5-4-2012

Submittal of a Long-Term Monitoring and Maintenance Plan for Solid Waste Management Units and Technical and Administrative Corrections and Updates to Comprehensive Part B Permit Request for Sandia National Laboratories/New Mexico, EPA ID Number NM5890110518

Sandia National Laboratories/NM

National Nuclear Security Administration
Sandia Site Office
P. O. Box 5400
Albuquerque, NM 87185

MAY 3 2012

Mr. John E. Kieling
Chief
New Mexico Environment Department
Hazardous Waste Bureau
2905 Rodeo Park Dr. East, Building 1
Santa Fe, NM 87505

Subject: Submittal of a Long-Term Monitoring and Maintenance Plan for Solid Waste Management Units and Technical and Administrative Corrections and Updates to Comprehensive Part B Permit Request for Sandia National Laboratories/New Mexico, Environmental Protection Agency Identification Number NM5890110518

Dear Mr. Kieling:

On behalf of the Department of Energy (DOE) and Sandia Corporation (Sandia), DOE is submitting the enclosed information to the New Mexico Environment Department (NMED). The information is related to the management of hazardous and radioactive/hazardous mixed waste regulated under the Resource Conservation and Recovery Act (RCRA) and the long-term monitoring and maintenance activities for select Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs).

DOE and Sandia have completed corrective action at numerous RCRA SWMUs/AOCs at Sandia National Laboratories/New Mexico (SNL/NM). These SWMUs/AOCs are listed in Table A.2, *List of Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) Not Currently Requiring Corrective Action*, in Module IV of Permit NM5890110518-1. In 2007 and 2008, DOE and Sandia requested that NMED add 31 SWMUs/AOCs to the list in Table A.2. In April 2010, NMED requested additional corrective action and information at several SWMUs and indicated the final decision regarding completion would be made in conjunction with renewal of the permit for RCRA-regulated waste management activities at SNL/NM. At this time, DOE and Sandia are submitting a plan for long-term monitoring and maintenance activities at select SWMUs/AOCs listed in Table A.2 and several of the SWMUs/AOCs under review by NMED.

DOE and Sandia submitted a Comprehensive Part B Permit Request in February 2002 for RCRA-regulated waste storage and treatment operations at SNL/NM. The Part B Permit Request has been revised numerous times: to address Notices of Deficiency issued by NMED; and to incorporate changes in waste management operations at SNL/NM. DOE and Sandia are submitting technical and administrative corrections and updates at this time.

This submittal includes nine enclosures. Each is discussed below.

LONG TERM MONITORING AND MAINTENANCE FOR SWMUS
Enclosures A and B address long-term monitoring and maintenance for SWMUs/AOCs listed in Table A.2 and SWMUs/AOCs included in NMED's April 2010 letter.

Enclosure A: Discussion of Select SWMUs
In Table A.2, NMED has noted that 23 SWMUs/AOCs are subject to establishment of site controls, including restrictions on future land use, based on the risk assessment results for the levels of contaminants remaining at these sites. DOE and Sandia believe controls are not warranted for eight SWMUs/AOCs; a discussion of each SWMU/AOC is included. DOE and Sandia request that NMED reconsider the risk assessment results for these SWMUs, and remove the requirement for controls.

Enclosure B: Long-Term Monitoring and Maintenance Plan (LTMMP) for SWMUs/AOCs
DOE and Sandia agree 23 SWMUs/AOCs require or are expected to require controls and have prepared a long-term monitoring and maintenance plan.

PART B PERMIT REQUEST
Enclosures C through I address the Part B Permit Request. The corrections and updates affect some or all of the pages in the Overview and in Parts 1, 2, 3, and 5 of the Part B Permit Request. Part 4 was submitted in April 2003; DOE and Sandia are withdrawing Part 4 and replacing it entirely due to the extent of the revisions.

Enclosure C: Summary of Corrections and Updates to the Overview, Part 1, and Part 2
The corrections, clarifications, and updates are summarized for your convenience in reviewing them.

Enclosure D: Redline/Strikeout Copies of Revised Pages in the Overview, Part 1, and Part 2
The revised text pages for the Overview and Parts 1 and 2 are included in redline/strikeout format. Revisions to figures are summarized in Enclosure C but are not shown in redline/strikeout format.

Enclosure E: Summary of Corrections and Updates to Parts 3 and 4
Additional groundwater information for regulated units is included in Part 3. The only regulated unit at SNL/NM is the Chemical Waste Landfill, which is undergoing post-closure care under a separate RCRA permit. This information is withdrawn from the Part B Permit Request.

Part 4 includes information regarding SWMUs/AOCs that are qualified to be on the permit; i.e., those for which NMED has not made a final decision regarding completion of corrective action. Corrective action for all SWMUs/AOCs is now conducted under the Compliance Order on Consent (COOC), dated April 29, 2004.

Enclosure F: Redline/Strikeout Copies of Revised Pages in Parts 3 and 4
The revised pages for Part 3 are included in redline/strikeout format. Due to the complete replacement of Part 4, redline/strikeout pages are not included.

Enclosure G: Summary of Corrections and Updates to Part 5
Part 5 of the Part B Permit Request (submitted in February 2002) included a request for renewal of the operating authorizations associated with the Corrective Action Management Unit (CAMU). DOE and Sandia completed treatment and containment operations at the CAMU in early 2003 and certified closure of the Unit on October 16, 2003. DOE and Sandia withdrew the CAMU treatment units from the Part B Permit Request in 2003 and submitted a comprehensive application for CAMU post-closure care to NMED on July 3, 2003. That application was revised in 2004 in response to NMED comments and notices of deficiency. The application has been further revised and updated and is included as Part 5 of the Part B Permit Request. The updates are summarized in this enclosure for your convenience in reviewing them.

Enclosure H: Redline/Strikeout Copies of Revised Pages in Part 5
The revised text pages for Part 5 are included in redline/strikeout format. Revisions to figures are summarized in Enclosure G but are not shown in redline/strikeout format.

Enclosure I: Overview and Parts 1 through 5
Due to the number of pages affected by the revisions, these parts have been reproduced in their entirety.

If you have questions please contact me at (505) 845-6036 or David Rast of my staff at (505) 845-5349.

Sincerely,

Geoffrey L. Beausoleil
Manager

10 Enclosures:

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See Page 4

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12-177-433750

Long-Term Monitoring and Maintenance Plan
Solid Waste Management Units and Areas of Concern
and
Updates to Comprehensive Part B Permit Request

Sandia National Laboratories / New Mexico
NM5890110518

CERTIFICATION STATEMENT

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

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

3 May 2012
Date signed

Geoffrey L. Beausoleil, Manager
U.S. Department of Energy
National Nuclear Security Administration
Sandia Site Office
Owner

3 MAY 2012
Date signed

Enclosure A

Discussion of Select Solid Waste Management Units and Areas of Concern

Sandia National Laboratories
NM5890110518

ENCLOSURE A

DISCUSSION OF SOLID WASTE MANAGEMENT UNITS AND AREAS OF CONCERN FOR WHICH CONTROLS ARE NOT WARRANTED

The New Mexico Environment Department (NMED) has determined that corrective action is complete at numerous solid waste management units (SWMUs) and areas of concern (AOCs) at Sandia National Laboratories/New Mexico (SNL/NM). These SWMUs/AOCs are listed in Table A.2 of Permit NM5890110518 *List of Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) Not Currently Requiring Corrective Action.*

Table A.2 includes 23 SWMUs/AOCs for which NMED has determined long-term controls are needed. The Department of Energy (DOE) and Sandia Corporation (Sandia) believe controls are not warranted at eight of these SWMUs/AOCs because the risk assessment calculations and considerations indicate each SWMU/AOC is acceptable for residential land use. Each is discussed below. DOE and Sandia request that NMED reconsider the need for long-term controls at each of these SWMUs/AOCs.

Five of the SWMUs/AOCs meet the criteria for residential land use based on maximum exposure point concentrations. The relevant risk assessment information for each of these SWMUs is summarized below.

- **SWMU 94-B** – DOE and Sandia submitted a revised risk assessment for this site to NMED in October 2003. Using maximum concentrations, this site met residential risk guidelines for nonradiological constituents of concern (COCs). For a residential scenario, the total hazard index (HI) is 0.07 and the total estimated excess cancer risk is 3E-8; both values are below the NMED guidelines. A radiological survey conducted in 1993 and 1994 found several point-source and area-source gamma radiation anomalies that were removed. A radiological risk assessment was conducted for this site and indicated that this site was acceptable for recreational and residential use.

- **SWMU 94-F** – DOE and Sandia submitted a revised risk assessment for this site to NMED in October 2003. Using maximum concentrations, this site meets residential risk guidelines for nonradiological COCs. For a residential scenario, the total HI is 0.37 and the total estimated excess cancer risk is 7E-7. A radiological survey was conducted in 1993 and 1994; no gamma radiation anomalies were detected within the boundary of Site 94-F. When excavating soil contaminated with jet fuel, depleted uranium (DU)-contaminated soil was discovered. The DU-contaminated soil was removed. A radiological risk assessment was submitted to the NMED as part of the NFA proposal for site 94-F in September 2001. The radiological risk assessment indicated that this site was acceptable for recreational and residential use.

- **SWMU 94-H** – DOE and Sandia submitted a revised risk assessment for this site to NMED in October 2003. Using maximum concentrations, this site meets residential risk guidelines for nonradiological COCs. For a residential scenario, the total HI is 0.02 and the total estimated excess cancer risk is 9E-10. A radiological survey was conducted in 1993 and 1994; no gamma radiation anomalies were detected within the boundary of Site 94-H. No radiological COCs exceeded background concentrations; therefore, a radiological risk assessment was not conducted.

- **SWMU 54 and TNT** - In the No Further Action (NFA) proposal submitted to NMED in October 1996, DOE and Sandia noted one soil sample at SWMU 54 where trinitrotoluene (TNT) was detected at a concentration of 3 ppm. The remainder of the soil samples had no detections of TNT. The maximum concentration of TNT detected at SWMU 54 does not present a risk under a residential land use scenario. The TNT site has been managed in conjunction with SWMU 54 and therefore, the TNT site is proposed as not warranting controls.

According to the NMED Risk Assessment Guidance for Site Investigations and Remediation (NMED 2012) a 95% upper confidence limit (UCL 95%) on the arithmetic mean may be used as an exposure point concentration (EPC) for chronic exposures. According to these specifications, SWMUs 136 and 227 both meet the criteria for residential land use. The relevant risk assessment information for each of these SWMUs is summarized below.

- **SWMU 136** - The residential HI (1.36) is above the NMED guidance. The estimated excess cancer risk for the residential land-use scenario, 2E-5, is above the NMED guideline. However using the UCL of the average concentrations for the main contributors to excess cancer risk (antimony, arsenic (below background), barium, cadmium, and thallium) leads to a HI of 0.76 and a total estimated excess cancer risk of 2E-6. Thus, by using realistic concentrations in the risk calculations that more accurately depict actual site conditions, the calculated total risk meets the NMED guidelines for residential land use.

- **SWMU 227** - The residential HI (0.5) is below the NMED guidance. The total estimated excess cancer risk for the residential land-use scenario, 2E-5, is above the NMED guideline. However, the UCL of the average concentration for the main contributor to risk, arsenic, is below the background value and arsenic is eliminated from the risk calculation. With the removal of arsenic, the HI is reduced to 0.23 and the total estimated excess cancer risk is reduced to 1E-7. Thus, by using realistic concentrations in the risk calculations that more accurately depict actual site conditions, the calculated total risk meets the NMED guidelines for residential land use.

ENCLOSURE A

The last SWMU for which DOE and Sandia believe that controls are not warranted passes residential risk criteria based other risk based considerations. The SWMU 48 relevant risk assessment information is summarized below.

- **SWMU 48** - The HI (1.06) based on a residential exposure scenario is slightly above the NMED guidance. None of the individual COC had a hazard quotient greater than 0.22. In addition the maximum detected concentration for thallium, the main contributor to the HI, was 1.1 mg/kg and the corresponding background concentration for thallium is <1.1 mg/kg. Therefore the risk contribution due to thallium is predominantly due to background thallium concentrations and not to onsite contamination at the SWMU. The HI with the removal of the thallium is 0.84, which is below the NMED guideline of 1.0 for residential land use. The total estimated residential excess cancer risk is 2E-7, which is below the NMED guideline of 1E-5. Therefore this SWMU meets the criteria for residential land use.

DOE and Sandia request that NMED remove the requirement for long-term controls for each of these SWMUs/AOCs.

REFERENCE

NMED, 2012. "Risk Assessment Guidance for Site Investigations and Remediation," Hazardous Waste Bureau and Ground Water Quality Bureau, New Mexico Environment Department.

Enclosure B

Long Term Monitoring and Maintenance Plan
Solid Waste Management Units and Areas of Concern
Corrective Action Complete with Controls

Sandia National Laboratories
NM5890110518

LONG-TERM MONITORING AND MAINTENANCE PLAN
REVISION 0

APRIL 2012

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LIST OF ABBREVIATIONS/ACRONYMS

AOC	Areas of Concern
DOE	U.S. Department of Energy
KAFB	Kirtland Air Force Base
LTMMP	Long Term Monitoring and Maintenance Plan
NMED	New Mexico Environment Department
Sandia	Sandia Corporation
SNL/NM	Sandia National Laboratories/New Mexico
SWMU	Solid Waste Management Units

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LONG-TERM MONITORING AND MAINTENANCE PLAN
SOLID WASTE MANAGEMENT UNITS
CORRECTIVE ACTION COMPLETE WITH CONTROLS

SANDIA NATIONAL LABORATORIES
EPA ID NM5890110518

1.0 INTRODUCTION

This Long Term Monitoring and Maintenance Plan (LTMMP) addresses measures that the U.S. Department of Energy (DOE) and Sandia Corporation (Sandia) will perform to provide protection of human health and the environment from constituents of concern present at Solid Waste Management Units (SWMU) at Sandia National Laboratories/New Mexico (SNL/NM).

Most of the SWMUs included in this LTMMP are listed in Table A.2, "List of Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) Not Currently Requiring Corrective Action" in Module IV of Permit NM5890110518 (hereinafter referred to as the Permit). The remainder of the SWMUs included in this LTMMP are under review by the New Mexico Environment Department (NMED), and NMED has indicated long-term monitoring and maintenance will be required.

The SWMUs listed in this LTMMP are located within the fenced boundaries of Kirtland Air Force Base (KAFB).

Measures under this LTMMP include surveillance of site conditions and maintenance of institutional controls. The controls are consistent with the risks presented by the site conditions and constituents of concern at each SWMU. The controls are implemented in an integrated and layered approach to enhance their effectiveness and reliability, and to provide continued protection in the event that one or more controls become temporarily impaired. Administrative and physical controls at the SWMUs subject to this LTMMP include:

- Information management,
- Restrictions on future use,
- Awareness,
- Limited access restrictions as described in this LTMMP, and
- Physical features at some SWMUs.

Maintenance of control measures, including routine surveillance, is conducted as necessary to prevent deterioration or failure of controls.

The administrative and physical controls are described in Section 2. The scope and frequency of surveillance and maintenance measures are described in Section 3, and periodic reports of SWMU status are summarized in Section 4 of this LTMMP. Information about the individual SWMUs, controls, and maintenance measures is summarized in Table 1. The SWMU locations are shown in Figures 1 through 6.

2.0 INSTITUTIONAL CONTROLS

2.1 Administrative Controls

The following information about each SWMU listed in this LTMMP is maintained at SNL/NM: the SWMU location, characteristics, constituents of concern, corrective action, current conditions, and restrictions on future use.

The SWMUs listed in this SWMU are not approved for residential land use. Plans for future DOE and Sandia activities within one-half mile of each SWMU will be evaluated to identify aspects that are not consistent with land use requirements for that SWMU.

2.2 Physical Controls

Physical controls are implemented for each SWMU listed in Table 1. Each of the SWMUs listed in Table 1 is located within the fenced boundaries of KAFB. Public access to KAFB is restricted. Additional physical controls at these SWMUs consist of one or more of the following:

- Land use restrictions (primarily industrial),
- Warning and information signs posted at each SWMU where feasible,
- Fences that restrict access to some or all of each SWMU, and
- Physical features such as subsurface location (e.g., sewer lines).

Where signs are posted at the SWMUs, the signs describe the following information:

- SWMU number;
- Site-specific instructions; and
- Contact information for further direction.

The specific controls and maintenance measures for each SWMU are listed in Table 1.

3.0 MAINTENANCE OF INSTITUTIONAL CONTROLS

3.1 Maintenance of Administrative Controls

Records and information for each SWMU listed in Table 1 are maintained in written or electronic form at SNL. The records are kept current and are updated when new information becomes available or is generated. The records include the following:

- Site location and characteristics;
- Site history and corrective action;
- Land use permits or agreements with KAFB;
- Documentation of current site conditions, including information from annual inspections;
- Planning information, including restrictions on future activities at the site; and
- Copies of reports previously submitted to NMED.

Table 1
Summary of Institutional Controls for Solid Waste Management Units and Areas of Concern Requiring Controls

SWMU/ AOC Number	Site Name	Site Data	Land Use	Signs and Postings	SWMU Inspections	Additional Information	Figure
OU 1302 TA-I							
96	Storm System Drain	Maintained and tracked	Industrial	Not feasible	None	SWMU consists of underground storm drains throughout TA-I. No signs, postings, or inspections are feasible due to SWMU features.	Not shown
98	Building 863 (TCA, Photochemical Releases: Silver Catch Boxes)	Maintained and tracked	Industrial	Not feasible	Annual	SWMU consists of subsurface area located under a building. No signs, postings, or inspections are feasible due to SWMU features.	1
187	Septic Tank Piping for POTW	Maintained and tracked	Industrial	Not feasible	None	SWMU consists of underground sewer lines throughout TA-I. No signs, postings, or inspections are feasible due to SWMU features.	Not shown
190	Steam Plant Tank Farm	Maintained and tracked	Industrial[a]	4 signs on SWMU perimeter, one in the approximate middle of each side of the SWMU	Annual		1
226	Old Acid Waste Line	Maintained and tracked	Industrial	Not feasible	None	SWMU consists of underground drain line throughout TA-I, II, and IV. No signs, postings, or inspections are feasible due to SWMU features.	1 and 2

Table 1 (Continued)
Summary of Institutional Controls for Solid Waste Management Units and Areas of Concern Requiring Controls

SWMU/ AOC Number	Site Name	Site Data	Land Use	Signs and Postings	SWMU Inspections	Additional Information	Figure
OU 1303 TA-II							
1	Radioactive Waste Landfill	Maintained and tracked	Industrial	4 signs on SWMU perimeter, one each in selected corners of the SWMU	Annual		2
2	Classified Waste Landfill (TA-II)	Maintained and tracked	Industrial	5 signs on SWMU perimeter, one in the approximate middle of each side of the SWMU	Annual		2
3	Chemical Disposal Pit	Maintained and tracked	Industrial	Included with SWMU 1	Annual	Located adjacent to SWMU 1.	2
135	Building 906 Drain System	Maintained and tracked	Industrial	1 sign	Annual		2
OU 1309 Tijeras Arroyo							
45	Liquid Discharge (Behind TA-IV)	Maintained and tracked	Industrial	5 signs on SWMU perimeter, one in approximately each corner of the SWMU outside of the TA-IV fence	Annual	Western half of the SWMU within the TA-IV fenced boundary	2
46	Old Acid Waste Line Outfall	Maintained and tracked	Industrial	4 signs along the TA-IV fence line and 7 signs posted along the south and west perimeter of the SWMU	Annual		2
229	Storm Drain System Outfall (for TA-II)	Maintained and tracked	Industrial	1 sign at the top of the outfall	Annual		2
234	Storm Drain System Outfall	Maintained and tracked	Industrial	2 signs, one at the top and bottom of the outfall	Annual		2

Table 1 (Continued)
Summary of Institutional Controls for Solid Waste Management Units and Areas of Concern Requiring Controls

SWMU/ AOC Number	Site Name	Site Data	Land Use	Signs and Postings	SWMU Inspections	Additional Information	Figure
OU 1306 TA III and V							
105	Mercury Spill (Bldg. 6536)	Maintained and tracked	Industrial	4 signs on SWMU perimeter, one in the approximate middle of each side of the SWMU	Annual		3
196	Bldg. 6597 Cistern (TA-V)	Maintained and tracked	Industrial	1 sign in the middle of the SWMU	Annual		3
OU 1307 Liquid Waste Disposal System							
4	LWDS Surface Impoundments	Maintained and tracked	Industrial	4 signs on SWMU perimeter, one in the approximate middle of each side of the SWMU	Annual		3
Miscellaneous Sites							
1029	Building 6584 North Septic System (TA-III)	Maintained and tracked	Industrial	3 signs on SWMU perimeter	Annual		3
1081	Building 6650 Septic System (TA-III)	Maintained and tracked	Industrial	3 signs on SWMU perimeter	Annual		3
1090	Bldg. 6721 Septic System (TA-III)	Maintained and tracked	Industrial	1 sign, approximately in the middle of the SWMU	Annual		3

Table 1 (Concluded)
Summary of Institutional Controls for Solid Waste Management Units and Areas of Concern Requiring Controls

SWMU/ AOC Number	Site Name	Site Data	Land Use	Signs and Postings	SWMU Inspections	Additional Information	Figure
OU 1295 Septic Tanks and Drainfields							
137	Bldg. 6540/6542 Septic System (TA-III)	Maintained and tracked	Industrial	4 signs on SWMU perimeter, one each at selected corners of the SWMU	Annual		3
140	Bldg. 9965 Septic System and Drywell (Thunder Range)	Maintained and tracked	Industrial[a]	2 signs, one each in the middle of 140a and 140b	Annual		5
OU 1335 Southwest Test Area							
91	Lead Firing Site (Thunder Range)	Maintained and tracked	Industrial[a]	4 signs on SWMU perimeter, one in the approximate middle of each side of the SWMU	Annual		4
OU 1332 Foothills Test Area							
87	Building 9990 Firing Site	Maintained and tracked	Industrial[a]	4 signs, one at the access road and three on the perimeter of the SWMU	Annual		6

[a]DOE/Sandia have separate documentation with KAFB to maintain institutional controls at this location, however, this documentation does not prohibit KAFB uses of the land.

AOC = Area of Concern.
DOE = U.S. Department of Energy.
KAFB = Kirtland Air Force Base.
LWDS = Liquid Waste Disposal System.
OU = Operable Unit.
POTW = Publicly Owned Treatment Works.
Sandia = Sandia Corporation.
SWMU = Solid Waste Management Unit.
TA = Technical Area.
TCA = Trichloroethane.

3.2 Maintenance of Physical Controls

DOE and Sandia periodically inspect and maintain the physical controls at the SWMUs. Documented annual inspections include reviews of the following, as applicable:

- Condition of the site;
- Evidence of erosion, seepage, or subsidence;
- Evidence of newly-occurring or newly-visible contamination;
- Condition and location of signs;
- Evidence of activities that are not consistent with restrictions in place; and
- Evidence of residential activities adjacent to the given SWMU that would necessitate additional awareness measures and access restrictions for the site.

Inspection results are evaluated for necessary maintenance, including repair, replacement, or installation. Maintenance will occur on the following schedule unless weather or other site-specific conditions require a delay:

Table 2
Maintenance Schedule

Maintenance Issue	Response Schedule
Erosion, seepage, or subsidence	• Evaluate severity and if necessary develop mitigation plan within 120 days • Complete in a timely manner
Newly-occurring or newly-discovered contamination	• See Permit Part 8
Signs	• Begin to address within 30 days • Complete in a timely manner
Activities that are inconsistent with site restrictions	• Begin to address within 30 days • Complete in a timely manner
Awareness measures to address new residential activities adjacent to SWMU locations	• Develop measures within 30 days • Implement measures in a timely manner
Access restrictions to address new residential activities adjacent to SWMU locations	• Develop measures within 60 days • Implement measures in a timely manner

SWMU = Solid Waste Management Unit.

DOE and Sandia will perform follow-up inspections to verify completion of corrective actions. Follow-up inspections will occur within 180 days after the actions are completed and may be combined with annual inspections.

4.0 LTMMP REPORTING REQUIREMENTS

An annual SWMU LTMMP report will be prepared to document the following:

- Annual inspection results;
- Maintenance and repair activities required;
- Status of maintenance and repair activities; and
- Other conditions or events at the site that affect the performance of the controls.

The report will include all SWMUs listed in Table 1. The annual report for each calendar year will be submitted to the NMED by March 31 of the following year.

FIGURES

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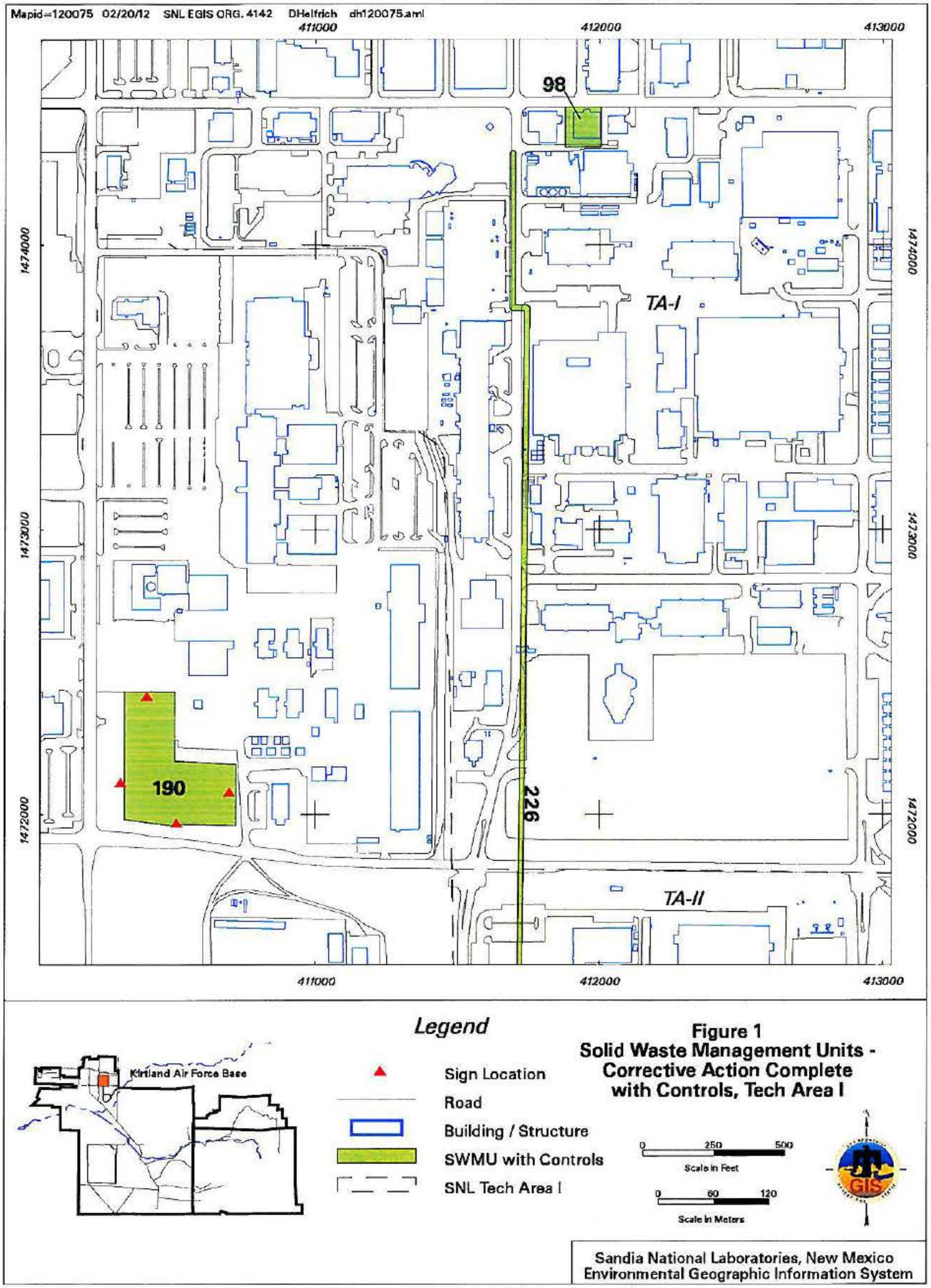
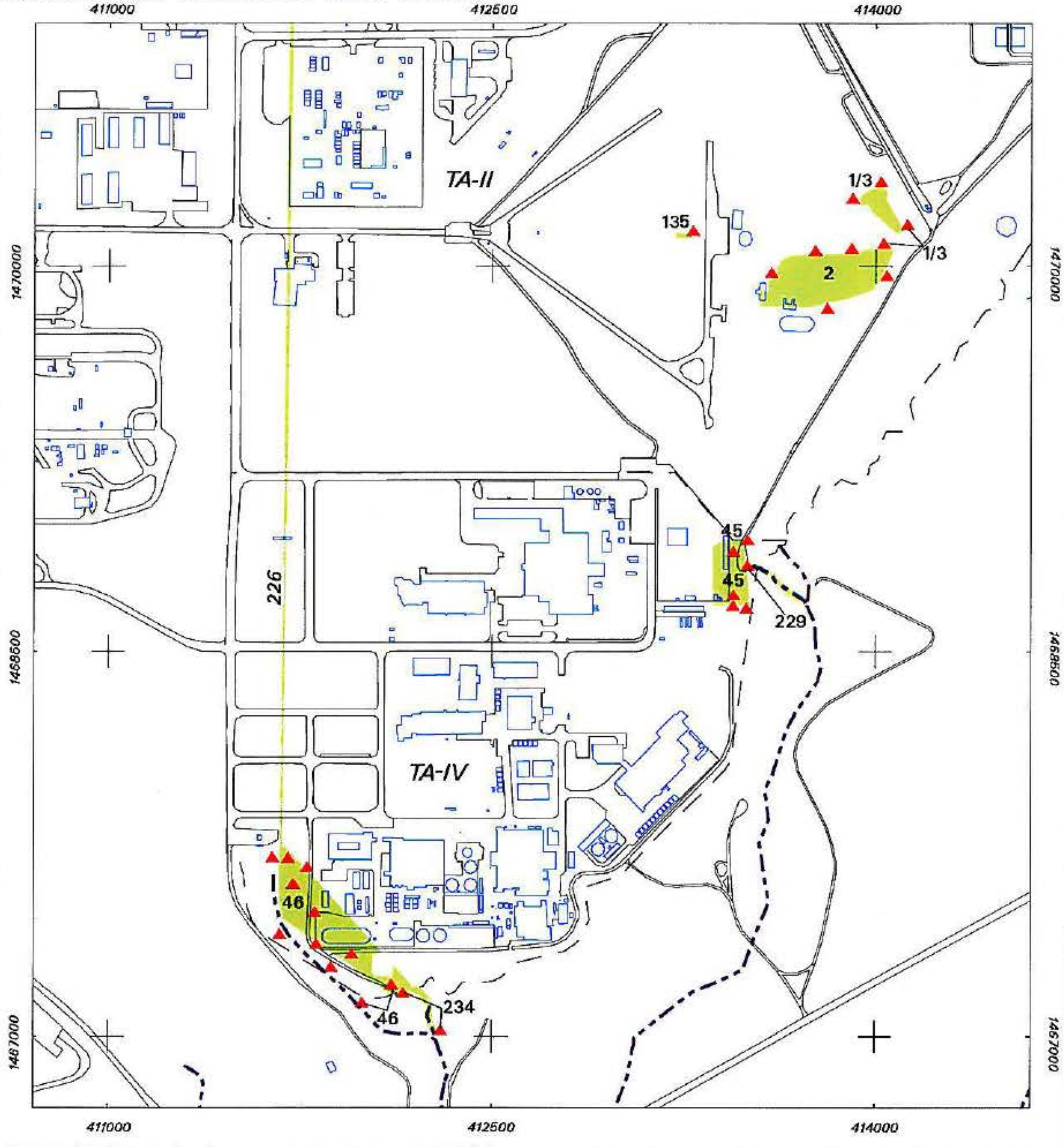
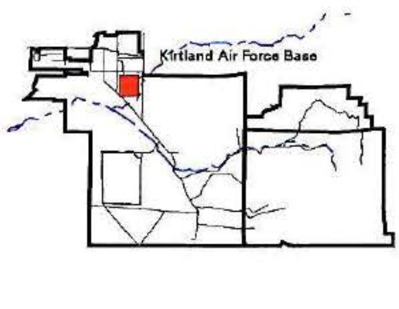


Figure 1
Solid Waste Management Units - Corrective Action Complete with Controls, Tech Area I

Mapid=120113 04/24/12 SNL EGIS ORG. 4142 DHelfrich dh120113.aml





Legend

- Sign Location
- Road
- Surface Drainage
- Building / Structure
- SWMU with Controls
- SNL Tech Area II & IV

0 325 650
Scale in Feet

0 78 156
Scale in Meters

Figure 2
Solid Waste Management Units - Corrective Action Complete with Controls, Tech Areas II and IV

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

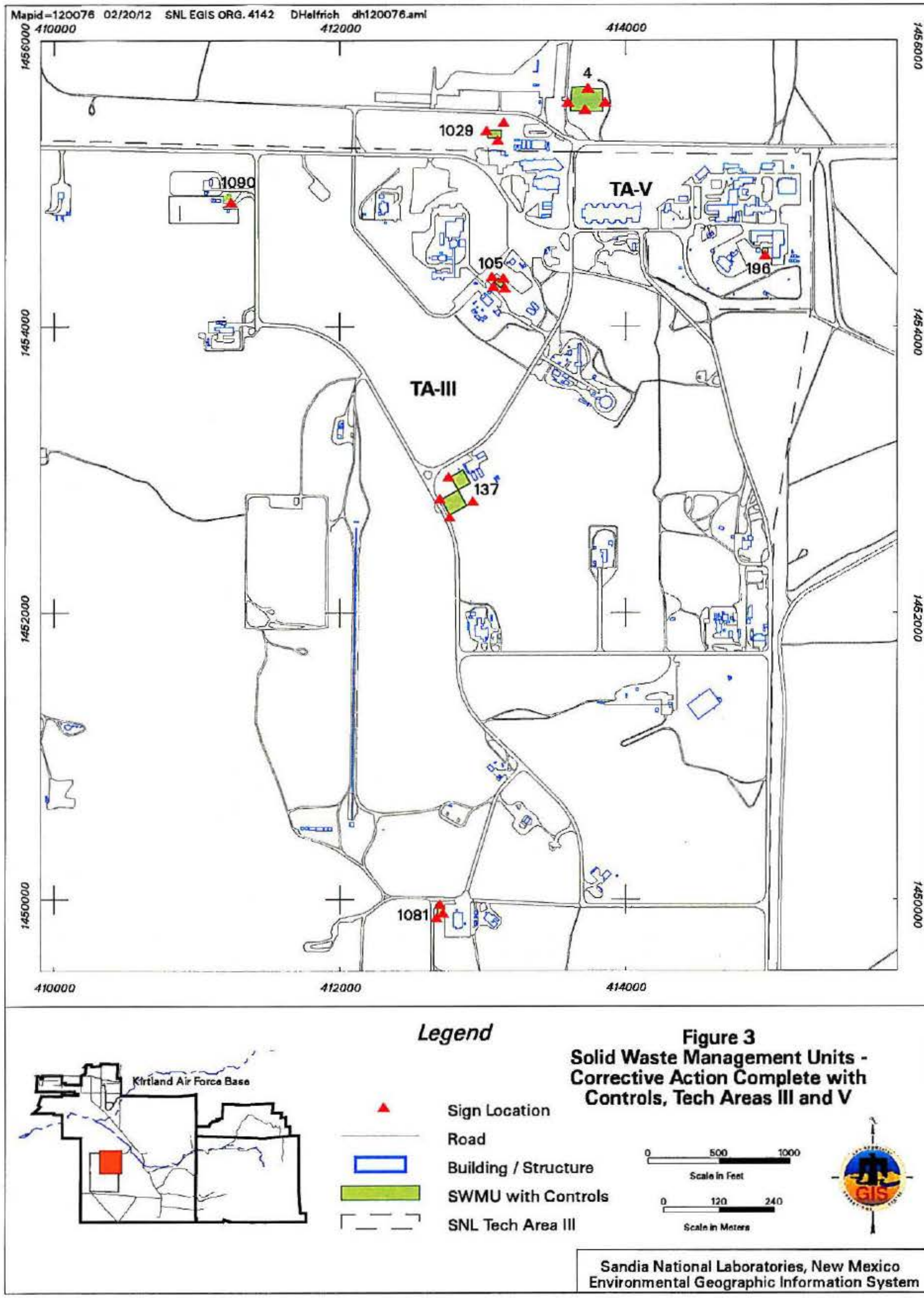
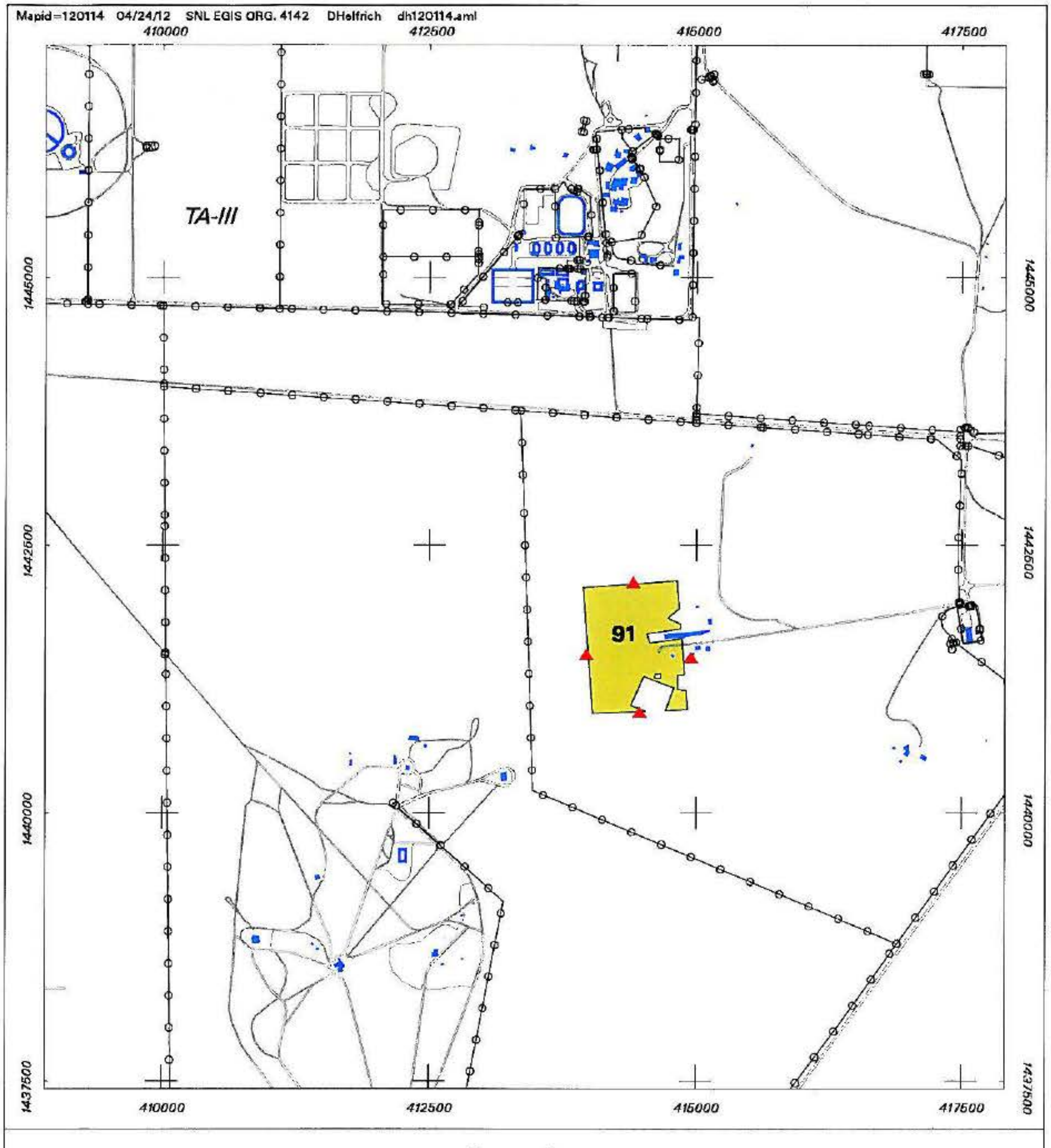


Figure 3
Solid Waste Management Units - Corrective Action Complete with Controls, Tech Areas III and V



Legend

- Sign Location
- Road
- Fence
- Building / Structure
- SWMU with Controls
- SNL Tech Area III

Figure 4
Solid Waste Management Unit 91 - Corrective Action Complete with Controls

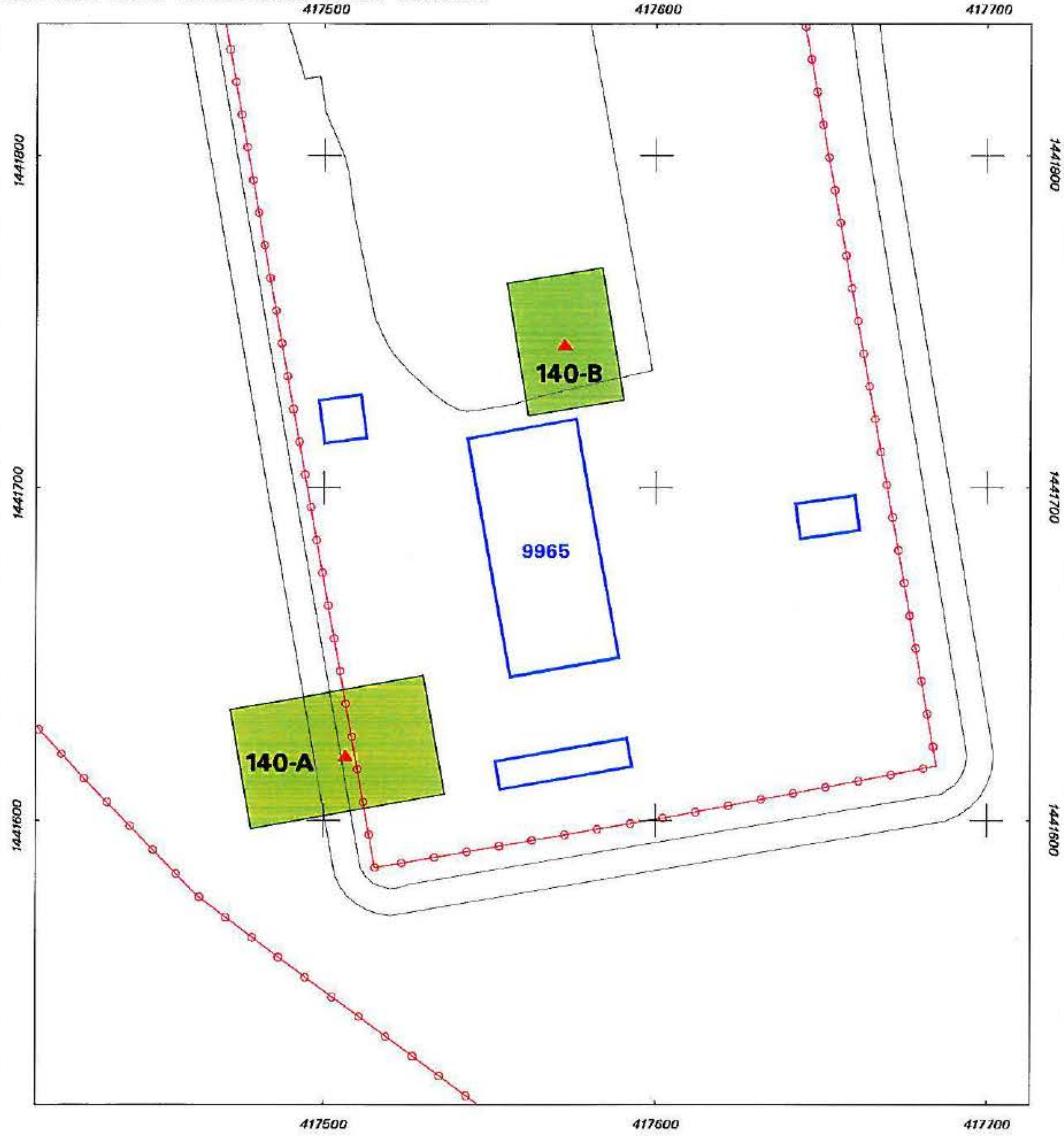
0 750 1500
Scale In Feet

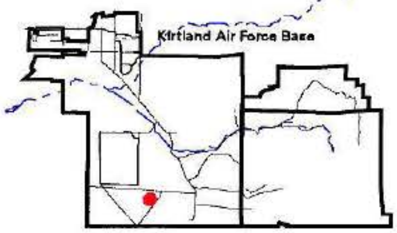
0 180 360
Scale in Meters

Projection: New Mexico State Plane, Central Zone 3002, 1927 North American Datum

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

Mapid=120079 02/16/12 SNL EGIS ORG. 4142 DHelfrich dh120079.aml





Legend

Sign Location

Unpaved Road

Fence

Building / Structure

SWMU with Controls

0 25 50
Scale in Feet

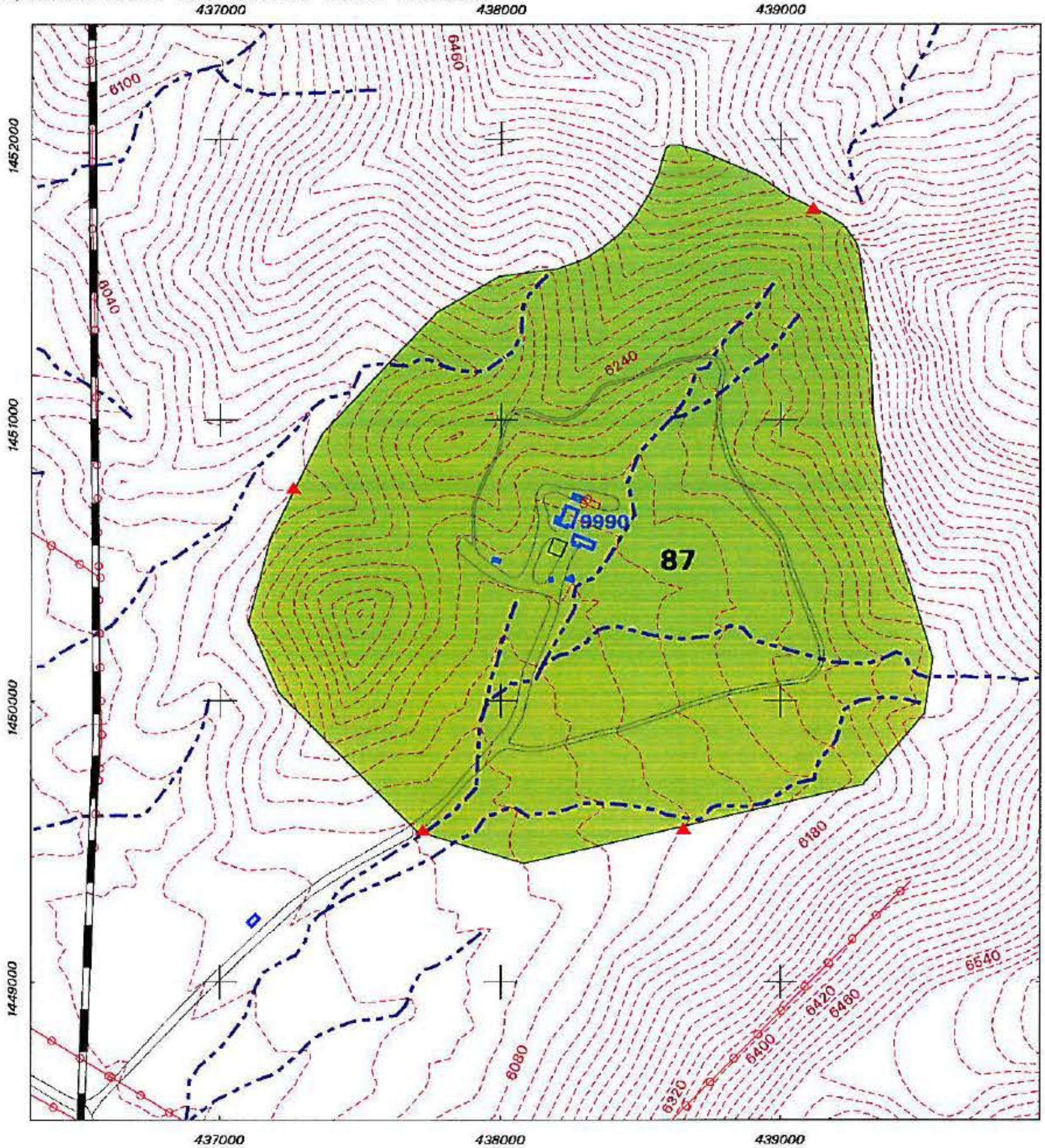
0 6 12
Scale in Meters

Figure 5
Solid Waste Management Unit 140 - Corrective Action Complete with Controls

Projection: New Mexico State Plane, Central Zone 3002, 1927 North American Datum

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

Mapid=120080 02/20/12 SNL EGIS ORG. 4142 DHelfrich dh120080.aml



Projection: New Mexico State Plane, Central Zone 3002, 1927 North American Datum

Legend

- ▲ Sign Location
- Unpaved Road
- 20-ft Contour
- KAFB Boundary
- Building / Structure
- Surface Drainage
- Fence
- SWMU with Controls

Figure 6
Solid Waste Manangement Unit 87 - Corrective Action Complete with Controls

0 300 600
Scale in Feet

0 72 144
Scale in Meters

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

Enclosure C

Comprehensive Part B Permit Request

Summary of Corrections and Updates:
Overview, Part 1, and Part 2

Sandia National Laboratories
NM5890110518

ENCLOSURE C

SUMMARY OF REVISIONS TO COMPREHENSIVE PART B PERMIT REQUEST

OVERVIEW, PART 1, AND PART 2

OVERVIEW

Sections 1 and 2 of the overview have been updated to reflect current operations and contents of Parts 1 through 5 of the Part B permit request. Section 3 of the Overview has not been revised.

PART 1

The Part A permit application in Part 1 of the Part B permit request has been updated to:

- Incorporate changes in waste quantities and treatment capacities. The revised waste quantities reflect current and expected operations at Sandia National Laboratories/New Mexico (SNL/NM). The treatment capacities have been revised to correct errors and to incorporate treatment technology that has become available since the last update.
- Present the updated information on the current EPA forms.
- Provide updated information about other active environmental permits at SNL/NM.
- Provide updated figures for several waste management units. The figures have been updated to reflect a name change for the Hazardous Waste Handling Facility (HWHF) (formerly the Hazardous Waste Management Facility), and to incorporate changes in office accommodations for personnel at the HWHF and the Radioactive and Mixed Waste Management Facility.

PART 2

Part 2 consists of a Part B permit renewal request/application for nine RCRA-regulated waste management units associated with ongoing operations at SNL/NM. Part 2 includes a general Part B that provides information that is applicable to most or all of the nine waste management units, together with six general appendices. Information that is specific to each waste management unit is included in five “modules.” The revisions for each section are summarized below.

ENCLOSURE C

SITE-WIDE PART B AND APPENDICES

General Part B

This text in this section has been revised to provide additional information and to reflect current operations at SNL/NM.

Appendix A - Site-Wide Description

The text and figures have been updated to reflect changes in SNL/NM and Kirtland Air Force Base facilities.

Appendix B – Site-Wide Waste Analysis Plan

This appendix has been extensively revised to:

- Clarify the processes and procedures used for waste characterization;
- Provide additional information for waste characterization and for chemical analyses; and
- Incorporate characterization for wastes generated during post-closure care activities at the Corrective Action Management Unit.

Appendix C – Site Wide Inspection Plan

This appendix has been revised to more accurately describe inspection and monitoring activities for containers that are subject to certain requirements.

Appendix D – Site-Wide Personnel Training Plan

This appendix has been updated to provide additional information and to reflect changes in typical job duties and training requirements for waste management personnel.

Appendix E – Site-Wide Contingency Plan

This appendix has been revised and updated to:

- Remove the Chemical Waste Landfill because that is now addressed under a separate RCRA Post-Closure Care Permit; and
- Clarify descriptions of actions to be taken in responding to emergencies.

Appendix F – Site Wide Closure Plan

This appendix is not being revised at this time.

ENCLOSURE C

WASTE MANAGEMENT UNIT-SPECIFIC MODULES

Module I – Hazardous Waste Handling Facility

This module has been revised to:

- Provide updated information and additional information about the facility in the text and figures; and
- Clarify the processes used for container management.

Module II – Thermal Treatment Facility

This module has been revised to

- Provide updated information and additional information about the facility in the text and figures;
- Clarify the processes used for waste management operations at the facility; and
- Provide additional information regarding waste treatment operations at the facility.

Module III – Radioactive and Mixed Waste Management Facility

This module has been revised to:

- Provide updated information and additional information about the facility in the text and figures;
- Clarify the processes used for container management; and
- Update information about treatment processes - to provide additional information, and to incorporate newly-available technology.

Module IV – Reserved

This module is not being revised at this time.

Module V – Auxiliary Hot Cell Facility

This module has been revised to:

- Provide updated information and additional information about the facility in the text and figures;
- Clarify the processes used for container management; and
- Update information about treatment processes - to provide additional information, and to incorporate newly-available technology

ENCLOSURE C

WASTE MANAGEMENT UNIT-SPECIFIC MODULES (continued)

Module VI – Manzano Storage Bunkers

This module has been revised to:

- Provide updated information and additional information about the facility in the text; and
- Clarify the processes used for container management.

Sandia National Laboratories is a multi-program laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.

Enclosure D

Comprehensive Part B Permit Request

Corrections and Updates to Overview, Part 1 and Part 2
Redline / Strikeout Format

Sandia National Laboratories
NM5890110518

Overview
Part 1: Part A
Part 2: Part B for Waste Management Units

Note: Only the revised text pages are included

OVERVIEW

1.0 BACKGROUND

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

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

Since November 19, 1980, Sandia/DOE have managed RCRA-regulated wastes at SNL/NM under the applicable requirements of Title 40 of the Code of Federal Regulations, Parts 260-270, and with the requirements of NMAC Title 20, Chapter 4, as they became effective. ~~Sandia/DOE operations~~Operations at SNL/NM include the following RCRA-regulated waste management facilities that are addressed in Parts 1 through 5 of this Part B permit request. ~~:~~

- **Hazardous Waste ~~Management~~Handling Facility (HW~~M~~HF).** *(Included in Parts 1 and 2)* The HW~~M~~HF (formerly known as the Hazardous Waste Management Facility) consists of several buildings within a fenced area located south of SNL/NM TA-I. The HW~~M~~HF is used for storage and packaging of RCRA-regulated wastes. The wastes are transported to off-site RCRA-permitted facilities for treatment, storage, and/or disposal. These wastes are generated during SNL/NM operations and corrective action activities. The ~~Part B~~ hazardous waste operating permit for the HWMF was issued in August 1992 and expired on August 6, 2002. The comprehensive Part B permit request submitted to NMED on February 6, 2002 included a request for the renewal of the HWMF operating permit. The Part B permit renewal request has been updated and revised several times in response to NMED comments and to reflect changes in operations. ~~Sandia/DOE revised the request in response to NMED's comments dated June 25, 2004. The complete updated request for renewal of the HWMF operating permit is included in the November 2004 submittal.~~

- **Thermal Treatment Facility (TTF).** *(Included in Parts 1 and 2)* The TTF consists of a burn cage with ancillary equipment located in a fenced area south of Building 6715 in the northern part of SNL/NM TA-III. The TTF is used for thermal treatment of explosive wastes generated by SNL/NM operations. RCRA-regulated treatment residues (ash) are transported to off-site permitted facilities for treatment, storage, and/or disposal.

The Part B hazardous waste operating permit for the TTF was issued on November 4, 1994. The comprehensive Part B permit request submitted to NMED on February 6, 2002 included a request for the renewal of the TTF operating permit. The Part B permit renewal request has been updated and revised several times in response to NMED comments and to reflect changes in operations. ~~Sandia/DOE revised the request in response to changes in TTF operations and NMED's comments dated June 25, 2004. The request for renewal of the TTF operating permit was included in this November 2004 submittal. Additional updates reflecting minor changes in TTF operations were submitted in July 2005.~~

- **Radioactive and Mixed Waste Management Facility (RMWMF).** *(Included in Parts 1 and 2)* The RMWMF consists of several buildings within a fenced area located at the southeastern corner of SNL TA-III, west of the CWL. The RMWMF is used for storage, treatment, and packaging of RCRA-regulated wastes generated during SNL/NM operations and corrective action activities. RCRA-regulated wastes and treated residues are transported to off-site permitted facilities for treatment, storage, and/or disposal. The RMWMF is operated under interim status. The comprehensive Part B permit request submitted to NMED on February 6, 2002 included a Part B permit application for operation of the RMWMF, which superseded the application submitted to the NMED in December 1996. The Part B permit application has been updated and revised several times in response to NMED comments and to reflect changes in operations.

- ~~Sandia/DOE revised the application in response to NMED's comments dated June 25, 2004.~~

~~Sandia/DOE planned to make physical modifications to the RMWMF in stages during the next three years to increase capacity. The modified facility was to be called the Consolidated Waste Management Facility. Sandia/DOE planned to continue the same general operations at the CWMF (storage, repackaging, and treatment of RCRA-regulated wastes) that are conducted at the existing RMWMF.~~

~~On September 7, 2005, Sandia/DOE decided not to proceed with the plans for modification of the RMWMF. The application for operation of the RMWMF in this comprehensive Part B permit request has been further modified to reflect the original RMWMF and incorporates minor technical changes and updates that were submitted to NMED in March and July 2005. The application for the RMWMF is included in this October 2005 submittal.~~

- **High Bay Waste Storage Facility (HBWSF).** The HBWSF ~~is an area within Building 6596 in SNL/NM TA-V. The HBWSF~~ was operated under interim status ~~used~~ for storage and packaging of RCRA-regulated wastes generated during SNL/NM operations and corrective action activities. ~~RCRA-regulated wastes were transported to off-site permitted facilities for treatment, storage, and/or disposal. The HBWSF is operated under interim status.~~ The comprehensive Part B permit request submitted to NMED in February 2002 included a Part B permit application for operation of the HBWSF, which superseded the application submitted to the NMED in December 1996. Sandia/DOE withdrew the Part B permit application for the HBWSF in April 2003 completed ~~and most recently submitted a~~ closure ~~plan to NMED in April 2004. NMED approved the plan in December 2004. Sandia/DOE are currently closing the Unit~~ under interim status in May 2006. NMED approved completion of closure in July 2006.

- **Auxiliary Hot Cell Facility (AHCF).** *(Included in Parts 1 and 2)* The AHCF is located in Building 6597 in SNL/NM TA-V. The AHCF will be used for treatment, packaging, and storage of RCRA-regulated wastes generated during SNL/NM operations and corrective action activities. The comprehensive Part B permit request submitted to NMED on February 6, 2002 included an application for operation of the AHCF. The Part B permit application has been updated and revised several times in response to NMED comments and to reflect changes in operations.~~Sandia/DOE revised the application in response to NMED's comments dated June 25, 2004. The complete updated application for operation of the AHCF is included in the November 2004 submittal.~~

- **Manzano Storage Bunkers (MSB).** *(Included in Parts 1 and 2)* The MSB are a set of Units used for storage of RCRA-regulated wastes generated during SNL/NM operations and corrective action activities. The ~~seven~~ bunkers within the MSB are located within the former Manzano Base in the eastern part of KAFB. RCRA-regulated wastes are typically transported to other SNL/NM Units for storage and/or treatment before being transported to permitted off-site facilities for further treatment, storage, and/or disposal. The MSB are operated under interim status. The comprehensive Part B permit request submitted to NMED in February 2002 included a Part B permit application for operation of the MSB, which superseded the application submitted to the NMED in December 1996. The Part B permit application has been updated and revised several times in response to NMED comments and to reflect changes in operations.~~Sandia/DOE revised the application in response to NMED's comments dated June 25, 2004. The complete updated application for operation of five bunkers in the MSB is included in the November 2004 submittal.~~

  The original application included seven bunkers. Two of the bunkers provided extra capacity that was not needed, and they were never used for storage of RCRA-regulated wastes under interim status. Sandia/DOE withdrew the Part B permit application for those two bunkers in April 2003 and submitted a request to NMED in February 2004~~. In December 2003, Sandia/DOE submitted a request to NMED~~ for closure of the two bunkers. NMED approved closure of the two bunkers in October 2006~~Sandia/DOE continue to operate the two Units under interim status until NMED approves the closure request~~. The remaining five bunkers are included in the permit application.

  Chemical Waste Landfill (CWL). *(Included in Part 3)* Sandia/DOE operated the CWL in the southeastern corner of SNL/NM TA-III for disposal of RCRA-regulated wastes under interim status until 1985. Sandia/DOE ~~are~~ closed~~ing~~ the landfill under interim status according to a closure plan approved by the New Mexico Environment Department (NMED). Two voluntary corrective measures (VCM) were~~have been~~ performed at the CWL: a vapor extraction VCM, and a landfill excavation VCM. The CWL is a regulated unit under RCRA. Sandia and DOE are conducting post-closure care of the CWL under the terms of Post-Closure Care Permit NM5890110518 (PCCP) issued by NMED October 15, 2009. The PCCP became effective June 2, 2011 upon NMED approval of CWL closure. Groundwater assessment and monitoring information for the CWL is addressed in Part 3 of this comprehensive Part B permit request by means of reference to the PCCP~~. Sandia/DOE will prepare corrective measures documentation as required by the closure plan. Sandia/DOE has prepared a post-closure care permit application as a supplement to this Part B application~~.

- **Corrective action for SWMUs at SNL/NM.** *(Included in Part 4)* Sandia/DOE have identified numerous SWMUs throughout SNL/NM, and, until issuance of a Compliance

Order by the NMED in April 2004, conducted corrective action under Module IV of the Part B Permit issued by the U.S. Environmental Protection Agency (EPA) under the 1984 Hazardous and Solid Waste Amendments to RCRA. The comprehensive Part B permit request submitted to NMED on February 6, 2002 included the required information for SWMUs and Areas of Concern (AOCs) that qualify to be on the permit as determined by NMED. Sandia/DOE updated the information in response to NMED's comments and included the updated information in the April 2003 submittal.

Corrective action activities are now conducted under the terms of the Compliance Order on Consent between DOE, Sandia, and NMED, dated April 29, 2004.

Thirty-five SWMUs and three groundwater AOCs remain on the list of SWMUs and AOCs requiring corrective action. Sandia/DOE have submitted three permit modification requests to NMED, requesting determination that corrective action is complete at 32 SWMUs.

- **Corrective Action Management Unit (CAMU).** *(Included in Parts 1 and 5)* The CAMU was used for staging, treatment, and containment of remediation wastes generated during ER Project activities. The CAMU included staging areas for bulk and containerized waste, a treatment pad, and a containment cell. The CAMU is located at SNL/NM SWMU 107 in the southeastern corner of SNL/NM TA-III, northwest of the CWL and the RMWMF. The 5-year authorization to operate the CAMU under Permit Module IV was issued by EPA on September 25, 1997, and expired on September 20, 2002. The comprehensive Part B permit request submitted to NMED on February 6, 2002 included a request for renewal of the operating authorizations associated with the CAMU. Sandia/DOE completed treatment and containment operations at the CAMU in early 2003, and certified closure of the Unit on October 15, 2003. The CAMU consisted of the following:

- CAMU Temporary Unit (TU) for soil stabilization operations. The temporary unit was one of two treatment units used to treat remediation wastes at the CAMU. Sandia/DOE closed the TU in early 2003, and withdrew it from the comprehensive Part B permit request in August 2003.

- CAMU Low Temperature Thermal Desorption Unit (LTTD) Unit. The LTTD unit was the second of two treatment units used to treat remediation wastes at the CAMU. Sandia/DOE closed the LTTD in early 2003, and withdrew it from the comprehensive Part B permit request in May 2003.

- CAMU Containment Cell. The containment cell holds the remediation wastes. Sandia/DOE constructed a cover on the cell and completed closure in 2003. The CAMU is currently ~~now~~ maintained under the post-closure care conditions of the CAMU permit application. A ~~comprehensive, stand-alone~~ permit application for CAMU post-closure care was transmitted to the NMED on July 3, 2003. It has been updated and revised in response to NMED comments and to reflect changes in operations. It is included as Part 5 of the Part B permit request. ~~When approved, the post-closure care permit application will be incorporated into the SNL/NM Part B permit application.~~

2.0 COMPREHENSIVE PART B PERMIT REQUEST

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

2.1 Part 1

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

2.2 Part 2

Part 2 consists of the updated Part B permit renewal request/application for the nine RCRA-regulated waste management units associated with ongoing operations at SNL/NM. Sandia/DOE have ~~parts of the request in response to NMED's comments dated June 25, 2004.~~ Part 2 includes complete applications and renewal requests for the HWH~~M~~F, TTF, ~~existing~~ RMWMF~~/future CWMF~~, AHCF, and five MSB.

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

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

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

2.3 Part 3

Part 3 consists of a limited ~~revised~~ discussion of the groundwater information for regulated units (the CWL is the only such unit at SNL/NM). ~~The discussion was revised in response to NMED comments dated September 9, 2003.~~ Sandia/DOE conduct post-closure care at the CWL under a separate permit; extensive information regarding groundwater is available in that permit and associated documents.

2.4 Part 4

Part 4 consists of updated information about SWMUs and AOCs at SNL/NM. Extensive information regarding the SWMUs and AOCs is available in other documents. Part 4 ~~It~~ includes a tabulated summary for SWMUs with references to other documents for additional information. ~~three sections:~~ Additional information is provided for four SWMUs and three groundwater AOCs.

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

2.5 Part 5

Part 5 ~~has not been updated at this time (November 2004). It consists of the requests for the renewal of authorization to operate the Corrective Action Management Unit (CAMU), its staging areas for bulk and containerized waste, the treatment pad, and the containment cell, that was submitted to NMED in February 2002. Part 5 will~~ consists of the updated post-closure care plan for the CAMU containment cell ~~when the plan is approved by the NMED~~. ~~In addition, this Part will be amended to contain the post-closure care permit application for the CWL.~~

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

Revision ~~10.0~~11.0

~~February 2007~~April 2012

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

Prepared for
The U.S. Department of Energy

LIST OF FIGURES

LIST OF PHOTOGRAPHS

SEND COMPLETED FORM TO: The AppropriateState 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 # ~~10~~11) ☐ As a component of the Hazardous Waste Report.
2. Site EPA ID Number(page 15)	**EPA ID Number**: *NM5 890 110 518*
3. Site Name (page 15)	**Name:** *Sandia National Laboratories*
4. Site Location Information (page 15)	**Street Address:** *1515 Eubank Blvd. SE* **City, Town, or Village:** *Albuquerque* — **State:** *NM* **County Name:** *Bernalillo* — **Zip Code:** *87123*
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.** *92811* — **B.** *54171* **C.** — **D.**
7. Site Mailing Address (page 16)	**Street or P.O. Box:** *P.O. Box 5400, US Department of Energy, Sandia Site Office* **City, Town, or Village:** *Albuquerque* **State:** *NM* **Country:** *USA* — **Zip Code:** *87185-5400*
8. Site Contact Person (page 16)	**First Name:** *David* — **MI:** *M* — **Last Name:** *Rast* **Phone Number:** *(505)-845-5349* — **Extension:** — **Email address:** *david.rast@nnsa.doe.gov* ~~drast@doeal.gov~~
9. Operator and Legal Owner of the Site (pages 16 and 17)	**A. Name of Site's Operator:** *Sandia Corporation* — **Date Became Operator (mm/dd/yyyy):** *11/01/1949* **Operator Type:** ☒ Private ☐ County ☐ District ☐ Federal ☐ Indian ☐ Municipal ☐ State ☐☒ Other **B. Name of Site's Legal Owner:** *US Department of Energy* — **Date Became Owner (mm/dd/yyyy):** *09/1945* **Owner Type:** ☐ Private ☐ County ☐ District ☒ Federal ☐ Indian ☐ Municipal ☐ State ☐ Other

9. Legal owner (continued) Address	**Street or P.O. Box:** *P.O. Box 5400, Sandia Site Office*	
	City, Town, or Village: *Albuquerque*	
	State: *NM*	
	Country: *USA*	**Zip Code:** *87185-5400*

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

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

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

In addition, indicate other generator activities

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) ____________	☐	☐

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

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 ☒ **4. Used Oil Fuel Marketer**
If "Yes"' mark each that applies

☐ a. Marketer Who Directs Shipment of Off-Specification Used Oil to Off-Specification Used Oil Burner
☐ b. Marketer Who First Claims the Used Oil Meets the Specifications

11. Description of Hazardous Wastes (See instructions on page 22) ~~*(n/a per instructions)*~~

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

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)

Item 4: Facility consists of a large area. Latitude range: 35 degrees, 04 minutes, 03 seconds North to 34 degrees 56 minutes 50 seconds North~~*Facility latitude: 35 degrees, 01 minutes, 45 seconds North*~~

Item 4: Facility consists of a large area. Longitude range: 106 degrees, 34 minutes, 48 seconds West to 106 degrees, 21 minutes, 39 seconds West~~*Facility longitude: 106 degrees, 32 minutes, 30 seconds West*~~

Item 9b: Sandia Corporation is a wholly-owned subsidiary of Lockheed Martin Corporation. Sandia Corporation manages and operates Sandia National Laboratories for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.

Item 11: See Item 9 in Hazardous Waste Permit Information Form for complete list of waste codes for federally regulated hazardous wastes.

13. Certification. I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who managed the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.
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)**
	Owner: Geoffrey Beausoleil,~~*Patty Wagner,*~~ *Manager, US DOE, NNSA, Sandia Site Office*	
	~~*Co-Operator: Patty Wagner, Manager, US DOE, Sandia Site Office*~~	
	~~*Co-*~~*Operator: Michael W. Hazen*~~*Francisco A. Figueroa*~~*, Vice President, Sandia Corporation*	

EPA ID NO: *NM5890110518* OMB#: 2050-0034 Expires 1/31/2009

United States Environmental Protection Agency

HAZARDOUS WASTE PERMIT INFORMATION FORM

1. Facility Permit Contact (See instructions on page 23)	**First Name:** *David*	**MI:** *M*	**Last Name:** *Rast*
	Phone Number: *505-845-5349*		**Phone Number Extension:**
2. Facility Permit Contact Mailing Address (See instructions on page 23)	**Street Address:** *P.O. Box 5400, US Department of Energy, Sandia Site Office*		
	City, Town, or Village: *Albuquerque*		**State:** *NM*
	County Name: *USA*		**Zip Code:** *87185-5400*
3. Operator Mailing Address and Telephone Number (See instructions on page 23)	**Street or P.O. Box:** *P.O. Box 5800, ~~Waste Management~~Sandia National Laboratories, Environment, Safety and Health Org.*		
	City, Town, or Village: *Albuquerque*		
	State: *NM*		
	Country: *USA*	**Zip Code:** *87185-5800*	**Phone Number:** *505-845-0011*
4. Legal owner Mailing Address and Telephone Number (See instructions on page 23)	**Street or P.O. Box:** *P.O. Box 5400*		
	City, Town, or Village: *Albuquerque*		
	State: *NM*		
	Country: *USA*	**Zip Code:** *87185-5400*	**Phone Number:** *505-845-6036*
5. Facility Existence Date (See instructions on page 24)	**Facility Existence Date (mm/dd/yyyy):** *11/19/1980 (date that regulated hazardous waste operations began)*		

6. Other Environmental Permits (See instructions on page 24) *See Appendix A*

A. Permit Type	B. Permit Number	C. Description

7. Nature of Business (Provide a brief description; see instructions on page 24)

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

8. Process Codes and Design Capacities (See instructions on page 24) – Enter information in the Sections on Form Page 3.

A. PROCESS CODE - ***Enter the code from the list of process codes 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 Treatment	Acres or Hectares
D82	Ocean Disposal	Gallons Per Day or Liters Per Day
D83	Surface Impoundment Disposal	Gallons; Liters; Cubic Meters; or Cubic Yards
D99	Other Disposal	Any Unit of Measure Listed Below
	Storage:	
S01	Container	Gallons; Liters; Cubic Meters; or Cubic Yards
S02	Tank Storage	Gallons; Liters; Cubic Meters; or Cubic Yards
S03	Waste Pile	Cubic Yards or Cubic Meters
S04	Surface Impoundment Storage	Gallons; Liters; Cubic Meters; or Cubic Yards
S05	Drip Pad	Gallons; Liters; Acres; Cubic Meters; Hectares; or Cubic Yards
S06	Containment Building Storage	Cubic Yards or Cubic Meters
S99	Other Storage	Any Unit of Measure Listed Below
	Treatment:	
T01	Tank Treatment	Gallons Per Day; Liters Per Day
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	Cement Kiln	For T81-T93:
T82	Lime Kiln	
T83	Aggregate Kiln	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
T84	Phosphate Kiln	
T85	Coke Oven	
T86	Blast Furnace	
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 H our; Liters Per Hour; or Gallons Per Day
X03	Thermal Unit	Gallons Per Day; Liters Per Day; Pounds Per Hour ; Short Tons Per Hour; Kilograms Per Hour; Metric Tons Per Day; Metric Tons Per Hour; Short Tons Per Day; Btu Per Hour; or Million Btu Per Hour
X04	Geologic Repository	Cubic Yards; Cubic Meters; Acre-feet; Hectare-meter; Gallons; or Liters
X99	Other Subpart X	Any Unit of Measure Listed Below

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

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

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

Line Number		A. Process Code (From list above)			B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	B. (2) Unit of Measure (Enter code)	C. Process Total Number of Units	For Official Use Only
X	1	S	0	2	533.788	G	001	
	1	S	0	1	410,885.00~~409,786.0~~	G	008	
	2	T	0	4	15,075.00~~945.0~~	U	006	
	3	T	0	4	5.05~~52.0~~	N~~J~~	004	
	4							
	5	X	0	1	20.80	G	001	
	6	S	9	9	31,800.0	Y	001	

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. (2) Unit of Measure (Enter code)	C. Process Total Number of Units	D. Description of Process
X	2	T	0	4	100.000	U	001	In-situ Vitrification
	2	T	0	4	120~~.0~~	U	002	Chemical Deactivation, gallons per day (volume equivalent)
	2	T	0	4	13,855~~895.0~~	U	002	Macroencapsulation, gallons per day (volume equivalent)
	2	T	0	4	1,100~~605.0~~	U	002	Stabilization/solidification gallons per day (volume equivalent)
	3	T	0	4	10,000~~10.0~~	J	002~~1~~	Physical Treatment~~Thermal Deactivation~~, pounds per day~~hour~~
	3	T	0	4	80~~40.0~~	J	001~~2~~	Thermal Deactivation~~Physical Treatment~~, pounds per day~~hour~~
	3	T	0	4	16~~2.0~~	J	001	Amalgamation, pounds per day~~hour~~
	6	S	9	9	31,800~~.0~~	Y	001	Closed Containment Cell, Corrective Action Management Unit, cubic yards

10. Description 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 Part 261, Subpart C that describes the characteristics and/or the toxic contaminants of those hazardous wastes.***

B. ESTIMATED ANNUAL QUANTITY - ***For each listed waste entered in 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 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 contained in Items 8A and 9A on page 3 to indicate all the processes that will be used to store, treat, and/or dispose of all the non-listed hazardous wastes that possess that characteristic or toxic contaminant.

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

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 wastes that can be described by more than one EPA Hazardous Waste Number shall be described 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 are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity Of Waste	C. Unit of Measure (Enter Code)	D. PROCESSES	
				(1) PROCESS CODES (Enter Code)	(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
X-1	K054	900	P	T03 D80	
X-2	D002	400	P	T03 D80	
X-3	D001	100	P	T03 D80	
X-4	D002				Included With Above

10. Description of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5a, etc.)

Line Number	A. EPA Hazardous Waste No. (Enter code) (See Note 1)	B. Estimated Annual Quantity of Waste (See Note~~s~~ 2~~and 3~~)	C. Unit of Measure (Enter Code)	D. PROCESSES (See Notes 3~~4~~ and 4~~5~~) (1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
1	P001	100~~125~~	K	S01				
2	P002	100~~110~~	K	S01				
3	P003	100~~110~~	K	S01				
4	P004	100~~110~~	K	S01				
5	P005	100~~125~~	K	S01				
6	P006	100~~110~~	K	S01				
7	P007	100~~110~~	K	S01				
8	P008	100~~110~~	K	S01				
9	P009	100~~110~~	K	S01				
10	P010	100~~110~~	K	S01				
11	P011	100~~125~~	K	S01				
12	P012	100~~110~~	K	S01				
13	P013	100~~110~~	K	S01				
14	P014	100~~110~~	K	S01				
15	P015	100~~110~~	K	S01				
16	P016	100~~110~~	K	S01				
17	P017	100~~110~~	K	S01				
18	P018	100~~110~~	K	S01				
19	P020	100~~110~~	K	S01				
20	P021	100~~110~~	K	S01				
21	P022	100~~200~~	K	S01				
22	P023	100~~110~~	K	S01				
23	P024	100~~110~~	K	S01				
24	P026	100~~110~~	K	S01				
25	P027	100~~110~~	K	S01				
26	P028	100~~110~~	K	S01				
27	P029	100~~1,600~~	K	S01				
28	P030	100~~350~~	K	S01				
29	P031	100~~110~~	K	S01				
30	P033	100~~110~~	K	S01				
31	P034	100~~110~~	K	S01				
32	P036	100~~110~~	K	S01				
33	P037	100~~110~~	K	S01				
34	P038	100~~110~~	K	S01				
35	P039	100~~110~~	K	S01				
36	P040	100~~110~~	K	S01				

10. Description of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5a, etc.)

Line Number	A. EPA Hazardous Waste No. (Enter code) (See Note 1)	B. Estimated Annual Quantity of Waste (See Note~~s~~ 2~~and 3~~)	C. Unit of Measure (Enter Code)	D. PROCESSES (See Notes 3~~4~~ and 4~~5~~) (1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
37	P041	100~~110~~	K	S01				
38	P042	100~~110~~	K	S01				
39	P043	100~~110~~	K	S01				
40	P044	100~~110~~	K	S01				
41	P045	100~~110~~	K	S01				
42	P046	100~~110~~	K	S01				
43	P047	100~~110~~	K	S01				
44	P048	100~~110~~	K	S01				
45	P049	100~~110~~	K	S01				
46	P050	100~~110~~	K	S01				
47	P051	100~~110~~	K	S01				
48	P054	100~~110~~	K	S01				
49	P056	100~~110~~	K	S01				
50	P057	100~~110~~	K	S01				
51	P058	100~~110~~	K	S01				
52	P059	100~~110~~	K	S01				
53	P060	100~~110~~	K	S01				
54	P062	100~~110~~	K	S01				
55	P063	100~~110~~	K	S01				
56	P064	100~~250~~	K	S01				
57	P065	100~~110~~	K	S01				
58	P066	100~~110~~	K	S01				
59	P067	100~~110~~	K	S01				
60	P068	100~~110~~	K	S01				
61	P069	100~~110~~	K	S01				
62	P070	100~~110~~	K	S01				
63	P071	100~~110~~	K	S01				
64	P072	100~~110~~	K	S01				
65	P073	100~~110~~	K	S01				
66	P074	100~~110~~	K	S01				
67	P075	100~~110~~	K	S01				
68	P076	100~~110~~	K	S01				
69	P077	100~~110~~	K	S01				
70	P078	100~~130~~	K	S01				
71	P081	100~~110~~	K	S01				
72	P082	100~~110~~	K	S01				

10. Description of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5a, etc.)

Line Number	A. EPA Hazardous Waste No. (Enter code) (See Note 1)	B. Estimated Annual Quantity of Waste (See Note~~s~~ 2~~and 3~~)	C. Unit of Measure (Enter Code)	D. PROCESSES (See Notes 3~~4~~ and 4~~5~~) (1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
73	P084	100~~110~~	K	S01				
74	P085	100~~110~~	K	S01				
75	P087	100~~150~~	K	S01				
76	P088	100~~110~~	K	S01				
77	P089	100~~110~~	K	S01				
78	P092	100~~110~~	K	S01				
79	P093	100~~110~~	K	S01				
80	P094	100~~110~~	K	S01				
81	P095	100~~110~~	K	S01				
82	P096	100~~110~~	K	S01				
83	P097	100~~110~~	K	S01				
84	P098	150	K	S01	T04			chemical deactivation
85	P099	100~~110~~	K	S01				
86	P101	100~~110~~	K	S01				
87	P102	100~~110~~	K	S01				
88	P103	100~~110~~	K	S01				
89	P104	100~~200~~	K	S01				
90	P105	100~~110~~	K	S01				
91	P106	100~~1100~~	K	S01				
92	P108	100~~110~~	K	S01				
93	P109	100~~110~~	K	S01				
94	P110	100~~110~~	K	S01				
95	P111	100~~110~~	K	S01				
96	P112	100~~110~~	K	S01				
97	P113	150	K	S01				
98	P114	100~~110~~	K	S01				
99	P115	100~~110~~	K	S01				
100	P116	100~~110~~	K	S01				
101	P118	100~~110~~	K	S01				
102	P119	100~~110~~	K	S01				
103	P120	100~~125~~	K	S01				
104	P121	100~~110~~	K	S01				
105	P122	100~~110~~	K	S01				
106	P123	100~~110~~	K	S01				
107	P127	100~~110~~	K	S01				
108	P128	100~~110~~	K	S01				

10. Description of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5a, etc.)

Line Number	A. EPA Hazardous Waste No. (Enter code) (See Note 1)	B. Estimated Annual Quantity of Waste (See Note~~s~~ 2~~and 3~~)	C. Unit of Measure (Enter Code)	D. PROCESSES (See Notes 34 and 4~~5~~) (1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
109	P185	100~~110~~	K	S01				
110	P188	100~~110~~	K	S01				
111	P189	100~~110~~	K	S01				
112	P190	100~~110~~	K	S01				
113	P191	100~~110~~	K	S01				
114	P192	100~~110~~	K	S01				
115	P194	100~~110~~	K	S01				
116	P196	100~~110~~	K	S01				
117	P197	100~~110~~	K	S01				
118	P198	100~~110~~	K	S01				
119	P199	100~~110~~	K	S01				
120	P201	100~~110~~	K	S01				
121	P202	100~~110~~	K	S01				
122	P203	100~~110~~	K	S01				
123	P204	100~~110~~	K	S01				
124	P205	100~~110~~	K	S01				
125	U001	100~~110~~	K	S01				
126	U002	500~~1,100~~	K	S01				
127	U003	500~~350~~	K	S01				
128	U004	100~~110~~	K	S01				
129	U005	100~~110~~	K	S01				
130	U006	100~~110~~	K	S01				
131	U007	100~~110~~	K	S01				
132	U008	100~~200~~	K	S01				
133	U009	100~~110~~	K	S01				
134	U010	100~~110~~	K	S01				
135	U011	100~~110~~	K	S01				
136	U012	100~~125~~	K	S01				
137	U014	100~~110~~	K	S01				
138	U015	100~~110~~	K	S01				
139	U016	100~~110~~	K	S01				
140	U017	100~~110~~	K	S01				
141	U018	100~~110~~	K	S01				
142	U019	100~~250~~	K	S01				
143	U020	100~~110~~	K	S01				
144	U021	100~~110~~	K	S01				

10. Description of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5a, etc.)

Line Number	A. EPA Hazardous Waste No. (Enter code) (See Note 1)	B. Estimated Annual Quantity of Waste (See Note~~s~~ 2~~and 3~~)	C. Unit of Measure (Enter Code)	D. PROCESSES (See Notes 3~~4~~ and 4~~5~~) (1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
145	U022	100~~110~~	K	S01				
146	U023	100~~110~~	K	S01				
147	U024	100~~110~~	K	S01				
148	U025	100~~110~~	K	S01				
149	U026	100~~110~~	K	S01				
150	U027	100~~110~~	K	S01				
151	U028	5,000~~5,100~~	K	S01				
152	U029	100~~110~~	K	S01				
153	U030	100~~110~~	K	S01				
154	U031	500~~600~~	K	S01				
155	U032	100~~600~~	K	S01				
156	U033	100~~110~~	K	S01				
157	U034	100~~110~~	K	S01				
158	U035	100~~150~~	K	S01				
159	U036	100~~600~~	K	S01				
160	U037	500~~150~~	K	S01				
161	U038	100~~110~~	K	S01				
162	U039	100~~110~~	K	S01				
163	U041	100~~110~~	K	S01				
164	U042	100~~110~~	K	S01				
165	U043	100~~110~~	K	S01				
166	U044	1,000~~250~~	K	S01				
167	U045	100~~125~~	K	S01				
168	U046	100~~110~~	K	S01				
169	U047	100~~110~~	K	S01				
170	U048	100~~110~~	K	S01				
171	U049	100~~110~~	K	S01				
172	U050	100~~110~~	K	S01				
173	U051	100~~175~~	K	S01				
174	U052	100~~125~~	K	S01				
175	U053	100~~110~~	K	S01				
176	U055	100~~125~~	K	S01				
177	U056	500~~350~~	K	S01				
178	U057	500~~125~~	K	S01				
179	U058	100~~110~~	K	S01				
180	U059	100~~110~~	K	S01				

10. Description of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5a, etc.)

Line Number	A. EPA Hazardous Waste No. (Enter code) (See Note 1)	B. Estimated Annual Quantity of Waste (See Note~~s~~ 2~~and 3~~)	C. Unit of Measure (Enter Code)	D. PROCESSES (See Notes 3~~4~~ and 4~~5~~) (1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
181	U060	100~~110~~	K	S01				
182	U061	2,000~~110~~	K	S01				
183	U062	100~~110~~	K	S01				
184	U063	100~~110~~	K	S01				
185	U064	100~~110~~	K	S01				
186	U066	100~~110~~	K	S01				
187	U067	100~~125~~	K	S01				
188	U068	100~~110~~	K	S01				
189	U069	100~~200~~	K	S01				
190	U070	500~~150~~	K	S01				
191	U071	100~~110~~	K	S01				
192	U072	100~~110~~	K	S01				
193	U073	100~~110~~	K	S01				
194	U074	100~~110~~	K	S01				
195	U075	150~~300~~	K	S01	T04			physical treatment
196	U076	100~~110~~	K	S01				
197	U077	100~~300~~	K	S01				
198	U078	100~~150~~	K	S01				
199	U079	100~~150~~	K	S01				
200	U080	500~~1,100~~	K	S01				
201	U081	100~~110~~	K	S01				
202	U082	100~~110~~	K	S01				
203	U083	100~~110~~	K	S01				
204	U084	100~~110~~	K	S01				
205	U085	100~~110~~	K	S01				
206	U086	100~~110~~	K	S01				
207	U087	100~~110~~	K	S01				
208	U088	100~~110~~	K	S01				
209	U089	100~~110~~	K	S01				
210	U090	100~~110~~	K	S01				
211	U091	100~~110~~	K	S01				
212	U092	100~~110~~	K	S01				
213	U093	100~~110~~	K	S01				
214	U094	100~~110~~	K	S01				
215	U095	100~~110~~	K	S01				
216	U096	100~~110~~	K	S01				

10. Description of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5a, etc.)

Line Number	A. EPA Hazardous Waste No. (Enter code) (See Note 1)	B. Estimated Annual Quantity of Waste (See Note~~s~~ 2~~and 3~~)	C. Unit of Measure (Enter Code)	D. PROCESSES (See Notes 3~~4~~ and 4~~5~~) (1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
217	U097	100~~110~~	K	S01				
218	U098	100~~110~~	K	S01				
219	U099	100~~110~~	K	S01				
220	U101	100~~110~~	K	S01				
221	U102	100~~120~~	K	S01	T04			stabilization/solidification
222	U103	100~~110~~	K	S01				
223	U105	100~~110~~	K	S01	T04			physical treatment
224	U106	100~~110~~	K	S01				
225	U107	100~~150~~	K	S01	T04			stabilization/solidification
226	U108	100~~150~~	K	S01				
227	U109	100~~110~~	K	S01				
228	U110	100~~110~~	K	S01				
229	U111	100~~110~~	K	S01				
230	U112	500~~1,100~~	K	S01				
231	U113	100~~110~~	K	S01				
232	U114	100~~110~~	K	S01				
233	U115	100~~110~~	K	S01				
234	U116	100~~110~~	K	S01				
235	U117	500~~130~~	K	S01				
236	U118	100~~110~~	K	S01				
237	U119	100~~110~~	K	S01				
238	U120	100~~110~~	K	S01				
239	U121	100~~300~~	K	S01				
240	U122	100~~600~~	K	S01				
241	U123	100~~135~~	K	S01				
242	U124	100~~110~~	K	S01				
243	U125	150~~110~~	K	S01				
244	U126	100~~110~~	K	S01				
245	U127	100~~110~~	K	S01				
246	U128	100~~110~~	K	S01				
247	U129	100~~110~~	K	S01				
248	U130	100~~110~~	K	S01				
249	U131	100~~150~~	K	S01				
250	U132	100~~125~~	K	S01				
251	U133	500~~350~~	K	S01				
252	U134	150~~2,100~~	K	S01				

10. Description of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5a, etc.)

Line Number	A. EPA Hazardous Waste No. (Enter code) (See Note 1)	B. Estimated Annual Quantity of Waste (See Note~~s~~ 2~~and 3~~)	C. Unit of Measure (Enter Code)	D. PROCESSES (See Notes 3~~4~~ and 4~~5~~) (1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
253	U135	100~~175~~	K	S01				
254	U136	100~~110~~	K	S01				
255	U137	100~~110~~	K	S01				
256	U138	100~~110~~	K	S01				
257	U140	500~~150~~	K	S01				
258	U141	100~~110~~	K	S01				
259	U142	100~~110~~	K	S01				
260	U143	100~~110~~	K	S01				
261	U144	150~~400~~	K	S01				
262	U145	100~~110~~	K	S01				
263	U146	100~~110~~	K	S01				
264	U147	100~~200~~	K	S01				
265	U148	100~~110~~	K	S01				
266	U149	100~~110~~	K	S01				
267	U150	100~~110~~	K	S01				
268	U151	5,000~~1,400~~	K	S01	T04			amalgamation, physical treatment
269	U152	100~~110~~	K	S01				
270	U153	100~~110~~	K	S01				
271	U154	500~~600~~	K	S01				
272	U155	100~~110~~	K	S01				
273	U156	100~~110~~	K	S01				
274	U157	100~~110~~	K	S01				
275	U158	100~~125~~	K	S01				
276	U159	500~~225~~	K	S01				
277	U160	100~~150~~	K	S01				
278	U161	500~~150~~	K	S01				
279	U162	100~~200~~	K	S01				
280	U163	100~~110~~	K	S01				
281	U164	100~~110~~	K	S01				
282	U165	100~~1,100~~	K	S01				
283	U166	100~~110~~	K	S01				
284	U167	100~~110~~	K	S01				
285	U168	100~~110~~	K	S01				
286	U169	100~~300~~	K	S01				
287	U170	100~~110~~	K	S01				
288	U171	100~~125~~	K	S01				

10. Description of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5a, etc.)

Line Number	A. EPA Hazardous Waste No. (Enter code) (See Note 1)	B. Estimated Annual Quantity of Waste (See Note~~s~~ 2~~and 3~~)	C. Unit of Measure (Enter Code)	D. PROCESSES (See Notes 3~~4~~ and 4~~5~~)				
				(1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
289	U172	100~~110~~	K	S01				
290	U173	100~~110~~	K	S01				
291	U174	100~~110~~	K	S01				
292	U176	100~~110~~	K	S01				
293	U177	100~~150~~	K	S01				
294	U178	100~~150~~	K	S01				
295	U179	100~~200~~	K	S01				
296	U180	100~~200~~	K	S01				
297	U181	100~~150~~	K	S01				
298	U182	100~~125~~	K	S01				
299	U183	100~~125~~	K	S01				
300	U184	100~~125~~	K	S01				
301	U185	100~~125~~	K	S01				
302	U186	100~~150~~	K	S01				
303	U187	100~~110~~	K	S01				
304	U188	100~~125~~	K	S01				
305	U189	100~~110~~	K	S01				
306	U190	100~~110~~	K	S01				
307	U191	100~~110~~	K	S01				
308	U192	100~~110~~	K	S01				
309	U193	100~~110~~	K	S01				
310	U194	100~~110~~	K	S01				
311	U196	100~~125~~	K	S01				
312	U197	100~~110~~	K	S01				
313	U200	100~~110~~	K	S01				
314	U201	100~~125~~	K	S01				
315	U202	100~~110~~	K	S01				
316	U203	100~~110~~	K	S01				
317	U204	100~~125~~	K	S01				
318	U205	100~~110~~	K	S01				
319	U206	100~~110~~	K	S01				
320	U207	100~~110~~	K	S01				
321	U208	100~~110~~	K	S01				
322	U209	100~~120~~	K	S01				
323	U210	500~~125~~	K	S01				
324	U211	500~~200~~	K	S01				

10. Description of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5a, etc.)

Line Number	A. EPA Hazardous Waste No. (Enter code) (See Note 1)	B. Estimated Annual Quantity of Waste (See Note~~s~~ 2 ~~and 3~~)	C. Unit of Measure (Enter Code)	D. PROCESSES (See Notes 3~~4~~ and 4~~5~~) (1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
325	U213	150~~450~~	K	S01				
326	U214	100~~110~~	K	S01				
327	U215	100~~110~~	K	S01				
328	U216	100~~110~~	K	S01				
329	U217	100~~110~~	K	S01				
330	U218	100~~110~~	K	S01				
331	U219	100~~125~~	K	S01				
332	U220	500~~600~~	K	S01				
333	U221	100~~110~~	K	S01				
334	U222	100~~110~~	K	S01				
335	U223	150~~1,100~~	K	S01				
336	U225	100~~150~~	K	S01				
337	U226	500~~4,100~~	K	S01				
338	U227	100~~1,600~~	K	S01				
339	U228	500~~1,100~~	K	S01				
340	U234	100~~110~~	K	S01	T04			physical treatment
341	U235	100~~110~~	K	S01				
342	U236	100~~110~~	K	S01				
343	U237	100~~110~~	K	S01				
344	U238	100~~110~~	K	S01				
345	U239	500~~350~~	K	S01				
346	U240	100~~110~~	K	S01				
347	U243	100~~110~~	K	S01				
348	U244	100~~110~~	K	S01				
349	U246	100~~110~~	K	S01				
350	U247	100~~110~~	K	S01				
351	U248	100~~110~~	K	S01				
352	U249	100~~110~~	K	S01				
353	U271	100~~110~~	K	S01				
354	U278	100~~110~~	K	S01				
355	U279	100~~110~~	K	S01				
356	U280	100~~110~~	K	S01				
357	U328	100~~110~~	K	S01				
358	U353	100~~110~~	K	S01				
359	U359	100~~200~~	K	S01				
360	U364	100~~110~~	K	S01				

10. Description of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5a, etc.)

Line Number	A. EPA Hazardous Waste No. (Enter code) (See Note 1)	B. Estimated Annual Quantity of Waste (See Note~~s~~ 2~~and 3~~)	C. Unit of Measure (Enter Code)	D. PROCESSES (See Notes 3~~4~~ and 4~~5~~) (1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
361	U367	100~~110~~	K	S01				
362	U372	100~~110~~	K	S01				
363	U373	100~~110~~	K	S01				
364	U387	100~~110~~	K	S01				
365	U389	100~~110~~	K	S01				
366	U394	100~~110~~	K	S01				
367	U395	100~~110~~	K	S01				
368	U404	100~~110~~	K	S01				
369	U409	100~~110~~	K	S01				
370	U410	100~~110~~	K	S01				
371	U411	100~~110~~	K	S01				
372	F001	200,00~~265,000~~	K	S01	T04			macroencapsulation, ~~stabilization,~~ physical treatment
373	F002	250,000~~272,000~~	K	S01	T04			macroencapsulation, ~~stabilization,~~ physical treatment
374	F003	275,000	K	S01	T04	X01		~~thermal treatment,~~ macroencapsulation, ~~stabilization,~~ physical treatment, open burning
375	F004	7,500~~1,500~~	K	S01	T04			macroencapsulation, ~~stabilization~~, physical treatment
376	F005	275,000~~262,000~~	K	S01	T04	~~X01~~		~~thermal treatment,~~ macroencapsulation, ~~stabilization,~~ physical treatment
377	F006	2,000~~200~~	K	S01				
378	F007	2,000~~6,500~~	K	S01				
379	F008	2,000~~200~~	K	S01				
380	F009	100~~200~~	K	S01				
381	F010	100~~200~~	K	S01				
382	F011	100~~200~~	K	S01				
383	F012	100	K	S01				
~~384~~	~~F019~~	~~100~~	~~K~~	~~S01~~				
~~385~~	~~F020~~	~~100~~	~~K~~	~~S01~~				
~~386~~	~~F021~~	~~100~~	~~K~~	~~S01~~				
~~387~~	~~F022~~	~~100~~	~~K~~	~~S01~~				
~~388~~	~~F023~~	~~100~~	~~K~~	~~S01~~				
~~389~~	~~F024~~	~~100~~	~~K~~	~~S01~~				
~~390~~	~~F025~~	~~100~~	~~K~~	~~S01~~				
~~391~~	~~F026~~	~~100~~	~~K~~	~~S01~~				
384~~392~~	F027	100~~150~~	K	S01				
~~393~~	~~F028~~	~~100~~	~~K~~	~~S01~~				

10. Description of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5a, etc.)

Line Number	A. EPA Hazardous Waste No. (Enter code) (See Note 1)	B. Estimated Annual Quantity of Waste (See Note~~s~~ 2~~and 3~~)	C. Unit of Measure (Enter Code)	D. PROCESSES (See Notes 3~~4~~ and 4~~5~~) (1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
~~394~~	~~FO32~~	~~100~~	~~K~~	~~S01~~				
~~395~~	~~F034~~	~~100~~	~~K~~	~~S01~~				
~~396~~	~~F035~~	~~100~~	~~K~~	~~S01~~				
~~397~~	~~F037~~	~~100~~	~~K~~	~~S01~~				
~~398~~	~~F038~~	~~100~~	~~K~~	~~S01~~				
385~~399~~	F039	50,000~~250,000~~	K	S01				
386~~400~~	D001	75,000~~125,500~~	K	S01	T04	X01		~~thermal treatment,~~ thermal deactivation, chemical deactivation, physical treatment, open burning
387~~401~~	D002	75,000~~58,000~~	K	S01	T04			chemical deactivation, physical treatment
388~~402~~	D003	100,00~~41,000~~	K	S01	T04	X01		~~thermal treatment,~~ thermal deactivation, chemical deactivation, physical treatment, open burning
389~~403~~	D004	100,00~~39,000~~	K	S01	T04			stabilization/solidification, macroencapsulation, physical treatment
390~~404~~	D005	100,00~~48,000~~	K	S01	T04			~~thermal deactivation,~~ chemical deactivation, stabilization/solidification, macroencapsulation, physical treatment
391~~405~~	D006	100,000~~105,00~~0	K	S01	T04			stabilization/solidification, macroencapsulation, physical treatment
392~~406~~	D007	200,00~~66,000~~	K	S01	T04			stabilization/solidification, macroencapsulation, physical treatment
393~~407~~	D008	250,000~~125,000~~	K	S01	T04			stabilization/solidification, macroencapsulation, physical treatment
394~~408~~	D009	100,00~~40,000~~	K	S01	T04			stabilization/solidification, macroencapsulation, amalgamation, physical treatment
395~~409~~	D010	50,00~~10,000~~	K	S01	T04			stabilization/solidification, macroencapsulation, physical treatment
396~~410~~	D011	100,00~~45,000~~	K	S01	T04			stabilization/solidification, macroencapsulation, physical treatment
397~~411~~	D012	100~~150~~	K	S01				
398~~412~~	D013	100~~150~~	K	S01				
399~~413~~	D014	100~~150~~	K	S01				
400~~414~~	D015	100~~150~~	K	S01				
401~~415~~	D016	100~~150~~	K	S01				
402~~416~~	D017	100~~150~~	K	S01				
403~~417~~	D018	5,00~~32,000~~	K	S01	T04			physical treatment, macroencapsulation

10. Description of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5a, etc.)

Line Number	A. EPA Hazardous Waste No. (Enter code) (See Note 1)	B. Estimated Annual Quantity of Waste (See Note~~s~~ 2~~and 3~~)	C. Unit of Measure (Enter Code)	D. PROCESSES (See Notes 3~~4~~ and 4~~5~~)				
				(1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
404~~418~~	D019	2,000~~25,200~~	K	S01	T04			physical treatment, macroencapsulation
405~~419~~	D020	2,000~~25,050~~	K	S01	T04			physical treatment, macroencapsulation
406~~420~~	D021	2,000~~25,100~~	K	S01	T04			physical treatment, macroencapsulation
407~~421~~	D022	5,000~~26,000~~	K	S01	T04			physical treatment, macroencapsulation
408~~422~~	D023	2,000~~25,050~~	K	S01	T04			physical treatment, macroencapsulation
409~~423~~	D024	2,000~~25,050~~	K	S01	T04			physical treatment, macroencapsulation
410~~424~~	D025	2,000~~25,050~~	K	S01	T04			physical treatment, macroencapsulation
411~~425~~	D026	2,000~~25,100~~	K	S01	T04			physical treatment, macroencapsulation
412~~426~~	D027	5,000~~25,100~~	K	S01	T04			physical treatment, macroencapsulation
413~~427~~	D028	5,000~~26,000~~	K	S01	T04			physical treatment, macroencapsulation
414~~428~~	D029	2,000~~25,100~~	K	S01	T04			physical treatment, macroencapsulation
415~~429~~	D030	2,000~~25,500~~	K	S01	T04			physical treatment, macroencapsulation
416~~430~~	D031	2,000~~25,050~~	K	S01	T04			physical treatment, macroencapsulation
417~~431~~	D032	15,000~~25,100~~	K	S01	T04			physical treatment, macroencapsulation
418~~432~~	D033	5,000~~25,100~~	K	S01	T04			physical treatment, macroencapsulation
419~~433~~	D034	5,000~~25,500~~	K	S01	T04			physical treatment, macroencapsulation
420~~434~~	D035	5,000~~40,000~~	K	S01	T04			physical treatment, macroencapsulation
421~~435~~	D036	5,000~~25,100~~	K	S01	T04			physical treatment, macroencapsulation
422~~436~~	D037	2,000~~25,100~~	K	S01	T04			physical treatment, macroencapsulation
423~~437~~	D038	5,000~~25,100~~	K	S01	T04			physical treatment, macroencapsulation
424~~438~~	D039	15,000~~27,000~~	K	S01	T04			physical treatment, macroencapsulation
425~~439~~	D040	25,000~~30,000~~	K	S01	T04			physical treatment, macroencapsulation

10. Description of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5a, etc.)

Line Number	A. EPA Hazardous Waste No. (Enter code) (See Note 1)	B. Estimated Annual Quantity of Waste (See Note~~s~~ 2~~and 3~~)	C. Unit of Measure (Enter Code)	D. PROCESSES (See Notes 3~~4~~ and 4~~5~~) (1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
426~~440~~	D041	2,000~~25,050~~	K	S01	T04			physical treatment, macroencapsulation
427~~441~~	D042	5,000~~25,050~~	K	S01	T04			physical treatment, macroencapsulation
428~~442~~	D043	5,000~~25,050~~	K	S01	T04			physical treatment, macroencapsulation
429~~443~~	D004	31,800	Y	S99				corrective action containment cell
	D005							included with above
	D006							included with above
	D007							included with above
	D008							included with above
	D009							included with above
	D010							included with above
	D011							included with above
	D021							included with above
	D023							included with above
	D027							included with above
	D028							included with above
	D032							included with above
	D033							included with above
	D034							included with above
	D035							included with above
	D036							included with above
	D037							included with above
	D039							included with above
	D040							included with above
	D041							included with above
	D042							included with above
	F001							included with above
	F002							included with above
	F003							included with above
	F004							included with above
	F005							included with above

10. Description of Hazardous Wastes (Continued. Use the Additional Sheet(s) as necessary; number pages as 5a, etc.)

Line Number	A. EPA Hazardous Waste No. (Enter code) *(See Note 1)*	B. Estimated Annual Quantity of Waste *(See Note~~s~~ 2~~and 3~~)*	C. Unit of Measure (Enter Code)	D. PROCESSES *(See Notes 3~~4~~ and 4~~5~~)*	
				(1) PROCESS CODES (Enter Code)	(2) PROCESS DESCRIPTION (If a code is not entered in D(1))

NOTE 1 (applicable to Lines 1-~~442~~428): Waste types and volumes are highly variable due to the large number of one-time activities and the nature of the research and development activities at SNL. For clarity, each waste number is listed only once. Individual wastes may have more than one number.

NOTE 2 (applicable to lines 1-~~442~~428): The estimated annual quantity of waste with a particular waste number includes the full quantity of each waste with that number, even if the waste also has other applicable numbers. For example, 10 kg of waste F001 F002 and 10 kg of waste F002 would be listed on this form as 10 kg of F001 and 20 kg of F002.

~~NOTE 3 (applicable to lines 1-442): The estimated total annual quantity of waste with any and all hazardous waste numbers is 635,000 kg.~~

NOTE 3~~4~~ (applicable to lines 1-~~442~~428): The treatment methods listed for each hazardous waste number are the methods that are appropriate for that waste number. Wastes with multiple numbers may undergo one or more types of treatment at SNL/NM for some or all of the characteristics and/or constituents. Wastes are then~~-~~ sent to off-site TSDFs for further treatment as needed before disposal. For example, ~~a liquid~~ wastes containing explosives~~, silver, acetone, and other constituents (numbers D001, D003, F003, D011, and potentially F005)~~ and metals (e.g., barium, chromium, and lead) with numbers D001, D003, D005, D007, and D008~~is generated by research activities. The waste is~~ are treated on site ~~(at the Thermal Treatment Facility)~~ to deactivate the explosive and render them~~it~~ nonignitable. The ~~quantity~~ quantities of these wastes are~~is~~ included in the quantities shown in Section C for D001, D003, ~~F003, D011, and F005~~D005, D007, and D008.. Thermal deactivation ~~treatment~~ is listed as a process in Section D for D001 and~~,~~ D003~~, F003, and F005~~ because the on-site treatment addresses these hazardous waste constituents and characteristics. Thermal deactivation ~~treatment~~ is not listed as a process in Section D for D005, D007, or D008 ~~D011~~ because these hazardous waste constituents and characteristics ~~silver in the waste~~ are~~is~~ not treated when the waste is subjected to thermal deactivation~~treatment~~. ~~The silver-containing residue from the thermal treatment process is sent to an off-site TSDF for further treatment before disposal.~~

NOTE 4 ~~5~~ (applicable to Line ~~443~~ 429only): The Corrective Action Management Unit containment cell holds remediation wastes generated during corrective action at SNL/NM. The cell has been closed and is undergoing post-closure care.

11. Map (See instructions on pages 25 and 26)	*See Figure B-1*
Attach to this application a topographic map, or other equivalent map, of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers and other surface water bodies in this map area. See instructions for precise requirements.	
12. Facility Drawing (See instructions on Page 26)	*See Appendix B*
All existing facilities must include a scale drawing of the facility (see instructions for more detail).	
13. Photographs (See instructions on page 26)	*See Appendix B*
All existing facilities must include photographs (aerial or ground-level) that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas (see instructions for more detail).	
14. Comments (See instructions on page 26)	

APPENDIX A

ACTIVE ENVIRONMENTAL PERMITS

Sandia National Laboratories/New Mexico
Active Environmental Permits as of 3/31/12~~1/31/07~~

Permit Type and/or Facility Name	Permit Number	Issue Date	Expiration Date	Regulatory Agency
SEWER WASTEWATER				
General	2069 A-~~7~~6	07/17/08~~07/01/03~~	02/28/13~~12/31/07~~	COA
General	2069 F-~~7~~6	06/17/10~~08/01/03~~	03/31/14~~01/31/08~~	COA
Microelectronics Development Laboratory	2069 G-~~7~~6	05/05/10~~10/12/05~~	02/28/15~~8/31/09~~	COA
General	2069 I-~~5~~6	06/15/10~~02/01/04~~	08/31/14~~07/31/08~~	COA
General	2069 K-~~5~~6	05/25/10~~11/17/04~~	10/31/14~~12/31/08~~	COA
Center for Integrated Nanotechnology	2238A	05/25/11~~01/05/07~~	04/30/16~~04/30/11~~	COA
SURFACE DISCHARGE				
Pulsed Power Development Facilities (Discharge Plan)	DP-530	09/12/07~~09/21/01~~	09/12/12~~09/21/06~~[a]	NMED
STORM WATER				
National Pollutant Discharge Elimination System Multi-Sector General Permit	~~NMR05A961~~NMR05GQ63 NMR05GP29	10/15/09~~02/01~~	09/29/13~~10/30/05~~[a]	EPA
~~NPDES CONSTRUCTION PERMITS~~				
~~Microsystems and Engineering Sciences Applications Facility~~	~~NM0002376~~	~~01/28/02~~	~~07/31/09~~	~~EPA~~
~~20th Street Stockpile Area~~	~~NMR 15E764~~	~~04/29/05~~	~~03/30/07~~	~~EPA~~
~~TA-1 Waterline Replacement Phase III~~	~~NMR 15EO38~~	~~12/16/05~~	~~03/28/07~~	~~EPA~~
~~46kV Feeder #1 Replacement and Switching Station~~	~~NMR 15EO48~~	~~12/21/05~~	~~10/30/07~~	~~EPA~~
~~New Master Substation Utility Sub 42~~	~~NMR 15EO73~~	~~12/23/05~~	~~05/30/07~~	~~EPA~~
~~Infrastructure Upgrades TA-II~~	~~NMR 15EW77~~	~~04/11/06~~	~~10/30/06~~[b]	~~EPA~~
~~Water Line Rehabilitation – WSR Phase II~~	~~NMR 15EY34~~	~~05/04/06~~	~~05/30/07~~	~~EPA~~
Mixed Waste Landfill Cover	NMR15EZ15 NMR15EZ62	05/18/06	active until terminated~~06/19/07~~	EPA
~~Building 806 Demolition~~	~~NMR15EW63~~	~~04/10/06~~	~~10/30/06~~[b]	~~EPA~~
~~TA-III Concrete Recycle/Borrow~~	~~NMR15F015~~	~~05/31/06~~	~~07/01/08~~	~~EPA~~
Thunder Range	NMR15G365 NMR15G366	06/03/08	12/31/13	EPA
TA II Escarpment	NMR10G475	08/12/08	active until terminated	EPA
Large Scale Liquid Natural Gas Pool Fire Experiment	NMR10G703	10/24/08	active until terminated	EPA
9940 Complex	NMR10HC79 NMR10HC78	09/01/09	active until terminated	EPA
Technical Capabilities Revitalization Phase II – Mechanical Shock Tube Project	NMR10GY81	04/01/10	active until terminated	EPA

National Solar Thermal Test	NMR10H628	12/07/10	active until terminated	EPA
~~16" Chilled Water Line Installation~~	~~NMR15F083~~	~~06/11/06~~	~~12/30/06[b]~~	~~EPA~~
~~TA-1 Limited Area Fence Expansion~~	~~NMR15F452~~	~~07/31/06~~	~~12/15/06[b]~~	~~EPA~~
~~Hardin & 20th Intersection~~	~~NMR15F829~~	~~09/27/06~~	~~03/30/07~~	~~EPA~~
~~NPDES CONSTRUCTION PERMIT WAIVERS~~				
~~Building 800 Parking Lot Renovation~~	~~NMLEW 0454~~	~~11/15/06~~	~~07/30/07~~	~~EPA~~

~~**NOTE:**~~ See notes at end of table

~~[a] Applied for permit or permit renewal, not yet received. Existing permit continues.~~
~~[b] Existing permit remains active.~~
~~COA = City of Albuquerque~~
~~NMED = New Mexico Environment Department~~
~~EPA = U.S. Environmental Protection Agency~~
~~UST Bur. = Underground Storage Tank Bureau, NMED~~

Sandia National Laboratories/New Mexico
Active Environmental Permits as of 3/31/12~~1/31/07~~ (Continued)

Permit Type and/or Facility Name	Permit Number	Issue Date	Expiration Date	Regulatory Agency
ECOLOGICAL				
New Mexico Department of Game and Fish, for Scientific/Educational Purposes, Authorization for Taking of Protected Wildlife	2931[b]	3/18/11~~Pending~~[a]	12/31/~~07~~12	New Mexico Department of Game and Fish
Fish and Wildlife Special Purpose - Salvage ~~Permit (for migratory birds)~~	MB02907A-0[b]	02/12/10~~Pending~~[a]	03/31/13~~12/31/07~~	U.S. Fish and Wildlife Service
Fish and Wildlife Special Purpose – Relocate	MB02872A-0	02/11/10	12/31/12	U.S. Fish and Wildlife Service
New Mexico Department of Game and Fish Nuisance Permit	N/A	N/A	03/01/2013	New Mexico Department of Game and Fish
UNDERGROUND STORAGE TANKS				
20,000 gal oil storage tank	~~1485~~[a,d]	07/01/~~06~~11	06/30/~~07~~12	NMED PSTB
20,000 gal oil storage tank	~~1486~~[a,d]	07/01/~~06~~11	06/30/~~07~~12	NMED PSTB
ABOVEGROUND STORAGE TANKS				
~~10,000 gal storage tank~~	~~1487~~	~~07/01/06~~	~~06/30/07~~	~~NMED~~
~~10,000 gal storage tank~~	~~1487~~	~~07/01/06~~	~~06/30/07~~	~~NMED~~
~~10,000 gal storage tank~~	~~1487~~	~~07/01/06~~	~~06/30/07~~	~~NMED~~
~~1,500 gal storage tank~~	~~1487~~	~~07/01/06~~	~~06/30/07~~	~~NMED~~
2,000 gal storage tank	2599~~1487~~	07/01/~~06~~11	06/30/~~07~~12	NMED PSTB
5,000 gal storage tank	2599~~1487~~	07/01/~~06~~11	06/30/~~07~~12	NMED PSTB
5,500 gal storage tank	2599~~1487~~	07/01/~~06~~11	06/30/~~07~~12	NMED PSTB

~~**NOTE:**~~ See notes at end of table

~~[a] Applied for permit or permit renewal; not yet received. Existing permit continues.~~

~~[b] Permit number not issued yet.~~

~~NMED = New Mexico Environment Department~~

Sandia National Laboratories/New Mexico
Active Environmental Permits as of ~~1/31/07~~3/31/12 (Continued)

Permit Type and/or Facility Name	Permit Number	Issue Date	Expiration Date	Regulatory Agency
RCRA				
~~RCRA Part B~~ Operating Permit for the Hazardous Waste Management Facility Modules I - III~~General Permit Conditions~~ ~~Module II - General Facility Conditions~~ ~~Module III - Containers~~	NM5890110518-1	08/06/92	08/06/02 [a, b]~~[c]~~	NMED
R~~CRA Part B~~ Operating Permit Module IV ~~- Hazardous and Solid Waste Amendments Portion for Solid Waste Management Units~~	NM5890110518-1	08/26/93	09/20/02 [a, b]~~[c]~~	EPA/NMED
~~RCRA Part B~~ Operating Permit for the Thermal Treatment Facility Modules I - III~~General Permit Conditions~~ ~~Module II - General Facility Conditions~~ ~~Module III - Containers~~	NM5890110518-2	11~~12~~/04/94	11~~12~~/04/04 [a, b]~~[c]~~	NMED
General Part A Permit Application Request Storage and/or treatment of the hazardous component of mixed waste at seven~~ten~~ waste management Units.	NM5890110518	First submitted 8/90 Rev. 10~~9,~~ 3/22/07~~10/25/05~~	Pending Review (No expiration date)	NMED
Class III Permit Modification for the Management of Hazardous Remediation Waste in the Corrective Action Management Unit (CAMU), Technical Area III	NM5890110518	09/25/97	09/20/02 [a, b, c] ~~07/03/03~~ ~~[d]~~	NMED
Comprehensive Part B Permit Request Storage and/or treatment of RCRA-regulated waste at nine waste management Units.	NM5890110518	02/06/02 [c]	Pending Review (No expiration date)	NMED
Post-Closure Care ~~Plan and Application for Part B~~ Permit for the Chemical Waste Landfill, Technical Area III	NM5890110518	Issue date 10/15/2009 Effective date 06/02/11~~09/05~~	06/02/21~~Pending Review (No expiration date)~~	NMED
~~**TSCA**~~				
~~Risk-Based Approval Request under 40 CFR 761.61(c); Risk-Based Method for Management of PCB Materials; Chemical Waste Landfill and CAMU~~		~~06/26/02~~	~~No expiration date~~ ~~[d]~~	~~EPA~~

~~**NOTE:**~~ See notes at end of table

~~[a] Applied for permit or permit renewal; not yet received. Existing permit continues.~~
~~[c] Submitted application for renewal on 02/06/2002, undergoing NMED review. Application has been revised in response to NMED comments.~~
~~[d] CAMU permit modification request for post-closure care submitted on 07/03/03 , undergoing NMED review.~~
~~EPA = U.S. Environmental Protection Agency~~
~~NMED = New Mexico Environment Department~~
~~RCRA = Resource Conservation and Recovery Act~~
~~TSCA = Toxic Substances Control Act~~

Sandia National Laboratories/New Mexico
Active Environmental Permits as of ~~1/31/07~~3/31/12 (Continued)

Permit Type and/or Facility Name	Permit Number	Issue Date	Expiration Date	Regulatory Agency
AIR (Open Burn Permits)				
Large Burn Pool	10-0056	05/01/12	05/31/12	COA
~~Igloo Building (9830)~~	~~07-0007~~	~~01/01/07~~	~~12/31/07~~	~~COA~~
Thermal Treatment Facility ~~(copy of permit must be submitted to NMED within 30 days of receipt)~~	12-0008~~07-0001~~	01/01/~~07~~12	12/31/~~07~~12	COA
Terminal Ballistics Facility - Explosive Applications	12-0004~~06-0080~~	01/01/~~07~~12	12/31/~~07~~12	COA
Burn Site (Igloo~~Large Pool Fire Tests~~)	12-0010~~07-0003~~	01/01/~~07~~12	12/31/~~07~~12	COA
Burn Site/~~Sled Track~~ (Wood Crib ~~Fire Tests~~)	12-0011~~07-0012~~	01/01/~~07~~12	12/31/~~07~~12	COA
Terminal Ballistics Facility - Propellant Applications	12-0005~~06-0081~~	01/01/~~07~~12	12/31/~~07~~12	COA
Burn Site/Thermal Test Complex	12-0003	01/01/12	12/31/12	COA
DETS Complex ~~Explosive Testing~~ (9940)	12-0009~~07-0010~~	01/01/07	12/31/07	COA
Terminal Ballistics Facility – Thermite Applications	12-0006~~06-0082~~	01//1/~~07~~12	12/31/~~07~~12	COA
9930 Test Site – Explosives Testing	12-0002	01/01/12	12/31/12	COA
9920 Test Site	12-0001	01/01/12	12/31/12	COA
~~Panel Box Tests~~	~~06-0084~~	~~01/01/07~~	~~12/31/07~~	~~COA~~
~~Explosives Testing (~~Thunder Range~~)~~	12-0007[b]	01/01/12~~Pending~~	12/31/12~~Pending~~	COA
AIR (Permits & Registrations)				
Air Quality Emission Sources	515	Pending	Pending	COA
Document Disintegrator Facility	144-M1	09/28/06	[d]~~Biennial update~~	COA
Fire Laboratory used for the Authentication of Modeling and Experiments	196[e]	05/19/88	[d]~~Registration~~‡	COA
Neutron Generator Facility	374-~~-~~M~~1~~2	~~07/17/98~~12/06/10	[d]~~Biennial update~~	COA
Standby diesel generators (four)	402	05/07/96	[d]~~Biennial update~~	COA
Radioactive & Mixed Waste Management Facility	415-~~-~~M~~1~~2-RV1	~~05/10/97~~09/23/11	[d]~~Biennial update~~	COA
Explosive Component Facility	547-RV1[e]	~~05/21/97~~09/27/11	[d]~~Biennial update~~	COA
~~Air Quality Emission Sources~~	~~515~~	~~Pending~~[a]	~~Pending~~	~~COA~~
Thermal Test Complex	1712	04/09/04	[d]~~Biennial update~~	COA
Center for Integrated Nanotechnology	1725	10/11/04	[d]~~Biennial update~~	COA
Microsystems and Engineering Sciences ~~Applications~~	1820-M1	~~09/26/06~~03/08/11	[d]~~Biennial update~~	COA
~~Weapons Integration Facility~~TA-1 Emergency Generator	1828[e]	09/28/06	[d]~~Biennial update~~	COA
~~Heating System Modernization~~	~~1830~~	~~Pending~~[a]	~~Biennial update~~	~~COA~~
Advanced Manufacturing Prototype Facility	1406-M1[e]	~~11/06/00~~05/28/08	~~Registration~~ ‡	COA
~~Microelectronics Development Laboratory~~	~~1678-M1~~	~~12/14/04~~	~~Biennial update~~	~~COA~~
Emergency Generator	924	05/05/98	[d]~~Biennial update~~	COA

See notes at end of table

Sandia National Laboratories/New Mexico
Active Environmental Permits as of ~~1/31/07~~3/31/12 (Continued)

Permit Type and/or Facility Name	Permit Number	Issue Date	Expiration Date	Regulatory Agency
Processing and Environmental Technology Laboratory	925-M1	03/05/01	[d]~~Biennial update~~	COA
Processing and Environmental Technology Laboratory	936-M1[e]	~~05/05/04~~05/28/08	[d]~~Registration†~~	COA
~~Steam Plant~~	~~1705~~	~~11/10/04~~	~~Biennial update~~	~~COA~~
~~Advanced Materials Laboratory Hazardous Air Pollutant (HAP)~~	~~[b]~~	~~Pending[a]~~	~~Registration†~~	~~COA~~
Building 869 Hazardous Air Pollutant Registration	1905[e]~~[b]~~	05/28/08~~Pending[a]~~	[d]~~Registration†~~	COA
Sled Track HAP Registration	1904[e]~~[b]~~	02/01/10~~Pending[a]~~	[d]~~Registration†~~	COA
~~Building 9940 HAP~~	~~[b]~~	~~Pending[a]~~	~~Registration†~~	~~COA~~
National Thermal Solar Test Facility HAP Registration	1903[e]	05/28/08	[d]	COA
~~Microsystems and Engineering Sciences Applications HAP~~	~~[b]~~	~~Pending[a]~~	~~Registration†~~	~~COA~~
Advanced Manufacturing Processes Laboratory HAP Registration	1888-RV1[e]~~[b]~~	05/11/11~~Pending[a]~~	[d]~~Registration†~~	COA
~~Miscellaneous~~ Site-Wide Chemical ~~HAP~~Registration	1901-RV1[e]~~[b]~~	10/24/11~~Pending[a]~~	[d]~~Registration†~~	COA
Building ~~895~~ 865 HAP Registration	1902[e]~~[b]~~	05/28/08~~Pending[a]~~	[d]~~Registration†~~	COA
~~Sitewide~~ Weapons Integration Facility Boilers~~Generator~~	1823[e]~~[b]~~	04/01/08~~Pending[a]~~	[d]~~Registration†~~	COA
SDF Emergency Generator	1900	01/11/08	[d]	COA
Strategic Defense Facility Emergency Generator	1930	04/08/09	[d]	COA
Building 833 Emergency Generator	2097	09/01/10	[d]	COA
Building 802 Source Registration	2109[e]	10/28/10	[d]	COA
Building 804 Source Registration	2110[e]	11/08/10	[d]	COA
Building 810 Source Registration	2111[e]	11/08/10	[d]	COA
Building 823 Source Registration	2112[e]	11/08/10	[d]	COA
Building 840 Source Registration	2113[e]	11/08/10	[d]	COA
Building 857 Source Registration	2114[e]	11/08/10	[d]	COA
Building 860 Source Registration	2115[e]	11/08/10	[d]	COA
Building 890 Source Registration	2117[e]	11/29/10	[d]	COA
Building 887 Source Registration	2118[e]	11/29/10	[d]	COA
Building 891 Source Registration	2119[e]	11/29/10	[d]	COA
Building 892 Source Registration	2120[e]	11/29/10	[d]	COA
Building 894 Source Registration	2121[e]	11/29/10	[d]	COA
Building 897 Source Registration	2122[e]	11/29/10	[d]	COA
Building 895 Source Registration	2170[e]	09/27/11	[d]	COA
Building 960 Source Registration	2169[e]	09/27/11	[d]	COA
Building 800 Source Registration	2171[e]	09/27/11	[d]	COA
Building 981 Source Registration	2175[e]	09/22/11	[d]	COA

~~**NOTE:**~~ See notes at end of table.

~~[a] Applied for permit or permit renewal; not yet received. Existing permit continues.~~
~~[b] Permit number not issued yet.~~
~~† Registration = Certificate, no permit required.~~
~~COA = City of Albuquerque~~

Sandia National Laboratories/New Mexico
Active Environmental Permits as of ~~1/31/07~~3/31/12 (Concluded)

Permit Type and/or Facility Name	Permit Number	Issue Date	Expiration Date	Regulatory Agency
AIR (~~FUGITIVE DUST CONTROL AND DEMOLITION~~Fugitive Dust Control and Demolition)				
Borrow Site Cell No. 1	P08-0004~~10-348-2925~~	12/11/07~~08/18/04~~	12/11/12~~08/18/09~~	COA
Moving Vehicle Test	P08-0005~~10-348-3305~~	12/10/07~~10/17/05~~	12/10/12~~10/17/10~~	COA
TCR Phase 2	5356-C	03/20/12	08/31/13	COA
Thunder Range – Range 6	P08-0061	07/18/08	07/18/13	COA
Thunder Range – Range 1	P08-0062	08/07/08	08/07/13	COA
Thunder Range – Range 5	P08-0063	08/07/08	08/07/13	COA
Thunder Range – Range 2	P08-0064	08/07/08	08/07/13	COA
DETS Complex – 9940	P09-0014	07/08/09	07/08/14	COA
DETS – West	P09-0015	07/09/09	07/09/14	COA
DETS – East	P09-0016	07/09/09	07/09/14	COA
Thunder Range – Range 8	P09-0018	08/14/09	08/14/14	COA
Thunder Range – Range 7	P09-0021	12/22/09	12/22/14	COA
Thunder Range – Range 4	P09-0022	12/22/09	12/22/14	COA
DETS – South	P10-0018	11/19/10	11/19/15	COA
Borrow Pit Cell 3	10-683-4160	05/01/09	04/28/14	COA
~~Building 806 Demolition~~	~~10-210-3442~~	~~04/07/06~~	~~04/07/07~~	~~COA~~
Mixed Waste Landfill Cover	10-683-4161~~10-411-3440~~	05/01/09~~04/05/06~~	04/28/14~~04/05/07~~	COA
Large Scale LNG Test	1009-626-3732	05/05/07	05/05/12	COA
ARRA Projects at the National Solar Thermal Test Facility	10-564-4405	10/20/10	10/20/15	COA
Building 894 Cooling Tower Construction	10-819-4546	11/01/11	11/01/12	COA
~~46 KV Feeder~~	~~10-555-3450~~	~~04/20/06~~	~~04/20/07~~	~~COA~~
~~20th Street Extension~~	~~10-10-3537~~	~~08/02/06~~	~~08/02/07~~	~~COA~~
~~16-inch Chilled Water~~	~~10-10-3538~~	~~08/02/06~~	~~08/02/07~~	~~COA~~
~~Waterline Replacement~~	~~10-149-3610~~	~~11/01/06~~	~~11/01/07~~	~~COA~~
~~Building 770~~	~~10-344-3390~~	~~02/02/06~~	~~03/15/07~~	~~COA~~
~~Building 9990 Comm. System~~	~~10-430-3426~~	~~03/23/06~~	~~03/23/07~~	~~COA~~
~~Building 880~~	~~10-564-3477~~	~~05/25/06~~	~~05/25/07~~	~~COA~~
~~Building 9940 Programmatic~~	~~P05-0057~~	~~11/10/05~~	~~11/10/10~~	~~COA~~
~~Thunder Range~~	~~P06-0004~~	~~05/02/06~~	~~05/02/11~~	~~COA~~

NOTES:

a Applied for permit or registration renewal, not yet received.
b Current permit remains in effect while application is under review.
c Application for modification of CAMU operating permit for post-closure care submitted in 4/19/04, undergoing NMED review.
d~~f~~ No expiration date
e~~g~~ Registration, no permit required.
f Number not known

COA = City of Albuquerque
EPA = U.S. Environmental Protection Agency
NMED = New Mexico Environment Department
RCRA = Resource Conservation and Recovery Act
PSTB = Petroleum Storage Tank Bureau

APPENDIX B

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

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

Description	Capacity	Associated Structure/Building
Line 1 S01 Container Storage [a]		
Container storage area	59,950 gallons	Building 958
Container storage area	7,590 gallons	Building 959
Container storage area	5,000 gallons	Modular Storage Building 958B
Container storage area	5,000 gallons	Modular Storage Building 958C
Total S01	**7~~,~~7,540 gallons**	

See footnotes at end of section

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

Description	Capacity	Annual Quantity	Associated Structure/Building
Line 5 X01 Treatment: Open Burning~~Thermal~~ [b]			
Open burning~~Thermal treatment~~ of explosive waste	20.8 gallons/pan~~batch~~ 190 pounds/pan~~batch~~	9,500 pounds/year	South of Building 6715
Total X01	**20.8 gallons/pan~~batch~~** **190 pounds/pan~~batch~~**	**9,500 pounds/year**	

See footnotes at end of section

Explanation of Process Code Listings, Design Capacities, and Annual Quantities at the Radioactive and Mixed Waste Management Facility (RMWMF) (Continued)

Description	Capacity	Annual Quantity	Associated Structure/Building
Line 3 T04 Other Treatment ~~(in containers)~~ [c, d, e, f]			
Chemical deactivation	65 gallons/day	3,000 gallons/year	Building 6920, Building 6921
Macroencapsulation	13,800~~840~~ gallons/day	138,000~~6,000~~ gallons/year	Building 6920, Building 6921, Building 6925
Stabilization and solidification	550 gallons/day	6,000 gallons/year	Building 6920, Building 6921
Thermal deactivation	80~~10~~ pounds/day~~hour~~	150 pounds/year	Building 6920, Building 6921
Amalgamation	16~~2~~ pounds/day~~hour~~	100 pounds/year	Building 6920, Building 6921
~~**Total T04**~~	~~**1,455 gallons/day and 12 pounds/hour**~~	~~**15,000 gallons/year and 250 pounds/year**~~	

~~Description~~	~~Capacity~~	~~Annual Quantity~~	~~Associated Structure/Building~~
~~**Line 3 T04 Other Treatment (physical treatment)**~~ [f]			
Physical treatment	5,000~~20~~ pounds/day~~hour~~	504,000 pounds/year	Building 6920, Building 6921
Total T04	**14,415 gallons/day and 5,096~~20~~ pounds/day~~hour~~**	**147,000 gallons/year and 504,250~~000~~ pounds/year**	

See footnotes at end of section

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

Description	Capacity	Associated Structure/Building
Line 1 S01 Container Storage [a]		
Container storage area	3,520 gallons	Building 6597
Storage silos	1,45~~6~~5 gallons	Building 6597
Hot cell	900 gallons	Building 6597
Fume hood	110 gallons (capacity included in work area)	Building 6597
Work area	2,200 gallons	Building 6597
Total S01	**~~6,976~~8,075 gallons**	

Description	Capacity	Annual Quantity	Associated Structure/Building
Line 2 T04 Other Treatment ~~(in containers)~~ [c, d, f]			
Chemical deactivation	55 gallons/day	2,000 gallons/ year	Building 6597
Macroencapsulation	55 gallons/day	6,000 gallons/year	Building 6597
Stabilization and solidification	550 gallons/day	2,000 gallons/year	Building 6597
~~**Total T04**~~	~~**165 gallons/day**~~	~~**10,000 gallons/year**~~	

~~Description~~	~~Capacity~~	~~Annual Quantity~~	~~Associated Structure/Building~~
~~**Line 3 T04 Other Treatment (physical treatment)**~~ [f]			
Physical treatment	5,000~~20~~ pounds/day~~hour~~	50~~4~~,000 pounds/year	Building 6597
Total T04	**660 gallons/day and 5,000~~20~~ pounds/day~~hour~~**	**10,000 gallons/year and 50~~4~~,000 pounds/year**	

See footnotes at end of section

Footnotes for Process Codes and Capacities

[a] Wastes are stored in a variety of containers, including but not limited to large boxes, 55-gallon drums, and smaller containers.

[b] The quantity of waste undergoing treatment at any one time cannot exceed the 20.8-gallon capacity of the burn pan.

[c] Wastes are treated by stabilization/solidification, chemical deactivation, and amalgamation in a variety of containers, including 55-gallon drums, 5-gallon buckets, laboratory glassware, and other containers as appropriate for the process. Some chemical deactivation is not conducted in containers.

[d] Wastes are placed in suitable containers and macroencapsulated. The container size is determined by the quantity of waste requiring treatment and the macroencapsulation process. Containers include but are not limited to shipping containers (volume 13,800 gallons), ~~7 ft X 4 ft X 4 ft boxes (equivalent volume of 840 gallons),~~ 55-gallon drums, and smaller containers. Liquid wastes are not treated through macroencapsulation; the volume of waste treated is equivalent to the number of gallons listed.

[e] Wastes are placed in the thermal deactivation equipment and treated. The time required to complete treatment depends on the waste.

[f] Physical treatment ~~separation~~ volumes depend on the size of the equipment or other item undergoing treatment (e.g., size reduction, separation). Volumes vary widely. If appropriate, the treatment is conducted in containers.

[g] During operation of the Corrective Action Management Unit (2001-2003), remediation wastes (soils and residues) were stored, treated as needed, and placed in the containment cell. The Unit was closed in 2003. The closed containment cell is undergoing post-closure care.

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

Revision ~~6.0b~~7.0

April 2012~~February 2007~~

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

Prepared for
The U.S. Department of Energy

LIST OF MODULES

ACRONYMS AND ABBREVIATIONS (Continued)

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

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

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

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

There are ~~11~~ 10 RCRA-regulated waste management units (Units) included in this comprehensive Part B permit request. Nine of the Units (listed in Table 1) are used for management of wastes from ongoing operations and from the ER project. These units are addressed in this part (Part 2) of the comprehensive Part B permit request. ~~One of~~ T~~t~~he remaining unit~~s~~ is a corrective action management unit (containment cell) used exclusively for management of remediation wastes generated through the ER project. It was closed in 2003 and is undergoing post-closure care; it is~~. The other unit is a landfill that was operated under interim status and is undergoing closure. Sandia/DOE will conduct post-closure care and maintenance at the containment cell and the landfill; both Units are~~ addressed in Part 5 of the comprehensive Part B permit request. ~~Three additional units will be undergoing closure under interim status and will not require post-closure care. They are included in Part 1~~.

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

- General information (the General Part B) that serves as an "umbrella" document addressing the general requirements of the New Mexico Hazardous Waste Act and implementing regulations, specifically the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subparts V and IX (20 NMAC 4.1.500 and .900), revised July 1, 2008~~October 1, 2003~~ [7-1-08~~10-1-03~~]. 20 NMAC 4.1.500 and .900 adopt, with limited exceptions, all of the Code of Federal Regulations, Title 40, Parts 264 and 270 (40 CFR 264 and 270). Information that is applicable to most or all of the Units is included in the General Part B.

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

Name	Acronym	Location, Size	Types of Operations	Types of Waste	Operating Status	Permit Status
Hazardous Waste Handling~~Management~~ Facility	HWH~~M~~F	South of TA-I, north of entrance to TA-II. 1.35 acres	Storage, Repackaging	All wastes listed in General Part A	Existing, operational	Permit expired August 6, 2002. Submitted renewal request February 6, 2002. Requesting that permit be updated and renewed for continued operation.
Thermal Treatment Facility	TTF	Northern part of TA-III. 196 square feet	Treatment	Ignitable, reactive, toxic, and listed wastes	Existing, on standby	Permit expires November 4, 2004. Submitted renewal request February 6, 2002. Requesting that permit be updated and renewed for continued operation.
Radioactive and Mixed Waste Management Facility	RMWMF	Southeast corner of TA-III. 3.11 acres	Storage, Treatment, Repackaging	All wastes listed in General Part A	Existing, operational	Interim status. Requesting that permit be issued using updated information provided in this application.
Auxiliary Hot Cell Facility	AHCF	TA-V. 5578 square feet	Storage, Treatment, Repackaging	All wastes listed in General Part A	Existing, expected to start operations in 2006	Added under interim status. Requesting that permit be issued using information provided in this application.
Manzano Storage Bunkers (set of 5 Units)	MSB	In Manzano Area on KAFB. 0.4 acres occupied by 5 bunkers (approximately 1600 to 2400 square feet in each bunker)	Storage	All wastes listed in General Part A	Existing, operational	Interim status. Requesting that permit be issued using updated information provided in this application.

- Unit-specific Part B modules addressing Unit-specific requirements of 20 NMAC 4.1.500 and .900/40 CFR 264 and 270 [~~10-1-03~~7-1-08]. There is one module for the set of five Manzano Storage Bunkers, and one module for each of the other four Units listed in Table 1. For clarity and consistency, the information in each Unit-specific Part B module is arranged in the same general order as the information in the General Part B.

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

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

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

Sandia/DOE are also submitting a “Sandia National Laboratories/New Mexico General Part A Permit Renewal Request/Application, Rev. 11.0~~7.0~~” hereinafter referred to as the General Part A (SNL/NM, ~~2004~~2012), with this General Part B. The General Part A is included as Part 1 of this comprehensive Part B permit request and serves as a companion document to this General Part B. ~~The General Part A identifies the RCRA-regulated waste management operating Units at SNL/NM as of March 31, 2003, that are or will be subject to:~~

- ~~20 NMAC 4.1.500/40 CFR 264 [10-1-03] and 20 NMAC 4.1.900/40 CFR 270 [10-1-03]. These nine Units are listed in Table 1.~~
- ~~20 NMAC 4.1.600/40 CFR 265 [10-1-03]. These three Units will be closed under interim status and are not included in this General Part B.~~

In the General Part A, this General Part B, the appendices, and the Unit-specific modules, a Unit to be permitted may sometimes be referred to as a “facility” (e.g., the Hazardous Waste Handling~~Management~~ Facility). The term “facility,” as it appears in this context, is used only to denote building or Unit names and does not imply the regulatory meaning of “facility” as defined in
20 NMAC 4.1.100/40 CFR 260.10 [~~10-1-03~~7-1-08]. However, pursuant to 20 NMAC 4.1.100/40

CFR 260.10 [~~10-1-03~~7-1-08], the SNL/NM site as a whole does meet the regulatory definition of a facility.

In the Waste Analysis Plan (Appendix B) and in the rest of this General Part B, the personnel associated with a RCRA-regulated waste at a given point during management at SNL/NM may sometimes be referred to as the "generator" (e.g., the "generator" completes a disposal request). The term "generator," as it appears in this context, is used only to denote an individual person and does not imply the regulatory meaning of "generator" as defined in 20 NMAC 4.1.100/40 CFR 260.10 [~~10-1-03~~7-1-08], particularly with respect to hazardous waste determination as required in 20 NMAC 4.1.300/40 CFR 262.11 [~~10-1-03~~7-1-08]. However, pursuant to 20 NMAC 4.1.100/40 CFR 260.10 [~~10-1-03~~7-1-08], Sandia Corporation is a "generator" and a "person" responsible for determining whether a waste is subject to regulation in accordance with 20 NMAC 4.1.300/40 CFR 262.11 [~~10-1-03~~7-1-08]. SNL/NM is a large research facility, and many individuals (including those employed through contract to Sandia Corporation) are involved with generation and subsequent management of RCRA-regulated wastes. These include personnel performing research and other waste-generating activities, and personnel performing environment, safety, and health activities (including waste management) to support Sandia operations and comply with regulatory requirements. Hazardous waste determination at SNL/NM is a collaborative effort between the individuals involved with the generation of RCRA-regulated waste and the Unit personnel. This approach is consistent with the process described in EPA's clarifying memo (Cotsworth, 2002).

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

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

Regulatory Citation(s)	Description of Requirement	Location in this Document
§264.175	Containment	1.1, 1.2[a]
§264.176	Special requirements for ignitable or reactive waste	1.1.2[a]
§264.177	Special requirements for incompatible waste	1.1[a]
§264.17	General requirements for ignitable, reactive, or incompatible wastes	1.1[a]
§270.23	Specific information requirements—miscellaneous units	Module II[a]
§264.600	Subpart X applicability	Module II
§264.601	Environmental performance standards	Module II
§264.602	Monitoring analysis, inspection, response, reporting, and corrective action	Module II
§270.27	Specific information requirements—air emission controls for tanks, surface impoundments, and containers	1.1, 1.2[a]
§264 Subpart AA	Air emission standards for process vents	1.1.4.6
§264 Subpart BB	Air emission standards for equipment leaks	1.1.4.6
§264 Subpart CC	Air emission standards for tanks, surface impoundments, and containers	1.1.4.6

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

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

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

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

Smoking is not allowed within any Unit. ~~"~~No Smoking" signs are conspicuously placed at the entrance to each Unit, as required by 20 NMAC 4.1.500/40 CFR 264.17(a) [~~10-1-03~~7-1-08].

Ignitable and reactive wastes are stored under controlled conditions as needed to prevent spontaneous combustion. For example, pyrophoric wastes (liquids or solids that can ignite in contact with air without an external ignition source) are stored in closed containers under oil or other inert liquid, or in sealed containers under an inert gas, to prevent contact with air and moisture.

Water-reactive wastes may be stored in WMAs equipped with automatic water sprinkler systems. When water-reactive wastes are present in such WMAs, Unit personnel will isolate the wastes with water-resistant barriers such as cabinets or overpack drums to keep water from coming into contact with the waste.

Buildings and areas where operations include open containers of ignitable or reactive wastes are equipped with intrinsically safe (spark-proof) electrical systems. All other buildings are equipped with electrical systems that meet applicable codes (e.g., storage of hazardous materials).

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

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

- Generate extreme heat or pressure, fire or explosions, or violent reaction;
- Produce uncontrolled toxic mists, fumes, dusts, or gases;
- Produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions;
- Damage the structural integrity of the device or Unit;
- Through other like means, threaten human health or the environment.

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

Incompatible wastes are kept separated from each other during storage to meet the requirements of 20 NMAC 4.1.500/40 CFR 264.177(c) [~~10-1-03~~7-1-08]. Incompatible wastes are not packed in the same container, and no waste is placed in a container that previously held an incompatible waste (i.e., only new and/or clean containers are used to hold RCRA-regulated wastes), as required by 20 NMAC 4.1.500/40 CFR 264.177(a) and (b) [~~10-1-03~~7-1-08], 20 NMAC 4.1.500/40 CFR 264.17(b), and 20 NMAC 4.1.900/ 40 CFR 270.15(d) [~~10-1-03~~7-1-08]. Additional information is included in the Unit-specific modules.

Compatibility is determined in accordance with 20 NMAC 4.1.500/40 CFR 264, Appendix V [~~10-1-03~~7-1-08], or equivalent information (e.g., NIOSH Pocket Guide to Chemical Hazards).

Containers holding ignitable or reactive wastes are located at least 50 feet from the SNL/NM facility property line, except at the MSB, where such containers are ~~at all times~~ located at least 50 feet from the fence surrounding Manzano Base. Containers holding ignitable or reactive wastes ~~and~~ are protected from sources of ignition or reaction as required by 20 NMAC 4.1.500/40 CFR 264.176 [~~10-1-03~~7-1-08].

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

20 NMAC 4.1.900/40 CFR 270.14(b)(8) [~~10-1-03~~7-1-08], and 20 NMAC 4.1.500/40 CFR 264, Subpart C [~~10-1-03~~7-1-08], require a description of how Units will comply with preparedness and prevention requirements. The following sections address required equipment, testing and maintenance of equipment, and access to communications or alarm systems.

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

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

1.2 Container Storage

The information provided in this section is submitted to address the applicable container storage requirements of 20 NMAC 4.1.900/40 CFR 270.15 [~~10-1-03~~7-1-08], and 20 NMAC 4.1.500/
40 CFR 264, Subpart I (~~10-1-03~~7-1-08). The following sections provide brief descriptions of waste management practices applicable to all Units used for container storage of RCRA-regulated wastes at SNL/NM.

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

1.2.1 Container Types and Labeling

Containers that may be used to store RCRA-regulated waste stored at Units qualify as ~~"~~containers" as defined in 20 NMAC 4.1.100/40 CFR 260.10 [~~10-1-03~~7-1-08]. That is, they are ~~"~~portable devices in which a material is stored, transported, disposed of, or otherwise handled."

A number of container types are used for storage of RCRA-regulated wastes, depending on the type of waste and the ultimate disposition of the waste. Waste containers that may be stored at the SNL/NM Units include, but are not limited to, 30-, 55-, 83-, 85-, and 110-gallon steel, polyethylene, and fiber drums; fiberglass-reinforced plastic or plywood boxes; various steel boxes; metal overpack boxes; cardboard shipping containers; gas cylinders; roll-off bins; labpack containers; various small containers (e.g., 1-, 2-, 5-, 10-, and 20-gallon drums or pails); bags; and some oversized, irregularly-shaped containers or large self-contained items (e.g. a large piece of equipment containing RCRA-regulated waste in which the RCRA-regulated component is located within the interior of the item, or is covered with an inert material, such as plastic sheeting, if located on the exterior of the item).

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

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

As required by 20 NMAC 4.1.500/40 CFR 264.173(b) [~~10-1-03~~7-1-08], containers of RCRA-regulated wastes at SNL/NM are handled in a manner that will not cause them to rupture or leak. Containers are handled in a manner to prevent shifting and falling. As required by 20 NMAC 4.1.500/40 CFR 264.173(a) [~~10-1-03~~7-1-08], stored containers at SNL/NM are kept closed during storage except when waste is added to or removed from a container, the contents of a container need to be repackaged, or waste is being inspected or sampled.

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

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

Prior to transportation or storage, additional containment is provided for each container that is not in good condition (e.g., severe rusting, apparent structural defects). The container may be overpacked or the waste may be repackaged in containers that are in good condition (20 NMAC 4.1.500/40 CFR 264.171 [~~10-1-03~~7-1-08]).

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

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

Storage configuration of containers depends upon the type of container, its size, and its weight restrictions as well as the load-bearing and/or secondary containment capacity of the specific Unit. Containers are stored in a stable manner, and may be stacked. Containers holding RCRA-regulated liquid wastes without absorbent are not stacked without separation or some other means to allow Unit personnel to distinguish between containers when identifying the source of liquids in secondary containment areas.

Aisle space is maintained to enable the unobstructed movement of Unit and emergency response personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of Unit operation in an emergency (20 NMAC 4.1.500/40 CFR 264.35 [~~10-1-03~~7-1-08]). Additional information is provided in Unit-specific modules.

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

As required by 20 NMAC 4.1.500/40 CFR 264.172 [~~10-1-03~~7-1-08], only containers made of or lined with materials that will not react with and are otherwise compatible with the RCRA-regulated waste stored in them are managed at SNL/NM Units. Unit personnel will evaluate the compatibility of the waste to the container by considering one or more of the following as appropriate:

- Physical properties of the waste.
- Chemical properties of the original raw material(s) or commercial chemical product(s) used in the activity that generated the waste (obtained through material safety data sheets or other published information)
- Physical and chemical similarities between the waste and the original material.

12.0 CERTIFICATION

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

Michael W. Hazen, Vice President~~Francisco A. Figueroa~~
~~Vice President, Infrastructure Operations and Business Management~~
~~and Chief Financial Officer~~
Sandia Corporation
Albuquerque, New Mexico
~~Co-~~Operator

Date Signed

Geoffrey Beausoleil, Manager~~Patty Wagner~~
~~Manager~~
U.S. Department of Energy
National Nuclear Security Administration
Sandia Site Office
Albuquerque, New Mexico
Owner ~~and Co-Operator~~

Date Signed

13.0 REFERENCES

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APPENDIX A

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

ACRONYMS AND ABBREVIATIONS

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

SITE-WIDE DESCRIPTION FOR SANDIA NATIONAL LABORATORIES/NEW MEXICO

The information provided in this appendix is submitted in accordance with the applicable requirements of New Administrative Code, Title 20, Chapter 4, Part 1, Subparts V and IX (20 NMAC 4.1.1500– and .900), revised October 1, 2003 [10-1-03]. 20 NMAC 4.1.500 and .900 adopt, with limited exceptions, all of the Code of Federal Regulations, Title 40, Parts 264 and 270 (40 CFR 264 and 270). The following subject areas are addressed in this appendix or in Section 2.0 of each Unit-specific module.

- A general description of the Sandia National Laboratories/New Mexico (SNL/NM) site (20 NMAC 4.1.900/40 CFR 270.14[b][1] [10-1-03]);
- Site-wide security procedures and equipment (20 NMAC 4.1.900/40 CFR 270.14[b][4] and 270.14[b][19][viii] [10-1-03]; 20 NMAC 4.1.500/40 CFR 264.14 [10-1-03]);
- Site-wide traffic patterns, volume, and controls (20 NMAC 4.1.900/40 CFR 270.14[b][10] [10-1-03]);
- Site location information for compliance with the seismic standard and floodplain requirements (20 NMAC 4.1.900/40 CFR 270.14[b][11] [10-1-03], and 20 NMAC 4.1.500/ 40 CFR 264.18[a] and [b] [10-1-03]);
- Site-wide topographic map requirements (20 NMAC 4.1.900/40 CFR 270.14[b][19] [10-1-03]);
- Site-wide groundwater monitoring and protection information (20 NMAC 4.1.900/40 CFR 270.14[c] [10-1-03], and 20 NMAC 4.1.500/40 CFR 264.90[a] [10-1-03]); and
- Other permit activities.

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

For the purposes of this permit renewal request/application, SNL/NM (the facility) is owned by the U.S. Department of Energy/National Nuclear Security Administration (DOE) and ~~co-~~operated by Sandia~~ and DOE~~.

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

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

Table A-1
RCRA-Regulated Waste Management Units

Unit Name	Acronym	Location, Size	Types of Operations	Operating Status
Hazardous Waste Handling~~Management~~ Facility	~~HWMF~~HWHF	South of TA-I, north of entrance to TA-II. 1.35 acres	Storage, Repackaging	Existing, operational
Thermal Treatment Facility	TTF	Northern part of TA-III. 196 square feet	Treatment	Existing, ~~on standby~~operational
Radioactive and Mixed Waste Management Facility	RMWMF	Southeast corner of TA-III. 3.11 acres	Storage, Treatment, Repackaging	Existing, operational
Auxiliary Hot Cell Facility	AHCF	TA-V. 5578 square feet	Storage, Treatment, Repackaging	Existing, ~~expected to start operations in 2006~~operational
Manzano Storage Bunkers (Set of five Units)	MSB	In Manzano Area on KAFB. 0.4 acres occupied by bunkers (approximately 1600 to 2100 square feet in each bunker)	Storage	Existing, operational

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

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

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

In accordance with 20 NMAC 4.1.500/40 CFR 264.14(a) [10-1-03], an owner or operator must prevent the unknowing entry, and minimize the possibility for the unauthorized entry, of persons or livestock onto the active portion of a facility. The following sections describe the security provisions provided at SNL/NM to prevent unknowing or unauthorized entry onto the active portions of Units.

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

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

The locations of the 100-year floodplains of Tijeras Arroyo and Arroyo del Coyote are shown in Figure A-2. The floodplain portion of Figure A-2 was derived from a U.S. Army Corps of Engineers map (COE, 1979), prepared using Federal Emergency Management Administration guidelines that are equivalent to the mapping techniques used to prepare Federal Insurance Administration floodplain maps. None of the SNL/NM Units are located within a 100-year floodplain, as defined in 20 NMAC 4.1.500/40 CFR 264.18(b)(2)(i) [10-1-03], and as regulated under 20 NMAC 4.1.500/40 CFR 264.18(b)(1) [10-1-03] and 20 NMAC 4.1.900/ 40 CFR 270.14(b)(11)(iv) [10-1-03]. Therefore, all SNL/NM Units are compliant with the floodplain standards.

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

Figure A-2 is provided to meet the requirements of the 20 NMAC 4.1.900/40 CFR 270.14(b)(19) [10-1-03]. Figure A-2 is a topographic map of KAFB that shows the SNL/NM TAs and includes the following:

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

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

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

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

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

A network of meteorological towers is used to monitor weather conditions at SNL/NM. Data indicate that the overall prevailing winds at SNL/NM are from the east, except that winter winds at the 100-ft elevation are from the north. Rapid night time ground cooling after sunset on cloudless or near-cloudless nights produces strong temperature inversions in which temperature increases with elevation (an atmospheric condition resulting from a reversal of the normal temperature lapse rate). This rapid cooling effect generates nighttime drainage winds out of the mountains, which are strongest at the mouths of the larger canyons. Nighttime winds in these areas are typically from the east and southeast, while daytime winds are typically from the southwest, west, and northwest. It also appears that Tijeras Arroyo diverts surface air flow between TAs III and V on the south and TAs I, II, and IV, and Albuquerque on the north (SNL/NM 2002, 2004). The channeling of wind through Tijeras Canyon can be seen by comparing the wind roses from these two areas (SNL/NM, 2002). Figure A-2 shows wind roses that summarize wind speeds and directions for TA-II (near the~~HWMF~~ HWHF), the southeast corner of TA-III (near the RMWMF), and the northeast corner of TA-III (near the AHCF and TTF). Wind roses are also shown on the Unit-specific topographic maps.

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

Albuquerque is the largest population center in Bernalillo County and also the closest population center to KAFB and SNL/NM. According to Census ~~2000~~ 2010 data, the total population of the Albuquerque metropolitan area is ~~448,607~~633,233 (U.S. Census Bureau, 2010~~2000~~). This population includes permanent residents of KAFB living in the KAFB housing areas. An additional ~~108,071~~ 29,341 people live outside the Albuquerque metropolitan area but within Bernalillo County (U.S. Census Bureau, ~~2000~~2010).

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

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

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

Some areas of KAFB and SNL/NM are within flight paths for aircraft that are taking off and landing at the Albuquerque International Sunport. Sandia/DOE studied the likelihood and potential impact of airplane crashes into SNL/NM facilities (DOE, 1999). The analysis covered several operations and facilities throughout SNL/NM, including the RMWMF and facilities near the ~~HWMF~~ HWHF and the AHCF. Such accidents were determined to be very unlikely; the annual probability varies from 2.8 in 1,000,000 at the RMWMF to 90 in 1,000,000 near the ~~HWMF~~HWHF.

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

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

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

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

A.5.5 Waste Management Areas

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

Lisenbee, A. L., L. A. Woodward, and J. R. Connolly, 1979, ~~"~~Tijeras-Canoncito Fault System—A Major Zone of Recurrent Movement in North-Central New Mexico," New Mexico Geological Society Guidebook 30, pp. 89–99.

Machette, M. N., 1982, ~~"~~Quaternary and Pliocene Faults in the La Jencia and Southern Part of the Albuquerque-Belen Basins, New Mexico: Evidence of Fault History from Fault-Scarp Morphology and Quaternary Geology," New Mexico Geological Society Guidebook, 33rd Field Conference, Albuquerque Country II, pp. 161-169.

Maynard, S. R., L. A. Woodward, and D. L. Giles, 1991, ~~"~~Tectonics, Intrusive Rocks, and Mineralization of the San Pedro-Ortiz Porphyry Belt, North-Central New Mexico," New Mexico Bureau of Mines and Mineral Resources Bulletin 137, pp. 57–69, Socorro, New Mexico.

Meyers, L., 1991, Kirtland Air Force Base, Construction and Engineering Department, Albuquerque, New Mexico, Personal Communication to B. A. Sladek, IT Corporation, Albuquerque, New Mexico.

SAIC, see Science Applications International Corporation.

Science Applications International Corporation (SAIC), 1985, ~~"~~Installation Restoration Program Phase II, Confirmation/Quantification Stage I," Report 2-827-06-351-33, prepared for Sandia National Laboratories, Albuquerque, New Mexico.

SNL/NM, see Sandia National Laboratories/New Mexico

Sandia National Laboratories/New Mexico (SNL/NM), 2002, ~~"~~Calendar Year 2001 Annual Site Environmental Report", SAND 2002-2415, Sandia National Laboratories/New Mexico, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), 2004, ~~"~~Calendar Year 2003 Annual Site Environmental Report", SAND 2004-2813, Sandia National Laboratories/New Mexico, Albuquerque, New Mexico.

U.S. Army Corps of Engineers (COE), 1979, ~~"~~Special Flood Hazard Information Tijeras Arroyo and Arroyo del Coyote, KAFB, New Mexico," U.S. Army Corps of Engineers, Albuquerque, New Mexico.

U.S. Census Bureau, 2010~~2000~~, 2010 Census Interactive Population Search and Interactive Population Map~~American FactFinder Census 2000 Summary File~~, http://2010.census.gov/2010census/, U.S. Census Bureau, Washington, D.C.

U.S. Department of Energy, (DOE), 1999, ~~"~~Sandia National Laboratories, New Mexico, Final Site-Wide Environmental Impact Statement," DOE/EIS-0281, U.S. Department of Energy, Albuquerque, New Mexico

APPENDIX B

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

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

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

Sandia/DOE perform storage and treatment of the RCRA-regulated wastes listed in the "General Part A Permit Renewal Request/Application," Revision 7.0, (SNL/NM, 2004) at the Units described in Section B.1.1. This WAP applies to those wastes only. It addresses the waste characterization necessary to perform waste storage and treatment activities requiring a permit (i.e., the activities described in the General Part B and Unit-specific modules). Sandia/DOE do not perform disposal of RCRA-regulated wastes under the terms of the existing or requested permit. Therefore, this WAP does not address waste characterization necessary for disposal.

This WAP has been prepared to meet the requirements set forth in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart V (20 NMAC 4.1.500), incorporating by reference the Code of Federal Regulations, Title 40, Part 264, including Section 264.13 (40 CFR 264.13), revised October 1, 2003[~~10-1-03~~7-1-08]. It has also been prepared to meet additional waste analysis requirements specified in 20 NMAC 4.1.900/40 CFR 270.14(b) [~~10-1-03~~7-1-08] and 20 NMAC 4.1.800/40 CFR 268.7(b) and 268.9(d) [~~10-1-03~~7-1-08] applicable to wastes treated at SNL/NM Units. Together, the information in this appendix, in the General Part B, and in each Unit-specific module meets the applicable regulatory requirements. The waste analysis information contained in this WAP applies to the SNL/NM Units where RCRA-regulated wastes are stored in containers and/or treated in containers or miscellaneous units.

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

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

Section B.2 Characterization Procedures: Includes the characterization approach (i.e., acceptable knowledge supplemented by sampling and analysis) for RCRA-regulated waste stored and/or treated at SNL/NM Units, a discussion of the data quality objectives (DQOs) and process used to ensure that the characterization data are suitable for their intended purposes, and a discussion of the rationale for specific data.

Section B.3 Use of Available Knowledge: Includes a discussion of the application of acceptable knowledge and available information for waste characterization.

Section B.4 Sampling and Analysis: Includes a discussion of the proposed sampling and analytical parameters and methods used at SNL/NM and the criteria/rationale for the parameter selection.

Section B.5 Off-Site Waste Acceptance Procedures: Includes a discussion of procedures in place for acceptance of RCRA-regulated waste from off-site facilities.

Section B.6 Special Procedural Requirements: Includes a discussion of the procedures in place for ignitable, reactive, and incompatible wastes; procedures to ensure compliance with land disposal restrictions (LDRs) for on-site activities that require a permit; and procedures to ensure compliance with the requirements of 20 NMAC 4.1.500/40 CFR 264, Subparts AA, BB, and CC [~~10-1-03~~7-1-08].

Section B.7: Records: Includes a discussion of records maintained for waste characterization and analytical data.

B.1 FACILITY DESCRIPTION [20 NMAC 4.1.900/40 CFR 270.14(b)(1)]

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

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

B.1.1 Description of Waste Management Units

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

- Hazardous Waste Management Facility: Container storage and repackaging of RCRA-regulated wastes;
- Thermal Treatment Facility (TTF): Thermal treatment of a specific RCRA-regulated waste stream by open burning in a miscellaneous unit;
- Existing Radioactive and Mixed Waste Management Facility (RMWMF): Container storage and repackaging of RCRA-regulated wastes and treatment of RCRA-regulated wastes in containers;

- Auxiliary Hot Cell Facility (AHCF): Container storage and repackaging of RCRA-regulated wastes and treatment of RCRA-regulated wastes in containers; and

- Manzano Storage Bunkers: Container storage of RCRA-regulated wastes.

The General Part A lists the EPA Hazardous Waste Numbers that may* be assigned to the wastes stored in containers at SNL/NM Units1. The General Part A also lists the EPA Hazardous Waste Numbers that may* be assigned to the wastes that will be treated in containers or the miscellaneous unit at SNL/NM.

B.1.2 SNL/NM Waste-Generating Processes and Activities

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

It is not feasible to provide detailed descriptions of all possible wastes that could be managed at one or more of the SNL/NM Units. Table B-1 summarizes information on RCRA-regulated waste types typically generated at SNL/NM. The following sections contain general descriptions of the typical waste types the associated waste-generating processes and/or activities, and the waste forms associated with each type. For the purposes of this WAP, a waste type is a general category used to describe one or more wastes ~~or waste streams~~ that share key features (e.g., type of waste-generating process, waste form). ~~Also for the purposes of this WAP, a waste stream is defined as waste that is routinely generated as part of a well-defined waste-generating process and is distinguishable from other waste by some unique combination of one or more of the following: specific waste source or generating process; EPA Hazardous Waste Numbers; SNL/NM Unit-specific handling requirements; off-site treatment, storage, and disposal facility (TSDF) handling requirements; LDR status; waste compatibility issues; or waste characterization requirements.~~

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

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

Waste Type Description	Principal Waste-Generating Activitiies~~y~~	Basis for Hazardous Waste Designation	Potential[a] EPA Hazardous Waste Numbers	Potential[a] Hazardous Constituents and/or Characteristics in the Waste
Laboratory Chemical Waste	Weapon systems and components design, development, fabrication, and testing and material research	Acceptable Knowledge[b] supplemented by Sampling and Analysis, as needed	D001 D002 D003 D004-D043 All P- and U-EPA Hazardous Waste Numbers	Ignitability Corrosivity Reactivity Toxicity [c] Discarded commercial chemical products and off-specification species
Contaminated Used Oil	Weapon systems and components design, development, fabrication, and testing, material research, pulsed-power research, reactor safety research, and off-site generated waste	Acceptable Knowledge[b] supplemented by Sampling and Analysis, as needed Fingerprint Analysis[d] (off-site waste)	D001 D002 D003 D004-D043 F001-F005	Ignitability Corrosivity Reactivity Toxicity[c] Spent solvents
Process Wastes	Weapon systems and components design, development, fabrication, and testing, material research, ER Project[e] activities, and off-site generated waste	Acceptable Knowledge[b] supplemented by Sampling and Analysis, as needed Fingerprint Analysis[d] (off-site waste)	D001 D002 D003 D004-D043 F001-F005	Ignitability Corrosivity Reactivity Toxicity[c] Spent solvents
Explosive Waste	Weapon systems and components design, development, fabrication, and testing	Acceptable Knowledge[b] supplemented by Sampling and Analysis, as needed	D001 D002 D003 D004-11~~8~~ ~~D011~~ F001-F005~~3~~	Ignitability Corrosivity Reactivity Toxicity[c]~~Lead~~ ~~Silver~~ Spent solvents~~Acetone~~
Batteries	Weapon systems and components design, development, and testing	Acceptable Knowledge[b] supplemented by Sampling and Analysis, as needed	D001 D002 D003 D005 D006 D007 D008 D009 D011	Ignitability Corrosivity Reactivity Barium Cadmium Chromium Lead Mercury Silver
Elemental Lead	Pulsed-power research, reactor safety research, ER Project and D&D[e] activities, and off-site generated waste	Acceptable Knowledge[b] supplemented by Sampling and Analysis, as needed Fingerprint Analysis[d] (off-site waste)	D008	Lead
Unknown Liquids and Solids	Legacy wastes from historical weapons system design, development and testing; materials research; and ER Project and D&D[e] activities	Acceptable Knowledge[b] supplemented by Sampling and Analysis, as needed	D001 D002 D003	Ignitability Corrosivity Reactivity

Waste Type Description	Principal Waste-Generating Activit~~y~~ies	Basis for Hazardous Waste Designation	Potential[a] EPA Hazardous Waste Numbers	Potential[a] Hazardous Constituents and/or Characteristics in the Waste
			D004-D043	Toxicity[c]

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

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

a “Potential” is defined as possibly present. Additional constituents may* be present on a case-by-case basis.

b “Acceptable knowledge” is broadly defined as process knowledge, supplemental waste analysis data, and/or facility records of analysis (EPA, 1994)

c A solid waste exhibits the characteristic of toxicity if, using the Toxicity Characteristic Leaching Procedure, Test Method 1311 in “Test Methods for Evaluating Solid Waste, Physical/Chemical Methods” (EPA, 1986 and all approved updates), the sample or the extract from a representative sample of the waste contains any of the constituents listed (D004-D043) at a concentration equal to or greater than the respective value given in 20 NMAC 4.1.200/40 CFR 261 Subpart C (~~10-1-03~~7-1-08)

d “Fingerprint analysis” refers to checks and field methods designed to quickly identify chemical properties (e.g., pH, density, chlorine content, etc.)

e ER Project = Environmental Restoration (corrective action) Project. D&D = decontamination and decommissioning.

~~Individual containers of waste packed into a single lab pack container do not constitute a waste stream.~~ RCRA-regulated waste types may* be of uniform composition (i.e., homogeneous) or of dissimilar/diverse composition (i.e., heterogeneous). Table B-1 includes brief waste type descriptions, the associated waste-generating process or activity, and the characterization basis for RCRA-regulated waste designation. Table B-1 also addresses the variability of each waste type by listing the potential EPA Hazardous Waste Numbers and potential hazardous waste constituents and/or characteristics associated with each waste type. Each type of waste may* include one or more wastes and waste streams.

B.1.3 Types of Waste Generated at SNL/NM

RCRA-regulated wastes are stored in containers at various SNL/NM Units. Typical RCRA-regulated waste types are described below. Section 1.2 in the General Part B provides more specific information on waste types that are considered to be acceptable at each Unit, and describes waste-handling practices, including Unit-specific container requirements. All waste types described in this WAP are acceptable for storage at each Unit except the TTF. Characterization of these wastes is discussed in Section B.2.

B.1.3.1 Laboratory Chemical Waste

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

B.1.3.2 Contaminated Used Oil

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

B.1.3.3 Process Wastes

Process wastes, which can be liquid or solid chemicals, solutions, mixtures, wastewaters, or manufactured items, are generated as a result of various activities, including experiments and routine operational processes. Typical RCRA-regulated process wastes include, but are not limited to, acidic solutions, alkaline solutions, oxidizers, and wastewaters. These wastes may* exhibit hazardous waste characteristics (e.g., ignitability, corrosivity, reactivity, toxicity) or be RCRA-regulated listed waste from nonspecific sources (e.g., spent solvents).

B.1.3.4 Explosive (Reactive) Waste

An explosive material is defined as a chemical compound or mixture containing any oxidizing and combustible units, or other ingredients in such proportions, quantities, or packing that ignition by fire, friction, concussion, percussion or detonation of any part thereof may* (and is intended to) decompose with the production of a considerable quantity of heat and gas. Therefore, explosive waste and explosive-contaminated waste exhibit the hazardous waste characteristic of reactivity described in 20 NMAC 4.1.200/40 CFR 261.23 [~~10-1-03~~7-1-08], if they are capable of detonation or explosive reaction when subjected to a strong initiating source or if heated under confinement. Examples of explosive (reactive) waste include components and test units that contain an explosive or explosive fragments, powders, and residues. Some of these wastes also exhibit hazardous waste characteristics of ignitability and/or toxicity.

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

B.1.3.5 Batteries

Batteries, a solid or solid/liquid waste form, are used in numerous SNL/NM activities, and unused or spent waste batteries may* exhibit the hazardous waste characteristics of reactivity, corrosivity, or toxicity (due to the presence of metals such as cadmium, mercury, and lead). Information about the battery content, hazards, and EPA Hazardous Waste Numbers is determined using manufacturer's data. For example, ~~unfired~~ thermal batteries (specialized single-use batteries) contain metals and exhibit the hazardous waste characteristics of reactivity and toxicity; lithium batteries exhibit the characteristic of reactivity; and mercury batteries, silver batteries, and nickel-cadmium batteries exhibit the characteristic of toxicity.

B.1.3.6 Elemental Lead

Solid elemental lead items that cannot be reused (e.g., for radiation shielding or containment) or are in a form that is unsuitable for recycling directly may* be declared waste. These wastes exhibit the hazardous waste characteristic of toxicity. Alternatively, these items may* be managed as scrap metal.

B.1.3.7 Unknown Liquids and Solids

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

B.1.3.8 Contaminated Soil

This waste type includes soil, a solid waste form, from ER Project activities, or other cleanup and excavation operations. Characterization of contaminated soil depends upon the documented historical activities that occurred at the site and the results of site investigation and sampling and analysis activities. Soil may be contaminated with or contain listed waste(s) or exhibit one or more hazardous waste characteristics (i.e., ignitability, reactivity, and/or toxicity).

B.1.3.9 Debris

This waste type includes material generated during cleaning operations, D&D operations, emergency response, waste management, and protection of personnel. These wastes are solid, usually heterogeneous, compactable and non-compactable materials that meet the definition of hazardous debris in 20 NMAC 4.1.800/40 CFR 268.2). Compactable materials include but are not limited to items such as personal protective equipment, rags, wipes, swipes, paper, and filters. Non-compactable materials include but are not limited to equipment, components, electronic hardware, experimental remnants, cables, tools, machining parts or debris, building materials, and glassware. Debris may* be contaminated with or contain RCRA-regulated listed waste(s) and/or exhibit one or more hazardous waste characteristics (i.e., reactivity, corrosivity, ignitability, and/or toxicity).

B.1.3.10 Leachate, Decontamination, Purge, and Treatment Waters

This waste type includes leachate from the Corrective Action Management Unit (CAMU), decontamination, purge, and treatment water (i.e., wastewater) from ER Project, ~~and~~ D&D ~~activities~~, and waste management activities. The hazardous waste characteristics depend upon the documented historical activities that occurred at the site, the results of site investigation(s), and sampling and analysis (if needed). Decontamination, purge, or treatment waters may* be listed waste, contaminated with or contain RCRA-regulated listed waste(s), and/or exhibit a hazardous waste characteristic (i.e., corrosivity and/or toxicity).

B.1.3.11 Treated Waste and Treatment Residuals

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

B.1.3.12 Containment System Liquids

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

B.1.4 Types of Waste Treated at SNL/NM Units

RCRA-regulated waste is treated at the TTF, which is a miscellaneous unit. RCRA-regulated wastes are treated in containers at the RMWMF and AHCF. Typical RCRA-regulated wastes and waste streams that are treated at SNL/NM Units are described in the following sections. Sandia/DOE personnel use the waste characterization procedures described in this WAP (Section B.2) to determine whether treated wastes and treatment residues are RCRA-regulated wastes, to determine whether they meet the treatment standards in 20 NMAC 4.1 800/40 CFR 268, and to assign appropriate EPA Hazardous Waste Numbers.

B.1.4.1 Waste Treated at the TTF

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

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

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

Furthermore, the explosive waste thermally treated at the TTF is not:

- Potentially fragment-producing when treated,

- Explosives that are confined,

- Explosives packaged as a unit with items that could become projectiles (e.g., wood, metal, or plastic) when treated, or

- Unknown or uncharacterized explosives.

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

B.1.4.2 Wastes Treated at the RMWMF and AHCF

RCRA-regulated wastes that are treated at the RMWMF and AHCF may* be generated from specific

R&D processes and activities. Other wastes may* be manufactured items or radioactive mixed wastes that are not amenable to sampling and analysis. Consequently, Sandia/DOE characterize RCRA-regulated wastes and waste streams treated at the RMWMF and AHCF using process knowledge, supplemented by sampling and analysis as needed. The process knowledge often includes knowledge of the item or a full accounting of the raw materials used in generating the waste. To ensure that detailed and accurate waste characterization exists, the process outlined in Section B.2 is used.

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

- Solid items exhibiting the hazardous waste characteristics of ignitability and/or reactivity;
- Solid items (including debris) exhibiting the hazardous waste characteristic of toxicity (excluding the high mercury subcategory) or containing spent solvents or commercial chemical products;
- Liquid wastes and wastewaters exhibiting the hazardous waste characteristics of ignitability, corrosivity, or reactivity; ~~and~~
- Liquid wastes and wastewaters containing toxicity characteristic ~~(TC)~~ constituents and organic compounds~~metals~~; and~~.~~
- Liquid wastes consisting of or containing spent solvents or commercial chemical products.

Treatment processes and the associated treatment goals at the RMWMF and AHCF are discussed in Section 8.0 of Modules III and V, respectively. They include:

- Chemical deactivation to eliminate the hazardous waste characteristics of ignitability, corrosivity, and/or reactivity.
- Thermal deactivation to eliminate the hazardous waste characteristic of reactivity in reactive wastes, including explosives~~ other than primary explosives~~.
- Amalgamation to immobilize elemental mercury into a solid, leach-resistant form.
- Stabilization and/or solidification to immobilize hazardous waste toxicity characteristic metals and/or eliminate free liquids, or both.
- Macroencapsulation to immobilize hazardous constituents.
- Physical treatment to change the physical character of the waste to make it more amenable to subsequent treatment and/or storage, or to reduce waste volume.

The RCRA-regulated wastes to be treated at the RMWMF and the AHCF typically are assigned one or more of the following EPA Hazardous Waste Numbers: D001-D011, D018-D043, and F001-F005. As noted in the Part A, other RCRA-regulated wastes may* also be treated if the treatment methods are appropriate. The EPA Hazardous Waste Numbers for RCRA-regulated waste to be treated at the RMWMF and AHCF are determined through the characterization process described in Section B.2, in which available knowledge is supplemented by sampling and analysis..

B.1.4.2.1 Waste Treated by Chemical Deactivation

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

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

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

Batteries consist of thermal batteries containing reactive materials.

B.1.4.2.2 Waste Treated by Thermal Deactivation

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

~~*Batteries* consist of unfired waste thermal batteries that contain reactive material.~~

- *Explosive waste* consists of explosives and explosive components, and solid items (e.g., paper towels, rags, and wipes) contaminated with static-sensitive explosives. The quantity of explosive (reactive) waste thermally treated at the RMWMF at any one time will be equivalent to 25 grams of trinitrotoluene or less.

B.1.4.2.3 Waste Treated by Amalgamation

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

B.1.4.2.4 Waste Treated by Stabilization and Solidification

RCRA-regulated wastes are treated by stabilization and/or solidification at the RMWMF and AHCF to immobilize hazardous waste toxicity characteristic metals and/or eliminate free liquids.

RCRA-regulated wastes that are stabilized and/or solidified at the RMWMF and AHCF generally consist of liquids, soils, and particulate-type wastes.

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

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

Contaminated soil consists of soils that are contaminated with hazardous waste constituents. This waste is generated primarily from ER Project and other cleanup and excavation operations.

B.1.4.2.5 Waste Treated by Macroencapsulation

RCRA-regulated solid waste items, including debris, are treated by macroencapsulation at the RMWMF and AHCF to immobilize hazardous waste constituents.

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

B.1.4.2.6 Waste Treated by Physical Treatment

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

Unknown solids consist of legacy wastes that originated from historical laboratory activities and can be dismantled. Waste items with hazardous waste constituents vary in size. The wastes typically exhibit the characteristics of ignitability, reactivity, and/or toxicity.

Debris consists of solid, heterogeneous, compactable and non-compactable materials, or solid items such as laboratory equipment or other laboratory items that were used in experiments or other processes that contain or are contaminated with hazardous waste constituents. This waste is generated primarily by R&D, D&D, and ER Project activities.

Commercial products consist of aerosol cans or other pressurized containers of commercial products that often exhibit the hazardous waste characteristics of ignitability and/or toxicity. They may* also be discarded commercial chemical products. This waste is generated by R&D and other activities.

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

The approach to waste characterization is based on use of existing information regarding the chemical and physical nature of the waste or waste stream and the activities that generated it, supplemented by data from sampling and analysis as needed. This approach is consistent with "Joint NRC/EPA Guidance on Testing Requirements for Mixed Radioactive and Hazardous Waste (EPA and U.S. Nuclear Regulatory Commission [NRC], 1997), and with EPA's waste analysis guidance (EPA, 1994).

In this WAP and in the rest of the General Part B, the personnel associated with a RCRA-regulated waste at a given point during management at SNL/NM are sometimes referred to as the "generator" (e.g., the "generator" completes a disposal request). The term "generator," as it appears in this context, is used only to denote an individual person and does not imply the regulatory meaning of "generator" as defined in 20 NMAC 4.1.100/40 CFR 260.10 [~~10-1-03~~7-1-08], particularly with respect to hazardous waste determination as required in 20 NMAC 4.1.300/40 CFR 262.11 [~~10-1-03~~7-1-08]. However, pursuant to 20 NMAC 4.1.100/40 CFR 260.10 [~~10-1-03~~7-1-08], Sandia is a "generator" and a "person" responsible for determining whether a waste is subject to regulation in accordance with
20 NMAC 4.1.300/40 CFR 262.11 [~~10-1-03~~7-1-08]. SNL/NM is a large research facility, and many individuals (including those employed through contract to Sandia) are involved with generation and subsequent management of RCRA-regulated wastes. These include personnel performing research and other waste-generating activities, and personnel performing environment, safety, and health activities (including waste management) to support Sandia operations and comply with regulatory requirements. Hazardous waste determination at SNL/NM is a collaborative effort between the individuals involved with the generation of RCRA-regulated waste and the Unit personnel. This approach is consistent with the process described in EPA's clarifying memo (Cotsworth, 2002).

This section describes the characterization strategy and procedures that apply to RCRA-regulated waste managed at SNL/NM Units. Use of available information is discussed in Section B.3, and sampling and analysis are discussed in Section B.4.

B.2.1 Overall Waste Characterization

Sandia/DOE have established a DQO process to ensure that the information used to characterize wastes for on-site management is adequate for that purpose. Sandia/DOE are able to make required waste determinations and manage RCRA-regulated waste in compliance with applicable regulatory requirements at SNL/NM Units. The process is described below and includes the following key elements:

- Sandia/DOE establish DQOs for waste characterization information (Section B.2.1.1).

- Initial waste generators supply waste characterization information regarding the physical and chemical properties of the waste and the activity generating the waste.

- The information provided by the initial generator, together with available information about waste types and the characterization guidelines in this WAP, is used by Unit personnel to determine what, if any, additional characterization is required.

- The initial generator and Unit personnel collaborate as needed to gather additional information if required for making waste determinations.

- Unit personnel assume responsibility for proper waste management (including additional waste characterization if necessary) when the waste is accepted at one of the SNL/NM Units.

B.2.1.1 Data Quality Objectives

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

Define the Problem. A solid waste is generated at SNL/NM and will be accepted at an SNL/NM Unit for storage. RCRA regulations require that hazardous wastes be identified and such wastes be adequately characterized for management at the Unit in accordance with 20 NMAC 4.1.500/40 CFR 264.13 [~~10-1-03~~7-1-08].

Identify the Questions to be Answered . Is the solid waste a RCRA-regulated hazardous waste? What are the appropriate EPA Hazardous Waste Numbers (waste codes)? Does the waste meet any of the exclusions in 20 NMAC 4.1.200/40 CFR 261.4 at the point of generation? Does the waste meet the definition of a listed hazardous waste in 20 NMAC 4.1.200/40 CFR 261 Subpart D at the point of generation? Does the waste exhibit any hazardous waste characteristics as defined in 20 NMAC 4.1.200/40 CFR 261 Subpart C at the point of generation? Does the RCRA-regulated hazardous waste have any properties that require special management?

Specify the Objectives. The characterization process is designed to provide information needed for DOE/Sandia to:

- Determine whether a solid waste is a RCRA-regulated hazardous waste,

- Assign appropriate waste codes, and

- Determine management requirements.

B.2.1.2 Waste Characterization Process

The initial generator assembles information about the waste and submits it to Unit personnel using a disposal request (DR) or equivalent form that is completed by the initial waste generator. This initial information is supplemented as needed until Unit personnel have sufficient information to accurately characterize the waste. When completed, the DR form includes information necessary for waste determinations; identifying physical form; accurately assigning EPA Hazardous Waste Numbers; and safely handling, storing, and transporting the waste by Unit personnel.

Initial generator-supplied waste description information used to characterize waste includes any of the following as needed and available: the quantity; physical form of the waste (e.g., solid, liquid, gas, wastewater); origin and source (e.g., R&D, ER Project, unused commercial product, activity that generated the waste); and waste characteristics and components (e.g., ignitability, corrosivity, chemicals or hazardous waste constituents, ~~[~~including reactive or explosive constituents)~~]~~ that are contained in the waste, the concentrations and proportions of chemicals and constituents as needed, and other information as needed or applicable (e.g., materials in contact with the waste such as paper or plastic).

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

Unit personnel review the initial-generator-supplied DR forms and associated documentation provided with the forms (e.g., waste process documentation, technical information about the waste, and analytical results) for adequacy, completeness, data reliability, and acceptability. Unit personnel consider each waste individually. Each waste is one of the types described in Section B.1.3 or B.1.4, and Unit personnel use waste type identification to determine whether and what kind of additional information is needed to adequately characterize the waste. Types of additional information are discussed in Section B.3. If analytical data are needed to supplement the available information, they are obtained through sampling and analysis, as described in Section B.4. The information that could be required to characterize wastes for each of the waste types as generated at SNL/NM is summarized in Table B-2.

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

After considering the accumulated information about the waste, its characteristics, the generating activity, and parameters of interest, and their respective regulatory levels, Unit personnel evaluate the waste with respect to the following general questions and determinations:

- If it meets a listing description in 20 NMAC 4.1.200/40 CFR 261 Subpart D[~~10-1-03~~7-1-08], then it is a RCRA-regulated waste.

- If it meets a listing description in 20 NMAC 4.1.200/40 CFR 261 Subpart D and exhibits one or more of the characteristics in 20 NMAC 4.1.200/40 CFR 261 Subpart C (as indicated by knowledge, analytical data, or definitions), then it is a RCRA-regulated waste.

Table B-2
Parameters, Characterization Methods, and Rationale for Types of Wastes Generated at Sandia National Laboratories/New Mexico

Waste Type Description	Characterization Method	Parameter[b]	Rationale
Laboratory Chemical Waste	Acceptable Knowledge[a] supplemented by Sampling and Analysis, as needed	• *Source of waste* • *Available information about waste composition* • *Physical characteristics* • Presence of liquids~~Visual or Paint Filter Liquids Test~~ • Flash point (for liquids), DOT hazard class (for solids)[c] • Stability, DOT hazard class[d] • pH (for liquids) • Hazardous waste metals[e] • Hazardous waste VOCs[e] • Hazardous waste SVOCs[e]	• Determine whether waste meets listing criteria[f] • Determine waste form • Determine presence of free liquids • Determine ignitability, reactivity, and corrosivity characteristics • Determine waste compatibility information • Determine toxicity characteristic
Contaminated Used Oil	Acceptable Knowledge[a] supplemented by Sampling and Analysis, as needed	• *Source of waste* • *Available information about waste composition* • *Physical characteristics* • Flash point • Hazardous waste metals[e] • Hazardous waste VOCs[e] • Hazardous waste SVOCs[e]	• Determine whether waste meets listing criteria[f] • Determine waste form • Determine presence of free liquids • Determine ignitability characteristic • Determine waste compatibility information • Determine toxicity characteristic
Process Wastes	Acceptable Knowledge[a] supplemented by Sampling and Analysis, as needed	• *Source of waste* • *Available information about waste composition* • *Physical characteristics* • Presence of liquids~~Visual or Paint Filter Liquids Test~~ • Flash point (for liquids), DOT hazard class (for solids)[c] • Stability, DOT hazard class[d] • pH (for liquids) • Hazardous waste metals[e] • Hazardous waste VOCs[e] • Hazardous waste SVOCs[e]	• Determine whether waste meets listing criteria[f] • Determine waste form • Determine presence of free liquids • Determine ignitability, corrosivity, and reactivity characteristics • Determine waste compatibility information • Determine toxicity characteristic

Table B-2 (Continued)
Parameters, Characterization Methods, and Rationale for Types of Wastes Generated at Sandia National Laboratories/New Mexico

Waste Type Description	Characterization Method	Parameter[b]	Rationale
Explosive Waste	Acceptable Knowledge[a] supplemented by Sampling and Analysis, as needed	• *Source of waste* • *Available information about waste composition* • *Physical characteristics* • Presence of liquids~~Visual or Paint Filter Liquids Test~~ • Flash point (for liquids), DOT hazard class (for solids)[c] • Stability, DOT hazard class[d] • Hazardous waste metals[e] • Hazardous waste VOCs[e] • Hazardous waste SVOCs[e]	• Determine whether waste meets listing criteria[f] • Determine waste form • Determine presence of free liquids • Determine ignitability and reactivity characteristics • Determine waste compatibility information • Determine toxicity characteristic
Batteries	Acceptable Knowledge[a] supplemented by Sampling and Analysis, as needed	• *Source of waste* • *Available information about waste composition* • *Physical characteristics* • Presence of liquids~~Visual or Paint Filter Liquids Test~~ • Flash point (for liquids), DOT hazard class (for solids)[c] • pH (for liquids) • Stability, DOT hazard class[d] • Hazardous waste metals[e]	• Determine waste form • Determine presence of free liquids • Determine ignitability, corrosivity, and reactivity characteristics • Determine waste compatibility information • Determine toxicity characteristic
Elemental Lead	Acceptable Knowledge[a] supplemented by Sampling and Analysis, as needed	• *Source of waste* • *Available information about waste composition* • *Physical characteristics* • Hazardous waste metals[e]	• Determine waste form • Determine toxicity characteristic

Table B-2 (Continued)
Parameters, Characterization Methods, and Rationale for Types of Wastes Generated at Sandia National Laboratories/New Mexico

Waste Type Description	Characterization Method	Parameter[b]	Rationale
Unknown Liquids and Solids	• Physical Examination • Acceptable Knowledge[a] supplemented by Sampling and Analysis, as needed	• *Source of waste* • *Available information about waste composition* • *Physical characteristics* • Flash point (for liquids), DOT hazard class (for solids)[c] • Stability, DOT hazard class[d] • pH (for liquids) • Hazardous waste metals[e] • Hazardous waste VOCs[e] • Hazardous waste SVOCs[e]	• Determine waste form • Determine presence of free liquids • Determine ignitability, reactivity, and corrosivity characteristics • Determine waste compatibility information • Determine toxicity characteristic
Contaminated Soil	Acceptable Knowledge[a] supplemented by Sampling and Analysis, as needed	• *Source of waste* • *Available information about waste composition* • *Physical characteristics* • Presence of liquids~~Visual or Paint Filter Liquids Test~~ • DOT hazard class (for solids)[c] • Stability, DOT hazard class[d] • Hazardous waste metals[e] • Hazardous waste VOCs[e] • Hazardous waste SVOCs[e]	• Determine whether waste meets listing criteria[f] • Determine waste form • Determine presence of free liquids • Determine ignitability, and reactivity characteristics • Determine waste compatibility information • Determine toxicity characteristic
Debris	Acceptable Knowledge[a] supplemented by Sampling and Analysis, as needed	• *Source of waste* • *Available information about waste composition* • *Physical characteristics* • Presence of liquids~~Visual or Paint Filter Liquids Test~~ • DOT hazard class (for solids)[c] • Stability, DOT hazard class[d] • Hazardous waste metals[e] • Hazardous waste VOCs[e] • Hazardous waste SVOCs[e]	• Determine whether waste meets listing criteria[f] • Determine waste form • Determine presence of free liquids • Determine ignitability, and reactivity characteristics • Determine waste compatibility information • Determine toxicity characteristic

Table B-2 (Continued)
Parameters, Characterization Methods, and Rationale for Types of Wastes Generated at Sandia National Laboratories/New Mexico

Waste Type Description	Characterization Method	Parameter[b]	Rationale
Leachate, Decontamination Purge, and Treatment Waters	Acceptable Knowledge[a] supplemented by Sampling and Analysis, as needed	• *Source of waste* • *Available information about waste composition* • *Physical characteristics* • Flash point • pH • Stability, DOT hazard class[d] • Hazardous waste metals[e] • Hazardous waste VOCs[e] • Hazardous waste SVOCs[e]	• Determine whether waste meets listing criteria[f] • Determine waste form • Determine ignitability, reactivity, and corrosivity characteristics • Determine waste compatibility information • Determine toxicity characteristic or constituent concentrations
Treated Waste and Treatment Residuals	• Acceptable Knowledge[a] • Sampling and analysis, as needed	SEE TABLE B-3	SEE TABLE B-3
Containment System Liquids	Acceptable Knowledge[a] supplemented by Sampling and Analysis, as needed	• *Source of waste* • *Available information about waste composition* • *Physical characteristics* • Flash point • pH • Hazardous waste metals[e] • Hazardous waste VOCs[e] • Hazardous waste SVOCs[e]	• Determine whether waste meets listing criteria[f] • Determine waste form • Determine ignitability and corrosivity characteristics • Determine waste compatibility information • Determine toxicity characteristic

[a] Acceptable knowledge is broadly defined as process knowledge, supplemental waste analysis data, and/or facility records of analysis (EPA, 1994). Acceptable knowledge also includes published information regarding chemical properties.

[b] Parameter selection is based on acceptable knowledge for each waste type. The first three items (shown in italics) are mandatory and constitute the minimum acceptable knowledge. The remaining parameters are optional and will be selected for each waste type as necessary, if the results of the first three parameters indicate additional information is needed. .

Table B-2 (Concluded)
Parameters, Characterization Methods, and Rationale for Types of Wastes Generated at Sandia National Laboratories/New Mexico

[c] The hazardous waste characteristic of reactivity as defined in 20 NMAC 4.1.200/40 CFR 261.23 is based on the properties of the waste and DOT hazard class as identified in 40 CFR 173, and is not measured through analysis.
[d] The hazardous waste characteristic of ignitability as defined in 20 NMAC 4.1.200/40 CFR 261.21 for solids is based on the properties of the waste and DOT hazard class as identified in 40 CFR 173, and is not measured through analysis.
[e] Use of the terms "hazardous waste metals," hazardous waste VOCs," and "hazardous waste SVOCs" refer to hazardous waste as defined in 20 NMAC 4.1.200/40 CFR 261.24 (~~10-1-03~~7-1-08) and to RCRA-regulated waste as defined in the General Part B.
[f] "Listing criteria" refers to hazardous waste as defined in 20 NMAC 4.1.200/40 CFR 261 Subpart D and the exclusion in 20 NMAC 4.1.200/40 CFR 261.3(g).

CFR Code of Federal Regulations
DOT U.S. Department of Transportation
NMAC New Mexico Administrative Code
SVOC semivolatile organic compound
VOC volatile organic compound

- If it does not meet any listing description in 20 NMAC 4.1.200/40 CFR 261 Subpart D but exhibits one or more of the characteristics in 20 NMAC 4.1.200/40 CFR 261 Subpart C (as indicated by knowledge, analytical data, or definitions), then it is a RCRA-regulated waste.

- If it is the same as a previously-generated waste that was a hazardous waste and there have been no substantive changes in the process, then it is a RCRA-regulated waste.

- If it is the same as a previously-generated waste that was not a hazardous waste and there have been no substantive changes in the process, then it is not a RCRA-regulated waste.

- If it similar to other previously- or concurrently-generated wastes that are hazardous wastes, and complete information is not yet available, then Unit personnel may* make a conservative determination that it is a RCRA-regulated waste. For example, if available information indicates toxicity characteristic metals are present but the concentrations are unknown, Unit personnel may* declare the waste exhibits the hazardous waste toxicity characteristic without analytical results.

Once the applicable EPA Hazardous Waste Numbers and physical form have been determined by Unit personnel, the waste is approved for transport to the SNL/NM Unit. Before transporting the waste to the appropriate SNL/NM Unit, Unit personnel visually check to verify that the waste container(s) matches the information on the DR form. If Unit personnel detect discrepancies between the shipping documentation and the waste at pickup, Unit personnel can choose to amend the documentation or have the initial generator correct and resubmit the documentation to Unit personnel for approval. If the waste matches the information on the DR form, the waste is transported to the appropriate Unit. Upon receipt of the waste at a Unit, the characterization documentation becomes part of the Unit operating record. Data from additional characterization activities at the Unit (if such activities are performed) also become part of the Unit operating record. These records will be made available at reasonable times to the NMED, upon request.

Unit personnel serve as initial generators in some cases (e.g., legacy items needing further characterization and/or repackaging, and wastes generated through Unit operations). In these cases, Unit personnel assemble the available information, prepare a disposal request, and follow the process described above, except that the waste is already present at the Unit.

B.2.2 Characterization of Unknown Wastes

Occasionally, wastes of an unknown nature require storage or treatment. For example, unknown wastes may* be generated as a result of a container label becoming detached or illegible. Most unknowns are contained in small containers (less than 1 gallon or 1 pound) and are related to R&D projects. These wastes are handled on a case-by-case basis. The individual waste will be tentatively characterized by knowledge of the operations and activities that were performed in the specific area in which the waste was generated. An on-site visual investigation of an unknown waste is another method utilized to characterize the waste. The visual investigation includes the assessment of the unknown for various properties, such as:

- Physical state,
- Color,
- Age,
- Storage and container conditions,

- Changes in substance,
- Phase separations,
- Quantity of waste,
- Any labeling, and
- Type of operations in the nearby area.

The waste~~material~~ and its proper handling are sometimes positively identified through this investigation. If a positive identification is made, a disposal request is prepared and the waste is characterized as described above. If the unknown cannot be identified after this investigation, a HazCat™ or comparable test is performed to determine the hazard class. Once the hazard class is determined and the waste~~material~~ is safe to transport to the appropriate SNL/NM Unit, the information is recorded on the disposal request, which is processed according to the procedures described above. Additional RCRA waste characterization will typically occur as needed after the waste has been accepted at a SNL/NM Unit.

B.2.3 Characterization of Mixed and Blended Wastes

Initial generators and Unit personnel mix and blend wastes on a limited basis. RCRA-regulated liquid wastes and non-RCRA-regulated wastes may* be mixed/blended together in a single container. These mixing/blending activities are generally limited to compatible wastes, such as oils, or process wastes~~, such as photographic fixers (RCRA-regulated) and photographic developers (non-RCRA-regulated). The resulting mixture is characteristic for silver (D011) and may* be corrosive (D002)~~. Unit personnel may* also combine compatible liquids drained from aerosol cans (commercial chemical products or characteristic liquids) into a single container. The resulting mixture is typically ignitable.

Initial generators provide the following additional information for containers with mixed/blended wastes:

- Approximate amounts of each waste in the mixture

- List of known or potential hazardous waste characteristics and underlying hazardous constituents as defined in 40 CFR 268.2(i) in each waste in the mixture

- Whether the wastes in the mixture include listed hazardous wastes such as spent solvents (based on available information)

Unit personnel consider the additional information when they characterize the waste using the general process described in Section B.2.1.2, and assign the applicable EPA Hazardous Waste Numbers. Unit personnel consider the known or suspected concentrations of hazardous waste constituents and the characteristics of the wastes as they were added to the container, before they were mixed and blended with other wastes. The EPA Hazardous Waste Numbers for each of the component wastes are incorporated into the numbers for the mixture.

B.2.4 Characterization of Wastes to be Treated at SNL/NM

Wastes to be treated at SNL/NM are characterized according to the process described above. In addition to the objectives listed in Section B.2.1.1, wastes to be treated are characterized to

determine one or more of the following, as needed, for each waste:

- Applicable treatment standards, including standards for both characteristic and listed hazardous wastes,
- Appropriate treatment methods to meet the standards,
- Presence of underlying hazardous constituents (UHCs) if applicable,
- Compliance with applicable treatment standards,
- Suitability for treatment by one or more methods available on site to meet treatment standards, and/or
- Suitability for treatment by one or more methods available on site to make the waste safer and more amenable to further management on site or off site.

These characterization criteria are summarized in Table B-3.

B.2.4.1 Waste to be Treated at the TTF

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

- Information from sampling analysis would not improve knowledge of the waste because the explosive (e.g., SASN) and ignitable (e.g., acetone) components of the waste are known as a result of knowledge of process and a well-defined and documented procedure for formulating SASN. Variability occurs ~~only~~ in the relative amounts of non-explosive liquid and solid items. Some variability occurs in the relative amounts of explosives (SASN and PETN).
- There is currently no other available treatment option for this explosive waste stream. Sampling and analysis activities could delay or prevent timely disposition of this waste, affecting the safety of Unit personnel, and causing a threat to human health and the environment
- Personnel document the waste constituents in the operating records for formulation and testing, and sign the documentation. Prior to formulating the explosive slurry, Unit personnel screen the formulation instructions to identify changes. If the formulation has changed, personnel evaluate the constituents to check that the wastes are acceptable for treatment in the TTF. Constituents include the maximum net weight and estimated actual weight of explosives in the waste, and the non-explosive constituents in the waste. Changes in the formulation are included in the documentation for formulation and testing.

Table B-3
Additional Parameters, Characterization Methods, and Rationale for Wastes Treated at Sandia National Laboratories/New Mexico Waste Management Units

Waste Type Description	Characterization Method	Parameter[b]	Rationale
Explosive waste to be treated by open burning/open detonation	Knowledge of Process[a]	• *All characterization information previously obtained* • *Knowledge of treatment process*	• Verify that waste has same characteristics and constituents as previous wastes treated at TTF • Determine treatment standards[g] • Identify UHCs reasonably expected to be present in characteristic waste[f]
Residues from treatment of explosive wastes through open burning/open detonation	Acceptable Knowledge[a] supplemented by Sampling and Analysis, as needed	• *All characterization information previously obtained for untreated waste* • *Physical characteristics* • *Knowledge of treatment process* • Presence of liquids~~Visual or Paint Filter Liquids Test~~ • Flash point (for liquids), DOT hazard class (for solids)[c] • Stability, DOT hazard class[d] • Hazardous waste metalse • UHCs[f]	• Determine whether treated waste meets listing criteria[h] • Determine waste form • Determine presence of free liquids • Determine waste compatibility information • Determine toxicity characteristics • Determine whether waste meets treatment standards, including standards for UHCs[f]
Waste to be treated through chemical deactivation	Acceptable Knowledge[a] supplemented by Sampling and Analysis, as needed	• *All characterization information previously obtained* • *Knowledge of treatment process* • Cyanides and sulfides[d] • UHCs[f]	• Verify that waste is suitable for treatment by planned process • Determine treatment standards • Identify UHCs expected to be present in characteristic waste[f]
Wastes that have been treated through chemical deactivation	Acceptable Knowledge[a] supplemented by Sampling and Analysis, as needed	• *All characterization information previously obtained for untreated waste* • *Physical characteristics* • *Knowledge of treatment process* • Presence of liquids~~Visual or Paint Filter Liquids Test~~ • Flash point (for liquids), DOT hazard class (for solids)[c] • pH (for liquids) • Stability, DOT hazard class[d] • Cyanides and sulfides • UHCs[f]	• Determine whether waste meets listing criteria[f] • Determine waste form • Determine presence of free liquids • Determine ignitability, corrosivity, and reactivity characteristics • Determine waste compatibility information • Determine whether waste meets treatment standards, including standards for UHCs[f]

Table B-3 (Continued)
Additional Parameters, Characterization Methods, and Rationale for Wastes Treated at Sandia National Laboratories/New Mexico Waste Management Units

Waste Type Description	Characterization Method	Parameter[b]	Rationale
Waste to be treated through thermal deactivation	Acceptable Knowledge[a] supplemented by Sampling and Analysis, as needed	• *All characterization information previously obtained* • *Knowledge of treatment process* • UHCs[f]	• Verify that waste is suitable for treatment by planned process • Determine treatment standards • Identify UHCs expected to be present in characteristic waste[f]
Wastes that have been treated through thermal deactivation	Acceptable Knowledge[a] supplemented by Sampling and Analysis, as needed	• *All characterization information previously obtained for untreated waste* • *Physical characteristics* • *Knowledge of treatment process* • DOT hazard class[c] • Stability, DOT hazard class[d] • UHCs[f]	• Determine waste form • Determine ignitability and reactivity characteristics • Determine waste compatibility information • Determine whether waste meets treatment standards, including standards for UHCs[f]
Waste to be treated through amalgamation	Acceptable Knowledge[a] supplemented by Sampling and Analysis, as needed	• *All characterization information previously obtained* • *Knowledge of treatment process*	• Verify that waste is suitable for treatment by planned process • Determine treatment standards
Wastes that have been treated through amalgamation	Knowledge of Process[a]	• *All characterization information previously obtained for untreated waste* • *Physical characteristics* • *Knowledge of treatment process*	• Determine waste form • Determine whether waste meets treatment standards
Waste to be treated through stabilization/ solidification	Acceptable Knowledge[a] supplemented by Sampling and Analysis, as needed	• *All characterization information previously obtained* • *Knowledge of treatment process* • UHCs[f]	• Verify that waste is suitable for treatment by planned process • Determine treatment standards • Identify UHCs expected to be present in characteristic waste[f]

Table B-3 (Continued)
Additional Parameters, Characterization Methods, and Rationale for Wastes Treated at Sandia National Laboratories/New Mexico Waste Management Units

Waste Type Description	Characterization Method	Parameter[b]	Rationale
Wastes that have been treated through stabilization/ solidification	Acceptable Knowledge[a] supplemented by Sampling and Analysis, as needed	• *All characterization information previously obtained for untreated waste* • *Physical characteristics* • *Knowledge of treatment process* • Presence of liquids~~Visual or Paint Filter Liquids Test~~ • Flash point (for liquids), DOT hazard class (for solids)[c] • Stability, DOT hazard class[d] • UHCs[f]	• Determine whether waste meets listing criteria[f] • Determine waste form • Determine presence of free liquids • Determine ignitability and reactivity characteristics • Determine waste compatibility information • Determine whether waste meets treatment standards, including standards for UHCs[f]
Waste to be treated through macro-encapsulation	Acceptable Knowledge[a] supplemented by Sampling and Analysis, as needed	• *All characterization information previously obtained* • *Knowledge of treatment process*	• Verify that waste is suitable for treatment by planned process • Determine treatment standards[i]
Waste that have been treated through macro-encapsulation	Knowledge of Process[a]	• *All characterization information previously obtained for untreated waste* • *Physical characteristics* • *Knowledge of treatment process*	• Determine waste form • Determine whether waste meets treatment standards[i]
Waste to be treated through physical treatment	Acceptable Knowledge[a] supplemented by Sampling and Analysis, as needed	• *All characterization information previously obtained* • *Knowledge of treatment process* • UHCs[f]	• Verify that waste is suitable for treatment by planned process • Determine treatment standards • Identify UHCs expected to be present in characteristic waste[f]
Wastes that have been treated through physical treatment	Acceptable Knowledge[a] supplemented by Sampling and Analysis, as needed	• *All characterization information previously obtained for untreated waste* • *Physical characteristics* • *Knowledge of treatment process* • Presence of liquids~~Visual or Paint Filter Liquids Test~~ • Flash point (for liquids), DOT hazard class (for solids)[c] • Stability, DOT hazard class[d] • pH (for liquids) • Hazardous waste VOCs[e] • Hazardous waste SVOCs[e] • Hazardous waste metals[e] • UHCs[f]	• Determine whether waste meets listing criteria[f] • Determine waste form, including size • Determine presence of free liquids • Determine ignitability, corrosivity, and reactivity characteristics • Determine waste compatibility information • Determine toxicity characteristic • Determine whether waste meets treatment standards, including standards for UHCs[f]

Table B-3 (Concluded)
Additional Parameters, Characterization Methods, and Rationale for Wastes Treated at Sandia National Laboratories/New Mexico Waste Management Units

[a] Acceptable knowledge is broadly defined as process knowledge, supplemental waste analysis data, and/or facility records of analysis (EPA, 1994). Acceptable knowledge also includes published information regarding chemical properties.

[b] Parameters listed are in addition to those shown in Table B-2. Parameters shown in italics are mandatory; the others are selected based on obtaining additional information necessary for treatment or for characterizing the treated waste.

[c] The hazardous waste characteristic of reactivity as defined in 20 NMAC 4.1.200/40 CFR 261.23 [~~10-1-03~~7-1-08] is based on the properties of the waste and DOT hazard class as identified in 40 CFR 173, and is not measured through analysis. The presence of sulfides and cyanides may* cause waste to be reactive.

[d] The hazardous waste characteristic of ignitability as defined in 20 NMAC 4.1.200/40 CFR 261.21 for solids is based on the properties of the waste and DOT hazard class as identified in 40 CFR 173, and is not measured through analysis.

[e] Use of the terms "hazardous waste metals," hazardous waste VOCs," and "hazardous waste SVOCs" refer to hazardous waste as defined in 20 NMAC 4.1.200/ 40 CFR 261.24 [~~10-1-03~~7-1-08] and to RCRA-regulated waste as defined in the General Part B.

[f] Underlying hazardous constituents that are reasonably expected to be present in the untreated waste are part of the treatment standard for wastes exhibiting the hazardous waste characteristics of ignitability, corrosivity, reactivity, or toxicity as defined in 20 NMAC 4.1.200/40 CFR 261 Subpart C (referred to as "characteristic wastes").

[g] Treatment standards are those listed in 20 NMAC 4.1.800/40 CFR 268 Subpart D. Compliance with the treatment standards is determined for treated wastes that will be sent to an off-site TSDF without further treatment.

[h] "Listing criteria" refers to hazardous waste as defined in 20 NMAC 4.1.200/40 CFR 261 Subpart D.

[i] Macroencapsulation is defined in 20 NMAC 4.1.800/40 CFR 268.42 and 268.45

CFR Code of Federal Regulations
DOT U.S~~s~~. Department of Transportation
NMAC New Mexico Administrative Code
SVOC semivolatile organic compound
TSDF Treatment, storage, and disposal facility managing RCRA-regulated wastes
UHC Underlying hazardous constituents
VOC volatile organic compound

B.2.4.2 Waste to be Treated at the RMWMF and AHCF

Wastes to be treated at the RMWMF and AHCF will be characterized based on acceptable knowledge, supplemented by sampling and analysis if necessary before treatment takes place to meet the objectives noted above. For wastes that will be treated to meet the treatment standards, the characterization includes the presence of UHCs that are reasonably expected to be present if UHCs are part of the treatment standards.

B.2.5 Characterization of Treated Wastes

Treated wastes are characterized through knowledge of process, supplemented by analytical data as needed, using the general process described in Section B.2.1.2. In addition to the objectives listed in Section B.2.1.1, treated wastes and residues are characterized to determine one or more of the following, as applicable, for each waste:

- Whether the characteristic of interest has been treated effectively
- Compliance with applicable treatment standards if compliance is a treatment goal,
- Continued presence of UHCs that are reasonably expected to be present in the waste as generated if compliance with applicable treatment standards is a treatment goal,
- Presence of hazardous waste constituents and characteristics that could have been introduced during treatment,
- Whether the treated waste or residue requires further management as a RCRA-regulated waste, and/or
- Suitability for further treatment by one or more methods available on site to make the waste safer and more amenable to further management on site or off site.

These characterization criteria are summarized in Table B-3.

Characterization for treated wastes and residues derived from treatment processes will include consideration of both listed and characteristic wastes that were present in the untreated wastes. In particular, Sandia/DOE will follow the requirements of 20 NMAC 4.1.200/40 CFR 261.3(g) [~~10-1-03~~7-1-08] in characterizing wastes that are listed solely because they exhibit one or more of the characteristics of ignitability, reactivity, or corrosivity.

Wastes that are treated using technologies specified in 20 NMAC 4.1.800/40 CFR 268.40-45 [~~10-1-03~~7-1-08] will not necessarily be subjected to sampling and analysis. Such treatment technologies include but are not limited to physical treatment, deactivation, and macroencapsulation. In these cases, treatment effectiveness will be determined by visual examination of the treated waste and/or knowledge of the treatment process as discussed in Section 8.0 of Modules II, III, and V. Other treated wastes will be subjected to sampling and analysis to characterize the waste and determine the effectiveness of the treatment as appropriate.

B.2.5.1 Treated Wastes at the TTF

Waste residues from the thermal treatment of explosive (reactive) waste at the TTF include decomposition by-products. The principal by-products are ash (carbon) produced from burned solid items (e.g., paper, filters), inert noncombustible solid items (e.g., metal clips and pieces that were part of the solid waste), and gases (i.e., nitrogen, water vapor, carbon dioxide, carbon monoxide, diatomic oxygen, and traces of nitrous oxides) produced by the decomposition of SASN, PETN, acetone, and acetonitrile. Elemental silver is also present in the ash when SASN is treated at the TTF.

The reactive and ignitable characteristics of the residue at the TTF are~~is~~ assessed by visually screening the residue in the burn pan for the presence of unreacted SASN (and PETN, as applicable).

Ash residue generated as a result of the treatment of explosive waste at the TTF is declared to be hazardous waste (D011) based on knowledge of the constituents and treatment process. Alternatively, Sandia/DOE may* use sampling and analysis to determine the silver content of the residue. The contents of the burn pan are containerized and transferred to one of the other SNL/NM Units for storage and transportation to an off-site TSDF. Sandia/DOE will characterize the residue as needed for further treatment or direct disposal at a permitted off-site TSDF.

Because the TTF is located outside, the steel-lined concrete pad periodically collects water from precipitation; the water drains into the catch tank. The water, a containment system liquid, will be characterized in accordance with this WAP~~Unless waste spills, untreated waste "kicks out" (i.e., is ejected from the burn pan) during treatment, or otherwise contaminates the steel-lined concrete pad, the water collected in the catch tank consists of precipitation~~ and managed accordingly. If water collected in the catch tank is known to be contaminated with hazardous waste constituents treated at the TTF, arrangements will be made for disposal into the City of Albuquerque wastewater system with a one-time notice placed in the facility file in accordance with 20 NMAC 4.1.800/40 CFR 268.7(a)(6) [~~10-1-03~~7-1-087-1-08]. If the wastewater cannot be discharged into the City of Albuquerque wastewater system, it will be handled through waste management procedures at one of the other SNL/NM Units.

B.2.5.2 Treated Wastes at the RMWMF and AHCF

Effectiveness of treatment is determined one or more ways that are specific to the type of treatment and the waste undergoing treatment. Evaluations are described in detail in Section 8.3 of Modules III and V. Treated wastes and residues resulting from treatment of RCRA-regulated wastes at the RMWMF and AHCF are characterized using one or more of the following methods:

- Reactive metals, metal-containing particulates, and oxidizers treated by chemical deactivation at the RMWMF and AHCF are deactivated using water, a water/alcohol solution, other organic liquid, or portland cement. Alcohol and other organic liquids may* exhibit the characteristic of ignitability, and can typically be characterized using knowledge of the treatment process. Unit personnel use knowledge of process to determine whether the treated waste exhibits the hazardous waste characteristics of reactivity or ignitability, and the flash point test, as needed, for determination of ignitability. If applicable, t~~T~~he treated wastes are analyzed for the presence of UHCs reasonably expected to be present in the

untreated waste if they will not undergo further treatment on site.

- Corrosive aqueous liquids treated by chemical deactivation at the RMWMF and AHCF are characterized for corrosivity through a pH check. If applicable, t~~T~~he treated wastes are analyzed for the presence of UHCs reasonably expected to be present in the untreated waste if they will not undergo further treatment on site.

- Reactive wastes treated by chemical deactivation at the RMWMF and AHCF are characterized for the presence of sulfides and cyanides through a chemical check if their presence caused the waste to be reactive. If applicable, t~~T~~he treated wastes are analyzed for the presence of UHCs if they will not undergo further treatment on site.

- Reactive ~~batteries and other reactive/~~ and explosive items treated by thermal deactivation at the RMWMF are characterized for reactivity through knowledge of the treatment process and operations. The wastes may* also exhibit the hazardous waste characteristic of toxicity. If applicable, t~~T~~he treated wastes are characterized for the presence of UHCs through process knowledge or analysis if they will not undergo further treatment. Characterization for the presence of UHCs is not necessary if the wastes will be further treated through macroencapsulation either on site or off site.

- Elemental mercury treated by amalgamation at the RMWMF is not subject to further analysis.

- Aqueous liquids treated by stabilization and/or solidification at the RMWMF and AHCF (including liquids that have previously been neutralized) are checked for the presence of free liquids. If applicable, t~~T~~he treated wastes are analyzed for the presence of UHCs reasonably expected to be present in the untreated waste if they will not undergo further treatment on site.

- Oils and organic liquids exhibiting the hazardous waste characteristic of toxicity that are treated by stabilization and/or solidification at the RMWMF and AHCF are characterized through process knowledge or sampling and analysis. If applicable, ~~T~~the treated wastes are analyzed for the presence of the toxicity characteristic constituents and UHCs present or reasonably expected to be present in the untreated waste if they will not undergo further treatment on site.

- Soils and particulates exhibiting one or more of the hazardous waste characteristics of ignitability, reactivity, and toxicity are treated by deactivation and stabilization at the RMWMF and AHCF, and may* contain UHCs. The treated wastes no longer exhibit the characteristics of ignitability and reactivity. The treated wastes are characterized for toxicity (if applicable) through sampling and analysis. If applicable, t~~T~~he treated wastes are analyzed for the presence of UHCs if they will not undergo further treatment on site.

- Wastes exhibiting the characteristic of toxicity and/or containing or contaminated with spent solvents that are treated by macroencapsulation at the RMWMF and AHCF are visually examined to determine whether treatment met the standards.

- Wastes treated by physical treatment include components containing listed wastes and/or exhibiting the characteristics of ignitability, reactivity, corrosivity, and/or toxicity. After the items are successfully detached and separated from larger items, both items are characterized as described in Section B.2.1.2 to determine whether they are RCRA-regulated wastes.

- Wastes that are treated to reduce the size of individual pieces at the RMWMF and AHCF do not undergo further characterization because the treatment does not affect hazardous waste constituents or characteristics of the waste.

- Liquids and pressurized containers treated by physical treatment at the RMWMF are characterized separately following treatment. If the containers are empty, they are no longer RCRA-regulated waste. The collected liquids are characterized in the same manner as mixed and blended wastes (described in Section B.2.3). If the liquids will not undergo further treatment on site, they are characterized to determine compliance with treatment standards applicable to all components, including the presence of UHCs in characteristic wastes when applicable.

B.2.6 Verification and Reevaluation Frequencies [20 NMAC 4.1.500/40 CFR 264.13(a)(3)(i) and 264.13(b)(4); 20 NMAC 4.1.800/40 CFR 268.7(b)]

Sandia/DOE will review air emissions data and status at least once every 12 months for RCRA-regulated wastes subject to 20 NMAC 4.1.500/40 CFR 264, Subpart CC [~~10-1-03~~7-1-08].

As described in previous sections, initial generators and Unit personnel obtain and evaluate information to characterize individual RCRA-regulated wastes managed at the SNL/NM Units. The evaluation needed for a single waste item depends on the item.

The duration of the characterization and its applicability to wastes generated in the future depends on the type of waste. For example, information about the contents of each container of used laboratory chemicals is applicable only to that container; however, information about the chemical composition and hazardous waste characteristics of batteries is applicable to all batteries of the same type.

The Sandia/DOE waste verification process is designed to provide additional assurance that wastes are adequately characterized for management at the Units. The process applies to the verification of wastes ~~and waste streams~~ received at a Unit and designated for storage and/or treatment prior to off-site disposal. Treated wastes are characterized as described in Section B.2.5, and are not subject to the verification and reevaluation procedures described in this section. Unit personnel involved in verification activities are trained and qualified for the activities they perform.

B.2.6.1 Verification of Wastes

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

- Random selection;
- Adequacy of information previously provided by the initial waste generators;

- Recommendations from Unit personnel;
- Incomplete or inconsistent documentation; and
- Other waste-specific criteria.

During each calendar year, Sandia/DOE will verify the characterization ~~using personnel independent of the initial waste characterization~~ for ten ~~one~~ percent by volume of the SNL/NM RCRA-regulated wastes. ~~items that meet all of the following conditions:~~

- ~~The waste is received at a SNL/NM Unit for storage or treatment,~~
- ~~The waste is not part of a waste stream,~~
- ~~The waste was initially characterized through acceptable knowledge,~~
- ~~The waste is not a commercial chemical product, off-specification species, container residue, or spill residue identified in 20 NMAC 4.1.200/40 CFR 261.33 [10-1-03~~7-1-08~~],~~
- ~~The waste is not material in a factory-sealed container or original container, and~~
- ~~The information that would be obtained during the verification is needed for further management of the waste at the SNL/NM Unit (i.e., the verification will be limited to necessary information).~~

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

For wastes that were initially characterized using acceptable knowledge, the independent personnel will review applicable waste characterization documentation to verify that it adequately describes the wastes. Verification analyses, if needed, will be conducted at SNL/NM or an approved laboratory, in conformance with appropriate methods (discussed in Section B-4). In all cases, verification will be limited to the information necessary for the management of the waste at the SNL/NM Unit.

B.2.6.2 Reevaluation of Wastes ~~Streams~~

Characterization information for routinely generated wastes ~~streams~~ is evaluated periodically to verify that they have not changed. Any information that indicates a change in the process that generates the waste and may* affect the waste will cause the waste to be recharacterized no later than the next time the waste is generated.

~~In addition to the verification activities described above for individual wastes, Sandia/DOE will reevaluate initial characterization information for routinely generated RCRA-regulated waste streams as needed for any of the following reasons (Routinely generated waste streams are those that are generated at least once per month in quantities of 30 gallons or greater):~~

- ~~To verify the accuracy of the initial waste characterization when Unit personnel suspect the characterization is not accurate;~~

- ~~To verify that applicable treatment standards have been met for those wastes treated at one of the SNL/NM Units;~~
- ~~When there is a change in a waste-generating process;~~
- ~~When the initial generator requests a review;~~
- ~~When analytical results indicate a change in a waste stream; or~~
- ~~When regulatory requirements change and additional information is required for further management of the waste at SNL/NM Units.~~

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

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

~~In each case,~~ Sandia/DOE will evaluate a single randomly-selected item from the waste stream, and the reevaluation will be limited to information necessary for management of the waste at the SNL/NM Unit. The evaluation will be conducted in the same manner as evaluation of individual wastes. For wastes that were characterized using acceptable knowledge, Unit personnel will review applicable waste characterization documentation to verify that it adequately describes the wastes. Verification analyses, if needed, will be conducted at SNL/NM or an approved laboratory, in conformance with appropriate methods (discussed in Section B-4).

B.3 USE OF AVAILABLE KNOWLEDGE

Sandia/DOE's approach to waste characterization is based on use of existing information (i.e., available knowledge) regarding the chemical and physical nature of the waste or waste stream and the activities that generated it, supplemented by data from sampling and analysis as needed to provide sufficient information to answer the questions discussed in Section B.2.1.1. This approach is consistent with EPA and EPA/NRC guidance (EPA, 1994) and (EPA/NRC, 1997).

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

necessary. Acceptable knowledge will be used to meet all or part of the waste analysis requirements and to direct subsequent sampling and analysis if they are needed.

B.3.1 Acceptable Knowledge [20 NMAC 4.1.500/40 CFR 264.13(a)(2) and 264.13(b)(5); 20 NMAC 4.1.900/40 CFR 270.14(b)(2)]

According to EPA guidance, acceptable knowledge is broadly defined to include process knowledge, supplemental waste analysis data, and/or facility records of analysis (EPA, 1994). Process knowledge is described in 20 NMAC 4.1.500/40 CFR 264.13(a)(2) [~~10-1-03~~7-1-08], as data developed under 20 NMAC 4.1.200/40 CFR 261 [~~10-1-03~~7-1-08] and existing published or documented data on a specific RCRA-regulated waste or a waste generated from similar processes. Supplemental waste analysis data include concentration(s) of hazardous waste constituents and/or results of tests for hazardous waste characteristics to determine whether wastes are RCRA regulated. Records for some unknown liquids and solids may* include waste analysis and/or physical characterization performed prior to the effective date of RCRA regulations. In order to be acceptable, such analytical results must be accurate and applicable to the specified waste and are typically supplemented with other existing information (e.g., published data).

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

- Wastes containing hazardous waste constituents from specific processes that are well documented;

- Wastes consisting of discarded commercial chemical products, reagents, or chemicals containing known physical and chemical constituents (e.g., spent solvents);

- Waste containing levels of radioactivity such that health and safety risks to personnel do not justify sampling and analysis due to quantified and documented radiological concerns; and

- Wastes containing heterogeneous materials, where the physical nature of the waste does not lend itself to taking a representative sample (e.g., laboratory trash and construction debris with surface contamination).

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

B.3.2 Process Knowledge

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

- Detailed information on a waste or waste stream obtained from existing published or documented waste analysis data;

- Studies conducted on RCRA-regulated wastes generated by processes similar to that which generated the waste; and

- Knowledge of the materials and operations that generated the waste and that demonstrates the potential for hazardous constituents in the waste. For example, metals present in debris waste are often associated with specific materials (e.g., lead in leaded rubber or lead shielding).

Process knowledge documentation for each RCRA-regulated waste or waste stream is kept in the operating record of the Unit with other waste characterization information, or in a reference file that includes the documents or identifies them and their locations. The reference file is also part of the operating record. The documentation is explicitly relevant and traceable to a given waste or waste stream. There are many sources of applicable documentation at SNL/NM that are used to substantiate process knowledge for a specific waste or waste stream. Examples of documentation that are used for waste characterization include the following:

- MSDSs, product labels, and other product package information;

- Process design documents;

- Preliminary and final reports and analyses of the operations generating the waste;

- Information from operating procedures, which can include a list of the raw materials or reagents, a description of the process/experiment that uses the materials, and a description of the wastes generated and how the wastes are handled;

- Waste packaging logs;

- Test plans or research project reports that describe the reagents and other raw materials used in an experiment;

- Laboratory notebooks that detail the research processes and raw materials used in an experiment;

- Site databases (e.g., chemical inventory database for Superfund Amendments and Reauthorization Act Title III requirements);

- Information from personnel (e.g., documented interviews);

- Standard industry practice documents (e.g., vendor information);

- Industry reports on a similar process when there is a clear connection between the SNL/NM process/experiment and the industry's similar process/experiment;

- Previous analytical data relevant to the waste or waste stream, including results from fingerprint analyses, spot checks, or routine waste verification sampling;

- Analytical data from studies of common industry processes that are similar to SNL/NM processes. These data can be used to identify the constituents in a specific "similar" process waste and to determine the regulatory status of the waste;

- Sampling and analysis data from comparable wastes or waste streams;

- Analysis of a surrogate waste or waste stream;

- Documented visual inspections to confirm or identify the physical characteristics and packaging of a waste; and

- ER site and waste characterization data.

B.4 WASTE SAMPLING AND ANALYSIS [20 NMAC 4.1.500/ 40 CFR 264.13(a)(1)]

Chemical and physical characterization and/or acceptable knowledge are applicable to all RCRA-regulated waste for management purposes, as required by 20 NMAC 4.1.500/40 CFR 264.13 [~~10-1-03~~7-1-08]. Initial waste generators and Unit personnel select analytical parameters to ensure that the characterization documentation will contain the information necessary to properly treat and/or store waste in accordance with RCRA general facility standards and LDR requirements.

Sandia/DOE will also obtain characterization information to meet the requirements of the off-site TSDFs that accept RCRA-regulated wastes that have been generated at SNL/NM. Management (including disposal) of Sandia/DOE wastes at off-site TSDFs is outside the scope of the permitted activities conducted at SNL/NM, and is not addressed further in this WAP.

Sampling and analytical procedures and sampling frequencies that are applicable to RCRA-regulated waste are discussed in this section. Sampling and analysis is generally performed to provide supplemental information when a waste lacks sufficient process information to adequately characterize the waste based on acceptable knowledge. The approach described for characterizing these wastes is based on the physical, chemical, and hazardous properties of the waste; and on the amount and type of knowledge/information available.

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

B.4.1 Proposed Analytical Parameters and Methods [20 NMAC 4.1.500/40 CFR 264.13(b)(1); 20 NMAC 4.1.900/40 CFR 270.14(b)(2)]

Analytical parameters and characterization methods that are used for RCRA-regulated waste stored and/or treated at SNL/NM Units are summarized in Tables B-2 and B-3. As noted in Sections B.2.1,

and B.2.4, the RCRA regulatory status of these wastes is determined through consideration of the following:

- Acceptable knowledge, supplemented by
- Sampling and analysis to determine the presence (and concentrations) of:
  - Hazardous waste metals (i.e., constituents of characteristic and listed wastes as defined in 20 NMAC 4.1.200/40 CFR 261.24 and Part 261 Subpart D [~~10-1-03~~7-1-08])
  - Hazardous waste volatile organic compounds (VOCs) (i.e., constituents of characteristic and listed wastes as defined in 20 NMAC 4.1.200/40 CFR 261.24 and Part 261 Subpart D [~~10-1-03~~7-1-08])
  - Hazardous waste semivolatile organic compounds (SVOCs) (i.e., constituents of characteristic and listed wastes as defined in 20 NMAC 4.1.200/40 CFR 261.24 and Part 261 Subpart D [~~10-1-03~~7-1-08])
  - Other hazardous waste characteristics (i.e., ignitability, reactivity, corrosivity)
  - UHC metals, volatile organic compounds, and semivolatile organic compounds (defined in 20 NMAC 4.1.800/40 CFR 268..48 [~~10-1-03~~7-1-08]) that are reasonably expected to be present in wastes exhibiting hazardous waste characteristics.
- Fingerprint analysis, or
- HazCat™ or other field tests.

B.4.2 Criteria and Rationale for Parameter Selection [20 NMAC 4.1.500/ 40 CFR 264.13(b)(1)]

As described above, waste analysis parameters are selected to characterize RCRA-regulated waste in conformance with 20 NMAC 4.1.500/40 CFR 264.13(b)(1) [~~10-1-03~~7-1-08], to obtain information necessary to properly store and/or treat waste at SNL/NM Units in accordance with 20 NMAC 4.1.500/40 CFR 264 and 20 NMAC 4.1.800/40 CFR 268 [~~10-1-03~~7-1-08]. The analytical parameters selected to supplement and confirm knowledge-based waste characterization for RCRA-regulated waste types and the rationale for the selected parameters are summarized in Tables B-2 and B-3. Table B-4 identifies the applicable analytical testing requirements and specific test methods for the parameters of interest, including UHCs discussed in Sections B.2.4 and B.2.5.

B.4.3 Waste Sampling

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

Table B-4
Summary of Analytical Characterization Methods Used for Resource Conservation and Recovery Act-Regulated Waste

Parameter	Method Numbers[b]	Rationale
VOC in waste matrix		
Spent halogenated solvents	ASTM Method D4547-91[c] or equivalent method EPA/540/4-91/001[d] or equivalent methods[e]	Determine total and/or TCLP ~~and~~ SVOC/VOC concentration in samples of solids or liquids
	EPA Methods SW-846 (8260~~B~~)[f] or equivalent methods[e]	
Spent nonhalogenated solvents	EPA Methods SW-846 (1311, 8260~~B~~, 8261~~75A~~)[f] or equivalent methods[e]	
	Methods included in 20 NMAC 4.1.600/40 CFR 265.1084(a)(2), (a)(3), and (a)(4)	
Underlying hazardous constituents[a] that are VOCs[a]	ASTM Method D4547-91[c] or equivalent method EPA/540/4-91/001[d] or equivalent methods[e]	Determine whether treated wastes meet treatment standards
	EPA Methods SW-846 (1311, 8260~~B~~, 8261~~75A~~)[f] or equivalent methods[e]	
SVOCs in waste	EPA Methods SW-846 (1311 and 8270~~C~~)[f] or equivalent methods[e]	Determine total and/or TCLP ~~and~~ SVOC concentration in samples of solids or liquids
Underlying hazardous constituents[a] that are SVOCs[a]	EPA Methods SW-846 (1311 and 8270~~C~~)[f] or equivalent methods[e]	Determine whether treated wastes meet treatment standards
Metals in waste	EPA Methods SW-846[f]:	Determine total and/or TCLP concentration in samples of solids or liquids
Arsenic	(1311, 6010~~B~~, 6020, 7000, 7010~~7060A, 7061A~~)[e]	
Barium	(1311, 6010~~B~~, 6020, 7000, 7010~~7080A, 7081~~)[e]	
Cadmium	(1311, 6010~~B~~, 6020, 7000, 7010~~7130, 7131A~~)[e]	
Chromium	(1311, 6010~~B~~, 6020, 7000, 7010~~7190, 7191~~)[e]	
Lead	(1311, 6010~~B~~, 6020, 7000, 7010~~7420, 7421~~)[e]	
Mercury	(1311, 7470~~B~~, 7471~~A~~)[e]	
Selenium	(1311, 6010~~B~~, 6020, 7000, 7010~~7740, 7741A, 7742~~)[e]	
Silver	(1311, 6010~~B~~, 6020, 7000, 7010~~7760A, 7761~~)[e]	
	or equivalent methods[e]	
Underlying hazardous constituents[a] that are metals:	EPA Methods SW-846[f]:	Determine whether treated wastes meet treatment standards
Same metals listed above (except selenium)	same methods for metals listed above	
Antimony	(1311, 6010~~B~~, 6020, 7000, 7010~~7040, 7041~~)[e]	
Beryllium	(1311, 6010~~B~~, 6020, 7000, 7010~~7090, 7091~~)[e]	
~~Cyanides (total)~~	~~(1311, 9010B, 9012A)[e]~~	
~~Cyanides (amendable)~~	~~(1311, 9010B, 9012A)[e]~~	
Nickel	(1311, 6010~~B~~, 6020, 7000, 7010~~7520, 7521~~)[e]	
Thallium	(1311, 6010~~B~~, 6020, 7000, 7010~~7840, 7841~~)[e]	
	or equivalent methods[e]	
Cyanides (total and amenable	(1311, 9010, 9012)[e]	Determine concentration of cyanides
Reactive Sulfide	EPA Methods SW-846, Test Method to Determine Hydrogen Sulfide Released from Wastes[g] or equivalent methods[e]	Determine concentration of reactive sulfides
	EPA Methods SW-846 (9030~~B~~, 9031, 9034)[f] or equivalent methods[e]	

Table B-4 (Concluded)
Summary of Analytical Characterization Methods Used for Resource Conservation and Recovery Act-Regulated Waste

Parameter	Method Numbers[b]	Rationale
Paint Filter Liquids Test	EPA Methods SW-846 (9095)[f] or equivalent methods[e]	Determine presence of free liquids
Flash Point	EPA Methods SW-846 (1010, 1020, 1030)[f] or equivalent methods[e]	Determine ignitability
pH	EPA Methods SW-846 (9040~~B~~, 9041~~A~~, 9045~~C~~)[f] or equivalent methods[e]	Determine corrosivity
Explosives in waste	EPA Methods SW-846 (Appropriate analytical method from the Method 8300 series 8330)[f]	Determine reactivity
Dioxins and furans in waste	EPA Methods SW-846 (1311, 8280, 8290)[f] or equivalent methods[e]	Determine total and/or TCLP concentration in samples of solids or liquids
Underlying hazardous constituents[a] that are dioxin and furan congeners[a]	EPA Methods SW-846 (1311, 8280, 8290)[f] or equivalent methods[e]	Determine whether treated wastes meet treatment standards
Underlying hazardous constituents[a] that are polychlorinated biphenyls[a]	EPA Methods SW-846 (13, 8082, 8275)[f] or equivalent methods[e]	Determine whether treated wastes meet treatment standards
Pesticides in waste	EPA Methods SW-846 (1311, 8140, 8141, 8081, 8085)[f] or equivalent methods[e]	Determine total and/or TCLP concentration in samples of solids or liquids
Underlying hazardous constituents[a] that are pesticides[a]	EPA Methods SW-846 (1311, 8140, 8141, 8081, 8085)[f] or equivalent methods[e]	Determine whether treated wastes meet treatment standards
Herbicides in waste	EPA Methods SW-846 (1311, 8150, 8151)[f] or equivalent methods[e]	Determine total and/or TCLP concentration in samples of solids or liquids
Underlying hazardous constituents[a] that are herbicides[a]	EPA Methods SW-846 (1311, 8150, 8151)[f] or equivalent methods[e]	Determine whether treated wastes meet treatment standards

[a] Analyses are limited to determining whether treated wastes meet the universal treatment standards for the underlying hazardous constituents that can reasonably be expected to be present at the point of generation of the hazardous waste, as provided in 20 NMAC 4.1.800/40 CFR 268.48 [~~10-1-03~~7-1-08].
[b] Sandia/DOE use the most current methods for analysis. Method numbers are subject to change through future updates and may* vary from those shown in this table.
[c] American Society for Testing and Materials, 1991, "Standard Practice for Sampling Waste and Soils for Volatile Organic Compounds," ASTM D4547-91, *Annual Book of ASTM Standards*, Philadelphia, Pennsylvania, American Society for Testing and Materials. (ASTM, 1991)
[d] U.S. Environmental Protection Agency (EPA), 1991, "Soil Sampling and Analysis for Volatile Organic Compounds," EPA 1/540/4-91/001, Office of Research and Development. (EPA, 1991)
[e] Equivalent methods may* be substituted to accommodate waste-specific properties.
[f] U.S. Environmental Protection Agency, 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
[g] SW-846, Section 7.3.4.2 contains specialized methods to determine if a sulfide-containing waste exhibits the reactivity characteristic.

A number of criteria are considered in determining how many samples are required, how sampling locations are selected, and how frequently sampling should be repeated. If the waste is a highly uniform waste stream from a single process location, one grab sample collected periodically is sufficient. However, if a single waste type is a mixture of materials generated in several locations

under varying conditions through time, more samples will be required, and composite sampling may* be appropriate. At a minimum, the sampling is repeated if the waste-generating process changes in a material way, or if inspection of the waste reveals it has changed.

Appendix I of 20 NMAC 4.1.200/40 CFR 261 [7-1-08~~10-1-03~~7-1-08] lists specific guidance documents that detail sampling protocols for different waste types. Waste samples collected in accordance with these protocols are considered representative by EPA. The protocols include standards developed by the American Society for Testing and Materials (ASTM) and portions of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846" (EPA, 1986 and all approved updates), hereinafter referred to as SW-846. Personnel involved in sampling and analysis comply with relevant and applicable protocol that is consistent with SW-846 or other equivalent methods. Detailed sampling recommendations and guidance are provided in Chapter 9 of SW-846. These methods are designed to ensure that representative waste samples are consistently collected and transferred to the responsible laboratory in a manner that maintains sample integrity.

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

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

- Sampling activities are conducted in a manner that minimizes the generation of waste;

- If the sampling or analysis of the waste would pose a serious threat to human health, Sandia/DOE will forego sampling and analysis;

- For heterogeneous solid items, such as contaminated debris, samples will be obtained from areas that are most likely to be contaminated, based on visual inspection of the waste or knowledge of the activity that generated the waste;

- For solid items whose surface is suspected to be contaminated with RCRA-regulated waste, such as contaminated equipment, surface ~~wipe~~ samples will be taken by an appropriate method;

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

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

- For liquid or solid waste items in multiple containers, the sampling strategy will be consistent with SW-846, Chapter 9~~one sample will be taken for each container or each 55 gallons of waste, whichever is larger~~;

- ~~For solid items in multiple containers, one sample will be taken for each container or each 10 cubic yards of waste, whichever is larger; and~~

- Handling and collection techniques are consistent with SW-846 and conducted to preserve the nature of the waste sample.

Table B-5 lists the applicable requirements specified in SW-846 regarding sample containers, preservation techniques, and holding times associated with sample collection.

B.4.4 Waste Analysis

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

Table B-5
Recommended Sample Containers[a], Preservation Techniques, and Holding Times[b]

Analyte Class and Sample Type	Container	Preservative	Holding Time
Volatile Organics			
Concentrated Waste Samples:	Method 5035[b]: ~~40-milliliter (mL) vials with stirring bar~~See method. Method 5021: See method. Methods 5031 & 5032: ~~125-mL WM[c]-G[d].~~See methods. Use ~~Teflon~~polytetrafluoroethylene (PTFE)-lined lids for all procedures.	Cool to 4° degrees Celsius (°C)[e] and adjust pH to less than 2 with H_2SO_4, HCl, or solid $NaHSO_4$.	14 days
Aqueous Samples:			
No Residual Chlorine Present	Methods 5030, 5031, & 5032: 2 x 40-mL vials with ~~Teflon~~ PTFE-lined septum caps.	Cool to 4°C 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~~PTFE-lined septum caps.	Collect sample in a 125-mL container which has been pre-preserved with 4 drops of 10% sodium thiosulfate solution. Gently swirl to mix sample and transfer to a 40-mL volatile organic analysis (VOA) vial. Cool to 4°C 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~~PTFE-lined septum caps.	Adjust to pH of 4-5. Cool to 4°C	14 days
Soil/Sediments and Sludges:	Method 5035: See method~~40-mL vials with stirring bar~~. Method 5021: See method. Methods 5031 & 5032: See methods~~125-mL WM[c]-G[d]~~. Use ~~Teflon~~PTFE-lined lids for all procedures.	See the individual method	14 days
Semivolatile Organic Compounds/Organochlorine Pesticides and Herbicides			
Concentrated Waste Samples:	125 mL WM[c]-G[d] with ~~Teflon[e]~~PTFE-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[e]~~PTFE-lined lid	Cool to 4°C	~~Samples must be extracted within~~ 14 days ~~and analyzed within 40 days following extraction.~~

Table B-5 (Concluded)
Recommended Sample Containers[a], Preservation Techniques, and Holding Times[b]

Analyte Class and Sample Type	Container	Preservative	Holding Time
Liquid Samples:			
No Residual Chlorine Present	~~1-gallon (gal.), 2 x 0.5 gal., or~~ 4 x 1 liter (L) AG[g] ~~container~~ with ~~Teflon~~PTFE-lined lid, or other size, as appropriate, to allow use of entire sample for analysis	Cool to 4ºC	~~Samples must be extracted within~~ ~~7~~14 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~~ PTFE-lined lid, or other size, as appropriate, to allow use of entire sample for analysis	Add 3-mL 10% sodium thiosulfate solution per gallon (or 0.008%). ~~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~~14 days ~~and extracts analyzed within 40 days following extraction~~
Polychlorinated Biphenyls, Polychlorinated Dibenzo-p-dioxins, and Polychlorinated Dibenzofurans			
Concentrated Waste Samples	125-mL WM[c]-G[d]	None	14 days
Soil/Sediments and Sludges	250 mL WM[c]-G[d] with PTFE-lined lid	Cool to 4ºC	14 days
Liquid Samples:			
No Residual Chlorine Present	4 x 1 liter (L) AG[f] with PTFE-lined lid, or other size, as appropriate, to allow use of entire sample for analysis	Cool to 4ºC	14 days
Residual Chlorine Present	4 x 1-L AG[f] with PTFE-lined lid, or other size, as appropriate, to allow use of entire sample for analysis.	Add 3-mL 10% sodium thiosulfate solution per gallon (or 0.008%). Cool to 4ºC.	14 days
Metals			
Liquid~~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
Cyanide	500-mL WM[c]-P[h] or G[d]	Cool to 4ºC. See method for preservation if oxidizing agents or interferences are present.	14 days

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

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

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

[c] WM = Wide-mouth

[d] G = Glass

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

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

[g] AG = Amber glass

[h] P = Polyethylene

Solid items may* be heterogeneous or homogeneous. If necessary for waste characterization purposes, these solids will be analyzed for total concentrations of hazardous waste metals, VOCs, and SVOCs (see Table B-4 for specific analytical methods). If necessary for waste characterization purposes, homogeneous wastes will be sampled and analyzed for the TC constituents listed in 20 NMAC 4.1.200/40 CFR 261.24 [~~10-1-03~~7-1-08]. If analysis for total concentration of TC constituents will be performed on samples, it will be done as a screening step, as described in Section 1.2 of Method 1311, Toxicity Characteristic Leaching Procedure (TCLP). If total concentrations are used in the waste characterization process, analytical data will be compared to the TC regulatory levels expressed as total values. These total values will be considered the regulatory threshold limit (RTL) values for the determination of whether a particular waste exhibits a TC. RTL values are obtained by calculating the weight/weight concentration (in the solid) of a TC constituent that would give the regulatory weight/volume concentration in the TCLP extract. If the total concentrations are less than the RTL value, the waste cannot exhibit the toxicity characteristic and the TCLP does not need to be completed for the screened TC constituents.

Liquid wastes typically consist of aqueous solutions, slurries, and organic liquids. If necessary for waste characterization purposes, these wastes will be sampled and analyzed for total concentrations of hazardous waste metals, VOCs, SVOCs, and for the hazardous waste characteristics of ignitability, reactivity, corrosivity, and toxicity (see Table B-4 for specific analytical methods). In accordance with Method 1311 (TCLP), liquid wastes (i.e., those wastes that contain less than 0.5 percent dry solids) do not require extraction. The liquid waste, after filtration, is defined as the TCLP extract. Liquid waste, therefore, will be characterized by filtering the waste, measuring total constituent concentrations in the resulting filtrate, and comparing these concentrations to the TC regulatory levels in 20 NMAC 4.1.200/40 CFR 261.24 [~~10-1-03~~7-1-08].

B.4.4.1 Sample Handling, Preservation, and Storage

Table B-5 lists QA/QC requirements specified in SW-846 regarding sample containers, preservation techniques, and holding times associated with sample collection. Adherence to these requirements will ensure that sampling and analysis meet quality objectives for data. In the event that the specified criteria are not met, Sandia/DOE will evaluate the data for usability.

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

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

B.4.4.2 Analytical Laboratory Selection and Analytical Methods [20 NMAC 4.1.500/40 CFR 264.13(b)(2)]

Analytical laboratories will perform the detailed qualitative and quantitative chemical analyses specified in SW-846 or equivalent methods that are listed in Table B-4 and applicable to the parameter(s) associated with a particular waste type. These laboratories must have:

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

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

- The physical form of the waste,
- Constituents of interest,
- Required detection limits (e.g., regulatory thresholds), and
- Information requirements (e.g., waste characterization, verifying compliance with LDR treatment standards for wastes treated at an SNL/NM Unit).

Collectively, these factors contributed to the selection of the analytical methods specified in Table B-4. Approved laboratories that meet the above criteria will analyze waste samples for hazardous waste constituents (e.g., VOCs, SVOCs, and metals) and characteristics (i.e., ignitability, reactivity, corrosivity, toxicity), according to the specifications in Table B-4.

B.5 OFF-SITE WASTE ACCEPTANCE PROCEDURES [20 NMAC 4.1.500/ 40 CFR 264.13(a)(3)(ii) and (a)(4), 264.13(b)(5), and 264.13(c)]

RCRA-regulated wastes from off-site sources will be accepted at SNL/NM. These wastes and sources include:

- RCRA-regulated wastes generated by Sandia employees (or contractors in the service of Sandia) outside the KAFB boundary will be accepted for storage and/or treatment if the wastes are properly characterized and transported.
- Wastes or waste residuals associated with off-site treatment of Sandia/DOE wastes or waste streams managed or treated by off-site facilities will be returned to SNL/NM for storage and/or treatment if all such wastes are properly characterized and transported.
- Wastes will be received from other (non-Sandia) off-site DOE facilities for final characterization, storage, treatment, and/or transport to other off-site facilities, only if all such wastes are properly characterized and transported.

The general waste acceptance procedures that will be used when RCRA-regulated wastes are accepted from off-site sources are discussed below. These procedures will be used to meet the requirements of 20 NMAC 4.1.500/40 CFR 264.13(a)(3)(ii), 264.13(a)(4), 264.13(b)(5), and 264.13(c) [~~10-1-03~~7-1-08]. The process used for managing off-site wastes at SNL/NM is diagrammed in Figure B-1 and explained below.

The basis for characterization of RCRA-regulated wastes or waste streams to be accepted by Sandia/DOE is generator documentation of the waste. Prior to waste shipment to SNL/NM, the appropriate Unit personnel receive a waste transfer request and characterization data from an off-site generator. Unit personnel review the request from the off-site generator for completeness and conformance with the waste characterization objectives and process described in Section B.2 of this WAP.

For wastes received from off-site small quantity and large quantity generators, Sandia/DOE will require an LDR notification that addresses LDR requirements applicable to the specific waste type and will inform the generators in writing that Sandia/DOE has the appropriate permit(s) for and will accept the waste (20 NMAC 4.1.500/40 CFR 264.12[b] [~~10-1-03~~7-1-08]).

After the documentation has been reviewed and determined to be complete, the waste will be shipped to SNL/NM where the shipment records, LDR Notification Forms (if needed), Uniform Hazardous Waste Manifest (if needed), and proper generator signatures are reviewed to ensure the accuracy and completeness of documentation and compliance with container management requirements. If discrepancies are found, acceptable options for resolution include shipment of the waste back to the off-site generation facility, or temporary storage pending further analysis or characterization.

B.5.1 Waste Manifest Verification

Each Uniform Hazardous Waste Manifest that accompanies a waste shipment is checked for the following information:

- The shipment identification number;
- The name, address, and EPA identification number of the generator;
- The name and EPA identification number of the transporter;
- The destination of the waste shipment (i.e., SNL/NM) including the facility address and EPA identification number;
- Any EPA Hazardous Waste Numbers
- The proper U.S. Department of Transportation (DOT) shipping name and number;
- The quantity (e.g., weight) of waste in the shipment;

- The number and type of containers in the shipment; and
- A signed and dated certification of the contents of the shipment.

B.5.2 Waste Shipment Verification

A visual inspection of the shipment will be conducted by Unit personnel to ensure that the number and type of container(s) match the manifest and the labeling on the container(s) is complete and matches the manifest. If discrepancies are found, acceptable options for resolution include shipment of the waste back to the off-site generation facility, or temporary storage pending further analysis or characterization. If any discrepancies between the shipment and associated documentation are found that cannot be resolved within 15 days after receiving the waste, Sandia/DOE will send a notification to the New Mexico Environment Department in accordance with 20 NMAC 4.1.500/40 CFR 264.72 [~~10-1-03~~7-1-08].

B.5.3 Waste Description Verification

Unit personnel review waste data, including acceptable knowledge, sampling and analysis data, and treatment records for completeness following the process described in Section B.2 of this WAP. The exact parameters to be verified are determined by Unit personnel at the time of waste receipt, based upon the generator-supplied information .

Fingerprint analyses will typically be conducted by Unit personnel for waste received from off site in one-time quantities larger than 30 gallons to verify the waste characterization information provided by the generator. The parameters (e.g., specific gravity, color, flash point, and pH) that are tested by fingerprint analysis are based on the information provided by the generator and the expected characterization of the waste.

If the fingerprint analyses results do not match the waste characterization designated on the accompanying Uniform Hazardous Waste Manifest, Unit personnel will perform waste characterization analyses described in Section B.4 of this WAP or send the waste back to the facility where it was initially generated.

B.6 SPECIAL PROCEDURAL REQUIREMENTS [20 NMAC 4.1.500/40 CFR 264.13(b)(6)]

RCRA-regulated waste management requirements specific to ignitable, reactive, and incompatible waste, as well as for compliance with LDR and 20 NMAC 4.1.500/40 CFR 264, Subparts AA, BB, and CC [~~10-1-03~~7-1-08] regulations, are described below.

B.6.1 Procedures for Ignitable, Reactive, and Incompatible Wastes

Pursuant to 20 NMAC 4.1.500/40 CFR 264.17 [~~10-1-03~~7-1-08], Unit personnel take the necessary precautions to prevent accidental ignition or reaction of wastes at SNL/NM Units. Unit personnel also take the necessary precautions to ensure that incompatible wastes are identified and managed

appropriately. These precautions are described in Section 1.1.2 of the General Part B and in Section 1.2.2 of each Unit-specific module.

As described in those sections, Sandia/DOE rely on waste characterization data and/or published chemical information (e.g., "NIOSH Pocket Guide to Chemical Hazards" [DHHS, 1994] or other chemical or engineering handbooks) for each waste in a planned treatment or repackaging operation involving ignitable, reactive, and incompatible wastes. This includes, but is not limited to, the segregation of these wastes according to compatibility groups (e.g., flammables/ignitables, oxidizers, corrosive acids, reactive with water, corrosive bases, and other reactives) and by the physical nature of the waste (i.e., liquids and solids).

B.6.2 Procedures to Ensure Compliance with LDR Requirements [20 NMAC 4.1.800/40 CFR 268.7(b), 268.9(b), and 268.9(d)]

Pursuant to 20 NMAC 4.1.800/40 CFR 268 [~~10-1-03~~7-1-08], Sandia/DOE will comply with LDR requirements for wastes stored or treated at the SNL/NM Units through compliant management of wastes subject to LDR storage prohibitions, and through characterization of treated waste (i.e., RCRA-regulated wastes treated at SNL/NM Units) for LDR compliance, and processing of the applicable LDR certifications and notifications for such treated wastes.

B.6.2.1 Storage Prohibitions (20 NMAC 4.1.800/40 CFR 268.50)

RCRA-regulated wastes are restricted from land disposal under 20 NMAC 4.1.800/40 CFR 268, Subpart C [~~10-1-03~~7-1-08] unless they meet the treatment standards in 20 NMAC 4.1.800/40 CFR 268 Subpart D. Restricted wastes (i.e., wastes that do not meet the applicable treatment standards) can be stored for up to one year at SNL/NM Units in compliance with 20 NMAC 4.1.800/40 CFR 268.50. Sandia/DOE assume that all of the RCRA-regulated wastes at SNL/NM are restricted from land disposal (i.e., they do not meet the applicable treatment standards) and apply the one-year storage limit to all RCRA-regulated wastes stored at any Unit except as noted below:

- RCRA-regulated wastes that are subject to the Federal Facilities Compliance Order (FFCO) (NMED 1995, as amended) between DOE, Sandia, and NMED can be stored at SNL/NM Units for more than one year even if they do not meet the treatment standards. Information about FFCO applicability is maintained in the operating record described in Section 9.0 of the General Part B.

- RCRA-regulated wastes that are not subject to the FFCO and do not meet the treatment standard(s) could be stored at SNL/NM Units for more than one year, solely for the purpose of accumulating sufficient quantities of RCRA-regulated waste to facilitate proper recovery, treatment, or disposal, in accordance with 20 NMAC 4.1.800/40 CFR 268.50(c). Information regarding proper recovery, treatment, or disposal is maintained in the operating record described in Section 9.0 of the General Part B.

- RCRA-regulated wastes that meet the treatment standards are not subject to the one-year storage limit. These wastes are characterized to determine compliance with the applicable treatment standard(s) using the process described in Section B.6.2.2. Analytical data or other information demonstrating compliance with the applicable treatment standard(s) is maintained in the operating record described in Section 9.0 of the General Part B.

B.6.2.2 Characterization for LDR Compliance: Wastes Generated Through Treatment of RCRA-Regulated Wastes at SNL/NM Units

RCRA-regulated waste generated through treatment at SNL/NM Units (e.g., treated waste, treatment residue) is characterized to determine whether it meets the applicable LDR treatment standards in 20 NMAC 4.1.800/40 CFR 268, Subpart D [~~10-1-03~~7-1-08] associated with the treatment performed. The information required of Sandia/DOE as the generator of the treated waste is dependent on any subsequent treatment that will be performed and the ultimate disposal method; therefore, Sandia/DOE characterize the treated waste specifically to meet the requirements of the off-site TSDF receiving it. The requirements of the off-site TSDF are based on their permit conditions and the treatment and/or disposal method.

Waste that must meet concentration-based treatment standards prior to shipment off site for disposal will be evaluated to determine if applicable constituent concentration levels have been attained, as described in Section B.2.5. Section B.2.5 includes a discussion of the criteria used to determine if acceptable knowledge is appropriate for characterizing a waste or waste stream with respect to LDR compliance. Likewise, if a waste must be treated by one or more specified treatment methods (e.g., macroencapsulation) prior to land disposal, analytical testing to certify LDR compliance for the waste before treatment is generally not necessary, as described in Section B.2.5.

If acceptable knowledge or use of a specified treatment technology is not appropriate for determining LDR compliance status, the treated waste will be sampled and analyzed to certify that it meets LDR treatment standards. The analysis will determine the total concentration of hazardous waste constituents in the treatment residue, or the concentrations of hazardous waste constituents in an extract of the residue obtained using Test Method 1311 in SW-846, as appropriate for the individual waste. Analytical results obtained in support of LDR requirements will be retained within the Unit operating record. Characterization of treatment residues for LDR compliance will include hazardous waste constituents that were introduced as part of the treatment process, as discussed in Section B.2.5.

For wastes generated through treatment at one of the SNL/NM Units, SNL/NM will comply with the applicable requirements of 20 NMAC 4.1.800/40 CFR 268.7(b), 268.9(b) and (d), 268.40(c), and 268.49 [~~10-1-03~~7-1-08]. RCRA-regulated treatment residues that are determined through analysis or acceptable knowledge to meet treatment standards as specified in 20 NMAC 4.1.800/40 CFR 268, Subpart D [~~10-1-03~~7-1-08], will be sent to a permitted TSDF for disposal without further treatment. Wastes that have been generated through treatment using technologies specified in 20 NMAC 4.1.800/40 CFR 268.42, 268.44, or 268.45 [~~10-1-03~~7-1-08] will also be sent to a permitted TSDF for disposal without further treatment. Residues that do not meet all of the applicable treatment standards will be sent to a permitted TSDF for further treatment.

Whenever Sandia/DOE send treated waste to an off-site TSDF for treatment and/or disposal as described above, it is in accordance with that facility's waste acceptance criteria. For treated wastes and residues generated at Units through treatment operations described in the General Part B and Unit-specific modules, Unit personnel review the LDRs as they relate to the further treatment and/or disposal of the treated waste at the TSDF that will accept the waste. Sandia/DOE obtain approval from the TSDF and meet TSDF-specific waste analysis requirements (including LDR requirements) prior to shipment.

Part of this review includes evaluating the waste for UHCs and Universal Treatment Standards for the treated wastes, and documenting the results of the evaluation as part of the certification

process. UHCs must be declared if reasonably expected to be present in D001 through D043 wastes. Unit personnel complete an appropriate LDR notification form (including signed certification) that accompanies the Uniform Hazardous Waste Manifest as part of the shipping documentation to the TSDF. Records are maintained at Sandia/DOE as discussed in Section 9.0 of the General Part B.

B.6.2.3 Characterization for LDR Compliance: Wastes From Off-Site Sources

For wastes received from off-site large quantity generators, Sandia/DOE will require an LDR notification that addresses LDR requirements applicable to the specific waste type. If off-site wastes are treated at SNL/NM, Sandia/DOE will comply with the requirements of 20 NMAC 4.1.800/40 CFR 268.7(b) [~~10-1-03~~7-1-08] as discussed above.

When shipping the waste to an off-site TSDF, Sandia/DOE will use the process described in Section B.5.2.2 for characterizing the waste in accordance with that facility's waste acceptance criteria.

B.6.3 Procedures to Ensure Compliance with Air Emission Requirements [20 NMAC 4.1.500/40 CFR 264, Subparts AA, BB, and CC]

Sandia/DOE manage wastes that are subject to some of the requirements in 20 NMAC 4.1.500/ 40 CFR 264, Subparts AA, BB, and CC [~~10-1-03~~7-1-08] as discussed in Section 1.1.4.6 of the General Part B. Sandia/DOE wastes and waste streams described in this WAP may* be subject to 20 NMAC 4.1.500/40 CFR 264, Subpart CC [~~10-1-03~~7-1-08], "Air Emission Standards for Tanks, Surface Impoundments, and Containers," based on applicability criteria specified in 20 NMAC 4.1.500/
40 CFR 264.1080 [~~10-1-03~~7-1-08]. For wastes that are not eligible for exemption under 20 NMAC 4.1.500/40 CFR 264.1080(b) [~~10-1-03~~7-1-08], Sandia/DOE will address the applicable 20 NMAC 4.1.500/40 CFR 264, Subpart CC [~~10-1-03~~7-1-08] requirements for control of air pollutant emissions from each Unit subject to the regulations, as follows:

- In lieu of determining the concentration of VOCs in a waste or waste stream at the point of origination, Sandia/DOE may* declare that a container holding waste that contains VOCs is subject to the requirements of 20 NMAC 4.1.500/40 CFR 264 Subpart CC.

- To establish 20 NMAC 4.1.500/40 CFR 264, Subpart CC [~~10-1-03~~7-1-08] applicability for a specific waste or waste stream, the initial generator will follow the waste determination procedures specified in 20 NMAC 4.1.500/40 CFR 264.1083(a) [~~10-1-03~~7-1-08] to determine the concentration of VOCs in the waste or waste stream at the point of origination and document this determination or assume/declare that the waste is subject to 20 NMAC 4.1.500/40 CFR 264, Subpart CC [~~10-1-03~~7-1-08] as listed above. Acceptable knowledge or process knowledge will be used to make this determination; however; if sampling and analysis is necessary, it will be performed in accordance with the approved methods listed in Tables B-4 and B-5.

- Whenever changes to the source generating the waste stream are reasonably likely to cause the average VOC concentration of the RCRA-regulated waste to increase to a level that is equal to or greater than the applicable VOC concentration limits specified in 20 NMAC

4.1.500/40 CFR 264.1082, a new waste determination will be performed, as specified in 20 NMAC 4.1.500/40 CFR 264.1083(a)(1)(ii).

- The characterization documentation for VOCs will be reviewed by the Unit personnel as part of the characterization process discussed in Section B.2. If process knowledge in accordance with 20 NMAC 4.1.600/40 CFR 265.1084(a)(4) is insufficient, sampling and analysis of the waste will be required, in accordance with 20 NMAC 4.1.600/40 CFR 265.1084(a)(3) [~~10-1-03~~7-1-08].

- RCRA-regulated wastes containing VOCs that are newly generated through treatment will be characterized for VOC content in accordance with 20 NMAC 4.1.600/40 CFR 265.1084(b) [~~10-1-03~~7-1-08] if the waste being treated contains VOCs, and/or the treatment process involves VOCs.

- Routinely-generated RCRA-regulated wastes that are subject to 20 NMAC 4.1.500/40 CFR 264, Subpart CC [~~10-1-03~~7-1-08], will be reviewed and updated at least once every 12 months (20 NMAC 4.1.500/40 CFR 264.1082(c)(1) [~~10-1-03~~7-1-08]) to determine whether the Subpart CC requirements continue to apply.

B.7 RECORDS

Once Unit personnel have adequate characterization for a RCRA-regulated waste, the information is typically entered into a waste tracking database. Each package (the smallest discrete waste item) is assigned a unique identification and tracking number before it is picked up and transported to a Unit. Characterization information and analytical data associated with the package is either in paper or electronic format. Unit personnel perform activities that affect a waste package (e.g., movement, repackaging, additional characterization, treatment, or shipment to an off-site TSDF). Information about these activities is added to the paper and/or electronic record for each package. The records are maintained as discussed in Section 9.0 of the General Part B.

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APPENDIX C

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

SITE-WIDE INSPECTION PLAN FOR SANDIA NATIONAL LABORATORIES/NEW MEXICO

In accordance with the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart IX (20 NMAC 4.1.900), adopting by reference the Code of Federal Regulations, Title 40, Part 270 including Section 270.14(b)(5) (40 CFR 270.14[b][5]), and 20 NMAC 4.1.500/40 CFR 264.15, "General Inspection Requirements," revised October 1, 2003 [10-1-03], this appendix presents site-wide inspection requirements applicable to the Resource Conservation and Recovery Act (RCRA)-regulated waste management units (Units) at Sandia National Laboratories/New Mexico (SNL/NM), ~~co-~~operated by Sandia Corporation (Sandia) and owned by the U.S. Department of Energy/National Nuclear Security Administration (DOE).

Pursuant to 20 NMAC 4.1.500/40 CFR 264.15(a) [10-1-03], inspection schedules for the Units have been developed to identify equipment malfunctions and deterioration, operator errors, and discharges that might cause or lead to a release of RCRA-regulated waste and pose a threat to human health and the environment. This inspection plan, which presents general inspection schedules, is being submitted as required by 20 NMAC 4.1.900/40 CFR 270.14(b)(5) [10-1-03]. Unit-specific inspection requirements are provided in Section 4.0 of each Unit-specific module. Together, information in this appendix, in the General Part B, and in each Unit-specific module meets the applicable regulatory requirements.

C.1 INSPECTION REQUIREMENTS FOR UNITS [20 NMAC 4.1.900/40 CFR 270.14(b)(5), and 20 NMAC 4.1.500/40 CFR 264.15, 264.174, and 264.602]

In accordance with the requirements of 20 NMAC 4.1.900/40 CFR 270.14(b)(5) [10-1-03], and 20 NMAC 4.1.500/40 CFR 264.15(b)(1), 264.174, and 264.602 [10-1-03], SNL/NM Units are inspected for malfunctions and deterioration, operator errors, and discharges which may be causing, or may lead to, a release of hazardous waste constituents to the environment or a threat to human health. Inspections include monitoring equipment, safety and emergency equipment, security devices, and operating and structural equipment that are important to preventing, detecting, and responding to environmental or human health hazards caused by RCRA-regulated waste. Containers of RCRA-regulated waste stored at a Unit are also routinely inspected to assess container integrity, closure, labeling, secondary containment, location with respect to incompatible wastes, and waste and container compatibility. Additional detail about specific items and areas is included in each Unit-specific module.

A copy of this appendix, which includes relevant inspection schedules, is maintained at each Unit, together with the Unit-specific inspection plan, unless specified otherwise in Section 4.0 of each Unit-specific module, as required in 20 NMAC 4.1.500/40 CFR 264.15(b)(2) [10-1-03].

C.1.1 Inspection Records [20 NMAC 4.1.500/40 CFR 264.15(d)]

Unit personnel are assigned to conduct inspections and record the information on inspection forms. Figures C-1 and C-2 are representative of the inspection forms completed by personnel inspecting SNL/NM Units. Figures C-1 and C-2 are provided for informational purposes only; the forms are subject to change. Any forms used will be functionally equivalent to the ones

C.3 INSPECTION AND MONITORING FOR UNITS SUBJECT TO SUBPART AA REQUIREMENTS [20 NMAC 4.1.500/40 CFR 264, Subpart AA]

Sandia/DOE do not manage RCRA-regulated wastes with organic concentrations ≥10 percent by weight using process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations. Therefore, Sandia/DOE are exempt from the requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart AA [~~10-1-03~~7-1-08].

C.4 INSPECTION and MONITORING FOR UNITS SUBJECT TO SUBPART BB REQUIREMENTS [20 NMAC 4.1.500/40 CFR 264, Subpart BB]

Sandia/DOE do not routinely manage RCRA-regulated wastes with organic concentrations ≥10 percent by weight in process equipment identified in 20 NMAC 4.1.500/40 CFR 264, Subpart BB [~~10-1-03~~7-1-08]. Equipment used in such service will be used for less than 300 hours per calendar year and is therefore exempt from the requirements of 20 NMAC 4.1.500/40 CFR 264.1052 through 264.1060 [~~10-1-03~~7-1-08] as noted in 20 NMAC 4.1.500/40 CFR 1050(f) [~~10-1-03~~7-1-08].

C.5 INSPECTION AND MONITORING FOR UNITS SUBJECT TO SUBPART CC REQUIREMENTS [20 NMAC 4.1.500/40 CFR 264, Subpart CC]

Containers are visually inspected either at the time of pickup from a generator site, as they are unloaded from a transport vehicle at a Unit, or within 24 hours of acceptance at a Unit. The visual inspection assures that there are no cracks, holes, gaps, or other open spaces into the interior of the container when the cover and closure devices are secured in the closed position, in accordance with Container Level 1 air emission standards in 20 NMAC 4.1.500/40 CFR 264, Subpart CC [~~10-1-03~~7-1-08]. The inspection requirements for these containers are specified in 20 NMAC 4.1.500/40 CFR 264.1086(c)(4) [~~10-1-03~~7-1-08]. At each Unit where such containers are handled and/or stored, personnel take the following steps:

- Check containers that are subject to 20 NMAC 4.1.500/40 CFR 264.1086(c)(4) and the condition and placement of their covers during inspections of handled and stored containers.

- Take remedial actions if needed. Unit personnel begin taking corrective action and make first effort at repair of a defect within 24 hours ~~upon~~ after discovery of a defect in the container, cover, or closure device. Repairs will be completed as soon as possible. If the repairs are not completed in 5 calendar days, the waste will be transferred to a container in good condition. The defective container, cover, or closure device will not be used for managing RCRA-regulated wastes until it is repaired.

- Record container conditions and remedial actions taken in the applicable inspection reports: daily reports for containers that are handled, or weekly inspection reports for stored containers.

Figure C-1
Resource Conservation and Recovery Act (RCRA)-Regulated Waste Management Unit Daily Inspection Form – Example

1. Area(s) Inspected (i.e., Loading/Unloading Area, Treatment Area) ______________________
2. Structure(s) Inspected (i.e., HWH~~M~~F, TTF, RMWMF, AHCF, MSB Bunker #)
3. Inspection Date ____________________
4. Inspection Time ____________________ am/pm
5. Inspector Name (print) ______________________________________

5. Loading/ Unloading Area(s)[a]	Inspection Criteria	Yes	No	NA ( ) load	Corrective Action Issue	Corrective Action Taken and Closure Date
Loading/Unloading Area[c]	Good condition, safe working surface, no spills					
Waste Handling Equipment[c]	Good condition, operational					
Container(s) Loaded/ Unloaded	Good condition					

6. Treatment Area(s)[b,c]	Inspection Criteria	Yes	No	NA ( ) treat	Corrective Action Issue	Corrective Action Taken and Closure Date
Treatment Area	Good condition					
Treatment Unit and/or Equipment (e.g., hand tools, containers)	Good condition (i.e., no releases or corrosion), maintains established parameters					
Monitoring Equipment	Good condition, operational					

7. Comments and Notes Comment on deficiencies by referencing section and question.

Inspector Signature: ______________________________________

Immediately file the completed inspection form in the Unit operating record.

[a] Required on days loading/unloading operations involving RCRA-regulated wastes are conducted.
[b] Required on days treatment operations involving RCRA-regulated wastes are conducted.
[c] Required monthly with facility operating and structural equipment if RCRA-regulated wastes are not managed at Unit during the month.

Figure C-2
Resource Conservation and Recovery Act (RCRA)-Regulated Waste Management Unit Weekly/Monthly Inspection Form – Example

1. Structure(s) Inspected (i.e., HWH~~M~~F, TTF, RMWMF, AHCF, MSB Bunker #) _______
2. Inspection Date ______________________ 5. Monthly ☐
3. Inspection Time ______________________ am/pm Weekly ☐
4. Inspector Name (print) ____

6. Status[a]	Inspection Criteria	Yes	No
RCRA-regulated waste currently stored at Unit	Storage status (Yes–waste present, No–waste not present)		
RCRA-regulated waste currently undergoing treatment at Unit	Treatment status (Yes–waste present, No–waste not present)		

7. Safety & Emergency Equipment[b]	Inspection Criteria	Yes	No	NA ( ) weekly	Corrective Action Issue	Corrective Action Taken and Closure Date
Spill Control Equipment	Present, good condition					
Fire Extinguisher(s)	Present, good condition, charged					
Decontamination Equipment	Present, good condition					
External Communication System	Present, operational					
Internal Communication and Alarm System	Present, operational					
Fire Suppression System (e.g., Water, Dry Chemical)	Present					

8. Security Devices[b]	Inspection Criteria	Yes	No	NA ( ) weekly	Corrective Action Issue	Corrective Action Taken and Closure Date
Facility Fence	Good condition					
Gate(s) and Door(s)	Operational					
Warning Sign(s)	Present, legible					
Lock(s) and Tamper Indication Device(s)	Present, good condition					

Refer to footnotes at end of form.

APPENDIX D

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

D.3 TRAINING CONTENT, FREQUENCY, AND TECHNIQUES [20 NMAC 4.1.900/40 CFR 270.14(b)(12) and 20 NMAC 4.1.500/40 CFR 264.16]

This program provides employees with training relevant to their positions and specific to the safe performance of assigned tasks. For example, personnel who are directly involved in handling RCRA-regulated wastes are informed of the potential hazards associated with waste management activities, procedures for safe handling of wastes, and emergency procedures. Individuals in supervisory or decision-making positions receive a comprehensive overview of all aspects of RCRA-regulated waste management. Personnel with specific or short-term assignments, such as visitors or temporary contractors, may ~~only~~ receive a site-specific briefing with ~~training on the contingency plan and~~ emergency response ~~procedures~~information necessary for their duties as an alternative to the training specified in this training plan. Personnel who perform hands-on management of RCRA-regulated wastes receive training commensurate with their assigned duties.

The training program includes a combination of online and classroom instruction, reviews of written documents, and classroom, hands-on, and on-the-job training exercises. Training information is provided according to training topics (e.g., Contingency Plan), frequency (e.g., initial or refresher), and methods (e.g., classroom instruction, procedure review, on-the-job exercises). Training course content includes, at a minimum, the topics shown in Table D-1. As regulatory compliance requirements change, or at least annually, training courses are evaluated and modified, as necessary. ~~The content is reviewed annually.~~ Some training is standardized and given to all employees. Job-specific training appropriate to job function is given to Unit employees. Training is provided at the frequencies shown on Table D-1. Training that may be applicable to each job title is provided in Table D-2.

D.4 TRAINING DIRECTOR [20 NMAC 4.1.500/40 CFR 264.16(a)(2)]

The Unit-specific Department Manager or designee will function as the Training Director. The Manager maintains responsibility for ensuring that all Unit-specific required training is obtained. The Manager/Training Director is knowledgeable about the applicable hazardous waste management regulations and specific RCRA-regulated waste management operations employed at a Unit. The Manager/Training Director determines the exact content and duration of training required for individual employees.

The Manager/Training Director may perform or delegate training to qualified trainers. Trainers are qualified on the basis of attainment of one or more of the following, as applicable:

- Certification in the subject matter addressed by the training;
- Demonstration of knowledge and competence in the training subject; and/or
- Previous on-the-job and/or classroom training in the topics covered.

Table D-1
Sandia National Laboratories/New Mexico Resource Conservation and Recovery Act (RCRA)-Regulated Waste Management Unit
Training Content

RCRA Regulation Training

Duration: Variable (Typically 1-4 hours~~ or more~~)
Frequency: Initial/Periodic Refresher (Typically annual)
Method: Classroom instruction, on-the-job training, and/or document review

Minimum content may include (as applicable to the specific Unit to which an employee is assigned):

- Identification of RCRA-regulated waste
- Treatment, storage, and disposal facility requirements
- Generator and transporter requirements

RCRA Contingency Plan and Emergency Procedures

Duration: Variable (Typically 1-4 hours)
Frequency: Initial/Annual Refresher
Method: Classroom or online instruction, document review, and/or classroom or hands-on ~~on-the-job~~ exercises

Minimum content must include (as applicable to the specific RCRA-regulated waste management unit to which an employee is assigned):

- Emergency notification procedures
- Response to emergencies
- Evacuation route and procedure
- Emergency equipment and personal protective equipment
- Emergency Coordinator responsibilities
- Post-emergency actions
- Contingency Plan
- Shutdown procedures (if any)

Table D-1 (Continued)
Sandia National Laboratories/New Mexico
RCRA-Regulated Waste Management Unit
Training Content

Technical Work Documents and Refresher

Duration: Variable (depends on the work documents~~Typically 1 hour or more~~)
Frequency: Initial/Periodic Refresher
Method: Document review, on-the-job training

Minimum Content: This training is function-specific and may be divided into sections or modules. Each employee must participate in the sections that apply to his or her specific job function. Sections may include, but are not limited to, the following as needed:

- Waste Analysis Plan
- Unit-specific safety practices
- Unit-specific operational procedures (e.g., loading and unloading)
- Unit security, entry, and control
- Operation, maintenance, and inspection of equipment
- Prevention of the ignition/reaction of ignitable/reactive wastes
- Permit conditions
- Emergency response
- Unit tour

Table D-2
Training for Each Job Title

Required Training	Job Titles: Training Director	RCRA Project Leader	Emergency Coordinator	Chemist	Field Technician (Waste Handler)	Special Projects Staff	Inspector	Transportation Manager	Unit Operations Support Staff
Resource Conservation and Recovery Act (RCRA) Regulations (Applicable Modules)	X	X	X	X	X	X	X	X	
RCRA Contingency Plan and Emergency Procedures	X	X	X	X	X	X	X	X	X
Technical Work Documents (Applicable Modules)	~~X~~	X		X	X	X	X		
Hazardous Waste Operations and Emergency Response (24- or 40-hour course)	X	X	X	X	X	X	X	X	
Hazardous Waste Operations and Emergency Response (8-hour course)	X	X	X	X	X	X	X	X	

Job Title: RCRA Training Director

Job Description:
The RCRA Training Director ensures that all appropriate personnel meet the site-wide personnel training requirements for SNL/NM RCRA-regulated waste management Unit workers, including the Unit-specific RCRA training requirements. Examples of ~~RCRA Training Director~~ duties ~~may include, but are not limited to~~:

- Identifying and/or coordinating training required by RCRA regulations and SNL/NM RCRA-regulated waste management worker training requirements.
- Ensuring maintenance of training records required by RCRA regulations and demonstrating compliance with SNL/NM RCRA-regulated waste management worker training requirements for all personnel.
- Informing personnel when specific training is required.

Skill, Education, and Other Qualifications:
At a minimum, the qualification for the RCRA Training Director is:

- High school diploma or equivalent, or bachelor's degree from an accredited post-secondary institution; or
- Three years experience with RCRA waste management regulations

Training:
Initial and refresher training will be as required in Table D-2

FIGURE D-1
JOB TITLE, DESCRIPTION, and QUALIFICATIONS
RCRA TRAINING DIRECTOR

Job Title: RCRA Project Leader

Job Description:
A RCRA Project Leader oversees, supervises, and coordinates collection, storage, and shipment of RCRA-regulated waste at the Sandia National Laboratories/New Mexico.
Examples of d~~D~~uties~~ may include, but are not limited to~~:

- Ensuring operation of the Unit in compliance with applicable RCRA regulations;
- Identifying and coordinating training required by RCRA regulations;
- Determining training and reading requirements specific to positions, tasks or Unit activities;
- Coordinating activities related to management of RCRA-regulated waste at the Unit;
- Ensuring maintenance of records required by RCRA regulations, such as training records, inspection records, waste analysis records, and a RCRA Contingency Plan;
- Ensuring maintenance of additional records required for the Unit operating record;
- Preparing, reviewing, submitting documents on waste management activities;
- Ensuring compliance with RCRA regulations for shipments of RCRA-regulated wastes; and
- Coordinating activities pertaining to audits of RCRA-regulated waste management.

Skill, Education, and Other Qualifications:
At a minimum, the qualification for a RCRA Project Leader is:

- High school diploma or equivalent, or bachelor's degree from an accredited post-secondary institution; or
- Three years experience in managing RCRA-regulated waste.

Training:
Initial and refresher training will be as required in Table D-2.

FIGURE D-2
JOB TITLE, DESCRIPTION, and QUALIFICATIONS
RCRA PROJECT LEADER

Job Title: Chemist

Job Description:
A Chemist conducts supporting characterization of RCRA-regulated waste managed at Sandia National Laboratories/New Mexico. Examples of d~~D~~uties ~~may include, but are not limited to~~:

- Evaluating data provided by the initial generator of a solid waste, and obtaining additional information as needed for hazardous waste determination;
- Determining whether solid wastes are hazardous wastes as defined in 20 NMAC 4.1.200/40 CFR 261;
- Assigning appropriate hazardous waste codes to RCRA-regulated wastes;
- Identifying treatment options and treatment standards for RCRA-regulated wastes to be treated on site;
- Evaluating data and/or information for treated wastes and residues to characterize the residues, assign appropriate hazardous waste codes, and determine land disposal restrictions; and
- Segregating RCRA-regulated waste.

Skill, Education, and Other Qualifications:
At a minimum, the qualification for a Chemist is:

- High school diploma or equivalent; or
- Two years experience working with RCRA-regulated waste.

Training:
Initial and refresher training will be as required in Table D-2.

FIGURE D-4
JOB TITLE, DESCRIPTION, and QUALIFICATIONS
CHEMIST

Job Title: Field Technician (Waste Handler)

Job Description:
A Waste Handler conducts RCRA-regulated waste handling, segregating, and storing operations at the Sandia National Laboratories/New Mexico. Examples of ~~Waste Handler~~ duties ~~may include, but are not limited to~~:

- Transporting and handling RCRA-regulated waste;
- Conducting daily inspections of waste management Units where RCRA-regulated waste loading, unloading, or treatment operations occur;
- Performing basic maintenance and housekeeping activities;
- Segregating RCRA-regulated waste
- Sorting, packaging, marking, labeling, storing, treating, and segregating RCRA-regulated waste; and
- Compiling ~~and entering into a database specific operating record~~ information for the SNL/NM or Unit operating record.

Skill, Education, and Other Qualifications:
At a minimum, the qualification for a Waste Handler is:

- High school diploma or equivalent; or
- Two years experience in handling RCRA-regulated waste.

Training:
Initial and refresher training will be as required in Table D-2.

FIGURE D-5
JOB TITLE, DESCRIPTION, and QUALIFICATIONS
FIELD TECHNICIAN

Job Title: Special Projects Staff

Job Description:
A Special Projects Staff member performs duties associated with non-routine and special projects at Sandia National Laboratories/New Mexico. Examples of ~~Special Projects Staff member~~ duties ~~may include, but are not limited to~~:

- Handling RCRA-regulated waste during a special project;
- Performing special project related maintenance and housekeeping activities;
- Operating RCRA-regulated waste treatment equipment associated with a special project;
- Storing, labeling, and segregating RCRA-regulated waste associated with a special project; and
- Identifying and scheduling special project activities involving RCRA-regulated waste;
- Monitoring RCRA-regulated waste special project activities for safety and procedural compliance; and
- Compiling special project information for the facility operating record.

Required Skill, Education, or Other Qualifications:
At a minimum, the qualification for a Special Projects Staff member is:

- High school diploma or equivalent; or
- Two years experience in handling RCRA-regulated waste.

Training:
Initial and refresher training will be as required in Table D-2.

FIGURE D-6
JOB TITLE, DESCRIPTION, and QUALIFICATIONS
SPECIAL PROJECT STAFF

Job Title: Inspector

Job Description:
An Inspector conducts inspections of RCRA-regulated waste and RCRA-regulated waste management Units at the Sandia National Laboratories/New Mexico. Examples of~~Inspector~~ duties~~ may include, but are not limited to~~:

- Inspecting at least daily areas subject to spills of RCRA-regulated wastes when these areas are in use;
- Inspecting at least weekly containers holding RCRA-regulated waste, container equipment, and secondary containment;
- Inspecting at least monthly emergency equipment, security devices, and structural equipment at RCRA-regulated waste management Units; and
- Recording inspection date, time, name, observations, and repairs in an inspection log (in the form of an inspection checklist).

Skill, Education, and Other Qualifications:
At a minimum, the qualification for an Inspector is:

- High school diploma or equivalent; or
- Two years experience working with RCRA-regulated waste.

Training:
Initial and refresher training will be as required in Table D-2.

FIGURE D-7
JOB TITLE, DESCRIPTION, and QUALIFICATIONS
INSPECTOR

Job Title: Transportation Manager

Job Description:
A Transportation Manager coordinates the shipment of RCRA-regulated waste from the Sandia National Laboratories/New Mexico. Examples of ~~Transportation Manager~~ duties ~~may include, but are not limited to~~:

- Preparing and compiling documentation and paperwork (e.g., manifests and notices) for off-site shipments of RCRA-regulated waste;
- Ensuring proper packaging, labeling, marking, and placarding are in place for off-site shipments of RCRA-regulated waste; and
- Coordinating the loading of RCRA-regulated waste for off-site shipment.

Required Skill, Education, or Other Qualifications:
At a minimum, the qualification for a Transportation Manager is:

- High school diploma or equivalent; or
- Two years experience coordinating shipments of RCRA-regulated waste.

Training:
Initial and refresher training will be as required in Table D-2.

FIGURE D-8
JOB TITLE, DESCRIPTION, and QUALIFICATIONS
TRANSPORTATION MANAGER

Job Title: Unit Operations Support Staff

Job Description:
A Unit Operations Support Staff member has unescorted access to the facility but performs no activities that require contact with RCRA-regulated waste or waste containers. Unit Operations Support Staff may include, but are not limited to:

- Administrative personnel;
- Information systems (database) personnel;
- Radiation support personnel; and
- Generator interface personnel. Note that the duties of radiation support personnel involve collecting radiological data; this requires contact with RCRA-regulated wastes and waste containers but is not consistent with the duties of a field technician in Figure D-5.

Skill, Education, and Other Qualifications:
The Training Supervisor determines the requisite level of experience for each position.

Training:
Initial and refresher training will be as required in Table D-2.

FIGURE D-9
JOB TITLE, DESCRIPTION, and QUALIFICATIONS
UNIT OPERATIONS SUPPORT STAFF

APPENDIX E

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

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SITE-WIDE CONTINGENCY PLAN FOR SANDIA NATIONAL LABORATORIES/NEW MEXICO

This appendix presents site-wide contingency measures applicable to all Resource Conservation and Recovery Act (RCRA)–regulated waste management units (Unit) at Sandia National Laboratories/New Mexico (SNL/NM), ~~co-~~operated by Sandia Corporation (Sandia) and owned by the U.S. Department of Energy/National Nuclear Security Administration (DOE). Unit-specific Contingency Plan information is provided in Section 6.0 of each Unit-specific module. Together, information in the General Part B, in this appendix, and in each Unit-specific module meets the applicable regulatory requirements.

This Contingency Plan is intended to meet the requirements specified in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart V (20 NMAC 4.1.500), adopting by reference the Code of Federal Regulations, Title 40, Part 264 (40 CFR 264), Subpart D, revised October 1, 2003 [10-1-03], ~~"~~Contingency Plan and Emergency Procedures," and 20 NMAC 4.1.900/40 CFR 270.14(b)(7) [10-1-03], for hazardous waste treatment, storage, or disposal facilities.

The provisions of this Contingency Plan will be carried out immediately to minimize hazards whenever there is an emergency, as required by 20 NMAC 4.1.500/40 CFR 264.51(b) [10-1-03].

E.1 SNL/NM SITE DESCRIPTION

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

SNL/NM is located on Kirtland Air Force Base (KAFB) immediately southeast of the Albuquerque city limits in Bernalillo County, New Mexico. SNL/NM occupies an area of approximately 2,842 acres (1,150 hectares) within the 80-square-mile KAFB. SNL/NM consists of five Technical Areas, I through V, and remote test areas situated in the eastern half of KAFB. ~~(Figure E-1)~~.

E.1.1 Unit Descriptions

The Units subject to 20 NMAC 4.1.500/40 CFR 264, Subpart D [10-1-03] and this Contingency Plan are listed in Table E-1. Additional detail about each Unit is provided in Section 6.0 of each Unit-specific module.

E.1.2 Waste Description

RCRA-regulated wastes at SNL/NM are generated primarily from laboratory research activities, process operations, and environmental restoration activities. Typical laboratory research waste includes bottles of excess or residual chemical mixtures and solutions, and solid laboratory items

Table E-1
RCRA – Regulated Waste Management Units Included in Contingency Plan

Name	Acronym	Location, size	Types of operations	Operating hours	Staff
Hazardous Waste Handling Facility	HWHF	South of TA-I, north of entrance to TA-II. Includes Buildings 958, 959. 1.35 acres	Storage, Repackaging	M-Th 8:00 am - 4:30 pm F: 7:00 am 3:30 pm	Staffed during operating hours
Thermal Treatment Facility	TTF	Northern part of TA-III, south of Building 6715. 196 square feet	Treatment	M-F 7:00 am 5:00 pm	Staffed only during operations at Unit
Radioactive and Mixed Waste Management Facility	RMWMF	Southeast corner of TA-III. Includes Buildings 6920, 6921, 6925, and 6926. 3.11 acres	Storage, Treatment, Repackaging	M-Th 7:00 am – 5:30 pm	Staffed during operating hours
Auxiliary Hot Cell Facility	AHCF	TA-V, Building 6597. 5578 square feet	Storage, Treatment, Repackaging	M-F 8:00 am – 4:30 pm	Staffed during operating hours
Manzano Storage Bunkers	MSB	In Manzano Area on KAFB. 0.4 acres occupied by 5 bunkers (approximately 1600 to 2400 square feet in each bunker)	Storage	M-Th 7:00 am – 5:30 pm	Staffed only during operations at Unit
Corrective Action Management Unit	CAMU	Southeast corner of TA-III. Includes containment cell located due north of RMWMF.	Post-closure monitoring of containment cell.		Staffed only during monitoring operations at Unit.
~~Chemical Waste Landfill~~	~~CWL~~	~~Southeast corner of TA-III. Includes landfill located due east of RMWMF.~~	~~Landfill undergoing closure.~~		~~Staffed only during closure and monitoring operations at Unit.~~

such as rags, batteries, and equipment. Typical process waste includes larger volumes (5- to 55-gallon containers) of solvents, oils, and corrosive solutions. Typical environmental restoration activity waste includes contaminated soil cuttings, debris, personal protective equipment, and decontamination fluids.

Because Sandia/DOE research and other activities are subject to change, waste streams and volumes stored at SNL/NM Units vary. The general types of wastes and capacities of each Unit are summarized in Section 6.0 of each module. The detailed description, location, and quantity of the RCRA-regulated wastes managed are identified in the Operating Record maintained for each Unit.

E.1.3 Operating Schedule

The operating schedules of the RCRA-regulated Units are summarized in Table E-1. Sandia/DOE security personnel check each Unit periodically during non-operating hours. If an emergency is discovered during these inspections, the SNL/NM Emergency Operations Center (EOC) and the Unit Emergency Coordinator (EC) (Section E.3.1) will be notified immediately.

E.2 CONTINGENCY PLAN DISTRIBUTION AND AMENDMENTS [20 NMAC 4.1.500/40 CFR 264.53-54]

Copies of the current site-wide Contingency Plan and the applicable Unit-specific information (Section 6.0 of each Unit-specific module and Part 5 for the CAMU) are maintained at the following locations: each Unit, the SNL/NM EOC, and SNL/NM Records Center. Sandia/DOE also provide copies of the Plan and any amendments and updates to the KAFB Fire Department and the New Mexico Environment Department (NMED) for their use.

This site-wide Contingency Plan and the Unit-specific information will be reviewed periodically by the EC(s) and Sandia emergency response organization (ERO) personnel. The plan(s) will be amended, if necessary, whenever one or more of the following occur:

- Applicable regulations or RCRA permit conditions are revised;
- There is a significant change in facility or Unit design, construction, maintenance, operation, or other circumstance that increases the potential for emergencies or changes the response necessary in an emergency;
- The list of designated emergency coordinators changes;
- The list of required emergency equipment changes significantly; or
- Actual implementation of the plan during an emergency demonstrates inadequacies.

E.3 EMERGENCY RESPONSE RESOURCES [20 NMAC 4.1.500/40 CFR 264.52(c) and 264.53]

Resources are available at each Unit, at SNL/NM, within KAFB, and in Albuquerque as described in this section.

E.3.1 Emergency Coordinator and Responsibilities [20 NMAC 4.1.500/40 CFR 264.52(d), 264.55, and 264.56(a)–(h)]

The Unit-specific EC has thorough familiarity with this Contingency Plan and the applicable Unit-specific information, Unit layout, operations, the location of records, the locations and characteristics of the RCRA-regulated waste managed at the Unit(s), and the emergency equipment and supplies. The EC has the authority through the Sandia department manager to commit the necessary Unit resources (including personnel, materials, and funds) to respond to an emergency at SNL/NM.

During emergencies at each Unit, or until the SNL/NM emergency response Incident Commander (IC) arrives (E.3.3), the EC has three primary responsibilities:

1. **Assess the Situation.** By observing the scene, interviewing personnel, and/or reviewing records, the EC must gather information relevant to the response, such as the type of event, quantity and type of released waste~~material~~, and actual or potential hazards to human health or the environment.

2. **Protect Personnel.** The EC should take any reasonable measures to ensure the safety of personnel, such as activating the fire alarm, accounting for Unit personnel, attending to injuries, or coordinating the evacuation of Unit personnel, if necessary. If evacuation is indicated for other personnel, the IC must be informed.

3. **Contain or Mitigate the Hazards.** The EC should take reasonable measures to ensure that fires, explosions, or releases do not occur, recur, or spread.

After emergencies, the EC must ensure that the facility and equipment are cleaned, waste is properly handled and disposed, the Unit is safe to resume operation, and all information necessary for notifications and reports is provided to Sandia/DOE personnel, as outlined in Sections E.6 and E.7.

In the event the EC is not on site or immediately available during an emergency, an alternate EC is contacted. The names, addresses, and phone numbers of the primary and alternate ECs for each SNL/NM Unit are included in each Unit-specific module. A Unit-specific EC or alternate EC is on site or immediately available during the operating hours of each Unit. ECs are also available during non-routine RCRA-regulated waste management operations that may be conducted outside normal operating hours.

E.3.2 Emergency Response Groups

The SNL/NM ERO consists of two response groups that respond to an emergency situation: (1) a field response group led by an IC under the Incident Command System (ICS) and (2) an EOC ~~cadre~~. The ICS ~~also~~ includes ~~resources as needed:~~ Sandia/DOE Security, the KAFB Fire Department, and Sandia/DOE personnel with relevant technical skills; any of these will be deployed in an emergency response as required by the circumstances of the emergency. An IC is on site at SNL/NM at all times (24 hours per day, 7 days per week). Sandia/DOE security and the KAFB Fire Department personnel are also available at all times. Sandia/DOE technical personnel are typically available on site at SNL/NM during business hours~~from 8:00 am – 4:30 pm Monday through Friday~~ and are on call the rest of the time. The SNL/NM EOC staff includes an Emergency Director and a staff of Sandia and DOE personnel who are responsible for the management decisions and notifications to outside parties that are required during an emergency response (Section E.5.3). EOC staff personnel are available on site at SNL/NM during business hours~~from 8:00 am–4:30 pm, Monday through Friday~~, and are on call the rest of the time.

In the field, the IC maintains overall management and control of response operations at the emergency site once control is relinquished by the Unit-specific EC. The IC works in a unified command with the KAFB Fire Department and in concert with safety personnel, Unit-specific personnel (e.g., EC), and other emergency responders to develop and execute response plans, including on-site protective actions and recommendations for off-site protective actions. The ICS system is implemented at the time an emergency occurs, is expanded to control the emergency as needs arise, and remains in effect until the need for emergency management no longer exists.

E.3.3 Emergency Chain of Command

When the EC is notified of an incident, he must first determine if procedures for emergencies (Section E.5) should be implemented. The EC manages the emergency response (Section E.3.1) until the IC arrives at the Unit and relinquishes control to the arriving IC. If possible, the EC maintains communication with the IC by telephone or radio before the IC arrives at the Unit. The EC remains at the Unit and assists in emergency response as directed by the IC. The EC advises the IC, as needed, on Unit operations, Unit layout, characteristics of RCRA-regulated waste on site, location of records, radio and cellular communication systems, and other information as necessary to respond to the emergency.

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

E.3.4 Support Agreements and Coordination with Outside Agencies [20 NMAC 4.1.500/40 CFR 264.37]

Sandia/DOE maintain sufficient response resources to handle most emergencies arising from RCRA-regulated waste management activities as described in this contingency plan. These response resources include personnel, emergency equipment, medical facilities, and communications systems. DOE also has established mutual aid agreements and memoranda of

understanding with several off-site agencies and facilities for additional response capabilities for SNL/NM. These agencies and facilities include:

Table E-2
Agreements and Memoranda of Understanding for Emergency Response

Agency or Facility	Type of Service
New Mexico Department of Public Safety	Mutual aid involving an actual or potential emergency, assistance in training and emergency response for local and tribal governments.
377th Air Base Wing, Kirtland Air Force Base	Various types of support, including fire protection, police services, communications, and utilities.
U.S. Forest Service	Cooperative fire fighting arrangement between the USFS and KAFB for wildland fires.
City of Albuquerque	Mutual support and responsibilities during a potential or actual emergency requiring the combined resources of DOE and the City of Albuquerque.
Lovelace Medical Center	Mutual cooperation and assistance in providing timely and effective emergency medical services.
Presbyterian Health Care Services	Mutual cooperation and assistance in providing timely and effective emergency medical services.

E.4 EMERGENCY EQUIPMENT [20 NMAC 4.1.500/40 CFR 264.32, 264.33, 264.34, and 264.52(e)]

A list of equipment available through the SNL/NM emergency response system is provided in Table E-3. Lists of emergency equipment available for use at each Unit are presented in each Unit-specific module.

E.5 CONTINGENCY PLAN IMPLEMENTATION [20 NMAC 4.1.500/40 CFR 264.56]

Unit personnel who become aware of an incident contact the EC immediately. If the incident is an emergency, personnel implement evacuation procedures identified in Section E.5.2 Personnel also immediately notify the Unit-specific EC or alternate EC of the emergency condition. The EC will then assess the situation and determine the scale of the incident.

If the EC determines that an emergency situation exists or is imminent at the Unit, he will immediately notify the SNL/NM EOC and activate this Contingency Plan. The methods for contacting emergency response representatives are listed in Table E-4.

Table E-3
Sandia National Laboratories/New Mexico (SNL/NM) Facility[a] Emergency Equipment
4/12/2012~~2-18-2003~~

Item or Equipment	Description/Telephone
Emergency Vehicles (owned by Sandia/DOE unless noted)	
Emergency Response Vehicle	Mobile Command Post equipped with communications equipment, typically located at SNL/NM EOC[b]. SNL/NM Emergency Response System — Call 911 or (505) 844-0911
Ambulance	Typically located at SNL/NM medical facility. SNL/NM Emergency Response System — Call 911 or (505) 844-0911
Security Vehicles	Vans and trucks equipped with communications equipment and utilized for transportation of personnel and equipment, typically located throughout SNL/NM. SNL/NM Emergency Response System — Call 911 or (505) 844-0911
Fire Trucks (owned by KAFB Fire Department)	Fire-fighting vehicles outfitted with equipment for fighting fires, typically located at KAFB fire stations. SNL/NM Emergency Response System — Call 911 or (505) 844-0911
Medical Supplies (owned by Sandia/DOE)	
Stretchers/Stokes Litter	Equipment for movement of injured personnel. Stokes litter will immobilize personnel so they may be moved vertically. Typically located in ambulance or at SNL/NM medical facility. SNL/NM Emergency Response System — Call 911 or (505) 844-0911
Blankets	Normal blankets, typically located in ambulance or at SNL/NM medical facility. SNL/NM Emergency Response System — Call 911 or (505) 844-0911
Medical Kits	Emergency first-aid supplies, typically located in ambulance or at SNL/NM medical facility. SNL/NM Emergency Response System — Call 911 or (505) 844-0911
Safety Supplies (owned by Sandia/DOE)	
Air Packs	Self-contained breathing apparatus for use by personnel entering hazardous atmospheres, typically located in ambulance or response vehicle. SNL/NM Emergency Response System — Call 911 or (505) 844-0911
Monitoring Instruments	Typically located in ambulance or emergency response vehicle. SNL/NM Emergency Response System — Call 911 or (505) 844-0911

[a] Lists of equipment available at each Unit are included in a table in each Unit-specific module.
[b] The SNL/NM EOC is located in TA-I.

Table E-4
Emergency Response System Notification, Sandia National Laboratories/New Mexico

Method	Number
Telephone (at Unit)	911
Mobile Telephone	(505) 844-0911
Portable Radio	NA
Automatic notification of emergency response when smoke detector or pull station is activated and/or water flows in sprinkler system, except as noted in Unit-specific information	NA

Note: Any person in any Unit is authorized to implement the evacuation procedures, notify the EC or alternate EC, and/or contact the emergency response representatives in the unlikely event that the EC or alternate EC cannot be contacted or respond in a timely manner.

E.5.1 Emergencies

In the event of an emergency, the EC, an assignee, or Unit personnel (see note above) will immediately telephone the SNL/NM EOC (911 or 844-0911) or notify them in some other way (see Section E.5). Emergencies require the activation of this Contingency Plan and SNL/NM emergency response resources.

The EC will relinquish authority to the IC upon arrival as described in Section E.3.3. The EC and the IC will:

- Determine the extent of the emergency;
- Identify the character, source, amount, and areal extent of released wastes and materials by observation, records reviews, or chemical analysis;
- Assess possible resulting hazards to human health or the environment, considering both direct and indirect effects;
- Take all reasonable measures necessary to ensure fires, explosions, and releases do not occur, recur, or spread to other RCRA-regulated waste at the Unit, including collecting and containing released waste, and removing or isolating containers; and
- Monitor for leaks, pressure buildup, gas generation, and ruptures in equipment.

E.5.1.1 Fire

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

1. All non-essential Unit personnel should evacuate (Section E.5.2) following the evacuation routes in Section 6.0 of each Unit-specific module,~~,~~ or to an alternate assembly location as directed by the EC. All Unit personnel may evacuate at this time.

2. The EC (or Unit personnel) must immediately notify the Sandia/DOE ERO and KAFB Fire Department by activating a manual pull alarm or by dialing the SNL/NM EOC at 911 or 844-0911. Medical response can also be requested at the same time. The KAFB Fire Department and Sandia/DOE ERO will also be notified by activation of an automatic fire alarm.

3. ONLY if safe to do so and consistent with Unit operations, Unit personnel may consider taking action to put out the fire or minimize its spread. These actions may be taken only after the SNL/NM IC and KAFB Fire Department have been notified. Personnel must not jeopardize their own safety or the safety of other personnel.

   - If the fire is small and the fuel source is small, portable fire extinguishers may be used to put out the fire.
   - Fire extinguishers may only be used by personnel trained in their use and in this Contingency Plan, and only for very small fires.
   - Flammable materials should be removed from the area of fire if safe to do so.
   - Only appropriate fire extinguishers and/or fire extinguishing agents are to be used for water-reactive waste (e.g., Met-L-X, Lith-X, or equivalent).

4. If the fire spreads or increases in intensity, all remaining personnel must evacuate (see Step 1).

5. The EC should remain near the site, but at a safe distance, so he can advise the personnel responding to the fire of the known hazards.

6. Upon arrival at a fire, the KAFB Fire Department officer-in-charge will be in command of fire fighting. He will accept and evaluate the advice of Sandia/DOE Unit and emergency response personnel, but he retains the responsibility to select the fire-fighting methods and tactics.

7. The IC will be in overall control of Sandia/DOE emergency response efforts until the emergency is terminated.

8. RCRA-regulated wastes involved in a fire can be identified in the following ways: The location of the container may indicate the contents. If the location does not indicate its contents, the label number can be used to identify the waste~~material~~. Records on the contents of each container can be accessed from outside the Unit or in the Unit office. If the label has been burned and the container cannot be identified, the waste~~material~~ will be treated as an unknown and analyzed according to methods in the Waste Analysis Plan (Appendix B to the General Part B.)

9. Residues of RCRA-regulated wastes may be collected and contained by stabilizing or neutralizing the spilled waste~~material~~, as appropriate; pouring an absorbent over the spilled waste~~material~~; and sweeping or shoveling the absorbed waste~~material~~ into drums or other appropriate containers.

10. If needed, affected surfaces will be cleaned using cleaners appropriate to the chemicals.

11. If possible and safe to do so, responding personnel will take measures to contain potentially hazardous runoff and keep it away from storm drains and/or sewers (e.g., ~~. If possible and necessary, personnel will~~ by building dikes around storm drains.)

12. Any fire-fighting waters collected in the stormwater catchment and retention ponds at the HWHF and RMWMF, the catchment tank at the TTF, or the floor trenches at the AHCF will be analyzed to determine an appropriate disposal method.

E.5.1.2 Explosion

The following steps will be implemented as needed in the event of an emergency involving an imminent or existing explosion that could threaten human health or the environment.

1. Unit personnel will immediately evacuate the area (Section E.5.2).

2. The EC (or Unit personnel) must immediately notify the Sandia/DOE ERO and KAFB Fire Department by activating a manual pull alarm or by dialing the SNL/NM EOC at 911 or 844-0911. Medical response can also be requested at the same time. The KAFB Fire Department and Sandia/DOE ERO will also be notified by activation of an automatic fire alarm.

3. The EC will take actions as directed by the IC. Unless directed otherwise, the EC will remain near the site, but at a safe distance, so he can advise the response personnel of the known hazards involved and the degree and location of the explosion and associated fires.

4. Upon arrival at the site, the KAFB fire department officer-in-charge will be in command of fire fighting. He will accept and evaluate the advice of Sandia/DOE personnel and emergency response organization members, but he retains the responsibility to select the fire-fighting methods and tactics.

5. The IC will be in overall control of Sandia/DOE emergency response efforts until the emergency is terminated.

6. Residues of RCRA-regulated wastes may be collected and contained by stabilizing or neutralizing the spilled waste~~material~~, as appropriate; pouring an absorbent over the spilled waste~~material~~; and sweeping or shoveling the absorbed waste~~material~~ into drums or other appropriate containers.

7. If needed, affected surfaces will be cleaned using cleaners appropriate to the chemicals.

8. If possible and safe, responding personnel will take measures to contain potentially hazardous runoff and keep it away from storm drains and/or sewers~~. If possible~~ (e.g., ~~personnel will~~ by building dikes around storm drains.)

9. Any ~~fire-fighting~~potentially contaminated waters collected in the stormwater catchment and retention ponds at the HWHF and RMWMF, the catchment tank at the TTF, or the floor trenches at the AHCF will be analyzed to determine an appropriate disposal method.

10. The EC will secure all operational units (e.g., process equipment, ventilation equipment) that may be affected ~~directly or indirectly~~ by the explosion once the areas needed to be entered have been determined safe by the IC or a safety officer.

E.5.1.3 Uncontrolled Release

The following steps will be implemented as needed in the event of an emergency involving an imminent or existing release of RCRA-regulated waste or hazardous waste constituents that could threaten human health or the environment.

1. Evacuate the immediate area (Section E.5.2).
2. The EC (or Unit personnel) must immediately notify the Sandia/DOE ERO and KAFB Fire Department by activating a manual pull alarm or by dialing the SNL/NM EOC at 911 or 844-0911. Medical response can also be requested at the same time. The KAFB Fire Department and Sandia/DOE ERO will also be notified by activation of an automatic fire alarm.
3. Take actions to minimize, contain, and clean up the release only if safe to do so.
4. Review facility records (e.g., waste inventory database) to determine the identity and chemical nature of released waste~~material~~.
5. Don appropriate personal protective equipment for exposure to the waste~~material~~.
6. If possible, secure the source of the release.
7. If necessary and possible, build a dike to contain runoff.
8. Take measures to contain potentially hazardous runoff and keep it away from storm drains and/or sewers. If possible and necessary, build dikes around storm drains.
9. Released wastes may be collected and contained by stabilizing or neutralizing the spilled waste~~material~~, as appropriate; pouring an absorbent over the spilled waste~~material~~; and sweeping or shoveling the absorbed waste~~material~~ into drums or other appropriate containers.
10. No waste that may be incompatible with the released waste~~material~~ will be treated, stored, or disposed of in the vicinity of the release location until the released waste is cleaned up or stabilized~~procedures are complete~~.
11. After collection of a released waste~~material~~, the release site will be sampled and evaluated. If contamination is found to exist, contaminated media will be characterized and remediated. ~~materials may be collected, drummed (if appropriate), and removed from the~~

~~site for disposal at a permitted disposal facility.~~ Depending on the specific conditions, however, Sandia/DOE may choose to implement an alternative decontamination method such as surface cleaning or in situ

E.5.3 Coordination with Off-Site Parties and Emergency Notification [20 NMAC 4.1.500/40 CFR 264.56(a) and (b)]

The Sandia EOC notifies DOE of all emergencies at SNL/NM. Sandia/DOE will notify state and local agencies if state or local response resources are required (see Section E.3.4), if human health or the environment are threatened outside the SNL/NM facility, or if areas outside the SNL/NM facility may require protective action. Sandia/DOE will verbally notify the City of Albuquerque or Isleta Pueblo, respectively, as soon as possible in the unlikely event that residents of Albuquerque or Isleta Pueblo outside KAFB are or could be affected. The notification will include available information about the nature and location of the emergency, the wastes~~materials~~ involved, and the recommended protective actions. The most likely protective actions are expected to include evacuation or sheltering indoors with doors and windows closed and ventilation systems shut off.

In the event of an emergency involving injuries that require medical services from one of the hospitals listed in Table E-2, Sandia/DOE will provide all available information about the event and the wastes and materials involved to the responders as soon as possible.

Sandia/DOE will also notify the National Response Center (1-800-424-8802) if human health or the environment ~~are threatened~~ outside the facility are threatened. The notification will include the following:

- Name and telephone number
- Facility name and address
- Time and nature of emergency
- Type and quantities of wastes and materials involved to the extent known
- Personnel injuries, and
- Potential hazards to human health, or the environment, outside the facility.

Sandia/DOE will also provide this information to the NMED in accordance with regulatory requirements, including verbal notification (1-505-827-9329 or other emergency notification number designated by NMED).

E.6 POST-EMERGENCY ACTIONS [20 NMAC 4.1.500/40 CFR 264.56(f-i)]

Immediately after an emergency, the EC (and the IC, when present) will:

- Continue to monitor for leaks, pressure buildup, gas generation, and ruptures in valves, pipes, or other equipment if the Unit stops operations;

- Provide for properly treating, storing, or disposing of recovered waste, contaminated soil or surface water, or any other media or material;

- Ensure that no waste that may be incompatible with the released waste or material is treated, stored, or disposed of in the vicinity of the release location until cleanup procedures are completed; and

- Ensure that all equipment used in responding to the emergency that is listed in either this site-wide plan or the Unit-specific Contingency Plan is cleaned and fit for its intended use before resuming operations.

Prior to resuming operations after an emergency involving RCRA-regulated waste in the affected area(s) of the Unit, Sandia/DOE will notify NMED that incompatible waste will not be managed until cleanup procedures are complete and equipment listed in the Unit-specific Contingency Plan is cleaned and fit for use.

E.7 EMERGENCY RESPONSE RECORDS AND REPORTS [20 NMAC 4.1.500/ 40 CFR 264.56(j)]

The time, date, and details of an emergency involving RCRA-regulated waste that require implementation of this Contingency Plan will be noted in the Operating Record maintained for the affected Unit. Within 15 days after the incident, a written report (email or paper copy) will be submitted to the NMED identifying:

- Name, address, and telephone number of the facility owner or operator
- Name, address, and telephone number of the facility
- Date, time, and type of incident (e.g., fire, explosion, release)
- Name and quantity of waste~~material~~(s) involved
- Extent of injuries (if any)
- Assessment of actual or potential hazards to human health or the environment, where applicable, and
- Estimated quantity and disposition of recovered waste, contaminated media, and material that resulted from the incident.

Sandia National Laboratories/New Mexico
Hazardous Waste Handling Facility
Part B Permit Renewal Request

Module I

Revision ~~6.0d~~7.0

April 2012~~September 2011~~

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Prepared for
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SANDIA NATIONAL LABORATORIES/NEW MEXICO HAZARDOUS WASTE HANDLING FACILITY PART B PERMIT RENEWAL REQUEST

This Sandia National Laboratories/New Mexico (SNL/NM) Hazardous Waste Handling Facility (HWHF) Part B Permit Renewal Request is submitted to address the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subparts V and IX (20 NMAC 4.1.500 and .900), revised ~~October 1, 2003~~ July 1, 2008 [~~10-1-03~~7-1-08], requirements specific to Resource Conservation and Recovery Act (RCRA)-regulated waste container storage operations at the HWHF. 20 NMAC 4.1.500 and .900, adopt by reference, with limited exceptions, all of the Code of Federal Regulations, Title 40, Parts 264 and 270 (40 CFR 264 and 270).

Sandia Corporation (Sandia) and the U.S. Department of Energy/National Nuclear Security Administration (DOE), as ~~co-~~operator~~s~~ and owner, respectively, of the SNL/NM site, have prepared and revised this module to provide Unit-specific details that supplement the information provided in the “Sandia National Laboratories/New Mexico General Part B Permit Renewal Request/Application” hereinafter referred to as the General Part B. Together, information provided in this module, in the General Part B, and in the appendices to the General Part B meet the applicable requirements for the HWHF that are specified in 20 NMAC 4.1.500/40 CFR 264 [~~10-1-03~~7-1-08], and 20 NMAC 4.1.900/40 CFR 270 [~~10-1-03~~7-1-08].

Sandia/DOE also prepared the “Sandia National Laboratories/New Mexico General Part A Permit Renewal Request/Application, Rev. 11.0~~7.0~~” (SNL/NM, ~~2004~~2012), hereinafter referred to as the General Part A, included as Part 1 of this comprehensive Part B permit request. The General Part A serves as a companion document to the General Part B and Unit-specific Part B modules, including this HWHF Part B Permit Renewal Request.

In the General Part A, the General Part B, its appendices, and this module, a Unit to be permitted may sometimes be referred to as a “facility” (e.g., Hazardous Waste Handling Facility). The term “facility,” as it appears in this context, is used only to denote a building or Unit name and does not imply the regulatory meaning of “facility” as defined in 20 NMAC 4.1.100/40 CFR 260.10 [~~10-1-03~~7-1-08]. However, pursuant to 20 NMAC 4.1.100/40 CFR 260.10 [~~10-1-03~~7-1-08], the SNL/NM site as a whole does meet the regulatory definition of a facility.

The HWHF occupies 1.35 acres on DOE property between TA-I and TA-II. It is a fenced compound with several buildings and waste management areas (WMAs). Operations include storage of RCRA-regulated wastes in containers and repackaging the wastes into suitable containers for shipment to off-site treatment and/or disposal facilities. Sandia/DOE currently operate the HWHF in accordance with the terms of NMED Permit NM5890110518-1, issued August 6, 1992 (NMED, 1992), and its subsequent modifications. Sandia/DOE manage all of the wastes listed in the Part A included in Permit NM5890110518-1.

All of the RCRA-regulated wastes listed in the General Part A may be managed at the HWHF upon issuance of the permit that is the subject of this Part B renewal request.

respectively. The ~~entire~~ floor ~~of the building~~ and the bottom seven inches of wall surface in each recessed area are covered with an epoxy-based chemical-resistant coating. The coating forms a continuous protective barrier over the concrete and protects the floor from the effects of solvents and corrosive chemicals that may be released from the containers.

The individual shelves are covered with removable chemical-resistant grating, and they have edges to hold the containers in place. The shelves are not designed to provide secondary containment. Secondary containment is provided by the recessed areas in each holding cell. The recessed area in each cell is 5 feet by 4.5 feet and 7 inches deep, with a capacity of 98 gallons. The recessed area under the packaging area is 5 feet by 12 feet and 7 inches deep, with a capacity of 261 gallons. For each of these recessed areas, Sandia/DOE consider only part of the available capacity: the capacity used in each holding cell is 71 gallons, and the capacity used under the packaging area is 191 gallons.

Based on the secondary containment capacity used by Sandia/DOE (10% of the stored volume or the volume of the largest container), each of the eight holding cells in the Hazardous Waste Packaging Building can hold a maximum of 13 55-gallon drums, or an equivalent volume. The packaging area can hold a maximum of 34 55-gallon drums, or an equivalent volume. The stacking configuration of waste containers will not exceed the load-bearing capacity of the reinforced concrete or metal grating. The secondary containment meets the requirements of 20 NMAC 4.1.500/40 CFR 264.175(b)(1-4).

1.1.2 Hazardous Waste Storage Building (Building 958)

The Hazardous Waste Storage Building (Building 958) is located west of the Hazardous Waste Packaging Building (Figure 2). The Hazardous Waste Storage Building is a ~~3,250~~3,520-ft^2 precast concrete building with an eave height of 14 ft. In the Hazardous Waste Storage Building, eight separate and recessed waste storage compartments for segregation of waste groups are contained in the building (Figure 4). The floors of Cells 1, 2, 3, 4, 6, 7, and 8 are constructed of reinforced concrete and metal grating. The floor of Cell 5 is constructed of reinforced concrete. The ~~entire~~ floor ~~(all cells and walkway)~~ and bottom 5 inches of the walls ~~is~~ are coated with an epoxy-based chemical-resistant coating. The coating protects the concrete from the effects of solvents and corrosive chemicals that could be released on the floor in the event of a spill. Waste containers are placed on metal grating over the secondary containment area, or on ~~pallets on~~ the reinforced concrete floor in Cell 5. Containers are not stored directly on the floor of Cell 5 when containers of liquids without absorbent are present in the cell. The load-bearing capacity of the metal grating and reinforced concrete are 450 and 2,000 pounds per ft^2, respectively. The storage compartments vary in size, secondary-containment capacity, and waste-container capacity.

The secondary containment in Bays 1, 2, 3, 4, 6, 7, and 8 is provided by the recessed areas under the grating. The secondary containment capacity in Bay 5 is provided by the volume of the entire recessed area. For example, the recessed area in Bay 1 is 11.75 feet by 14.67 feet by 5 inches deep, with a capacity of 542 gallons. The secondary containment capacity is 10% of the stored volume or the volume of the largest container; thus, the storage capacity in Bay 1 is 5420 gallons, 98 55-gallon drums, or an equivalent volume. The secondary containment meets the requirements of 20 NMAC 4.1.500/40 CFR 264.175(b)(1-4).

Based on the secondary containment capacity, the storage compartments are limited to the following maximum storage capacity of 55-gallon drums, or equivalent volume, as listed in Table 1.

Table 1
Secondary Containment Capacity for Building 958

Bay No.	Secondary Containment Capacity, Gallons	Maximum Number of 55-Gallon Drums Stored[a]
1	542	98
2	434	79
3	434	79
4	434	79
5	4,136	518[b]
6	434	79
7	434	79
8	434	79

[a] Actual limit will be various containers with total volume equivalent to stated number of 55-gallon drums

[b] A portion of the secondary containment capacity is taken up by pallets, and the aisle area is not included in the calculations.

The stacking configuration of waste containers will not exceed the load-bearing capacity of the reinforced concrete floor or the metal grating.

1.1.3 Modular Storage Buildings (958B and 958C)

The modular storage buildings are located west of Building 958 (Figure 2) and are used for storage of spontaneously ignitable and reactive wastes, including, but not limited to, lithium batteries, gas cylinders, and flammable solids.

The exterior dimensions of each modular storage building are 22 ft long, 8 ft wide, and 8 ft high. The buildings are constructed of welded 10- and 12-gauge steel supported by structural steel sections. Each building has three doors, each with a three-point locking system to provide access and security. Each has a 6-inch-deep integral spill containment reservoir under the entire building; the containment capacity is 500 gallons. The secondary-containment subfloor is constructed of continuously welded 10-gauge steel, which is painted ~~epoxy-coated~~ to provide protection against degradation~~resist chemical attack; the coating is compatible with reactive wastes~~. The floors are 1-inch-thick ~~epoxy-coated, fire resistant plywood~~vinyl ester fiberglass grating. The load-bearing capacity of the floor for each structure is 250 pounds per square foot. The inside walls and ceiling are also painted~~coated with chemical-resistant epoxy~~. Each building rests on structural supports that elevate it and allow visual checks of the underside of the spill containment reservoir if there is evidence of deterioration on the interior surfaces. The secondary containment capacity is 10% of the stored volume or the contents of the largest container; thus, the storage capacity is 5,000 gal. The secondary containment meets the requirements of 20 NMAC 4.1.500/40 CFR 264.175(b)(1-4).

1.2 Unit Operations

The HWHF WMAs are used to store any of the RCRA-regulated wastes bearing U.S. Environmental Protection Agency Hazardous Waste Numbers listed in the General Part A.

Information regarding operations requiring a permit at all RCRA-regulated Units at SNL/NM is included in Section 1.1 of the General Part B. Additional Unit-specific information is provided in the following sections.

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

Unit personnel begin taking action to evaluate and remove accumulated liquids in each secondary containment area in the HWHF upon discovery. Accumulated liquids are cleaned up as described in Section 1.1.1 of the General Part B.

Containers are inspected for integrity when the wastes arrive at the HWHF, before they are placed on the shelves in the holding cells in Building 959. Containers in poor condition are not placed on the shelves; the containers may be overpacked or the RCRA-regulated wastes may be transferred to containers in good condition, as described in Section 1.2.2.1 of the General Part B. The shelves are typically lined with absorbent pads under the removable grating in areas where containers of liquids are stored. Containers are placed on the grating on the shelves, and are inspected regularly as noted in Section 4.0 of this module and in Appendix C of the General Part B. Released materials are contained in the absorbent pads and are cleaned up as described in Section 1.1.1 of the General Part B. These practices serve to protect the containers on the shelves from contact with liquids.

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

Any of the ignitable or reactive wastes listed in the General Part A may be managed at the HWHF. Sources of ignition that may be present at the HWHF are those noted in Section 1.1.2.1 of the General Part B: welding activities, open flames, hot surfaces, frictional heat, radiant heat, sparks, and engines. The general precautions and practices employed by Unit personnel are described in Section 1.1.2 of the General Part B. Additional HWHF-specific features, potential ignition and reaction sources, precautions, and practices include:

- The modular storage buildings are grounded by a 10-ft-long grounding rod and cable. They are equipped with a dry chemical fire suppression system to assure that water-reactive wastes will not be exposed to water during fire emergencies.
- Building 959 is used for open container operations (e.g., bulking, sampling) that may involve ignitable or reactive wastes. It is equipped with an intrinsically safe (spark proof) electrical system, including lighting and receptacles.

- Spontaneously ignitable and water-reactive wastes are segregated from other wastes and stored in the modular storage buildings. The modular storage buildings have exterior signs indicating the presence of ignitable and reactive wastes.

- Spontaneously ignitable and water-reactive wastes may temporarily be managed in Building 959 after receipt and during repackaging activities. Individual containers are labeled as described in Section 1.2.1 of the General Part B, and they are kept apart from other wastes.

- Containers of wastes (including ignitables and reactives) are labeled and segregated in different holding cells in Building 959 according to compatibility criteria in 20 NMAC 4.1.500/40 CFR 264 Appendix V. Each cell is marked with a sign noting the hazard class(es) of wastes inside. Containers in Building 958 (including ignitables and reactives) are labeled. They are segregated into different bays according to general DOT hazard classes in 49 CFR 172 and 20 NMAC4.1.500/40 CFR 264 Appendix V as appropriate. Each bay is marked with a sign noting the hazard class(es) of wastes inside. The holding cells and bays are separated from each other by concrete walls and independent containment systems.

- Forklifts are not used for waste movement in Building 959 to minimize potential sources of ignition in the building.

- Unit personnel use the process described in Section 1.1.2 to minimize and dissipate static charge ~~ground containers~~ during transfer of flammable liquids between containers.

- Wastes are mixed together on a very limited basis during the repackaging operations at the Unit. Ignitable and reactive wastes are only mixed on a case-by-case basis. Unit personnel plan each such operation carefully to identify the hazards and potential consequences. Personnel use waste characterization data and/or published chemical information (e.g., NIOSH Pocket Guide to Chemical Hazards or other chemical or engineering handbook) for each waste in the planning process. Personnel then conduct the operations according to the plan in order to control the hazards and prevent uncontrolled reactions.

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

The following sections address required equipment, testing and maintenance of equipment, and access to communications or alarms systems at the HWHF.

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

General information about fire hydrants at each Unit is provided in Section 1.1.3.1 of the General Part B. The fire hydrant at the HWHF is shown in Figure 10.

The modular storage buildings are grounded by a 10-ft-long grounding rod and cable. All buildings at the HWHF are equipped with automatic fire suppression systems, which are summarized in Table 2.

Table 2
Fire Suppression Systems at the Hazardous Waste Handling Facility

Building	Applicable NFPA Standard[a]	Sprinkler Design Occupancy Classification	System Type	Sprinkler Actuation[b]
959	13, 30	Special	Automatic sprinkler, wet pipe	GB/FS
958	13, 30	Special	Automatic sprinkler, dry pipe	GB/FS
958B	17	N/A	Dry chemical	
958C	17	N/A	Dry chemical	

[a] National Fire Protection Association (NFPA), 2000, 2002
[b] Sprinklers are either glass bulb or fusible solder type, typically designed to open at temperatures of 155ºF or higher.

Information on other required equipment located at the HWHF is provided in Section 6.0 and Table 4 of this module.

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

Information on equipment testing and maintenance at the HWHF is provided in Section 1.1.3.2 and in Appendix C of the General Part B, and in Section 4.0 of this module.

1.2.3.3 Access to Communications or Alarm Systems (20 NMAC 4.1.500/40 CFR 264.34)

Information about the types and locations of communications or alarm systems at the HWHF is provided in Section 1.1.3.3 of the General Part B and in Section 6.0 of this module.

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

The following sections address the procedures, equipment, and structures used at the HWHF to prevent hazards. Additional information applicable to the HWHF and all other Units at SNL/NM is included in Section 1.1.4 of the General Part B.

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

HWHF personnel employ the practices described in Section 1.1.4.1 of the General Part B to prevent hazards in unloading. Loading and unloading activities typically take place on the south

side of buildings 958 and 959 (Figure 7). The surface is level, the pavement is in good condition in the area, and there is sufficient room for operating vehicles.

Containers are handled in a manner to prevent shifting and falling. Containers are typically shrink-wrapped to hold them together on a pallet before being loaded onto vehicles by a forklift for off-site shipment. Containers are typically hand carried or transported within the Unit with drum dollies or pallet jacks.

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

The land around the HWHF is generally level, sloping gently toward the south and west. The paved areas of the HWHF are higher than the surrounding land on all sides, preventing sheet-flow run-on of surface water from surrounding areas. The western edge of the paved area is steeply sloped at the edge, rising to a level at least~~also surrounded by a~~ 6 ~~-~~inches above the surface outside the Unit, ~~high asphalt curb,~~ further preventing runon and runoff from HWHF WMAs.

Within the HWHF, the paved areas are sloped toward a 74,800-gallon catchment pond located at the northwest corner of the Unit. During normal operations, the catchment pond collects only storm water. The catchment pond does not provide secondary containment for RCRA-regulated waste.

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

Sandia/DOE do not anticipate that management of RCRA-regulated wastes at the HWHF will affect water supplies, as described in Section 1.1.4.3 of the General Part B.

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

General measures that are available to Unit personnel are described in Section 1.1.4.4 of the General Part B. The HWHF is equipped with battery-operated lights that will automatically turn on in the event of a power failure. A permanent power transformer can provide emergency power from the SNL/NM emergency power network.

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

HWHF personnel employ the practices described in Section 1.1.4.5 of the General Part B to prevent undue exposure. In addition, a fume hood and flexible ventilation hoses are available in Building 959 and can be used if there is a need to open a container of vapor-generating RCRA-regulated waste to sample the waste or transfer it to another container.

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

HWHF personnel employ the practices described in Section 1.1.4.6 of the General Part B to prevent releases to the atmosphere during storage.

Subpart AA

HWHF storage operations do not employ any of the processes subject to the requirements of 20 NMAC 4.1.500/40 CFR 264 Subpart AA.

Subpart BB

During storage activities, Sandia/DOE do not routinely manage RCRA-regulated wastes with organic concentrations ≥10 percent by weight in process equipment identified in 20 NMAC 4.1.500/40 CFR 264, Subpart BB [~~10-1-03~~7-1-08]. HWHF repackaging operations sometimes involve a pump used in light organic service. It is used for less than 300 hours per calendar year and is therefore exempt from the requirements of 20 NMAC 4.1.500/40 CFR 264.1052 through 1060 [~~10-1-03~~7-1-08] as noted in 20 NMAC 4.1.500/40 CFR 264.1050(f) [~~10-1-03~~7-1-08]. The equipment list will be noted in the HWHF records, and equipment use will also be noted in the records.

Subpart CC

HWHF personnel employ the practices described in Section 1.1.4.6 of the General Part B to prevent releases to the atmosphere in accordance with Container Level 1 standards (20 NMAC 4.1.500/40 CFR 264.1086[c]) for containers that are subject to the standards. Such containers may be stored in any of the WMAs at the Unit.

Section B.5.3 in Appendix B of the General Part B also describes procedures to maintain compliance with the air emissions requirements of 20 NMAC 4.1.500/40 CFR 264, Subparts BB and CC [~~10-1-03~~7-1-08].

1.3 Container Storage Practices (20 NMAC 4.1.900/40 CFR 270.15 and 20 NMAC 4.1.500/40 CFR, Subpart I)

The HWHF is permitted for container storage of RCRA-regulated wastes in accordance with the conditions of “Sandia National Laboratories/New Mexico Hazardous Waste Facility Operating Permit Number NM5890110518-1” (NMED, 1992). Container storage practices applicable to the HWHF are presented in the following sections.

1.3.1 Container Types and Labeling

HWHF personnel use the containers types and labeling practices described in Section 1.2.1 of the General Part B.

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

HWHF personnel employ the container handling practices described in Section 1.2.2 of the General Part B.

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

The condition of containers at the HWHF is maintained as indicated in Section 1.2.2.1 of the General Part B.

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

HWHF personnel employ the aisle space and storage configuration ~~as~~ described in Section 1.2.2.2 of the General Part B. Aisle width is typically 2.5 feet in all buildings. This is adequate for unobstructed movement of Unit and emergency response personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of Unit operation in an emergency.

Drums and large drum-shaped containers that are stacked in Building 958 are stored on pallets, and are not stacked more than two pallets high. Smaller containers may be stacked on a single pallet. Box-shaped containers may be stacked ~~two high~~ without pallets. Containers may also be stored directly on the grating, ~~or~~ on pallets on the floor, or directly on the floor in Cell 5 when containers of liquids without absorbent are not present in the cell.

In Building 959, containers are stored in the holding cells: smaller containers are stored on the shelves, and larger containers are stored directly on the grating. Containers are typically not stacked in Building 959; however, containers on the floor grating may be stacked two high.

Fifty-five-gallon drums stored in the modular buildings (Buildings 958B and 958C) are not stacked. Smaller containers may be stacked.

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

HWHF personnel ensure waste compatibility with containers as indicated in Section 1.2.2.3 of the General Part B.

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

All container storage areas at the HWHF are equipped with secondary containment. Therefore, Unit personnel do not verify whether containers contain free liquids before storage.

Table 3
Hazardous Waste Handling Facility Inspection Criteria and Frequency

Inspected Item	Inspection Criteria	Inspection Frequency
SAFETY AND EMERGENCY EQUIPMENT See Table 4 "Emergency Equipment and Locations" in this module for additional information		
Eye wash / safety shower	Operational, accessible, in good condition	Monthly
Spill control and cleanup items	Present, quantities per inventory, and in good condition	Monthly
Self-contained breathing apparatus	Present and in good condition	Monthly
Personal protective equipment	Present, quantities per inventory, and in good condition	Monthly
Fire alarm pull station(s)	Present, accessible, and in good condition	Monthly
Fire alarm(s)	Present	Monthly
Telephone(s)	Present and operational	Monthly
Fire extinguisher(s)	Present, charged, accessible, and in good condition	Monthly
Fire sprinklers and system	Present, appears to be in good condition, sprinklers not obstructed	Monthly
OPERATING AND STRUCTURAL EQUIPMENT Buildings 958, 959, 958B, and 958C		
Building / storage area floor	Clean, no spills, cracks, or excessive wear	Weekly when and where wastes are managed. Monthly otherwise.
Building walls	Not leaking or spalling, in good condition	Weekly when and where wastes are managed. Monthly otherwise.
Building ceiling	Not leaking or spalling, and in good condition	Weekly when and where wastes are managed. Monthly otherwise.
Building lights	Operational and in good condition	Weekly when and where wastes are managed. Monthly otherwise.
Shelves (Building 959 only)	Clean, in good condition, no accumulated leaks or spills	Daily when and where wastes are handled. Weekly otherwise.
Secondary containment	Free of liquids, good condition (i.e., no cracks, excessive wear)	Daily when and where wastes are handled. Weekly otherwise.

Table 3 (Concluded)
Hazardous Waste Handling Facility Inspection Criteria and Frequency

Inspected Item	Inspection Criteria	Inspection Frequency
OPERATING AND STRUCTURAL EQUIPMENT (cont) Buildings 958, 959, 958B, and 958C		
Loading and unloading areas	Good condition, safe working surface, free of cracks, no spills	Daily when and where wastes are handled. Monthly otherwise.
Waste handling equipment	Good condition, in good repair, operational	Daily when and where wastes are handled. Monthly otherwise.
Monitoring equipment	Instruments in good condition, operational, calibrated	Daily when and where wastes are handled. Monthly otherwise.
Waste transfer pump	Present, operational, and in good condition	Prior to use. Monthly otherwise.
Stormwater retention pond	~~Sampled for presence of released/spilled hazardous waste constituents if there is evidence of or chance that such constituents entered the pond~~Good condition, adequate freeboard, outlet not obstructed, no evidence of release of RCRA-regulated waste.	~~Within five days of a release requiring reporting to the NMED Secretary~~Weekly.
SECURITY DEVICES		
Fence	Present and in good condition	Monthly
Warning signs	Present and in good condition	Monthly
Gates and doors	Present, operational, in good condition	Monthly
Locks	Present, operational, in good condition	Monthly
CONTAINERS		
Integrity	Good condition (i.e., no bulging, leaks, corrosion, or deterioration)	Check individual containers as they are handled. Weekly otherwise.
Closed	Correct lid/cover placement (i.e., properly closed and sealed)	Check containers as they are handled. Weekly otherwise.
Labeling	Correct information, correct location, legible	Check containers as they are handled. Weekly otherwise.
Storage Conditions	Waste compatible with container, container located with compatible wastes	Check individual containers as they are handled. Weekly otherwise.
Location	Correct aisle space, stable~~correct~~ stacking ~~(2 maximum)~~	Check individual containers as they are handled. Weekly otherwise.

6.0 CONTINGENCY PLAN AND EMERGENCY RESPONSE

Emergency response requirements for permitted units are specified in 20 NMAC 4.1.500/40 CFR 264, Subpart D [~~10-1-03~~7-1-08], "Contingency Plan and Emergency Procedures," and in 20 NMAC 4.1.900/40 CFR 270.14(b)(7) [~~10-1-03~~7-1-08]. The Sandia/DOE "Site-Wide Contingency Plan" is included as Appendix E of the General Part B. Supplemental HWHF-specific information is included in this section, in Figures 9 and 10, and in Tables 4 and 5 of this module. Current copies of the site-wide contingency plan and this supplemental information are maintained at the HWHF and at the SNL/NM Emergency Operations Center.

The HWHF is located at the curve of 14th and P Streets (approximately 1,000 feet (ft) north of the entrance to Technical Area II) at SNL/NM. The Unit is used to repackage and store RCRA-regulated wastes. The WMAs at the HWHF include Building 958, Building 959, and the two modular storage buildings. The HWHF WMAs are located within a single area surrounded by a fence. All of the wastes listed in the General Part A may be stored at the HWHF.

- Building 959 is an 1,800-square-foot precast concrete building with an eave height of 12 feet. Inside the building are eight waste holding cells, a repackaging area, a restroom, a general use area, an office area, and an area for packing materials. The floor is coated with an epoxy finish. Small containers of wastes (typically less than 55 gallons) are stored in this building. Containers of incompatible wastes are segregated into different holding cells. The containers and contents are repackaged into other containers for shipment to off-site facilities. Up to 7,590 gallons of waste may be stored in this building.

- Building 958 (west of Building 959) is a 3,520-square-foot precast concrete building with an eave height of 14 feet. The building includes eight separate and recessed waste storage compartments for segregation of waste groups according to compatibility. Containers of wastes are stored in this building. Up to 59,950 gallons of waste may be stored in this building.

- Buildings 958B and 958C are modular, relocatable, prefabricated safety storage structures used for the storage of reactive and ignitable wastes. Each structure is constructed of welded 10- and 12-gauge steel with supporting structural steel sections, and each has three doors. The 500-gallon containment reservoirs within each building, the walls, and the ceilings are painted.~~coated with chemical-resistant epoxy. The reservoirs are lined with polypropylene, which is compatible with reactive wastes.~~ The floors are vinyl ester fiberglass grating~~epoxy-coated, fire-resistant plywood~~. Up to 5,000 gallons of waste may be stored in each building.

- Storage of water-reactive wastes~~, lithium batteries, gas cylinders and flammable solids~~ is restricted to these two buildings except for temporary storage that may occur in Buildings 958 and 959 during receipt, repackaging, and staging activities~~following acceptance of the waste at the HWHF~~.

Figure 9 presents the evacuation routes for the HWHF. Figure 10 presents emergency response and access information for the HWHF. Table 4 lists the emergency equipment typically available at the HWHF. Table 5 lists the emergency coordinators for the HWHF.

Current copies of the site-wide contingency plan (Appendix E of the General Part B) and this supplemental information are maintained at the HWHF and at the SNL/NM Emergency Operations Center.

Table 4
Hazardous Waste Handling Facility, Emergency Equipment and Locations

Building 958

Category	Description/Capabilities	Location
Spill Control and Decontamination Equipment	Fixed shower / eyewash	Near south entrance
	Recovery drums and containers	~~At south entrance~~In equipment storage at the HWHF
	Absorbent (sufficient absorbent for 55 gallons of liquid when liquid wastes are present)	~~At south entrance~~In equipment storage at the HWHF
	Spill cleanup items (mops, brooms, and/or shovels)	In equipment storage at the HWHF
	SCBA	At south entrance
	Miscellaneous personal protective equipment (protective suits, goggles and/or safety glasses, gloves)	~~At south entrance~~In equipment storage at the HWHF
Internal Communication and Alarm System	Voice command	
	Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)	~~One each~~ O~~o~~n the ~~exterior and interior~~ walls near north and south personnel doors
	Audible fire alarms	
External Communication System	Telephones – unlimited employee access	One on the interior walls near the north and south entrances
	Fire alarm pull stations (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)	~~One each~~ O~~o~~n the ~~exterior and interior~~ walls near north and south personnel doors
Fire Extinguishers	Portable (A-B-C)	One at both the north and south entrances
Fire Suppression	Automatic wet-pipe water sprinkler system, with heat-actuated sprinklers	Coverage throughout the building
	Water supplied by fire hydrants	One hydrant, location shown in Figure 10

Table 4 (Continued)
Hazardous Waste Handling Facility, Emergency Equipment and Locations

Building 959

Category	Description/Capabilities	Location
Spill Control and Decontamination Equipment	Fixed shower/eyewash	Near south entrance
	Recovery drums and containers	~~Near south entrance~~In equipment storage at the HWHF
	Absorbent (sufficient absorbent for 55 gallons of liquid when liquid wastes are present)	~~Near south entrance~~In equipment storage at the HWHF
	Spill cleanup items (mops, brooms, and/or shovels)	In equipment storage at the HWHF
	SCBA	~~Near south entrance~~In equipment storage at the HWHF
	Miscellaneous personal protective equipment (protective suits, goggles and/or safety glasses, gloves)	~~Near south entrance~~In equipment storage at the HWHF
	First aid kit	One in the bathroom
Internal Communication and Alarm System	Voice command	
	Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers).	~~One each~~ O~~o~~n the ~~exterior and interior~~ walls near each personnel door and one inside the office area
	Audible fire alarms	
External Communication System	Telephones – unlimited employee access	One in the office
	Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers).	~~One each~~ O~~o~~n the ~~exterior and interior~~ walls near each personnel door
Fire Extinguishers	Portable (A-B-C)	One at both the north and south entrances
	Lith-X or equivalent	One in the general use area. One in the office
Fire Suppression	Automatic wet-pipe water sprinkler system, heat-actuated sprinklers	Coverage throughout the building
	Water supplied by fire hydrants	One hydrant, location shown in Figure 10

7.0 CLOSURE PLAN

Applicable closure requirements are specified in 20 NMAC 4.1.900/40 CFR 270.14(b)(13), and 20 NMAC 4.1.500/40 CFR 264, Subparts G and I, [~~10-1-03~~7-1-08]. General closure information applicable to all Units at SNL/NM and general sampling and analytical procedures to be used during closure activities are presented in the "Site- Wide Closure Plan" in Appendix F of the General Part B. The site-wide plan includes a description of the SNL/NM facility, waste descriptions, closure performance standards, general closure methods, a sampling and analysis plan (SAP), a general closure schedule, procedures for amendment of the plan, closure certification and letter, survey plat, and post-closure requirements. Unit-specific information for closure of the HWHF is included in this section.

7.1 Unit Description

The HWHF is located at the curve of 14th and P Streets (approximately 1,000 feet north of the entrance to Technical Area II) at SNL/NM and is used to repackage and store RCRA-regulated wastes. The WMAs at the HWHF include Building 958 (Figure 12), Building 959 (Figure 11), and two modular storage buildings (Buildings 958B and 958C, Figure 13). The HWHF WMAs are located within a single area surrounded by a fence.

- Building 959 is an 1,800-square-foot precast concrete building that contains eight separate and recessed waste holding cells and a repackaging area. The floor and sides of each recessed area are~~is~~ coated with an epoxy finish. Small containers of wastes (typically less than 55 gallons) are stored in this building. The repackaging area includes a fume hood and local negative-pressure ventilation systems for use when opening containers of vapor-producing wastes to repackage them.

- Building 958 (west of Building 959) is a 3,520-square-foot precast concrete building that includes eight separate and recessed waste storage compartments for segregation of waste according to compatibility groups. The floor and bottom 7 inches of walls in each recessed area are~~is~~ covered with a chemical-resistant epoxy finish. Containers of wastes are stored in this building.

- Buildings 958B and 958C are modular, prefabricated safety storage structures used for container storage of reactive and ignitable wastes. Each structure is constructed of welded 10- and 12-gauge steel with supporting structural steel sections, and a 500-gallon containment reservoir. The inside surfaces are painted~~coated with chemical-resistant epoxy finish~~.

7.2 Estimate of Maximum Waste in Storage (20 NMAC 4.1.500/40 CFR 264.112[b][3])

The maximum volume of RCRA-regulated waste in storage at any time at the HWHF is estimated at 77,540 gallons of liquids and/or solids (including lab packs that contain substantial quantities of absorbent). This is the maximum volume of RCRA-regulated wastes that could be removed

9.0 REFERENCES

DOE, see U.S. Department of Energy

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National Fire Protection Association (NFPA), 2000, "Flammable and Combustible Liquids Code," NFPA 30, National Fire Protection Association, Quincy, Massachusetts.

National Fire Protection Association (NFPA), 2002, "Standard for the Installation of Sprinkler Systems," NFPA 13, National Fire Protection Association, Quincy, Massachusetts.

National Fire Protection Association (NFPA), 2002, " Standard for Dry Chemical Extinguishing Systems," NFPA 17, National Fire Protection Association, Quincy, Massachusetts.

National Fire Protection Association (NFPA), 2002, "Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems," NFPA 25, National Fire Protection Association, Quincy, Massachusetts.

NFPA, see National Fire Protection Association

New Mexico Environment Department (NMED), 1992, "Sandia National Laboratories/ New Mexico Hazardous Waste Facility Operating Permit Number NM5890110518-1," effective August 6, 1992, New Mexico Environment Department, Santa Fe, New Mexico.

New Mexico Environment Department, 1997, Letter from NMED (Robert S. Dinwiddie) to DOE (Michael Zamorski), entitled "Request for Supplemental Information: Background Concentrations Report, SNL/KAFB," dated September 24, 1997.

NMED, see New Mexico Environment Department.

Sandia National Laboratories/New Mexico (SNL/NM), ~~2004~~2012, "Sandia National Laboratories/New Mexico General Part A Permit Renewal Request/Application," Revision ~~7.0~~11.0, Sandia National Laboratories/New Mexico, Albuquerque, New Mexico.

SNL/NM, see Sandia National Laboratories/New Mexico

U.S. Department of Energy (DOE), 2000, "Agreement-in-Principle Between the United States Department of Energy and the State of New Mexico for Environmental Oversight and Monitoring", dated November 29, 2000.

Sandia National Laboratories/New Mexico
Thermal Treatment Facility
Part B Permit Renewal Request

Module II

Revision 7.0~~4.0b~~

April 2012~~November 2010~~

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SANDIA NATIONAL LABORATORIES/NEW MEXICO
THERMAL TREATMENT FACILITY
PART B PERMIT RENEWAL REQUEST

This Sandia National Laboratories/New Mexico (SNL/NM) Thermal Treatment Facility (TTF) Part B Permit Renewal Request is submitted to address the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subparts V and IX (20 NMAC 4.1.500 and .900), revised July 1, 2008~~October 1, 2003~~ [7-1-08~~10-1-03~~], requirements specific to Resource Conservation and Recovery Act (RCRA)-regulated waste treatment operations at the TTF. 20 NMAC 4.1.500 and .900 adopt by reference, with limited exceptions, all of the Code of Federal Regulations, Title 40, Parts 264 and 270 (40 CFR 264 and 270).

Sandia Corporation (Sandia) and the U.S. Department of Energy/National Nuclear Security Adminstration (DOE), as ~~co-~~operator~~s~~ and owner, respectively, of the SNL/NM site, have prepared and revised this module to provide Unit-specific details that supplement the information provided in the ~~"~~Sandia National Laboratories/New Mexico General Part B Permit Renewal Request/Application", hereinafter referred to as the SNL/NM General Part B. Together, information provided in this module, in the SNL/NM General Part B, and in appendices to the General Part B meet the applicable requirements for the TTF that are specified in 20 NMAC 4.1.500/40 CFR 264 [~~10-1-03~~7-1-08], and 20 NMAC 4.1.900/40 CFR 270 [~~10-1-03~~7-1-08].

Sandia/DOE also prepared the ~~"~~Sandia National Laboratories/New Mexico General Part A Permit Renewal Request/Application, Rev. ~~7.0~~11.0" (SNL/NM,~~ 2004a~~2012), hereinafter referred to as SNL/NM General Part A, included as Part 1 of this comprehensive Part B permit request. The General Part A serves as a companion document to the SNL/NM General Part B and Unit-specific Part B modules, including this TTF Part B Permit Renewal Request.

In the SNL/NM General Part A, the General Part B, its appendices, and this module, a Unit to be permitted may sometimes be referred to as a "facility" (e.g., Thermal Treatment Facility). The term "facility," as it appears in this context, is used only to denote a building or Unit name and does not imply the regulatory meaning of "facility" as defined in 20 NMAC 4.1.100/40 CFR 260.10 [~~10-1-03~~7-1-08]. However, pursuant to 20 NMAC 4.1.100/40 CFR 260.10 [~~10-1-03~~7-1-08], the SNL/NM site as a whole does meet the regulatory definition of a facility.

The TTF occupies 196 square feet south of Building 6715 in Technical Area (TA)-III. It is a thermal treatment unit surrounded by an earthen berm and a fence. The entire area within the fence is 8140 square feet. It is used for treatment of explosive waste exhibiting the hazardous waste characteristic of reactivity (D003) generated during operations in Building 6715 (adjacent to the Unit). Sandia/DOE currently operate the TTF in accordance with the terms of NMED Permit NM5890110518-2, issued November 4, 1994 (NMED, 1994), and its subsequent modifications. Sandia/DOE manage all of the wastes listed in the Part A included in Permit NM5890110518-2.

1.0 GENERAL UNIT OPERATIONS

This section provides descriptions of the TTF waste management area (WMA) and TTF operations. The information in this section complements the information provided in Section 1.0 of the SNL/NM General Part B.

Specific information in this section regarding Unit operations includes containment systems; requirements for ignitable, reactive, and incompatible wastes; preparedness and prevention; and hazards prevention. Treatment practices are discussed in Section 8.0 of this module.

The specific information provided and documents referenced in this section, together with the general information provided in Section 1.0 of the SNL/NM General Part B, address the applicable hazardous waste management facility requirements of 20 NMAC 4.1.500/40 CFR 264, Subparts X, AA, BB, and CC [7-1-08~~10-1-03~~], and 20 NMAC 4.1.900/40 CFR 270.14 and 270.23 [7-1-08~~10-1-03~~].

The TTF is used to treat specific and well-defined explosive (D003) wastes generated at a test facility in Building 6715. The wastes also meet the definition of ignitable waste (D001), and may bear EPA Hazardous Waste Numbers D002, D011, and F003, depending on the presence of nitric acid, silver and spent solvents. Other constituents are also present, as discussed in Sections 8.0 and 9.0. Explosive silver acetylide/silver nitrate (SASN) slurry is formulated from raw ingredients as needed for tests. SASN is present in the solid and liquid wastes treated at the TTF. Pentaerythritol tetranitrate (PETN) (an explosive) is sometimes included in the tests and would also be present in the wastes. SASN is categorized as a primary explosive, and each discrete crystal (when dry) has the potential to detonate. According to published technical data (Wilden, 1986), SASN can be initiated by the energy of bright light (by raising the surface temperature to the auto ignition temperature of 457 degrees Fahrenheit) or small contact shock. SASN is not approved for transport on public roads. Thermal treatment is an accepted treatment technology for the deactivation of explosive waste (20 NMAC 4.1.800/40 CFR 268.40 [7-1-08~~10-1-03~~]) to meet treatment standards.

1.1 Designated Waste Management Area (20 NMAC 4.1.900/40 CFR 270.23[a])

The location of the TTF at SNL/NM is shown on Figure 1. The TTF has one designated WMA, the treatment area, shown on Figure 2.

The treatment area at the TTF is located outside the south end of Building 6715 in TA-III at SNL/NM. The treatment area consists of a square burn pan constructed of 0.375-inch (in.) steel, 2 feet (ft) 6 in. on a side and 6-in. deep. The bottom of the burn pan is elevated approximately 10 to 12 inches above the floor of the TTF by steel beams. The burn pan is located near the center of a square curbed slab of concrete 14 ft on a side lined with 0.5-in. steel, with a 4-in. high, steel-lined concrete curb around the edge. The burn pan is enclosed within a square cage approximately 4 ft on a side, consisting of expanded metal screen approximately 8-ft high with a nearly solid metal roof having slots for tracks and cables. An expanded metal screen door, remotely activated from inside Building 6715, provides access to the treatment area (i.e., the burn pan). Moveable steel panels are attached to the lower part of

two sides of the cage to control airflow as needed. TTF site plans and drawings are presented in Figures 3 and 4.

An enclosure on the east side of the cage houses three propane burners, which can be remotely activated from inside Building 6715. Two propane burners are positioned to heat the burn pan. A third burner is positioned to ignite the contents of the burn pan and flammable vapors above the pan. Liquid wastes to be treated are transferred from Building 6715 to the TTF through flexible transfer hoses utilizing a remotely operated peristaltic pump. The hoses are contained inside a metal channel that provides secondary containment. The flexible hoses and channel terminate approximately 5 ft. from the burn pan and metal tubing transfers the waste the final distance into the burn pan. Solid items to be treated in the TTF are manually loaded into the burn pan.

Liquids that might accumulate at the TTF WMA are contained within a secondary containment system (i.e., the entire steel-lined concrete pad that drains through a filter into a catch tank) and the system is sufficiently impervious to contain spills or accumulated precipitation until the liquid is removed. The secondary containment system provided by the steel-lined concrete pad is designed to contain at least 20.8 gallons of liquid waste. This is the maximum volume of RCRA-regulated liquid waste in the TTF burn pan at any time. The catch tank has a containment capacity of approximately 157 gallons.

A circular tank located north of the unit and south of Building 6715 is primarily utilized as a process tank for collecting non-RCRA-regulated cleaning water ~~wastewater~~ from test operations; this tank is not part of the TTF. The wastewater collected in this tank is not typically ~~intended to be~~ treated at the TTF. The water drains through a filter at the inlet to the tank. The filter may be treated at the TTF if it is known or suspected to contain unreacted SASN. The wastewater is sampled and analyzed. If it contains unreacted SASN it is treated in the TTF.

Because the TTF is located outside, it is difficult to prevent equipment deterioration; however, the unit and its ancillary equipment are periodically inspected to insure proper operation as described in Section 4.0 of this module. If deterioration sufficient to affect the operation, safety, or reliability of the unit is identified, the affected equipment is either refurbished or replaced.

1.2 Unit Operations (20 NMAC 4.1.900/40 CFR 270.23[a])

Information regarding operations requiring a permit at all RCRA-regulated Units at SNL/NM is included in Section 1.1 of the SNL/NM General Part B. Additional Unit-specific information is provided in the following sections.

1.2.1 Operation of Containment Systems (20 NMAC 4.1.900/40 CFR 270.14[b][8][ii] and 270.23; and 20 NMAC 4.1.500/40 CFR 264.175[b][5])

Because the TTF is located outside, the steel-lined concrete pad periodically collects water from precipitation, and the water drains through a filter into the catch tank. The water typically contains some soil and may possibly contain silver-containing particulates if such particulates are present on the pad.

Treatment operations occur periodically at the TTF and typically involve burns during one to three days. Each treatment operation is followed by a post-treatment inspection, described in Section 8.0 of this module, which identifies kickout or contamination of the steel-lined concrete pad. Operating personnel wet contaminated areas with water and decontaminate them with wet paper wipes as described in Section 8.1.2. Alternatively, personnel may wash the areas. The wash water typically contains some soil and silver-containing particulates.

Water on the pad drains through a filter into the catch tank. Soil and other particulates are contained in the filter. The filter is managed as ~~D011~~ hazardous waste due to the potential presence of ~~silver~~ SASN and silver. The ~~If the~~ accumulated water in the catch tank will be characterized as described in the Site-Wide Waste Analysis Plan in Appendix B. ~~was generated by either of the processes listed above, it will be assumed to meet City of Albuquerque wastewater discharge parameters and will be discharged (pumped) directly to the Technical Area III sanitary sewer system after appropriate notifications and approvals.~~ Previous analyses of storm water collected in the catch tank indicate the water meets the wastewater discharge parameters set by the City of Albuquerque. Unit personnel will collect one sample of accumulated water periodically~~annually~~; the sample will be analyzed for silver to check that the water continues to meet the discharge limits. If the filter or the water in the catch tank are known or suspected to contain unreacted SASN, they are treated in the TTF.~~If there is not sufficient accumulated water for annual sampling, personnel will collect a sample when water is available.~~

~~If water in the catch tank was generated by a process other than those listed above, it will be managed as described in Section B.2.5.1 of the Waste Analysis Plan (Appendix B).~~

1.2.2 Requirements for Ignitable, Reactive, and Incompatible Wastes (20 NMAC 4.1.900/40 CFR 270.14[b][9] and 20 NMAC 4.1.500/40 CFR 264.17)

1.2.2.1 General Precautions for Handling Reactive Waste

The grounds and berms near the TTF are routinely cleared of dry or dead weeds and brush. This helps to prevent brush fires near the TTF. During normal operations, wastes are not stored at the TTF prior to treatment, and the wastes are treated soon after transfer to or placement in the TTF burn pan, as described in Section 8.0 of this module.

Incompatible wastes are not accepted for treatment at the TTF. In particular, copper is incompatible with the explosive slurry of silver acetylide/silver nitrate (SASN) treated at the TTF; therefore, no exposed copper is allowed when SASN is present. No other materials that would produce undesirable reactions with RCRA-regulated waste (e.g., explosion, toxic fumes, or structural damage) are located at the TTF.

Sources of ignition that may be present at the TTF are those noted in Section 1.1.2.1 of the General Part B: welding activities, open flames, hot surfaces, frictional heat, radiant heat, sparks, and engines. Unit personnel take the precautions and measures described in Section 1.1.2.1 of the General Part B to prevent accidental ignition or reaction of wastes at the TTF. Precautions during waste treatment activities are discussed in the following section.

1.2.2.2 Engineering and Operating Precautions to Prevent Reactions

General Treatment Operations

Unit personnel operate the TTF from the control room inside Building 6715. Personnel are not present in the area between Building 6715 and the Unit during treatment operations. Treatment operations begin only after an audible warning signal, an area check for personnel, and a public address announcement that the TTF will begin operations. The TTF access gates are closed and locked. The Building 6715 complex fence access gates are closed during TTF waste transfer operations.

Solid Items

Solid items, saturated in water, are loaded manually into the burn pan. Unit personnel open the TTF expanded metal screen door from the control console in Building 6715. The door is operable only from the control console. Unit personnel then remove the key from the burner control, disabling the gas burner system, before manually loading waste into the TTF burn pan. Typically, the gas burner system is controlled by the same operator who manually loads the TTF burn pan.

Liquids

Liquids are transferred to the burn pan through the waste transfer pump and lines. The operator at the control console in the building operates the pump remotely. The burners may or may not be operating during the transfer, depending on the stage of the treatment operations.

Liquids are also carried to the burn pan and manually loaded with the solid items to be treated.

Maintenance Operations

In order to ensure that residual untreated explosive material is not present to cause a hazard to workers, operating personnel check surfaces with a portable propane burner as described below:

- Prior to maintenance or repair activities on or in the burn cage: If such activities involve hot work or friction (such as welding, cutting, or grinding), personnel check the burn cage and pad.
- Prior to maintenance or repair activities on the steel-lined concrete pad: If such activities involve hot work or friction (such as welding, cutting, or grinding),personnel check the burn cage, the pad, and the surrounding areas in the vicinity of the work area.
- Following observation of kickout that occurs during treatment operations: If kickout is observed, personnel check the affected area following the post-treatment inspection as described in Section 8.1.2.

1.2.3 Preparedness and Prevention (20 NMAC 4.1.500/40 CFR 264, Subpart C)

The following sections address required equipment, testing and maintenance of equipment, and access to communications or alarm systems at the TTF.

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

Information about fire hydrants is provided in Section 1.1.3.1 of the General Part B. The fire hydrant at the TTF is shown in Figure 9. Information on other required equipment located at the TTF is provided in Section 6.0 and Table 3 of this module.

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

Information on equipment testing and maintenance at the TTF is provided in Appendix C of the SNL/NM General Part B and in Section 4.0 of this module.

1.2.3.3 Access to Communications or Alarm Systems (20 NMAC 4.1.500/40 CFR 264.34)

Information about the types and locations of communications or alarm systems at the TTF is provided in Section 1.1.3.3 of the SNL/NM General Part B and in Section 6.0 of this module.

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

The following sections address the procedures, equipment, and structures used at the TTF to prevent hazards. Additional information applicable to the TTF and all other Units at SNL/NM is included in Section 1.1.4 of the SNL/NM General Part B.

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

TTF personnel employ the practices described in Section 1.1.4.1 of the SNL/NM General Part B to prevent hazards in unloading, as applicable. Waste treated at the TTF is pumped or hand-carried to the Unit from Building 6715 or from areas surrounding the TTF. Unloading activities are limited to removal of ash residue from the burn pan, removal of ~~or contaminated~~ water from the catch tank, and~~followed by~~ loading ~~of~~ containers onto a flatbed truck or other vehicle for transport to another Unit. Vehicles are typically loaded on the paved area south or southeast of Building 6715 (Figure 7). The surface is level, the pavement is in good condition in the area, and there is sufficient room for the vehicles used to transport RCRA-regulated wastes between the TTF and the receiving Unit(s).

3. If the power failure occurs during treatment, personnel will not enter the TTF until all combustion has ceased and water has been added to the waste and residue (using the water spigot and hose at the TTF entrance) to reduce the explosive hazard, and it is deemed safe to enter. If the power is not restored in time to complete treatment during the day, personnel will secure the area, manually lower the burn pan lid if it is deemed safe to do so, and allow the waste to remain in the burn pan. Unit personnel will notify Sandia/DOE security personnel of the presence of and potential hazards associated with the waste. Unit personnel will complete treatment when power is restored and all other permit requirements for treatment conditions have been met.

4. If power failure occurs during waste transfer, personnel will stop transferring waste and follow the procedures outlined in #3 above.

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

TTF personnel employ the practices described in Section 1.1.4.5 of the SNL/NM General Part B to prevent undue exposure to the wastes to be treated at the TTF.

Hazards associated with the waste treated at the TTF (e.g., the explosive nature of the wastes) serve to increase the potential for personnel exposure to hazardous waste constituents. These are addressed through Unit design and operations:

- Treatment operations are scheduled as soon as practicable after the operations in Building 6715 are completed, minimizing the amount of time that explosive wastes are present on site.

- RCRA-regulated waste that cannot be pumped to the TTF (solid items) is first wetted with water to temporarily reduce the explosive sensitivity and minimize hazards to personnel.

- When wastes or residue are present, Unit personnel keep the burn pan covered with the lid except when wastes are being loaded into the pan or combustion is occurring. This practice serves to minimize personnel exposure to the wastes.

- The TTF is operated from a control console inside Building 6715. Operating personnel observe the treatment through a video camera. During combustion, personnel are not allowed in the area between Building 6715 and the TTF. Both of these practices serve to minimize the potential for exposure to the wastes.

- If adverse weather conditions (described in Section 8.1.3) arise during treatment, operating personnel will evaluate the risks associated with continued operation against the risks associated with halting operations, and determine whether halting operations is warranted. In order to halt treatment, operating personnel will stop the propane burners and lower the burn pad lid as soon as it is safe to do so. Unit personnel may add water to the waste in the burn pan to cool and stabilize it before lowering the lid. Water would be added through the waste transfer tubing or by using the water spigot and hose at the TTF entrance (taking care not to disperse the waste and residue in the pan).

- Operating personnel check the surfaces of the burn cage, the pad, and the surrounding area with a portable propane burner before maintenance and repair activities as described in Section 1.2.2.2 to ensure that residual untreated explosive material is not present to cause a hazard to workers.

Table 1
Thermal Treatment Facility Inspection Criteria and Frequency

Inspected Item	Inspection Criteria	Inspection Frequency
SAFETY AND EMERGENCY EQUIPMENT See Table 3 "Emergency Equipment" in this module for additional information		
Eye wash and safety shower	Operational, accessible, in good condition	Monthly
First-aid kit	Present and stocked	Monthly
Personal protective equipment	Required items present and in good condition	Monthly
Spill control and cleanup items	Present, accessible, quantities per inventory, in good condition	Monthly
Fire alarm pull station(s)	Present, accessible, and in good condition	Monthly
Public address system	Operational	Monthly
Telephone(s)	Present and operational	Monthly
Fire extinguisher(s)	Present, charged, accessible, and in good condition	Prior to treatment. Monthly otherwise.
OPERATING AND STRUCTURAL EQUIPMENT		
Waste transfer pump	Present, operational, and in good condition	Prior to use
Waste transfer tubes	Free of apparent leaks and in good condition	Prior to use
Burn pan	Present, free of apparent leaks, and in good condition	Prior to treatment. Monthly otherwise.
Burn pan lid	Operational and in good condition	Prior to treatment. Monthly otherwise.
Burn cage	Present and in good condition	Prior to treatment. Monthly otherwise.
Burn cage door	Operational and in good condition	Prior to treatment. Monthly otherwise.
Steel-lined concrete pad	Free of apparent cracks and in good condition	Monthly
Filter element	Present, free of apparent tears or holes, and in good condition	Monthly
Rain catch tank	Free of apparent leaks and in good condition	Monthly

6.0 CONTINGENCY PLAN AND EMERGENCY RESPONSE

Emergency response requirements for permitted units are specified in 20 NMAC 4.1.500/ 40 CFR 264, Subpart D [7-1-08~~10-1-03~~], ~~"C~~Contingency Plan and Emergency Procedures," and in 20 NMAC 4.1.900/40 CFR 270.14(b)(7) [7-1-08~~10-1-03~~]. The Sandia/DOE ~~"S~~Site-Wide Contingency Plan" is included as Appendix E of the SNL/NM General Part B. Supplemental TTF-specific information is included in this section, in Figure 9, and in Tables 3 and 4 of this module. Current copies of the site-wide contingency plan and this supplemental information are maintained in Building 6715 and at the SNL/NM Emergency Operations Center.

The TTF is located in the north-central portion of Technical Area III at SNL/NM, just south of Building 6715. The TTF consists of a square, steel burn pan, 30 inches (in.) on each side and 6 in. deep. A remotely-operated metal lid can be raised to open, or lowered to cover, the burn pan. The burn pan is enclosed by an expanded metal screen (i.e., open to the air) cage, approximately 4 feet (ft) on each side and 8 ft tall. Access to the burn pan is provided by a door on the north side of the burn cage, which is operated remotely using controls inside Building 6715. The burn cage sits in the center of a steel-lined concrete pad. The concrete pad is surrounded on the west, south, and east sides by an earthen berm, approximately 8 ft tall. An 8-ft-high chain-link security fence surrounds the entire TTF.

The TTF is used to thermally treat (i.e., burn) small quantities of waste explosive substances, waste liquids (e.g., water, volatile organics) contaminated with explosive substances, and waste items (e.g. rags, wipes, swabs, filters, wood, and inert test debris) contaminated with explosive substances. Wastes treated at the TTF may have U.S. EPA Hazardous Waste Numbers D001, D003, D011, ~~and~~ F003, and D002.

RCRA-regulated waste is not stored at the TTF and is only present just before and during treatment operations. However, if for some reason treatment operations are aborted and it is deemed unsafe to remove the waste, the waste will be wetted as needed to stabilize it, the burn pan lid will be lowered remotely to cover the burn pan and the waste will remain there until it is possible to perform the treatment or safely remove the waste. Personnel will not enter the TTF unless waste is not present, or it is fully treated, or it has been stabilized by saturation with water.

Figure 9 presents the evacuation route, emergency response, and access information for the TTF. Table 3 lists the emergency equipment typically available at the TTF. Table 4 lists the emergency coordinators for the TTF.

8.0 TREATMENT PLAN

In accordance with 20 NMAC 4.1.900/40 CFR 270.23 [~~10-1-03~~7-1-08], treatment operations for RCRA-regulated wastes treated at the TTF are described in this section. Waste analysis procedures are provided in Appendix B (Section B.3.2 and Section B.3.3) of the General Part B.

8.1 Treatment Operations

The treatment is designed to deactivate the reactive and ignitable components of the wastes. Thermal treatment is an accepted treatment technology for the deactivation of explosive wastes (20 NMAC 4.1.800/40 CFR 268.40 [~~10-1-03~~7-1-08]) to meet treatment standards. The wastes may also contain pentaerythritol tetranitrate (PETN, an explosive); however, PETN is rarely used in the process. PETN and SASN both exhibit the hazardous waste characteristic of reactivity (D003). The treatment also effectively deactivates the ignitable (D001) components in the SASN slurry and liquid wastes. Some of the liquid wastes generated during formulation of the SASN slurry may be corrosive (D002) when they are generated in Building 6715; however the overall liquid wastes treated at the TTF are not corrosive. The treated residue may require further treatment to address other constituents, as discussed in Section B.3.3.1 in Appendix B of the General Part B.

The wastes treated at the TTF are typically generated as a result of the formulation of SASN slurry, its application to test articles, and cleanup activities during and after the tests. The tests typically take one to three days, and wastes are generated and treated intermittently during this period. Liquid RCRA-regulated wastes are generated from the formulation and application of SASN slurry. Solid RCRA-regulated wastes (e.g., wipes, rags, swabs, filter elements, cardboard masks, wood, and inert test debris) are generated as a result of cleanup during and after the tests. The solid items are typically saturated with water (i.e., wetted or submerged in water) as needed to protect personnel from explosive hazards.

According to published technical data (Wildin, 1986), SASN can be initiated by the energy of bright light (by raising the surface temperature of the SASN to the auto ignition temperature of 457 ºF) or small contact shock. The TTF was specifically built to treat SASN slurry and SASN contaminated waste because of the hazards associated with handling the waste.

A description of the TTF burn pan design, construction, and materials is provided in Section 1.1 of this module to meet the requirements of 20 NMAC 4.1.900/40 CFR 270.23(a) [~~10-1-03~~7-1-08]; and 20 NMAC 4.1.500/40 CFR 264.601 [~~10-1-03~~7-1-08].

Prior to treatment operations (treatment of wastes in conjunction with a test), TTF personnel perform a pretreatment inspection of the Unit as described in Section 4.0 of this module. During treatment operations, Unit personnel have immediate access to a telephone to summon help, if needed, as described in Section 6.0 of this module.

8.1.1 Waste Quantities

The TTF is limited to the treatment of the following quantities of reactive wastes during treatment operations:

- The maximum net explosive weight of explosive treated during any treatment operation will not exceed 2.41 pounds (1.092 kilograms).

- The maximum total volume of SASN-contaminated wastes (solid and liquid combined) present in the burn pan at any time will not exceed 20.8 gallons (78.7 liters), the capacity of the burn pan.

- The maximum total mass of wastes (solid and liquid combined) present in the burn pan at any time will not exceed 190 pounds (86.2 kilograms).

If more restrictive conditions are imposed by the annual Open Burn Permit issued by the Albuquerque/Bernalillo County Air Quality Control Board (A/BCAQCB), those conditions will be followed. The Open Burn Permit and conditions are described in Section 8.1.4.

8.1.2 Operations

Liquid waste is generally pumped to the TTF utilizing a remotely-operated peristaltic pump that is located inside the area where SASN is formulated and used. The waste is transferred to the TTF burn pan via flexible hoses and metal tubing that lead into the burn pan. RCRA-regulated waste that cannot be pumped to the TTF (solid items) is first wetted with water to temporarily reduce the explosive sensitivity and then hand carried in appropriate containers and manually placed or poured into the burn pan by qualified personnel, using extreme care to prevent spills. TTF personnel are required to wear appropriate personal protective equipment when performing treatment operations.

After the waste is pumped and/or manually placed or poured into the burn pan, all open TTF gates are closed and locked and the door to the TTF is closed remotely. Transfer of liquid waste to the TTF can be accomplished remotely, without opening the TTF door or accessing the fence gates. During operations, t~~T~~he burn pad lid remains closed as much as possible except during loading and combustion to minimize evaporation of volatile waste.

The area between the TTF north fence and Building 6715 is cleared of all personnel by announcing over the public address system that treatment operations will soon commence. The TTF is controlled from the console inside Building 6715. Propane burners are pre-positioned to both heat the burn pan and ignite the contents; this is necessary to vaporize water-bearing wastes so that the explosive component can be treated effectively. The burn pan lid is raised if needed and the burners are ignited and operate until combustion is complete. To provide additional assurance of complete treatment, personnel may~~typically~~ operate the burners for a period of time (typically 30 to 60 minutes). This post-treatment burn is conducted after the last treatment of the day is complete (i.e., all the explosives are deactivated and the ignitable liquids are combusted). Unit personnel use visual and audible evidence to determine treatment completion. Evidence of complete deactivation of explosives is the cessation of audible popping noises and visual flashes of light and/or puffs of smoke. Evidence of the complete combustion of ignitable liquids includes the absence of large yellow flames from the burn pan and absence of liquid inside the burn pan. After treatment and/or the post-treatment burn are complete, Unit personnel turn off the propane burners and lower the lid to preclude wind dispersal of treatment residue and water infiltration into the burn pan during the cool-down period. The cool-down period varies, but it is at least 4 hours and generally will not exceed 24 hours.

After the cool-down period, Unit personnel perform a post-treatment inspection to identify any untreated waste in the burn pan and contamination and/or "kickout" on the steel-lined concrete pad. Kickout is defined as untreated RCRA-regulated waste ejected from the burn pan during treatment. Kickout has occasionally been observed during treatment, and particles of untreated waste have been observed on the steel-lined concrete pad during post-treatment inspections. If any kickout is observed, Unit personnel wash the area and collect the residue or wet the kickout ~~it~~ with water, wipe it up with wet paper wipes. The residue and/or~~, and place the~~ wet wipes are placed in the burn pan for treatment. Untreated waste remaining in the pan and kickout returned to the burn pan are subsequently retreated. If the inspection indicates that all the waste has been treated, personnel remove the contents of the burn pan (i.e., all loose residue) using plastic scoops or a vacuum cleaner equipped with a high-efficiency particulate air filter. Personnel then lower the lid to minimize ash dispersal. The residue is containerized, characterized as described in Section B.2.5.1 of the WAP (Appendix B), and managed appropriately.

Following the post-treatment inspection and ash removal after treatment operations where kickout was observed, Unit personnel perform an additional review, checking surfaces of the affected areas with a portable propane burner (as described in Section 1.2.2.2) to determine whether small quantities of additional kickout (small particles that are not visually observed during the post-treatment inspections) are present. Visible kickout identified during this review will be collected as described above and treated in the burn pan. Personnel may also perform this additional review following treatment operations where kickout was not observed.

Unit personnel may collect kickout and residues generated during post-treatment inspections in a container, saturate them with water, and include them in the next treatment operations.

8.1.3 Operating Conditions

To minimize air emissions or exposure of people to toxic or hazardous air emissions, treatment at the TTF will be initiated ~~operated~~ only:

- In the day, during the period beginning one hour after astronomical sunrise and ending one hour before astronomical ~~Between the hours of 7 a.m. and~~ sunset. Operations may extend beyond sunset if necessary to complete treatment and post-treatment burn of the wastes in the burn pan.

- When the sustained wind speed is less than or equal to 20 miles per hour (mph).

- When threatening weather is less than 10 miles (mi) from the TTF. Threatening weather is defined as winds in excess of 35 mph; tornadoes; electrical storms with or without precipitation of any type; snow storms with a visibility of less than 2000 feet; rain with accumulations greater than 0.3 inch per hour; or any hail, sleet, or ice storms.

If adverse weather conditions arise during treatment operations, Unit personnel will evaluate the risks associated with continued operation against the risks associated with halting operations, and will take action as described in Section 1.2.4.5.

8.2 Preventing Releases to the Atmosphere

TTF personnel employ the practices described in Section 8.2 of the SNL/NM General Part B to prevent releases to the atmosphere during treatment (20 NMAC 4.1.900/40 CFR 270.14[b][8][vi] and 270.27(a)(2); 20 NMAC 4.1.500/40 CFR 264.179 and Subparts AA, BB, and CC).

8.2.1 Subpart AA

TTF treatment operations do not employ any of the processes subject to the requirements of 20 NMAC 4.1.500/40 CFR 264 Subpart AA.

Table 5
Estimated Maximum Quantities of Constituents in SASN Wastes

Constituent	Approximate quantity in wastes from cleanup of aborted test using four batches of solution
Acetone	80 L [a, b]
Acetonitrile	6 L[b]
Nitric acid	0.25 L [c]
Silver nitrate	~~Trace~~ 340 grams [c]
SASN	1.092 kg [d]
PETN (optional)	~~0.04~~0.40 kg [d]
Water	~~50~~ 210 L
Solid items (e.g., paper, cloth, wood, cardboard)	50 kg

a In normal operations, some of the acetone would be applied to the test article, some would be used to flush lines, and approximately 25L of acetone would be present in the solution to be treated at the TTF.
b A solvent used in the formulation of the SASN slurry. Most or all of the material may be present in the waste from normal operations and from aborted tests.
c A byproduct generated in the formulation of the SASN slurry. Nitric acid will be present in the waste from normal operations and from aborted tests.
d In normal operations, all the explosive would be applied to the test article, and a trace would remain in the solution to be treated at the TTF. Some explosive would also be present on the solid items treated.
kg kilogram
L liter

Most test operations will require at least two batches of SASN; the largest may require four batches. PETN is used on rare occasions. Normal test operations result in a mixture containing acetone, water, nitric acid, acetonitrile, ~~and traces of~~ silver nitrate, and SASN that requires treatment at the TTF. Aborted tests may result in the entire quantity of formulated SASN requiring treatment in addition to the normal wastes. The latter situation is shown in Table 5.

Of the COPCs identified above, silver is the only COPC remaining in the ash after treatment at the TTF. Analytical data for residual ash from TTF operations during 2004 indicate (a total of 2 samples), silver was detected at a maximum concentration of 550 milligrams per kilogram (mg/kg). Sandia/DOE used this concentration as the exposure point concentration when considering direct contact in the human health screening evaluation.

9.1.2 Unit Features

The TTF is described in Section 1.1 of this module. It is comprised of a steel burn pan with a cover, located inside a steel cage. The cage and burn pan rest on a steel-lined concrete pad. The cage and pad are surrounded by an earthen berm.

Nine~~Eight~~ situations present the potential for the release of RCRA-regulated waste to the environment surrounding the TTF. Each situation is addressed below:

- *Transfer of liquid wastes to the TTF burn pan*. Liquid wastes are transferred to the Unit through enclosed tubing equipped with secondary containment. No more than 20.8 gallons of liquid wastes are present in the Unit at any time, limiting the maximum release to 20.8 gallons. Spills on the ground or on the TTF pad will be wetted with water using spray hoses. When saturated with water, the explosive waste is stable. The spilled, wet waste can then be wiped or scooped up and placed ~~deposited~~ in the burn pan for treatment or containerized with water and included in the next treatment operations~~destruction~~. Similarly, contaminated soils will be wetted, excavated, and placed in the TTF burn pan or containerized for treatment.

- *Transfer of solid items and liquids to the TTF burn pan*. Solid items such as explosive-contaminated paper and filters are saturated in water in containers~~d~~ and carried to the TTF burn pan by qualified Unit personnel. Solids or liquids that are spilled during transfer would be handled in the same manner as described above for liquids.

- *Runoff of potentially contaminated precipitation*. Once waste is transferred to the burn pan, treatment generally takes place immediately. In the unlikely event of spillage from the burn pan, waste material will be contained on the steel-lined concrete pad. Any precipitation or spillage in the steel-lined concrete pad drains through a settling basin and filter into the 157-gallon catch tank. In addition, no untreated waste or treated residue is allowed to remain for extended periods of time in the burn pan.~~,~~

- *Halting treatment before completion.* Treatment may be halted before completion due to adverse weather conditions or equipment or power failure as described in Section 1.2.4. If wastes or residues were dispersed when during addition of water, they would be contained on the steel-lined concrete pad as described above.

- *Discharge of potentially contaminated precipitation from the catch tank*. Water collected in the catch tank is managed as described in Section 1.2.1 of this module.

- *Evaporation of liquid wastes from the burn pan*. Untreated wastes are not allowed to remain for extended periods in the burn pan, and treatment generally takes place immediately during normal operations. If treatment cannot be performed, the burn pan lid is lowered. During treatment, the high vapor pressure and low flash point of the organic liquids in the waste, combined with the burner design (Section 1.1), maximize the destruction of organic constituents through combustion.

- *Emission of particulates and gaseous combustion products during treatment*. Combustion products are described in Section 8.2. Products of complete combustion include nonhazardous gases. As noted above, the high vapor pressure and low flash point of the organic liquids in the waste, combined with the burner design (Section 1.1), maximize combustion performance.

- *Kickout of untreated waste during treatment.* Kickout (described in Section 8.1.2) may occur, and has been occasionally observed on the steel-lined concrete pad. Kickout on the pad is identified during the post-treatment inspection, wetted, wiped up, and placed in

the pan for treatment. Kickout on the berm would be handled in the same manner as described above for spilled liquids.

- *Emission of particulates following treatment.* Ash and particulate matter (residues) from the thermal treatment process are removed from the burn pan as soon as possible, and the burn pan lid is lowered~~is covered~~ except during loading and unloading, treatment, inspections, and maintenance.~~between treatment~~.

Table 7
Full-Time Occupants of Buildings Near TTF in TA-III at SNL/NM

Building	Distance From TTF (feet)	Direction From TTF	Number of Full-time Occupants	Approximate Percent of Time Downwind from the TTF [a]
6715	20	N	10 [b]	5-10
6585	1250	E	152	5-10
6584	950	E	59	5-10
~~6536~~ [c]	~~795~~	~~SE~~	~~5~~	~~5-10~~
6530	820	SE	1	5-10
6710	1080	SW	8	2-12
6539 [d]	470	E	8	5-10

[a] Based on prevailing winds during daylight hours, based on data from 2001-2003. Range indicates some variation from year to year.
[b] The TTF may or may not be continuously occupied. Personnel who are present during tests and treatment have the highest potential for exposure
[c] ~~Building is scheduled to be demolished by September 30, 2006.~~
[d] ~~Building is scheduled to be operational by September 30, 2006.~~

9.3.2 Methodology

To evaluate potential human health risk at the TTF, maximum exposure point concentrations of the residual ash COPCs were compared to the corresponding occupational NMED soil screening levels (SSLs) (NMED, 2004). An individual SSL represents the soil concentration below which no significant adverse health effects are expected to occur from the assumed soil exposure pathways. The SSLs are fixed to conservative levels of risk (i.e., a cancer risk of 1 x 10^{-05} or a hazard quotient of 1.0). For metals and high explosives, the SSL uses three exposure pathways in the risk calculations:

- Incidental ingestion of chemicals in soil
- Dermal contact with chemicals in soil
- Inhalation of fugitive dust from soil.

The modeled duration of exposure assumes a continuous exposure during a 40-hour work week, 50 weeks each year, for a 25-year period.

The proposed current and future land use at the TTF is occupational under operating conditions. In addition, the onsite occupational receptors are not expected to exceed 50 days per year operational use at the TTF (i.e., the actual annual exposure period is less than 20% of the modeled exposure). Therefore, use of the occupational SSLs to calculate potential risk is highly conservative. Groundwater is not considered a viable exposure medium due to due the limited potential fate and transport soil-to-groundwater mechanisms operating at TA-III. Vapors released during treatment operations at the TTF do not to significantly contribute to the operational risk due to the following factors:

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Sandia National Laboratories/New Mexico (SNL/NM), 2002, ~~“~~Calendar Year 2001 Annual Site Environmental Report”, SAND 2002-2415, Sandia National Laboratories/New Mexico, Albuquerque, New Mexico.

Sandia National Laboratories, New Mexico (SNL/NM), 2003, ~~“~~Fiscal Year 2002, Annual Groundwater Monitoring Report” Report # 75-1077-5, Sandia National Laboratories/New Mexico, Albuquerque, New Mexico.

~~Sandia National Laboratories/New Mexico (SNL/NM), 2004a, “Sandia National Laboratories/New Mexico General Part A Permit Renewal Request/Application,” Revision 7.0, Sandia National Laboratories/New Mexico, Albuquerque, New Mexico.~~

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Sandia National Laboratories/New Mexico (SNL/NM), 2012, ~~“~~Sandia National Laboratories/New Mexico General Part A Permit Renewal Request/Application,” Revision 11.0, Sandia National Laboratories/New Mexico, Albuquerque, New Mexico.

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U.S. Department of Energy, 1999. ~~“~~Final Site-Wide Environmental Impact Statement for Sandia National Laboratories/New Mexico” (DOE/EIS-0281), Albuquerque Operations Office, Albuquerque New Mexico

U.S. Environmental Protection Agency (EPA), 1989. ~~“~~Risk Assessment Guidance for Superfund, Vol. I: Human Health Evaluation Manual,” EPA/540-1089/002, Office of Emergency and Remedial Response, U.S. Environmental Protection Agency, Washington, D.C.

Wildin, Maurice W., 1986. ~~“~~Investigations Pertinent to Ignition of Sprayed Layers of Silver Acetylide Silver Nitrate”. SAND 1985-1859, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico Radioactive and Mixed Waste Management Facility Part B Permit Application

Module III

Revision ~~6.0e~~7.0

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SANDIA NATIONAL LABORATORIES/NEW MEXICO RADIOACTIVE AND MIXED WASTE MANAGEMENT FACILITY PART B PERMIT APPLICATION

This Sandia National Laboratories/New Mexico (SNL/NM) Radioactive and Mixed Waste Management Facility (RMWMF) Part B Permit Application is submitted to address the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subparts V and IX (20 NMAC 4.1.500 and .900), revised ~~October 1, 2003~~ July 1, 2008 [~~10-1-03~~7-1-08], requirements specific to Resource Conservation and Recovery Act (RCRA)-regulated waste container storage and treatment operations at the RMWMF. 20 NMAC 4.1.500 and .900 adopt by reference, with limited exceptions, all of the Code of Federal Regulations, Title 40, Parts 264 and 270 (40 CFR 264 and 270).

Sandia Corporation (Sandia) and the U.S. Department of Energy /National Nuclear Security Administration (DOE), as ~~co-~~operator~~s~~ and owner, respectively, of the SNL/NM site, have prepared and revised this module to provide Unit-specific details that supplement the information provided in the “Sandia National Laboratories/New Mexico General Part B Permit Renewal Request/Application,” hereinafter referred to as the General Part B. Together, information provided in this module, in the General Part B, and in the appendices to the General Part B meet the applicable requirements for the RMWMF that are specified in 20 NMAC 4.1.500/40 CFR 264 [~~10-1-03~~7-1-08], and 20 NMAC 4.1.900/40 CFR 270 [~~10-1-03~~7-1-08].

Sandia/DOE also prepared the “Sandia National Laboratories/New Mexico General Part A Permit Renewal Request/Application, Rev. ~~7.0~~11.0” (SNL/NM, 2012~~2004~~), hereinafter referred to as the General Part A, included as Part 1 of this comprehensive Part B permit request. The General Part A serves as a companion document to the General Part B and Unit-specific Part B modules, including this RMWMF Part B Permit Application.

In the General Part A, the General Part B, its appendices, and this module, a Unit to be permitted may sometimes be referred to as a "facility" (e.g., Radioactive and Mixed Waste Management Facility). The term "facility," as it appears in this context, is used only to denote a building or Unit name and does not imply the regulatory meaning of "facility" as defined in 20 NMAC 4.1.100/40 CFR 260.10 [~~10-1-03~~7-1-08]. However, pursuant to 20 NMAC 4.1.100/40 CFR 260.10 [~~10-1-03~~7-1-08], the SNL/NM site as a whole does meet the regulatory definition of a facility.

Sandia/DOE currently operate the RMWMF under interim status in accordance with the terms of the most recent updates to the Part A submitted to the New Mexico Environment Department (NMED) (~~November 29, 2004~~May 2012) and the most recent updates to the Part B permit request submitted to NMED (~~November 29, 2004~~May 2012).

~~Sandia/DOE planned to make physical modifications to the existing RMWMF during the next three years to increase capacity, and the modified facility would have been called the Consolidated Waste Management Facility. Sandia/DOE have decided not to make these modifications, and will continue to operate the existing RMWMF under interim status as described above.~~

The RMWMF occupies 3.11 acres in the southeast corner of Technical Area (TA)-III. It is a fenced compound with several buildings and waste management areas (WMAs). Operations include storage of RCRA-regulated wastes in containers, repackaging wastes, and treating the wastes as needed to render them more suitable for shipment to off-site treatment and/or disposal facilities. All of the RCRA-regulated wastes listed in the General Part A may be managed at the RMWMF.

1.0 GENERAL UNIT OPERATIONS

This section provides descriptions of the RMWMF waste management areas (WMAs) and specific waste management practices. The information in this section complements the information provided in Section 1.0 of the General Part B.

Specific information in this section regarding Unit operations includes: containment systems; requirements for ignitable, reactive, and incompatible wastes; preparedness and prevention; hazards prevention; and container storage of RCRA-regulated wastes. Treatment practices are discussed in Section 8.0 of this module.

The specific information provided and documents referenced in this section, together with the general information provided in Section 1.0 of the General Part B, address the applicable hazardous waste management facility requirements of 20 NMAC 4.1.500/40 CFR 264, Subparts I, AA, BB, and CC [~~10-1-03~~7-1-08], and 20 NMAC 4.1.900/40 CFR 270.14 and 270.15 [~~10-1-03~~7-1-08].

1.1 Designated Waste Management Areas

The location of the RMWMF at SNL/NM is shown on Figure 1. The location of the RMWMF within TA-III is shown on Figure 2. The RMWMF has six designated WMAs (Figure 3). Buildings 6920, 6921, 6925, and 6926; two modular storage buildings; and the outdoor waste storage area (i.e., paved areas within the RMWMF fence to the north, east, and west of Building 6920) are included in the RMWMF.

In each RMWMF WMA (except where noted), containers holding RCRA-regulated liquid wastes are stored on portable spill pallets or pans. These are commercially available units consisting of a tub made of a heavy-duty inert material such as polyethylene or polypropylene with a heavy-duty inert plastic grating cover. They are designed to be resistant and impervious to corrosives, solvents, and other liquids. The containers of liquids (up to and including 85-gallon overpack containers~~typically 5- to 55-gallon capacity~~) are stored on the grating. Any liquids released from the containers drain through the grating into the tub. The pallets come in various sizes and capacities, they are designed for use with 55-gallon drums or other standard containers, and they meet the requirements of 20 NMAC 4.1.900/40 CFR 270.15[a] and [b] [~~10-1-03~~7-1-08] and 20 NMAC 4.1.500/40 CFR 264.175(b)(1-3) [~~10-1-03~~7-1-08].

Each pallet has sufficient capacity to hold the contents of the largest container of liquid stored on it. Containers are typically not stacked on each other on the pallets. Stacked containers are stored as described in Section 1.2.2.2 of the General Part B. Because the spill pallets are designed to hold containers of liquids, the weight of the containers does not exceed the load-bearing capacity of the grating or the pallet.

RCRA-regulated wastes are typically stored inside one of the buildings or inside transportainers in the outdoor storage area. The containers are protected from precipitation by the buildings and transportainers, and by the slope of the asphalt pavement and concrete pads outside the buildings that direct storm water away from the doorways, meeting the requirements of 20 NMAC 4.1.500/40 CFR 264.175(b)(4). If containers are stored outside, they are protected from

precipitation by covers, tarpaulins, or other means, if needed. The slope of the pavement prevents accumulation of standing water near the containers.

The following sections provide descriptions of the features, location and capacity of each WMA. Treatment practices are summarized in Section 1.4 and discussed in detail in Section 8.0 of this module.

1.1.1 Building 6920

The principal structure at the RMWMF is Building 6920. The floor plan for Building 6920 is presented on Figure 4. The WMAs in Building 6920 include waste staging, repackaging, and storage areas, and waste treatment areas. Building 6920 is a single-story concrete and steel structure housing ~~approximately 5,000~~5,800 square feet of RCRA-regulated waste management area. The floors are 6-inch (in.) reinforced, sealed concrete on compacted subgrade sloped to sumps with no outlets. Walls are 8-in. load-bearing concrete masonry unit (CMU) with prefinished metal building panels in some areas. Nongrouted cells of the 8-in. CMU exterior walls are filled with vermiculite insulation. The staging area at the east end of the building has 14-foot (ft) high reinforced concrete walls. The exterior walls are 2-ft thick, interior walls are 1-ft thick, and the shared wall between the north and south parts of the building is 1.5-ft thick. Inner partitions are 8-in. reinforced CMU.

The roof consists of 24-in. deep steel joists with a 1.5 in. metal deck with 3-in. rigid insulation and a single-ply roof membrane. The roof system is a single-ply fully adhered elastomeric system, installed over rigid insulation with factory-laminated fiberglass-coated skin on both sides, and attached to the deck with metal fasteners. Ceilings are exposed and painted.

Building 6920 consists of two bays (north and south) that are isolated from each other by a wall, with an interior airlock and office area near the west end of the building.

There are seven exterior personnel doors and four cargo entrances to the building, as well as separate entrances to the exterior mechanical and electrical rooms. The personnel doors provide access to the north and south bays and to all sides of the building. There is a cargo entrance (i.e., roll-up door) at each end of each bay. Rollup doors enclose the airlocks on the south bay.

~~Two enclosed areas within the north bay (shown in Figure 4) are equipped with a negative-pressure exhaust system. There are four small rooms in the south bay (Figure 4). One commercially available fume hood with a negative-pressure ventilation system is located in one of these rooms. Another local ventilation system is located in another of the rooms. The ventilation system air flow from the north bay passes through a high-efficiency particulate air (HEPA) filter train before being released to the environment through an exhaust stack. The air flow from the systems in the south bay is combined and passes through a separate HEPA filter train before being released to the environment through the exhaust stack. The filters effectively remove particulates entrained in the air flow of each system.~~

North Bay

Waste treatment, storage, and repackaging are performed in the north bay of Building 6920 (Figure 4). The storage capacity of the north bay is approximately 6,000 gallons of RCRA-regulated wastes. Treatment currently includes physical treatment, stabilization/solidification, and macroencapsulation.

The floor in the north bay currently slopes from the doorways toward one or more shallow (6-in.-deep) blind sumps, some of which are covered with grating. Containers of liquid RCRA-regulated wastes are stored on portable spill pallets or pans. Floors, (including the sumps), and the walls in the WMAs of Building 6920 are painted~~sealed with a chemical-resistant epoxy, which withstands degradation by~~ to provide protection from chemical substances and to resists~~s~~ wear from forklift traffic. The ~~sumps and~~ pallets meet the requirements of 20 NMAC 4.1.500/40 CFR 264.175(b)(1-4).

The RMWMF north bay includes two enclosed areas (shown in Figure 4) that are equipped with a negative-pressure exhaust system. The exhaust passes through a high-efficiency particulate air (HEPA) filter train before being released to the environment through an exhaust stack. The filters effectively remove particulates entrained in the air flow.

South Bay

Waste treatment, storage, and repackaging are performed in the south bay of Building 6920 (Figure 4). Wastes are stored in the main bay and in the airlocks at either end. Treatment in the south bay currently includes chemical and thermal deactivation, stabilization/solidification, amalgamation, macroencapsulation, and physical treatment. The current storage capacity of the south bay and airlocks is 7,420 gallons.

The floor in the south bay slopes from the doorways toward one or more shallow (6-in.-deep) blind sumps covered with grating along the south wall which provide secondary containment. Containers of liquid RCRA-regulated wastes are typically stored over or near the sumps in the south bay or on portable spill pallets or pans. Floors, (including the sumps), and the walls in the WMAs of Building 6920 are painted to provide protection from ~~sealed with a chemical-resistant epoxy, which withstands degradation by~~ chemical substances and to resists~~s~~ wear from forklift traffic. The sumps and pallets meet the requirements of 20 NMAC 4.1.500/40 CFR 264.175(b)(1-4).

There are four small rooms in the south bay (Figure 4) where personnel typically conduct treatment and storage. One commercially available fume hood with a negative-pressure ventilation system is located in one of these rooms. Another local ventilation system is located in another of the rooms. The exhaust from both of these systems is combined and passes through a HEPA filter train before being released to the environment through the exhaust stack. The filters effectively remove particulates entrained in the air flow of each system.

1.1.2 Building 6921

The Waste Assay Facility (Building 6921) is located east of Building 6920 (Figure 3) in the RMWMF. Unit personnel treat, repackage, and store wastes in the WMAs. The Building 6921

floor plan is presented on Figure 5. Building 6921 is a single-story structure constructed with interior walls of 8-in. CMU and metal studs. The roof is comprised of steel bar joists with metal decking, rigid insulation, and single-ply membrane roofing. The floors are 6-in.-thick concrete slab-on-grade. ~~The floors in the assay area on the south side of the building are sealed with a chemical-resistant epoxy that extends up the walls for 6 in.~~ The floors in the ~~other two~~ WMAs are painted~~also coated~~. The total WMA is approximately 1,450 ft^2 with a maximum capacity of approximately 7,810 gallons.

Building 6921 (waste treatment area, shown on Figure 5) is equipped with a commercially available fume hood with a negative-pressure ventilation system. The exhaust from the hood passes through a HEPA filter train before being released to the environment through an exhaust stack. The filters effectively remove particulates entrained in the air flow.

Treatment in Building 6921 includes chemical and thermal deactivation, stabilization/solidification, amalgamation, macroencapsulation, and physical treatment.

1.1.3 Buildings 6925 and 6926

Buildings 6925 and 6926 are used for storage, repackaging, and some treatment of RCRA-regulated waste at the RMWMF. Treatment consists of macroencapsulation (Building 6925).

The floor plans for RMWMF Buildings 6925 and 6926 are presented on Figure 6. Building 6925 has a total storage area of approximately 4,000 ft^2 with a maximum capacity of approximately 83,160 gallons. Building 6926 also has a total storage area of approximately 4,000 ft^2 with a maximum capacity of approximately 83,160 gallons. Each is a prefabricated steel building erected on a reinforced concrete slab floor and foundation. The concrete floors in both buildings are ~~covered with chemical-resistant epoxy coating~~coated. Steel rollup doors are located on the south wall of each building, on the east wall of Building 6925, and on the west wall of Building 6926. Personnel doors are located on the east, south, and west sides of each building. A covered concrete ramp and loading dock are located at the west end of Building 6926, immediately outside the building.

1.1.4 Modular Storage Buildings (TP150 and TP153)

There are two modular storage buildings located west of Building 6920 that are used for storage of RCRA-regulated reactive and ignitable/flammable wastes (Figure 3).

The exterior dimensions of each modular storage building are 23-ft long, 9-ft wide, and 8.6-ft high. The structures are constructed of welded 10- and 12-gauge steel supported by structural steel~~for a snow loading of 40 pounds per square foot (lb/ft²), Uniform Building Code seismic Zone 3, and a wind loading with exposure C open area at 110 miles per hour. The walls and roof of each structure are rated for a 2-hour fire~~. Each building has double~~two 5-ft wide~~ doors~~, and each door has a single-point locking mechanism~~ with an inside handle~~safety release~~. Each building is vented. The inside walls and ceiling of each building are painted~~covered with an epoxy coating which is resistant to reactive wastes~~.

Each modular storage building has a 5.5-inch-deep integral spill containment reservoir constructed of welded 10-gauge steel under the entire building; the capacity is 650 gallons. The

secondary containment capacity is 10% of the stored volume of the contents of the largest container; thus, the storage capacity based on secondary containment is 6500 gallons. The secondary containment meets the requirements of 20 NMAC 4.1.500/40 CFR 264.175(b)(1-4). ~~The reservoirs are constructed of 10-gauge American Society for Testing and Materials A36 steel and are coated with a chemical-resistant epoxy.~~ The inside surfaces (bottom and sides) or each reservoir are painted to provide additional protection against degradation. The building floors are painted~~epoxy-coated~~ steel grating. Each building rests on structural supports that elevate it and allow visual checks of the underside of the spill containment reservoir if there is evidence of deterioration on the interior surfaces. The maximum storage capacity at each building is not based on secondary containment. It is approximately 1,100 gallons.

1.1.5 Outdoor Waste Storage Area

The outdoor waste storage area consists of the asphalt paved areas to the north, east, and west of Building 6920 and within the RMWMF fence (Figure 3). The outdoor waste storage area may be used for ~~containerized~~ storage of RCRA-regulated wastes. It has an area of approximately 48,500 ft^2 with a total storage capacity of approximately 19,800 gallons. The area is curbed and paved~~ with berms on the east end of the site~~, and slopes toward the water retention pond. In the event of any releases of liquids in the outdoor storage area, the curbing ~~and berms~~ and the retention pond would capture released liquids, including precipitation, so that any contaminants would not exit the site.

Containers of RCRA-regulated wastes are typically stored inside enclosed steel transportainers, which are 10- to 40-cubic-yard transportable containers. A transportainer typically has doors at one end and can be lifted onto a large flatbed truck for transportation. Containers may also be stored outside on the pavement.

1.2 Unit Operations

The RMWMF WMAs are and will be used to store any of the RCRA-regulated wastes bearing U.S. Environmental Protection Agency Hazardous Waste Numbers listed in the General Part A. Many of the wastes may also be treated in the RMWMF WMAs; specific treatment operations are discussed in Sections 1.4 and 8.0 of this Module.

Information regarding operations requiring a permit at all RCRA-regulated Units at SNL/NM is included in Section 1.1 of the General Part B. Additional Unit-specific information is provided in the following sections.

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

Liquid wastes released from individual containers will accumulate in the spill pallets. Unit personnel begin taking action to evaluate and remove accumulated liquids in the spill pallets and sumps (in Building 6920) upon discovery. Accumulated liquids are cleaned up as described in Section 1.1.1 of the General Part B.

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

Any of the ignitable or reactive wastes listed in the General Part A may be managed at the RMWMF. Sources of ignition that may be present at the RMWMF are those noted in Section 1.1.2.1 of the General Part B: welding activities, open flames, hot surfaces, frictional heat, radiant heat, sparks, and engines. Unit personnel employ the general precautions and practices described in Section 1.1.2 of the General Part B. Additional RMWMF-specific features, potential ignition and reaction sources, precautions, and practices include:

- The modular storage buildings are grounded by a 10-ft-long grounding rod and cable. They are equipped with a dry chemical fire suppression system to assure that water-reactive wastes will not be exposed to water during fire emergencies.

- Ignitable and reactive wastes are segregated from other wastes and typically stored in the modular storage buildings. The modular storage buildings have exterior signs indicating the presence of ignitable/flammable and reactive wastes.

- Ignitable and reactive wastes may also be stored in Building 6925, and may be kept temporarily in Buildings 6920, 6921, and 6926 for treatment, packaging, and staging for shipment. Individual containers are labeled as described in Section 1.2.1 of the General Part B, and they are kept apart from other wastes.

- Water-reactive wastes are not routinely stored in areas equipped with water sprinklers for fire suppression. They may be managed temporarily in Buildings 6920, 6921, 6925, and 6926 for treatment, packaging, and staging for shipment. If water-reactive wastes are present, they will be isolated from water contact as described in Section 1.1.2.1 of the General Part B, and their location will be identified through the use of signs, labels, or some other method.

- Containers of wastes are labeled and segregated according to compatibility criteria in 20 NMAC 4.1.500/40 CFR 264 Appendix V. The liquids in containers that are stored together on a spill pallet must be compatible with each other. The spill pallet provides an independent containment system. Likewise, only compatible solids are stored together on a pallet. The pallets of wastes are segregated into different rows and areas; each row or area containing only compatible wastes. Ignitable and reactive wastes are segregated from other wastes in this manner.

- Forklifts are not used for waste movement near treatment operations involving ignitable or reactive wastes in Building 6920 to minimize potential sources of ignition while containers are or may be open.

- Wastes are mixed together on a very limited basis during the treatment and repackaging operations at the Unit. Ignitable and reactive wastes are treated or mixed on a case-by-case basis. Unit personnel plan each such operation carefully to identify the hazards and potential consequences. Personnel use waste characterization data and/or published chemical information (e.g., “NIOSH Pocket Guide to Chemical Hazards” [DHHS, 1994] or

other chemical or engineering handbook) for each waste in the planning process. Personnel then conduct the operations according to the plan in order to control the hazards and prevent uncontrolled reactions. Treatment operations are described in Section 8.0 of this module.

1.2.3 Preparedness and Prevention (20 NMAC 4.1.5.500/40 CFR 264, Subpart C and 20 NMAC 4.1.900/40 CFR 270.14[b][8])

The following sections address required equipment, testing and maintenance of equipment, and access to communications or alarm systems at the RMWMF.

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

General information about fire hydrants is provided in Section 1.1.3.1 of the General Part B. The fire hydrants at the RMWMF are shown in Figure 12.

The modular storage buildings are grounded by a 10-ft-long grounding rod and cable.

All buildings at the RMWMF are equipped with automatic fire suppression systems, summarized in Table 1.

Table 1
Fire Suppression Systems at the
Radioactive and Mixed Waste Management Facility

Building	Applicable NFPA Standard[a]	Sprinkler Design Occupancy Classification	System Type	Sprinkler Actuation[b]
6920 (general area) 6920 (small rooms) HEPA filters	13 13 15	Ordinary/Group 2 Extra/Group 1 N/A	Automatic sprinkler, wet pipe Automatic sprinkler, wet pipe Deluge, dry/open	GB/FS GB/FS Detection
6921	13	Ordinary/Group 2	Automatic sprinkler, wet pipe	GB/FS
6925	13	Ordinary/Group 2	Automatic sprinkler, dry pipe	GB/FS
6926	13	Ordinary/Group 2	Automatic sprinkler, dry pipe	GB/FS
TP150	17	N/A	Dry chemical	
TP153	17	N/A	Dry chemical	

[a] National Fire Protection Association (NFPA), 2000, 2002
[b] Sprinklers are either glass bulb (GB) or fusible solder (FS) type, typically designed to open at temperatures of 155ºF or higher.

Information on other required equipment located at the RMWMF is provided in Section 6.0 and Table 3 of this module.

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

Information on equipment testing and maintenance at the RMWMF is provided in Appendix C of the General Part B and in Section 4.0 of this module.

1.2.3.3 Access to Communications or Alarm Systems (20 NMAC 4.1.500/40 CFR 264.34)

Information about the types and locations of communications or alarm systems at the RMWMF is provided in Section 1.1.3.2 of the General Part B and in Section 6.0 of this module.

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

The following sections address the procedures, equipment, and structures used at the RMWMF to prevent hazards. Additional information applicable to the RMWMF and all other Units at SNL/NM is included in Section 1.1.4 of the General Part B.

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

RMWMF personnel employ the practices described in Section 1.1.4.1 of the General Part B to prevent hazards in unloading. Loading and unloading activities take place on the paved areas, typically immediately outside the buildings. The surface is sloped gently toward shallow drainage channels that direct stormwater to the retention pond~~ditches~~, the pavement is in good condition in the area, and there is sufficient room for operating vehicles.

Containers are handled in a manner to prevent shifting and falling. Drums and other containers of RCRA-regulated waste are typically strapped together on a pallet before being loaded onto vehicles, or are loaded individually. Containers are typically transported within the Unit by hand or with forklifts, drum dollies, or pallet jacks.

Unit personnel typically use the loading dock for loading and unloading wastes from trucks. The ramp on the west side of Building 6926 slopes gently up to the dock, allowing forklift operators to drive onto trailers of trucks parked at the dock. The dock and ramp are in good condition and are covered with a corrugated metal roof to provide protection from weather.

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

The area around the Unit slopes gently toward the west. Sheet-flow run-on of surface water from surrounding areas outside the Unit is prevented from entering the WMAs by several features. The elevated gravel-covered ~~road~~ area located outside the east fence of the Unit serves to divert water flowing from areas farther to the east. An 8-in. curb at the east edge of the asphalt pavement and an asphalt-lined drainage swale along the eastern edge of the Unit (inside the fence) divert run-on from the gravel area~~road~~ toward the south away from the Unit. On the south and west sides, the Unit is higher than the surrounding land. On the north side, the Unit and a narrow ledge of land outside the fence are higher than the surrounding land. Thus, run-on from all directions is prevented from entering the Unit.

The asphalt-paved areas within the Unit are surrounded by an 8-inch curb, further preventing run-on and run-off. The outside storage area slopes toward the south and west. The concrete pads outside the doors and the asphalt pavement surrounding Buildings 6920, 6921, 6925, and 6926 all slope away from the doors and toward shallow drainage channels that run between buildings 6920, 6925, and 6926. The channels lead to the synthetic-lined water retention pond at the southwest corner of the Unit, providing controlled drainage of storm water from roof downspouts and the paved areas in the RMWMF into the water retention pond. During normal operations, the water retention pond collects only storm water. The water retention pond does not provide secondary containment for RCRA-regulated waste.

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

Sandia/DOE do not anticipate that management of RCRA-regulated wastes at the RMWMF will affect water supplies, as described in Section 1.1.4.3 of the General Part B.

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

General measures that are available to Unit personnel are described in Section 1.1.4.4 of the General Part B. RCRA-regulated waste handling activities in the RMWMF WMAs that are affected by equipment failures or power outages will be suspended in response to such outages.

The RMWMF is equipped with an auxiliary diesel generator that can provide backup power to Building 6920. The generator maintains containment ventilation, alarm systems, heating equipment, and controls necessary to keep water in pipes from freezing should the main power supply fail.

Equipment and/or power failures at Buildings 6920, 6921, 6925, 6926; the outdoor waste storage area; or the two modular storage buildings will not result in a loss of containment of RCRA-regulated wastes.

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

RMWMF personnel employ the practices described in Section 1.1.4.5 of the General Part B to prevent undue exposure. In addition, the enclosed work areas and negative-pressure ventilation systems in the fume hoods in Buildings 6920 and 6921 provide additional protection for Unit personnel performing treatment and repackaging operations. Anticipated emissions from treatment operations are discussed in Section 8.2.

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

RMWMF personnel employ the practices described in Section 1.1.4.6 of the General Part B to prevent releases to the atmosphere during storage.

Subpart AA

RMWMF storage operations do not employ any of the processes subject to the requirements of 20 NMAC 4.1.500/40 CFR 264 Subpart AA.

Subpart BB

During storage activities, Sandia/DOE do not routinely manage RCRA-regulated wastes with organic concentrations ≥10 percent by weight in process equipment identified in 20 NMAC 4.1.500/40 CFR 264, Subpart BB [~~10-1-03~~7-1-08]. Equipment used in such service at the RMWMF will be used for less than 300 hours per calendar year and is therefore exempt from the requirements of 20 NMAC 4.1.500/40 CFR 264.1052 through 1060 [~~10-1-03~~7-1-08] as noted in 20 NMAC 4.1.500/40 CFR 264.1050(f) [~~10-1-03~~7-1-08]. The equipment list will be maintained in the RMWMF records. Equipment use will also be noted in the records.

Subpart CC

Unit personnel follow the practices described in Section 1.1.4.6 of the General Part B and maintain compliance with Container Level 1 standards (20 NMAC 4.1.500/40 CFR 264.1086[c]) for containers that are subject to the standards. Such containers may be stored in any of the WMAs at the Unit.

Section B.5.3 in Appendix B of the General Part B also describes procedures to maintain compliance with the air emissions requirements of 20 NMAC 4.1.500/40 CFR 264, Subparts BB and CC [~~10-1-03~~7-1-08].

1.3 Container Storage (20 NMAC 4.1.900/40 CFR 270.15 and 20 NMAC 4.1.500/40 CFR 264, Subpart I)

Container storage practices applicable to the RMWMF are presented in the following sections.

1.3.1 Container Types and Labeling

RMWMF personnel use the containers types and labeling practices described in Section 1.2.1 of the General Part B.

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

RMWMF personnel employ the container handling practices described in Section 1.2.2 of the General Part B.

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

The condition of containers at the RMWMF is maintained as indicated in Section 1.2.2.1 of the General Part B.

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

RMWMF personnel employ the aisle space and storage configuration ~~as~~ described in Section 1.2.2.2 of the General Part B. Aisle width is typically 2.5 feet; this is adequate for unobstructed movement of Unit and emergency response personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of Unit operation in an emergency.

Containers of liquids are typically not stacked when stored in the modular buildings.

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

RMWMF personnel ensure waste compatibility with containers as indicated in Section 1.2.2.3 of the General Part B.

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

RMWMF personnel verify the absence of free liquids in containers as indicated in Section 1.2.2.4 of the General Part B before storing containers in areas that are not equipped with secondary containment.

1.4 Treatment Operations

RCRA-regulated wastes are treated at the RMWMF by the following methods:

- Chemical deactivation (performed in the south bay of Building 6920 or in the treatment area in Building 6921).
- Thermal deactivation (performed in the south bay of Building 6920 or in the treatment area in Building 6921).
- Stabilization and solidification (performed in either ~~the south~~ bay of Building 6920 or in the treatment area in Building 6921).
- Amalgamation (performed in the south bay of Building 6920 or in the treatment area in Building 6921).
- Macroencapsulation (performed in Buildings 6920, 6921, or 6925)
- Physical treatment (performed in either bay in Building 6920 and in Building 6921).

The treatment practices are discussed in detail in Section 8.0 of this module.

Table 2
Radioactive and Mixed Waste Management Facility Inspection Criteria and Frequency

Inspected Item	Inspection Criteria	Inspection Frequency
SAFETY AND EMERGENCY EQUIPMENT See Table 6 "Emergency Equipment and Locations" in this module for additional information		
Eye wash/safety shower	Operational, accessible, in good condition	Monthly
Spill control and cleanup items	Present, accessible, quantities per inventory, in good condition	Monthly
Personal protective equipment	Present, quantities per inventory, and in good condition	Monthly
Fire alarm pull station(s)	Present, accessible, and in good condition	Monthly
Fire alarm(s)	Present	Monthly
Telephone(s)	Present and operational	Monthly
Fire extinguisher(s)	Present, charged, accessible, and in good condition	Monthly
Fire sprinklers and system	Present, appears to be in good condition, sprinklers not obstructed	Monthly
OPERATING AND STRUCTURAL EQUIPMENT		
Building/storage area floor	Clean, no spills, cracks, or excessive wear	Weekly when and where wastes are managed. Monthly otherwise.
Building walls	Not leaking or spalling, in good condition	Weekly when and where wastes are managed. Monthly otherwise.
Building ceiling	Not leaking or spalling, and in good condition	Weekly when and where wastes are managed. Monthly otherwise.
Building lights	Operational and in good condition	Weekly when and where wastes are managed. Monthly otherwise.
Overhead crane	Present, appears to be in good condition	Weekly when and where wastes are managed. Monthly otherwise.
Secondary containment (Buildings 6920, TP150, TP153)	Free of liquids, good condition (i.e., no cracks, excessive wear)	Daily when and where wastes are handled. Weekly otherwise.
Loading and unloading areas	Good condition, safe working surface, free of cracks, no spills	Daily when and where wastes are handled. Monthly otherwise.
Waste handling equipment	Good condition, in good repair, operational	Daily when and where wastes are handled. Monthly otherwise.

Table 2 (Concluded)
Radioactive and Mixed Waste Management Facility Inspection Criteria and Frequency

Inspected Item	Inspection Criteria	Inspection Frequency
OPERATING AND STRUCTURAL EQUIPMENT (cont)		
Treatment areas	Good condition, clean, uncluttered, no spills	Daily when and where wastes are handled. Monthly otherwise.
~~Fume hoods~~	~~Good condition, clean, no deterioration~~	~~Daily when used for waste treatment. Monthly otherwise.~~
Treatment equipment ~~(e.g., hand tools, containers)~~	Good condition (i.e., no releases or deterioration), or present if in storage	Daily when and where wastes are treated. Prior to use for ~~treatment~~ ~~(~~consumable items~~)~~ and items that have been stored.~~or daily when and where wastes are treated (tools)~~. Monthly otherwise.
Thermal deactivation equipment	Good condition (i.e., no releases or deterioration)	Daily when used to treat wastes. Monthly otherwise.
Monitoring equipment	Instruments in good condition, operational, calibrated	Daily when and where wastes are handled. Monthly otherwise.
Stormwater retention pond	~~Sampled for presence of released/spilled hazardous waste constituents if there is evidence of or chance that such constituents entered the pond~~Good condition, adequate freeboard, outlet not obstructed, no evidence of release of RCRA-regulated waste.	~~Within five days of a release requiring reporting to the NMED Secretary.~~Weekly.
SECURITY DEVICES		
Fence	Present and in good condition	Monthly
Warning signs	Present and in good condition	Monthly
Gates and doors	Present, operational, in good condition	Monthly
Locks	Present, operational, in good condition	Monthly
CONTAINERS		
Integrity	Good condition (i.e., no bulging, leaks, corrosion, or deterioration)	Check individual containers as they are handled. Weekly otherwise.
Closed	Correct lid/cover placement (i.e., properly closed and sealed)	Check individual containers as they are handled. Weekly otherwise.
Labeling	Correct information, correct location, legible	Check individual containers as they are handled. Weekly otherwise.
Secondary Containment (e.g., spill pallets for liquid waste)	Adequate volume, free of liquids, good condition (i.e., no cracks, excessive wear)	Check individual containers as they are handled. Weekly otherwise.
Storage Conditions	Waste compatible with container, container located with compatible wastes	Check individual containers as they are handled. Weekly otherwise.
Location	Correct aisle space, stable~~correct~~	Check individual containers as they

Inspected Item	Inspection Criteria	Inspection Frequency
	stacking ~~(2 or 3 maximum)~~	are handled. Weekly otherwise.

6.0 CONTINGENCY PLAN AND EMERGENCY RESPONSE

Emergency response requirements for permitted units are specified in 20 NMAC 4.1.500/40 CFR 264, Subpart D [~~10-1-03~~7-1-08], “Contingency Plan and Emergency Procedures,” and in 20 NMAC 4.1.900/40 CFR 270.14(b)(7) [~~10-1-03~~7-1-08]. The “Site-Wide Contingency Plan” is included in as Appendix E of the General Part B. Supplemental RMWMF-specific information is included in this section, in Figures 11 and 12, and in Tables 3 and 4 of this module. Current copies of the site-wide contingency plan (Appendix E of the General Part B) and this supplemental information are maintained at the RMWMF and at the SNL/NM Emergency Operations Center.

The RMWMF is located in the southeastern corner of TA-III at SNL/NM. It is used for treatment and storage of RCRA–regulated wastes. The WMAs at the RMWMF include Buildings 6920, 6921, 6925, and 6926; two modular storage buildings; and the outdoor waste storage area (i.e., paved areas within the RMWMF fence and north, east, and west of Building 6920). All are surrounded by a fence.

The RMWMF WMAs include the following:

- Building 6920 at the RMWMF is a single-story concrete masonry unit (CMU) and steel building with ~~approximately 5,000~~5,800 square feet of space used for waste storage and treatment activities. Inside the building are two bays (north and south), separated by an interior airlock. The south bay includes four small rooms used for treatment and storage. The building also includes a control room, restrooms, and electrical and mechanical rooms. Containers of wastes (typically less than 55 gallons) are stored in this building. Containers with liquids are stored over a sump in the south bay or on portable spill containment pallets. Containers of incompatible wastes are not stored together. The containers and contents may be repackaged into other containers for shipment to off-site facilities. RCRA-regulated wastes may be treated by chemical deactivation, macroencapsulation, stabilization/solidification, thermal deactivation, amalgamation, or physical treatment. Up to 13,420 gallons of waste may be stored in this building.

- Building 6921 at the RMWMF is a single-story CMU building with approximately 1450 square feet of space used for waste storage and treatment activities. The building also includes office space and restrooms. Containers of wastes (typically less than 55 gallons) are stored in this building. Containers with liquids are stored on portable spill containment pallets. Containers of incompatible wastes are not stored together. The containers and contents may be repackaged into other containers for shipment to off-site facilities. RCRA-regulated wastes may be treated by chemical deactivation, thermal deactivation, macroencapsulation, amalgamation, stabilization/solidification, or physical treatment. Up to 7,810 gallons of waste may be stored in this building.

- Buildings 6925 and 6926 at the RMWMF are each 4000-square-foot prefabricated steel buildings on concrete foundations. Containers of wastes ~~(typically less than 55 gallons)~~ are stored in ~~this~~ these buildings. Containers with liquids are stored on portable spill containment pallets. Containers of incompatible wastes are not stored over the same secondary containment area~~segregated into different areas~~. The containers and contents may be repackaged into other containers for shipment to off-site

facilities. RCRA-regulated wastes may also be treated by macroencapsulation in Building 6925. Up to 83,160 gallons of waste may be stored in each building.

- Two modular, prefabricated safety storage structures located west of Building 6920 at the RMWMF are used for the storage of reactive and ignitable wastes. Each structure is constructed of 10- and 12-gauge welded steel with supporting structural steel sections, and includes a welded steel containment pan covered by grating. Each structure may contain up to 1,100 gallons of waste.

  The outdoor waste storage area at the RMWMF consists of 48,500 square feet of asphalt-paved areas to the north, east, and west of Building 6920 within the RMWMF fence that may be used for storage of containers of RCRA-regulated wastes. Containers of RCRA-regulated wastes are typically stored inside enclosed transportainers but may be stored outside. Containers with liquids are stored on portable spill containment pallets ~~inside the transportainers~~. Up to 19,800 gallons of wastes may be stored in these areas.

RCRA-regulated wastes bearing the U.S. EPA Hazardous Waste Numbers listed in the General Part A may be stored and/or treated at the RMWMF WMAs.

Figure 11 presents evacuation routes for the RMWMF. Figure 12 presents emergency response and access information for the RMWMF. Table 3 lists the emergency equipment typically available at the RMWMF. Table 4 lists the emergency coordinators for the RMWMF.

7.0 CLOSURE PLAN

Applicable closure requirements are specified in 20 NMAC 4.1.900/40 CFR 270.14[b][13] and 20 NMAC 4.1.500/40 CFR 264, Subparts G and I [~~10-1-03~~7-1-08]. General closure information applicable to all Units at SNL/NM and general sampling and analytical procedures to be used during closure activities are presented in the "Site-Wide Closure Plan" in Appendix F of the General Part B. The site-wide plan includes a description of the SNL/NM facility, waste descriptions, closure performance standards, general closure methods, a sampling and analysis plan (SAP), a general closure schedule, procedures for amendment of the plan, closure certification and letter, survey plat, and post-closure requirements. Unit-specific information for closure of the RMWMF is included in this section.

7.1 Unit Description

Sandia/DOE use the RMWMF for treatment, repackaging, and storage of RCRA-regulated waste. The RMWMF is located in the southeastern corner of TA-III at SNL/NM. The waste management areas (WMAs) at the RMWMF include Buildings 6920, 6921, 6925, and 6926; two modular storage buildings; and an outdoor waste storage area (i.e., paved areas within the RMWMF fence and north, east, and west of Building 6920).

- Building 6920 (Figure 13) at the RMWMF is a single-story concrete masonry unit (CMU) and steel building with approximately 5,000 ft^2 of space used for treatment and container storage activities. Inside the building are two bays (north and south), separated by an interior airlock. The south bay includes four small rooms used for treatment and storage; one of these rooms is equipped with a fume hood with a local negative-pressure ventilation system. Another room is equipped with a portable local ventilation system. Two areas of the north bay are also equipped with local negative-pressure ventilation systems. The air flow from the ventilation systems passes through a HEPA filter train before being released to the environment through an exhaust stack. The filters effectively remove particulates entrained in the air flow. The floors of the north and south bays are painted ~~coated with an epoxy-based chemical resistant coating that forms a continuous~~to provide a protective barrier over the concrete floor. The south bay includes ~~a~~painted~~n epoxy coated~~ sumps that provide~~s~~ secondary containment for liquids stored in the area.

- Building 6921 (Figure 14) is a single-story CMU building with approximately 1,450 ft^2 of space used for treatment and container storage activities in three areas. The concrete floors are painted~~covered with a chemical-resistant epoxy coating~~. One room contains a fume hood with a local negative-pressure ventilation system. The exhaust from the system passes through a HEPA filter train before being released to the environment through an exhaust stack.

- Buildings 6925 and 6926 (Figure 15) are each 4,000-ft^2 prefabricated steel buildings on concrete foundations. The buildings are used for container storage of RCRA-regulated wastes, and Building 6925 is also used for treatment. The concrete floors are coated~~covered with a chemical-resistant epoxy coating~~. The buildings are used for storage of wastes in containers.

- Two modular, prefabricated storage structures located west of Building 6920 are used for container storage of RCRA-regulated reactive and ignitable wastes. Each structure (Figure 16) is constructed of 10- and 12-gauge welded steel with supporting structural steel sections, and includes a welded steel containment pan covered by grating. The inside surfaces of the containment pan are painted~~are covered with a chemical-resistant epoxy coating~~.

- The outdoor waste storage area consists of 48,500 ft^2 of asphalt-paved areas to the north, east, and west of Building 6920 within the RMWMF fence. This area may be used for container storage of RCRA-regulated wastes. Containers of RCRA-regulated wastes are typically stored inside enclosed transportainers at this WMA. Containers may be stored outdoors. Containers with liquids are stored on portable spill containment pallets ~~inside the transportainers~~.

7.2 Estimate of Maximum Waste in Storage (20 NMAC 4.1.500/40 CFR 264.112[b][3])

The maximum total volume of RCRA-regulated waste in treatment and/or storage at any time at the RMWMF is estimated at approximately 209,550 gallons of liquids and/or solids. This is the maximum volume of RCRA-regulated waste that could be removed from the WMAs as part of closure activities. The maximum total waste volume is broken down as follows:

- Building 6920: 13,420 gallons
- Building 6921: 7,810 gallons
- Building 6925: 83,160 gallons
- Building 6926: 83,160 gallons
- Modular storage building TP150: 1,100 gallons
- Modular storage building TP153: 1,100 gallons
- Outdoor waste storage area: 19,800 gallons

7.3 Closure Conditions

In addition to the general assumptions listed in Section F.5 of the site-wide closure plan , partial closure activities specified in this plan assume the following conditions were met during the operational life of the RMWMF:

- Waste handling and treatment activities that involved opening containers of RCRA-regulated waste were confined to the RMWMF WMAs. If contamination occurred, it would have been confined to those areas.

- Treatment activities were conducted in a controlled manner, minimizing the potential for releases of RCRA-regulated wastes or hazardous waste constituents.

- If RCRA-regulated wastes or hazardous waste constituents were inadvertently released into the local exhaust systems during treatment activities, they would only be present in the systems up to the first filter.

8.0 TREATMENT PLAN

Treatment operations for RCRA-regulated wastes treated at the RMWMF are described in this section.

The following treatment technologies may be used to treat RCRA-regulated wastes at the RMWMF:

- Chemical deactivation,
- Thermal deactivation,
- Amalgamation,
- Stabilization and solidification,
- Macroencapsulation, and
- Physical treatment.

Sandia/DOE may use each technology to treat any of the wastes in the General Part A for which the treatment ~~that include the particular~~ technology is included~~in the process description~~. Treatment at the RMWMF may occur in Buildings 6920, 6921, and 6925. Treatment (except some physical treatment and chemical deactivation of thermal batteries) is and will be conducted in containers; therefore, it is not subject to the miscellaneous unit and environmental performance standards in 20 NMAC 4.1.500/40 CFR 264, Subpart X [7-1-08~~10-1-03~~]. Treatment effectiveness ~~for each waste stream~~ is discussed in Section 8.3.

8.1 Treatment Operations

Waste treatment is performed at the RMWMF for one or more of the following reasons:

- To meet land disposal restrictions (LDRs);
- To allow for the safe storage of the waste; and/or
- To meet treatment, storage, or disposal facility (TSDF) requirements.

All of the treatment at the RMWMF is batch treatment performed on single packages of waste (each package is one 55-gallon drum or less, or a single item that may be larger than a drum. Each type of treatment is performed on batches of 500 pounds of waste or less, with the exception of physical treatment, which may occasionally involve very large, heavy items. Liquid wastes are treated in batches of 60 gallons or less. .

Waste treatment may generate secondary waste streams (treatment residues). RCRA-regulated treatment residues may undergo additional on-site treatment ~~to meet LDRs~~ and/or be sent to an appropriate off-site TSDF.

The waste treatment processes described in this section are effective in addressing hazardous characteristics in RCRA-regulated wastes, including the following:

- Solid items exhibiting the hazardous waste characteristics of ignitability or reactivity may be chemically deactivated to eliminate the characteristic(s).

- Liquid waste exhibiting the hazardous waste characteristics of ignitability, corrosivity, and/or reactivity may be chemically deactivated to remove the characteristic(s).

- Reactive (explosive) wastes may be treated using thermal deactivation techniques.

- Elemental mercury may undergo amalgamation to reduce or eliminate the leaching potential.

- Liquid wastes and particulates containing hazardous waste toxicity characteristic metals (excluding elemental mercury and high mercury subcategories) may be stabilized and/or solidified to reduce or eliminate the leaching potential of the hazardous waste constituents.

- Debris, and wastes containing hazardous waste toxicity characteristic metals (excluding elemental and high mercury subcategories defined in 20 NMAC 4.1.800/40 CFR 268), may be macroencapsulated to reduce or eliminate the leaching potential of the hazardous waste constituent(s).

- Solid items with hazardous constituents may be physically separated from larger items, and the size of individual pieces may be reduced.

- Pressurized containers may be punctured or opened to release the contents.

Treated wastes and waste residues resulting from treatment of RCRA-regulated wastes may or may not require further management as hazardous wastes, as discussed in Appendix B, Section B.2.5.

Each waste treatment technology or process listed above is described in the following sections.

8.1.1 Chemical Deactivation

Sandia/DOE perform chemical deactivation in containers in the treatment areas in Buildings 6920 and 6921 at the RMWMF. The treatment may take place within the fume hood(s) that are present in each building. The containers vary in size depending on the quantity of waste to be treated, and include laboratory glassware, 5-gallon buckets, and 55-gallon drums.

Chemical deactivation refers to a number of chemical processes that can eliminate the hazardous waste characteristics of ignitability, corrosivity, and/or reactivity. Deactivation can be accomplished by several technologies (e.g., neutralization or chemical oxidation). However, the intent of this section is to identify and describe specific methods or treatment trains which may be used at the RMWMF to deactivate ignitable wastes defined in 20 NMAC 4.1.200/40 CFR 261.21(a)(2) and (4) [~~10-1-03~~7-1-08], corrosive and reactive wastes defined in 20 NMAC 4.1.200/40 CFR 261.23 [~~10-1-03~~7-1-08]. Deactivation may or may not result in a final waste form, depending on the process, and may be used as the first in a series of treatment steps.

Deactivation processes are conducted under carefully controlled conditions so that RCRA-regulated waste with the characteristic of reactivity is allowed to react in a slow, nonviolent

manner. Allowing the reactive potential of the waste to be dissipated in this manner reduces or eliminates the reactive characteristic of the waste. Deactivation of reactive wastes is typically conducted in small batches under laboratory conditions such that process control can be easily maintained.

- Hydrides, deuterides, and tritides are deactivated by slow addition to an ice water bath.
- Deactivation of water reactive metals such as elemental sodium and lithium involves the slow and controlled addition of an appropriate alcohol/water solution. Alcohol/water addition is maintained until the water reactive potential of the waste has been eliminated.
- Deactivation of pyrophoric metal powders and particulates may be achieved by mixing waste in a portland cement matrix.
- Water-soluble oxidizers in particulate form are slowly dissolved in water to deactivate them as the first step in the treatment process. The resulting solution may undergo further treatment (e.g., neutralization and stabilization).
- Water-soluble concentrated liquid oxidizers such as hydrogen peroxide may be diluted with water in a controlled manner to make them safer to handle before deactivation with an appropriate chemical agent such as iron filings.
- The reactive material in thermal batteries may be deactivated through introduction of an electrical current that induces a chemical reaction in the material, deactivating it and generating heat. Batteries are treated one at a time in this manner; this process is not conducted in containers due to the need to dissipate the heat generated during the chemical reaction.

Chemical deactivation to remove the characteristic of corrosivity is the process of removing excess acidity or alkalinity from an aqueous liquid waste. Other uses may include pH adjustment to facilitate subsequent treatment; such pretreatment through deactivation may be necessary to prevent corrosive damage to equipment, deter undesirable reactions, and preclude the formation of unwanted byproducts.

Reagents added to achieve a desired pH are combined with liquid waste inside a mixing vessel or directly in the waste container. Common deactivating reagents include, but are not limited to, sodium hydroxide for acid wastes; and phosphoric acid for alkaline wastes. The selection of reagents is dependent on the quantity of reagent required, cost, availability, and the potential byproduct(s). These deactivation processes are conducted under carefully controlled conditions in which the reagent is added to the waste slowly and mixed thoroughly. This allows the reaction to proceed in a nonviolent manner and allows the energy to be dissipated effectively. Ice may be used if needed to cool the mixture during the reaction. In the case of reactions that are expected to be strongly exothermic, wastes may be treated in small batches under laboratory conditions (similar to the deactivation of reactive wastes) such that process control can be easily maintained.

8.1.2 Thermal Deactivation

Sandia/DOE perform thermal deactivation of reactive RCRA-regulated wastes, including batteries, explosives, and explosive components, in a Sandia-designed and tested portable deactivation device that meets the definition of a container in 20 NMAC 4.1.100/40 CFR 260.10. The device is a thick-walled stainless steel vacuum apparatus equipped with an internal heated plate and sensors to measure temperature and pressure. The explosive deactivation device was designed to contain a detonation of 25 grams TNT-equivalents of explosive waste. The inside diameter of the cylinder is 8 inches, and it is 18 inches long. Because the device is portable, it may be used in any of the treatment areas in Building 6920 or 6921. It is shown in Figure 17.

Reactive waste is placed on the covered tray~~plate~~, inserted into the cold unit, the unit is sealed and filled with an inert atmosphere (e.g., nitrogen), and the temperature of the tray~~plate~~ is slowly raised until reaching a temperature at which the explosive being treated decomposes. Personnel use waste characterization data and/or published chemical information (e.g., "DOE Explosives Safety Manual" [DOE, 2002] or other chemical or engineering handbook) to determine the required temperature. The temperature is maintained for two hours to complete the decomposition. The unit is cooled and decomposition gases are vented to a fume hood with a high-efficiency particulate air filtration system.

8.1.3 Amalgamation

Sandia/DOE perform amalgamation of small quantities of elemental mercury in small (e.g., laboratory) containers in the treatment areas in Buildings 6920 and 6921 at the RMWMF. The amalgamation process for liquid elemental mercury involves mixing liquid mercury waste with a powdered base metal. The amalgamation process immobilizes elemental mercury into a solid leach-resistant form that has minimal potential for emission of mercury vapor.

The two important operating parameters for effective treatment are: (1) the ratio of base metal to mercury, and (2) the efficiency of mixing. Copper or zinc is typically used as a base metal~~s~~, but tin, nickel, gold, and sulfur may also be used. The base metal may be pretreated with acid to improve the effectiveness of the amalgamation reaction. For the small quantities of mercury that are~~will be~~ treated at the RMWMF, hand mixing the mercury and base metal using a mortar and pestle or mechanical mixing are~~is~~ sufficient to create an amalgam with uniform properties.

8.1.4 Stabilization and Solidification

Sandia/DOE perform stabilization in containers in the treatment areas in Buildings 6920 and 6921 at the RMWMF. The treatment may take place within the fume hood(s) that are present in each building. Stabilization is a process of binding hazardous waste metals so that the metals become chemically part of the matrix or are physically bound within the matrix. The primary use of stabilization is to immobilize toxicity characteristic metals but many stabilization agents also eliminate free liquids. Typical waste forms suitable for stabilization and/or solidification include liquids, soils, and particulate-type wastes.

Process equipment for mixing waste and binder materials depends on the type of reagents used and the volume of waste to be treated. In-drum mixing is typically used for large volume waste quantities. Once waste and binder have been thoroughly mixed and placed in a container, the

mass is allowed to cure and/or set. Smaller batches may be mixed by hand and allowed to cure in smaller containers (e.g., 5-gallon pails, and tubs and trays of various sizes).

Development of appropriate formulas is waste specific. Stabilization agents for toxic metals may include portland cement, pozzolans, thermoplastics, organic polymers, and clays. However, other waste forms may require proprietary reagents that are available for specific applications. Additional reagents may be added to reduce contaminant leachability, reduce cure and/or set time, and increase strength.

Waste characteristics that are important to the success of the stabilization and/or solidification process for liquids may include volume percent of water, oil, solvents, or other organics; pH; and hazardous waste constituents. Waste characterization data are used to determine whether the waste is amenable to stabilization, any necessary pretreatment requirements, and the appropriate binding agent.

Once the stabilization or solidification method is selected, the binding agent is identified based on chemical compatibility with the waste form and contaminants present. Pretreatment may be required to assure compatibility between the waste and the binding agent (e.g., neutralization of liquid wastes to an acceptable pH range of 5.0 to 11.0). Once the proper binding agent(s) have been identified, bench-scale testing is performed to determine optimum amounts of each agent. In the case of low volume waste streams (e.g., less than approximately 0.26 gallons), bench-scale testing may not be practical and treatment is performed without bench-scale testing using the manufacturer's suggested quantities or by estimating binding agent quantities from previous experience. The stabilization process is performed by combining the predetermined quantities of binding agent(s) with the waste and thoroughly mixing, if appropriate. The resulting mixture is staged to allow an appropriate cure time.

8.1.5 Macroencapsulation

Sandia/DOE perform macroencapsulation in containers in Buildings 6920, 6921, and 6925 at the RMWMF. Macroencapsulation is generally applicable to debris or specific wastes, whereas stabilization/solidification (see Section 8.1.4) is generally applicable to liquids, sludges, and particulate-type wastes. Macroencapsulation is the process of completely encasing waste within a polymer coating or concrete, or within a jacket of inert inorganic materials. The primary use of macroencapsulation is to immobilize wastes such as debris-type solids containing hazardous waste constituents by completely surrounding the waste material with a leach-resistant coating.

Sandia/DOE perform macroencapsulation using one of three processes:

- Encasing the waste in concrete, typically within a larger container that serves as a mold.
- Coating the waste with polymer agents within a mold. Polymers typically used for macroencapsulation include, but are not limited to, polyethylene, thermosetting plastics, and resins that can be polymerized under ambient temperatures in the presence of a catalyst. Equipment used for macroencapsulation may include molds, polymer extrusion equipment, and resin mixing equipment. In-drum macroencapsulation may also be performed with the drum acting as the mold. Temperature control of polymer macroencapsulation processes is critical and carefully maintained to assure that adequate coating occurs.

For example, Sandia/DOE perform macroencapsulation with a chemically inert resin (typically polyethylene), using 30-gallon containers (metal baskets). Each basket containing the solid RCRA-regulated waste items is placed in a 50-gallon mold (similar in size and shape to a 55-gallon drum). The basket is designed to fit into the mold with one to two inches of clearance on all sites, the top, and the bottom. The mold containing the basket and waste items is then filled with melted resin that is heated using a commercially available extrusion unit. Each basket is used only once because it becomes encapsulated within the inert resin and is part of the final waste form. After the resin cools and solidifies, the mold is removed, the waste form is turned over and more polyethylene is added to form ~~a~~ final caps on the ends. The completed waste form is a cylinder slightly smaller than a 55-gallon drum.

- Placing the waste inside a commercially available container made of ~~an~~ inert or noncorroding materials ~~resin~~ such as polyethylene or stainless steel. Alternatively, the container may consist of an outer shell with a liner of inert or noncorroding material such as polyethylene or stainless steel. After the wastes and inert void-filler materials are placed in the container, the resin is heated to seal the container and lid (e.g. using a resistance-heated wire system embedded in the container lid). Stainless steel containers or liners are welded closed to seal the container and encapsulate the wastes~~The container may also include an outer metal shell to provide additional structural strength~~. Sandia/DOE use containers of various sizes, depending on the volume and dimensions of waste items to be macroencapsulated.

8.1.6 Physical Treatment

Sandia/DOE perform physical treatment (volume reduction) in Buildings 6920 and 6921 at the RMWMF.

The treatment includes:

- Reducing waste volume by using commercially available tools (e.g., hammers, screwdrivers, wrenches, pliers, saws, drills, cutters, etc.) to separate items with hazardous waste constituents from larger items or from each other, including removal of coating and filler materials. In some cases, the RCRA-regulated waste item may undergo further physical treatment or treatment in containers.

- Removing coating and filler materials (e.g. resins and glues) by dissolution in containers (e.g., trays or pails) in order to facilitate separation of items with hazardous waste constituents from each other or from other items. Dissolution may take place within the fume hood(s) that are present in each building. The dissolved material may undergo further treatment in containers.

- Reducing the size of waste items by using tools (e.g. mallets, cutters, etc.) to crush or cut items into smaller pieces. The pieces may undergo further treatment in containers.

- Puncturing aerosol cans within a container to allow recovery of the contents. The liquid contents of the aerosol cans are collected in the container, and any gaseous propellants

are filtered through a carbon or other appropriate filter attached to the container. Liquids collected may undergo further treatment in containers.

- Releasing pressurized contents of containers other than aerosol cans (e.g., gas cylinders). Organic gaseous contents are filtered through a carbon filter. All gaseous contents are vented to a chemical fume hood with a high-efficiency particulate air filtration system.

8.2 Preventing Releases to the Atmosphere

Most of the RCRA-regulated wastes treated at the RMWMF are inorganic and are not expected to generate emissions during treatment. Unit personnel perform chemical reactions that could generate emissions (deactivation and stabilization/solidification) in a controlled manner as described above to further minimize potential air emissions. Treatment operations that may generate air emissions of gases, vapors, or particulates are conducted in a controlled manner within fume hoods or with other local ventilation if possible. Each fume hood provides an enclosed work area equipped with a localized exhaust system. Air flow from each fume hood passes through a high-efficiency particulate air filter train before being released to the environment through an exhaust stack. The filters effectively remove particulates entrained in the air flow.

The filters do not remove organic constituents entrained in the air flow. Unit personnel employ the practices described in Section 8.2 of the General Part B to prevent releases of organic constituents to the atmosphere during treatment (20 NMAC 4.1.900/40 CFR 270.14[b][8][vi] and 270.27(a)(2); 20 NMAC 4.1.500/40 CFR 264.179 and Subparts AA, BB, and CC).

8.2.1 Subpart AA

The RMWMF treatment operations do not employ processes subject to the requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart AA.

8.2.2 Subpart BB

During treatment, Sandia/DOE do not routinely manage RCRA-regulated wastes with organic concentrations ≥10 percent by weight in process equipment identified in 20 NMAC 4.1.500/ 40 CFR 264, Subpart BB [~~10-1-03~~7-1-08]. Equipment used in such service at the RMWMF will be used for less than 300 hours per calendar year and is therefore exempt from the requirements of 20 NMAC 4.1.500/40 CFR 264.1052 through 1060 [~~10-1-03~~7-1-08] as noted in 20 NMAC 4.1.500/40 CFR 264.1050(f) [~~10-1-03~~7-1-08]. The equipment location will be noted in the RMWMF records. Equipment use will also be noted in the records.

8.2.3 Subpart CC

Unit personnel follow the practices described in Section 8.2 of the General Part B. Unit personnel do not perform any treatment subject to Container Level 3 standards (20 NMAC 4.1.500/40 CFR 264.1086[c]).

Section B.5.3 in Appendix B to the General Part B also describes procedures to maintain compliance with the air emissions requirements of 20 NMAC 4.1.500/40 CFR 264, Subparts BB and CC [~~10-1-03~~7-1-08].

8.3 Treatment Effectiveness (20 NMAC 4.1.900/40 CFR 270.23[d])

As required in 20 NMAC 4.1.900/40 CFR 270.23(d) [~~10-1-03~~7-1-08], Sandia/DOE evaluate treatment effectiveness by appropriate methods for each batch of waste treated at the RMWMF. In many cases (e.g. stabilization/solidification), Unit personnel treat small samples of a batch of waste using a single agent in various proportions or using various agents to determine which is most effective. That process is then used in treating the rest of the waste, and the data demonstrating that treatment is effective for the samples may be used to demonstrate effectiveness for the rest of the waste. Characterization of the treated waste is described in Appendix B (Section B.2.5.2) of the General Part B.

8.3.1 Chemical Deactivation

Unit personnel check treatment effectiveness using one or more of the following methods (depending on the goal of the treatment performed):

- Visual check for completeness of chemical reaction for solid items that were treated to remove the characteristic of reactivity (e.g., color change or structural change).
- Visual check or ignitability test for liquids that were treated to remove the characteristic of ignitability.
- Knowledge of process to determine whether chemical reaction(s) were completed.
- Check whether treated waste is an oxidizer as defined in 40 CFR Part 173.
- Visual check for liquids that were treated to remove the characteristic of reactivity.
- Fingerprint chemical check for the presence of sulfides and cyanides if their presence caused the waste to be reactive.
- Fingerprint check for pH of liquids that were treated to remove the characteristic of corrosivity.

8.3.2 Thermal Deactivation

Unit personnel check treatment effectiveness through proper operation of the unit (maintaining specified decomposition temperature for specified length of time). In some cases, personnel may visually check for evidence of chemical reaction (e.g., color change or structural change) in the solid item.

8.3.3 Amalgamation

Unit personnel visually check each batch of treated waste to verify that the chemical reaction occurred.

8.3.4 Stabilization and Solidification

Unit personnel check treatment effectiveness using one or more of the following methods (depending on the goal of the treatment performed):

- Visual check for the presence of free liquids.
- Paint filter test to determine whether free liquids are present if the treated waste is amorphous and may contain some liquids.
- Analysis of one or more samples of the treated waste using the TCLP for hazardous waste toxicity characteristic metals. If the stabilization is intended to meet the treatment standards in 20 NMAC 4.1.800/40 CFR 268.40, the analysis will include underlying hazardous constituents as described in Appendix B.

8.3.5 Macroencapsulation

Unit personnel visually check each macroencapsulated item to verify that it is completely encased in the inert resin or concrete. For inert or noncorroding containers and containers with inert or noncorroding liners, Unit personnel check the seal of the liner or container.

8.3.6 Physical Treatment

Unit personnel check treatment effectiveness using one of more of the following methods (depending on the goal of the treatment performed):

- Visual check that item(s) with hazardous waste constituents has(ve) been completely separated from other item(s).
- Visual check that pieces are the desired size.
- Visual check that punctured aerosol cans are empty and the contents are in the container.
- Leaving the container for a time to allow it to continue venting after visual and/or audible evidence indicates it is empty. The length of time would be determined by the size of the container, the contents, and the strength of the evidence.

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Sandia National Laboratories/New Mexico
Auxiliary Hot Cell Facility
Part B Permit Application

Module V

Revision ~~4.0b~~7.0

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SANDIA NATIONAL LABORATORIES/NEW MEXICO AUXILIARY HOT CELL FACILITY PART B PERMIT APPLICATION

This Sandia National Laboratories/New Mexico (SNL/NM) Auxiliary Hot Cell Facility (AHCF) Part B Permit Application is submitted to address the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subparts V and IX (20 NMAC 4.1.500 and .900), revised October 1, 2003 [10-1-03], requirements specific to Resource Conservation and Recovery Act (RCRA)-regulated waste container storage and treatment operations at the AHCF that require a permit. 20 NMAC 4.1.500 and .900 adopt by reference, with limited exceptions, all of the Code of Federal Regulations, Title 40, Parts 264 and 270 (40 CFR 264 and 270).

Sandia Corporation (Sandia) and the U.S. Department of Energy/National Nuclear Security Administration (DOE), as ~~co-~~operator~~s~~ and owner, respectively, of the SNL/NM site, have prepared and revised this module to provide Unit-specific details that supplement the information provided in the "Sandia National Laboratories/New Mexico General Part B Permit Renewal Request/Application", hereinafter referred to as the General Part B. Together, information provided in this module, in the General Part B, and in appendices to the General Part B meet the applicable requirements for the AHCF that are specified in 20 NMAC 4.1.500/40 CFR 264 [10-1-03] and 20 NMAC 4.1.900/40 CFR 270 [10-1-03].

Sandia/DOE also prepared a "Sandia National Laboratories/New Mexico General Part A Permit Renewal Request/Application, Rev. ~~7.0~~11.0" (SNL/NM, ~~2004~~2012), hereinafter referred to as the General Part A, included as Part 1 of this comprehensive Part B permit request. The General Part A serves as a companion document to the General Part B and Unit-specific Part B modules, including this AHCF Part B Permit Application.

In the General Part A, the General Part B, its appendices, and this module, a Unit to be permitted may sometimes be referred to as a "facility" (e.g., Auxiliary Hot Cell Facility). The term "facility," as it appears in this context, is used only to denote a building or Unit name and does not imply the regulatory meaning of "facility" as defined in 20 NMAC 4.1.100/40 CFR 260.10 [10-1-03]. However, pursuant to 20 NMAC 4.1.100/40 CFR 260.10 [10-1-03], the SNL/NM site as a whole does meet the regulatory definition of a facility.

The AHCF occupies 5578 square feet in Building 6597 in Technical Area (TA)-V. Operations include storage of RCRA-regulated wastes in containers, repackaging wastes, and treating the wastes as needed to render them more suitable for shipment to off-site treatment and/or disposal facilities. All of the RCRA-regulated wastes listed in the General Part A may be managed at the AHCF. Sandia/DOE currently operate the AHCF under interim status in accordance with the terms of the most recentupdates to the Part A submitted to the New Mexico Environment Department (NMED) (~~November 29, 2004~~May 2012) and the most recent Part B permit request submitted to NMED (~~November 29, 2004~~May 2012).

1.0 GENERAL UNIT OPERATIONS

This section provides general descriptions of the AHCF waste management areas (WMAs) and specific waste management practices. The information in this section complements the information provided in Section 1.0 of the General Part B.

Specific information in this section regarding Unit operations includes containment systems; requirements for ignitable, reactive, and incompatible wastes; preparedness and prevention; hazards prevention; and container storage practices. Treatment practices are discussed in Section 8.0 of this module.

The specific information provided and documents referenced in this section, together with the general information provided in Section 1.0 of the General Part B, address the applicable hazardous waste management facility requirements of 20 NMAC 4.1.500/40 CFR 264, Subparts I, AA, BB, and CC [10-1-03], and 20 NMAC 4.1.900/40 CFR 270.14 and 270.15 [10-1-03].

1.1 Designated Waste Management Areas

The location of the AHCF at SNL/NM is shown on Figures 1 and 2. The location of the AHCF within TA-V is shown on Figure 2. The AHCF includes four designated WMAs within the high bay of Building 6597: the hot cell; the work area near the hot cell (including the fume hood); the storage silos; and container storage (Figure 3). The high bay of Building 6597 is a concrete and steel structure, with concrete masonry unit (CMU) walls and a concrete floor. The roof consists of steel joists covered with a metal deck, rigid insulation, and a single-ply roof membrane. The east side of the high bay is equipped with an overhead crane that can be used to move large items between the hot cell, the storage silos, and the work area. The floor of the work area is coated with an epoxy-based chemical resistant coating that forms a continuous protective barrier over the concrete floor. The floor of the container storage area will be covered with a similar coating. The high bay area of Building 6597 is also equipped with a system of floor trenches covered with steel plates or grating. These trenches are not used to provide secondary containment for management of RCRA-regulated wastes.

Containers holding RCRA-regulated liquid wastes in the AHCF WMAs will be stored on portable spill pallets or pans. These are commercially available units consisting of a tub made of a heavy-duty inert material such as polyethylene or polypropylene with a heavy-duty inert plastic grating cover. They are designed to be resistant and impervious to corrosives and other liquids. The containers of liquids (up to and including 85-gallon overpack containers~~typically 5- to 30-gallon capacity~~) will be stored on the grating. Any liquids released from the containers will drain through the grating into the tub. The pallets come in various sizes and capacities, they are designed for use with 55-gallon drums or other standard containers, and they meet the requirements of 20 NMAC 4.1.900/40 CFR 270.15[a] and [b] [10-1-03] and 20 NMAC 4.1.500/40 CFR 264.175(b)(1-3) [10-1-03].

Each pallet has sufficient capacity to hold the contents of the largest container of liquid stored on it. Containers are typically not stacked on each other on the pallets. Stacked containers are stored as described in Section 1.2.2.2 of the General Part B. Because the spill pallets are designed to hold containers of liquids, the weight of the containers does not exceed the load-bearing capacity of the grating or the pallet.

The containers are stored indoors and are protected from precipitation by the building, and by the slope of the asphalt pavement and gravel-covered soil surface outside the building that directs storm water away from the doorways, meeting the requirements of 20 NMAC 4.1.500/ 40 CFR 264.175(b)(4).

The fume hood in the work area is equipped with a negative pressure ventilation system. In addition, a flexible exhaust hose can be attached to the same system, allowing for localized negative pressure ventilation from the work area. The air flow from the ventilation system passes through a two-stage high-efficiency particulate air filter train before being released to the environment through an exhaust stack. The filters effectively remove particulates entrained in the air flow.

The following sections provide descriptions of the location and capacity of each WMA. Treatment practices are summarized in Section 1.4 and discussed in detail in Section 8.0 of this module.

1.1.1 Hot Cell

The hot cell is located in the high bay area of Building 6597. Waste management activities include repackaging RCRA-regulated wastes for shipment to off-site TSDFs, and reducing waste volume by using tools to separate items with hazardous waste constituents from larger items. Outside overall dimensions of the hot cell are 16 feet (ft), 8 inches (in.) square and 16 ft, 2 in. high. Inside space dimensions are 100 square feet with a height of 13-ft, 10-in. The inside surfaces are lined with stainless steel. An 18-in. thick concrete foundation mat supports the hot cell. The hot cell walls are constructed of inner and outer precast concrete panels that are held apart by threaded rods. The space between the panels is filled with sand. The roof sections are also constructed of reinforced concrete panels with sand between them. Each individual roof panel is designed to structurally support one 5,000-pound point load. Each roof section supports a roof port and roof plug. The hot cell is equipped with manipulator arms that allow personnel to handle items remotely. The storage capacity of the hot cell is equivalent to 900 gallons of RCRA-regulated waste.

1.1.2 Work Area

The work area is located in the corner of the high bay north and east of the hot cell and the permanent shield wall. Activities include treatment and storage. Treatment includes deactivation, stabilization, macroencapsulation, and physical treatment. Personnel also repackage wastes for shipment to off-site TSDFs. The work area (approximately 300 square feet) may be used for storage of up to 1100 gallons of RCRA-regulated waste. The floor of the work area is covered with an epoxy-based coating.

From time to time, a temporary tent-like room may be erected in the work area north of the hot cell and east of the permanent shield wall to accommodate large RCRA-regulated waste items and containers. If the RCRA-regulated item or container must be handled remotely, the temporary room will be built directly against the permanent shield wall to allow the use of the manipulators at the shield wall. Each time the temporary room is erected, package-specific considerations will determine details of the design; however, basic construction will consist of polyvinyl chloride or metal framing, clear or translucent plastic roof and walls, and plastic doors. The temporary room will operate at a slight negative pressure.

A 6-ft-wide walk-in fume hood is located in the work area northeast of the hot cell; it can accommodate two 55-gallon drums placed side by side. Unit personnel treat and repackage RCRA-regulated wastes in the fume hood. The fume hood is included in the storage capacity for the overall work area.

1.1.3 Storage Silos

Four 10-in. inside diameter (ID), 15-ft deep floor silos and two 30-in.-ID, 15-ft-deep floor silos are located in the work area north of the hot cell and east of the permanent shield wall (Figure 3). These silos have removable locking-type shield plugs. The tops of the silos are raised slightly above the general floor level to reduce the possibility for the entry of water into the silo.

Two additional storage silos are located within the hot cell. Each silo is 10-in. ID. One silo is 15-ft deep and the other is 11-ft, 8-in. deep.

Each silo is constructed of concrete, and each is lined with a removable welded stainless steel sleeve. The sleeves do not provide secondary containment for the small quantities of liquid wastes that may be stored in the silos; secondary containment is provided by outer storage containers. The silos are typically used only for storage of RCRA-regulated wastes that exhibit high external radiation dose rates and therefore present hazards to personnel. The maximum waste storage capacity of the silos is 1,455~~6~~ gallons.

1.1.4 Container Storage (20 NMAC 4.1.900/40 CFR 270.15 and 20 NMAC 4.1.500/ 40 CFR, Subpart I)

Containers of RCRA-regulated waste will be stored in the high bay, south and west of the hot cell, within an area of approximately 3,100 square feet. The footprint of the storage area will vary, depending on the quantity and configuration of the wastes. The floor of the storage area is painted ~~will be coated with an epoxy-based chemical resistant coating that forms a continuous protective barrier over the concrete floor~~.

The area is equipped with a system of floor trenches covered with grating. These trenches are not used to provide secondary containment for management of RCRA-regulated wastes.

Table 1
Fire Suppression System at the Auxiliary Hot Cell Facility

Building	Applicable NFPA Standard[a]	Sprinkler Design Occupancy Classification	System Type	Sprinkler Actuation[b]
6597	13	Storage	Automatic sprinkler, wet pipe	GB/FS

[a] National Fire Protection Association (NFPA), 2002
[b] Sprinklers are either glass bulb or fusible solder type, typically designed to open at temperatures of 155ºF or higher.

Information on other required equipment located at the AHCF is provided in Section 6.0 and Table 3 of this module.

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

Information on equipment testing and maintenance at the AHCF is provided in Appendix C of the General Part B and in Section 4.0 of this module.

1.2.3.3 Access to Communications or Alarm Systems (20 NMAC 4.1.500/40 CFR 264.34)

Information about the types and locations of communications or alarm systems at the AHCF is provided in Section 1.1.3.3 of the General Part B and in Section 6.0 of this module.

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

The following sections address the procedures, equipment, and structures used at the AHCF to prevent hazards. Additional information applicable to the AHCF and all other Units at SNL/NM is included in Section 1.1.4 of the General Part B.

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

AHCF personnel employ the practices described in Section 1.1.4.1 of the General Part B to prevent hazards in unloading. Unit personnel will typically perform loading and unloading activities just inside the rollup doors on the north and south sides of the WMA (Figure 6). The floor is level and in good condition, and there is sufficient room for operating the vehicles and equipment.

Containers will be handled in a manner to prevent shifting and falling. Drums and other containers of RCRA-regulated waste will typically be strapped together on a pallet before being loaded onto vehicles. Containers will typically be transported within the Unit by hand or with drum dollies or pallet jacks.

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

AHCF personnel employ the practices described in Section 1.1.4.6 of the General Part B to prevent releases to the atmosphere during storage.

Subpart AA

AHCF storage operations do not employ any of the processes subject to the requirements of 20 NMAC 4.1.500/40 CFR 264 Subpart AA.

Subpart BB

During storage activities, Sandia/DOE do not routinely manage RCRA-regulated wastes with organic concentrations ≥10 percent by weight in process equipment identified in 20 NMAC 4.1.500/40 CFR 264, Subpart BB [10-1-03]. Equipment used in such service at the AHCF will be used for less than 300 hours per calendar year and is therefore exempt from the requirements of 20 NMAC 4.1.500/40 CFR 264.1052 through 1060 [10-1-03] as noted in 20 NMAC 4.1.500/40 CFR 264.1050(f) [10-1-03]. The equipment list will be maintained in the AHCF records. Equipment use will also be noted in the records.

Subpart CC

Unit personnel follow the practices described in Section 1.1.4.6 of the General Part B and maintain compliance with Container Level 1 standards (20 NMAC 4.1.500/40 CFR 264.1086[c]) for containers that are subject to the standards. Such containers may be stored in any of the WMAs at the Unit.

Section B.5.3 in Appendix B to the General Part B also describes procedures to maintain compliance with the air emissions requirements of 20 NMAC 4.1.500/40 CFR 264, Subparts BB and CC [10-1-03].

1.3 Container Storage Practices (20 NMAC 4.1.900/40 CFR 270.15 and 20 NMAC 4.1.500/40 CFR 264 Subpart I)

Container storage practices applicable to the AHCF are presented in the following sections.

1.3.1 Container Types and Labeling

~~Containers used for storage of RCRA-regulated wastes at the AHCF are most often strong, tight containers such as steel drums, steel boxes, wooden crates, plastic containers, casks, and cylinders.~~ AHCF ~~Unit~~ personnel use the container types and labeling practices described in Section 1.2.1 of the General Part B.

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

AHCF personnel employ the container handling practices described in Section 1.2.1 of the General Part B.

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

The condition of containers at the AHCF is maintained as indicated in Section 1.2.2.1 of the General Part B.

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

AHCF personnel employ the aisle space and storage configuration ~~as~~ described in Section 1.2.2.2 of the General Part B. Aisle width is typically 2.5 feet; this is adequate for unobstructed movement of Unit and emergency response personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of Unit operation in an emergency.

Drums and drum-shaped containers that are stacked are stored on pallets, and are not stacked more than three pallets high. Box-shaped containers may be stacked three high without pallets. Containers of solids may also be stored directly on the floor. Containers of liquids are stored on spill pallets and are typically not stacked.

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

AHCF personnel ensure waste compatibility with containers as indicated in Section 1.2.2.3 of the General Part B.

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

AHCF personnel verify the absence of free liquids in containers as indicated in Section 1.2.2.4 of the General Part B before storing containers in areas that are not equipped with secondary containment.

1.4 Treatment Operations

RCRA-regulated wastes are treated at the AHCF by the following methods:

- Chemical deactivation (performed in the work area, including the fume hood).
- Stabilization and solidification (performed in the work area, including the fume hood).

Table 2
Auxiliary Hot Cell Facility Inspection Criteria and Frequency

Inspected Item	Inspection Criteria	Inspection Frequency
SAFETY AND EMERGENCY EQUIPMENT See Table 3 "Emergency Equipment and Locations" in this module for additional information		
Eye wash / safety shower	Operational and in good condition	Monthly
Spill control and cleanup items	Present, quantities per inventory, and in good condition	Monthly
Personal protective equipment	Present, quantities per inventory, and in good condition	Monthly
Fire alarm pull station(s)	Present, accessible, and in good condition	Monthly
Fire alarm(s)	Present	Monthly
Telephone(s)	Present and operational	Monthly
Fire extinguisher(s)	Present, charged, accessible, and in good condition	Monthly
Fire sprinklers and system	Present, appears to be in good condition, sprinklers not obstructed	Monthly
OPERATING AND STRUCTURAL EQUIPMENT		
Building / storage area floor	Clean, no spills, cracks, or excessive wear	Weekly when and where wastes are managed. Monthly otherwise.
Building walls	Not leaking or spalling, in good condition	Weekly when and where wastes are managed. Monthly otherwise.
Building ceiling	Not leaking or spalling, and in good condition	Weekly when and where wastes are managed. Monthly otherwise.
Building lights	Operational and in good condition	Weekly when and where wastes are managed. Monthly otherwise.
~~Overhead crane~~	~~Present, appears to be in good condition~~	~~Weekly when wastes are managed. Monthly otherwise.~~
Storage silos	Liner in good condition, no cracks or visible deterioration	Prior to waste storage. ~~Monthly otherwise when empty.~~
Storage silo covers	Top surface i~~I~~n good condition, no cracks or excessive wear	Prior to waste storage. Monthly otherwise.
Loading and unloading areas	Good condition, safe working surface, free of cracks, no spills	Daily when and where wastes are handled. Monthly otherwise.
Waste handling equipment	Good condition, in good repair, operational	Daily when and where wastes are handled. Monthly otherwise.
Treatment area	Good condition, clean, uncluttered, no spills	Prior to treatment. Monthly otherwise.

Table 2 (Concluded)
Auxiliary Hot Cell Facility Inspection Criteria and Frequency

Inspected Item	Inspection Criteria	Inspection Frequency
OPERATING AND STRUCTURAL EQUIPMENT (cont)		
~~Fume hood~~	~~Good condition, clean, no deterioration~~	~~Daily when used for waste treatment. Monthly otherwise.~~
Treatment equipment ~~(e.g., hand tools, containers)~~	Good condition (i.e., no releases or deterioration)	Daily when and where wastes are treated. Prior to use for ~~treatment~~ ~~(~~consumable items~~) or daily when and where wastes are treated (tools)~~. Monthly otherwise.
SECURITY DEVICES		
Warning signs	Present and in good condition	Monthly
Doors	Present, operational, in good condition	Monthly
Locks	Present, operational, in good condition	Monthly
CONTAINERS		
Integrity	Good condition (i.e., no bulging, leaks, corrosion, or deterioration)	Check individual containers as they are handled.~~*~~ Weekly otherwise. *
Closed	Correct lid/cover placement (i.e., properly closed and sealed)	Check individual containers as they are handled.~~*~~ Weekly otherwise.*
Labeling	Correct information, correct location, legible	Check individual containers as they are handled.~~*~~ Weekly otherwise. *
Secondary Containment (e.g., spill pallets for liquid waste)	Adequate volume, free of liquids, good condition (i.e., no cracks, excessive wear)	Check individual containers as they are handled.~~*~~ Weekly otherwise.*
Storage Conditions	Waste compatible with container, container located with compatible wastes	Check individual containers as they are handled.~~*~~ Weekly otherwise.*
Location	Correct aisle space, stable ~~correct~~ stacking ~~(3 maximum)~~	Check individual containers as they are handled. Weekly otherwise.

* Containers will be inspected prior to placement into and immediately following removal from a storage silo.

The results of inspections by Unit personnel (including any corrective actions required and taken) are recorded on forms identical or similar to the ones presented in Appendix C. The inspection plan (Appendix C and this section) and inspection records for the current calendar year are maintained in Building 6597 or in the TA-V electronic facility documentation system. Inspection records for previous calendar years are maintained in department offices of AHCF personnel or the SNL/NM Records Center.

6.0 CONTINGENCY PLAN AND EMERGENCY RESPONSE

Emergency response requirements for permitted units are specified in 20 NMAC 4.1.500/ 40 CFR 264, Subpart D [10-1-03], “Contingency Plan and Emergency Procedures,” and in 20 NMAC 4.1.900/40 CFR 270.14(b)(7) [10-1-03]. The Sandia /DOE “Site-Wide Contingency Plan” is included as Appendix E of the General Part B. Supplemental AHCF-specific information is included in this section, in Figures 8, 9, and 10, and in Tables 3 and 4 of this module. Current copies of the site-wide contingency plan and this supplemental information are maintained in department offices of AHCF personnel, in the TA-V emergency control room, and at the SNL/NM Emergency Operations Center.

The AHCF is located in the northeast (high bay) part of Building 6597 in TA-V at SNL/NM and is used to repackage, store, and treat RCRA-regulated wastes. Building 6597 is a concrete masonry unit building; the high bay area of the building has a roof height of 35 feet. The AHCF includes four WMAs:

- The hot cell is constructed of precast concrete with a stainless steel lining. A permanent shield wall extends north of the cell. The cell is used for repackaging and treatment.
- The work area is located in the corner of the high bay north and east of the hot cell and the permanent shield wall. Waste management activities in the work area include storage and treatment and may require the use of a temporary room. A 6-ft-wide walk-in fume hood in the work area can be used for storage and treatment.
- Eight floor silos (six in the work area and two in the cell) can be used for storage.
- Containers of RCRA-regulated waste may also be stored in the high bay, typically south and west of the hot cell..

RCRA-regulated wastes bearing the U.S. EPA Hazardous Waste Numbers listed in the General Part A may be stored and/or treated at the AHCF WMAs. Wastes will be segregated according to compatibility groups.

During an emergency, Unit personnel will evacuate the unit as described in Section E.5.2 of the site-wide contingency plan. During an emergency, Sandia security officers provide unimpeded access to the AHCF for authorized personnel as directed by the IC. ~~Security officers also provide additional emergency assistance as required by the IC. Personnel who are authorized to enter TA-V in case of emergencies are members of the SNL/NM Emergency Response Organization, including medical personnel, the KAFB fire department, and KAFB security police.~~

Figure 8 presents the evacuation routes for the AHCF. Figures 9 and 10 present emergency response and access information for the AHCF. Table 3 lists the emergency equipment typically available at the AHCF. Table 4 lists the emergency coordinators for the AHCF.

Table 3
Auxiliary Hot Cell Facility, Emergency Equipment and Locations

Building 6597

Category	Description/Capabilities	Location
Spill Control and Decontamination Equipment	Fixed shower/eyewash	Near north entrance to Building 6597 high bay
	Absorbent (sufficient absorbent for 55 gallons of liquid when liquid wastes are present)	Near north entrance to Building 6597 high bay
	Spill cleanup items (mops, brooms, and/or shovels)	In equipment storage in Building 6597
	Recovery drums and containers	In equipment storage in Building 6597
	Personal protective equipment (goggles and/or safety glasses, gloves)	Near north entrance to Building 6597 high bay
Internal Communication and Alarm System	Voice communication	
	Fire alarm pull stations (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)	One near each exit door Building 6597 high bay
	Audible fire alarms	Located throughout the building
External Communication System	Telephones	Near north entrance to Building 6597 high bay
	Fire alarm pull stations (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)	One near each exit door in Building 6597 high bay
Fire Extinguishers	Portable (A-B-C)	By personnel doors on the east, south, and west walls
Fire Suppression	Automatic wet-pipe sprinkler system with heat-actuated sprinklers	Coverage throughout the high bay in Building 6597
	Sprinkler head~~Halon replacement fire suppression system~~	Hot Cell
	Sprinkler head	~~Under~~ In fume hood
	Branch line from the Building 6597 sprinkler system	Temporary Room
	Water supplied by fire hydrant	One hydrant, location shown on Figure 9

KAFB Kirtland Air Force Base

Table 4
Auxiliary Hot Cell Facility, Emergency Coordinator List

December 23, 2011~~October 9, 2009~~

Facility Emergency Coordinator		Office Phone	Home Phone
~~Primary~~	~~John Garcia~~ ~~Sandia National Laboratories~~ ~~P.O. Box 5800~~ ~~Albuquerque, New Mexico~~	~~(505) 284-3538 (office)~~ ~~(505) 951-5760 (pager)~~	~~(505) 243-5914~~
Primary~~First~~ ~~Alternate~~	David Siddoway Sandia National Laboratories P.O. Box 5800 Albuquerque, New Mexico	(505) 844-2713 (office) (800) 343-9316 (pager)	(505) 867-0828
First ~~Second~~ Alternate	Michael Torneby Sandia National Laboratories P.O. Box 5800 Albuquerque, New Mexico	(505) 845-3254 (office) (800) 343-9371 (pager)	(505) 823-2451

One or more of these personnel are routinely available during normal work hours (8:00 am to 4:30 pm, Monday through Friday).

7.0 CLOSURE PLAN

Applicable closure requirements are specified in 20 NMAC 4.1.900/40 CFR 270.14(b)(13), and 20 NMAC 4.1.500/40 CFR 264, Subparts G and I, [10-1-03]. General closure information applicable to all Units at SNL/NM and general sampling and analytical procedures to be used during closure activities are presented in the "Site-Wide Closure Plan" in Appendix F of the General Part B. The site-wide plan in Appendix F includes a description of the SNL/NM facility, waste descriptions, closure performance standards, general closure methods, a sampling and analysis plan (SAP), a general closure schedule, procedures for amendment of the plan, closure certification and letter, survey plat, and post-closure requirements. Unit-specific information for closure of the AHCF is included in this section.

7.1 Unit Description

Sandia/DOE use the AHCF to repackage, store, and treat RCRA-regulated wastes. The AHCF is located in the northeast (high bay) part of Building 6597 (see Figure 11) in TA-V at SNL/NM. Building 6597 is a concrete masonry unit building. The AHCF includes four designated WMAs within the high bay of Building 6597: the hot cell; the work area near the hot cell (including the fume hood); the storage silos; and a container storage area:

- The hot cell is constructed of precast concrete and is lined with stainless steel. A permanent shield wall extends north of the cell. The cell is used for repackaging and treatment.

- The work area is located in the corner of the high bay north and east of the hot cell and the permanent shield wall. Waste management activities in the work area include storage and treatment. The floor of the work area is coated with an epoxy-based ~~chemical-resistant~~ coating~~ that forms a continuous protective barrier over the concrete floor~~. The work area includes a 6-ft-wide walk-in fume hood, which is also used for storage and treatment of waste in containers. The fume hood is equipped with a negative-pressure ventilation system. A flexible exhaust hose can be attached to this system, allowing localized negative-pressure ventilation from the work area. Air flow from the ventilation system passes through a two-stage high-efficiency particulate air filter train before being released to the environment through an exhaust stack. The filter train effectively removes particulates entrained in the air flow.

- Eight floor silos (six in the work area and two in the hot cell) can be used for storage. Each silo is constructed of concrete and lined with a removable welded stainless-steel sleeve.

- Containers of RCRA-regulated waste may also be stored in the southern half of the high bay. The footprint of the storage area will vary, depending on the quantity and configuration of waste containers (e.g., containers may also be stored in the northwest portion of the high bay). The floor of the storage area is painted~~coated with an epoxy-based chemical-resistant coating that forms a continuous protective barrier over the concrete floor~~. The high bay area of building 6597 is also equipped with a system of floor trenches covered with steel plates or grating. These trenches are not used to provide secondary containment for management of RCRA-regulated wastes.

7.2 Estimate of Maximum Waste in Storage (20 NMAC 4.1.500/40 CFR 264.112[b][3])

The maximum volume of RCRA-regulated waste in storage at any time at the AHCF is estimated at ~~6,976~~8,075 gallons of liquids and/or solids. This is the maximum volume of RCRA-regulated waste that could be removed from the WMAs as part of closure activities. The maximum total waste volume is broken down as follows:

Building 6597 hot cell	900 gallons
Building 6597 work area	~~1,100~~2,200 gallons
Building 6597 container storage area:	3,520 gallons
Building 6597 storage silos:	1,45~~6~~5 gallons

7.3 Closure Conditions

In addition to the general assumptions listed in Section F.5 in the site-wide closure plan , closure activities specified in this plan assume the following conditions were met during the operational life of the AHCF:

- Waste handling and treatment activities that involved opening containers of RCRA-regulated waste were confined to the interiors of the AHCF WMAs. If contamination occurred, it would have been confined to those areas.

- Treatment activities were conducted in a controlled manner, minimizing the potential for releases of RCRA-regulated wastes or hazardous waste constituents.

- If RCRA-regulated wastes or hazardous waste constituents were inadvertently released into the local exhaust systems during treatment activities, they would be only be present in the system up to the first filter.

- Enclosed WMAs (e.g. hot cell and floor silos) are considered independently of other WMAs when evaluating the potential presence of RCRA-regulated wastes or hazardous waste constituents.

- Steel plates over floor trenches were moved only as needed for maintenance. RCRA-regulated wastes or hazardous waste constituents are not present in any section of floor trench that has been covered with steel plates unless there has been a release of RCRA-regulated wastes into that section of trench.

- Covers to each silo have been opened only as needed for storage operations. RCRA-regulated wastes or hazardous waste constituents are not present in each silo unless there has been a release of RCRA-regulated wastes into that silo.

- The container storage area occupied the entire south half of the high bay, and containers were not ~~occasionally~~ stored in the northwest corner~~portion~~ of the high bay.

8.0 TREATMENT PLAN

Treatment operations for RCRA-regulated wastes treated at the AHCF are described in this section

The following treatment technologies may be used to treat RCRA-regulated wastes at the AHCF:

- Chemical deactivation,
- Stabilization and solidification,
- Macroencapsulation, and
- Physical treatment.

Sandia/DOE may use each technology to treat any of the wastes in the General Part A that include the particular technology in the process description. The waste management areas at the AHCF that are used for the treatment of RCRA-regulated wastes are the hot cell, and the work area (including the fume hood), as described below.

Because treatment at the AHCF (except some physical treatment) will be conducted in containers, it is not subject to the miscellaneous unit and environmental performance standards in 20 NMAC 4.1.500/40 CFR 264, Subpart X [~~10-1-03~~7-1-08]. Treatment effectiveness for each waste stream is discussed in Section 8.3.

8.1 Treatment Operations

Waste treatment is performed at the AHCF for one or more of the following reasons:

- To meet land disposal restrictions (LDRs);
- to allow for the safe storage of the waste; and/or
- To meet treatment, storage, or disposal facility (TSDF) requirements.

All of the treatment at the AHCF will be batch treatment performed on single packages of waste (each package is one 55-gallon drum or less, or a single item that may be larger than a drum). Each type of treatment will be performed on batches of 500 pounds of waste or less, with the exception of physical treatment, which may occasionally involve very large, heavy items. Liquid wastes will be treated in batches of 55 gallons or less.

Waste treatment may generate secondary waste streams (treatment residues). RCRA-regulated treatment residues may undergo additional on-site treatment ~~to meet LDRs~~ and/or be sent to an appropriate off-site TSDF.

The waste treatment processes described in this section are effective in addressing hazardous characteristics in RCRA-regulated wastes, including the following:

- Solid items exhibiting the hazardous waste characteristics of ignitability or reactivity may be chemically deactivated to eliminate the characteristic(s).

- Liquid waste exhibiting the hazardous waste characteristics of ignitability, corrosivity, and/or reactivity may be chemically deactivated to remove the characteristic(s).

- Liquid wastes and particulates containing hazardous waste toxicity characteristic metals (excluding elemental mercury and high mercury subcategories) may be stabilized and/or solidified to reduce or eliminate the leaching potential of the hazardous waste constituents.

- Debris, and wastes containing hazardous waste toxicity characteristic metals (excluding elemental and high mercury subcategories defined in 20 NMAC 4.1.800/40 CFR 268), may be macroencapsulated to reduce or eliminate the leaching potential of the hazardous waste constituent(s).

- Solid items with hazardous constituents may be physically separated from larger items, and the size of individual pieces may be reduced.

Treated wastes and waste residues resulting from treatment of RCRA-regulated wastes may or may not require further management as hazardous wastes, as discussed in Appendix B, Section B.2.5. Each waste treatment technology or process listed above is described in the following sections.

8.1.1 Chemical Deactivation

Sandia/DOE perform chemical deactivation in containers in the work area (including the fume hood) at the AHCF. The containers vary in size depending on the quantity of waste to be treated, and include laboratory glassware, 5-gallon buckets, and 55-gallon drums.

Chemical deactivation refers to a number of chemical processes that can eliminate the hazardous waste characteristics of ignitability, corrosivity, and/or reactivity. Deactivation can be accomplished by several technologies (e.g., neutralization or chemical oxidation). However, the intent of this section is to identify and describe specific methods or treatment trains which may be used at the AHCF to deactivate ignitable wastes defined in 20 NMAC 4.1.200/40 CFR 261.21(a)(2) and (4) [10-1-03], corrosive and reactive wastes defined in 20 NMAC 4.1.200/ 40 CFR 261.23 [10-1-03]. Deactivation may or may not result in a final waste form, depending on the process, and may be used as the first in a series of treatment steps.

Deactivation processes are conducted under carefully controlled conditions so that RCRA-regulated waste with the characteristic of reactivity is allowed to react in a slow, nonviolent manner. Allowing the reactive potential of the waste to be dissipated in this manner reduces or eliminates the reactive characteristic of the waste. Deactivation of reactive wastes is typically conducted in small batches under laboratory conditions such that process control can be easily maintained.

- Hydrides, deuterides, and tritides are deactivated by slow addition to an ice water bath.

- Deactivation of water reactive metals such as elemental sodium and lithium involves the slow and controlled addition of an appropriate alcohol/water solution. Alcohol/water addition is maintained until the water reactive potential of the waste has been eliminated.

- Deactivation of pyrophoric metal powders and particulates may be achieved by mixing waste in a portland cement matrix.

- Water-soluble oxidizers in particulate form are slowly dissolved in water to deactivate them as the first step in the treatment process. The resulting solution may undergo further treatment (e.g., neutralization and stabilization).

- Water-soluble concentrated liquid oxidizers such as hydrogen peroxide may be diluted with water in a controlled manner to make them safer to handle before deactivation with an appropriate chemical agent such as iron filings.

Chemical deactivation to remove the characteristic of corrosivity is the process of removing excess acidity or alkalinity from an aqueous liquid waste. Other uses may include pH adjustment to facilitate subsequent treatment; such pretreatment through deactivation may be necessary to prevent corrosive damage to equipment, deter undesirable reactions, and preclude the formation of unwanted byproducts.

Reagents added to achieve a desired pH are combined with liquid waste inside a mixing vessel or directly in the waste container. Common deactivating reagents include, but are not limited to, sodium hydroxide for acid wastes; and phosphoric acid for alkaline wastes. The selection of reagents is dependent on the quantity of reagent required, cost, availability, and the potential byproduct(s). These deactivation processes are conducted under carefully controlled conditions in which the reagent is added to the waste slowly and mixed thoroughly. This allows the reaction to proceed in a nonviolent manner and allows the energy to be dissipated effectively. Ice may be used if needed to cool the mixture during the reaction. In the case of reactions that are expected to be strongly exothermic, wastes may be treated in small batches under laboratory conditions (similar to the deactivation of reactive wastes) such that process control can be easily maintained.

8.1.2 Stabilization and Solidification

Sandia/DOE perform stabilization in containers in the work area, (including the fume hood) at the AHCF. Stabilization is a process of binding hazardous waste metals so that the metals become chemically part of the matrix or are physically bound within the matrix. The primary use of stabilization is to immobilize toxicity characteristic metals but many stabilization agents also eliminate free liquids. Typical waste forms suitable for stabilization and/or solidification include liquids, soils, and particulate-type wastes.

Process equipment for mixing waste and binder materials depends on the type of reagents used and the volume of waste to be treated. In-drum mixing is typically used for large volume waste quantities. Once waste and binder have been thoroughly mixed and placed in a container, the mass is allowed to cure and/or set. Smaller batches may be mixed by hand and allowed to cure in smaller containers (e.g., 5-gallon pails, and tubs and trays of various sizes).

Development of appropriate formulas is waste specific. Stabilization agents for toxic metals may include portland cement, pozzolans, thermoplastics, organic polymers, and clays. However, other waste forms may require proprietary reagents that are available for specific applications. Additional reagents may be added to reduce contaminant leachability, reduce cure and/or set time, and increase strength.

Waste characteristics that are important to the success of the stabilization and/or solidification process for liquids may include volume percent of water, oil, solvents, or other organics; pH; and hazardous waste constituents. Waste characterization data are used to determine whether the waste is amenable to stabilization, any necessary pretreatment requirements, and the appropriate binding agent.

Once the stabilization or solidification method is selected, the binding agent is identified based on chemical compatibility with the waste form and contaminants present. Pretreatment may be required to assure compatibility between the waste and the binding agent (e.g., neutralization of liquid wastes to an acceptable pH range of 5.0 to 11.0). Once the proper binding agent(s) have been identified, bench-scale testing is performed to determine optimum amounts of each agent. In the case of low volume waste streams (e.g., less than approximately 0.26 gallons), bench-scale testing may not be practical and treatment is performed without bench-scale testing using the manufacturer's suggested quantities or by estimating binding agent quantities from previous experience. The stabilization process is performed by combining the predetermined quantities of binding agent(s) with the waste and thoroughly mixing, if appropriate. The resulting mixture is staged to allow an appropriate cure time.

8.1.3 Macroencapsulation

Sandia/DOE perform macroencapsulation in containers in the work area (including the fume hood) and/or the hot cell at the AHCF. Macroencapsulation is generally applicable to debris, whereas stabilization/solidification (see Section 8.1.2) is generally applicable to liquids, sludges, and particulate-type wastes. Macroencapsulation is the process of encasing waste within a polymer coating or concrete, or within a jacket of inert inorganic materials. The primary use of macroencapsulation is to immobilize wastes such as debris-type solids containing hazardous waste constituents by surrounding the waste material with a leach-resistant coating.

Sandia/DOE perform macroencapsulation using one of three processes:

- Encasing the waste in concrete, typically within a larger container that serves as a mold for the concrete.

- Coating the waste with polymer agents within a mold. Polymers typically used for macroencapsulation include, but are not limited to, asphalt, polyethylene, thermosetting plastics, and resins that can be polymerized under ambient temperatures in the presence of a catalyst. Equipment used for macroencapsulation may include molds, polymer extrusion equipment, and resin mixing equipment. In-drum macroencapsulation may also be performed with the drum acting as the mold. Temperature control of polymer macroencapsulation processes is critical and carefully maintained to assure that adequate coating occurs.

- Placing the waste inside a container made of ~~an~~ inert or noncorroding materials ~~resin~~ such as polyethylene or stainless steel. Alternatively, the container may consist of an outer shell with a liner of inert or noncorroding material such as polyethylene or stainless steel. After the wastes and inert void-filler materials are placed in the container, the resin is heated to seal the container and lid (e.g. using a resistance-heated wire system embedded in the container lid). Stainless steel containers or liners are welded closed to seal the container and encapsulate the wastes. ~~The container may also include an outer metal shell to provide additional structural strength.~~ Sandia/DOE use containers of various sizes, depending on the volume and dimensions of waste items to be macroencapsulated.

8.1.4 Physical Treatment

Sandia/DOE perform physical treatment (volume reduction through separation) in the work area (including the fume hood) and/or the hot cell at the AHCF. The treatment includes:

- Reducing waste volume by using commercially available tools (e.g., hammers, screwdrivers, wrenches, pliers, saws, drills, cutters, etc.) to separate items with hazardous waste constituents from larger items or from each other, including removal of coating and filler materials. In some cases, the RCRA-regulated waste item may undergo further physical treatment or treatment in containers.

- Reducing the size of waste items by using tools (e.g. mallets, cutters, etc.) to crush or cut items into smaller pieces. The pieces may undergo further treatment in containers.

8.2 Preventing Releases to the Atmosphere

Most of the RCRA-regulated wastes treated at the AHCF are inorganic and are not expected to generate emissions during treatment. Unit personnel perform chemical reactions that could generate emissions (deactivation and stabilization/solidification) in a controlled manner as described above to further minimizes potential air emissions. Treatment operations that may generate air emissions of gases, vapors, or particulates will be conducted in a controlled manner within the fume hood if possible. Air flow from the fume hood passes through a two-stage high-efficiency particulate air filter train before being released to the environment through an exhaust stack. The filters effectively remove particulates entrained in the air flow.

The filters do not remove organic constituents entrained in the air flow. AHCF personnel employ the practices described in Section 8.2 of the General Part B to prevent releases of organic constituents to the atmosphere during treatment (20 NMAC 4.1.900/40 CFR 270.14[b][8][vi] and 270.27(a)(2); 20 NMAC 4.1.500/40 CFR 264.179 and Subparts AA, BB, and CC).

8.2.1 Subpart AA

The AHCF treatment operations do not employ processes subject to the requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart AA.

8.2.2 Subpart BB

During treatment, Sandia/DOE do not routinely manage RCRA-regulated wastes with organic concentrations ≥10 percent by weight in process equipment identified in 20 NMAC 4.1.500/ 40 CFR 264, Subpart BB [10-1-03]. Equipment used in such service at the AHCF will be used for less than 300 hours per calendar year and is therefore exempt from the requirements of 20 NMAC 4.1.500/40 CFR 264.1052 through 1060 [10-1-03] as noted in 20 NMAC 4.1.500/40 CFR 264.1050(f) [10-1-03]. The equipment location will be noted in the AHCF records. Equipment use will also be noted in the records.

8.2.3 Subpart CC

Unit personnel follow the practices described in Section 8.2 of the General Part B. Unit personnel do not perform any treatment subject to Container Level 3 standards (20 NMAC 4.1.500/40 CFR 264.1086[c]).

Section B.5.3 in Appendix B to the General Part B also describes procedures to maintain compliance with the air emissions requirements of 20 NMAC 4.1.500/40 CFR 264, Subparts BB and CC [10-1-03].

8.3 Treatment Effectiveness (20 NMAC 4.1.900/40 CFR 270.23[d])

As required in 20 NMAC 4.1.900/40 CFR 270.23(d) [10-1-03], Sandia/DOE evaluate treatment effectiveness by appropriate methods for each batch of waste treated at the AHCF. In many cases (e.g. stabilization/solidification), Unit personnel treat small samples of a batch of waste using a single agent in various proportions or using various agents to determine which is most effective. That process is then used in treating the rest of the waste, and the data demonstrating that treatment is effective for the samples may be used to demonstrate effectiveness for the rest of the waste. Characterization of the treated waste is described in Appendix B (Section B.2.5.2) of the General Part B.

8.3.1 Chemical Deactivation

Unit personnel check treatment effectiveness using one or more of the following methods (depending on the goal of the treatment performed):

- Visual check for completeness of chemical reaction for solid items that were treated to remove the characteristic of reactivity (e.g., color change or structural change).
- Visual check or ignitability test for liquids that were treated to remove the characteristic of ignitability.
- Check whether treated waste is an oxidizer as defined in 40 CFR 173.151.
- Visual check for liquids that were treated to remove the characteristic of reactivity.

- Fingerprint chemical check for the presence of sulfides and cyanides if their presence caused the waste to be reactive.

- Fingerprint check for pH of liquids that were treated to remove the characteristic of corrosivity.

8.3.2 Stabilization and Solidification

Unit personnel check treatment effectiveness using one or more of the following methods (depending on the goal of the treatment performed):

- Visual check for the presence of free liquids.

- Paint filter test to determine whether free liquids are present if the treated waste is amorphous and may contain some liquids.

- Analysis of one or more samples of the treated waste using the TCLP for hazardous waste toxicity characteristic metals. If the stabilization is intended to meet the treatment standards in 20 NMAC 4.1.800/40 CFR 268.40, the analysis will include underlying hazardous constituents as described in Appendix B.

8.3.3 Macroencapsulation

Unit personnel visually check each macroencapsulated item to verify that it is completely encased in the inert resin or concrete. For inert or noncorroding containers and containers with inert or noncorroding liners, Unit personnel check the seal of the liner or container.

8.3.4 Physical Treatment

Unit personnel check treatment effectiveness using one of more of the following methods (depending on the goal of the treatment performed):

- Visual check that item(s) with hazardous waste constituents has(ve) been completely separated from other item(s).

- Visual check that pieces are the desired size.

9.0 REFERENCES

DHHS, see US Department of Health and Human Services

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New Mexico Environment Department, 1997, Letter from NMED (Robert S. Dinwiddie) to DOE (Michael Zamorski), entitled “Request for Supplemental Information: Background Concentrations Report, SNL/KAFB,” dated September 24, 1997.

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Sandia National Laboratories/New Mexico (SNL/NM), ~~2004~~2012, “Sandia National Laboratories/New Mexico General Part A Permit Renewal Request/Application,” Revision ~~7.0~~11.0, Sandia National Laboratories/New Mexico, Albuquerque, New Mexico.

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Sandia National Laboratories/New Mexico
Manzano Storage Bunkers
Part B Permit Application

Module VI

Revision ~~6.0e~~7.0

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SANDIA NATIONAL LABORATORIES/NEW MEXICO MANZANO STORAGE BUNKERS PART B PERMIT APPLICATION

This Sandia National Laboratories/New Mexico (SNL/NM) Manzano Storage Bunkers (MSB) Part B Permit Application is submitted to address the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subparts V and IX (20 NMAC 4.1.500 and .900), revised ~~October 1, 2003~~July 1, 2008 [~~10-1-03~~7-1-08], requirements specific to Resource Conservation and Recovery Act (RCRA)-regulated waste container storage operations requiring a permit at the MSB. 20 NMAC 4.1.500 and .900 adopt by reference, with limited exceptions, all of the Code of Federal Regulations, Title 40, Parts 264 and 270 (40 CFR 264 and 270).

Sandia Corporation (Sandia) and the U.S. Department of Energy/National Nuclear Security Adminstration (DOE), as ~~co-~~operator~~s~~ and owner, respectively, of the SNL/NM site, have prepared and revised this module to provide Unit-specific details that supplement the information provided in the “Sandia National Laboratories/New Mexico General Part B Permit Renewal Request/Application”, hereinafter referred to as the General Part B. Together, information provided in this module, in the General Part B, and in the appendices to the General Part B meet the applicable requirements for the MSB that are specified in 20 NMAC 4.1.500/40 CFR 264 [~~10-1-03~~7-1-08] and 20 NMAC 4.1.900/40 CFR 270 [~~10-1-03~~7-1-08].

Sandia/DOE also prepared a “Sandia National Laboratories/New Mexico General Part A Permit Renewal Request/Application, Rev. ~~7.0~~44.0” (SNL/NM, ~~2004~~2012), hereinafter referred to as the General Part A, included as Part 1 of this comprehensive Part B permit request. The General Part A serves as a companion document to the General Part B and Unit-specific Part B modules, including this MSB Part B Permit Application.

In the General Part A, the General Part B, its appendices, ~~.~~ and this module, a Unit to be permitted may sometimes be referred to as a “facility.” The term “facility,” as it appears in this context, is used only to denote a building or Unit name and does not imply the regulatory meaning of ”facility” as defined in 20 NMAC 4.1.100/40 CFR 260.10 [~~10-1-03~~7-1-08]. However, pursuant to 20 NMAC 4.1.100/40 CFR 260.10 [~~10-1-03~~7-1-08], the SNL/NM site as a whole does meet the regulatory definition of a facility.

The MSB are a set of five units, each with approximately 1600 to 2100 square feet of space. They are located in the Manzano Area on Kirtland Air Force Base (KAFB) and are used for storage of RCRA-regulated wastes in containers. The MSB are owned by KAFB and leased to the DOE. All of the RCRA-regulated wastes listed in the General Part A may be managed at the MSB. Sandia/DOE currently operate the MSB under interim status in accordance with the terms of the most recent updates to the Part A submitted to the New Mexico Environment Department (NMED) (~~November 29, 2004~~May 2012) and the most recent updates to the Part B permit request submitted to NMED (~~November 29, 2004~~May 2012).

1.0 GENERAL UNIT OPERATIONS

This section provides descriptions of the MSB waste management areas (WMAs) and specific waste management practices. The information in this section complements the information provided in Section 1.0 of the General Part B.

Specific information in this section regarding Unit operations includes containment systems; requirements for ignitable, reactive, and incompatible wastes; preparedness and prevention; hazards prevention; and container storage of RCRA-regulated wastes.

The specific information provided and documents referenced in this section, together with the general information provided in Section 1.0 of the General Part B, address the applicable hazardous waste management facility requirements of 20 NMAC 4.1.500/40 CFR 264, Subparts I, AA, BB, and CC [~~10-1-03~~7-1-08], and 20 NMAC 4.1.900/40 CFR 270.14 and 270.15 [~~10-1-03~~7-1-08].

1.1 Designated Waste Management Areas

The location of the MSB at SNL/NM is shown on Figures 1 and 2. The MSB include five Units: Bunkers 37034, 37045, 37055, 37057, and 37118 (Figure 2). There are five designated waste management areas (one in each bunker) as shown in Figures 3, 4, and 5.

In each MSB bunker, containers holding RCRA-regulated liquid wastes are stored on portable spill pallets or pans. These are commercially available units consisting of a tub made of a heavy-duty inert material such as polyethylene or polypropylene with a heavy-duty inert plastic grating cover. They are designed to be resistant and impervious to corrosives and other liquids. The containers of liquids (up to and including 85-gallon overpack containers~~typically 5- to 30-gallon capacity~~) are stored on the grating. Any liquids released from the containers drain through the grating into the tub. The pallets come in various sizes and capacities, they are designed for use with 55-gallon drums or other standard containers, and they meet the requirements of 20 NMAC 4.1.900/40 CFR 270.15[a] and [b] [~~10-1-03~~7-1-08] and 20 NMAC 4.1.500/40 CFR 264.175(b)(1-3).

The pallets come in various sizes and capacities; each pallet has sufficient capacity to hold the contents of the largest container of liquid stored on it. Containers are typically not stacked on each other on the pallets. Stacked containers are stored as described in Section 1.2.2.2 of the General Part B. Because the spill pallets are designed to hold containers of liquids, the weight of the containers does not exceed the load-bearing capacity of the grating or the pallet.

The containers are stored indoors and are protected from precipitation by the bunkers, and by the slope of the concrete paved surface outside the door that directs storm water away from the doorways, meeting the requirements of 20 NMAC 4.1.500/40 CFR 264.175(b)(4).

The MSB are constructed of concrete (walls, roof, and floor) and are covered by earthen materials. The walls and roof of each bunker are rounded. There are three types of bunkers: Type B (37034); Type C (37118); and Type D (37045, 37055, and 37057). The following sections provide descriptions of specific bunker storage structures, locations, and capacities.

1.1.1 Type B Bunker (37034)

Type B bunkers consist of an access tunnel leading to a main chamber that is used for storage of RCRA-regulated wastes. Figure 3 provides a typical floor plan for a Type B bunker. The Type B access tunnel is approximately 20 feet (ft) long, 12 ft wide, and 12.5 ft high. The main chamber is approximately 81 ft long, 26.5 ft wide, and 12.8 ft high. Each bunker is covered by at least 2 ft of earthen fill over a 6-in. thick concrete roof~~ of waterproofed concrete~~. The soil surface above and around the~~each~~ bunker is sloped so water drains away from the bunker. Access to the WMA ~~of each bunker~~ is through two sets of double doors that are 9 ft high and 9 ft wide. One set is at the entrance to the access tunnel, and the other set is at the entrance to the main chamber.

Based on the available floor space (2,1~~00~~46 square feet [ft^2]) in Bunker 37034, it can hold a maximum of 25,080 gallons of RCRA-regulated wastes.

1.1.2 Type C Bunker (37118)

Type C bunkers do not have an access tunnel and consist entirely of a main chamber used for storage of RCRA-regulated wastes. Figure 4 is a typical floor plan of a Type C bunker. The main chamber is approximately 83 ft long, 29 ft wide, and 12.8 ft high. A 6-in. drain tile is located outside the bunker perimeter. Access to the main chamber is through a set of double doors 8 ft wide and 9.5 ft high. Each bunker is covered by at least 2 ft of earthen fill over a 6-in. thick concrete roof~~ of waterproofed concrete~~. The soil surface over and around the ~~each~~ bunker is sloped so water drains away from the bunker.

Based on the available floor space (~~approximately~~ 2,4~~00~~33 ft^2) in Bunker 37118, it can hold a maximum of 35,200 gallons of RCRA-regulated wastes.

1.1.3 Type D Bunkers (37045, 37055, and 37057)

Type D bunkers consist of an access tunnel leading to a main chamber. Only the main chamber is used for storage of RCRA-regulated wastes. Figure 5 is a typical floor plan of a Type D bunker. Type D access tunnels vary in length from 76 feet to 110 feet and are 9 ft wide and 11 to 12 ft high. The main chamber in each bunker is approximately 61 ft long, 26.5 ft wide, and 12.5 ft high. Access to the WMA of each bunker is through two sets of double doors that are 9 ft high and 9 ft wide. One set is at the entrance to the access tunnel, and the other set is at the entrance to the main chamber. Each bunker is covered by at least 2 ft of earthen fill over a 6-in. thick concrete roof~~ of waterproofed concrete~~. The soil surface over and around each bunker is sloped so water drains away from each bunker.

Based on the available floor space (1,6~~00~~08 ft^2) in each of the Type D bunkers, each bunker can hold a maximum of 18,480 gallons of RCRA-regulated wastes.

door, the pavement is in good condition in the area, and there is sufficient room for operating vehicles.

Transport vehicles carry absorbent spill pillows/pigs and/or additional absorbent. The spill pillows will contain any spill or release of liquid wastes to the concrete surface immediately adjacent to and in front of the bunker doors and prevent run-off to surrounding areas. Personnel will add the additional absorbent or pillows to the contained liquid and place the absorbed waste into appropriate containers as described in Section E.5 of the Site Wide Contingency Plan (Appendix E).

Containers are handled in a manner to prevent shifting and falling, and are typically strapped together or tied down on a pallet before being moved. Containers are moved with a forklift from the storage areas through the access tunnels to the loading areas at each bunker. Containers may be moved by hand or with a drum dolly or hand truck within each bunker.

Waste handling personnel work in pairs at the Unit, and maintain contact with one another. Because the Unit is not routinely occupied, personnel are trained to be particularly aware of current and forecast weather conditions and other operations that could affect waste movement, and to exercise caution in operating equipment such as forklifts.

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

Sheet-flow run-on of surface water from surrounding areas and runoff from the MSB are prevented from entering/leaving the WMAs by the design and construction of the bunkers. The MSB are constructed of concrete and covered by earthen materials. The slope of the earthen materials covering the bunkers prevents run-on of storm water or snow melt. The concrete provides a barrier to moisture~~interior roof and side walls of each bunker are protected by a waterproof membrane~~. In Type B and Type C bunkers, a 6-ft drain tile is located on the exterior perimeter, so any water that percolates through the earthen fill is drained away from the bunkers. The drive at the front of each bunker is level or sloped slightly away from the bunker doors.

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

Sandia/DOE do not anticipate that management of RCRA-regulated wastes at the MSB will affect water supplies, as described in this section and in Section 1.1.4.3 of the General Part B.

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

General measures that are available to Unit personnel are described in Section 1.1.4.4 of the General Part B. RCRA-regulated waste handling activities at the MSB that are affected by equipment failures or power outages will be suspended in response to such outages.

1.3 Container Storage Practices (20 NMAC 4.1.900/40 CFR 270.15 and 20 NMAC 4.1.500/40 CFR 264 Subpart I)

Container storage practices applicable to the MSB are presented in the following sections.

1.3.1 Container Types and Labeling

MSB personnel use the containers types and labeling practices described in Section 1.2.1 of the General Part B.

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

MSB personnel employ the container handling practices described in Section 1.2.2 of the General Part B.

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

The condition of containers at the MSB is maintained as indicated in Section 1.2.2.1 of the General Part B.

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

MSB personnel employ the aisle space and storage configuration ~~as~~ described in Section 1.2.2.2 of the General Part B. Aisle width is typically 2.5 feet; this is adequate for unobstructed movement of Unit and emergency response personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of Unit operation in an emergency.

Drums and drum-shaped containers that are stacked are stored on pallets, and are not stacked more than two or three pallets high. Smaller containers may be stacked on a single pallet. Box-shaped containers may be stacked two high without pallets. Containers of solids may also be stored directly on the floor. Containers of liquids are stored on spill pallets and are typically not stacked.

1.3.2.3 Capability of Waste with containers (20 NMAC 4.1.500/40 CFR 264.172)

MSB personnel ensure waste compatibility with containers as indicated in Section 1.2.2.3 of the General Part B.

Table 1
Manzano Storage Bunker Inspection Criteria and Frequency

Inspected Item	Inspection Criteria	Inspection Frequency
SAFETY AND EMERGENCY EQUIPMENT **See Table 2 "Emergency Equipment and Locations" in this module for additional information**		
Portable eye wash	Operational, accessible, in good condition	Monthly
Spill control and cleanup items	Present, quantities per inventory, accessible, in good condition	Monthly
Personal protective equipment	Present, quantities per inventory, and in good condition	Monthly
Smoke alarm	Present	Monthly
Fire extinguisher	Present, charged, accessible, and in good condition	Monthly
OPERATING AND STRUCTURAL EQUIPMENT		
Bunker floor	Clean, no spills or excessive wear	Weekly when and where wastes are managed. Monthly otherwise.
Bunker walls	Not leaking or spalling, in good condition	Weekly when and where wastes are managed. Monthly otherwise.
Bunker ceiling	Not leaking or spalling, and in good condition	Weekly when and where wastes are managed. Monthly otherwise.
Bunker lights	Operational and in good condition	Weekly when and where wastes are managed. Monthly otherwise.
Loading and unloading areas	Good condition, safe working surface, no spills	Daily when and where wastes are handled. Monthly otherwise.
Waste handling equipment	Good condition, in good repair, operational	Daily when and where wastes are handled. Monthly otherwise.
SECURITY DEVICES		
Warning signs	Present and in good condition	Monthly
Doors	Present, operational, in good condition	Monthly
Locks	Present, operational, in good condition	Monthly
CONTAINERS		
Integrity	Good condition (i.e., no bulging, leaks, corrosion, or deterioration)	Check individual containers as they are handled. Weekly otherwise.
Closed	Correct lid/cover placement (i.e., properly closed and sealed)	Check individual containers as they are handled. Weekly otherwise.
Labeling	Correct information, correct location, legible	Check individual containers as they are handled. Weekly otherwise.

Table 1 (Concluded)
Manzano Storage Bunker Inspection Criteria and Frequency

Inspected Item	Inspection Criteria	Inspection Frequency
CONTAINERS (cont)		
Secondary Containment (e.g., spill pallets for liquid waste)	Adequate volume, free of liquids, good condition (i.e., no cracks, excessive wear)	Check individual containers as they are handled. Weekly otherwise.
Storage Conditions	Waste compatible with container, container located with compatible wastes	Check individual containers as they are handled. Weekly otherwise.
Location	Correct aisle space, stable ~~correct~~ stacking ~~(2 maximum)~~	Check individual containers as they are handled. Weekly otherwise.

Table 2
Manzano Storage Bunkers,
Emergency Equipment and Locations

Category	Description/Capabilities	Location
Spill Control and Decontamination Equipment	Portable Eyewash	By inner door inside each bunker
	Personal protective equipment (chemical-resistant gloves and safety glasses)	By inner door inside each bunker
	Absorbents (sufficient absorbent for 55 gallons of liquid when liquid wastes are present)	By inner door inside each bunker
	Spill cleanup items (mops, brooms, and/or shovels)	In equipment storage at the RMWMF
	Recovery drums and containers	In equipment storage at the RMWMF
Internal Communication and Alarm System	Voice command Portable 2-way radio or equivalent, as needed	Operating personnel
	Smoke Alarms	• Smoke detectors ~~and alarms~~ inside each bunker • Strobe light on front outside each bunker
External Communication System	Mobile Telephone or Portable Radio ~~or equivalent~~	Available to all operating ~~Taken to bunkers by~~ personnel at the bunker~~as needed~~
Fire Extinguishers	Portable (A-B-C)	By entrance door outside each bunker
Fire Suppression	Water to Extinguish Fires	KAFB tanker truck at the KAFB fire station in the Manzano administrative area

KAFB Kirtland Air Force Base

7.0 CLOSURE PLAN

Applicable closure requirements are specified in 20 NMAC 4.1.900/40 CFR 270.14(b)(13), and 20 NMAC 4.1.500/40 CFR 264, Subparts G and I [~~10-1-03~~7-1-08]. General closure information applicable to all Units at SNL/NM and general sampling and analytical procedures to be used during closure activities are presented in the "Site-Wide Closure Plan" in Appendix F of the General Part B. The site-wide closure plan includes a description of the SNL/NM facility, waste descriptions, closure performance standards, general closure methods, a sampling and analysis plan (SAP), a general closure schedule, procedures for amendment of the plan, closure certification and letter, survey plat, and post-closure requirements. Unit-specific information for closure of the MSB is included in this section.

7.1 Unit Description

Sandia/DOE use the five bunkers of the MSB to store containers of RCRA-regulated waste. The MSB are located approximately one mile east of the road leading to the entrance of TA-III and -V at the end of Pennsylvania Avenue. The WMAs at the MSB include: a Type B bunker (37034); a Type C bunker (37118); and three Type D bunkers (37045, 37055, and 37057). Bunkers are constructed of concrete (walls, roof, and floor) and are covered by earthen materials.

The Type B bunker is approximately 81 feet (ft) long by 26 ft wide, and the Type C bunker is approximately 80 ft long by 27 ft wide (Figure 13). Each of the Type D bunkers is approximately 61 ft long by 26 ft wide (Figure 14).

7.2 Estimate of Maximum Waste in Storage

The maximum volume of RCRA-regulated waste in storage at any time in the MSB is approximately ~~105,600~~115,720 gallons of liquids and/or solids. This is the maximum volume of RCRA-regulated waste that could be removed from the WMAs as part of closure activities. The WMAs are located at the bunkers shown in Figure 2. The maximum total waste volume is broken down as follows:

- Type B Bunker (37034): 25,080 gallons
- Type C Bunker (37118): ~~25,080~~35,200 gallons
- Type D Bunkers (37045, 37055, and 37057): 55,440 gallons (18,480 each)

7.3 Closure Conditions

In addition to the general assumptions listed in Section F.5 of the site-wide closure plan, partial closure activities specified in this plan assume the following conditions were met during the operational life of the MSB:

- Waste handling activities that involved opening containers of RCRA-regulated waste at the MSB were confined to the interiors of the bunkers. If contamination occurred, it would have been confined to those areas; and

9.0 REFERENCES

DOE, see U.S. Department of Energy

NAAG, see National Association of Attorneys General

National Association of Attorneys General, 1998, "Announcement and Issuance of Guidance: *Sharing of Radionuclide Information with States*", dated September 1998.

New Mexico Environment Department, 1997, Letter from NMED (Robert S. Dinwiddie) to DOE (Michael Zamorski), entitled "Request for Supplemental Information: Background Concentrations Report, SNL/KAFB," dated September 24, 1997.

NMED, see New Mexico Environment Department.

Sandia National Laboratories/New Mexico (SNL/NM), ~~2004~~2012, "Sandia National Laboratories/New Mexico General Part A Permit Renewal Request/Application," Revision ~~7.0~~11.0, Sandia National Laboratories/New Mexico, Albuquerque, New Mexico.

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

U.S. Department of Energy (DOE), 2000, "Agreement-in-Principle Between the United States Department of Energy and the State of New Mexico for Environmental Oversight and Monitoring", dated November 29, 2000.

Enclosure E

Comprehensive Part B Permit Request

Summary of Corrections and Updates:
Part 3
Part 4

Sandia National Laboratories
NM5890110518

ENCLOSURE E

SUMMARY OF REVISIONS TO COMPREHENSIVE PART B PERMIT REQUEST

PART 3 AND PART 4

PART 3

Part 3 addresses groundwater information for regulated units. It has been updated to reflect post-closure care of the Chemical Waste Landfill under a separate permit issued by the New Mexico Environment Department (NMED). Extensive information regarding groundwater is available in that permit and associated documents. That information is no longer included in this Part.

PART 4

Part 4 addresses corrective action at Sandia National Laboratories/New Mexico (SNL/NM). It consists of updated information about solid waste management units (SWMUs) and areas of concern (AOCs). Thirty-five SWMUs and three groundwater AOCs remain on the list of SWMUs and AOCs requiring corrective action. One additional SWMU was identified in 2008.

DOE and Sandia have submitted three permit modification requests to NMED, requesting determination that corrective action is complete at 32 SWMUs. Extensive information for these SWMUs is available in documents that have been submitted to the NMED. That information is not repeated in this Part.

Part 4 has been extensively revised to reflect the current status of corrective action. The 32 SWMUs are summarized in a table. Information for the remaining four SWMUs and three groundwater AOCs has been updated to reflect current information. An updated figure shows the 36 SWMUs and the three groundwater AOCs.

Enclosure F

Comprehensive Part B Permit Request

Corrections and Updates to Part 3 and Part 4
Redline / Strikeout Format

Sandia National Laboratories
NM5890110518

Part 3: Groundwater Information for Regulated Units
Part 4: Solid Waste Management Units

Note: Only the revised text pages for Part 3 are included. Part 4 has been replaced in its entirety and is not included in redline/strikeout format.

PART 3

~~ADDITIONAL~~ GROUNDWATER INFORMATION ~~REQUIREMENTS~~ REGULATED UNITS~~PROTECTION OF GROUNDWATER~~

This part addresses information required by 20 NMAC 4.1.900/40 CFR 270.14(c), "Additional information requirements." This provision requires additional information related to protection of groundwater for facilities containing a regulated unit. A regulated unit, defined in 20 NMAC 4.1.500/40 CFR 264.90(a)(2), is a surface impoundment, waste pile, and land treatment unit or landfill that received hazardous waste after July 26, 1982.

Using this definition, the Chemical Waste Landfill (CWL) qualifies as a regulated unit. The CWL is ~~an inactive landfill~~ located in the southeastern corner of Technical Area (TA) III at Sandia National Laboratories in New Mexico (SNL/NM). Disposal activities at the CWL were conducted from 1962 until 1985. Separate, shallow, unlined pits were used for the disposal of a variety of hazardous wastes.

The CWL qualified for interim status under 20 NMAC 4.1.900/40 CFR 270.70 and was closed ~~is now closing~~ under interim status. The New Mexico Environment Department (NMED) approved final closure on June 2, 2011. ~~The closure process is governed by the CWL Final Closure Plan and Post-Closure Permit Application (SNL/NM, December 1992), fulfilling the requirements of 20 NMAC 4.1.600/40 CFR 265 Subpart G. The approved CWL Closure Plan contains the details of the groundwater monitoring program.~~

The CWL is undergoing post-closure care under a separate Post-Closure Care Permit (PCCP) issued by the NMED in October 2009. The PCCP took effect June 2, 2011, upon NMED approval of the closure of the landfill.

Protection of groundwater is addressed in the PCCP. The information requirements of 20 NMAC 4.1.900/40 CFR 270.14(c) were addressed during closure of the CWL and application for the post-closure care permit. The CWL is not addressed further in this Comprehensive Part B Permit Request.

~~Because the CWL is closing under interim status, many of the requirements associated with a permitted unit are not applicable. The additional information requirements (20 NMAC 4.1.900, 40 CFR 270.14(c)) addressed in this appendix primarily are related to permitted units, referring to provisions of 20 NMAC 4.1.500, 40 CFR 264. As an interim status unit, the CWL has not been subject to these requirements for permitted units and some of the information required for permitted units is not available. Nonetheless, Sandia/DOE have compiled CWL information that corresponds as closely as possible to the additional information requirements of 20 NMAC 4.1.900, 40 CFR 270.14(c). The information presented is intended only to satisfy the additional information requirements of 20 NMAC 4.1.900, 40 CFR 270.14(c); as a unit closing under interim status, the CWL is not subject to permitting and is not included in this permit application as an operating RCRA-regulated waste management unit.~~

~~The CWL groundwater information is summarized in the sections that follow. Detailed information has been submitted routinely to the New Mexico Environment Department (NMED) since the inception of groundwater monitoring in 1985. Additional details can be found in the references of primary submittals containing CWL groundwater information.~~

~~2.0 ADDITIONAL INFORMATION REQUIREMENTS~~

~~270.14(c)(1) Summary of Groundwater Monitoring Data~~

~~The constituents of concern for CWL groundwater are trichloroethylene (TCE) and chromium. TCE has been detected in the groundwater since January 1990. The maximum concentration of TCE detected has been 31 micrograms per liter (μg/L). When the VE VCM, designed to remove TCE vapor from the vadose zone, was completed in 1998, the level of TCE in groundwater decreased to well below the maximum contaminant level (MCL) of 5 μg/L. Chromium has been detected in the groundwater at a maximum concentration of 690 μg/L in background monitoring well CWL-BW 3. The MCL for chromium is 100 μg/L. The chromium has been found only in wells with stainless steel screens that were installed at the landfill. Sandia and DOE have researched this issue and found a number of other installations where the presence of this metal is due to the corrosion of the stainless steel screen in the wells. Nickel, another component of stainless steel, has also been found in these wells at concentrations above the MCL. With one exception of a detection slightly above the MCL level, chromium has not been detected above the MCL since late1996 at the CWL.~~

~~240.14(c)(2) Identification of Aquifers~~

~~The groundwater beneath the CWL occurs in the heterogeneous sediments under locally semi-confined conditions. The water table is at approximately 490 feet (ft) below ground surface (bgs). The uppermost aquifer consists of interbedded clays, silts, and sands of low permeability. The second significant water-bearing zone, which occurs approximately 25 ft below the uppermost aquifer, has higher (a few orders of magnitude) permeability resulting from a higher percentage of sand and gravel layers in these strata. The groundwater flow is to the northwest at a rate of about 1 ft/yr. The groundwater level is declining at a rate of about 0.85 ft/year (yr) at the CWL.~~

~~270.14(c)(3) Location of Landfill and Monitoring Wells~~

~~The location of the CWL is shown on the facility-wide topographic map, Figure A-2 of the SNL/NM General Part B, Part 2. Figure 1 shows the property boundary and the locations of the monitoring wells at the CWL. No point of compliance has been established for the CWL.~~

~~270.14(c)(4) Description of Plume~~

~~Figure 2 shows the extent of the TCE plume in groundwater as of February 1997, prior to the vapor extraction VCM. Figure 3 shows the TCE concentrations as of February 2001, after the vapor extraction VCM was completed.~~

~~270.14(c)(5) Description of Groundwater Monitoring Program~~

~~Groundwater monitoring at the CWL started in 1985 with the installation of five monitoring wells. These wells were installed to establish a detection-well network around the CWL. These wells were installed at various depths (445 to 980 ft bgs), but the NMED determined that these wells were inadequately constructed for monitoring wells, particularly because of the well screen lengths. In 1988, four more wells were installed to replace the 1985 wells and a fifth well was installed in 1990. All of these new wells were approved for monitoring by the NMED.~~

~~The first detection of TCE at 7.3 μg/L occurred in January 1990. The monitoring wells were then placed on an assessment-monitoring program. Due to the discovery of TCE, the NMED issued a notice of violation, which resulted in the completion of the Compliance Agreement Report (CAR) that details the activities associated with performing a 30-day aquifer test. The NMED wanted the test done to gain observation-well data and to provide an interim measure for the groundwater contamination. Difficulty in obtaining these data resulted from the low permeability of the aquifer, the distance between wells, and the low flow rate (SNL/NM, October 1995).~~

~~The NMED conditionally approved the CAR in September 1991, stating that further characterization of the groundwater was necessary to determine the vertical gradient and the lateral and vertical extent of the TCE plume and the aquifer. These requirements resulted in the development of Section 7.0 of the Closure Plan (approved in February 1993) and the Groundwater Assessment Plan (approved in November 1993). Five additional monitoring wells were installed between January and June 1994, of which three were completed at two intervals. These wells and the wells installed in 1988 and 1990 became part of the quarterly groundwater monitoring program in August 1995 (SNL/NM, October 1995).~~

~~Until 1990, all groundwater sampling at the CWL was conducted on a quarterly basis in accordance with 40 CFR 265.92(c). Because no contaminants above EPA's drinking water standards had been detected in the wells until early in 1990, the NMED approved a reduction in the sampling frequency from quarterly to semi-annually for groundwater contamination indicator parameters and annually for groundwater quality parameters. That same year, TCE was detected above the MCL in the groundwater and later confirmed through re-sampling. The NMED reinstated the quarterly sampling requirement based on these results.~~

~~The wells have been sampled quarterly according to the Sampling and Analysis Plan for Groundwater Assessment Monitoring at the CWL (Appendix G of the Closure Plan). After the implementation of the VE VCM in 1997 through 1998, TCE was detected below the MCL for the next nine consecutive quarters. In May 2000, the NMED granted permission to reduce the sampling frequency from quarterly to semi-annually for contamination indicator parameters (volatile organic compounds and metals). Every other year, samples are also collected and analyzed for semi-volatile organic compounds, polychlorinated biphenyls, cyanide, and sulfide.~~

~~In February 1997, revisions to Appendix G were submitted as a modification to the Closure Plan. In March 1998, the NMED issued a request for supplemental information (RSI) for the modification. Sandia and DOE submitted the response to the RSI in June 1998, but to date, the modification has not been fully approved. One outstanding issue is the use of the low-flow sampling technique. Beginning in February 2002, Sandia and DOE will re-implement the approved Appendix G methodology for well purging.~~

~~Regulatory schedules for monitoring and reporting are set and agreed to by the NMED and are presented in the Closure Plan. These schedules are updated as needed in the modifications to the Plan.~~

~~270.14(c)(6) Detection Monitoring Program~~

~~The information requirements of this section are not applicable to the CWL.~~

~~270.14(c)(7) Compliance Monitoring Program~~

~~Because the CWL is an interim status unit, the groundwater monitoring program is an assessment monitoring program (not compliance monitoring). The summary of the groundwater monitoring program is provided for Section 270.14(c)(5) above.~~

~~270.14(c)(8) Corrective Action Program~~

~~A corrective action program has been included as part of the CWL closure, as documented in the CWL Closure Plan. Two VCMs, vapor extraction and landfill excavation, have been conducted as part of the corrective action program. Because the CWL is an interim status unit, the requirements of 20 NMAC 4.1.500, 40 CFR 264.100 are not applicable. The corrective action program has been tailored to incorporate remediation activities into the interim status closure process (see Chapter 12 of the CWL Closure Plan).~~

REFERENCE

New Mexico Environment Department, October 2009. Hazardous Waste Permit NM5890110518, issued to United States Department of Energy and Sandia Corporation for Sandia National Laboratories, New Mexico Environment Department, Santa Fe, New Mexico.
~~The following references identify detailed CWL groundwater information previously submitted to the NMED.~~

~~IT Corporation (IT), December 1995. RCRA Interim Status Groundwater Monitoring Plan Chemical Waste Landfill, IT Corporation, Albuquerque, New Mexico.~~

~~Sandia National Laboratories/New Mexico (SNL/NM), February 1989. Calendar Year 1988 Groundwater Monitoring Program for the Annual Report for the Chemical Waste Landfill, Sandia National Laboratories, Albuquerque, New Mexico.~~

~~Sandia National Laboratories/New Mexico (SNL/NM), February 1990. Calendar Year 1989 Groundwater Monitoring Program Annual Report: Sandia National Laboratories, Albuquerque, New Mexico.~~

~~Sandia National Laboratories/New Mexico (SNL/NM), August 1990. Report on the Installation of the MW-4 at the Chemical Waste Landfill, Sandia National Laboratories, Albuquerque, New Mexico.~~

~~Sandia National Laboratories/New Mexico (SNL/NM), March 1991. Annual Groundwater Monitoring Report for the Chemical Waste Landfill, Sandia National Laboratories, Albuquerque, New Mexico.~~

~~Sandia National Laboratories/New Mexico (SNL/NM), March 1992. Calendar Year 1991 Groundwater Monitoring Program Annual Report, Sandia National Laboratories, Albuquerque, New Mexico.~~

~~Sandia National Laboratories/New Mexico (SNL/NM), December 1992. The Chemical Waste Landfill Closure Plan and Post-Closure Permit Application, Sandia National Laboratories, Albuquerque, New Mexico.~~

~~Sandia National Laboratories/New Mexico (SNL/NM), March 1993. Calendar Year 1992 Groundwater Monitoring Program Annual Report, Sandia National Laboratories, Albuquerque, New Mexico.~~

~~Sandia National Laboratories/New Mexico (SNL/NM), May 1993 – (ongoing on a quarterly basis). The Chemical Waste Landfill Quarterly Closure Progress Report, Sandia National Laboratories, Albuquerque, New Mexico.~~

~~Sandia National Laboratories/New Mexico (SNL/NM), November 1993. The Chemical Waste Landfill Unsaturated Zone Contaminant Characterization, Sandia National Laboratories, Albuquerque, New Mexico.~~

~~Sandia National Laboratories/New Mexico (SNL/NM), March 1994. Calendar Year 1993 Groundwater Monitoring Program Annual Report, Sandia National Laboratories, Albuquerque, New Mexico.~~

~~Sandia National Laboratories/New Mexico (SNL/NM), March 1995. Calendar Year 1994 Groundwater Monitoring Program Annual Report, Sandia National Laboratories, Albuquerque, New Mexico.~~

~~Sandia National Laboratories/New Mexico (SNL/NM), October 1995. Chemical Waste Landfill Ground-Water Assessment Report, Sandia National Laboratories, Albuquerque, New Mexico.~~

~~Sandia National Laboratories/New Mexico (SNL/NM), March 1996. Calendar Year 1995 Groundwater Monitoring Program Annual Report, Sandia National Laboratories, Albuquerque, New Mexico.~~

~~Sandia National Laboratories/New Mexico (SNL/NM), March 1997. Fiscal Year 1997 Annual Groundwater Monitoring Report, Groundwater Protection Program, Sandia National Laboratories, Albuquerque, New Mexico.~~

~~Sandia National Laboratories/New Mexico (SNL/NM), May 1997. Stage 1 Field Implementation Work Plan Vapor Extraction Voluntary Corrective Measure Chemical Waste Landfill, Sandia National Laboratories, Albuquerque, New Mexico.~~

~~Sandia National Laboratories/New Mexico (SNL/NM), March 1998. Fiscal Year 1998 Annual Groundwater Monitoring Report, Groundwater Protection Program, Sandia National Laboratories, Albuquerque, New Mexico.~~

~~Sandia National Laboratories/New Mexico (SNL/NM), March 1999. Annual Groundwater Monitoring Report, Fiscal Year 1999, Groundwater Protection Program, Sandia National Laboratories, Albuquerque, New Mexico.~~

~~Sandia National Laboratories/New Mexico (SNL/NM), April 2000. Annual Groundwater Monitoring Report, Fiscal Year 2000, Groundwater Protection Program, Sandia National Laboratories, Albuquerque, New Mexico.~~

~~Sandia National Laboratories/New Mexico (SNL/NM), May 2000. Chemical Waste Landfill Vapor Extraction Voluntary Corrective Measures Design Report, Sandia National Laboratories, Albuquerque, New Mexico.~~

~~Sandia National Laboratories/New Mexico (SNL/NM), May 2000a. Chemical Waste Landfill Vapor Extraction Corrective Measures Final Report, Sandia National Laboratories, Albuquerque, New Mexico.~~

~~U.S. Department of Energy (DOE), May 9, 1997. Letter requesting incorporation of a revised Appendix G to the Chemical Waste Landfill Closure Plan, from Michael Zamorski, DOE/Kirtland Area Office, to Benito Garcia, HRMB/NMED.~~

~~U.S. Department of Energy (DOE), May 5, 2000. Letter requesting change in the Chemical Waste Landfill monitoring schedule, from Michael Zamorski, DOE/Kirtland Area Office, to James Bearzi, HWB/NMED.~~

Enclosure G

Comprehensive Part B Permit Request

Summary of Corrections and Updates:
Part 5

Sandia National Laboratories
NM5890110518

ENCLOSURE G

SUMMARY OF REVISIONS TO COMPREHENSIVE PART B PERMIT REQUEST

PART 5

Part 5 consists of a post-closure care plan and permit renewal request for the Corrective Action Management Unit (CAMU) at Sandia National Laboratories/New Mexico. The plan includes several appendices and has been extensively revised and updated to reflect post-closure conditions and activities. The revisions for each section are summarized below.

Post-Closure Care Plan

The plan in this section has been extensively revised to:

- Provide updated information and additional information about the CAMU in the text and figures;
- Add references to the site-wide information in Part 2 of the Part B permit request;
- Delete information that was redundant with the information provided in Part 2 of the Part B permit request;
- Provide additional information about inspection and maintenance activities at the CAMU;
- Update information about operation of the monitoring systems; and
- Clarify the processes and procedures used for waste characterization.

Appendix A – Post-Closure Care Notice

This appendix formerly contained a waste analysis plan that is redundant with the Site-Wide Waste Analysis Plan in Part 2 of the Part B permit request. This waste analysis plan has been deleted and the appendix now contains a post-closure care notice that was formerly in Appendix B.

Appendix B – Sampling and Analysis Plans for the Vadose Zone Monitoring System

These three sampling and analysis plans were formerly contained in Appendix C. They have been revised to reflect current operations and to clarify the procedures used for monitoring.

ENCLOSURE G

Appendix C – Inspection Forms

These inspection forms were previously included in an attachment to the text of the plan. They have been revised and updated to reflect current operations and maintenance of the cover at the CAMU. Example forms are included in this appendix.

Appendix D – Contingency Plan and Emergency Response Addendum for the CAMU

This appendix formerly included a site-wide contingency plan, together with a CAMU-specific addendum. The site-wide plan is redundant with the Site-Wide Contingency Plan in Part 2 and has been deleted. The addendum has been updated to reflect current operations.

Appendix E – Personnel Training Program

This has been revised and updated to:

- Remove training descriptions that were redundant with the Site-Wide Personnel Training Plan in Part 2; and
- Reflect changes in typical job duties for CAMU personnel.

Enclosure H

Comprehensive Part B Permit Request

Corrections and Updates to Part 5
Redline / Strikeout Format

Sandia National Laboratories
NM5890110518

Part 5: Corrective Action Management Unit

Note: Only the revised text pages are included

Sandia National Laboratories/New Mexico

~~Environmental Restoration Project~~Long-Term Stewardship Program

POST-CLOSURE CARE PLAN FOR THE CORRECTIVE ACTION MANAGEMENT UNIT TECHNICAL AREA III

~~March 2004~~April 2012

United States Department of Energy
Sandia Site Office

Sandia is a multiprogram laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation~~Company~~, for the United States Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.

POST-CLOSURE CARE PLAN FOR THE
CORRECTIVE ACTION MANAGEMENT UNIT
TECHNICAL AREA III
SANDIA NATIONAL LABORATORIES/NEW MEXICO
~~ENVIRONMENTAL RESTORATION PROJECT~~LONG-TERM STEWARDSHIP PROGRAM

Sandia is a multiprogram laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin ~~Company~~Corporation, for the United States Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.

POST-CLOSURE CARE PLAN FOR THE CORRECTIVE ACTION MANAGEMENT UNIT TECHNICAL AREA III SANDIA NATIONAL LABORATORIES/NEW MEXICO LONG-TERM STEWARDSHIP PROGRAM~~ENVIRONMENTAL RESTORATION PROJECT~~

~~MARCH 2004~~APRIL 2012

List of Figures

~~*List of Attachments*~~

~~Attachment Title~~

~~1 Post-Closure Assessment and Maintenance Schedule~~

~~2 Post-Closure Inspection Form~~

List of Appendices

Appendix	*Title*
~~A~~	~~Waste Analysis Plan for the Corrective Action Management Unit, Technical Area III, Sandia National Laboratories/New Mexico Environmental Restoration Project~~
A~~B~~	Post-Closure Notice for the Corrective Action Management Unit, Technical Area III, Sandia National Laboratories/New Mexico ~~Environmental Restoration Project~~
B~~C~~	Sampling and Analysis Plans for the Vadose Zone Monitoring System at the Corrective Action Management Unit, Technical Area III, Sandia National Laboratories/New Mexico ~~Environmental Restoration Project~~
B~~C~~-1	Sampling and Analysis Plan for the Primary Subliner Monitoring System, March 2004
B~~C~~-2	Sampling and Analysis Plan for the Vertical Sensor Array Monitoring System, March 2004
B~~C~~-3	Sampling and Analysis Plan for the Chemical Waste Landfill and Sanitary Sewer Line Monitoring System, March 2004
C	Inspection Forms for the Corrective Action Management Unit, Technical Area III, Sandia National Laboratories/New Mexico
~~D~~	~~Incorporating the Site-Wite Contingency Plan for Sandia National Laboratories/New Mexico Resource Conservation and Recovery Act-Regulated Waste Management Units~~
	~~Attachment~~
D	~~Site-Specific~~ Contingency Plan and Emergency Response Addendum for the Corrective Action Management Unit
E	Personnel Training Program for the Post-Closure Care Period at the Corrective Action Management Unit, Technical Area III, Sandia National Laboratories/New Mexico ~~Environmental Restoration Project~~

Table 2
Regulatory Guidance
Post-Closure Care Plan for the Corrective Action Management Unit, Technical Area III

Table 2 identifies guidance that supplements the CAMU post-closure requirements (see Table 1). Because the CAMU post-closure requirements are general in nature, the DOE and Sandia~~SNL/NM~~ have identified additional guidance that is useful in preparing a complete post-closure care plan. Although the provisions identified below as guidance are not independently applicable to the CAMU, this guidance (provisions from 20.4.1.500 NMAC, 40 CFR 264, Subparts B, D, E, G, H, and N, and 20.4.1.900 NMAC, 40 CFR 270.14) defined the scope of the document, identifying the post-closure topics to be addressed in the plan. In promulgating the CAMU rule, EPA recognized that post-closure requirements for a CAMU would be established on a site-specific basis: ~~"~~….EPA proposes not to apply part 264 Subpart G procedural requirements to CAMUs…, in favor of using the remedy selection and permit modification process that will serve to establish comprehensively the technical requirements for the remedy….Technical requirements for closure and post-closure of CAMUs, therefore, will be established on a site-specific basis." (EPA, 1990). This table also includes provisions identified as necessary by the NMED (NMED, December 2003). The contents of this plan establish site-specific requirements for the post-closure period for the CAMU.

40 CFR Citation	Regulatory Requirement	Location/Section in This Document
Part 264	STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND CONTAINMENT	See below
Subpart B	General Facility Standards	
264.14	Security	
264.14(b)	A facility must have:	
264.14(b)(2)	An artificial or natural barrier which completely surrounds the active portion of the facility and a means to control entry, at all times, through the gates or other entrances to the active portion of the facility	2.5 Description of Security Fences
264.14(c)	A sign with the legend, ~~"~~Danger-Unauthorized Personnel Keep Out" must be posted at each entrance to the active portion of the facility, and at other locations, in sufficient numbers to be seen from any approach to this active portion	
264.15	General Inspection Requirements	3.5 Inspection/Maintenance Activities and Frequencies
264.15(a)	Inspect the facility for malfunctions and deterioration, operator errors, and discharges which may be causing–or may lead to–(1) release of hazardous waste constituents to the environment, or (2) a threat to human health	3.6 Inspection Schedule, Corrective Actions, and Recorded Results

40 CFR Citation	Regulatory Requirement	Location/Section in This Document
264.15(b)	Develop and follow a written schedule for inspecting monitoring equipment, safety and emergency equipment, security devices, and operating and structural equipment that are important to preventing, detecting, or responding to environmental or human health hazards	3.6 Inspection Schedule, Corrective Actions, and Recorded Results
264.15(c)	Remedy any deterioration or malfunction of equipment or structures, which the inspection reveals on a schedule which ensures that the problem does not lead to an environmental or human health hazard. Where a hazard is imminent or has already occurred, remedial action must be taken immediately.	
264.15(d)	Must record inspections in an inspection log or summary. Records must be kept for at least three years from the date of inspection.	
Subpart D	Contingency Plan and Emergency Procedures	See below
264.56	Emergency Procedures	
264.56(j)	Note in the operating record the time, date, and details of any incident that requires implementing the contingency plan. Submit a written report on the incident to the Regional Administrator within 15 days after the incident.	3.9~~8~~ Record Keeping and Reporting
Subpart E	Manifest System, Record Keeping and Reporting	See below
264.75	Biennial Report	3.9~~8~~ Record Keeping and Reporting
Subpart G	Closure and Post-Closure	See below
264.117	Post-Closure Care and Use of Property	• Introduction 3.0 Post-Closure Care
264.118	Post-Closure Plan; Amendment of Plan	1.0 Introduction 3.0 Post-Closure Care
264.118(b)	The post-closure plan must identify the activities that will be carried on after closure of each disposal unit and the frequency of these activities, and include at least:	See below
264.118(b)(1)	A description of the planned monitoring activities and frequencies at which they will be performed to comply with the requirements of Subparts F, K, L, M, N, and X of this part during the post-closure care period	3.4 VZMS Leak Detection Monitoring 3.5 Inspection/Maintenance Activities and Frequencies 3.6 Inspection Schedule, Corrective Actions, and Recorded Results

40 CFR Citation	Regulatory Requirement	Location/Section in This Document
264.118(b)(2)	A description of the planned maintenance activities, and frequencies at which they will be performed to ensure the integrity of the cap and final cover and the function of the monitoring equipment are in accordance with Subparts F, K, L, M, N, and X of this part	3.4 VZMS Leak Detection Monitoring 3.5 Inspection/Maintenance Activities and Frequencies 3.6 Inspection Schedule, Corrective Actions, and Recorded Results
264.118(b)(3)	The name, address, and phone number of the person or office to contact about the hazardous waste disposal unit or facility during the post-closure care period	3.1 Point of Contact Concerning Facility During Post-Closure Care
264.118(c)	After final closure has been certified, the person or office specified in §264.118(b)(3) must keep the approved post-closure plan during the remainder of the post-closure period	
264.118(d)	Amendment of plan	3.2 Amendment of Post-Closure Care Plan
264.119	Post-Closure Notices	3.3 Post-Closure Notices
264.120	Certification of Completion of Post-Closure Care	3.10~~9~~ Certification of Completion of Post-Closure Care
Subpart H	Financial Requirements	See below
264.140	Applicability	
264.140(c)	States and the Federal government are exempt from the requirements of this subpart	4.0 Financial Assurance and Liability Requirements
Subpart N	Landfills	See below
264.310	Closure and Post-Closure Care	
264.310(b)	After final closure, the owner or operator must comply with all post-closure requirements contained in §§264.117 through 264.120, including maintenance and monitoring throughout the post-closure care period. The owner or operator must:	3.0 Post-Closure Care
264.310(b)(1)	Maintain the integrity and effectiveness of the final cover, including making repairs to the cap as necessary to correct the effects of settling, subsidence, erosion, or other events	3.5.1 Final Cover System Inspection and Maintenance
264.310(b)(3)	Maintain and monitor the leak detection system in accordance with §264.301(c)(3)(iv) and (4) and §264.303(c), and comply with all other applicable leak detection system requirements of this part	3.5.4 VZMS Inspection and Maintenance
264.310(b)(5)	Prevent run-on and runoff from eroding or otherwise damaging the final cover	3.5.2 Storm-Water Diversion Structures Inspection and Maintenance

40 CFR Citation	Regulatory Requirement	Location/Section in This Document
Part 270	EPA ADMINISTERED PERMIT PROGRAMS: THE HAZARDOUS WASTE PERMIT PROGRAM	See below
Subpart B	Permit Application	
270.14	Contents of Part B: General Requirements	
270.14(b)	General information requirements. The following information is required for all HWM facilities, except as §264.1 provides otherwise:	
270.14(b)(1)	A general description of the facility	2.0 Facility Description
270.14(b)(2)	Chemical and physical analysis of the hazardous waste to be handled at the facility	Appendix A 2.2 Description of Hazardous Remediation Waste
270.14(b)(3)	A copy of the waste analysis plan	Appendix B to the General Part B in Part 2 of the Comprehensive Part B Permit Request~~A~~
270.14(b)(4)	A description of the security procedures and equipment required by §264.14.	
264.14	Security	See below
264.14(b)	A facility must have:	
264.14(b)(2)	An artificial or natural barrier, which completely surrounds the active portion of the facility; and a means to control entry, at all times, through the gates or other entrances to the active portion of the facility.	2.5 Description of Security Fences
264.14(c)	A sign with the legend, ~~"~~Danger-Unauthorized Personnel Keep Out" must be posted at each entrance to the active portion of the facility, and at other locations, in sufficient numbers to be seen from any approach to this active portion.	
270.14(b)(5)	A copy of the general inspection schedule required by §264.15(b)	See below
264.15	General Inspection Requirements	
264.15(b)	Develop and follow a written schedule for inspecting monitoring equipment, safety and emergency equipment, security devices, and operating and structural equipment that are important to preventing, detecting, or responding to environmental or human health hazards	3.5 Inspection/Maintenance Activities and Frequencies

40 CFR Citation	Regulatory Requirement	Location/Section in This Document
270.14(b)(6)	A justification of any request for a waiver(s) of the preparedness and prevention requirements of Part 264, Subpart C	A waiver from Part 264, Subpart C, preparedness and prevention requirements, is not requested.
270.14(b)(7)	A copy of the contingency plan as required by Part 264, Subpart D	Appendix D
270.14(b)(8)(v)	Prevent undue exposure of personnel to hazardous waste	Appendix D
270.14(b)(10)	Traffic pattern	2.2 Location, Conditions, and Description of the CAMU
270.14(b)(11)	Facility location information – requires compliance with §264.18(a) and (b)	See below
264.18	Location Standards	
264.18(a)	Seismic considerations	2.2.1 Seismic Considerations
264.18(b)	Floodplains	2.2.2 Floodplain
270.14(b)(13)	A copy of the post-closure plan required by §§264.118 and 264.197	See below
264.118	Post-Closure Plan; Amendment of Plan	2.0 Introduction
264.197	Closure and Post-Closure Care	3.0 Post-Closure Care
270.14(b)(14)	For hazardous waste disposal units that have been closed, documentation that notices required under §264.119 have been filed	See below
264.119	Post-Closure Notices	3.3 Post-Closure Notices
270.14(b)(16)	Where applicable, the most recent post-closure care estimate for the facility prepared in accordance with §264.144 plus a copy of the documentation required to demonstrate financial assurance under §264.145	Not Applicable
270.14(b)(18)	Where appropriate, proof of coverage by a State financial mechanism in compliance with §§264.149 or 264.150	Not Appropriate
270.14(b)(19)	Topographic map	2.2 Location, Conditions, and Description of the CAMU
270.14(c)	Additional information requirements	Not Applicable; exempt under §264.90(b)(2)
270.14(d)	Information requirements for solid waste management units	Information regarding SWMUs is provided in Part 4 of the Comprehensive Part B Permit Request~~SNL/NM facility-wide RCRA Part B renewal application~~.

CAMU = Corrective Action Management Unit.
CFR = Code of Federal Regulations.
DOE = U.S. Department of Energy.
EPA = U.S. Environmental Protection Agency.
HWM = Hazardous waste management.
NMAC = New Mexico Administrative Code.
NMED = New Mexico Environment Department.
RCRA = Resource Conservation and Recovery Act
SNL/NM = Sandia National Laboratories/New Mexico.
SWMU = Solid Waste Management Unit.
VZMS = Vadose Zone Monitoring System.

1.0 Introduction

This post-closure care plan identifies the post-closure activities that will be performed at the Corrective Action Management Unit (CAMU) in Technical Area (TA)-III at Sandia National Laboratories/New Mexico (SNL/NM). The CAMU is used for the containment of hazardous remediation waste that was generated during Environmental Restoration (ER) Project remediation activities. The CAMU was designed and operated in compliance with the "Class III Permit Modification for the Management of Hazardous Remediation Wastes in the Corrective Action Management Unit, Technical Area III, Sandia National Laboratories/New Mexico Environmental Restoration Project," as modified (SNL/NM, September 1997, reprinted June 2002), hereafter referred to as the CAMU Permit. This plan is designed to meet the Resource Conservation and Recovery Act (RCRA) post-closure requirements in Title 40 of the Code of Federal Regulations (CFR) §264.552(e)(4)(iv).

SNL/NM (EPA Identification Number NM5890110518) is a multidisciplinary laboratory engaged in the research and development of weapons and alternative energy sources. SNL/NM is managed and operated for the U.S. Department of Energy/National Nuclear Security Administration (DOE) by Sandia Corporation (Sandia), a wholly-owned subsidiary of Lockheed Martin Corporation, with work also performed for others. Generation and management of hazardous waste occur at SNL/NM as a result of these activities. SNL/NM is located south of Albuquerque, New Mexico, within the boundaries of Kirtland Air Force Base (KAFB) (Figure 2-1) in Bernalillo County. ~~If this post-closure care plan requires amending, the U.S. Department of Energy (DOE) and the ER Project will notify the New Mexico Environment Department (NMED) and U.S. Environmental Protection Agency (EPA) Region 6 in writing. The written notification will include a copy of the amended post-closure care plan for review and approval.~~

The CAMU underwent closure in 2003. NMED approved completion of closure on May 10, 2004 (NMED, 2004). DOE/Sandia conduct p~~P~~ost-closure care activities at the CAMU in accordance with the post-closure care requirements in the Closure Plan for the Corrective Action Management Unit (SNL/NM, 2003), Appendix D of the CAMU Permit. ~~began on October 7, 2003, and will continue for 30 years after that date. Future permit modifications may be undertaken to propose alternative post-closure conditions, including the time frame for the post-closure period. A detailed discussion of the post-closure care activities and frequencies is presented in Section 3.0.~~

Sandia/DOE submitted a comprehensive Part B permit request for ongoing hazardous and mixed hazardous/radioactive waste management activities at 12 units (Units) at SNL/NM in February

2002. The Part B permit request has been updated numerous times to reflect changes in operations at SNL/NM, and to incorporate additional information as required by NMED. The Part B permit request currently addresses ongoing operations at nine Units and post-closure care at the CAMU. The permit request consists of 5 parts:

- Part 1: General Part A for SNL/NM
- Part 2: General Part B for SNL/NM waste management units
- Part 3: Additional Groundwater Information
- Part 4: Information on Solid Waste Management Units
- Part 5: CAMU Post-Closure Care Plan (PCCP)

The information in Part 2 includes general information in the General Part B and six appendices which is applicable to all hazardous waste management units at SNL/NM, including the CAMU. Where applicable, this PCCP refers to sections in Part 2; the text is not reproduced in this Part. Together, the information in this PCCP and in Part 2 address the applicable regulatory requirements in Table 2.

2.0 Facility Description

This chapter presents the facility characteristics and provides the context within which post-closure activities will occur.

2.1 General Description of SNL/NM

SNL/NM is described in the previous section.~~(EPA Identification Number NM5890110518) is a multidisciplinary laboratory engaged in the research and development of weapons and alternative energy sources. SNL/NM is managed for the DOE by Sandia Corporation, a wholly-owned subsidiary of Lockheed Martin Corporation, with work also performed for the U.S. Department of Defense and the Nuclear Regulatory Commission. Generation and management of hazardous waste occur at SNL/NM as a result of these activities. SNL/NM is located south of Albuquerque, New Mexico, within the boundaries of Kirtland Air Force Base (KAFB) (Figure 2-1) in Bernalillo County.~~

2.2 Location, Conditions, and Description of the CAMU

Prior to closure, the CAMU was a 19-acre site located in the southeast corner of TA-III, within the boundaries of Solid Waste Management Unit 107. A facility location map showing the topography of the area, the location of the SNL/NM TAs, and the location of the CAMU is presented in Figure 2-2.

The regional aquifer in the area of the CAMU is located within the Santa Fe group at a depth of approximately 485 feet below ground surface. Groundwater appears to flow toward the northwest at a rate of approximately 2 feet per year (SNL/NM, 1992; SNL/NM, 1993).

Several major well fields have been developed in the regional aquifer to support the City of Albuquerque, KAFB, and surrounding areas. The closest well field is located approximately 5 miles north-northwest and downgradient of the CAMU. Within that well field, the closest downgradient water supply well is KAFB-4, located approximately 4.3 miles north-northwest of the CAMU.

The surface winds at SNL/NM are light, averaging 9 miles per hour. The prevailing wind direction is from the east with speed generally less than 8 miles per hour (Figure 2-2). However, winds from the west and southwest are also common in this part of New Mexico. Additional information about SNL/NM is included in Appendix A to the General Part B in Part 2.

Prior to closure, the CAMU consisted of four waste staging areas (i.e., the bulk waste staging area, the Sprung™ structures, the containerized waste staging area, and the treated waste staging area); a treatment pad; and a containment cell. Support areas at the CAMU included an equipment decontamination pad, storm-water retention ponds, and less-than-90-day areas for the containment-cell leachate collection tanks and the decontamination-pad wash water storage tanks. The waste staging, treatment pad, and support areas at the CAMU were closed under RCRA, and all hazardous waste and hazardous waste residues were removed. The CAMU containment cell was closed with waste remaining in place. The containment cell and supporting infrastructure are subject to the post-closure requirements established in this post-closure care plan. Figure 2-3 presents the pre-closure ~~areal~~ configuration of the CAMU. ~~and delineates the area subject to post-closure care.~~

~~Due to the remote location of the CAMU in TA-III, the general SNL/NM traffic patterns will neither affect nor be affected by CAMU post-closure operations. Traffic within the CAMU will be light and only occur during periodic inspection and sampling periods.~~

2.2.1 Seismic Considerations

As defined by 40 CFR §264.18(a)(2), there are no faults or fault traces with Holocene displacements located within 200 feet of the CAMU facility.

2.2.2 Floodplain

The locations of the 100-year floodplains in the vicinity of the CAMU are shown in Figure 2-2. As defined in 40 CFR §264.18(b)(2)(i), the CAMU facility is not located within a 100-year floodplain.

2.3 Description of the CAMU Containment Cell

The CAMU containment cell consists of an engineered liner system and final cover system that were designed to prevent the migration of hazardous constituents to the environment from leachate and hazardous waste decomposition products generated during the post-closure period. In addition to the cell liner and final cover system, the containment cell incorporates a vadose zone monitoring system (VZMS) and a leachate collection and removal system (LCRS). Figures 2-4, 2-5, ~~and~~ 2-6, and 2-7 present details on the containment cell and associated features.

The CAMU containment cell contains approximately 31,800 cubic yards of remediation wastes that were generated as part of the voluntary corrective action activities conducted during closure of ~~at~~ the Chemical Waste Landfill (CWL), an interim status landfill located adjacent to the CAMU.

Construction quality assurance (QA) for the containment cell and associated liner system and the LCRS is documented in the CAMU Containment Cell Construction Quality Assurance Report–Phase II Subsurface Components (SNL/NM, April 1999). Construction QA for the final cover system is documented in the ~~"~~CAMU Containment Cell Cover Construction Quality Assurance Report, Sandia National Laboratories/New Mexico, Environmental Restoration Project" (SNL/NM October 2003).

2.3.1 Containment Cell Liner System

The engineered containment cell liner system includes bottom liner system and side-wall liner system components.

2.3.1.1 Bottom Liner System Components

The bottom liner system components include the following in descending order:

- LCRS
- Geomembrane liner
- Geosynthetic clay liner (GCL)

Each of these bottom liner system components is discussed in detail as follows.

LCRS. The LCRS is designed to collect and withdraw leachate from the cell during operations and during the post-closure care period. The LCRS includes a lined sump in the north end of the containment cell, a collection pipe in a central trench located above the geomembrane liner, a manually-operated pump that removes liquids that collect in the sump, and a geocomposite drainage layer.

The central trench traverses the bottom of the containment cell from the south to the north and is sloped approximately 1 percent toward the north. The bottom of the containment cell is sloped approximately 2 percent to drain toward the central trench. The trench receives any leachate from the geocomposite drainage layer. The collection pipe in the bottom of the trench is constructed of slotted 4-inch-diameter polyvinyl chloride (PVC) pipe and provides access for a portable pump to the LCRS sump. The pump delivers leachate to ~~aboveground, portable~~ 55-gallon drums or other suitable containers. Additional details of the leachate collection process and system maintenance are presented in Sections 2.3.4 and 3.5.3.

Geomembrane Liner. A 60-mil high-density polyethylene (HDPE) geomembrane liner system lies across the entire containment cell and below the LCRS. The liner system acts as the initial barrier for preventing leachate migration out of the containment cell. A second 60-mil HDPE liner system is located in the LCRS sump area to provide redundancy.

GCL. A GCL underlies the geomembrane and functions as a leachate barrier layer in the event that the overlying HDPE geomembrane fails. The GCL is located directly above the prepared wicking materials in the bottom of the cell and over the prepared side slopes. The GCL consists of nonwoven, geotextile outer layers needle-punched through an inner layer of low-permeability sodium bentonite.

2.3.1.2 Sidewall Liner System Components

The side-wall liner system components include the following in descending order:

- Protective cover sheet
- Geomembrane
- GCL
- Prepared subgrade

Protective Cover Sheet. A 60-mil HDPE cover sheet lies above the LCRS trench on the north and south side slopes of the cell. The protective cover sheet is field-welded to the geomembrane liner system at the edges of the LCRS trench.

Geomembrane. A 60-mil HDPE geomembrane liner system comprises the uppermost layer on the side-walls of the cell. The geomembrane provides the initial barrier for the prevention of leachate migration out of the containment cell.

GCL. The side-wall liner system GCL is identical to the bottom liner system GCL described in Section 2.3.1.1.

Prepared Subgrade. The prepared subgrade lies below and in direct contact with the GCL. The base below the subgrade is compacted and free of roots, debris, large voids, and rocks greater than 0.5 inches in diameter.

2.3.2 Final Cover System

The final cover system design incorporates a capillary barrier and vegetation cover for primary hydraulic control. An HDPE liner positioned at the base of the final cover system provides reinforced hydraulic control. In addition to the vegetative cover, engineering controls will be applied to prevent or minimize erosion losses. These include slope control, surface runoff control, and perimeter flow control. The crown of the final cover slopes to the north, south, east, and west at a 3-percent grade. Transition slopes range from 8:1 to 4:1. This design facilitates low-profile mounding and gentle slopes that enhance resistance to erosion caused by wind and precipitation. A plan-view ~~design~~ drawing of the completed containment cell showing the final cover configuration and associated perimeter drainage pathways are~~is~~ presented in Figure 2-~~7~~8. The final cover system components, as shown on Figure 2-~~8~~9, include the following in descending order:

- Topsoil and native soil blend
- Filter sand and pea gravel
- Bedding sand and HDPE liner

Topsoil and Native Soil Blend Layers. The purpose of the topsoil and native soil blend layers is to provide growing media for the vegetati~~on~~ve cover, which consists of native plants. This enhances evapotranspiration and reduces infiltration. The 6-inch-thick topsoil layer is comprised of existing surface soil stripped from the containment cell area during CAMU construction, other SNL/NM surface soil, and off-site surface soil with properties similar to the soil in the vicinity of the CAMU. The 36-inch-thick native soil blend layer underlies the topsoil layer and is free of organic matter, rubble, trash, and deleterious substances. The topsoil layer provides a suitable root bed for the vegetation cover while the underlying native soil blend layer allows for more moisture storage and facilitates further root penetration.

The uppermost portion of the topsoil layer contains a 1-inch-thick gravel mulch layer used to armor the cover surface and reduce the effects of erosion.

Filter Sand/Pea Gravel Layers. A capillary barrier, comprised of a 4-inch-thick filter sand layer and a 6-inch-thick pea gravel layer, lies beneath the native soil blend. Because capillary pressure in a soil matrix is inversely proportionate to the effective pore size (i.e., the smaller the pore size, the higher the capillary pressure), the downward migration of percolating water is suspended when it arrives at the fine/coarse-grained soil interface. The sand layer beneath the native soil blend promotes lateral movement of percolating water and reduces migration of fines into the pea gravel layer.

Bedding Sand Layer and HDPE Liner. An 8-inch-thick bedding sand layer underlies the pea gravel layer and provides cushion protection to the underlying HDPE liner. The HDPE liner is included in the final cover design as an additional measure of protection. The flexible HDPE membrane liner consists of premium grade, 60-mil-thick, textured HDPE produced from specially formulated polyethylene resin. The HDPE liner lies over the waste material, buttress soil, and extended slope, and is keyed into the anchor trench along the perimeter of the containment cell.

2.3.3 VZMS

The VZMS is designed to provide real-time information on containment cell performance with respect to early detection of leaks from the containment cell.

The VZMS consists of the following three subsystems:

- The Primary Subliner (PSL) Monitoring Subsystem
- The Vertical Sensor Array (VSA) Monitoring Subsystem
- The CWL and Sanitary Sewer Line (CSS) Monitoring Subsystem

The three subsystems, shown on Figures 2-~~9~~10 and 2-~~10~~11, are used in an integrated fashion to ~~achieve a high probability of~~ detect~~ing "real"~~ leakage from the containment cell, and to provide information that can be used to distinguish between leakage from the containment cell and ~~avoid~~ false detections caused by environmental factors beyond the control of the CAMU operation (e.g., leakage from the sanitary sewer line or constituent migration from the CWL).

2.3.3.1 PSL Monitoring Subsystem

The PSL Monitoring Subsystem is the primary monitoring subsystem of the VZMS and is designed to provide early leak-detection capability. It consists of five parallel-trending, sub-horizontal, vitrified clay pipes (VCPs) located 5 feet below the containment cell bottom liner, with horizontal spacing of 17 to 27 feet (see Figures 2-~~9~~10 and 2-~~10~~11). The PSL VCP provides sufficient porosity for moisture detection, thus eliminating the need for holes or screens. A PVC access tube is connected to the ends of each VCP to facilitate the deployment of a neutron probe for moisture monitoring. The neutron probe is manually moved through the VCP during monitoring events. ~~Although the purpose of the PSL subsystem is to monitor for soil moisture, a temporary sampling tube can be deployed to support the collection of soil gas measurements as required.~~ Figure 2-~~11~~12 presents a cross-sectional view of the PSL monitoring subsystem components.

2.3.3.2 VSA Monitoring Subsystem

The VSA Monitoring Subsystem provides both lateral and vertical soil gradient information on *in situ* soil moisture, soil temperature monitoring, and soil gas sampling as required. It consists of 11 vertical boreholes located below the containment cell, including one beneath the LCRS sump (see Figures 2-~~9~~10 and 2-~~10~~11). Each borehole contains a sampling point at 5 and 15 feet below the containment cell liner, as well as the following three components: a time-domain reflectometry soil-moisture content probe, a temperature sensor, and an active soil-gas sampler. Instrumentation cabling and tubing is ducted to the surface outside of the containment cell liner

perimeter. Figure 2-~~12~~13 presents a cross-sectional view of the VSA Monitoring Subsystem components.

2.3.3.3 CSS Monitoring Subsystem

The CSS Monitoring Subsystem is designed to detect and identify leakage of moisture and hazardous constituents from the sanitary sewer line should such leakage occur, as well as volatile organic compounds that could potentially migrate from the CWL toward the containment cell. The CSS subsystem consists of six vertical, 20-foot-deep boreholes, spaced approximately 100 feet apart in a line parallel to the sanitary sewer line (see Figures 2-~~9~~10 and 2-~~10~~11). Each borehole is equipped with a well screen suitable for soil gas sampling or for deployment of a neutron probe for soil moisture monitoring. Figure 2-~~13~~14 presents a cross-sectional view of the CSS monitoring subsystem components.

2.3.4 Leachate Collection ~~Drums~~

The leachate that collects in the LCRS sump over time will be pumped into ~~portable,~~ 55-gallon drums or other suitable containers and accumulated in a designated area at the north end of the containment cell. The leachate ~~managed as a listed hazardous waste~~ (~~e.g.,~~ EPA Hazardous Waste Number F039) is characterized as outlined in the Waste Analysis Plan ~~for the CAMU~~ (Appendix B to the General Part B in Part 2~~A~~). ~~Currently, leachate is managed through the SNL/NM Hazardous Waste Management Facility and is manifested off-site for treatment at a RCRA Subtitle C facility.~~

2.4 Description of Storm-Water Diversion Structures

During the post-closure care period, the function of storm-water diversion structures associated with the containment cell is to prevent storm-water run-on and runoff from eroding the final cover. As shown in Figure 2-~~7~~8, the two storm-water diversion structures associated with the containment cell are the site diversion ditch and the containment cell perimeter drainage swale. Storm-water run-on is diverted away from the containment cell by the site diversion ditch where it is directed toward existing surface-water drainage features. Storm-water runoff from the containment cell cover is directed to the perimeter drainage swale where it is discharged off site via an outfall ~~system~~.

2.5 Description of Security Fences

General information applicable to all SNL/NM Units, including the CAMU, is presented in Section A.2 of Appendix A to the General Part B in Part 2. Due to the remote location of the CAMU in TA-III, the general SNL/NM traffic patterns will neither affect nor be affected by

CAMU post-closure operations. Traffic within the CAMU will be light and only occur during periodic post-closure care operations. Additional information about traffic is included in Appendix A. ~~The CAMU is located inside TA-III, which is controlled by fences, KAFB security patrols, and limited access through security gates. TA-III access control procedures are designed to assure~~

~~that only properly identified and authorized persons, vehicles, and property are allowed to enter and exit TA-III.~~

Figure 2-~~14~~15 shows the post-closure perimeter and boundary for the CAMU containment cell area. A contiguous four-strand, barbed-wire fence with two main gates delineates this boundary. The gates are locked when operating personnel are not present. The gates are locked when operating personnel are not present; only authorized ~~SNL/NM~~ personnel control access~~the keys to the locks~~. Warning signs stating, ~~"~~Danger—Unauthorized Personnel Keep Out" are posted on all sides of the CAMU fence at 100-foot intervals, at the main gate, and at the emergency exit. The ~~warning~~ signs contain the warning in English and Spanish, are legible from a distance of at least 25 feet, and can be seen~~visible~~ from any approach to the CAMU.

3.0 Post-Closure Care

This section documents how ~~the~~ Sandia/DOE ~~and SNL/NM~~ will comply with the post-closure requirements contained in 40 CFR §264.552(e)(4)(iv). In addition, this section outlines the procedures necessary to protect human health and the environment, including monitoring and maintenance activities, and the frequency with which such activities shall be performed to ensure the integrity of the final cover and waste containment cell is maintained. ~~The~~ Sandia/DOE ~~and SNL/NM~~ will conduct the following activities to protect human health and the environment:

- Maintain the integrity and effectiveness of the final cover by making repairs as necessary to correct the effects of settling, subsidence, erosion, plant or animal intrusion, or other events that compromise the final cover
- Maintain and monitor the LCRS and the VZMS as specified herein
- Prevent run-on and runoff from eroding or otherwise damaging the final cover
- Maintain fencing, security signs, and locks
- Prepare for and respond to emergencies that may arise during post-closure care activities at the CAMU
- Maintain training, operating, inspection, and monitoring, and other required records
- Report to the NMED

~~The CAMU post-closure phase will be implemented under a post-closure permit, authorized under the Hazardous and Solid Waste Amendments (HSWA) Module, Module IV of the Sandia RCRA Operating Permit, hereafter referred to as the HSWA Module (EPA 1993). The SNL/NM facility-wide RCRA Part B renewal application was submitted to the NMED on February 4, 2002, allowing continued operation of the CAMU pending completion of the permit renewal process; the CAMU post-closure conditions will be included as part of the NMED-issued operating permit, when finalized.~~

3.1 Point of Contact Concerning Facility During Post-Closure Care

~~After final closure has been certified, the DOE and SNL/NM will maintain the post-closure care plan during the remainder of the post-closure period.~~ Points of contact during the post-closure care period are identified below.

The DOE contact person is:

> Site Office Manager~~Joe Estrada~~
> U.S. Department of Energy
> ~~Albuquerque Operations Office~~
> ~~Office of Kirtland Site Operations~~
> P.O. Box 5400
> Albuquerque, NM 87185
> ~~(505) 845-5326~~

The Sandia ~~SNL/NM~~ contact person is:

> Vice President~~Mr. Fran Nimick~~
> Waste Management Operations~~Sandia National Laboratories~~
> P.O. Box 5800
> ~~M/S 1087~~
> Albuquerque, NM 87185-5800
> ~~(505) 284-2577~~

3.2 Amendment of the Post-Closure Care Plan

At any time during the post-closure care period, the DOE and SNL/NM may submit a written notification or request to the NMED for a permit modification to amend the post-closure care plan. The DOE and SNL/NM will submit a written request for a permit modification to authorize a change in the approved post-closure care plan as needed.

3.3 Post-Closure Notices

A copy of the post-closure notice required by 20.4.1.500 NMAC incorporating 40 CFR 264.119 is provided in Appendix A~~B~~.

3.4 VZMS Leak Detection Monitoring Frequency and Assessment

Frequency. During the initial stages of the post-closure care period, the PSL, VSA, and CSS monitoring subsystems of the VZMS was~~will be~~ monitored on a monthly basis for one year. Monitoring is now~~will then~~and will continue to be performed on a quarterly and annual basis for the remainder of the monitoring period. Sandia/~~The~~ DOE ~~and SNL/NM~~ may periodically reevaluate the VZMS monitoring data and may request future permit modifications to make changes in the monitoring requirements for the VZMS. A summary of the VZMS post-closure monitoring frequency, parameters, and methods are presented in Table 3-1. Sampling and analysis plans for the PSL, VSA, and CSS monitoring subsystems are outlined ~~included~~ in ~~this plan as~~ Appendix B~~C~~.

Assessment. The VZMS monitoring system is used to verify containment cell integrity and performance. As part of each monitoring event, soil moisture content and soil gas results obtained from the VZMS will be evaluated to determine if there has been leakage or a release of soil gas from the containment cell and, if so, the ~~general~~ character and magnitude of the leak or release.

Soil Moisture. In the case of An unexplained soil moisture increase greater than approximately 4 percent (expressed as gravimetric percent moisture content) at a monitoring location(s) that suggests a leak from the containment cell will trigger a secondary assessment and confirmation/rejection phase. Sandia/DOE will collect and analyze a second round of samples. If the second analysis confirms that the trigger level has been exceeded, Sandia/DOE will notify NMED confirming that the trigger level has been exceeded during the particular sampling event. Sandia/DOE will evaluate the soil moisture data to determine the likely location and source of the moisture and report the results in writing to NMED within 180 days. If the sanitary sewer line is determined to be the likely source of the increased moisture, Sandia/DOE will continue monitoring and will take additional action if necessary to locate, reduce, and/or eliminate the source of the moisture. ~~a leak is confirmed, the NMED will be notified and consulted to determine an appropriate course of action~~. If the CAMU containment cell is determined to be the likely source of the increased moisture, Sandia/DOE will take further action as required by NMED.

Soil Gas. If a soil-gas sample result exceeds a trigger level of 20 parts per million by volume (ppmv) total volatile organic compounds (VOCs), Sandia/DOE will immediately confirm the result by collecting and analyzing additional samples. If the second analysis confirms that the trigger level has been exceeded, Sandia/DOE will notify NMED confirming that the trigger level has been exceeded during the particular sampling event. Sandia/DOE will evaluate the soil gas data in the vicinity of the CAMU (including data for the CWL) to determine the source of the soil gas, and to evaluate whether the increased soil gas will cause groundwater contamination of any hazardous constituent to exceed the drinking water maximum contanminant levels (MCLs) established by EPA, and will report the results in writing to NMED within 180 days. Sandia/DOE will take further action as required by NMED.

3.5 Inspection/Maintenance/Repair Activities and Frequencies

The CAMU systems will be routinely inspected during the post-closure care period. The CAMU systems associated with the containment cell that will require inspection and maintenance/repair during the post-closure care period include: 1) the final cover; 2) surface-water diversion structures; 3) the LCRS; 4) the VZMS; and 5) the perimeter security fence, security signs, and gate locks. Inspection and maintenance of these systems will be performed throughout the post-closure care period. The inspection and maintenance routines will be performed on a regularly scheduled basis to ensure the integrity of the waste containment cell, the LCRS, and supporting systems for each system. The inspection/maintenance schedule is summarized in Table 3-2. The~~se~~ individual inspection and maintenance elements ~~routines~~ are detailed in the following sections.

Examples of forms used for recording inspections and maintenance/repair are included in Appendix C. These forms are subject to change; any forms used will be functionally equivalent to those shown.

3.5.1 Final Cover System Inspection/Maintenance/Repair

Inspection. The final cover will be inspected on a quarterly basis. Cover inspections will note the following:

- Presence of species of deep-rooted plants (those with roots at least 8 feet deep at maturity) such as shrubs and trees~~the height of the vegetative cover~~;~~,~~

- S~~s~~ettlement of the cover surface in excess of 6 inches~~,~~;

- Presence of animal intrusion burrows in excess of 4 inches in diameter or burrows of species able to burrow 6 feet or deeper~~,~~;
- E~~e~~rosion of the cover soil in excess of 6 inches deep~~,~~;
- C~~c~~ontiguous areas with no vegetation in excess of 200~~100~~ square feet;~~,~~ and
- A~~a~~ny other conditions that may impact the cover's integrity.

The vegetative cover will also be inspected on a quarterly basis until it is successfully established. A successful vegetative cover consists of the following:

- Total percent foliar coverage equals 20 percent (i.e., 20 percent of the land surface is covered with living plants versus 80 percent bare surface area);
- Of the 20 percent total foliar coverage, 50 percent or greater comprises native perennial species, and 50 percent or less comprises annual species; and
- No contiguous bare spots greater than 200 square feet (approximately 14 by 14 feet) are present.

Once the vegetative cover is successfully established, Sandia/DOE will continue to monitor it on an annual basis.

Table 3-1
VZMS Post-Closure Monitoring Frequency, Parameters, and Methods

Time Frame	Monitoring Frequency	Monitoring System	Monitoring Parameter	Monitoring Method
~~Year 1~~	~~Monthly~~[a]	~~PSL~~	~~Moisture Content~~	~~Neutron Probe~~
		~~VSA~~	~~Soil Moisture Content~~ ~~Temperature~~ ~~Active Soil Gas~~	~~TDR probe~~ ~~Temperature Sensor~~ ~~Method TO-14~~
		~~CSS~~	~~Moisture Content~~ ~~Active Soil Gas~~	~~Neutron Probe~~ ~~Method TO-14~~
	~~Annually~~[b]	~~PSL~~	~~Active Soil Gas~~	~~Method TO-14~~
Years 2–30[a]	Quarterly[c]	PSL	Moisture Content	Neutron Probe
		VSA	Soil Moisture Content Temperature	TDR probe Temperature Sensor
		CSS	Moisture Content	Neutron Probe
		~~PSL~~		
	Annually[b]	VSA	Active Soil Gas	Method TO-14 or equivalent, as revised and updated
		CSS		

[a]~~Monthly monitoring will continue beyond the first year, if necessary, until stable readings are obtained~~Closure was completed in October 2003.
[b]Active soil-gas sampling will be conducted annually unless increased soil moisture is detected, in which case active soil-gas sampling will be conducted on a quarterly basis until stable conditions are achieved.
~~[c]Quarterly monitoring will be conducted for a period of three years, at which time it is subject to renegotiation.~~
CSS = Chemical Waste Landfill and sanitary sewer line.
EPA = U.S. Environmental Protection Agency.
PSL = Primary subliner.
TDR = Time domain reflectometer.
TO-14 = EPA Method TO-14 (EPA, November 1986). Sandia/DOE may use an equivalent method such as TO-15 that includes the same analyte list, method detection limits equal to or lower than the TO-14 limits, and provides the same or higher level of data quality.
VSA = Vertical sensor array.
VZMS = Vadose zone monitoring system.

Table 3-2
CAMU
Post-Closure Inspection and Maintenance Schedule

CAMU System to be Inspected	Inspection Parameters	Inspection Frequency	Maintenance/Repair Implementation	Maintenance/Repair Frequency
Final Cover System	• Existence of invasive plants or plants with the potential for forming deep roots (at least 8 feet deep at maturity)~~Vegetative cover in excess of 12 inches in height~~.	Quarterly	• Physically remove or otherwise eliminate the invasive or deep-rooting plant~~Mow vegetative cover~~	Within 60 days of identification or as soon as seasonal conditions are most fgavorable for eliminating the plants~~As necessary~~[a]
	• Settlement of cover surface in excess of 6 inches		• Repair cover system damage that exceeds prescribed limits, relocate animals if possible and repair burrows.	Within 60 days of discovery of needed repairs [a]~~As necessary[b]~~
	• Animal intrusion burrows in excess of 4 inches in diameter or burrows that appear to be of species able to burrow 6 ft or greater in depth			
	• Erosion of cover soil in excess of 6 inches deep			
	• Contiguous areas of no vegetation >2~~1~~00 ft2		• Revegetate barren areas that exceed prescribed limits	Within 60 days of discovery or needed repairs or as soon as possible if seasonal conditions are not appropriate within 60 days.
Final Cover System	Full biological inspection, including: • Approximate percentage vegetative coverage (actively photosynthesizing) • Approximate percentage native vegetation of the total vegetative cover • Main plant species growing on the CAMU cover and te apporximate percentage of the cover populated by each species.	Annually [b]	Remove plants, revegetate barren areas, relocate animals if possible and repair burrows, augmernt soil and/or reseed per biologist recommendations	Follow schedule above for each item
Storm-Water Diversion Structures	• Channel or side-wall erosion in excess of 6 inches deep	Quarterly	• Repair erosion that exceeds prescribed limits	Within 60 days of discovery of needed repairs [a] ~~As necessary[b]~~
	• Accumulations of silt in excess of 6 inches deep~~or debris that blocks more than 1/3 of the channel width~~		• Remove silt and debris accumulations that exceed prescribed limits	
	Debris that blocks more than 1/3 of the channel width			

CAMU System to be Inspected	Inspection Parameters	Inspection Frequency	Maintenance/Repair Implementation	Maintenance/Repair Frequency
LCRS	• Leachate in sump	Monthly/ Quarterly[c]	• Manually activate pump/inspect for leachate collection	Monthly/Quarterly[c]
	• Pump	Quarterly	• Maintain pump	Within 60 days of discovery of needed repairs [a]~~As necessary[d]~~
	• Plumbing		• Maintain plumbing	
VZMS	• Protective casings • Access covers and doors • Instrumentation access boxes • Compression caps	Monthly/ Quarterly~~[e]~~	• Maintain protective casings, access covers and doors, instrumentation access boxes, and compression caps	Within 60 days of discovery of needed repairs [a]~~As necessary[b]~~
	• Locks		• Clean/replace locks ~~as necessary~~	
	• Electronic monitoring systems		• Maintain calibration and proper operating condition of electronic monitoring systems	
	• Aboveground VZMS components		• Ensure aboveground VZMS components are protected from weather	
	• Monitoring equipment (pump), tubing, gauges, valves, etc.) in need of repair/maintenance			
Security Fence	• Presence of wind-blown plants and debris	Quarterly	• Remove wind-blown plants and debris	Within 60 days of discovery of needed repairs [a]~~As necessary[f]~~
	• Condition of fence wires, posts, gates, gate locks, and warning signs		• Repair broken wire sections and posts • Repair and oil gates • Clean or replace locks • Repair or replace warning signs	
Safety and Emergency Equipment [d]	• Spill control materials, including sorbent material, brooms and shovels are present, accessible, and in good condition • Fire extinguisher is present, charged, accessigle, and in good condition • Portable eyewash station is operational and in good condition	Monthly	Repair or replace	As soon as possible

~~[a]When the vegetative cover exceeds a height of 12 inches, it will be mowed to a height of 3 to 4 inches.~~

a~~b~~ Maintenance/repairs will be performed as necessary, based upon the results of inspections.

b This inspection will be conducted quarterly until the vegetative cover is successfully established and annually thereafter

c The LCRS pump and plumbing will be maintained and repaired based on the results of the quarterly inspections.

d See Table 1 in Appendix D for equipment details

~~[e]Following site closure, the LCRS pump will be manually activated on monthly basis for 12 consecutive months, then on a quarterly basis thereafter. During post-closure care, if no leachate can be pumped from the collection sump during a 12-month period, the pump assembly will be removed and properly stored. If the pump is removed, the LCRS will be inspected on a quarterly basis for accumulated leachate. The inspection process will use a video camera to detect leachate in the 4-inch-diameter collection pipe located at the bottom of the LCRS sump. If the~~

~~leachate level in the collection pipe is greater than ½ the pipe diameter (i.e., > 2 inches deep), the pump assembly will be reinstalled and the leachate removed. Following pumping, the pump assembly will be removed and properly stored.~~
~~CAMU~~
~~Post-Closure Inspection and Maintenance Schedule (Continued)~~

~~[d]The LCRS pump and plumbing will be maintained/repaired based upon the results of quarterly inspections.~~
~~[e]The VZMS components will be inspected during regularly scheduled monitoring events (see Table 3-1 for VZMS post-closure monitoring frequency).~~
~~fThe fence, gates, and warning signs will be maintained/repaired as indicated by quarterly inspections.~~
CAMU = Corrective Action Management Unit.
ft^2 = Square foot (feet).
LCRS = Leachate Collection and Removal System.
VZMS = Vadose Zone Monitoring System.

Maintenance/Repair. ~~Annually and when the vegetative cover exceeds a height of 12 inches, it will be mowed to a height of 3 to 4 inches to prevent the establishment of deep-rooted plants.~~ Cover damage that exceeds the limits described under ―Inspection" will be repaired to a condition that meets or exceeds the original design. Repair specifications are listed as follows:

- Backfilling and compacting settlement areas, animal intrusion burrows, and areas of erosion using off-site soil with properties similar to the soil in the vicinity of the CAMU. Sandia/DOE will make reasonable attempts to relocate animals prior to backfilling their burrows.

- Preventing deep-rooted plants from becoming established by identifying them during inspections and killing or removing them within 60 days or as soon as seasonal conditions are favorable.

- Re-seeding areas with no vegetation in excess of 200~~100~~ square feet within 60 days, and, where necessary, re-establishing the topsoil layer and gravel mulch surface treatment to provide a suitable seedbed. If seasonal conditions (e.g., temperature) are not appropriate for establishing vegetation, Sandis/DOE will complete repairs as soon as possible when appropriate conditions occur.

3.5.2 Storm-Water Diversion Structures Inspection/Maintenance/Repair

Inspection. During the post-closure care period, the function of storm-water diversion structures associated with the containment cell is~~will be~~ to prevent run-on and runoff from eroding the final cover. The storm-water diversion structures will be inspected on a quarterly basis to verify structural integrity. Inspections will note erosion of the channels or side-walls in excess of 6 inches deep and accumulations of silt greater than 6 inches deep or debris that blocks more than one-third of the channel width.

Maintenance/Repair. Based upon the results from the storm-water diversion structure inspections, erosion that exceeds the limits described under ―Inspection" will be repaired to a condition that meets or exceeds the original design. Silt and debris accumulations that exceed these limits will be removed.

3.5.3 LCRS Inspection/Maintenance/Repair

Inspection. Following closure, the amount of leachate that accumulates within the leachate collection system is expected to gradually diminish because the primary hydraulic control provided by the containment cell cover system will inhibit percolation of meteoric water through the waste, and the majority of soil placed in the cell has been stabilized with cement, causing it to be hydrophilic. As described in Section 2.3.4, liquids that collect in the LCRS sump will be

pumped directly into ~~portable,~~ 55-gallon drums or other suitable containers. ~~Following site closure,~~ T~~t~~he LCRS pump will be manually activated on a schedule consistent with the inspection and maintenance schedule for the VZMS outlined in Attachment 1. When the pump is manually activated, it will be operated to remove leachate from the sump until it experiences cavitation. At this point the pump will be deactivated. If the pump experiences cavitation without pumping any leachate from the sump, operating personnel will perform an inspection of the collection pipe in the bottom of the LCRS sump to determine whether the pump is experiencing cavitation due to an insufficient leachate level or whether the pump has malfunctioned. If the pump has malfunctioned, Sandia/DOE will determine the cause and repair or replace the pump. ~~During post-closure care, if no leachate can be pumped from the collection sump for a 12-month period,~~ T~~t~~he pump assembly may~~will~~ be removed and properly stored until needed. ~~If the pump is removed, the LCRS will be inspected on a quarterly basis for accumulated leachate. The inspection process will use a video camera to detect leachate in the 4-inch-diameter collection pipe located at the bottom of the LCRS sump. If the leachate level in the collection pipe is greater than one-half the pipe diameter (i.e., more than 2 inches deep), the pump assembly will be reinstalled and the leachate removed. Following pumping, the pump assembly will be removed and properly stored.~~

Maintenance/Repair. The LCRS pump and plumbing will be maintained/repaired as necessary based upon the results of quarterly inspections.

3.5.4 VZMS Inspection/Maintenance/Repair

Inspection. During regularly scheduled monitoring events (see Table 3-1), the VZMS components will be inspected. The inspection will note the condition of the components including protective casings, access covers and doors, instrumentation access boxes, compression caps, locks, and electronic monitoring systems.

Maintenance/Repair. The VZMS components will be maintained/repaired as needed based upon inspection results. Activities may include, but are not limited to, maintaining protective casings, access covers/doors, and instrumentation access boxes in good repair and well marked, ensuring the PSL and CSS compression caps are in good repair, cleaning or replacing locks as necessary, and maintaining calibration and proper operating condition of all electronic monitoring systems. Maintenance/repair activities will also include ensuring that all aboveground VZMS components are protected from the weather.

3.5.5 Security Fence Inspection/Maintenance/Repair

Inspection. The fence, gates, and warning signs will be inspected on a quarterly basis. The inspections will document the condition of the fence;~~,~~ including fence wires, posts, gates, gate locks, and warning signs;~~,~~ and will note excessive accumulations of wind-blown plants and debris that would obscure warning signs, block access to the containment cell, or interfere with waste management activities, VZMS components, or monitoring of any kind.

Maintenance/Repair. The fence, gates, and warning signs will be maintained/repaired as needed to maintain them in good condition - as indicated by quarterly inspections. Activities may include, but are not limited to, removing excessive accumulations of wind-blown plants and debris, repairing broken wire sections and posts, repairing and oiling gates, cleaning or replacing locks, and repairing or replacing warning signs.

3.6 Inspection Schedule, Remedial~~Corrective~~ Actions, and Recorded Results

The~~An~~ inspection and maintenance schedule ~~for implementing inspections and prescribed maintenance of~~ for the CAMU systems associated with the containment cell is provided in Attachment 1. Inspection results for each of the CAMU systems will be recorded on an inspection form~~the Post-Closure Inspection Form (PCIF)~~. Biological inspections will be also be recorded on and inspection form. Examples of forms for both inspections are~~,~~ included in ~~Attachment 2~~Appendix C.

Remedial~~Corrective~~ actions will be taken to ensure protection of human health and the environment and mitigate any potential hazards. If an inspection of the CAMU reveals defects, deterioration, damage, or potential hazards, Sandia/DOE will take corrective action in a timely manner so the problem does not lead to an environmental or human health hazard. If an inspection reveals that a nonemergency problem (e.g., ~~safety and emergency equipment,~~ security devices, or operational equipment are found to be damaged, incomplete, or inoperable) has developed, remedial action including repairs, maintenance, and replacement will be completed as soon as practical~~initiated within three days, unless circumstances beyond the control of the DOE and SNL/NM cause further delay~~. ~~The DOE and SNL/NM should limit any such delays to as short a time period as reasonably possible.~~ If a hazard appears imminent or a hazardous situation already exists, remedial action will be initiated immediately and completed as soon as possible. Any remedial action taken pursuant to an inspection will be noted on the CAMU PCIF. If the identified hazard meets the definition of an emergency, the ~~CAMU~~ Site-Wide ~~and Site-Specific~~ Contingency Plan (Appendix E to the General Part B in Part 2) ~~s (Appendix D)~~ will be

implemented together with the CAMU-specific provisions in Appendix D, and standard notification procedures will be followed.

Inspection results will be recorded in an inspection log ~~(i.e., a collection of completed PCIFs)~~ to be maintained for at least three years from the date of inspection. The inspection forms will include the date and time of inspection, the name of the inspector, a notation of the observations made, and the date and nature of any repairs or other remedial actions.

3.7 Contingency Plan and Emergency Response

Any fire, explosion, or unplanned sudden or gradual release of RCRA-regulated hazardous waste or hazardous waste constituents that significantly threaten human health or the environment outside of a unit are defined as emergencies requiring implementation of a contingency plan.

The Site-Wide Contingency Plan for responding to emergencies at hazardous waste management units at SNL/NM is included in Appendix E of the General Part B in Part 2. Supplemental information applicable to the CAMU is included in Appendix D.

~~3.7~~3.8 Personnel Training

The Site-Wide P~~p~~ersonnel T~~t~~raining Plan ~~program~~ for RCRA_regulated hazardous waste management units, including the CAMU, is included in Appendix D of the General Part B in Part 2. Duties, qualifications, and training for CAMU personnel ~~inspection, monitoring, and maintenance of the CAMU containment cell~~ is included in this plan as Appendix E.

~~3.8~~3.9 Record Keeping and Reporting

The following records will be maintained at the SNL/NM ~~Integrated Safety and Security~~ Records Center:

- A current copy of the CAMU Permit~~HSWA Module~~
- A current copy of the post-closure care plan ~~that includes personnel training procedures and a written inspection schedule~~
- Correspondence and other documents from governmental agencies related to post-closure care
- A written operating record that includes:
- Completed inspection forms for the last three years

- Monitoring, testing, or analytical data and records of actions taken to prevent or mitigate releases of RCRA-regulated hazardous waste or constituents to the environment
- Written standard operating procedures (current editions)
- Training records for current personnel
- VZMS records
- Leachate generation and management records
- ~~Site-specific health and safety plan (current edition)~~Records documenting emergencies that required implementation of the CAMU contingency plan

Sandia/~~The~~ DOE ~~and SNL/NM~~ will comply with the record-keeping provisions of 20.4.1.500 NMAC incorporating 40 CFR 264.74 concerning the availability, retention, and disposition of records.

During the post-closure care period, ~~the~~ Sandia/DOE ~~and SNL/NM~~ will submit a CAMU activity summary report to the NMED on an annual basis. The report will summarize the inspection and maintenance activities, monitoring results, and problems that either endangered or presented significant potential to endanger human health and the environment for the reporting period.

~~3.9~~3.10 Certification of Completion of Post-Closure Care

Within 60 days of the end of the post-closure care period for the CAMU, ~~the~~ DOE and Sandia~~SNL/NM~~ will submit to the NMED, by registered mail, a certification that post-closure care for the CAMU was performed in accordance with the specifications of the approved post-closure care plan. Responsible officials of ~~the~~ DOE and Sandia~~SNL/NM~~, as well as an independent registered professional engineer, will sign the certification. Documentation supporting the independent registered professional engineer's certification of completion of post-closure will be furnished to the NMED upon request. In addition, Sandia/DOE~~SNL/NM~~ will prepare a final post-closure report ~~containing all PCIFs generated during the post-closure care period. The post-closure report will~~ summarizing~~e~~ pertinent ~~PCIF~~ information regarding post-closure monitoring, maintenance, and repair activities and any variances from the approved post-closure plan and the reasons for the variances. The post-closure care report will be provided with the certification to the NMED within 60 days of the end of the post-closure period.

Transmittal of the report will include a request from Sandia and ~~the~~ DOE ~~and SNL/NM~~ for ~~the~~ NMED ~~to~~ approv~~e~~al of termination of the post-closure care period for the CAMU.

4.0 Financial Assurance and Liability Requirements

Under 20.4.1.500 NMAC incorporating 40 CFR 264.140(c) and Public Law 108-199, federal facilities, including SNL/NM, are exempt from financial assurance requirements.

5.0 Potential for Exposure

During the post-closure care period, the CAMU containment cell will be monitored and maintained in a manner that will ensure protection of human health and the environment. Although waste will remain in place within the containment cell, the potential for exposure is highly unlikely for the following reasons:

- All waste emplaced in the containment cell has met negotiated treatment or risk-based standards, resulting in extremely low or nondetectable concentrations of many of the hazardous constituents.
- Engineered barriers will minimize the potential for the migration of liquids into the containment cell and transport of liquids from the containment cell out into the surrounding environment.
- Security measures will maintain restricted access to the area.
- Inspections, maintenance, and repairs will be performed on a regular basis.

~~6.0 Potential for Emergency~~

~~Any fire, explosion, or unplanned sudden or gradual release of RCRA-regulated hazardous waste or hazardous waste constituents that significantly threaten human health or the environment outside of a unit are defined as emergencies requiring implementation of a contingency plan. The Contingecy Plan for the CAMU is provided in Appendix D.~~

~~7.0~~6.0 References

EPA, see U.S. Environmental Protection Agency.

New Mexico Environment Department (NMED), December 2003, ~~"~~Notice of Deficiency: Post Closure Care Plan for the Corrective Action Management Unit, Technical Area 3, Sandia

~~**ATTACHMENT 1**~~

~~**POST-CLOSURE ASSESSMENT AND MAINTENANCE SCHEDULE**~~

~~CAMU~~

~~Post-Closure Inspection and Maintenance Schedule~~

~~CAMU System to be Inspected~~	~~Inspection Parameters~~	~~Inspection Frequency~~	~~Maintenance Implementation~~	~~Maintenance Frequency~~
~~Final Cover System~~	• ~~Vegetative cover in excess of 12 inches in height.~~	~~Quarterly~~	• ~~Mow vegetative cover~~	~~As necessary~~[a]
	• ~~Settlement of cover surface in excess of 6 inches~~		• ~~Repair cover system damage that exceeds prescribed limits~~	~~As necessary~~[b]
	• ~~Animal intrusion burrows in excess of 4 inches in diameter~~			
	• ~~Erosion of cover soil in excess of 6 inches deep~~			
	• ~~Contiguous areas of no vegetation >100~~ ~~ft^2~~		• ~~Revegetate barren areas that exceed prescribed limits~~	
~~Storm-Water Diversion Structures~~	• ~~Channel or side-wall erosion in excess of 6 inches deep~~	~~Quarterly~~	• ~~Repair erosion that exceeds prescribed limits~~	~~As necessary~~[b]
	• ~~Accumulations of silt in excess of 6 inches deep or debris that blocks more than 1/3 of the channel width~~		• ~~Remove silt and debris accumulations that exceed prescribed limits~~	
~~LCRS~~	• ~~Leachate in sump~~	~~Monthly/ Quarterly~~[c]	• ~~Manually activate pump/inspect for leachate collection~~	~~Monthly/Quarterly~~[c]
	• ~~Pump~~	~~Quarterly~~	• ~~Maintain pump~~	~~As necessary~~[d]
	• ~~Plumbing~~		• ~~Maintain plumbing~~	
~~VZMS~~	• ~~Protective casings~~ • ~~Access covers and doors~~ • ~~Instrumentation access boxes~~ • ~~Compression caps~~	~~Monthly/ Quarterly~~[e]	• ~~Maintain protective casings, access covers and doors, instrumentation access boxes, and compression caps~~	~~As necessary~~[b]
	• ~~Locks~~		• ~~Clean/replace locks as necessary~~	
	• ~~Electronic monitoring systems~~		• ~~Maintain calibration and proper operating condition of electronic monitoring systems~~	
	• ~~Aboveground VZMS components~~		• ~~Ensure aboveground VZMS components are protected from weather~~	
~~Security Fence~~	• ~~Presence of wind-blown plants and debris~~	~~Quarterly~~	• ~~Remove wind-blown plants and debris~~	~~As necessary~~[f]
	• ~~Condition of fence wires, posts, gates, gate locks, and warning signs~~		• ~~Repair broken wire sections and posts~~ • ~~Repair and oil gates~~ • ~~Clean or replace locks~~ • ~~Repair or replace warning signs~~	

[a] ~~When the vegetative cover exceeds a height of 12 inches, it will be mowed to a height of 3 to 4 inches.~~
[b] ~~Maintenance/repairs will be performed as necessary, based upon the results of inspections.~~
[c] ~~Following site closure, the LCRS pump will be manually activated on monthly basis for 12 consecutive months, then on a quarterly basis thereafter. During post-closure care, if no leachate can be pumped from the collection sump during a 12-month period, the pump assembly will be removed and properly stored. If the pump is removed, the LCRS will be inspected on a quarterly basis for accumulated leachate. The inspection process will use a video camera to detect leachate in the 4-inch-diameter collection pipe located at the bottom of the LCRS sump. If the leachate level in the collection pipe is greater than ½ the pipe diameter (i.e., > 2 inches deep), the pump assembly will be reinstalled and the leachate removed. Following pumping, the pump assembly will be removed and properly stored.~~

~~[d]The LCRS pump and plumbing will be maintained/repaired based upon the results of quarterly inspections.~~
~~[e]The VZMS components will be inspected during regularly scheduled monitoring events (see Table 3-1 for VZMS post-closure monitoring frequency).~~
~~[f]The fence, gates, and warning signs will be maintained/repaired as indicated by quarterly inspections.~~
~~CAMU = Corrective Action Management Unit.~~
~~ft^2 = Square foot (feet).~~
~~LCRS = Leachate Collection and Removal System.~~
~~VZMS = Vadose Zone Monitoring System.~~

~~ATTACHMENT 2~~

~~POST-CLOSURE INSPECTION FORM~~

~~CAMU~~
~~Post-Closure Inspection Form~~

~~1. Date of Inspection~~ ______________________

~~2. Time of Inspection~~ ______________________

~~3. Name of Designated Inspector~~ ______________________

~~Mandatory Requirement:~~
~~The inspector has read the LTES plan and procedures in the last 12 months:~~ *~~(Inspector must initial box before proceeding with the inspection.)~~* _____
~~Date read~~ ________________

~~Provide explanatory notes for each parameter not inspected or each action required. Include any remedial steps required.~~

~~I. CONTAINMENT CELL COVER SYSTEM~~			
~~Inspection Parameters~~	***~~Parameter Inspected (Yes or No)~~***	***~~Action Required (Yes or No)~~***	***~~Note Number~~***
~~A. Plants comprising the vegetative cover are in excess of 12 inches tall.~~	_____	_____	_____
~~B. Visible settlement of the soil cover in excess of 6 inches.~~	_____	_____	_____
~~C. Animal intrusion burrows in excess of 4 inches in diameter.~~	_____	_____	_____
~~D. Erosion of the soil cover in excess of 6 inches deep.~~	_____	_____	_____
~~E. Contiguous areas of no vegetation greater than 100 ft^2.~~	_____	_____	_____
~~II. SURFACE-WATER DIVERSION STRUCTURES~~			
~~Inspection Parameters~~	***~~Parameter Inspected (Yes or No)~~***	***~~Action Required (Yes or No)~~***	***~~Note Number~~***
~~A. Channel or side-wall erosion in excess of 6 inches deep.~~	_____	_____	_____
~~B. Channel sediment accumulation in excess of 6 inches deep.~~	_____	_____	_____
~~C. Debris that blocks more than 1/3 of the channel width.~~	_____	_____	_____

~~III. LEACHATE COLLECTION AND REMOVAL SYSTEM (LCRS)~~[1]			
~~Inspection Parameters~~	***~~Parameter Inspected (Yes or No)~~***	***~~Action Required (Yes or No)~~***	***~~Note Number~~***
~~Initial 12-month period following closure~~ ~~A. Leachate is pumped from the LCRS collection sump [If Yes, record the amount of liquid pumped into collection drum].~~	______	______	______
~~Remainder of the post-closure period~~ ~~A. Leachate level in the LCRS collection pipe is greater than ½ the pipe diameter (i.e., > 2 inches deep) [If Yes, reinstall LCRS pump and remove leachate].~~	______	______	______
~~B. LCRS pump in need of repair/maintenance.~~	______	______	______
~~C. LCRS plumbing in need of repair/maintenance.~~	______	______	______
~~[1]~~***~~Only designated, experienced, and trained personnel shall inspect LCRS leachate levels and remove, sample, and store leachate from the LCRS. The CAMU Task Leader or his/her qualified designee shall verify the field technician's qualifications.~~***			
~~IV. VADOSE ZONE MONITORING SYSTEM (VZMS)~~			
~~Inspection Parameters~~	***~~Parameter Inspected (Yes or No)~~***	***~~Action Required (Yes or No)~~***	***~~Note Number~~***
~~A. Protective casings, access covers and doors, instrumentation access boxes, and compression caps in need of repair/maintenance.~~	______	______	______
~~B. Locks in need of cleaning or replacement.~~	______	______	______
~~C. Electronic monitoring system in need of calibration/repair/ maintenance.~~	______	______	______
~~D. Aboveground VZMS components exposed to weather.~~	______	______	______
~~V. SECURITY FENCE~~			
~~Inspection Parameters~~	***~~Parameter Inspected (Yes or No)~~***	***~~Action Required (Yes or No)~~***	***~~Note Number~~***
~~A. Accumulation of wind-blown plants and debris.~~	______	______	______
~~B. Fence wires and posts in need of repair/maintenance.~~	______	______	______
~~C. Gates in need of oiling/repair/maintenance.~~	______	______	______
~~D. Locks in need of cleaning or replacement.~~			
~~E. Warning signs in need of repair or replacement.~~	______	______	______
~~VI. PREVIOUS DEFICIENCIES~~			
~~Inspection Parameter~~	***~~Parameter Inspected (Yes or No)~~***	***~~Action Required (Yes or No)~~***	***~~Note Number~~***
~~A. Uncorrected/undocumented previous deficiencies.~~	______	______	______

~~NOTES~~

~~Note Number~~	~~DESCRIPTION~~

~~Action assigned to~~ ______________________________ ~~Date action completed~~ ______________

~~Inspector's Signature~~ ____________________

~~Original to: CAMU Operating Record~~

~~Copy to: Environmental Operations Records Center, MS-1309~~

~~Additional Comments:~~ ____

APPENDIX A~~B~~

POST-CLOSURE NOTICE FOR THE CORRECTIVE ACTION MANAGEMENT UNIT TECHNICAL AREA III SANDIA NATIONAL LABORATORIES/NEW MEXICO ~~ENVIRONMENTAL RESTORATION PROJECT~~

~~APPENDIX A~~

~~WASTE ANALYSIS PLAN FOR THE~~
~~CORRECTIVE ACTION MANAGEMENT UNIT~~
~~TECHNICAL AREA III~~
~~SANDIA NATIONAL LABORATORIES/NEW MEXICO~~
~~ENVIRONMENTAL RESTORATION PROJECT~~

~~APPENDIX A~~

~~WASTE ANALYSIS PLAN FOR THE CORRECTIVE ACTION MANAGEMENT UNIT~~

~~MARCH 2004~~

~~Table of Contents~~

~~List of Tables~~

~~List of Abbreviations/Acronyms~~

~~AR/COC~~	~~analysis request/chain-of-custody~~
~~CAMU~~	~~Corrective Action Management Unit~~
~~CFR~~	~~Code of Federal Regulations~~
~~DOE~~	~~U.S. Department of Energy~~
~~EPA~~	~~Environmental Protection Agency~~
~~ER~~	~~Environmental Restoration~~
~~LCRS~~	~~leachate collection and removal system~~
~~NMAC~~	~~New Mexico Administrative Code~~
~~PCB~~	~~polychlorinated biphenyl~~
~~PPE~~	~~personal protective equipment~~
~~QA~~	~~Quality assurance~~
~~QC~~	~~Quality control~~
~~R&D~~	~~Research and Development~~
~~RCRA~~	~~Resource Conservation and Recovery Act~~
~~SNL/NM~~	~~Sandia National Laboratories/New Mexico~~
~~TA~~	~~Technical Area~~
~~TSDF~~	~~treatment, storage, and disposal facility~~
~~VOC~~	~~volatile organic compound~~
~~WAP~~	~~Waste Analysis Plan~~

~~1.0 Introduction~~

~~This Waste Analysis Plan (WAP) provides methods for characterizing hazardous remediation waste managed at the Sandia National Laboratories/New Mexico (SNL/NM) Environmental Restoration (ER) Project Corrective Action Management Unit (CAMU) through the post-closure period. The WAP was prepared in accordance with 20.4.1.900 and 20.4.1.500 of the New Mexico Administrative Code (NMAC), incorporating Title 40 Code of Federal Regulations (CFR) Section (§) 270.14(b)(3) and §264.13(b). This WAP was prepared using the U.S. Environmental Protection Agency (EPA) "Waste Analysis at Facilities that Generate, Treat, Store, and Dispose of Hazardous Wastes, A Guidance Manual" (EPA, 1994).~~

~~The waste characterization requirements for 40 CFR §264.341 (incinerators), 40 CFR §264.1034(d) (process vents), 40 CFR §264.1063(d) (equipment leaks), and 40 CFR §264.1083 (tanks, surface impoundments, and containers at facilities other than Resource Conservation and Recovery Act [RCRA] corrective action sites) are not applicable to CAMU operations and are not addressed in this WAP.~~

~~Characterization is the process of identifying the hazardous characteristics of waste that uses sampling and analysis methods, acceptable knowledge methods, or a combination of chemical analysis and acceptable knowledge methods. This WAP specifically applies to characterization of hazardous remediation wastes that are generated during ER Project post-closure activities at the CAMU. This WAP describes the parameters for which hazardous remediation waste derived from the CAMU containment cell leachate collection and removal system (LCRS) will be characterized and the rationale for selecting these parameters, the characterization methods (including sampling and test methods for analytical characterization) that will be used to determine these parameters, and the frequency of characterization.~~

~~2.0 Facility Description~~

~~2.1 Description of Facility Activity~~

~~SNL/NM is a multidisciplinary research and development (R&D) laboratory that performs work for the U.S. Department of Energy (DOE), as well as the U.S. Department of Defense and the U.S. Nuclear Regulatory Commission. SNL/NM falls under Standard Industrial Classification Numbers 9711 "National Defense Organizations" and 7391 "Research and Development." Since 1945, many buildings and technical areas (TAs) at SNL/NM have been used for R&D related to nuclear weapons, energy, and other programs of national interest.~~

~~The waste management unit to which this WAP applies is the CAMU, which is located in TA-III. The CAMU was used as a staging, treatment, and containment area for the management of hazardous remediation wastes generated during ER Project activities.~~

~~In October 2003, all hazardous waste and hazardous waste residues were removed, and the staging, treatment, and support areas at the CAMU were closed under RCRA. The CAMU containment cell was closed with waste remaining in place.~~

~~2.2 Description of Hazardous Remediation Waste~~

~~The post-closure configuration of the CAMU consists of a capped containment cell that incorporates an LCRS. Leachate water that has accumulated below the containment cell will be pumped to the surface and stored in 55-gallon drums at the CAMU containment cell less-than-90-day RCRA waste accumulation area, hereafter referred to as the less-than-90-day area. The staged leachate will be managed as hazardous waste generated on site. Based upon analytical data collected from leachate previously pumped from the LCRS, the leachate consists of water containing very low concentrations of RCRA contaminants, polychlorinated biphenyls (PCBs), and tritium. These constituents are known to be compatible with the polyethylene or carbon steel drums used to manage it. Personal protective equipment (PPE) that is used during leachate collection and management operations will also be managed as hazardous waste generated on site.~~

~~3.0 Selecting Waste Analysis Parameters~~

~~3.1 Criteria and Rationale for Parameter Selection~~

~~Hazardous remediation waste management activities at the CAMU during the post-closure care period are limited to the management of leachate and associated PPE.~~

~~Table 3-1 provides information on the typical parameters and rationale identified to characterize the accumulated leachate liquid waste stream and PPE. SNL/NM will characterize this waste stream based upon the parameters listed in Table 3-1 unless site-specific information dictates different parameters. Generally, waste analysis parameters for leachate are determined by the SNL/NM Hazardous Waste Management Facility in consultation with the receiving facility.~~

~~Table 3-1~~

~~Typical Waste Analysis Parameters and Rationale for Selection~~

~~Waste Stream~~	~~Waste Analysis Parameter(s)[a]~~	~~Rationale for Selection[b]~~
~~PPE and Sampling Equipment~~	~~TCLP metals and organic compounds~~ ~~Appropriate hazardous constituents~~ ~~PCBs~~	~~2 (D004-D043)~~ ~~2 (F001, F002, F003, F005)~~ ~~1, 3, 4, 5~~
~~Leachate Water~~	~~Appropriate hazardous constituents~~	~~2 (F039)~~

~~[a]Table 5-2 provides the analytical test methods for waste parameters.~~
~~[b]1 = Used to verify that the waste is consistent with the expected nature of that waste.~~
~~2 = Used to determine applicable EPA Hazardous Waste Numbers (shown in parentheses).~~
~~3 = Used to determine safe and appropriate handling and storage conditions.~~
~~4 = Used to identify special health and safety precautions and procedures.~~
~~5 = Used to determine Environmental Restoration Project site characterization.~~
~~EPA = U.S. Environmental Protection Agency.~~
~~PCB = Polychlorinated biphenyls.~~
~~PPE = Personal protective equipment.~~
~~TCLP = Toxicity Characteristic Leaching Procedure.~~

~~*4.0 Selecting Sampling Procedures*~~

~~*4.1 Sampling Strategies*~~

~~The objective of the sampling program is to obtain a physical sample of material that is representative of the media being tested. All waste sampling performed at SNL/NM is consistent with the guidance found in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846 (EPA, 1986). The methods specified in 20.4.1.200 NMAC, incorporating 40 CFR Part 261 will be followed, as applicable. Pertinent information that contributes toward the goal of representativeness will be used, such as substantial variability in waste composition and the physical state of the waste. The following sampling strategies will be used for hazardous remediation waste sampling as much as possible, unless a better sampling strategy is deemed appropriate for a specific waste item based upon specific historical processes or waste information.~~

- ~~For solid wastes where surface is suspected to be contaminated with hazardous waste or PCBs, such as contaminated debris and PPE, surface wipe samples may be taken.~~

- ~~For liquid wastes with more than one phase, samples will be taken of each phase.~~

- ~~For waste items in multiple containers, one sample will be taken per batch of waste. For example, if 10 containers of leachate water are generated during one pumping event, one composite sample will be collected from those containers.~~

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

~~*4.2 Selecting, Maintaining, and Decontaminating Sampling Equipment*~~

~~The selection of sampling equipment, containers, and PPE must be made prior to the sampling event. Procedures are designed to minimize the generation of hazardous waste during the sampling event. Sampling equipment is decontaminated to limit the introduction of contaminants from equipment to sampled media and cross-contamination between sampling points, and to protect worker health and safety. The physical and chemical nature of waste (e.g., physical state, volume, hazardous characteristics, homogeneity, and accessibility) and the potential interactions between sampling equipment or container materials with analytes of interest are evaluated in the choice of sampling equipment and sample containers. The equipment listed in Table 4-1, in SW-846, Chapter 9 (EPA, 1986), or in other EPA-approved guidance, are used to sample ER Project hazardous remediation wastes to be managed at the CAMU during the post-closure care period.~~

~~Table 4-1~~
~~Typical Waste Sampling Equipment~~

~~Waste Media~~	~~Sampling Equipment~~
~~Liquids~~	~~COLIWASA, pipette, or Bennett pump~~

~~COLIWASA = Composite liquid waste sampler.~~

~~*4.3 Sample Preservation and Storage*~~

~~In many low-concentration samples, preservation is necessary to prevent the constituents from chemically, physically, or biologically altering prior to analysis. Typical techniques include the addition of appropriate chemicals, sample refrigeration, sample storage using appropriate containers and lids, and holding time limitations between sampling and analysis. SNL/NM uses the EPA-approved preservation and storage techniques, such as those presented in Table 4-2, or in SW-846 (EPA, 1986).~~

~~Table 4-2~~
~~Sample Containers and Preservation Techniques for Leachate Water~~

~~Analytes~~	~~Sample Container Type and Materials~~[a]	~~Preservation Method~~[a]	~~Temperature~~[a]
~~VOCs~~	~~4–40-ml vials, Teflon™-lined septum (plus trip blank)~~[b]	~~HCl~~	~~Cool to 4°C;~~
~~SVOCs~~	~~1–1-L amber glass~~	~~Unpreserved~~	~~Cool to 4°C;~~
~~PCBs~~	~~1–1-L amber glass~~	~~Unpreserved~~	~~Cool to 4°C;~~
~~Total Metals~~[c]	~~1–500-mL plastic~~	~~HNO_3~~	~~None required~~

[a]~~As there are variances between laboratory and analytical methodology, the quantity and type of containers, as well as the required preservative, is subject to change.~~
[b]~~An additional sample set will be collected as a trip blank that will accompany the sample shipment to the laboratory.~~
[c]~~Total metals include aluminum, arsenic, cadmium, chromium, copper, lead, manganese, molybdenum, nickel, selenium, silver, and zinc.~~
~~°C = Degrees Celsius.~~
~~HCl = Hydrochloric acid.~~
~~HNO_3 = Nitric acid.~~
~~L = Liter.~~
~~ml = Milliliter.~~
~~PCB = Polychlorinated biphenyl.~~
~~SVOC = Semivolatile organic compound.~~
~~VOC = Volatile organic compound.~~

~~*4.4 Establishing Quality Assurance/Quality Control Procedures*~~

~~SNL/NM has developed sampling quality assurance (QA)/quality control (QC) procedures to assure that analytical results can be attributed to specific containers of waste or specific sampling sites. The sampling program is designed to meet the requirements of SW-846, Chapter 1.0 (EPA, 1986).~~

~~A field duplicate water sample will be collected along with each composite sample per batch of leachate waste. An aqueous equipment rinsate blank will not be required because the submersible pump, piping, and hose used to withdraw leachate from the LCRS are dedicated, and pumped leachate is discharged directly into storage and sample containers. However, as indicated in Table 4.2, an aqueous trip blank will be included with the volatile organic compound (VOC) component of the sample shipment and will be analyzed for VOCs only.~~

~~After a sample is collected, a label providing the following information at a minimum is affixed to the sample container:~~

- ~~Sample number~~
- ~~Date and time of collection~~
- ~~Sampling location or container number~~
- ~~Type of sample (e.g., liquid, gas, solid, sludge)~~
- ~~Name of sample collector~~

~~Sample numbers are unique to each sample. The sample number is also recorded on a sample collection log, which includes the following information for each sample:~~

- ~~Sample number~~
- ~~Sample and analysis request number~~
- ~~Date and time of sample collection~~
- ~~Sampling location or container number~~
- ~~Type of sample (e.g., gas, solid, sludge, liquid)~~
- ~~Purpose of sample collection~~
- ~~Number and volume of samples~~
- ~~Sample description (e.g., grab, composite)~~
- ~~Results of field observations or measurements~~
- ~~Name of sample collector~~
- ~~Signature of sample collector~~

~~To assure that the sample is traceable from the time of collection to the time of analysis, an analysis request/chain-of-custody (AR/COC) form is completed and maintained for each sample. The AR/COC form includes the following information at a minimum:~~

- ~~Sample number~~
- ~~Date and time of sample collection~~
- ~~Sampling location or container number~~
- ~~Type of sample (e.g., gas, solid, sludge, liquid)~~
- ~~Required analytical testing~~
- ~~Sample description (e.g., grab, composite)~~
- ~~Results of field observations or measurements~~
- ~~Name of sample collector~~
- ~~Signature of sample collector~~
- ~~Signatures of persons involved in the chain of custody~~
- ~~Dates of possession~~

~~Samples will be analyzed only by SNL/NM-approved laboratories operating in accordance with contract requirements and EPA laboratory QA/QC guidance (EPA, 1986). Documentation that demonstrates QA/QC procedures (e.g., tabulation of results of blank analyses, calibration curves) is prepared and maintained in the analytical laboratory's files. All hazardous remediation waste analytical results are reported and signed by the analytical laboratory's chemist or his/her supervisor.~~

~~If QA/QC goals are not met, the DOE and SNL/NM will consider the need for additional sampling or determine the adequacy of the qualified data in fulfilling the intended purpose.~~

~~5.0 Selecting a Laboratory and Laboratory Testing and Analytical Methods~~

~~5.1 Selecting a Laboratory~~

~~Waste characterization samples will be analyzed at off-site laboratories. SNL/NM only uses off-site laboratories under contract with or approved by SNL/NM. Generally, SNL/NM has three to six off-site laboratories with current contracts. Before awarding contracts, each bidding laboratory is audited to assure that it meets minimum requirements with respect to cost, technical abilities, QA/QC, and regulatory compliance, (e.g., maintaining appropriate licenses and permits, performing the sample preparation and analytical methods in accordance with current EPA guidance, maintaining chain of custody and associated documentation, and using a data validation process).~~

~~5.2 Selecting Testing and Analytical Methods~~

~~Waste characterization is the process of identifying the RCRA hazardous waste characteristics (as defined in 20.4.1.200 NMAC, incorporating 40 CFR 261, Subpart C) and hazardous waste constituents (as defined in 20.4.1.100 NMAC, incorporating 40 CFR 260.10) of remediation waste. Waste characterization involves using full-scale sampling and analysis methods, fingerprint or field analysis methods, acceptable process-knowledge methods, or a combination of these methods. All of these methods are appropriate for characterizing waste managed at the CAMU (see Section 5.2.2 for a description of the use of acceptable knowledge for waste characterization). Full-scale sampling and analysis involves the collection of representative samples (using EPA-approved methods and guidelines) and laboratory analyses of those samples in accordance with EPA-approved analytical methods.~~

~~Acceptable knowledge is broadly defined to include process knowledge (e.g., the procurement of detailed information on wastes from existing published or documented waste analysis data or studies conducted on hazardous waste generated by similar processes), waste analysis data, and/or records of analyses performed before the effective date of RCRA regulations.~~

~~Table 5-1 indicates how the ER Project hazardous remediation waste streams subject to this WAP are typically characterized; however, the actual method used for a specific waste will be determined by site-specific factors. Sections 5.2.1 through 5.2.3 discuss the selection criteria that will be used in determining the characterization method.~~

~~Table 5-1~~
~~Waste Characterization Methods~~

~~Waste Streams~~	~~Method of Characterization~~
~~Leachate water~~	~~Full-scale sampling and analysis~~
~~Personal protective equipment and sampling equipment~~	~~Acceptable knowledge~~[a]

[a]~~Acceptable knowledge may be used for waste streams that do not lend themselves to the collection of representative samples.~~

~~*5.2.1 Using Sampling and Analysis*~~

~~Table 5-2 lists the analytical methods used for each waste parameter when sampling and analysis is used as the method of characterization. Methods other than "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" SW-846 (EPA, 1986) may be used if the nature of the sample or improvements in analytical technology warrant the alternative method and the method has been approved by the EPA.~~

~~*5.2.2 Using Acceptable Knowledge*~~

~~According to the EPA's "Waste Analysis at Facilities that Generate, Treat, Store, and Dispose of Hazardous Waste, A Guidance Manual," pages 1-13 and 1-14 (EPA, 1994), "...Generators and TSDFs [treatment, storage, and disposal facilities] may use acceptable knowledge alone or in conjunction with sampling and laboratory analysis..." At SNL/NM, acceptable knowledge may be used for PPE and sampling equipment if the physical nature of the waste does not lend itself to obtaining a representative sample. If it is suspected that a material is contaminated, SNL/NM~~

~~Table 5-2~~

~~Analysis Test Methods for Waste Parameters~~

~~Analytical Parameter~~	~~Analytical Test Method~~[a]
~~VOCs~~	~~EPA 8260~~
~~SVOCs~~	~~EPA 8270~~
~~PCBs~~	~~EPA 8082~~
~~Total Metals~~[b]	~~EPA 200.7/200.8~~

[a]~~EPA, 1986.~~
[b]~~Total metals include aluminum, arsenic, cadmium, chromium, copper, lead, manganese, molybdenum, nickel, selenium, silver, and zinc.~~
~~EPA = U.S. Environmental Protection Agency.~~
~~PCB = Polychlorinated biphenyl.~~
~~SVOC = Semivolatile organic compound.~~
~~VOC = Volatile organic compound.~~

~~may opt to use acceptable knowledge by assigning hazardous waste classification codes based upon characterization results from the associated waste stream, such as leachate water. For the specified waste streams (i.e., PPE and sampling equipment) characterized using acceptable knowledge, hazardous waste codes are assigned based upon professional knowledge of constituents or characteristics and/or characterization results from associated waste streams (e.g., sampling equipment is coded with the same codes as assigned to the sampled media).~~

~~*6.0 Selecting Waste Evaluation Frequencies*~~

~~As described in Table 5-1 of Section 5.2, full-scale sampling of containerized leachate water will be performed to obtain information to safely and responsibly dispose of the waste. Leachate will be pumped from the LCRS on a schedule consistent with the inspection and maintenance schedule for the Vadose Zone Monitoring System as outlined in Attachment 1 of the Post-Closure Care Plan. Following each pumping event, the pumped leachate will be sampled and analyzed for the parameters listed in Table 5-2.~~

~~7.0 References~~

~~EPA, see U.S. Environmental Protection Agency.~~

~~U.S. Environmental Protection Agency (EPA), 1994, "Waste Analysis at Facilities that Generate, Treat, Store, and Dispose of Hazardous Wastes, A Guidance Manual," OSWER 9938.4-03 (or PB94-963603), Office of Solid Waste and Emergency Response, U.S. Environmental Protection Agency, Washington, D.C.~~

~~U.S. Environmental Protection Agency (EPA), 1986, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA SW-846, Third Edition with Codified Amendments, Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, D.C.~~

APPENDIX B~~C~~

SAMPLING AND ANALYSIS PLANS FOR THE VADOSE ZONE MONITORING SYSTEM AT THE CORRECTIVE ACTION MANAGEMENT UNIT TECHNICAL AREA III SANDIA NATIONAL LABORATORIES/NEW MEXICO ~~ENVIRONMENTAL RESTORATION PROJECT~~

APPENDIX B~~C~~-1

SAMPLING AND ANALYSIS PLAN FOR THE PRIMARY SUBLINER MONITORING SYSTEM

APRIL 2012~~MARCH 2004~~

~~*List of Tables*~~

List of Abbreviations/Acronyms

~~ASSOP~~	~~Activity Specific Standard Operating Procedure~~
ASTM	American Society for Testing and Materials
CAMU	Corrective Action Management Unit
CPN	California Pacific Nuclear
EPA	U.S. Environmental Protection Agency
FOP	Field Operating Procedure
PSL	primary subliner
QA	quality assurance
QC	quality control
SAP	Sampling and Analysis Plan
~~SMO~~	~~Sample Management Office~~
SNL/NM	Sandia National Laboratories/New Mexico
VCP	vitrified clay pipe

1.0 Introduction

The Primary Subliner (PSL) is one of three vadose zone monitoring systems associated with the containment cell. Monitoring using the PSL Monitoring Subsystem will be conducted to verify containment cell integrity and performance. This Sampling and Analysis Plan (SAP) summarizes the general monitoring and sampling strategy for the PSL that will be used during the post-closure period.

The PSL is the primary monitoring system for the containment cell and is designed to provide early leak-detection capability. It consists of five parallel-trending, horizontal, vitrified clay pipes (VCPs) located 5 feet below the containment cell bottom liner, with horizontal spacing of 17 to 27 feet. The PSL VCP provides sufficient porosity for moisture detection, thus eliminating the need for holes or screens. A polyvinyl chloride access tube is connected to the ends of each VCP to facilitate the deployment of a neutron probe for moisture monitoring. The access tubes open on the north and south sides of the containment cell. The neutron probe is manually moved through the VCP during monitoring events. ~~Although the purpose of the neutron probe is to monitor moisture content, the PSL subsystem is also designed to sample for soil gas if necessary~~.

2.0 Monitoring and Sampling Strategy

Monitoring requirements for the post-closure care period are specified in Table 3-1, Section 3.4 of the Post-Closure Care Plan. Monitoring is performed to verify containment cell performance.

2.1 Monitoring Methods

Moisture monitoring in the PSL subsystem involves measuring soil moisture content through each VCP using a neutron probe. The moisture sensor will be a California Pacific Nuclear (CPN) 503DR Hydroprobe Moisture Depth Gauge, or equivalent. The CPN 503DR probe uses a 50.0-millicurie americium-241:beryllium neutron source for moisture content measurement. With the custom-made cable-and-winch system available at Sandia National Laboratories/New Mexico (SNL/NM), the CPN 503DR probe can be configured to move through each VCP while communicating with the control box on the surface.

Following neutron logging, the calculated moisture content data can be entered onto a computer spreadsheet for evaluation. Moisture monitoring will be conducted in accordance with ~~Activity Specific Standard Operating Procedure (ASSOP) 01-02, "Activity Specific Standard Operating~~Field Operating Procedure 08-20 "~~Procedure~~ Soil Moisture Determination Utilizing ~~for~~

~~Use of the CPN 503DR Hydroprobe Moisture Depth Gauge in~~ Neutron Logging ~~Activities at the Corrective Action Management Unit (CAMU)"~~ (SNL/NM, 2011) ~~November 2001a~~).

~~2.2 Analytical Procedures~~

~~If soil gas samples are collected, For soil gas samples, U.S. Environmental Protection Agency (EPA) Method TO-14 or TO-17 (EPA, November 1986) will be used for analysis of selected volatile organic compounds. Any liquid samples collected will be analyzed using EPA SW-846 methods (EPA November 1986). Gas sampling, if performed, will be conducted in accordance with ASSOP 01-04, "Activity Specific Standard Operating Procedure for Active Soil Gas Sampling Using Method TO-14 at the Corrective Action Management Unit (CAMU)" (SNL/NM November 2001b) or ASSOP 01-05, "Activity Specific Standard Operating Procedure for Active Soil Gas Sampling onto Sorbent Tubes at the Corrective Action Management Unit (CAMU)" (SNL/NM November 2001c).~~

~~An analytical laboratory under contract to the SNL/NM Sample Management Office (SMO) will be used to provide the analytical services. Laboratory sample custody, sample analysis, data management, reporting, and sample disposal will be performed in accordance with established laboratory procedures. Analytical procedures will follow established laboratory standard operating procedures based upon the referenced EPA method.~~

~~2.3~~2.2 Field and Laboratory Quality Assurance/Quality Control

~~Table 2-1 lists procedures that are used in support of this SAP.~~ FOP 08-20 ~~These procedures~~ provides instructions for PSL monitoring and sampling operations. For each scheduled sampling event prescribed by Table 3-1 of the Post-Closure Care Plan, ~~F~~field and laboratory quality assurance (QA) samples ~~may~~shall include duplicate samples and field blanks. Samples will be submitted to an analytical laboratory under contract to Sandia~~the SMO~~ that meets the QA/quality control (QC) requirements of SW-846.

The CPN 503DR Hydroprobe Moisture Depth Gauge is a geophysical means of measuring soil moisture content. The CPN neutron probe is used to measure absorption of emitted neutrons. The assumption is made that the hydrogen in soil moisture is the dominant absorber of the emitted neutrons. For the PSL monitoring system, the ~~following~~ correlation and QA/QC checks described in FOP 08-20 will be performed as needed.

~~Table 2-1~~
~~Applicable SNL/NM Operating Procedures~~

~~Number~~	~~Administrative and Field Operating Procedure Title~~
~~ASSOP 01-02[a]~~	~~"Activity Specific Standard Operating Procedure for Use of the CPN 503DR Hydroprobe Moisture Depth Gauge in Neutron Logging Activities at the Corrective Action Management Unit (CAMU)"~~
~~ASSOP 01-04[b]~~	~~"Activity Specific Standard Operating Procedure for Active Soil Gas Sampling Using Method TO-14 at the Corrective Action Management Unit (CAMU)"~~
~~ASSOP 01-05[c]~~	~~"Activity Specific Standard Operating Procedure for Active Soil Gas Sampling onto Sorbent Tubes at the Corrective Action Management Unit (CAMU)"~~

~~[a]SNL/NM November 2001a.~~
~~[b]SNL/NM November 2001b.~~
~~[c]SNL/NM November 2001c.~~
~~ASSOP = Activity Specific Standard Operating Procedure.~~
~~CPN = California Pacific Nuclear.~~
~~SNL/NM = Sandia National Laboratories/New Mexico.~~

~~2.3.1~~2.2.1 CPN 503DR Hydroprobe Moisture Depth Gauge QA/QC

The CPN 503DR probe is operated in accordance with ~~the ASSOP 01-02~~ FOP 08-20 and the operating manual (CPN, 1984). The standard count measures the proper function of the gauge electronics and also compensates for the source decay. This measurement should be performed daily when the probe is used~~,~~ as described in the FOP~~ASSOP~~.

~~2.3.2~~2.2.2 CPN 503DR Hydroprobe Moisture Depth Gauge Correlation

The correlation of neutron counts to soil moisture content using the CPN 503DR neutron probe was initially~~is~~ performed in a vessel that duplicated~~s~~ as close as possible the *in situ* characteristics at the field measuring location. The correlation setup that was used for the PSL is shown in Figure 2-1.

The probe was~~is~~ inserted into the access tube within the vessel, and count readings were~~are~~ taken for a known soil moisture content in the repacked native soil. The resulting neutron count/soil moisture content relationship was~~is~~ used to develop the initial correlation currently for the instrument, which associates a neutron count to a known soil moisture content. A mathematical formula was~~is~~ developed that correlates a neutron count to a known moisture content. Actual soil moisture contents can be determined as described in American Society for Testing and

Materials (ASTM) Methods ASTM D2216, "Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass," and ASTM D4643, "Test Method for Determination of Water (Moisture) Content of Soil by the Microwave Oven Method," or with the aid of a previously calibrated time-domain reflectometry system.

To ensure the accuracy of the moisture measurement using the correlation formula the neutron probe must be recalibrated to account for source decay and drift of the electronic counting system. During calibration the probe response is restored to the same condition as existed when the correlation formula was determined. The probe will be returned to the manufacturer annually for calibration.

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3.0 References

California Pacific Nuclear (CPN), 1984. "CPN 503DR Hydroprobe Moisture Depth Gauge Operating Manual," California Pacific Nuclear, Martinez, California.

CPN, see California Pacific Nuclear.

EPA, see U.S. Environmental Protection Agency.

~~Sandia National Laboratories/New Mexico (SNL/NM), November 2001a. ASSOP 01-02, "Activity Specific Standard Operating Procedure for Use of the CPN 503DR Hydroprobe Moisture Depth Gauge in Neutron Logging Activities at the Corrective Action Management Unit (CAMU)," Sandia National Laboratories, Albuquerque, New Mexico.~~

~~Sandia National Laboratories/New Mexico (SNL/NM), November 2001b. ASSOP 01-04, "Activity Specific Standard Operating Procedure for Active Soil Gas Sampling Using Method TO-14 at the Corrective Action Management Unit (CAMU)," Sandia National Laboratories, Albuquerque, New Mexico.~~

Sandia National Laboratories/New Mexico (SNL/NM), February 2011~~November 2001c~~. FOP 08-20, "Soil Moisture Determination Utilizing Neutron Logging"~~ASSOP 01-05, "Activity Specific Standard Operating Procedure for Active Soil Gas Sampling onto Sorbent Tubes at the Corrective Action Management Unit (CAMU),"~~ Sandia National Laboratories, Albuquerque, New Mexico.

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

U~~.S. Environmental Protection Agency (EPA), November 1986. "Test Methods for Evaluating Solid Waste," 3rd ed., Update 3, SW-846, Office of Solid Waste and Emergency Response, U.S. Environmental Protection Agency, Washington, D.C.~~

APPENDIX B~~C~~-2

SAMPLING AND ANALYSIS PLAN FOR THE VERTICAL SENSOR ARRAY MONITORING SYSTEM

APRIL 2012~~MARCH 2004~~

List of Abbreviations/Acronyms

~~ASSOP~~	~~Activity Specific Standard Operating Procedure~~
CAMU	Corrective Action Management Unit
EPA	U.S. Environmental Protection Agency
FOP	Field Operating Procedure
PC	personal computer
QA	quality assurance
QC	quality control
SAP	Sampling and Analysis Plan
~~SMO~~	~~Sample Management Office~~
TDR	time-domain reflectometry
TO	toxic organic
VSA	Vertical Sensor Array

1.0 Introduction

The Vertical Sensor Array (VSA) monitoring subsystem provides both lateral and vertical soil gradient information on *in situ* soil moisture, with options for soil temperature monitoring and soil gas sampling~~, if necessary~~. Sampling and analysis of the VSA monitoring system will be conducted to verify containment cell integrity and performance. This Sampling and Analysis Plan (SAP) summarizes the general monitoring and sampling strategy that will be used for the VSA during the post-closure period.

The VSA monitoring subsystem consists of 11 vertical boreholes located below the containment cell. Each borehole contains a sampling point at 5 and 15 feet below the containment cell liner. Sampling points contain the following three components: a time-domain reflectometry (TDR) soil-moisture content probe, a temperature sensor, and an active soil-gas sampler. Instrumentation cabling and tubing is ducted to the surface outside of the containment cell liner perimeter. The cabling and tubing connection ends for each VSA borehole are located within individual weatherproof, aboveground enclosures positioned around the perimeter of the containment cell.

2.0 Monitoring and Sampling Strategy

Monitoring requirements for the VSA are outlined in Table 3-1 in Section 3.4 of the Post-Closure Care Plan. Monitoring is performed to verify containment cell performance.

2.1 Monitoring Methods

The TDR moisture content measuring package consists of the following equipment or equivalent: Campbell Scientific, Inc. Model CS610-L TDR moisture probes with coaxial cables, a reflectometer (Campbell Scientific, Inc. Model TDR100), computer interface software, and a notebook computer to display the data (Campbell Scientific, Inc., April 2002). To promote accurate measurement of soil moisture in the vadose zone below the containment cell, TDR probes are inserted into native material at a 15-foot-deep sampling point or inserted in compacted backfill of native material at a 5-foot-deep sampling point to duplicate the native material effective pore size. Because moisture data is collected from only one monitoring depth at a time, a system composed of a single reflectometer and laptop personal computer (PC) for data acquisition may be used. When a soil moisture measurement is needed, the reflectometer is connected to the coaxial cable of an individual TDR probe. Moisture content values are displayed on the laptop PC and recorded in a field logbook. The TDR moisture sampling

package will use Campbell Scientific, Inc. (or similar) data acquisition software (Campbell Scientific, Inc., April 2002).

The temperature sampling package includes thermistors, wiring, and a datalogger. The thermistors consist of 20 AWG Type T duplex insulated copper/constantan wires welded with a TIGTech, Inc. (Lexington, Massachusetts) Model 116 SRL thermocouple welder. A voltage proportional to the surrounding temperature is generated at the juncture of the two dissimilar metals and measured by a Campbell Scientific, Inc. 23X datalogger. Campbell Scientific, Inc. Graphterm™ software (or similar) is used to facilitate datalogger operation and data retrieval.

TDR moisture monitoring and temperature monitoring (if performed) will be conducted in accordance with Field Operating Procedure (FOP) 08-21 "Soil Moisture Monitoring Using ~~Activity Specific Standard Operating Procedure (ASSOP) 02-03 "Activity Specific Standard Operating Procedure for~~ Time Domain Reflectometry ~~and Temperature Data Collection from the CAMU [Corrective Action Management Unit] Vertical Sensor Array Monitoring Locations Using a TDR100 System and CR23X Micrologger"~~ (SNL/NM 2009~~2002~~).

2.2 Sampling Methods

The soil gas-sampling package consists of a 2-inch-diameter and 6-inch-long, end-capped and slotted polyvinyl chloride screen at the sampling location, connected to the ground surface by 1/4-inch-inside-diameter Teflon™ tubing. Soil gas sampling~~, if performed,~~ will be conducted in accordance with FOP 08-22 "Soil Vapor Sampling"~~ASSOP 01-04, "Activity Specific Standard Operating Procedure for Active Soil Gas Sampling Using Method TO-14 at the Corrective Action Management Unit (CAMU)" (SNL/NM November 2001a) or ASSOP 01-05, "Activity Specific Standard Operating Procedure for Active Soil Gas Sampling onto Sorbent Tubes at the Corrective Action Management Unit (CAMU)"~~ (SNL/NM ~~November 2001b~~2011).

2.3 Analytical Procedures

An analytical laboratory under contract to ~~the~~ Sandia ~~National Laboratories/New Mexico Sample Management Office (SMO)~~ will be used to provide the analytical services~~, if needed~~. Laboratory sample custody, sample analysis, data management, reporting, and sample disposal will be performed in accordance with established laboratory procedures. Analytical procedures will follow established laboratory standard operating procedures based upon the referenced U.S. Environmental Protection Agency (EPA) method. ~~If performed, active~~Active soil gas sampling will be conducted for selected volatile organic compounds included in EPA Method~~s~~

TO-14 or an equivalent method such as TO-15 that includes the same analyte list, method detection limits equal to or lower than the TO-14 limits, and provides the same or higher level of data quality. ~~TO-17~~ (EPA, January 1999~~November 1986~~).

2.4 Field and Laboratory Quality Assurance/Quality Control

Table 2-1 lists the field procedures that are used in support of this SAP. These procedures provide instructions for conducting VSA monitoring and sampling operations. For each scheduled sampling event prescribed by Table 3-1 of the Post-Closure Care Plan, ~~F~~field and laboratory quality assurance (QA) samples ~~may~~will include duplicate samples and field blanks. Samples will be submitted to an analytical laboratory under contract to Sandia~~the SMO~~ that meets the QA/quality control (QC) requirements of SW-846 (EPA, November 1986).

Table 2-1
Applicable SNL/NM Operating Procedures

Number	Administrative and Field Operating Procedure Title
~~ASSOP 02-03[a]~~	~~"Activity Specific Standard Operating Procedure for Time Domain Reflectometry and Temperature Data Collection from the CAMU Vertical Sensor Array Monitoring Locations Using a TDR100 System and CR23X Micrologger"~~
~~ASSOP 01-04[b]~~	~~"Activity Specific Standard Operating Procedure for Active Soil Gas Sampling Using Method TO-14 at the Corrective Action Management Unit (CAMU)"~~
~~ASSOP 01-05[c]~~	~~"Activity Specific Standard Operating Procedure for Active Soil Gas Sampling onto Sorbent Tubes at the Corrective Action Management Unit (CAMU)"~~
FOP 08-21[a]	Soil Moisture Monitoring Using Time Domain Reflectometry
FOP 08-22[b]	Soil Vapor Sampling

[a]SNL/NM ~~November 2002~~2009.
[b]SNL/NM ~~November 2001a~~2011.
~~[c]SNL/NM November 2001b.~~
~~ASSOP = Activity Specific Standard Operating Procedure.~~
~~CAMU = Corrective Action Management Unit.~~
FOP = Field Operating Procedure
SNL/NM = Sandia National Laboratories/New Mexico.
TDR = Time-domain reflectometry.

This section describes the calibration and QA/QC procedures associated with the TDR monitoring technique. TDR is a method used for determining *in situ* soil moisture content. The TDR system includes a probe assembly with coaxial cabling and a reflectometer that is used for generating and receiving an electromagnetic signal. The following calibrations and/or QA/QC checks are recommended for the TDR soil moisture content monitoring technique.

2.4.1 PC Data Acquisition Software

The PC data acquisition software used with TDR requires no calibration or testing other than to ensure there is proper transfer of instructions to and data from the reflectometer. Proper operation of the data acquisition software and reception of the TDR probe signal by the

3.0 References

Campbell Scientific, Inc., April 2002. "TDR100 Instruction Manual," Campbell Scientific, Inc., Logan, Utah.

Dasberg, S., and J.W. Hopmans, 1992. "Time Domain Reflectometry Calibration for Uniformly and Nonuniformly Wetted Sandy and Clayey Loam Soil," *Soil Science Society of America Journal*, 56:1341-1345.

EPA, see U.S. Environmental Protection Agency.

Kachanoski, R.G., E. Pringle, and A. Ward, 1992. "Field Measurement of Solute Travel Times Using Time Domain Reflectometry," *Soil Science Society of America Journal*, 56:46-52.

Klute, A. (Ed), 1986. *Methods of Soil Analysis, Part 1, Physical and Mineralogical Methods*, 2nd Edition, Soil Science Society of America, Inc., Madison, Wisconsin.

Knight, J. H., 1992. "Sensitivity of Time Domain Reflectometry Measurements to Lateral Variations in Soil Water Content," *Water Resources Research*, Vol. 28, No. 9.

Ledieu, J., P. DeRidder, P. DeClerck, and S. Dautrebande, 1986. "A Method of Measuring Soil Moisture by Time-Domain Reflectometry," *Journal of Hydrology*, 88:319-328.

Sandia National Laboratories/New Mexico (SNL/NM), 2009~~November 2001a~~. FOP 08-21 "Soil Moisture Monitoring Using Time Domain Reflectometry"~~ASSOP 01-04, "Activity Specific Standard Operating Procedure for Active Soil Gas Sampling using Method TO-14 at the Corrective Action Management Unit (CAMU),"~~ Sandia National Laboratories, Albuquerque, New Mexico.

~~Sandia National Laboratories/New Mexico (SNL/NM), November 2001b. ASSOP 01-05, "Activity Specific Standard Operating Procedure for Active Soil Gas Sampling onto Sorbent Tubes at the Corrective Action Management Unit (CAMU)," Sandia National Laboratories, Albuquerque, New Mexico.~~

Sandia National Laboratories/New Mexico (SNL/NM), 2011~~2002~~. FOP 08-22 "Soil Vapor Sampling"~~ASSOP 02-03, "Activity Specific Standard Operating Procedure for Time Domain Reflectometry and Temperature Data Collection from the CAMU Vertical Sensor Array Monitoring Locations Using a TDR100 System and CR23X Micrologger,"~~ Sandia National Laboratories, Albuquerque, New Mexico.

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

Topp, G.C., J.L. Davis, and A.P. Annan, 1980. "Electromagnetic Determination of Soil Water Content: Measurements in Coaxial Transmission Lines," *Water Resources Research*, Vol. 16, No. 3, pp. 574-582.

U.S. Environmental Protection Agency (EPA), November 1986. "Test Methods for Evaluating Solid Waste," 3rd ed., ~~Update 3,~~ SW-846, as revised and updated, Office of Solid Waste and Emergency Response, U.S. Environmental Protection Agency, Washington, D.C.

U.S. Environmental Protection Agency (EPA), January 1999. *Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air -- Second Edition* (EPA/625/R-96/010b), as revised and updated, U.S. Environmental Protection Agency, Washington, D.C.

APPENDIX B~~C~~-3

SAMPLING AND ANALYSIS PLAN FOR THE CHEMICAL WASTE LANDFILL AND SANITARY SEWER LINE MONITORING SYSTEM

APRIL 2012~~MARCH 2004~~

List of Abbreviations/Acronyms

~~ASSOP~~	~~Activity Specific Standard Operating Procedure~~
ASTM	American Society for Testing and Materials
CPN	California Pacific Nuclear
CSS	Chemical Waste Landfill and Sanitary Sewer Line
CWL	Chemical Waste Landfill
EPA	U.S. Environmental Protection Agency
FOP	Field Operating Procedure
QA	quality assurance
QC	quality control
SAP	Sampling and Analysis Plan
~~SMO~~	~~Sample Management Office~~
SNL/NM	Sandia National Laboratories/New Mexico
TO	toxic organic
VOC	volatile organic compound

1.0 Introduction

The Chemical Waste Landfill (CWL) and Sanitary Sewer Line (CSS) monitoring subsystem is designed to allow detection and identification of leakage from the sanitary sewer line, as well as volatile organic compounds (VOCs) that could potentially migrate from the CWL towards the containment cell. This Sampling and Analysis Plan (SAP) summarizes the general monitoring and sampling strategy that can be used for the CSS monitoring system during the post-closure care period.

The CSS monitoring subsystem is located east of the containment cell and consists of ~~five~~six vertical, 20-foot-deep boreholes, spaced approximately 100 feet apart in a line parallel to the north-south oriented sanitary sewer line. Each borehole is equipped with galvanized steel casing suitable for deployment of a neutron probe for soil moisture monitoring and a soil gas sampling port used to collect soil gas samples.~~, if necessary~~

2.0 Monitoring and Sampling Strategy

Monitoring will be conducted as specified in Table 3-1, Section 3.4 of the Post-Closure Care Plan. The CSS monitoring system can be used to perform the following activities:

- Detect liquid releases from the sanitary sewer line, thereby providing information to eliminate ~~avoiding a~~ false positive detections at~~from~~ the other vadose zone monitoring systems. Potential releases from the sanitary sewer line would be of an aqueous nature and could contain nitrates and perhaps phosphates and sulfates. VOCs originating from the sanitary sewer line are not anticipated.

- Detect VOC vapors migrating northwest through the vadose zone toward the containment cell from residual contamination at ~~the former buried sources in~~ the CWL.

2.1 Monitoring Methods

A neutron probe will be used at the CSS monitoring locations to measure ~~detect~~ soil moisture ~~changes~~. During a monitoring event, the probe is manually lowered to the selected monitoring point inside the galvanized steel casing.

The primary moisture sensor will be a California Pacific Nuclear (CPN) 503DR Hydroprobe Moisture Depth Gauge or an equivalent soil moisture neutron probe. The CPN 503DR probe uses a 50.0-millicurie americium-241:beryllium neutron source for moisture content

measurement. Moisture monitoring within the CSS will be conducted following Field Operating Procedure (FOP) 08-20 “Soil Moisture Determination Utilizing Neutron Logging”~~Activity Specific Standard Operating Procedure (ASSOP) 01-02~~ “~~Activity Specific Standard Operating Procedure for Use of the CPN 503DR Hydroprobe Moisture Depth Gauge in Neutron Logging Activities at the Corrective Action Management Unit (CAMU)”~~ (SNL/NM, 2011a~~November 2001a~~).

2.2 Sampling Methods

The CSS monitoring points ~~may~~will be used for soil gas sampling to detect and identify VOC vapors that may potentially migrate toward the containment cell from the ~~former buried waste materials in the~~ CWL. Soil g~~G~~as sampling~~, if performed,~~ will be conducted in accordance with FOP 08-22 “Soil Vapor Sampling”~~ASSOP 01-04 “Activity Specific Standard Operating Procedure for Active Soil Gas Sampling Using Method TO-14 at the Corrective Action Management Unit (CAMU)” (SNL/NM, November 2001b) or ASSOP 01-05, “Activity Specific Standard Operating Procedure for Active Soil Gas Sampling onto Sorbent Tubes at the Corrective Action Management Unit (CAMU)”~~ (SNL/NM, 2011b~~November 2001c~~).

2.3 Analytical Procedures

An analytical laboratory under contract to ~~the~~ Sandia ~~National Laboratories/New Mexico (SNL/NM) Sample Management Office (SMO)~~ will be used to provide the analytical services. Laboratory sample custody, sample analysis, data management, reporting, and sample disposal will be performed in accordance with established laboratory procedures. Analytical procedures will follow established laboratory standard operating procedures based upon the referenced U.S. Environmental Protection Agency (EPA) m~~M~~ethod~~ TO-14 or TO-17 (EPA, November 1986)~~. Active soil gas sampling ~~may~~will be conducted for selected VOCs included in EPA Method~~s~~ TO-14 an equivalent method such as TO-15 that includes the same analyte list, method detection limits equal to or lower than the TO-14 limits, and provides the same or higher level of data quality. ~~TO-17~~ (EPA, January 1999~~November 1986~~).

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2.4 Field and Laboratory Quality Assurance/Quality Control

Table 2-1 lists the field procedures that are used in support of this SAP. These procedures provide instructions for CSS monitoring and sampling operations. For each scheduled sampling event prescribed by Table 3-1 of the Post-Closure Care Plan, F~~F~~ield and laboratory quality assurance (QA) samples will~~may~~ include duplicate samples and field blanks. ~~If collected,~~

~~samples~~Samples will be submitted to an analytical laboratory under contract to ~~the~~Sandia ~~SNL/NM SMO~~ that meets the QA/quality control (QC) requirements of SW-846 (EPA, November 1986).

Table 2-1
Applicable SNL/NM Operating Procedures

Number	Administrative and Field Operating Procedure Title
~~ASSOP 01-02[a]~~	~~"Activity Specific Standard Operating Procedure for Use of the CPN 503DR Hydroprobe Moisture Depth Gauge in Neutron Logging Activities at the Corrective Action Management Unit (CAMU)"~~
~~ASSOP 01-04[b]~~	~~"Activity Specific Standard Operating Procedure for Active Soil Gas Sampling Using Method TO-14 at the Corrective Action Management Unit (CAMU)"~~
~~ASSOP 01-05[c]~~	~~"Activity Specific Standard Operating Procedure for Active Soil Gas Sampling onto Sorbent Tubes at the Corrective Action Management Unit (CAMU)"~~
FOP 08-20[a]	Soil Moisture Determination Using Neutron Logging
FOP 08-22[b]	Soil Vapor Sampling

[a]SNL/NM ~~November 2001a~~February 2011.
[b]SNL/NM ~~November 2001b.~~June 2011.
~~[c]SNL/NM November 2001c.~~
~~ASSOP = Activity Specific Standard Operating Procedure.~~
CPN = California Pacific Nuclear.
FOP = Field Operating procedure
SNL/NM = Sandia National Laboratories/New Mexico.

The CPN 503DR Hydroprobe Moisture Depth Gauge is a geophysical means of calculating soil moisture content. The CPN neutron probe is used to measure absorption of emitted neutrons. The assumption is made that the hydrogen in soil moisture is the dominant absorber of the emitted neutrons. For the CSS, the ~~following~~ correlation and QA/QC checks described in FOP 08-20 will be performed as needed.

2.4.1 CPN 503DR Hydroprobe Moisture Depth Gauge QA/QC

The CPN 503DR probe is operated in accordance with ~~the ASSOP 01-02~~ FOP 08-20 and the operating manual (CPN, 1984). The standard count measures the proper function of the gauge electronics and also compensates for the source decay. This measurement should be performed daily when the probe is used as described in the FOP~~ASSOP~~.

2.4.2 CPN 503DR Hydroprobe Moisture Depth Gauge Correlation

The correlation of neutron counts to soil moisture content using the CPN 503DR neutron probe was initially ~~is~~ performed in a vessel that duplicate~~s~~d as close as possible the *in situ* characteristics at the field measuring location. The correlation setup that was used for the CSS is shown in Figure 2-1.

The probe was~~is~~ inserted into the access tube within the vessel and count readings were~~are~~ taken for a known soil moisture content in the repacked native soil. The resulting neutron count/soil moisture content relationship was~~is~~ used to develop the correlation for the instrument, which associates a neutron count to a known soil moisture content. A mathematical formula was~~is~~ developed that correlates a neutron count to a known moisture content. Actual soil moisture contents can be determined as described in American Society for Testing and Materials (ASTM) Methods ASTM D2216, "Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass," and ASTM D4643, "Test Method for Determination of Water (Moisture) Content of Soil by the Microwave Oven Method," or with the aid of a previously calibrated time-domain reflectometry system.

To ensure the accuracy of the moisture measurement using the correlation formula the neutron probe must be recalibrated to account for source decay and drift of the electronic counting system. During calibration the probe response is restored to the same condition as existed when the correlation formula was determined. The probe will be returned to the manufacturer annually for calibration.

3.0 References

California Pacific Nuclear (CPN), 1984. "CPN 503DR Hydroprobe Moisture Depth Gauge Operating Manual," California Pacific Nuclear, Martinez, California.

CPN, see California Pacific Nuclear.

EPA, see U.S. Environmental Protection Agency.

Sandia National Laboratories/New Mexico (SNL/NM), 2011a~~November 2001a~~. FOP 08-20, "Soil Moisture Determination Utilizing Neutron Logging"~~ASSOP 01-02, "Activity Specific Standard Operating Procedure for Use of the CPN 503DR Hydroprobe Moisture Depth Gauge in Neutron Logging Activities at the Corrective Action Management Unit (CAMU),"~~ Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), November 2001b. FOP 08-22, "Soil Vapor Sampling"~~ASSOP 01-04, "Activity Specific Standard Operating Procedure for Active Soil Gas Sampling Using Method TO-14 at the Corrective Action Management Unit (CAMU),"~~ Sandia National Laboratories, Albuquerque, New Mexico.

~~Sandia National Laboratories/New Mexico (SNL/NM), November 2001c. ASSOP 01-05, "Activity Specific Standard Operating Procedure for Active Soil Gas Sampling onto Sorbent~~

~~Tubes at the Corrective Action Management Unit (CAMU)," Sandia National Laboratories, Albuquerque, New Mexico.~~

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

U.S. Environmental Protection Agency (EPA), November 1986. "Test Methods for Evaluating Solid Waste," 3rd ed., ~~Update 3,~~ SW-846, as revised and updated, Office of Solid Waste and Emergency Response, U.S. Environmental Protection Agency, Washington, D.C.

U.S. Environmental Protection Agency (EPA), January 1999. *Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air -- Second Edition* (EPA/625/R-96/010b), as revised and updated, U.S. Environmental Protection Agency, Washington, D.C.

APPENDIX C

INSPECTION FORMS~~SAMPLING AND ANALYSIS PLANS~~
FOR THE
~~VADOSE ZONE MONITORING SYSTEM AT THE~~
CORRECTIVE ACTION MANAGEMENT UNIT
TECHNICAL AREA III
SANDIA NATIONAL LABORATORIES/NEW MEXICO
~~ENVIRONMENTAL RESTORATION PROJECT~~

CAMU
Post-Closure Inspection Form - Example

1. Date of Inspection ________________________

2. Time of Inspection ________________________

3. Name of Designated Inspector ________________________

Provide explanatory notes for each parameter not inspected or each action required. Include any remedial steps required.

CONTAINMENT CELL COVER SYSTEM			
Inspection Parameters	***Parameter Inspected (Yes or No)***	***Action Required (Yes or No)***	***Note Number***
A. Plants comprising the vegetative cover have the potential for forming deep roots .			
B. Visible settlement of the soil cover in excess of 6 inches.			
C. Animal intrusion burrows in excess of 4 inches in diameter.			
D. Erosion of the soil cover in excess of 6 inches deep.			
E. Contiguous areas of no vegetation greater than 200 ft^2.			
II. SURFACE-WATER DIVERSION STRUCTURES			
Inspection Parameters	***Parameter Inspected (Yes or No)***	***Action Required (Yes or No)***	***Note Number***
A. Channel or sidewall erosion in excess of 6 inches deep.			
B. Channel sediment accumulation in excess of 6 inches deep.			
C. Debris that blocks more than 1/3 of the channel width.			

CAMU
Post-Closure Inspection Form – Example (continued)

III. LEACHATE COLLECTION AND REMOVAL SYSTEM (LCRS)[1]			
Inspection Parameters	***Parameter Inspected (Yes or No)***	***Action Required (Yes or No)***	***Note Number***
Initial 12-month period following closure A. Leachate is pumped from the LCRS collection sump [If Yes, record the amount of liquid pumped into collection drum].			
Remainder of the post-closure period A. Activate leachate pump on a quarterly basis. Pump until cavitation. Perform a video camera inspection if no leachate is removed.			
B. LCRS pump/plumbing in need of repair/maintenance.			
[1]Only designated, experienced, and trained personnel shall inspect LCRS leachate levels and remove, sample, and store leachate from the LCRS. The CAMU Task Leader or his/her qualified designee shall verify the field technician's qualifications.			

IV. VADOSE ZONE MONITORING SYSTEM (VZMS)			
Inspection Parameters	***Parameter Inspected (Yes or No)***	***Action Required (Yes or No)***	***Note Number***
A. Protective casings, access covers and doors, instrumentation access boxes, and compression caps in need of repair/maintenance.			
B. Locks in need of cleaning or replacement.			
C. Electronic monitoring system in need of calibration/repair/ maintenance.			
D. Aboveground VZMS components exposed to weather.			
E. Monitoring equipment (pump, tubing, gauges, valves, etc.) in need of repair/maintenance			

CAMU
Post-Closure Inspection Form – Example (concluded)

V. SECURITY FENCE			
Inspection Parameters	***Parameter Inspected (Yes or No)***	***Action Required (Yes or No)***	***Note Number***
A. Accumulation of wind-blown plants and debris.			
B. Fence wires and posts in need of repair/maintenance.			
C. Gates in need of oiling/repair/maintenance.			
D. Locks in need of cleaning or replacement.			
E. Warning signs in need of repair or replacement.			
VI. PREVIOUS DEFICIENCIES			
Inspection Parameter	***Parameter Inspected (Yes or No)***	***Action Required (Yes or No)***	***Note Number***
Uncorrected/undocumented previous deficiencies.			

NOTES

Note Number	***Description***

Action assigned to: ______________________ Date action completed: ____________

Action assigned to: ______________________ Date action completed: ____________

Action assigned to: ______________________ Date action completed: ____________

Action assigned to: ______________________ Date action completed: ____________

Inspector's Signature ____________________________
Original to: CAMU Operating Record
Copy to: SNLRecords Center,

AdditionalComments:____

Corrective Action Management Unit
Post-Closure Inspection Form
Biology Inspection Checklist for the CAMU Cover - Example

Approximate vegetative coverage (actively photosynthesizing): ________ %
Approximate percent native vegetation of the total vegetative cover: _______%

Listed below are the main plant species identified growing on the CAMU cover and the approximate percentage of the cover populated by each species.

Scientific Name	Common name (optional)	% of total cover[a]

a Percentage of total CAMU cover populated by actively-photosynthesizing plants of this species

Corrective Action Management Unit
Biology Inspection Checklist for the CAMU Cover - Example (continued)

Are there any contiguous areas of no vegetation greater than 200 square feet? (Approximately 14 x14 ft.): _______

If "Yes," mark such areas on a map and attach to this checklist. Improve such area(s) with native vegetation via soil augmentation, scarification, and/or reseeding.

Are there any very deeply rooted (roots greater than 8 feet deep at maturity) plant species present on the cover? ________

If "Yes," describe the plant(s) and their general distribution or mark such areas on a map and attach to this checklist, and remove plant(s) from the cover.

Notes: ____

____

____

____

Inspection for animal burrow intrusion into CAMU cover

Are any burrows present on the cover? ______

Does any burrow(s) appear to be active? ______

If burrows with an entrance diameter of 4 inches or greater are present or appear to be that of a species that is able to burrow 6 feet or greater, describe below and/or indicate the location(s) on a map and attach to this checklist. Take appropriate actions as necessary to repair cover damage that exceeds prescribed limits.

Notes: ____

____

Biological Aspects Map – [note: sketch map to locate specific features will be attached as appropriate]

Inspector's Signature: ______________________________ Date: _____________

Original to: Corrective Action Management Unit Operating Record
Copy to: SNL Records Center

APPENDIX D~~ATTACHMENT~~

~~SITE-SPECIFIC~~ CONTINGENCY PLAN AND EMERGENCY RESPONSE ADDENDUM FOR THE CORRECTIVE ACTION MANAGEMENT UNIT

~~MARCH 2004~~APRIL 2012

~~SITE-SPECIFIC~~ CONTINGENCY PLAN AND EMERGENCY RESPONSE ADDENDUM FOR THE CORRECTIVE ACTION MANAGEMENT UNIT

Emergency response requirements for Resource Conservation and Recovery Act (RCRA)-regulated units are specified in 20 4.1.500 of the New Mexico Administrative Code (NMAC) incorporating Title 40 of the Code of Federal Regulations (CFR), Part 264, Subpart D [~~6-14-00~~7-1-08], "Contingency Plan and Emergency Procedures," and in 20 NMAC 4.1.900/40 CFR 270.14(b)(7) [~~6-14-00~~7-1-08]. The Sandia National Laboratories/New Mexico and U.S. Department of Energy Site-Wide Contingency Plan is included in Appendix E of the SNL/NM General Part B Permit, in Part 2~~submitted to the New Mexico Environment Department (NMED) in February 2003~~. Supplemental information specific to the Corrective Action Management Unit (CAMU), Technical Area (TA)-III is included in this attachment, and in Figure~~s~~ 1~~ and 2~~, and Tables 1 and 2. ~~Current copies of the Site-wide Contingency Plan and this supplemental information are maintained at the both CAMU and the SNL/NM Emergency Operations Center.~~

The CAMU is a 3.75-acre area located in the southeast corner of TA-III at SNL/NM~~ (Figure 1)~~. The CAMU was used for treatment, storage, and containment of RCRA- and Toxic Substances Control Act (TSCA)-regulated wastes. The unit was closed under RCRA with wastes remaining in place in the containment cell. The CAMU containment cell contains approximately 31,800 cubic yards of RCRA and TSCA-regulated wastes. All aboveground facilities, including the Bulk Waste Staging Area, Containerized Waste Staging Area, and the Sprung™ Structures have been clean-closed.

The CAMU containment cell is a landfill containing approximately 31,800 cubic yards of RCRA- and TSCA-contaminated soils. The soil also contain low levels of tritium (up to 20,000 picocuries per liter). The tritium levels are at or below the federal drinking water standard. The containment cell is covered with a 5-foot-thick, evapotransporation-type cover system consisting of a layer of 60-mil high-density polyethylene on top of the waste, which, in turn, is covered by bedding sand, pea gravel, filter sand, a native soil blend, and a topsoil layer.

The CAMU also incorporates a less-than-90-day waste accumulation area at the north end of the containment cell. This area is used to accumulate containers ~~stage~~ of leachate periodically pumped from the containment cell leachate collection and removal system (LCRS). The leachate consists of water with very low levels of RCRA contaminants, polychlorinated biphenyls (PCBs), and tritium. Containers of leachate (55-gallon drums or other suitable containers) are stored on portable spill pallets.

Safety and emergency equipment is stored in a small building adjacent to the less-than-90-day accumulation area or in the office which is located just outside the main entrance near the southeast end of the containment cell.

Figure 1~~2~~ presents the evacuation routes and assembly areas at the CAMU. Table 1 lists the emergency equipment typically available at the CAMU, which will be tested on a monthly ~~quarterly~~ basis and maintained as necessary to ensure proper operation. Table 2 lists the emergency coordinators for the CAMU.

Leachate Management. Leachate will be collected and managed by personnel who have received training in hazardous waste management. ~~SNL/NM procedures define the appropriate methods for removal of leachate, sample collection, decontamination of equipment, record keeping, and management in the less-than-90-day waste accumulation area.~~ Whenever leachate is being pumped, poured, or otherwise handled, all personnel involved in the operation will have access to a communications equipment ~~bullhorn maintained on site and a phone~~ to contact Kirtland Air Force Base

~~Figure 1. Location of Kirtland Air Force Base, Sandia National Laboratories, and the Corrective Action Management Unit (CAMU)~~

Figure 1~~2~~. Evacuation Routes from the Less-Than-90-Day Waste Accumulation Area

Table 1
Corrective Action Management Unit
Emergency Equipment and Locations

Category	Description	Location
Spill Control Equipment	Spill Control Materials, including sorbent material, brooms, and shovels	Leachate Storage Area Shed
Fire Extinguisher	Portable, Multi-Class	One near ~~at each end of~~ the Leachate Storage Area and ~~; one near~~ Containment Cell, and ~~;~~ One in CAMU office~~Administration Trailer~~
Communications: (Internal/External)	Mobile telephone or portable radio or equivalent~~Cellular Phone or Red Site radio~~	~~In the vicinity of the Accumulation Area~~Carried by personnel as needed
	Telephone	CAMU office
Water Supply	Fire Hydrant ~~Ground Hydrant~~	One outside the southeast entrance to the CAMU ~~Two near the former Treatment Pad~~ ~~Two near the former Bulk Waste Staging Area~~
Environmental Safety and Health	Portable eyewash station	Leachate Storage Area Shed (during waste handling activities)
Evacuation	Voice command by on-site personnel or signaled by three blasts of a vehicle warning horn.	Designated Assembly Area (See Figure 1~~2~~)

CAMU = Corrective Action Management Unit.

Table 2
Corrective Action Management Unit
Emergency Coordinator List

~~March 16, 2004~~April 2012

~~Emergency Coordinators[a]~~		~~Home Telephone~~	~~Office Telephone~~	~~Cellular or Pager~~
~~Primary:~~	~~Franz Lauffer~~ ~~P.O. Box 5800~~ ~~Environmental Management~~ ~~MS-1042~~ ~~Albuquerque, NM 87185~~	~~867-2043~~	~~845-7697~~	~~540-5513 (Pager)~~
~~1st Alternate:~~	~~Bruce Reavis~~ ~~P.O. Box 5800~~ ~~Environmental Management~~ ~~MS-1042~~ ~~Albuquerque, NM 87185~~	~~296-0007~~	~~845-8403~~	~~250-6388 (Cellular)~~ ~~530-7538 (Pager)~~
~~2nd Alternate:~~	~~Robert Ziock~~ ~~P.O. Box 5800~~ ~~Landfills and Test Areas~~ ~~MS-1088~~ ~~Albuquerque, NM 87185~~	~~255-4714~~	~~845-0845~~	~~None~~

~~[a]At least one emergency coordinator must be at the CAMU facility or on call.~~

Facility Emergency Coordinator		**Office Phone**	**Home Phone**
Primary	Don Schofield Sandia National Laboratories P.O. Box 5800 Albuquerque, NM 87185	(505) 844-4088 (office) (505) 259-7098 (cell) (505) 951-6153 (pager)	(505) 268-6888
First Alternate	Robert Ziock Sandia National Laboratories P.O. Box 5800 Albuquerque, NM 87185	(505) 845-0485 (office) (505) 238-3668 (cell) (505) 951-6160 (pager)	(505) 255-4714
Second Alternate	Danielle Nieto Sandia National Laboratories P.O. Box 5800 Albuquerque, NM 87185	(505) 845-7706 (office) (505) 239-3989 (cell) (505) 951-6537 (pager)	(505) 239-3989

One or more of these personnel are available when operations are occurring at the CAMU.

(KAFB) emergency personnel, if necessary. Site personnel will clean up spills immediately, and the required notifications shall be made. At least one verification sample will be collected to ensure complete cleanup has been achieved.

Container Management ~~Waste Staging~~. The less-than-90-day waste accumulation area consists of a pad approximately 2,500 square feet in size. The pad design is rectangular and consists of compacted subgrade and a 6-inch aggregate base course surface. Containerized leachate is accumulated ~~staged~~ in 55-gallon drums or other suitable containers on spill containment pallets to prevent the accidental discharge of leachate to the ground surface. The drums will be ~~staged~~ maintained in a manner that maintains sufficient aisle space to allow the unobstructed movement of personnel and equipment to any portion of the less-than-90-day waste accumulation area. Up to 100 drums of leachate can be present~~stored~~ in the area at one time.

~~**Waste Disposition.** The leachate stored in each drum is sampled and analyzed according to the Waste Analysis Plan (Appendix A of the Post-Closure Care Plan).~~

CAMU Access. The CAMU is located inside TA-III~~, which is controlled by fences, KAFB security patrols, and limited access through security gates. TA-III access control procedures are designed to assure that only properly identified and authorized persons, vehicles, and property enter and exit TA-III. Figure 2 shows the post-closure perimeter boundary for the CAMU containment cell area. A~~and is surrounded contiguous four-strand, barbed-wire fence that delineates ~~this~~ the boundary. Locked gates located at the northern and southern perimeter boundaries provide access to the CAMU containment cell and leachate storage area. ~~Authorized CAMU personnel maintain the combinations to the gate locks.~~

~~**CAMU Container Management.** Typical containers managed within the CAMU include 55-gallon drums that are labeled in accordance with applicable regulations.~~

~~**CAMU Waste Contaminants.** Hazardous remediation waste managed at the CAMU includes leachate derived from the LCRS. Hazardous constituents may include, but are not limited to; organic compounds, semivolatile organic compounds, and toxic and heavy metals. The leachate may also be co-contaminated with very low levels of PCBs and tritium. The U.S. Environmental Protection Agency Hazardous Waste Number for managing leachate is F039.~~

APPENDIX E

PERSONNEL TRAINING PROGRAM FOR THE POST-CLOSURE CARE PERIOD AT THE CORRECTIVE ACTION MANAGEMENT UNIT TECHNICAL AREA III SANDIA NATIONAL LABORATORIES/NEW MEXICO ~~ENVIRONMENTAL RESTORATION PROJECT~~

PERSONNEL TRAINING PROGRAM FOR THE POST-CLOSURE CARE PERIOD AT THE CORRECTIVE ACTION MANAGEMENT UNIT TECHNICAL AREA 3 SANDIA NATIONAL LABORATORIES/NEW MEXICO ENVIRONMENTAL RESTORATION PROJECT

~~MARCH 2004~~APRIL 2012

~~List of Tables~~

1.0 Introduction

This document describes the personnel training program for inspection, monitoring, and maintenance of the Sandia National Laboratories/New Mexico (SNL/NM) Corrective Action Management Unit (CAMU) containment cell. The primary objective of this training program is to prepare CAMU personnel to perform job duties in a safe, environmentally sound, and technically competent manner. To achieve this objective, the program provides all employees with training relevant to their positions. CAMU personnel receive classroom and on-the-job training designed specifically to teach them how to perform their duties safely and in conformance with the CAMU Post-Closure Permit. CAMU personnel receive the required training before being allowed to work in unsupervised positions.

1.1 Relevance of Training to Job Position

This training program provides employees with training relevant to their positions and training necessary to safely perform their actual job tasks. Personnel will be trained in operations specific to their job duties.

1.2 Implementation of Training Program

The training program is implemented to ensure that all CAMU personnel receive the appropriate training in a timely manner. Personnel do not work in unsupervised positions until they successfully complete the indicated training requirements.

2.0 Outline of the Training Program

2.1 Job Title/Job Description

Job titles, descriptions, and qualifications for CAMU positions are provided in Figures 2-1 and 2-2. The job descriptions include job duties and education, skills, or experience requirements.

2.2 Training Content, Frequency, and Techniques

The training program includes a combination of formal classroom sessions, reviews of written documents, and on-the-job training as described in Appendix D to the General Part B in Part 2 of the Comprehensive Part B Permit Request. The training content is shown in Table D-1 in Appendix D. All CAMU personnel receive all training listed in Table D-1.~~The training content will include, at a minimum, the topics shown in Table 2-1. The training program is administered by the training director, who is responsible for identifying and coordinating training required by~~

~~the hazardous waste regulations. The training director must complete the CAMU Operating Procedures and Refresher Training outlined in Table 2-1.~~

Figure 2-1
Job Title, Description, and Qualifications CAMU Project Leader/Operations Coordinator

Job Title: Corrective Action Management Unit (CAMU) Project Leader/Operations Coordinator

Job Description: To provide ongoing oversight, supervision, and coordination at the CAMU during the post-closure care period for vadose zone monitoring and inspection and maintenance of the containment cell and Vadose Zone Monitoring System (VZMS) in compliance with the Post-Closure Permit. Examples of duties:

Coordinate and implement monthly/quarterly VZMS monitoring activities.

Compile and archive VZMS monitoring data into the Environmental Restoration Data Management System.

Produce annual monitoring results reports and other reports.

Maintain/revise sampling and analysis plans for VZMS monitoring, as required.

Coordinate and implement ~~monthly/quarterly~~ leachate removal and management activities.

Ensure necessary inspections and required maintenance are properly conducted.

Assure the maintenance of records, such as training records, inspection and maintenance records, and data reports, as specified in the Post-Closure Permit.

Supervise the inventory, maintenance, and repair of all tools, supplies, equipment, and vehicles (i.e., ensure that they are in good working order) used for monitoring and maintenance operations.

Provide oversight of CAMU Field Technicians.

Required Education, Skill, and/or Experience:

Bachelors' degree in chemistry, biology, physical science, engineering, environmental science, or

Minimum of 5 years experience in waste management operations and/or environmental restoration, and

Project management experience.

Figure 2-2
Job Title, Description, and Qualifications
CAMU Field Technician

<u>Job Title</u>: Corrective Action Management Unit (CAMU) Field Technician

<u>Job Description</u>: To perform post-closure monitoring, inspection, and maintenance activities as instructed by the CAMU Project Leader/Operations Coordinator. Examples of duties:

Perform ~~monthly/quarterly~~ VZMS monitoring activities.

Perform inspection and maintenance activities.

Assist CAMU Project Leader/Operations Coordinator with leachate removal and management activities.

<u>Required Education, Skill, and/or Experience</u>:

High school diploma or equivalent (e.g., General Education Development [GED])

~~Table 2-1~~

~~TRAINING CONTENT~~

~~Occupational Safety and Health Administration~~
~~Hazardous Waste Worker Training and Refresher~~

~~Duration:~~	~~24-40 hours initial, 8-hour annual refresher~~
~~Frequency:~~	~~Initial and annual~~
~~Method:~~	~~Classroom~~
~~Required CAMU Attendees:~~	~~Project Leader/Operations Coordinator and Field Technician~~

~~Minimum Content:~~

~~Proper use of personal protective equipment~~
~~Overview of federal regulations related to hazardous materials and hazardous waste management~~
~~Guidelines for safe practices while managing hazardous waste~~
~~Overview of hazardous materials (i.e., properties, compatibility, toxicology)~~

~~CAMU~~
~~Operating Procedures and Refresher~~

~~Duration:~~	~~2-24 hours initial, 2-8 hours annual refresher~~
~~Frequency:~~	~~Initial and annual~~
~~Method:~~	~~Procedure review, on-the-job training~~
~~Required CAMU Attendees:~~	~~Project Leader/Operations Coordinator; Field Technician; Training Director~~

~~Minimum Content: This training is function-specific, divided into sections or modules. Each employee must participate in the sections that apply to his specific job function. Example sections include, but are not limited to, the following:~~

~~Written standard operating procedures~~
~~Review of the CAMU Contingency Plan and Waste Analysis Plan~~
~~Safety practices at the CAMU~~
~~Security, site entry, and site control at the CAMU~~
~~Operation, maintenance, and inspection of CAMU equipment~~
~~Inspection forms~~
~~RCRA facility or operating permit Module IV requirements~~
~~Sampling procedures~~
~~Record keeping~~

~~CAMU = Corrective Action Management Unit.~~
~~RCRA = Resource Conservation and Recovery Act.~~

~~Training will be provided at the frequencies shown in Table 2-1. The Occupational Safety and Health Administration (OSHA) Hazardous Waste Worker Training is standardized and provided to all applicable employees. A minimum of 24 hours of initial OSHA Hazardous Waste Worker Training is required of all on-site CAMU personnel. All on-site personnel also participate in a minimum of eight hours annual refresher training. The CAMU Operating Procedures and Refresher Training is function-specific so that an employee is provided training that is appropriate to his job function. A minimum of two hours of initial CAMU Operating Procedures and Refresher Training is required of all on-site CAMU personnel. All on-site personnel also participate in a minimum of two hours annual refresher training.~~

~~2.3 Emergency Training~~

~~All personnel assigned to work at the CAMU are required to participate in unit-specific emergency training to ensure that they are able to respond effectively in an emergency situation. The training consists primarily of classroom training and/or on-site exercises. Topics covered include at a minimum:~~

- ~~Emergency notification procedures~~
- ~~Response to emergencies, including fires and releases of hazardous wastes~~
- ~~Procedures for using, inspecting, maintaining, and replacing emergency/monitoring equipment~~
- ~~Procedures for shutdown operations (if any)~~
- ~~Procedures for evacuation~~
- ~~Post-emergency reports and actions~~

3.0 Training Records

Training records will be kept to document the type, amount, and dates of training received for each assigned employee. Contents of these records will include the following at a minimum:

- The name of the employee
- Job title and a written job description

- Training requirements for each job position
- Records that document training received, such as amount, dates, and certificates; attendance or signature lists; memoranda of training; or reports from computerized training databases

Training records for current employees will be kept until the end of the post-closure care period. Training records for any former employee will be kept for a minimum of three years from the last date the employee worked at the unit. A current approved training program and training records for unit personnel for the previous 12 months are maintained at the CAMU administration trailer. All other training records and documentation are maintained by the CAMU Project Leader/Operations Coordinator or designee at the SNL/NM ~~Integrated Safety and Security~~ Records Center.

Enclosure I

Comprehensive Part B Permit Request

Overview
Part 1
Part 2
Part 3
Part 4
Part 5

Sandia National Laboratories
NM5890110518

Volume I
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Overview

Part 1—General Part A Permit Renewal Request/Application

Part 2—General Part B Permit Renewal Request/Application

Table of Contents (Continued)

OVERVIEW

1.0 BACKGROUND

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

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

Since November 19, 1980, Sandia/DOE have managed RCRA-regulated wastes at SNL/NM under the applicable requirements of Title 40 of the Code of Federal Regulations, Parts 260-270, and with the requirements of NMAC Title 20, Chapter 4, as they became effective. Operations at SNL/NM include the following RCRA-regulated waste management facilities that are addressed in Parts 1 through 5 of this Part B permit request.

- **Hazardous Waste Handling Facility (HWHF).** *(Included in Parts 1 and 2)* The HWHF (formerly known as the Hazardous Waste Management Facility) consists of several buildings within a fenced area located south of SNL/NM TA-I. The HWHF is used for storage and packaging of RCRA-regulated wastes. The wastes are transported to off-site RCRA-permitted facilities for treatment, storage, and/or disposal. These wastes are generated during SNL/NM operations and corrective action activities. The hazardous waste operating permit for the HWMF was issued in August 1992 and expired on August 6, 2002. The comprehensive Part B permit request submitted to NMED on February 6, 2002 included a request for the renewal of the HWMF operating permit. The Part B permit renewal request has been updated and revised several times in response to NMED comments and to reflect changes in operations.

- **Thermal Treatment Facility (TTF).** *(Included in Parts 1 and 2)* The TTF consists of a burn cage with ancillary equipment located in a fenced area south of Building 6715 in the northern part of SNL/NM TA-III. The TTF is used for thermal treatment of explosive wastes generated by SNL/NM operations. RCRA-regulated treatment residues (ash) are transported to off-site permitted facilities for treatment, storage, and/or disposal. The Part B hazardous waste operating permit for the TTF was issued on November 4, 1994. The comprehensive Part B permit request submitted to NMED on February 6, 2002 included a request for the renewal of the TTF operating permit. The Part B permit

renewal request has been updated and revised several times in response to NMED comments and to reflect changes in operations.

- **Radioactive and Mixed Waste Management Facility (RMWMF).** *(Included in Parts 1 and 2)* The RMWMF consists of several buildings within a fenced area located at the southeastern corner of SNL TA-III, west of the CWL. The RMWMF is used for storage, treatment, and packaging of RCRA-regulated wastes generated during SNL/NM operations and corrective action activities. RCRA-regulated wastes and treated residues are transported to off-site permitted facilities for treatment, storage, and/or disposal. The RMWMF is operated under interim status. The comprehensive Part B permit request submitted to NMED on February 6, 2002 included a Part B permit application for operation of the RMWMF, which superseded the application submitted to the NMED in December 1996. The Part B permit application has been updated and revised several times in response to NMED comments and to reflect changes in operations.

- **High Bay Waste Storage Facility (HBWSF).** The HBWSF was operated under interim status for storage and packaging of RCRA-regulated wastes generated during SNL/NM operations and corrective action activities. The comprehensive Part B permit request submitted to NMED in February 2002 included a Part B permit application for operation of the HBWSF, which superseded the application submitted to the NMED in December 1996. Sandia/DOE withdrew the Part B permit application for the HBWSF in April 2003 completed closure under interim status in May 2006. NMED approved completion of closure in July 2006.

- **Auxiliary Hot Cell Facility (AHCF).** *(Included in Parts 1 and 2)* The AHCF is located in Building 6597 in SNL/NM TA-V. The AHCF will be used for treatment, packaging, and storage of RCRA-regulated wastes generated during SNL/NM operations and corrective action activities. The comprehensive Part B permit request submitted to NMED on February 6, 2002 included an application for operation of the AHCF. The Part B permit application has been updated and revised several times in response to NMED comments and to reflect changes in operations.

- **Manzano Storage Bunkers (MSB).** *(Included in Parts 1 and 2)* The MSB are a set of Units used for storage of RCRA-regulated wastes generated during SNL/NM operations and corrective action activities. The bunkers within the MSB are located within the former Manzano Base in the eastern part of KAFB. RCRA-regulated wastes are typically transported to other SNL/NM Units for storage and/or treatment before being transported to permitted off-site facilities for further treatment, storage, and/or disposal. The MSB are operated under interim status. The comprehensive Part B permit request submitted to NMED in February 2002 included a Part B permit application for operation of the MSB, which superseded the application submitted to the NMED in December 1996. The Part B permit application has been updated and revised several times in response to NMED comments and to reflect changes in operations.

  The original application included seven bunkers. Two of the bunkers provided extra capacity that was not needed, and they were never used for storage of RCRA-regulated wastes under interim status. Sandia/DOE withdrew the Part B permit application for those two bunkers in April 2003 and submitted a request to NMED in February 2004 for closure of the two bunkers. NMED approved closure of the two bunkers in October 2006. The remaining five bunkers are included in the permit application.

Chemical Waste Landfill (CWL). *(Included in Part 3)* Sandia/DOE operated the CWL in the southeastern corner of SNL/NM TA-III for disposal of RCRA-regulated wastes under interim status until 1985. Sandia/DOE closed the landfill under interim status according to a closure plan approved by the New Mexico Environment Department (NMED). Two voluntary corrective measures (VCM) were performed at the CWL: a vapor extraction VCM, and a landfill excavation VCM. The CWL is a regulated unit under RCRA. Sandia and DOE are conducting post-closure care of the CWL under the terms of Post-Closure Care Permit NM5890110518 (PCCP) issued by NMED October 15, 2009. The PCCP became effective June 2, 2011 upon NMED approval of CWL closure. Groundwater assessment and monitoring information for the CWL is addressed in Part 3 of this comprehensive Part B permit request by means of reference to the PCCP.

- **Corrective action for SWMUs at SNL/NM.** *(Included in Part 4)* Sandia/DOE have identified numerous SWMUs throughout SNL/NM, and, until issuance of a Compliance Order by the NMED in April 2004, conducted corrective action under Module IV of the Part B Permit issued by the U.S. Environmental Protection Agency (EPA) under the 1984 Hazardous and Solid Waste Amendments to RCRA. The comprehensive Part B permit request submitted to NMED on February 6, 2002 included the required information for SWMUs and Areas of Concern (AOCs) that qualify to be on the permit as determined by NMED. Sandia/DOE updated the information in response to NMED's comments and included the updated information in the April 2003 submittal.

  Corrective action activities are now conducted under the terms of the Compliance Order on Consent between DOE, Sandia, and NMED, dated April 29, 2004.

  Thirty-five SWMUs and three groundwater AOCs remain on the list of SWMUs and AOCs requiring corrective action. Sandia/DOE have submitted three permit modification requests to NMED, requesting determination that corrective action is complete at 32 SWMUs.

- **Corrective Action Management Unit (CAMU).** *(Included in Parts 1 and 5)* The CAMU was used for staging, treatment, and containment of remediation wastes generated during ER Project activities. The CAMU included staging areas for bulk and containerized waste, a treatment pad, and a containment cell. The CAMU is located at SNL/NM SWMU 107 in the southeastern corner of SNL/NM TA-III, northwest of the CWL and the RMWMF. The 5-year authorization to operate the CAMU under Permit Module IV was issued by EPA on September 25, 1997, and expired on September 20, 2002. The comprehensive Part B permit request submitted to NMED on February 6, 2002 included a request for renewal of the operating authorizations associated with the CAMU. Sandia/DOE completed treatment and containment operations at the CAMU in early 2003, and certified closure of the Unit on October 15, 2003. The CAMU consisted of the following:

- CAMU Temporary Unit (TU) for soil stabilization operations. The temporary unit was one of two treatment units used to treat remediation wastes at the CAMU. Sandia/DOE closed the TU in early 2003, and withdrew it from the comprehensive Part B permit request in August 2003.

- CAMU Low Temperature Thermal Desorption Unit (LTTD) Unit. The LTTD unit was the second of two treatment units used to treat remediation wastes at the CAMU.

Sandia/DOE closed the LTTD in early 2003, and withdrew it from the comprehensive Part B permit request in May 2003.

- CAMU Containment Cell. The containment cell holds the remediation wastes. Sandia/DOE constructed a cover on the cell and completed closure in 2003. The CAMU is currently maintained under the post-closure care conditions of the CAMU permit application. A permit application for CAMU post-closure care was transmitted to the NMED on July 3, 2003. It has been updated and revised in response to NMED comments and to reflect changes in operations. It is included as Part 5 of the Part B permit request.

2.0 COMPREHENSIVE PART B PERMIT REQUEST

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

2.1 Part 1

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

2.2 Part 2

Part 2 consists of the updated Part B permit renewal request/application for nine RCRA-regulated waste management units associated with ongoing operations at SNL/NM. Sandia/DOE have Part 2 includes complete applications and renewal requests for the HWHF, TTF, RMWMF, AHCF, and five MSB.

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

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

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

2.3 Part 3

Part 3 consists of a limited discussion of the groundwater information for regulated units (the CWL is the only such unit at SNL/NM). Sandia/DOE conduct post-closure care at the CWL under a separate permit; extensive information regarding groundwater is available in that permit and associated documents.

2.4 Part 4

Part 4 consists of updated information about SWMUs and AOCs at SNL/NM. Extensive information regarding the SWMUs and AOCs is available in other documents. Part 4 includes a tabulated summary for SWMUs with references to other documents for additional information. Additional information is provided for four SWMUs and three groundwater AOCs.

2.5 Part 5

Part 5 consists of the updated post-closure care plan for the CAMU containment cell.

3.0 PRE-APPLICATION PUBLIC NOTICE AND MEETING

As required under 20 NMAC 4.1.901/40 CFR 124.31, Sandia/DOE held a pre-application public meeting to inform the community about waste management activities at SNL/NM and about the "comprehensive Part B permit request," and to solicit questions.

Sandia/DOE and the US Air Force hold joint quarterly public meetings to inform the community about ongoing environmental restoration and waste management activities. Sandia/DOE included the comprehensive Part B permit request in the agenda of the meeting held on January 17, 2002 at the Radisson Hotel and Conference Center, I-40 and Carlisle NE, Albuquerque NM.

3.1 Public Notice

Sandia/DOE provided public notice of the pre-application meeting in accordance with the requirements of 20 NMAC 4.1.901/40 CFR 124.31(d):

- Sandia/DOE published a display advertisement in the Albuquerque Journal and Albuquerque Tribune on December 18, 2001 (30 days before the meeting). A copy of the notice is included in the attachment.
- Sandia/DOE attached two copies of a visible and accessible sign announcing the public meeting to the external fence of Kirtland Air Force Base outside two of the most heavily-used entrance gates. Photographs of the signs are included in the attachment.
- Sandia/DOE broadcast an announcement of the meeting on KIOT FM on December 18, 2001. An affidavit of service and the text of the broadcast message are included in the attachment.
- Sandia/DOE sent the notice to the New Mexico Environment Department and to other federal, state, and local agencies with jurisdiction over Sandia/DOE and SNL/NM. The list of addressees and a copy of the letter to NMED are included in the attachment.

In addition to these notices, the agenda for the public meeting (which included the comprehensive Part B permit request) was mailed to the 692 persons on the distribution list. This distribution list is open to all members of the public. The agenda is included in the attachment.

3.2 Public Meeting

The comprehensive Part B permit request was the last item on the agenda at the meeting on January 17, 2002. A sign-up sheet was placed on the welcome table outside the meeting room. A list of attendees and their addresses is included in the attachment.

Sandia/DOE personnel presented background information about Sandia's operations and waste management activities. The presentation also included Unit-specific information for the HWMF, TTF, RMWMF, HBWSF, AHCF, MSB, CAMU, LTTD, TU, CWL, and solid waste management units. Information for each unit included: location at SNL/NM; waste management activities; current permit status; and requested permit action.

Sandia and DOE personnel solicited questions from the audience. None were asked during or after the presentation, and no written comments were submitted at or after the meeting. A copy of the presentation slides is included in the attachment.

ATTACHMENT

PRE-APPLICATION
PUBLIC NOTICE AND PUBLIC MEETING INFORMATION INCLUDING:

Newspaper Display Notice

Signs Announcing Public Meeting

Affidavit of Radio Announcement

Public Notice and Mailing List

DOD/DOE Quarterly Public Meeting Agenda

DOD/DOE Quarterly Public Meeting Attendance List

Sandia/DOE Public Meeting Part B Presentation Slides

Newspaper Display Notice

SANDIA NATIONAL LABORATORIES

P.O. Box 5800 Albuquerque, New Mexico 87185

Public Notice of "Part B" Permit Application / Renewal Request
Sandia National Laboratories/New Mexico (SNL/NM)
EPA ID No. NM5890110518

Sandia National Laboratories (SNL) is a multi-purpose engineering and science laboratory operated for the US Department of Energy (DOE) by Sandia Corporation (Sandia), a subsidiary of Lockheed Martin. Sandia designs all non-nuclear components for the nation's nuclear weapons, performs a wide variety of energy research and development projects, and works on assignments that respond to national security threats. SNL is located on Kirtland Air Force Base southeast of Albuquerque, New Mexico.

Sandia generates hazardous and hazardous/radioactive mixed wastes through normal operations. Sandia also generates hazardous and mixed wastes through an ongoing environmental restoration project involving cleanup of sites that were formerly used for operations such as testing and disposal. Sandia has an active and successful program to minimize hazardous and mixed wastes through product substitutions, process changes, material re-use, and recycling.

Sandia and the DOE are submitting a comprehensive "Part B" permit request package for management of hazardous and hazardous/radioactive mixed wastes at SNL/NM. The package includes several parts:

* Renewing permits to operate two units for storage and treatment of wastes from operations and environmental restoration activities.
* Updating previous applications for a permit to operate three units for storage and treatment of wastes from operations and environmental restoration activities.
* Requesting a permit to operate one additional unit for storage and treatment of wastes from operations and environmental restoration activities.
* Renewing authorization to operate three units for storage, treatment, and containment of wastes from the environmental restoration project.

A public meeting is scheduled for:

January 17, 2002
6:30 p.m. - 8:30 p.m.
Radisson Hotel and Conference Center
I-40 and Carlisle NE
Albuquerque, New Mexico

Sandia and the DOE will provide information about Sandia's hazardous and hazardous/radioactive mixed waste management activities and the permit request package. This is the final item on the agenda of this public meeting. All interested persons are invited to attend, and questions are welcome. For further information, contact

Mr. Ron Dobbs
U.S. Department of Energy, Kirtland Area Office
P.O. Box 5400
Albuquerque, New Mexico 87185
(505) 845-4428

Note: If you need special access to attend the meeting, please contact Mr. Dobbs at least 72 hours before the meeting.

Signs Announcing Public Meeting

Sign on KAFB Fence on Wyoming Ave. North of KAFB Gate
Photograph taken December 18, 2001

The 28-by-42-inch sign announced the public meeting to be held on January 17 regarding the Sandia/DOE “comprehensive Part B permit request”. The sign was attached to the west side (the outside) of the Kirtland Air Force Base fence on the Wyoming Avenue north of the Wyoming entrance gate to the base. A gasoline service station is located at the right edge of the picture.

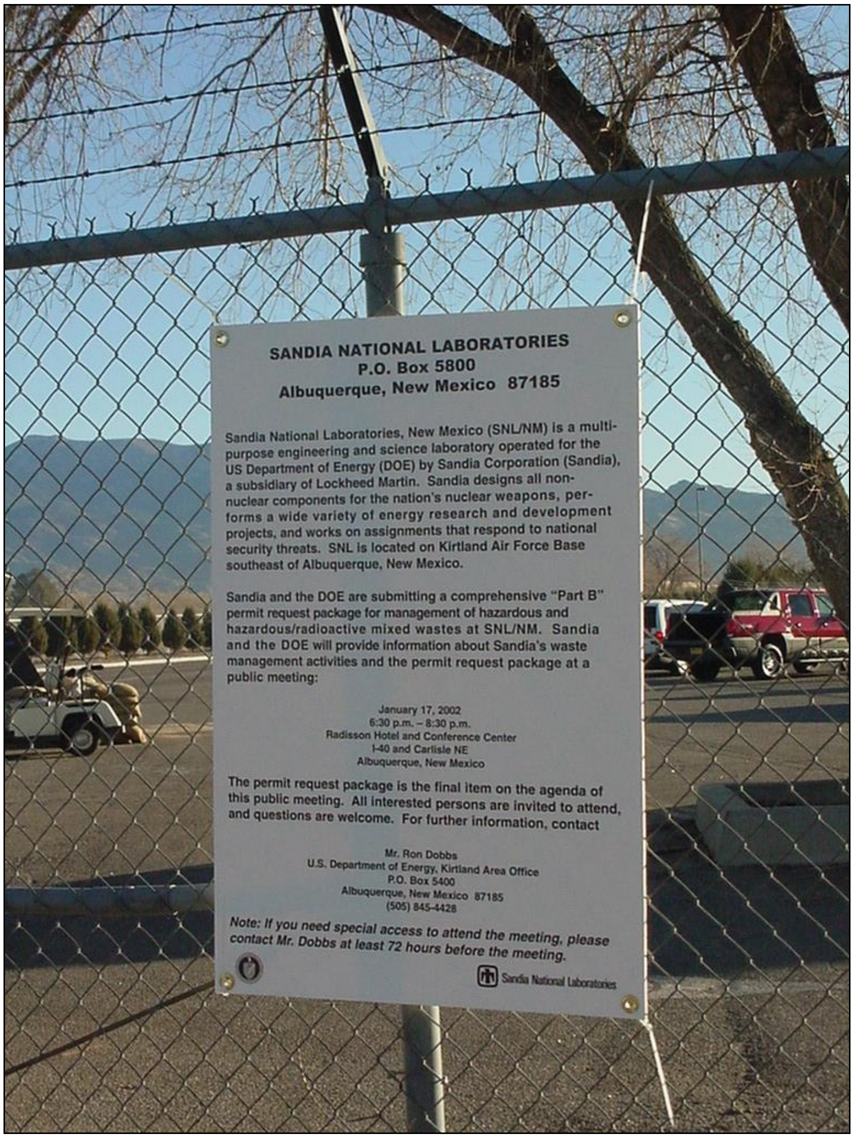
Sandia personnel put the sign up on December 18, 2001 and took it down on the evening of December 20 because 40 CFR 124.31(c) does not specify the length of time the sign is to be displayed. Late on December 20, DOE received direction from NMED that the sign was to be up until the meeting. Sandia personnel put the sign back up on December 21 and took it down on the evening of January 17, 2002.

The sign contains the same text as the newspaper advertisement and the letters to federal, state, and local agencies.

Sign on KAFB Fence at the Intersection
of Gibson Blvd. and Louisiana Blvd.
Photograph taken December 19, 2001

Sandia personnel attached a second 28-by-42-inch sign announcing the public meeting to the west side (the outside) of the KAFB fence on the southeast corner of the intersection. The second sign was identical to the sign attached to the fence north of the Wyoming gate.

The second sign was put up on December 18, taken down on the evening of December 20, put back up on December 21, and taken down on January 18.



Close-Up View of Sign on KAFB Fence at the Intersection of Gibson Blvd. and Louisiana Blvd.
Photograph taken December 19, 2001

Affidavit of Radio Announcement

AFFIDAVIT OF SERVICE RENDERED

rom: SIMMONS MEDIA GROUP P.O. BOX 25852
ALBUQUERQUE. NM 87125-5852
PH:505-262-1142
FAX:505-262-9211

State of
County of NEW MEXICO } SS:

The Undersigned Having Been Duly Sworn, Deposes and Says That Broadcasting Service Has Been Rendered by Radio Station in Accordance With the Accompanying Statement:
By ....

INVOICE

DATE
12/30/01
INVOICE NUMBER
28495

dvertiser: SANDIA NATIONAL LABS

Subscribed and Sworn to Before
Me this 31 day of Dec 20 01

NL001 MICHELSOHN CREATIVE
8016 CONSTITUTION PL NE
ALBUQUERQUE, NM 87110

OFFICIAL SEAL
LAURIE JARAMILLO
NOTARY PUBLIC
STATE OF NEW MEXICO
My Commission Expires

LAURIE JARAMILLO NOTARY PUBLIC
My Commission Expires 5/24/2003

Page 1

DATE	ACCOUNT / RUN DETAIL	LENGTH	NO. RUN	RATE	AMOUNT
	Contract 27585 01/17/02 MEETING				
	JAN 17 MEETING				
.2/15/01	KIOT FM 0:20 5:33	60	2	0.00	0.00
	Total Sales -----		2		0.00

SIMMONS MEDIA GROUP

PAYMENT TERMS: NET 30 DAYS

Sales Rep: STEVE WEARDEN

A Finance Charge, is computed by a **PERIODIC RATE OF 1½% PER MONTH,** which is an **ANNUAL PERCENTAGE RATE OF 18%,** added to the unpaid balance at the end of the next month following date of purchase.

XXXXXXX.XX

THIS INVOICE WAS PREPARED FROM OFFICIAL STATION PROGRAM LOGS
TIMES SHOWN ABOVE ARE ACCURATE PLUS OR MINUS 8 MINS.

PLEASE PAY THIS AMOUNT 0.00

SANDIA NATIONAL LABS
RADIO: 60
JANUARY 17, 2002 MEETING"

SANDIA NATIONAL LABORATORIES, A MULTI-PURPOSE ENGINEERING AND SCIENCE LABORATORY OPERATED FOR THE U.S. DEPARTMENT OF ENERGY, DESIGNS ALL NON-NUCLEAR COMPONENTS FOR THE NATION'S NUCLEAR WEAPONS. SANDIA PERFORMS A VARIETY OF RESEARCH AND DEVELOPMENT PROJECTS AND WORKS ON ASSIGNMENTS IN RESPONSE TO NATIONAL SECURITY THREATS. SANDIA IS LOCATED ON KIRTLAND AIR FORCE BASE, SOUTHEAST OF ALBUQUERQUE, NEW MEXICO. SANDIA AND THE D.O.E. WILL HOST A PUBLIC MEETING TO DISCUSS THE MANAGEMENT OF HAZARDOUS WASTES AND MIXED HAZARDOUS AND RADIOACTIVE WASTES AT THE LABORATORIES. PRESENTERS WILL PROVIDE INFORMATION ABOUT SANDIA'S WASTE MANAGEMENT ACTIVITIES AND THE PERMIT REQUEST PACKAGE THAT SANDIA AND D.O.E. WILL SUBMIT TO THE NEW MEXICO ENVIRONMENT DEPARTMENT AT THE PUBLIC MEETING. THE MEETING WILL BE HELD THURSDAY, JANUARY 17, 2002 FROM 6:30 PM TO 8:30 PM AT THE RADISSON HOTEL AND CONFERENCE CENTER NEAR I-40 AND CARLISLE NE IN ALBUQUERQUE. THIS PRESENTATION IS THE FINAL ITEM ON THE MEETING'S AGENDA. SANDIA AND D.O.E. ENCOURAGE ALL INTERESTED PERSONS TO ATTEND. YOUR QUESTIONS ARE WELCOME. FOR FURTHER INFORMATION, CONTACT MR. RON DOBBS OF THE U.S. DEPARTMENT OF ENERGY AT 845-4428. YOU MAY WRITE HIM AT P.O. BOX 5400, ALBUQUERQUE, NEW MEXICO, 87185. IF YOU NEED SPECIAL ACCESS TO ATTEND THE MEETING, PLEASE CONTACT MR. DOBBS AT LEAST 72 HOURS BEFORE THE MEETING.

(211 WORDS)

Public Notice and Mailing List

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

DEC 1 8 2001

Peter Maggiore
State of New Mexico
Environment Department
PO Box 26110
Santa Fe, NM 87502-0110

Subject: Public Notice of "Part B" Permit Application / Renewal Request
Sandia National Laboratories/New Mexico (SNL/NM) EPA ID No. NM5890110518

Dear Mr. Maggiore:

Sandia National Laboratories (SNL) is a multi-purpose engineering and science laboratory operated for the US Department of Energy (DOE) by Sandia Corporation (Sandia), a subsidiary of Lockheed Martin. Sandia designs all non-nuclear components for the nation's nuclear weapons, performs a wide variety of energy research and development projects, and works on assignments that respond to national security threats. SNL is located on Kirtland Air Force Base southeast of Albuquerque, New Mexico.

Sandia generates hazardous and hazardous/radioactive mixed wastes through normal operations. Sandia also generates hazardous and mixed wastes through an ongoing environmental restoration project involving cleanup of sites that were formerly used for operations such as testing and disposal. Sandia has an active and successful program to minimize hazardous and mixed wastes through product substitutions, process changes, material re-use, and recycling.

Sandia and the DOE are submitting a comprehensive "Part B" permit request package for management of hazardous and hazardous/radioactive mixed wastes at SNL/NM. The package includes several parts:

- Renewing permits to operate two units for storage and treatment of wastes from operations and environmental restoration activities.
- Updating previous applications for a permit to operate three units for storage and treatment of wastes from operations and environmental restoration activities.
- Requesting a permit to operate one additional unit for storage and treatment of wastes from operations and environmental restoration activities.
- Renewing authorization to operate three units for storage, treatment, and containment of wastes from the environmental restoration project.

A public meeting is scheduled for:

January 17, 2002
6:30 p.m. – 8:30 p.m.
Radisson Hotel and Conference Center
I-40 and Carlisle NE
Albuquerque, New Mexico

Sandia and the DOE will provide information about Sandia's hazardous and hazardous/radioactive mixed waste management activities and the permit request package. This is the final item on the agenda of this public meeting. All interested persons are invited to attend, and questions are welcome. For further information, contact:

Mr. Ron Dobbs
U.S. Department of Energy, Kirtland Area Office
P.O. Box 5400
Albuquerque, New Mexico 87185
(505) 845-4428

Note: if you need special access to attend the meeting, please contact Mr. Dobbs at least 72 hours before the meeting.

Sincerely,

Ronald Dobbs

for George K. Laskar
Associate Director for
Laboratory Operations

cc:
J. P. Bearzi, NMED HWB

MS-1087	W. P. Moats, NMED
MS-1396	R. Kennett, NMED
MS-0184	R. Dobbs, DOE/KAO
MS-0141	E. D. Krauss, 11300
MS-1151	A. S. Reiser, 3125
MS-1151	J. J. Thompson, 3125
MS-1151	M. J. Irwin, 6134

Agencies and Other Recipients of Notice of Pre-Application public Meeting

Name	Agency and Department		Address			
Environmental Public Affairs Officer	377th Air Base Wing	Public Affairs	2000 Wyoming Blvd SE	Kirtland Air Force Base	NM	87117-5606
Ralph Francis	377th Air Base Wing	Public Affairs	2000 Wyoming Blvd SE	Kirtland Air Force Base	NM	87117-5000
Clinton Abell	377th Air Base Wing		AMDS/SGPB	Kirtland Air Force Base	NM	87117-5270
Mark Holmes	377th Air Base Wing	Environmental Management Division	2050 Wyoming Blvd. SE, Suite 128	Kirtland Air Force Base	NM	87117-5270
Steve Milligan	377th Air Base Wing	Environmental Management Division	2050 Wyoming Blvd. SE, Suite 128	Kirtland Air Force Base	NM	87117-5270
Jerry Sillerud	377th Air Base Wing		377 SPTG/CEVR	Kirtland Air Force Base	NM	87117-5270
Chief Lovato	377th Air Base Wing		377 SPTT/CEF	Kirtland Air Force Base	NM	87117
John Kelly, Executive Engineer	Albuquerque Metropolitan Arroyo Flood Control Authority		2600 Prospect Ave NE	Albuquerque	NM	87107
Environmental Protection Officer	All Indian Pueblo Council	Office of Environmental Protection	PO Box 3256	Albuquerque	NM	87190
Richard Brusuelas, Director	Bernalillo County	Environmental Health Department	600 Second St NW, Suite 400	Albuquerque	NM	87102
Lord Skeie-Campbell	Bernalillo County	Groundwater Protection Advisory Board	600 Second St NW, Suite 500	Albuquerque	NM	87102
Alfredo Santistevan, Director	City of Albuquerque	Environmental Health Department	PO Box 1293	Albuquerque	NM	87103
Bob Gurule	City of Albuquerque	Public Works Department	PO Box 1293	Albuquerque	NM	87103-1293
David Anthony Segura Acting Director	City of Albuquerque	Solid Waste Department	PO Box 1293	Albuquerque	NM	87103-1293
Executive Assistant to the Mayor	City of Albuquerque		PO Box 1293	Albuquerque	NM	87103
Honorable Martin Chavez, Mayor	City of Albuquerque		PO Box 1293	Albuquerque	NM	87103
Karren Suesz	DOE Community Resource Information Office		8338A Comanche NE	Albuquerque	NM	87110
Lawrence C. Troncosa	Middle Rio Grande Conservancy District		1931 Second St. SW	Albuquerque	NM	87102
Jane Altweis	Office of US Rep Heather Wilson		625 Silver SW	Albuquerque	NM	87102
Sharon Miner	Office of US Senator Jeff Bingaman		625 Silver SW	Albuquerque	NM	87102
Agnes Orczo	Office of US Senator Pete Domenici		625 Silver SW, Suite 120	Albuquerque	NM	87102

Name	Agency and Department		Address			
Jim Piatt	Pueblo of Isleta	Environmental Division	PO Box 1270	Isleta	NM	87022
John McKean	State of New Mexico	Office of the Governor	PERA Bldg, Room 542	Santa Fe	NM	87503
Elmo Baca, Director	State of New Mexico	Cultural Affairs Office, Historic Preservation Division	228 East Palace Avenue	Santa Fe	NM	87501
	USGS	New Mexico District Office	4501 Indian School Rd NE	Albuquerque	NM	87110
Ray Powell, Comissioner of Public Lands	State of New Mexico	Land Office	PO Box 1148	Santa Fe	NM	87504-1148
Peter Maggiore, Secretary	State of New Mexico	Environment Department	PO Box 26110	Santa Fe	NM	87502-0110
Larry Bell, Director	State of New Mexico	Game and Fish Department	PO Box 25112	Santa Fe	NM	87504
K. Carroll McKinney, Chief	US Army Corps of Engineers	HTRW Section	4101 Jefferson Plaza NE	Albuquerque	NM	87109
Tom Remington, Natural Resources Manager	US Bureau of Indian Affairs		PO Box 26567	Albuquerque	NM	87125-6567
Ed Singleton, Field Manager	US Bureau of Land Management		435 Montano NE	Albuquerque	NM	87107
David Neleigh, RCRA NM Federal Facilities Section	US Environmental Protection Agency, Region VI	Multimedia Planning and Permitting Department	1445 Ross Ave	Dallas	TX	75202-2733
Thomas F. O'Brien	US Fish & Wildlife Service		2105 Osuna Rd NE	Albuquerque	NM	87113-1001
Dr. Joy Nicoloposis	US Fish & Wildlife Service - Ecological Services		2105 Osuna Rd NE	Albuquerque	NM	87113-1001
	US Forest Service		11776 Highway 337	Tijeras	NM	87059
Liz Agpaoa, Forest Supervisor	US Forest Service	Cibola National Forest	2113 Osuna Rd NE, Suite A	Albuquerque	NM	87113-1001
Eleanor S. Towns, Regional Forester	US Forest Service		517 Gold Ave SW	Albuquerque	NM	87102

DOD/DOE Quarterly Public Meeting Agenda

DOD/DOE Quarterly Public Meeting

Environmental Restoration and Waste Management Activities
For Kirtland Air Force Base and Sandia National Laboratories

January 17, 2001
6:30 - 8:30 p.m.
Radisson Hotel & Conference Center
1-40 and Carlisle NE
Albuquerque, NM

Note: This will be a joint meeting between the Kirtland Air Force Base IRP program and the Sandia National Laboratories ER Project.

DOD Quarterly Public Meeting

Introductory Remarks	Steve Milligan 377th ABW Public Affairs Kirtland Air Force Base
Agenda items to be determined	
Public Comment	Public
Break	

DOE Quarterly Public Meeting

DOE Host Remarks	John Gould Department of Energy/KAO
Corrective Measures Study for Sandia's Mixed Waste Landfill -- The Regulatory Process	Will Moats New Mexico Environment Dept.
Corrective Measures Study for Sandia's Mixed Waste Landfill -- Remedial Actions	John Gould Department of Energy/KAO
Corrective Action Management Unit (CAMU) Waste Treatment Using Thermal Desorption	Mike Irwin Sandia National Laboratories

(please turn over)

Long-Term Environmental Stewardship Status Report	Joe Estrada Department of Energy/KAO
Sandia's "Part B" Permit for Handling Hazardous and Mixed Wastes	Anita Reiser Sandia National Laboratories
Public Comment	Public

Further information:
John Gould
Department of Energy/Kirtland Area Office
PO Box 5400
Albuquerque, NM 87185-5400
505/845-6089

Steve Milligan
377th ABW Public Affairs
Kirtland Air Force Base
IR Program
505/846-9003

Mailing List Maintainer

You are on a mailing list to receive information about Sandia National Laboratories' environmental activities. If you would like your name removed from the list, or changes made to your address please respond by:

Calling 844-1690
Faxing 284-2616, or
Emailing to: rwkeene@sandia.gov
Regular Mail: PO Box 5800, Albuquerque, NM 87185-1089

Thank you for your help!

DOD/DOE Quarterly Public Meeting Attendance List

DOE/Sandia National Laboratories & Kirtland Air Force Base Quarterly Public Meeting January 17, 2002	
NAME	**MAILING ADDRESS**
1. Terry, Diane	1000 Betts NE, Albuquerque, NM 87112
2. Stepp, Leon	11717 Paseo del Oso NE, Albuquerque, NM 87110
3. Brocklebank, Jean	1236 Lobo Place NE, Albuquerque, NM 87106
4. Taylor, Ralph	1304 Glorieta NE, Albuquerque, NM 87112
5. Clemens, Joni	1417 Jefferson NE, Albuquerque, NM 87110
6. Marchand, Hal	1520 University Blvd. NE #B, Albuquerque, NM 87102
7. Ramponi, JoAnne	1521 Muriel NE, Albuquerque, NM 87112
8. Weisberg, Maurice	1677 Cerro Gordo, Santa Fe, NM 87501
9. Vigil, Ed	1824 Sandler Court NE, Albuquerque, NM 87112
10. Long, Bob	211 Valle Vista, Corrales, NM
11. Maldonado, James	2213 Muniz Road SW, Albuquerque, NM 87108
12. Ong, Kim	316 Dartmouth NE, Albuquerque, NM 87106
13. Reiser, Anita	3521 Parisian Way NE, Albuquerque, NM 87111
14. Reiser, Sylvia	3521 Parisian Way NE, Albuquerque, NM 87111
15. Reiser, Tim	3521 Parisian Way NE, Albuquerque, NM 87111
16. Reiser, Will	3521 Parisian Way NE, Albuquerque, NM 87111
17. Richards, Craig	4424 Sherre Dr. NE, Albuquerque, NM 87111
18. Peters, Kelley	4533 Trumbull SE, Albuquerque, NM 87108
19. Nelson, Terry	4909 Northridge Place NE, Albuquerque, NM 87111
20. Woodard, Tom	5301 Central Ave. SE, Albuquerque, NM 87108
21. Irwin, Mike	5524 Via Conejo NE, 87111
22. Truske, Ted	Albuquerque, NM
23. Earp, Doug	City of Albuquerque, 4600 Edith NE, Albuquerque, NM 87107
24. Martinez, Therese	City of Albuquerque, Air Quality Division, 4600 Edith NE, Albuquerque, NM 87107
25. Hoffman, Will	City of Albuquerque, Solid Waste Division, 4600 Edith NE, Albuquerque, NM 87107
26. Chang, Allen	EPA, 1445 Ross Ave., Dallas, TX 75202
27. Miller, Gary	EPA, 1445 Ross Ave., Dallas, TX 75202
28. Goering, Tim	GRAM
29. Nguyen, Hanh	Hnguyen@unm.edu
30. Dunlop, Eric	KAFB
31. Milligan, Steve	KAFB
32. Abell, Clint	KAFB - 377 SPTG/CEVR
33. Cooper, Terry	KAFB - 377 SPTG/CEVR
34. Hale, Alan	KAFB - 377 SPTG/CEVR
35. Holmes, Mark	KAFB - 377 SPTG/CEVR
36. Sillerud, Jerry	KAFB - 377 SPTG/CEVR
37. Francis, Ralph	KAFB - 377ABW/PA
38. Johnston, Jeff	Montgomery Watson Harza, 6100 Indian School Road, Albuquerque, NM 87110
39. Kennett, Roger	NMED
40. Kilbury, Rich	NMED
41. Moats, Will	NMED
42. Voss, Lance	NMED
43. Estrada, Joe	NNSA/DOE, PO Box 5400, Albuquerque, NM 87185
44. Zamorksi, Mike	NNSA/DOE, PO Box 5400, Albuquerque, NM 87185
45. Gould, John	NNSA/DOE, PO Box 5400, Albuquerque, NM 87185
46. Dobbs, Ron	NNSA/DOE, PO Box 5400, Albuquerque, NM 87185

DOE/Sandia National Laboratories & Kirtland Air Force Base Quarterly Public Meeting January 17, 2002	
NAME	**MAILING ADDRESS**
47. Gardipe, Mike	NNSA/DOE, PO Box 5400, Albuquerque, NM 87185
48. Moore, Tami	NNSA/DOE, PO Box 5400, Albuquerque, NM 87185
49. Dayton, Sue	PO Box 1133, Sandia Park, NM 87047
50. Nelson, Miles	PO Box 1133, Sandia Park, NM 87047
51. Deichmann, Jens	PO Box 1148, Santa Fe, NM 87504
52. Duncan, Dianne	PO Box 3316, Edgewood, NM 87015
53. Young, Jessie	Rfkjessamyn@aol.com
54. Davis, MJ	SAIC, 2109 Air Park Road SE, Albuquerque, NM 87106
55. Hoier, Sally	Sandia National Laboratories
56. Keener, Will	Sandia National Laboratories
57. Miller, David	Sandia National Laboratories
58. Peace, Jerry	Sandia National Laboratories
59. Thompson, Jim	Sandia National Laboratories
60. Young, Sharissa	Sandia National Laboratories
61. Price, Joe	USFS, Sandia Road, Tijeras, NM

Sandia/DOE Public Meeting Part B Presentation Slides

Sandia/DOE "Part B"

- Comprehensive waste permit request package
- Due to NMED on or before February 6, 2002
- Permit will allow Sandia/DOE to continue current activities:
  - Waste storage, treatment, and packaging for shipment to permitted off-site disposal facilities
  - Environmental restoration (ER) cleanup

Anita Reiser
Sandia National Labs
(505) 284-4048

Ron Dobbs
U.S. Dept. of Energy
(505) 845-4428

Sandia Background

- Multi-purpose engineering and science laboratory operated for DOE by Sandia Corp.
- Located on Kirtland Air Force Base (KAFB)
  - Most Sandia operations are in five "technical areas" (TAs)
  - Some tests in remote areas on KAFB
- Ongoing operations
  - wide variety of energy research and development projects
  - projects that respond to national security threats
  - design non-nuclear components for weapons

Sandia Background (cont.)

- Generate wastes regulated by Resource Conservation and Recovery Act (RCRA)
  - Hazardous wastes
  - Hazardous / radioactive mixed wastes
  - Laboratory operations
  - Corrective action for solid waste management units (ER sites)
- Active and successful program to minimize wastes through product substitution, process changes, material re-use, and recycling
- Managed wastes under RCRA since November 1980.

Waste Management at Sandia

- 9 "units" included in this comprehensive Part B permit request package
  - Five have permits that we want to renew
  - Three are operating under interim status and we are updating previous applications for permits
  - One is a new unit starting up in 2002
- Information also included
  - Groundwater monitoring
  - Solid waste management units (ER sites)

Waste Management Units at Sandia

UNIT	STATUS
Hazardous Waste Management Facility	Operating
Thermal Treatment Facility	Standby
Radioactive and Mixed Waste Management Facility	Operating
High Bay Waste Storage Facility	Operating
Manzano Storage Bunkers	Operating
Auxiliary Hot Cell Facility	Scheduled to begin in 2002
Corrective Action Management Unit	Operating
Temporary Unit (Soil Stabilization)	Scheduled for 2002
Low Temperature Thermal Desorption Unit	Scheduled for 2002
Chemical Waste Landfill	Closing per approved plan
Solid Waste Management Units	Various

Hazardous Waste Management Facility

Hazardous Waste Management Facility

- Buildings south of TA-1
- Storage and packaging - lab and remediation wastes
- Wastes are shipped to permitted off-site disposal facilities
- *Received NMED Part B operating permit August 6, 1992*
- *Operating permit expires August 6, 2002*
- **Comprehensive Part B permit request package includes request for renewing permit**

Thermal Treatment Facility

Thermal Treatment Facility

- Burn cage with protective earthen berm in northern part of TA-3
- Thermal treatment and destruction of explosive lab wastes
- *Received NMED Part B operating permit November 4, 1994*
- *Receive annual operating permit from Albuquerque*
- *Operating permit expires November 4, 2004*
- **Comprehensive Part B permit request package includes request for renewing permit**

Radioactive and Mixed Waste Management Facility

Radioactive and Mixed Waste Management Facility

- Buildings in southeast corner of TA-3
- Storage, treatment, and packaging - lab and remediation wastes
- Wastes are shipped to permitted off-site disposal facilities
- *Most recent application for NMED Part B operating permit in December 1996*
- *Continue to operate under interim status*
- **Comprehensive Part B permit request package includes updated application for permit**

High Bay Waste Storage Facility

High Bay Waste Storage Facility

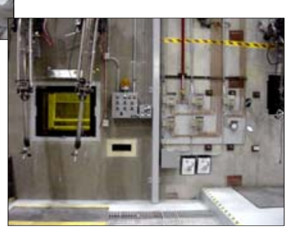
- Building in TA-5
- Storage - lab and remediation wastes
- Wastes are shipped to permitted off-site disposal facilities
- *Most recent application for NMED Part B operating permit in December 1996*
- *Continue to operate under interim status*
- Comprehensive Part B permit request package includes updated application for permit

Manzano Storage Bunkers

Manzano Storage Bunkers

- Seven bunkers in former Manzano Base
- Storage - lab and remediation wastes
- Wastes are shipped to permitted off-site disposal facilities
- *Most recent application for NMED Part B operating permit in December 1996*
- *Continue to operate under interim status*
- Comprehensive Part B permit request package includes updated application for permit

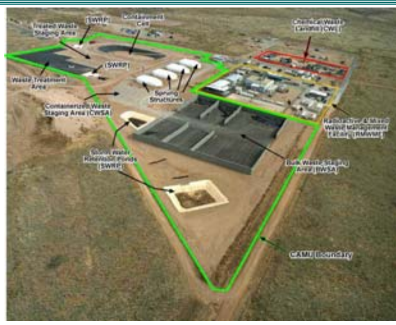
Auxiliary Hot Cell Facility



Auxiliary Hot Cell Facility

- Building in TA-5
- Storage, treatment, and packaging of wastes that can’t be handled at RMWMF or HBWSF
- Will be used to process wastes to meet compliance order issued by NMED
- Wastes will be shipped to permitted off-site disposal facilities
- *Requesting permission to add capacity before Part B permit is issued*
- Comprehensive Part B permit request package includes application for operating permit

Southeast Corner of TA 3



Corrective Action Management Unit

Corrective Action Management Unit

- **Located in southeast corner of TA-3**
- **Staging, treatment, and containment - remediation wastes only**
- ***Received EPA authorization to operate on September 25, 1997***
- ***Authorization expires September 20, 2002***
- **Comprehensive Part B permit request package includes request for renewing authorization**

CAMU Temporary Unit

- **Located in CAMU in southeast corner of TA-3**
- **Treatment - remediation wastes only**
- ***Received EPA authorization to operate on June 19, 1998***
- ***Authorization expires one year after Sandia and DOE certify that unit is ready to operate***
- **Comprehensive Part B permit request package includes request for renewing authorization**

CAMU Low Temperature Thermal Desorption Unit

CAMU Low Temperature Thermal Desorption Unit

- **Located in CAMU in southeast corner of TA-3**
- **Treatment - remediation wastes only**
- ***Received NMED temporary authorization to operate on August 3, 1998***
- ***Authorization expires six months after operations begin***
- **Comprehensive Part B permit request package includes request for renewing authorization**

Chemical Waste Landfill

- Landfill in southeast corner of TA-3
- Used until 1985 for disposal of Sandia wastes
- *Being closed under plan approved by NMED*
- *Removing wastes under voluntary corrective measure*
- *Sandia/DOE will present results of corrective measure as required by closure plan*
- Comprehensive Part B permit request package includes information about groundwater monitoring at landfill

Solid Waste Management Units

- Located throughout Sandia Tech Areas and in remote testing areas on KAFB
- Being addressed through ER project
- Comprehensive Part B permit request package includes information about solid waste management units and areas of concern designated by NMED

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

Revision 11.0

April 2012

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

Prepared for
The U.S. Department of Energy

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF PHOTOGRAPHS

Photograph Title

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SEND COMPLETED FORM TO: The Appropriate State or Regional Office.	United States Environmental Protection Agency **RCRA SUBTITLE C SITE IDENTIFICATION FORM**

1. Reason for Submittal MARK ALL BOX(ES) THAT APPLY	**Reason for Submittal:** ☐ To provide an Initial Notification (first time submitting site identification information / to obtain an EPA ID number for this location) ☐ To provide a Subsequent Notification (to update site identification information for this location) ☐ 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 # 11) ☐ As a component of the Hazardous Waste Report (If marked, see sub-bullet below) ☐ Site was a TSD facility and/or generator of ≥1,000 kg of hazardous waste, >1 kg of acute hazardous waste, or >100 kg of acute hazardous waste spill cleanup in one or more months of the report year (or State equivalent LQG regulations)		
2. Site EPA ID Number	**EPA ID Number**: *NM5 890 110 518*		
3. Site Name	**Name:** *Sandia National Laboratories*		
4. Site Location Information	**Street Address:** *1515 Eubank Blvd. SE*		
	City, Town, or Village: *Albuquerque*		**County:** *Bernalillo*
	State: *NM*	**Country:** *United States*	**Zip Code:** *87123*
5. Site Land Type	☐ Private ☐ County ☐ District ☒ Federal ☐ Indian ☐ Municipal ☐ State ☐ Other		
6. NAICS Code(s) for the Site (at least 5-digit codes)	**A.** *92811*	**C.**	
	B. *54171*	**D.**	
7. Site Mailing Address	**Street or P.O. Box:** *P.O. Box 5400, US Department of Energy, Sandia Site Office*		
	City, Town, or Village: *Albuquerque*		
	State: *New Mexico*	**Country:** *United States*	**Zip Code:** *87185-5400*
8. Site Contact Person	**First Name:** *David*	**MI:** *M.*	**Last:** *Rast*
	Title: *Mr.*		
	Street or P.O. Box: *P.O. Box 5400, Sandia Site Office*		
	City, Town, or Village: *Albuquerque*		
	State: *New Mexico*	**Country:** *United States*	**Zip Code:** *87185-5400*
	Email: *david.rast@nnsa.doe.gov*		
	Phone: *505-845-5349*	**Ext.:**	**Fax:** *505-845-4710*
9. Legal Owner and Operator of the Site	**A. Name of Site's Legal Owner:** *US Department of Energy*		**Date Became Owner:** *09/1945*
	Owner Type: ☐ Private ☐ County ☐ District ☒ Federal ☐ Indian ☐ Municipal ☐ State ☐ Other		
	Street or P.O. Box: *P.O. Box 5400, Sandia Site Office*		
	City, Town, or Village: *Albuquerque*		**Phone:** *505-845-6036*
	State: *New Mexico*	**Country:** *United States*	**Zip Code:** *87185-5400*
	B. Name of Site's Operator: *Sandia Corporation*		**Date Became Operator:** *11/01/1949*
	Operator Type: ☒ Private ☐ County ☐ District ☐ Federal ☐ Indian ☐ Municipal ☐ State ☐ Other		

10. Type of Regulated Waste Activity (at your site)
Mark ―Yes" or ―No" for all current activities (as of the date submitting the form); complete any additional boxes as instructed.

A. Hazardous Waste Activities; Complete all parts 1-7

Y☒ N☐ **1. Generator of Hazardous Waste**
If ―Yes", mark only one of the following – a, b, or c.

☒ a. LQG: Generates, in any calendar month, 1,000 kg/mo (2,200 lbs./mo) or more of hazardous waste; **or** Generates, in any calendar month, or accumulates at any time, more than 1 kg/mo (2.2 lbs./mo) of acute hazardous waste; **or** Generates, in any calendar month, **or** accumulates at any time, more than 100 kg/mo (220 lbs./mo) of acute hazardous spill cleanup material.

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

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

If ―Yes" above, indicate other generator activities in 2-4.

Y☐ N☒ **2. Short-Term Generator** (generate from a short-term or one-time event and not from on-going processes). If "Yes", provide an explanation in the Comments section.

Y☐ N☒ **3. United States Importer of Hazardous Waste**

Y☒ N☐ **4. Mixed Waste (hazardous and radioactive) Generator**

Y☐ N☒ **5. Transporter of Hazardous Waste**
If ―Yes", mark all that apply

☐ a. Transporter

☐ b. Transfer Facility (at your site)

Y☒ N☐ **6. Treater, Storer, or Disposer of Hazardous Waste** Note: A hazardous waste Part B permit is required for these activities.

Y☐ N☒ **7. Recycler of Hazardous Waste**

Y☐ N☒ **8. Exempt Boiler and/or Industrial Furnace**
If ―Yes", mark all that apply.

☐ a. Small Quantity On-site Burner Exemption

☐ b. Smelting, Melting and Refining Furnace Exemption

Y☐ N☒ **9. Underground Injection Control**

Y☒ N☐ **10. Receives Hazardous Waste from Off-site**

B. Universal Waste Activities; Complete all parts 1-2.

Y☐ N☒ **1. Large Quantity Handler Of Universal Waste (you accumulate 5,000 kg or more) [refer to your State regulations to determine what is regulated]. Indicate types of universal waste managed at your site. If ―Yes", mark all that apply:**

a. Batteries	☐
b. Pesticides	☐
c. Mercury containing equipment	☐
d. Lamps	☐
e. Other (specify) ____________	☐
f. Other (specify) ____________	☐
g. Other (specify) ____________	☐

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

C. Used Oil Activities; Complete all parts 1-4.

Y☐ N☒ **1. Used Oil Transporter**
If ―Yes", mark all that apply

☐ a. Transporter

☐ b. Transfer Facility

Y☐ N☒ **2. Used Oil Processor and/or Re-refiner**
If ―Yes", mark all that apply

☐ a. Processor

☐ b. Re-refiner

Y☐ N☒ **3. Off-Specification Used Oil Burner**

Y☐ N☒ **4. Used Oil Fuel Marketer**
If ―Yes", mark all that apply

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

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

D. Eligible Academic Entities with Laboratories—Notification for opting into or withdrawing from managing laboratory hazardous wastes pursuant to 40 CFR Part 262 Subpart K

- You can **ONLY** Opt into Subpart K if:
  - You are at least one of the following: a college or university, a teaching hospital that is owned by or has a formal affiliation agreement with a college or university; or a non-profit research institute that is owned by or has a formal affiliation agreement with a college or university; AND
  - You have checked with your State to determine if 40 CFR Part 262 Subpart K is effective in your state

Y☐ N☒ 1. Opting into or currently operating under 40 CFR Part 262 Subpart K for the management of hazardous wastes in laboratories **See the item-by-item instructions for definitions of types of eligible academic entities. Mark all that apply:**

☐ a. College or University

☐ b. Teaching Hospital that is owned by or has a formal written affiliation agreement with a college or university

☐ c. Non-profit Institute that is owned by or has a formal written affiliation agreement with a college or university

Y☐ N☒ 2. Withdrawing from 40 CFR Part 262 Subpart K for the management of hazardous wastes in laboratories

11. Description of Hazardous Wastes

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 Item 13						

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.

none						

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12. Notification of Hazardous Secondary Material (HSM) Activity

Y☐ N☒ Are you notifying under 40 CFR 260.42 that you will begin managing, are managing, or will stop managing hazardous secondary material under 40 CFR 261.2(a)(2)(ii), 40 CFR 261.4(a)(23), (24), or (25)?

If "Yes", you must fill out the Addendum to the Site Identification Form: Notification for Managing Hazardous Secondary Material.

13. Comments

Item 4: Facility consists of a large area. Latitude range: 35 degrees, 04 minutes, 03 seconds North to 34 degrees 56 minutes 50 seconds North

Item 4: Facility consists of a large area. Longitude range: 106 degrees, 34 minutes, 48 seconds West to 106 degrees, 21 minutes, 39 seconds West

Item 9b: Sandia Corporation is a wholly-owned subsidiary of Lockheed Martin Corporation. Sandia Corporation manages and operates Sandia National Laboratories for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.

Item 11: See Item 9 in Hazardous Waste Permit Information Form for complete list of waste codes for federally regulated hazardous wastes.

14. 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 owner(s) and operator(s) must sign (see 40 CFR 270.10(b) and 270.11).

Signature of legal owner, operator, or an authorized representative	Name and Official Title (type or print)	Date Signed (mm/dd/yyyy)
[signature]	*Owner: Geoffrey Beausoleil, Manager, US DOE, NNSA, Sandia Site Office*	05/03/2012 3 MAY 2012
[signature]	*Operator: Michael W. Hazen, Vice President, Sandia Corporation*	05/03/2012

United States Environmental Protection Agency

HAZARDOUS WASTE PERMIT INFORMATION FORM

1. Facility Permit Contact	**First Name:** *David*	**MI:** *M.*	**Last Name:** *Rast*
	Contact Title: *Mr.*		
	Phone: *505-845-5349*	**Ext.:**	**Email:** *david.rast@nnsa.doe.gov*
2. Facility Permit Contact Mailing Address	**Street or P.O. Box:** *P.O. Box 5400, US Department of Energy, Sandia Site Office*		
	City, Town, or Village: *Albuquerque*		
	State: *New Mexico*		
	Country: *USA*		**Zip Code:** *87185-5400*
3. Operator Mailing Address and Telephone Number	**Street or P.O. Box:** *P.O. Box 5800, Sandia National Laboratories, Environment, Safety and Health Org.*		
	City, Town, or Village: *Albuquerque*		
	State: *NM*		**Phone:** *505-845-0011*
	Country: *USA*		**Zip Code:** *87185-5800*
4. Facility Existence Date	**Facility Existence Date (mm/dd/yyyy):** *11/19/1980 (date that regulated hazardous waste operations began)*		

5. Other Environmental Permits *See Appendix A*

A. Facility Type *(Enter code)*	**B. Permit Number**	**C. Description**

6. Nature of Business:

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

7. Process Codes and Design Capacities – Enter information in the Section on Form Page 3.

A. PROCESS CODE - Enter the code from the list of process codes below that best describes each process to be used at the facility. If more lines are needed, attach a separate sheet of paper with the additional information. For "other" processes (i.e., D99, S99, T04 and X99), describe the process (including its design capacity) in the space provided in Item 8.

B. PROCESS DESIGN CAPACITY- For each code entered in Item 7.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 Item 7.B(1), enter the code in Item 7.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 Unit of Measure for Process Design Capacity
	Disposal	
D79	Underground Injection Well Disposal	Gallons; Kiters; Gallons Per Day; or Liters Per Day
D80	Landfill	Acre-Feet; Hectares-meter; Acres; Cubic Meters; Hectares; Cubic Yards
D81	Land Treatment	Acres or Hectares
D82	Ocean Disposal	Gallons Per Day or Liters Per Day
D83	Surface Impoundment Disposal	Gallons; Liters; Cubic Meters; or Cubic Yards
D99	Other Disposal	Any Unit of Measure Listed Below
	Storage	
S01	Container	Gallons; Liters; Cubic Meters; or Cubic Yards
S02	Tank Storage	Gallons; Liters; Cubic Meters; or Cubic Yards
S03	Waste Pile	Cubic Yards; or Cubic Meters
S04	Surface Impoundment	Gallons; Liters; Cubic Meters; or Cubic Yards
S05	Drip Pad	Gallons; Liters; Cubic Meters; Hectares; or Cubic Yards
S06	Containment Building Storage	Cubic Yards; or Cubic Meters
S99	Other Storage	Any Unit of Measure Listed Below
	Treatment	
T01	Tank Treatment	Gallons Per Day; Liters Per Day
T02	Surface Impoundment	Gallons Per Day; Liters Per Day
T03	Incinerator	Short Tons Per Hour; Metric Tons Per Hour; Gallons per Hour; Liters Per Hour; BTUs Per Hour; Pounds Per Hour; Short Tons Per Day; Kilograms Per Hour; Gallons 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; Short Tons Per Day; BTUs Per Hour; Gallons Per Day; Liters Per Hour; or Million BTU Per Hour
T80	Boiler	Gallons; Liters; Gallons Per Hour; Liters Per Hour; BTUs Per Hour; or Million BTU Per Hour

Process Code	Process	Appropriate Unit of Measure for Process Design Capacity
	Treatment (Continued)	**(for T81-T94)**
T81	Cement Kiln	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
T82	Lime Kiln	
T83	Aggregate Kiln	
T84	Phosphate Kiln	
T85	Coke Oven	
T86	Blast Furnace	
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 Listed Below
X02	Mechanical Processing	Short Tons Per Hour; Metric Tons Per Hour; Short Tons Per Day; Metric Tons Per Day; Pounds per hour; Kilograms Per Hour; Gallons Per 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 of Measure Listed Below

Unit of Measure	Unit of Measure Code	Unit of Measure	Unit of Measure Code	Unit of Measure	Unit of Measure Code
Gallons	**G**	**Short Tons Per Hour**	**D**	**Cubic Yards**	**Y**
Gallons Per Hour	**E**	**Short Tons Per Day**	**N**	**Cubic Meters**	**C**
Gallons Per Day	**U**	**Metric Tons Per Hour**	**W**	**Acres**	**B**
Liters	**L**	**Metric Tons Per Day**	**S**	**Acre-feet**	**A**
Liters Per Hour	**H**	**Pounds Per Hour**	**J**	**Hectares**	**Q**
Liters Per Day	**V**	**Kilograms Per Hour**	**X**	**Hectare-meter**	**F**
		Million BTU Per Hour	**X**	**BTU Per Hour**	**I**

7. Process Codes and Design Capacities (Continued)

EXAMPLE FOR COMPLETING Item 7 (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	C. Process Total Number of Units	For Official Use Only					
X	**1**	**S**	**0**	**2**	**533.788**	**G**	**001**						
	1	*S*	*0*	*1*	*410,885.00*	*G*	*008*						
	2	*T*	*0*	*4*	*15,075.00*	*U*	*006*						
	3	*T*	*0*	*4*	*5.05*	*N*	*004*						
	4												
	5	*X*	*0*	*1*	*20.80*	*G*	*001*						
	6	*S*	*9*	*9*	*31,800.00*	*Y*	*001*						
	7												
	8												
	9												
	0												
1	1												
1	2												
1	3												

NOTE: If you need to list more than 13 process codes, attach an additional sheet(s) with the information in the same format as above. Number the line sequentially, taking into account any lines that will be used for "other" processes (i.e., D99, S99, T04 and X99) in Item 8.

8. Other Processes (Follow instructions from Item 7 for D99, S99, T04, and X99 process codes)

Line Number (Enter #s in sequence with Item 7)		A. Process Code (From list above)			B. PROCESS DESIGN CAPACITY (1) Amount (Specify)	(2) Unit of Measure	C. Process Total Number of Units	Description of Process
X	***2***	***T***	***0***	***4***	**100.000**	***U***	***001***	
	2	*T*	*0*	*4*	*120*	*U*	*002*	*Chemical Deactivation, gallons per day (volume equivalent)*
	2	*T*	*0*	*4*	*13,855*	*U*	*002*	*Macroencapsulation, gallons per day (volume equivalent)*
	2	*T*	*0*	*4*	*1,100*	*U*	*002*	*Stabilization/solidification, gallons per day (volume equivalent)*
	3	*T*	*0*	*4*	*10,000*	*J*	*002*	*Physical Treatment, pounds per day*
	3	*T*	*0*	*4*	*80*	*J*	*001*	*Thermal Deactivation, pounds per day*
	3	*T*	*0*	*4*	*16*	*J*	*001*	*Amalgamation, pounds per day*
	6	*S*	*9*	*9*	*31,800*	*Y*	*001*	*Closed Containment Cell, Corrective Action Management Unit, cubic yards*

9. Description of Hazardous Wastes – 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 Part 261, Subpart C that describes the characteristics and/or the toxic contaminants of those hazardous wastes.

B. ESTIMATED ANNUAL QUANTITY - For each listed waste entered in Item 9.A, estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in Item 9.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 Item 9.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 Item 9.A, select the code(s) from the list of process codes contained in Items 7.A and 8.A on page 3 to indicate all the processes that will be used to store, treat, and/or dispose of all listed hazardous wastes.

For non-listed waste: For each characteristic or toxic contaminant entered in Item 9.A, select the code(s) from the list of process codes contained in Items 7.A and 8.A 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 9.D(1).**
3. **Use additional sheet, enter line number from previous sheet, and enter additional code(s) in Item 9.E.**

2. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in Item 9.D(2) or in Item 9.E(2).

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

1. **Select one of the EPA Hazardous Waste Numbers and enter it in Item 9.A. On the same line complete Items 9.B, 9.C, and 9.D by estimating the total annual quantity of the waste and describing all the processes to be used to store, treat, and/or dispose of the waste.**
2. **In Item 9.A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In Item 9.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 9 (shown in line numbers X-1, X-2, X-3, and X-4 below) - A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operations. In addition, the facility will treat and dispose of three non-listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter Code)	D. PROCESSES									
								(1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If code is not entered in 9.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

9. Description of Hazardous Wastes ***(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)***

Line Number	A. EPA Hazardous Waste No. (Enter code) *(See Note 1)*	B. Estimated Annual Qty of Waste *(See Note 2)*	C. Unit of Measure (Enter Code)	D. PROCESSES *(See Notes 3 and 4)* (1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
1	P001	100	K	S01				
2	P002	100	K	S01				
3	P003	100	K	S01				
4	P004	100	K	S01				
5	P005	100	K	S01				
6	P006	100	K	S01				
7	P007	100	K	S01				
8	P008	100	K	S01				
9	P009	100	K	S01				
10	P010	100	K	S01				
11	P011	100	K	S01				
12	P012	100	K	S01				
13	P013	100	K	S01				
14	P014	100	K	S01				
15	P015	100	K	S01				
16	P016	100	K	S01				
17	P017	100	K	S01				
18	P018	100	K	S01				
19	P020	100	K	S01				
20	P021	100	K	S01				
21	P022	100	K	S01				
22	P023	100	K	S01				
23	P024	100	K	S01				
24	P026	100	K	S01				
25	P027	100	K	S01				
26	P028	100	K	S01				
27	P029	100	K	S01				
28	P030	100	K	S01				
29	P031	100	K	S01				
30	P033	100	K	S01				
31	P034	100	K	S01				
32	P036	100	K	S01				
33	P037	100	K	S01				
34	P038	100	K	S01				
35	P039	100	K	S01				
36	P040	100	K	S01				

9. Description of Hazardous Wastes ***(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)***

Line Number	A. EPA Hazardous Waste No. (Enter code) *(See Note 1)*	B. Estimated Annual Qty of Waste *(See Note 2)*	C. Unit of Measure (Enter Code)	D. PROCESSES *(See Notes 3 and 4)* (1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
37	P041	100	K	S01				
38	P042	100	K	S01				
39	P043	100	K	S01				
40	P044	100	K	S01				
41	P045	100	K	S01				
42	P046	100	K	S01				
43	P047	100	K	S01				
44	P048	100	K	S01				
45	P049	100	K	S01				
46	P050	100	K	S01				
47	P051	100	K	S01				
48	P054	100	K	S01				
49	P056	100	K	S01				
50	P057	100	K	S01				
51	P058	100	K	S01				
52	P059	100	K	S01				
53	P060	100	K	S01				
54	P062	100	K	S01				
55	P063	100	K	S01				
56	P064	100	K	S01				
57	P065	100	K	S01				
58	P066	100	K	S01				
59	P067	100	K	S01				
60	P068	100	K	S01				
61	P069	100	K	S01				
62	P070	100	K	S01				
63	P071	100	K	S01				
64	P072	100	K	S01				
65	P073	100	K	S01				
66	P074	100	K	S01				
67	P075	100	K	S01				
68	P076	100	K	S01				
69	P077	100	K	S01				
70	P078	100	K	S01				
71	P081	100	K	S01				
72	P082	100	K	S01				

9. Description of Hazardous Wastes ***(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)***

Line Number	A. EPA Hazardous Waste No. (Enter code) *(See Note 1)*	B. Estimated Annual Qty of Waste *(See Note 2)*	C. Unit of Measure (Enter Code)	D. PROCESSES *(See Notes 3 and 4)* (1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
73	P084	100	K	S01				
74	P085	100	K	S01				
75	P087	100	K	S01				
76	P088	100	K	S01				
77	P089	100	K	S01				
78	P092	100	K	S01				
79	P093	100	K	S01				
80	P094	100	K	S01				
81	P095	100	K	S01				
82	P096	100	K	S01				
83	P097	100	K	S01				
84	P098	150	K	S01	T04			chemical deactivation
85	P099	100	K	S01				
86	P101	100	K	S01				
87	P102	100	K	S01				
88	P103	100	K	S01				
89	P104	100	K	S01				
90	P105	100	K	S01				
91	P106	100	K	S01				
92	P108	100	K	S01				
93	P109	100	K	S01				
94	P110	100	K	S01				
95	P111	100	K	S01				
96	P112	100	K	S01				
97	P113	150	K	S01				
98	P114	100	K	S01				
99	P115	100	K	S01				
100	P116	100	K	S01				
101	P118	100	K	S01				
102	P119	100	K	S01				
103	P120	100	K	S01				
104	P121	100	K	S01				
105	P122	100	K	S01				
106	P123	100	K	S01				
107	P127	100	K	S01				
108	P128	100	K	S01				

9. Description of Hazardous Wastes ***(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)***

Line Number	A. EPA Hazardous Waste No. (Enter code) *(See Note 1)*	B. Estimated Annual Qty of Waste *(See Note 2)*	C. Unit of Measure (Enter Code)	D. PROCESSES *(See Notes 3 and 4)* (1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
109	*P185*	*100*	*K*	*S01*				
110	*P188*	*100*	*K*	*S01*				
111	*P189*	*100*	*K*	*S01*				
112	*P190*	*100*	*K*	*S01*				
113	*P191*	*100*	*K*	*S01*				
114	*P192*	*100*	*K*	*S01*				
115	*P194*	*100*	*K*	*S01*				
116	*P196*	*100*	*K*	*S01*				
117	*P197*	*100*	*K*	*S01*				
118	*P198*	*100*	*K*	*S01*				
119	*P199*	*100*	*K*	*S01*				
120	*P201*	*100*	*K*	*S01*				
121	*P202*	*100*	*K*	*S01*				
122	*P203*	*100*	*K*	*S01*				
123	*P204*	*100*	*K*	*S01*				
124	*P205*	*100*	*K*	*S01*				
125	*U001*	*100*	*K*	*S01*				
126	*U002*	*500*	*K*	*S01*				
127	*U003*	*500*	*K*	*S01*				
128	*U004*	*100*	*K*	*S01*				
129	*U005*	*100*	*K*	*S01*				
130	*U006*	*100*	*K*	*S01*				
131	*U007*	*100*	*K*	*S01*				
132	*U008*	*100*	*K*	*S01*				
133	*U009*	*100*	*K*	*S01*				
134	*U010*	*100*	*K*	*S01*				
135	*U011*	*100*	*K*	*S01*				
136	*U012*	*100*	*K*	*S01*				
137	*U014*	*100*	*K*	*S01*				
138	*U015*	*100*	*K*	*S01*				
139	*U016*	*100*	*K*	*S01*				
140	*U017*	*100*	*K*	*S01*				
141	*U018*	*100*	*K*	*S01*				
142	*U019*	*100*	*K*	*S01*				
143	*U020*	*100*	*K*	*S01*				
144	*U021*	*100*	*K*	*S01*				

9. Description of Hazardous Wastes ***(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)***

Line Number	A. EPA Hazardous Waste No. (Enter code) *(See Note 1)*	B. Estimated Annual Qty of Waste *(See Note 2)*	C. Unit of Measure (Enter Code)	D. PROCESSES *(See Notes 3 and 4)* (1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
145	*U022*	*100*	*K*	*S01*				
146	*U023*	*100*	*K*	*S01*				
147	*U024*	*100*	*K*	*S01*				
148	*U025*	*100*	*K*	*S01*				
149	*U026*	*100*	*K*	*S01*				
150	*U027*	*100*	*K*	*S01*				
151	*U028*	*5,000*	*K*	*S01*				
152	*U029*	*100*	*K*	*S01*				
153	*U030*	*100*	*K*	*S01*				
154	*U031*	*500*	*K*	*S01*				
155	*U032*	*100*	*K*	*S01*				
156	*U033*	*100*	*K*	*S01*				
157	*U034*	*100*	*K*	*S01*				
158	*U035*	*100*	*K*	*S01*				
159	*U036*	*100*	*K*	*S01*				
160	*U037*	*500*	*K*	*S01*				
161	*U038*	*100*	*K*	*S01*				
162	*U039*	*100*	*K*	*S01*				
163	*U041*	*100*	*K*	*S01*				
164	*U042*	*100*	*K*	*S01*				
165	*U043*	*100*	*K*	*S01*				
166	*U044*	*1,000*	*K*	*S01*				
167	*U045*	*100*	*K*	*S01*				
168	*U046*	*100*	*K*	*S01*				
169	*U047*	*100*	*K*	*S01*				
170	*U048*	*100*	*K*	*S01*				
171	*U049*	*100*	*K*	*S01*				
172	*U050*	*100*	*K*	*S01*				
173	*U051*	*100*	*K*	*S01*				
174	*U052*	*100*	*K*	*S01*				
175	*U053*	*100*	*K*	*S01*				
176	*U055*	*100*	*K*	*S01*				
177	*U056*	*500*	*K*	*S01*				
178	*U057*	*500*	*K*	*S01*				
179	*U058*	*100*	*K*	*S01*				
180	*U059*	*100*	*K*	*S01*				

9. Description of Hazardous Wastes ***(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)***

Line Number	A. EPA Hazardous Waste No. (Enter code) *(See Note 1)*	B. Estimated Annual Qty of Waste *(See Note 2)*	C. Unit of Measure (Enter Code)	D. PROCESSES *(See Notes 3 and 4)*				
				(1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
181	*U060*	*100*	*K*	*S01*				
182	*U061*	*2,000*	*K*	*S01*				
183	*U062*	*100*	*K*	*S01*				
184	*U063*	*100*	*K*	*S01*				
185	*U064*	*100*	*K*	*S01*				
186	*U066*	*100*	*K*	*S01*				
187	*U067*	*100*	*K*	*S01*				
188	*U068*	*100*	*K*	*S01*				
189	*U069*	*100*	*K*	*S01*				
190	*U070*	*500*	*K*	*S01*				
191	*U071*	*100*	*K*	*S01*				
192	*U072*	*100*	*K*	*S01*				
193	*U073*	*100*	*K*	*S01*				
194	*U074*	*100*	*K*	*S01*				
195	*U075*	*150*	*K*	*S01*	*T04*			*physical treatment*
196	*U076*	*100*	*K*	*S01*				
197	*U077*	*100*	*K*	*S01*				
198	*U078*	*100*	*K*	*S01*				
199	*U079*	*100*	*K*	*S01*				
200	*U080*	*500*	*K*	*S01*				
201	*U081*	*100*	*K*	*S01*				
202	*U082*	*100*	*K*	*S01*				
203	*U083*	*100*	*K*	*S01*				
204	*U084*	*100*	*K*	*S01*				
205	*U085*	*100*	*K*	*S01*				
206	*U086*	*100*	*K*	*S01*				
207	*U087*	*100*	*K*	*S01*				
208	*U088*	*100*	*K*	*S01*				
209	*U089*	*100*	*K*	*S01*				
210	*U090*	*100*	*K*	*S01*				
211	*U091*	*100*	*K*	*S01*				
212	*U092*	*100*	*K*	*S01*				
213	*U093*	*100*	*K*	*S01*				
214	*U094*	*100*	*K*	*S01*				
215	*U095*	*100*	*K*	*S01*				
216	*U096*	*100*	*K*	*S01*				

9. Description of Hazardous Wastes ***(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)***

Line Number	A. EPA Hazardous Waste No. (Enter code) *(See Note 1)*	B. Estimated Annual Qty of Waste *(See Note 2)*	C. Unit of Measure (Enter Code)	D. PROCESSES *(See Notes 3 and 4)* (1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
217	*U097*	*100*	*K*	*S01*				
218	*U098*	*100*	*K*	*S01*				
219	*U099*	*100*	*K*	*S01*				
220	*U101*	*100*	*K*	*S01*				
221	*U102*	*100*	*K*	*S01*	*T04*			*stabilization/solidification*
222	*U103*	*100*	*K*	*S01*				
223	*U105*	*100*	*K*	*S01*	*T04*			*physical treatment*
224	*U106*	*100*	*K*	*S01*				
225	*U107*	*100*	*K*	*S01*	*T04*			*stabilization/solidification*
226	*U108*	*100*	*K*	*S01*				
227	*U109*	*100*	*K*	*S01*				
228	*U110*	*100*	*K*	*S01*				
229	*U111*	*100*	*K*	*S01*				
230	*U112*	*500*	*K*	*S01*				
231	*U113*	*100*	*K*	*S01*				
232	*U114*	*100*	*K*	*S01*				
233	*U115*	*100*	*K*	*S01*				
234	*U116*	*100*	*K*	*S01*				
235	*U117*	*500*	*K*	*S01*				
236	*U118*	*100*	*K*	*S01*				
237	*U119*	*100*	*K*	*S01*				
238	*U120*	*100*	*K*	*S01*				
239	*U121*	*100*	*K*	*S01*				
240	*U122*	*100*	*K*	*S01*				
241	*U123*	*100*	*K*	*S01*				
242	*U124*	*100*	*K*	*S01*				
243	*U125*	*150*	*K*	*S01*				
244	*U126*	*100*	*K*	*S01*				
245	*U127*	*100*	*K*	*S01*				
246	*U128*	*100*	*K*	*S01*				
247	*U129*	*100*	*K*	*S01*				
248	*U130*	*100*	*K*	*S01*				
249	*U131*	*100*	*K*	*S01*				
250	*U132*	*100*	*K*	*S01*				
251	*U133*	*500*	*K*	*S01*				
252	*U134*	*150*	*K*	*S01*				

9. Description of Hazardous Wastes ***(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)***

Line Number	A. EPA Hazardous Waste No. (Enter code) *(See Note 1)*	B. Estimated Annual Qty of Waste *(See Note 2)*	C. Unit of Measure (Enter Code)	D. PROCESSES *(See Notes 3 and 4)* (1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
253	*U135*	*100*	*K*	*S01*				
254	*U136*	*100*	*K*	*S01*				
255	*U137*	*100*	*K*	*S01*				
256	*U138*	*100*	*K*	*S01*				
257	*U140*	*500*	*K*	*S01*				
258	*U141*	*100*	*K*	*S01*				
259	*U142*	*100*	*K*	*S01*				
260	*U143*	*100*	*K*	*S01*				
261	*U144*	*150*	*K*	*S01*				
262	*U145*	*100*	*K*	*S01*				
263	*U146*	*100*	*K*	*S01*				
264	*U147*	*100*	*K*	*S01*				
265	*U148*	*100*	*K*	*S01*				
266	*U149*	*100*	*K*	*S01*				
267	*U150*	*100*	*K*	*S01*				
268	*U151*	*5,000*	*K*	*S01*	*T04*			*amalgamation, physical treatment*
269	*U152*	*100*	*K*	*S01*				
270	*U153*	*100*	*K*	*S01*				
271	*U154*	*500*	*K*	*S01*				
272	*U155*	*100*	*K*	*S01*				
273	*U156*	*100*	*K*	*S01*				
274	*U157*	*100*	*K*	*S01*				
275	*U158*	*100*	*K*	*S01*				
276	*U159*	*500*	*K*	*S01*				
277	*U160*	*100*	*K*	*S01*				
278	*U161*	*500*	*K*	*S01*				
279	*U162*	*100*	*K*	*S01*				
280	*U163*	*100*	*K*	*S01*				
281	*U164*	*100*	*K*	*S01*				
282	*U165*	*100*	*K*	*S01*				
283	*U166*	*100*	*K*	*S01*				
284	*U167*	*100*	*K*	*S01*				
285	*U168*	*100*	*K*	*S01*				
286	*U169*	*100*	*K*	*S01*				
287	*U170*	*100*	*K*	*S01*				
288	*U171*	*100*	*K*	*S01*				

9. Description of Hazardous Wastes ***(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)***

Line Number	A. EPA Hazardous Waste No. (Enter code) *(See Note 1)*	B. Estimated Annual Qty of Waste *(See Note 2)*	C. Unit of Measure (Enter Code)	D. PROCESSES *(See Notes 3 and 4)* (1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
289	U172	100	K	S01				
290	U173	100	K	S01				
291	U174	100	K	S01				
292	U176	100	K	S01				
293	U177	100	K	S01				
294	U178	100	K	S01				
295	U179	100	K	S01				
296	U180	100	K	S01				
297	U181	100	K	S01				
298	U182	100	K	S01				
299	U183	100	K	S01				
300	U184	100	K	S01				
301	U185	100	K	S01				
302	U186	100	K	S01				
303	U187	100	K	S01				
304	U188	100	K	S01				
305	U189	100	K	S01				
306	U190	100	K	S01				
307	U191	100	K	S01				
308	U192	100	K	S01				
309	U193	100	K	S01				
310	U194	100	K	S01				
311	U196	100	K	S01				
312	U197	100	K	S01				
313	U200	100	K	S01				
314	U201	100	K	S01				
315	U202	100	K	S01				
316	U203	100	K	S01				
317	U204	100	K	S01				
318	U205	100	K	S01				
319	U206	100	K	S01				
320	U207	100	K	S01				
321	U208	100	K	S01				
322	U209	100	K	S01				
323	U210	500	K	S01				
324	U211	500	K	S01				

9. Description of Hazardous Wastes ***(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)***

Line Number	A. EPA Hazardous Waste No. (Enter code) *(See Note 1)*	B. Estimated Annual Qty of Waste *(See Note 2)*	C. Unit of Measure (Enter Code)	D. PROCESSES *(See Notes 3 and 4)* (1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
325	*U213*	*150*	*K*	*S01*				
326	*U214*	*100*	*K*	*S01*				
327	*U215*	*100*	*K*	*S01*				
328	*U216*	*100*	*K*	*S01*				
329	*U217*	*100*	*K*	*S01*				
330	*U218*	*100*	*K*	*S01*				
331	*U219*	*100*	*K*	*S01*				
332	*U220*	*500*	*K*	*S01*				
333	*U221*	*100*	*K*	*S01*				
334	*U222*	*100*	*K*	*S01*				
335	*U223*	*150*	*K*	*S01*				
336	*U225*	*100*	*K*	*S01*				
337	*U226*	*500*	*K*	*S01*				
338	*U227*	*100*	*K*	*S01*				
339	*U228*	*500*	*K*	*S01*				
340	*U234*	*100*	*K*	*S01*	*T04*			*physical treatment*
341	*U235*	*100*	*K*	*S01*				
342	*U236*	*100*	*K*	*S01*				
343	*U237*	*100*	*K*	*S01*				
344	*U238*	*100*	*K*	*S01*				
345	*U239*	*500*	*K*	*S01*				
346	*U240*	*100*	*K*	*S01*				
347	*U243*	*100*	*K*	*S01*				
348	*U244*	*100*	*K*	*S01*				
349	*U246*	*100*	*K*	*S01*				
350	*U247*	*100*	*K*	*S01*				
351	*U248*	*100*	*K*	*S01*				
352	*U249*	*100*	*K*	*S01*				
353	*U271*	*100*	*K*	*S01*				
354	*U278*	*100*	*K*	*S01*				
355	*U279*	*100*	*K*	*S01*				
356	*U280*	*100*	*K*	*S01*				
357	*U328*	*100*	*K*	*S01*				
358	*U353*	*100*	*K*	*S01*				
359	*U359*	*100*	*K*	*S01*				
360	*U364*	*100*	*K*	*S01*				

9. Description of Hazardous Wastes ***(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)***

Line Number	A. EPA Hazardous Waste No. (Enter code) *(See Note 1)*	B. Estimated Annual Qty of Waste *(See Note 2)*	C. Unit of Measure (Enter Code)	D. PROCESSES *(See Notes 3 and 4)* (1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
361	U367	100	K	S01				
362	U372	100	K	S01				
363	U373	100	K	S01				
364	U387	100	K	S01				
365	U389	100	K	S01				
366	U394	100	K	S01				
367	U395	100	K	S01				
368	U404	100	K	S01				
369	U409	100	K	S01				
370	U410	100	K	S01				
371	U411	100	K	S01				
372	F001	200,000	K	S01	T04			macroencapsulation, physical treatment
373	F002	250,000	K	S01	T04			macroencapsulation, physical treatment
374	F003	275,000	K	S01	T04	X01		macroencapsulation, physical treatment, open burning
375	F004	7,500	K	S01	T04			macroencapsulation, physical treatment
376	F005	275,000	K	S01	T04			macroencapsulation, physical treatment
377	F006	2,000	K	S01				
378	F007	2,000	K	S01				
379	F008	2,000	K	S01				
380	F009	100	K	S01				
381	F010	100	K	S01				
382	F011	100	K	S01				
383	F012	100	K	S01				
384	F027	100	K	S01				
385	F039	50,000	K	S01				
386	D001	75,000	K	S01	T04	X01		thermal deactivation, chemical deactivation, physical treatment, open burning
387	D002	75,000	K	S01	T04			chemical deactivation, physical treatment
388	D003	100,000	K	S01	T04	X01		thermal deactivation, chemical deactivation, physical treatment, open burning
389	D004	100,000	K	S01	T04			stabilization/solidification, macroencapsulation, physical treatment
390	D005	100,000	K	S01	T04			chemical deactivation, stabilization/solidification, macroencapsulation, physical treatment
391	D006	100,000	K	S01	T04			stabilization/solidification, macroencapsulation, physical treatment
392	D007	200,000	K	S01	T04			stabilization/solidification, macroencapsulation, physical treatment

9. Description of Hazardous Wastes ***(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)***

Line Number	A. EPA Hazardous Waste No. (Enter code) *(See Note 1)*	B. Estimated Annual Qty of Waste *(See Note 2)*	C. Unit of Measure (Enter Code)	D. PROCESSES *(See Notes 3 and 4)* (1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
393	*D008*	*250,000*	*K*	*S01*	*T04*			*stabilization/solidification, macroencapsulation, physical treatment*
394	*D009*	*100,000*	*K*	*S01*	*T04*			*stabilization/solidification, macroencapsulation, amalgamation, physical treatment*
395	*D010*	*50,000*	*K*	*S01*	*T04*			*stabilization/solidification, macroencapsulation, physical treatment*
396	*D011*	*100,000*	*K*	*S01*	*T04*			*stabilization/solidification, macroencapsulation, physical treatment*
397	*D012*	*100*	*K*	*S01*				
398	*D013*	*100*	*K*	*S01*				
399	*D014*	*100*	*K*	*S01*				
400	*D015*	*100*	*K*	*S01*				
401	*D016*	*100*	*K*	*S01*				
402	*D017*	*100*	*K*	*S01*				
403	*D018*	*5,000*	*K*	*S01*	*T04*			*physical treatment, macroencapsulation*
404	*D019*	*2,000*	*K*	*S01*	*T04*			*physical treatment, macroencapsulation*
405	*D020*	*2,000*	*K*	*S01*	*T04*			*physical treatment, macroencapsulation*
406	*D021*	*2,000*	*K*	*S01*	*T04*			*physical treatment, macroencapsulation*
407	*D022*	*5,000*	*K*	*S01*	*T04*			*physical treatment, macroencapsulation*
408	*D023*	*2,000*	*K*	*S01*	*T04*			*physical treatment, macroencapsulation*
409	*D024*	*2,000*	*K*	*S01*	*T04*			*physical treatment, macroencapsulation*
410	*D025*	*2,000*	*K*	*S01*	*T04*			*physical treatment, macroencapsulation*
411	*D026*	*2,000*	*K*	*S01*	*T04*			*physical treatment, macroencapsulation*
412	*D027*	*5,000*	*K*	*S01*	*T04*			*physical treatment, macroencapsulation*
413	*D028*	*5,000*	*K*	*S01*	*T04*			*physical treatment, macroencapsulation*
414	*D029*	*2,000*	*K*	*S01*	*T04*			*physical treatment, macroencapsulation*
415	*D030*	*2,000*	*K*	*S01*	*T04*			*physical treatment, macroencapsulation*
416	*D031*	*2,000*	*K*	*S01*	*T04*			*physical treatment, macroencapsulation*
417	*D032*	*15,000*	*K*	*S01*	*T04*			*physical treatment, macroencapsulation*
418	*D033*	*5,000*	*K*	*S01*	*T04*			*physical treatment, macroencapsulation*
419	*D034*	*5,000*	*K*	*S01*	*T04*			*physical treatment, macroencapsulation*
420	*D035*	*5,000*	*K*	*S01*	*T04*			*physical treatment, macroencapsulation*
421	*D036*	*5,000*	*K*	*S01*	*T04*			*physical treatment, macroencapsulation*
422	*D037*	*2,000*	*K*	*S01*	*T04*			*physical treatment, macroencapsulation*
423	*D038*	*5,000*	*K*	*S01*	*T04*			*physical treatment, macroencapsulation*
424	*D039*	*15,000*	*K*	*S01*	*T04*			*physical treatment, macroencapsulation*
425	*D040*	*25,000*	*K*	*S01*	*T04*			*physical treatment, macroencapsulation*
426	*D041*	*2,000*	*K*	*S01*	*T04*			*physical treatment, macroencapsulation*
427	*D042*	*5,000*	*K*	*S01*	*T04*			*physical treatment, macroencapsulation*

9. Description of Hazardous Wastes ***(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)***

Line Number	A. EPA Hazardous Waste No. (Enter code) *(See Note 1)*	B. Estimated Annual Qty of Waste *(See Note 2)*	C. Unit of Measure (Enter Code)	D. PROCESSES *(See Notes 3 and 4)* (1) PROCESS CODES (Enter Code)				(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
428	*D043*	*5,000*	*K*	*S01*	*T04*			*physical treatment, macroencapsulation*
429	*D004*	*31,800*	*Y*	*S99*				*corrective action containment cell*
	D005							*included with above*
	D006							*included with above*
	D007							*included with above*
	D008							*included with above*
	D009							*included with above*
	D010							*included with above*
	D011							*included with above*
	D021							*included with above*
	D023							*included with above*
	D027							*included with above*
	D028							*included with above*
	D032							*included with above*
	D033							*included with above*
	D034							*included with above*
	D035							*included with above*
	D036							*included with above*
	D037							*included with above*
	D039							*included with above*
	D040							*included with above*
	D041							*included with above*
	D042							*included with above*
	F001							*included with above*
	F002							*included with above*
	F003							*included with above*
	F004							*included with above*
	F005							*included with above*

9. Description of Hazardous Wastes ***(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)***					
Line Number	**A. EPA Hazardous Waste No. (Enter code)** *(See Note 1)*	**B. Estimated Annual Qty of Waste** *(See Note 2)*	**C. Unit of Measure (Enter Code)**	**D. PROCESSES** *(See Notes 3 and 4)*	
				(1) PROCESS CODES (Enter Code)	**(2) PROCESS DESCRIPTION (If a code is not entered in D(1))**

NOTE 1 (applicable to Lines 1-428): Waste types and volumes are highly variable due to the large number of one-time activities and the nature of the research and development activities at SNL. For clarity, each waste number is listed only once. Individual wastes may have more than one number.

NOTE 2 (applicable to lines 1-428): The estimated annual quantity of waste with a particular waste number includes the full quantity of each waste with that number, even if the waste also has other applicable numbers. For example, 10 kg of waste F001 F002 and 10 kg of waste F002 would be listed on this form as 10 kg of F001 and 20 kg of F002.

NOTE 3 (applicable to lines 1-428): The treatment methods listed for each hazardous waste number are the methods that are appropriate for that waste number. Wastes with multiple numbers may undergo one or more types of treatment at SNL/NM for some or all of the characteristics and/or constituents. Wastes are then sent to off-site TSDFs for further treatment as needed before disposal. For example, wastes containing explosives and metals (e.g., barium, chromium, and lead) with numbers D001, D003, D005, D007, and D008 are treated on site to deactivate the explosive and render them nonignitable. The quantities of these wastes are included in the quantities shown in Section C for D001, D003, D005, D007, and D008. Thermal deactivation is listed as a process in Section D for D001 and D003 because the on-site treatment addresses these hazardous waste constituents and characteristics. Thermal deactivation is not listed as a process in Section D for D005, D007, or D008 because these hazardous waste constituents and characteristics are not treated when the waste is subjected to thermal deactivation.

NOTE 4 (applicable to Line 429 only): The Corrective Action Management Unit containment cell holds remediation wastes generated during corrective action at SNL/NM. The cell has been closed and is undergoing post-closure care.

10. Map *See Figure B-1*
Attach to this application a topographical 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.
11. Facility Drawing *See Appendix B*
All existing facilities must include a scale drawing of the facility (see instructions for more detail).
12. Photographs *See Appendix B*
All existing facilities must include photographs (aerial or ground-level) that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas (see instructions for more detail).
13. Comments

APPENDIX A

ACTIVE ENVIRONMENTAL PERMITS

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Sandia National Laboratories/New Mexico
Active Environmental Permits as of 3/31/12

Permit Type and/or Facility Name	Permit Number	Issue Date	Expiration Date	Regulatory Agency
SEWER WASTEWATER				
General	2069 A-7	07/17/08	02/28/13	COA
General	2069 F-7	06/17/10	03/31/14	COA
Microelectronics Development Laboratory	2069 G-7	05/05/10	02/28/15	COA
General	2069 I-6	06/15/10	08/31/14	COA
General	2069 K-6	05/25/10	10/31/14	COA
Center for Integrated Nanotechnology	2238A	05/25/11	04/30/16	COA
SURFACE DISCHARGE				
Pulsed Power Development Facilities (Discharge Plan)	DP-530	09/12/07	09/12/12	NMED
STORM WATER				
National Pollutant Discharge Elimination System Multi-Sector General Permit	NMR05GQ63 NMR05GP29	10/15/09	09/29/13	EPA
Mixed Waste Landfill Cover	NMR15EZ15 NMR15EZ62	05/18/06	active until terminated	EPA
Thunder Range	NMR15G365 NMR15G366	06/03/08	12/31/13	EPA
TA II Escarpment	NMR10G475	08/12/08	active until terminated	EPA
Large Scale Liquid Natural Gas Pool Fire Experiment	NMR10G703	10/24/08	active until terminated	EPA
9940 Complex	NMR10HC79 NMR10HC78	09/01/09	active until terminated	EPA
Technical Capabilities Revitalization Phase II – Mechanical Shock Tube Project	NMR10GY81	04/01/10	active until terminated	EPA
National Solar Thermal Test	NMR10H628	12/07/10	active until terminated	EPA

See notes at end of table

Sandia National Laboratories/New Mexico
Active Environmental Permits as of 3/31/12 (Continued)

Permit Type and/or Facility Name	Permit Number	Issue Date	Expiration Date	Regulatory Agency
ECOLOGICAL				
New Mexico Department of Game and Fish, for Scientific/Educational Purposes, Authorization for Taking of Protected Wildlife	2931	3/18/11	12/31/12	New Mexico Department of Game and Fish
Fish and Wildlife Special Purpose - Salvage	MB02907A-0	02/12/10	03/31/13	U.S. Fish and Wildlife Service
Fish and Wildlife Special Purpose – Relocate	MB02872A-0	02/11/10	12/31/12	U.S. Fish and Wildlife Service
New Mexico Department of Game and Fish Nuisance Permit	N/A	N/A	03/01/2013	New Mexico Department of Game and Fish
UNDERGROUND STORAGE TANKS				
20,000 gal oil storage tank	[a,d]	07/01/11	06/30/12	NMED PSTB
20,000 gal oil storage tank	[a,d]	07/01/11	06/30/12	NMED PSTB
ABOVEGROUND STORAGE TANKS				
2,000 gal storage tank	2599	07/01/11	06/30/12	NMED PSTB
5,000 gal storage tank	2599	07/01/11	06/30/12	NMED PSTB
5,500 gal storage tank	2599	07/01/11	06/30/12	NMED PSTB

See notes at end of table

Sandia National Laboratories/New Mexico
Active Environmental Permits as of 3/31/12 (Continued)

Permit Type and/or Facility Name	Permit Number	Issue Date	Expiration Date	Regulatory Agency
RCRA				
Operating Permit for the Hazardous Waste Management Facility Modules I - III	NM5890110518-1	08/06/92	08/06/02 [a, b]	NMED
Operating Permit Module IV	NM5890110518-1	08/26/93	09/20/02 [a, b]	EPA/NMED
Operating Permit for the Thermal Treatment Facility Modules I - III	NM5890110518-2	11/04/94	11/04/04 [a, b]	NMED
General Part A Permit Application Request Storage and/or treatment of the hazardous component of mixed waste at seven waste management Units.	NM5890110518	First submitted 8/90 Rev. 10 3/22/07	Pending Review (No expiration date)	NMED
Class III Permit Modification for the Management of Hazardous Remediation Waste in the Corrective Action Management Unit (CAMU), Technical Area III	NM5890110518	09/25/97	09/20/02 [a, b, c]	NMED
Comprehensive Part B Permit Request Storage and/or treatment of RCRA-regulated waste at nine waste management Units.	NM5890110518	02/06/02 [c]	Pending Review (No expiration date)	NMED
Post-Closure Care Permit for the Chemical Waste Landfill, Technical Area III	NM5890110518	Issue date 10/15/2009 Effective date 06/02/11	06/02/21	NMED

See notes at end of table

Sandia National Laboratories/New Mexico
Active Environmental Permits as of 3/31/12 (Continued)

Permit Type and/or Facility Name	Permit Number	Issue Date	Expiration Date	Regulatory Agency
AIR (Open Burn Permits)				
Large Burn Pool	10-0056	05/01/12	05/31/12	COA
Thermal Treatment Facility	12-0008	01/01/12	12/31/12	COA
Terminal Ballistics Facility - Explosive Applications	12-0004	01/01/12	12/31/12	COA
Burn Site (Igloo)	12-0010	01/01/12	12/31/12	COA
Burn Site (Wood Crib)	12-0011	01/01/12	12/31/12	COA
Terminal Ballistics Facility - Propellant Applications	12-0005	01/01/12	12/31/12	COA
Burn Site/Thermal Test Complex	12-0003	01/01/12	12/31/12	COA
DETS Complex (9940)	12-0009	01/01/07	12/31/07	COA
Terminal Ballistics Facility – Thermite Applications	12-0006	01//1/12	12/31/12	COA
9930 Test Site – Explosives Testing	12-0002	01/01/12	12/31/12	COA
9920 Test Site	12-0001	01/01/12	12/31/12	COA
Thunder Range	12-0007	01/01/12	12/31/12	COA
AIR (Permits & Registrations)				
Air Quality Emission Sources	515	Pending	Pending	COA
Document Disintegrator Facility	144-M1	09/28/06	[d]	COA
Fire Laboratory used for the Authentication of Modeling and Experiments	196[e]	05/19/88	[d]	COA
Neutron Generator Facility	374-M2	12/06/10	[d]	COA
Standby diesel generators (four)	402	05/07/96	[d]	COA
Radioactive & Mixed Waste Management Facility	415-M2-RV1	09/23/11	[d]	COA
Explosive Component Facility	547-RV1[e]	09/27/11	[d]	COA
Thermal Test Complex	1712	04/09/04	[d]	COA
Center for Integrated Nanotechnology	1725	10/11/04	[d]	COA
Microsystems and Engineering Sciences	1820-M1	03/08/11	[d]	COA
TA-1 Emergency Generator	1828[e]	09/28/06	[d]	COA
Advanced Manufacturing Prototype Facility	1406-M1[e]	05/28/08		COA
Emergency Generator	924	05/05/98	[d]	COA

See notes at end of table

Sandia National Laboratories/New Mexico
Active Environmental Permits as of 3/31/12 (Continued)

Permit Type and/or Facility Name	Permit Number	Issue Date	Expiration Date	Regulatory Agency
Processing and Environmental Technology Laboratory	925-M1	03/05/01	[d]	COA
Processing and Environmental Technology Laboratory	936-M1[e]	05/28/08	[d]	COA
Building 869 Hazardous Air Pollutant Registration	1905[e]	05/28/08	[d]	COA
Sled Track HAP Registration	1904[e]	02/01/10	[d]	COA
National Thermal Solar Test Facility HAP Registration	1903[e]	05/28/08	[d]	COA
Advanced Manufacturing Processes Laboratory HAP Registration	1888-RV1[e]	05/11/11	[d]	COA
Site-Wide Chemical Registration	1901-RV1[e]	10/24/11	[d]	COA
Building 865 HAP Registration	1902[e]	05/28/08	[d]	COA
Weapons Integration Facility Boilers	1823[e]	04/01/08	[d]	COA
SDF Emergency Generator	1900	01/11/08	[d]	COA
Strategic Defense Facility Emergency Generator	1930	04/08/09	[d]	COA
Building 833 Emergency Generator	2097	09/01/10	[d]	COA
Building 802 Source Registration	2109 [e]	10/28/10	[d]	COA
Building 804 Source Registration	2110 [e]	11/08/10	[d]	COA
Building 810 Source Registration	2111 [e]	11/08/10	[d]	COA
Building 823 Source Registration	2112 [e]	11/08/10	[d]	COA
Building 840 Source Registration	2113 [e]	11/08/10	[d]	COA
Building 857 Source Registration	2114 [e]	11/08/10	[d]	COA
Building 860 Source Registration	2115 [e]	11/08/10	[d]	COA
Building 890 Source Registration	2117 [e]	11/29/10	[d]	COA
Building 887 Source Registration	2118 [e]	11/29/10	[d]	COA
Building 891 Source Registration	2119 [e]	11/29/10	[d]	COA
Building 892 Source Registration	2120 [e]	11/29/10	[d]	COA
Building 894 Source Registration	2121 [e]	11/29/10	[d]	COA
Building 897 Source Registration	2122 [e]	11/29/10	[d]	COA
Building 895 Source Registration	2170 [e]	09/27/11	[d]	COA
Building 960 Source Registration	2169 [e]	09/27/11	[d]	COA
Building 800 Source Registration	2171 [e]	09/27/11	[d]	COA
Building 981 Source Registration	2175 [e]	09/22/11	[d]	COA

See notes at end of table

Sandia National Laboratories/New Mexico
Active Environmental Permits as of 3/31/12 (Concluded)

Permit Type and/or Facility Name	Permit Number	Issue Date	Expiration Date	Regulatory Agency
AIR (Fugitive Dust Control and Demolition)				
Borrow Site Cell No. 1	P08-0004	12/11/07	12/11/12	COA
Moving Vehicle Test	P08-0005	12/10/07	12/10/12	COA
TCR Phase 2	5356-C	03/20/12	08/31/13	COA
Thunder Range – Range 6	P08-0061	07/18/08	07/18/13	COA
Thunder Range – Range 1	P08-0062	08/07/08	08/07/13	COA
Thunder Range – Range 5	P08-0063	08/07/08	08/07/13	COA
Thunder Range – Range 2	P08-0064	08/07/08	08/07/13	COA
DETS Complex – 9940	P09-0014	07/08/09	07/08/14	COA
DETS – West	P09-0015	07/09/09	07/09/14	COA
DETS – East	P09-0016	07/09/09	07/09/14	COA
Thunder Range – Range 8	P09-0018	08/14/09	08/14/14	COA
Thunder Range – Range 7	P09-0021	12/22/09	12/22/14	COA
Thunder Range – Range 4	P09-0022	12/22/09	12/22/14	COA
DETS – South	P10-0018	11/19/10	11/19/15	COA
Borrow Pit Cell 3	10-683-4160	05/01/09	04/28/14	COA
Mixed Waste Landfill Cover	10-683-4161	05/01/09	04/28/14	COA
Large Scale LNG Test	1009-626-3732	05/05/07	05/05/12	COA
ARRA Projects at the National Solar Thermal Test Facility	10-564-4405	10/20/10	10/20/15	COA
Building 894 Cooling Tower Construction	10-819-4546	11/01/11	11/01/12	COA

NOTES:

a Applied for permit or registration renewal, not yet received.
b Current permit remains in effect while application is under review.
c Application for modification of CAMU operating permit for post-closure care submitted in 4/19/04, undergoing NMED review.
d No expiration date
e Registration, no permit required.
f Number not known

COA = City of Albuquerque
EPA = U.S. Environmental Protection Agency
NMED = New Mexico Environment Department
RCRA = Resource Conservation and Recovery Act
PSTB = Petroleum Storage Tank Bureau

APPENDIX B

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

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LOCATION-SPECIFIC PROCESS CODE LISTINGS, DESIGN CAPACITIES, AND ANNUAL QUANTITIES

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

Description	Capacity	Associated Structure/Building
Line 1 S01 Container Storage [a]		
Container storage area	59,950 gallons	Building 958
Container storage area	7,590 gallons	Building 959
Container storage area	5,000 gallons	Modular Storage Building 958B
Container storage area	5,000 gallons	Modular Storage Building 958C
Total S01	**77,540 gallons**	

See footnotes at end of section

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

Description	Capacity	Annual Quantity	Associated Structure/Building
Line 5 X01 Treatment: Open Burning [b]			
Open burning of explosive waste	20.8 gallons/pan 190 pounds/pan	9,500 pounds/year	South of Building 6715
Total X01	**20.8 gallons/pan** **190 pounds/pan**	**9,500 pounds/year**	

See footnotes at end of section

Explanation of Process Code Listings, Design Capacities, and Annual Quantities at the Radioactive and Mixed Waste Management Facility (RMWMF)

Description	Capacity	Associated Structure/Building
Line 1 S01 Container Storage [a]		
Container storage area	13,420 gallons	Building 6920
Container storage area	7,810 gallons	Building 6921
Container storage area	83,160 gallons	Building 6925
Container storage area	83,160 gallons	Building 6926
Container storage area	1,100 gallons	Modular Storage Building TP150
Container storage area	1,100 gallons	Modular Storage Building TP153
Container storage area	19,800 gallons	Asphalt area N, E, and W of Building 6920
Total S01	**209,550 gallons**	

See footnotes at end of section

Explanation of Process Code Listings, Design Capacities, and Annual Quantities at the Radioactive and Mixed Waste Management Facility (RMWMF) (Continued)

Description	Capacity	Annual Quantity	Associated Structure/Building
Line 3 T04 Other Treatment [c, d, e, f]			
Chemical deactivation	65 gallons/day	3,000 gallons/year	Building 6920, Building 6921
Macroencapsulation	13,800 gallons/day	138,000 gallons/year	Building 6920, Building 6921, Building 6925
Stabilization and solidification	550 gallons/day	6,000 gallons/year	Building 6920, Building 6921
Thermal deactivation	80 pounds/day	150 pounds/year	Building 6920, Building 6921
Amalgamation	16 pounds/day	100 pounds/year	Building 6920, Building 6921
Physical treatment	5,000 pounds/day	50,000 pounds/year	Building 6920, Building 6921
Total T04	**14,415 gallons/day and 5,096 pounds/day**	**147,000 gallons/year and 50,250 pounds/year**	

See footnotes at end of section

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

Description	Capacity	Associated Structure/Building
Line 1 S01 Container Storage [a]		
Container storage area	3,520 gallons	Building 6597
Storage silos	1,455 gallons	Building 6597
Hot cell	900 gallons	Building 6597
Fume hood	110 gallons (capacity included in work area)	Building 6597
Work area	2,200 gallons	Building 6597
Total S01	**8,075 gallons**	

Description	Capacity	Annual Quantity	Associated Structure/Building
Line 2 T04 Other Treatment [c, d, f]			
Chemical deactivation	55 gallons/day	2,000 gallons/ year	Building 6597
Macroencapsulation	55 gallons/day	6,000 gallons/year	Building 6597
Stabilization and solidification	550 gallons/day	2,000 gallons/year	Building 6597
Physical treatment	5,000 pounds/day	50,000 pounds/year	Building 6597
Total T04	**660 gallons/day and 5,000 pounds/day**	**10,000 gallons/year and 50,000 pounds/year**	

See footnotes at end of section

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

Description	Capacity	Associated Structure/Building
Line 1 S01 Container Storage [a]		
Container storage area	25,080 gallons	Type B Bunker Bunker 37034
Container storage area	35,200 gallons	Type C Bunker Bunker 37118
Container storage area	55,440 gallons	Type D Bunkers Bunkers 37045, 37055, and 37057
Total S01	**115,720 gallons**	

See footnotes at end of section

Explanation of Process Code Listings and Design Capacities for the Corrective Action Management Unit

Description	Capacity	Associated Structure/Building
Line 6 S99 Containment [g]		
Closed Containment Cell	31,800 cubic yards	Corrective Action Management Unit Containment Cell
Total S99	**31,800 cubic yards**	

See footnotes at end of section

Footnotes for Process Codes and Capacities

[a] Wastes are stored in a variety of containers, including but not limited to large boxes, 55-gallon drums, and smaller containers.

[b] The quantity of waste undergoing treatment at any one time cannot exceed the 20.8-gallon capacity of the burn pan.

[c] Wastes are treated by stabilization/solidification, chemical deactivation, and amalgamation in a variety of containers, including 55-gallon drums, 5-gallon buckets, laboratory glassware, and other containers as appropriate for the process. Some chemical deactivation is not conducted in containers.

[d] Wastes are placed in suitable containers and macroencapsulated. The container size is determined by the quantity of waste requiring treatment and the macroencapsulation process. Containers include but are not limited to shipping containers (volume 13,800 gallons), 55-gallon drums, and smaller containers. Liquid wastes are not treated through macroencapsulation; the volume of waste treated is equivalent to the number of gallons listed.

[e] Wastes are placed in the thermal deactivation equipment and treated. The time required to complete treatment depends on the waste.

[f] Physical treatment volumes depend on the size of the equipment or other item undergoing treatment (e.g., size reduction, separation). Volumes vary widely. If appropriate, the treatment is conducted in containers.

[g] During operation of the Corrective Action Management Unit (2001-2003), remediation wastes (soils and residues) were stored, treated as needed, and placed in the containment cell. The Unit was closed in 2003. The closed containment cell is undergoing post-closure care.

FIGURES

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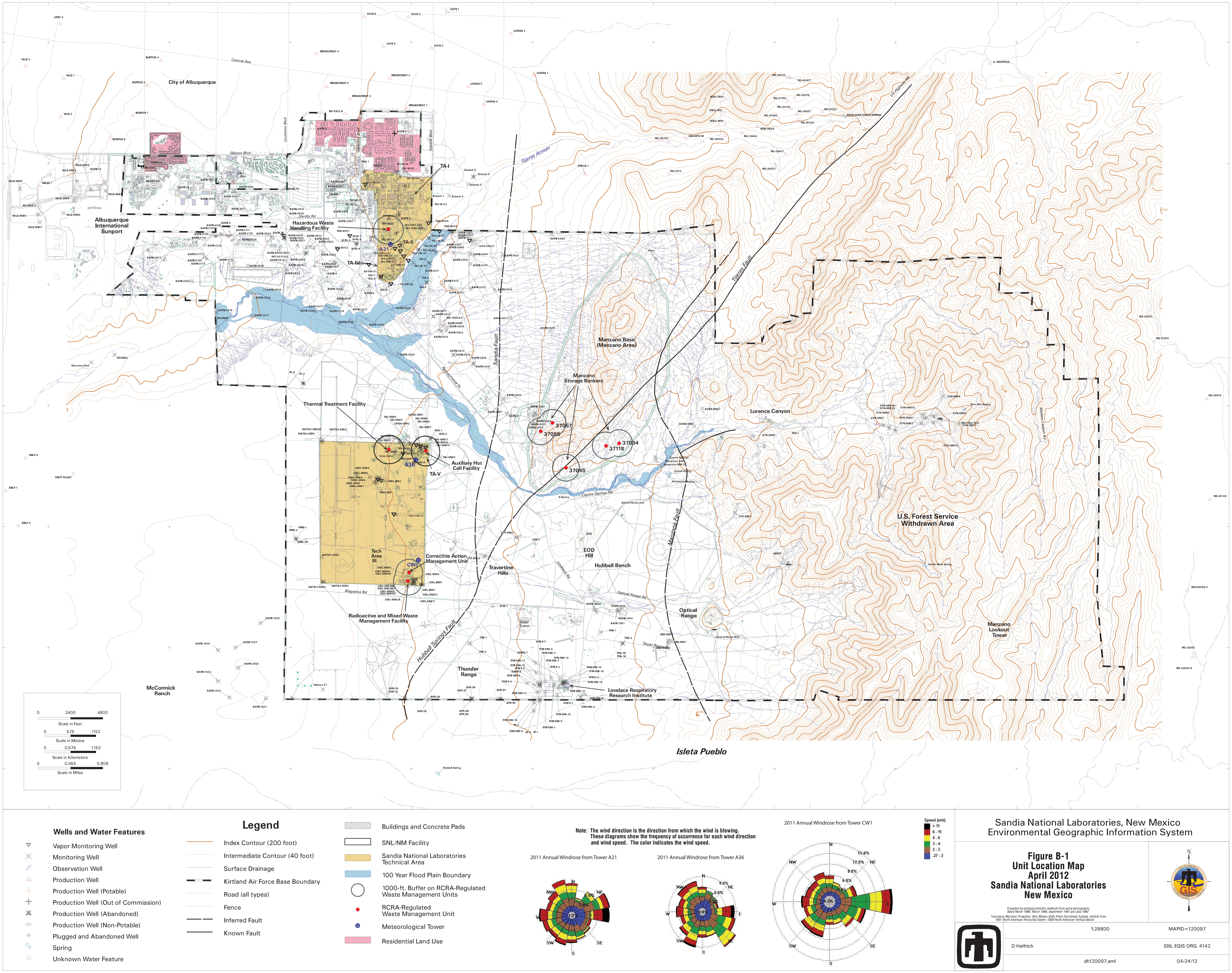

City of Albuquerque
Albuquerque International Sunport
Hazardous Waste Handling Facility
TA-I
TA-II
TA-IV
TA-V
A21
A36
CW1
Tijeras Arroyo
Tijeras Fault
Sandia Fault
Manzano Fault
Hubbell Springs Fault
Manzano Base (Manzano Area)
Manzano Storage Bunkers
37057
37055
37034
37118
37045
Lurance Canyon
Thermal Treatment Facility
Auxiliary Hot Cell Facility
Tech Area III
Corrective Action Management Unit
Travertine Hills
EOD Hill
Hubbell Bench
Optical Range
Radioactive and Mixed Waste Management Facility
Thunder Range
Lovelace Respiratory Research Institute
McCormick Ranch
U.S. Forest Service Withdrawn Area
Manzano Lookout Tower
Isleta Pueblo
Scale in Feet
Scale in Meters
Scale in Kilometers
Scale in Miles
Legend
Wells and Water Features
Vapor Monitoring Well
Monitoring Well
Observation Well
Production Well
Production Well (Potable)
Production Well (Out of Commission)
Production Well (Abandoned)
Production Well (Non-Potable)
Plugged and Abandoned Well
Spring
Unknown Water Feature
Index Contour (200 foot)
Intermediate Contour (40 foot)
Surface Drainage
Kirtland Air Force Base Boundary
Road (all types)
Fence
Inferred Fault
Known Fault
Buildings and Concrete Pads
SNL/NM Facility
Sandia National Laboratories Technical Area
100 Year Flood Plain Boundary
1000-ft. Buffer on RCRA-Regulated Waste Management Units
RCRA-Regulated Waste Management Unit
Meteorological Tower
Residential Land Use
Note: The wind direction is the direction from which the wind is blowing. These diagrams show the frequency of occurrence for each wind direction and wind speed. The color indicates the wind speed.
2011 Annual Windrose from Tower A21
2011 Annual Windrose from Tower A36
2011 Annual Windrose from Tower CW1
Speed (m/s)
> 11
6 - 11
4 - 6
3 - 4
2 - 3
.27 - 2
Sandia National Laboratories, New Mexico
Environmental Geographic Information System
Figure B-1
Unit Location Map
April 2012
Sandia National Laboratories
New Mexico
Compiled by photogrammetric methods from aerial photography dated March 1989, March 1990, September 1991 and July 1992
Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone
1927 North American Horizontal Datum, 1929 North American Vertical Datum
1:28800
MAPID=120097
D Helfrich
SNL EGIS ORG. 4142
dh120097.aml
04/24/12

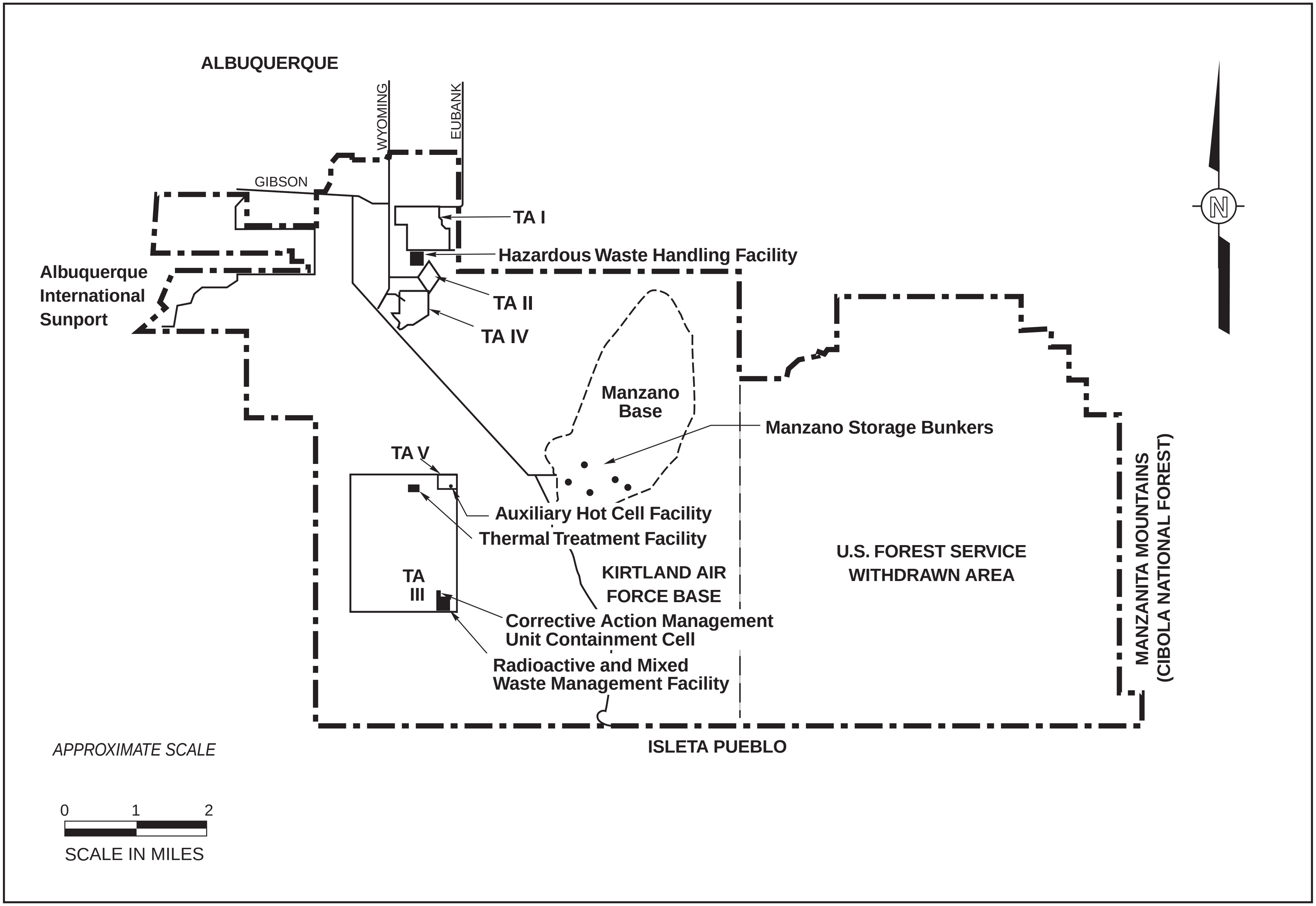


Figure B-2

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

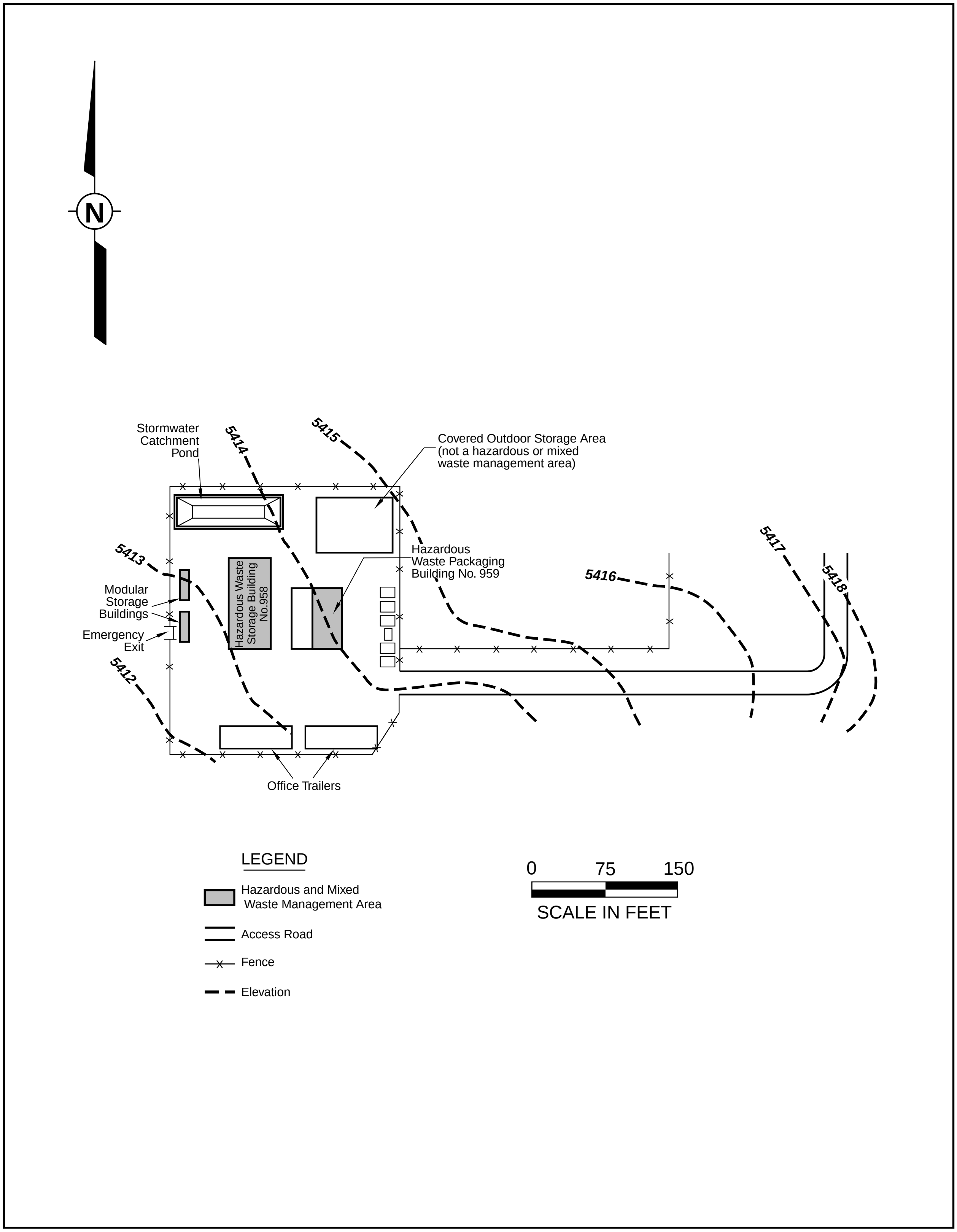
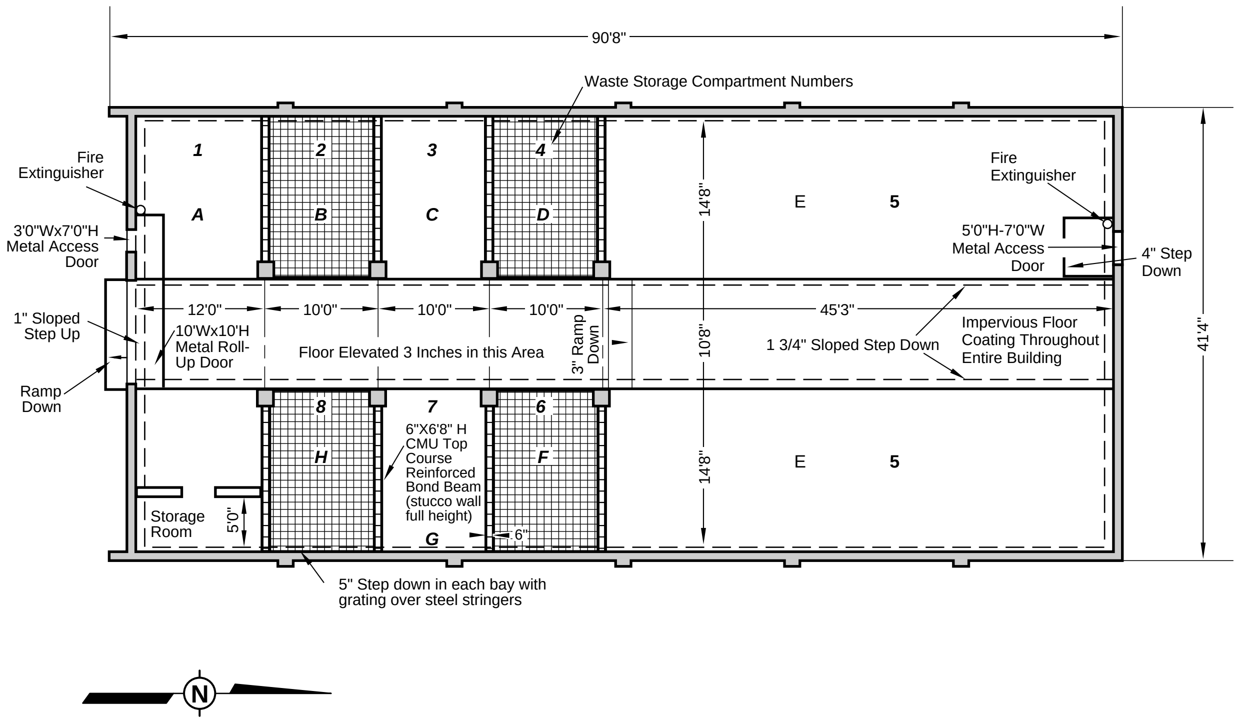


Figure B-3

Hazardous Waste Handling Facility,
Resource Conservation and Recovery Act-
Regulated Waste Management Areas



Typical Waste Segregation Groups

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

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

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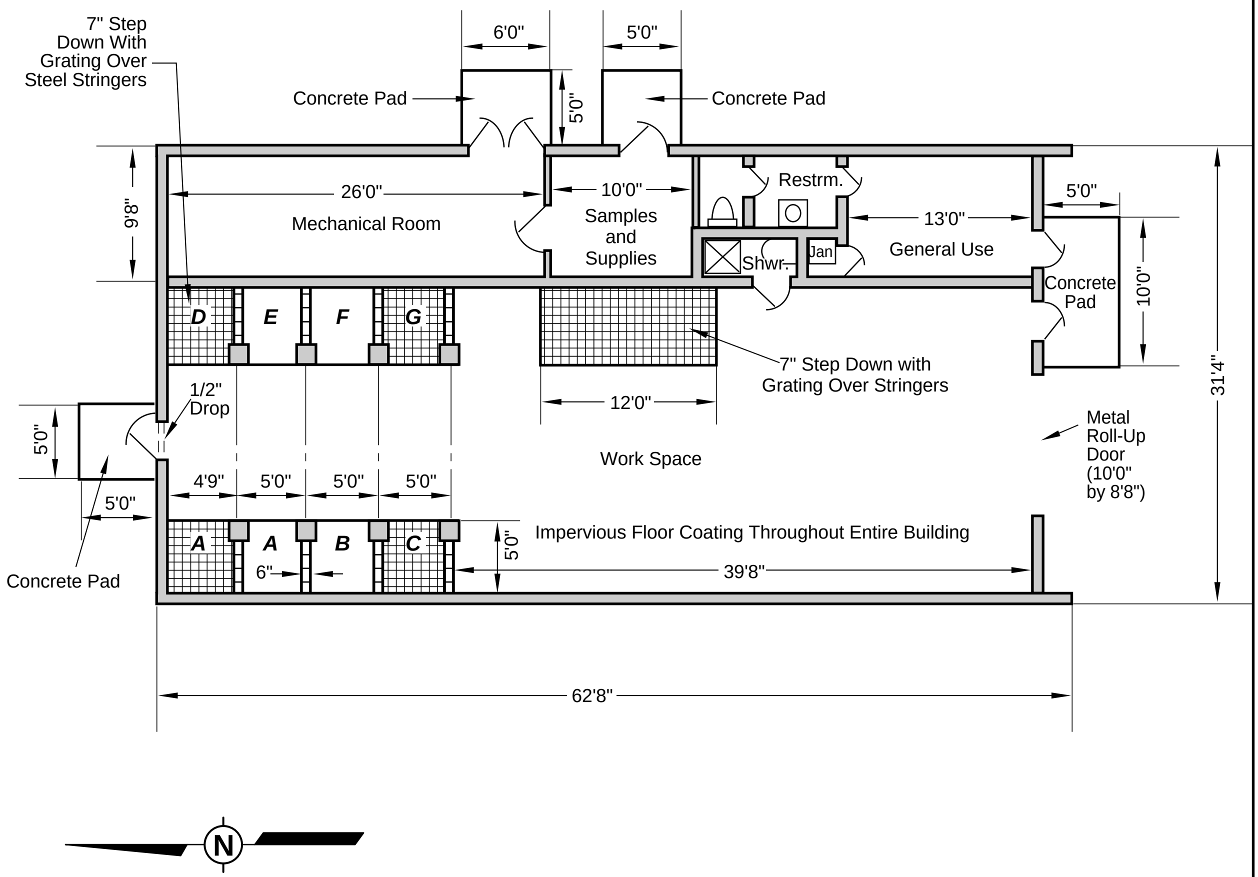
Figure B-4
Hazardous Waste Storage Building (Building 958), Floor Plan



Typical Waste Segregation Groups

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

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

843887.01000000 A120

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

Mapid=120102b 04/24/12 SNL EGIS ORG. 4142 DHelfrich dh120102b.aml

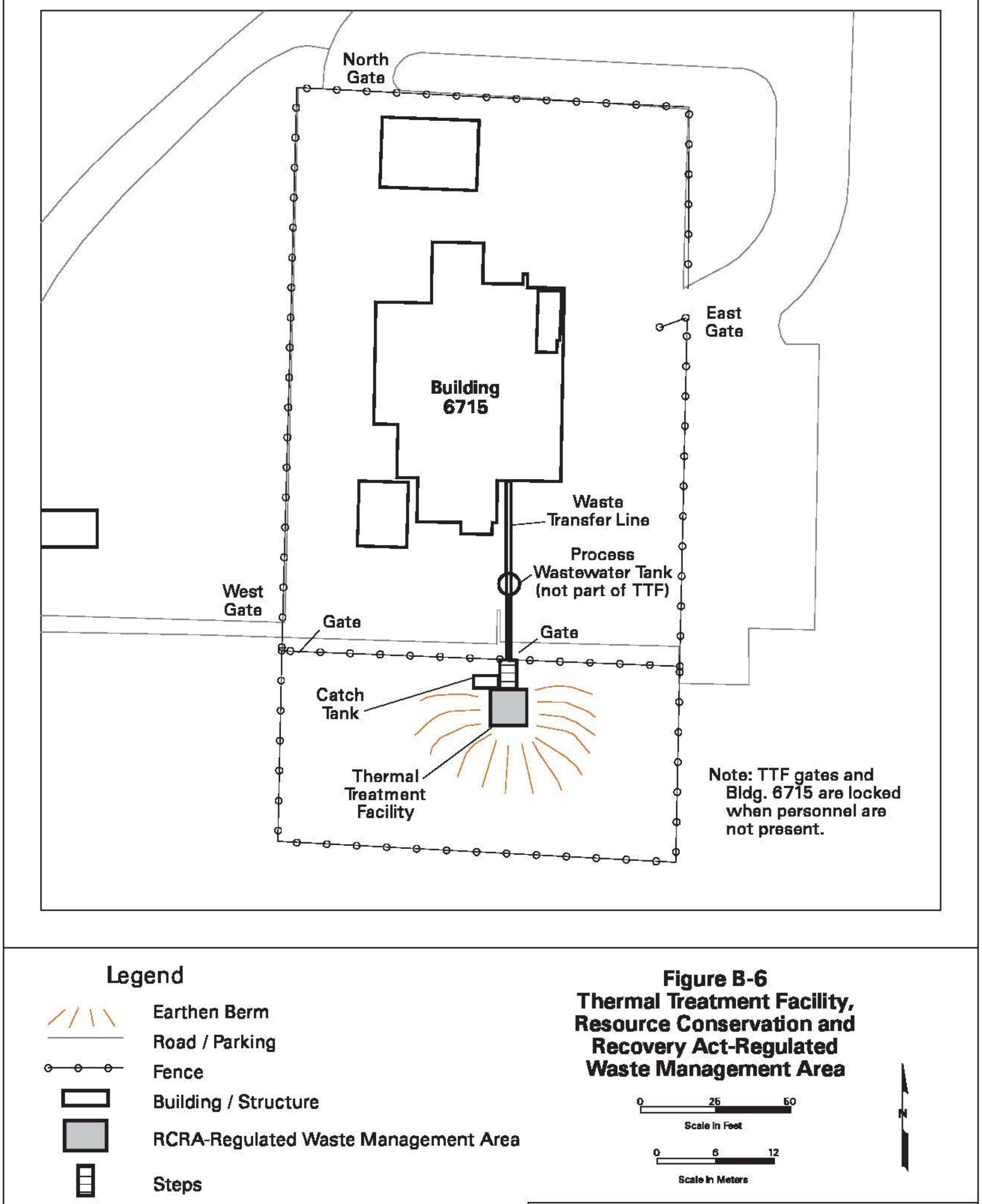


Figure B-6
Thermal Treatment Facility, Resource Conservation and Recovery Act-Regulated Waste Management Area

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

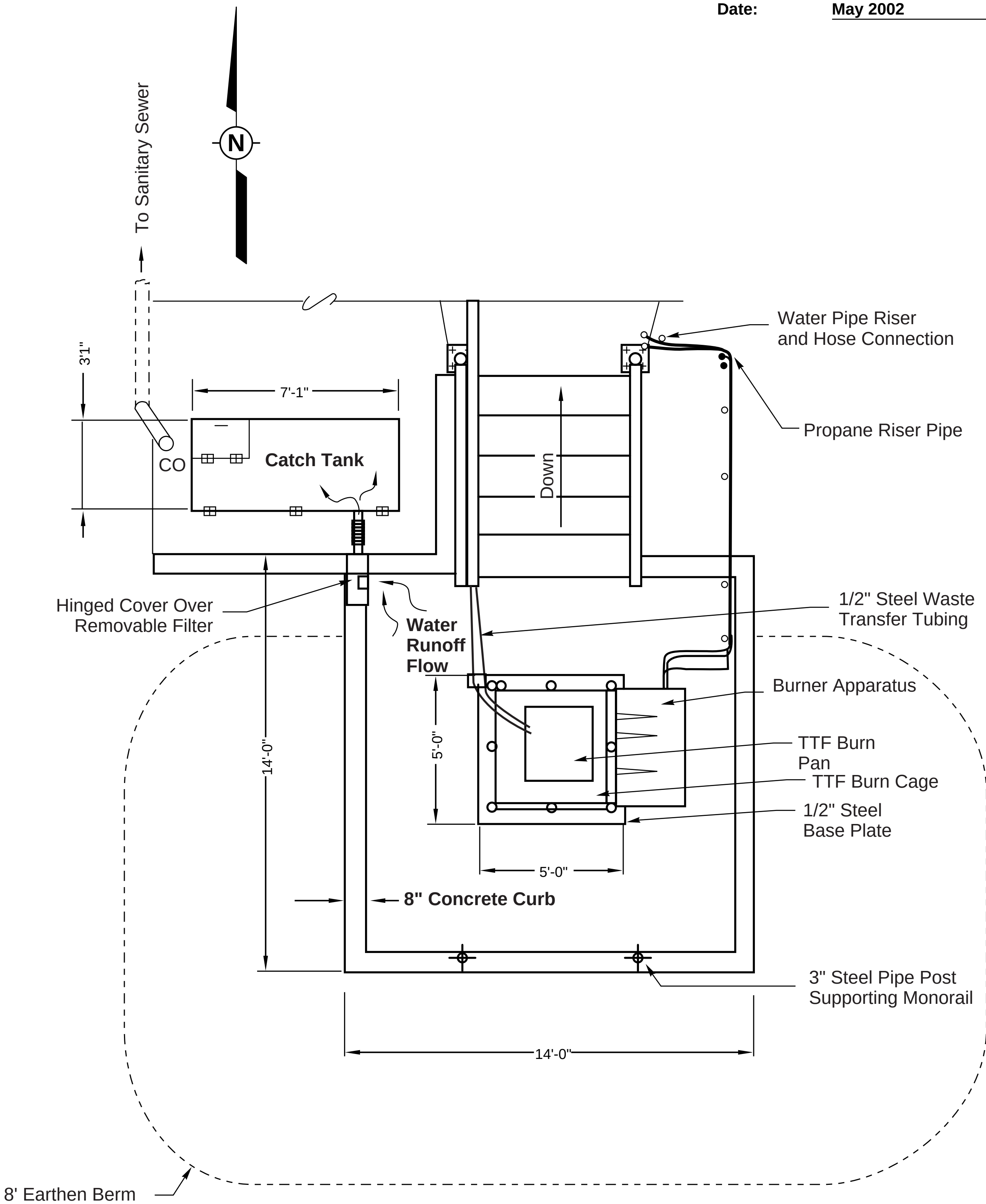


Figure B-7

Thermal Treatment Facility (TTF)—Plan View

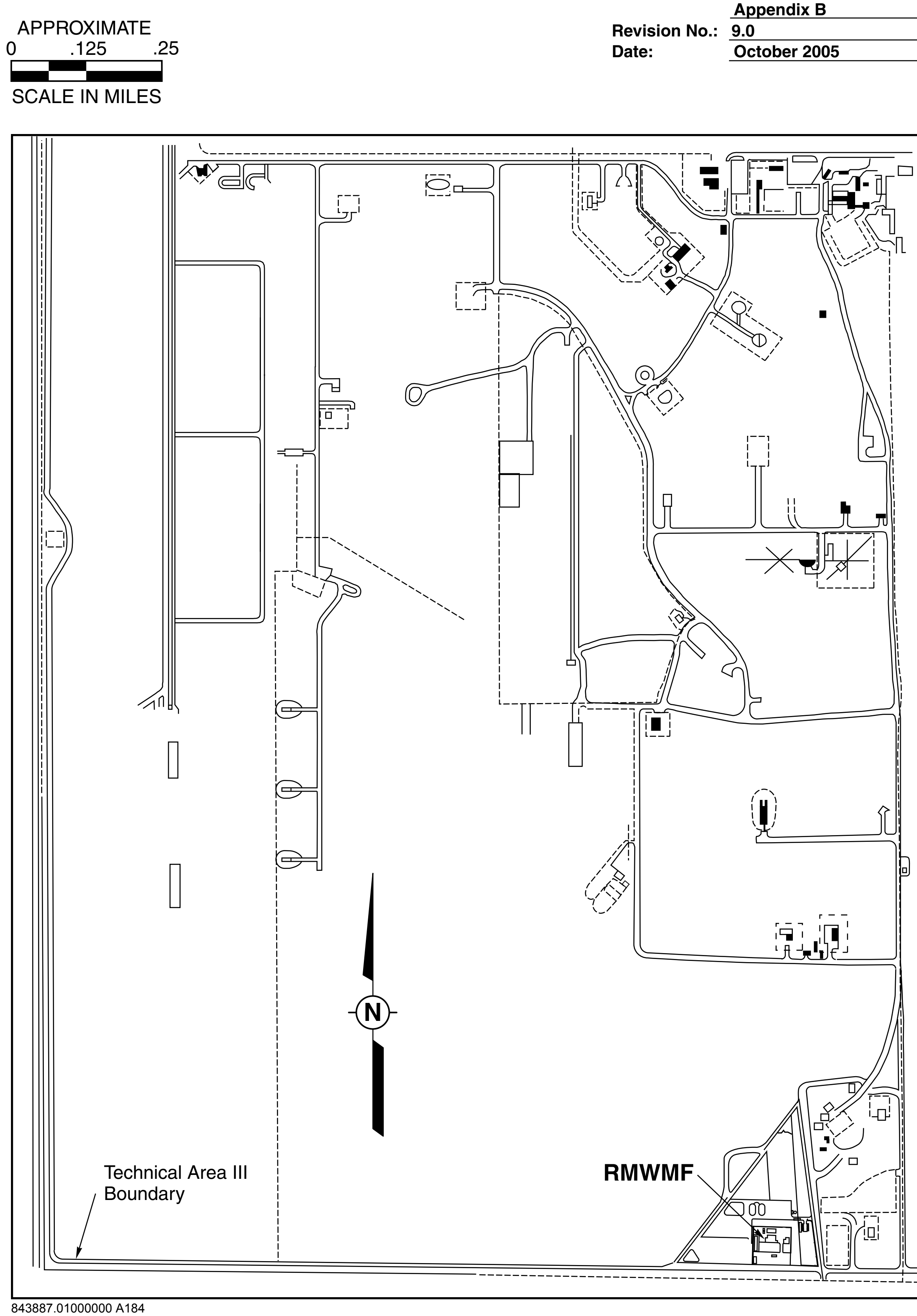


Figure B-8
Location of the Radioactive and Mixed Waste Management Facility in Technical Area III

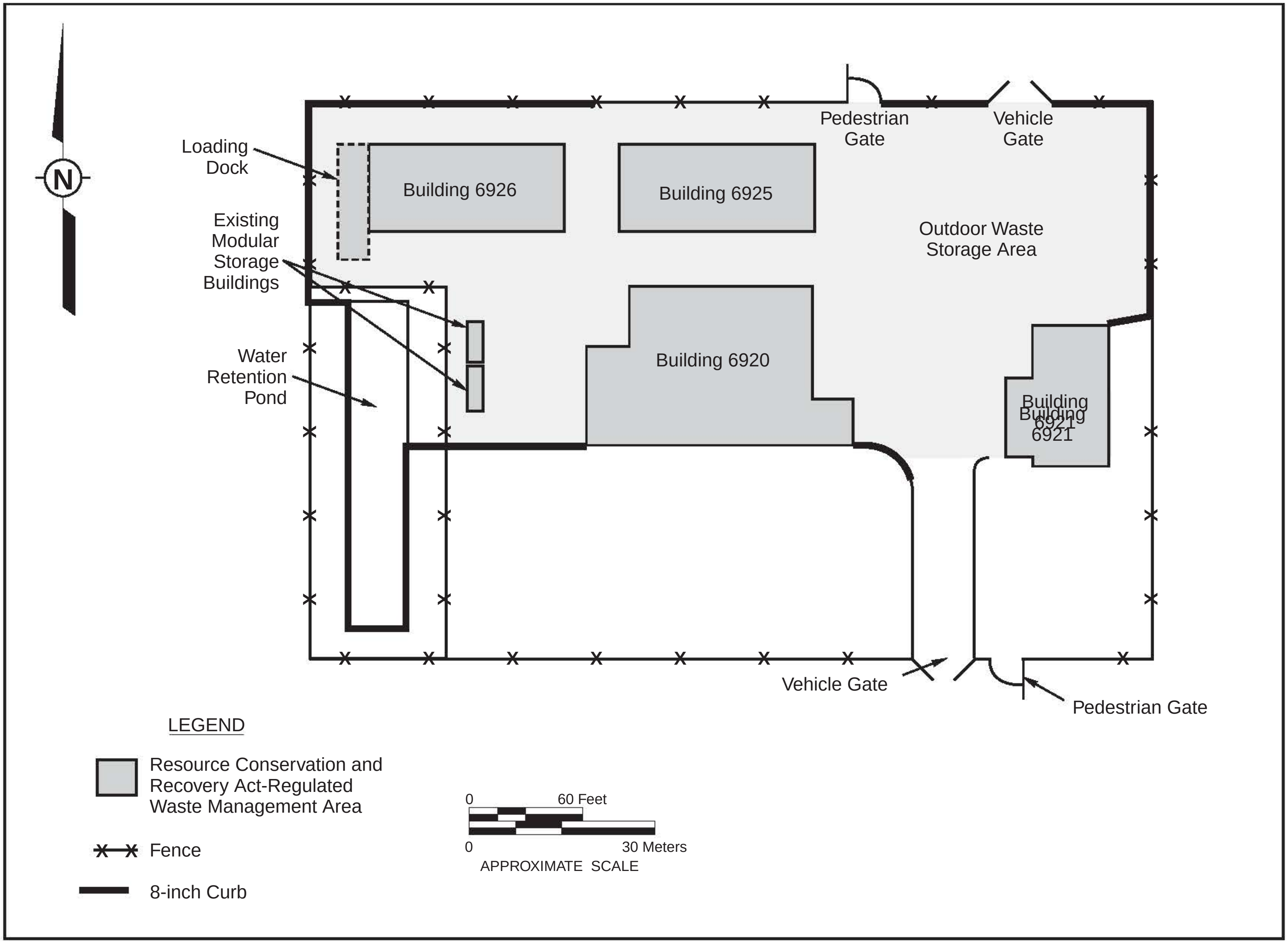


Figure B-9

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

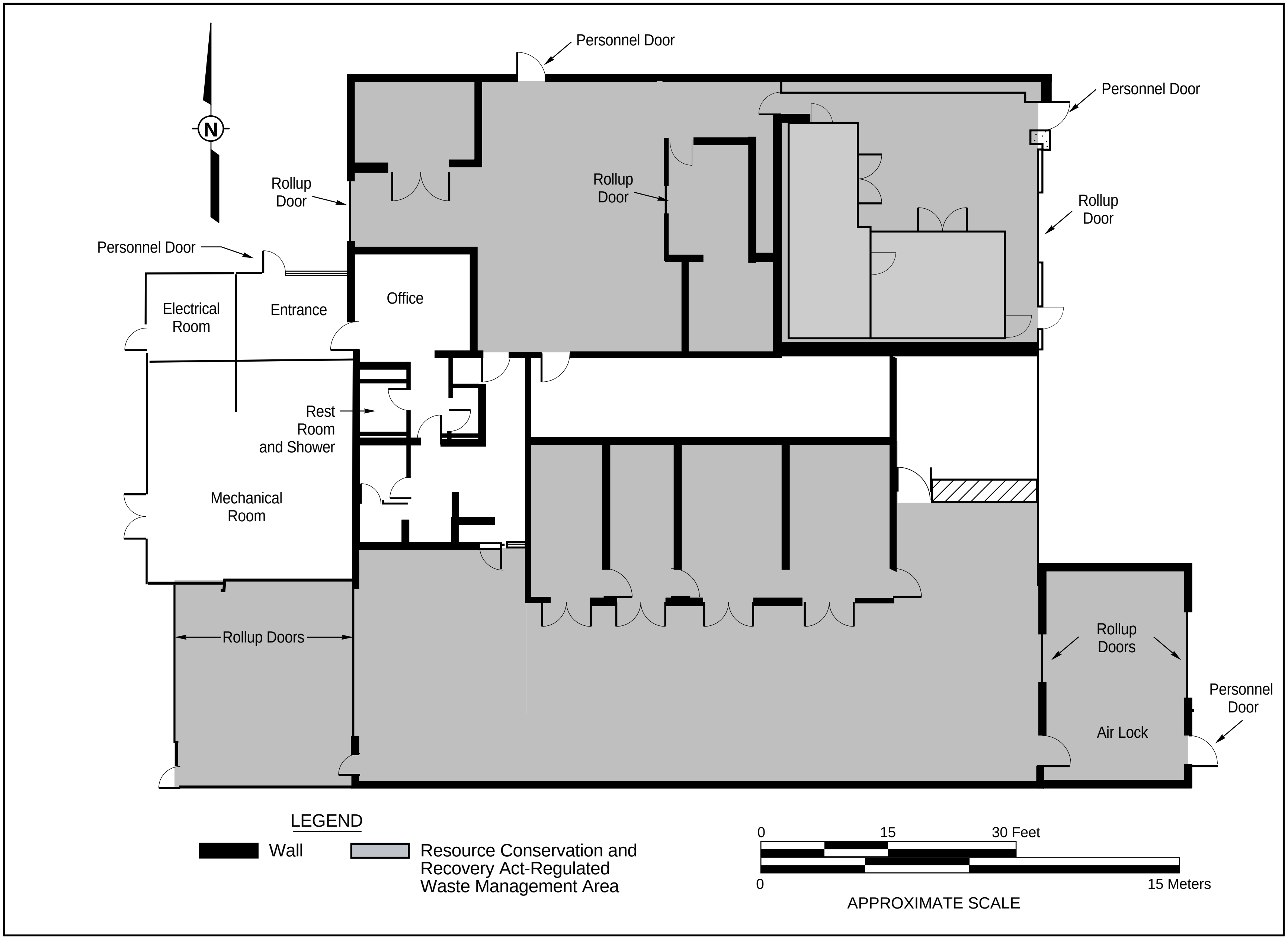


Figure B-10

Radioactive and Mixed Waste Management Facility, Building 6920, Resource Conservation and Recovery Act-Regulated Waste Management Areas

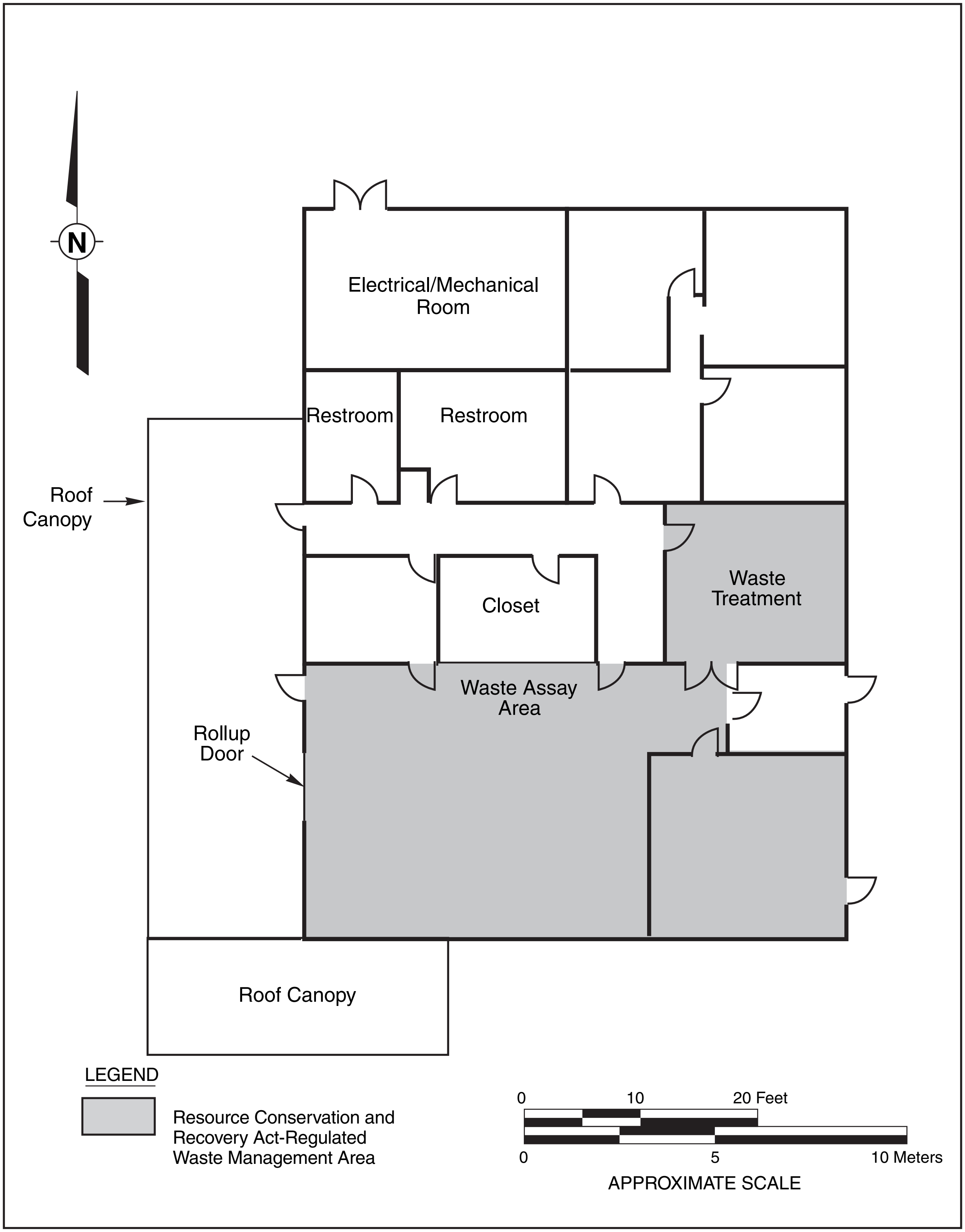


Figure B-11
Radioactive and Mixed Waste Management Facility, Building 6921, Resource Conservation and Recovery Act-Regulated Waste Management Areas

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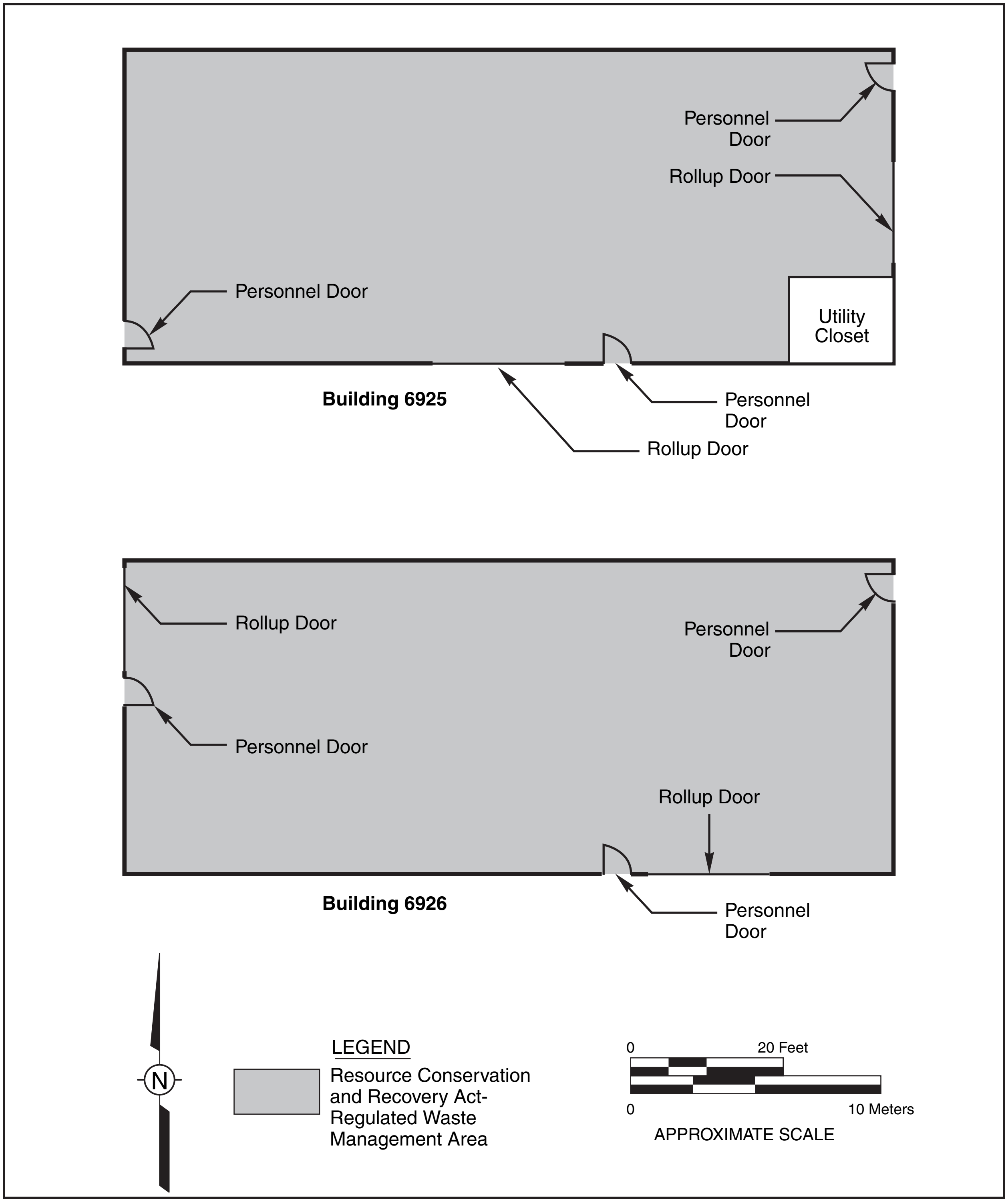

Figure B-12

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

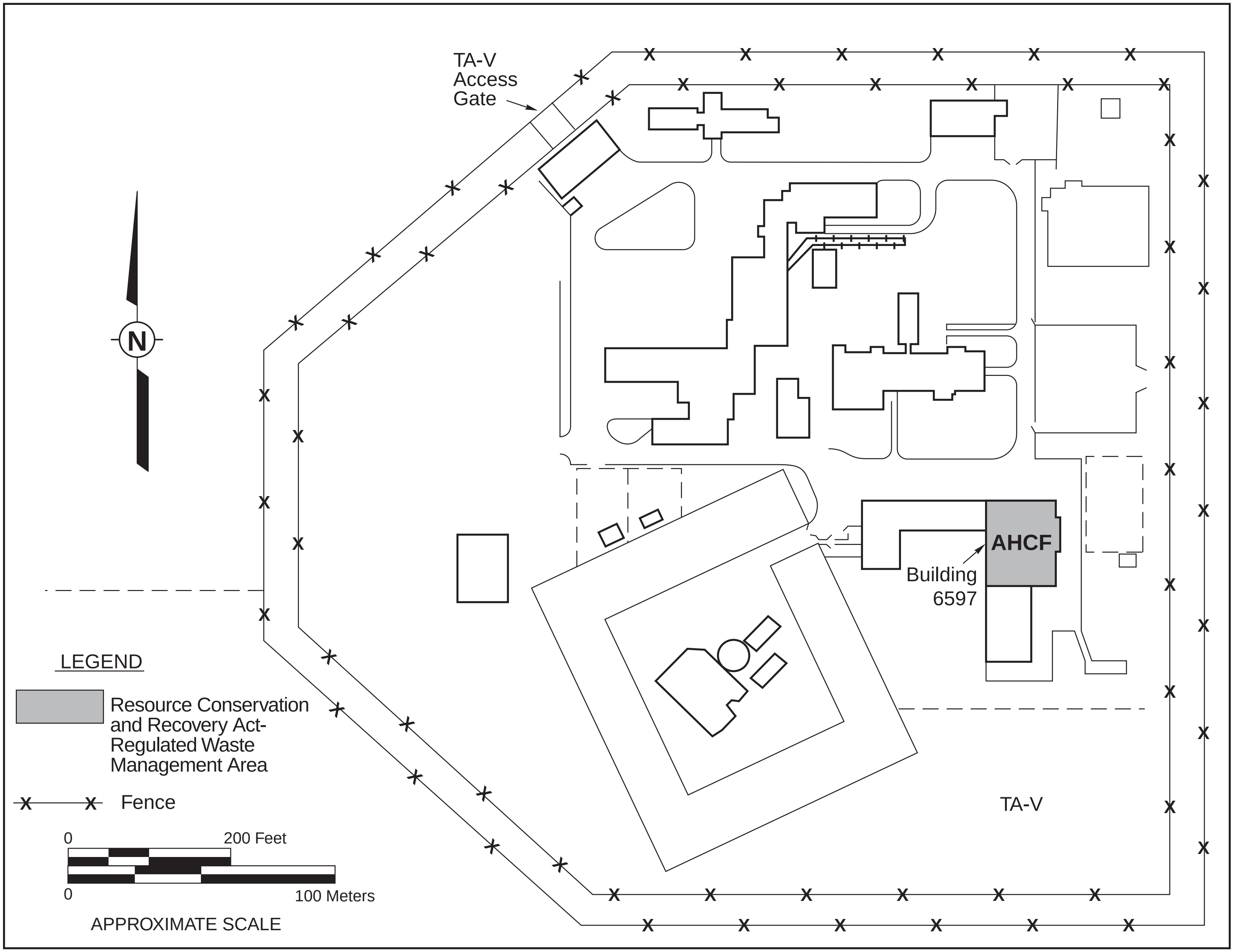

Figure B-13
Location of the Auxiliary Hot Cell Facility (AHCF) in Technical Area (TA) V

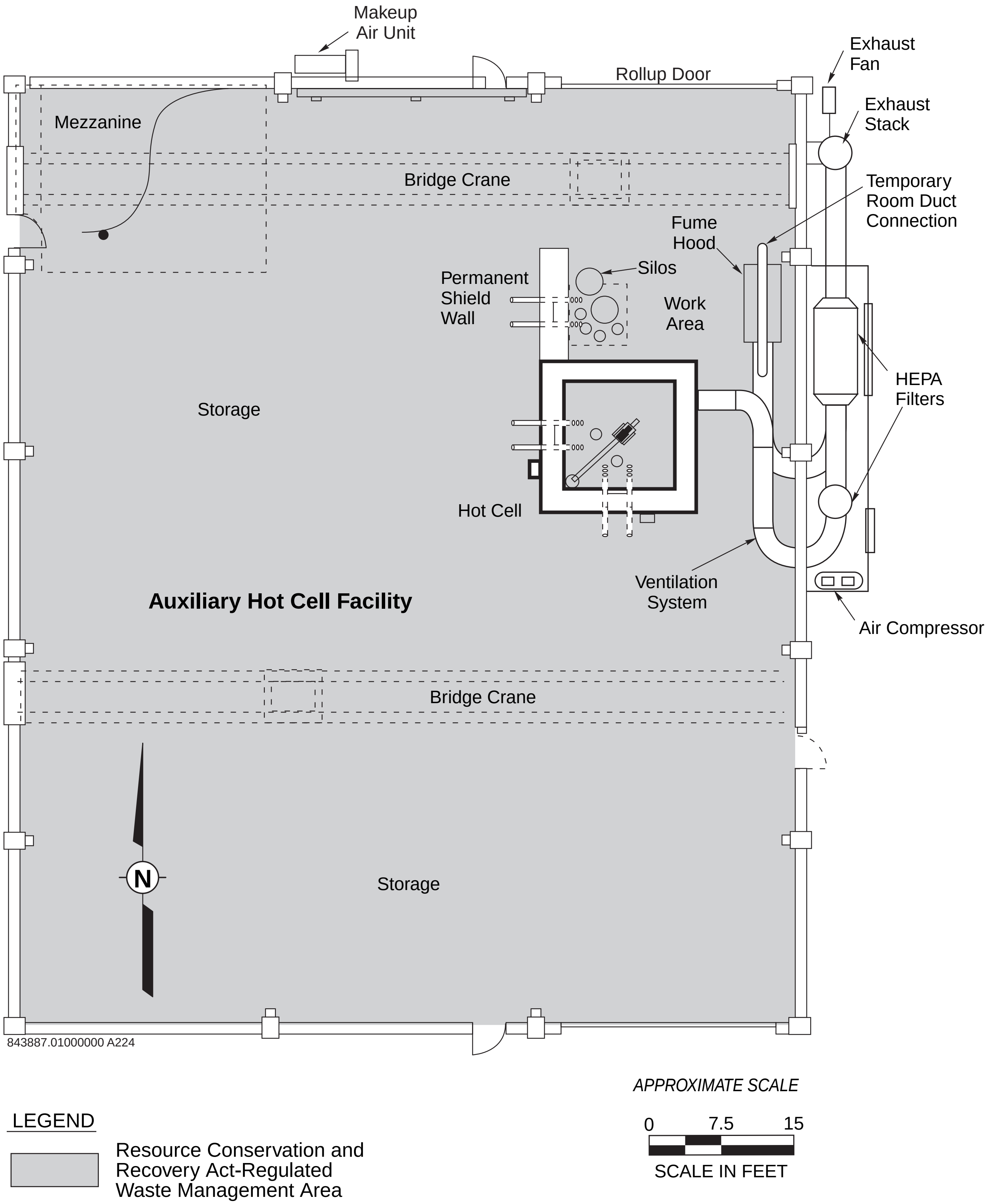

Figure B-14

Auxiliary Hot Cell Facility, Resource Conservation and Recovery Act-Regulated Waste Management Areas

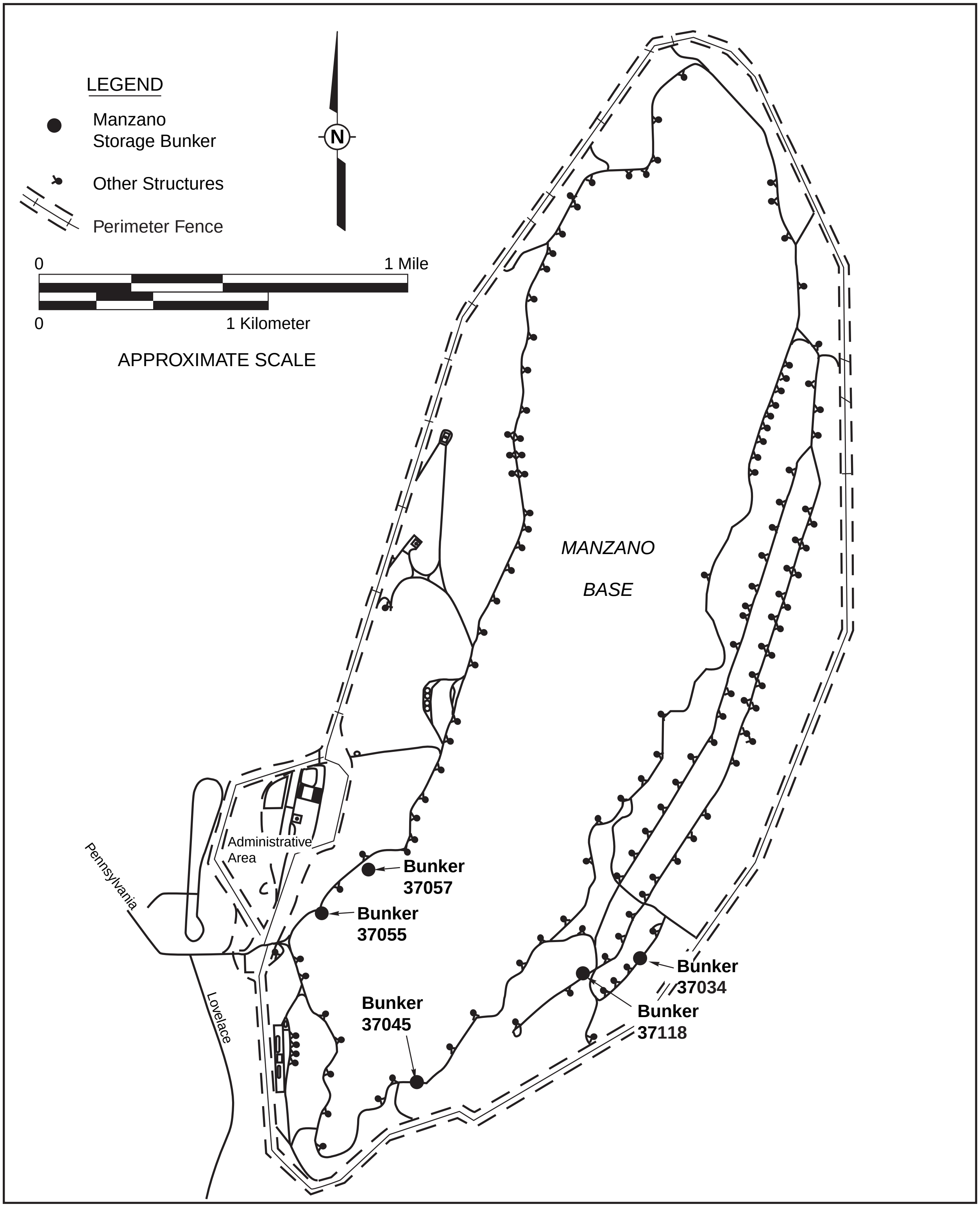

Figure B-15

Location of the Manzano Storage Bunkers at Manzano Base

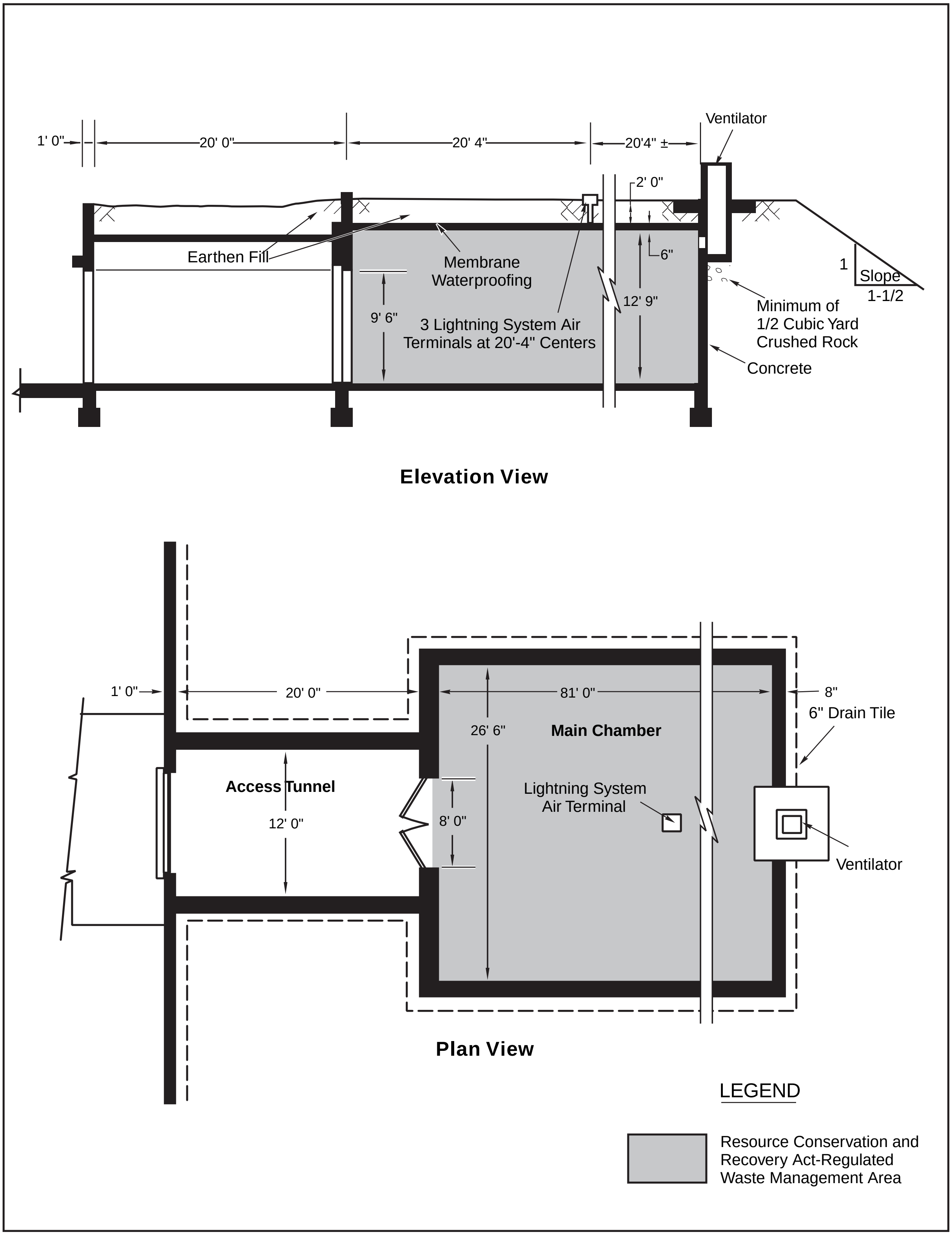

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Figure B-16
Manzano Storage Bunkers, Type B,
Bunker 37034

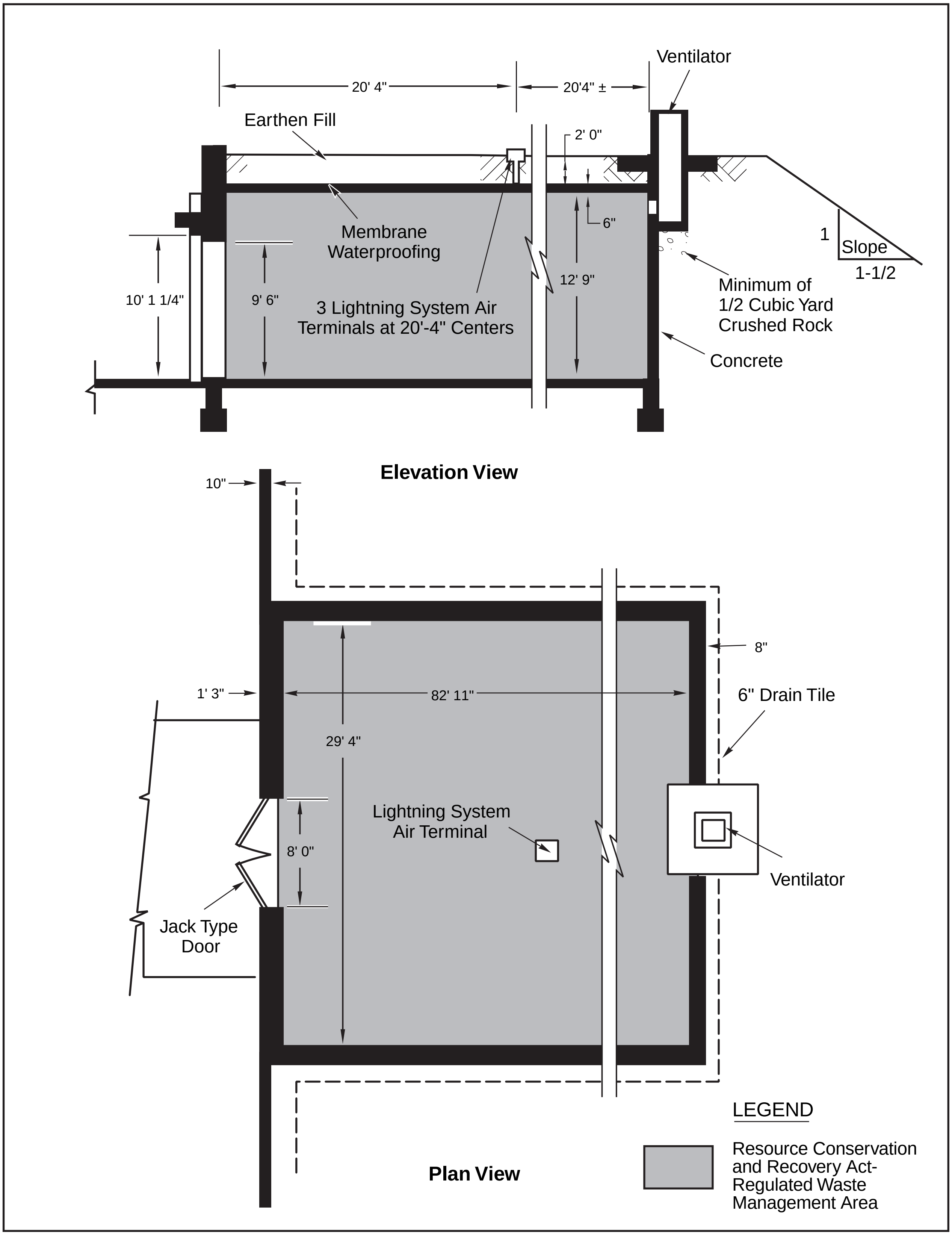

Figure B-17
Manzano Storage Bunkers, Type C, Bunker 37118

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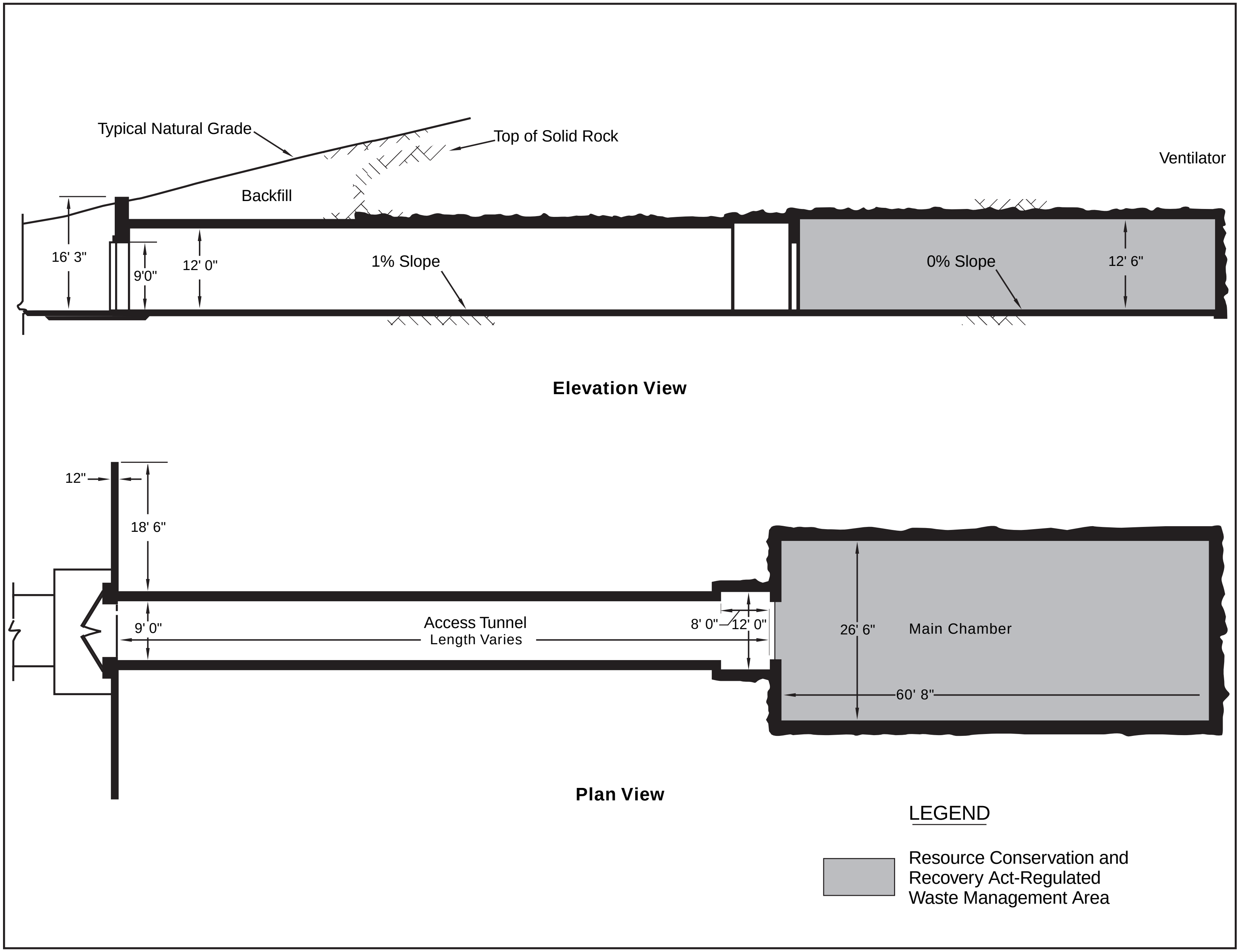

Figure B-18
Manzano Storage Bunkers, Type D
Bunkers 37045, 37055, and 37057

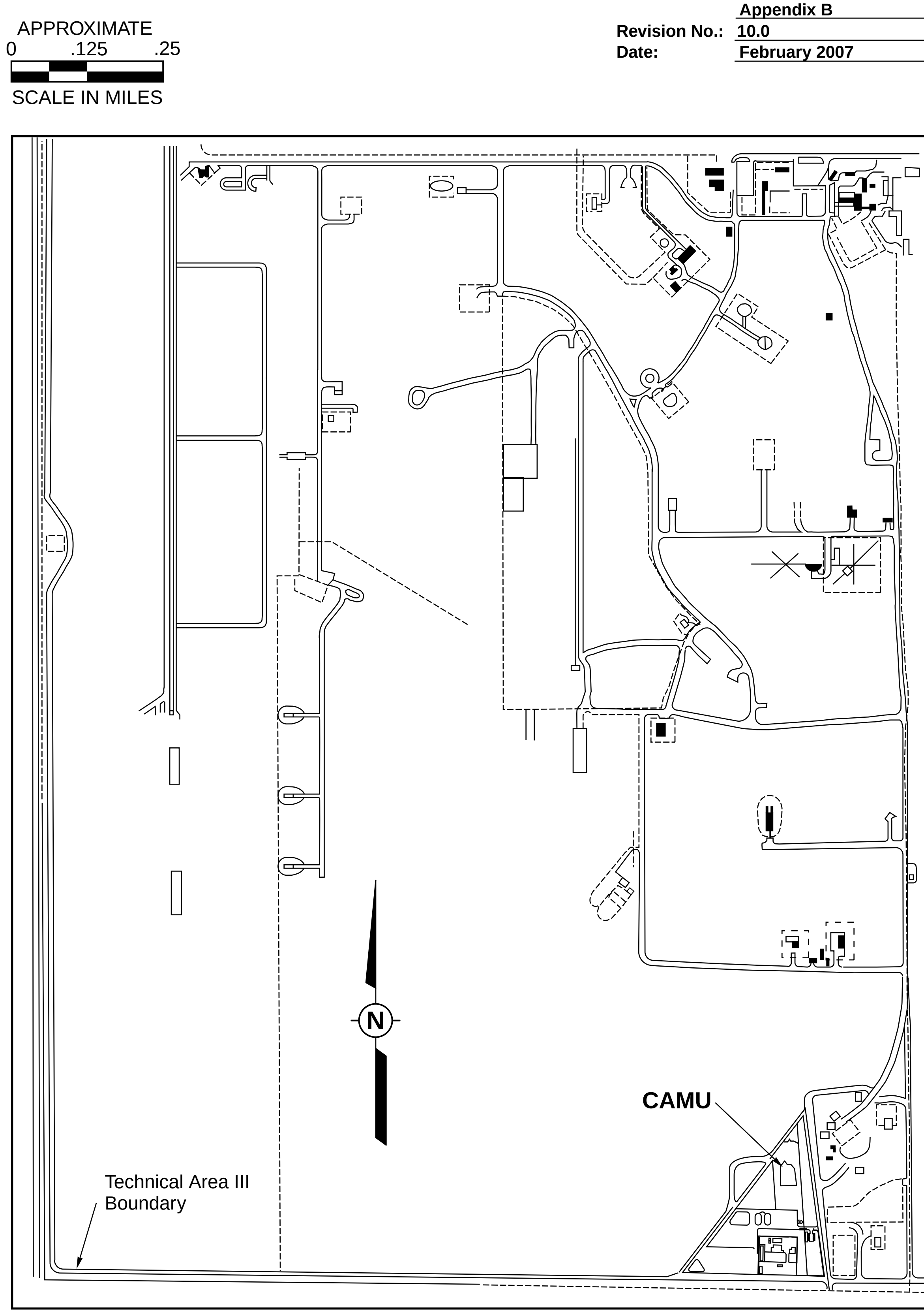

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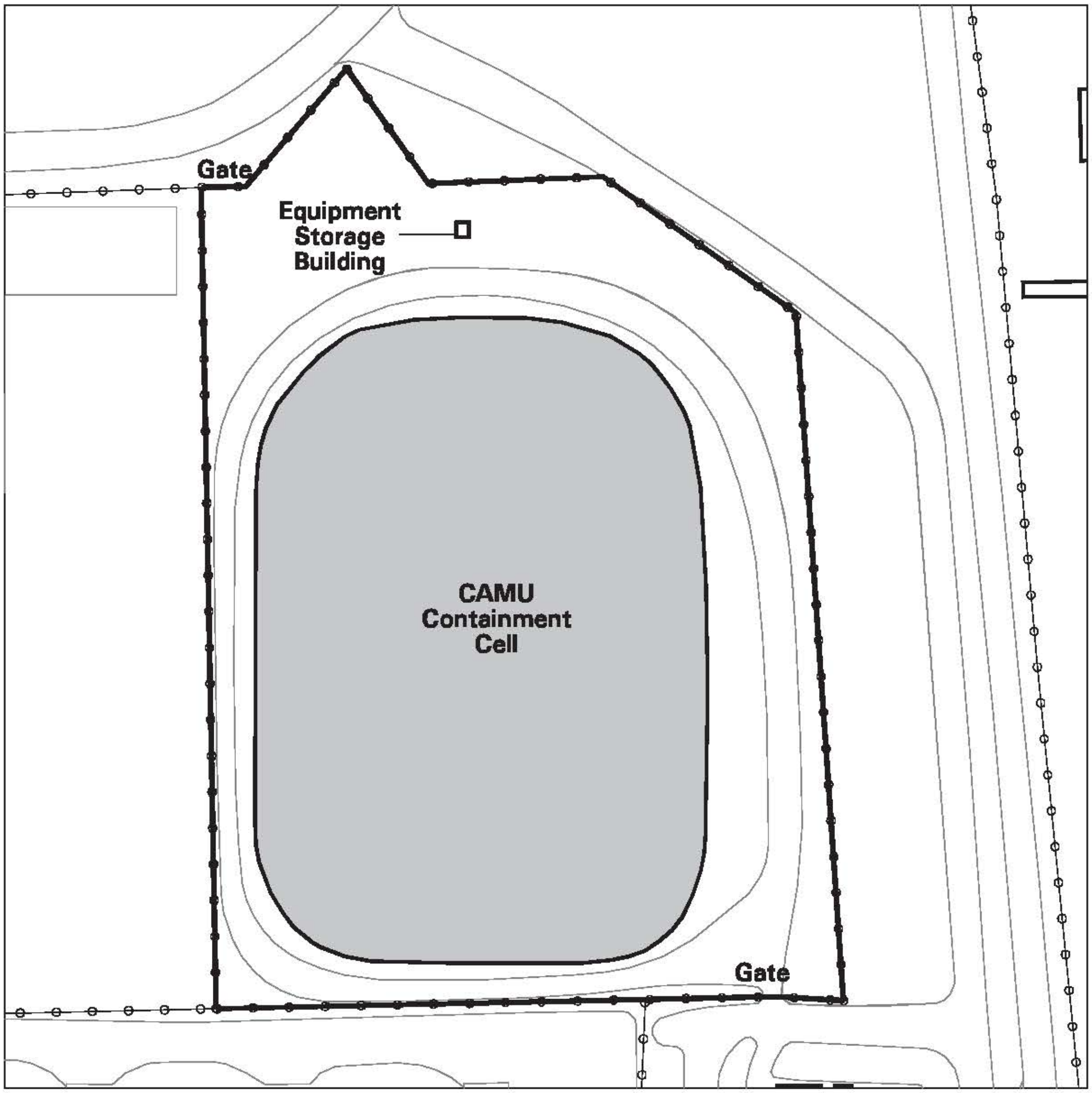
Figure B-19
Location of the Corrective Action Management Unit Containment Cell in Technical Area III

Mapid=120117 04/30/12 SNL EGIS ORG. 4142 DHelfrich dh120117.aml



Legend

- CAMU Perimeter
- Road
- Fence
- Building / Structure
- Resource Convservation and Recovery Act - Regulated Waste Management Area

Figure B-20
Corrective Action Management Unit Resource Conservation and Recovery Act - Regulated Waste Mangement Area

0 50 100
Scale In Feet

0 12 24
Scale In Meters

N

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

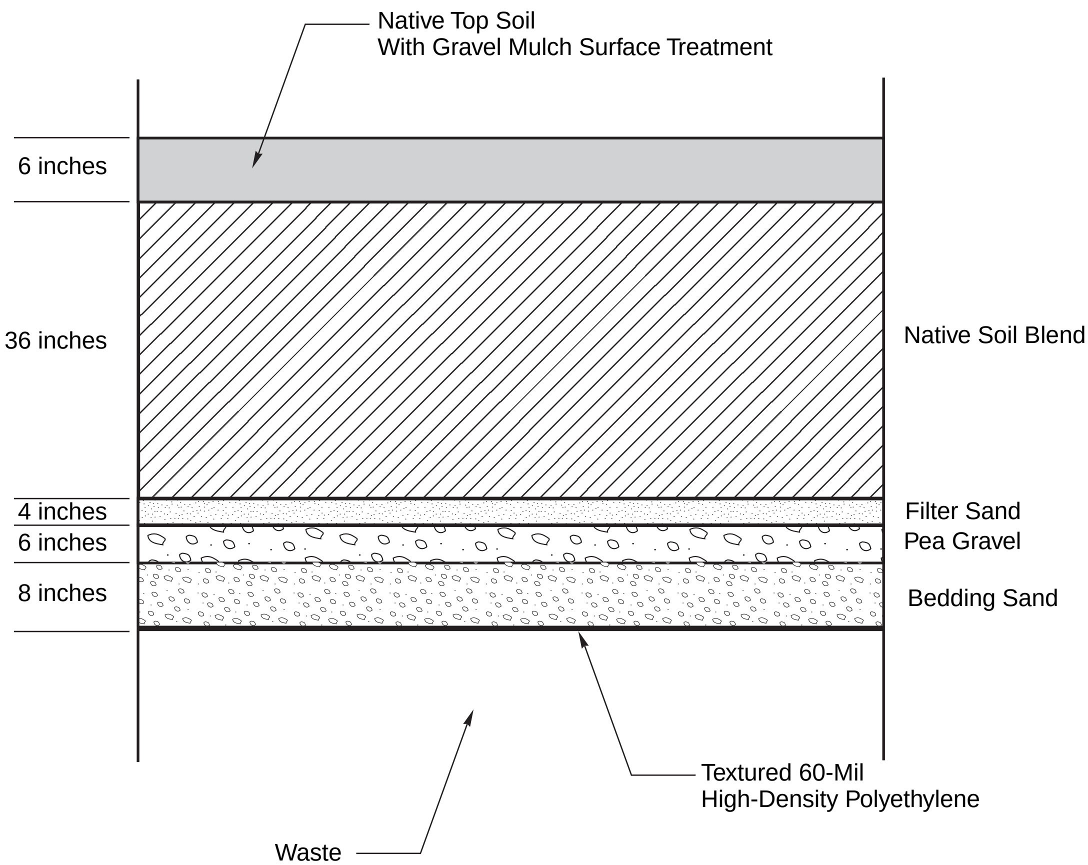


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Figure B-21

Corrective Action Management Unit Containment Cell Schematic Cross-Section of Final Cover System

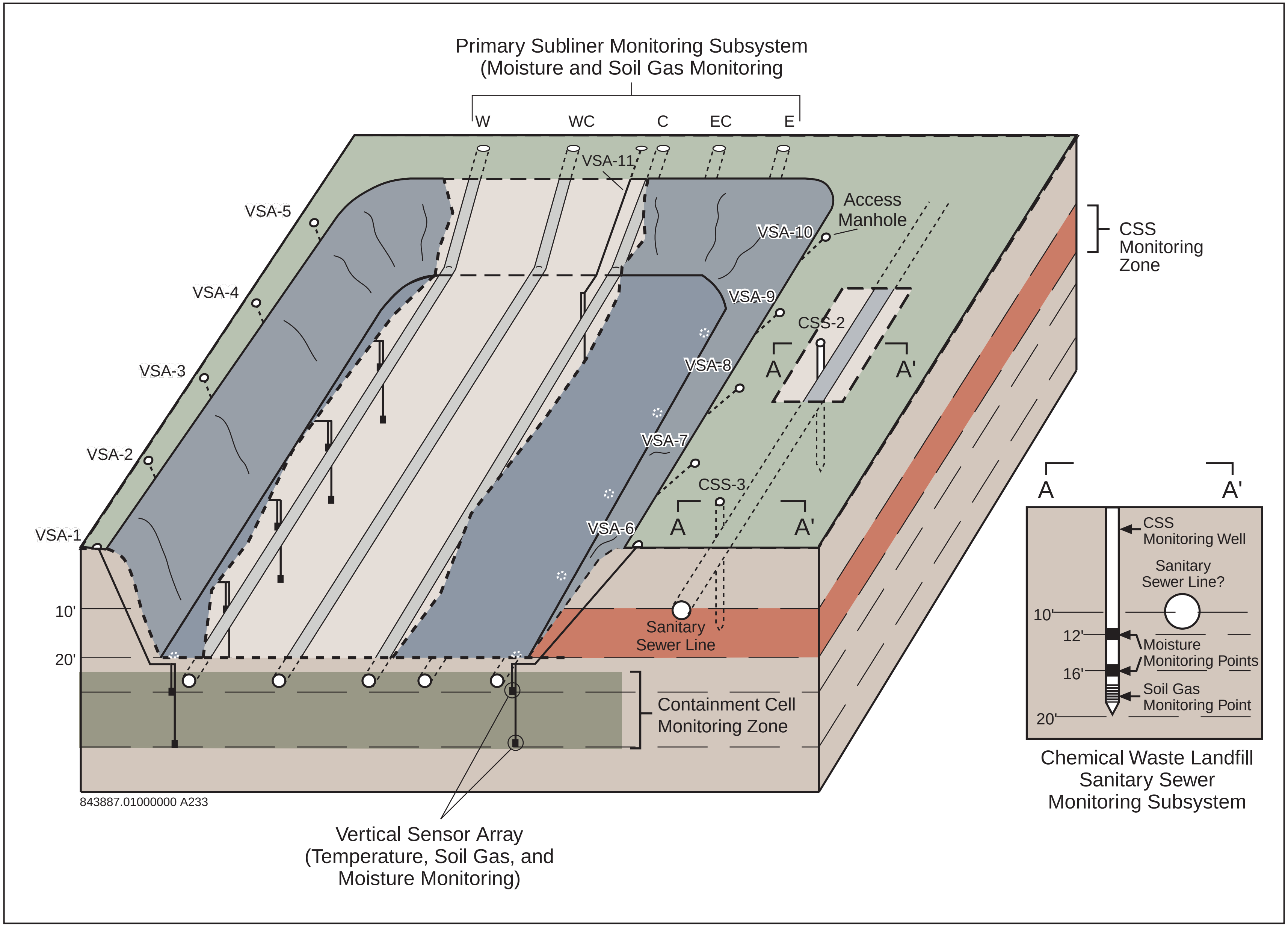

Figure B-22

Block Diagram of Corrective Action Management Unit Containment Cell and Vadose Zone Monitoring System

PHOTOGRAPHS

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Hazardous Waste Handling Facility, Buildings 958 and 959
Photograph Taken on January 3, 2002
Process Code: S01

Building 958 is on the left, and Building 959 is on the right.

Hazardous Waste Handling Facility, Flammable Waste Storage Bay in Building 958
Photograph Taken on January 3, 2002
Process Code: S01

Hazardous Waste Handling Facility, Waste Storage Bays in Building 959
Photograph Taken on January 3, 2002
Process Code: S01

The drum at the far end of the building near the door contains absorbent for spill control. The bucket on the wall above it contains clean up materials.

Containers of RCRA-regulated wastes (solids and liquids) are segregated into the bays by compatibility and are stored on shelves over secondary containment in the bays.

Hazardous Waste Handling Facility,
Modular Storage Buildings (958B and 958C) for Reactive and Ignitable Wastes
Photograph Taken on January 3, 2002
Process Code: S01

Thermal Treatment Facility
Viewed from Roof of Building 6715
Photograph Taken October 23, 2003
Process Code: X01

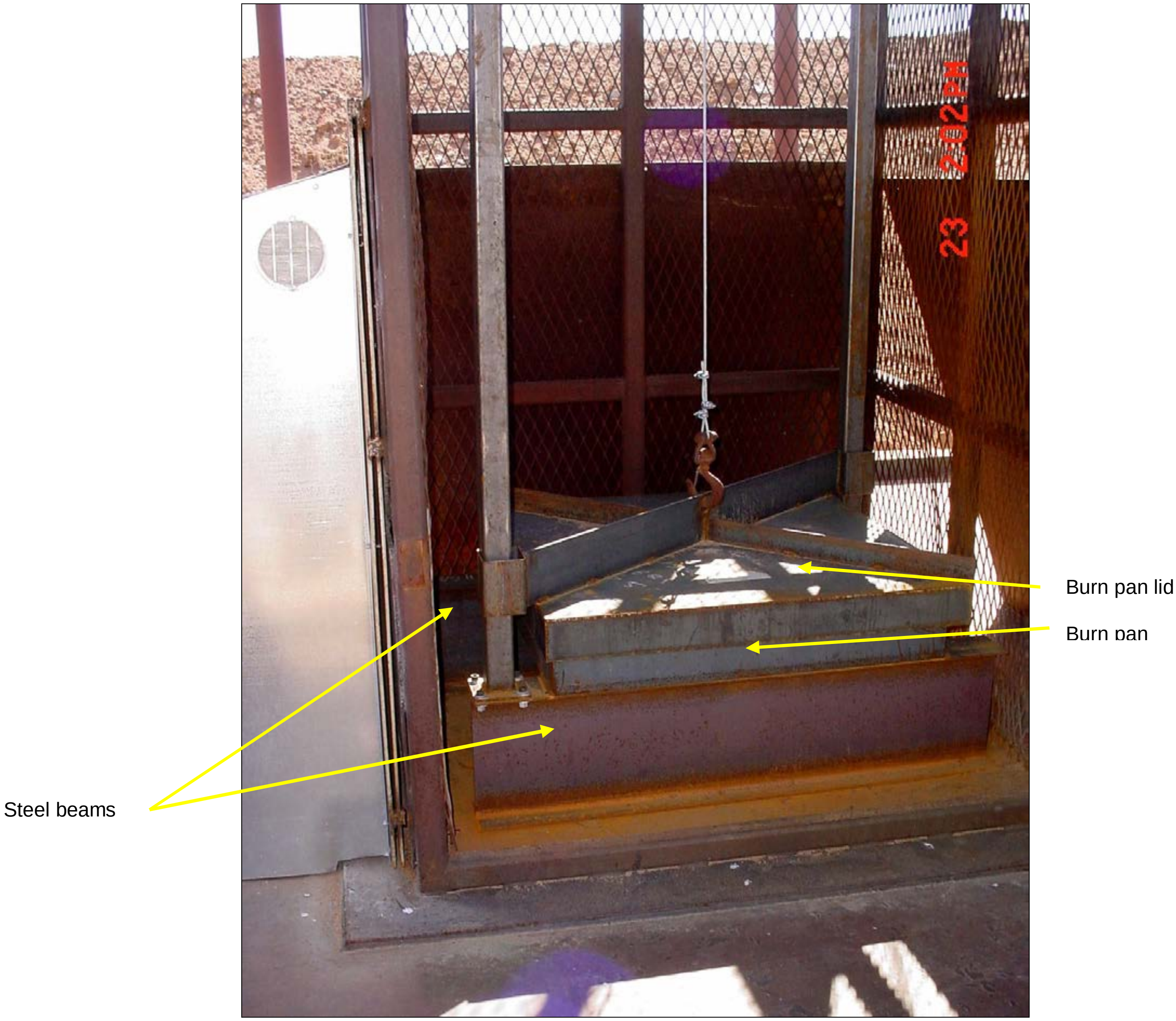
The sheet metal housing and propane lines for the propane burners are on the left side of the burn cage. The sheets of steel on the right side and the back of the burn cage are attached at the top and provide protection from wind during waste treatment.

The entire surface of the concrete foundation pad and the inside edge of the concrete pad curb are lined with steel. Runoff water is directed toward the right front corner of the pad, through a filter, and into a covered catchment tank that is visible at the lower right corner of the photograph.

The burn pan lid is in the lowered position. The burn cage is surrounded by an earthen berm. The gate in the fence surrounding the TTF is open.

Thermal Treatment Facility
Rear View of Burn Cage from Top of Earthen Berm
Photograph Taken on October 23, 2003
Process Code: X01

The door of the burn cage is open on the left (front) side of the cage. The sheet metal housing for the propane burners is visible on the far side of the burn cage.



Thermal Treatment Facility
Front View of Burn Pan (with Lid Down) Inside Burn Cage
Photograph Taken on October 23, 2003
Process Code: X01

The base of the burn pan sits on the steel beams that run across in the front and back of the burn cage. The pan is 6 inches deep. The lid is lowered and covers the pan. During operation, the lid is raised using the attached cable, and solid RCRA-regulated wastes are placed inside the burn pan or liquid wastes are pumped into the pan. The liquid waste feed system is located on the right side of the cage and is not visible in this photograph. It is temporarily out of service.

The burn cage door is open. The steel sheets on the outside of the burn cage provide protection from wind during treatment. The sheet metal housing for the propane burners is visible to the left of the burn cage.

Radioactive and Mixed Waste Management Facility, East Side of Building 6920
Photograph Taken on December 5, 2001
Process Codes: S01, T04

Radioactive and Mixed Waste Management Facility, West Side of Building 6920
Photograph Taken on December 5, 2001
Process Codes: S01, T04

Radioactive and Mixed Waste Management Facility, Building 6920, South Bay
Photograph Taken on December 20, 2001
Process Codes: S01, T04

The south bay is used for storage of RCRA-regulated wastes in containers and for treatment. The doors to three of the four rooms in the south bay are visible at the left edge of the picture. Treatment operations typically occur in these rooms. The roll-up door at the far (east) end of the room leads to an additional storage/work area. Containers of liquid RCRA-regulated waste are stored over the secondary containment sump shown on the right in the photograph. Containers of solid RCRA-regulated waste may also be stored over the sump.

Radioactive and Mixed Waste Management Facility, Building 6921
Photograph Taken on December 5, 2001
Process Codes: S01, T04

Radioactive and Mixed Waste Management Facility, Building 6925
Photograph Taken on December 5, 2001
Process Codes: S01, T04

Radioactive and Mixed Waste Management Facility, Building 6925, Interior
Photograph Taken on December 20, 2001
Process Codes: S01, T04

The drum in the front of the row on the right contains liquid RCRA-regulated waste and is stored on a portable spill containment pallet.

Radioactive and Mixed Waste Management Facility, Building 6926
Photograph Taken on December 5, 2001
Process Codes: S01

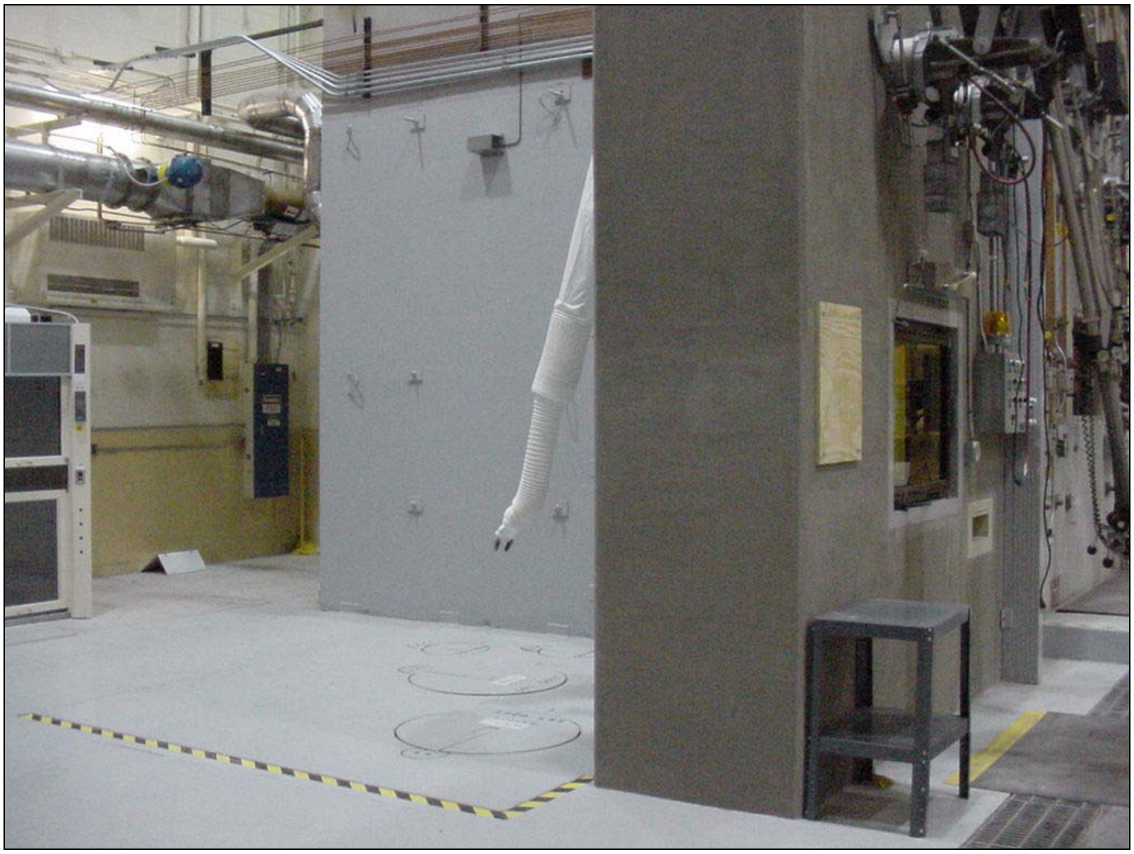
Radioactive and Mixed Waste Management Facility, Modular Storage Buildings
Photograph Taken on December 5, 2001
Process Code: S01

Auxiliary Hot Cell Facility, North Side of Building 6597
Photograph Taken on January 7, 2002
Process Codes: S01, T04

The work area and permanent shield wall are visible inside the building.

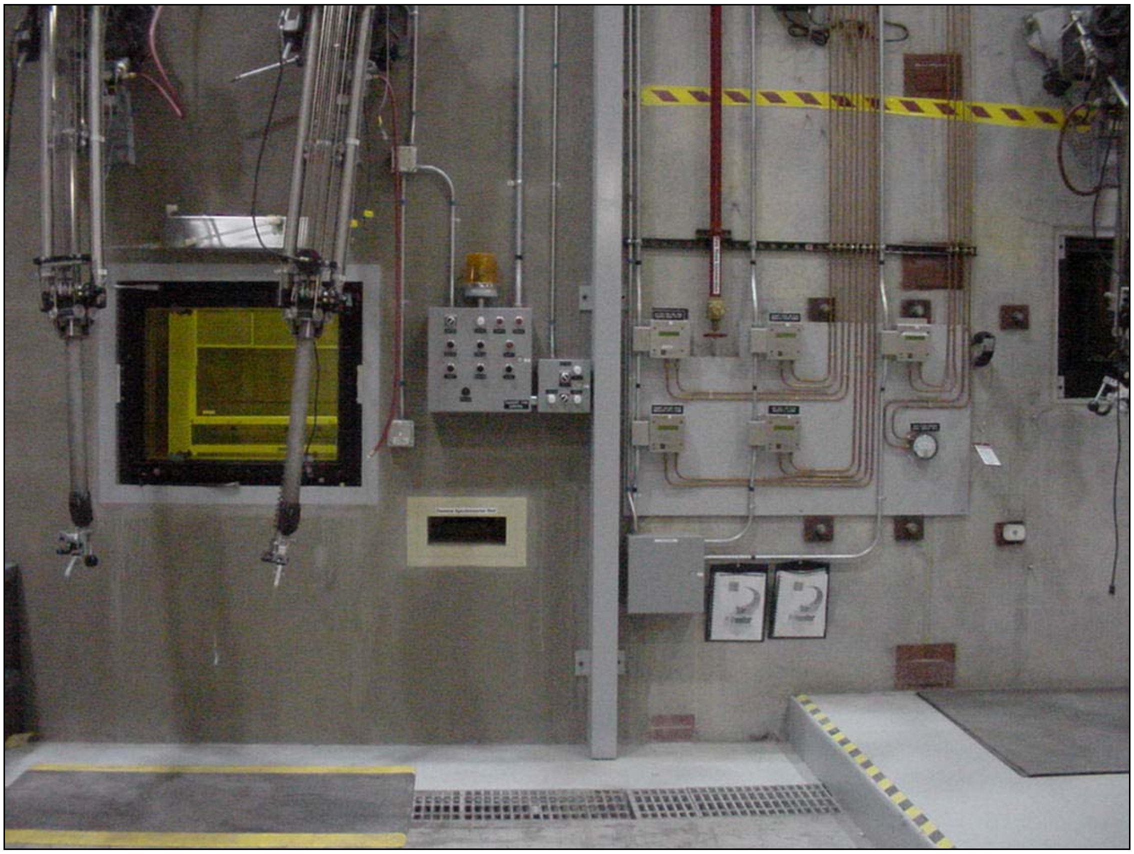
Auxiliary Hot Cell Facility, Work Area North of Auxiliary Hot Cell
Photograph Taken on January 7, 2002
Process Codes: S01, T04

The permanent shield wall is visible inside the building at the right edge of the opening. The manipulator arms extend from the permanent shield wall into the work area. The north wall of the hot cell is visible behind the manipulator arms at the center of the picture. The fume hood is visible at the left edge of the work area.



Auxiliary Hot Cell Facility, Fume Hood and Work Area North of Auxiliary Hot Cell
Photograph Taken on January 7, 2002
Process Codes: S01, T04

One of the manipulator arms is visible. It extends from the permanent shield wall into the work area. The operator controls for the manipulator arms are on the right side (outside) of the permanent shield wall at the right edge of the picture. The fume hood is visible at the left edge of the picture. Covers of two storage silos are visible on the floor of the work area under the manipulation arm.



Auxiliary Hot Cell Facility, Operator Controls for Work Area and Hot Cell
Photograph Taken on January 7, 2002
Process Codes: S01, T04

The permanent shield wall is on the left, and the hot cell is located on the right. The operator controls for the manipulator arms in the permanent shield wall are visible on the left. The fume hood at the back of the work area is visible through the shield wall window. Similar operator controls and a window are located on the hot cell wall to the right.

Manzano Storage Bunkers, Type B, Front View of Bunker 37034
Photograph Taken on December 13, 2001
Process Code: S01

The drain shown near the right edge of the picture serves a drain tile on the outside of the bunker, allowing drainage of water (from precipitation) that may accumulate in the soil behind the concrete wall.

The large orange sign indicates that explosive (D003) waste is currently stored in this bunker. The fire extinguisher is located in the white box below and to the left of the orange sign.

The concrete pad in front of the bunker doors is level or slopes slightly away from the bunker, preventing surface water runon into the bunker.

Manzano Storage Bunkers, Type D, Front View of Bunker 37045
Photograph Taken on December 13, 2001
Process Code: S01

Manzano Storage Bunkers, Type D, Front View of Bunker 37055
Photograph Taken on December 5, 2001
Process Code: S01

Manzano Storage Bunkers, Type D, Front View of Bunker 37057
Photograph Taken on December 5, 2001
Process Code: S01

Manzano Storage Bunkers, Type C, Front View of Bunker 37118
Photograph Taken on December 13, 2001
Process Code: S01

Corrective Action Management Unit
South End and Southeast Corner of Containment Cell
Photograph Taken on February 21, 2007
Process Code: S99

The containment cell is comprised of the following elements (from the top down):

- Multi-component engineered cover system.
- Treated waste.
- Leachate collection and removal system.
- Multi-component engineered liner system on sidewalls and bottom of cell.
- Vadose zone monitoring system.

The vadose zone monitoring system is designed to provide information on containment cell performance and early detection of leaks. It is comprised of three subsystems:

- Primary subliner monitoring system for leak detection – five horizontal clay pipes that run the length (north-south) of the containment cell under the bottom liner. The pipes are equipped with access tubes at either end for a probe to monitor moisture; the southern access tubes for four of the five pipes are visible in the photograph.

- Chemical Waste Landfill and sanitary sewer line monitoring subsystem - 6 vertical boreholes near the sewer line east of the containment cell. The boreholes allow access for monitoring equipment and collecting samples to detect leaks from the sewer line or migration of constituents from the former landfill; the top of one of the boreholes is visible at the right edge of the picture. The yellow posts on either side of the borehole provide protection from vehicles.

- Vertical sensor array subystem - 11 monitoring locations below the containment cell. These locations house monitoring equipment and allow access for collecting samples. They are not visible in this photograph.

Corrective Action Management Unit
East Side of Containment Cell
Photograph Taken on February 21, 2007
Process Code: S99

The top of one of the boreholes in the Chemical Waste Landfill and sanitary sewer line monitoring subsystem is visible at the left side of the picture.

Tops of three access points in the vertical sensor array subsystem (small grey boxes on grey posts) are visible along the edge of the containment cell. The boxes house cables and tubing connected to the monitoring and sampling equipment located under the containment cell.

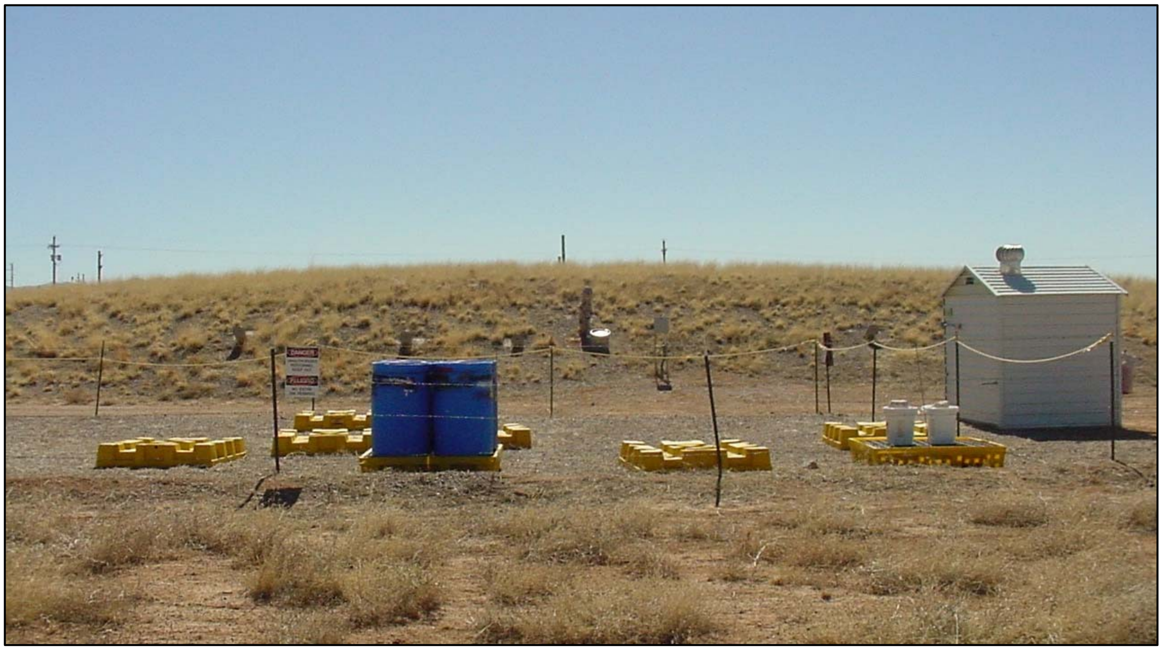
Corrective Action Management Unit
North End and Northeast Corner of Containment Cell
Photograph Taken on February 21, 2007
Process Code: S99

The top of one of the boreholes in the Chemical Waste Landfill and sanitary sewer line monitoring subsystem is visible in the foreground beyond the CAMU perimeter fence.

The northern access tubes for four of the five pipes in the primary subliner leak detection subsystem are visible at the right edge of the photograph.

The larger tube extending from the north end of the cap (with a support brace, visible at the right side of the photograph) is the access point for the leachate collection and removal system. The tube is connected to the leachate collection sump at the bottom of the containment cell, and allows access for a portable pump to remove leachate. The pump is stored in a container near the base of the support brace when not in use.

The tops of two utility poles are visible beyond the top of the containment cell (above the signs in the left side of the photograph.



Corrective Action Management Unit
Containment Cell and Leachate Management
Photograph Taken on February 21, 2007
Process Code: S99

The leachate accumulation area is shown in the foreground. Leachate is pumped from the collection sump at the bottom of the containment cell using a portable pump. The access tube for the collection system is visible in the north end of the cell (near the center of the photograph). The container used for storage of the pump is immediately to the right of the access tube; sunlight is reflected off the container lid.

The leachate is collected in the blue containers. The containers are stored on a (yellow) portable spill containment pallet. Other wastes are stored in the white containers on a second pallet. Pallets are stored upside down when not in use to prevent rainwater accumulation.

The portable metal building at the right houses electrical equipment and is used for storage of spill cleanup supplies and safety-related items.

The tops of several utility poles are visible beyond the top of the containment cell.

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

Revision 7.0

April 2012

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

Prepared for
The U.S. Department of Energy

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LIST OF MODULES

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

ACRONYMS AND ABBREVIATIONS

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

ACRONYMS AND ABBREVIATIONS (Continued)

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

ACRONYMS AND ABBREVIATIONS (Concluded)

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

DEFINITIONS

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

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

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

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

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

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

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

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

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

There are 10 RCRA-regulated waste management units (Units) included in this comprehensive Part B permit request. Nine of the Units (listed in Table 1) are used for management of wastes from ongoing operations and from the ER project. These units are addressed in this part (Part 2) of the comprehensive Part B permit request. The remaining unit is a corrective action management unit (containment cell) used exclusively for management of remediation wastes generated through the ER project. It was closed in 2003 and is undergoing post-closure care; it is addressed in Part 5 of the comprehensive Part B permit request.

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

- General information (the General Part B) that serves as an ―umbrella" document addressing the general requirements of the New Mexico Hazardous Waste Act and implementing regulations, specifically the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subparts V and IX (20 NMAC 4.1.500 and .900), revised July 1, 2008 [7-1-08]. 20 NMAC 4.1.500 and .900 adopt, with limited exceptions, all of the Code of Federal Regulations, Title 40, Parts 264 and 270 (40 CFR 264 and 270). Information that is applicable to most or all of the Units is included in the General Part B.

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

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

Name	Acronym	Location, Size	Types of Operations	Types of Waste	Operating Status	Permit Status
Hazardous Waste Handling Facility	HWHF	South of TA-I, north of entrance to TA-II. 1.35 acres	Storage, Repackaging	All wastes listed in General Part A	Existing, operational	Permit expired August 6, 2002. Submitted renewal request February 6, 2002. Requesting that permit be updated and renewed for continued operation.
Thermal Treatment Facility	TTF	Northern part of TA-III. 196 square feet	Treatment	Ignitable, reactive, toxic, and listed wastes	Existing, on standby	Permit expires November 4, 2004. Submitted renewal request February 6, 2002. Requesting that permit be updated and renewed for continued operation.
Radioactive and Mixed Waste Management Facility	RMWMF	Southeast corner of TA-III. 3.11 acres	Storage, Treatment, Repackaging	All wastes listed in General Part A	Existing, operational	Interim status. Requesting that permit be issued using updated information provided in this application.
Auxiliary Hot Cell Facility	AHCF	TA-V. 5578 square feet	Storage, Treatment, Repackaging	All wastes listed in General Part A	Existing, expected to start operations in 2006	Added under interim status. Requesting that permit be issued using information provided in this application.
Manzano Storage Bunkers (set of 5 Units)	MSB	In Manzano Area on KAFB. 0.4 acres occupied by 5 bunkers (approximately 1600 to 2400 square feet in each bunker)	Storage	All wastes listed in General Part A	Existing, operational	Interim status. Requesting that permit be issued using updated information provided in this application.

- Unit-specific Part B modules addressing Unit-specific requirements of 20 NMAC 4.1.500 and .900/40 CFR 264 and 270 [7-1-08]. There is one module for the set of five Manzano Storage Bunkers, and one module for each of the other four Units listed in Table 1. For clarity and consistency, the information in each Unit-specific Part B module is arranged in the same general order as the information in the General Part B.

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

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

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

Sandia/DOE are also submitting a -Sandia National Laboratories/New Mexico General Part A Permit Renewal Request/Application, Rev. 11.0" hereinafter referred to as the General Part A (SNL/NM,2012), with this General Part B. The General Part A is included as Part 1 of this comprehensive Part B permit request and serves as a companion document to this General Part B.

In the General Part A, this General Part B, the appendices, and the Unit-specific modules, a Unit to be permitted may sometimes be referred to as a -facility" (e.g., the Hazardous Waste Handling Facility). The term -facility," as it appears in this context, is used only to denote building or Unit names and does not imply the regulatory meaning of -facility" as defined in 20 NMAC 4.1.100/40 CFR 260.10 [7-1-08]. However, pursuant to 20 NMAC 4.1.100/40 CFR 260.10 [7-1-08], the SNL/NM site as a whole does meet the regulatory definition of a facility.

In the Waste Analysis Plan (Appendix B) and in the rest of this General Part B, the personnel associated with a RCRA-regulated waste at a given point during management at SNL/NM may sometimes be referred to as the -generator" (e.g., the -generator" completes a disposal request). The term -generator," as it appears in this context, is used only to denote an individual person and does not imply the regulatory meaning of -generator" as defined in 20 NMAC 4.1.100/40 CFR 260.10 [7-1-08], particularly with respect to hazardous waste

determination as required in 20 NMAC 4.1.300/40 CFR 262.11 [7-1-08]. However, pursuant to 20 NMAC 4.1.100/40 CFR 260.10 [7-1-08], Sandia Corporation is a -generator” and a -person” responsible for determining whether a waste is subject to regulation in accordance with 20 NMAC 4.1.300/40 CFR 262.11 [7-1-08]. SNL/NM is a large research facility, and many individuals (including those employed through contract to Sandia Corporation) are involved with generation and subsequent management of RCRA-regulated wastes. These include personnel performing research and other waste-generating activities, and personnel performing environment, safety, and health activities (including waste management) to support Sandia operations and comply with regulatory requirements. Hazardous waste determination at SNL/NM is a collaborative effort between the individuals involved with the generation of RCRA-regulated waste and the Unit personnel. This approach is consistent with the process described in EPA’s clarifying memo (Cotsworth, 2002).

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

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

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

Refer to footnotes at end of table.

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

Regulatory Citation(s)	Description of Requirement	Location in this Document
§264.16	Personnel training	Appendix D[a]
§270.14(b)(13)	Closure and post-closure plans	Appendix F[a]
§264.112	Closure plan	Appendix F[a]
§264.118	Post-closure plan	Appendix F[a]
§264.178	Closure—containers	Appendix F[a]
§264.601	Environmental performance standards—miscellaneous units	Module II
§264.603	Post-closure care—miscellaneous units	Appendix F
§270.14(b)(14)	Post-closure notices (264.119)	Appendix F
§264.119	Post-closure notices	Appendix F
§270.14(b)(15)	Closure cost estimate (264.142)	Appendix F
	Financial assurance (264.143)	Appendix F
§264.142	Cost estimate for closure	Appendix F
§264.143	Financial assurance for closure	Appendix F
§270.14(b)(16)	Post-closure cost estimate (264.144)	Appendix F
	Post-closure care financial assurance (264.145)	Appendix F
§264.144	Cost estimate for post-closure care	Appendix F
§264.145	Financial assurance for post-closure care	Appendix F
§270.14(b)(17)	Liability insurance (264.147)	Appendix F
§264.147	Liability requirements	Appendix F
§270.14(b)(18)	Proof of financial coverage (264.149-150)	Appendix F
§270.14(b)(19)	Topographic map requirements	Appendix A[a]
§270.14(b)(19)(i)	Map scale and date	Appendix A[a]
§270.14(b)(19)(ii)	100-year floodplain area	Appendix A[a]
§270.14(b)(19)(iii)	Surface waters	Appendix A[a]
§270.14(b)(19)(iv)	Surrounding land uses	Appendix A[a]
§270.14(b)(19)(v)	Wind rose	Appendix A[a]
§270.14(b)(19)(vi)	Map orientation/north arrow	Appendix A[a]
§270.14(b)(19)(vii)	Legal boundaries	Appendix A[a]
§270.14(b)(19)(viii)	Access controls	Appendix A[a]
§270.14(b)(19)(ix)	Wells (injection and withdrawal)	Appendix A
§270.14(b)(19)(x)	Buildings or other structures	Appendix A
§270.14(b)(19)(xi)	Barriers—drainage or flood control	Appendix A[a]
§270.14(b)(19)(xii)	Location of operational units	Appendix A
§270.14(b)(20)	Other federal laws (270.3)	10.0
§270.14(b)(21)	Notice of extension approval for land disposal facilities	NA
§270.14(b)(22)	Summary of pre-application meeting	Overview
§270.14(c)	Groundwater monitoring requirements	Appendix A[b]
§264.90(b)	Exemptions from regulation of releases	NA
§270.14(d)	Information requirements for solid waste management units	11.0[c], Part 4
§270.15	Specific information requirements—containers	1.2[a]
§264.170	Subpart I applicability	1.1[a]

Refer to footnotes at end of table.

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

Regulatory Citation(s)	Description of Requirement	Location in this Document
§264.175	Containment	1.1, 1.2[a]
§264.176	Special requirements for ignitable or reactive waste	1.1.2[a]
§264.177	Special requirements for incompatible waste	1.1[a]
§264.17	General requirements for ignitable, reactive, or incompatible wastes	1.1[a]
§270.23	Specific information requirements—miscellaneous units	Module II[a]
§264.600	Subpart X applicability	Module II
§264.601	Environmental performance standards	Module II
§264.602	Monitoring analysis, inspection, response, reporting, and corrective action	Module II
§270.27	Specific information requirements—air emission controls for tanks, surface impoundments, and containers	1.1, 1.2[a]
§264 Subpart AA	Air emission standards for process vents	1.1.4.6
§264 Subpart BB	Air emission standards for equipment leaks	1.1.4.6
§264 Subpart CC	Air emission standards for tanks, surface impoundments, and containers	1.1.4.6

[a] Unit-specific information is provided in Unit-specific modules.
[b] Groundwater monitoring for regulated units is addressed in Part 3 of this comprehensive Part B permit request package.
[c] Corrective action is addressed in Parts 4 and 5 of this comprehensive Part B permit request package. Solid waste management units are discussed in Part 4. Post-closure care of the waste management units associated with corrective action is addressed in Part 5.

NA = not applicable

1.0 GENERAL SITE OPERATIONS

This section provides an overview of management activities involving RCRA-regulated wastes at the Units addressed in this General Part B.

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

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

- General Unit operations; containment systems; requirements for ignitable, reactive, and incompatible wastes; preparedness and prevention; hazards prevention; and

- Container storage practices, including air emission controls. Sandia/DOE do not manage RCRA-regulated wastes in tanks at any Unit.

The general information provided in this section, together with the Unit-specific information provided in Modules I through VI, address the applicable hazardous waste management facility requirements of 20 NMAC 4.1.500/40 CFR 264 [7-1-08], and 20 NMAC 4.1.900/40 CFR 270.14, 270.15, and 270.23 [7-1-08].

1.1 General Unit Operations

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

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

20 NMAC 4.1.500/40 CFR 264.175(b)(1) [7-1-08] requires that containment systems be maintained in leak proof and fully operable conditions. 20 NMAC 4.1.500/40 CFR 264.175(b)(2) and (3) [7-1-08], respectively, require that secondary containment systems be designed to: 1) contain at least 10 percent of the volume of potential liquid-bearing containers or the volume of the largest container, whichever is greater; and 2) prevent contact between containers and spilled material. 20 NMAC 4.1.500/40 CFR 264.175(b)(4) requires that run-on and run-off be prevented. These features of containment systems at each Unit are described in Section 1.0 of each Unit-specific module.

20 NMAC 4.1.500/40 CFR 264.175(b)(5) requires that secondary containment systems be managed to prevent overflow. Liquids that might accumulate at an SNL/NM Unit are contained within a secondary containment system, as described in each Unit-specific module. The

containment system is sufficiently impervious to contain leaks, spills, or accumulated precipitation until the liquid is removed, as described below.

Unit personnel begin taking action to evaluate and remove accumulated liquids upon discovery to prevent overflow. Personnel evaluate the liquids for two purposes: to determine the most appropriate method of removing the liquid from the containment; and to characterize the removed liquid for appropriate further management.

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

Accumulated liquids or waters generated during fire suppression activities may be characterized as a newly-generated waste using acceptable knowledge or may be analyzed, as applicable, for hazardous waste constituents known to be components of the wastes involved in the fire. In either case, the liquids will be characterized using the process described above. Containers of collected liquids are also stored with adequate secondary containment.

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

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

20 NMAC 4.1.900/40 CFR 270.14(b)(9) [7-1-08], requires a description of precautions taken to prevent accidental ignition or reaction of ignitable, reactive, or incompatible RCRA-regulated wastes as required to demonstrate compliance with 20 NMAC 4.1.500/40 CFR 264.17(c) [7-1-08]. 20 NMAC 4.1.900/40 CFR 270.15(d) [7-1-08], requires a description of procedures used to ensure compliance with 20 NMAC 4.1.500/40 CFR 264.17(b) and (c) [7-1-08], and 264.176 and 264.177.

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

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

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

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

Spark-proof tools may be used to open and close containers holding ignitable or reactive wastes. When large quantities of flammable or reactive liquids are transferred from one container to another, grounding procedures or equivalent methods are typically used to minimize or dissipate static charge created by liquid flow.

Smoking is not allowed within any Unit. ―No Smoking" signs are conspicuously placed at the entrance to each Unit, as required by 20 NMAC 4.1.500/40 CFR 264.17(a) [7-1-08].

Ignitable and reactive wastes are stored under controlled conditions as needed to prevent spontaneous combustion. For example, pyrophoric wastes (liquids or solids that can ignite in contact with air without an external ignition source) are stored in closed containers under oil or other inert liquid, or in sealed containers under an inert gas, to prevent contact with air and moisture.

Water-reactive wastes may be stored in WMAs equipped with automatic water sprinkler systems. When water-reactive wastes are present in such WMAs, Unit personnel will isolate the wastes with water-resistant barriers such as cabinets or overpack drums to keep water from coming into contact with the waste.

Buildings and areas where operations include open containers of ignitable or reactive wastes are equipped with intrinsically safe (spark-proof) electrical systems. All other buildings are equipped with electrical systems that meet applicable codes (e.g., storage of hazardous materials).

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

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

- Generate extreme heat or pressure, fire or explosions, or violent reaction;
- Produce uncontrolled toxic mists, fumes, dusts, or gases;
- Produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions;
- Damage the structural integrity of the device or Unit;
- Through other like means, threaten human health or the environment.

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

Incompatible wastes are kept separated from each other during storage to meet the requirements of 20 NMAC 4.1.500/40 CFR 264.177(c) [7-1-08]. Incompatible wastes are not packed in the same container, and no waste is placed in a container that previously held an incompatible waste (i.e., only new and/or clean containers are used to hold RCRA-regulated wastes), as required by 20 NMAC 4.1.500/40 CFR 264.177(a) and (b) [7-1-08], 20 NMAC 4.1.500/40 CFR 264.17(b), and 20 NMAC 4.1.900/ 40 CFR 270.15(d) [7-1-08]. Additional information is included in the Unit-specific modules.

Compatibility is determined in accordance with 20 NMAC 4.1.500/40 CFR 264, Appendix V [7-1-08], or equivalent information (e.g., NIOSH Pocket Guide to Chemical Hazards).

Containers holding ignitable or reactive wastes are located at least 50 feet from the SNL/NM facility property line, except at the MSB, where such containers are located at least 50 feet from the fence surrounding Manzano Base. Containers holding ignitable or reactive wastes are protected from sources of ignition or reaction as required by 20 NMAC 4.1.500/40 CFR 264.176 [7-1-08].

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

20 NMAC 4.1.900/40 CFR 270.14(b)(8) [7-1-08], and 20 NMAC 4.1.500/40 CFR 264, Subpart C [7-1-08], require a description of how Units will comply with preparedness and prevention requirements. The following sections address required equipment, testing and maintenance of equipment, and access to communications or alarm systems.

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

Sandia/DOE maintain required equipment, including internal communications or alarm systems; devices to summon emergency assistance; fire control, spill control, and decontamination

equipment; and adequate water volume and pressure for fire suppression equipment at each Unit.

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

Each Unit (except the MSB) is equipped with fire hydrants. The locations of the hydrants are shown in each Unit-specific module. Each fire hydrant meets the requirements of the Appendix B of the International Fire Code, and provides at least 1500 gallons per minute of water at 20 psi, which meets the requirements of 20 NMAC 4.1.500/40 CFR 264.32(d) [7-1-08].

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

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

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

Sandia personnel test fire suppression equipment on monthly, quarterly, and annual schedules, based on National Fire Protection Association (NFPA) 25 ―Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems" (NFPA, 2002). Monthly tests typically include visual checks of valves and pressure gages. Quarterly tests typically include checks of water flow, switches, and alarms. Annual activities typically include valve inspection and maintenance.

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

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

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

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

SNL/NM Units are designed and operated to prevent hazards, i.e., to minimize the possibility of fire, explosion, or any unplanned or nonsudden releases of hazardous waste or constituents to the environment. Specific Unit design and construction information is presented in Section 1.1 of each Unit-specific Part B module. The following sections describe the general procedures, equipment, and structures that are currently used at SNL/NM Units to prevent hazards. These include preventing hazards during unloading of waste containers, preventing runoff and flooding, preventing contamination of water supplies, mitigating the effects of power outages, preventing undue exposure to personnel, and preventing releases to the atmosphere. Any additional information about procedures is included in Section 1.2 of each Unit-specific module.

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

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

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

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

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

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

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

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

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

Due to the depth to groundwater at SNL/NM and Unit operating procedures, it is not anticipated that there will be any impact to groundwater or other water supplies as a result of ongoing operations that involve handling RCRA-regulated wastes at any Unit. Contamination of surface water and groundwater is prevented by Unit operating procedures as well as the spill containment features located within a specific WMA at a Unit. Spills are contained within the buildings or within secondary containment systems, and are cleaned up promptly. Spills occurring outside the buildings will be contained promptly and cleaned up so as not to come into contact with surface water or groundwater. Some units are supplied with potable water that is provided through pressurized underground water supply lines. These water supply lines are designed to withstand industrial activities that are typical of waste management operations, and they are not affected by Unit operations.

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

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

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

- Lights: Fixed battery-operated lights operate in the buildings in each Unit where available.

- Alarms: Fire alarm devices in each Unit (except the MSB) are equipped with emergency power supply.

- Pumps and other equipment: Personnel use portable manually- or pneumatically-operated equipment or wait for power to be restored.

- Container-handling equipment: Unit personnel obtain forklifts and drum-handling equipment from Sandia’s transportation department.

- Personal Protective Equipment: Unit personnel replace equipment with supplies in the Unit storage areas.

- Vehicles: Unit personnel obtain replacements for vehicles from Sandia’s transportation department.

- Telephone: Unit personnel use cellular telephones or portable radios.

- Fire sprinklers: Unit personnel use portable fire extinguishers.

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

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

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

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

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

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

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

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

Subpart AA

Sandia/DOE do not use any of the processes identified in 20 NMAC 4.1.500/40 CFR 264, Subpart AA [7-1-08] during storage of RCRA-regulated wastes. Therefore, the requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart AA [7-1-08] do not apply to SNL/NM.

Subpart BB

Sandia/DOE do not routinely manage RCRA-regulated wastes with organic concentrations $\geq$ 10 percent by weight in process equipment identified in 20 NMAC 4.1.500/40 CFR 264, Subpart BB [7-1-08] during storage. Equipment used in such service will be used for less than 300 hours per calendar year and is therefore exempt from the requirements of 20 NMAC

4.1.500/40 CFR 264.1052-.1060 as noted in 20 NMAC 4.1.500/40 CFR 264.1050(f). A list of such equipment will be maintained with other Unit records, as described in Section 9.0. Further information is provided in Modules II, III, and V.

Subpart CC

RCRA-regulated wastes stored in containers at SNL/NM may be subject to 20 NMAC 4.1.500/40 CFR 264, Subpart CC [7-1-08], "Air Emission Standards for Tanks, Surface Impoundments, and Containers," based on applicability criteria specified in 20 NMAC 4.1.500/40 CFR 264.1080 [7-1-08]. These standards are not applicable to:

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

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

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

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

5. Containers equipped with and operating air emission controls in accordance with the requirements of an applicable Clean Air Act regulation (20 NMAC 4.1.500/40 CFR 264.1080[b] [7-1-08].

Furthermore, a container is exempt from the 20 NMAC 4.1.500/40 CFR 264, Subpart CC [7-1-08] container standards in 20 NMAC 4.1.500/40 CFR 264.1086 [7-1-08] if:

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

- The organic content of all RCRA-regulated waste entering a container has been reduced by an organic destruction or removal process achieving any one of the conditions specified in 20 NMAC 4.1.500/40 CFR 264.1082(c)(2)(i)-(vi) [7-1-08] (20 NMAC 4.1.500/40 CFR 264.1082 [7-1-08]), or

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

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

At SNL/NM, RCRA-regulated wastes that are subject to 20 NMAC 4.1.500/40 CFR 264, Subpart CC [7-1-08] requirements are managed in primary containers that have a design capacity greater than 0.1 m^3 but less than 0.46 m^3 while in the container storage Units. Such containers are subject to Container Level 1 standards in 20 NMAC 4.1.500/40 CFR 264.1086(c). Two types of containers are used:

- U.S. Department of Transportation-approved containers that meet the requirements in 20 NMAC 4.1.500/40 CFR 264.1086(f), or

- Containers equipped with covers and closure devices that form a continuous barrier over the container openings as specified in 20 NMAC 4.1.500/40 CFR 264.1086(c)(ii).

Releases to the atmosphere are not anticipated at any of the container storage Units because containers are kept closed during storage. Covers of containers that are subject to the Container Level 1 standards are secured and maintained in closed and sealed conditions (i.e., no cracks, holes, gaps, or other open spaces) while the containers are in storage. Covers are opened only for access for the purposes described in 20 NMAC 4.1.500/40 CFR 264.1086(c) (1)-(5) [7-1-08]: these include adding waste to or removing waste from the container; repackaging the contents; and inspecting or sampling the waste in the container. At each Unit where containers subject to Container Level 1 standards are stored, personnel take the following steps:

- Check containers and the condition and placement of their covers during inspections of stored containers.

- Take remedial actions if needed.

- Record container condition and remedial actions taken in the inspection reports.

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

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

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

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

1.2 Container Storage

The information provided in this section is submitted to address the applicable container storage requirements of 20 NMAC 4.1.900/40 CFR 270.15 [7-1-08], and 20 NMAC 4.1.500/ 40 CFR 264, Subpart I (7-1-08). The following sections provide brief descriptions of waste management practices applicable to all Units used for container storage of RCRA-regulated wastes at SNL/NM.

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

1.2.1 Container Types and Labeling

Containers that may be used to store RCRA-regulated waste stored at Units qualify as "containers" as defined in 20 NMAC 4.1.100/40 CFR 260.10 [7-1-08]. That is, they are "portable devices in which a material is stored, transported, disposed of, or otherwise handled."

A number of container types are used for storage of RCRA-regulated wastes, depending on the type of waste and the ultimate disposition of the waste. Waste containers that may be stored at the SNL/NM Units include, but are not limited to, 30-, 55-, 83-, 85-, and 110-gallon steel, polyethylene, and fiber drums; fiberglass-reinforced plastic or plywood boxes; various steel boxes; metal overpack boxes; cardboard shipping containers; gas cylinders; roll-off bins; labpack containers; various small containers (e.g., 1-, 2-, 5-, 10-, and 20-gallon drums or pails); bags; and some oversized, irregularly-shaped containers or large self-contained items (e.g. a large piece of equipment containing RCRA-regulated waste in which the RCRA-regulated component is located within the interior of the item, or is covered with an inert material, such as plastic sheeting, if located on the exterior of the item).

Containers of RCRA-regulated wastes are clearly labeled with the words "hazardous waste" or with other words that identify the container contents. The accumulation start date is clearly marked on each container holding RCRA-regulated waste at a SNL/NM Unit.

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

As required by 20 NMAC 4.1.500/40 CFR 264.173(b) [7-1-08], containers of RCRA-regulated wastes at SNL/NM are handled in a manner that will not cause them to rupture or leak. Containers are handled in a manner to prevent shifting and falling. As required by 20 NMAC 4.1.500/40 CFR 264.173(a) [7-1-08], stored containers at SNL/NM are kept closed during storage except when waste is added to or removed from a container, the contents of a container need to be repackaged, or waste is being inspected or sampled.

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

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

Prior to transportation or storage, additional containment is provided for each container that is not in good condition (e.g., severe rusting, apparent structural defects). The container may be overpacked or the waste may be repackaged in containers that are in good condition (20 NMAC 4.1.500/40 CFR 264.171 [7-1-08]).

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

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

Storage configuration of containers depends upon the type of container, its size, and its weight restrictions as well as the load-bearing and/or secondary containment capacity of the specific Unit. Containers are stored in a stable manner, and may be stacked. Containers holding RCRA-regulated liquid wastes without absorbent are not stacked without separation or some other means to allow Unit personnel to distinguish between containers when identifying the source of liquids in secondary containment areas.

Aisle space is maintained to enable the unobstructed movement of Unit and emergency response personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of Unit operation in an emergency (20 NMAC 4.1.500/40 CFR 264.35 [7-1-08]). Additional information is provided in Unit-specific modules.

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

As required by 20 NMAC 4.1.500/40 CFR 264.172 [7-1-08], only containers made of or lined with materials that will not react with and are otherwise compatible with the RCRA-regulated waste stored in them are managed at SNL/NM Units. Unit personnel will evaluate the compatibility of the waste to the container by considering one or more of the following as appropriate:

- Physical properties of the waste.
- Chemical properties of the original raw material(s) or commercial chemical product(s) used in the activity that generated the waste (obtained through material safety data sheets or other published information)
- Physical and chemical similarities between the waste and the original material.

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

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

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

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

2.0 SITE DESCRIPTION

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

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

3.0 WASTE ANALYSIS PLAN

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

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

4.0 INSPECTION PLAN

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

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

5.0 PERSONNEL TRAINING PLAN

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

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

6.0 EMERGENCY RESPONSE AND CONTINGENCY PLAN

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

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

7.0 CLOSURE PLAN

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

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

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

8.0 TREATMENT

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

8.1 Handling and Treatment of Unstable Wastes

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

If the material has deteriorated such that handling the chemical would pose an imminent and substantial threat of a release that could be harmful to human health or the environment, on-site stabilization may be performed to render the material nonhazardous. Treatment may include venting of known, nonhazardous gas cylinders or stabilizing (e.g., rehydrating) the chemical. Unknown gas cylinders are not vented to the atmosphere; however, a sample of the gas may be taken and analyzed to characterize the gas. According to 20 NMAC 4.1.500/ 40 CFR 264.1(g)(8) [7-1-08], and 20 NMAC 4.1.900/40 CFR 270.1(c)(3)(i) [7-1-08], treatment of this type is exempt from permitting requirements and from 20 NMAC 4.1.500/40 CFR 264. Once the material has been stabilized and is safe to handle, it will be disposed of according to normal procedures through the appropriate Unit.

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

Subpart AA

Sandia/DOE do not use any of the processes identified in 20 NMAC 4.1.500/40 CFR 264, Subpart AA [7-1-08] for the treatment of RCRA-regulated wastes. Therefore, the requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart AA [7-1-08] do not apply to SNL/NM.

Subpart BB

During treatment, Sandia/DOE do not routinely manage RCRA-regulated wastes with organic concentrations $\geq$ 10 percent by weight in process equipment identified in 20 NMAC 4.1.500/ 40 CFR 264, Subpart BB [7-1-08] except during treatment at the TTF. Sandia/DOE

occasionally manage such waste using process equipment identified above at the RMWMF and AHCF.

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

Subpart CC

RCRA-regulated wastes are treated in containers at the RMWMF and AHCF. Such wastes and treatment processes may be subject to 20 NMAC 4.1.500/40 CFR 264, Subpart CC [7-1-08], "Air Emission Standards for Tanks, Surface Impoundments, and Containers," based on applicability criteria specified in 20 NMAC 4.1.500/40 CFR 264.1080 [7-1-08]. These standards are not applicable to:

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

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

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

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

5. Containers equipped with and operating air emission controls in accordance with the requirements of an applicable Clean Air Act regulation (20 NMAC 4.1.500/40 CFR 264.1080[b] [7-1-08].

Furthermore, a container is exempt from the 20 NMAC 4.1.500/40 CFR 264, Subpart CC [7-1-08] container standards in 20 NMAC 4.1.500/40 CFR 264.1086 [7-1-08] if:

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

- The organic content of all RCRA-regulated waste entering a container has been reduced by an organic destruction or removal process achieving any one of the conditions specified in 20 NMAC 4.1.500/40 CFR 264.1082(c)(2)(i)-(vi) [7-1-08] (20 NMAC 4.1.500/40 CFR 264.1082 [7-1-08]), or

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

Sandia personnel assume that each container of RCRA-regulated wastes undergoing treatment that meets the applicability criteria for Subpart CC (i.e., each container that is not included in any of items 1 through 5 above) is subject to the Subpart CC requirements, unless a waste determination is made in accordance with 20 NMAC 4.1.500/40 CFR 264.1083 to establish that one or more of the exemptions is applicable. The waste determination process is described in Section B.5.3 in Appendix B of this General Part B, and the results are included in the operating record as described in Section 9.0.

At SNL/NM, RCRA-regulated wastes that are subject to 20 NMAC 4.1.500/40 CFR 264, Subpart CC [7-1-08] requirements are treated in primary containers that have a design capacity of less than 0.1 m^3. These treatment activities are exempt from Subpart CC standards, as noted above. Sandia/DOE do not perform treatment activities that are subject to Container Level 3 standards.

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

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

9.0 RECORDKEEPING

The information provided in this section is submitted to address the applicable requirements of 20 NMAC 4.1.500/40 CFR 264 Subpart E, [7-1-08]. The following Unit-specific records are maintained by Sandia/DOE at each Unit unless specified otherwise in each Unit-specific Part B module.

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

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

- A written or electronic operating record that describes:

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

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

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

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

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

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

  - inspection forms for the last three years

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

  - treatment notices and certifications (as specified in 20 NMAC 4.1.800/40 CFR 268.7(b), (d), and (e) or 268.9(d) [7-1-08])

  - off-site treatment facility notices and certifications as specified in 20 NMAC 4.1.500/40 CFR 264.73(b)(11), and on-site treatment facility information as specified in 20 NMAC 4.1.500/40 CFR 264.73(b)(12)

  - off-site storage facility notices and certifications (as specified in 20 NMAC 4.1.500/ 40 CFR 264.73(b)(15), and on-site storage facility information as specified in 20 NMAC 4.1.500/40 CFR 264.73(b)(16).

- Training records for current personnel;
- Written inspection schedule; and
- Air emissions records (as specified in 20 NMAC 4.1.500/40 CFR 264.1064 and 264.1089 [7-1-08]). These include a list of process equipment at the Unit that is identified in 20 NMAC 4.1.500/40 CFR 264 Subpart BB and is used for less than 300 hours per year for management of RCRA-regulated wastes with organic concentrations ≥ 10 percent by weight.

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

- A copy of the General Part B permit renewal request/application (or permit upon issuance);
- Correspondence and other documents from government agencies;
- Notices to off-site generators (as specified in 20 NMAC 4.1.500/40 CFR 264.12[b] [7-1-08]);
- Waste minimization certification;
- Training records for former employees (maintained for a minimum of three years from the date the employee last worked at a Unit);
- Historical training records for current employees)
- Manifest documents for RCRA-regulated waste shipped off site;
- A copy of the Hazardous Waste Report (Biennial Report);
- Copies of unmanifested waste reports;
- Certification and documentation that the Unit and any associated closed-vent system, control system, and containers meet the specifications of 20 NMAC 4.1.500/40 CFR 264.1084 and 1089 [7-1-08];
- Historical air emission records.
- Historical information from the written or electronic operating record.
- Superseded versions of the General Part B permit renewal request/application, the permit, Contingency Plan, Inspection Plan, Waste Analysis Plan, Treatment Plans, and Training Plan.

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

Sandia/DOE will prepare and submit a hazardous waste report (biennial report) to the New Mexico Environment Department (NMED) by March 1 of each even-numbered year as required by 20 NMAC 4.1.500/40 CFR 264.75 and 20 NMAC 4.1.300/40 CFR 262.41 [7-1-08]. The biennial report will be submitted to the NMED on U.S. Environmental Protection Agency (EPA) Form 8700-13A/B (June 2000 or update) unless directed otherwise. The report will cover SNL/NM Unit activities during the previous calendar year and will include the information requested on the form and in the accompanying instructions, such as:

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

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

Waste from off-site sources may be accepted at SNL/NM, provided that such waste is properly characterized and transported, and meets the requirements listed in Section B.4 of Appendix B. If Sandia/DOE accepts any wastes for treatment or storage from an off-site large quantity generator without an accompanying manifest, or without an accompanying shipping paper as described in 20 NMAC 4.1.500/40 CFR 264.76 [7-1-08], Sandia/DOE will prepare and submit an Unmanifested Waste Report (EPA Form 8700-13B) to the NMED within fifteen days after receiving the waste. The report will include the following:

- The EPA identification number, name, and address of the facility;
- The date the Unit received the waste;
- The EPA identification number, name, and address of the generator and transporter, if available;

- A description and the quantity of each unmanifested RCRA-regulated waste and facility received;

- The method of treatment, storage, or disposal for each RCRA-regulated waste;

- The certification signed by Sandia/DOE or an authorized representative; and

- A brief explanation of why the waste was unmanifested, if known.

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

In accordance with the requirements of 20 NMAC 4.1.500/40 CFR 264.77 [7-1-08], Sandia/DOE will also report the following to the NMED:

- Releases, fires, and explosions as specified in 20 NMAC 4.1.500/40 CFR 264.56(j) [7-1-08];

- Unit closures specified in 20 NMAC 4.1.500/40 CFR 264.115 [7-1-08];

- Manifest discrepancies that cannot be resolved within 15 days after receiving the waste as required by 20 NMAC 4.1.500/40 CFR 264.72(b) [7-1-08];

- Occurrence(s), if any, when RCRA-regulated waste is placed in a container in noncompliance with conditions specified in 20 NMAC 4.1.500/40 CFR 264.1090[a] [7-1-08] (20 NMAC 4.1.500/40 CFR 264.1082[c][1] or [2] [7-1-08]); and

- As otherwise required by 20 NMAC 4.1.500/40 CFR 264, Subparts F, BB, and CC [7-1-08].

10.0 OTHER FEDERAL LAWS

The following federal laws are required under 20 NMAC 4.1.900/40 CFR 270.3 and 270.14(b)(20) [7-1-08], to be given consideration when applying for a hazardous waste facility permit. When any of these laws is applicable, its procedures must be followed. Requirements and applicability of each law are briefly summarized.

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

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

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

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

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

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

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

Protection Act (ARPA) (*16 USC 470aa et seq.*), which requires a permit from the U.S. Department of the Interior (DOI) for excavation or removal of archeological resources from public or pueblo lands. Both of these statutes apply to known or future cultural properties recorded on KAFB land used by Sandia/DOE. Any excavations conducted on, or removal of archaeological resources from, KAFB land used by Sandia/DOE require an ARPA permit obtained through the DOI, National Park Service.

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

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

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

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

11.0 CORRECTIVE ACTION

In accordance with 20 NMAC 4.1.900/40 CFR 270.14(d) [7-1-08], information on solid waste management units is presented in Part 4 of this comprehensive Part B permit request. Solid waste management units are shown on Figure 1 in Part 4.

12.0 CERTIFICATION

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

3 May 2012
Michael W. Hazen, Vice President
Sandia Corporation
Albuquerque, New Mexico
Operator

Date Signed

3 May 2012
Geoffrey Beausoleil, Manager
U.S. Department of Energy
National Nuclear Security Administration
Sandia Site Office
Albuquerque, New Mexico
Owner

Date Signed

13.0 REFERENCES

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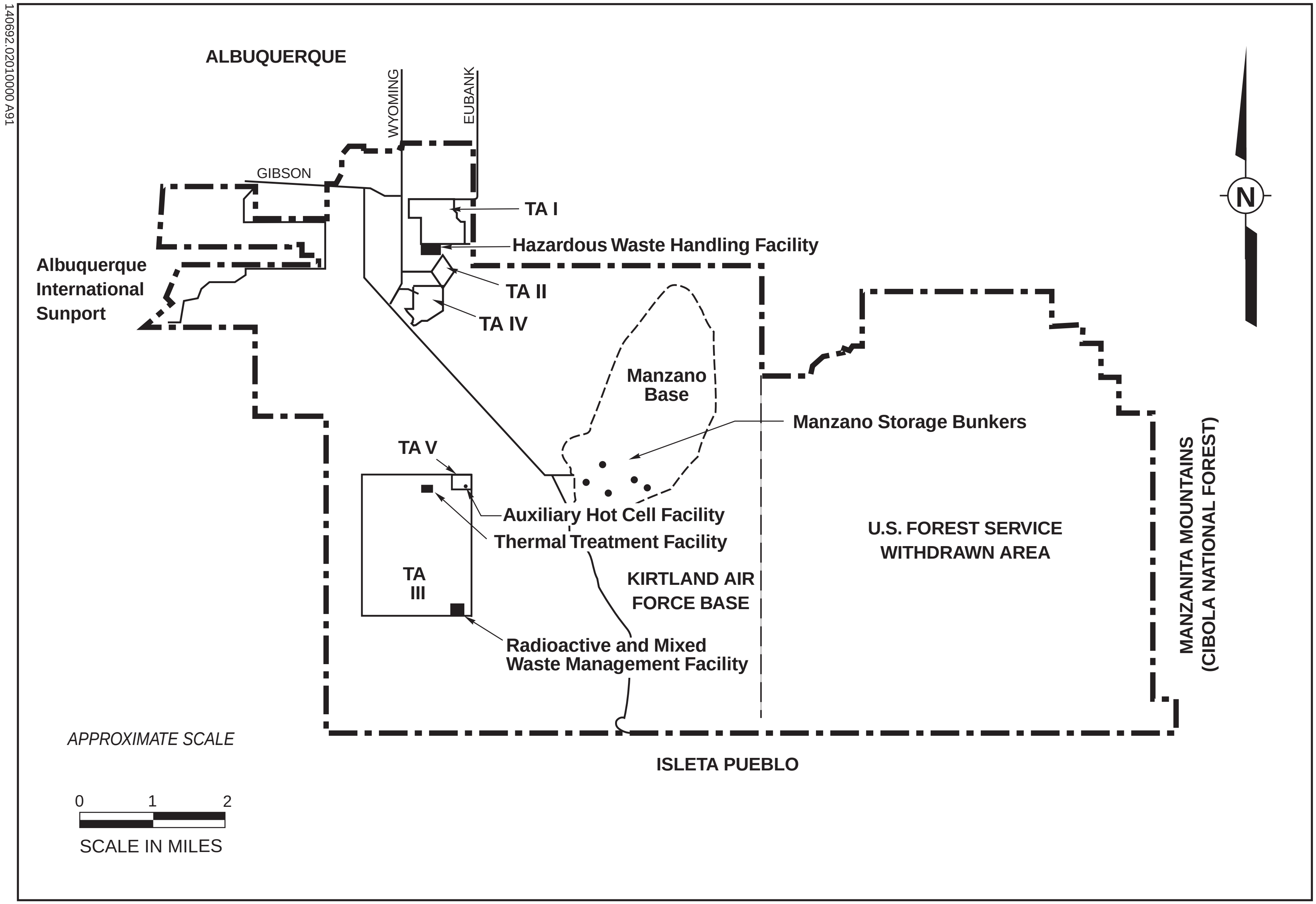

Figure 1

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

APPENDIX A

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

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ACRONYMS AND ABBREVIATIONS

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

SITE-WIDE DESCRIPTION FOR SANDIA NATIONAL LABORATORIES/NEW MEXICO

The information provided in this appendix is submitted in accordance with the applicable requirements of New Administrative Code, Title 20, Chapter 4, Part 1, Subparts V and IX (20 NMAC 4.1.1500– and .900), revised October 1, 2003 [7-1-08]. 20 NMAC 4.1.500 and .900 adopt, with limited exceptions, all of the Code of Federal Regulations, Title 40, Parts 264 and 270 (40 CFR 264 and 270). The following subject areas are addressed in this appendix or in Section 2.0 of each Unit-specific module.

- A general description of the Sandia National Laboratories/New Mexico (SNL/NM) site (20 NMAC 4.1.900/40 CFR 270.14[b][1] [7-1-08]);
- Site-wide security procedures and equipment (20 NMAC 4.1.900/40 CFR 270.14[b][4] and 270.14[b][19][viii] [7-1-08]; 20 NMAC 4.1.500/40 CFR 264.14 [7-1-08]);
- Site-wide traffic patterns, volume, and controls (20 NMAC 4.1.900/40 CFR 270.14[b][10] [7-1-08]);
- Site location information for compliance with the seismic standard and floodplain requirements (20 NMAC 4.1.900/40 CFR 270.14[b][11] [7-1-08], and 20 NMAC 4.1.500/ 40 CFR 264.18[a] and [b] [7-1-08]);
- Site-wide topographic map requirements (20 NMAC 4.1.900/40 CFR 270.14[b][19] [7-1-08]);
- Site-wide groundwater monitoring and protection information (20 NMAC 4.1.900/40 CFR 270.14[c] [7-1-08], and 20 NMAC 4.1.500/40 CFR 264.90[a] [7-1-08]); and
- Other permit activities.

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

For the purposes of this permit renewal request/application, SNL/NM (the facility) is owned by the U.S. Department of Energy/National Nuclear Security Administration (DOE) and operated by Sandia.

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

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

Table A-1
RCRA-Regulated Waste Management Units

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

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

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

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

In accordance with 20 NMAC 4.1.500/40 CFR 264.14(a) [7-1-08], an owner or operator must prevent the unknowing entry, and minimize the possibility for the unauthorized entry, of persons or livestock onto the active portion of a facility. The following sections describe the security provisions provided at SNL/NM to prevent unknowing or unauthorized entry onto the active portions of Units.

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

20 NMAC 4.1.500/40 CFR 264.14 [7-1-08] and 270.14[b][19][viii] [7-1-08], require that security be provided by 24-hour surveillance which is continuously monitored and controls access to the facility (20 NMAC 4.1.500/40 CFR 264.14[b][1] [7-1-08]), or if that requirement cannot be met, a natural or artificial barrier and means to control entry must be provided (20 NMAC 4.1.500/40 CFR 264.14[b][2] [7-1-08]). The design and operation of the SNL/NM facility fully meet the security requirements of 20 NMAC 4.1.500/40 CFR 264.14(b)(2) [7-1-08].

The five TAs, Manzano Base, and Units outside TAs are surrounded by fences that prohibit access except through gated entrances. Only personnel with appropriate Sandia-issued access badges and identification, or escorted visitors, are allowed access to the TAs and all Units. The gates and/or doors to all Units are closed and locked during non-operating hours.

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

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

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

20 NMAC 4.1.500/40 CFR 264.14(c) [7-1-08], requires that signs meeting the requirements of that section be posted. Each SNL/NM Unit is posted with ―Danger: Unauthorized Personnel Keep Out" (or functionally equivalent) signs in English and Spanish. The signs are legible from a distance of 25 feet and can be seen from any approach to any Unit. The signs and their placement meet the requirements of 20 NMAC 4.1.500/40 CFR 264.14(c) [7-1-08]. Any additional Unit-specific information on warning signs is provided in each Unit-specific module.

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

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

RCRA-regulated waste is generated during operations at sites throughout SNL/NM. Because RCRA-regulated waste may be generated throughout SNL/NM, waste transport may occur on nearly all roads within KAFB. Off-site wastes may be received at SNL/NM (see Appendix B of this General Part B). The Units included in this permit application can be reached from the KAFB

entrance gates at Wyoming Boulevard, Truman Avenue, Gibson Boulevard, or Eubank Boulevard (Figure A-4). KAFB may restrict hazardous material traffic to one or more gates.

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

A.3.1 Traffic Patterns

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

A.3.2 Traffic Volumes

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

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

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

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

A.3.3 Traffic Control Signals

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

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

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

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

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

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

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

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

SNL/NM is located in Bernalillo County, New Mexico, which is listed in Appendix VI of 20 NMAC 4.1.500/40 CFR 264 [7-1-08]. None of the SNL/NM Units are located within 3,000 feet (ft) of any fault with Holocene displacements (Machette, 1982). Therefore, all SNL/NM Units are compliant with the seismic standards in 20 NMAC 4.1.500/40 CFR 264.18(a) [7-1-08] and 20 NMAC 4.1.900/40 CFR 270.14(b)(11)(ii) [7-1-08].

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

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

The locations of the 100-year floodplains of Tijeras Arroyo and Arroyo del Coyote are shown in Figure A-2. The floodplain portion of Figure A-2 was derived from a U.S. Army Corps of Engineers map (COE, 1979), prepared using Federal Emergency Management Administration guidelines that are equivalent to the mapping techniques used to prepare Federal Insurance Administration floodplain maps. None of the SNL/NM Units are located within a 100-year floodplain, as defined in 20 NMAC 4.1.500/40 CFR 264.18(b)(2)(i) [7-1-08], and as regulated under 20 NMAC 4.1.500/40 CFR 264.18(b)(1) [7-1-08] and 20 NMAC 4.1.900/40 CFR 270.14(b)(11)(iv) [7-1-08]. Therefore, all SNL/NM Units are compliant with the floodplain standards.

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

Figure A-2 is provided to meet the requirements of the 20 NMAC 4.1.900/40 CFR 270.14(b)(19) [7-1-08]. Figure A-2 is a topographic map of KAFB that shows the SNL/NM TAs and includes the following:

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

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

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

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

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

A network of meteorological towers is used to monitor weather conditions at SNL/NM. Data indicate that the overall prevailing winds at SNL/NM are from the east, except that winter winds at the 100-ft elevation are from the north. Rapid night time ground cooling after sunset on cloudless or near-cloudless nights produces strong temperature inversions in which temperature increases with elevation (an atmospheric condition resulting from a reversal of the normal temperature lapse rate). This rapid cooling effect generates nighttime drainage winds out of the mountains, which are strongest at the mouths of the larger canyons. Nighttime winds in these areas are typically from the east and southeast, while daytime winds are typically from the southwest, west, and northwest. It also appears that Tijeras Arroyo diverts surface air flow between TAs III and V on the south and TAs I, II, and IV, and Albuquerque on the north (SNL/NM 2002, 2004). The channeling of wind through Tijeras Canyon can be seen by comparing the wind roses from these two areas (SNL/NM, 2002). Figure A-2 shows wind roses that summarize wind speeds and directions for TA-II (near the HWHF), the southeast corner of TA-III (near the RMWMF), and the northeast corner of TA-III (near the AHCF and TTF). Wind roses are also shown on the Unit-specific topographic maps.

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

Albuquerque is the largest population center in Bernalillo County and also the closest population center to KAFB and SNL/NM. According to Census 2010 data, the total population of the Albuquerque metropolitan area is633,233 (U.S. Census Bureau, 2010). This population includes permanent residents of KAFB living in the KAFB housing areas. An additional 29,341 people live outside the Albuquerque metropolitan area but within Bernalillo County (U.S. Census Bureau, 2010).

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

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

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

Some areas of KAFB and SNL/NM are within flight paths for aircraft that are taking off and landing at the Albuquerque International Sunport. Sandia/DOE studied the likelihood and potential impact of airplane crashes into SNL/NM facilities (DOE, 1999). The analysis covered several operations and facilities throughout SNL/NM, including the RMWMF and facilities near the HWHF and the AHCF. Such accidents were determined to be very unlikely; the annual probability varies from 2.8 in 1,000,000 at the RMWMF to 90 in 1,000,000 near the HWHF.

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

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

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

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

A.5.5 Waste Management Areas

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

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

The nine SNL/NM Units included in Part 2 of this Sandia/DOE comprehensive Part B permit request are storage and/or treatment Units that are subject to 20 NMAC 4.1.500/40 CFR 264.101 [7-1-08] which requires that operators of treatment, storage, or disposal facilities develop and implement corrective actions as necessary to protect human health and the environment from past, present, or future releases of RCRA-regulated wastes. None of the nine storage and/or treatment Units addressed in Part 2 have released RCRA-regulated wastes in the past.

The nine Units are not subject to the groundwater protection and monitoring requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart F [7-1-08] because they are not regulated units or solid waste management units.

SNL/NM currently has one regulated unit (the Chemical Waste Landfill) that is subject to the groundwater protection and monitoring requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart F [7-1-08]. Chemical Waste Landfill groundwater monitoring is addressed in Part 3 of this Sandia/DOE comprehensive Part B permit request.

A.7 OTHER PERMIT ACTIVITIES

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

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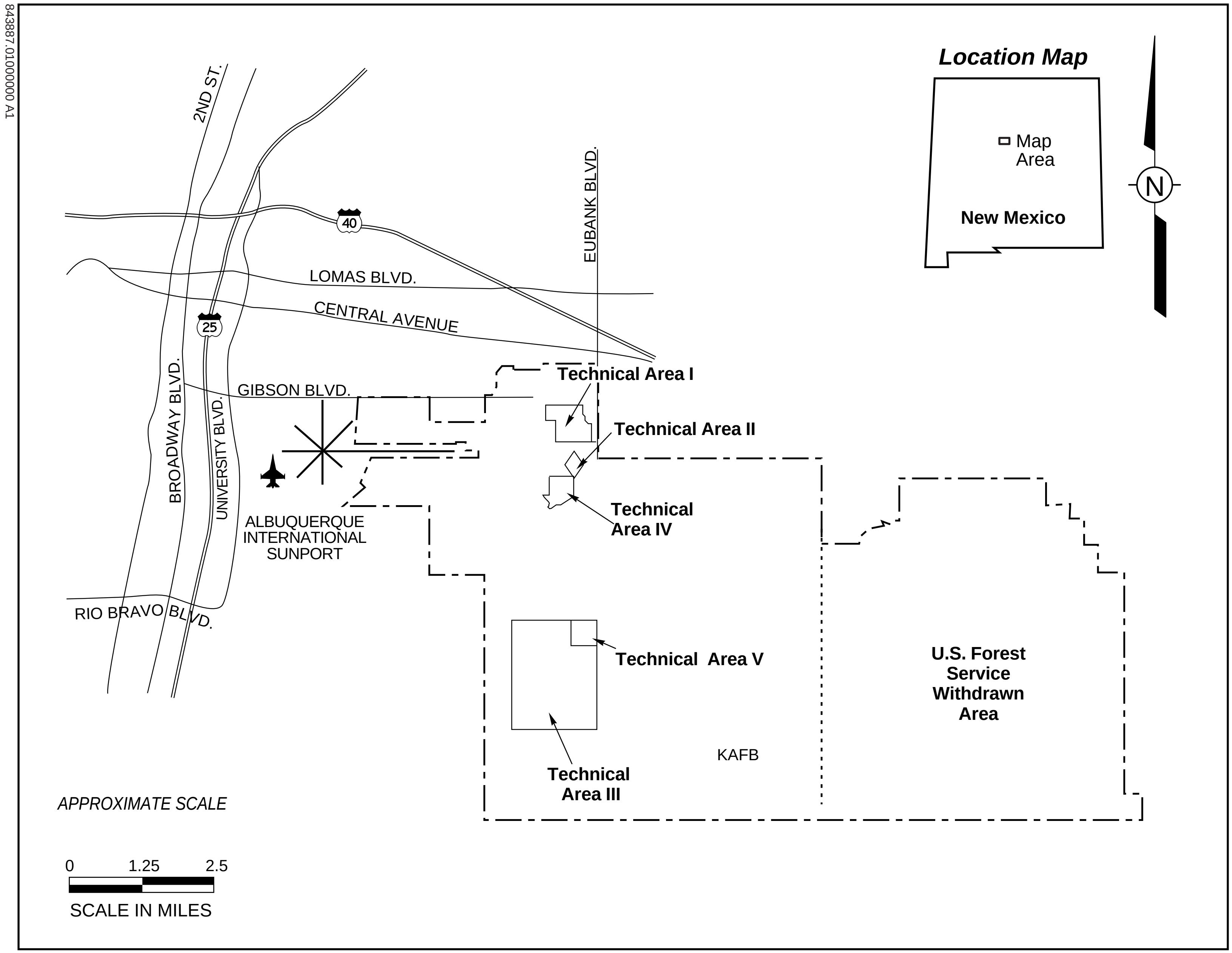
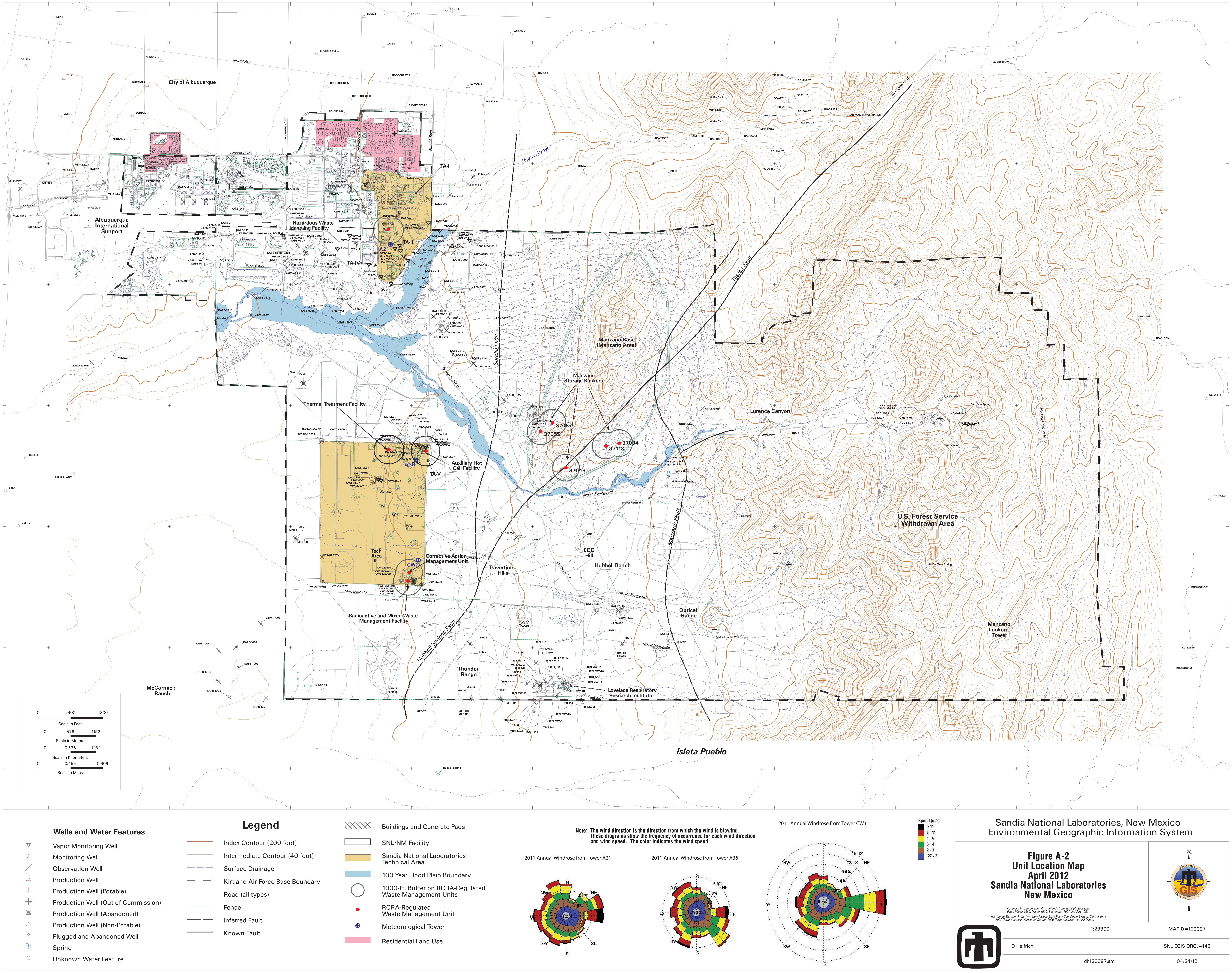


Document: SNL/NM General Part B, Appendix A
Revision No.: 3.0
Date: November 2003

Figure A-1
Site Location Map, Albuquerque and Kirtland Air Force Base (KAFB)


City of Albuquerque
Albuquerque International Sunport
Hazardous Waste Handling Facility
TA-I
TA-II
TA-IV
TA-V
A21
A36
CW1
Thermal Treatment Facility
Auxiliary Hot Cell Facility
Tech Area III
Corrective Action Management Unit
Radioactive and Mixed Waste Management Facility
Manzano Base (Manzano Area)
Manzano Storage Bunkers
37057
37055
37034
37118
37045
Lurance Canyon
U.S. Forest Service Withdrawn Area
EOD Hill
Hubbell Bench
Travertine Hills
Optical Range
Thunder Range
Lovelace Respiratory Research Institute
Manzano Lookout Tower
McCormick Ranch
Isleta Pueblo
Sandia Fault
Tijeras Fault
Manzano Fault
Hubbell Springs Fault
Tijeras Arroyo
Central Ave
Gibson Blvd
Magazine Rd
Coyote Springs Rd
Optical Range Rd
Scale in Feet 0 2400 4800
Scale in Meters 0 576 1152
Scale in Kilometers 0 0.576 1.152
Scale in Miles 0 0.455 0.909
Wells and Water Features
Vapor Monitoring Well
Monitoring Well
Observation Well
Production Well
Production Well (Potable)
Production Well (Out of Commission)
Production Well (Abandoned)
Production Well (Non-Potable)
Plugged and Abandoned Well
Spring
Unknown Water Feature
Legend
Index Contour (200 foot)
Intermediate Contour (40 foot)
Surface Drainage
Kirtland Air Force Base Boundary
Road (all types)
Fence
Inferred Fault
Known Fault
Buildings and Concrete Pads
SNL/NM Facility
Sandia National Laboratories Technical Area
100 Year Flood Plain Boundary
1000-ft. Buffer on RCRA-Regulated Waste Management Units
RCRA-Regulated Waste Management Unit
Meteorological Tower
Residential Land Use
Note: The wind direction is the direction from which the wind is blowing. These diagrams show the frequency of occurrence for each wind direction and wind speed. The color indicates the wind speed.
2011 Annual Windrose from Tower A21
2011 Annual Windrose from Tower A36
2011 Annual Windrose from Tower CW1
Speed (m/s)
> 11
6 - 11
4 - 6
3 - 4
2 - 3
.27 - 2
Sandia National Laboratories, New Mexico
Environmental Geographic Information System
Figure A-2
Unit Location Map
April 2012
Sandia National Laboratories
New Mexico
1:28800
MAPID=120097
D Helfrich
SNL EGIS ORG. 4142
dh120097.aml
04/24/12

843887.01000000 A11

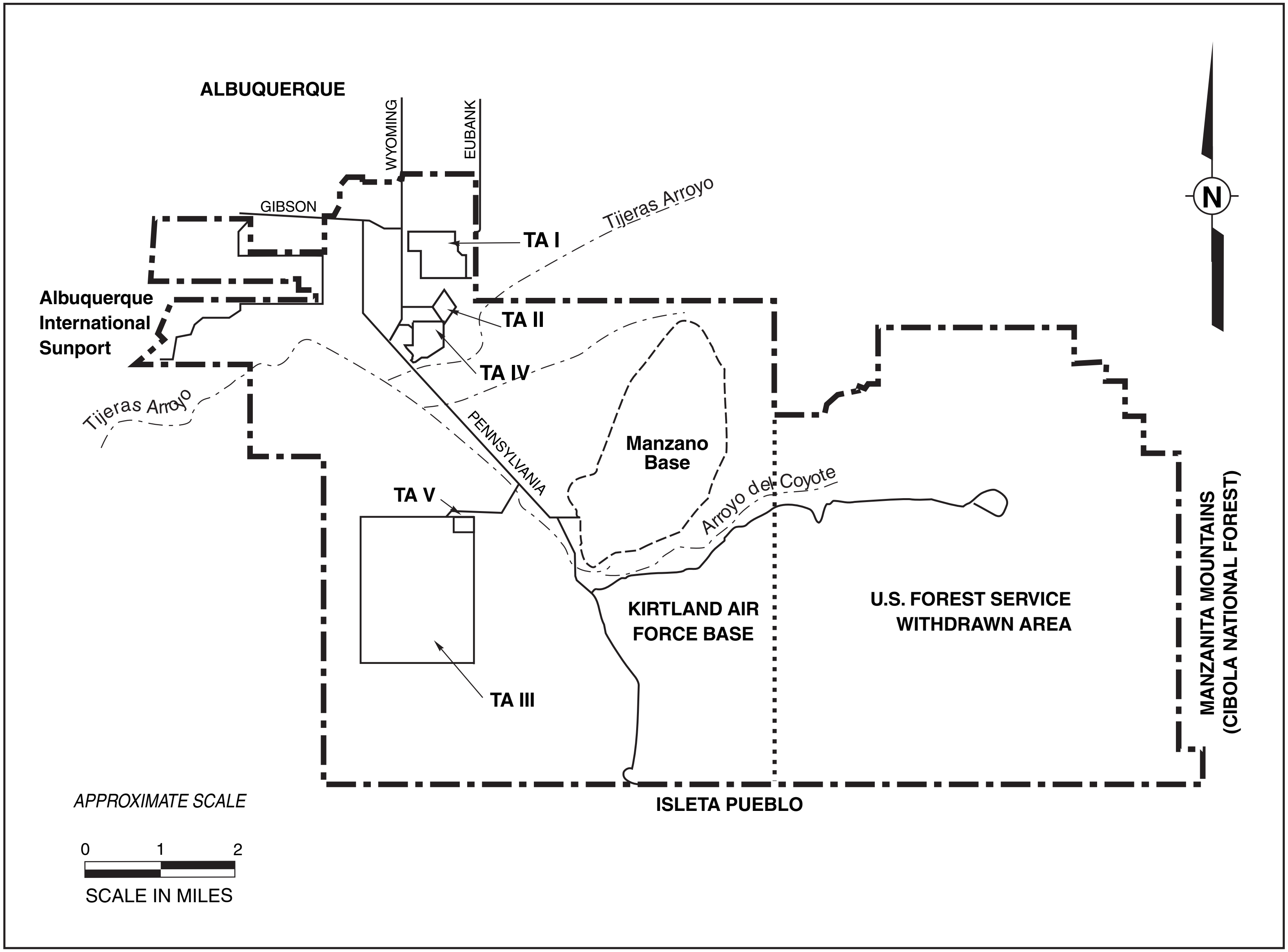


Figure A-3
Sandia National Laboratories/New Mexico
Technical Areas (TAs) in Relation to Kirtland Air Force Base

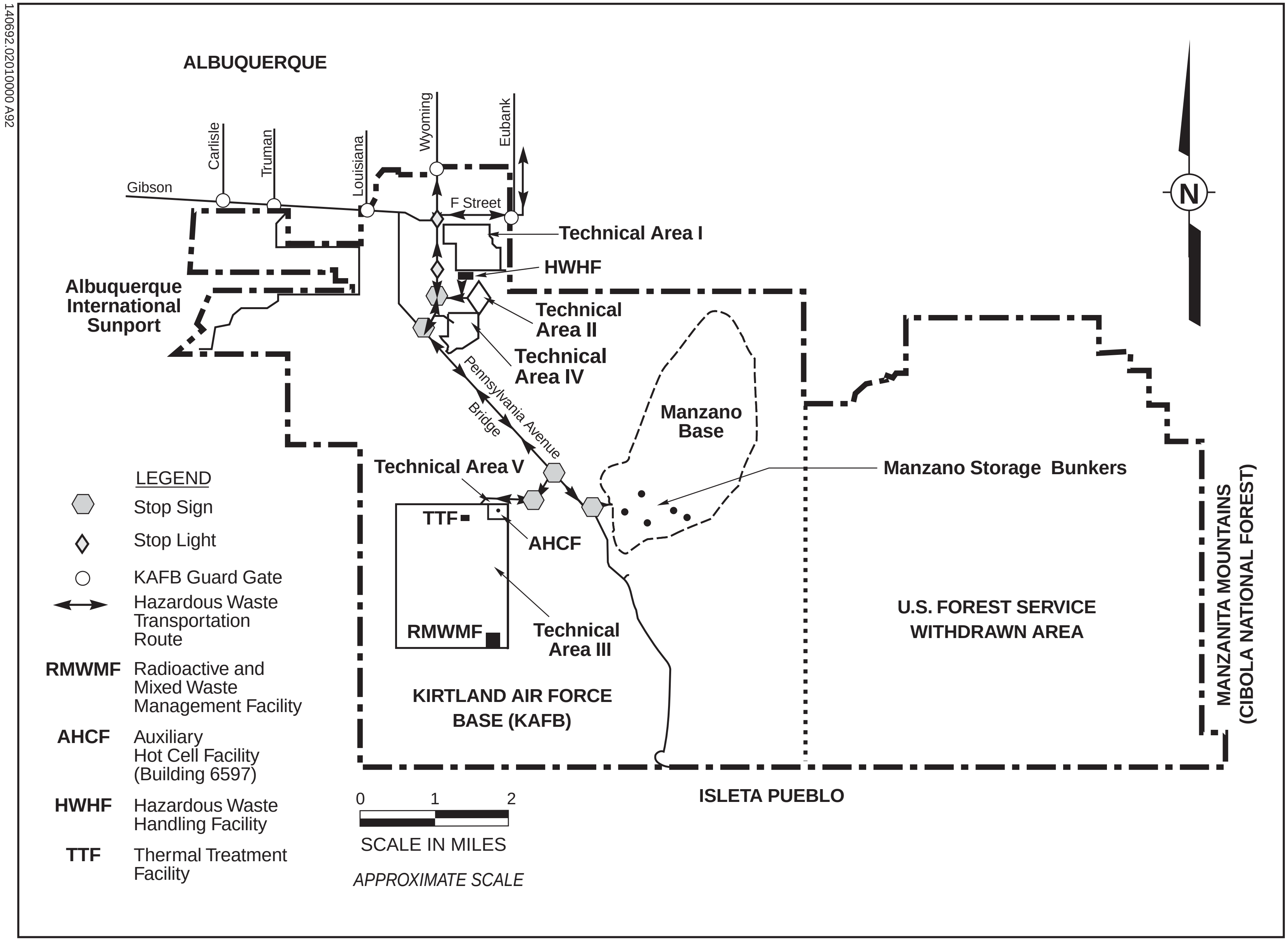
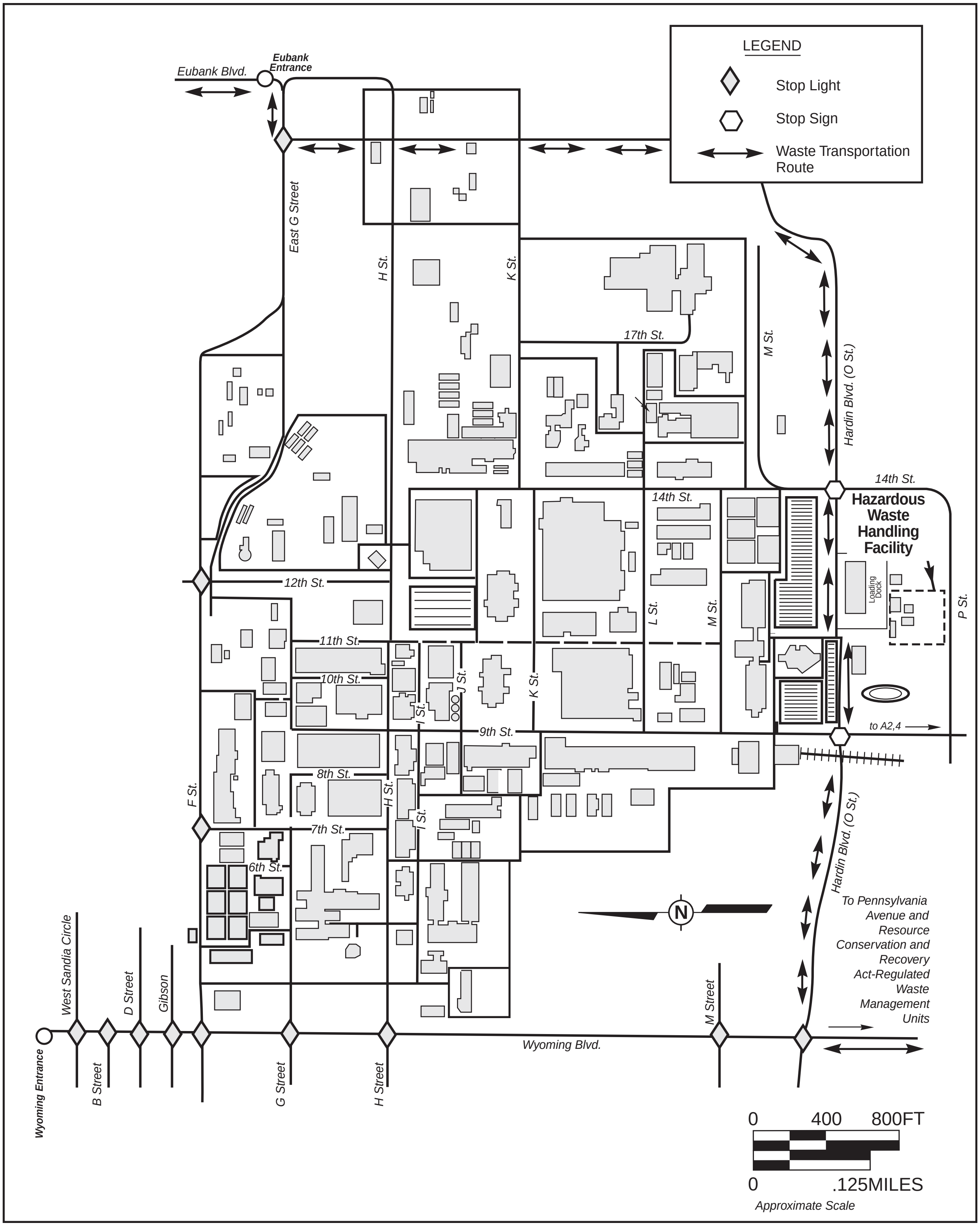


Figure A-4
Resource Conservation and Recovery Act-Regulated Waste Transportation Routes, Sandia National Laboratories/New Mexico



140692.02010000 A93

Figure A-5
Resource Conservation and Recovery Act-Regulated Waste Transportation Routes Around Technical Area I

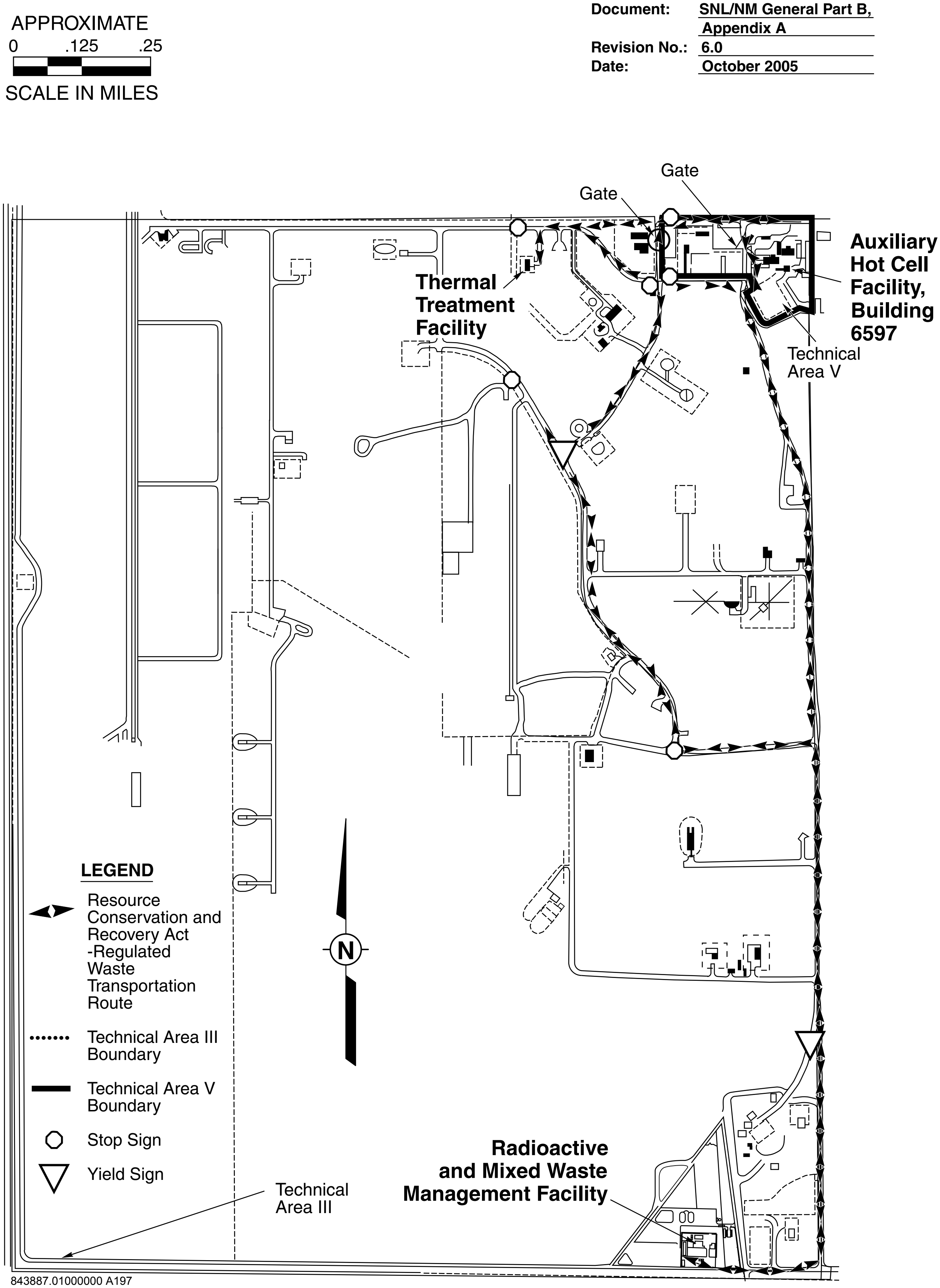


Figure A-6
Resource Conservation and Recovery Act-Regulated Waste Transportation Routes in Technical Areas III and V

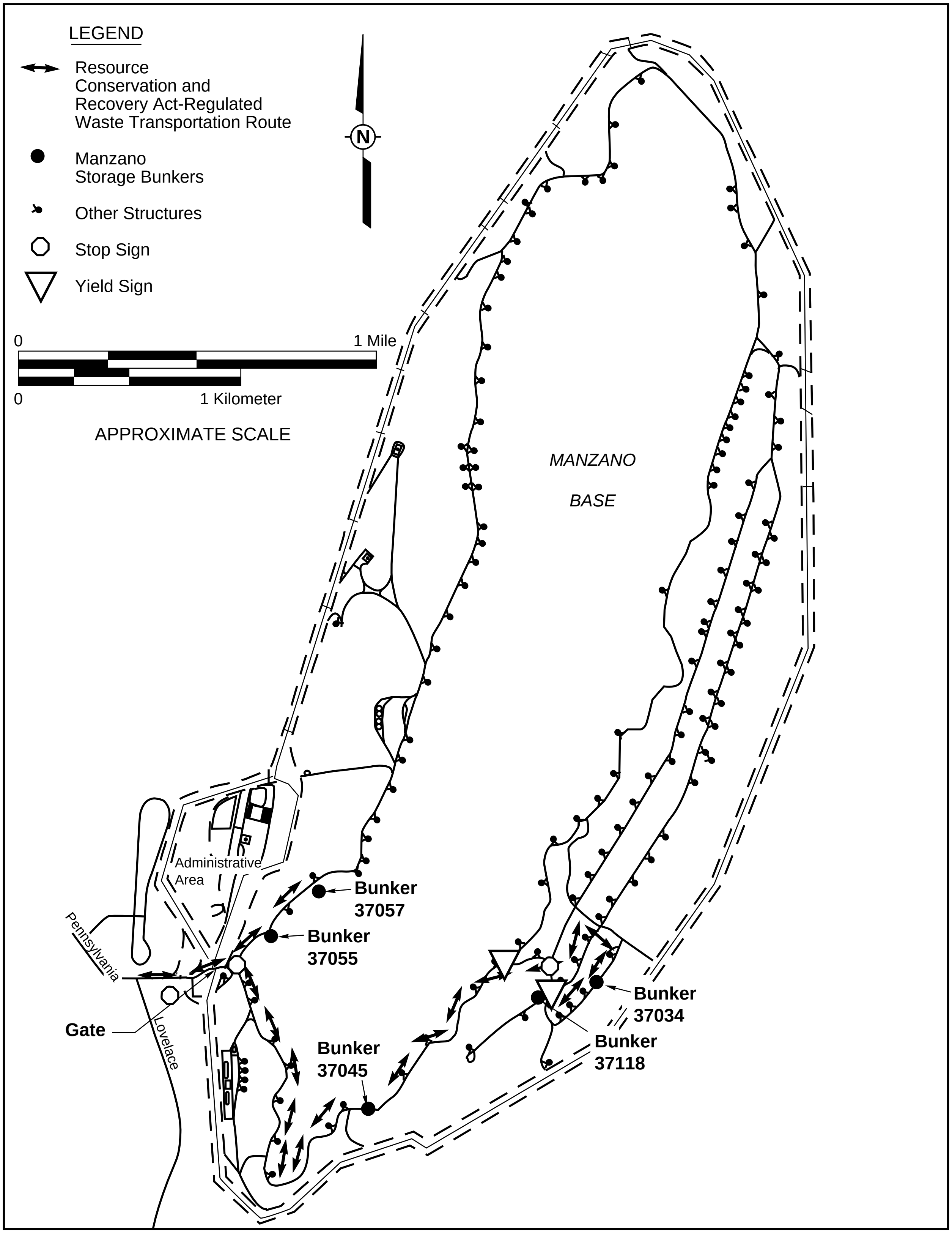
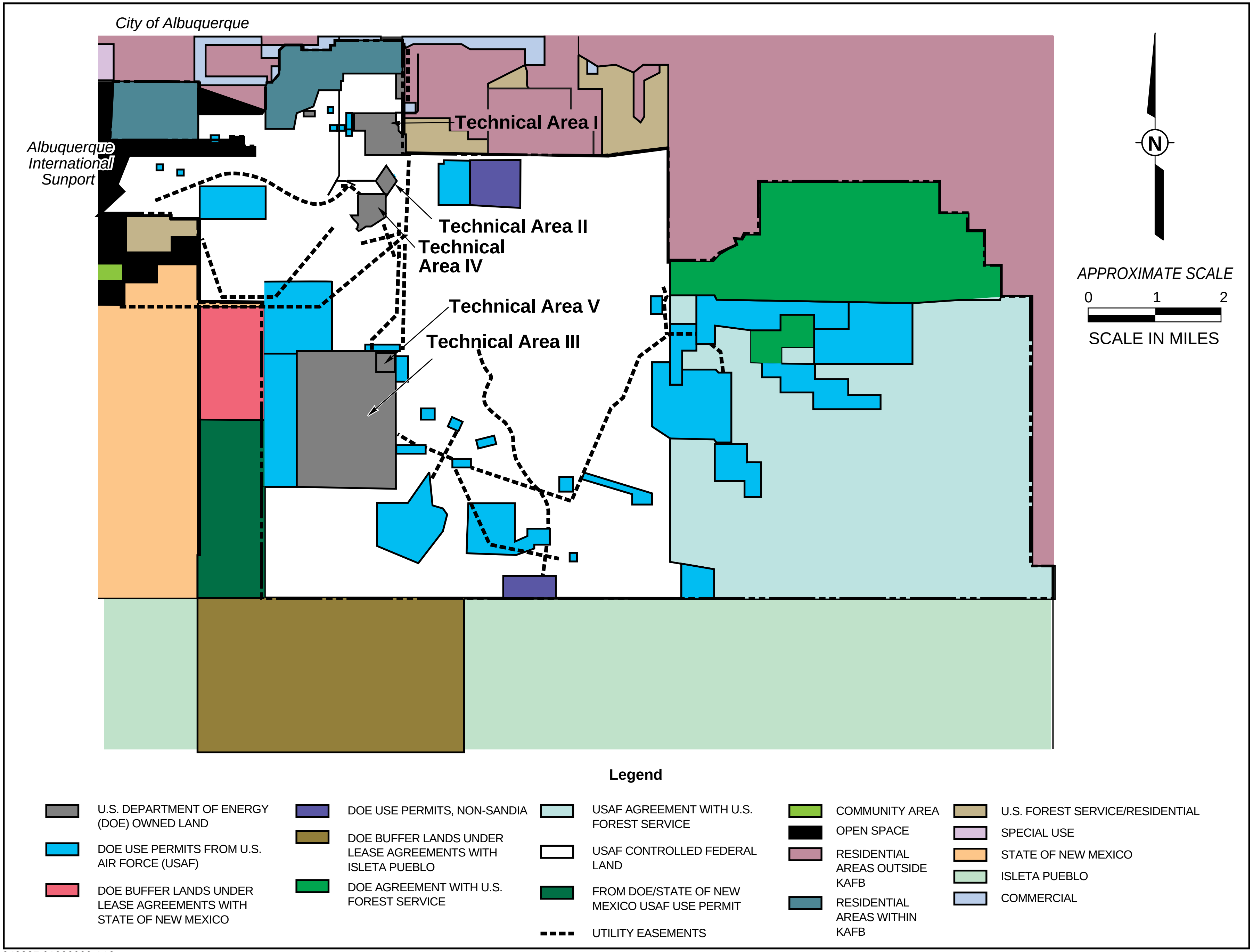


Figure A-7

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

774470.14000000 A98



843887.01000000 A13

Figure A-8
Land Uses Adjacent to and Within Sandia National Laboratories/New Mexico and Kirtland Air Force Base

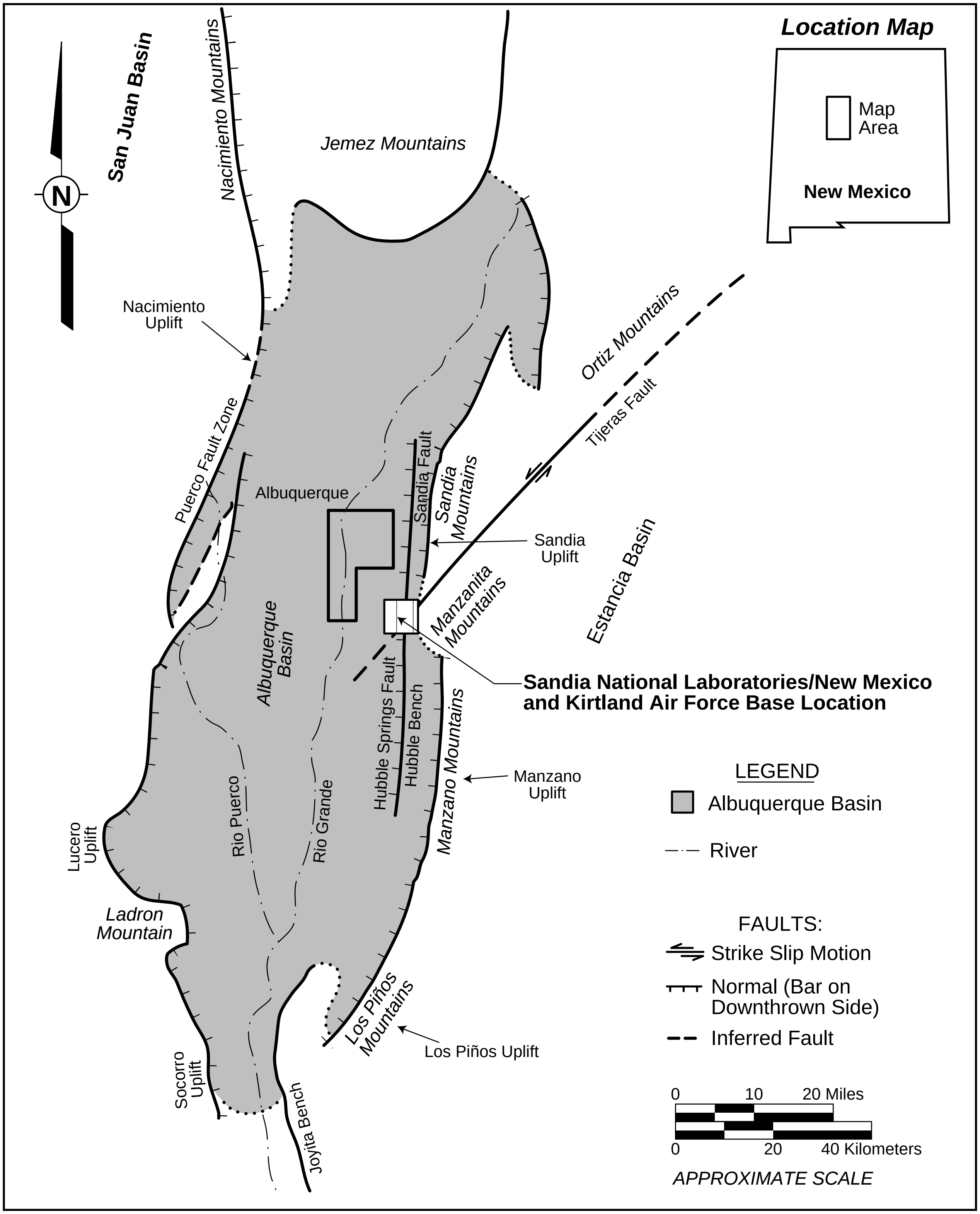


Figure A-9
Geologic Features in Relation to Sandia National Laboratories/New Mexico

774470.14000000 A4

APPENDIX B

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

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ABBREVIATIONS AND ACRONYMS

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

LIST OF ABBREVIATIONS/ACRONYMS (Concluded)

SASN	silver acetylide/silver nitrate
SNL/NM	Sandia National Laboratories/New Mexico
SVOC	semivolatile organic compound
TC	toxicity characteristic
TCLP	Toxicity Characteristic Leaching Procedure
TSDF	treatment, storage, and disposal facility
TTF	Thermal Treatment Facility
UHC	underlying hazardous constituent
Unit	RCRA-regulated waste management unit
VOC	volatile organic compound
WAP	waste analysis plan

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

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

Sandia/DOE perform storage and treatment of the RCRA-regulated wastes listed in the "General Part A Permit Renewal Request/Application," Revision 7.0, (SNL/NM, 2004) at the Units described in Section B.1.1. This WAP applies to those wastes only. It addresses the waste characterization necessary to perform waste storage and treatment activities requiring a permit (i.e., the activities described in the General Part B and Unit-specific modules). Sandia/DOE do not perform disposal of RCRA-regulated wastes under the terms of the existing or requested permit. Therefore, this WAP does not address waste characterization necessary for disposal.

This WAP has been prepared to meet the requirements set forth in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart V (20 NMAC 4.1.500), incorporating by reference the Code of Federal Regulations, Title 40, Part 264, including Section 264.13 (40 CFR 264.13), revised October 1, 2003[7-1-08]. It has also been prepared to meet additional waste analysis requirements specified in 20 NMAC 4.1.900/40 CFR 270.14(b) [7-1-08] and 20 NMAC 4.1.800/40 CFR 268.7(b) and 268.9(d) [7-1-08] applicable to wastes treated at SNL/NM Units. Together, the information in this appendix, in the General Part B, and in each Unit-specific module meets the applicable regulatory requirements. The waste analysis information contained in this WAP applies to the SNL/NM Units where RCRA-regulated wastes are stored in containers and/or treated in containers or miscellaneous units.

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

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

Section B.2 Characterization Procedures: Includes the characterization approach (i.e., acceptable knowledge supplemented by sampling and analysis) for RCRA-regulated waste stored and/or treated at SNL/NM Units, a discussion of the data quality objectives (DQOs) and process used to ensure that the characterization data are suitable for their intended purposes, and a discussion of the rationale for specific data.

Section B.3 Use of Available Knowledge: Includes a discussion of the application of acceptable knowledge and available information for waste characterization.

Section B.4 Sampling and Analysis: Includes a discussion of the proposed sampling and analytical parameters and methods used at SNL/NM and the criteria/rationale for the parameter selection.

Section B.5 Off-Site Waste Acceptance Procedures: Includes a discussion of procedures in place for acceptance of RCRA-regulated waste from off-site facilities.

Section B.6 Special Procedural Requirements: Includes a discussion of the procedures in place for ignitable, reactive, and incompatible wastes; procedures to ensure compliance with land disposal restrictions (LDRs) for on-site activities that require a permit; and procedures to ensure compliance with the requirements of 20 NMAC 4.1.500/40 CFR 264, Subparts AA, BB, and CC [7-1-08].

Section B.7: Records: Includes a discussion of records maintained for waste characterization and analytical data.

B.1 FACILITY DESCRIPTION [20 NMAC 4.1.900/40 CFR 270.14(b)(1)]

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

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

B.1.1 Description of Waste Management Units

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

- Hazardous Waste Management Facility: Container storage and repackaging of RCRA-regulated wastes;
- Thermal Treatment Facility (TTF): Thermal treatment of a specific RCRA-regulated waste stream by open burning in a miscellaneous unit;
- Existing Radioactive and Mixed Waste Management Facility (RMWMF): Container storage and repackaging of RCRA-regulated wastes and treatment of RCRA-regulated wastes in containers;

- Auxiliary Hot Cell Facility (AHCF): Container storage and repackaging of RCRA-regulated wastes and treatment of RCRA-regulated wastes in containers; and

- Manzano Storage Bunkers: Container storage of RCRA-regulated wastes.

The General Part A lists the EPA Hazardous Waste Numbers that may* be assigned to the wastes stored in containers at SNL/NM Units1. The General Part A also lists the EPA Hazardous Waste Numbers that may* be assigned to the wastes that will be treated in containers or the miscellaneous unit at SNL/NM.

B.1.2 SNL/NM Waste-Generating Processes and Activities

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

It is not feasible to provide detailed descriptions of all possible wastes that could be managed at one or more of the SNL/NM Units. Table B-1 summarizes information on RCRA-regulated waste types typically generated at SNL/NM. The following sections contain general descriptions of the typical waste types the associated waste-generating processes and/or activities, and the waste forms associated with each type. For the purposes of this WAP, a waste type is a general category used to describe one or more wastes that share key features (e.g., type of waste-generating process, waste form).

RCRA-regulated waste types may* be of uniform composition (i.e., homogeneous) or of dissimilar/diverse composition (i.e., heterogeneous). Table B-1 includes brief waste type descriptions, the associated waste-generating process or activity, and the characterization basis for RCRA-regulated waste designation. Table B-1 also addresses the variability of each waste type by listing the potential EPA Hazardous Waste Numbers and potential hazardous waste constituents and/or characteristics associated with each waste type. Each type of waste may* include one or more wastes and waste streams.

B.1.3 Types of Waste Generated at SNL/NM

RCRA-regulated wastes are stored in containers at various SNL/NM Units. Typical RCRA-regulated waste types are described below. Section 1.2 in the General Part B provides more specific information on waste types that are considered to be acceptable at each Unit, and describes waste-handling practices, including Unit-specific container requirements. All waste types described in this WAP are acceptable for storage at each Unit except the TTF. Characterization of these wastes is discussed in Section B.2.

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

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

Waste Type Description	Principal Waste-Generating Activities	Basis for Hazardous Waste Designation	Potential[a] EPA Hazardous Waste Numbers	Potential[a] Hazardous Constituents and/or Characteristics in the Waste
Laboratory Chemical Waste	Weapon systems and components design, development, fabrication, and testing and material research	Acceptable Knowledge[b] supplemented by Sampling and Analysis, as needed	D001 D002 D003 D004-D043 All P- and U-EPA Hazardous Waste Numbers	Ignitability Corrosivity Reactivity Toxicity [c] Discarded commercial chemical products and off-specification species
Contaminated Used Oil	Weapon systems and components design, development, fabrication, and testing, material research, pulsed-power research, reactor safety research, and off-site generated waste	Acceptable Knowledge[b] supplemented by Sampling and Analysis, as needed Fingerprint Analysis[d] (off-site waste)	D001 D002 D003 D004-D043 F001-F005	Ignitability Corrosivity Reactivity Toxicity[c] Spent solvents
Process Wastes	Weapon systems and components design, development, fabrication, and testing, material research, ER Project[e] activities, and off-site generated waste	Acceptable Knowledge[b] supplemented by Sampling and Analysis, as needed Fingerprint Analysis[d] (off-site waste)	D001 D002 D003 D004-D043 F001-F005	Ignitability Corrosivity Reactivity Toxicity[c] Spent solvents
Explosive Waste	Weapon systems and components design, development, fabrication, and testing	Acceptable Knowledge[b] supplemented by Sampling and Analysis, as needed	D001 D002 D003 D004-11 F001-F005	Ignitability Corrosivity Reactivity Toxicity[c] Spent solvents
Batteries	Weapon systems and components design, development, and testing	Acceptable Knowledge[b] supplemented by Sampling and Analysis, as needed	D001 D002 D003 D005 D006 D007 D008 D009 D011	Ignitability Corrosivity Reactivity Barium Cadmium Chromium Lead Mercury Silver
Elemental Lead	Pulsed-power research, reactor safety research, ER Project and D&D[e] activities, and off-site generated waste	Acceptable Knowledge[b] supplemented by Sampling and Analysis, as needed Fingerprint Analysis[d] (off-site waste)	D008	Lead
Unknown Liquids and Solids	Legacy wastes from historical weapons system design, development and testing; materials research; and ER Project and D&D[e] activities	Acceptable Knowledge[b] supplemented by Sampling and Analysis, as needed	D001 D002 D003 D004-D043	Ignitability Corrosivity Reactivity Toxicity[c]

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

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

a “Potential” is defined as possibly present. Additional constituents may* be present on a case-by-case basis.

b “Acceptable knowledge” is broadly defined as process knowledge, supplemental waste analysis data, and/or facility records of analysis (EPA, 1994)

c A solid waste exhibits the characteristic of toxicity if, using the Toxicity Characteristic Leaching Procedure, Test Method 1311 in “Test Methods for Evaluating Solid Waste, Physical/Chemical Methods” (EPA, 1986 and all approved updates), the sample or the extract from a representative sample of the waste contains any of the constituents listed (D004-D043) at a concentration equal to or greater than the respective value given in 20 NMAC 4.1.200/40 CFR 261 Subpart C (7-1-08)

d “Fingerprint analysis” refers to checks and field methods designed to quickly identify chemical properties (e.g., pH, density, chlorine content, etc.)

e ER Project = Environmental Restoration (corrective action) Project. D&D = decontamination and decommissioning.

B.1.3.1 Laboratory Chemical Waste

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

B.1.3.2 Contaminated Used Oil

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

B.1.3.3 Process Wastes

Process wastes, which can be liquid or solid chemicals, solutions, mixtures, wastewaters, or manufactured items, are generated as a result of various activities, including experiments and routine operational processes. Typical RCRA-regulated process wastes include, but are not limited to, acidic solutions, alkaline solutions, oxidizers, and wastewaters. These wastes may* exhibit hazardous waste characteristics (e.g., ignitability, corrosivity, reactivity, toxicity) or be RCRA-regulated listed waste from nonspecific sources (e.g., spent solvents).

B.1.3.4 Explosive (Reactive) Waste

An explosive material is defined as a chemical compound or mixture containing any oxidizing and combustible units, or other ingredients in such proportions, quantities, or packing that ignition by fire, friction, concussion, percussion or detonation of any part thereof may* (and is intended to) decompose with the production of a considerable quantity of heat and gas. Therefore, explosive waste and explosive-contaminated waste exhibit the hazardous waste characteristic of reactivity described in 20 NMAC 4.1.200/40 CFR 261.23 [7-1-08], if they are capable of detonation or explosive reaction when subjected to a strong initiating source or if heated under confinement. Examples of explosive (reactive) waste include components and test units that contain an explosive or explosive fragments, powders, and residues. Some of these wastes also exhibit hazardous waste characteristics of ignitability and/or toxicity.

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

B.1.3.5 Batteries

Batteries, a solid or solid/liquid waste form, are used in numerous SNL/NM activities, and unused or spent waste batteries may* exhibit the hazardous waste characteristics of reactivity, corrosivity, or toxicity (due to the presence of metals such as cadmium, mercury, and lead). Information about the battery content, hazards, and EPA Hazardous Waste Numbers is determined using manufacturer's data. For example, thermal batteries (specialized single-use batteries) contain metals and exhibit the hazardous waste characteristics of reactivity and toxicity; lithium batteries exhibit the characteristic of reactivity; and mercury batteries, silver batteries, and nickel-cadmium batteries exhibit the characteristic of toxicity.

B.1.3.6 Elemental Lead

Solid elemental lead items that cannot be reused (e.g., for radiation shielding or containment) or are in a form that is unsuitable for recycling directly may* be declared waste. These wastes exhibit the hazardous waste characteristic of toxicity. Alternatively, these items may* be managed as scrap metal.

B.1.3.7 Unknown Liquids and Solids

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

B.1.3.8 Contaminated Soil

This waste type includes soil, a solid waste form, from ER Project activities, or other cleanup and excavation operations. Characterization of contaminated soil depends upon the documented historical activities that occurred at the site and the results of site investigation and sampling and analysis activities. Soil may be contaminated with or contain listed waste(s) or exhibit one or more hazardous waste characteristics (i.e., ignitability, reactivity, and/or toxicity).

B.1.3.9 Debris

This waste type includes material generated during cleaning operations, D&D operations, emergency response, waste management, and protection of personnel. These wastes are solid, usually heterogeneous, compactable and non-compactable materials that meet the definition of hazardous debris in 20 NMAC 4.1.800/40 CFR 268.2). Compactable materials include but are not limited to items such as personal protective equipment, rags, wipes, swipes, paper, and filters. Non-compactable materials include but are not limited to equipment, components, electronic hardware, experimental remnants, cables, tools, machining parts or debris, building materials, and glassware.

Debris may* be contaminated with or contain RCRA-regulated listed waste(s) and/or exhibit one or more hazardous waste characteristics (i.e., reactivity, corrosivity, ignitability, and/or toxicity).

B.1.3.10 Leachate, Decontamination, Purge, and Treatment Waters

This waste type includes leachate from the Corrective Action Management Unit (CAMU), decontamination, purge, and treatment water (i.e., wastewater) from ER Project, D&D, and waste management activities. The hazardous waste characteristics depend upon the documented historical activities that occurred at the site, the results of site investigation(s), and sampling and analysis (if needed). Decontamination, purge, or treatment waters may* be listed waste, contaminated with or contain RCRA-regulated listed waste(s), and/or exhibit a hazardous waste characteristic (i.e., corrosivity and/or toxicity).

B.1.3.11 Treated Waste and Treatment Residuals

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

B.1.3.12 Containment System Liquids

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

B.1.4 Types of Waste Treated at SNL/NM Units

RCRA-regulated waste is treated at the TTF, which is a miscellaneous unit. RCRA-regulated wastes are treated in containers at the RMWMF and AHCF. Typical RCRA-regulated wastes and waste streams that are treated at SNL/NM Units are described in the following sections. Sandia/DOE personnel use the waste characterization procedures described in this WAP (Section B.2) to determine whether treated wastes and treatment residues are RCRA-regulated wastes, to determine whether they meet the treatment standards in 20 NMAC 4.1 800/40 CFR 268, and to assign appropriate EPA Hazardous Waste Numbers.

B.1.4.1 Waste Treated at the TTF

Explosive (D003) waste treated at the TTF is a silver acetylide/silver nitrate (SASN) mixture that is generated as a result of a specific process that is well defined and well controlled, enabling Sandia/DOE to characterize the waste stream on the basis of knowledge of the process and the raw materials used. SASN is present in the solid and liquid wastes treated at the TTF. The waste also meets the definition of ignitable waste (D001), and often bears EPA Hazardous Waste Numbers

D011 and F003, depending on the silver concentration and the presence of spent solvents. The treatment is performed to eliminate the hazardous waste characteristics of reactivity and ignitability. The waste is composed of:

- A liquid or slurry containing varying amounts of acetone, acetonitrile, nitric acid, water, and typically some SASN crystals. The liquid or slurry may* also contain pentaerythritol tetranitrate (PETN), another explosive.
- Solid items that may* contain small quantities of SASN, including paper wipes, cotton rags and swabs, metal clips, filter elements, incidental silver nitrate that did not react to form SASN, and traces of Viton™ fluoroelastomer. Small quantities of PETN may* also be present on the solids.

Furthermore, the explosive waste thermally treated at the TTF is not:

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

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

B.1.4.2 Wastes Treated at the RMWMF and AHCF

RCRA-regulated wastes that are treated at the RMWMF and AHCF may* be generated from specific R&D processes and activities. Other wastes may* be manufactured items or radioactive mixed wastes that are not amenable to sampling and analysis. Consequently, Sandia/DOE characterize RCRA-regulated wastes and waste streams treated at the RMWMF and AHCF using process knowledge, supplemented by sampling and analysis as needed. The process knowledge often includes knowledge of the item or a full accounting of the raw materials used in generating the waste. To ensure that detailed and accurate waste characterization exists, the process outlined in Section B.2 is used.

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

- Solid items exhibiting the hazardous waste characteristics of ignitability and/or reactivity;
- Solid items (including debris) exhibiting the hazardous waste characteristic of toxicity (excluding the high mercury subcategory) or containing spent solvents or commercial chemical products;
- Liquid wastes and wastewaters exhibiting the hazardous waste characteristics of ignitability, corrosivity, or reactivity;

- Liquid wastes and wastewaters containing toxicity characteristic constituents and organic compounds; and

- Liquid wastes consisting of or containing spent solvents or commercial chemical products.

Treatment processes and the associated treatment goals at the RMWMF and AHCF are discussed in Section 8.0 of Modules III and V, respectively. They include:

- Chemical deactivation to eliminate the hazardous waste characteristics of ignitability, corrosivity, and/or reactivity.

- Thermal deactivation to eliminate the hazardous waste characteristic of reactivity in reactive wastes, including explosives.

- Amalgamation to immobilize elemental mercury into a solid, leach-resistant form.

- Stabilization and/or solidification to immobilize hazardous waste toxicity characteristic metals and/or eliminate free liquids, or both.

- Macroencapsulation to immobilize hazardous constituents.

- Physical treatment to change the physical character of the waste to make it more amenable to subsequent treatment and/or storage, or to reduce waste volume.

The RCRA-regulated wastes to be treated at the RMWMF and the AHCF typically are assigned one or more of the following EPA Hazardous Waste Numbers: D001-D011, D018-D043, and F001-F005. As noted in the Part A, other RCRA-regulated wastes may* also be treated if the treatment methods are appropriate. The EPA Hazardous Waste Numbers for RCRA-regulated waste to be treated at the RMWMF and AHCF are determined through the characterization process described in Section B.2, in which available knowledge is supplemented by sampling and analysis.

B.1.4.2.1 Waste Treated by Chemical Deactivation

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

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

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

Batteries consist of thermal batteries containing reactive materials.

B.1.4.2.2 Waste Treated by Thermal Deactivation

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

Explosive waste consists of explosives and explosive components, and solid items (e.g., paper towels, rags, and wipes) contaminated with static-sensitive explosives. The quantity of explosive (reactive) waste thermally treated at the RMWMF at any one time will be equivalent to 25 grams of trinitrotoluene or less.

B.1.4.2.3 Waste Treated by Amalgamation

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

B.1.4.2.4 Waste Treated by Stabilization and Solidification

RCRA-regulated wastes are treated by stabilization and/or solidification at the RMWMF and AHCF to immobilize hazardous waste toxicity characteristic metals and/or eliminate free liquids.

RCRA-regulated wastes that are stabilized and/or solidified at the RMWMF and AHCF generally consist of liquids, soils, and particulate-type wastes.

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

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

Contaminated soil consists of soils that are contaminated with hazardous waste constituents. This waste is generated primarily from ER Project and other cleanup and excavation operations.

B.1.4.2.5 Waste Treated by Macroencapsulation

RCRA-regulated solid waste items, including debris, are treated by macroencapsulation at the RMWMF and AHCF to immobilize hazardous waste constituents.

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

B.1.4.2.6 Waste Treated by Physical Treatment

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

Unknown solids consist of legacy wastes that originated from historical laboratory activities and can be dismantled. Waste items with hazardous waste constituents vary in size. The wastes typically exhibit the characteristics of ignitability, reactivity, and/or toxicity.

Debris consists of solid, heterogeneous, compactable and non-compactable materials, or solid items such as laboratory equipment or other laboratory items that were used in experiments or other processes that contain or are contaminated with hazardous waste constituents. This waste is generated primarily by R&D, D&D, and ER Project activities.

Commercial products consist of aerosol cans or other pressurized containers of commercial products that often exhibit the hazardous waste characteristics of ignitability and/or toxicity. They may* also be discarded commercial chemical products. This waste is generated by R&D and other activities.

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

The approach to waste characterization is based on use of existing information regarding the chemical and physical nature of the waste or waste stream and the activities that generated it, supplemented by data from sampling and analysis as needed. This approach is consistent with "Joint NRC/EPA Guidance on Testing Requirements for Mixed Radioactive and Hazardous Waste (EPA and U.S. Nuclear Regulatory Commission [NRC], 1997), and with EPA's waste analysis guidance (EPA, 1994).

In this WAP and in the rest of the General Part B, the personnel associated with a RCRA-regulated waste at a given point during management at SNL/NM are sometimes referred to as the "generator" (e.g., the "generator" completes a disposal request). The term "generator," as it appears in this context, is used only to denote an individual person and does not imply the regulatory meaning of "generator" as defined in 20 NMAC 4.1.100/40 CFR 260.10 [7-1-08], particularly with respect to hazardous waste determination as required in 20 NMAC 4.1.300/40 CFR 262.11 [7-1-08]. However, pursuant to 20 NMAC 4.1.100/40 CFR 260.10 [7-1-08], Sandia is a "generator" and a "person" responsible for determining whether a waste is subject to regulation in accordance with 20 NMAC 4.1.300/40 CFR 262.11 [7-1-08]. SNL/NM is a large research facility, and many individuals (including those employed through contract to Sandia) are involved with generation and subsequent management of RCRA-regulated wastes. These include personnel performing research and other waste-generating activities, and personnel performing environment, safety, and health activities (including waste management) to support Sandia operations and comply with regulatory requirements. Hazardous waste determination at SNL/NM is a collaborative effort between the individuals involved with the generation of RCRA-regulated waste and the Unit personnel. This approach is consistent with the process described in EPA's clarifying memo (Cotsworth, 2002).

This section describes the characterization strategy and procedures that apply to RCRA-regulated waste managed at SNL/NM Units. Use of available information is discussed in Section B.3, and sampling and analysis are discussed in Section B.4.

B.2.1 Overall Waste Characterization

Sandia/DOE have established a DQO process to ensure that the information used to characterize wastes for on-site management is adequate for that purpose. Sandia/DOE are able to make required waste determinations and manage RCRA-regulated waste in compliance with applicable regulatory requirements at SNL/NM Units. The process is described below and includes the following key elements:

- Sandia/DOE establish DQOs for waste characterization information (Section B.2.1.1).
- Initial waste generators supply waste characterization information regarding the physical and chemical properties of the waste and the activity generating the waste.
- The information provided by the initial generator, together with available information about waste types and the characterization guidelines in this WAP, is used by Unit personnel to determine what, if any, additional characterization is required.
- The initial generator and Unit personnel collaborate as needed to gather additional information if required for making waste determinations.
- Unit personnel assume responsibility for proper waste management (including additional waste characterization if necessary) when the waste is accepted at one of the SNL/NM Units.

B.2.1.1 Data Quality Objectives

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

Define the Problem. A solid waste is generated at SNL/NM and will be accepted at an SNL/NM Unit for storage. RCRA regulations require that hazardous wastes be identified and such wastes be adequately characterized for management at the Unit in accordance with 20 NMAC 4.1.500/40 CFR 264.13 [7-1-08].

Identify the Questions to be Answered. Is the solid waste a RCRA-regulated hazardous waste? What are the appropriate EPA Hazardous Waste Numbers (waste codes)? Does the waste meet any of the exclusions in 20 NMAC 4.1.200/40 CFR 261.4 at the point of generation? Does the waste meet the definition of a listed hazardous waste in 20 NMAC 4.1.200/40 CFR 261 Subpart D at the point of generation? Does the waste exhibit any hazardous waste characteristics as defined in 20 NMAC 4.1.200/40 CFR 261 Subpart C at the point of generation? Does the RCRA-regulated hazardous waste have any properties that require special management?

Specify the Objectives. The characterization process is designed to provide information needed for DOE/Sandia to:

- Determine whether a solid waste is a RCRA-regulated hazardous waste,
- Assign appropriate waste codes, and
- Determine management requirements.

B.2.1.2 Waste Characterization Process

The initial generator assembles information about the waste and submits it to Unit personnel using a disposal request (DR) or equivalent form that is completed by the initial waste generator. This initial information is supplemented as needed until Unit personnel have sufficient information to accurately characterize the waste. When completed, the DR form includes information necessary for waste determinations; identifying physical form; accurately assigning EPA Hazardous Waste Numbers; and safely handling, storing, and transporting the waste by Unit personnel.

Initial generator-supplied waste description information used to characterize waste includes any of the following as needed and available: the quantity; physical form of the waste (e.g., solid, liquid, gas, wastewater); origin and source (e.g., R&D, ER Project, unused commercial product, activity that generated the waste); and waste characteristics and components (e.g., ignitability, corrosivity, chemicals or hazardous waste constituents, including reactive or explosive constituents) that are contained in the waste, the concentrations and proportions of chemicals and constituents as needed, and other information as needed or applicable (e.g., materials in contact with the waste such as paper or plastic).

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

Unit personnel review the initial-generator-supplied DR forms and associated documentation provided with the forms (e.g., waste process documentation, technical information about the waste, and analytical results) for adequacy, completeness, data reliability, and acceptability. Unit personnel consider each waste individually. Each waste is one of the types described in Section B.1.3 or B.1.4, and Unit personnel use waste type identification to determine whether and what kind of additional information is needed to adequately characterize the waste. Types of additional information are discussed in Section B.3. If analytical data are needed to supplement the available information, they are obtained through sampling and analysis, as described in Section B.4. The information that could be required to characterize wastes for each of the waste types as generated at SNL/NM is summarized in Table B-2.

Table B-2
Parameters, Characterization Methods, and Rationale for Types of Wastes Generated at Sandia National Laboratories/New Mexico

Waste Type Description	Characterization Method	Parameter[b]	Rationale
Laboratory Chemical Waste	Acceptable Knowledge[a] supplemented by Sampling and Analysis, as needed	• *Source of waste* • *Available information about waste composition* • *Physical characteristics* • Presence of liquids • Flash point (for liquids), DOT hazard class (for solids)[c] • Stability, DOT hazard class[d] • pH (for liquids) • Hazardous waste metals[e] • Hazardous waste VOCs[e] • Hazardous waste SVOCs[e]	• Determine whether waste meets listing criteria[f] • Determine waste form • Determine presence of free liquids • Determine ignitability, reactivity, and corrosivity characteristics • Determine waste compatibility information • Determine toxicity characteristic
Contaminated Used Oil	Acceptable Knowledge[a] supplemented by Sampling and Analysis, as needed	• *Source of waste* • *Available information about waste composition* • *Physical characteristics* • Flash point • Hazardous waste metals[e] • Hazardous waste VOCs[e] • Hazardous waste SVOCs[e]	• Determine whether waste meets listing criteria[f] • Determine waste form • Determine presence of free liquids • Determine ignitability characteristic • Determine waste compatibility information • Determine toxicity characteristic
Process Wastes	Acceptable Knowledge[a] supplemented by Sampling and Analysis, as needed	• *Source of waste* • *Available information about waste composition* • *Physical characteristics* • Presence of liquids • Flash point (for liquids), DOT hazard class (for solids)[c] • Stability, DOT hazard class[d] • pH (for liquids) • Hazardous waste metals[e] • Hazardous waste VOCs[e] • Hazardous waste SVOCs[e]	• Determine whether waste meets listing criteria[f] • Determine waste form • Determine presence of free liquids • Determine ignitability, corrosivity, and reactivity characteristics • Determine waste compatibility information • Determine toxicity characteristic

Table B-2 (Continued)
Parameters, Characterization Methods, and Rationale for Types of Wastes Generated at Sandia National Laboratories/New Mexico

Waste Type Description	Characterization Method	Parameter[b]	Rationale
Explosive Waste	Acceptable Knowledge[a] supplemented by Sampling and Analysis, as needed	• *Source of waste* • *Available information about waste composition* • *Physical characteristics* • Presence of liquids • Flash point (for liquids), DOT hazard class (for solids)[c] • Stability, DOT hazard class[d] • Hazardous waste metals[e] • Hazardous waste VOCs[e] • Hazardous waste SVOCs[e]	• Determine whether waste meets listing criteria[f] • Determine waste form • Determine presence of free liquids • Determine ignitability and reactivity characteristics • Determine waste compatibility information • Determine toxicity characteristic
Batteries	Acceptable Knowledge[a] supplemented by Sampling and Analysis, as needed	• *Source of waste* • *Available information about waste composition* • *Physical characteristics* • Presence of liquids • Flash point (for liquids), DOT hazard class (for solids)[c] • pH (for liquids) • Stability, DOT hazard class[d] • Hazardous waste metals[e]	• Determine waste form • Determine presence of free liquids • Determine ignitability, corrosivity, and reactivity characteristics • Determine waste compatibility information • Determine toxicity characteristic
Elemental Lead	Acceptable Knowledge[a] supplemented by Sampling and Analysis, as needed	• *Source of waste* • *Available information about waste composition* • *Physical characteristics* • Hazardous waste metals[e]	• Determine waste form • Determine toxicity characteristic

Table B-2 (Continued)
Parameters, Characterization Methods, and Rationale for Types of Wastes Generated at Sandia National Laboratories/New Mexico

Waste Type Description	Characterization Method	Parameter[b]	Rationale
Unknown Liquids and Solids	• Physical Examination • Acceptable Knowledge[a] supplemented by Sampling and Analysis, as needed	• *Source of waste* • *Available information about waste composition* • *Physical characteristics* • Flash point (for liquids), DOT hazard class (for solids)[c] • Stability, DOT hazard class[d] • pH (for liquids) • Hazardous waste metals[e] • Hazardous waste VOCs[e] • Hazardous waste SVOCs[e]	• Determine waste form • Determine presence of free liquids • Determine ignitability, reactivity, and corrosivity characteristics • Determine waste compatibility information • Determine toxicity characteristic
Contaminated Soil	Acceptable Knowledge[a] supplemented by Sampling and Analysis, as needed	• *Source of waste* • *Available information about waste composition* • *Physical characteristics* • Presence of liquids • DOT hazard class (for solids)[c] • Stability, DOT hazard class[d] • Hazardous waste metals[e] • Hazardous waste VOCs[e] • Hazardous waste SVOCs[e]	• Determine whether waste meets listing criteria[f] • Determine waste form • Determine presence of free liquids • Determine ignitability, and reactivity characteristics • Determine waste compatibility information • Determine toxicity characteristic
Debris	Acceptable Knowledge[a] supplemented by Sampling and Analysis, as needed	• *Source of waste* • *Available information about waste composition* • *Physical characteristics* • Presence of liquids • DOT hazard class (for solids)[c] • Stability, DOT hazard class[d] • Hazardous waste metals[e] • Hazardous waste VOCs[e] • Hazardous waste SVOCs[e]	• Determine whether waste meets listing criteria[f] • Determine waste form • Determine presence of free liquids • Determine ignitability, and reactivity characteristics • Determine waste compatibility information • Determine toxicity characteristic

**Table B-2 (Continued)
Parameters, Characterization Methods, and Rationale
for Types of Wastes Generated at
Sandia National Laboratories/New Mexico**

Waste Type Description	Characterization Method	Parameter[b]	Rationale
Leachate, Decontamination Purge, and Treatment Waters	Acceptable Knowledge[a] supplemented by Sampling and Analysis, as needed	• *Source of waste* • *Available information about waste composition* • *Physical characteristics* • Flash point • pH • Stability, DOT hazard class[d] • Hazardous waste metals[e] • Hazardous waste VOCs[e] • Hazardous waste SVOCs[e]	• Determine whether waste meets listing criteria[f] • Determine waste form • Determine ignitability, reactivity, and corrosivity characteristics • Determine waste compatibility information • Determine toxicity characteristic or constituent concentrations
Treated Waste and Treatment Residuals	• Acceptable Knowledge[a] • Sampling and analysis, as needed	SEE TABLE B-3	SEE TABLE B-3
Containment System Liquids	Acceptable Knowledge[a] supplemented by Sampling and Analysis, as needed	• *Source of waste* • *Available information about waste composition* • *Physical characteristics* • Flash point • pH • Hazardous waste metals[e] • Hazardous waste VOCs[e] • Hazardous waste SVOCs[e]	• Determine whether waste meets listing criteria[f] • Determine waste form • Determine ignitability and corrosivity characteristics • Determine waste compatibility information • Determine toxicity characteristic

[a] Acceptable knowledge is broadly defined as process knowledge, supplemental waste analysis data, and/or facility records of analysis (EPA, 1994). Acceptable knowledge also includes published information regarding chemical properties.

[b] Parameter selection is based on acceptable knowledge for each waste type. The first three items (shown in italics) are mandatory and constitute the minimum acceptable knowledge. The remaining parameters are optional and will be selected for each waste type as necessary, if the results of the first three parameters indicate additional information is needed.

Table B-2 (Concluded)
Parameters, Characterization Methods, and Rationale for Types of Wastes Generated at Sandia National Laboratories/New Mexico

[c] The hazardous waste characteristic of reactivity as defined in 20 NMAC 4.1.200/40 CFR 261.23 is based on the properties of the waste and DOT hazard class as identified in 40 CFR 173, and is not measured through analysis.

[d] The hazardous waste characteristic of ignitability as defined in 20 NMAC 4.1.200/40 CFR 261.21 for solids is based on the properties of the waste and DOT hazard class as identified in 40 CFR 173, and is not measured through analysis.

[e] Use of the terms "hazardous waste metals," hazardous waste VOCs," and "hazardous waste SVOCs" refer to hazardous waste as defined in 20 NMAC 4.1.200/40 CFR 261.24 (7-1-08) and to RCRA-regulated waste as defined in the General Part B.

[f] "Listing criteria" refers to hazardous waste as defined in 20 NMAC 4.1.200/40 CFR 261 Subpart D and the exclusion in 20 NMAC 4.1.200/40 CFR 261.3(g).

CFR Code of Federal Regulations
DOT U.S. Department of Transportation
NMAC New Mexico Administrative Code
SVOC semivolatile organic compound
VOC volatile organic compound

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

After considering the accumulated information about the waste, its characteristics, the generating activity, and parameters of interest, and their respective regulatory levels, Unit personnel evaluate the waste with respect to the following general questions and determinations:

- If it meets a listing description in 20 NMAC 4.1.200/40 CFR 261 Subpart D[7-1-08], then it is a RCRA-regulated waste.

- If it meets a listing description in 20 NMAC 4.1.200/40 CFR 261 Subpart D and exhibits one or more of the characteristics in 20 NMAC 4.1.200/40 CFR 261 Subpart C (as indicated by knowledge, analytical data, or definitions), then it is a RCRA-regulated waste.

- If it does not meet any listing description in 20 NMAC 4.1.200/40 CFR 261 Subpart D but exhibits one or more of the characteristics in 20 NMAC 4.1.200/40 CFR 261 Subpart C (as indicated by knowledge, analytical data, or definitions), then it is a RCRA-regulated waste.

- If it is the same as a previously-generated waste that was a hazardous waste and there have been no substantive changes in the process, then it is a RCRA-regulated waste.

- If it is the same as a previously-generated waste that was not a hazardous waste and there have been no substantive changes in the process, then it is not a RCRA-regulated waste.

- If it similar to other previously- or concurrently-generated wastes that are hazardous wastes, and complete information is not yet available, then Unit personnel may* make a conservative determination that it is a RCRA-regulated waste. For example, if available information indicates toxicity characteristic metals are present but the concentrations are unknown, Unit personnel may* declare the waste exhibits the hazardous waste toxicity characteristic without analytical results.

Once the applicable EPA Hazardous Waste Numbers and physical form have been determined by Unit personnel, the waste is approved for transport to the SNL/NM Unit. Before transporting the waste to the appropriate SNL/NM Unit, Unit personnel visually check to verify that the waste container(s) matches the information on the DR form. If Unit personnel detect discrepancies between the shipping documentation and the waste at pickup, Unit personnel can choose to amend the documentation or have the initial generator correct and resubmit the documentation to Unit personnel for approval. If the waste matches the information on the DR form, the waste is transported to the appropriate Unit. Upon receipt of the waste at a Unit, the characterization documentation becomes part of the Unit operating record. Data from additional characterization activities at the Unit (if such activities are performed) also become part of the Unit operating record. These records will be made available at reasonable times to the NMED, upon request.

Unit personnel serve as initial generators in some cases (e.g., legacy items needing further characterization and/or repackaging, and wastes generated through Unit operations). In these cases, Unit personnel assemble the available information, prepare a disposal request, and follow the process described above, except that the waste is already present at the Unit.

B.2.2 Characterization of Unknown Wastes

Occasionally, wastes of an unknown nature require storage or treatment. For example, unknown wastes may* be generated as a result of a container label becoming detached or illegible. Most unknowns are contained in small containers (less than 1 gallon or 1 pound) and are related to R&D projects. These wastes are handled on a case-by-case basis. The individual waste will be tentatively characterized by knowledge of the operations and activities that were performed in the specific area in which the waste was generated. An on-site visual investigation of an unknown waste is another method utilized to characterize the waste. The visual investigation includes the assessment of the unknown for various properties, such as:

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

The waste and its proper handling are sometimes positively identified through this investigation. If a positive identification is made, a disposal request is prepared and the waste is characterized as described above. If the unknown cannot be identified after this investigation, a HazCat™ or comparable test is performed to determine the hazard class. Once the hazard class is determined and the waste is safe to transport to the appropriate SNL/NM Unit, the information is recorded on the disposal request, which is processed according to the procedures described above. Additional RCRA waste characterization will typically occur as needed after the waste has been accepted at a SNL/NM Unit.

B.2.3 Characterization of Mixed and Blended Wastes

Initial generators and Unit personnel mix and blend wastes on a limited basis. RCRA-regulated liquid wastes and non-RCRA-regulated wastes may* be mixed/blended together in a single container. These mixing/blending activities are generally limited to compatible wastes, such as oils, or process wastes. Unit personnel may* also combine compatible liquids drained from aerosol cans (commercial chemical products or characteristic liquids) into a single container. The resulting mixture is typically ignitable.

Initial generators provide the following additional information for containers with mixed/blended wastes:

- Approximate amounts of each waste in the mixture
- List of known or potential hazardous waste characteristics and underlying hazardous constituents as defined in 40 CFR 268.2(i) in each waste in the mixture
- Whether the wastes in the mixture include listed hazardous wastes such as spent solvents (based on available information)

Unit personnel consider the additional information when they characterize the waste using the general process described in Section B.2.1.2, and assign the applicable EPA Hazardous Waste Numbers. Unit personnel consider the known or suspected concentrations of hazardous waste constituents and the characteristics of the wastes as they were added to the container, before they were mixed and blended with other wastes. The EPA Hazardous Waste Numbers for each of the component wastes are incorporated into the numbers for the mixture.

B.2.4 Characterization of Wastes to be Treated at SNL/NM

Wastes to be treated at SNL/NM are characterized according to the process described above. In addition to the objectives listed in Section B.2.1.1, wastes to be treated are characterized to determine one or more of the following, as needed, for each waste:

- Applicable treatment standards, including standards for both characteristic and listed hazardous wastes,
- Appropriate treatment methods to meet the standards,
- Presence of underlying hazardous constituents (UHCs) if applicable,
- Compliance with applicable treatment standards,
- Suitability for treatment by one or more methods available on site to meet treatment standards, and/or
- Suitability for treatment by one or more methods available on site to make the waste safer and more amenable to further management on site or off site.

These characterization criteria are summarized in Table B-3.

Table B-3
Additional Parameters, Characterization Methods, and Rationale for Wastes Treated at Sandia National Laboratories/New Mexico Waste Management Units

Waste Type Description	Characterization Method	Parameter[b]	Rationale
Explosive waste to be treated by open burning/open detonation	Knowledge of Process[a]	• *All characterization information previously obtained* • *Knowledge of treatment process*	• Verify that waste has same characteristics and constituents as previous wastes treated at TTF • Determine treatment standards[g] • Identify UHCs reasonably expected to be present in characteristic waste[f]
Residues from treatment of explosive wastes through open burning/open detonation	Acceptable Knowledge[a] supplemented by Sampling and Analysis, as needed	• *All characterization information previously obtained for untreated waste* • *Physical characteristics* • *Knowledge of treatment process* • Presence of liquids • Flash point (for liquids), DOT hazard class (for solids)[c] • Stability, DOT hazard class[d] • Hazardous waste metalse • UHCs[f]	• Determine whether treated waste meets listing criteria[h] • Determine waste form • Determine presence of free liquids • Determine waste compatibility information • Determine toxicity characteristics • Determine whether waste meets treatment standards, including standards for UHCs[f]
Waste to be treated through chemical deactivation	Acceptable Knowledge[a] supplemented by Sampling and Analysis, as needed	• *All characterization information previously obtained* • *Knowledge of treatment process* • Cyanides and sulfides[d] • UHCs[f]	• Verify that waste is suitable for treatment by planned process • Determine treatment standards • Identify UHCs expected to be present in characteristic waste[f]
Wastes that have been treated through chemical deactivation	Acceptable Knowledge[a] supplemented by Sampling and Analysis, as needed	• *All characterization information previously obtained for untreated waste* • *Physical characteristics* • *Knowledge of treatment process* • Presence of liquids • Flash point (for liquids), DOT hazard class (for solids)[c] • pH (for liquids) • Stability, DOT hazard class[d] • Cyanides and sulfides • UHCs[f]	• Determine whether waste meets listing criteria[f] • Determine waste form • Determine presence of free liquids • Determine ignitability, corrosivity, and reactivity characteristics • Determine waste compatibility information • Determine whether waste meets treatment standards, including standards for UHCs[f]

Table B-3 (Continued)
Additional Parameters, Characterization Methods, and Rationale for Wastes Treated at Sandia National Laboratories/New Mexico Waste Management Units

Waste Type Description	Characterization Method	Parameter[b]	Rationale
Waste to be treated through thermal deactivation	Acceptable Knowledge[a] supplemented by Sampling and Analysis, as needed	• *All characterization information previously obtained* • *Knowledge of treatment process* • UHCs[f]	• Verify that waste is suitable for treatment by planned process • Determine treatment standards • Identify UHCs expected to be present in characteristic waste[f]
Wastes that have been treated through thermal deactivation	Acceptable Knowledge[a] supplemented by Sampling and Analysis, as needed	• *All characterization information previously obtained for untreated waste* • *Physical characteristics* • *Knowledge of treatment process* • DOT hazard class[c] • Stability, DOT hazard class[d] • UHCs[f]	• Determine waste form • Determine ignitability and reactivity characteristics • Determine waste compatibility information • Determine whether waste meets treatment standards, including standards for UHCs[f]
Waste to be treated through amalgamation	Acceptable Knowledge[a] supplemented by Sampling and Analysis, as needed	• *All characterization information previously obtained* • *Knowledge of treatment process*	• Verify that waste is suitable for treatment by planned process • Determine treatment standards
Wastes that have been treated through amalgamation	Knowledge of Process[a]	• *All characterization information previously obtained for untreated waste* • *Physical characteristics* • *Knowledge of treatment process*	• Determine waste form • Determine whether waste meets treatment standards
Waste to be treated through stabilization/ solidification	Acceptable Knowledge[a] supplemented by Sampling and Analysis, as needed	• *All characterization information previously obtained* • *Knowledge of treatment process* • UHCs[f]	• Verify that waste is suitable for treatment by planned process • Determine treatment standards • Identify UHCs expected to be present in characteristic waste[f]

Table B-3 (Continued)
Additional Parameters, Characterization Methods, and Rationale for Wastes Treated at Sandia National Laboratories/New Mexico Waste Management Units

Waste Type Description	Characterization Method	Parameter[b]	Rationale
Wastes that have been treated through stabilization/ solidification	Acceptable Knowledge[a] supplemented by Sampling and Analysis, as needed	• *All characterization information previously obtained for untreated waste* • *Physical characteristics* • *Knowledge of treatment process* • Presence of liquids • Flash point (for liquids), DOT hazard class (for solids)[c] • Stability, DOT hazard class[d] • UHCs[f]	• Determine whether waste meets listing criteria[f] • Determine waste form • Determine presence of free liquids • Determine ignitability and reactivity characteristics • Determine waste compatibility information • Determine whether waste meets treatment standards, including standards for UHCs[f]
Waste to be treated through macro-encapsulation	Acceptable Knowledge[a] supplemented by Sampling and Analysis, as needed	• *All characterization information previously obtained* • *Knowledge of treatment process*	• Verify that waste is suitable for treatment by planned process • Determine treatment standards[i]
Waste that have been treated through macro-encapsulation	Knowledge of Process[a]	• *All characterization information previously obtained for untreated waste* • *Physical characteristics* • *Knowledge of treatment process*	• Determine waste form • Determine whether waste meets treatment standards[i]
Waste to be treated through physical treatment	Acceptable Knowledge[a] supplemented by Sampling and Analysis, as needed	• *All characterization information previously obtained* • *Knowledge of treatment process* • UHCs[f]	• Verify that waste is suitable for treatment by planned process • Determine treatment standards • Identify UHCs expected to be present in characteristic waste[f]
Wastes that have been treated through physical treatment	Acceptable Knowledge[a] supplemented by Sampling and Analysis, as needed	• *All characterization information previously obtained for untreated waste* • *Physical characteristics* • *Knowledge of treatment process* • Presence of liquids • Flash point (for liquids), DOT hazard class (for solids)[c] • Stability, DOT hazard class[d] • pH (for liquids) • Hazardous waste VOCs[e] • Hazardous waste SVOCs[e] • Hazardous waste metals[e] • UHCs[f]	• Determine whether waste meets listing criteria[f] • Determine waste form, including size • Determine presence of free liquids • Determine ignitability, corrosivity, and reactivity characteristics • Determine waste compatibility information • Determine toxicity characteristic • Determine whether waste meets treatment standards, including standards for UHCs[f]

Table B-3 (Concluded)
Additional Parameters, Characterization Methods, and Rationale for Wastes Treated at Sandia National Laboratories/New Mexico Waste Management Units

[a] Acceptable knowledge is broadly defined as process knowledge, supplemental waste analysis data, and/or facility records of analysis (EPA, 1994). Acceptable knowledge also includes published information regarding chemical properties.
[b] Parameters listed are in addition to those shown in Table B-2. Parameters shown in italics are mandatory; the others are selected based on obtaining additional information necessary for treatment or for characterizing the treated waste.
[c] The hazardous waste characteristic of reactivity as defined in 20 NMAC 4.1.200/40 CFR 261.23 [7-1-08] is based on the properties of the waste and DOT hazard class as identified in 40 CFR 173, and is not measured through analysis. The presence of sulfides and cyanides may* cause waste to be reactive.
[d] The hazardous waste characteristic of ignitability as defined in 20 NMAC 4.1.200/40 CFR 261.21 for solids is based on the properties of the waste and DOT hazard class as identified in 40 CFR 173, and is not measured through analysis.
[e] Use of the terms "hazardous waste metals," hazardous waste VOCs," and "hazardous waste SVOCs" refer to hazardous waste as defined in 20 NMAC 4.1.200/ 40 CFR 261.24 [7-1-08] and to RCRA-regulated waste as defined in the General Part B.
[f] Underlying hazardous constituents that are reasonably expected to be present in the untreated waste are part of the treatment standard for wastes exhibiting the hazardous waste characteristics of ignitability, corrosivity, reactivity, or toxicity as defined in 20 NMAC 4.1.200/40 CFR 261 Subpart C (referred to as "characteristic wastes").
[g] Treatment standards are those listed in 20 NMAC 4.1.800/40 CFR 268 Subpart D. Compliance with the treatment standards is determined for treated wastes that will be sent to an off-site TSDF without further treatment.
[h] "Listing criteria" refers to hazardous waste as defined in 20 NMAC 4.1.200/40 CFR 261 Subpart D.
[i] Macroencapsulation is defined in 20 NMAC 4.1.800/40 CFR 268.42 and 268.45

CFR Code of Federal Regulations
DOT U.S. Department of Transportation
NMAC New Mexico Administrative Code
SVOC semivolatile organic compound
TSDF Treatment, storage, and disposal facility managing RCRA-regulated wastes
UHC Underlying hazardous constituents
VOC volatile organic compound

B.2.4.1 Waste to be Treated at the TTF

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

- Information from sampling analysis would not improve knowledge of the waste because the explosive (e.g., SASN) and ignitable (e.g., acetone) components of the waste are known as a result of knowledge of process and a well-defined and documented procedure for formulating SASN. Variability occurs in the relative amounts of non-explosive liquid and solid items. Some variability occurs in the relative amounts of explosives (SASN and PETN).

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

- Personnel document the waste constituents in the operating records for formulation and testing, and sign the documentation. Prior to formulating the explosive slurry, Unit personnel screen the formulation instructions to identify changes. If the formulation has changed, personnel evaluate the constituents to check that the wastes are acceptable for treatment in the TTF. Constituents include the maximum net weight and estimated actual weight of explosives in the waste, and the non-explosive constituents in the waste. Changes in the formulation are included in the documentation for formulation and testing.

B.2.4.2 Waste to be Treated at the RMWMF and AHCF

Wastes to be treated at the RMWMF and AHCF will be characterized based on acceptable knowledge, supplemented by sampling and analysis if necessary before treatment takes place to meet the objectives noted above. For wastes that will be treated to meet the treatment standards, the characterization includes the presence of UHCs that are reasonably expected to be present if UHCs are part of the treatment standards.

B.2.5 Characterization of Treated Wastes

Treated wastes are characterized through knowledge of process, supplemented by analytical data as needed, using the general process described in Section B.2.1.2. In addition to the objectives listed in Section B.2.1.1, treated wastes and residues are characterized to determine one or more of the following, as applicable, for each waste:

- Whether the characteristic of interest has been treated effectively

- Compliance with applicable treatment standards if compliance is a treatment goal,

- Continued presence of UHCs that are reasonably expected to be present in the waste as generated if compliance with applicable treatment standards is a treatment goal,

- Presence of hazardous waste constituents and characteristics that could have been introduced during treatment,

- Whether the treated waste or residue requires further management as a RCRA-regulated waste, and/or

- Suitability for further treatment by one or more methods available on site to make the waste safer and more amenable to further management on site or off site.

These characterization criteria are summarized in Table B-3.

Characterization for treated wastes and residues derived from treatment processes will include consideration of both listed and characteristic wastes that were present in the untreated wastes. In particular, Sandia/DOE will follow the requirements of 20 NMAC 4.1.200/40 CFR 261.3(g) [7-1-08] in characterizing wastes that are listed solely because they exhibit one or more of the characteristics of ignitability, reactivity, or corrosivity.

Wastes that are treated using technologies specified in 20 NMAC 4.1.800/40 CFR 268.40-45 [7-1-08] will not necessarily be subjected to sampling and analysis. Such treatment technologies include but are not limited to physical treatment, deactivation, and macroencapsulation. In these cases, treatment effectiveness will be determined by visual examination of the treated waste and/or knowledge of the treatment process as discussed in Section 8.0 of Modules II, III, and V. Other treated wastes will be subjected to sampling and analysis to characterize the waste and determine the effectiveness of the treatment as appropriate.

B.2.5.1 Treated Wastes at the TTF

Waste residues from the thermal treatment of explosive (reactive) waste at the TTF include decomposition by-products. The principal by-products are ash (carbon) produced from burned solid items (e.g., paper, filters), inert noncombustible solid items (e.g., metal clips and pieces that were part of the solid waste), and gases (i.e., nitrogen, water vapor, carbon dioxide, carbon monoxide, diatomic oxygen, and traces of nitrous oxides) produced by the decomposition of SASN, PETN, acetone, and acetonitrile. Elemental silver is also present in the ash when SASN is treated at the TTF.

The reactive and ignitable characteristics of the residue at the TTF are assessed by visually screening the residue in the burn pan for the presence of unreacted SASN (and PETN, as applicable).

Ash residue generated as a result of the treatment of explosive waste at the TTF is declared to be hazardous waste (D011) based on knowledge of the constituents and treatment process. Alternatively, Sandia/DOE may* use sampling and analysis to determine the silver content of the residue. The contents of the burn pan are containerized and transferred to one of the other SNL/NM Units for storage and transportation to an off-site TSDF. Sandia/DOE will characterize the residue as needed for further treatment or direct disposal at a permitted off-site TSDF.

Because the TTF is located outside, the steel-lined concrete pad periodically collects water from precipitation; the water drains into the catch tank. The water, a containment system liquid, will be characterized in accordance with this WAP and managed accordingly. If water collected in the

catch tank is known to be contaminated with hazardous waste constituents treated at the TTF, arrangements will be made for disposal into the City of Albuquerque wastewater system with a one-time notice placed in the facility file in accordance with 20 NMAC 4.1.800/40 CFR 268.7(a)(6) [7-1-087-1-08]. If the wastewater cannot be discharged into the City of Albuquerque wastewater system, it will be handled through waste management procedures at one of the other SNL/NM Units.

B.2.5.2 Treated Wastes at the RMWMF and AHCF

Effectiveness of treatment is determined one or more ways that are specific to the type of treatment and the waste undergoing treatment. Evaluations are described in detail in Section 8.3 of Modules III and V. Treated wastes and residues resulting from treatment of RCRA-regulated wastes at the RMWMF and AHCF are characterized using one or more of the following methods:

- Reactive metals, metal-containing particulates, and oxidizers treated by chemical deactivation at the RMWMF and AHCF are deactivated using water, a water/alcohol solution, other organic liquid, or portland cement. Alcohol and other organic liquids may* exhibit the characteristic of ignitability, and can typically be characterized using knowledge of the treatment process. Unit personnel use knowledge of process to determine whether the treated waste exhibits the hazardous waste characteristics of reactivity or ignitability, and the flash point test, as needed, for determination of ignitability. If applicable, the treated wastes are analyzed for the presence of UHCs reasonably expected to be present in the untreated waste if they will not undergo further treatment on site.

- Corrosive aqueous liquids treated by chemical deactivation at the RMWMF and AHCF are characterized for corrosivity through a pH check. If applicable, the treated wastes are analyzed for the presence of UHCs reasonably expected to be present in the untreated waste if they will not undergo further treatment on site.

- Reactive wastes treated by chemical deactivation at the RMWMF and AHCF are characterized for the presence of sulfides and cyanides through a chemical check if their presence caused the waste to be reactive. If applicable, the treated wastes are analyzed for the presence of UHCs if they will not undergo further treatment on site.

- Reactive and explosive items treated by thermal deactivation at the RMWMF are characterized for reactivity through knowledge of the treatment process and operations. The wastes may* also exhibit the hazardous waste characteristic of toxicity. If applicable, the treated wastes are characterized for the presence of UHCs through process knowledge or analysis if they will not undergo further treatment. Characterization for the presence of UHCs is not necessary if the wastes will be further treated through macroencapsulation either on site or off site.

- Elemental mercury treated by amalgamation at the RMWMF is not subject to further analysis.

- Aqueous liquids treated by stabilization and/or solidification at the RMWMF and AHCF (including liquids that have previously been neutralized) are checked for the presence of free liquids. If applicable, the treated wastes are analyzed for the presence of UHCs reasonably expected to be present in the untreated waste if they will not undergo further treatment on site.

- Oils and organic liquids exhibiting the hazardous waste characteristic of toxicity that are treated by stabilization and/or solidification at the RMWMF and AHCF are characterized through process knowledge or sampling and analysis. If applicable, the treated wastes are analyzed for the presence of the toxicity characteristic constituents and UHCs present or reasonably expected to be present in the untreated waste if they will not undergo further treatment on site.

- Soils and particulates exhibiting one or more of the hazardous waste characteristics of ignitability, reactivity, and toxicity are treated by deactivation and stabilization at the RMWMF and AHCF, and may* contain UHCs. The treated wastes no longer exhibit the characteristics of ignitability and reactivity. The treated wastes are characterized for toxicity (if applicable) through sampling and analysis. If applicable, the treated wastes are analyzed for the presence of UHCs if they will not undergo further treatment on site.

- Wastes exhibiting the characteristic of toxicity and/or containing or contaminated with spent solvents that are treated by macroencapsulation at the RMWMF and AHCF are visually examined to determine whether treatment met the standards.

- Wastes treated by physical treatment include components containing listed wastes and/or exhibiting the characteristics of ignitability, reactivity, corrosivity, and/or toxicity. After the items are successfully detached and separated from larger items, both items are characterized as described in Section B.2.1.2 to determine whether they are RCRA-regulated wastes.

- Wastes that are treated to reduce the size of individual pieces at the RMWMF and AHCF do not undergo further characterization because the treatment does not affect hazardous waste constituents or characteristics of the waste.

- Liquids and pressurized containers treated by physical treatment at the RMWMF are characterized separately following treatment. If the containers are empty, they are no longer RCRA-regulated waste. The collected liquids are characterized in the same manner as mixed and blended wastes (described in Section B.2.3). If the liquids will not undergo further treatment on site, they are characterized to determine compliance with treatment standards applicable to all components, including the presence of UHCs in characteristic wastes when applicable.

B.2.6 Verification and Reevaluation Frequencies [20 NMAC 4.1.500/40 CFR 264.13(a)(3)(i) and 264.13(b)(4); 20 NMAC 4.1.800/40 CFR 268.7(b)]

Sandia/DOE will review air emissions data and status at least once every 12 months for RCRA-regulated wastes subject to 20 NMAC 4.1.500/40 CFR 264, Subpart CC [7-1-08].

As described in previous sections, initial generators and Unit personnel obtain and evaluate information to characterize individual RCRA-regulated wastes managed at the SNL/NM Units. The evaluation needed for a single waste item depends on the item.

The duration of the characterization and its applicability to wastes generated in the future depends on the type of waste. For example, information about the contents of each container of used laboratory chemicals is applicable only to that container; however, information about the chemical

composition and hazardous waste characteristics of batteries is applicable to all batteries of the same type.

The Sandia/DOE waste verification process is designed to provide additional assurance that wastes are adequately characterized for management at the Units. The process applies to the verification of wastes received at a Unit and designated for storage and/or treatment prior to off-site disposal. Treated wastes are characterized as described in Section B.2.5, and are not subject to the verification and reevaluation procedures described in this section. Unit personnel involved in verification activities are trained and qualified for the activities they perform.

B.2.6.1 Verification of Wastes

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

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

During each calendar year, Sandia/DOE will verify the characterization for ten percent by volume of the SNL/NM RCRA-regulated wastes.

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

For wastes that were initially characterized using acceptable knowledge, the independent personnel will review applicable waste characterization documentation to verify that it adequately describes the wastes. Verification analyses, if needed, will be conducted at SNL/NM or an approved laboratory, in conformance with appropriate methods (discussed in Section B-4). In all cases, verification will be limited to the information necessary for the management of the waste at the SNL/NM Unit.

B.2.6.2 Reevaluation of Wastes

Characterization information for routinely generated wastes is evaluated periodically to verify that they have not changed. Any information that indicates a change in the process that generates the waste and may* affect the waste will cause the waste to be recharacterized no later than the next time the waste is generated.

Sandia/DOE will evaluate a single randomly-selected item from the waste stream, and the reevaluation will be limited to information necessary for management of the waste at the SNL/NM Unit. The evaluation will be conducted in the same manner as evaluation of individual wastes. For

wastes that were characterized using acceptable knowledge, Unit personnel will review applicable waste characterization documentation to verify that it adequately describes the wastes. Verification analyses, if needed, will be conducted at SNL/NM or an approved laboratory, in conformance with appropriate methods (discussed in Section B-4).

B.3 USE OF AVAILABLE KNOWLEDGE

Sandia/DOE's approach to waste characterization is based on use of existing information (i.e., available knowledge) regarding the chemical and physical nature of the waste or waste stream and the activities that generated it, supplemented by data from sampling and analysis as needed to provide sufficient information to answer the questions discussed in Section B.2.1.1. This approach is consistent with EPA and EPA/NRC guidance (EPA, 1994) and (EPA/NRC, 1997).

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

B.3.1 Acceptable Knowledge [20 NMAC 4.1.500/40 CFR 264.13(a)(2) and 264.13(b)(5); 20 NMAC 4.1.900/40 CFR 270.14(b)(2)]

According to EPA guidance, acceptable knowledge is broadly defined to include process knowledge, supplemental waste analysis data, and/or facility records of analysis (EPA, 1994). Process knowledge is described in 20 NMAC 4.1.500/40 CFR 264.13(a)(2) [7-1-08], as data developed under 20 NMAC 4.1.200/40 CFR 261 [7-1-08] and existing published or documented data on a specific RCRA-regulated waste or a waste generated from similar processes. Supplemental waste analysis data include concentration(s) of hazardous waste constituents and/or results of tests for hazardous waste characteristics to determine whether wastes are RCRA regulated. Records for some unknown liquids and solids may* include waste analysis and/or physical characterization performed prior to the effective date of RCRA regulations. In order to be acceptable, such analytical results must be accurate and applicable to the specified waste and are typically supplemented with other existing information (e.g., published data).

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

- Wastes containing hazardous waste constituents from specific processes that are well documented;
- Wastes consisting of discarded commercial chemical products, reagents, or chemicals containing known physical and chemical constituents (e.g., spent solvents);

- Waste containing levels of radioactivity such that health and safety risks to personnel do not justify sampling and analysis due to quantified and documented radiological concerns; and

- Wastes containing heterogeneous materials, where the physical nature of the waste does not lend itself to taking a representative sample (e.g., laboratory trash and construction debris with surface contamination).

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

B.3.2 Process Knowledge

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

- Detailed information on a waste or waste stream obtained from existing published or documented waste analysis data;

- Studies conducted on RCRA-regulated wastes generated by processes similar to that which generated the waste; and

- Knowledge of the materials and operations that generated the waste and that demonstrates the potential for hazardous constituents in the waste. For example, metals present in debris waste are often associated with specific materials (e.g., lead in leaded rubber or lead shielding).

Process knowledge documentation for each RCRA-regulated waste or waste stream is kept in the operating record of the Unit with other waste characterization information, or in a reference file that includes the documents or identifies them and their locations. The reference file is also part of the operating record. The documentation is explicitly relevant and traceable to a given waste or waste stream. There are many sources of applicable documentation at SNL/NM that are used to substantiate process knowledge for a specific waste or waste stream. Examples of documentation that are used for waste characterization include the following:

- MSDSs, product labels, and other product package information;

- Process design documents;

- Preliminary and final reports and analyses of the operations generating the waste;

- Information from operating procedures, which can include a list of the raw materials or reagents, a description of the process/experiment that uses the materials, and a description of the wastes generated and how the wastes are handled;

- Waste packaging logs;

- Test plans or research project reports that describe the reagents and other raw materials used in an experiment;
- Laboratory notebooks that detail the research processes and raw materials used in an experiment;
- Site databases (e.g., chemical inventory database for Superfund Amendments and Reauthorization Act Title III requirements);
- Information from personnel (e.g., documented interviews);
- Standard industry practice documents (e.g., vendor information);
- Industry reports on a similar process when there is a clear connection between the SNL/NM process/experiment and the industry's similar process/experiment;
- Previous analytical data relevant to the waste or waste stream, including results from fingerprint analyses, spot checks, or routine waste verification sampling;
- Analytical data from studies of common industry processes that are similar to SNL/NM processes. These data can be used to identify the constituents in a specific "similar" process waste and to determine the regulatory status of the waste;
- Sampling and analysis data from comparable wastes or waste streams;
- Analysis of a surrogate waste or waste stream;
- Documented visual inspections to confirm or identify the physical characteristics and packaging of a waste; and
- ER site and waste characterization data.

B.4 WASTE SAMPLING AND ANALYSIS [20 NMAC 4.1.500/ 40 CFR 264.13(a)(1)]

Chemical and physical characterization and/or acceptable knowledge are applicable to all RCRA-regulated waste for management purposes, as required by 20 NMAC 4.1.500/40 CFR 264.13 [7-1-08]. Initial waste generators and Unit personnel select analytical parameters to ensure that the characterization documentation will contain the information necessary to properly treat and/or store waste in accordance with RCRA general facility standards and LDR requirements.

Sandia/DOE will also obtain characterization information to meet the requirements of the off-site TSDFs that accept RCRA-regulated wastes that have been generated at SNL/NM. Management (including disposal) of Sandia/DOE wastes at off-site TSDFs is outside the scope of the permitted activities conducted at SNL/NM, and is not addressed further in this WAP.

Sampling and analytical procedures and sampling frequencies that are applicable to RCRA-regulated waste are discussed in this section. Sampling and analysis is generally performed to

provide supplemental information when a waste lacks sufficient process information to adequately characterize the waste based on acceptable knowledge. The approach described for characterizing these wastes is based on the physical, chemical, and hazardous properties of the waste; and on the amount and type of knowledge/information available.

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

B.4.1 Proposed Analytical Parameters and Methods [20 NMAC 4.1.500/40 CFR 264.13(b)(1); 20 NMAC 4.1.900/40 CFR 270.14(b)(2)]

Analytical parameters and characterization methods that are used for RCRA-regulated waste stored and/or treated at SNL/NM Units are summarized in Tables B-2 and B-3. As noted in Sections B.2.1, and B.2.4, the RCRA regulatory status of these wastes is determined through consideration of the following:

- Acceptable knowledge, supplemented by
- Sampling and analysis to determine the presence (and concentrations) of:
  - Hazardous waste metals (i.e., constituents of characteristic and listed wastes as defined in 20 NMAC 4.1.200/40 CFR 261.24 and Part 261 Subpart D [7-1-08])
  - Hazardous waste volatile organic compounds (VOCs) (i.e., constituents of characteristic and listed wastes as defined in 20 NMAC 4.1.200/40 CFR 261.24 and Part 261 Subpart D [7-1-08])
  - Hazardous waste semivolatile organic compounds (SVOCs) (i.e., constituents of characteristic and listed wastes as defined in 20 NMAC 4.1.200/40 CFR 261.24 and Part 261 Subpart D [7-1-08])
  - Other hazardous waste characteristics (i.e., ignitability, reactivity, corrosivity)
  - UHC metals, volatile organic compounds, and semivolatile organic compounds (defined in 20 NMAC 4.1.800/40 CFR 268.48 [7-1-08]) that are reasonably expected to be present in wastes exhibiting hazardous waste characteristics.
- Fingerprint analysis, or
- HazCat™ or other field tests.

B.4.2 Criteria and Rationale for Parameter Selection [20 NMAC 4.1.500/ 40 CFR 264.13(b)(1)]

As described above, waste analysis parameters are selected to characterize RCRA-regulated waste in conformance with 20 NMAC 4.1.500/40 CFR 264.13(b)(1) [7-1-08], to obtain information necessary to properly store and/or treat waste at SNL/NM Units in accordance with 20 NMAC 4.1.500/40 CFR 264 and 20 NMAC 4.1.800/40 CFR 268 [7-1-08]. The analytical parameters selected to supplement and confirm knowledge-based waste characterization for RCRA-regulated waste types and the rationale for the selected parameters are summarized in Tables B-2 and B-3. Table B-4 identifies the applicable analytical testing requirements and specific test methods for the parameters of interest, including UHCs discussed in Sections B.2.4 and B.2.5.

B.4.3 Waste Sampling

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

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

Appendix I of 20 NMAC 4.1.200/40 CFR 261 [7-1-087-1-08] lists specific guidance documents that detail sampling protocols for different waste types. Waste samples collected in accordance with these protocols are considered representative by EPA. The protocols include standards developed by the American Society for Testing and Materials (ASTM) and portions of "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846" (EPA, 1986 and all approved updates), hereinafter referred to as SW-846. Personnel involved in sampling and analysis comply with relevant and applicable protocol that is consistent with SW-846 or other equivalent methods. Detailed sampling recommendations and guidance are provided in Chapter 9 of SW-846. These methods are designed to ensure that representative waste samples are consistently collected and transferred to the responsible laboratory in a manner that maintains sample integrity.

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

Table B-4
Summary of Analytical Characterization Methods Used for Resource Conservation and Recovery Act-Regulated Waste

Parameter	Method Numbers[b]	Rationale
VOC in waste matrix		
Spent halogenated solvents	ASTM Method D4547-91[c] or equivalent method EPA/540/4-91/001[d] or equivalent methods[e]	
	EPA Methods SW-846 (8260)[f] or equivalent methods[e]	Determine total and/or TCLP SVOC/VOC concentration in samples of solids or liquids
Spent nonhalogenated solvents	EPA Methods SW-846 (1311, 8260, 8261)[f] or equivalent methods[e]	
	Methods included in 20 NMAC 4.1.600/40 CFR 265.1084(a)(2), (a)(3), and (a)(4)	
Underlying hazardous constituents[a] that are VOCs[a]	ASTM Method D4547-91[c] or equivalent method EPA/540/4-91/001[d] or equivalent methods[e] EPA Methods SW-846 (1311, 8260, 8261)[f] or equivalent methods[e]	Determine whether treated wastes meet treatment standards
SVOCs in waste	EPA Methods SW-846 (1311 and 8270)[f] or equivalent methods[e]	Determine total and/or TCLP SVOC concentration in samples of solids or liquids
Underlying hazardous constituents[a] that are SVOCs[a]	EPA Methods SW-846 (1311 and 8270)[f] or equivalent methods[e]	Determine whether treated wastes meet treatment standards
Metals in waste	EPA Methods SW-846[f]:	
Arsenic	(1311, 6010, 6020, 7000, 7010)[e]	
Barium	(1311, 6010, 6020, 7000, 7010)[e]	
Cadmium	(1311, 6010, 6020, 7000, 7010)[e]	
Chromium	(1311, 6010, 6020, 7000, 7010)[e]	Determine total and/or TCLP concentration in samples of solids or liquids
Lead	(1311, 6010, 6020, 7000, 7010)[e]	
Mercury	(1311, 7470, 7471)[e]	
Selenium	(1311, 6010, 6020, 7000, 7010)[e]	
Silver	(1311, 6010, 6020, 7000, 7010)[e]	
	or equivalent methods[e]	
Underlying hazardous constituents[a] that are metals:	EPA Methods SW-846[f]:	
Same metals listed above (except selenium)	same methods for metals listed above	Determine whether treated wastes meet treatment standards
Antimony	(1311, 6010, 6020, 7000, 7010)[e]	
Beryllium	(1311, 6010, 6020, 7000, 7010)[e]	
Nickel	(1311, 6010, 6020, 7000, 7010)[e]	
Thallium	(1311, 6010, 6020, 7000, 7010)[e]	
	or equivalent methods[e]	
Cyanides (total and amenable	(1311, 9010, 9012)[e]	Determine concentration of cyanides
Reactive Sulfide	EPA Methods SW-846, Test Method to Determine Hydrogen Sulfide Released from Wastes[g] or equivalent methods[e] EPA Methods SW-846 (9030, 9031, 9034)[f] or equivalent methods[e]	Determine concentration of reactive sulfides

Table B-4 (Concluded)
Summary of Analytical Characterization Methods Used for Resource Conservation and Recovery Act-Regulated Waste

Parameter	Method Numbers[b]	Rationale
Paint Filter Liquids Test	EPA Methods SW-846 (9095)[f] or equivalent methods[e]	Determine presence of free liquids
Flash Point	EPA Methods SW-846 (1010, 1020, 1030)[f] or equivalent methods[e]	Determine ignitability
pH	EPA Methods SW-846 (9040, 9041, 9045)[f] or equivalent methods[e]	Determine corrosivity
Explosives in waste	EPA Methods SW-846 (Appropriate analytical method from the Method 8300 series 8330)[f]	Determine reactivity
Dioxins and furans in waste	EPA Methods SW-846 (1311, 8280, 8290)[f] or equivalent methods[e]	Determine total and/or TCLP concentration in samples of solids or liquids
Underlying hazardous constituents[a] that are dioxin and furan congeners[a]	EPA Methods SW-846 (1311, 8280, 8290)[f] or equivalent methods[e]	Determine whether treated wastes meet treatment standards
Underlying hazardous constituents[a] that are polychlorinated biphenyls[a]	EPA Methods SW-846 (13, 8082, 8275)[f] or equivalent methods[e]	Determine whether treated wastes meet treatment standards
Pesticides in waste	EPA Methods SW-846 (1311, 8140, 8141, 8081, 8085)[f] or equivalent methods[e]	Determine total and/or TCLP concentration in samples of solids or liquids
Underlying hazardous constituents[a] that are pesticides[a]	EPA Methods SW-846 (1311, 8140, 8141, 8081, 8085)[f] or equivalent methods[e]	Determine whether treated wastes meet treatment standards
Herbicides in waste	EPA Methods SW-846 (1311, 8150, 8151)[f] or equivalent methods[e]	Determine total and/or TCLP concentration in samples of solids or liquids
Underlying hazardous constituents[a] that are herbicides[a]	EPA Methods SW-846 (1311, 8150, 8151) [f] or equivalent methods[e]	Determine whether treated wastes meet treatment standards

[a] Analyses are limited to determining whether treated wastes meet the universal treatment standards for the underlying hazardous constituents that can reasonably be expected to be present at the point of generation of the hazardous waste, as provided in 20 NMAC 4.1.800/40 CFR 268.48 [7-1-08].
[b] Sandia/DOE use the most current methods for analysis. Method numbers are subject to change through future updates and may* vary from those shown in this table.
[c] American Society for Testing and Materials, 1991, "Standard Practice for Sampling Waste and Soils for Volatile Organic Compounds," ASTM D4547-91, *Annual Book of ASTM Standards*, Philadelphia, Pennsylvania, American Society for Testing and Materials. (ASTM, 1991)
[d] U.S. Environmental Protection Agency (EPA), 1991, "Soil Sampling and Analysis for Volatile Organic Compounds," EPA 1/540/4-91/001, Office of Research and Development. (EPA, 1991)
[e] Equivalent methods may* be substituted to accommodate waste-specific properties.
[f] U.S. Environmental Protection Agency, 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*.
[g] SW-846, Section 7.3.4.2 contains specialized methods to determine if a sulfide-containing waste exhibits the reactivity characteristic.

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

- Sampling activities are conducted in a manner that minimizes the generation of waste;
- If the sampling or analysis of the waste would pose a serious threat to human health, Sandia/DOE will forego sampling and analysis;
- For heterogeneous solid items, such as contaminated debris, samples will be obtained from areas that are most likely to be contaminated, based on visual inspection of the waste or knowledge of the activity that generated the waste;
- For solid items whose surface is suspected to be contaminated with RCRA-regulated waste, such as contaminated equipment, surface samples will be taken by an appropriate method;
- For solid items with compositions that may* exhibit hazardous waste characteristics, a sample will be taken and analyzed from the waste or from a nonwaste item similar to the waste item;
- Portions or aliquots will be collected from each phase of wastes that exist in multiple solid, liquid, and/or gas phases;
- For liquid or solid waste items in multiple containers, the sampling strategy will be consistent with SW-846, Chapter 9;
- Handling and collection techniques are consistent with SW-846 and conducted to preserve the nature of the waste sample.

Table B-5 lists the applicable requirements specified in SW-846 regarding sample containers, preservation techniques, and holding times associated with sample collection.

B.4.4 Waste Analysis

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

Table B-5
Recommended Sample Containers[a], Preservation Techniques, and Holding Times[b]

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

Table B-5 (Continued)
Recommended Sample Containers[a], Preservation Techniques, and Holding Times[b]

Analyte Class and Sample Type	Container	Preservative	Holding Time
Liquid Samples:			
No Residual Chlorine Present	4 x 1 liter (L) AG[g] with PTFE-lined lid, or other size, as appropriate, to allow use of entire sample for analysis	Cool to 4ºC	14 days
Residual Chlorine Present	4 x 1-L AG[g] with PTFE-lined lid, or other size, as appropriate, to allow use of entire sample for analysis	Add 3-mL 10% sodium thiosulfate solution per gallon (or 0.008%). Cool to 4ºC.	14 days
Polychlorinated Biphenyls, Polychlorinated Dibenzo-p-dioxins, and Polychlorinated Dibenzofurans			
Concentrated Waste Samples	125-mL WM[c]-G[d]	None	14 days
Soil/Sediments and Sludges	250 mL WM[c]-G[d] with PTFE-lined lid	Cool to 4ºC	14 days
Liquid Samples:			
No Residual Chlorine Present	4 x 1 liter (L) AG[f] with PTFE-lined lid, or other size, as appropriate, to allow use of entire sample for analysis	Cool to 4ºC	14 days
Residual Chlorine Present	4 x 1-L AG[f] with PTFE-lined lid, or other size, as appropriate, to allow use of entire sample for analysis.	Add 3-mL 10% sodium thiosulfate solution per gallon (or 0.008%). Cool to 4ºC.	14 days

Table B-5 (Concluded)
Recommended Sample Containers[a], Preservation Techniques, and Holding Times[b]

Analyte Class and Sample Type	Container	Preservative	Holding Time
Metals			
Liquid 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
Cyanide	500-mL WM[c]-P[h] or G[d]	Cool to 4ºC. See method for preservation if oxidizing agents or interferences are present.	14 days

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

[a] Smaller sample containers may* be required due to health and safety concerns associated with potential radiation exposure, transportation requirements, and waste management considerations.
[b] Information primarily from "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846,* U.S. Environmental Protection Agency, 1986 and all approved updates.
[c] WM = Wide-mouth
[d] G = Glass
[e] Adjust to pH of less than 2 with sulfuric acid, hydrochloric acid, or solid sodium bisulfate.
[f] A term used to describe the hydrogen-ion activity of a system.
[g] AG = Amber glass
[h] P = Polyethylene

Solid items may* be heterogeneous or homogeneous. If necessary for waste characterization purposes, these solids will be analyzed for total concentrations of hazardous waste metals, VOCs, and SVOCs (see Table B-4 for specific analytical methods). If necessary for waste characterization purposes, homogeneous wastes will be sampled and analyzed for the TC constituents listed in 20 NMAC 4.1.200/40 CFR 261.24 [7-1-08]. If analysis for total concentration of TC constituents will be performed on samples, it will be done as a screening step, as described in Section 1.2 of Method 1311, Toxicity Characteristic Leaching Procedure (TCLP). If total concentrations are used in the waste characterization process, analytical data will be compared to the TC regulatory levels expressed as total values. These total values will be considered the regulatory threshold limit (RTL) values for the determination of whether a particular waste exhibits a TC. RTL values are obtained by calculating the weight/weight concentration (in the solid) of a TC constituent that would give the regulatory weight/volume concentration in the TCLP extract. If the total concentrations are less than the RTL value, the waste cannot exhibit the toxicity characteristic and the TCLP does not need to be completed for the screened TC constituents.

Liquid wastes typically consist of aqueous solutions, slurries, and organic liquids. If necessary for waste characterization purposes, these wastes will be sampled and analyzed for total concentrations of hazardous waste metals, VOCs, SVOCs, and for the hazardous waste characteristics of ignitability, reactivity, corrosivity, and toxicity (see Table B-4 for specific analytical methods). In accordance with Method 1311 (TCLP), liquid wastes (i.e., those wastes that contain less than 0.5 percent dry solids) do not require extraction. The liquid waste, after filtration, is defined as the TCLP extract. Liquid waste, therefore, will be characterized by filtering the waste, measuring total constituent concentrations in the resulting filtrate, and comparing these concentrations to the TC regulatory levels in 20 NMAC 4.1.200/40 CFR 261.24 [7-1-08].

B.4.4.1 Sample Handling, Preservation, and Storage

Table B-5 lists QA/QC requirements specified in SW-846 regarding sample containers, preservation techniques, and holding times associated with sample collection. Adherence to these requirements will ensure that sampling and analysis meet quality objectives for data. In the event that the specified criteria are not met, Sandia/DOE will evaluate the data for usability.

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

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

B.4.4.2 Analytical Laboratory Selection and Analytical Methods [20 NMAC 4.1.500/40 CFR 264.13(b)(2)]

Analytical laboratories will perform the detailed qualitative and quantitative chemical analyses specified in SW-846 or equivalent methods that are listed in Table B-4 and applicable to the parameter(s) associated with a particular waste type. These laboratories must have:

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

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

- The physical form of the waste,
- Constituents of interest,
- Required detection limits (e.g., regulatory thresholds), and
- Information requirements (e.g., waste characterization, verifying compliance with LDR treatment standards for wastes treated at an SNL/NM Unit).

Collectively, these factors contributed to the selection of the analytical methods specified in Table B-4. Approved laboratories that meet the above criteria will analyze waste samples for hazardous waste constituents (e.g., VOCs, SVOCs, and metals) and characteristics (i.e., ignitability, reactivity, corrosivity, toxicity), according to the specifications in Table B-4.

B.5 OFF-SITE WASTE ACCEPTANCE PROCEDURES [20 NMAC 4.1.500/ 40 CFR 264.13(a)(3)(ii) and (a)(4), 264.13(b)(5), and 264.13(c)]

RCRA-regulated wastes from off-site sources will be accepted at SNL/NM. These wastes and sources include:

- RCRA-regulated wastes generated by Sandia employees (or contractors in the service of Sandia) outside the KAFB boundary will be accepted for storage and/or treatment if the wastes are properly characterized and transported.
- Wastes or waste residuals associated with off-site treatment of Sandia/DOE wastes or waste streams managed or treated by off-site facilities will be returned to SNL/NM for storage and/or treatment if all such wastes are properly characterized and transported.
- Wastes will be received from other (non-Sandia) off-site DOE facilities for final characterization, storage, treatment, and/or transport to other off-site facilities, only if all such wastes are properly characterized and transported.

The general waste acceptance procedures that will be used when RCRA-regulated wastes are accepted from off-site sources are discussed below. These procedures will be used to meet the requirements of 20 NMAC 4.1.500/40 CFR 264.13(a)(3)(ii), 264.13(a)(4), 264.13(b)(5), and 264.13(c) [7-1-08]. The process used for managing off-site wastes at SNL/NM is diagrammed in Figure B-1 and explained below.

The basis for characterization of RCRA-regulated wastes or waste streams to be accepted by Sandia/DOE is generator documentation of the waste. Prior to waste shipment to SNL/NM, the appropriate Unit personnel receive a waste transfer request and characterization data from an off-site generator. Unit personnel review the request from the off-site generator for completeness and conformance with the waste characterization objectives and process described in Section B.2 of this WAP.

For wastes received from off-site small quantity and large quantity generators, Sandia/DOE will require an LDR notification that addresses LDR requirements applicable to the specific waste type and will inform the generators in writing that Sandia/DOE has the appropriate permit(s) for and will accept the waste (20 NMAC 4.1.500/40 CFR 264.12[b] [7-1-08]).

After the documentation has been reviewed and determined to be complete, the waste will be shipped to SNL/NM where the shipment records, LDR Notification Forms (if needed), Uniform Hazardous Waste Manifest (if needed), and proper generator signatures are reviewed to ensure the accuracy and completeness of documentation and compliance with container management requirements. If discrepancies are found, acceptable options for resolution include shipment of the waste back to the off-site generation facility, or temporary storage pending further analysis or characterization.

B.5.1 Waste Manifest Verification

Each Uniform Hazardous Waste Manifest that accompanies a waste shipment is checked for the following information:

- The shipment identification number;
- The name, address, and EPA identification number of the generator;
- The name and EPA identification number of the transporter;
- The destination of the waste shipment (i.e., SNL/NM) including the facility address and EPA identification number;
- Any EPA Hazardous Waste Numbers
- The proper U.S. Department of Transportation (DOT) shipping name and number;
- The quantity (e.g., weight) of waste in the shipment;

- The number and type of containers in the shipment; and

- A signed and dated certification of the contents of the shipment.

B.5.2 Waste Shipment Verification

A visual inspection of the shipment will be conducted by Unit personnel to ensure that the number and type of container(s) match the manifest and the labeling on the container(s) is complete and matches the manifest. If discrepancies are found, acceptable options for resolution include shipment of the waste back to the off-site generation facility, or temporary storage pending further analysis or characterization. If any discrepancies between the shipment and associated documentation are found that cannot be resolved within 15 days after receiving the waste, Sandia/DOE will send a notification to the New Mexico Environment Department in accordance with 20 NMAC 4.1.500/40 CFR 264.72 [7-1-08].

B.5.3 Waste Description Verification

Unit personnel review waste data, including acceptable knowledge, sampling and analysis data, and treatment records for completeness following the process described in Section B.2 of this WAP. The exact parameters to be verified are determined by Unit personnel at the time of waste receipt, based upon the generator-supplied information.

Fingerprint analyses will typically be conducted by Unit personnel for waste received from off site in one-time quantities larger than 30 gallons to verify the waste characterization information provided by the generator. The parameters (e.g., specific gravity, color, flash point, and pH) that are tested by fingerprint analysis are based on the information provided by the generator and the expected characterization of the waste.

If the fingerprint analyses results do not match the waste characterization designated on the accompanying Uniform Hazardous Waste Manifest, Unit personnel will perform waste characterization analyses described in Section B.4 of this WAP or send the waste back to the facility where it was initially generated.

B.6 SPECIAL PROCEDURAL REQUIREMENTS [20 NMAC 4.1.500/40 CFR 264.13(b)(6)]

RCRA-regulated waste management requirements specific to ignitable, reactive, and incompatible waste, as well as for compliance with LDR and 20 NMAC 4.1.500/40 CFR 264, Subparts AA, BB, and CC [7-1-08] regulations, are described below.

B.6.1 Procedures for Ignitable, Reactive, and Incompatible Wastes

Pursuant to 20 NMAC 4.1.500/40 CFR 264.17 [7-1-08], Unit personnel take the necessary precautions to prevent accidental ignition or reaction of wastes at SNL/NM Units. Unit personnel also take the necessary precautions to ensure that incompatible wastes are identified and managed

appropriately. These precautions are described in Section 1.1.2 of the General Part B and in Section 1.2.2 of each Unit-specific module.

As described in those sections, Sandia/DOE rely on waste characterization data and/or published chemical information (e.g., "NIOSH Pocket Guide to Chemical Hazards" [DHHS, 1994] or other chemical or engineering handbooks) for each waste in a planned treatment or repackaging operation involving ignitable, reactive, and incompatible wastes. This includes, but is not limited to, the segregation of these wastes according to compatibility groups (e.g., flammables/ignitables, oxidizers, corrosive acids, reactive with water, corrosive bases, and other reactives) and by the physical nature of the waste (i.e., liquids and solids).

B.6.2 Procedures to Ensure Compliance with LDR Requirements [20 NMAC 4.1.800/40 CFR 268.7(b), 268.9(b), and 268.9(d)]

Pursuant to 20 NMAC 4.1.800/40 CFR 268 [7-1-08], Sandia/DOE will comply with LDR requirements for wastes stored or treated at the SNL/NM Units through compliant management of wastes subject to LDR storage prohibitions, and through characterization of treated waste (i.e., RCRA-regulated wastes treated at SNL/NM Units) for LDR compliance, and processing of the applicable LDR certifications and notifications for such treated wastes.

B.6.2.1 Storage Prohibitions (20 NMAC 4.1.800/40 CFR 268.50)

RCRA-regulated wastes are restricted from land disposal under 20 NMAC 4.1.800/40 CFR 268, Subpart C [7-1-08] unless they meet the treatment standards in 20 NMAC 4.1.800/40 CFR 268 Subpart D. Restricted wastes (i.e., wastes that do not meet the applicable treatment standards) can be stored for up to one year at SNL/NM Units in compliance with 20 NMAC 4.1.800/40 CFR 268.50. Sandia/DOE assume that all of the RCRA-regulated wastes at SNL/NM are restricted from land disposal (i.e., they do not meet the applicable treatment standards) and apply the one-year storage limit to all RCRA-regulated wastes stored at any Unit except as noted below:

- RCRA-regulated wastes that are subject to the Federal Facilities Compliance Order (FFCO) (NMED 1995, as amended) between DOE, Sandia, and NMED can be stored at SNL/NM Units for more than one year even if they do not meet the treatment standards. Information about FFCO applicability is maintained in the operating record described in Section 9.0 of the General Part B.

- RCRA-regulated wastes that are not subject to the FFCO and do not meet the treatment standard(s) could be stored at SNL/NM Units for more than one year, solely for the purpose of accumulating sufficient quantities of RCRA-regulated waste to facilitate proper recovery, treatment, or disposal, in accordance with 20 NMAC 4.1.800/40 CFR 268.50(c). Information regarding proper recovery, treatment, or disposal is maintained in the operating record described in Section 9.0 of the General Part B.

- RCRA-regulated wastes that meet the treatment standards are not subject to the one-year storage limit. These wastes are characterized to determine compliance with the applicable treatment standard(s) using the process described in Section B.6.2.2. Analytical data or other information demonstrating compliance with the applicable treatment standard(s) is maintained in the operating record described in Section 9.0 of the General Part B.

B.6.2.2 Characterization for LDR Compliance: Wastes Generated Through Treatment of RCRA-Regulated Wastes at SNL/NM Units

RCRA-regulated waste generated through treatment at SNL/NM Units (e.g., treated waste, treatment residue) is characterized to determine whether it meets the applicable LDR treatment standards in 20 NMAC 4.1.800/40 CFR 268, Subpart D [7-1-08] associated with the treatment performed. The information required of Sandia/DOE as the generator of the treated waste is dependent on any subsequent treatment that will be performed and the ultimate disposal method; therefore, Sandia/DOE characterize the treated waste specifically to meet the requirements of the off-site TSDF receiving it. The requirements of the off-site TSDF are based on their permit conditions and the treatment and/or disposal method.

Waste that must meet concentration-based treatment standards prior to shipment off site for disposal will be evaluated to determine if applicable constituent concentration levels have been attained, as described in Section B.2.5. Section B.2.5 includes a discussion of the criteria used to determine if acceptable knowledge is appropriate for characterizing a waste or waste stream with respect to LDR compliance. Likewise, if a waste must be treated by one or more specified treatment methods (e.g., macroencapsulation) prior to land disposal, analytical testing to certify LDR compliance for the waste before treatment is generally not necessary, as described in Section B.2.5.

If acceptable knowledge or use of a specified treatment technology is not appropriate for determining LDR compliance status, the treated waste will be sampled and analyzed to certify that it meets LDR treatment standards. The analysis will determine the total concentration of hazardous waste constituents in the treatment residue, or the concentrations of hazardous waste constituents in an extract of the residue obtained using Test Method 1311 in SW-846, as appropriate for the individual waste. Analytical results obtained in support of LDR requirements will be retained within the Unit operating record. Characterization of treatment residues for LDR compliance will include hazardous waste constituents that were introduced as part of the treatment process, as discussed in Section B.2.5.

For wastes generated through treatment at one of the SNL/NM Units, SNL/NM will comply with the applicable requirements of 20 NMAC 4.1.800/40 CFR 268.7(b), 268.9(b) and (d), 268.40(c), and 268.49 [7-1-08]. RCRA-regulated treatment residues that are determined through analysis or acceptable knowledge to meet treatment standards as specified in 20 NMAC 4.1.800/40 CFR 268, Subpart D [7-1-08], will be sent to a permitted TSDF for disposal without further treatment. Wastes that have been generated through treatment using technologies specified in 20 NMAC 4.1.800/40 CFR 268.42, 268.44, or 268.45 [7-1-08] will also be sent to a permitted TSDF for disposal without further treatment. Residues that do not meet all of the applicable treatment standards will be sent to a permitted TSDF for further treatment.

Whenever Sandia/DOE send treated waste to an off-site TSDF for treatment and/or disposal as described above, it is in accordance with that facility's waste acceptance criteria. For treated wastes and residues generated at Units through treatment operations described in the General Part B and Unit-specific modules, Unit personnel review the LDRs as they relate to the further treatment and/or disposal of the treated waste at the TSDF that will accept the waste. Sandia/DOE obtain approval from the TSDF and meet TSDF-specific waste analysis requirements (including LDR requirements) prior to shipment.

Part of this review includes evaluating the waste for UHCs and Universal Treatment Standards for the treated wastes, and documenting the results of the evaluation as part of the certification

process. UHCs must be declared if reasonably expected to be present in D001 through D043 wastes. Unit personnel complete an appropriate LDR notification form (including signed certification) that accompanies the Uniform Hazardous Waste Manifest as part of the shipping documentation to the TSDF. Records are maintained at Sandia/DOE as discussed in Section 9.0 of the General Part B.

B.6.2.3 Characterization for LDR Compliance: Wastes From Off-Site Sources

For wastes received from off-site large quantity generators, Sandia/DOE will require an LDR notification that addresses LDR requirements applicable to the specific waste type. If off-site wastes are treated at SNL/NM, Sandia/DOE will comply with the requirements of 20 NMAC 4.1.800/40 CFR 268.7(b) [7-1-08] as discussed above.

When shipping the waste to an off-site TSDF, Sandia/DOE will use the process described in Section B.5.2.2 for characterizing the waste in accordance with that facility's waste acceptance criteria.

B.6.3 Procedures to Ensure Compliance with Air Emission Requirements [20 NMAC 4.1.500/40 CFR 264, Subparts AA, BB, and CC]

Sandia/DOE manage wastes that are subject to some of the requirements in 20 NMAC 4.1.500/ 40 CFR 264, Subparts AA, BB, and CC [7-1-08] as discussed in Section 1.1.4.6 of the General Part B. Sandia/DOE wastes and waste streams described in this WAP may* be subject to 20 NMAC 4.1.500/40 CFR 264, Subpart CC [7-1-08], "Air Emission Standards for Tanks, Surface Impoundments, and Containers," based on applicability criteria specified in 20 NMAC 4.1.500/40 CFR 264.1080 [7-1-08]. For wastes that are not eligible for exemption under 20 NMAC 4.1.500/40 CFR 264.1080(b) [7-1-08], Sandia/DOE will address the applicable 20 NMAC 4.1.500/40 CFR 264, Subpart CC [7-1-08] requirements for control of air pollutant emissions from each Unit subject to the regulations, as follows:

- In lieu of determining the concentration of VOCs in a waste or waste stream at the point of origination, Sandia/DOE may* declare that a container holding waste that contains VOCs is subject to the requirements of 20 NMAC 4.1.500/40 CFR 264 Subpart CC.

- To establish 20 NMAC 4.1.500/40 CFR 264, Subpart CC [7-1-08] applicability for a specific waste or waste stream, the initial generator will follow the waste determination procedures specified in 20 NMAC 4.1.500/40 CFR 264.1083(a) [7-1-08] to determine the concentration of VOCs in the waste or waste stream at the point of origination and document this determination or assume/declare that the waste is subject to 20 NMAC 4.1.500/40 CFR 264, Subpart CC [7-1-08] as listed above. Acceptable knowledge or process knowledge will be used to make this determination; however; if sampling and analysis is necessary, it will be performed in accordance with the approved methods listed in Tables B-4 and B-5.

- Whenever changes to the source generating the waste stream are reasonably likely to cause the average VOC concentration of the RCRA-regulated waste to increase to a level that is equal to or greater than the applicable VOC concentration limits specified in 20 NMAC 4.1.500/40 CFR 264.1082, a new waste determination will be performed, as specified in 20 NMAC 4.1.500/40 CFR 264.1083(a)(1)(ii).

- The characterization documentation for VOCs will be reviewed by the Unit personnel as part of the characterization process discussed in Section B.2. If process knowledge in accordance with 20 NMAC 4.1.600/40 CFR 265.1084(a)(4) is insufficient, sampling and analysis of the waste will be required, in accordance with 20 NMAC 4.1.600/40 CFR 265.1084(a)(3) [7-1-08].

- RCRA-regulated wastes containing VOCs that are newly generated through treatment will be characterized for VOC content in accordance with 20 NMAC 4.1.600/40 CFR 265.1084(b) [7-1-08] if the waste being treated contains VOCs, and/or the treatment process involves VOCs.

- Routinely-generated RCRA-regulated wastes that are subject to 20 NMAC 4.1.500/40 CFR 264, Subpart CC [7-1-08], will be reviewed and updated at least once every 12 months (20 NMAC 4.1.500/40 CFR 264.1082(c)(1) [7-1-08]) to determine whether the Subpart CC requirements continue to apply.

B.7 RECORDS

Once Unit personnel have adequate characterization for a RCRA-regulated waste, the information is typically entered into a waste tracking database. Each package (the smallest discrete waste item) is assigned a unique identification and tracking number before it is picked up and transported to a Unit. Characterization information and analytical data associated with the package is either in paper or electronic format. Unit personnel perform activities that affect a waste package (e.g., movement, repackaging, additional characterization, treatment, or shipment to an off-site TSDF). Information about these activities is added to the paper and/or electronic record for each package. The records are maintained as discussed in Section 9.0 of the General Part B.

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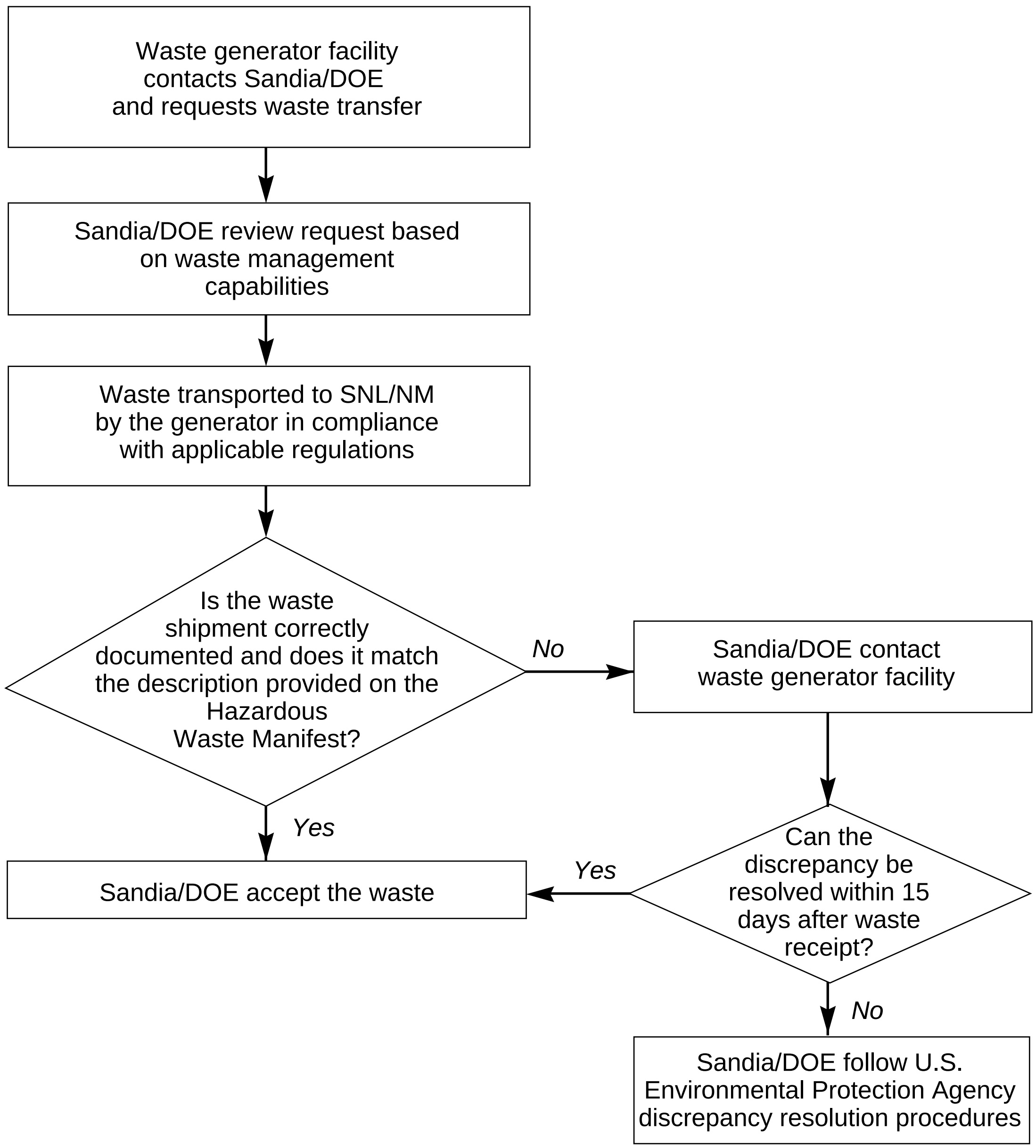

Figure B-1

Decision Flow Logic Diagram for Managing Off-Site Generated Waste at Sandia National Laboratories/New Mexico

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APPENDIX C

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

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20 NMAC 4.1.*X*00	New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart *X*
40 CFR 2*XX.XX*	Code of Federal Regulations, Title 40, Part 2*XX*, Section 2*XX.XX*
DOE	U.S. Department of Energy/National Nuclear Security Administration
RCRA	Resource Conservation and Recovery Act
Sandia	Sandia Corporation
SNL/NM	Sandia National Laboratories/New Mexico
Unit	RCRA-regulated waste management unit
WMA	waste management area

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SITE-WIDE INSPECTION PLAN FOR SANDIA NATIONAL LABORATORIES/NEW MEXICO

In accordance with the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart IX (20 NMAC 4.1.900), adopting by reference the Code of Federal Regulations, Title 40, Part 270 including Section 270.14(b)(5) (40 CFR 270.14[b][5]), and 20 NMAC 4.1.500/40 CFR 264.15, "General Inspection Requirements," revised October 1, 2003 [7-1-08], this appendix presents site-wide inspection requirements applicable to the Resource Conservation and Recovery Act (RCRA)-regulated waste management units (Units) at Sandia National Laboratories/ New Mexico (SNL/NM), operated by Sandia Corporation (Sandia) and owned by the U.S. Department of Energy/National Nuclear Security Administration (DOE).

Pursuant to 20 NMAC 4.1.500/40 CFR 264.15(a) [7-1-08], inspection schedules for the Units have been developed to identify equipment malfunctions and deterioration, operator errors, and discharges that might cause or lead to a release of RCRA-regulated waste and pose a threat to human health and the environment. This inspection plan, which presents general inspection schedules, is being submitted as required by 20 NMAC 4.1.900/40 CFR 270.14(b)(5) [7-1-08]. Unit-specific inspection requirements are provided in Section 4.0 of each Unit-specific module. Together, information in this appendix, in the General Part B, and in each Unit-specific module meets the applicable regulatory requirements.

C.1 INSPECTION REQUIREMENTS FOR UNITS [20 NMAC 4.1.900/40 CFR 270.14(b)(5), and 20 NMAC 4.1.500/40 CFR 264.15, 264.174, and 264.602]

In accordance with the requirements of 20 NMAC 4.1.900/40 CFR 270.14(b)(5) [7-1-08], and 20 NMAC 4.1.500/40 CFR 264.15(b)(1), 264.174, and 264.602 [7-1-08], SNL/NM Units are inspected for malfunctions and deterioration, operator errors, and discharges which may be causing, or may lead to, a release of hazardous waste constituents to the environment or a threat to human health. Inspections include monitoring equipment, safety and emergency equipment, security devices, and operating and structural equipment that are important to preventing, detecting, and responding to environmental or human health hazards caused by RCRA-regulated waste. Containers of RCRA-regulated waste stored at a Unit are also routinely inspected to assess container integrity, closure, labeling, secondary containment, location with respect to incompatible wastes, and waste and container compatibility. Additional detail about specific items and areas is included in each Unit-specific module.

A copy of this appendix, which includes relevant inspection schedules, is maintained at each Unit, together with the Unit-specific inspection plan, unless specified otherwise in Section 4.0 of each Unit-specific module, as required in 20 NMAC 4.1.500/40 CFR 264.15(b)(2) [7-1-08].

C.1.1 Inspection Records [20 NMAC 4.1.500/40 CFR 264.15(d)]

Unit personnel are assigned to conduct inspections and record the information on inspection forms. Figures C-1 and C-2 are representative of the inspection forms completed by personnel inspecting SNL/NM Units. Figures C-1 and C-2 are provided for informational purposes only; the forms are subject to change. Any forms used will be functionally equivalent to the ones

shown as Figures C-1 and C-2. The inspection forms identify the items to be inspected and the potential problems that may occur (20 NMAC 4.1.500/40 CFR 264.15(b)(3) [7-1-08]). Additional detail is included in each Unit-specific inspection plan. The following information is recorded on the inspection forms.

- Name of inspector
- Date and time of inspection
- Notation of observations and results of the inspection
- Date and nature of any repairs or remedial action.

For each Unit, inspection records are maintained for a minimum of three years from the date of inspection. Current calendar year records are maintained at the Unit. Previous calendar year records may be maintained at the Unit, SNL/NM Records Center, or as noted in Section 4.0 of each Unit-specific module.

C.1.2 Remedial Action [20 NMAC 4.1.500/40 CFR 264.15(c)]

For every item requiring inspection, a response indicating the condition of each item must be entered in the appropriate column on the form. If any defects, deterioration, damage, or potential hazards are discovered during an inspection or observed during waste handling activities, Unit personnel begin taking corrective action upon discovery to ensure that the problem does not lead to an environmental or human health hazard. Appropriate action may include evaluation and removal of accumulated liquids from secondary containment, transfer of waste from a defective container to an appropriate container in good condition, or repair or replacement of nonfunctioning equipment and/or systems. If an inspection or observation during waste handling reveals that a nonemergency problem has developed, corrective action including repairs, maintenance, and replacement will be completed as soon as practical to preclude further damage and reduce the need for emergency repairs.

Corrective action(s) taken in response to conditions discovered during an inspection or observed during waste handling are noted on the inspection forms. The corrective action(s) taken (along with time, date, and other pertinent information) are recorded in the appropriate section of the inspection form on which the condition and corrective action were first noted or in the first form after the corrective actions are completed. For example, corrective actions in response to conditions observed during waste handling are noted in the form for that day or in the form for the first daily inspection following implementation of the corrective action. Corrective actions in response to conditions discovered during a weekly inspection are noted in the appropriate section of the form for the discovery date or in the form for the first weekly inspection completed following implementation of the corrective action.

C.2 TYPICAL INSPECTION SCHEDULE AND REQUIREMENTS FOR UNITS [20 NMAC 4.1.500/40 CFR 264.15(b)(4), 264.174, and 264.602]

The schedules described in this section are followed for the inspection of the items and areas noted in Section C.1. Inspections may be conducted at any time during the applicable time period (e.g., day, week, month) specified in the inspection schedule.

The U.S. Air Force, which operates Kirtland Air Force Base, may, for security or other reasons, deny access to Sandia/DOE personnel performing periodic Unit inspections. In such cases, Unit personnel will resume inspections as soon as possible after access is granted, and will document the missed inspections and reasons on the next inspection report.

SNL/NM Units are typically inspected according to the schedule provided below. Inspection frequencies have been developed based on the deterioration rates of equipment/systems and likelihood of failure, and the probability of harm to human health or the environment if: 1) the equipment/system fails between inspections; or 2) operator error goes undetected between inspections. Equipment and systems most likely to fail and those whose failure could lead to severe consequences are inspected most frequently.

The inspection frequencies for specific equipment and areas of operation at each Unit are listed in Section 4.0 of each Unit-specific module. Those detailed schedules are consistent with the general schedule described here.

C.2.1 Daily

A daily Unit inspection is conducted during each day that RCRA-regulated wastes are handled at that Unit. Waste handling includes when RCRA-regulated waste is received at, moved or opened within, treated at, or removed from a WMA. An example of a daily inspection form (Figure C-1) lists the items typically addressed. A detailed list of items is included in Section 4.0 of each Unit-specific module.

C.2.2 Weekly

A weekly Unit inspection is conducted at least once during each week that RCRA-regulated waste is stored at that Unit. The example of a weekly inspection form (Figure C-2) lists the items typically addressed (included in Item 10 on the form). A detailed list of items is included in Section 4.0 of each Unit-specific module. For the purposes of inspections, weekly is defined as Sunday through the following Saturday.

C.2.3 Monthly

Safety and emergency equipment, security devices, and Unit operating and structural equipment are inspected on a monthly schedule at each active and inactive Unit. Monthly inspections are conducted at WMAs not currently in use for management of RCRA-regulated wastes. Items 7, 8, and 9 on the monthly inspection form (Figure C-2) identify the items to be inspected at active and inactive WMAs. A detailed list of items is included in Section 4.0 of each Unit-specific module.

C.3 INSPECTION AND MONITORING FOR UNITS SUBJECT TO SUBPART AA REQUIREMENTS [20 NMAC 4.1.500/40 CFR 264, Subpart AA]

Sandia/DOE do not manage RCRA-regulated wastes with organic concentrations ≥10 percent by weight using process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations. Therefore, Sandia/DOE are exempt from the requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart AA [7-1-08].

C.4 INSPECTION and MONITORING FOR UNITS SUBJECT TO SUBPART BB REQUIREMENTS [20 NMAC 4.1.500/40 CFR 264, Subpart BB]

Sandia/DOE do not routinely manage RCRA-regulated wastes with organic concentrations ≥10 percent by weight in process equipment identified in 20 NMAC 4.1.500/40 CFR 264, Subpart BB [7-1-08]. Equipment used in such service will be used for less than 300 hours per calendar year and is therefore exempt from the requirements of 20 NMAC 4.1.500/40 CFR 264.1052 through 264.1060 [7-1-08] as noted in 20 NMAC 4.1.500/40 CFR 1050(f) [7-1-08].

C.5 INSPECTION AND MONITORING FOR UNITS SUBJECT TO SUBPART CC REQUIREMENTS [20 NMAC 4.1.500/40 CFR 264, Subpart CC]

Containers are visually inspected either at the time of pickup from a generator site, as they are unloaded from a transport vehicle at a Unit, or within 24 hours of acceptance at a Unit. The visual inspection assures that there are no cracks, holes, gaps, or other open spaces into the interior of the container when the cover and closure devices are secured in the closed position, in accordance with Container Level 1 air emission standards in 20 NMAC 4.1.500/40 CFR 264, Subpart CC [7-1-08]. The inspection requirements for these containers are specified in 20 NMAC 4.1.500/40 CFR 264.1086(c)(4) [7-1-08]. At each Unit where such containers are handled and/or stored, personnel take the following steps:

- Check containers that are subject to 20 NMAC 4.1.500/40 CFR 264.1086(c)(4) and the condition and placement of their covers during inspections of handled and stored containers.

- Take remedial actions if needed. Unit personnel begin taking corrective action and make first effort at repair of a defect within 24 hours after discovery of a defect in the container, cover, or closure device. Repairs will be completed as soon as possible. If the repairs are not completed in 5 calendar days, the waste will be transferred to a container in good condition. The defective container, cover, or closure device will not be used for managing RCRA-regulated wastes until it is repaired.

- Record container conditions and remedial actions taken in the applicable inspection reports: daily reports for containers that are handled, or weekly inspection reports for stored containers.

Figure C-1
Resource Conservation and Recovery Act (RCRA)-Regulated Waste Management Unit Daily Inspection Form – Example

1. Area(s) Inspected (i.e., Loading/Unloading Area, Treatment Area) ______________________________
2. Structure(s) Inspected (i.e., HWHF, TTF, RMWMF, AHCF, MSB Bunker #)
3. Inspection Date ________________________
4. Inspection Time ________________________ am/pm
5. Inspector Name (print) ____

5. Loading/ Unloading Area(s)[a]	Inspection Criteria	Yes	No	NA ( ) load	Corrective Action Issue	Corrective Action Taken and Closure Date
Loading/Unloading Area[c]	Good condition, safe working surface, no spills					
Waste Handling Equipment[c]	Good condition, operational					
Container(s) Loaded/ Unloaded	Good condition					

6. Treatment Area(s)[b,c]	Inspection Criteria	Yes	No	NA ( ) treat	Corrective Action Issue	Corrective Action Taken and Closure Date
Treatment Area	Good condition					
Treatment Unit and/or Equipment (e.g., hand tools, containers)	Good condition (i.e., no releases or corrosion), maintains established parameters					
Monitoring Equipment	Good condition, operational					

7. Comments and Notes Comment on deficiencies by referencing section and question.

Inspector Signature: ____

Immediately file the completed inspection form in the Unit operating record.

[a] Required on days loading/unloading operations involving RCRA-regulated wastes are conducted.
[b] Required on days treatment operations involving RCRA-regulated wastes are conducted.
[c] Required monthly with facility operating and structural equipment if RCRA-regulated wastes are not managed at Unit during the month.

Figure C-2
Resource Conservation and Recovery Act (RCRA)-Regulated Waste Management Unit Weekly/Monthly Inspection Form – Example

1. Structure(s) Inspected (i.e., HWHF, TTF, RMWMF, AHCF, MSB Bunker #) _________
2. Inspection Date _______________________ 5. Monthly ☐
3. Inspection Time _______________________ am/pm Weekly ☐
4. Inspector Name (print) ____

6. Status[a]	Inspection Criteria	Yes	No
RCRA-regulated waste currently stored at Unit	Storage status (Yes–waste present, No–waste not present)		
RCRA-regulated waste currently undergoing treatment at Unit	Treatment status (Yes–waste present, No–waste not present)		

7. Safety & Emergency Equipment[b]	Inspection Criteria	Yes	No	NA ( ) weekly	Corrective Action Issue	Corrective Action Taken and Closure Date
Spill Control Equipment	Present, good condition					
Fire Extinguisher(s)	Present, good condition, charged					
Decontamination Equipment	Present, good condition					
External Communication System	Present, operational					
Internal Communication and Alarm System	Present, operational					
Fire Suppression System (e.g., Water, Dry Chemical)	Present					

8. Security Devices[b]	Inspection Criteria	Yes	No	NA ( ) weekly	Corrective Action Issue	Corrective Action Taken and Closure Date
Facility Fence	Good condition					
Gate(s) and Door(s)	Operational					
Warning Sign(s)	Present, legible					
Lock(s) and Tamper Indication Device(s)	Present, good condition					

Refer to footnotes at end of form.

Figure C-2 (Continued)
Resource Conservation and Recovery Act (RCRA)-Regulated Waste Management Unit Weekly/Monthly Inspection Form – Example

9. Facility Operating & Structural Equipment[b]	Inspection Criteria	Yes	No	NA ( ) weekly	Corrective Action Issue	Corrective Action Taken and Closure Date
Floor, Walls, Ceiling	Good condition					
Lighting	Operational					

10. Treatment Area(s)[b]	Inspection Criteria	Yes	No	NA ( ) weekly	Corrective Action Issue	Corrective Action Taken and Closure Date
Treatment Area (i.e., floor, walls) Condition	Good condition					
Fume Hood	Good condition					
Treatment Unit and/or Equipment (e.g. hand tools)	Good condition (i.e., no releases or corrosion), maintains established parameters					
Monitoring Equipment	Good condition, operational					

11. Containers[c]	Inspection Criteria	Yes	No	NA ( ) monthly	Corrective Action Issue	Corrective Action Taken and Closure Date
Container Placement	Correct aisle space, correct stacking					
Container Integrity	Good condition (i.e., no bulging, leaks, corrosion, or deterioration)					
Container Sealing	Correct lid/cover placement (i.e., closed)					
Container Labeling	Correct information, correct location, legible					
Storage Area (i.e., floor, walls) Condition	Good condition					
Secondary Containment (liquid waste)	Adequate volume, free of liquids, good condition					
Storage Conditions	Waste compatibility, container compatibility					

Refer to footnotes at end of form.

Figure C-2 (Concluded)
Resource Conservation and Recovery Act (RCRA)-Regulated Waste Management Unit Weekly/Monthly Inspection Form – Example

12. Comments and Notes Comment on deficiencies by referencing section and question.

Immediately file the completed inspection form in the facility operating record.

[a] Weekly inspection criteria are not applicable if RCRA-regulated waste is not stored or treated at structure. Monthly inspection criteria are still applicable.
[b] Required during a monthly inspection. Criteria are not applicable during weekly (only) inspection.
[c] Required during a weekly inspection. Criteria are not applicable during monthly (only) inspection.

Inspector Signature: ______________________________

Inspector Name ______________________________

APPENDIX D

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

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20 NMAC 4.1.*X*00	New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart *X*
40 CFR 2*XX.XX*	Code of Federal Regulations, Title 40, Part 2*XX*, Section 2*XX.XX*
RCRA	Resource Conservation and Recovery Act
SNL/NM	Sandia National Laboratories/New Mexico
Unit	RCRA-regulated waste management Unit

SITE-WIDE PERSONNEL TRAINING PLAN FOR SANDIA NATIONAL LABORATORIES/NEW MEXICO

This appendix describes site-wide personnel training requirements for Sandia National Laboratories/New Mexico (SNL/NM) Resource Conservation and Recovery Act (RCRA)-regulated waste management unit (Unit) workers. Unit-specific training requirements, if any, for SNL/NM Unit workers are provided in Section 5.0 of each Unit-specific module. Together, information in the General Part B, in this appendix and in each Unit-specific module meets the applicable regulatory requirements.

Training requirements for Unit personnel are specified in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart V, (20 NMAC 4.1.500), adopting by reference the Code of Federal Regulations, Title 40, Part 264 including Section 264.16 (40 CFR 264.16), revised October 1, 2003 [7-1-08], “Personnel Training.” The primary objective of the training program is to prepare personnel to operate and maintain safely those areas used for managing RCRA-regulated waste, in accordance with 20 NMAC 4.1.500/40 CFR 264 [7-1-08]. This training program applies to all employees of the U.S. Department of Energy, Sandia Corporation, and any subcontractors who have responsibility for the day-to-day management of RCRA-regulated waste at SNL/NM Units included in this General Part B. The degree of training varies with the job duties.

D.1 RCRA-REGULATED WASTE MANAGEMENT RESPONSIBILITIES

This program provides employees with training relevant to their positions. Unit personnel are given, at a minimum, a basic understanding of the RCRA regulatory requirements for waste management, emergency procedures, and operating procedures. Some employees receive additional classroom and on-the-job training designed for specific duties. Employees who have not received training or are unable to provide relevant and appropriate training documentation receive the required training within six months of assignment to RCRA-regulated waste management activities and prior to managing RCRA-regulated waste without supervision.

D.2 JOB TITLE/JOB DESCRIPTION [20 NMAC 4.1.900/40 CFR 270.14(b)(12) and 20 NMAC 4.1.500/40 CFR 264.16(d)(1), (2) and (3)

Job titles and descriptions are provided in Figures D-1 through D-9. The job descriptions include requisite skills, education, and/or other qualifications as well as RCRA-regulated waste management job duties. The required training for each job title is found in Table D-2.

A file of all Unit personnel, including their job titles and job descriptions, is maintained at each Unit unless specified differently in Section 5.0 of each Unit-specific module. For each job title, the file contains information on the minimum activities performed by employees, requisite qualifications, and training records.

D.3 TRAINING CONTENT, FREQUENCY, AND TECHNIQUES [20 NMAC 4.1.900/40 CFR 270.14(b)(12) and 20 NMAC 4.1.500/40 CFR 264.16]

This program provides employees with training relevant to their positions and specific to the safe performance of assigned tasks. For example, personnel who are directly involved in handling RCRA-regulated wastes are informed of the potential hazards associated with waste management activities, procedures for safe handling of wastes, and emergency procedures. Individuals in supervisory or decision-making positions receive a comprehensive overview of all aspects of RCRA-regulated waste management. Personnel with specific or short-term assignments, such as visitors or temporary contractors, may receive a site-specific briefing with emergency response information necessary for their duties as an alternative to the training specified in this training plan. Personnel who perform hands-on management of RCRA-regulated wastes receive training commensurate with their assigned duties.

The training program includes a combination of online and classroom instruction, reviews of written documents, and classroom, hands-on, and on-the-job training exercises. Training information is provided according to training topics (e.g., Contingency Plan), frequency (e.g., initial or refresher), and methods (e.g., classroom instruction, procedure review, on-the-job exercises). Training course content includes, at a minimum, the topics shown in Table D-1. As regulatory compliance requirements change, or at least annually, training courses are evaluated and modified, as necessary. Some training is standardized and given to all employees. Job-specific training appropriate to job function is given to Unit employees. Training is provided at the frequencies shown on Table D-1. Training that may be applicable to each job title is provided in Table D-2.

D.4 TRAINING DIRECTOR [20 NMAC 4.1.500/40 CFR 264.16(a)(2)]

The Unit-specific Department Manager or designee will function as the Training Director. The Manager maintains responsibility for ensuring that all Unit-specific required training is obtained. The Manager/Training Director is knowledgeable about the applicable hazardous waste management regulations and specific RCRA-regulated waste management operations employed at a Unit. The Manager/Training Director determines the exact content and duration of training required for individual employees.

The Manager/Training Director may perform or delegate training to qualified trainers. Trainers are qualified on the basis of attainment of one or more of the following, as applicable:

- Certification in the subject matter addressed by the training;
- Demonstration of knowledge and competence in the training subject; and/or
- Previous on-the-job and/or classroom training in the topics covered.

Table D-1
Sandia National Laboratories/New Mexico Resource Conservation and Recovery Act (RCRA)-Regulated Waste Management Unit
Training Content

RCRA Regulation Training

Duration: Variable (Typically 1-4 hours)
Frequency: Initial/Periodic Refresher (Typically annual)
Method: Classroom instruction, on-the-job training, and/or document review

Minimum content may include (as applicable to the specific Unit to which an employee is assigned):

- Identification of RCRA-regulated waste
- Treatment, storage, and disposal facility requirements
- Generator and transporter requirements

RCRA Contingency Plan and Emergency Procedures

Duration: Variable (Typically 1-4 hours)
Frequency: Initial/Annual Refresher
Method: Classroom or online instruction, document review, and/or classroom or hands-on exercises

Minimum content must include (as applicable to the specific RCRA-regulated waste management unit to which an employee is assigned):

- Emergency notification procedures
- Response to emergencies
- Evacuation route and procedure
- Emergency equipment and personal protective equipment
- Emergency Coordinator responsibilities
- Post-emergency actions
- Contingency Plan
- Shutdown procedures (if any)

Table D-1 (Continued)
Sandia National Laboratories/New Mexico
RCRA-Regulated Waste Management Unit
Training Content

Technical Work Documents and Refresher

Duration: Variable (depends on the work documents)
Frequency: Initial/Periodic Refresher
Method: Document review, on-the-job training

Minimum Content: This training is function-specific and may be divided into sections or modules. Each employee must participate in the sections that apply to his or her specific job function. Sections may include, but are not limited to, the following as needed:

- Waste Analysis Plan
- Unit-specific safety practices
- Unit-specific operational procedures (e.g., loading and unloading)
- Unit security, entry, and control
- Operation, maintenance, and inspection of equipment
- Prevention of the ignition/reaction of ignitable/reactive wastes
- Permit conditions
- Emergency response
- Unit tour

Table D-1 (Concluded)
Sandia National Laboratories/New Mexico
RCRA-Regulated Waste Management Unit
Training Content

Hazardous Waste Operations and Emergency Response

Duration: Variable (Typically 24 hours or more with an 8-hour refresher)
Frequency: Initial/Refresher (Typically annual)
Method: Classroom instruction, hands-on exercises

Minimum Content:

- Hazardous waste management regulations
- Sources of information
- Compatibility of RCRA-regulated wastes
- Personnel protection
- Principles of safety
- Emergency procedures

Table D-2
Training for Each Job Title

Required Training	Job Titles: Training Director	RCRA Project Leader	Emergency Coordinator	Chemist	Field Technician (Waste Handler)	Special Projects Staff	Inspector	Transportation Manager	Unit Operations Support Staff
Resource Conservation and Recovery Act (RCRA) Regulations (Applicable Modules)	X	X	X	X	X	X	X	X	
RCRA Contingency Plan and Emergency Procedures	X	X	X	X	X	X	X	X	X
Technical Work Documents (Applicable Modules)		X		X	X	X	X		
Hazardous Waste Operations and Emergency Response (24- or 40-hour course)	X	X	X	X	X	X	X	X	
Hazardous Waste Operations and Emergency Response (8-hour course)	X	X	X	X	X	X	X	X	

D.5 EMERGENCY TRAINING [20 NMAC 4.1.500/40 CFR 264.16(a)(3) and (c)]

Appendix E of this permit renewal request/application provides a more detailed discussion of emergency procedures, personnel, and equipment.

Unit employees participate in Unit-specific emergency response training to assure effective emergency response. Emergency response training consists of classroom instruction, document reviews, and/or on-the-job exercises. The content is reviewed annually and revised as needed to incorporate changes in regulatory compliance requirements. Topics covered include at a minimum:

- Emergency notification procedures
- Response to emergencies, including fires, explosions, and releases of RCRA-regulated wastes
- Procedures for using, inspecting, maintaining, and replacing emergency equipment and personal protective equipment
- Procedures for the shutdown of operations (if any)
- Procedures for evacuation (i.e., communications/alarms)
- Responsibilities of the Emergency Coordinator
- Post-emergency reports and actions
- Contingency Plan.

D.6 IMPLEMENTATION OF TRAINING PROGRAMS [20 NMAC 4.1.500/40 CFR 264.16(b) and (c)]

The training program is implemented to assure that Unit personnel receive appropriate training in a timely manner. Employees who require training receive the specified training within six months of their date of hire or their transfer to a new position. Personnel do not work unsupervised in RCRA-regulated waste management areas until they successfully complete the indicated training requirements.

Training records are kept to document the type and amount of training received for each Unit employee who manages RCRA-regulated wastes. Contents of these records include the following, at a minimum:

- Job title for each position related to RCRA-regulated waste management
- The name of the employee assigned to each job title

- Written job description
- Written training requirements for each job title
- Records that document training received, such as attendance or signature lists, certificates, memoranda of training, or reports from computerized databases of training completion status.

Training records for current and former Unit employees are kept at the Unit to which an employee is/was assigned, unless specified differently in Section 5.0 of each Unit-specific module. Training records for current Unit employees are kept until closure of the Unit. Training records for any former Unit employee are kept for a minimum of three years from the date the employee last worked at the Unit.

Job Title: RCRA Training Director

Job Description:
The RCRA Training Director ensures that all appropriate personnel meet the site-wide personnel training requirements for SNL/NM RCRA-regulated waste management Unit workers, including the Unit-specific RCRA training requirements. Examples of duties:

- Identifying and/or coordinating training required by RCRA regulations and SNL/NM RCRA-regulated waste management worker training requirements.
- Ensuring maintenance of training records required by RCRA regulations and demonstrating compliance with SNL/NM RCRA-regulated waste management worker training requirements for all personnel.
- Informing personnel when specific training is required.

Skill, Education, and Other Qualifications:
At a minimum, the qualification for the RCRA Training Director is:

- High school diploma or equivalent, or bachelor's degree from an accredited post-secondary institution; or
- Three years experience with RCRA waste management regulations

Training:
Initial and refresher training will be as required in Table D-2

FIGURE D-1
JOB TITLE, DESCRIPTION, and QUALIFICATIONS
RCRA TRAINING DIRECTOR

Job Title: RCRA Project Leader

Job Description:
A RCRA Project Leader oversees, supervises, and coordinates collection, storage, and shipment of RCRA-regulated waste at the Sandia National Laboratories/New Mexico. Examples of duties:

- Ensuring operation of the Unit in compliance with applicable RCRA regulations;
- Identifying and coordinating training required by RCRA regulations;
- Determining training and reading requirements specific to positions, tasks or Unit activities;
- Coordinating activities related to management of RCRA-regulated waste at the Unit;
- Ensuring maintenance of records required by RCRA regulations, such as training records, inspection records, waste analysis records, and a RCRA Contingency Plan;
- Ensuring maintenance of additional records required for the Unit operating record;
- Preparing, reviewing, submitting documents on waste management activities;
- Ensuring compliance with RCRA regulations for shipments of RCRA-regulated wastes; and
- Coordinating activities pertaining to audits of RCRA-regulated waste management.

Skill, Education, and Other Qualifications:
At a minimum, the qualification for a RCRA Project Leader is:

- High school diploma or equivalent, or bachelor’s degree from an accredited post-secondary institution; or
- Three years experience in managing RCRA-regulated waste.

Training:
Initial and refresher training will be as required in Table D-2.

FIGURE D-2
JOB TITLE, DESCRIPTION, and QUALIFICATIONS
RCRA PROJECT LEADER

Job Title: Emergency Coordinator

Job Description:
An Emergency Coordinator evaluates, coordinates, and implements emergency actions in accordance with the RCRA Contingency Plan during an emergency (as defined in the Contingency Plan). As defined in the RCRA Contingency Plan, Emergency Coordinator duties during and after an emergency may include, but are not limited to:

- Identifying the character, exact source, amount, and extent of released RCRA-regulated waste by observation, records reviews, or chemical analysis;
- Assessing possible resulting hazards to human health or the environment considering both direct and indirect effects;
- Taking all reasonable measures necessary to ensure fires, explosions, and releases do not occur, recur, or spread to other RCRA-regulated waste at the Unit including stopping processes and operations, collecting and containing released waste, and removing or isolating containers;
- Monitoring for leaks, pressure buildup, gas generation, and ruptures in valves, pipes, or other equipment if the facility stops operations;
- Providing for properly treating, storing, or disposing of recovered waste, contaminated soil or surface water, or any other material;
- Ensuring that no waste that may be incompatible with the released material is treated, stored, or disposed of until cleanup procedures are completed; and
- Ensuring that all equipment listed in the Contingency Plan is cleaned and fit for its intended use before resuming operations.

Skill, Education, and Other Qualifications:
At a minimum, the qualification for an Emergency Coordinator is:

- High school diploma or equivalent; or
- Three years experience working with RCRA-regulated waste.

Training:
Initial and refresher training will be as required in Table D-2.

FIGURE D-3
JOB TITLE, DESCRIPTION, and QUALIFICATIONS
EMERGENCY COORDINATOR

Job Title: Chemist

Job Description:
A Chemist conducts supporting characterization of RCRA-regulated waste managed at Sandia National Laboratories/New Mexico. Examples of duties:

- Evaluating data provided by the initial generator of a solid waste, and obtaining additional information as needed for hazardous waste determination;
- Determining whether solid wastes are hazardous wastes as defined in 20 NMAC 4.1.200/40 CFR 261;
- Assigning appropriate hazardous waste codes to RCRA-regulated wastes;
- Identifying treatment options and treatment standards for RCRA-regulated wastes to be treated on site;
- Evaluating data and/or information for treated wastes and residues to characterize the residues, assign appropriate hazardous waste codes, and determine land disposal restrictions; and
- Segregating RCRA-regulated waste.

Skill, Education, and Other Qualifications:
At a minimum, the qualification for a Chemist is:

- High school diploma or equivalent; or
- Two years experience working with RCRA-regulated waste.

Training:
Initial and refresher training will be as required in Table D-2.

FIGURE D-4
JOB TITLE, DESCRIPTION, and QUALIFICATIONS
CHEMIST

Job Title: Field Technician (Waste Handler)

Job Description:
A Waste Handler conducts RCRA-regulated waste handling, segregating, and storing operations at the Sandia National Laboratories/New Mexico. Examples of duties:

- Transporting and handling RCRA-regulated waste;
- Conducting daily inspections of waste management Units where RCRA-regulated waste loading, unloading, or treatment operations occur;
- Performing basic maintenance and housekeeping activities;
- Segregating RCRA-regulated waste
- Sorting, packaging, marking, labeling, storing, treating, and segregating RCRA-regulated waste; and
- Compiling information for the SNL/NM or Unit operating record.

Skill, Education, and Other Qualifications:
At a minimum, the qualification for a Waste Handler is:

- High school diploma or equivalent; or
- Two years experience in handling RCRA-regulated waste.

Training:
Initial and refresher training will be as required in Table D-2.

FIGURE D-5
JOB TITLE, DESCRIPTION, and QUALIFICATIONS
FIELD TECHNICIAN

Job Title: Special Projects Staff

Job Description:
A Special Projects Staff member performs duties associated with non-routine and special projects at Sandia National Laboratories/New Mexico. Examples of duties:

- Handling RCRA-regulated waste during a special project;
- Performing special project related maintenance and housekeeping activities;
- Operating RCRA-regulated waste treatment equipment associated with a special project;
- Storing, labeling, and segregating RCRA-regulated waste associated with a special project; and
- Identifying and scheduling special project activities involving RCRA-regulated waste;
- Monitoring RCRA-regulated waste special project activities for safety and procedural compliance; and
- Compiling special project information for the facility operating record.

Required Skill, Education, or Other Qualifications:
At a minimum, the qualification for a Special Projects Staff member is:

- High school diploma or equivalent; or
- Two years experience in handling RCRA-regulated waste.

Training:
Initial and refresher training will be as required in Table D-2.

FIGURE D-6
JOB TITLE, DESCRIPTION, and QUALIFICATIONS
SPECIAL PROJECT STAFF

Job Title: Inspector

Job Description:
An Inspector conducts inspections of RCRA-regulated waste and RCRA-regulated waste management Units at the Sandia National Laboratories/New Mexico. Examples of duties:

- Inspecting at least daily areas subject to spills of RCRA-regulated wastes when these areas are in use;
- Inspecting at least weekly containers holding RCRA-regulated waste, container equipment, and secondary containment;
- Inspecting at least monthly emergency equipment, security devices, and structural equipment at RCRA-regulated waste management Units; and
- Recording inspection date, time, name, observations, and repairs in an inspection log (in the form of an inspection checklist).

Skill, Education, and Other Qualifications:
At a minimum, the qualification for an Inspector is:

- High school diploma or equivalent; or
- Two years experience working with RCRA-regulated waste.

Training:
Initial and refresher training will be as required in Table D-2.

FIGURE D-7
JOB TITLE, DESCRIPTION, and QUALIFICATIONS
INSPECTOR

Job Title: Transportation Manager

Job Description:
A Transportation Manager coordinates the shipment of RCRA-regulated waste from the Sandia National Laboratories/New Mexico. Examples of duties:

- Preparing and compiling documentation and paperwork (e.g., manifests and notices) for off-site shipments of RCRA-regulated waste;
- Ensuring proper packaging, labeling, marking, and placarding are in place for off-site shipments of RCRA-regulated waste; and
- Coordinating the loading of RCRA-regulated waste for off-site shipment.

Required Skill, Education, or Other Qualifications:
At a minimum, the qualification for a Transportation Manager is:

- High school diploma or equivalent; or
- Two years experience coordinating shipments of RCRA-regulated waste.

Training:
Initial and refresher training will be as required in Table D-2.

FIGURE D-8
JOB TITLE, DESCRIPTION, and QUALIFICATIONS
TRANSPORTATION MANAGER

Job Title: Unit Operations Support Staff

Job Description:
A Unit Operations Support Staff member has unescorted access to the facility but performs no activities that require contact with RCRA-regulated waste or waste containers. Unit Operations Support Staff may include, but are not limited to:

- Administrative personnel;
- Information systems (database) personnel;
- Radiation support personnel; and
- Generator interface personnel. Note that the duties of radiation support personnel involve collecting radiological data; this requires contact with RCRA-regulated wastes and waste containers but is not consistent with the duties of a field technician in Figure D-5.

Skill, Education, and Other Qualifications:
The Training Supervisor determines the requisite level of experience for each position.

Training:
Initial and refresher training will be as required in Table D-2.

FIGURE D-9
JOB TITLE, DESCRIPTION, and QUALIFICATIONS
UNIT OPERATIONS SUPPORT STAFF

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APPENDIX E

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

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ACRONYMS AND ABBREVIATIONS

40 CFR 2*XX.XX*	Code of Federal Regulations, Title 40, Part 2*XX*, Section 2*XX.XX*
20 NMAC 4.1.*X*00	New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart *X*
DOE	U.S. Department of Energy/National Nuclear Security Administration
EC	Emergency Coordinator
EOC	Emergency Operations Center
ERO	Emergency Response Organization
IC	Incident Commander
ICS	Incident Command System
KAFB	Kirtland Air Force Base
NMED	New Mexico Environment Department
OKSO	Office of Kirtland Site Operations
RCRA	Resource Conservation and Recovery Act
Sandia	Sandia Corporation
SNL/NM	Sandia National Laboratories/New Mexico
Unit	RCRA-regulated waste management unit

DEFINITIONS

Emergency: Any imminent or existing fire or explosion, or unplanned sudden or nonsudden release of Resource Conservation and Recovery Act (RCRA)-regulated hazardous waste or hazardous waste constituents to air, soil, or surface water that threatens human health or the environment. Examples of emergencies include but are not limited to:

- A release of RCRA-regulated waste within the Unit that cannot be contained with secondary containment or application of absorbents.
- An imminent or existing fire or explosion involving RCRA-regulated waste.
- A structure fire, grass fire, or forest fire that threatens to ignite RCRA-regulated waste.

Facility: A facility is defined by 20 NMAC 4.1.100/40 CFR 260.10 [7-1-08], as all contiguous land, and structures, other appurtenances, and improvements on the land, used for treating, storing, or disposing of RCRA-regulated waste. A facility may consist of several treatment, storage, or disposal operational units (e.g., one or more landfills, surface impoundments, or combinations of them). The U.S. Environmental Protection Agency Identification Number assigned to Sandia National Laboratories/New Mexico is NM5890110518.

Hazardous Waste: A waste that meets the definition of RCRA solid waste, is not exempt from regulation, and exhibits one or more of the characteristics described in 20 NMAC 4.1.200/40 CFR 261, Subpart C [7-1-08], or is listed in 20 NMAC 4.1.200/40 CFR Part 261, Subpart D [7-1-08].

Mixed Waste: Waste that contains both hazardous waste and radioactive materials (including source, special nuclear, or by-product material) subject to the Atomic Energy Act of 1954 *(42 United States Code 2011 et seq.)*.

Radioactive Waste: Solid, liquid, or gaseous waste that contains radionuclides regulated under the Atomic Energy Act of 1954, as amended.

RCRA-Regulated Waste: For the purposes of this site-wide Contingency Plan and the Unit-specific Contingency Plans, a waste that meets the definition of either hazardous waste or mixed waste.

RCRA-Regulated Waste Management Unit (Unit): A specific operational area used for the treatment and/or storage of RCRA-regulated waste.

SITE-WIDE CONTINGENCY PLAN FOR SANDIA NATIONAL LABORATORIES/NEW MEXICO

This appendix presents site-wide contingency measures applicable to all Resource Conservation and Recovery Act (RCRA)–regulated waste management units (Unit) at Sandia National Laboratories/New Mexico (SNL/NM), operated by Sandia Corporation (Sandia) and owned by the U.S. Department of Energy/National Nuclear Security Administration (DOE). Unit-specific Contingency Plan information is provided in Section 6.0 of each Unit-specific module. Together, information in the General Part B, in this appendix, and in each Unit-specific module meets the applicable regulatory requirements.

This Contingency Plan is intended to meet the requirements specified in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart V (20 NMAC 4.1.500), adopting by reference the Code of Federal Regulations, Title 40, Part 264 (40 CFR 264), Subpart D, revised October 1, 2003 [7-1-08], "Contingency Plan and Emergency Procedures," and 20 NMAC 4.1.900/40 CFR 270.14(b)(7) [7-1-08], for hazardous waste treatment, storage, or disposal facilities.

The provisions of this Contingency Plan will be carried out immediately to minimize hazards whenever there is an emergency, as required by 20 NMAC 4.1.500/40 CFR 264.51(b) [7-1-08].

E.1 SNL/NM SITE DESCRIPTION

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

SNL/NM is located on Kirtland Air Force Base (KAFB) immediately southeast of the Albuquerque city limits in Bernalillo County, New Mexico. SNL/NM occupies an area of approximately 2,842 acres (1,150 hectares) within the 80-square-mile KAFB. SNL/NM consists of five Technical Areas, I through V, and remote test areas situated in the eastern half of KAFB.

E.1.1 Unit Descriptions

The Units subject to 20 NMAC 4.1.500/40 CFR 264, Subpart D [7-1-08] and this Contingency Plan are listed in Table E-1. Additional detail about each Unit is provided in Section 6.0 of each Unit-specific module.

E.1.2 Waste Description

RCRA-regulated wastes at SNL/NM are generated primarily from laboratory research activities, process operations, and environmental restoration activities. Typical laboratory research waste includes bottles of excess or residual chemical mixtures and solutions, and solid laboratory items

Table E-1
RCRA – Regulated Waste Management Units Included in Contingency Plan

Name	Acronym	Location, size	Types of operations	Operating hours	Staff
Hazardous Waste Handling Facility	HWHF	South of TA-I, north of entrance to TA-II. Includes Buildings 958, 959. 1.35 acres	Storage, Repackaging	M-Th 8:00 am - 4:30 pm F: 7:00 am 3:30 pm	Staffed during operating hours
Thermal Treatment Facility	TTF	Northern part of TA-III, south of Building 6715. 196 square feet	Treatment	M-F 7:00 am 5:00 pm	Staffed only during operations at Unit
Radioactive and Mixed Waste Management Facility	RMWMF	Southeast corner of TA-III. Includes Buildings 6920, 6921, 6925, and 6926. 3.11 acres	Storage, Treatment, Repackaging	M-Th 7:00 am – 5:30 pm	Staffed during operating hours
Auxiliary Hot Cell Facility	AHCF	TA-V, Building 6597. 5578 square feet	Storage, Treatment, Repackaging	M-F 8:00 am – 4:30 pm	Staffed during operating hours
Manzano Storage Bunkers	MSB	In Manzano Area on KAFB. 0.4 acres occupied by 5 bunkers (approximately 1600 to 2400 square feet in each bunker)	Storage	M-Th 7:00 am – 5:30 pm	Staffed only during operations at Unit
Corrective Action Management Unit	CAMU	Southeast corner of TA-III. Includes containment cell located due north of RMWMF.	Post-closure monitoring of containment cell.		Staffed only during monitoring operations at Unit.

such as rags, batteries, and equipment. Typical process waste includes larger volumes (5- to 55-gallon containers) of solvents, oils, and corrosive solutions. Typical environmental restoration activity waste includes contaminated soil cuttings, debris, personal protective equipment, and decontamination fluids.

Because Sandia/DOE research and other activities are subject to change, waste streams and volumes stored at SNL/NM Units vary. The general types of wastes and capacities of each Unit are summarized in Section 6.0 of each module. The detailed description, location, and quantity of the RCRA-regulated wastes managed are identified in the Operating Record maintained for each Unit.

E.1.3 Operating Schedule

The operating schedules of the RCRA-regulated Units are summarized in Table E-1. Sandia/DOE security personnel check each Unit periodically during non-operating hours. If an emergency is discovered during these inspections, the SNL/NM Emergency Operations Center (EOC) and the Unit Emergency Coordinator (EC) (Section E.3.1) will be notified immediately.

E.2 CONTINGENCY PLAN DISTRIBUTION AND AMENDMENTS [20 NMAC 4.1.500/40 CFR 264.53-54]

Copies of the current site-wide Contingency Plan and the applicable Unit-specific information (Section 6.0 of each Unit-specific module and Part 5 for the CAMU) are maintained at the following locations: each Unit, the SNL/NM EOC, and SNL/NM Records Center. Sandia/DOE also provide copies of the Plan and any amendments and updates to the KAFB Fire Department and the New Mexico Environment Department (NMED) for their use.

This site-wide Contingency Plan and the Unit-specific information will be reviewed periodically by the EC(s) and Sandia emergency response organization (ERO) personnel. The plan(s) will be amended, if necessary, whenever one or more of the following occur:

- Applicable regulations or RCRA permit conditions are revised;
- There is a significant change in facility or Unit design, construction, maintenance, operation, or other circumstance that increases the potential for emergencies or changes the response necessary in an emergency;
- The list of designated emergency coordinators changes;
- The list of required emergency equipment changes significantly; or
- Actual implementation of the plan during an emergency demonstrates inadequacies.

E.3 EMERGENCY RESPONSE RESOURCES [20 NMAC 4.1.500/40 CFR 264.52(c) and 264.53]

Resources are available at each Unit, at SNL/NM, within KAFB, and in Albuquerque as described in this section.

E.3.1 Emergency Coordinator and Responsibilities [20 NMAC 4.1.500/40 CFR 264.52(d), 264.55, and 264.56(a)–(h)]

The Unit-specific EC has thorough familiarity with this Contingency Plan and the applicable Unit-specific information, Unit layout, operations, the location of records, the locations and characteristics of the RCRA-regulated waste managed at the Unit(s), and the emergency equipment and supplies. The EC has the authority through the Sandia department manager to commit the necessary Unit resources (including personnel, materials, and funds) to respond to an emergency at SNL/NM.

During emergencies at each Unit, or until the SNL/NM emergency response Incident Commander (IC) arrives (E.3.3), the EC has three primary responsibilities:

1. **Assess the Situation.** By observing the scene, interviewing personnel, and/or reviewing records, the EC must gather information relevant to the response, such as the type of event, quantity and type of released waste, and actual or potential hazards to human health or the environment.

2. **Protect Personnel.** The EC should take any reasonable measures to ensure the safety of personnel, such as activating the fire alarm, accounting for Unit personnel, attending to injuries, or coordinating the evacuation of Unit personnel, if necessary. If evacuation is indicated for other personnel, the IC must be informed.

3. **Contain or Mitigate the Hazards.** The EC should take reasonable measures to ensure that fires, explosions, or releases do not occur, recur, or spread.

After emergencies, the EC must ensure that the facility and equipment are cleaned, waste is properly handled and disposed, the Unit is safe to resume operation, and all information necessary for notifications and reports is provided to Sandia/DOE personnel, as outlined in Sections E.6 and E.7.

In the event the EC is not on site or immediately available during an emergency, an alternate EC is contacted. The names, addresses, and phone numbers of the primary and alternate ECs for each SNL/NM Unit are included in each Unit-specific module. A Unit-specific EC or alternate EC is on site or immediately available during the operating hours of each Unit. ECs are also available during non-routine RCRA-regulated waste management operations that may be conducted outside normal operating hours.

E.3.2 Emergency Response Groups

The SNL/NM ERO consists of two response groups that respond to an emergency situation: (1) a field response group led by an IC under the Incident Command System (ICS) and (2) an EOC. The ICS includes Sandia/DOE Security, the KAFB Fire Department, and Sandia/DOE personnel with relevant technical skills; any of these will be deployed in an emergency response as required by the circumstances of the emergency. An IC is on site at SNL/NM at all times (24 hours per day, 7 days per week). Sandia/DOE security and the KAFB Fire Department personnel are also available at all times. Sandia/DOE technical personnel are typically available on site at SNL/NM during business hours and are on call the rest of the time. The SNL/NM EOC staff includes an Emergency Director and a staff of Sandia and DOE personnel who are responsible for the management decisions and notifications to outside parties that are required during an emergency response (Section E.5.3). EOC staff personnel are available on site at SNL/NM during business hours, and are on call the rest of the time.

In the field, the IC maintains overall management and control of response operations at the emergency site once control is relinquished by the Unit-specific EC. The IC works in a unified command with the KAFB Fire Department and in concert with safety personnel, Unit-specific personnel (e.g., EC), and other emergency responders to develop and execute response plans, including on-site protective actions and recommendations for off-site protective actions. The ICS system is implemented at the time an emergency occurs, is expanded to control the emergency as needs arise, and remains in effect until the need for emergency management no longer exists.

E.3.3 Emergency Chain of Command

When the EC is notified of an incident, he must first determine if procedures for emergencies (Section E.5) should be implemented. The EC manages the emergency response (Section E.3.1) until the IC arrives at the Unit and relinquishes control to the arriving IC. If possible, the EC maintains communication with the IC by telephone or radio before the IC arrives at the Unit. The EC remains at the Unit and assists in emergency response as directed by the IC. The EC advises the IC, as needed, on Unit operations, Unit layout, characteristics of RCRA-regulated waste on site, location of records, radio and cellular communication systems, and other information as necessary to respond to the emergency.

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

E.3.4 Support Agreements and Coordination with Outside Agencies [20 NMAC 4.1.500/40 CFR 264.37]

Sandia/DOE maintain sufficient response resources to handle most emergencies arising from RCRA-regulated waste management activities as described in this contingency plan. These response resources include personnel, emergency equipment, medical facilities, and communications systems. DOE also has established mutual aid agreements and memoranda of

understanding with several off-site agencies and facilities for additional response capabilities for SNL/NM. These agencies and facilities include:

Table E-2
Agreements and Memoranda of Understanding for Emergency Response

Agency or Facility	Type of Service
New Mexico Department of Public Safety	Mutual aid involving an actual or potential emergency, assistance in training and emergency response for local and tribal governments.
377th Air Base Wing, Kirtland Air Force Base	Various types of support, including fire protection, police services, communications, and utilities.
U.S. Forest Service	Cooperative fire fighting arrangement between the USFS and KAFB for wildland fires.
City of Albuquerque	Mutual support and responsibilities during a potential or actual emergency requiring the combined resources of DOE and the City of Albuquerque.
Lovelace Medical Center	Mutual cooperation and assistance in providing timely and effective emergency medical services.
Presbyterian Health Care Services	Mutual cooperation and assistance in providing timely and effective emergency medical services.

E.4 EMERGENCY EQUIPMENT [20 NMAC 4.1.500/40 CFR 264.32, 264.33, 264.34, and 264.52(e)]

A list of equipment available through the SNL/NM emergency response system is provided in Table E-3. Lists of emergency equipment available for use at each Unit are presented in each Unit-specific module.

E.5 CONTINGENCY PLAN IMPLEMENTATION [20 NMAC 4.1.500/40 CFR 264.56]

Unit personnel who become aware of an incident contact the EC immediately. If the incident is an emergency, personnel implement evacuation procedures identified in Section E.5.2 Personnel also immediately notify the Unit-specific EC or alternate EC of the emergency condition. The EC will then assess the situation and determine the scale of the incident.

If the EC determines that an emergency situation exists or is imminent at the Unit, he will immediately notify the SNL/NM EOC and activate this Contingency Plan. The methods for contacting emergency response representatives are listed in Table E-4.

Table E-3
Sandia National Laboratories/New Mexico (SNL/NM) Facility[a] Emergency Equipment
4/12/2012

Item or Equipment	Description/Telephone
Emergency Vehicles (owned by Sandia/DOE unless noted)	
Emergency Response Vehicle	Mobile Command Post equipped with communications equipment, typically located at SNL/NM EOC[b]. SNL/NM Emergency Response System — Call 911 or (505) 844-0911
Ambulance	Typically located at SNL/NM medical facility. SNL/NM Emergency Response System — Call 911 or (505) 844-0911
Security Vehicles	Vans and trucks equipped with communications equipment and utilized for transportation of personnel and equipment, typically located throughout SNL/NM. SNL/NM Emergency Response System — Call 911 or (505) 844-0911
Fire Trucks (owned by KAFB Fire Department)	Fire-fighting vehicles outfitted with equipment for fighting fires, typically located at KAFB fire stations. SNL/NM Emergency Response System — Call 911 or (505) 844-0911
Medical Supplies (owned by Sandia/DOE)	
Stretchers/Stokes Litter	Equipment for movement of injured personnel. Stokes litter will immobilize personnel so they may be moved vertically. Typically located in ambulance or at SNL/NM medical facility. SNL/NM Emergency Response System — Call 911 or (505) 844-0911
Blankets	Normal blankets, typically located in ambulance or at SNL/NM medical facility. SNL/NM Emergency Response System — Call 911 or (505) 844-0911
Medical Kits	Emergency first-aid supplies, typically located in ambulance or at SNL/NM medical facility. SNL/NM Emergency Response System — Call 911 or (505) 844-0911
Safety Supplies (owned by Sandia/DOE)	
Air Packs	Self-contained breathing apparatus for use by personnel entering hazardous atmospheres, typically located in ambulance or response vehicle. SNL/NM Emergency Response System — Call 911 or (505) 844-0911
Monitoring Instruments	Typically located in ambulance or emergency response vehicle. SNL/NM Emergency Response System — Call 911 or (505) 844-0911

[a] Lists of equipment available at each Unit are included in a table in each Unit-specific module.
[b] The SNL/NM EOC is located in TA-I.

Table E-4
Emergency Response System Notification, Sandia National Laboratories/New Mexico

Method	Number
Telephone (at Unit)	911
Mobile Telephone	(505) 844-0911
Portable Radio	NA
Automatic notification of emergency response when smoke detector or pull station is activated and/or water flows in sprinkler system, except as noted in Unit-specific information	NA

Note: Any person in any Unit is authorized to implement the evacuation procedures, notify the EC or alternate EC, and/or contact the emergency response representatives in the unlikely event that the EC or alternate EC cannot be contacted or respond in a timely manner.

E.5.1 Emergencies

In the event of an emergency, the EC, an assignee, or Unit personnel (see note above) will immediately telephone the SNL/NM EOC (911 or 844-0911) or notify them in some other way (see Section E.5). Emergencies require the activation of this Contingency Plan and SNL/NM emergency response resources.

The EC will relinquish authority to the IC upon arrival as described in Section E.3.3. The EC and the IC will:

- Determine the extent of the emergency;
- Identify the character, source, amount, and areal extent of released wastes and materials by observation, records reviews, or chemical analysis;
- Assess possible resulting hazards to human health or the environment, considering both direct and indirect effects;
- Take all reasonable measures necessary to ensure fires, explosions, and releases do not occur, recur, or spread to other RCRA-regulated waste at the Unit, including collecting and containing released waste, and removing or isolating containers; and
- Monitor for leaks, pressure buildup, gas generation, and ruptures in equipment.

E.5.1.1 Fire

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

1. All non-essential Unit personnel should evacuate (Section E.5.2) following the evacuation routes in Section 6.0 of each Unit-specific module, or to an alternate assembly location as directed by the EC. All Unit personnel may evacuate at this time.

2. The EC (or Unit personnel) must immediately notify the Sandia/DOE ERO and KAFB Fire Department by activating a manual pull alarm or by dialing the SNL/NM EOC at 911 or 844-0911. Medical response can also be requested at the same time. The KAFB Fire Department and Sandia/DOE ERO will also be notified by activation of an automatic fire alarm.

3. ONLY if safe to do so and consistent with Unit operations, Unit personnel may consider taking action to put out the fire or minimize its spread. These actions may be taken only after the SNL/NM IC and KAFB Fire Department have been notified. Personnel must not jeopardize their own safety or the safety of other personnel.

   - If the fire is small and the fuel source is small, portable fire extinguishers may be used to put out the fire.

   - Fire extinguishers may only be used by personnel trained in their use and in this Contingency Plan, and only for very small fires.

   - Flammable materials should be removed from the area of fire if safe to do so.

   - Only appropriate fire extinguishers and/or fire extinguishing agents are to be used for water-reactive waste (e.g., Met-L-X, Lith-X, or equivalent).

4. If the fire spreads or increases in intensity, all remaining personnel must evacuate (see Step 1).

5. The EC should remain near the site, but at a safe distance, so he can advise the personnel responding to the fire of the known hazards.

6. Upon arrival at a fire, the KAFB Fire Department officer-in-charge will be in command of fire fighting. He will accept and evaluate the advice of Sandia/DOE Unit and emergency response personnel, but he retains the responsibility to select the fire-fighting methods and tactics.

7. The IC will be in overall control of Sandia/DOE emergency response efforts until the emergency is terminated.

8. RCRA-regulated wastes involved in a fire can be identified in the following ways: The location of the container may indicate the contents. If the location does not indicate its contents, the label number can be used to identify the waste. Records on the contents of

each container can be accessed from outside the Unit or in the Unit office. If the label has been burned and the container cannot be identified, the waste will be treated as an unknown and analyzed according to methods in the Waste Analysis Plan (Appendix B to the General Part B.)

9. Residues of RCRA-regulated wastes may be collected and contained by stabilizing or neutralizing the spilled waste, as appropriate; pouring an absorbent over the spilled waste; and sweeping or shoveling the absorbed waste into drums or other appropriate containers.

10. If needed, affected surfaces will be cleaned using cleaners appropriate to the chemicals.

11. If possible and safe to do so, responding personnel will take measures to contain potentially hazardous runoff and keep it away from storm drains and/or sewers (e.g., by building dikes around storm drains.)

12. Any fire-fighting waters collected in the stormwater catchment and retention ponds at the HWHF and RMWMF, the catchment tank at the TTF, or the floor trenches at the AHCF will be analyzed to determine an appropriate disposal method.

E.5.1.2 Explosion

The following steps will be implemented as needed in the event of an emergency involving an imminent or existing explosion that could threaten human health or the environment.

1. Unit personnel will immediately evacuate the area (Section E.5.2).

2. The EC (or Unit personnel) must immediately notify the Sandia/DOE ERO and KAFB Fire Department by activating a manual pull alarm or by dialing the SNL/NM EOC at 911 or 844-0911. Medical response can also be requested at the same time. The KAFB Fire Department and Sandia/DOE ERO will also be notified by activation of an automatic fire alarm.

3. The EC will take actions as directed by the IC. Unless directed otherwise, the EC will remain near the site, but at a safe distance, so he can advise the response personnel of the known hazards involved and the degree and location of the explosion and associated fires.

4. Upon arrival at the site, the KAFB fire department officer-in-charge will be in command of fire fighting. He will accept and evaluate the advice of Sandia/DOE personnel and emergency response organization members, but he retains the responsibility to select the fire-fighting methods and tactics.

5. The IC will be in overall control of Sandia/DOE emergency response efforts until the emergency is terminated.

6. Residues of RCRA-regulated wastes may be collected and contained by stabilizing or neutralizing the spilled waste, as appropriate; pouring an absorbent over the spilled waste; and sweeping or shoveling the absorbed waste into drums or other appropriate containers.

7. If needed, affected surfaces will be cleaned using cleaners appropriate to the chemicals.

8. If possible and safe, responding personnel will take measures to contain potentially hazardous runoff and keep it away from storm drains and/or sewers (e.g., by building dikes around storm drains.)

9. Any potentially contaminated waters collected in the stormwater catchment and retention ponds at the HWHF and RMWMF, the catchment tank at the TTF, or the floor trenches at the AHCF will be analyzed to determine an appropriate disposal method.

10. The EC will secure all operational units (e.g., process equipment, ventilation equipment) that may be affected by the explosion once the areas needed to be entered have been determined safe by the IC or a safety officer.

E.5.1.3 Uncontrolled Release

The following steps will be implemented as needed in the event of an emergency involving an imminent or existing release of RCRA-regulated waste or hazardous waste constituents that could threaten human health or the environment.

1. Evacuate the immediate area (Section E.5.2).

2. The EC (or Unit personnel) must immediately notify the Sandia/DOE ERO and KAFB Fire Department by activating a manual pull alarm or by dialing the SNL/NM EOC at 911 or 844-0911. Medical response can also be requested at the same time. The KAFB Fire Department and Sandia/DOE ERO will also be notified by activation of an automatic fire alarm.

3. Take actions to minimize, contain, and clean up the release only if safe to do so.

4. Review facility records (e.g., waste inventory database) to determine the identity and chemical nature of released waste.

5. Don appropriate personal protective equipment for exposure to the waste.

6. If possible, secure the source of the release.

7. If necessary and possible, build a dike to contain runoff.

8. Take measures to contain potentially hazardous runoff and keep it away from storm drains and/or sewers. If possible and necessary, build dikes around storm drains.

9. Released wastes may be collected and contained by stabilizing or neutralizing the spilled waste, as appropriate; pouring an absorbent over the spilled waste; and sweeping or shoveling the absorbed waste into drums or other appropriate containers.

10. No waste that may be incompatible with the released waste will be treated, stored, or disposed of in the vicinity of the release location until the released waste is cleaned up or stabilized.

11. After collection of a released waste, the release site will be sampled and evaluated. If contamination is found to exist, contaminated media will be characterized and remediated. Depending on the specific conditions, however, Sandia/DOE may choose to implement an alternative decontamination method such as surface cleaning or in situ neutralization or stabilization. Any such alternative will be discussed with the NMED prior to implementation.

E.5.2 Evacuation [20 NMAC 4.1.500/40 CFR 264.52(f)]

During an emergency that threatens the health or safety of personnel within a Unit, the following steps will be taken as needed to facilitate safe, coordinated evacuation:

1. Stop work.

2. If safe to do so, close containers and shut down equipment or otherwise place it in a safe mode.

3. Alert personnel in the affected area by announcing the evacuation by voice command, –Evacuate the Area.”

4. Activate the available Unit-specific evacuation signal consistent with the internal communications and alarm systems that are listed in Section 6.0 of each Unit-specific module.

5. Notify the Sandia/DOE ERO by activating a manual pull alarm or by dialing the SNL/NM EOC at 911 or 844-0911. Medical response can also be requested at the same time. The KAFB Fire Department and Sandia/DOE ERO will also be notified by activation of an automatic fire alarm.

6. Check to see whether there is evidence that the designated evacuation route is not safe.

7. If there is no evidence of danger or obstacles, exit the Unit according to the evacuation routes provided in Section 6.0 of the Unit-specific module.

8. If there is evidence of danger or obstacles, exit the Unit by any safe route available.

9. If safe to do so, check for other personnel in other areas of the Unit.

10. Proceed to the designated assembly area for roll call to be taken by the EC or designee.

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

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

13. Do not reenter the Unit until the IC or EC determines that is safe to do so.

E.5.3 Coordination with Off-Site Parties and Emergency Notification [20 NMAC 4.1.500/40 CFR 264.56(a) and (b)]

The Sandia EOC notifies DOE of all emergencies at SNL/NM. Sandia/DOE will notify state and local agencies if state or local response resources are required (see Section E.3.4), if human health or the environment are threatened outside the SNL/NM facility, or if areas outside the SNL/NM facility may require protective action. Sandia/DOE will verbally notify the City of Albuquerque or Isleta Pueblo, respectively, as soon as possible in the unlikely event that residents of Albuquerque or Isleta Pueblo outside KAFB are or could be affected. The notification will include available information about the nature and location of the emergency, the wastes involved, and the recommended protective actions. The most likely protective actions are expected to include evacuation or sheltering indoors with doors and windows closed and ventilation systems shut off.

In the event of an emergency involving injuries that require medical services from one of the hospitals listed in Table E-2, Sandia/DOE will provide all available information about the event and the wastes and materials involved to the responders as soon as possible.

Sandia/DOE will also notify the National Response Center (1-800-424-8802) if human health or the environment outside the facility are threatened. The notification will include the following:

- Name and telephone number
- Facility name and address
- Time and nature of emergency
- Type and quantities of wastes and materials involved to the extent known
- Personnel injuries, and
- Potential hazards to human health, or the environment, outside the facility.

Sandia/DOE will also provide this information to the NMED in accordance with regulatory requirements, including verbal notification (1-505-827-9329 or other emergency notification number designated by NMED).

E.6 POST-EMERGENCY ACTIONS [20 NMAC 4.1.500/40 CFR 264.56(f-i)]

Immediately after an emergency, the EC (and the IC, when present) will:

- Continue to monitor for leaks, pressure buildup, gas generation, and ruptures in valves, pipes, or other equipment if the Unit stops operations;
- Provide for properly treating, storing, or disposing of recovered waste, contaminated soil or surface water, or any other media or material;
- Ensure that no waste that may be incompatible with the released waste or material is treated, stored, or disposed of in the vicinity of the release location until cleanup procedures are completed; and
- Ensure that all equipment used in responding to the emergency that is listed in either this site-wide plan or the Unit-specific Contingency Plan is cleaned and fit for its intended use before resuming operations.

Prior to resuming operations after an emergency involving RCRA-regulated waste in the affected area(s) of the Unit, Sandia/DOE will notify NMED that incompatible waste will not be managed until cleanup procedures are complete and equipment listed in the Unit-specific Contingency Plan is cleaned and fit for use.

E.7 EMERGENCY RESPONSE RECORDS AND REPORTS [20 NMAC 4.1.500/ 40 CFR 264.56(j)]

The time, date, and details of an emergency involving RCRA-regulated waste that require implementation of this Contingency Plan will be noted in the Operating Record maintained for the affected Unit. Within 15 days after the incident, a written report (email or paper copy) will be submitted to the NMED identifying:

- Name, address, and telephone number of the facility owner or operator
- Name, address, and telephone number of the facility
- Date, time, and type of incident (e.g., fire, explosion, release)
- Name and quantity of waste(s) involved
- Extent of injuries (if any)
- Assessment of actual or potential hazards to human health or the environment, where applicable, and
- Estimated quantity and disposition of recovered waste, contaminated media, and material that resulted from the incident.

APPENDIX F

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

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ACRONYMS AND ABBREVIATIONS

20 NMAC 4.1.*X*00	New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart *X*
40 CFR 2*XX.XX*	Code of Federal Regulations, Title 40, Part 2*XX*, Section 2*XX.XX*
AHCF	Auxiliary Hot Cell Facility
ASTM	American Society for Testing and Materials
DOE	U.S. Department of Energy
DQO	data quality objective
EPA	U.S. Environmental Protection Agency
HWMF	Hazardous Waste Management Facility
NAAG	National Association of Attorneys General
NMED	New Mexico Environment Department
QA	quality assurance
QC	quality control
RCRA	Resource Conservation and Recovery Act
RMWMF	Radioactive and Mixed Waste Management Facility
SAP	sampling and analysis plan
Sandia	Sandia Corporation
SNL/NM	Sandia National Laboratories/New Mexico
TSDF	treatment, storage, or disposal facility
TTF	Thermal Treatment Facility
Unit	RCRA-regulated waste management unit
WMA	waste management area

SITE-WIDE CLOSURE PLAN FOR SANDIA NATIONAL LABORATORIES/NEW MEXICO

In accordance with the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart IX (20 NMAC 4.1.900), incorporating the Code of Federal Regulations, Title 40, Part 270, including Section 270.14(b)(13) (40 CFR 270.14[b][13]), and 20 NMAC 4.1.500/40 CFR 264, Subparts G and I, revised October 1, 2003 [10-1-03], closure requirements for Resource Conservation and Recovery Act (RCRA)-regulated waste management units (Units) at Sandia National Laboratories/New Mexico (SNL/NM), co-operated by Sandia Corporation (Sandia) and the U.S. Department of Energy (DOE), are provided in this site-wide closure plan and in Section 7.0 of each Unit-specific module. Together, information in the General Part B, in this appendix, and in each Unit-specific module meets the applicable regulatory requirements.

F.1 INTRODUCTION (20 NMAC 4.1.500/40 CFR 264.111 AND 264.112[b][2])

This site-wide closure plan was prepared in accordance with the applicable requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart G, “Closure and Post-Closure” [10-1-03]. This plan identifies the steps necessary for closure of individual RCRA-permitted storage and treatment Units at SNL/NM. Partial closure at SNL/NM will consist of closing one or more of the SNL/NM Units, while leaving the other Units in service. Partial closure will be deemed complete when equipment and structures have been decontaminated, as needed; the Unit meets the performance criteria for “clean” closure; and closure certification has been submitted to the New Mexico Environment Department (NMED). Final closure will be complete when all Units at the SNL/NM facility have been closed. Neither partial nor final closure is expected to occur during the life of the permit.

Closure information applicable to all Units at SNL/NM (Figure F-1) and general sampling and analytical procedures to be used during closure activities are presented in this appendix. This plan presents closure information that is applicable to all Units at the site, while information regarding individual Units is provided in Section 7.0 of the appropriate Unit-specific module. Prior to closure of a Unit, the Unit-specific module will be revised, as needed (e.g., to provide updated Unit-specific sampling and analysis plans [SAPs], or to incorporate updated decontamination technologies), and submitted to NMED for approval.

F.2 SITE DESCRIPTION

SNL/NM (U.S. Environmental Protection Agency [EPA] Identification Number NM5890110518) is a multidisciplinary laboratory engaged in the research and development of weapons and alternative energy sources. SNL/NM is managed by Sandia, a wholly-owned subsidiary of Lockheed Martin, for the DOE. Generation and management of RCRA-regulated wastes occur at SNL/NM as part of these activities. SNL/NM is located south of Albuquerque, New Mexico, within the boundaries of Kirtland Air Force Base in Bernalillo County. Descriptions of individual Units are provided in Section 7.1 of each Unit-specific module.

F.3 WASTE DESCRIPTION, MAXIMUM VOLUME STORED, AND INVENTORY ELIMINATION (20 NMAC 4.1.500/40 CFR 264.112[B][3])

The types and quantities of RCRA-regulated wastes managed at the SNL/NM Units are highly variable and may include, but are not limited to, laboratory chemical waste, contaminated used oil, process waste, explosive waste, used batteries, unknown liquids and solids, elemental lead, contaminated soil, debris, decontamination/purge/treatment waters, and treatment residuals.

The maximum storage and/or treatment capacity for RCRA-regulated wastes at each SNL/NM Unit is provided in Section 7.2 of each Unit-specific module. This capacity corresponds to the maximum volume that can be present on site at any one time, and is the largest quantity of waste that would be addressed during closure activities.

The first step in closure of a Unit will be elimination (removal) of any waste inventory stored in the Unit. Prior to initiation of further closure activity, all RCRA-regulated wastes will be removed from the Unit and will be either transferred to an active Unit at SNL/NM or transported directly to an off-site permitted treatment, storage, or disposal facility (TSDF). Off-site TSDFs that might receive these wastes are listed in Table F-1.

Table F-1
Facilities That May Receive RCRA-Regulated Wastes from Closure Activities at Sandia National Laboratories/New Mexico

Name	Location	EPA ID Number
Rinchem Company, Inc	6133 Edith Blvd NE, Albuquerque NM 87107	NMD002208627
Ensco, Inc	309 American Circle, Eldorado AR 71730	ARD069748192
NSSI/ Sources and Services, Inc	5711 Etheridge St, Houston TX 77087	TXD982560294
Waste Control Specialists, LLC	9998 W. Highway 176, Andrews TX 79714	TXD988088464
Envirocare of Utah, Inc	Interstate 80, Exit 49, Clive UT 84101	UTD982598898
Permafix Environmental Services Inc	901 East Bodley, Memphis TN 38106	TND991279480

F.4 CLOSURE PERFORMANCE STANDARDS (20 NMAC 4.1.500/40 CFR 264.111)

- Sandia/DOE plan to clean close all Units to meet the following closure performance standards in 20 NMAC 4.1.500/40 CFR 264.111 [10-1-03]:Minimize the need for further maintenance;

- Control, minimize, or eliminate, to the extent necessary to protect human health and the environment, the post-closure escape of RCRA-regulated waste, hazardous waste constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground or surface waters or to the atmosphere; and

- Comply with the applicable closure and post-closure requirements of 20 NMAC 4.1.500/ 40 CFR 264, Subparts G, I, and X [10-1-03].

The closure criteria that are applicable to individual Units and that will be used to demonstrate clean closure are presented in tables in Section 7.0 of each Unit-specific module.

F.5 CLOSURE METHOD (20 NMAC 4.1.500/40 CFR 264.112[b][1,2,4,5], 264.114, AND 264.115)

Sandia/DOE expect to demonstrate compliance with the closure performance standards in 20 NMAC 4.1.500/40 CFR 264.111 through 264.115 [10-1-03], as applicable, for SNL/NM Units. Closure methods proposed in this plan are based on the following assumptions about conditions during the operational life of SNL/NM Units:

- RCRA-regulated wastes were stored in containers (e.g., drums);
- Containers used to store and/or treat RCRA-regulated wastes retained their integrity;
- Adequate secondary containment was provided for RCRA-regulated liquid wastes and liquid-bearing wastes;
- Appropriate spill cleanup and decontamination procedures were performed in response to releases, if any, of RCRA-regulated wastes at Units;
- Releases of RCRA-regulated waste and/or hazardous waste constituents to the environment did not occur;
- Equipment used in waste treatment was maintained properly; and
- The Units were maintained in good condition.

These assumptions are derived from historical knowledge of waste management practices and policies, as well as applicable written records (e.g., inspection logs, survey results, waste inventory reports, facility/activity descriptions).

In order to demonstrate achievement of the closure performance standards listed in Section F.4, Sandia/DOE propose to perform the following general closure activities:

- Phase I: Data Quality Objective Process and Closure Approach.
    - The data quality objective (DQO) process will continue to be implemented to ensure that the type, quantity, and quality of information used in decision making are appropriate for the intended application.

- Phase II: Closure Activities—Removal, Decontamination, and Verification Procedures.
  - Equipment will be evaluated to determine whether removal or decontamination would be more effective.
  - Loose material (e.g., soil), if present in waste management areas (WMAs), will be swept up and containerized.
  - Appropriate portions of each WMA (including equipment, if necessary) will be washed to remove waste residues.
  - Decontamination rinse water will be collected, sampled, and analyzed to verify clean closure.
  - Additional decontamination will be performed, if necessary, in any areas where analytical results indicate that residues of RCRA-regulated wastes remain at levels exceeding the closure criteria.
  - Solid wastes generated during closure activities will be characterized and managed appropriately.
- Phase III: Certification of closure.
  - Closure will be certified by an independent, registered professional engineer.

Closure "phases" are fully described in Sections F.5.1–F.5.3. The site-wide SAP is provided in Section F.6, and Unit-specific closure plans (which include SAPs) are included in Section 7.0 of each module. The Unit-specific plans will be revised, as needed, and submitted to NMED for approval prior to closure of a given Unit, as described by the closure schedule referenced in Section F.7.

F.5.1 Phase I: DQO Process and Closure Approach

The DQO process is designed to ensure that the type, quantity, and quality of environmental data used in decision making are appropriate for the intended application. DQOs are qualitative and quantitative statements derived from a series of seven planning steps based on the scientific method. DQO statements applied to development of this plan and the closure activities at SNL/NM Units are summarized below.

Define the Problem. The Unit to be closed is no longer needed for RCRA-regulated waste management activities at SNL/NM and should be closed under applicable closure requirements. RCRA closure must meet the performance standards in 20 NMAC 4.1.500/ 40 CFR 264.111 [10-1-03] (see Section F.4).

Identify the Decision. What are the appropriate closure criteria for the Unit, and will decontamination of the Unit meet the criteria ? If the criteria are met, closure certification will be

submitted to the Secretary of the NMED. If not, the stated closure criteria will be met before closure certification.

Identify Inputs to the Decision. The inputs include the following:

- Information regarding constituents in the RCRA-regulated wastes stored and/or treated in the WMA.
- Evidence of incidents or activities that may have resulted in RCRA-regulated waste or constituent contamination of the WMA.
- Physical condition and features of the WMA (including equipment used for treatment activities) and visual evidence of contamination.
- Anticipated level of effort and likelihood of success in decontaminating equipment used for treatment activities.
- Results of decontamination activities undertaken during closure, including analytical data.
- Established concentrations of constituents of concern in the environment (e.g., correspondence from NMED [Robert S. Dinwiddie] to DOE [Michael Zamorski], dated September 24, 1997).

Define the Boundaries. The evaluation will be limited to information that is relevant to activities conducted in the WMA and the planned closure activities:

- Information obtained from review of applicable archival records of RCRA-regulated waste storage and treatment activities during the operating life of the WMA (e.g., inspection logs, operating record, and waste inventory reports).
- Features of equipment used in treatment areas (e.g., fume hoods), and requirements for removing or decontaminating the equipment.
- Using parameters relevant to the operating history of the WMA in characterizing equipment for proper management.
- Limiting Phase II decontamination activities to affected areas. The decontamination will be limited to the hardened surfaces present in the WMA (e.g., concrete floors). If decontamination of equipment is required, the decontamination effort will be limited to equipment directly associated with waste management. If decontamination of secondary containment surfaces is required, the decontamination effort will be limited to the bottoms and sides up to the secondary containment level.
- Samples collected during decontamination activities will be analyzed for parameters that are relevant to the operating history of the WMA to demonstrate clean closure and to characterize closure-generated wastes for proper management.

Develop the Decision Rule. The decision consists of two parts: 1) defining Unit-specific closure criteria to indicate when the closure performance standard has been achieved; and 2) determining whether the results of the closure activities satisfy the closure criteria.

To meet the first part, the information obtained from the records review will be used to select parameters to indicate the potential presence of waste constituents. The SAP in each Unit-specific closure plan describes the rationale for the indicator parameters currently selected for closure verification sampling.

If analytical results of indicator parameters in residues (e.g., sweepings) and decontamination rinse water do not show significantly elevated concentrations, the WMA will be considered to be clean closed, and the closure certification step may commence.

Specify Limits on Decision Errors. Because measurement data from sampling and analysis can only estimate true values, there is always a possibility that decisions made based on measurement data will be in error. Decision errors can be attributed to either sampling error (when incorrect sampling fails to adequately represent the true environment) or measurement errors (when the combinations of random and systematic errors in the measurement process inaccurately represent the true values). Precautions taken to minimize either type of decision error when performing RCRA closure of the Unit to be closed are discussed in the SAP included as Section F.6 of this plan and in each Unit-specific plan.

Optimize Design. The results of the first steps will be evaluated and used in developing resource-effective strategies for sampling and analysis and for closure. The data will be used to determine if the closure activities were successful and the WMA meets the second part of the decision rule following removal or decontamination of equipment and decontamination of affected surfaces.

F.5.2 Phase II: Removal, Decontamination, and Verification Procedures

Sandia/DOE will evaluate the features of equipment used in treatment areas at those Units where treatment is conducted. Smaller pieces of equipment, parts of larger pieces, or equipment with porous or textured surfaces will be evaluated to determine whether removal is the most effective option. Removed items will be characterized to determine if they are RCRA-regulated wastes, in accordance with the applicable requirements of 20 NMAC 4.1.200/40 CFR 261.

Decontamination will be performed as described below. All sampling conducted during decontamination will be done in accordance with sampling procedures in Section F.6 of this plan.

To the extent possible, all contaminated structures, surfaces, and equipment (if appropriate) at a Unit will be decontaminated. The following general principles apply to decontamination and verification of all Units at SNL/NM:

- Verification samples will be collected to demonstrate that the applicable closure criteria are met. The decontamination verification samples will be collected as specified in a Unit-specific closure plan SAP.

- Only those areas (e.g., floor grids) that do not meet closure criteria (based on results from rinse water sampling) will require further decontamination and verification sampling.

- Before transport off site or use elsewhere on site, all equipment used for closure will be decontaminated via scraping and rinsing with high pressure water, steam, or other appropriate industrial cleaning solution until no visible evidence of contamination is present. Equipment decontamination may be performed in a specific decontamination staging area with adequate containment.

- Used wash water and rinse water may be discharged into the City of Albuquerque sewer treatment system, provided the results of sampling and analysis meet the criteria of the discharge permit.

- Most personal protective equipment, plastic sheeting, and sampling equipment used by personnel performing decontamination activities will be disposable. These materials will be placed in containers and characterized to determine if they are RCRA-regulated wastes, in accordance with all applicable requirements of 20 NMAC 4.1.200/40 CFR 261 [10-1-03].

- Any RCRA-regulated wastes generated during closure (e.g., equipment, contaminated floor sweepings) will be managed in accordance with all applicable requirements of 20 NMAC 4.1.300/40 CFR 262.34 [10-1-03], pending arrangements for transfer to an active SNL/NM Unit or an off-site permitted TSDF.

- Sandia/DOE may propose improved decontamination technologies or an alternative demonstration of decontamination at the time of closure. This information would be submitted to NMED prior to implementation of closure in a revised Unit-specific closure plan.

- Sandia/DOE will continue the long-standing practice of providing radionuclide data to NMED on a voluntary basis, in accordance with: 1) the joint guidance developed by the National Association of Attorneys General (NAAG), (NAAG, 1998), and 2) the data-sharing provisions of the current Agreement-in-Principle between DOE and the State of New Mexico (DOE, 2000).

The following sections describe decontamination procedures applicable to specific types of Units.

F.5.2.1 Treatment Units

The closure processes described below are appropriate for indoor storage areas and for indoor areas at Units where treatment in containers occurs (i.e., the Radioactive and Mixed Waste Management Facility and the Auxiliary Hot Cell Facility). The closure processes described below are also appropriate for the Thermal Treatment Facility (TTF) treatment equipment. Closure activities (if needed) for areas immediately surrounding the TTF treatment equipment are addressed in the SAP in Section 7.5 of Module II.

Many of the closure processes appropriate for floor surfaces in storage and treatment areas are also appropriate for large pieces of equipment (e.g., fume hoods). The processes for equipment

decontamination are described in the following section. Alternatively, Sandia/DOE may choose to manage treatment equipment (e.g., exhaust ductwork from fume hoods in treatment areas) as solid waste.

F.5.2.2 Container Storage Units

The decontamination procedures described below are designed to satisfy closure performance standards by describing the steps taken to remove or decontaminate all RCRA-regulated waste residues and contaminated containment system components, equipment, and structures during closure. Soil and groundwater are not expected to be impacted by operations at container storage Units, as the Units are located inside buildings for protection from the weather, are equipped with impermeable secondary containment systems, and are regularly inspected and maintained.

The decontamination techniques described below apply to hardened surfaces present in container storage Units (e.g., asphalt, concrete, sheet plastic, and metal). These surfaces may include floors, secondary containment structures, and miscellaneous equipment. Not all steps will be required for each surface; some steps are contingent on the outcome of prior steps. The procedures described below are intended to allow structures and equipment in the Units to be returned to service in the management of non-RCRA regulated materials, and may be revised before closure to incorporate new practices or technology.

- Remove gross residual material (e.g., soil from floors) using brooms, mechanical sweepers, or similar equipment.
- Collect a composite grab sample of the floor sweepings to be analyzed for the indicator parameters identified in Unit-specific SAPs.
- Inspect all surfaces for cracks or gaps prior to decontamination.
- Formulate a wash solution of water and non-phosphate detergent for decontamination. Prior to use, collect a grab sample of the wash solution to be analyzed for the indicator parameters identified in Unit-specific SAPs.
- Wash appropriate hardened surface areas (e.g., floors, secondary containment, non-disposable equipment) with the non-phosphate detergent solution. Large areas to be washed will be cleaned according to grids established in Unit-specific SAPs. Washing may be done with mops/sponges or with pressure washers, depending on the degree of contamination or other conditions at the time of closure.
- Use portable berms or other containment structures (e.g., enclosed areas covered with polyethylene sheeting) to contain and collect decontamination wash and rinse waters.
- Allow surfaces to air dry.
- Conduct a walk-through visual inspection of all decontaminated surfaces.

- Repeat surface wash and wash/rinse water collection procedures until all visible signs of contamination have been removed. Visible contamination that cannot be removed by washing will be removed by scraping or chipping using appropriate tools and equipment.

- Verify the absence of visible contamination using a site inspection logbook or memo entries and visual documentation (e.g., videotaping, photographing).

- Collect two grab samples of decontamination wash and rinse water from each decontaminated area or item for analysis of the indicator parameters (as identified in the Unit-specific SAP).

F.5.3 Phase III: Closure Certification

An independent, registered professional engineer will certify that closure activities followed the approved plan. Upon completion of closure, a letter certifying that the Unit was closed according to the approved plan will be prepared. The letter will be dated and signed by the engineer and will be stamped by the engineer with his or her professional seal. The original copy will be submitted to the Secretary of the NMED.

Upon completion of closure activities, Sandia/DOE will submit closure information to the Secretary of the NMED. This information will include:

- Certification of closure,
- Location and custodian of all closure documentation,
- Discussion of closure activities, and
- Laboratory analyses/results summaries.

Additional information will be available, upon request, in the documentation supporting the independent, registered professional engineer's certification in accordance with 20 NMAC 4.1.500/40 CFR 264.115 [10-1-03]. The supporting documentation will include:

- Original laboratory data package(s), and
- Quality assurance (QA)/quality control (QC) documentation for contract laboratory analyses.

F.6 SAMPLING AND ANALYSIS PLAN (20 NMAC 4.1.500/40 CFR 264.112[b][4,5])

Sampling and analysis activities will be performed to verify decontamination and demonstrate clean closure (Phase II) and for waste characterization purposes, as necessary (e.g., certain closure-generated wastes). Sample collection will be performed in accordance with established sampling procedures (e.g., EPA, American Society for Testing and Materials [ASTM]) or equivalent methods so that samples are representative of Unit conditions at closure. Sample collection equipment and techniques are generally described in this site-wide closure plan, and sampling methods/types are summarized in Table F-2. Unit-specific closure SAPs are provided in Section 7.5 of each Unit-specific module.

Table F-2
Sampling and Analysis Plan for Closure of Sandia National Laboratories/New Mexico Resource Conservation and Recovery Act (RCRA)-Regulated Waste Management Units

Activity	Sampling Method/Type	Parameters of Interest[a]	Sample Number/ Frequency
Operations and site reviews	1) Visual observation 2) Review of Unit documentation/records	1) Staining, discoloration 2) (Identify) hazardous waste indicator parameters	1) Not applicable 2) Not applicable
Decontamination of equipment	Liquid sampling	Hazardous waste indicator parameters	1 clean wash water, 2 used wash water, and 2 used rinse water per sampling area location [b]
Decontamination of floor/secondary containment surface	1) Floor sweepings (soil) sampling 2) Liquid sampling	1) Physical state 2) Hazardous waste indicator parameters	1 soil sample per WMA; 1 clean wash water, 2 used wash water, and 2 used rinse water per sampling grid location [b]
Characterization of contaminated equipment	1) Review of Unit documentation/records 2) Acceptable knowledge 3) Wipe or bulk sampling, as appropriate	Hazardous waste characteristics	As appropriate
Characterization of decontamination equipment [c] (e.g., personal protective equipment, plastic sheeting, dry wipes, and tools)	1) Liquid sampling 2) Acceptable knowledge	1) Physical state 2) Hazardous waste indicator parameters	As appropriate
Quality control sampling	Equipment rinsate blanks and duplicate samples	1) Physical state 2) Hazardous waste indicator parameters	1 per day per piece of non-disposable sampling equipment [d], 1 per every 20 clean and used wash water and used rinse water samples [e]

[a] Samples will be analyzed for indicator parameters that have been selected to represent the RCRA-regulated waste and hazardous waste constituents known to have been managed during the operational life of the Unit. See Section 7.5 of the appropriate Unit-specific module.
[b] See the appropriate Unit-specific module for sampling areas and grids.
[c] Decontamination equipment wastes will be characterized using the results of decontamination sampling and analysis (e.g., used wash water, used rinse water, floor sweepings, as appropriate) or acceptable knowledge.
[d] Applicable to equipment rinsate blanks.
[e] Applicable to duplicate samples.

F.6.1 Sample Locations, Collection, Handling, and Quality Control

Unit-specific samples and locations are identified in Section 7.5 of each Unit-specific module. Representative samples of clean and used decontamination wash water and used decontamination rinse water will be collected using appropriate equipment. Sample collection methods may include grid sampling, chipping, coring, or drilling, as appropriate.

Samples will be collected, stored, and preserved in accordance with established and applicable procedures (e.g., EPA, ASTM). Samples will be analyzed for indicator parameters that have been selected to represent the RCRA-regulated wastes and hazardous waste constituents known to have been managed during the operational life of the Unit.

F.6.1.1 Sample Collection Documentation

Sample collection will be documented for each sample following QA/QC information established by EPA guidelines or equivalent methods.

F.6.1.2 Sample Identification

Each sample will be assigned a unique identifying number, as described in the Unit-specific SAP. Labels will be preformatted or filled in with waterproof ink prior to sample collection to minimize container handling. Sample labels will include the following information:

- Name of sampler,
- Date and time of sample collection,
- Sample number,
- Sample matrix and how collected (i.e., grab composite),
- Preservation method, and
- Analysis required.

F.6.1.3 Sample Preservation, Handling, and Shipment Preparation

Sample preservation and handling will be in accordance with applicable QA requirements. Proper container, preservative, and holding time requirements for each parameter will follow EPA guidelines or equivalent methods. Sample shipment will be in accordance with U.S. Department of Transportation and International Air Transport Association shipping requirements, as applicable. Additional information is included in Section 7.5.2 of each Unit-specific module.

F.6.1.4 Quality Control Sampling

The quality of data from sampling efforts will be controlled by using blank and duplicate samples. Blanks and duplicate samples will be collected so that the extent of any contamination introduced during sample collection and handling and the precision of the total sample collection and laboratory analysis system can be determined. Sampling equipment rinsate blanks will be collected

at a frequency of one per day for each piece of non-disposable sampling equipment to determine if cross contamination has occurred. One in every twenty clean and used wash water and used rinse water samples collected will be submitted in duplicate for analysis and determination of precision. The blanks and duplicate samples will be treated as separate samples. Objectives for acceptable QC sample analytical results will follow available EPA guidance or equivalent methods. Unit-specific QC sampling is described in Section 7.5.4 of the appropriate Unit-specific module.

F.6.1.5 Analysis Request/Chain-of-Custody Form

In order to document the integrity of samples from collection to analysis, sample possession will be recorded on an analysis request/chain-of-custody form, which will be prepared for samples collected for laboratory analyses. A sample is in custody if it is:

- In someone's physical possession or view, and/or
- Secured to prevent tampering, and/or
- Secured in an area restricted to authorized personnel.

The form will include the same information as the label, will be initiated at the point of sample collection, and will be kept with the samples during transfer to the laboratory. The form will be completed upon receipt in the laboratory. Specific analysis request/chain-of-custody procedures will follow available EPA guidance or equivalent methods.

F.6.1.6 Sampling Equipment Decontamination Procedures

To minimize the potential for cross contamination between samples, disposable sampling equipment may be used. If reusable sampling equipment is used, it will be decontaminated as described in Section 7.5.2.4 of each Unit-specific module.

F.6.1.7 Waste Management

Minimal quantities of waste will be generated through the sampling procedures. The waste will primarily be miscellaneous solid, nonhazardous wastes such as cotton gloves, wipe media, sample container packaging, and label adhesive backing. All RCRA-regulated wastes generated during sampling activities will be managed as described in Section F.5.2.

F.6.2 Laboratory Analysis and Quality Control

Samples will be analyzed for indicator parameters that have been selected to represent the RCRA-regulated waste and hazardous waste constituents known to have been managed during the operational life of the Unit. See Section 7.5 of the appropriate Unit-specific module for additional information. Analytical procedures will conform to "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (EPA, 1986 and all approved updates), or other appropriate established methods.

The analytical laboratory will have a written QA plan and standard operating procedures in place to ensure sample preparation and analysis are performed properly and results are of the appropriate and documented quality to ensure that project-specific DQOs are met. Sandia/DOE may request both sets of documentation for review and approval prior to submission of closure samples. The laboratory will perform the following QC checks with each batch of samples at a minimum frequency of five percent:

- Matrix duplicate: Split aliquots of a sample are fortified with identical concentrations of target analytes and analyzed. The results are used to document the precision and bias of a method in the sample matrix.
- Matrix spike: An aliquot of sample is fortified with known concentrations of target analytes, the sample is prepared and analyzed, and the results are compared to the results of a split, non-fortified sample to determine and document the bias of the matrix on the analytical method.

F.6.3 Data Management and Reporting

Initial data reduction and validation will be done by the laboratory contracted to analyze the samples. The laboratory will report the data in accordance with their internal QC requirements. Duplicate laboratory control samples will be analyzed by the laboratory for indicators of bias and precision and will be reported as percent recovery and relative percent difference. QC acceptance criteria for bias and precision will be included in the analytical report.

Summary analytical and laboratory QC data will be transmitted to Sandia/DOE by the contractor laboratory. The analytical report will be in electronic and hardcopy formats. The laboratory will archive all raw data, notes, and bench sheets in a manner allowing retrieval upon request by Sandia/DOE. These records will include instrument tuning and calibration records, batch QC sample data, sample tracking and control documentation, raw analytical sample data, and analytical results.

F.7 CLOSURE SCHEDULE (20 NMAC 4.1.500/40 CFR 264.112[b][6], 264.112[d], AND 264.113)

The schedule for completion of closure activities is shown in Table F-3. Closure is expected to take 180 days. If unforeseen circumstances that impact this schedule arise during closure, a closure plan modification will be requested in accordance with 20 NMAC 4.1.500/40 CFR 264.113(b)(1)(i) [10-1-03].

Table F-3
Closure Schedule for Sandia National Laboratories/New Mexico Resource Conservation and Recovery Act-Regulated Waste Management Units

Activity[a]	Schedule[b]
Submit updated Unit-specific closure plan (Section 7.0 of appropriate Unit-specific module), if necessary	Prior to closure notification
Receive NMED approval of updated Unit-specific closure plan	Prior to closure notification
Notify NMED of closure	Day 0 minus 45
Begin closure activities	Day 0
Begin records review and site observations	Day 1
Develop closure criteria (Phase I)	Day 60
Conduct removal and decontamination activities (Phase II)	Day 100
Verify decontamination through sampling and analysis	Day 145
Complete final closure	Day 180
Submit closure certification to NMED	60 days later

[a] Some activities may be accomplished concurrently with others.
[b] This schedule represents estimated completion time; some activities may be completed earlier than scheduled. Also, the schedule assumes that updated Unit-specific closure plans will be approved by NMED prior to notification of closure by Sandia/DOE.

F.8 CLOSURE PLAN AMENDMENT (20 NMAC 4.1.500/40 CFR 264.112[c])

This site-wide closure plan will be amended if any changes occur in the operating plans or Unit design that affect the plan, such as Unit size or capacity, types of RCRA-regulated waste in the Unit at closure, maximum waste inventory, or the closure schedule. The plan will be amended if, during closure, unexpected events require the plan to be modified. Additionally, the plan will be amended if there are changes in technical considerations such as availability of new technology, changes in requirements, or operating contingencies.

This plan is intended to provide general closure policies and procedures applicable to all Units at the SNL/NM facility. It is expected that revisions to the Unit-specific modules made prior to closure will address all necessary information, without requiring amendments to this plan.

If this plan requires amendment(s), Sandia/DOE will request authorization from the NMED in writing, in accordance with 20 NMAC 4.1.500/40 CFR 264.112(c) [10-1-03].

F.9 FINANCIAL REQUIREMENTS (20 NMAC 4.1.500/40 CFR 264.140[c])

Cost estimates, financial assurance mechanisms, and liability coverage for closure and post-closure activities are not included in this site-wide closure plan. Federal facilities are exempt from these requirements, in accordance with 20 NMAC 4.1.500/40 CFR 264.140(c) [10-1-03].

F.10 POST-CLOSURE CARE (20 NMAC 4.1.500/40 CFR 264.117 THROUGH 264.120)

Sandia/DOE plan to clean close all operating RCRA-regulated waste management Units at the SNL/NM facility. Because all RCRA-regulated waste will be removed from the Units and the Units will be decontaminated at closure, a general post-closure care plan is not required. Potential post-closure care activities at the TTF are addressed in Module II.

F.11 SURVEY PLAT [20 NMAC 4.1.500/40 CFR 264.116]

Sandia/DOE plan to clean close all Units at SNL/NM. Because all RCRA-regulated waste will be removed from the Units and the Units will be decontaminated at closure, a survey plat is not required.

REFERENCES

DOE, see U.S. Department of Energy

EPA, see U.S. Environmental Protection Agency.

NAAG, see National Association of Attorneys General

NMED, see New Mexico Environment Department.

National Association of Attorneys General, 1998, "Announcement and Issuance of Guidance: *Sharing of Radionuclide Information with States*", dated September 1998.

New Mexico Environment Department, 1997, Letter from NMED (Robert S. Dinwiddie) to DOE (Michael Zamorski), entitled "Request for Supplemental Information: Background Concentrations Report, SNL/KAFB," dated September 24, 1997.

U.S. Department of Energy (DOE), 2000, "Agreement-in-Principle Between the United States Department of Energy and the State of New Mexico for Environmental Oversight and Monitoring", dated November 29, 2000.

U.S. Environmental Protection Agency (EPA), 1986 and all approved updates, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," *SW-846*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, D.C.

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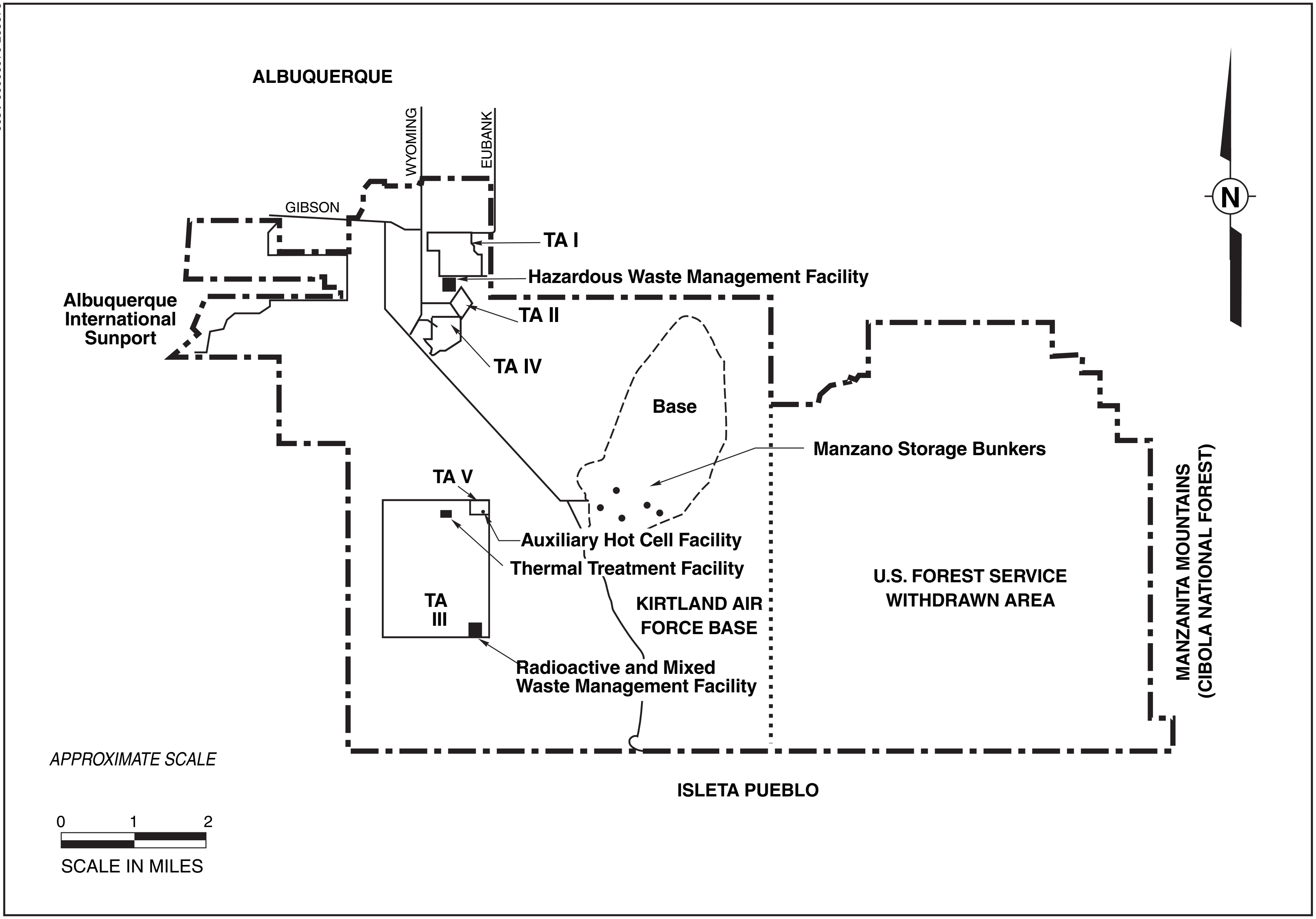

Figure F-1

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

Sandia National Laboratories/New Mexico
Hazardous Waste Handling Facility
Part B Permit Renewal Request

Module I

Revision 7.0

April 2012

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Prepared for
The U.S. Department of Energy

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ACRONYMS AND ABBREVIATIONS

20 NMAC 4.1.*X*00	New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart *X*
40 CFR 2*XX.XX*	Code of Federal Regulations, Title 40, Part 2*XX*, Section 2*XX.XX*
DOE	U.S. Department of Energy/National Nuclear Security Administration
ft	foot/feet
ft^2	square foot/feet
HWHF	Hazardous Waste Handling Facility
NMED	New Mexico Environment Department
QA	quality assurance
QC	quality control
RCRA	Resource Conservation and Recovery Act
SAP	sampling and analysis plan
Sandia	Sandia Corporation
SNL/NM	Sandia National Laboratories/New Mexico
TSDF	treatment, storage, and disposal facility
Unit	RCRA-regulated waste management unit
WMA	waste management area

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SANDIA NATIONAL LABORATORIES/NEW MEXICO HAZARDOUS WASTE HANDLING FACILITY PART B PERMIT RENEWAL REQUEST

This Sandia National Laboratories/New Mexico (SNL/NM) Hazardous Waste Handling Facility (HWHF) Part B Permit Renewal Request is submitted to address the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subparts V and IX (20 NMAC 4.1.500 and .900), revised July 1, 2008 [7-1-08], requirements specific to Resource Conservation and Recovery Act (RCRA)-regulated waste container storage operations at the HWHF. 20 NMAC 4.1.500 and .900, adopt by reference, with limited exceptions, all of the Code of Federal Regulations, Title 40, Parts 264 and 270 (40 CFR 264 and 270).

Sandia Corporation (Sandia) and the U.S. Department of Energy/National Nuclear Security Administration (DOE), as operator and owner, respectively, of the SNL/NM site, have prepared and revised this module to provide RCRA-regulated waste management units (Unit)-specific details that supplement the information provided in the "Sandia National Laboratories/New Mexico General Part B Permit Renewal Request/Application" hereinafter referred to as the General Part B. Together, information provided in this module, in the General Part B, and in the appendices to the General Part B meet the applicable requirements for the HWHF that are specified in 20 NMAC 4.1.500/40 CFR 264 [7-1-08], and 20 NMAC 4.1.900/40 CFR 270 [7-1-08].

Sandia/DOE also prepared the "Sandia National Laboratories/New Mexico General Part A Permit Renewal Request/Application, Rev. 11.0" (SNL/NM, 2012), hereinafter referred to as the General Part A, included as Part 1 of this comprehensive Part B permit request. The General Part A serves as a companion document to the General Part B and Unit-specific Part B modules, including this HWHF Part B Permit Renewal Request.

In the General Part A, the General Part B, its appendices, and this module, a Unit to be permitted may sometimes be referred to as a "facility" (e.g., Hazardous Waste Handling Facility). The term "facility," as it appears in this context, is used only to denote a building or Unit name and does not imply the regulatory meaning of "facility" as defined in 20 NMAC 4.1.100/40 CFR 260.10 [7-1-08]. However, pursuant to 20 NMAC 4.1.100/40 CFR 260.10 [7-1-08], the SNL/NM site as a whole does meet the regulatory definition of a facility.

The HWHF occupies 1.35 acres on DOE property between TA-I and TA-II. It is a fenced compound with several buildings and waste management areas (WMAs). Operations include storage of RCRA-regulated wastes in containers and repackaging the wastes into suitable containers for shipment to off-site treatment and/or disposal facilities. Sandia/DOE currently operate the HWHF in accordance with the terms of New Mexico Environment Department (NMED) Permit NM5890110518-1, issued August 6, 1992 (NMED, 1992), and its subsequent modifications. Sandia/DOE manage all of the wastes listed in the Part A included in Permit NM5890110518-1.

All of the RCRA-regulated wastes listed in the General Part A may be managed at the HWHF upon issuance of the permit that is the subject of this Part B renewal request.

1.0 GENERAL UNIT OPERATIONS

This section provides descriptions of the HWHF WMAs and specific Unit waste management operations. The information in this section complements the information provided in Section 1.0 of the General Part B.

Specific information in this section regarding Unit operations includes: containment systems; requirements for ignitable, reactive, and incompatible wastes; preparedness and prevention; hazards prevention; and container storage of RCRA-regulated wastes.

The specific information provided and documents referenced in this section, together with the general information provided in Section 1.0 of the General Part B, address the applicable hazardous waste management facility requirements of 20 NMAC 4.1.500/40 CFR 264, Subparts I, AA, BB, and CC [7-1-08], and 20 NMAC 4.1.900/40 CFR 270.14 and 270.15 [7-1-08].

1.1 Designated Waste Management Areas

The location of the HWHF at SNL/NM is shown on Figure 1. The HWHF has three designated WMAs, shown on Figure 2:

- The Hazardous Waste Packaging Building (Building 959),
- The Hazardous Waste Storage Building (Building 958), and
- Two modular storage buildings.

The following sections provide descriptions of the storage structure, location, capacity, and secondary containment of each WMA.

1.1.1 Hazardous Waste Packaging Building (Building 959)

In the Hazardous Waste Packaging Building, lab packs are prepared by placing small containers into larger containers filled with absorbent material, and other wastes are repackaged into containers for shipment to off-site treatment, storage, and disposal facilities (TSDFs).

The Hazardous Waste Packaging Building is the easternmost WMA at the HWHF and is an 1,800-square-foot (ft^2) precast concrete building with an eave height of 12 feet (ft) (Figures 2 and 3). Eight waste-holding cells with half-height concrete masonry unit walls and a waste packaging area are located in the building. The packaging area contains a fume hood and flexible ventilation hoses attached to a local negative-pressure ventilation system that exhausts to the exterior of the building.

All the cells and the packaging area have recessed floors that are constructed of reinforced concrete and are covered with metal grating. Waste containers are placed on shelves over the metal grating over the recessed secondary containment areas. The load-bearing capacities of the metal grating and the reinforced concrete floor are 450 and 2,000 pounds per ft^2,

respectively. The floor and the bottom seven inches of wall surface in each recessed area are covered with an epoxy-based chemical-resistant coating. The coating forms a continuous protective barrier over the concrete and protects the floor from the effects of solvents and corrosive chemicals that may be released from the containers.

The individual shelves are covered with removable chemical-resistant grating, and they have edges to hold the containers in place. The shelves are not designed to provide secondary containment. Secondary containment is provided by the recessed areas in each holding cell. The recessed area in each cell is 5 ft by 4.5 ft and 7 inches deep, with a capacity of 98 gallons. The recessed area under the packaging area is 5 ft by 12 ft and 7 inches deep, with a capacity of 261 gallons. For each of these recessed areas, Sandia/DOE consider only part of the available capacity: the capacity used in each holding cell is 71 gallons, and the capacity used under the packaging area is 191 gallons.

Based on the secondary containment capacity used by Sandia/DOE (10% of the stored volume or the volume of the largest container), each of the eight holding cells in the Hazardous Waste Packaging Building can hold a maximum of 13 55-gallon drums, or an equivalent volume. The packaging area can hold a maximum of 34 55-gallon drums, or an equivalent volume. The stacking configuration of waste containers will not exceed the load-bearing capacity of the reinforced concrete or metal grating. The secondary containment meets the requirements of 20 NMAC 4.1.500/40 CFR 264.175(b)(1-4).

1.1.2 Hazardous Waste Storage Building (Building 958)

The Hazardous Waste Storage Building (Building 958) is located west of the Hazardous Waste Packaging Building (Figure 2). The Hazardous Waste Storage Building is a 3,520-ft^2 precast concrete building with an eave height of 14 ft. Eight separate and recessed waste storage compartments for segregation of waste groups are contained in the Hazardous Waste Storage Building (Figure 4). The floors of Cells 1, 2, 3, 4, 6, 7, and 8 are constructed of reinforced concrete and metal grating. The floor of Cell 5 is constructed of reinforced concrete. The floor and bottom 5 inches of the walls are coated with an epoxy-based chemical-resistant coating. The coating protects the concrete from the effects of solvents and corrosive chemicals that could be released on the floor in the event of a spill. Waste containers are placed on metal grating over the secondary containment area, or on the reinforced concrete floor in Cell 5. Containers are not stored directly on the floor of Cell 5 when containers of liquids without absorbent are present in the cell. The load-bearing capacity of the metal grating and reinforced concrete are 450 and 2,000 pounds per ft^2, respectively. The storage compartments vary in size, secondary-containment capacity, and waste-container capacity.

The secondary containment in Bays 1, 2, 3, 4, 6, 7, and 8 is provided by the recessed areas under the grating. The secondary containment capacity in Bay 5 is provided by the volume of the entire recessed area. For example, the recessed area in Bay 1 is 11.75 ft by 14.67 ft by 5 inches deep, with a capacity of 542 gallons. The secondary containment capacity is 10% of the stored volume or the volume of the largest container; thus, the storage capacity in Bay 1 is 5420 gallons, 98 55-gallon drums, or an equivalent volume. The secondary containment meets the requirements of 20 NMAC 4.1.500/40 CFR 264.175(b)(1-4).

Based on the secondary containment capacity, the storage compartments are limited to the following maximum storage capacity of 55-gallon drums, or equivalent volume, as listed in Table 1.

Table 1
Secondary Containment Capacity for Building 958

Bay No.	Secondary Containment Capacity, Gallons	Maximum Number of 55-Gallon Drums Stored[a]
1	542	98
2	434	79
3	434	79
4	434	79
5	4,136	518[b]
6	434	79
7	434	79
8	434	79

[a] Actual limit will be various containers with total volume equivalent to stated number of 55-gallon drums

[b] A portion of the secondary containment capacity is taken up by pallets, and the aisle area is not included in the calculations.

The stacking configuration of waste containers will not exceed the load-bearing capacity of the reinforced concrete floor or the metal grating.

1.1.3 Modular Storage Buildings (958B and 958C)

The modular storage buildings are located west of Building 958 (Figure 2) and are used for storage of spontaneously ignitable and reactive wastes, including, but not limited to, lithium batteries, gas cylinders, and flammable solids.

The exterior dimensions of each modular storage building are 22 ft long, 8 ft wide, and 8 ft high. The buildings are constructed of welded 10- and 12-gauge steel supported by structural steel sections. Each building has three doors, each with a three-point locking system to provide access and security. Each has a 6-inch-deep integral spill containment reservoir under the entire building; the containment capacity is 500 gallons. The secondary-containment subfloor is constructed of continuously welded 10-gauge steel, which is painted to provide protection against degradation. The floors are 1-inch-thick vinyl ester fiberglass grating. The load-bearing capacity of the floor for each structure is 250 pounds per square foot. The inside walls and ceiling are also painted. Each building rests on structural supports that elevate it and allow visual checks of the underside of the spill containment reservoir if there is evidence of deterioration on the interior surfaces. The secondary containment capacity is 10% of the stored volume or the contents of the largest container; thus, the storage capacity is 5,000 gallons. The secondary containment meets the requirements of 20 NMAC 4.1.500/40 CFR 264.175(b)(1-4).

1.2 Unit Operations

The HWHF WMAs are used to store any of the RCRA-regulated wastes bearing U.S. Environmental Protection Agency Hazardous Waste Numbers listed in the General Part A.

Information regarding operations requiring a permit at all Units at SNL/NM is included in Section 1.1 of the General Part B. Additional Unit-specific information is provided in the following sections.

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

Unit personnel begin taking action to evaluate and remove accumulated liquids in each secondary containment area in the HWHF upon discovery. Accumulated liquids are cleaned up as described in Section 1.1.1 of the General Part B.

Containers are inspected for integrity when the wastes arrive at the HWHF, before they are placed on the shelves in the holding cells in Building 959. Containers in poor condition are not placed on the shelves; the containers may be overpacked or the RCRA-regulated wastes may be transferred to containers in good condition, as described in Section 1.2.2.1 of the General Part B. The shelves are typically lined with absorbent pads under the removable grating in areas where containers of liquids are stored. Containers are placed on the grating on the shelves, and are inspected regularly as noted in Section 4.0 of this module and in Appendix C of the General Part B. Released materials are contained in the absorbent pads and are cleaned up as described in Section 1.1.1 of the General Part B. These practices serve to protect the containers on the shelves from contact with liquids.

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

Any of the ignitable or reactive wastes listed in the General Part A may be managed at the HWHF. Sources of ignition that may be present at the HWHF are those noted in Section 1.1.2.1 of the General Part B: welding activities, open flames, hot surfaces, frictional heat, radiant heat, sparks, and engines. The general precautions and practices employed by Unit personnel are described in Section 1.1.2 of the General Part B. Additional HWHF-specific features, potential ignition and reaction sources, precautions, and practices include:

- The modular storage buildings are grounded by a 10-ft-long grounding rod and cable. They are equipped with a dry chemical fire suppression system to assure that water-reactive wastes will not be exposed to water during fire emergencies.

- Building 959 is used for open container operations (e.g., bulking, sampling) that may involve ignitable or reactive wastes. It is equipped with an intrinsically safe (spark proof) electrical system, including lighting and receptacles.

- Spontaneously ignitable and water-reactive wastes are segregated from other wastes and stored in the modular storage buildings. The modular storage buildings have exterior signs indicating the presence of ignitable and reactive wastes.

- Spontaneously ignitable and water-reactive wastes may temporarily be managed in Building 959 after receipt and during repackaging activities. Individual containers are labeled as described in Section 1.2.1 of the General Part B, and they are kept apart from other wastes.

- Containers of wastes (including ignitables and reactives) are labeled and segregated in different holding cells in Building 959 according to compatibility criteria in 20 NMAC 4.1.500/40 CFR 264 Appendix V. Each cell is marked with a sign noting the hazard class(es) of wastes inside. Containers in Building 958 (including ignitables and reactives) are labeled. They are segregated into different bays according to general DOT hazard classes in 49 CFR 172 and 20 NMAC4.1.500/40 CFR 264 Appendix V as appropriate. Each bay is marked with a sign noting the hazard class(es) of wastes inside. The holding cells and bays are separated from each other by concrete walls and independent containment systems.

- Forklifts are not used for waste movement in Building 959 to minimize potential sources of ignition in the building.

- Unit personnel use the process described in Section 1.1.2 to minimize and dissipate static charge during transfer of flammable liquids between containers.

- Wastes are mixed together on a very limited basis during the repackaging operations at the Unit. Ignitable and reactive wastes are only mixed on a case-by-case basis. Unit personnel plan each such operation carefully to identify the hazards and potential consequences. Personnel use waste characterization data and/or published chemical information (e.g., NIOSH Pocket Guide to Chemical Hazards or other chemical or engineering handbook) for each waste in the planning process. Personnel then conduct the operations according to the plan in order to control the hazards and prevent uncontrolled reactions.

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

The following sections address required equipment, testing and maintenance of equipment, and access to communications or alarms systems at the HWHF.

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

General information about fire hydrants at each Unit is provided in Section 1.1.3.1 of the General Part B. The fire hydrant at the HWHF is shown in Figure 10.

The modular storage buildings are grounded by a 10-ft-long grounding rod and cable. All buildings at the HWHF are equipped with automatic fire suppression systems, which are summarized in Table 2.

Table 2
Fire Suppression Systems at the Hazardous Waste Handling Facility

Building	Applicable NFPA Standard[a]	Sprinkler Design Occupancy Classification	System Type	Sprinkler Actuation[b]
959	13, 30	Special	Automatic sprinkler, wet pipe	GB/FS
958	13, 30	Special	Automatic sprinkler, dry pipe	GB/FS
958B	17	N/A	Dry chemical	
958C	17	N/A	Dry chemical	

[a] National Fire Protection Association (NFPA), 2000, 2002a, 2002b.
[b] Sprinklers are either glass bulb (GB) or fusible solder (FS) type, typically designed to open at temperatures of 155ºF or higher.

Information on other required equipment located at the HWHF is provided in Section 6.0 and Table 4 of this module.

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

Information on equipment testing and maintenance at the HWHF is provided in Section 1.1.3.2 and in Appendix C of the General Part B, and in Section 4.0 of this module.

1.2.3.3 Access to Communications or Alarm Systems (20 NMAC 4.1.500/40 CFR 264.34)

Information about the types and locations of communications or alarm systems at the HWHF is provided in Section 1.1.3.3 of the General Part B and in Section 6.0 of this module.

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

The following sections address the procedures, equipment, and structures used at the HWHF to prevent hazards. Additional information applicable to the HWHF and all other Units at SNL/NM is included in Section 1.1.4 of the General Part B.

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

HWHF personnel employ the practices described in Section 1.1.4.1 of the General Part B to prevent hazards in unloading. Loading and unloading activities typically take place on the south

side of buildings 958 and 959 (Figure 7). The surface is level, the pavement is in good condition in the area, and there is sufficient room for operating vehicles.

Containers are handled in a manner to prevent shifting and falling. Containers are typically shrink-wrapped to hold them together on a pallet before being loaded onto vehicles by a forklift for off-site shipment. Containers are typically hand carried or transported within the Unit with drum dollies or pallet jacks.

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

The land around the HWHF is generally level, sloping gently toward the south and west. The paved areas of the HWHF are higher than the surrounding land on all sides, preventing sheet-flow run-on of surface water from surrounding areas. The western edge of the paved area is steeply sloped at the edge, rising to a level at least 6 inches above the surface outside the Unit, further preventing runon and runoff from HWHF WMAs.

Within the HWHF, the paved areas are sloped toward a 74,800-gallon catchment pond located at the northwest corner of the Unit. During normal operations, the catchment pond collects only storm water. The catchment pond does not provide secondary containment for RCRA-regulated waste.

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

Sandia/DOE do not anticipate that management of RCRA-regulated wastes at the HWHF will affect water supplies, as described in Section 1.1.4.3 of the General Part B.

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

General measures that are available to Unit personnel are described in Section 1.1.4.4 of the General Part B. The HWHF is equipped with battery-operated lights that will automatically turn on in the event of a power failure. A permanent power transformer can provide emergency power from the SNL/NM emergency power network.

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

HWHF personnel employ the practices described in Section 1.1.4.5 of the General Part B to prevent undue exposure. In addition, a fume hood and flexible ventilation hoses are available in Building 959 and can be used if there is a need to open a container of vapor-generating RCRA-regulated waste to sample the waste or transfer it to another container.

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

HWHF personnel employ the practices described in Section 1.1.4.6 of the General Part B to prevent releases to the atmosphere during storage.

Subpart AA

HWHF storage operations do not employ any of the processes subject to the requirements of 20 NMAC 4.1.500/40 CFR 264 Subpart AA.

Subpart BB

During storage activities, Sandia/DOE do not routinely manage RCRA-regulated wastes with organic concentrations ≥10 percent by weight in process equipment identified in 20 NMAC 4.1.500/40 CFR 264, Subpart BB [7-1-08]. HWHF repackaging operations sometimes involve a pump used in light organic service. It is used for less than 300 hours per calendar year and is therefore exempt from the requirements of 20 NMAC 4.1.500/40 CFR 264.1052 through 1060 [7-1-08] as noted in 20 NMAC 4.1.500/40 CFR 264.1050(f) [7-1-08]. The equipment list will be noted in the HWHF records, and equipment use will also be noted in the records.

Subpart CC

HWHF personnel employ the practices described in Section 1.1.4.6 of the General Part B to prevent releases to the atmosphere in accordance with Container Level 1 standards (20 NMAC 4.1.500/40 CFR 264.1086[c]) for containers that are subject to the standards. Such containers may be stored in any of the WMAs at the Unit.

Section B.5.3 in Appendix B of the General Part B also describes procedures to maintain compliance with the air emissions requirements of 20 NMAC 4.1.500/40 CFR 264, Subparts BB and CC [7-1-08].

1.3 Container Storage Practices (20 NMAC 4.1.900/40 CFR 270.15 and 20 NMAC 4.1.500/40 CFR, Subpart I)

The HWHF is permitted for container storage of RCRA-regulated wastes in accordance with the conditions of “Sandia National Laboratories/New Mexico Hazardous Waste Facility Operating Permit Number NM5890110518-1” (NMED, 1992). Container storage practices applicable to the HWHF are presented in the following sections.

1.3.1 Container Types and Labeling

HWHF personnel use the containers types and labeling practices described in Section 1.2.1 of the General Part B.

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

HWHF personnel employ the container handling practices described in Section 1.2.2 of the General Part B.

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

The condition of containers at the HWHF is maintained as indicated in Section 1.2.2.1 of the General Part B.

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

HWHF personnel employ the aisle space and storage configuration described in Section 1.2.2.2 of the General Part B. Aisle width is typically 2.5 ft in all buildings. This is adequate for unobstructed movement of Unit and emergency response personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of Unit operation in an emergency.

Drums and large drum-shaped containers that are stacked in Building 958 are stored on pallets, and are not stacked more than two pallets high. Smaller containers may be stacked on a single pallet. Box-shaped containers may be stacked without pallets. Containers may also be stored directly on the grating, on pallets on the floor, or directly on the floor in Cell 5 when containers of liquids without absorbent are not present in the cell.

In Building 959, containers are stored in the holding cells: smaller containers are stored on the shelves, and larger containers are stored directly on the grating. Containers are typically not stacked in Building 959; however, containers on the floor grating may be stacked two high.

Fifty-five-gallon drums stored in the modular buildings (Buildings 958B and 958C) are not stacked. Smaller containers may be stacked.

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

HWHF personnel ensure waste compatibility with containers as indicated in Section 1.2.2.3 of the General Part B.

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

All container storage areas at the HWHF are equipped with secondary containment. Therefore, Unit personnel do not verify whether containers contain free liquids before storage.

2.0 UNIT DESCRIPTION AND INFORMATION

The information provided in this section is submitted to address the applicable requirements of 20 NMAC 4.1.500 and .900/40 CFR 264 and 270) [7-1-08]. The following subject areas are addressed in this section:

- Unit-specific security procedures and equipment (20 NMAC 4.1.900/40 CFR 270.14[b][4] and 270.14[b][19][viii] [7-1-08]; 20 NMAC 4.1.500/40 CFR 264.14 [7-1-08]);
- Unit-specific traffic patterns, volume, and controls (20 NMAC 4.1.900/40 CFR 270.14[b][10] [7-1-08]);
- Unit-specific location information for compliance with the seismic standard and floodplain requirements (20 NMAC 4.1.900/40 CFR 270.14[b][11] [7-1-08], and 20 NMAC 4.1.500/40 CFR 264.18[a] and [b] [7-1-08]);
- Unit-specific topographic map requirements (20 NMAC 4.1.900/40 CFR 270.14[b][19] [7-1-08]); and
- Unit-specific groundwater monitoring and protection information (20 NMAC 4.1.900/ 40 CFR 270.14[c] [7-1-08], and 20 NMAC 4.1.500/40 CFR 264.90[a] [7-1-08]).

An SNL/NM site-wide facility description addressing additional regulatory requirements is provided in Section 2.0 and Appendix A of the General Part B.

2.1 Security Procedures and Equipment (20 NMAC 4.1.900/40 CFR 270.14[b][4]; 20 NMAC 4.1.500/40 CFR 264.14)

The following sections describe the security provisions provided at SNL/NM to prevent unknowing or unauthorized entry onto the active portions of the HWHF.

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

The HWHF is located on DOE property between TA-I and TA-II (Figure 1). The Unit is surrounded by an 8-ft high chain-link fence topped with barbed wire. A single entrance gate is located on the east side of the HWHF. The gate is locked during non-operational hours. An emergency exit gate is located on the west side of the Unit, as shown in Figures 6 and 7. This gate is locked at all times and can only be opened from the inside by pressing on the handle. All buildings are also kept locked during non-operational hours. As noted in Appendix A of the General Part B, Sandia security personnel periodically monitor the HWHF gates during non-operational hours.

During work hours, Unit signs instruct personnel and visitors to report to Office Trailer #1 for site entry privileges and instructions. Resident personnel have Sandia-issued badges.

Nonresidents are escorted while on site. These procedures limit access to the HWHF WMAs, in accordance with 20 NMAC 4.1.500/40 CFR 264.14(b)(2) [7-1-08].

2.1.2 Warning Signs (20 NMAC 4.1.500/40 CFR 264.14[c])

The permanent perimeter fences surrounding the HWHF and the entrance to the HWHF are posted with "Danger: Unauthorized Personnel Keep Out" (or functionally equivalent) signs. The signs contain the warning in English and Spanish, are legible from a distance of 25 ft, and can be seen from any approach to the HWHF.

2.2 Traffic Pattern, Volume, and Controls (20 NMAC 4.1.900/40 CFR 270.14[b][10])

General traffic pattern information, traffic volumes, and traffic control signals for the SNL/NM facility are provided in Appendix A of the General Part B.

2.2.1 Traffic Patterns

The primary traffic routes used to transport RCRA-regulated wastes to the HWHF include Hardin Boulevard (formerly O Street), Pennsylvania Avenue, Wyoming Boulevard, Eubank Boulevard, and 9th, 14th, and P Streets as shown in Figures A-4 and A-5 in Appendix A of the General Part B.

Waste transport vehicles enter the HWHF from 14th Street (Figure 5). Within the HWHF, waste is transported on paved surfaces.

2.2.2 Traffic Volumes

Traffic volumes on Hardin Boulevard, Wyoming Boulevard, and Eubank Boulevard are generally light to moderate; traffic volumes on Pennsylvania Avenue and 9th, 14th, and P Streets are generally light. Vehicle types are generally cars, light- and medium-duty trucks, and vans. Flatbed trucks or trailers also use primary traffic routes to transport waste containers.

Approximately 10 to 30 vehicles per week travel into and out of the HWHF. These include flatbed trucks and trailers carrying supplies, RCRA-regulated wastes from initial generators, and RCRA-regulated wastes to off-site TSDFs.

2.2.3 Traffic Control Signals

Traffic on the access road is controlled by a stop sign at each end of the road: one at the intersection with 14th Street, and a stop sign and speed limit sign posted on the fence adjacent to the HWHF vehicle entrance gate (Figure 5). The speed limit within the HWHF fenced area is 5 miles per hour and no private vehicles are allowed inside the HWHF. Vehicle presence within

the fenced HWHF is limited to work and waste transport vehicles (i.e., no personal vehicles). Therefore, signals or signs are not necessary to control traffic within the HWHF fenced area.

2.3 Unit Location Information (20 NMAC 4.1.900/40 CFR 270.14[b][11])

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

The WMAs at the HWHF are not located within 3,000 ft of any fault with Holocene displacements (see Section A.4.2 in Appendix A of the General Part B).

2.3.2 Floodplain Standard (20 NMAC 4.1.900/40 CFR 270.14[b][11][iii]; 20 NMAC 4.1.500/40 CFR 264.18[b])

The WMAs at the HWHF are not located within the 100-year floodplain boundary (see Section A.4.3 in Appendix A of the General Part B).

2.4 Topographic Maps (20 NMAC 4.1.900/40 CFR 270.14[b][19])

Topographic maps and figures are provided herein or referenced to meet the requirements of 20 NMAC 4.1.900/40 CFR 270.14(b)(19) [7-1-08]. Due to the large amount of information, it is not provided on a single map. The maps clearly show the map scale, the date of preparation, and a north arrow (20 NMAC 4.1.900/40 CFR 270.14[b][19][i] and [vi] [7-1-08]). The maps and figures used to fulfill these regulatory requirements include the following:

- An SNL/NM-wide 100-year floodplain map is provided as Figure A-2 in Appendix A of the General Part B (20 NMAC 4.1.900/40 CFR 270.14[b][19][ii] [7-1-08]).

- Surface waters, including intermittent streams, near the HWHF are shown on Figure A-2 in Appendix A of the General Part B and Figure 6 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][iii] [7-1-08]).

- Surrounding land uses are shown on Figures A-2 and A-8 in Appendix A of the General Part B and Figure 6 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][iv] [7-1-08]). The area surrounding the HWHF is occupied by other Sandia-controlled operations (industrial land use). As noted in Appendix A, the nearest residential areas are located west of Pennsylvania Avenue, north of Hardin Blvd (west of SNL/NM TA-I), more than one mile away from the HWHF.

- Wind roses for SNL/NM are shown on Figure A-2 in Appendix A of the General Part B and Figure 6 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][v] [7-1-08]).

- Legal boundaries of SNL/NM (including the HWHF) are shown on Figure A-2 in Appendix A of the General Part B (20 NMAC 4.1.900/40 CFR 270.14[b][19][vii] [7-1-08]).

- Access control features at the HWHF (e.g., fences, gates) are shown on Figures 6 and 7 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][viii] [7-1-08]).

- Supply wells, monitoring wells, test wells, springs, and surface-water sampling stations near the HWHF are shown on Figure A-2 in Appendix A of the General Part B and Figure 6 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][ix] [7-1-08]).

- The location of the HWHF and associated WMAs and structures, loading and unloading areas, roads, and sanitary sewers are shown on Figures 6 and 7 of this module (20 NMAC 4.1.900/ 40 CFR 270.14[b][19][x] [7-1-08]).

- Drainage control features (e.g., run-on/runoff, drainage barriers) are shown on Figure 8 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][x] and [xi] [7-1-08]).

- Locations of the HWHF and HWHF WMAs are shown on Figures 1, 2, and 5 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][xii] [7-1-08]).

Contour lines on all topographic maps are in intervals sufficient to detail natural drainage at SNL/NM and in the vicinity of the HWHF. As provided for in 20 NMAC 4.1.900/ 40 CFR 270.14(b)(19) [7-1-08], SNL/NM has submitted the maps to NMED at these scales and contour intervals due to the size of the HWHF, the extent of the SNL/NM facility, and the topographic relief in the area.

2.5 Groundwater Monitoring (20 NMAC 4.1.900/40 CFR 270.14[c]; 20 NMAC 4.1.500/40 CFR 264.90[a])

Groundwater monitoring information is provided in Part 3 of the Sandia/DOE comprehensive Part B permit request. The HWHF is not a regulated Unit. There have been no releases of RCRA-regulated waste in the past, nor is the HWHF likely to affect groundwater quality during normal operations or during unusual events.

3.0 WASTE ANALYSIS PLAN

In accordance with 20 NMAC 4.1.900/40 CFR 270.14[b][2] and 20 NMAC 4.1.500/40 CFR 264.13, "General Waste Analysis" [7-1-08], waste analysis requirements applicable to all Units, including the HWHF, are addressed in Appendix B of the General Part B.

4.0 INSPECTION PLAN

20 NMAC 4.1.500/40 CFR 264.15 and 264.33 [7-1-08] and 20 NMAC 4.1.900/40 CFR 270.14(b)(5) [7-1-08] require that WMAs and associated systems be inspected on a regular basis and in accordance with procedures to assure their integrity, maintenance, and safe operation.

Unit personnel perform periodic inspections to identify malfunctions, signs of deterioration, operator errors, and discharges or spills that may be causing or may lead to a release of hazardous waste constituents to the environment or may pose a threat to human health. The inspections are performed on a regular schedule based on the likelihood of equipment or system failure and associated consequences. The inspections include safety and emergency equipment, security devices, and operating and structural equipment related to management of RCRA-regulated wastes to ensure that human health and the environment will be protected.

The general Sandia/DOE inspection plan and schedule that meets these requirements are described in the "Site-Wide Inspection Plan", provided as Appendix C of the General Part B. HWHF personnel conduct inspections in accordance with the site-wide plan.

Specific items and areas that are inspected are listed in Table 3, which includes the inspection criteria and frequency. The items listed in the table are inspected in each HWHF WMA.

Automatic fire suppression systems are included in Table 3. Unit personnel check to see that the systems are present. Sandia/DOE personnel also test the systems based on the requirements of National Fire Protection Association 25 "Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems" (NFPA, 2002c), as described in Section 1.1.3.2 of the General Part B.

The results of inspections by Unit personnel (including any corrective actions required and taken) are recorded on forms identical or similar to the ones presented in Appendix C of the General Part B. The inspection plan (Appendix C and this section) and inspection records for the current calendar year are maintained at the HWHF. Inspection records for previous calendar years are maintained at the HWHF or the SNL/NM Records Center.

Table 3
Hazardous Waste Handling Facility Inspection Criteria and Frequency

Inspected Item	Inspection Criteria	Inspection Frequency
SAFETY AND EMERGENCY EQUIPMENT **See Table 4 "Emergency Equipment and Locations" in this module for additional information**		
Eye wash / safety shower	Operational, accessible, in good condition	Monthly
Spill control and cleanup items	Present, quantities per inventory, and in good condition	Monthly
Self-contained breathing apparatus	Present and in good condition	Monthly
Personal protective equipment	Present, quantities per inventory, and in good condition	Monthly
Fire alarm pull station(s)	Present, accessible, and in good condition	Monthly
Fire alarm(s)	Present	Monthly
Telephone(s)	Present and operational	Monthly
Fire extinguisher(s)	Present, charged, accessible, and in good condition	Monthly
Fire sprinklers and system	Present, appears to be in good condition, sprinklers not obstructed	Monthly
OPERATING AND STRUCTURAL EQUIPMENT **Buildings 958, 959, 958B, and 958C**		
Building / storage area floor	Clean, no spills, cracks, or excessive wear	Weekly when and where wastes are managed. Monthly otherwise.
Building walls	Not leaking or spalling, in good condition	Weekly when and where wastes are managed. Monthly otherwise.
Building ceiling	Not leaking or spalling, and in good condition	Weekly when and where wastes are managed. Monthly otherwise.
Building lights	Operational and in good condition	Weekly when and where wastes are managed. Monthly otherwise.
Shelves (Building 959 only)	Clean, in good condition, no accumulated leaks or spills	Daily when and where wastes are handled. Weekly otherwise.
Secondary containment	Free of liquids, good condition (i.e., no cracks, excessive wear)	Daily when and where wastes are handled. Weekly otherwise.

Table 3 (Concluded)
Hazardous Waste Handling Facility Inspection Criteria and Frequency

Inspected Item	Inspection Criteria	Inspection Frequency
OPERATING AND STRUCTURAL EQUIPMENT (continued) Buildings 958, 959, 958B, and 958C		
Loading and unloading areas	Good condition, safe working surface, free of cracks, no spills	Daily when and where wastes are handled. Monthly otherwise.
Waste handling equipment	Good condition, in good repair, operational	Daily when and where wastes are handled. Monthly otherwise.
Monitoring equipment	Instruments in good condition, operational, calibrated	Daily when and where wastes are handled. Monthly otherwise.
Waste transfer pump	Present, operational, and in good condition	Prior to use. Monthly otherwise.
Stormwater retention pond	Good condition, adequate freeboard, outlet not obstructed, no evidence of release of RCRA-regulated waste.	Weekly.
SECURITY DEVICES		
Fence	Present and in good condition	Monthly
Warning signs	Present and in good condition	Monthly
Gates and doors	Present, operational, in good condition	Monthly
Locks	Present, operational, in good condition	Monthly
CONTAINERS		
Integrity	Good condition (i.e., no bulging, leaks, corrosion, or deterioration)	Check individual containers as they are handled. Weekly otherwise.
Closed	Correct lid/cover placement (i.e., properly closed and sealed)	Check containers as they are handled. Weekly otherwise.
Labeling	Correct information, correct location, legible	Check containers as they are handled. Weekly otherwise.
Storage Conditions	Waste compatible with container, container located with compatible wastes	Check individual containers as they are handled. Weekly otherwise.
Location	Correct aisle space, stable stacking	Check individual containers as they are handled. Weekly otherwise.

5.0 PERSONNEL TRAINING

Training requirements for Unit personnel are specified in 20 NMAC 4.1.900/40 CFR 270.14[b][12], and 20 NMAC 4.1.500/40 CFR 264.16, [7-1-08] "Personnel Training."

The Sandia/DOE training program is designed and implemented to prepare personnel to operate and maintain safely those areas used for managing RCRA-regulated waste. The training program applies to all employees of the DOE, Sandia, and any subcontractors who have responsibility for the day-to-day management of RCRA-regulated waste at the HWHF.

HWHF personnel receive training in accordance with the "Site-Wide Personnel Training Plan" provided as Appendix D of the General Part B.

Training records for HWHF personnel are maintained at the HWHF.

6.0 CONTINGENCY PLAN AND EMERGENCY RESPONSE

Emergency response requirements for permitted units are specified in 20 NMAC 4.1.500/40 CFR 264, Subpart D [7-1-08], "Contingency Plan and Emergency Procedures," and in 20 NMAC 4.1.900/40 CFR 270.14(b)(7) [7-1-08]. The Sandia/DOE "Site-Wide Contingency Plan" is included as Appendix E of the General Part B. Supplemental HWHF-specific information is included in this section, in Figures 9 and 10, and in Tables 4 and 5 of this module. Current copies of the site-wide contingency plan and this supplemental information are maintained at the HWHF and at the SNL/NM Emergency Operations Center.

The HWHF is located at the curve of 14th and P Streets (approximately 1,000 ft north of the entrance to Technical Area II) at SNL/NM. The Unit is used to repackage and store RCRA-regulated wastes. The WMAs at the HWHF include Building 958, Building 959, and the two modular storage buildings. The HWHF WMAs are located within a single area surrounded by a fence. All of the wastes listed in the General Part A may be stored at the HWHF.

- Building 959 is an 1,800-ft^2 precast concrete building with an eave height of 12 ft. Inside the building are eight waste holding cells, a repackaging area, a restroom, a general use area, an office area, and an area for packing materials. The floor is coated with an epoxy finish. Small containers of wastes (typically less than 55 gallons) are stored in this building. Containers of incompatible wastes are segregated into different holding cells. The containers and contents are repackaged into other containers for shipment to off-site facilities. Up to 7,590 gallons of waste may be stored in this building.

- Building 958 (west of Building 959) is a 3,520-ft^2 precast concrete building with an eave height of 14 ft. The building includes eight separate and recessed waste storage compartments for segregation of waste groups according to compatibility. Containers of wastes are stored in this building. Up to 59,950 gallons of waste may be stored in this building.

- Buildings 958B and 958C are modular, relocatable, prefabricated safety storage structures used for the storage of reactive and ignitable wastes. Each structure is constructed of welded 10- and 12-gauge steel with supporting structural steel sections, and each has three doors. The 500-gallon containment reservoirs within each building, the walls, and the ceilings are painted. The floors are vinyl ester fiberglass grating. Up to 5,000 gallons of waste may be stored in each building.

- Storage of water-reactive wastes is restricted to these two buildings except for temporary storage that may occur in Buildings 958 and 959 during receipt, repackaging, and staging activities.

Figure 9 presents the evacuation routes for the HWHF. Figure 10 presents emergency response and access information for the HWHF. Table 4 lists the emergency equipment typically available at the HWHF. Table 5 lists the emergency coordinators for the HWHF.

Current copies of the site-wide contingency plan (Appendix E of the General Part B) and this supplemental information are maintained at the HWHF and at the SNL/NM Emergency Operations Center.

Table 4
Hazardous Waste Handling Facility, Emergency Equipment and Locations

Building 958

Category	Description/Capabilities	Location
Spill Control and Decontamination Equipment	Fixed shower / eyewash	Near south entrance
	Recovery drums and containers	In equipment storage at the HWHF
	Absorbent (sufficient absorbent for 55 gallons of liquid when liquid wastes are present)	In equipment storage at the HWHF
	Spill cleanup items (mops, brooms, and/or shovels)	In equipment storage at the HWHF
	SCBA	At south entrance
	Miscellaneous personal protective equipment (protective suits, goggles and/or safety glasses, gloves)	In equipment storage at the HWHF
Internal Communication and Alarm System	Voice command	
	Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)	On the walls near north and south personnel doors
	Audible fire alarms	
External Communication System	Telephones – unlimited employee access	One on the interior walls near the north and south entrances
	Fire alarm pull stations (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)	On the walls near north and south personnel doors
Fire Extinguishers	Portable (A-B-C)	One at both the north and south entrances
Fire Suppression	Automatic wet-pipe water sprinkler system, with heat-actuated sprinklers	Coverage throughout the building
	Water supplied by fire hydrants	One hydrant, location shown in Figure 10

Table 4 (Continued)
Hazardous Waste Handling Facility, Emergency Equipment and Locations

Building 959

Category	Description/Capabilities	Location
Spill Control and Decontamination Equipment	Fixed shower/eyewash	Near south entrance
	Recovery drums and containers	In equipment storage at the HWHF
	Absorbent (sufficient absorbent for 55 gallons of liquid when liquid wastes are present)	In equipment storage at the HWHF
	Spill cleanup items (mops, brooms, and/or shovels)	In equipment storage at the HWHF
	SCBA	In equipment storage at the HWHF
	Miscellaneous personal protective equipment (protective suits, goggles and/or safety glasses, gloves)	In equipment storage at the HWHF
	First aid kit	One in the bathroom
Internal Communication and Alarm System	Voice command	
	Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers).	On the walls near each personnel door and one inside the office area
	Audible fire alarms	
External Communication System	Telephones – unlimited employee access	One in the office
	Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers).	On the walls near each personnel door
Fire Extinguishers	Portable (A-B-C)	One at both the north and south entrances
	Lith-X or equivalent	One in the general use area. One in the office
Fire Suppression	Automatic wet-pipe water sprinkler system, heat-actuated sprinklers	Coverage throughout the building
	Water supplied by fire hydrants	One hydrant, location shown in Figure 10

Table 4 (Concluded)
Hazardous Waste Handling Facility, Emergency Equipment and Locations

Modular Storage Buildings (958B and 958C)

Category	Description/Capabilities	Location
Spill Control and Decontamination Equipment	Personal protective equipment Recovery drums and containers Absorbent (sufficient absorbent for 55 gallons of liquid when liquid wastes are present) and spill cleanup items	Buildings 958 and 959, equipment storage at the HWHF
Internal Communication and Alarm System	Voice command	
	Fire alarm pull boxes (pulling handle sends signal to KAFB fire department, does not actuate system).	Buildings 958 and 959
	Audible fire alarms	
External Communication System	Telephones – unlimited employee access	Buildings 958 and 959
	Fire alarm pull boxes (pulling handle sends signal to KAFB fire department, does not actuate system)	Buildings 958 and 959
Fire Suppression	Ansul automatic dry chemical system	Coverage throughout the building

HWHF Hazardous Waste Handling Facility.
KAFB Kirtland Air Force Base.
SCBA Self-contained breathing apparatus.

Table 5
Hazardous Waste Handling Facility, Emergency Coordinator List

September 26, 2011

Facility Emergency Coordinator		Office Phone	Home Phone
Primary	David Castillo Sandia National Laboratories P.O. Box 5800 Albuquerque, New Mexico	(505) 284-4192 (office) (505) 269-1705 (cellular) (505) 951-6340 (pager)	(505) 269-1705
First Alternate	Ken Tetreault Sandia National Laboratories P.O. Box 5800 Albuquerque, New Mexico	(505) 844-1346(office) (505) 270-4089 (cellular) (505) 283-1949 (pager)	(505) 822-6336
Second Alternate	Chris Dean Sandia National Laboratories P.O. Box 5800 Albuquerque, New Mexico	(505) 284-8083(office) (505) 350-4982 (cellular) (505) 283-1942 (pager)	(505) 268-8913
Third Alternate	Mary Ann Krauss Sandia National Laboratories P.O. Box 5800 Albuquerque, New Mexico	(505) 845-9997 (office) (505) 250-2422 (cellular) (505) 951-6335 (pager)	(505) 299-0793

One or more of these personnel are routinely available during operating hours (8:00 am to 4:30 pm, Monday through Thursday, and 7:00 am to 3:30 pm Friday)

7.0 CLOSURE PLAN

Applicable closure requirements are specified in 20 NMAC 4.1.900/40 CFR 270.14(b)(13), and 20 NMAC 4.1.500/40 CFR 264, Subparts G and I, [7-1-08]. General closure information applicable to all Units at SNL/NM and general sampling and analytical procedures to be used during closure activities are presented in the "Site- Wide Closure Plan" in Appendix F of the General Part B. The site-wide plan includes a description of the SNL/NM facility, waste descriptions, closure performance standards, general closure methods, a sampling and analysis plan (SAP), a general closure schedule, procedures for amendment of the plan, closure certification and letter, survey plat, and post-closure requirements. Unit-specific information for closure of the HWHF is included in this section.

7.1 Unit Description

The HWHF is located at the curve of 14th and P Streets (approximately 1,000 ft north of the entrance to Technical Area II) at SNL/NM and is used to repackage and store RCRA-regulated wastes. The WMAs at the HWHF include Building 959 (Figure 11), Building 958 (Figure 12), and two modular storage buildings (Buildings 958B and 958C, Figure 13). The HWHF WMAs are located within a single area surrounded by a fence.

- Building 959 is an 1,800-ft^2 precast concrete building that contains eight separate and recessed waste holding cells and a repackaging area. The floor and sides of each recessed area are coated with an epoxy finish. Small containers of wastes (typically less than 55 gallons) are stored in this building. The repackaging area includes a fume hood and local negative-pressure ventilation systems for use when opening containers of vapor-producing wastes to repackage them.

- Building 958 (west of Building 959) is a 3,520-ft^2 precast concrete building that includes eight separate and recessed waste storage compartments for segregation of waste according to compatibility groups. The floor and bottom 7 inches of walls in each recessed area are covered with a chemical-resistant epoxy finish. Containers of wastes are stored in this building.

- Buildings 958B and 958C are modular, prefabricated safety storage structures used for container storage of reactive and ignitable wastes. Each structure is constructed of welded 10- and 12-gauge steel with supporting structural steel sections, and a 500-gallon containment reservoir. The inside surfaces are painted.

7.2 Estimate of Maximum Waste in Storage (20 NMAC 4.1.500/40 CFR 264.112[b][3])

The maximum volume of RCRA-regulated waste in storage at any time at the HWHF is estimated at 77,540 gallons of liquids and/or solids (including lab packs that contain substantial quantities of absorbent). This is the maximum volume of RCRA-regulated wastes that could be

removed from the WMAs as part of closure activities. The maximum total waste volume is broken down as follows:

- Building 959: 7,590 gallons
- Building 958: 59,950 gallons
- Building 958B: 5,000 gallons
- Building 958C: 5,000 gallons

7.3 Closure Conditions

In addition to the general assumptions listed in Section F.5 of the site-wide closure plan, partial closure activities specified in this plan assume the following conditions were met during the operational life of the HWHF:

- Waste handling activities that involved opening containers of RCRA-regulated wastes were confined to the interiors of HWHF WMAs. If contamination occurred, it would have been confined to these areas.

- Repackaging and bulking activities were conducted in a controlled manner, minimizing the potential for releases of RCRA-regulated wastes or hazardous waste constituents.

- If RCRA-regulated wastes or hazardous waste constituents were inadvertently released into the local exhaust systems during repackaging or bulking activities in Building 959, they would only be present in the first 15 ft of the exhaust system.

- The WMAs are physically separate, therefore each WMA is considered independently of other WMAs when evaluating the potential presence of RCRA-regulated wastes or hazardous waste constituents.

- There has been no evidence of releases onto the asphalt pavement within the fence.

- RCRA-regulated wastes or hazardous waste constituents could not be present except in areas in the WMAs where wastes were managed.

- The interior floors of WMAs in each building were maintained to retain their integrity by following established maintenance and inspection procedures, breaches of protective coatings did not occur, and small amount of soil will be present on the floors due to normal traffic and operations.

7.4 Closure Activities and Schedule

This closure will be conducted to support attainment of the closure performance standards outlined in Section F.4 of the site-wide closure plan. Section 7.5.3 of this plan discusses the criteria that will be used to verify that clean closure has been achieved.

7.4.1 Closure Activities

The closure approach and general activities described in Section F.5 of the site-wide closure plan will be applied to closure of the WMAs at the HWHF. With respect to the individual WMAs, Sandia/DOE will use the following approach:

- Items of equipment within the HWHF repackaging area will be evaluated individually to determine whether it is more effective to remove them or decontaminate them. Items that are most likely to be removed include local exhaust systems (the first 15 ft), filters, and portable equipment. Items that are most likely to be decontaminated include the interior of the fume hood.

- Removable items within the storage areas will also be evaluated individually to determine whether it is more effective to remove them or decontaminate them. Items that may be removed include shelves (Building 959) and floor grating.

- The modular storage buildings (958B and 958C) will be evaluated individually to determine whether it is more effective to remove them or decontaminate them.

- The floors of each WMA will be decontaminated by sweeping and washing as described in Section F.5, except as noted in this section.

7.4.2 Closure Schedule

Section F.7 of the site-wide closure plan provides a timeline for closure activities applicable to all permitted Units at the SNL/NM facility. Currently, there is not an estimated date of closure for the HWHF, but a Unit-specific closure schedule will be prepared and submitted to NMED prior to initiation of closure activities at the HWHF.

7.5 Sampling and Analysis Plan

Section F.6 of the site-wide closure plan presents general sample collection equipment and techniques applicable to all Units at the SNL/NM facility. This Unit-specific SAP describes the sampling, analysis, and quality assurance (QA) methodologies Sandia/DOE will use to demonstrate clean closure of the HWHF in accordance with the requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart G [7-1-08], as applicable. It addresses specific details (e.g., the type, number, and location of samples; required analytical constituents; closure criteria; QA and quality control [QC] procedures) regarding RCRA closure of the HWHF.

7.5.1 Sampling and Analysis Scope

This SAP presents procedures for acquisition, analyses, and evaluation of samples of floor sweepings (soil), pre-wash (unused) wash water, used wash water, and used rinse water from the floor and, where appropriate, secondary containment surfaces of the four WMAs at the HWHF (Buildings 958, 959, 958B, and 958C). All of the samples will be analyzed to determine concentrations of a set of indicator parameters selected from the range of hazardous waste

constituents in the RCRA-regulated wastes managed in the Unit. These indicator parameters and the applicable criteria for clean closure are identified in Tables 6 and 7, and the rationale for their selection is presented in Section 7.5.3.

7.5.2 Sampling Methodology

7.5.2.1 Sample Locations

The floor of each WMA will be swept and a sample of the composited floor sweepings from each WMA will be collected for analysis.

As indicated in Table 7, two samples of used wash water and two samples of used decontamination rinse water will be collected from each area shown on Figures 11, 12, and 13. Used wash water will be contained in the bays, in temporary berms, or other containment devices; sampled; and removed prior to the decontamination rinse step. Used rinse water will be contained similarly, as necessary.

7.5.2.2 Sample Collection

One single representative sample will be collected from the composited floor sweepings (e.g., soil) at each WMA shown on Figures 11, 12, and 13 prior to the decontamination procedure. Each sample will be analyzed for the indicator parameters identified in Table 6.

One representative sample will be collected from each batch of unused detergent and water solution to be utilized in the decontamination procedure. Two representative grab samples of used wash water and two samples of used decontamination rinse water will be collected from the temporary berms or other containment structures after each wash and rinse cycle. One sample from each pair will be filtered upon collection to remove particulates present in the water. Each sample will be analyzed for the indicator parameters identified in Tables 6 and 7.

7.5.2.3 Sampling Equipment

Samples of floor sweepings (e.g., soil) will be collected with a disposable scoop, trowel, or equivalent sampling device. Wash and rinse water samples will be collected with a disposable liquid sampling device. Samples will be placed in pre-cleaned 500-milliliter or 1-liter wide-mouth glass jars with screw-top lids, or other approved containers that are appropriate for the analysis.

One sample from each pair of used wash water and used decontamination rinse water samples will be filtered using a 0.45-micron filter to remove particulates.

Table 6
Summary of Pre-Wash Sampling Program

Media to be Sampled	Sample Number & Type	Indicator Parameters[a]	Standards for Comparison[b]
Floor sweepings	Single grab from collected material at each WMA (representative of material removed from entire floor surface)	Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver	5.6 ppm 200 ppm <1 ppm 17.3 ppm 39 ppm <0.25 ppm <1 ppm <1 ppm
Pre-wash (unused) water	Single grab (one from each batch of detergent/water solution prior to use in decontamination)	Same as above	N/A

[a] These metals have been selected as indicator parameters to demonstrate clean closure at the HWHF due to their typical presence in the wastes stored at the Unit.

[b] Analytical results for indicator parameters in floor sweepings will be compared to background concentrations in site soils developed by NMED (NMED, 1997). Analytical results for indicator parameters in sweepings and/or pre-wash water will be used in evaluating the decontamination wash water and rinse water.

Table 7
Summary of Post-Wash Sampling Program

Area to be Decontaminated	Grid(s)	Samples per Grid[a]	Indicator Parameters[b]	Closure Criteria[c] (milligrams per Liter)
Building 958	A-H	4[d]	Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver	Evaluate with respect to concentrations in sweepings and/or in pre-wash water
	I-J	4	Same as above	Same as above
Building 959	A_1-G, K	4[d]	Same as above	Same as above
	H-J	4	Same as above	Same as above
Building 958B	A	4[d]	Same as above	Same as above
Building 958C	A	4[d]	Same as above	Same as above

[a] One sample from each pair of wash water and rinse water samples will be filtered when collected to remove particulates.

[b] These metals have been selected as indicator parameters to demonstrate clean closure at the HWHF due to their typical presence in the wastes stored at the Unit.

[c] Sandia/DOE will continue the long-standing practice of providing radionuclide data to NMED on a voluntary basis, in accordance with: 1) the joint guidance developed by the National Association of Attorneys General (NAAG), (NAAG, 1998), and 2) the data-sharing provisions of the current Agreement-in-Principle between DOE and the State of New Mexico (DOE, 2000).

[d] Secondary containment surfaces (bottom and sides) will be washed up to the secondary containment level.

7.5.2.4 Sample Equipment Decontamination

Pre-cleaned and prepared sample containers and disposable filtration equipment will be obtained from a commercial supplier or the analytical laboratory selected by Sandia/DOE. Decontamination of other disposable sampling equipment (e.g., scoops, trowels, liquid samplers) will not be required for the sampling procedures used in this closure.

If it is determined, during sampling activities, that reusable sampling equipment will be utilized, the equipment will be decontaminated using the following steps:

- Wash the equipment with a detergent and water solution, scrubbing as needed to remove any deposits;
- Rinse the equipment with tap water until the soapy residue is removed;
- Rinse with deionized or distilled water; and
- Allow to air dry or dry with a lint-free cloth.

7.5.2.5 Sample Identification

Each sample will be assigned an identification number that will uniquely identify the sampling area (e.g., floor, secondary containment, the grid identifier, the sample type (e.g., soil, rinse water), and any additional information that may be necessary. As an example, the sample numbered F-958-A-FL-RINSE-01 would indicate the filtered rinse water sample taken from water used to rinse the floor of Grid A in Building 958.

7.5.2.6 Sample Preservation and Holding Time

After samples are collected at the site, they will be placed in a cooler with frozen gel packs to maintain a temperature of approximately 4 degrees Celsius. Liquid samples will be preserved with nitric acid to maintain a pH of 2 or less. Analytical holding times will be observed by the laboratory for samples collected under this SAP (e.g., the recommended maximum holding time for metals analysis is 180 days from sample collection until extraction).

7.5.3 Demonstration of Clean Closure

Hazardous waste toxicity characteristic metals have been selected for use as indicator parameters to demonstrate clean closure at the HWHF, as these constituents are present in many of the wastes commonly stored in the Unit. Other wastes stored in the HWHF typically are regulated as hazardous waste due to ignitability (D001), corrosivity (D002), reactivity (D003), or the presence of trace amounts of volatile organic solvent constituents (F001-F005). Sampling floor sweepings (soil) or decontamination wash and rinse waters is of limited value for determining the presence of D001, D002, or D003 waste residuals. In addition, given their volatility, F001-F005 constituents would not likely be present on the floor or secondary containment surfaces even if these constituents had been released in the past. If residual contamination is present on the floor or secondary containment surfaces of the HWHF WMAs, it is more likely to consist of metal constituents than volatile organic compounds. For these reasons, samples will be analyzed for hazardous waste toxicity characteristic metals only, using EPA Method SW 6010B, or an equivalent method.

Analytical results from floor sweeping (soil) samples will be compared to the background concentrations that were developed by the NMED for site soils (NMED, 1997) to determine whether the levels in the floor sweepings exceed background and to establish appropriate management requirements for these residuals. Analytical results from decontamination wash and rinse water samples will be compared to the results for the floor sweepings and/or pre-wash water. If the concentrations of indicator parameters in the rinse water are consistent with the concentrations in the soil and/or pre-wash water, the grid area will be considered clean. If the concentrations of indicator parameters are substantially elevated, surface contamination is indicated, and the grid area represented by the sample will be decontaminated again in accordance with the procedures in Section F.5.2.1 of the site-wide closure plan.

7.5.4 Quality Control

QC for sampling and analysis at the HWHF will be implemented as described in Section F.6 of the site-wide closure plan.

7.5.5 Data Management and Reporting

Data management and reporting will be performed as described in Section F.6 of the site-wide closure plan.

7.6 Decontamination and Verification Procedures

Section F.5.2 of the site-wide closure plan presents general decontamination and verification procedures applicable to all Units at the SNL/NM facility. Prior to closure, this Unit-specific plan will be updated as necessary to incorporate new or improved decontamination practices or technology. Any revisions to this Unit-specific plan will be submitted to NMED for approval prior to initiation of closure activities at the HWHF.

8.0 TREATMENT PLAN

Sandia/DOE do not perform treatment of RCRA-regulated wastes requiring a permit at the HWHF.

9.0 REFERENCES

DOE, see U.S. Department of Energy

NAAG, see National Association of Attorneys General

National Association of Attorneys General, 1998, "Announcement and Issuance of Guidance: *Sharing of Radionuclide Information with States*", dated September 1998.

National Fire Protection Association (NFPA), 2000, "Flammable and Combustible Liquids Code," NFPA 30, National Fire Protection Association, Quincy, Massachusetts.

National Fire Protection Association (NFPA), 2002a, "Standard for the Installation of Sprinkler Systems," NFPA 13, National Fire Protection Association, Quincy, Massachusetts.

National Fire Protection Association (NFPA), 2002b, " Standard for Dry Chemical Extinguishing Systems," NFPA 17, National Fire Protection Association, Quincy, Massachusetts.

National Fire Protection Association (NFPA), 2002c, "Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems," NFPA 25, National Fire Protection Association, Quincy, Massachusetts.

New Mexico Environment Department (NMED), 1992, "Sandia National Laboratories/ New Mexico Hazardous Waste Facility Operating Permit Number NM5890110518-1," effective August 6, 1992, New Mexico Environment Department, Santa Fe, New Mexico.

New Mexico Environment Department (NMED), 1997, Letter from NMED (Robert S. Dinwiddie) to DOE (Michael Zamorski), entitled "Request for Supplemental Information: Background Concentrations Report, SNL/KAFB," dated September 24, 1997.

NFPA, see National Fire Protection Association

NMED, see New Mexico Environment Department.

Sandia National Laboratories/New Mexico (SNL/NM), 2012, "Sandia National Laboratories/New Mexico General Part A Permit Renewal Request/Application," Revision 11.0, Sandia National Laboratories/New Mexico, Albuquerque, New Mexico.

SNL/NM, see Sandia National Laboratories/New Mexico

U.S. Department of Energy (DOE), 2000, "Agreement-in-Principle Between the United States Department of Energy and the State of New Mexico for Environmental Oversight and Monitoring", dated November 29, 2000.

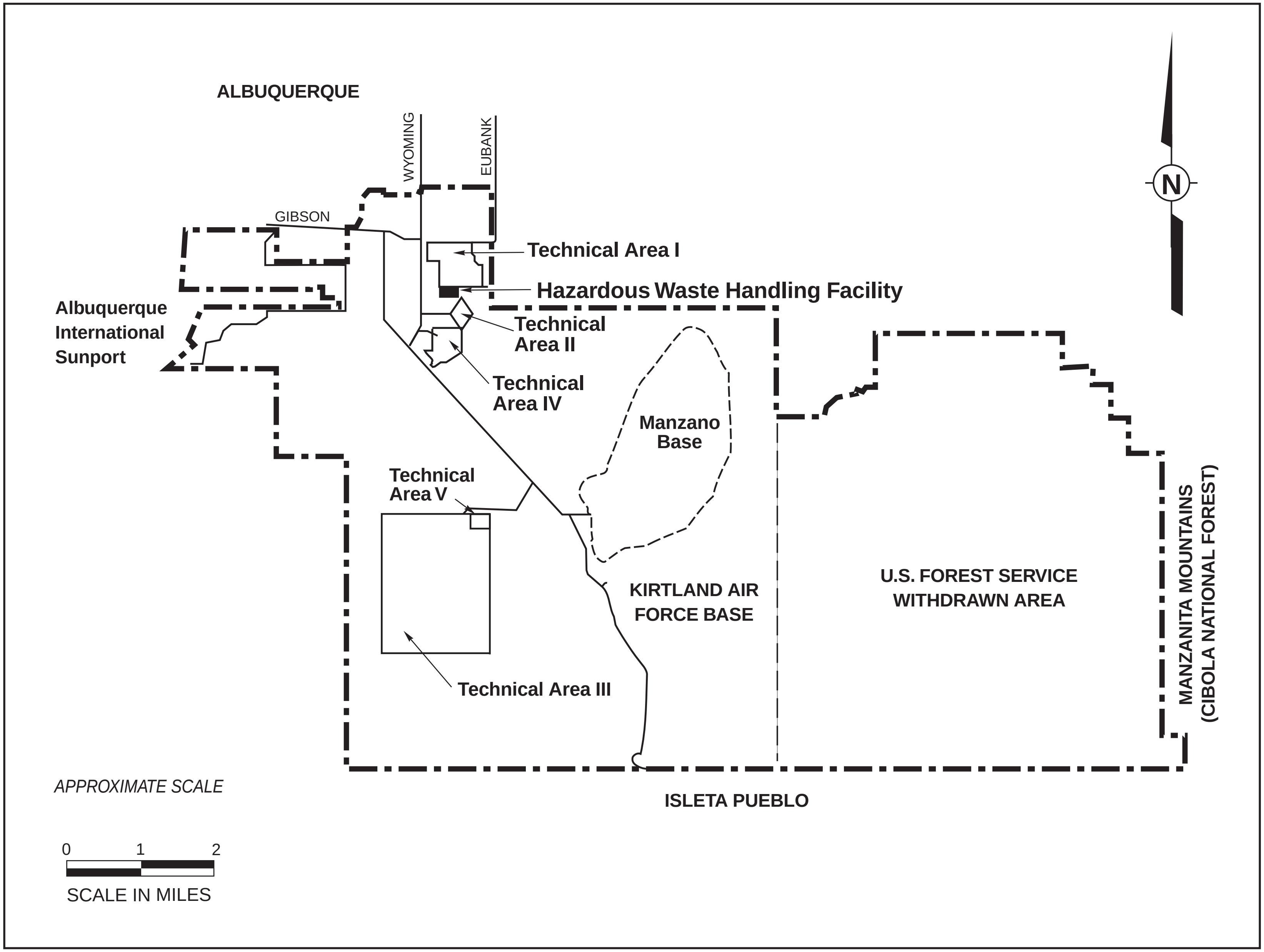


Figure 1
Location of the Hazardous Waste Handling Facility at Sandia National Laboratories/New Mexico

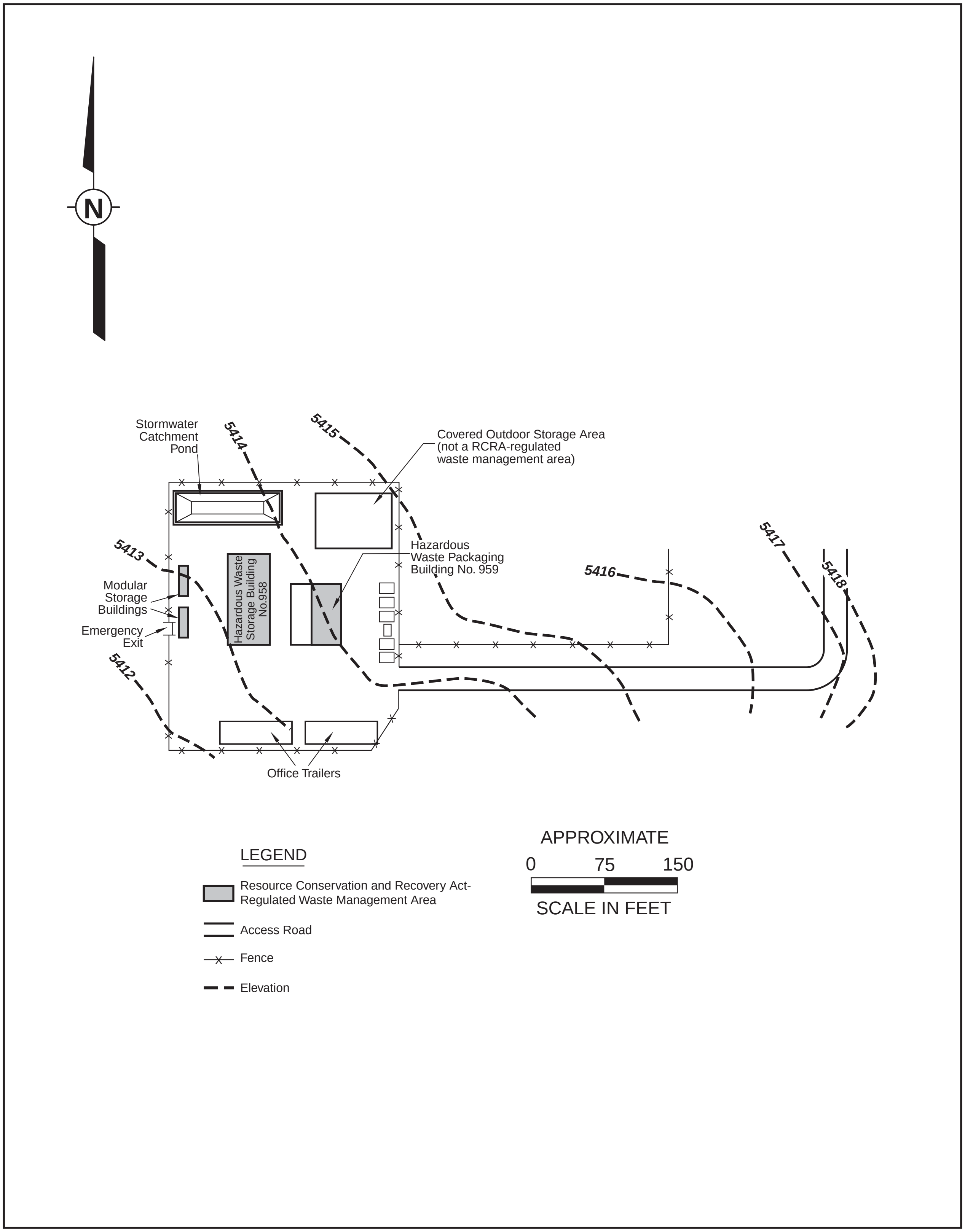
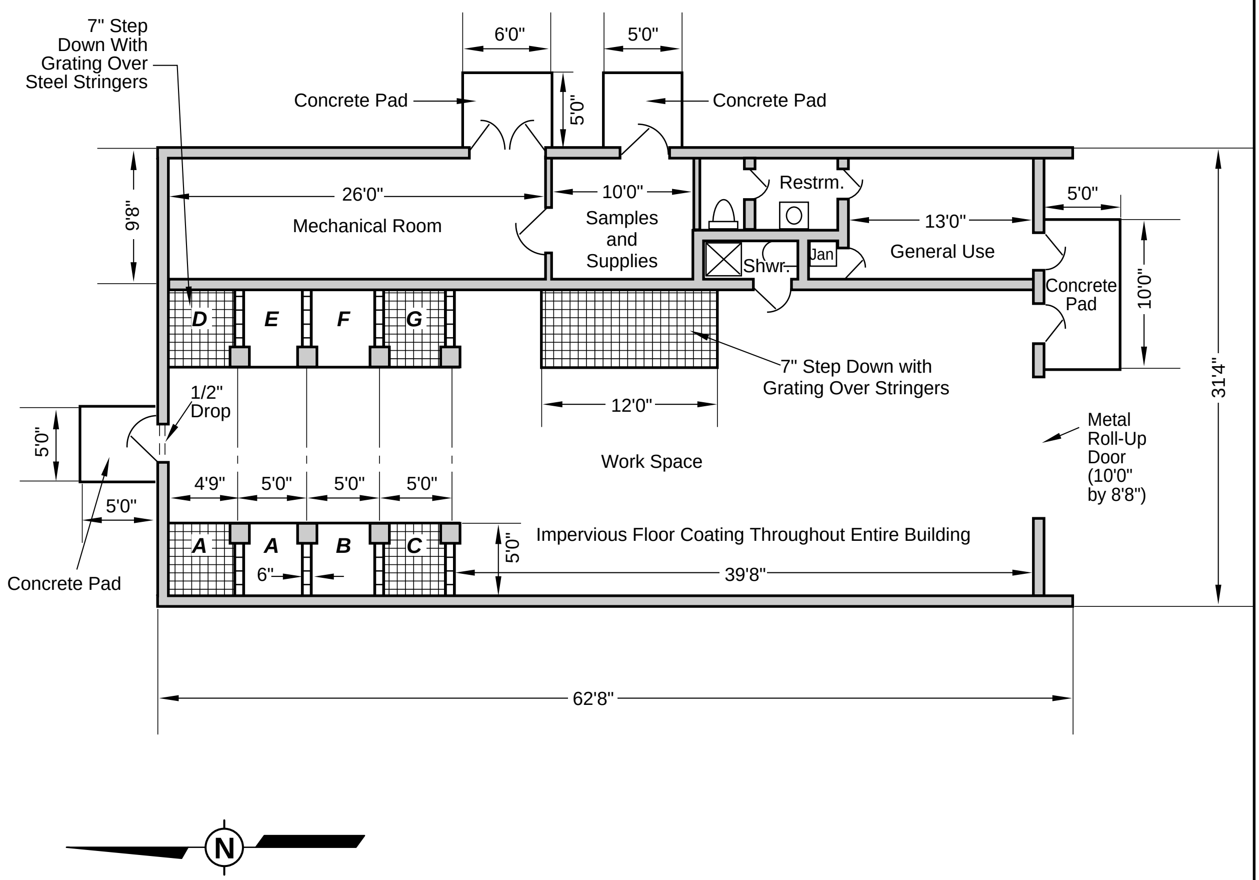


Figure 2

Hazardous Waste Handling Facility, Resource Conservation and Recovery Act-Regulated Waste Management Areas



Typical Waste Segregation Groups

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

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

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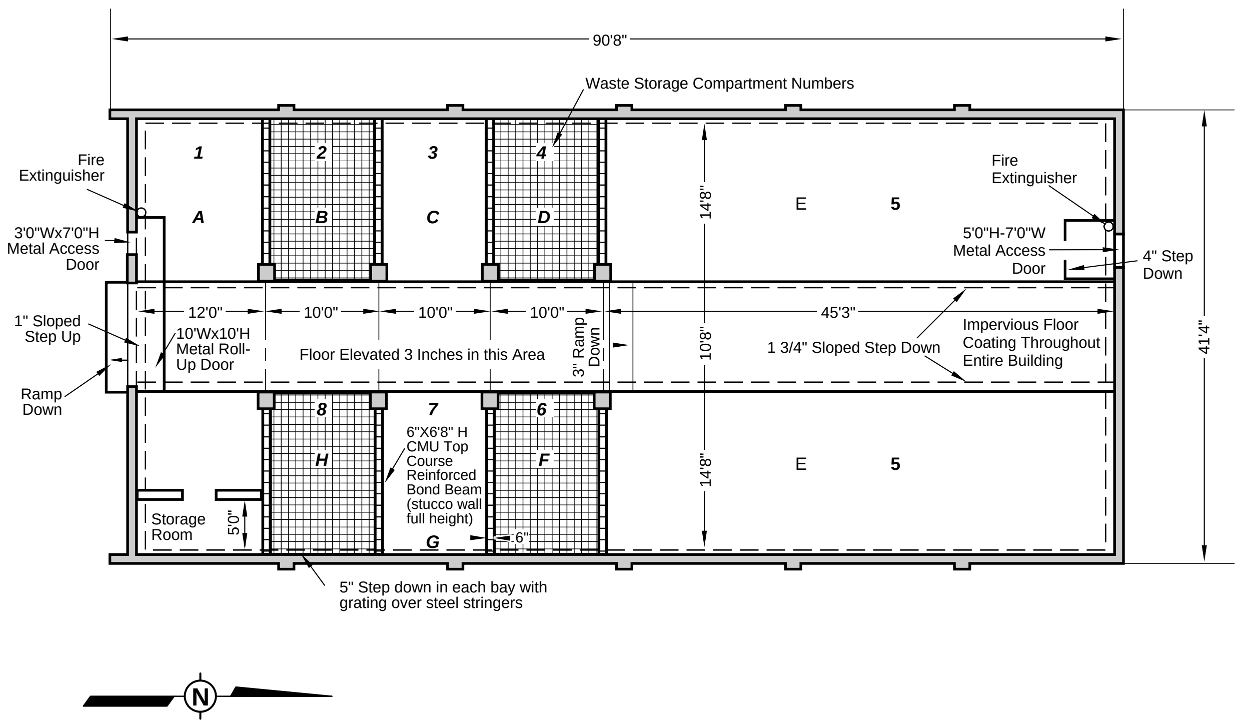
Figure 3
Hazardous Waste Packaging Building (Building 959), Floor Plan



Typical Waste Segregation Groups

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

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

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

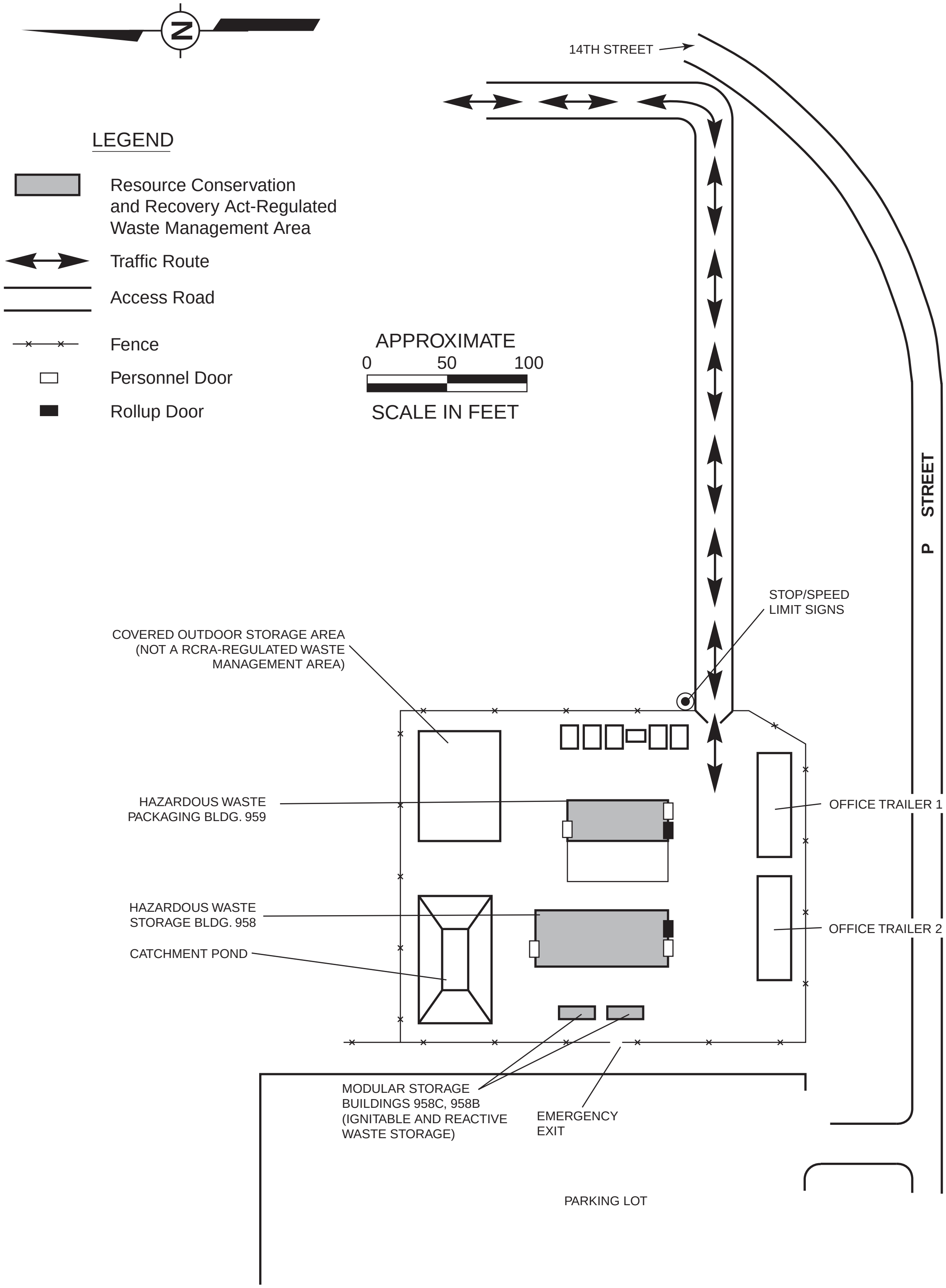
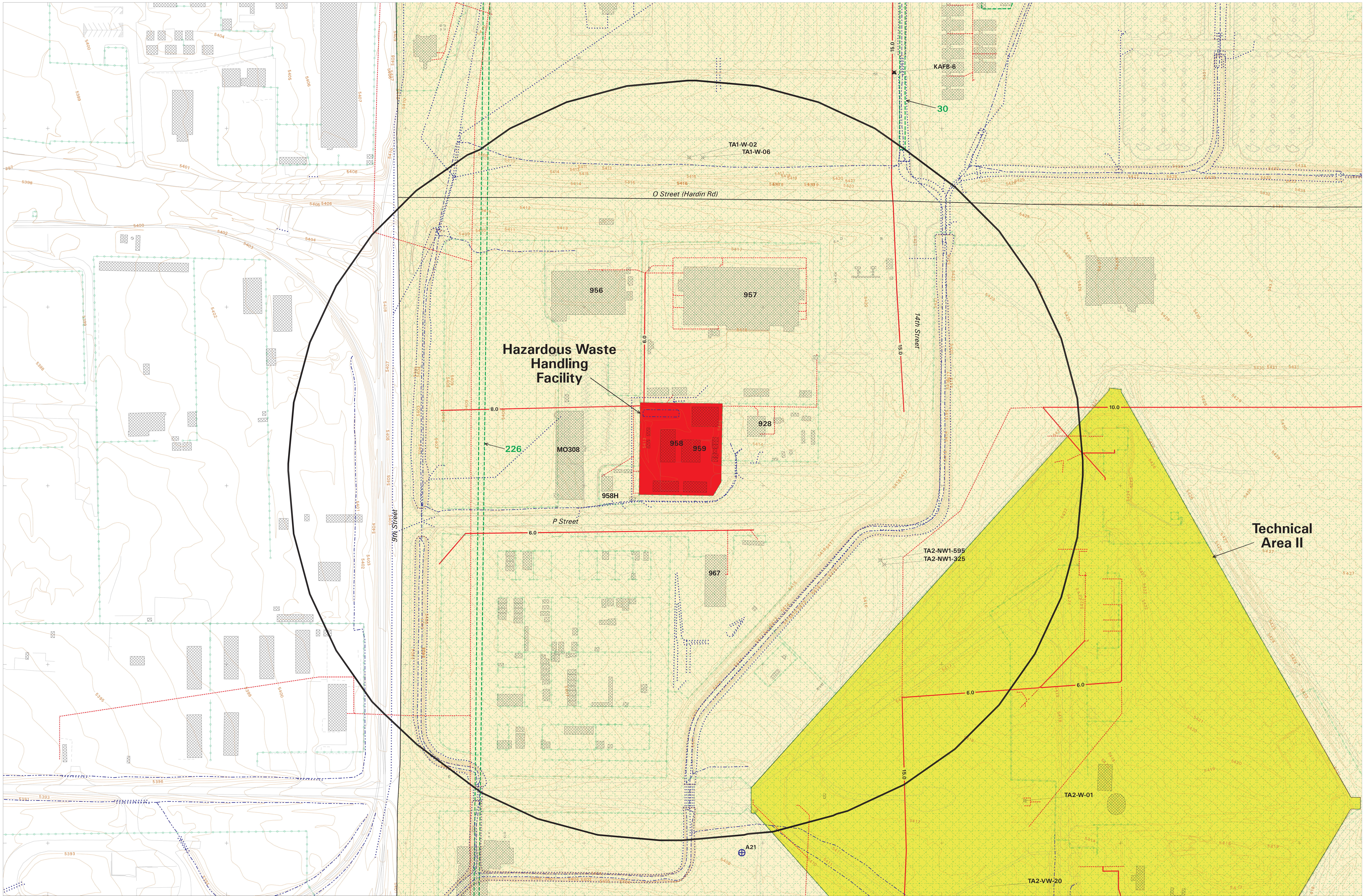


Figure 5

Hazardous Waste Handling Facility, Traffic Routes and Controls



Legend

Wells and Water Features

- Vapor Monitoring Well
- Monitoring Well
- Observation Well
- Production Well
- Production Well (Potable)
- Production Well (Out of Commission)
- Production Well (Abandoned)
- Production Well (Non-Potable)
- Plugged and Abandoned Well
- Spring
- Unknown Water Feature

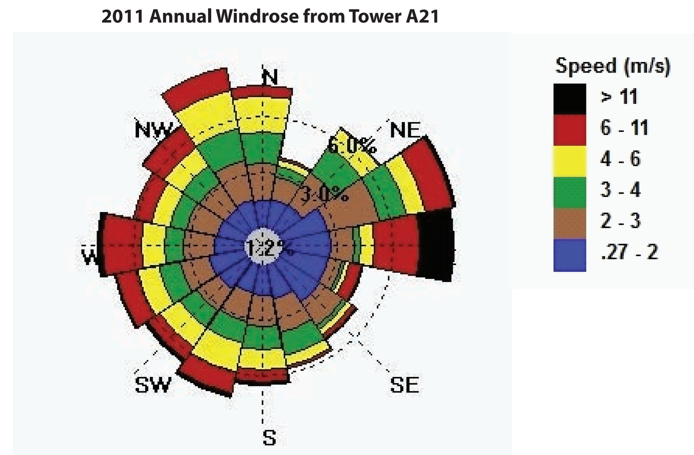
- Contours (2 Ft)
- Road (all types)
- Fence
- Surface Drainage
- Storm Sewer
- Buildings and Concrete Pads
- Sanitary Sewer Main (active)
- Sanitary Sewer Service (active and inactive)
- Solid Waste Management Unit

- Sandia National Laboratories Technical Area II
- SNL/NM Facility
- Hazardous Waste Handling Facility (HWHF)
- 1000 Foot Buffer Around HWHF
- Meteorological Tower

Land Use

- Industrial
- Undefined

2011 Annual Windrose from Tower A21



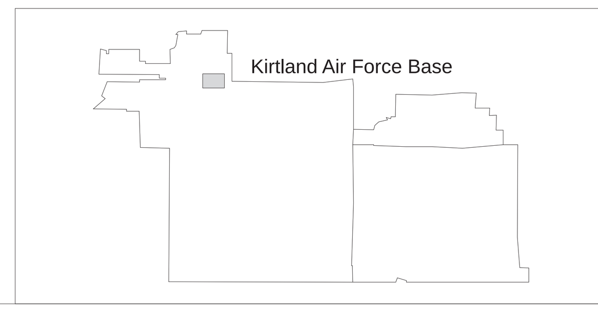
Note: The wind direction is the direction from which the wind is blowing. This diagram shows the frequency of occurrence for each wind direction and wind speed. The color indicates the wind speed.

0 100 200
Scale in Feet

0 24 48
Scale in Meters

0 0.024 0.048
Scale in Kilometers

0 0.019 0.038
Scale in Miles



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

Figure 6
Topographic Map
Hazardous Waste Handling Facility (HWHF)
April 2012
Sandia National Laboratories
New Mexico

Compiled by photogrammetric methods from aerial photography dated March 1989, March 1990, September 1991 and July 1992

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum

MAPID=120104

Unclassified | SNL EGIS ORG. 4142

D Helfrich | dh120104.aml | 04/13/12

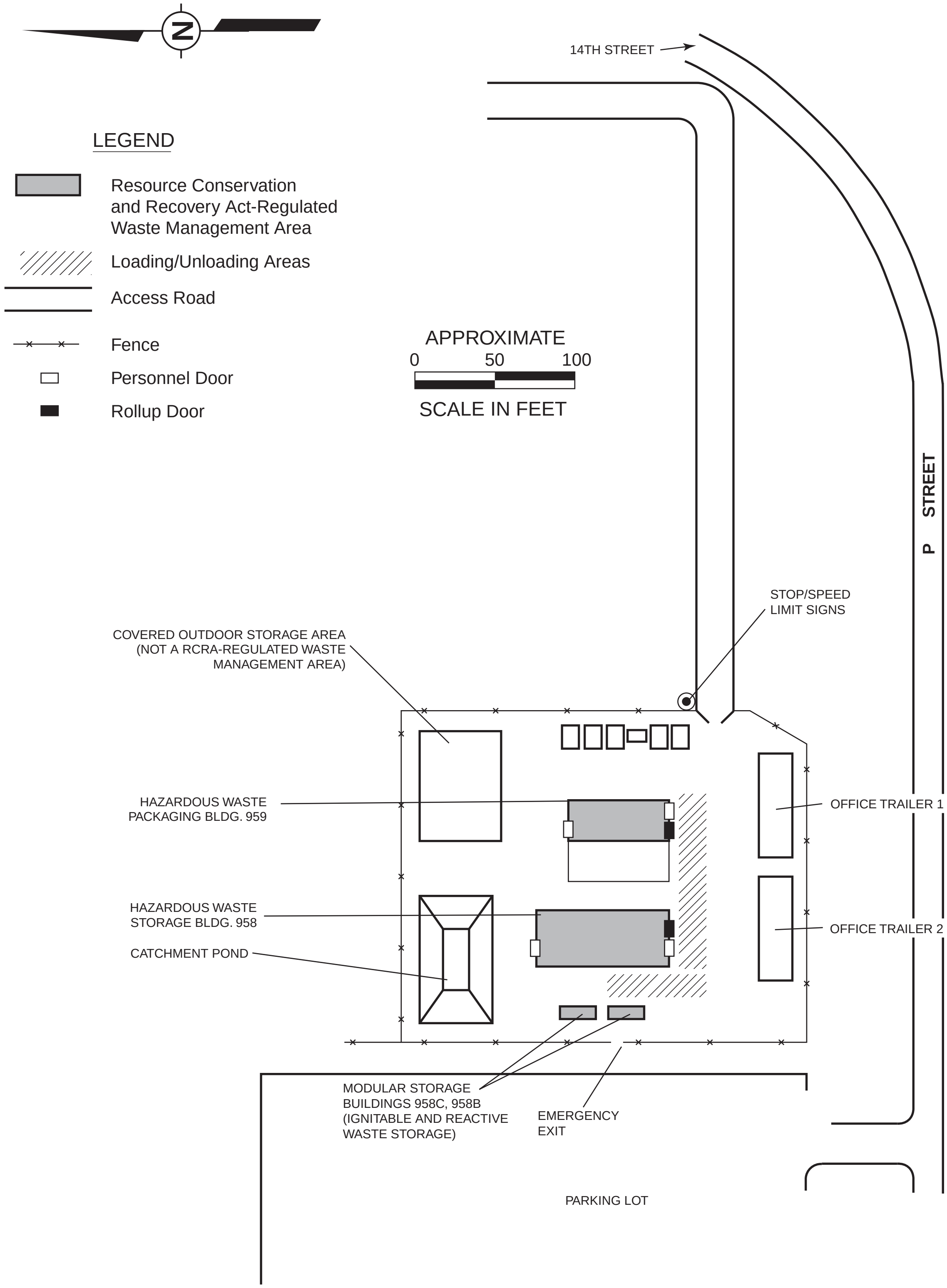


Figure 7

Hazardous Waste Handling Facility, Access Control Features

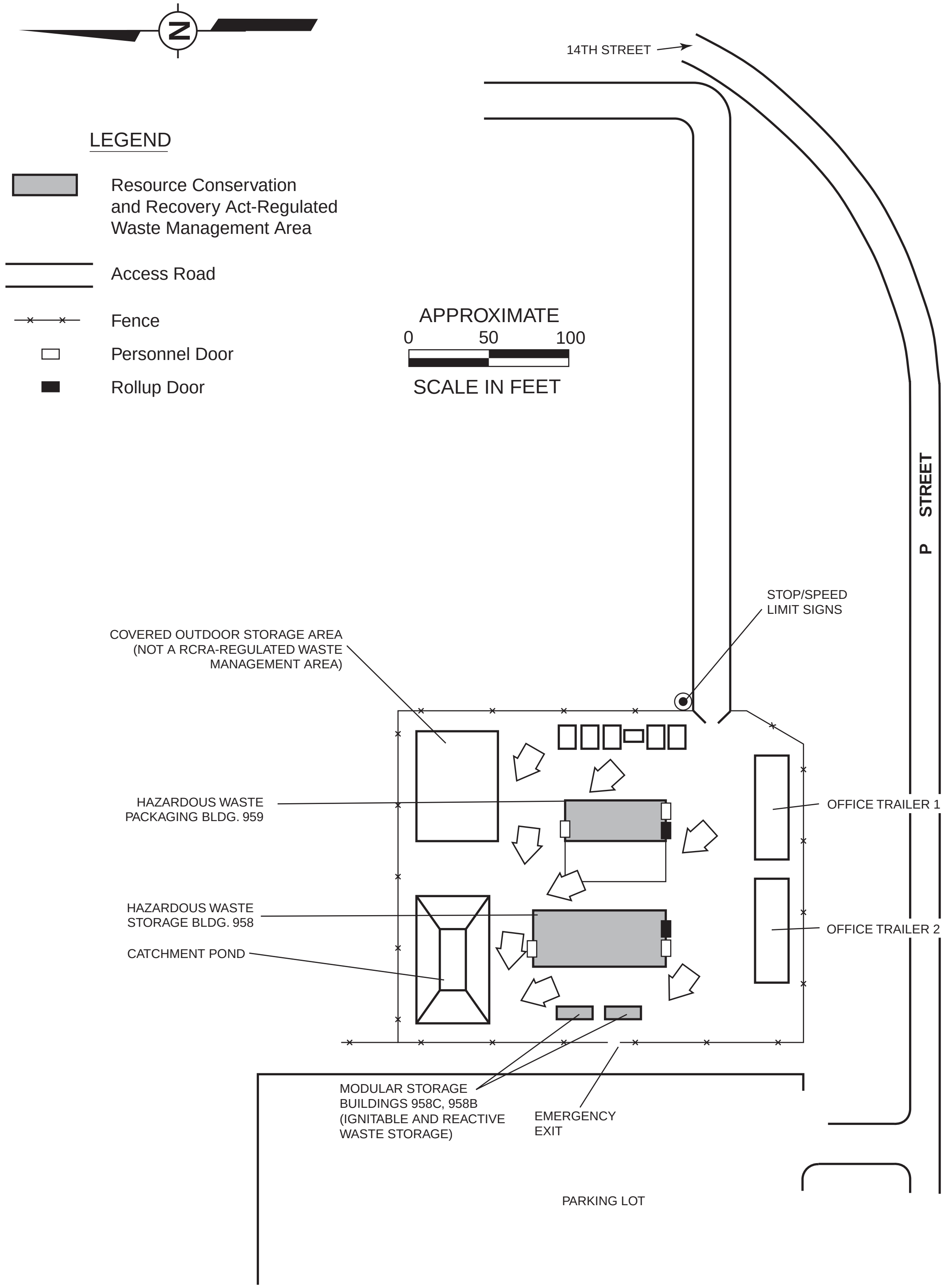


Figure 8

Hazardous Waste Handling Facility, Drainage Control Features

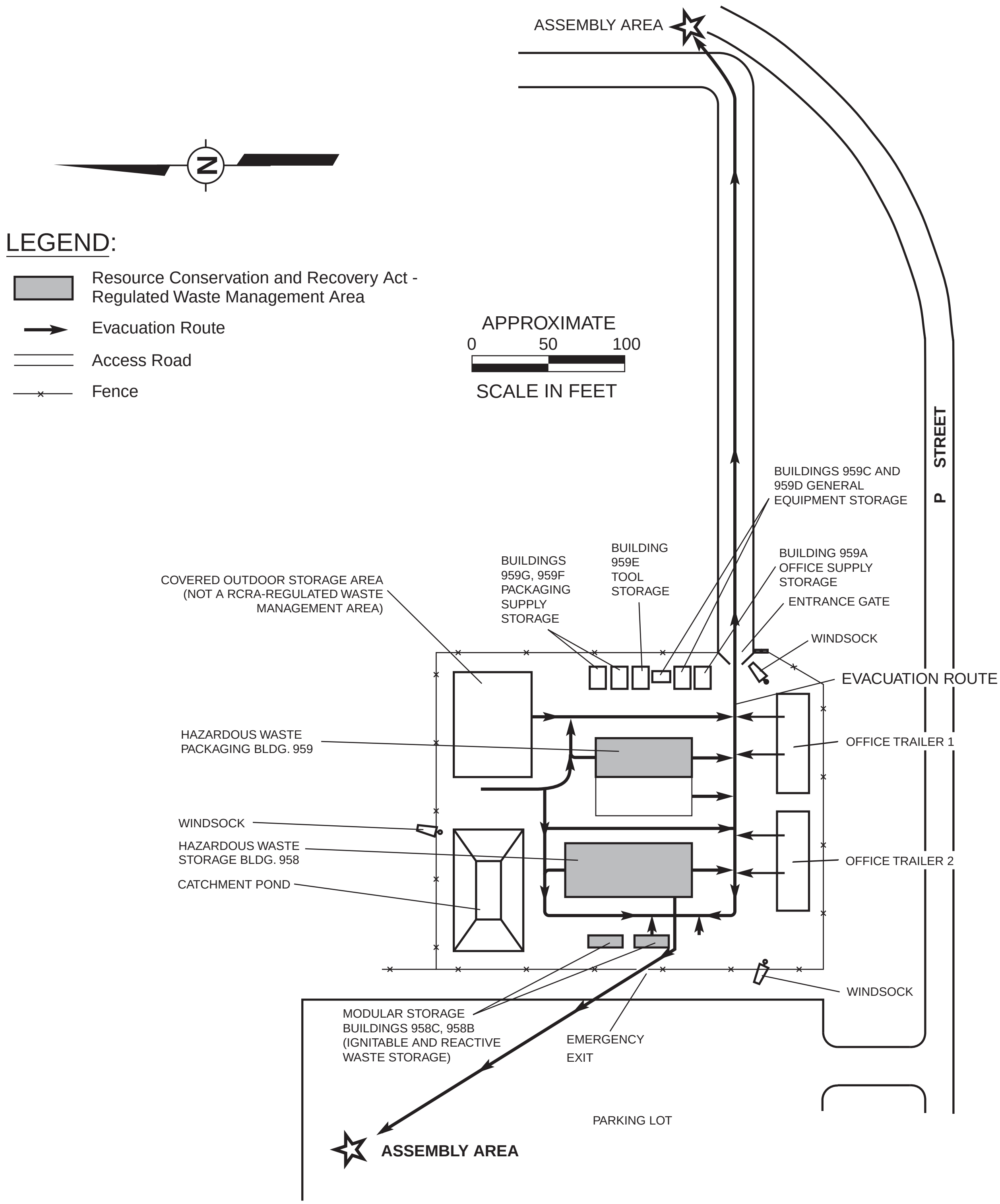


Figure 9

Hazardous Waste Handling Facility, Evacuation Routes

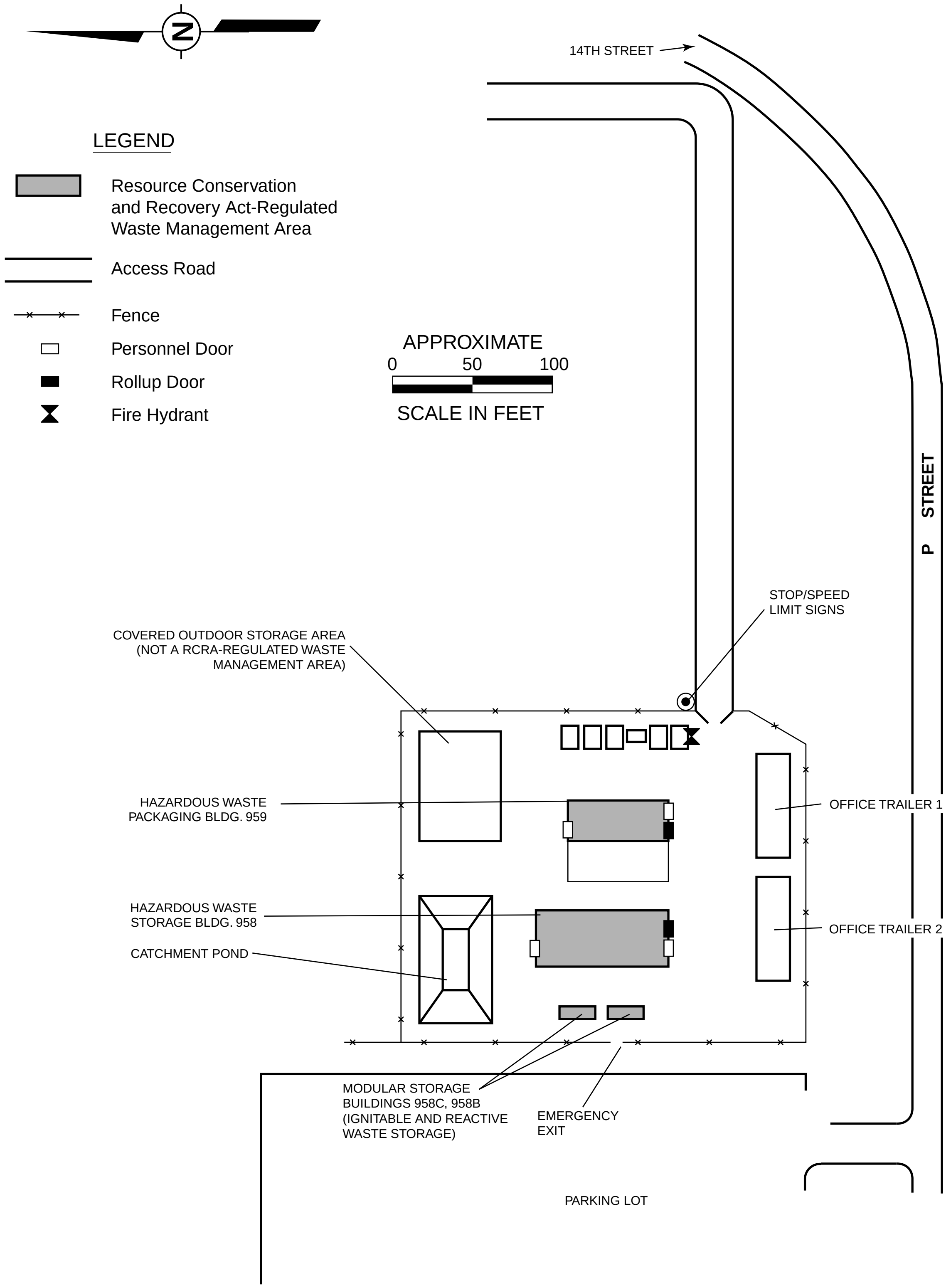


Figure 10

Hazardous Waste Handling Facility, Emergency Response and Access Information

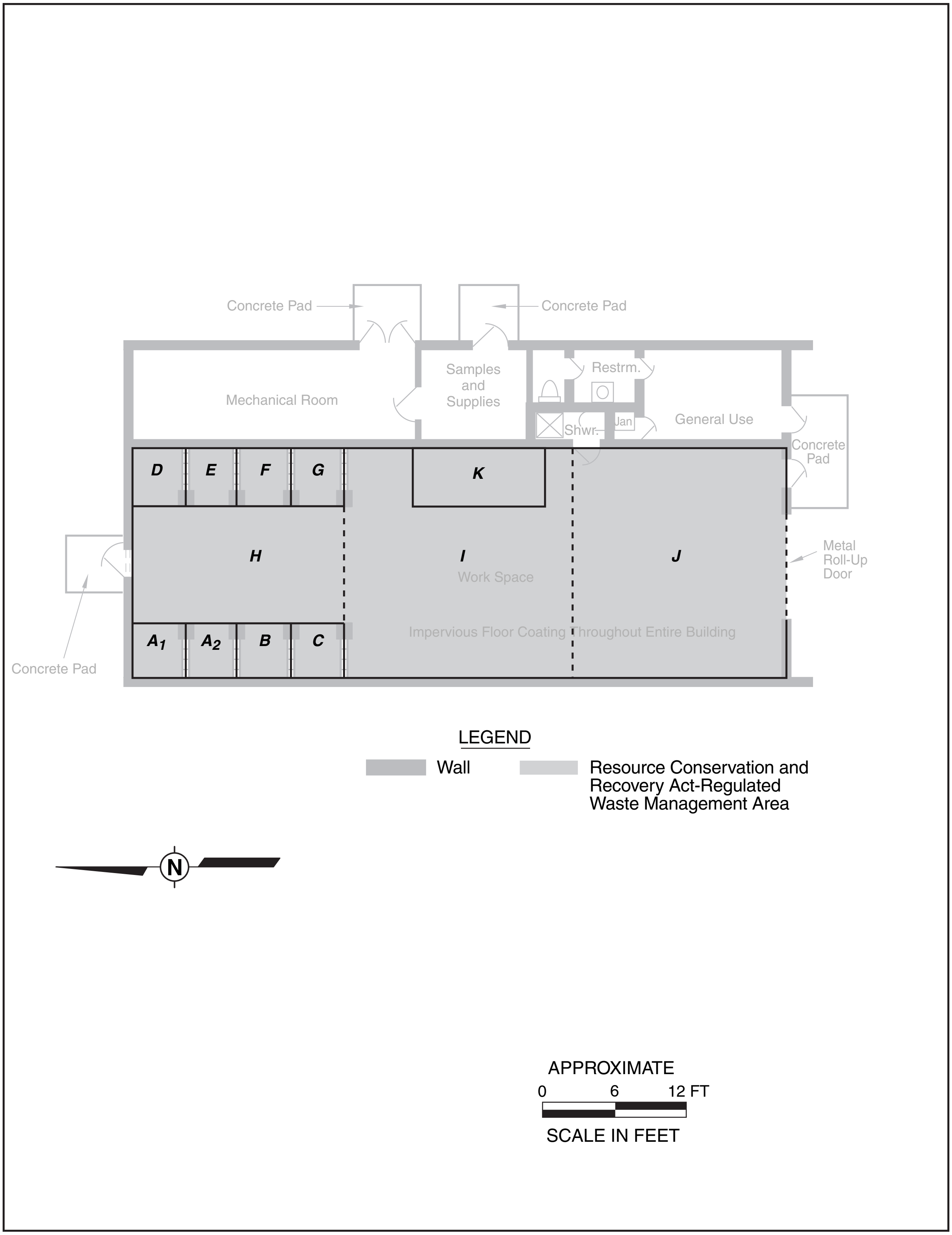


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Figure 11

Hazardous Waste Packaging Building (Building 959), Closure Grid

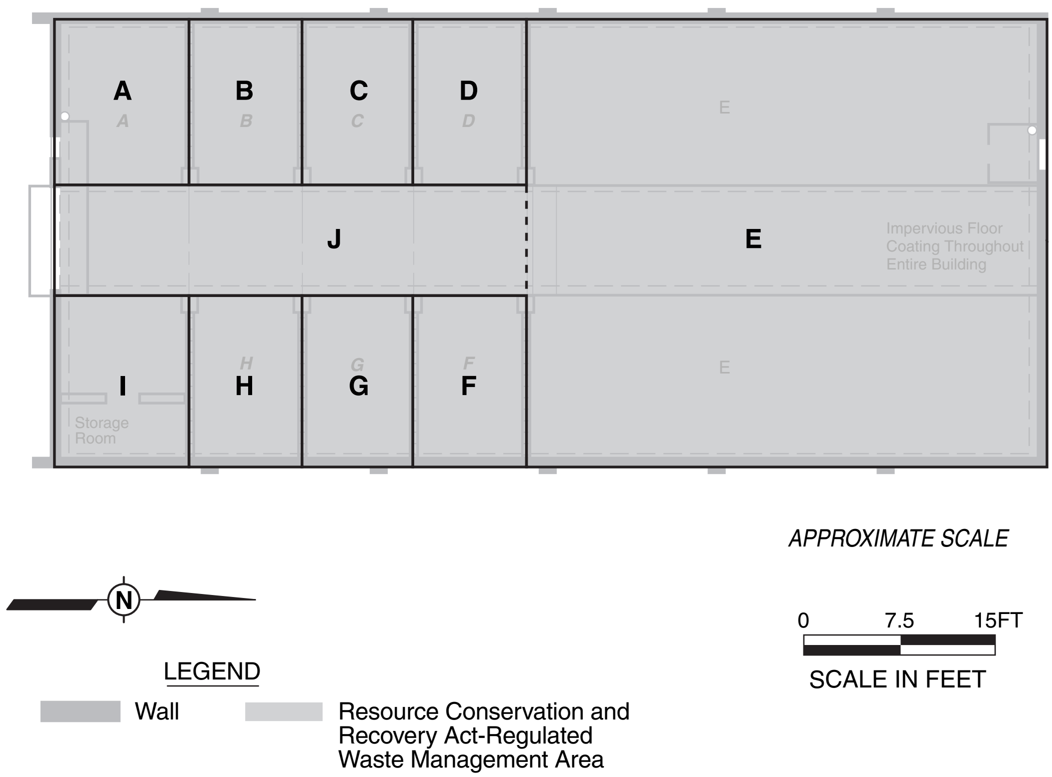

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Figure 12

Hazardous Waste Storage Building (Building 958), Closure Grid

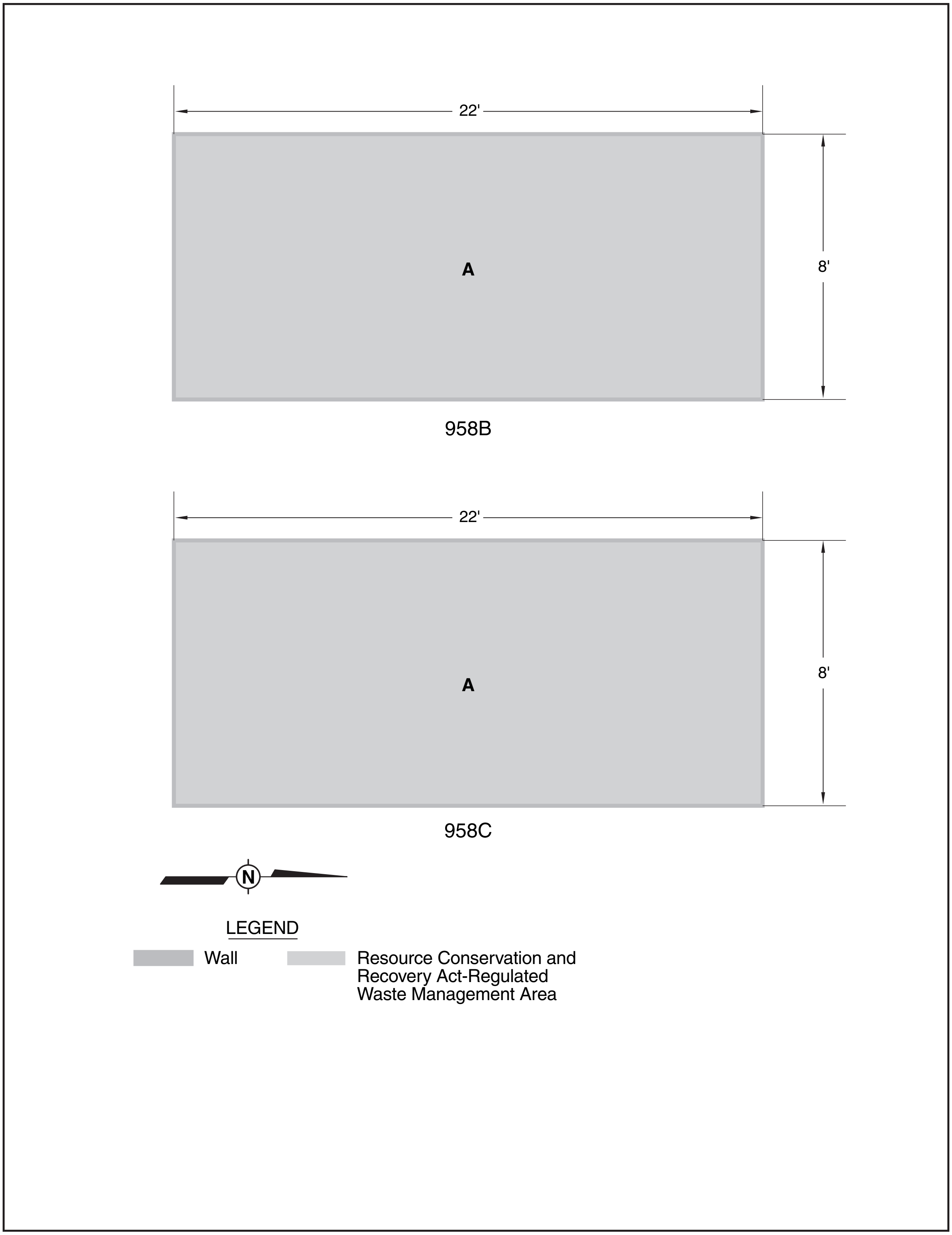

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Figure 13

Hazardous Waste Modular Buildings (Building 958B and 958C), Closure Grid

Sandia National Laboratories/New Mexico
Thermal Treatment Facility
Part B Permit Renewal Request

Module II

Revision 7.0

April 2012

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

Prepared for
The U.S. Department of Energy

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ACRONYMS AND ABBREVIATIONS

20 NMAC 4.1.*X*00	New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart *X*
40 CFR 2*XX.XX*	Code of Federal Regulations, Title 40, Part 2*XX*, Section 2*XX.XX*
AAQS	Ambient Air Quality Standards
A/BCAQCB	Albuquerque/Bernalillo County Air Quality Control Board
COPC	chemicals of potential concern
DOE	U.S. Department of Energy/National Nuclear Security Administration
ER	Environmental Restoration
°F	degrees Fahrenheit
ft	foot/feet
ft^2	square foot/feet
HQ	hazard quotient
in.	inch(es)
KAFB	Kirtland Air Force Base
mg/kg	milligram per kilogram
mph	miles per hour
NMDGF	New Mexico Department of Game and Fish
NMED	New Mexico Environment Department
NMFRCD	New Mexico Forestry and Resource Conservation District
QA	quality assurance
QC	quality control
PETN	Pentaerythritol tetranitrate
RCRA	Resource Conservation and Recovery Act
SAP	sampling and analysis plan

ACRONYMS AND ABBREVIATIONS (Concluded)

Sandia	Sandia Corporation
SASN	silver acetylide/silver nitrate
SNL/NM	Sandia National Laboratories/New Mexico
SSL	soil screening level
T and E	threatened and endangered
TA	Technical Area
TCLP	Toxicity Characteristic Leaching Procedure
TTF	Thermal Treatment Facility
Unit	RCRA-regulated waste management unit
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
WAP	Waste Analysis Plan
WMA	waste management area

SANDIA NATIONAL LABORATORIES/NEW MEXICO THERMAL TREATMENT FACILITY PART B PERMIT RENEWAL REQUEST

This Sandia National Laboratories/New Mexico (SNL/NM) Thermal Treatment Facility (TTF) Part B Permit Renewal Request is submitted to address the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subparts V and IX (20 NMAC 4.1.500 and .900), revised July 1, 2008[7-1-08], requirements specific to Resource Conservation and Recovery Act (RCRA)-regulated waste treatment operations at the TTF. 20 NMAC 4.1.500 and .900 adopt by reference, with limited exceptions, all of the Code of Federal Regulations, Title 40, Parts 264 and 270 (40 CFR 264 and 270).

Sandia Corporation (Sandia) and the U.S. Department of Energy/National Nuclear Security Administration (DOE), as operator and owner, respectively, of the SNL/NM site, have prepared and revised this module to provide RCRA-regulated waste management unit (Unit)-specific details that supplement the information provided in the ―Sandia National Laboratories/New Mexico General Part B Permit Renewal Request/Application", hereinafter referred to as the SNL/NM General Part B. Together, information provided in this module, in the SNL/NM General Part B, and in appendices to the General Part B meet the applicable requirements for the TTF that are specified in 20 NMAC 4.1.500/40 CFR 264 [7-1-08], and 20 NMAC 4.1.900/40 CFR 270 [7-1-08].

Sandia/DOE also prepared the ―Sandia National Laboratories/New Mexico General Part A Permit Renewal Request/Application, Rev. 11.0" (SNL/NM, 2012), hereinafter referred to as SNL/NM General Part A, included as Part 1 of this comprehensive Part B permit request. The General Part A serves as a companion document to the SNL/NM General Part B and Unit-specific Part B modules, including this TTF Part B Permit Renewal Request.

In the SNL/NM General Part A, the General Part B, its appendices, and this module, a Unit to be permitted may sometimes be referred to as a "facility" (e.g., Thermal Treatment Facility). The term "facility," as it appears in this context, is used only to denote a building or Unit name and does not imply the regulatory meaning of "facility" as defined in 20 NMAC 4.1.100/40 CFR 260.10 [7-1-08]. However, pursuant to 20 NMAC 4.1.100/40 CFR 260.10 [7-1-08], the SNL/NM site as a whole does meet the regulatory definition of a facility.

The TTF occupies 196 square feet (ft^2) south of Building 6715 in Technical Area (TA)-III. It is a thermal treatment unit surrounded by an earthen berm and a fence. The entire area within the fence is 8140 ft^2. It is used for treatment of explosive waste exhibiting the hazardous waste characteristic of reactivity (D003) generated during operations in Building 6715 (adjacent to the Unit). Sandia/DOE currently operate the TTF in accordance with the terms of New Mexico Environment Department (NMED) Permit NM5890110518-2, issued November 4, 1994 (NMED, 1994), and its subsequent modifications. Sandia/DOE manage all of the wastes listed in the Part A included in Permit NM5890110518-2.

1.0 GENERAL UNIT OPERATIONS

This section provides descriptions of the TTF waste management area (WMA) and TTF operations. The information in this section complements the information provided in Section 1.0 of the SNL/NM General Part B.

Specific information in this section regarding Unit operations includes containment systems; requirements for ignitable, reactive, and incompatible wastes; preparedness and prevention; and hazards prevention. Treatment practices are discussed in Section 8.0 of this module.

The specific information provided and documents referenced in this section, together with the general information provided in Section 1.0 of the SNL/NM General Part B, address the applicable hazardous waste management facility requirements of 20 NMAC 4.1.500/40 CFR 264, Subparts X, AA, BB, and CC [7-1-08], and 20 NMAC 4.1.900/40 CFR 270.14 and 270.23 [7-1-08].

The TTF is used to treat specific and well-defined explosive (D003) wastes generated at a test facility in Building 6715. The wastes also meet the definition of ignitable waste (D001), and may bear U.S. Environmental Protection Agency (EPA) Hazardous Waste Numbers D002, D011, and F003, depending on the presence of nitric acid, silver and spent solvents. Other constituents are also present, as discussed in Sections 8.0 and 9.0. Explosive silver acetylide/silver nitrate (SASN) slurry is formulated from raw ingredients as needed for tests. SASN is present in the solid and liquid wastes treated at the TTF. Pentaerythritol tetranitrate (PETN) (an explosive) is sometimes included in the tests and would also be present in the wastes. SASN is categorized as a primary explosive, and each discrete crystal (when dry) has the potential to detonate. According to published technical data (Wilden, 1986), SASN can be initiated by the energy of bright light (by raising the surface temperature to the auto ignition temperature of 457 degrees Fahrenheit [°F]) or small contact shock. SASN is not approved for transport on public roads. Thermal treatment is an accepted treatment technology for the deactivation of explosive waste (20 NMAC 4.1.800/40 CFR 268.40 [7-1-08]) to meet treatment standards.

1.1 Designated Waste Management Area (20 NMAC 4.1.900/40 CFR 270.23[a])

The location of the TTF at SNL/NM is shown on Figure 1. The TTF has one designated WMA, the treatment area, shown on Figure 2.

The treatment area at the TTF is located outside the south end of Building 6715 in TA-III at SNL/NM. The treatment area consists of a square burn pan constructed of 0.375-inch (in.) steel, 2 feet (ft) 6 in. on a side and 6-in. deep. The bottom of the burn pan is elevated approximately 10 to 12 inches above the floor of the TTF by steel beams. The burn pan is located near the center of a square curbed slab of concrete 14 ft on a side lined with 0.5-in. steel, with a 4-in. high, steel-lined concrete curb around the edge. The burn pan is enclosed within a square cage approximately 4 ft on a side, consisting of expanded metal screen approximately 8-ft high with a nearly solid metal roof having slots for tracks and cables. An expanded metal screen door, remotely activated from inside Building 6715, provides access to the treatment area (i.e., the burn pan). Moveable steel panels are attached to the lower part of

two sides of the cage to control airflow as needed. TTF site plans and drawings are presented in Figures 3 and 4.

An enclosure on the east side of the cage houses three propane burners, which can be remotely activated from inside Building 6715. Two propane burners are positioned to heat the burn pan. A third burner is positioned to ignite the contents of the burn pan and flammable vapors above the pan. Liquid wastes to be treated are transferred from Building 6715 to the TTF through flexible transfer hoses utilizing a remotely operated peristaltic pump. The hoses are contained inside a metal channel that provides secondary containment. The flexible hoses and channel terminate approximately 5 ft. from the burn pan and metal tubing transfers the waste the final distance into the burn pan. Solid items to be treated in the TTF are manually loaded into the burn pan.

Liquids that might accumulate at the TTF WMA are contained within a secondary containment system (i.e., the entire steel-lined concrete pad that drains through a filter into a catch tank) and the system is sufficiently impervious to contain spills or accumulated precipitation until the liquid is removed. The secondary containment system provided by the steel-lined concrete pad is designed to contain at least 20.8 gallons of liquid waste. This is the maximum volume of RCRA-regulated liquid waste in the TTF burn pan at any time. The catch tank has a containment capacity of approximately 157 gallons.

A circular tank located north of the unit and south of Building 6715 is primarily utilized as a process tank for collecting non-RCRA-regulated cleaning water from test operations; this tank is not part of the TTF. The wastewater collected in this tank is not typically treated at the TTF. The water drains through a filter at the inlet to the tank. The filter may be treated at the TTF if it is known or suspected to contain unreacted SASN. The wastewater is sampled and analyzed. If it contains unreacted SASN it is treated in the TTF.

Because the TTF is located outside, it is difficult to prevent equipment deterioration; however, the unit and its ancillary equipment are periodically inspected to insure proper operation as described in Section 4.0 of this module. If deterioration sufficient to affect the operation, safety, or reliability of the unit is identified, the affected equipment is either refurbished or replaced.

1.2 Unit Operations (20 NMAC 4.1.900/40 CFR 270.23[a])

Information regarding operations requiring a permit at all RCRA-regulated Units at SNL/NM is included in Section 1.1 of the SNL/NM General Part B. Additional Unit-specific information is provided in the following sections.

1.2.1 Operation of Containment Systems (20 NMAC 4.1.900/40 CFR 270.14[b][8][ii] and 270.23; and 20 NMAC 4.1.500/40 CFR 264.175[b][5])

Because the TTF is located outside, the steel-lined concrete pad periodically collects water from precipitation, and the water drains through a filter into the catch tank. The water typically contains some soil and may possibly contain silver-containing particulates if such particulates are present on the pad.

Treatment operations occur periodically at the TTF and typically involve burns during one to three days. Each treatment operation is followed by a post-treatment inspection, described in Section 8.0 of this module, which identifies kickout or contamination of the steel-lined concrete pad. Operating personnel wet contaminated areas with water and decontaminate them with wet paper wipes as described in Section 8.1.2. Alternatively, personnel may wash the areas. The wash water typically contains some soil and silver-containing particulates.

Water on the pad drains through a filter into the catch tank. Soil and other particulates are contained in the filter. The filter is managed as hazardous waste due to the potential presence of SASN and silver. The accumulated water in the catch tank will be characterized as described in the Site-Wide Waste Analysis Plan in Appendix B. Previous analyses of storm water collected in the catch tank indicate the water meets the wastewater discharge parameters set by the City of Albuquerque. Unit personnel will collect one sample of accumulated water periodically; the sample will be analyzed for silver to check that the water continues to meet the discharge limits. If the filter or the water in the catch tank are known or suspected to contain unreacted SASN, they are treated in the TTF.

1.2.2 Requirements for Ignitable, Reactive, and Incompatible Wastes (20 NMAC 4.1.900/40 CFR 270.14[b][9] and 20 NMAC 4.1.500/40 CFR 264.17)

1.2.2.1 General Precautions for Handling Reactive Waste

The grounds and berms near the TTF are routinely cleared of dry or dead weeds and brush. This helps to prevent brush fires near the TTF. During normal operations, wastes are not stored at the TTF prior to treatment, and the wastes are treated soon after transfer to or placement in the TTF burn pan, as described in Section 8.0 of this module.

Incompatible wastes are not accepted for treatment at the TTF. In particular, copper is incompatible with the explosive slurry of SASN treated at the TTF; therefore, no exposed copper is allowed when SASN is present. No other materials that would produce undesirable reactions with RCRA-regulated waste (e.g., explosion, toxic fumes, or structural damage) are located at the TTF.

Sources of ignition that may be present at the TTF are those noted in Section 1.1.2.1 of the General Part B: welding activities, open flames, hot surfaces, frictional heat, radiant heat, sparks, and engines. Unit personnel take the precautions and measures described in Section 1.1.2.1 of the General Part B to prevent accidental ignition or reaction of wastes at the TTF. Precautions during waste treatment activities are discussed in the following section.

1.2.2.2 Engineering and Operating Precautions to Prevent Reactions

<u>General Treatment Operations</u>

Unit personnel operate the TTF from the control room inside Building 6715. Personnel are not present in the area between Building 6715 and the Unit during treatment operations. Treatment

operations begin only after an audible warning signal, an area check for personnel, and a public address announcement that the TTF will begin operations. The TTF access gates are closed and locked. The Building 6715 complex fence access gates are closed during TTF waste transfer operations.

Solid Items

Solid items, saturated in water, are loaded manually into the burn pan. Unit personnel open the TTF expanded metal screen door from the control console in Building 6715. The door is operable only from the control console. Unit personnel then remove the key from the burner control, disabling the gas burner system, before manually loading waste into the TTF burn pan. Typically, the gas burner system is controlled by the same operator who manually loads the TTF burn pan.

Liquids

Liquids are transferred to the burn pan through the waste transfer pump and lines. The operator at the control console in the building operates the pump remotely. The burners may or may not be operating during the transfer, depending on the stage of the treatment operations.

Liquids are also carried to the burn pan and manually loaded with the solid items to be treated.

Maintenance Operations

In order to ensure that residual untreated explosive material is not present to cause a hazard to workers, operating personnel check surfaces with a portable propane burner as described below:

- Prior to maintenance or repair activities on or in the burn cage: If such activities involve hot work or friction (such as welding, cutting, or grinding), personnel check the burn cage and pad.

- Prior to maintenance or repair activities on the steel-lined concrete pad: If such activities involve hot work or friction (such as welding, cutting, or grinding),personnel check the burn cage, the pad, and the surrounding areas in the vicinity of the work area.

- Following observation of kickout that occurs during treatment operations: If kickout is observed, personnel check the affected area following the post-treatment inspection as described in Section 8.1.2.

1.2.3 Preparedness and Prevention (20 NMAC 4.1.500/40 CFR 264, Subpart C)

The following sections address required equipment, testing and maintenance of equipment, and access to communications or alarm systems at the TTF.

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

Information about fire hydrants is provided in Section 1.1.3.1 of the General Part B. The fire hydrant at the TTF is shown in Figure 9. Information on other required equipment located at the TTF is provided in Section 6.0 and Table 3 of this module.

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

Information on equipment testing and maintenance at the TTF is provided in Appendix C of the SNL/NM General Part B and in Section 4.0 of this module.

1.2.3.3 Access to Communications or Alarm Systems (20 NMAC 4.1.500/40 CFR 264.34)

Information about the types and locations of communications or alarm systems at the TTF is provided in Section 1.1.3.3 of the SNL/NM General Part B and in Section 6.0 of this module.

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

The following sections address the procedures, equipment, and structures used at the TTF to prevent hazards. Additional information applicable to the TTF and all other Units at SNL/NM is included in Section 1.1.4 of the SNL/NM General Part B.

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

TTF personnel employ the practices described in Section 1.1.4.1 of the SNL/NM General Part B to prevent hazards in unloading, as applicable. Waste treated at the TTF is pumped or hand-carried to the Unit from Building 6715 or from areas surrounding the TTF. Unloading activities are limited to removal of ash residue from the burn pan, removal of water from the catch tank, and loading containers onto a flatbed truck or other vehicle for transport to another Unit. Vehicles are typically loaded on the paved area south or southeast of Building 6715 (Figure 7). The surface is level, the pavement is in good condition in the area, and there is sufficient room for the vehicles used to transport RCRA-regulated wastes between the TTF and the receiving Unit(s).

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

The land surrounding the TTF slopes gently toward the west. Sheet-flow runon of surface water from surrounding areas is diverted around the TTF treatment area by an 8-ft-high earthen berm that surrounds the Unit on the east, south, and west. The diverted storm water drains to the west.

Sheet-flow runoff from the outside face of the berms surrounding the TTF flows away from the Unit. Sheet flow runoff from the inside face of the berms is directed toward the center of the

bermed area, around the steel-lined concrete pad, and toward the opening in the berm on the north side. The TTF burn pan sits near the center of the steel-lined concrete pad, which is surrounded by a 4-inch-high concrete curb and is elevated approximately 12 to 24 inches above the surrounding soil, further preventing runon.

The curbs also prevent runoff from the TTF WMA. Storm water that collects in the pad drains to the catch tank. The containment capacity of the catch tank exceeds the volume of treatment area runoff expected during a storm event.

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

Sandia/DOE do not anticipate that management of RCRA-regulated wastes at the TTF will affect water supplies, as described in Section 1.1.4.3 of the SNL/NM General Part B. Section 2.6 of this module includes a discussion of the surface water and groundwater in the vicinity of the TTF. Section 9.0 discusses the potential for the deposition or migration of waste or waste constituents to surface water and groundwater in the vicinity of the TTF.

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

General measures that are available to Unit personnel are described in Section 1.1.4.4 of the General Part B.

Four pieces of equipment at the TTF would be affected by a power failure: the burners, the motor-driven burn cage door, the motor-driven burn pan lid, and the waste transfer pump. In the event of a power failure, personnel would take the following actions.

1. If the power failure occurs before waste is placed inside the burn pan, treatment operations will be delayed until power is restored.

2. If the power failure occurs after wastes are present in the burn pan but before the burners are ignited, personnel will manually lower the burn pan lid and wait until power is restored before proceeding with treatment. If the treatment cannot be conducted during the same day, Unit personnel will wet the waste with water as needed to stabilize it, secure the area and notify Sandia/DOE security personnel of the presence of and potential hazards associated with the waste. Unit personnel will conduct treatment when power is restored and all other permit requirements for treatment operating conditions, listed in Section 8.1.3 of this module, have been met.

3. If the power failure occurs during treatment, personnel will not enter the TTF until all combustion has ceased and water has been added to the waste and residue (using the water spigot and hose at the TTF entrance) to reduce the explosive hazard, and it is deemed safe to enter. If the power is not restored in time to complete treatment during the day, personnel will secure the area, manually lower the burn pan lid if it is deemed safe to do so, and allow the waste to remain in the burn pan. Unit personnel will notify Sandia/DOE security personnel of the presence of and potential hazards associated

with the waste. Unit personnel will complete treatment when power is restored and all other permit requirements for treatment conditions have been met.

4. If power failure occurs during waste transfer, personnel will stop transferring waste and follow the procedures outlined in #3 above.

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

TTF personnel employ the practices described in Section 1.1.4.5 of the SNL/NM General Part B to prevent undue exposure to the wastes to be treated at the TTF.

Hazards associated with the waste treated at the TTF (e.g., the explosive nature of the wastes) serve to increase the potential for personnel exposure to hazardous waste constituents. These are addressed through Unit design and operations:

- Treatment operations are scheduled as soon as practicable after the operations in Building 6715 are completed, minimizing the amount of time that explosive wastes are present on site.

- RCRA-regulated waste that cannot be pumped to the TTF (solid items) is first wetted with water to temporarily reduce the explosive sensitivity and minimize hazards to personnel.

- When wastes or residue are present, Unit personnel keep the burn pan covered with the lid except when wastes are being loaded into the pan or combustion is occurring. This practice serves to minimize personnel exposure to the wastes.

- The TTF is operated from a control console inside Building 6715. Operating personnel observe the treatment through a video camera. During combustion, personnel are not allowed in the area between Building 6715 and the TTF. Both of these practices serve to minimize the potential for exposure to the wastes.

- If adverse weather conditions (described in Section 8.1.3) arise during treatment, operating personnel will evaluate the risks associated with continued operation against the risks associated with halting operations, and determine whether halting operations is warranted. In order to halt treatment, operating personnel will stop the propane burners and lower the burn pad lid as soon as it is safe to do so. Unit personnel may add water to the waste in the burn pan to cool and stabilize it before lowering the lid. Water would be added through the waste transfer tubing or by using the water spigot and hose at the TTF entrance (taking care not to disperse the waste and residue in the pan).

- Operating personnel check the surfaces of the burn cage, the pad, and the surrounding area with a portable propane burner before maintenance and repair activities as described in Section 1.2.2.2 to ensure that residual untreated explosive material is not present to cause a hazard to workers.

In addition to the hazards associated with equipment operation and treatment of explosives, there are three sources of noise during treatment:

- Detonation of dried explosive SASN crystals from the liquids and solids treated at the TTF. Because the particles are small, the detonations are relatively small, with a popping noise similar to a popping balloon.

- Operation of the propane burners. The sound of the operating burners is similar to the sound of burners used in a hot air balloon.

- Warning bell/buzzer. The warning bell/buzzer is designed to alert Unit personnel to treatment operations. The bell/buzzer is louder than the propane burners or the detonation.

Because Unit personnel are inside Building 6715 during treatment, they are not subjected to the noise. Personnel in neighboring Sandia operations and buildings may hear the warning bells but will not be affected by the noise of TTF treatment. The closest continuously occupied building is approximately 470 ft east southeast of Building 6715 and the TTF. The physical locations of neighboring buildings and personnel are summarized in Section 9.3 of this module.

1.2.4.6 Preventing Releases to the Atmosphere (20 NMAC 4.1.900/40 CFR 270.14[b][8][vi]; 20 NMAC 4.1.500/40 CFR 264 Subparts AA, BB, and CC)

TTF operations do not include storage of RCRA-regulated wastes in containers subject to the requirements of 20 NMAC 4.1.500/40 CFR 264 Subpart CC. Further, operations do not include any storage or management associated with storage that would be subject to the requirements of 20 NMAC 4.1.500/40 CFR Subparts AA or BB.

The treatment process and releases to the atmosphere are described in Section 8.0 of this module. Compliance with the requirements of 20 NMAC 4.1.500/40 CFR Subparts AA, BB, and CC is discussed in Section 8.1.4.

1.3 Container Storage Practices

Sandia/DOE do not conduct container storage of RCRA-regulated wastes requiring a permit at the TTF.

1.4 Treatment Operations

The TTF is currently permitted for the treatment of RCRA-regulated wastes in accordance with the conditions of the ~~"~~Sandia National Laboratories/New Mexico Hazardous Waste Facility Operating Permit Number NM5890110518-2" (NMED, 1994). Treatment practices applicable to the TTF are presented in Section 8.0 of this module.

2.0 UNIT DESCRIPTION AND INFORMATION

The information provided in this section is submitted to address the applicable requirements of 20 NMAC 4.1.500 and .900/40 CFR 264 and 270 [7-1-08]. The following subject areas are addressed in this section:

- Unit-specific security procedures and equipment (20 NMAC 4.1.900/40 CFR 270.14[b][4] and 270.14[b][19][viii] [7-1-08]; 20 NMAC 4.1.500/40 CFR 264.14 [7-1-08]).

- Unit-specific traffic patterns, volume, and controls (20 NMAC 4.1.900/40 CFR 270.14[b][10] [7-1-08]).

- Unit-specific location information for compliance with the seismic standard and floodplain requirements (20 NMAC 4.1.900/40 CFR 270.14[b][11] [7-1-08], and 20 NMAC 4.1.500/40 CFR 264.18[a] and [b] [7-1-08]).

- Unit-specific topographic map requirements (20 NMAC 4.1.900/40 CFR 270.14[b][19] [7-1-08]).

- Unit-specific groundwater monitoring and protection information (20 NMAC 4.1.900/ 40 CFR 270.14[c] [7-1-08], and 20 NMAC 4.1.500/40 CFR 264.90[a] [7-1-08]).

- Unit-specific environmental setting information (20 NMAC 4.1.900/40 CFR 270.23[b] [7-1-08], and 20 NMAC 4.1.500/40 CFR 264.601[a][2-6], [b][3-9], [c][4,5] [7-1-08]).

An SNL/NM site-wide facility description addressing additional regulatory requirements is provided in Appendix A of the SNL/NM General Part B.

2.1 Security Procedures and Equipment (20 NMAC 4.1.900/40 CFR 270.14[b][4]; 20 NMAC 4.1.500/40 CFR 264.14)

The following sections describe the security provisions provided at SNL/NM to prevent unknowing or unauthorized entry onto the active portions of the TTF.

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

The TTF is completely surrounded by an approximately 8-ft high, single chain-link fence topped with three strands of barbed wire. Three gates provide access to the TTF and remain locked except when TTF personnel are performing treatment operations, inspections, maintenance, or repairs. The active portion of the TTF is also the south portion of the Building 6715 complex. Access to the north TTF fence, and, therefore, all three TTF gates, is from inside the Building 6715 complex, which is also completely surrounded by an 8-ft tall chain link fence with and lock-equipped gates. The Building 6715 doors are kept locked during non-operational hours, restricting access to TTF controls. As noted in Appendix A of the SNL/NM General

Part B, Sandia security personnel periodically monitor the Building 6715 complex and TTF gates during non-operational hours.

TTF personnel have Sandia-issued badges. Visitors contact TTF personnel for access. TTF personnel and visitors typically enter the Building 6715 complex through the east gate. During treatment events, all TTF gates are locked. These procedures limit access to the TTF WMAs, in accordance with 20 NMAC 4.1.500/40 CFR 264.14(b)(2) [7-1-08].

The Building 6715 complex is located inside TA-III (Figures 1 and 2). TA III is surrounded by a barbed-wire fence with designated access gates. TA-III access control procedures assure that only properly identified and authorized persons, vehicles, and property are allowed entrance to and exit from TA-III.

2.1.2 Warning Signs (20 NMAC 4.1.500/40 CFR 264.14[c])

The permanent perimeter fences surrounding the TTF are posted with ―Danger: Unauthorized Personnel Keep Out" (or functionally equivalent) signs. The signs contain the warning in English and Spanish, are legible from a distance of 25 ft, and can be seen from any approach to the TTF.

2.2 Traffic Pattern, Volume, and Controls (20 NMAC 4.1.900/40 CFR 270.14[b][10])

General traffic pattern information, traffic volumes, and traffic control signals for the SNL/NM facility are provided in Appendix A of the SNL/NM General Part B.

2.2.1 Traffic Patterns

The primary traffic routes used to transport RCRA-regulated wastes (e.g., ash) from the TTF include Wyoming Boulevard, Hardin Boulevard (formerly O Street), P Street, Pennsylvania Avenue, and the access road to TA-III.

Pennsylvania Avenue crosses Tijeras Arroyo over the Manzano Bridge. A two-lane paved access road to TA-III turns southwestward off Pennsylvania Avenue at a point just over 5 miles south of the Wyoming Boulevard Kirtland Air Force Base entrance gate as shown on Figure A-4 in Appendix A of the SNL/NM General Part B.

Within TA-III, traffic access to and from the TTF is along the 2-lane asphalt-paved roads shown on Figure A-6 in Appendix A of the SNL/NM General Part B. Vehicles entering the Building 6715 complex travel on a 2-lane asphalt-paved drive from the road to the east gate (Figure 5). Within the Building 6715 complex, waste is typically transported on concrete- or asphalt-paved surfaces.

2.2.2 Traffic Volumes

Traffic volumes on Wyoming Boulevard, Hardin Boulevard, and P Street are generally light to moderate. Traffic volumes on Pennsylvania Avenue are generally light. Traffic volumes within TA-III are light. Vehicle types are generally cars, light- and medium-duty trucks, and vans. Flatbed trucks or trailers also use primary traffic routes to transport equipment and waste containers.

Fewer than 15 vehicles typically enter/exit the compound per week. These include flatbed trucks and trailers carrying supplies, treated residues, and contaminated catch tank water from the TTF. SASN wastes are generated in Building 6715; therefore, wastes are not transported in vehicles to the TTF for treatment. Treated residues are transported to another Unit at SNL/NM for storage and/or treatment prior to disposal. Catch tank water may also be transported to another unit, as discussed in Section 1.2.1.

2.2.3 Traffic Control Signals

Vehicles must stop at a gate prior to entering or leaving TA-III. Only authorized personnel are permitted to enter TA-III. Speed limit signs (i.e., “30 mph Unless Otherwise Posted”) are located at several locations in TA-III.

There are no traffic control signals or signs at the Building 6715 complex. The TTF is locked except when personnel are present. Treatment operations are carefully coordinated with appropriate individuals to limit vehicle presence and access to operating and treatment personnel. The southeast corner of the Building 6715 complex is paved. Therefore, signals or signs are not necessary to control traffic within the Building 6715 complex.

2.3 Unit Location Information (20 NMAC 4.1.900/40 CFR 270.14[b][11]; 20 NMAC 4.1.900/40 CFR 264.18)

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

The WMA at the TTF is not located within 3,000 ft of any fault with Holocene displacement (see Section A.4.2 in Appendix A of the SNL/NM General Part B).

2.3.2 Floodplain Standard (20 NMAC 4.1.900/40 CFR 270.14[b][11][iii]; 20 NMAC 4.1.500/40 CFR 264.18[b])

The WMA at the TTF is not located within the 100-year floodplain boundary (see Section A.4.3 in Appendix A of the SNL/NM General Part B).

2.4 Topographic Maps (20 NMAC 4.1.900/40 CFR 270.14[b][19] and 270.23[b]; 20NMAC 4.1.500/40 CFR 264.601[a][6] and [b][9])

Topographic maps and figures are provided herein or referenced to meet the requirements of 20 NMAC 4.1.900/40 CFR 270.14(b)(19) and 270.23[b] [7-1-08]. Due to the large amount of information, it is not provided on a single map. The maps clearly show the map scale, the date of preparation, and a north arrow (20 NMAC 4.1.900/40 CFR 270.14[b][19][i] and [vi] [7-1-08]). The maps and figures used to fulfill these regulatory requirements include the following:

- An SNL/NM-wide 100-year floodplain map is provided as Figure A-2 in Appendix A of the SNL/NM General Part B (20 NMAC 4.1.900/40 CFR 270.14[b][19][ii] [7-1-08]).
- Surface waters, including intermittent streams, near the TTF are shown on Figure A-2 in Appendix A of the SNL/NM General Part B and Figure 6 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][iii][7-1-08]).
- Surrounding land uses are shown on Figures A-2 and A-8 in Appendix A of the SNL/NM General Part B and Figure 6 of this module. (20 NMAC 4.1.900/40 CFR 270.14[b][19][iv] and 270.23[b]; 20NMAC 4.1.500/40 CFR 264.601[a][6] and [b][9] [7-1-08]). The area surrounding the TTF is occupied by test areas and Sandia-controlled operations (industrial land use). The area of Kirtland Air Force Base (KAFB) immediately north of SNL/NM TA-III is mostly open (other land use).
- Wind roses for SNL/NM are shown on Figure A-2 in Appendix A of the SNL/NM General Part B and Figure 6 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][v] [7-1-08]).
- Legal boundaries of SNL/NM (including the TTF) are shown on Figure A-2 in Appendix A of the SNL/NM General Part B (20 NMAC 4.1.900/40 CFR 270.14[b][19][vii] [7-1-08]).
- Access control features at the TTF (e.g., fences, gates) are shown on Figures 6 and 7 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][viii] [7-1-08]).
- Supply wells, monitoring wells, test wells, springs, and surface-water sampling stations near the TTF are shown on Figure A-2 in Appendix A of the SNL/NM General Part B and Figure 6 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][ix] [7-1-08]).
- The location of the TTF WMA and associated structures, loading and unloading areas, roads, and sanitary sewers are shown on Figures 6 and 7 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][x] [7-1-08]).
- Drainage control features (e.g., run-on/runoff, drainage barriers) are shown on Figures 6 and 8 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][x] and [xi] [7-1-08]).
- The location of the TTF WMA is shown on Figure 6 of this module (20 NMAC 4.1.900/ 40 CFR 270.14[b][19][xii] [7-1-08]).

Contour lines on all topographic maps are in intervals sufficient to detail natural drainage at SNL/NM and in the vicinity of the TTF. As provided for in 20 NMAC 4.1.900/40 CFR 270.14(b)(19) [7-1-08], SNL/NM has submitted the maps to the NMED at these scales and contour intervals due to the size of the TTF, the extent of the SNL/NM facility, and the topographic relief in the area.

2.5 Groundwater Monitoring (20 NMAC 4.1.900/40 CFR 270.14[c]; 20 NMAC 4.1.500/40 CFR 264.90[a])

Groundwater monitoring information for SNL/NM is provided in Part 3 of the Sandia/DOE comprehensive Part B permit request. The TTF is not a regulated unit. There have been no releases of RCRA-regulated waste in the past, nor is the TTF likely to affect groundwater quality during normal operations or during unusual events.

2.6 Environmental Setting (20 NMAC 4.1.900/40 CFR 270.23[b], and 20 NMAC 4.1.500/40 CFR 264.601[a][2-5], [b][3-8], [c][4,5])

As described in Appendix A of the General Part B, SNL/NM is located in the western part of Kirtland Air Force Base in Bernalillo County. DOE/Sandia monitor weather conditions and ambient air quality at SNL/NM through a network of monitoring stations. Meteorological data from a tower at the northeast corner of TA-III indicate that the prevailing winds at SNL/NM are from the southeast and east. The annual wind rose is shown on Figure 6. During daylight hours, the prevailing winds are from the west, southwest, and northwest. Rapid nighttime ground cooling after sunset on cloudless or near-cloudless nights generates drainage winds out of the mountains; in TA-III, these winds come from the southeast and east (SNL/NM, 2004, 2002).

Bernalillo County meets the New Mexico and national ambient air quality standards (AAQS) for ozone, particulates, lead, and oxides of nitrogen and sulfur. Bernalillo County currently meets the New Mexico and national AAQS for carbon monoxide. DOE/Sandia monitor ambient air quality at several stations; the two nearest the TTF are located north of TA-III and at the southeast corner of TA-III (near the existing Radioactive and Mixed Waste Management Facility). Data from both stations indicate air quality is in compliance with New Mexico and national AAQS. The monitoring results also allow DOE/Sandia to establish background airborne concentration levels for pollutants of concern and determine that SNL/NM operations do not affect ambient air quality (SNL/NM, 2004, 2002).

SNL/NM is located in an arid region with an average annual precipitation of approximately 8 inches (NOAA, 1990). Half of the average annual precipitation occurs in the form of brief but heavy thunderstorms during the summer period, July through September.

Water rarely infiltrates more than a few feet into the soil, and typically returns to the atmosphere via evapotranspiration. Evapotranspiration in the area has been estimated at 95 percent of the annual rainfall (Thomson and Smith 1985). Sandia/DOE have conducted extensive field investigations and analytical studies in TA-III. Data collected from boreholes, groundwater monitoring wells, and instantaneous profile tests have measured saturated and unsaturated zone characteristics that include volumetric water content, saturated and unsaturated hydraulic

conductivity, bulk density, and isotopic chloride content (Peace et al., 2002). Based upon these data, groundwater recharge is negligible at TA-III and most of the water from precipitation returns to the atmosphere via evapotranspiration. Vegetation, although sparse at the site, increases the rate of moisture loss from the subsurface soil through transpiration.

Sandia/DOE's ongoing Terrestrial and Ecological Surveillance Program includes monitoring for the presence of various compounds in soil, sediment, surface water, and vegetation near past or present SNL/NM operations (SNL/NM, 2004, 2002). As part of the program, samples of soil and vegetation have been collected for several years at a location in the northern part of TA-III (approximately 600 ft northeast of the TTF). The samples collected each year, including 2003 and 2001 were analyzed for several metals, including silver. Concentrations of silver and other metals in the soil and vegetation vary slightly from year to year due to slight variations in sampling location, differences in climatic conditions, and laboratory variations or errors. The silver concentrations in the samples from this location were consistent with the levels in off-site samples. Silver has historically and consistently been detected in soils at concentrations that are consistent with those found in off-site locations, and the data do not indicate a trend toward increasing concentrations over time (SNL/NM, 2004, 2002).

As noted in Appendix A of the General Part B, the nearest major body of surface water (the Rio Grande river) is situated approximately 7 miles west of the TTF. Surface water (with the exception of several springs in the eastern part of KAFB) is found only as ephemeral streams that flow for short periods from runoff after storm events or during the spring melt of mountain snowpacks. The primary surface water drainage channels on KAFB are Tijeras Arroyo and Arroyo del Coyote (which joins Tijeras Arroyo north of TA-III.) Surface water in TA-III infiltrates into the soil, and does not flow to either of the arroyos or to the Rio Grande.

The depth to saturated groundwater underlying SNL/NM TA-III is approximately 500 ft. Sandia/DOE have an established extensive groundwater monitoring system to assess the quality of the groundwater in the SNL/NM area. The monitoring network includes observation wells, test wells, production wells, and other hydrogeologic devices. Routine samples are analyzed for toxic constituents, basic water quality, and water levels. The results are published annually in the Groundwater Monitoring Report (SNL/NM, 2003).

The historical direction (no longer apparent) of regional groundwater flow in the western part of KAFB (including the area west of TA-III) has been westward from the mountains toward the Rio Grande (Gram, 1985). However, due to groundwater pumping by KAFB and the City of Albuquerque, a depression in the water table has created a broad trough (drawdown) directing flow towards the well fields at the northwest end of KAFB. The trough extends as far south as TA-III and affects groundwater flow at the western edge of TA-III. The TTF is east of the trough, and groundwater flow under the TTF is toward the west (SNL/NM, 2001a, 2001b).

The well fields at the northwest end of KAFB are located approximately 3 miles northwest and downgradient of the TTF, and the closest downgradient water supply well is KAFB-4. Approximately 117,000 gallons of water were pumped from Well KAFB-4 during the 12-month period ending September 30, 2001. During the same time period, approximately 1.2 billion gallons of water were pumped from all the KAFB wells (SNL/NM, 2003).

Over 280 archeological sites have been recorded on KAFB (including the withdrawn area), and in the buffer zones west of KAFB. No archeological sites or Native American traditional cultural properties have been identified in TA-III (DOE, 1999).

3.0 WASTE ANALYSIS PLAN

In accordance with 20 NMAC 4.1.900/ 40 CFR 270.14[b][2] and 20 NMAC 4.1.500/ 40 CFR 264.13, ~~"~~General Waste Analysis" [7-1-08], waste analysis requirements applicable to all units, including the TTF, are addressed in Appendix B of the SNL/NM General Part B.

4.0 INSPECTION PLAN

20 NMAC 4.1.500/40 CFR 264.15 and 264.33 [7-1-08] and 20 NMAC 4.1.900/40 CFR 270.14(b)(5) [7-1-08] require that WMAs and associated systems be inspected on a regular basis and in accordance with procedures to assure their integrity, maintenance, and safe operation.

Unit personnel perform periodic inspections to identify malfunctions, signs of deterioration, operator errors, and discharges or spills that may be causing or may lead to a release of hazardous waste constituents to the environment or may pose a threat to human health. The inspections are performed on a regular schedule based on the likelihood of equipment or system failure and associated consequences. The inspections include safety and emergency equipment, security devices, and operating and structural equipment related to management of RCRA-regulated wastes to ensure that human health and the environment will be protected.

20 NMAC 4.1.500/40 CFR 264.15(b)(4) [7-1-08], requires inspections of specific portions of a facility, rather than the general facility. RCRA-regulated waste at the TTF is managed in a miscellaneous unit requiring inspection as a "specific portion" of the SNL/NM facility. 20 NMAC 4.1.500/40 CFR 264.602 [7-1-08], requires that inspections required in 20 NMAC 4.1.500/40 CFR 264.15 and 264.33 [7-1-08], as well as any additional requirements needed to protect human health and the environment, be met. The requirements of 20 NMAC 4.1.500/40 CFR 264.15 and 264.33 [7-1-08] are discussed in this section, Section 6.0, and Appendices C and E of the SNL/NM General Part B.

The general Sandia/DOE inspection plan and schedule that meets these requirements are described in the "Site-Wide Inspection Plan", provided as Appendix C of the SNL/NM General Part B. TTF personnel conduct inspections in accordance with the site-wide plan.

Specific items and areas that are inspected are listed in Table 1, with the inspection criteria and frequency.

The inspection results (including any remedial actions taken) are recorded on a form similar to those in Appendix C. The results of inspections by Unit personnel (including any corrective actions required and taken) are recorded on forms similar to the ones presented in Appendix C. The inspection plan (Appendix C and this section) and inspection records for the current calendar year are maintained in Building 6715. Inspection records for previous calendar years are maintained in Building 6715 or the SNL/NM Records Center.

Table 1
Thermal Treatment Facility Inspection Criteria and Frequency

Inspected Item	Inspection Criteria	Inspection Frequency
SAFETY AND EMERGENCY EQUIPMENT See Table 3 "Emergency Equipment" in this module for additional information		
Eye wash and safety shower	Operational, accessible, in good condition	Monthly
First-aid kit	Present and stocked	Monthly
Personal protective equipment	Required items present and in good condition	Monthly
Spill control and cleanup items	Present, accessible, quantities per inventory, in good condition	Monthly
Fire alarm pull station(s)	Present, accessible, and in good condition	Monthly
Public address system	Operational	Monthly
Telephone(s)	Present and operational	Monthly
Fire extinguisher(s)	Present, charged, accessible, and in good condition	Prior to treatment. Monthly otherwise.
OPERATING AND STRUCTURAL EQUIPMENT		
Waste transfer pump	Present, operational, and in good condition	Prior to use
Waste transfer tubes	Free of apparent leaks and in good condition	Prior to use
Burn pan	Present, free of apparent leaks, and in good condition	Prior to treatment. Monthly otherwise.
Burn pan lid	Operational and in good condition	Prior to treatment. Monthly otherwise.
Burn cage	Present and in good condition	Prior to treatment. Monthly otherwise.
Burn cage door	Operational and in good condition	Prior to treatment. Monthly otherwise.
Steel-lined concrete pad	Free of apparent cracks and in good condition	Monthly
Filter element	Present, free of apparent tears or holes, and in good condition	Monthly
Rain catch tank	Free of apparent leaks and in good condition	Monthly

Table 1 (Concluded)
Thermal Treatment Facility Inspection Criteria and Frequency

Inspected Item	Inspection Criteria	Inspection Frequency
OPERATING AND STRUCTURAL EQUIPMENT (cont)		
Area condition	Free of combustible materials and weeds and in good condition	Prior to treatment. Monthly otherwise.
Red warning beacons	Present and operational	Prior to treatment. Monthly otherwise.
Water spigot and hose	Present, operational, and in good condition	Prior to treatment. Monthly otherwise.
Burner control warning bell	Operational	Prior to treatment. Monthly otherwise.
SECURITY DEVICES		
Fence	Present and in good condition	Monthly
Warning signs	Present legible, and in good condition	Monthly
Gates	Present, operational, in good condition	Monthly
Locks	Present, operational, in good condition	Monthly

5.0 PERSONNEL TRAINING

Training requirements for Unit personnel are specified in 20 NMAC 4.1.900/ 40 CFR 270.14[b][12], and 20 NMAC 4.1.500/40 CFR 264.16, [7-1-08] “Personnel Training.” The Sandia/DOE training program is designed and implemented to prepare personnel to operate and maintain safely those areas used for managing RCRA-regulated waste. The training program applies to all employees of the DOE, Sandia, and any subcontractors who have responsibility for the day-to-day management of RCRA-regulated waste at the TTF.

TTF personnel receive training in accordance with the “Site-Wide Personnel Training Plan” provided as Appendix D of the SNL/NM General Part B.

Only the following job descriptions identified in Appendix D, Table D-2 are applicable at the TTF: Training Director, Project Leader, Emergency Coordinator, Field Technician, and Inspector.

Additional training designed to specifically teach TTF personnel (i.e., TTF Project Leader, TTF Field Technician, TTF Inspector) to perform their duties safely and in conformance with regulatory requirements is presented in this section. TTF training course content includes, at a minimum, the topics shown in Table 2.

Training records for TTF personnel are maintained in Building 6715.

Table 2
Thermal Treatment Facility
Resource Conservation and Recovery Act-Regulated Waste Management Unit
Training Content

Explosives Personnel Safety Course

Duration:	Variable (Typically 16 hours)
Frequency:	Initial
Method:	Classroom instruction

Minimum content may include:

- Basic explosives definitions
- Overview of explosives and explosive device categories and characteristics
- Initiation stimuli and safety guidelines for avoiding accidental ignition
- Standards for explosives operations, including compatibility, storage, and standard operating procedures

Operating Procedures of the Thermal Treatment Facility

Duration:	Variable (Typically 4 hours)
Frequency:	Annual
Method:	Classroom instruction, on-the-job training, and/or document review

Minimum content may include:

- Overview of written operating procedures
- Overview of the waste analysis plan
- Safety practices
- Security, site entry, and site control
- Facility operations
- Facility equipment and structures
- Procedures to prevent the reaction of reactive waste
- Permit requirements for the Thermal Treatment Facility

6.0 CONTINGENCY PLAN AND EMERGENCY RESPONSE

Emergency response requirements for permitted units are specified in 20 NMAC 4.1.500/ 40 CFR 264, Subpart D [7-1-08], “Contingency Plan and Emergency Procedures,” and in 20 NMAC 4.1.900/40 CFR 270.14(b)(7) [7-1-08]. The Sandia/DOE “Site-Wide Contingency Plan” is included as Appendix E of the SNL/NM General Part B. Supplemental TTF-specific information is included in this section, in Figure 9, and in Tables 3 and 4 of this module. Current copies of the site-wide contingency plan and this supplemental information are maintained in Building 6715 and at the SNL/NM Emergency Operations Center.

The TTF is located in the north-central portion of Technical Area III at SNL/NM, just south of Building 6715. The TTF consists of a square, steel burn pan, 30 inches (in.) on each side and 6 in. deep. A remotely-operated metal lid can be raised to open, or lowered to cover, the burn pan. The burn pan is enclosed by an expanded metal screen (i.e., open to the air) cage, approximately 4 ft on each side and 8 ft tall. Access to the burn pan is provided by a door on the north side of the burn cage, which is operated remotely using controls inside Building 6715. The burn cage sits in the center of a steel-lined concrete pad. The concrete pad is surrounded on the west, south, and east sides by an earthen berm, approximately 8 ft tall. An 8-ft-high chain-link security fence surrounds the entire TTF.

The TTF is used to thermally treat (i.e., burn) small quantities of waste explosive substances, waste liquids (e.g., water, volatile organics) contaminated with explosive substances, and waste items (e.g. rags, wipes, swabs, filters, wood, and inert test debris) contaminated with explosive substances. Wastes treated at the TTF may have U.S. EPA Hazardous Waste Numbers D001, D003, D011, F003, and D002.

RCRA-regulated waste is not stored at the TTF and is only present just before and during treatment operations. However, if for some reason treatment operations are aborted and it is deemed unsafe to remove the waste, the waste will be wetted as needed to stabilize it, the burn pan lid will be lowered remotely to cover the burn pan and the waste will remain there until it is possible to perform the treatment or safely remove the waste. Personnel will not enter the TTF unless waste is not present, or it is fully treated, or it has been stabilized by saturation with water.

Figure 9 presents the evacuation route, emergency response, and access information for the TTF. Table 3 lists the emergency equipment typically available at the TTF. Table 4 lists the emergency coordinators for the TTF.

Table 3
Thermal Treatment Facility, Emergency Response Equipment

Building 6715 Complex

Category	Description/Capabilities	Location
Safety and Decontamination Equipment	Permanent eyewash/hand-held deluge showers	Building 6715
	First aid kit	Building 6715
	Absorbent (sufficient absorbent for 20.8 gallons of liquid that could be present in the burn pan)	Building 6715
	Spill cleanup items (mops, brooms, and/or shovels)	In equipment storage at Building 6715
	Recovery drums and containers	In equipment storage at Building 6715
	Miscellaneous PPE (protective suits, goggles, gloves)	Building 6715
Internal Communication and Alarm System	Fire alarm pull station (pulling handle sends signal to KAFB fire department)	One on east wall inside Building 6715 near personnel door
	Public address system	Microphone in Building 6715
External Communication System	Telephones	Building 6715
	Fire alarm pull station (pulling handle sends signal to KAFB fire department)	Near personnel doors in Building 6715.
Fire Extinguishers	Portable (A-B-C)	One at or near each personnel door in Buildings 6715, one located at the TTF fence.
Fire Suppression	Water supplied by fire hydrant	One hydrant, location shown in Figure 9

KAFB Kirtland Air Force Base

Table 4
Thermal Treatment Facility, Emergency Coordinator List

November 15, 2010

Facility Emergency Coordinator		Office Phone	Home Phone
Primary	Tim Covert Sandia National Laboratories P.O. Box 5800 Albuquerque, NM 87185	(505) 284-4664 (office) (505) 951-7315 (pager)	(505) 506-5907
First Alternate	David Castillo Sandia National Laboratories P.O. Box 5800 Albuquerque, NM 87185	(505) 284-4192 (office) (505) 951-6340 (pager)	(505) 269-1705
Second Alternate	Daniel Dow Sandia National Laboratories P.O. Box 5800 Albuquerque, NM 87185	(505) 284-1622 (office) (505) 951-6781 (pager)	(505) 892-0497

One or more of these personnel are routinely available during operating hours (7:00 am to 5:00 pm on days when activities are conducted in Building 6715).

7.0 CLOSURE PLAN

Applicable closure requirements are specified in 20 NMAC 4.1.900/40 CFR 270.14(b)(13), and 20 NMAC 4.1.500/40 CFR 264, Subparts G and X, [7-1-08]. General closure information applicable to all Units at SNL/NM and general sampling and analytical procedures to be used during closure activities are presented in the –Site-Wide Closure Plan" in Appendix F of the General Part B. The site-wide plan includes a description of the SNL/NM facility, waste descriptions, closure performance standards, general closure methods, a sampling and analysis plan (SAP), a general closure schedule, procedures for amendment of the plan, closure certification and letter, survey plat, and post-closure requirements. Unit-specific information for closure of the TTF is included in this section.

7.1 Unit Description

The TTF is located in the north-central portion of Technical Area III at SNL/NM, just south of Building 6715. The TTF consists of a square, steel burn pan that is 30 in on each side and 6 in. deep. A remotely-operated metal lid can be raised to open, or lowered to cover, the burn pan. The burn pan is enclosed by an expanded metal screen (i.e., open to the air) cage, approximately 4 ft on each side and 8 ft tall. Access to the burn pan is provided by a door on the north side of the burn cage, which is operated remotely from controls inside Building 6715. The burn cage sits in the center of a steel-lined concrete pad. The concrete pad is surrounded on the west, south, and east sides by an earthen berm, approximately 8 ft high. An 8-ft-high chain-link security fence surrounds the entire TTF.

7.2 Estimate of Maximum Waste Inventory (20 NMAC 4.1.500/40 CFR 264.112[b][3])

The maximum inventory of RCRA-regulated waste in treatment at any time at the TTF is no more than 20.8 gallons of explosive-contaminated material. This is the maximum volume of RCRA-regulated waste that could be removed from the TTF as part of closure activities.

7.3 Closure Conditions

In addition to the general assumptions listed in Section F.5 of the site-wide closure plan in Appendix F, partial closure activities specified in this plan assume the following conditions were met during the operational life of the TTF:

- Waste handling activities at the TTF under this permit were confined to the burn pan and immediate surrounding area. If contamination occurred, it would have been confined to those areas.

- Treatment activities were conducted in a controlled manner, minimizing the potential for releases of RCRA-regulated wastes or hazardous waste constituents.

- RCRA-regulated wastes have been kicked out onto the steel-lined concrete pad during treatment. The kickout has been identified and removed during the post-treatment inspections.

- The concrete pad has been covered with the steel liner and therefore does not contain elevated concentrations of RCRA-regulated wastes or hazardous waste constituents (i.e., silver).

- If RCRA-regulated wastes were kicked out beyond the edge of the steel-lined concrete pad during treatment, they would have been deposited on the earthen berm near the pad. Personnel inspected the berm and removed visible kickout following treatment operations.

- The burn pan and all other equipment were maintained to retain their integrity by following established maintenance and inspection procedures.

7.4 Closure Activities and Schedule

This closure will be conducted to support attainment of the closure performance standards outlined in Section F.4 of the site-wide closure plan. Section 7.5.3 of this plan discusses the criteria that will be used to verify that clean closure has been achieved.

7.4.1 Closure Activities

The closure approach and general activities described in Section F.5 of the site-wide closure plan will be applied to closure of the TTF. Sandia/DOE will use the following approach:

- Items of equipment within the TTF treatment area will be removed, including the burn pan and lid, metal screen cage, ancillary equipment, and the steel liner on the concrete pad. Items that are removed will be recycled, if possible. Those that cannot be recycled will be characterized to determine requirements for management.

- The soil in the berm will be excavated, characterized to determine requirements for management, and removed from the TTF site if it contains elevated concentrations of RCRA-regulated wastes or hazardous waste constituents (i.e., silver) from the treatment operations at the TTF. Soil that does not contain elevated concentrations of silver may be left at the site and used for general grading purposes.

- The concrete pad will be characterized to determine requirements for management, and removed from the TTF site.

- The soil under the concrete pad and in the areas surrounding the earthen berm will be sampled and analyzed to determine whether it contains elevated concentrations of silver from TTF operations. Additional soil will be removed as needed to achieve clean closure of the Unit.

7.4.2 Closure Schedule

Section F.7 of the site-wide closure plan in Appendix F provides a timeline for closure activities applicable to all permitted Units at the SNL/NM facility. Currently, there is not an estimated date of closure for the TTF, but a Unit-specific closure schedule will be prepared and submitted to NMED prior to initiation of closure activities at the TTF.

7.5 Sampling and Analysis Plan

Section F.6 of the site-wide closure plan presents sample collection equipment and techniques applicable to all Units at the SNL/NM facility. This Unit-specific SAP describes the sampling, analysis, and quality assurance (QA) methodologies Sandia/DOE will use to demonstrate clean closure of the TTF in accordance with the requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart G [7-1-08], as applicable. It addresses specific details (e.g., the type, number, and location of samples; required analytical constituents; closure criteria; QA and quality control [QC] procedures) regarding RCRA closure of the TTF.

7.5.1 Sampling and Analysis Scope

This SAP presents procedures for acquisition, analyses, and evaluation of samples that will be obtained during closure activities at the TTF (described above).

The TTF components will be recycled, if possible. Any components that cannot be recycled will be characterized to determine proper management. The concrete pad and the soil from the earthen berms will also be characterized to establish appropriate management.

Soil samples from beneath the concrete pad and the areas surrounding the berms will be collected for analysis and compared to the established background soil concentration to demonstrate clean closure of the Unit. If the background concentration is exceeded in these soil samples, additional sampling will be conducted, and soil exceeding the background concentration will be removed. Sampling, analysis, and removal of these soils will continue until the applicable criterion for clean closure is met. All samples will be analyzed for silver, which is the only hazardous waste constituent remaining in the ash after treatment at the TTF (as described in Section 9.1 of this Module).

7.5.2 Sampling Methodology

7.5.2.1 Sample Locations

The components of the TTF will either be recycled, or characterized to determine if they are hazardous waste, or declared hazardous waste (due to the potential deposition of silver, D011) and managed appropriately. In the second instance, characterization will consist of collecting a representative sample from each component. This sample will be biased towards surface areas suspected of being contaminated (e.g., visibly stained or discolored areas).

The concrete pad will be characterized to determine if it will be managed as solid waste debris or hazardous waste debris. A representative sample will be collected, and the location will be biased towards an area that is suspected of being contaminated (e.g., a visibly stained or discolored area).

The soil comprising the earthen berm surrounding the TTF will be removed, and a composite grab sample will be collected from each 20-cubic-yard batch of soil. These characterization samples will be analyzed to determine if the threshold concentration for silver is exceeded and to determine appropriate management methods.

The soil beneath the concrete pad and in the areas surrounding the earthen berm will be sampled to determine if the threshold concentration for silver is exceeded. The locations for and number of these samples will be determined at the time of closure because it is not feasible to identify them until the pad and the earthen berm are removed and the areas are evaluated to determine appropriate sample locations (e.g., stained or discolored areas).

7.5.2.2 Sample Collection

A representative sample will be collected from components comprising the TTF if it is determined that any component cannot be recycled and sampling and analysis is necessary for characterization purposes. Each sample will be analyzed for total silver and/or for silver content in leachate using the Toxicity Characteristic Leaching Procedure (TCLP).

A representative sample will be collected from the concrete pad for characterization purposes. This sample will be analyzed for total silver and/or for silver content in leachate using the TCLP.

A representative composite grab sample will be collected for characterization purposes from each 20-cubic-yard batch of soil removed from the earthen berms surrounding the TTF. Each sample will be analyzed for total silver.

Representative samples of soil will be collected from the area beneath the concrete pad and from the areas surrounding the earthen berm after the pad and berm are removed to demonstrate clean closure. Each sample will be analyzed for total silver.

7.5.2.3 Sampling Equipment

Samples of the TTF components will be collected, as necessary, using appropriate equipment (e.g., metal cutters). Samples of the concrete underlying the Unit will be collected using appropriate equipment (e.g., a chisel or hammer). Samples will be placed in pre-cleaned wide-mouth glass jars with screw top lids, or other approved containers that are appropriate for the material and the analysis.

Soil samples will be collected with a disposable scoop, trowel, or equivalent sampling device. Samples will be placed in pre-cleaned 500-milliliter or 1-liter wide-mouth glass jars with screw-top lids, or other approved containers that are appropriate for the analysis.

7.5.2.4 Sample Equipment Decontamination

Pre-cleaned and prepared sample containers will be obtained from a commercial supplier or the analytical laboratory selected by Sandia/DOE. Decontamination of other disposable sampling equipment (e.g., metal cutters, chisels, hammers, scoops, trowels) will not be required for the sampling procedures used in this closure. For each soil sample, new disposable sampling equipment will be used to prevent the possibility of cross-contamination between sample locations, and to eliminate the need for decontamination.

If it is determined, during sampling activities, that reusable sampling equipment will be utilized, the equipment will be decontaminated using the following steps:

- Wash the equipment with a detergent and water solution, scrubbing as needed to remove any deposits;
- Rinse the equipment with tap water until the soapy residue is removed;
- Rinse with deionized or distilled water; and
- Allow to air dry or dry with a lint-free cloth.

7.5.2.5 Sample Identification

Each sample will be assigned an identification number that will uniquely identify the sampling area (e.g., soil batch, Unit component), the sample type (random, bias, composite), and any additional information that may be necessary. As an example, the sample numbered TTF-PAD-BIAS-SOIL-01 would indicate a biased soil sample taken from beneath the concrete pad at the TTF.

7.5.2.6 Sample Preservation and Holding Time

After samples are collected at the site, they will be placed in a cooler with frozen gel packs to maintain a temperature of approximately 4 degrees Celsius. Analytical holding times will be observed by the laboratory for samples collected under this SAP (e.g., the recommended maximum holding time for silver analysis is 180 days from sample collection until extraction).

7.5.3 Demonstration of Clean Closure

The following presents the criteria that will be used to evaluate characterization samples and to demonstrate that clean closure has been achieved for the TTF. Silver has been selected as the indicator parameter to evaluate characterization samples and to demonstrate clean closure, as it is the only hazardous waste constituent remaining in the ash after treatment occurs at the TTF.

All components of the TTF (the concrete pad and above) will be removed. The components of the TTF will either be recycled, or characterized to determine if they are hazardous waste, or

declared to be hazardous waste (D011, due to the potential deposition of silver), and will be managed appropriately. In the second case, the characterization will be based on analytical results. If the total silver concentration(s) is less than 100 milligrams per kilogram (mg/kg), or if the TCLP silver concentration(s) is less than 5 milligrams per liter, the components are not RCRA-regulated waste. (Note that the TCLP silver concentration that is the basis for a hazardous waste determination cannot exceed the regulatory threshold if the total silver concentration is less than 20 times the threshold).

Total silver concentrations (determined by analysis) from characterization sampling of the soil comprising the earthen berm will be compared to the most current residential soil screening level (SSL) for silver (NMED, 2012). The current residential SSL is 391 mg/kg (NMED, 2012). If characterization sampling results are equal to or lower than the SSL, soil contamination is not indicated, and the soil will be made available for reuse on site. If the characterization sampling results indicate the silver level is equal to or exceeds the SSL, the subject batch(es) of soil will be further evaluated to determine appropriate management requirements. The soil will be excavated and removed, or a risk assessment will be performed to demonstrate that remaining silver does not pose a potential unacceptable risk to human health or the environment.

Soil beneath the concrete pad will be evaluated in the same manner as the soil comprising the earthen berm. Analytical results for silver will be compared to the most current residential SSLs, and the soil will be managed accordingly. The soil comprising the berm and the soil under the concrete pad will be excavated as needed until the remaining soil contains silver at levels below 391 mg/kg or the most current residential SSL for silver.

7.5.4 Quality Control

QC for sampling and analysis at the TTF will be implemented as described in Section F.6 of the site-wide closure plan.

7.5.5 Data Management and Reporting

Data management and reporting will be performed as described in Section F.6 of the site-wide closure plan.

7.6 Characterization Procedures

Section F.5.2 of the site-wide closure plan presents general procedures applicable to all Units at the SNL/NM facility. Prior to closure, this Unit-specific plan will be updated as necessary to incorporate new or improved characterization practices or technology. Any revisions to this Unit-specific plan will be submitted to NMED for approval prior to initiation of closure activities at the TTF.

7.7 Contingent Post-Closure Care

The intent of the site-wide and Unit-specific closure plans is to establish procedures for clean closure of permitted Units used for management of RCRA-regulated wastes. It is expected that the closure activities described herein will successfully remove silver from the Unit and surrounding soils. In the unlikely event that soil contamination remains upon completion of closure activities at the TTF, Sandia/DOE will prepare a post-closure plan to address this contamination in accordance with 20 NMAC 4.1.500/40 CFR 264.118.

8.0 TREATMENT PLAN

In accordance with 20 NMAC 4.1.900/40 CFR 270.23 [7-1-08], treatment operations for RCRA-regulated wastes treated at the TTF are described in this section. Waste analysis procedures are provided in Appendix B (Section B.3.2 and Section B.3.3) of the General Part B.

8.1 Treatment Operations

The treatment is designed to deactivate the reactive and ignitable components of the wastes. Thermal treatment is an accepted treatment technology for the deactivation of explosive wastes (20 NMAC 4.1.800/40 CFR 268.40 [7-1-08]) to meet treatment standards. The wastes may also contain PETN, an explosive; however, PETN is rarely used in the process. PETN and SASN both exhibit the hazardous waste characteristic of reactivity (D003). The treatment also effectively deactivates the ignitable (D001) components in the SASN slurry and liquid wastes. Some of the liquid wastes generated during formulation of the SASN slurry may be corrosive (D002) when they are generated in Building 6715; however the overall liquid wastes treated at the TTF are not corrosive. The treated residue may require further treatment to address other constituents, as discussed in Section B.3.3.1 in Appendix B of the General Part B.

The wastes treated at the TTF are typically generated as a result of the formulation of SASN slurry, its application to test articles, and cleanup activities during and after the tests. The tests typically take one to three days, and wastes are generated and treated intermittently during this period. Liquid RCRA-regulated wastes are generated from the formulation and application of SASN slurry. Solid RCRA-regulated wastes (e.g., wipes, rags, swabs, filter elements, cardboard masks, wood, and inert test debris) are generated as a result of cleanup during and after the tests. The solid items are typically saturated with water (i.e., wetted or submerged in water) as needed to protect personnel from explosive hazards.

According to published technical data (Wildin, 1986), SASN can be initiated by the energy of bright light (by raising the surface temperature of the SASN to the auto ignition temperature of 457 °F) or small contact shock. The TTF was specifically built to treat SASN slurry and SASN contaminated waste because of the hazards associated with handling the waste.

A description of the TTF burn pan design, construction, and materials is provided in Section 1.1 of this module to meet the requirements of 20 NMAC 4.1.900/40 CFR 270.23(a) [7-1-08]; and 20 NMAC 4.1.500/40 CFR 264.601 [7-1-08].

Prior to treatment operations (treatment of wastes in conjunction with a test), TTF personnel perform a pretreatment inspection of the Unit as described in Section 4.0 of this module. During treatment operations, Unit personnel have immediate access to a telephone to summon help, if needed, as described in Section 6.0 of this module.

8.1.1 Waste Quantities

The TTF is limited to the treatment of the following quantities of reactive wastes during treatment operations:

- The maximum net explosive weight of explosive treated during any treatment operation will not exceed 2.41 pounds (1.092 kilograms).
- The maximum total volume of SASN-contaminated wastes (solid and liquid combined) present in the burn pan at any time will not exceed 20.8 gallons (78.7 liters), the capacity of the burn pan.
- The maximum total mass of wastes (solid and liquid combined) present in the burn pan at any time will not exceed 190 pounds (86.2 kilograms).

If more restrictive conditions are imposed by the annual Open Burn Permit issued by the Albuquerque/Bernalillo County Air Quality Control Board (A/BCAQCB), those conditions will be followed. The Open Burn Permit and conditions are described in Section 8.1.4.

8.1.2 Operations

Liquid waste is generally pumped to the TTF utilizing a remotely-operated peristaltic pump that is located inside the area where SASN is formulated and used. The waste is transferred to the TTF burn pan via flexible hoses and metal tubing that lead into the burn pan. RCRA-regulated waste that cannot be pumped to the TTF (solid items) is first wetted with water to temporarily reduce the explosive sensitivity and then hand carried in appropriate containers and manually placed or poured into the burn pan by qualified personnel, using extreme care to prevent spills. TTF personnel are required to wear appropriate personal protective equipment when performing treatment operations.

After the waste is pumped and/or manually placed or poured into the burn pan, all open TTF gates are closed and locked and the door to the TTF is closed remotely. Transfer of liquid waste to the TTF can be accomplished remotely, without opening the TTF door or accessing the fence gates. During operations, the burn pad lid remains closed as much as possible except during loading and combustion to minimize evaporation of volatile waste.

The area between the TTF north fence and Building 6715 is cleared of all personnel by announcing over the public address system that treatment operations will soon commence. The TTF is controlled from the console inside Building 6715. Propane burners are pre-positioned to both heat the burn pan and ignite the contents; this is necessary to vaporize water-bearing wastes so that the explosive component can be treated effectively. The burn pan lid is raised if needed and the burners are ignited and operate until combustion is complete. To provide additional assurance of complete treatment, personnel may operate the burners for a period of time (typically 30 to 60 minutes). This post-treatment burn is conducted after the last treatment of the day is complete (i.e., all the explosives are deactivated and the ignitable liquids are combusted). Unit personnel use visual and audible evidence to determine treatment completion. Evidence of complete deactivation of explosives is the cessation of audible popping noises and visual flashes of light and/or puffs of smoke. Evidence of the complete

combustion of ignitable liquids includes the absence of large yellow flames from the burn pan and absence of liquid inside the burn pan. After treatment and/or the post-treatment burn are complete, Unit personnel turn off the propane burners and lower the lid to preclude wind dispersal of treatment residue and water infiltration into the burn pan during the cool-down period. The cool-down period varies, but it is at least 4 hours and generally will not exceed 24 hours.

After the cool-down period, Unit personnel perform a post-treatment inspection to identify any untreated waste in the burn pan and contamination and/or ―kickout" on the steel-lined concrete pad. Kickout is defined as untreated RCRA-regulated waste ejected from the burn pan during treatment. Kickout has occasionally been observed during treatment, and particles of untreated waste have been observed on the steel-lined concrete pad during post-treatment inspections. If any kickout is observed, Unit personnel wash the area and collect the residue or wet the kickout with water, wipe it up with wet paper wipes. The residue and/or wet wipes are placed in the burn pan for treatment. Untreated waste remaining in the pan and kickout returned to the burn pan are subsequently retreated. If the inspection indicates that all the waste has been treated, personnel remove the contents of the burn pan (i.e., all loose residue) using plastic scoops or a vacuum cleaner equipped with a high-efficiency particulate air filter. Personnel then lower the lid to minimize ash dispersal. The residue is containerized, characterized as described in Section B.2.5.1 of the Waste Analysis Plan (WAP) (Appendix B), and managed appropriately.

Following the post-treatment inspection and ash removal after treatment operations where kickout was observed, Unit personnel perform an additional review, checking surfaces of the affected areas with a portable propane burner (as described in Section 1.2.2.2) to determine whether small quantities of additional kickout (small particles that are not visually observed during the post-treatment inspections) are present. Visible kickout identified during this review will be collected as described above and treated in the burn pan. Personnel may also perform this additional review following treatment operations where kickout was not observed.

Unit personnel may collect kickout and residues generated during post-treatment inspections in a container, saturate them with water, and include them in the next treatment operations.

8.1.3 Operating Conditions

To minimize air emissions or exposure of people to toxic or hazardous air emissions, treatment at the TTF will be initiated only:

- In the day, during the period beginning one hour after astronomical sunrise and ending one hour before astronomical sunset. Operations may extend beyond sunset if necessary to complete treatment and post-treatment burn of the wastes in the burn pan.

- When the sustained wind speed is less than or equal to 20 miles per hour (mph).

- When threatening weather is less than 10 miles from the TTF. Threatening weather is defined as winds in excess of 35 mph; tornadoes; electrical storms with or without precipitation of any type; snow storms with a visibility of less than 2000 ft; rain with accumulations greater than 0.3 inch per hour; or any hail, sleet, or ice storms.

If adverse weather conditions arise during treatment operations, Unit personnel will evaluate the risks associated with continued operation against the risks associated with halting operations, and will take action as described in Section 1.2.4.5.

8.2 Preventing Releases to the Atmosphere

TTF personnel employ the practices described in Section 8.2 of the SNL/NM General Part B to prevent releases to the atmosphere during treatment (20 NMAC 4.1.900/40 CFR 270.14[b][8][vi] and 270.27(a)(2); 20 NMAC 4.1.500/40 CFR 264.179 and Subparts AA, BB, and CC).

8.2.1 Subpart AA

TTF treatment operations do not employ any of the processes subject to the requirements of 20 NMAC 4.1.500/40 CFR 264 Subpart AA.

8.2.2 Subpart BB

TTF operations involve a pump and transfer lines in light organic service. These are used less than 300 hours per calendar year and are therefore exempt from the requirements of 20 NMAC 4.1.500/40 CFR 264.1052-.1060 as noted in 20 NMAC 4.1.500/40 CFR 264.1050(f). A list of the equipment will be maintained in the Unit records, as described in Section 9.0 of the General Part B. Hours of operation will also be noted in the Unit records.

The TTF is subject to the regulations of the A/BCAQCB. Open burning of high explosives is allowed under A/BCAQCB Regulation Number 3 when transporting the material would be unnecessarily hazardous. The TTF is granted a permit for open burning of explosives by the City of Albuquerque on an annual basis. Treatment will be restricted to the open burning conditions imposed by the most current City of Albuquerque Open Burn Permit.

8.2.3 Subpart CC

TTF treatment operations do not include management of RCRA-regulated wastes in containers subject to the requirements of 20 NMAC 4.1.500/40 CFR 264 Subpart CC.

8.3 Treatment Effectiveness (20 NMAC 4.1.900/40 CFR 270.23[d])

The thermal treatment of RCRA-regulated waste at the TTF is completely effective in deactivating explosive and ignitable constituents in the wastes. The auto ignition temperature of SASN is 457 °F. Propane, used to ignite the waste, has a flame temperature of 3500°F. The TTF burners are operated for a minimum of 30 minutes after there is no visual (sparks) or audible evidence of untreated explosive waste remaining in the burn pan. No waste explosives have been observed in the treated TTF ash.

Given the extremely high vapor pressure and low flash points of ignitable solvents (e.g., acetone, acetonitrile) that may be treated at the TTF (the flash point of acetone is 15°F and the flash point of acetonitrile is 35.6°F), it can be concluded that the materials are completely burned and decompose to gaseous by-products and ash.

The principal by-products of combustion of liquids and solids treated at the TTF are ash (carbon), gases, and silver. Gases consist primarily of nitrogen, water vapor, carbon dioxide, carbon monoxide, sulfur dioxide, diatomic oxygen, and traces of nitrous oxides. Treated residues (ash) are managed in accordance with applicable RCRA requirements and characterized in accordance with Section B.3.3.1 of the site-wide WAP (Appendix B).

Some evidence of occasional kickout during treatment has been observed. In such cases, Unit personnel remove the kickout and treat it in the TTF as described in Section 8.1.2.

9.0 ENVIRONMENTAL PERFORMANCE STANDARDS FOR THE MISCELLANEOUS UNIT

The TTF will be operated, maintained, and closed in a manner that will ensure protection of human health and the environment, in accordance with 20 NMAC 4.1.500/40 CFR 264.601 [7-1-08]. The Unit is located in a sparsely populated area, and is designed and operated to facilitate safe handling and treatment of RCRA-regulated wastes in order to prevent adverse impacts to human health and the environment. The Unit features, small quantities of waste treated, and operating requirements minimize the potential for a release. Operations, including hazard prevention features and practices, are described in Sections 1.2 and 8.1 of this module. Contingency and emergency response actions to minimize impacts of unanticipated events, such as spills, are described in Section 6.0 of this module. Treatment operations and effectiveness are described in Sections 8.1 and 8.2 of this module.

In conformance with 20 NMAC 4.1.500/40 CFR 264.601 [7-1-08], a miscellaneous hazardous waste storage, treatment, or disposal facility must be shown to prevent any releases to groundwater, surface water, soil, or air that may have adverse effects on human health and the environment. The TTF has been designed and is operated in such a manner as to meet these requirements, as described below.

9.1 Characteristics of the Waste and the Unit (20 NMAC 4.1.500/40 CFR 264.601[a][1], [b][1,2], and [c][1-3])

Sandia/DOE assessed the potential risk to human health and ecological receptors due to operation of the TTF under the conditions described in this module. The chemicals of potential concern (COPCs) and Unit features are summarized below.

9.1.1 Waste Characteristics

Waste quantities are discussed in Section 8.1 of this module. The RCRA-regulated wastes treated at the TTF consist of the following:

- A liquid or slurry containing varying amounts of acetone, acetonitrile, nitric acid, water, and typically some SASN crystals. The liquid or slurry may also contain PETN.
- Solid items containing or coated with SASN, such as paper wipes, cotton rags and swabs, filter elements, test debris (pieces of wood and metal), incidental silver nitrate that did not react to form SASN, and traces of Viton™ fluoroelastomer.

The estimated quantity of waste generated by testing operations is based on individual batches of SASN. Table 5 summarizes the COPCs in the wastes treated at the TTF.

Table 5
Estimated Maximum Quantities of Constituents in SASN Wastes

Constituent	Approximate quantity in wastes from cleanup of aborted test using four batches of solution
Acetone	80 L [a, b]
Acetonitrile	6 L[b]
Nitric acid	0.25 L [c]
Silver nitrate	340 grams [c]
SASN	1.092 kg [d]
PETN (optional)	0.40 kg [d]
Water	210 L
Solid items (e.g., paper, cloth, wood, cardboard)	50 kg

[a] In normal operations, some of the acetone would be applied to the test article, some would be used to flush lines, and approximately 25L of acetone would be present in the solution to be treated at the TTF.
[b] A solvent used in the formulation of the SASN slurry. Most or all of the material may be present in the waste from normal operations and from aborted tests.
[c] A byproduct generated in the formulation of the SASN slurry. Nitric acid will be present in the waste from normal operations and from aborted tests.
[d] In normal operations, all the explosive would be applied to the test article, and a trace would remain in the solution to be treated at the TTF. Some explosive would also be present on the solid items treated.
kg kilogram
L liter

Most test operations will require at least two batches of SASN; the largest may require four batches. PETN is used on rare occasions. Normal test operations result in a mixture containing acetone, water, nitric acid, acetonitrile, silver nitrate, and SASN that requires treatment at the TTF. Aborted tests may result in the entire quantity of formulated SASN requiring treatment in addition to the normal wastes. The latter situation is shown in Table 5.

Of the COPCs identified above, silver is the only COPC remaining in the ash after treatment at the TTF. Analytical data for residual ash from TTF operations during 2004 indicate (a total of 2 samples), silver was detected at a maximum concentration of 550 mg/kg. Sandia/DOE used this concentration as the exposure point concentration when considering direct contact in the human health screening evaluation.

9.1.2 Unit Features

The TTF is described in Section 1.1 of this module. It is comprised of a steel burn pan with a cover, located inside a steel cage. The cage and burn pan rest on a steel-lined concrete pad. The cage and pad are surrounded by an earthen berm.

Nine situations present the potential for the release of RCRA-regulated waste to the environment surrounding the TTF. Each situation is addressed below:

- *Transfer of liquid wastes to the TTF burn pan.* Liquid wastes are transferred to the Unit through enclosed tubing equipped with secondary containment. No more than 20.8 gallons of liquid wastes are present in the Unit at any time, limiting the maximum release to 20.8 gallons. Spills on the ground or on the TTF pad will be wetted with water using spray hoses. When saturated with water, the explosive waste is stable. The spilled, wet waste can then be wiped or scooped up and placed in the burn pan for treatment or containerized with water and included in the next treatment operations. Similarly, contaminated soils will be wetted, excavated, and placed in the TTF burn pan or containerized for treatment.

- *Transfer of solid items and liquids to the TTF burn pan.* Solid items such as explosive-contaminated paper and filters are saturated in water in containers and carried to the TTF burn pan by qualified Unit personnel. Solids or liquids that are spilled during transfer would be handled in the same manner as described above for liquids.

- *Runoff of potentially contaminated precipitation.* Once waste is transferred to the burn pan, treatment generally takes place immediately. In the unlikely event of spillage from the burn pan, waste material will be contained on the steel-lined concrete pad. Any precipitation or spillage in the steel-lined concrete pad drains through a settling basin and filter into the 157-gallon catch tank. In addition, no untreated waste or treated residue is allowed to remain for extended periods of time in the burn pan.

- *Halting treatment before completion.* Treatment may be halted before completion due to adverse weather conditions or equipment or power failure as described in Section 1.2.4. If wastes or residues were dispersed when during addition of water, they would be contained on the steel-lined concrete pad as described above.

- *Discharge of potentially contaminated precipitation from the catch tank.* Water collected in the catch tank is managed as described in Section 1.2.1 of this module.

- *Evaporation of liquid wastes from the burn pan.* Untreated wastes are not allowed to remain for extended periods in the burn pan, and treatment generally takes place immediately during normal operations. If treatment cannot be performed, the burn pan lid is lowered. During treatment, the high vapor pressure and low flash point of the organic liquids in the waste, combined with the burner design (Section 1.1), maximize the destruction of organic constituents through combustion.

- *Emission of particulates and gaseous combustion products during treatment.* Combustion products are described in Section 8.2. Products of complete combustion include nonhazardous gases. As noted above, the high vapor pressure and low flash point of the organic liquids in the waste, combined with the burner design (Section 1.1), maximize combustion performance.

- *Kickout of untreated waste during treatment.* Kickout (described in Section 8.1.2) may occur, and has been occasionally observed on the steel-lined concrete pad. Kickout on the pad is identified during the post-treatment inspection, wetted, wiped up, and placed

in the pan for treatment. Kickout on the berm would be handled in the same manner as described above for spilled liquids.

- *Emission of particulates following treatment.* Ash and particulate matter (residues) from the thermal treatment process are removed from the burn pan as soon as possible, and the burn pan lid is lowered except during loading and unloading, treatment, inspections, and maintenance.

9.2 Potential for Deposition or Migration of Wastes or Waste Constituents (20 NMAC 4.1.500/40 CFR 264.601[a][7])

The potential for release of COPCs to the soil is directly associated with the operations and residual waste at the TTF. COPCs may be released to the surface soil as a result of wind-blown ash deposition. Wind can transport ash particles with adsorbed COPCs (silver) as suspended dust, capable of dry or wet deposition away from the site. The site is sparsely vegetated, and is susceptible to wind and water erosion. Surface runoff and biota are natural, but minor mechanisms of COPC transport. Water percolation through the soil is the primary mechanism for the transport and migration of COPCs in the subsurface soil and into groundwater.

It has been estimated that loss through evapotranspiration accounts for 95 percent of the total precipitation received at SNL/NM (Thomson and Smith 1985). Vegetation, although sparse at the site, will increase the rate of moisture loss from the subsurface soil through transpiration. As moisture evaporates from the soil surface, the direction of COPC movement near the surface may be reversed (i.e., upward transport) with capillary rise of the soil moisture.

Because of the arid nature of the environment at the TTF, characterized by low precipitation and high evapotranspiration rates, recharge to the water table at TA-III (measured at a solid waste management unit in north central TA-III) is insignificant under current climatic and vegetative conditions (Peace et al., 2002). Because groundwater at the TTF is approximately 500 ft below ground surface, the potential for COPCs to reach groundwater through the unsaturated zone above the water table is very low and can be ruled out as a transport pathway of concern.

Plant roots can access COPCs that are in the soil solution and transported to the aboveground tissues with the xylem stream. This may be a passive process, but active uptake (i.e., requiring energy expenditure on the part of the plant) or exclusion of some constituents in the soil solution may also take place. Aboveground tissues can absorb constituents directly from the air or by contact with dust particles. Constituents in plant tissues that are consumed by herbivores may pass through the gut and be returned to the soil in feces (at the site or transported from the site in the herbivore), or be absorbed into tissues, to be held, metabolized, or later excreted. The herbivore may be eaten by a primary carnivore or scavenger, and the constituents still held in the consumed tissues will repeat the sequence of absorption, metabolization, excretion, and consumption by higher predators, scavengers, and decomposers. The potential for transport of the constituents within the food chain is dependent upon both the mobility of the species that comprise the food chain and the potential for the constituent to be transferred across the links in the food chain. Inorganic COPCs (silver) at the TTF are elemental in form and are, therefore, not considered to be degradable via biotic or abiotic processes.

Table 6 summarizes the fate and transport processes that may occur at the TTF. Because the topography of the site is relatively flat and maintained for treatment operations, the potential for surface-water transport is low. Because winds in the Albuquerque area can be fairly strong in late winter and early spring, the potential for transport of COPCs in surface soil by wind is moderate. In both cases, however, the significance of these transport mechanisms is lessened by the fact that the principal COPC that would be released (i.e., silver) has been and is expected to be present in the residual ash at low initial concentrations. Because of the arid nature of the climate at the site, significant movement of water through the subsurface soil is unlikely and migration to groundwater is not expected to occur. The potential for food chain uptake is low because of the small size of the site, the disturbed nature of the habitat, and the continued operations at the site. The potential for degradation is minimal due to the elemental and inorganic nature of the COPC (silver).

Table 6
Summary of Fate and Transport Mechanism at the TTF

Fate and Transport Mechanism	Existence at Site	Significance
Wind	Yes	Moderate
Surface runoff	Yes	Low
Migration to groundwater	No	None
Food chain uptake	Yes	Low
Transformation/degradation	No	None

9.3 Potential Risks to Human Health (20 NMAC 4.1.500/40 CFR 264.601[a][8], [b][10], and [c][6])

Sandia/DOE performed a screening human health risk assessment to estimate the potential risk to human receptors that may be exposed to residual COPCs at the TTF under the proposed operating conditions. The assessment indicates that exposure to the COPCs at the TTF poses no significant human health risks under current and anticipated future conditions, as discussed in the following sections. The assessment was performed in accordance with the "Risk Assessment Guidance for Superfund" (EPA, 1989) and ―Technical Background Document for Development of Soil Screening Levels" (NMED, 2012).

9.3.1 Receptors

Building 6715 is occupied during research activities, and may be continuously occupied for several weeks or months, depending on the test schedule. Six buildings are occupied on a regular basis within the vicinity of the TTF. The remaining buildings are used sporadically for other tests or research activities, in the same manner as Building 6715. Table 7 summarizes the occupants of the TTF and the full-time occupants near the TTF.

Table 7
Full-Time Occupants of Buildings Near TTF in TA-III at SNL/NM

Building	Distance From TTF (feet)	Direction From TTF	Number of Full-time Occupants	Approximate Percent of Time Downwind from the TTF [a]
6715	20	N	10 [b]	5-10
6585	1250	E	152	5-10
6584	950	E	59	5-10
6530	820	SE	1	5-10
6710	1080	SW	8	2-12
6539	470	E	8	5-10

[a] Based on prevailing winds during daylight hours, based on data from 2001-2003. Range indicates some variation from year to year.
[b] The TTF may or may not be continuously occupied. Personnel who are present during tests and treatment have the highest potential for exposure

The occupants of surrounding buildings are upwind from the TTF for a large percentage of the time. The wind rose on Figure 5 shows that overall prevailing winds at the TTF are from the east to southeast. However, winds in the area exhibit a diurnal pattern as described in Section 2.6: nighttime winds are from the southeast, and daytime winds are generally from the northwest to southwest (SNL/NM, 2004). The daytime winds are reported in Table 7, because the buildings are occupied during the daytime.

9.3.2 Methodology

To evaluate potential human health risk at the TTF, maximum exposure point concentrations of the residual ash COPCs were compared to the corresponding occupational NMED SSLs (NMED, 2012). An individual SSL represents the soil concentration below which no significant adverse health effects are expected to occur from the assumed soil exposure pathways. The SSLs are fixed to conservative levels of risk (i.e., a cancer risk of 1×10^{-05} or a hazard quotient of 1.0). For metals and high explosives, the SSL uses three exposure pathways in the risk calculations:

- Incidental ingestion of chemicals in soil
- Dermal contact with chemicals in soil
- Inhalation of fugitive dust from soil.

The modeled duration of exposure assumes a continuous exposure during a 40-hour work week, 50 weeks each year, for a 25-year period.

The proposed current and future land use at the TTF is occupational under operating conditions. In addition, the onsite occupational receptors are not expected to exceed 50 days per year operational use at the TTF (i.e., the actual annual exposure period is less than 20% of the modeled exposure). Therefore, use of the occupational SSLs to calculate potential risk is

highly conservative. Groundwater is not considered a viable exposure medium due to due the limited potential fate and transport soil-to-groundwater mechanisms operating at TA-III. Vapors released during treatment operations at the TTF do not to significantly contribute to the operational risk due to the following factors:

- The short duration of TTF treatment operations.
- The majority of the COPCs are incinerated during treatment.
- The treatment takes place outdoors and, therefore, the remaining vapors are quickly dispersed.
- Unit personnel are inside Building 6715 during treatment.
- Building 6715 is upwind from the TTF most of the time (Table 7).
- The nearest continuously-occupied building other than Building 6715 is 470 ft away from the TTF and is upwind most of the time (Table 7).

A hazard quotient (HQ) can be estimated using an exposure point concentration and a respective non-carcinogenic SSL, according to the following formula:

$$HQ = THQ \frac{EPC_i}{SSL_i}$$

Where:

- THQ = The target hazard quotient of 1.0
- EPC_i = Maximum exposure point concentration of $COPC_i$ detected in soil (mg/kg)
- SSL_i = Occupational SSL for $COPC_i$ detected in soil (mg/kg) based upon non-carcinogenic effects

None of the COPCs at the TTF are carcinogenic; therefore, no estimation of incremental lifetime cancer risk was conducted.

9.3.3 Results

Table 8 summarizes the COPC HQ values, based on comparing the maximum exposure point concentrations with the occupational SSLs.

Table 8
Results of the Human Health Risk Screening Analysis for the TTF

COPC	Occupational NMED SSL (mg/kg) [a]	Concentration (mg/kg) [b]	Hazard quotient	Incidental lifetime cancer risk
Silver[n]	5680	550	0.10	NA

[a] NMED 2012.
[b] concentration at point of maximum exposure, assuming direct contact
mg/kg milligram per kilogram.
n Non-carcinogenic metal.
NA Not applicable.

This screening human health risk assessment indicates the maximum concentration of silver in residual ash does not pose a potential significant risk to human health. The HQ calculated is 0.10, which is significantly less than the screening criteria of 1.0.

As noted in Section 9.3.2, the actual risks presented by treatment at the TTF and the residual ash are significantly less than those calculated due to the limited actual use of the TTF (i.e., it is only used 50 days per year, and the actual annual exposure is less than 20% of the modeled exposure). Therefore, under current and anticipated future conditions, exposure to COPCs at the TTF poses no significant human health risks.

9.4 Potential Damage to Animals, Vegetation, and Physical Structures (20 NMAC 4.1.500/40 CFR 264.601[a][9], [b][11], and [c][7])

Sandia/DOE evaluated the risk and potential damage to animals and vegetation through a screening ecological assessment, which examines the potential presence of endangered or threatened species at or around the TTF. The assessment indicates the expected impact of the TTF is minimal. No sensitive species have been identified at the TTF. The habitat quality of the TTF is poor (due to industrial land use patterns in the surrounding area), indicating that future habitation by sensitive species is unlikely.

Damage to physical structures (primarily Building 6715) that are in close proximity to the Unit could be caused by detonation of the explosive wastes treated in the TTF. However, the potential for such damage is effectively minimized through the design and operation of the Unit (described in Sections 1.2 and 8.1 of this Module).

9.4.1 Ecological Screening Assessment

The screening ecological assessment is limited to the potential threatened or endangered (T and E) species that may occur within the vicinity of the TTF. It includes: summary of the T and E species survey for SNL/NM; the ecological receptors found at SNL/NM; and a summary of the receptors found at TA-III and, more specifically, the TTF as reported in *Sensitive Species Survey Results* (IT Corporation, 1995).

9.4.2 Survey Description

Sandia/DOE conducted biological field surveys and reviewed previously documented surveys to identify the presence of sensitive species and key habitat areas at each of the SNL/NM solid waste management units (being addressed through the Sandia/DOE Environmental Restoration (ER) program) that are located within the boundaries of KAFB.

The term "sensitive species" is used in these surveys refers to all state or federally listed threatened or endangered species, proposed or candidate species, and other species afforded special management consideration, thereby providing that species legal protection from actions that may jeopardize its further existence, by a state or federal resource management agency (e.g., U.S. Forest Service [USFS] Sensitive Species). Both plant and animal species are included under this definition. The actual or potential occurrence of permanent or transient sensitive species populations with the vicinity of the TTF is discussed.

The current list of species that fall under the definition of sensitive and that may occur on KAFB was compiled from information obtained from the U.S. Fish and Wildlife Service (USFWS), the New Mexico Department of Game and Fish (NMDGF), and the New Mexico Forestry and Resource Conservation Division (NMFRCD) of the Energy, Minerals and Natural Resources Department. Federal protection of a species (plant or animal) principally falls under the jurisdiction of the USFWS, although special management status may be granted to a species by other resource management agencies, such as the USFS and the Bureau of Land Management. In New Mexico, the state agencies empowered to identify and protect sensitive biological resources are the NMDGF (for vertebrate wildlife and some invertebrates) and the NMFRCD (for plants).

Other species designations are also recognized through the listing process. Those that are considered sufficient to warrant inclusion as a sensitive species are proposed species, C1 candidate species, and C2 candidate species. A proposed species is one for which a proposal for listing has been published in the Federal Register, but a final rule on the listing has not yet been made. Candidate species are those that are under review for possible listing. The C1 classification means that the USFWS believes sufficient information exists to support listing. The C2 classification means that insufficient information currently exists to support listing.

Similarly, the New Mexico Wildlife Conservation Act authorizes the NMDGF to designate species of wildlife native to New Mexico as endangered, thereby granting the species protection from further threats to their continued existence in New Mexico. Under this authority, the NMDGF uses two levels of classification, endangered group 1, and endangered group 2, which are equivalent to the endangered and threatened classifications (respectively) of the USFWS. The NMDGF also designates certain species and groups of wildlife (e.g., raptors and horned lizards) as "protected"; however, this designation is directed at protecting individuals of these species from unregulated hunting, killing, trapping, capture, or harassment and does not carry with it the criterion of threat of extinction or extirpation.

The NMFRCD has the authority to designate and protect plant species and varieties that are threatened by extinction or extirpation in New Mexico. The NMFRCD maintains four lists of plant species, each representing a separate level of classification. List 1 plants are designated endangered in New Mexico and are legally protected from unauthorized collection. List 1 plants include all plant species in New Mexico that are listed by the USFS as endangered or

threatened as well as other species that may be threatened with extirpation from the state. List 2 plants are either rare throughout their range or have a very restricted range, making them vulnerable to environmental perturbations. Although List 2 plants are monitored for change in status, they are not protected under the New Mexico Endangered Plant Species Act. List 3 plants are rare plants that are currently under review for listing. List 4 plants are those that, after review, have been dropped from consideration at this time. As with the List 2 plants, neither List 3 nor List 4 plants are protected under the New Mexico Endangered Plant Species Act. Plants on the NMFRCD Lists 1, 2, and 3 are considered to be sensitive species because all are either known to be vulnerable to disturbance or are of uncertain sensitivity.

9.4.3 Receptors Found at SNL/NM

There are no federally listed T or E species known to occur within KAFB. The federally endangered peregrine falcon (*Falco peregrinus*) could potentially occur in the mountainous areas of KAFB; however, the likelihood is low due to poor habitat quality for this species. The federally threatened Mexican spotted owl (*Strix occidentalis lucida*) occurs in canyons similar to Sol se Mete and Lurance Canyons in eastern KAFB; however, a special survey of these canyons by Roger W. Skaggs found the habitat conditions to be unsuitable and concluded that the probability of this species occurring in these canyons is low. The federally endangered black-footed ferret (*Mustela nigripes*) was once native to central New Mexico but has not been recorded in the state in recent years.

Two candidate species (C2) for federal listing are known to occur on KAFB. These are the grama grass cactus (*Pediocactus papyracanthus*) and the Texas horned lizard (*Phrynosoma cornutum*). The grama grass cactus is also a State-listed endangered plant species (List 1) and a USFS sensitive plant and has been recorded throughout the lower elevations of KAFB, from the base of the Manzanita Mountains to the fence marking the western boundary of the base. The Texas horned lizard has been observed at the North Thunder Range and in Lurance Canyon. As a horned lizard, this species is protected by state law from collection but has no other state-granted special status.

Seven other federal candidate species are considered as potentially occurring on KAFB but have not been recorded on KAFB. These include three birds, three bats, and one rodent species. Three of these species, the southwestern willow flycatcher (*Empidonax traillii extimus*), the spotted bat (*Euderma maculatum*), and the "New Mexican" meadow jumping mouse (*Zapus hudsonius luteus*), are also listed by the NMDGF as endangered (group 2). All three of the birds -- the "Apache" northern goshawk (*Accipiter gentilis apache*), the ferruginous hawk (*Buteo regalis*), and the southwestern willow flycatcher -- are likely to be migrants on KAFB, if they occur at all. The northern goshawk typically nests at higher elevations and in denser coniferous forests than those provided by the Manzanita Mountains, although it winters at lower elevations, usually along riparian zones. Although a ferruginous hawk was observed soaring over the South Thunder Range during surveys, nesting, roosting, or feeding by this species on KAFB has not been observed. The lack of dense willow stands (which are the preferred nesting habitat for the southwestern willow flycatcher), makes it an unlikely breeding species on KAFB. The three species of bats listed as federal candidate species (C2) potentially use the mine shafts in the Manzanita Mountains as roosts, although the small number of records for the greater western mastiff bat (*Eumops perotis californicus*) in New Mexico make it very unlikely to occur in these mine shafts. The "New Mexican" meadow jumping mouse has

been recorded along the Rio Grande and in higher montane meadows, but suitable habitat for this species (thick grass with high soil moisture) does not occur on KAFB.

Two species of birds, the gray vireo (*Vireo vicinior*) and Baird's sparrow (*Ammodramus bairdii*), are listed by the NMDGF as endangered (group 2) but have no federal status. A gray vireo was observed in Sol se Mete Canyon but was probably a migrant. Past observational records indicate that the Baird's sparrow is unlikely in the area of KAFB.

Three State-listed endangered plants (List 1) are known to occur on KAFB. These are the grama grass cactus, the Wright's pincushion cactus (*Mammillaria wrightii*), and the visnagita cactus (*Neolloydia intertexta*). Two other State-listed endangered plants, Simpson's cactus (*Pediocactus simpsonii*) and Great Plains lady tresses (*Spiranthes magnicamporum*), are possible but have not been recorded on KAFB. The latter, an orchid, is unlikely due to the rarity of moist habitats required for this species.

One State-listed rare and sensitive plant (List 2) is known to occur on KAFB, and two others may potentially occur. The Santa Fe milkvetch (*Astragalus feensis*) has been recorded in the North Thunder Range area. The cyanic milkvetch (*Astragalus cyaneus*) and Plank's catchfly (*Silene plankii*) are sporadic but locally common on dry slopes along the Rio Grande Valley. Neither has been observed on KAFB.

Finally, only one species under review by the NMFRCD (List 3) may potentially occur on KAFB. The strong prickly pear (*Opuntia valida*) occurs along the foothills of the Sandia Mountains and has typically been treated as a form of the common and highly varied Engelmann or "sprawling" prickly pear (*Opuntia phaeacantha*). Its taxonomic elevation to species is not widely accepted and requires further study. It has not been recorded on KAFB but may be easily overlooked due to the prevalence of Engelmann prickly pear.

9.4.4 Sensitive Species Found at TA-III

TA-III was surveyed for sensitive species during the spring and summer of 1992 and 1993. This survey effort included all ER Project sites that are within TA-III, as well as an area northwest of TA-III. Portions of the west central part of TA-III have been identified as Priority 1 habitat for grama grass cacti, indicating that the species occurs in vigorous populations in the area of TA-III.

Although no other sensitive species have been recorded on SNL/NM ER Project sites in TA-III, the potential occurrence of some cannot be ruled out. Among the plants, both the Santa Fe milkvetch and Simpson's cactus are possible in the habitats of the lower foothills and may have eluded detection. The Texas horned lizard, which has been recorded in Lurance Canyon, could occur in the grassland sites within this canyon and on the mesa. Finally, the abandoned mines in the eastern part of KAFB may contain bats, among which both the spotted bat and occult little brown bat are possible occupants. However, none of these are expected to occur at the TTF.

No sensitive species have been identified at the TTF. Additionally the habitat quality of the TTF is poor, indicating that future habitation by sensitive species is unlikely to occur. Therefore, a

quantitative assessment of potential risk to ecological receptors at the TTF is not warranted at this time.

9.5 Monitoring (20 NMAC 4.1.500/40 CFR 264.601 - 602)

Sandia/DOE do not routinely perform environmental monitoring at the TTF because of the sporadic nature of the operations and the minimal effect of the operations on human health and the surrounding environment (discussed in Sections 9.3 and 9.4 of this module). However, as discussed in Sections 2.6 and 9.0, Sandia/DOE perform routine environmental monitoring in the vicinity of the TTF. The results of the activities are provided in annual environmental monitoring reports (SNL/NM 2004). Contamination attributable to the TTF has not been detected during environmental monitoring activities at SNL/NM.

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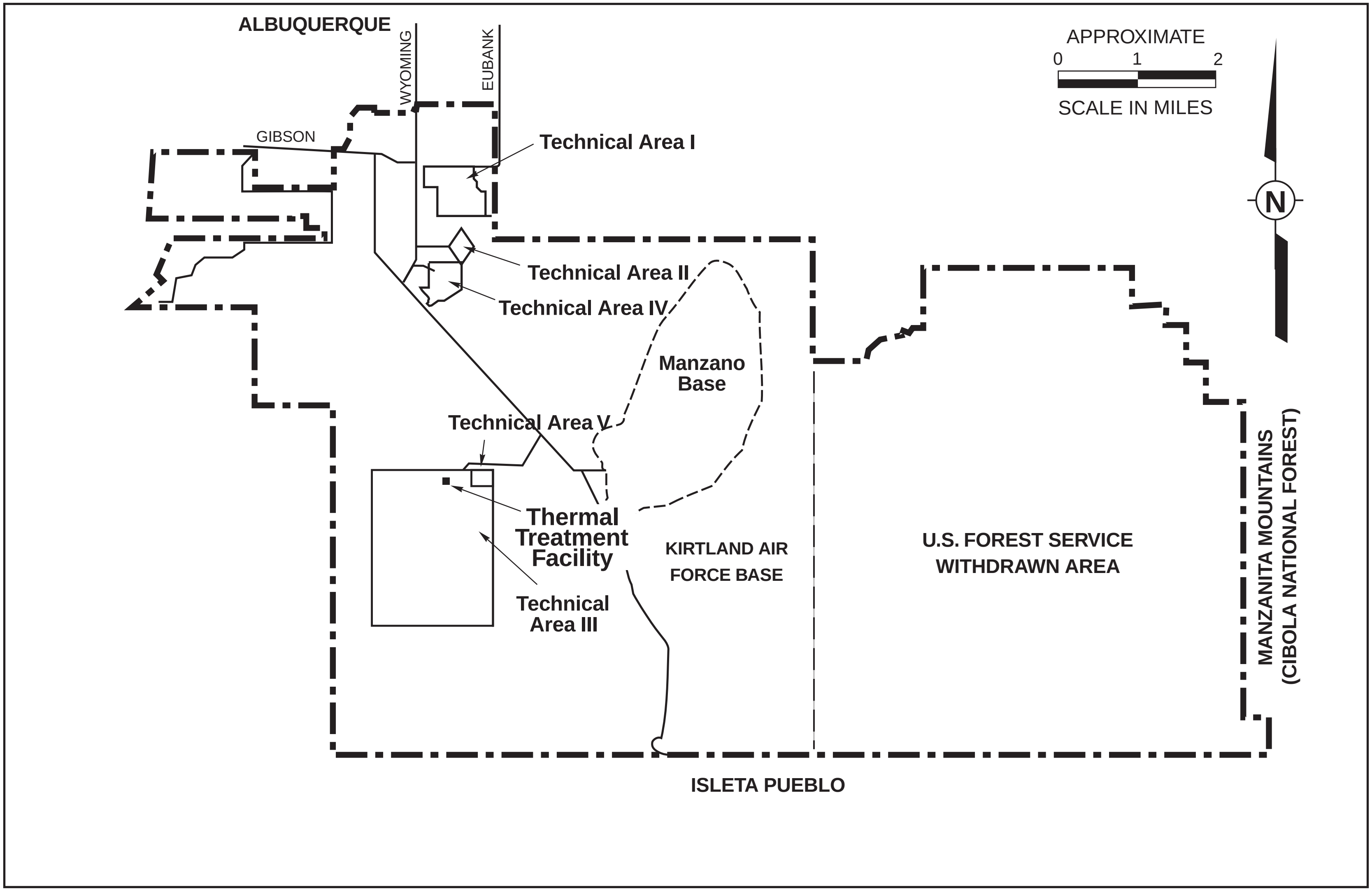

Figure 1

Location of the Thermal Treatment Facility at Sandia National Laboratories/New Mexico

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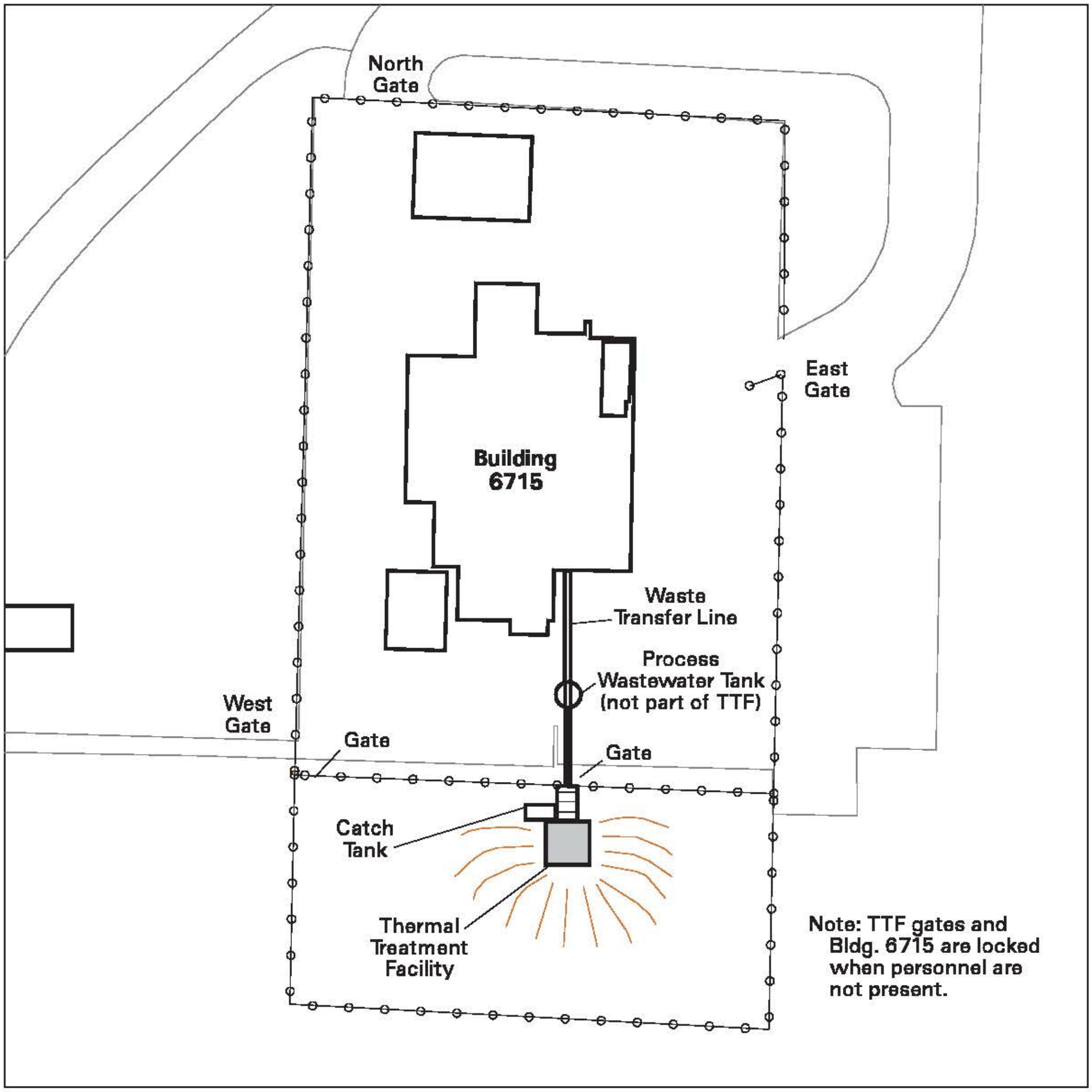

Legend

- Earthen Berm
- Road / Parking
- Fence
- Building / Structure
- RCRA-Regulated Waste Management Area
- Steps

Figure 2
Thermal Treatment Facility, Resource Conservation and Recovery Act-Regulated Waste Management Area

0 25 50
Scale in Feet

0 6 12
Scale in Meters

N

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

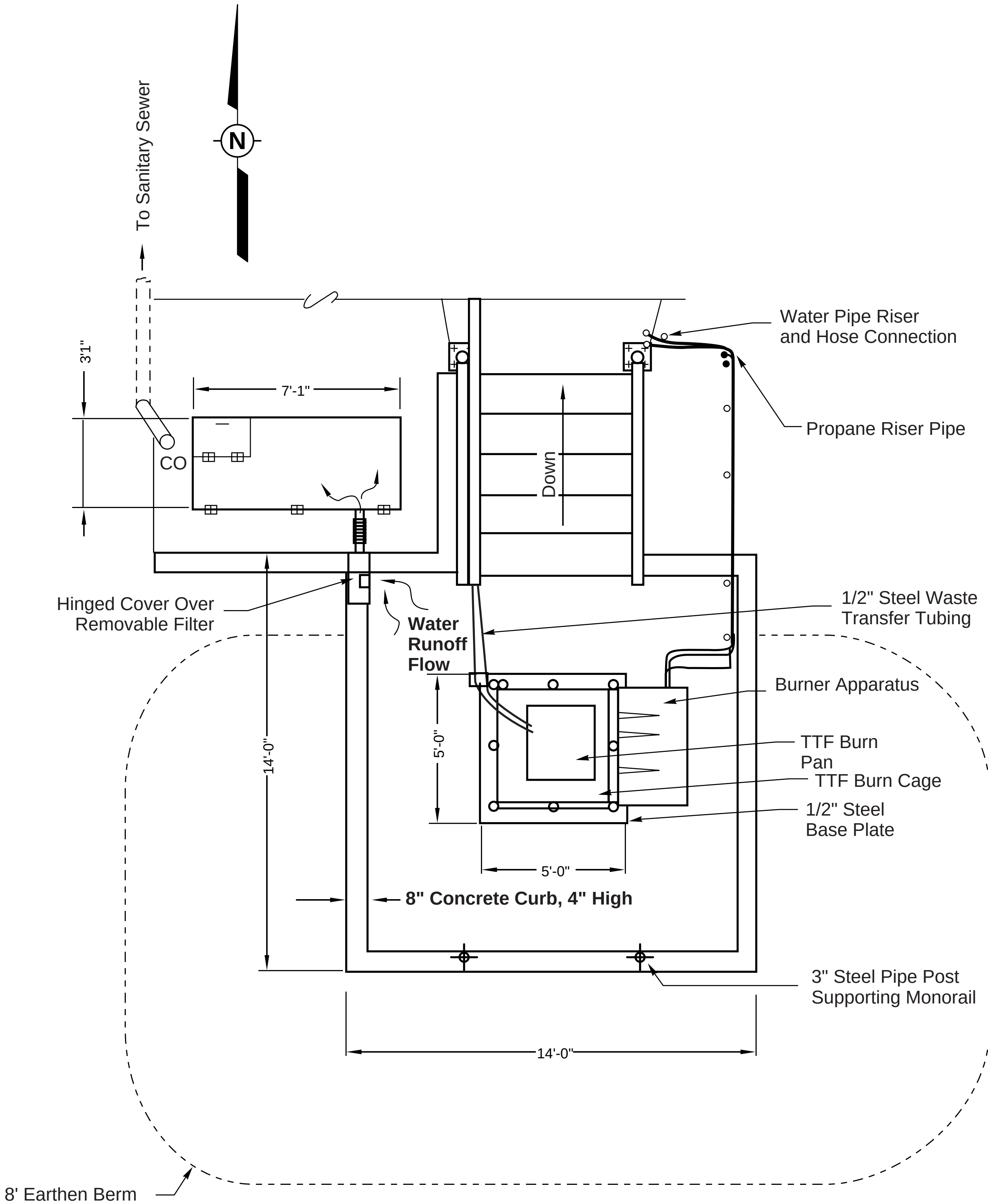

Figure 3

Thermal Treatment Facility (TTF)—Plan View

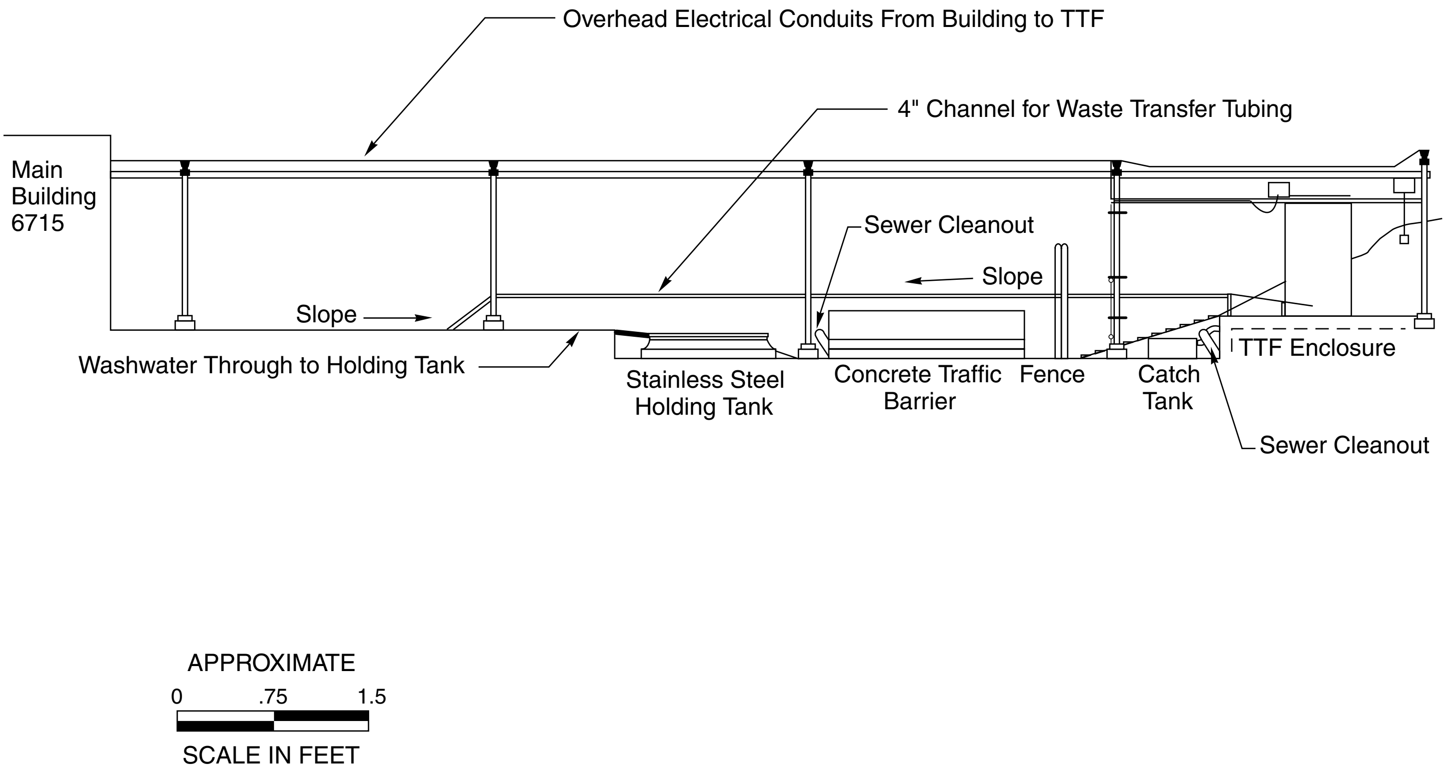

Figure 4

Thermal Treatment Facility (TTF)—Section View

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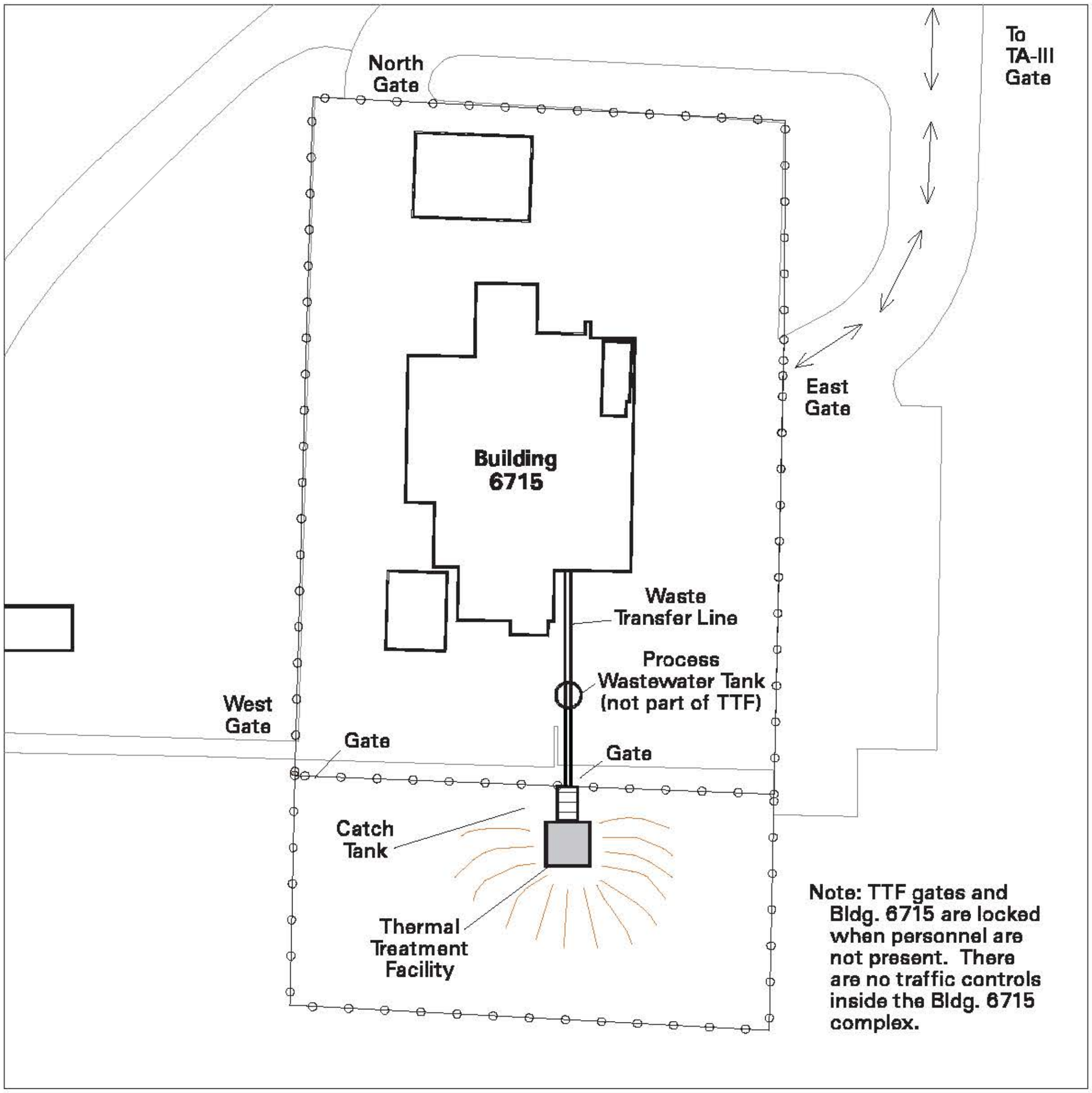


Legend

- Earthen Berm
- Road / Parking
- Fence
- Building / Structure
- RCRA-Regulated Waste Management Area
- Steps

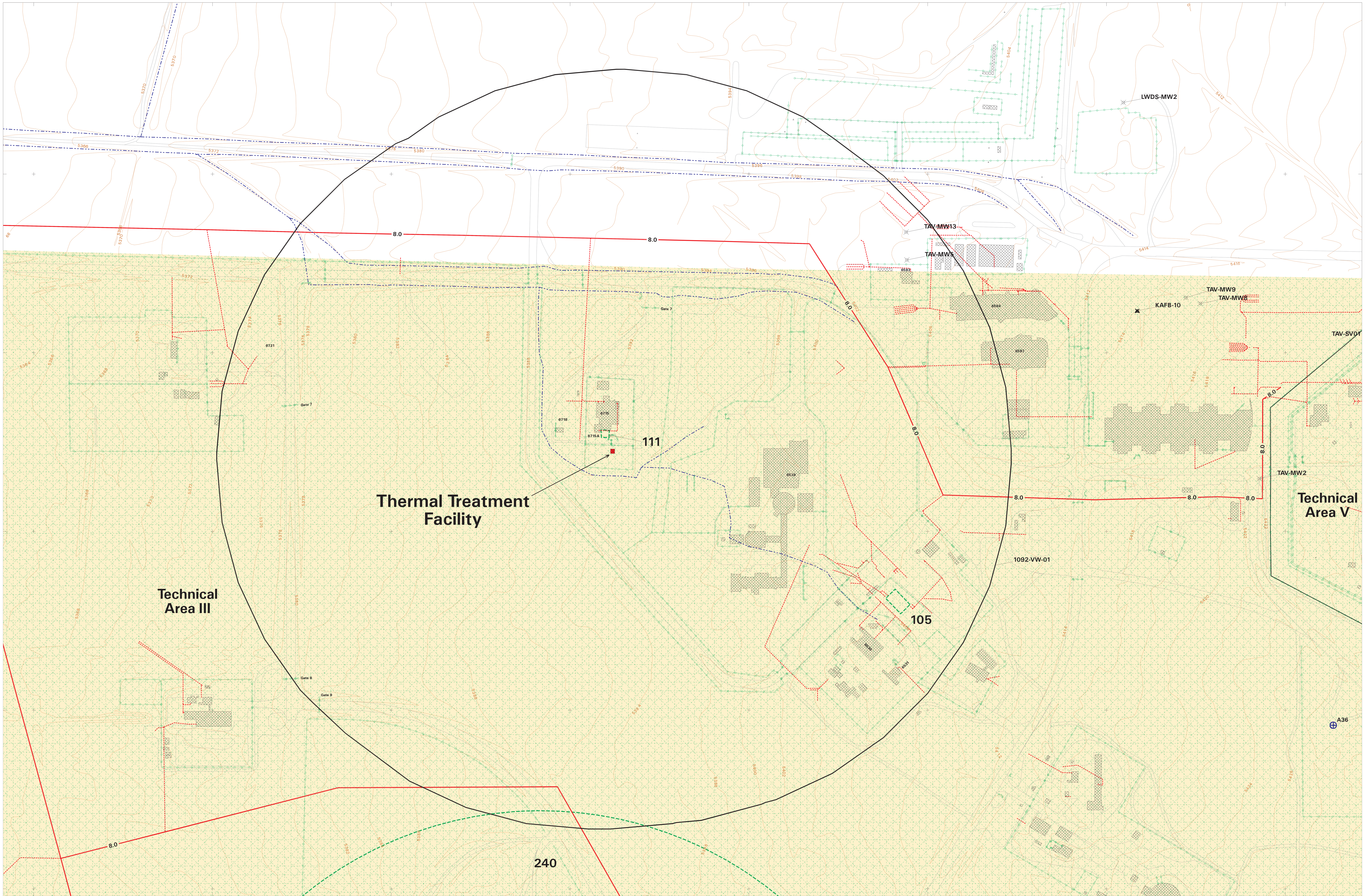
Figure 5
Thermal Treatment Facility
Traffic Routes and Controls

0 25 50
Scale in Feet

0 6 12
Scale in Meters

N

Sandia National Laboratories, New Mexico
Environmental Geographic Information System



Legend

Wells and Water Features

- Vapor Monitoring Well
- Monitoring Well
- Observation Well
- Production Well
- Production Well (Potable)
- Production Well (Out of Commission)
- Production Well (Abandoned)
- Production Well (Non-Potable)
- Plugged and Abandoned Well
- Spring
- Unknown Water Feature

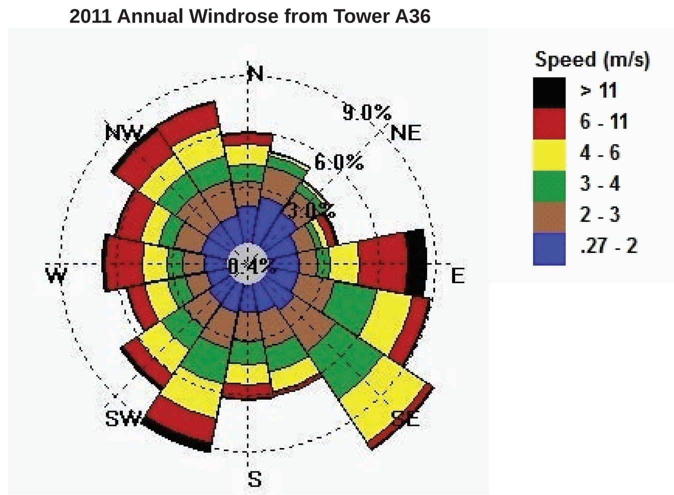
- Meteorological Tower
- Contours (2 Ft)
- Road (all types)
- Fence
- Surface Drainage
- Solid Waste Management Unit
- Building and Concrete Pad
- Sanitary Sewer Main (active)
- Sanitary Sewer Service (active and inactive)

- Thermal Treatment Facility (TTF)
- Sandia National Laboratories Technical Area
- 1000 Foot Buffer Around TTF

Land Use

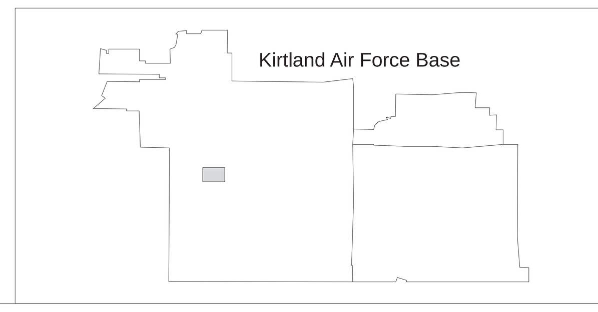
- Industrial
- Undefined

2011 Annual Windrose from Tower A36



Note: The wind direction is the direction from which the wind is blowing. This diagram shows the frequency of occurrence for each wind direction and speed. The color indicates the wind speed.

0 100 200
Scale in Feet
0 24 48
Scale in Meters
0 0.024 0.048
Scale in Kilometers
0 0.019 0.038
Scale in Miles



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

Figure 6
Topographic Map
Thermal Treatment Facility (TTF)
April 2012
Sandia National Laboratories
New Mexico

Compiled by photogrammetric methods from aerial photography dated March 1989, March 1990, September 1991 and July 1992

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum

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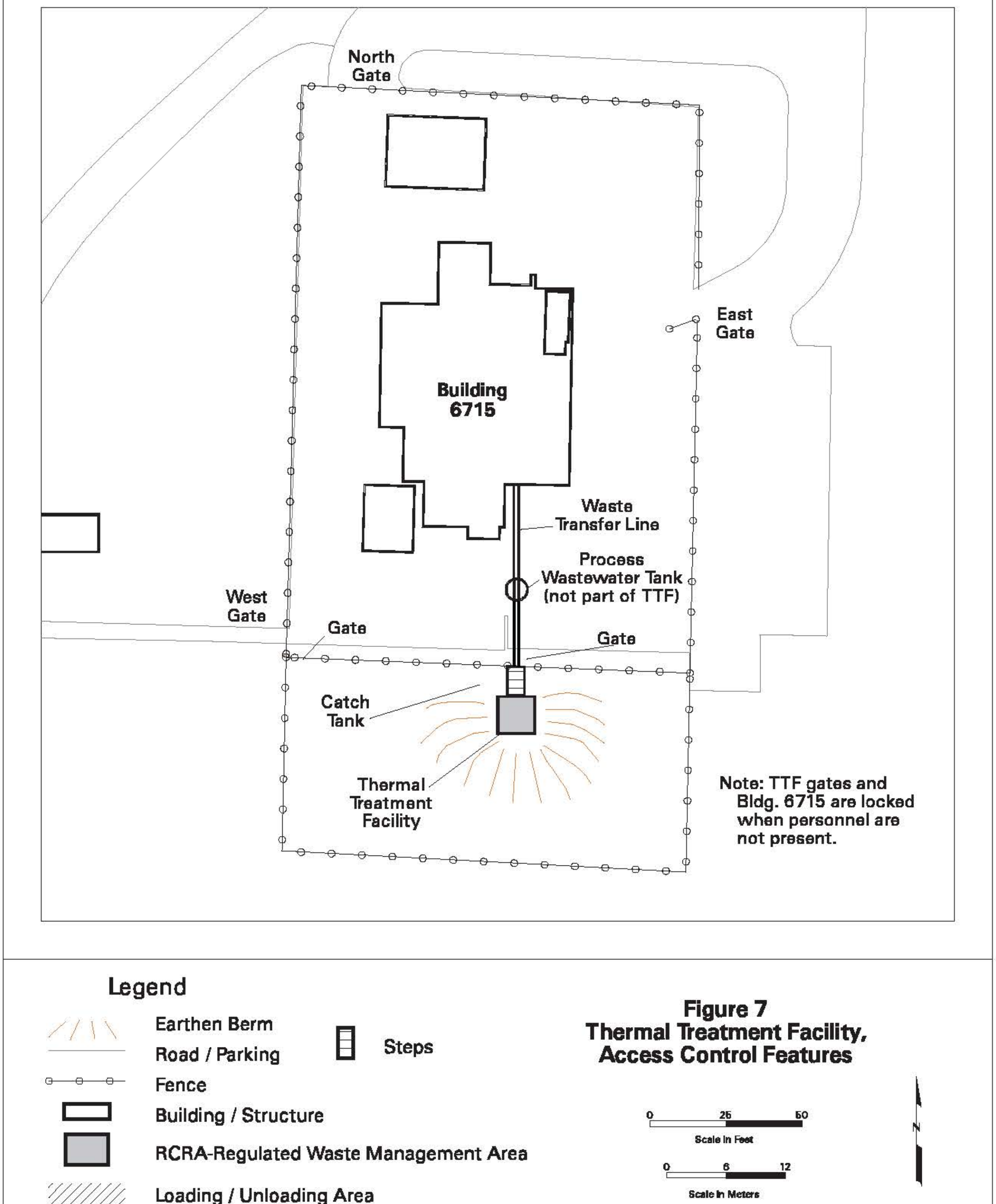


Figure 7
Thermal Treatment Facility, Access Control Features

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

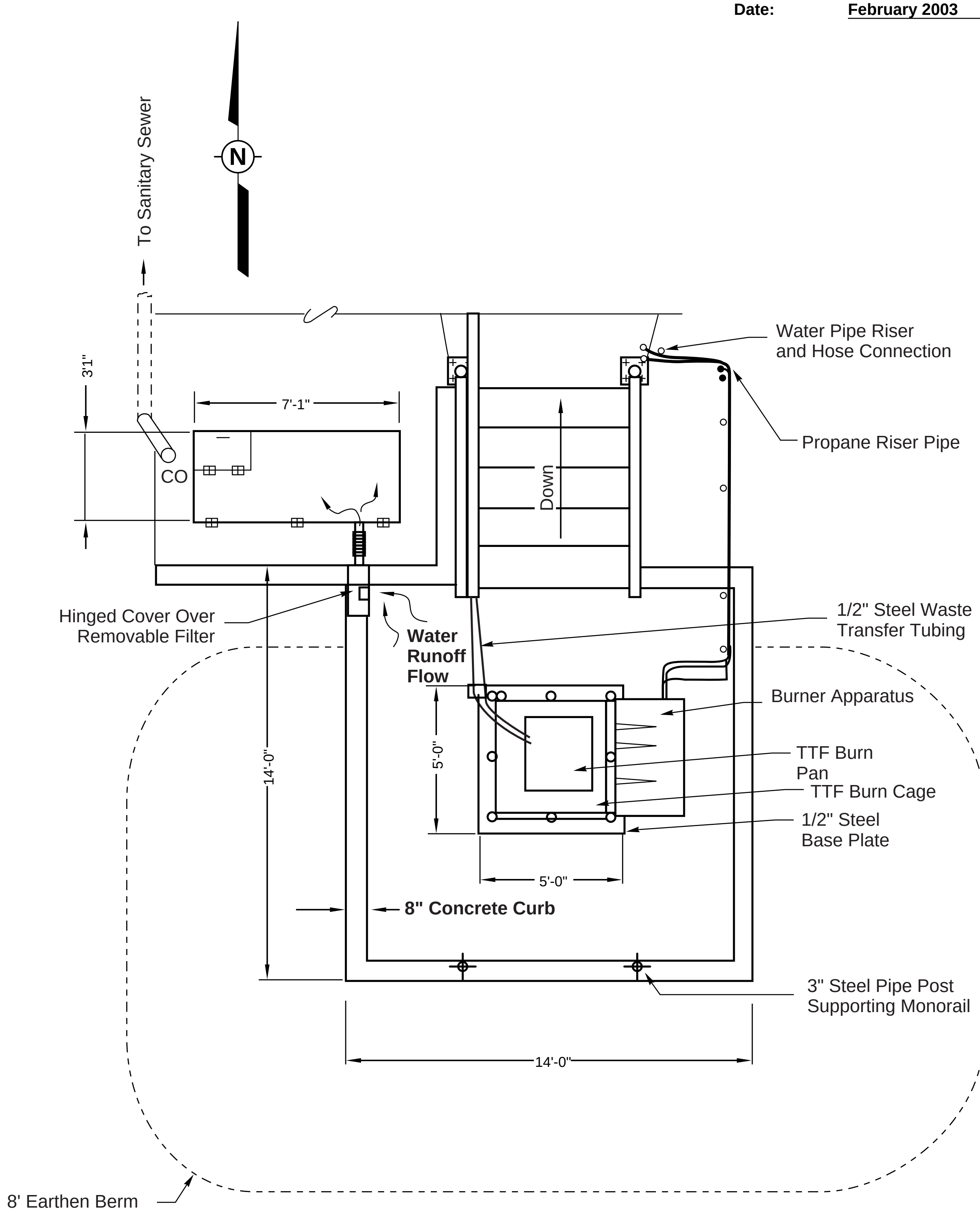
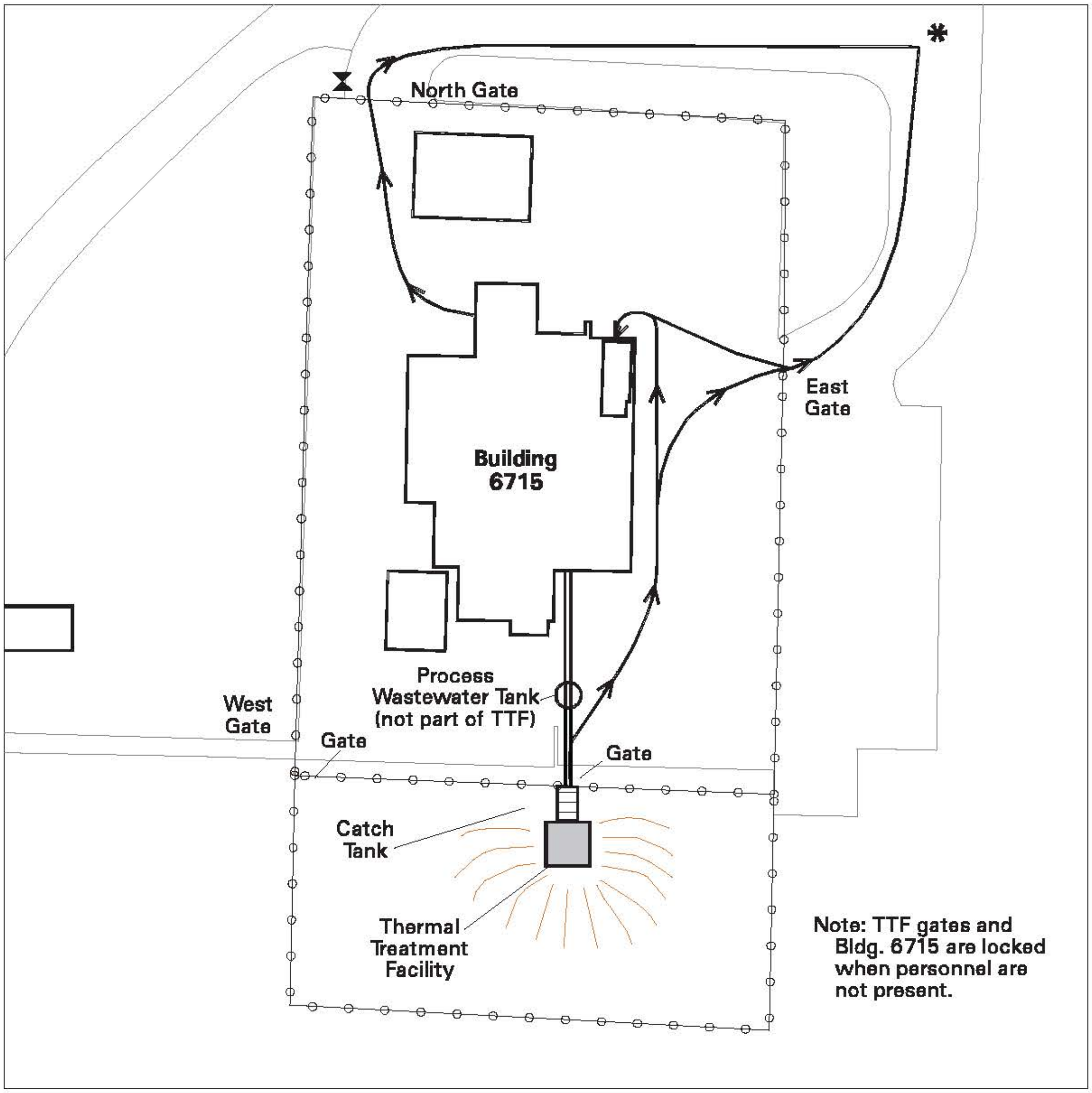


Figure 8

Thermal Treatment Facility (TTF), Drainage Control Features

Mapid=120103a 04/24/12 SNL EGIS ORG. 4142 DHelfrich dh120103.aml



Legend

Earthen Berm
Road / Parking
Fence
Evacuation Route
Building / Structure
RCRA-Regulated Waste Management Area
* Assembly Area northeast exit Technical Area III
Fire Hydrant
Steps

Figure 9
Thermal Treatment Facility, Evacuation Route and Emergency Response and Access Information

0 25 50
Scale in Feet

0 6 12
Scale in Meters

N

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

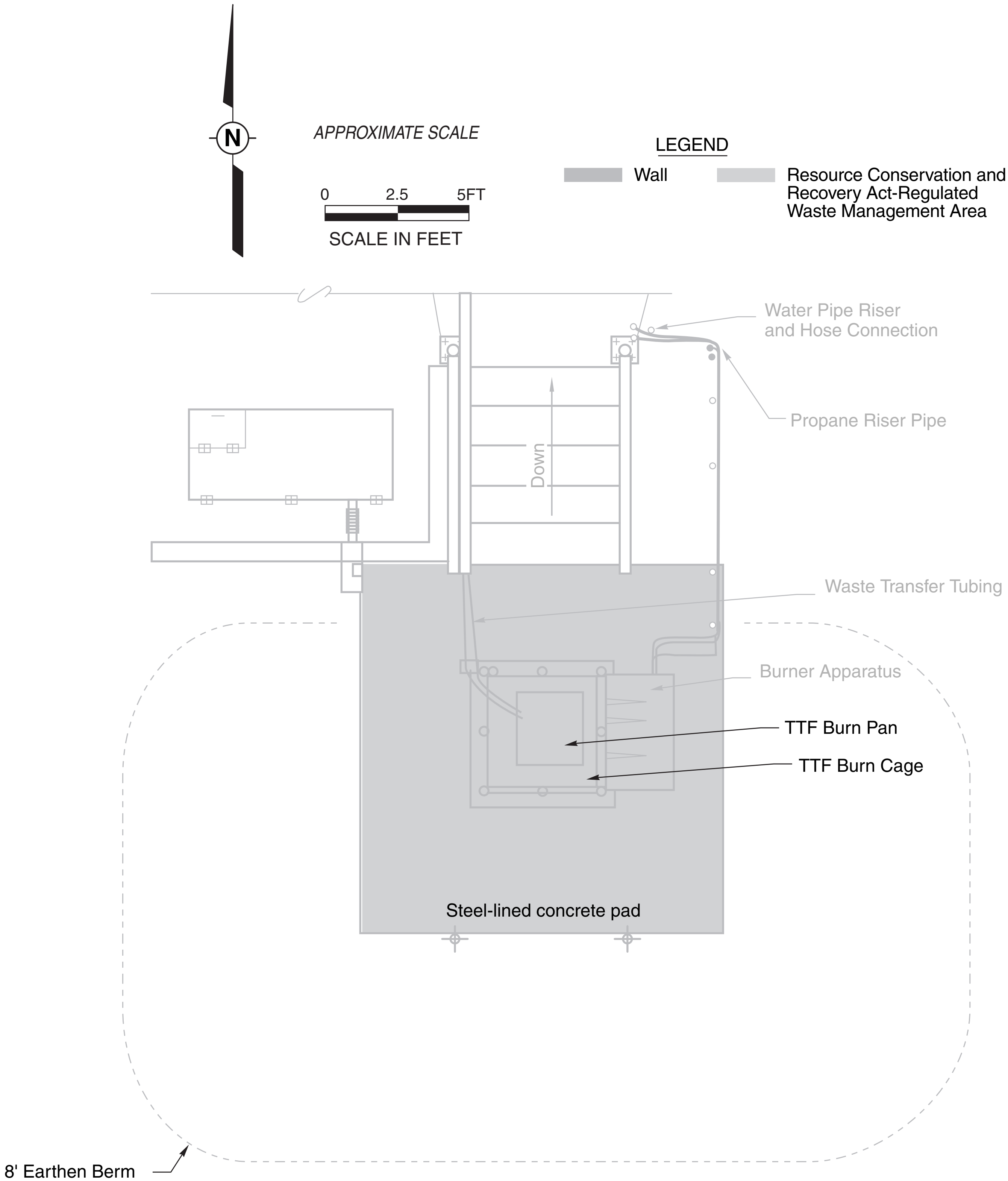


Figure 10

Thermal Treatment Facility (TTF) Closure Grid

843887.01000000 A141

Sandia National Laboratories/New Mexico Radioactive and Mixed Waste Management Facility Part B Permit Application

Module III

Revision 7.0

April 2012

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Prepared for
The U.S. Department of Energy

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ACRONYMS AND ABBREVIATIONS

20 NMAC 4.1.*X*00	New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart *X*
40 CFR 2*XX.XX*	Code of Federal Regulations, Title 40, Part 2XX, Section 2*XX.XX*
CMU	concrete masonry unit
DOE	U.S. Department of Energy/National Nuclear Security Administration
EPA	U.S. Environmental Protection Agency
ft	foot/feet
ft^2	square foot/feet
HEPA	high-efficiency particulate air
in.	inch(es)
NMED	New Mexico Environment Department
QA	quality assurance
QC	quality control
RCRA	Resource Conservation and Recovery Act
RMWMF	Radioactive and Mixed Waste Management Facility
SAP	sampling and analysis plan
Sandia	Sandia Corporation
SNL/NM	Sandia National Laboratories/New Mexico
TA	Technical Area
TSDF	treatment, storage, and disposal facility
Unit	RCRA-regulated waste management unit
WMA	waste management area

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SANDIA NATIONAL LABORATORIES/NEW MEXICO RADIOACTIVE AND MIXED WASTE MANAGEMENT FACILITY PART B PERMIT APPLICATION

This Sandia National Laboratories/New Mexico (SNL/NM) Radioactive and Mixed Waste Management Facility (RMWMF) Part B Permit Application is submitted to address the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subparts V and IX (20 NMAC 4.1.500 and .900), revised July 1, 2008 [7-1-08], requirements specific to Resource Conservation and Recovery Act (RCRA)-regulated waste container storage and treatment operations at the RMWMF. 20 NMAC 4.1.500 and .900 adopt by reference, with limited exceptions, all of the Code of Federal Regulations, Title 40, Parts 264 and 270 (40 CFR 264 and 270).

Sandia Corporation (Sandia) and the U.S. Department of Energy/National Nuclear Security Administration (DOE), as operator and owner, respectively, of the SNL/NM site, have prepared and revised this module to provide RCRA-regulated waste management unit (Unit)-specific details that supplement the information provided in the "Sandia National Laboratories/New Mexico General Part B Permit Renewal Request/Application," hereinafter referred to as the General Part B. Together, information provided in this module, in the General Part B, and in the appendices to the General Part B meet the applicable requirements for the RMWMF that are specified in 20 NMAC 4.1.500/40 CFR 264 [7-1-08], and 20 NMAC 4.1.900/40 CFR 270 [7-1-08].

Sandia/DOE also prepared the "Sandia National Laboratories/New Mexico General Part A Permit Renewal Request/Application, Rev. 11.0" (SNL/NM, 2012), hereinafter referred to as the General Part A, included as Part 1 of this comprehensive Part B permit request. The General Part A serves as a companion document to the General Part B and Unit-specific Part B modules, including this RMWMF Part B Permit Application.

In the General Part A, the General Part B, its appendices, and this module, a Unit to be permitted may sometimes be referred to as a "facility" (e.g., Radioactive and Mixed Waste Management Facility). The term "facility," as it appears in this context, is used only to denote a building or Unit name and does not imply the regulatory meaning of "facility" as defined in 20 NMAC 4.1.100/40 CFR 260.10 [7-1-08]. However, pursuant to 20 NMAC 4.1.100/40 CFR 260.10 [7-1-08], the SNL/NM site as a whole does meet the regulatory definition of a facility.

Sandia/DOE currently operate the RMWMF under interim status in accordance with the terms of the most recent updates to the Part A submitted to the New Mexico Environment Department (NMED) (May 2012) and the most recent updates to the Part B permit request submitted to NMED (May 2012).

The RMWMF occupies 3.11 acres in the southeast corner of Technical Area (TA)-III. It is a fenced compound with several buildings and waste management areas (WMAs). Operations include storage of RCRA-regulated wastes in containers, repackaging wastes, and treating the wastes as needed to render them more suitable for shipment to off-site treatment and/or disposal facilities. All of the RCRA-regulated wastes listed in the General Part A may be managed at the RMWMF.

1.0 GENERAL UNIT OPERATIONS

This section provides descriptions of the RMWMF WMAs and specific waste management practices. The information in this section complements the information provided in Section 1.0 of the General Part B.

Specific information in this section regarding Unit operations includes: containment systems; requirements for ignitable, reactive, and incompatible wastes; preparedness and prevention; hazards prevention; and container storage of RCRA-regulated wastes. Treatment practices are discussed in Section 8.0 of this module.

The specific information provided and documents referenced in this section, together with the general information provided in Section 1.0 of the General Part B, address the applicable hazardous waste management facility requirements of 20 NMAC 4.1.500/40 CFR 264, Subparts I, AA, BB, and CC [7-1-08], and 20 NMAC 4.1.900/40 CFR 270.14 and 270.15 [7-1-08].

1.1 Designated Waste Management Areas

The location of the RMWMF at SNL/NM is shown on Figure 1. The location of the RMWMF within TA-III is shown on Figure 2. The RMWMF has six designated WMAs (Figure 3). Buildings 6920, 6921, 6925, and 6926; two modular storage buildings; and the outdoor waste storage area (i.e., paved areas within the RMWMF fence to the north, east, and west of Building 6920) are included in the RMWMF.

In each RMWMF WMA (except where noted), containers holding RCRA-regulated liquid wastes are stored on portable spill pallets or pans. These are commercially available units consisting of a tub made of a heavy-duty inert material such as polyethylene or polypropylene with a heavy-duty inert plastic grating cover. They are designed to be resistant and impervious to corrosives, solvents, and other liquids. The containers of liquids (up to and including 85-gallon overpack containers) are stored on the grating. Any liquids released from the containers drain through the grating into the tub. The pallets come in various sizes and capacities, they are designed for use with 55-gallon drums or other standard containers, and they meet the requirements of 20 NMAC 4.1.900/40 CFR 270.15[a] and [b] [7-1-08] and 20 NMAC 4.1.500/40 CFR 264.175(b)(1-3) [7-1-08].

Each pallet has sufficient capacity to hold the contents of the largest container of liquid stored on it. Containers are typically not stacked on each other on the pallets. Stacked containers are stored as described in Section 1.2.2.2 of the General Part B. Because the spill pallets are designed to hold containers of liquids, the weight of the containers does not exceed the load-bearing capacity of the grating or the pallet.

RCRA-regulated wastes are typically stored inside one of the buildings or inside transportainers in the outdoor storage area. The containers are protected from precipitation by the buildings and transportainers, and by the slope of the asphalt pavement and concrete pads outside the buildings that direct storm water away from the doorways, meeting the requirements of 20 NMAC 4.1.500/40 CFR 264.175(b)(4). If containers are stored outside, they are protected from

precipitation by covers, tarpaulins, or other means, if needed. The slope of the pavement prevents accumulation of standing water near the containers.

The following sections provide descriptions of the features, location and capacity of each WMA. Treatment practices are summarized in Section 1.4 and discussed in detail in Section 8.0 of this module.

1.1.1 Building 6920

The principal structure at the RMWMF is Building 6920. The floor plan for Building 6920 is presented on Figure 4. The WMAs in Building 6920 include waste staging, repackaging, and storage areas, and waste treatment areas. Building 6920 is a single-story concrete and steel structure housing 5,800 square feet (ft^2) of RCRA-regulated waste management area. The floors are 6-inch (in.) reinforced, sealed concrete on compacted subgrade sloped to sumps with no outlets. Walls are 8-in. load-bearing concrete masonry unit (CMU) with prefinished metal building panels in some areas. Nongrouted cells of the 8-in. CMU exterior walls are filled with vermiculite insulation. The staging area at the east end of the building has 14-foot (ft) high reinforced concrete walls. The exterior walls are 2-ft thick, interior walls are 1-ft thick, and the shared wall between the north and south parts of the building is 1.5-ft thick. Inner partitions are 8-in. reinforced CMU.

The roof consists of 24-in. deep steel joists with a 1.5 in. metal deck with 3-in. rigid insulation and a single-ply roof membrane. The roof system is a single-ply fully adhered elastomeric system, installed over rigid insulation with factory-laminated fiberglass-coated skin on both sides, and attached to the deck with metal fasteners. Ceilings are exposed and painted.

Building 6920 consists of two bays (north and south) that are isolated from each other by a wall, with an interior airlock and office area near the west end of the building.

There are seven exterior personnel doors and four cargo entrances to the building, as well as separate entrances to the exterior mechanical and electrical rooms. The personnel doors provide access to the north and south bays and to all sides of the building. There is a cargo entrance (i.e., roll-up door) at each end of each bay. Rollup doors enclose the airlocks on the south bay.

North Bay

Waste treatment, storage, and repackaging are performed in the north bay of Building 6920 (Figure 4). The storage capacity of the north bay is approximately 6,000 gallons of RCRA-regulated wastes. Treatment currently includes physical treatment, stabilization/solidification, and macroencapsulation.

The floor in the north bay currently slopes from the doorways toward one or more shallow (6-in.-deep) blind sumps, some of which are covered with grating. Containers of liquid RCRA-regulated wastes are stored on portable spill pallets or pans. Floors, (including the sumps), and the walls in the WMAs of Building 6920 are painted to provide protection from chemical

substances and to resist wear from forklift traffic. The pallets meet the requirements of 20 NMAC 4.1.500/40 CFR 264.175(b)(1-4).

The RMWMF north bay includes two enclosed areas (shown in Figure 4) that are equipped with a negative-pressure exhaust system. The exhaust passes through a high-efficiency particulate air (HEPA) filter train before being released to the environment through an exhaust stack. The filters effectively remove particulates entrained in the air flow.

South Bay

Waste treatment, storage, and repackaging are performed in the south bay of Building 6920 (Figure 4). Wastes are stored in the main bay and in the airlocks at either end. Treatment in the south bay currently includes chemical and thermal deactivation, stabilization/solidification, amalgamation, macroencapsulation, and physical treatment. The current storage capacity of the south bay and airlocks is 7,420 gallons.

The floor in the south bay slopes from the doorways toward one or more shallow (6-in.-deep) blind sumps covered with grating along the south wall which provide secondary containment. Containers of liquid RCRA-regulated wastes are typically stored over or near the sumps in the south bay or on portable spill pallets or pans. Floors, (including the sumps), and the walls in the WMAs of Building 6920 are painted to provide protection from chemical substances and to resist wear from forklift traffic. The sumps and pallets meet the requirements of 20 NMAC 4.1.500/40 CFR 264.175(b)(1-4).

There are four small rooms in the south bay (Figure 4) where personnel typically conduct treatment and storage. One commercially available fume hood with a negative-pressure ventilation system is located in one of these rooms. Another local ventilation system is located in another of the rooms. The exhaust from both of these systems is combined and passes through a HEPA filter train before being released to the environment through the exhaust stack. The filters effectively remove particulates entrained in the air flow of each system.

1.1.2 Building 6921

The Waste Assay Facility (Building 6921) is located east of Building 6920 (Figure 3) in the RMWMF. Unit personnel treat, repackage, and store wastes in the WMAs. The Building 6921 floor plan is presented on Figure 5. Building 6921 is a single-story structure constructed with interior walls of 8-in. CMU and metal studs. The roof is comprised of steel bar joists with metal decking, rigid insulation, and single-ply membrane roofing. The floors are 6-in.-thick concrete slab-on-grade. The floors in the WMAs are painted. The total WMA is approximately 1,450 ft^2 with a maximum capacity of approximately 7,810 gallons.

Building 6921 (waste treatment area, shown on Figure 5) is equipped with a commercially available fume hood with a negative-pressure ventilation system. The exhaust from the hood passes through a HEPA filter train before being released to the environment through an exhaust stack. The filters effectively remove particulates entrained in the air flow.

Treatment in Building 6921 includes chemical and thermal deactivation, stabilization/ solidification, amalgamation, macroencapsulation, and physical treatment.

1.1.3 Buildings 6925 and 6926

Buildings 6925 and 6926 are used for storage, repackaging, and some treatment of RCRA-regulated waste at the RMWMF. Treatment consists of macroencapsulation (Building 6925).

The floor plans for RMWMF Buildings 6925 and 6926 are presented on Figure 6. Building 6925 has a total storage area of approximately 4,000 ft^2 with a maximum capacity of approximately 83,160 gallons. Building 6926 also has a total storage area of approximately 4,000 ft^2 with a maximum capacity of approximately 83,160 gallons. Each is a prefabricated steel building erected on a reinforced concrete slab floor and foundation. The concrete floors in both buildings are coated. Steel rollup doors are located on the south wall of each building, on the east wall of Building 6925, and on the west wall of Building 6926. Personnel doors are located on the east, south, and west sides of each building. A covered concrete ramp and loading dock are located at the west end of Building 6926, immediately outside the building.

1.1.4 Modular Storage Buildings (TP150 and TP153)

There are two modular storage buildings located west of Building 6920 that are used for storage of RCRA-regulated reactive and ignitable/flammable wastes (Figure 3).

The exterior dimensions of each modular storage building are 23-ft long, 9-ft wide, and 8.6-ft high. The structures are constructed of welded 10- and 12-gauge steel supported by structural steel. Each building has double doors with an inside handle. Each building is vented. The inside walls and ceiling of each building are painted.

Each modular storage building has a 5.5-inch-deep integral spill containment reservoir constructed of welded 10-gauge steel under the entire building; the capacity is 650 gallons. The secondary containment capacity is 10% of the stored volume of the contents of the largest container; thus, the storage capacity based on secondary containment is 6500 gallons. The secondary containment meets the requirements of 20 NMAC 4.1.500/40 CFR 264.175(b)(1-4). The inside surfaces (bottom and sides) or each reservoir are painted to provide additional protection against degradation. The building floors are painted steel grating. Each building rests on structural supports that elevate it and allow visual checks of the underside of the spill containment reservoir if there is evidence of deterioration on the interior surfaces. The maximum storage capacity at each building is not based on secondary containment. It is approximately
1,100 gallons.

1.1.5 Outdoor Waste Storage Area

The outdoor waste storage area consists of the asphalt paved areas to the north, east, and west of Building 6920 and within the RMWMF fence (Figure 3). The outdoor waste storage area may be used for storage of RCRA-regulated wastes. It has an area of approximately

48,500 ft^2 with a total storage capacity of approximately 19,800 gallons. The area is curbed and paved, and slopes toward the water retention pond. In the event of any releases of liquids in the outdoor storage area, the curbing and the retention pond would capture released liquids, including precipitation, so that any contaminants would not exit the site.

Containers of RCRA-regulated wastes are typically stored inside enclosed steel transportainers, which are 10- to 40-cubic-yard transportable containers. A transportainer typically has doors at one end and can be lifted onto a large flatbed truck for transportation. Containers may also be stored outside on the pavement.

1.2 Unit Operations

The RMWMF WMAs are and will be used to store any of the RCRA-regulated wastes bearing U.S. Environmental Protection Agency (EPA) Hazardous Waste Numbers listed in the General Part A. Many of the wastes may also be treated in the RMWMF WMAs; specific treatment operations are discussed in Sections 1.4 and 8.0 of this Module.

Information regarding operations requiring a permit at all RCRA-regulated Units at SNL/NM is included in Section 1.1 of the General Part B. Additional Unit-specific information is provided in the following sections.

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

Liquid wastes released from individual containers will accumulate in the spill pallets. Unit personnel begin taking action to evaluate and remove accumulated liquids in the spill pallets and sumps (in Building 6920) upon discovery. Accumulated liquids are cleaned up as described in Section 1.1.1 of the General Part B.

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

Any of the ignitable or reactive wastes listed in the General Part A may be managed at the RMWMF. Sources of ignition that may be present at the RMWMF are those noted in Section 1.1.2.1 of the General Part B: welding activities, open flames, hot surfaces, frictional heat, radiant heat, sparks, and engines. Unit personnel employ the general precautions and practices described in Section 1.1.2 of the General Part B. Additional RMWMF-specific features, potential ignition and reaction sources, precautions, and practices include:

- The modular storage buildings are grounded by a 10-ft-long grounding rod and cable. They are equipped with a dry chemical fire suppression system to assure that water-reactive wastes will not be exposed to water during fire emergencies.

- Ignitable and reactive wastes are segregated from other wastes and typically stored in the modular storage buildings. The modular storage buildings have exterior signs indicating the presence of ignitable/flammable and reactive wastes.

- Ignitable and reactive wastes may also be stored in Building 6925, and may be kept temporarily in Buildings 6920, 6921, and 6926 for treatment, packaging, and staging for shipment. Individual containers are labeled as described in Section 1.2.1 of the General Part B, and they are kept apart from other wastes.

- Water-reactive wastes are not routinely stored in areas equipped with water sprinklers for fire suppression. They may be managed temporarily in Buildings 6920, 6921, 6925, and 6926 for treatment, packaging, and staging for shipment. If water-reactive wastes are present, they will be isolated from water contact as described in Section 1.1.2.1 of the General Part B, and their location will be identified through the use of signs, labels, or some other method.

- Containers of wastes are labeled and segregated according to compatibility criteria in 20 NMAC 4.1.500/40 CFR 264 Appendix V. The liquids in containers that are stored together on a spill pallet must be compatible with each other. The spill pallet provides an independent containment system. Likewise, only compatible solids are stored together on a pallet. The pallets of wastes are segregated into different rows and areas; each row or area containing only compatible wastes. Ignitable and reactive wastes are segregated from other wastes in this manner.

- Forklifts are not used for waste movement near treatment operations involving ignitable or reactive wastes in Building 6920 to minimize potential sources of ignition while containers are or may be open.

- Wastes are mixed together on a very limited basis during the treatment and repackaging operations at the Unit. Ignitable and reactive wastes are treated or mixed on a case-by-case basis. Unit personnel plan each such operation carefully to identify the hazards and potential consequences. Personnel use waste characterization data and/or published chemical information (e.g., "NIOSH Pocket Guide to Chemical Hazards" [DHHS, 1994] or other chemical or engineering handbook) for each waste in the planning process. Personnel then conduct the operations according to the plan in order to control the hazards and prevent uncontrolled reactions. Treatment operations are described in Section 8.0 of this module.

1.2.3 Preparedness and Prevention (20 NMAC 4.1.5.500/40 CFR 264, Subpart C and 20 NMAC 4.1.900/40 CFR 270.14[b][8])

The following sections address required equipment, testing and maintenance of equipment, and access to communications or alarm systems at the RMWMF.

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

General information about fire hydrants is provided in Section 1.1.3.1 of the General Part B. The fire hydrants at the RMWMF are shown in Figure 12.

The modular storage buildings are grounded by a 10-ft-long grounding rod and cable.

All buildings at the RMWMF are equipped with automatic fire suppression systems, summarized in Table 1.

Table 1
Fire Suppression Systems at the
Radioactive and Mixed Waste Management Facility

Building	Applicable NFPA Standard[a]	Sprinkler Design Occupancy Classification	System Type	Sprinkler Actuation[b]
6920 (general area) 6920 (small rooms) HEPA filters	13 13 15	Ordinary/Group 2 Extra/Group 1 N/A	Automatic sprinkler, wet pipe Automatic sprinkler, wet pipe Deluge, dry/open	GB/FS GB/FS Detection
6921	13	Ordinary/Group 2	Automatic sprinkler, wet pipe	GB/FS
6925	13	Ordinary/Group 2	Automatic sprinkler, dry pipe	GB/FS
6926	13	Ordinary/Group 2	Automatic sprinkler, dry pipe	GB/FS
TP150	17	N/A	Dry chemical	
TP153	17	N/A	Dry chemical	

[a] National Fire Protection Association (NFPA), 2001, 2002a, 2002b.
[b] Sprinklers are either glass bulb (GB) or fusible solder (FS) type, typically designed to open at temperatures of 155ºF or higher.

Information on other required equipment located at the RMWMF is provided in Section 6.0 and Table 3 of this module.

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

Information on equipment testing and maintenance at the RMWMF is provided in Appendix C of the General Part B and in Section 4.0 of this module.

1.2.3.3 Access to Communications or Alarm Systems (20 NMAC 4.1.500/40 CFR 264.34)

Information about the types and locations of communications or alarm systems at the RMWMF is provided in Section 1.1.3.2 of the General Part B and in Section 6.0 of this module.

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

The following sections address the procedures, equipment, and structures used at the RMWMF to prevent hazards. Additional information applicable to the RMWMF and all other Units at SNL/NM is included in Section 1.1.4 of the General Part B.

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

RMWMF personnel employ the practices described in Section 1.1.4.1 of the General Part B to prevent hazards in unloading. Loading and unloading activities take place on the paved areas, typically immediately outside the buildings. The surface is sloped gently toward shallow drainage channels that direct stormwater to the retention pond, the pavement is in good condition in the area, and there is sufficient room for operating vehicles.

Containers are handled in a manner to prevent shifting and falling. Drums and other containers of RCRA-regulated waste are typically strapped together on a pallet before being loaded onto vehicles, or are loaded individually. Containers are typically transported within the Unit by hand or with forklifts, drum dollies, or pallet jacks.

Unit personnel typically use the loading dock for loading and unloading wastes from trucks. The ramp on the west side of Building 6926 slopes gently up to the dock, allowing forklift operators to drive onto trailers of trucks parked at the dock. The dock and ramp are in good condition and are covered with a corrugated metal roof to provide protection from weather.

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

The area around the Unit slopes gently toward the west. Sheet-flow run-on of surface water from surrounding areas outside the Unit is prevented from entering the WMAs by several features. The elevated gravel-covered area located outside the east fence of the Unit serves to divert water flowing from areas farther to the east. An 8-in. curb at the east edge of the asphalt pavement and an asphalt-lined drainage swale along the eastern edge of the Unit (inside the fence) divert run-on from the gravel area toward the south away from the Unit. On the south and west sides, the Unit is higher than the surrounding land. On the north side, the Unit and a narrow ledge of land outside the fence are higher than the surrounding land. Thus, run-on from all directions is prevented from entering the Unit.

The asphalt-paved areas within the Unit are surrounded by an 8-inch curb, further preventing run-on and run-off. The outside storage area slopes toward the south and west. The concrete pads outside the doors and the asphalt pavement surrounding Buildings 6920, 6921, 6925, and 6926 all slope away from the doors and toward shallow drainage channels that run between buildings 6920, 6925, and 6926. The channels lead to the synthetic-lined water retention pond at the southwest corner of the Unit, providing controlled drainage of storm water from roof downspouts and the paved areas in the RMWMF into the water retention pond. During normal operations, the water retention pond collects only storm water. The water retention pond does not provide secondary containment for RCRA-regulated waste.

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

Sandia/DOE do not anticipate that management of RCRA-regulated wastes at the RMWMF will affect water supplies, as described in Section 1.1.4.3 of the General Part B.

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

General measures that are available to Unit personnel are described in Section 1.1.4.4 of the General Part B. RCRA-regulated waste handling activities in the RMWMF WMAs that are affected by equipment failures or power outages will be suspended in response to such outages.

The RMWMF is equipped with an auxiliary diesel generator that can provide backup power to Building 6920. The generator maintains containment ventilation, alarm systems, heating equipment, and controls necessary to keep water in pipes from freezing should the main power supply fail.

Equipment and/or power failures at Buildings 6920, 6921, 6925, 6926; the outdoor waste storage area; or the two modular storage buildings will not result in a loss of containment of RCRA-regulated wastes.

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

RMWMF personnel employ the practices described in Section 1.1.4.5 of the General Part B to prevent undue exposure. In addition, the enclosed work areas and negative-pressure ventilation systems in the fume hoods in Buildings 6920 and 6921 provide additional protection for Unit personnel performing treatment and repackaging operations. Anticipated emissions from treatment operations are discussed in Section 8.2.

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

RMWMF personnel employ the practices described in Section 1.1.4.6 of the General Part B to prevent releases to the atmosphere during storage.

Subpart AA

RMWMF storage operations do not employ any of the processes subject to the requirements of 20 NMAC 4.1.500/40 CFR 264 Subpart AA.

Subpart BB

During storage activities, Sandia/DOE do not routinely manage RCRA-regulated wastes with organic concentrations ≥10 percent by weight in process equipment identified in 20 NMAC 4.1.500/40 CFR 264, Subpart BB [7-1-08]. Equipment used in such service at the RMWMF will be used for less than 300 hours per calendar year and is therefore exempt from the requirements of 20 NMAC 4.1.500/40 CFR 264.1052 through 1060 [7-1-08] as noted in 20 NMAC 4.1.500/40 CFR 264.1050(f) [7-1-08]. The equipment list will be maintained in the RMWMF records. Equipment use will also be noted in the records.

Subpart CC

Unit personnel follow the practices described in Section 1.1.4.6 of the General Part B and maintain compliance with Container Level 1 standards (20 NMAC 4.1.500/40 CFR 264.1086[c]) for containers that are subject to the standards. Such containers may be stored in any of the WMAs at the Unit.

Section B.5.3 in Appendix B of the General Part B also describes procedures to maintain compliance with the air emissions requirements of 20 NMAC 4.1.500/40 CFR 264, Subparts BB and CC [7-1-08].

1.3 Container Storage (20 NMAC 4.1.900/40 CFR 270.15 and 20 NMAC 4.1.500/40 CFR 264, Subpart I)

Container storage practices applicable to the RMWMF are presented in the following sections.

1.3.1 Container Types and Labeling

RMWMF personnel use the containers types and labeling practices described in Section 1.2.1 of the General Part B.

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

RMWMF personnel employ the container handling practices described in Section 1.2.2 of the General Part B.

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

The condition of containers at the RMWMF is maintained as indicated in Section 1.2.2.1 of the General Part B.

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

RMWMF personnel employ the aisle space and storage configuration described in Section 1.2.2.2 of the General Part B. Aisle width is typically 2.5 ft; this is adequate for unobstructed movement of Unit and emergency response personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of Unit operation in an emergency.

Containers of liquids are typically not stacked when stored in the modular buildings.

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

RMWMF personnel ensure waste compatibility with containers as indicated in Section 1.2.2.3 of the General Part B.

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

RMWMF personnel verify the absence of free liquids in containers as indicated in Section 1.2.2.4 of the General Part B before storing containers in areas that are not equipped with secondary containment.

1.4 Treatment Operations

RCRA-regulated wastes are treated at the RMWMF by the following methods:

- Chemical deactivation (performed in the south bay of Building 6920 or in the treatment area in Building 6921).
- Thermal deactivation (performed in the south bay of Building 6920 or in the treatment area in Building 6921).
- Stabilization and solidification (performed in either bay of Building 6920 or in the treatment area in Building 6921).
- Amalgamation (performed in the south bay of Building 6920 or in the treatment area in Building 6921).
- Macroencapsulation (performed in Buildings 6920, 6921, or 6925)
- Physical treatment (performed in either bay in Building 6920 and in Building 6921).

The treatment practices are discussed in detail in Section 8.0 of this module.

2.0 UNIT DESCRIPTION AND INFORMATION

The information provided in this section is submitted to address the applicable requirements of 20 NMAC 4.1.500 and .900/40 CFR 264 and 270 [7-1-08]. The following subject areas are addressed in this section:

- Unit-specific security procedures and equipment (20 NMAC 4.1.900/40 CFR 270.14[b][4] and 270.14[b][19][viii] [7-1-08]; 20 NMAC 4.1.500/40 CFR 264.14 [7-1-08]);
- Unit-specific traffic patterns, volume, and controls (20 NMAC 4.1.900/40 CFR 270.14[b][10] [7-1-08]);
- Unit-specific location information for compliance with the seismic standard and floodplain requirements (20 NMAC 4.1.900/40 CFR 270.14[b][11] [7-1-08], and 20 NMAC 4.1.500/40 CFR 264.18[a] and [b] [7-1-08]);
- Unit-specific topographic map requirements (20 NMAC 4.1.900/40 CFR 270.14[b][19] [7-1-08]); and
- Unit-specific groundwater monitoring and protection information (20 NMAC 4.1.900/ 40 CFR 270.14[c] [7-1-08], and 20 NMAC 4.1.500/40 CFR 264.90[a] [7-1-08]).

An SNL/NM site-wide facility description addressing additional regulatory requirements is provided in Appendix A of General Part B.

2.1 Security Procedures And Equipment (20 NMAC 4.1.900/40 CFR 270.14[b][4]; 20 NMAC 4.1.500/40 CFR 264.14)

The following sections describe the security provisions provided at SNL/NM to prevent unknowing or unauthorized entry onto the active portions of the RMWMF.

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

The RMWMF is completely surrounded by an 8-ft-high chain-link and barbed-wire fence. A single personnel entrance door adjacent to the main vehicle entrance gate is located on the south side of the RMWMF. Another personnel entrance door and vehicle gate are located on the north side of the RMWMF. The gates and doors in the RMWMF fence are maintained in closed and locked positions. As noted in Appendix A of the General Part B, Sandia security personnel periodically monitor the RMWMF gates during non-operational hours.

During work hours, RMWMF employees may enter the area through the locked personnel doors by entering the appropriate code into a keypad on the RMWMF fence near each personnel door. Emergency and service vehicles may enter the RMWMF through the electronically-controlled main vehicle gate if RMWMF personnel enter the appropriate code into a keypad

inside the office trailer or on the keypads located near the personnel doors on the RMWMF fence. Signs instruct personnel and visitors to report to the office trailer for site entry privileges and instructions. Resident personnel have Sandia-issued badges. Individuals who do not have a Sandia-issued badge are escorted. These procedures limit access to the RMWMF WMAs in accordance with 20 NMAC 4.1.500/40 CFR 264.14(b)(2) [7-1-08].

The RMWMF is located inside TA-III (Figures 1 and 2). TA-III is surrounded by a barbed wire fence with designated access gates. TA-III access control procedures assure that only properly identified and authorized persons, vehicles, and property are allowed entrance to and exit from TA-III.

2.1.2 Warning Signs (20 NMAC 4.1.500/40 CFR 264.14[c])

The permanent perimeter fence surrounding the RMWMF and the entrance to the RMWMF are posted with "Danger: Unauthorized Personnel Keep Out" (or functionally equivalent) signs. The signs contain the warning in English and Spanish, are legible from a distance of 25 ft, and can be seen from any approach to the RMWMF.

2.2 Traffic Pattern, Volume, and Controls (20 NMAC 4.1.900/40 CFR 270.14[b][10])

General traffic pattern information, traffic volumes, and traffic control signals for the SNL/NM facility are provided in Appendix A of the General Part B.

2.2.1 Traffic Patterns

The primary traffic routes used to transport RCRA-regulated waste to the RMWMF include Wyoming Boulevard, Hardin Boulevard (formerly “O” Street), and Pennsylvania Avenue. Pennsylvania Avenue crosses Tijeras Arroyo over the Manzano Bridge. A two-lane paved road to TA-III turns southwestward off of Pennsylvania Avenue at a point just over 5 miles south of the Wyoming Boulevard entrance gate as shown on Figure A-4 in Appendix A of the General Part B.

Within TA-III, traffic access to and from the RMWMF is along 2-lane asphalt-paved roads shown on Figure A-6 in Appendix A of the General Part B. Vehicles entering the RMWMF travel on an asphalt-paved 2-lane drive from the road through the south vehicle gate, as shown on Figure 9. Within the RMWMF, waste is transported on asphalt-paved surfaces.

2.2.2 Traffic Volumes

Traffic volumes on Wyoming Boulevard and Hardin Boulevard are generally light to moderate. Traffic volumes on Pennsylvania Avenue are generally light. Traffic volumes within TA-III are light. Vehicle types are generally cars, light- and medium-duty trucks, and vans. Flatbed trucks or trailers also use primary traffic routes to transport waste containers.

Approximately 10 to 30 vehicles per week travel into and out of the RMWMF. These include flatbed trucks and trailers carrying supplies, RCRA-regulated wastes from initial generators, and wastes to off-site treatment, storage, or disposal facilities (TSDFs).

2.2.3 Traffic Control Signals

Vehicles must stop at a gate prior to entering or leaving TA-III. Only authorized personnel are permitted into TA-III. Speed limit signs (i.e., “30 mph Unless Otherwise Posted”) are located at several locations in TA-III.

There are no traffic control signals or signs within the RMWMF fenced area. A speed limit sign (i.e., “Max. Speed 5 mph On Site”) is posted on the fence adjacent to the RMWMF entrance gate (Figure 9). Vehicle presence within the RMWMF fenced area is limited to official and waste transport vehicles. Therefore, signals or signs are not necessary to control traffic within the RMWMF fenced area.

2.3 Unit Location Information (20 NMAC 4.1.900/40 CFR 270.14[b][11])

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

The WMAs at the RMWMF are not located within 3,000 ft of any faults with Holocene displacements (see Section A.4.2 in Appendix A of the General Part B).

2.3.2 Floodplain Standard (20 NMAC 4.1.900/40 CFR 270.14[b][11][iii]; 20 NMAC 4.1.500/40 CFR 264.18[b])

The WMAs at the RMWMF are not located within the 100-year floodplain boundary (see Section A.4.3 in Appendix A of the General Part B).

2.4 Topographic Maps (20 NMAC 4.1.900/40 CFR 270.14[b][19])

Topographic maps and figures are provided herein or referenced to meet the requirements of 20 NMAC 4.1.900/40 CFR 270.14(b)(19) [7-1-08]. Due to the large amount of information, it is not provided on a single map. The maps clearly show the map scale, the date of preparation, and a north arrow (20 NMAC 4.1.900/40 CFR 270.14[b][19][i] and [vi] [7-1-08]). The maps and figures used to fulfill these regulatory requirements include the following:

- An SNL/NM-wide 100-year floodplain map is provided as Figure A-2 in Appendix A of the General Part B (20 NMAC 4.1.900/40 CFR 270.14[b][19][ii] [7-1-08]).
- Surface waters, including intermittent streams, near the RMWMF are shown on Figure A-2 in Appendix A of the General Part B and Figure 8 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][iii] [7-1-08]).

- Surrounding land uses are shown on Figures A-2 and A-8 in Appendix A of the General Part B and Figure 8 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][iv] [7-1-08]). The area surrounding the RMWMF is occupied by test areas and Sandia-controlled operations (industrial land use).

- Wind roses for SNL/NM are shown on Figure A-2 in Appendix A of the General Part B and Figure 8 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][v] [7-1-08]).

- Legal boundaries of SNL/NM (including the RMWMF) are shown on Figure A-2 in Appendix A of the General Part B (20 NMAC 4.1.900/40 CFR 270.14[b][19][vii] [7-1-08]).

- Access control features at the RMWMF (e.g., fences, gates) are shown on Figure 9 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][viii] [7-1-08]).

- Supply wells, monitoring wells, test wells, springs, and surface-water sampling stations near the RMWMF are shown on Figure A-2 in Appendix A of the General Part B and Figure 8 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][ix] [7-1-08]).

- The location of the WMA structures, loading and unloading areas, roads, and sanitary sewers associated with the RMWMF are shown on Figures 8 and 9 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][x] [7-1-08]).

- Drainage control features (e.g., run-on/runoff, drainage barriers) are shown on Figure 10 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][x] and [xi] [7-1-08]).

- Locations of the RMWMF and RMWMF WMAs are shown on Figures 3 and 8 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][xii] [7-1-08]).

Contour lines on all topographic maps are in intervals sufficient to detail natural drainage at SNL/NM and in the vicinity of the RMWMF. As provided for in 20 NMAC 4.1.900/40 CFR 270.14(b)(19) [7-1-08], SNL/NM has submitted the maps to the NMED at these scales and contour intervals due to the size of the RMWMF, the extent of the SNL/NM facility, and the topographic relief in the area.

2.5 Groundwater Monitoring (20 NMAC 4.1.900/40 CFR 270.14[c]; 20 NMAC 4.1.500/40 CFR 264.90[a])

Groundwater monitoring information is provided in Part 3 of this comprehensive Part B permit request. The RMWMF is not a regulated unit. There have been no releases of RCRA-regulated waste in the past, nor is the RMWMF likely to affect groundwater quality during normal operations or during unusual events.

3.0 WASTE ANALYSIS PLAN

Waste analysis requirements applicable to all Units, including the RMWMF, are addressed in Appendix B of the General Part B as required by 20 NMAC 4.1.900/40 CFR 270.14[b][2], 20 NMAC 4.1.500/40 CFR 264.13, "General Waste Analysis."

4.0 INSPECTION PLAN

20 NMAC 4.1.500/40 CFR 264.15 and 264.33 [7-1-08] and 20 NMAC 4.1.900/40 CFR 270.14(b)(5) [7-1-08] require that WMAs and associated systems be inspected on a regular basis and in accordance with procedures to assure their integrity, maintenance, and safe operation.

Unit personnel perform periodic inspections to identify malfunctions, signs of deterioration, operator errors, and discharges or spills that may be causing or may lead to a release of hazardous waste constituents to the environment or may pose a threat to human health. The inspections are performed on a regular schedule based on the likelihood of equipment or system failure and associated consequences. The inspections include safety and emergency equipment, security devices, and operating and structural equipment related to management of RCRA-regulated waste to ensure that human health and the environment will be protected.

The general Sandia/DOE inspection plan and schedule that meets these requirements are described in the "Site-Wide Inspection Plan", provided as Appendix C of the General Part B. RMWMF personnel conduct inspections in accordance with the site-wide plan.

Specific items and areas that are inspected are listed in Table 4, with the inspection criteria and frequency. The items listed in the table are inspected in each RMWMF WMA where applicable.

Automatic fire suppression systems are included in Table 2. Unit personnel check to see that the systems are present. Sandia/DOE personnel also test the systems based on the requirements of NFPA 25 "Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems" (NFPA, 2002c), as described in Section 1.1.3.2 of the General Part B.

The results of inspections by Unit personnel (including any corrective actions required and taken) are recorded on forms identical or similar to the ones presented in Appendix C of the General Part B. The inspection plan (Appendix C and this section) and inspection records for the current calendar year are maintained at the RMWMF. Inspection records for previous calendar years are maintained at the RMWMF or the SNL/NM Records Center.

Table 2
Radioactive and Mixed Waste Management Facility Inspection Criteria and Frequency

Inspected Item	Inspection Criteria	Inspection Frequency
SAFETY AND EMERGENCY EQUIPMENT See Table 6 “Emergency Equipment and Locations” in this module for additional information		
Eye wash/safety shower	Operational, accessible, in good condition	Monthly
Spill control and cleanup items	Present, accessible, quantities per inventory, in good condition	Monthly
Personal protective equipment	Present, quantities per inventory, and in good condition	Monthly
Fire alarm pull station(s)	Present, accessible, and in good condition	Monthly
Fire alarm(s)	Present	Monthly
Telephone(s)	Present and operational	Monthly
Fire extinguisher(s)	Present, charged, accessible, and in good condition	Monthly
Fire sprinklers and system	Present, appears to be in good condition, sprinklers not obstructed	Monthly
OPERATING AND STRUCTURAL EQUIPMENT		
Building/storage area floor	Clean, no spills, cracks, or excessive wear	Weekly when and where wastes are managed. Monthly otherwise.
Building walls	Not leaking or spalling, in good condition	Weekly when and where wastes are managed. Monthly otherwise.
Building ceiling	Not leaking or spalling, and in good condition	Weekly when and where wastes are managed. Monthly otherwise.
Building lights	Operational and in good condition	Weekly when and where wastes are managed. Monthly otherwise.
Overhead crane	Present, appears to be in good condition	Weekly when and where wastes are managed. Monthly otherwise.
Secondary containment (Buildings 6920, TP150, TP153)	Free of liquids, good condition (i.e., no cracks, excessive wear)	Daily when and where wastes are handled. Weekly otherwise.
Loading and unloading areas	Good condition, safe working surface, free of cracks, no spills	Daily when and where wastes are handled. Monthly otherwise.
Waste handling equipment	Good condition, in good repair, operational	Daily when and where wastes are handled. Monthly otherwise.

Table 2 (Concluded)
Radioactive and Mixed Waste Management Facility Inspection Criteria and Frequency

Inspected Item	Inspection Criteria	Inspection Frequency
OPERATING AND STRUCTURAL EQUIPMENT (cont)		
Treatment areas	Good condition, clean, uncluttered, no spills	Daily when and where wastes are handled. Monthly otherwise.
Treatment equipment	Good condition (i.e., no releases or deterioration), or present if in storage	Daily when and where wastes are treated. Prior to use for consumable items and items that have been stored. Monthly otherwise.
Thermal deactivation equipment	Good condition (i.e., no releases or deterioration)	Daily when used to treat wastes. Monthly otherwise.
Monitoring equipment	Instruments in good condition, operational, calibrated	Daily when and where wastes are handled. Monthly otherwise.
Stormwater retention pond	Good condition, adequate freeboard, outlet not obstructed, no evidence of release of RCRA-regulated waste.	Weekly.
SECURITY DEVICES		
Fence	Present and in good condition	Monthly
Warning signs	Present and in good condition	Monthly
Gates and doors	Present, operational, in good condition	Monthly
Locks	Present, operational, in good condition	Monthly
CONTAINERS		
Integrity	Good condition (i.e., no bulging, leaks, corrosion, or deterioration)	Check individual containers as they are handled. Weekly otherwise.
Closed	Correct lid/cover placement (i.e., properly closed and sealed)	Check individual containers as they are handled. Weekly otherwise.
Labeling	Correct information, correct location, legible	Check individual containers as they are handled. Weekly otherwise.
Secondary Containment (e.g., spill pallets for liquid waste)	Adequate volume, free of liquids, good condition (i.e., no cracks, excessive wear)	Check individual containers as they are handled. Weekly otherwise.
Storage Conditions	Waste compatible with container, container located with compatible wastes	Check individual containers as they are handled. Weekly otherwise.
Location	Correct aisle space, stable stacking	Check individual containers as they are handled. Weekly otherwise.

5.0 PERSONNEL TRAINING

Training Requirements for Unit personnel are specified in 20 NMAC 4.1.900/40 CFR 270.14[b][12] and 20 NMAC 4.1.500/40 CFR 264.16 [7-1-08], "Personnel Training."

The Sandia/DOE training program is designed and implemented to prepare personnel to safely operate and maintain those areas used for managing RCRA-regulated wastes. The training program applies to all employees of the DOE, Sandia, and any subcontractors who have responsibility for the day-to-day management of RCRA-regulated waste at the RMWMF.

RMWMF personnel receive training in accordance with the "Site-Wide Personnel Training Plan," provided as Appendix D of the General Part B. All job descriptions identified in Appendix D, Table D-2 of the General Part B are applicable at the RMWMF.

Training records for RMWMF personnel are maintained at the RMWMF.

6.0 CONTINGENCY PLAN AND EMERGENCY RESPONSE

Emergency response requirements for permitted units are specified in 20 NMAC 4.1.500/40 CFR 264, Subpart D [7-1-08], “Contingency Plan and Emergency Procedures,” and in 20 NMAC 4.1.900/40 CFR 270.14(b)(7) [7-1-08]. The “Site-Wide Contingency Plan” is included in as Appendix E of the General Part B. Supplemental RMWMF-specific information is included in this section, in Figures 11 and 12, and in Tables 3 and 4 of this module. Current copies of the site-wide contingency plan (Appendix E of the General Part B) and this supplemental information are maintained at the RMWMF and at the SNL/NM Emergency Operations Center.

The RMWMF is located in the southeastern corner of TA-III at SNL/NM. It is used for treatment and storage of RCRA–regulated wastes. The WMAs at the RMWMF include Buildings 6920, 6921, 6925, and 6926; two modular storage buildings; and the outdoor waste storage area (i.e., paved areas within the RMWMF fence and north, east, and west of Building 6920). All are surrounded by a fence.

The RMWMF WMAs include the following:

- Building 6920 at the RMWMF is a single-story CMU and steel building with 5,800 ft^2 of space used for waste storage and treatment activities. Inside the building are two bays (north and south), separated by an interior airlock. The south bay includes four small rooms used for treatment and storage. The building also includes a control room, restrooms, and electrical and mechanical rooms. Containers of wastes (typically less than 55 gallons) are stored in this building. Containers with liquids are stored over a sump in the south bay or on portable spill containment pallets. Containers of incompatible wastes are not stored together. The containers and contents may be repackaged into other containers for shipment to off-site facilities. RCRA-regulated wastes may be treated by chemical deactivation, macroencapsulation, stabilization/solidification, thermal deactivation, amalgamation, or physical treatment. Up to 13,420 gallons of waste may be stored in this building.

- Building 6921 at the RMWMF is a single-story CMU building with approximately 1450 ft^2 of space used for waste storage and treatment activities. The building also includes office space and restrooms. Containers of wastes (typically less than 55 gallons) are stored in this building. Containers with liquids are stored on portable spill containment pallets. Containers of incompatible wastes are not stored together. The containers and contents may be repackaged into other containers for shipment to off-site facilities. RCRA-regulated wastes may be treated by chemical deactivation, thermal deactivation, macroencapsulation, amalgamation, stabilization/solidification, or physical treatment. Up to 7,810 gallons of waste may be stored in this building.

- Buildings 6925 and 6926 at the RMWMF are each 4000-ft^2 prefabricated steel buildings on concrete foundations. Containers of wastes are stored in these buildings. Containers with liquids are stored on portable spill containment pallets. Containers of incompatible wastes are not stored over the same secondary containment area. The containers and contents may be repackaged into other containers for shipment to off-

site facilities. RCRA-regulated wastes may also be treated by macroencapsulation in Building 6925. Up to 83,160 gallons of waste may be stored in each building.

- Two modular, prefabricated safety storage structures located west of Building 6920 at the RMWMF are used for the storage of reactive and ignitable wastes. Each structure is constructed of 10- and 12-gauge welded steel with supporting structural steel sections, and includes a welded steel containment pan covered by grating. Each structure may contain up to 1,100 gallons of waste.

  The outdoor waste storage area at the RMWMF consists of 48,500 ft^2 of asphalt-paved areas to the north, east, and west of Building 6920 within the RMWMF fence that may be used for storage of containers of RCRA-regulated wastes. Containers of RCRA-regulated wastes are typically stored inside enclosed transportainers but may be stored outside. Containers with liquids are stored on portable spill containment pallets. Up to 19,800 gallons of wastes may be stored in these areas.

RCRA-regulated wastes bearing the EPA Hazardous Waste Numbers listed in the General Part A may be stored and/or treated at the RMWMF WMAs.

Figure 11 presents evacuation routes for the RMWMF. Figure 12 presents emergency response and access information for the RMWMF. Table 3 lists the emergency equipment typically available at the RMWMF. Table 4 lists the emergency coordinators for the RMWMF.

Table 3
Radioactive and Mixed Waste Management Facility, Emergency Equipment and Locations

Building 6920

Category	Description/Capabilities	Location
Spill Control and Decontamination Equipment	Eyewash Stations/ Showers	• On north wall in south bay • Near office in north bay
	Absorbent (sufficient absorbent for 55 gallons of liquid when liquid wastes are present)	In hallway between north and south bays
	Spill cleanup items (mops, brooms, and/or shovels)	In equipment storage at the RMWMF
	Recovery drums and containers	In equipment storage at the RMWMF
	Miscellaneous PPE (protective suits, goggles and/or safety glasses, chemical-resistant gloves)	In hallway between north and south bays
Internal Communication and Alarm System	Voice command Portable 2-way radio or equivalent, as needed	Operating personnel
	Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)	• By personnel door in northeast corner of building • By personnel door in southeast corner of south bay • In southwest corner of southwest airlock • By personnel door in west mechanical room • By personnel door on north wall of north bay • By personnel door in entryway west of office
	Audible fire alarms	Located throughout the building

Table 3 (Continued)
Radioactive and Mixed Waste Management Facility, Emergency Equipment and Locations

Building 6920 (continued)

Category	Description/Capabilities	Location
External Communication System	Telephones	Control room, south and north bays
	Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)	• By personnel door in northeast corner of building • By personnel door in southeast corner of south bay • In southwest corner of southwest airlock • By personnel door in west mechanical room • By personnel door on north wall of north bay • By personnel door in entryway west of office
Fire Extinguishers	Portable (A-B-C)	• By personnel door in northeast corner of building • By personnel door in southeast corner of south bay • By personnel door in southwest corner of south bay • In hallway between north and south bays • By personnel door in west mechanical room
	Portable (D)	In northwest corner of north bay
	Portable (A-B-C)(D)	By personnel door on north wall of north bay
Fire Suppression	Automatic wet-pipe sprinkler system with heat-actuated sprinklers	Coverage throughout the building
	Water supplied by fire hydrants	Three hydrants, locations shown in Figure 12

Table 3 (Continued)
Radioactive and Mixed Waste Management Facility, Emergency Equipment and Locations

Building 6921

Category	Description/Capabilities	Location
Spill Control and Decontamination Equipment	Eyewash Station/Shower	On north wall of assay area
	Absorbent (sufficient absorbent for 55 gallons of liquid when liquid wastes are present)	By north wall of assay area
	Spill cleanup items (mops, brooms, and/or shovels)	In equipment storage at the RMWMF
	Recovery drums and containers	In equipment storage at the RMWMF
	Miscellaneous PPE (protective suits, goggles and/or safety glasses, chemical-resistant gloves)	By north wall of assay area
Internal Communication and Alarm System	Voice command Portable 2-way radio or equivalent, as needed	Operating personnel
	Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)	• By personnel door in electrical/mechanical room • In central hallway outside restrooms • In northwest corner of assay area • By east personnel door in southeast counting room • By east personnel door in middle east office area
	Audible fire alarms	Located throughout the building

Table 3 (Continued)
Radioactive and Mixed Waste Management Facility, Emergency Equipment and Locations

Building 6921 (continued)

Category	Description/Capabilities	Location
External Communication System	Telephones	Office and lab areas
	Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)	• By personnel door in electrical/mechanical room • In central hallway outside restrooms • In northwest corner of assay area • By east personnel door in southeast counting room • By east personnel door in middle east office area
Fire Extinguishers	Portable (A-B-C)	• By north personnel door in electrical/mechanical room • In hallway between assay area and north office area • By northwest personnel door of assay area • By east personnel door in southeast counting room
Fire Suppression	Automatic wet-pipe sprinkler system with heat-actuated sprinklers	Coverage throughout the building
	Water supplied by fire hydrants	Three hydrants, locations shown in Figure 12

Table 3 (Continued)
Radioactive and Mixed Waste Management Facility, Emergency Equipment and Locations

Building 6925

Category	Description/Capabilities	Location
Spill Control and Decontamination Equipment	Portable Eyewash	By personnel door near center of south wall
	Absorbent (sufficient absorbent for 55 gallons of liquid when liquid wastes are present)	By personnel door near center of south wall
	Spill cleanup items (mops, brooms, and/or shovels)	In equipment storage at the RMWMF
	Recovery drums and containers	In equipment storage at the RMWMF
	Miscellaneous PPE (protective suits, goggles and/or safety glasses, chemical-resistant gloves)	By personnel door near center of south wall
Internal Communication and Alarm System	Voice command Portable 2-way radio or equivalent, as needed	Operating personnel
	Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)	• By personnel door in northeast corner of building • By personnel door in southwest corner of building • By personnel door near center of south wall
	Audible fire alarms	Located on east and west wall
External Communication System	Telephone	By personnel door in southwest corner of building
	Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)	• By personnel door in northeast corner of building • By personnel door in southwest corner of building • By personnel door near center of south wall
Fire Extinguishers	Portable (A-B-C)	• By personnel door in northeast corner of building • By personnel door in southwest corner of building
	Portable (A-B-C)(D)	By personnel door near center of south wall
Fire Suppression	Automatic dry-pipe sprinkler system with heat-actuated sprinklers	Sprinklers located throughout building
	Water supplied by fire hydrants	Three hydrants, locations shown in Figure 12

Table 3 (Continued)
Radioactive and Mixed Waste Management Facility,
Emergency Equipment and Locations

Building 6926

Category	Description/Capabilities	Location
Spill Control and Decontamination Equipment	Eyewash Station/Shower	In southeast area of building
	Absorbent (sufficient absorbent for 55 gallons of liquid when liquid wastes are present)	In southeast area of building
	Spill cleanup items (mops, brooms, and/or shovels)	In equipment storage at the RMWMF
	Recovery drums and containers	In equipment storage at the RMWMF
	Miscellaneous PPE (protective suits, goggles and/or safety glasses, chemical-resistant gloves)	In southeast area of building
Internal Communication and Alarm System	Voice command Portable 2-way radio or equivalent, as needed	Operating personnel
	Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)	• By personnel door in northeast corner of building • By personnel door on west wall of building • By personnel door on south wall of building
	Audible fire alarms	Located on east wall and west wall
External Communication System	Telephone	In southeast area of building
	Fire alarm pull station (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)	• By personnel door in northeast corner of building • By personnel door on west wall of building • By personnel door on south wall of building
Fire Extinguishers	Portable (A-B-C)	• By personnel door in northeast corner of building • By personnel door on west wall of building
	Portable (A-B-C)(D)	By personnel door on south wall of building
Fire Suppression	Automatic dry-pipe sprinkler system with heat-actuated sprinklers	Sprinklers located throughout building
	Water supplied by fire hydrants	Three hydrants, locations shown in Figure 12

Table 3 (Concluded)
Radioactive and Mixed Waste Management Facility, Emergency Equipment and Locations

Modular Storage Buildings

Category	Description/Capabilities	Location
Spill Control and Decontamination Equipment	Absorbent (sufficient absorbent for 55 gallons of liquid when liquid wastes are present)	Buildings 6920 and 6926
	Spill cleanup items (mops, brooms, and/or shovels)	In equipment storage at the RMWMF
	Recovery drums and containers	In equipment storage at the RMWMF
	Miscellaneous PPE (protective suits, goggles and/or safety glasses, chemical-resistant gloves)	Buildings 6920 and 6926
Internal Communication and Alarm System	Voice command Portable 2-way radio or equivalent, as needed	Operating personnel
	Fire alarm pull boxes (pulling handle sends signal to KAFB fire department, does not actuate system)	Buildings 6920, 6921, 6925, and 6926
	Audible fire alarms	Buildings 6920, 6921, 6925, and 6926
External Communication System	Telephones	Buildings 6920 and 6926
	Fire alarm pull boxes (pulling handle sends signal to KAFB fire department, does not actuate system)	Buildings 6920, 6921, 6925, and 6926
Fire Suppression	Automatic dry chemical system	Coverage throughout the building

PPE personal protective equipment
KAFB Kirtland Air Force Base
RMWMF Radioactive and Mixed Waste Management Facility

Table 4
Radioactive and Mixed Waste Management Facility, Emergency Coordinator List

September 15, 2011

Facility Emergency Coordinator		Office Phone	Home Phone
Primary	Leroy Duran Sandia National Laboratories P.O. Box 5800 Albuquerque, NM 87185	(505) 284-1488 (office) (505) 951-6297 (pager)	(505) 980-4401
First Alternate	Phil Zelle Sandia National Laboratories P.O. Box 5800 Albuquerque, NM 87185	(505) 844-2486 (office) (505) 951-6248 (pager)	(505) 615-7445
Second Alternate	Jesse Farr Sandia National Laboratories P.O. Box 5800 Albuquerque, NM 87185	(505) 284-3041 (office) (505) 951-6336 (pager)	(505) 379-8913
Third Alternate	Jeff Jarry Sandia National Laboratories P.O. Box 5800 Albuquerque, NM 87185	(505) 284-3080 (office) (505) 951-6332 (pager)	(505) 697-2108

One or more of these personnel are routinely available during operating hours (7:00 am to 5:30 pm, Monday through Thursday).

7.0 CLOSURE PLAN

Applicable closure requirements are specified in 20 NMAC 4.1.900/40 CFR 270.14[b][13] and 20 NMAC 4.1.500/40 CFR 264, Subparts G and I [7-1-08]. General closure information applicable to all Units at SNL/NM and general sampling and analytical procedures to be used during closure activities are presented in the "Site-Wide Closure Plan" in Appendix F of the General Part B. The site-wide plan includes a description of the SNL/NM facility, waste descriptions, closure performance standards, general closure methods, a sampling and analysis plan (SAP), a general closure schedule, procedures for amendment of the plan, closure certification and letter, survey plat, and post-closure requirements. Unit-specific information for closure of the RMWMF is included in this section.

7.1 Unit Description

Sandia/DOE use the RMWMF for treatment, repackaging, and storage of RCRA-regulated waste. The RMWMF is located in the southeastern corner of TA-III at SNL/NM. The WMAs at the RMWMF include Buildings 6920, 6921, 6925, and 6926; two modular storage buildings; and an outdoor waste storage area (i.e., paved areas within the RMWMF fence and north, east, and west of Building 6920).

- Building 6920 (Figure 13) at the RMWMF is a single-story CMU and steel building with approximately 5,000 ft^2 of space used for treatment and container storage activities. Inside the building are two bays (north and south), separated by an interior airlock. The south bay includes four small rooms used for treatment and storage; one of these rooms is equipped with a fume hood with a local negative-pressure ventilation system. Another room is equipped with a portable local ventilation system. Two areas of the north bay are also equipped with local negative-pressure ventilation systems. The air flow from the ventilation systems passes through a HEPA filter train before being released to the environment through an exhaust stack. The filters effectively remove particulates entrained in the air flow. The floors of the north and south bays are painted to provide a protective barrier over the concrete floor. The south bay includes painted sumps that provide secondary containment for liquids stored in the area.

- Building 6921 (Figure 14) is a single-story CMU building with approximately 1,450 ft^2 of space used for treatment and container storage activities in three areas. The concrete floors are painted. One room contains a fume hood with a local negative-pressure ventilation system. The exhaust from the system passes through a HEPA filter train before being released to the environment through an exhaust stack.

- Buildings 6925 and 6926 (Figure 15) are each 4,000-ft^2 prefabricated steel buildings on concrete foundations. The buildings are used for container storage of RCRA-regulated wastes, and Building 6925 is also used for treatment. The concrete floors are coated. The buildings are used for storage of wastes in containers.

- Two modular, prefabricated storage structures located west of Building 6920 are used for container storage of RCRA-regulated reactive and ignitable wastes. Each structure (Figure 16) is constructed of 10- and 12-gauge welded steel with supporting structural

steel sections, and includes a welded steel containment pan covered by grating. The inside surfaces of the containment pan are painted.

- The outdoor waste storage area consists of 48,500 ft^2 of asphalt-paved areas to the north, east, and west of Building 6920 within the RMWMF fence. This area may be used for container storage of RCRA-regulated wastes. Containers of RCRA-regulated wastes are typically stored inside enclosed transportainers at this WMA. Containers may be stored outdoors. Containers with liquids are stored on portable spill containment pallets.

7.2 Estimate of Maximum Waste in Storage (20 NMAC 4.1.500/40 CFR 264.112[b][3])

The maximum total volume of RCRA-regulated waste in treatment and/or storage at any time at the RMWMF is estimated at approximately 209,550 gallons of liquids and/or solids. This is the maximum volume of RCRA-regulated waste that could be removed from the WMAs as part of closure activities. The maximum total waste volume is broken down as follows:

- Building 6920: 13,420 gallons
- Building 6921: 7,810 gallons
- Building 6925: 83,160 gallons
- Building 6926: 83,160 gallons
- Modular storage building TP150: 1,100 gallons
- Modular storage building TP153: 1,100 gallons
- Outdoor waste storage area: 19,800 gallons

7.3 Closure Conditions

In addition to the general assumptions listed in Section F.5 of the site-wide closure plan, partial closure activities specified in this plan assume the following conditions were met during the operational life of the RMWMF:

- Waste handling and treatment activities that involved opening containers of RCRA-regulated waste were confined to the RMWMF WMAs. If contamination occurred, it would have been confined to those areas.

- Treatment activities were conducted in a controlled manner, minimizing the potential for releases of RCRA-regulated wastes or hazardous waste constituents.

- If RCRA-regulated wastes or hazardous waste constituents were inadvertently released into the local exhaust systems during treatment activities, they would only be present in the systems up to the first filter.

- The WMAs are physically separate; therefore, each WMA is considered independently of the other WMAs when evaluating the potential presence of RCRA-regulated wastes or hazardous waste constituents.

- Containers of wastes were not routinely stored on the asphalt in the outdoor storage area. Containers were occasionally staged there temporarily if needed to accommodate operations involving large numbers of containers (e.g., staging for shipments). Containers of liquids were stored on spill pallets and were not stored directly on the asphalt. Containers of waste were not opened in the area, therefore, RCRA-regulated wastes or hazardous waste constituents are not present on the asphalt unless there is knowledge or evidence of a release.

- Containers of waste were stored in steel transportainers in the outdoor storage area. Containers of liquids were not routinely stored within the transportainers; those that were present were stored on spill pallets. Containers of waste were not opened within the transportainers; therefore, RCRA-regulated wastes or hazardous waste constituents are not present in any transportainer unless there has been a release in that transportainer.

- RCRA-regulated wastes or hazardous waste constituents could not be present except in areas in the WMAs where wastes were managed.

- The interior floors of the WMAs in each building were maintained to retain their integrity by following established maintenance and inspection procedures, breaches of protective coatings did not occur, and a small amount of soil will be present on the floors due to normal traffic and operations.

7.4 Closure Activities and Schedule

This closure will be conducted to support attainment of the closure performance standards outlined in Section F.4 of the site-wide closure plan. Section 7.5.3 of this plan discusses the criteria that will be used to verify that clean closure has been achieved.

7.4.1 Closure Activities

The closure approach and general activities described in Section F.5 of the site-wide closure plan will be applied to closure of the WMAs at the RMWMF. With respect to the individual WMAs, Sandia/DOE will use the following approach:

- Items of equipment within the treatment areas will be evaluated individually to determine whether it is more effective to remove them or decontaminate them. Items that are most likely to be removed include local exhaust systems (up to the first filter), filters, and portable equipment. Items that are most likely to be decontaminated include the interiors of fume hoods.

- Transportainers used for storage in the outdoor waste storage area will be visually examined for evidence of releases. Additional closure activity will be limited to those areas where RCRA-regulated wastes or hazardous waste constituents could be present due to visual evidence of releases or knowledge of prior releases. The transportainers will be evaluated individually to determine whether it is more effective to remove them or decontaminate them.

- The modular storage buildings (TP150 and TP153) will be evaluated individually to determine whether it is more effective to remove them or decontaminate them.

- The floors of each treatment and/or storage WMA will be decontaminated by sweeping and washing as described in Section F.5, except as noted in this section.

- The asphalt in the outdoor waste storage area will be visually examined for evidence of deterioration and releases. Decontamination or removal of the asphalt will be limited to areas where there is visual evidence or documentation indicating a release of RCRA-regulated wastes or hazardous waste constituents has occurred.

7.4.2 Closure Schedule

Section F.7 of the site-wide closure plan provides a timeline for closure activities applicable to all permitted Units at the SNL/NM facility. Currently, there is not an estimated date of closure for the RMWMF. A Unit-specific closure schedule will be prepared and submitted to NMED prior to initiation of closure activities at the RMWMF.

7.5 Sampling and Analysis Plan

Section F.6 of the site-wide closure plan presents general sample collection equipment and techniques applicable to all Units at the SNL/NM facility. This Unit-specific SAP describes the sampling, analysis, and quality assurance (QA) methodologies Sandia/DOE will use to demonstrate clean closure of the RMWMF in accordance with the requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart G [7-1-08], as applicable. It addresses specific details (e.g., the type, number, and location of samples; required analytical constituents; closure criteria, QA and quality control [QC] procedures) regarding RCRA closure of the RMWMF.

7.5.1 Sampling and Analysis Scope

This SAP presents procedures for acquisition, analyses, and evaluation of samples of floor sweepings (soil), pre-wash (unused) wash water, used wash water, and used rinse water from the floor and, where appropriate, secondary containment surfaces and fume hood interiors of six of the WMAs at the RMWMF (Buildings 6920, 6921, 6925, and 6926; and the two modular storage buildings); and similar samples from the transportainers at the outdoor waste storage area. All of the samples will be analyzed to determine concentrations of a set of indicator parameters selected from the range of hazardous waste constituents in the RCRA-regulated wastes managed in the Unit. These indicator parameters and the applicable criteria for clean closure are identified in Tables 5 and 6, and the rationale for their selection is presented in Section 7.5.3.

7.5.2 Sampling Methodology

7.5.2.1 Sample Locations

The floor of each WMA within a building, except for fume hoods, and of each transportainer at the outdoor storage area will be swept and a sample of the composited floor sweepings from each WMA will be collected for analysis.

Two samples of used wash water and two samples of used decontamination rinse water will be collected from each area indicated in Table 6. Used wash water will be contained in the bays, in temporary berms, or other containment devices; sampled; and removed prior to the decontamination rinse step. Used rinse water will be contained similarly, as necessary.

7.5.2.2 Sample Collection

One single representative sample will be collected from the composited floor sweepings (e.g., soil) at each WMA, as discussed above, prior to the decontamination procedure. Each sample will be analyzed for the indicator parameters identified in Table 5.

Table 5
Summary of Pre-Wash Sampling Program

Media to be Sampled	Sample Number & Type	Indicator Parameters[a]	Standards for Comparison[b]
Floor sweepings	Single grab from collected material at each WMA, except for fume hoods (representative of material removed from entire floor surface)	Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver	5.6 ppm 130 ppm <1 ppm 17.3 ppm 21.4 ppm <0.25 ppm <1 ppm <1 ppm
Pre-wash (unused) water	Single grab (one from each batch of detergent/water solution prior to use in decontamination)	Same as above	N/A

[a] These metals have been selected as indicator parameters to demonstrate clean closure at the RMWMF due to their typical presence in the wastes stored at each Unit.

[b] Analytical results for indicator parameters in floor sweepings will be compared to background concentrations in site soils developed by NMED (NMED, 1997). Analytical results for indicator parameters in sweepings and/or pre-wash water will be used in evaluating the decontamination wash water and rinse water.

Table 6
Radioactive and Mixed Waste Management Facility, Summary of Post-Wash Sampling Program

Area to be Decontaminated	Grid(s)	Samples per Grid[a]	Indicator Parameters[b]	Closure Criteria[c]
Building 6920 (Figure 13)	$S_1 – S_7$	4	Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver	Evaluate with respect to concentrations in sweepings and/or in pre-wash water
	S_8	4[d]	Same as above	Same as above
	S_9 (Fume Hood)	4[e]	Same as above	Evaluate with respect to concentrations in pre-wash water
	$N_1 – N_7$	4	Same as above	Evaluate with respect to concentrations in sweepings and/or in pre-wash water
Building 6921 (Figure 14)	WA	4	Same as above	Same as above
	WT_1, WT_2	4	Same as above	Same as above
	Fume Hood	4[e]	Same as above	Evaluate with respect to concentrations in pre-wash water
Building 6925 (Figure 15)	A - B	4	Same as above	Evaluate with respect to concentrations in sweepings and/or in pre-wash water
Building 6926 (Figure 15)	A - B	4	Same as above	Same as above
Modular Storage Buildings (Figure16)	A	4[d]	Same as above	Same as above
Outdoor Storage Area	Each Transportainer	4	Same as above	Same as above

[a] One sample from each pair of wash water and rinse water samples will be filtered when collected to remove particulates.

[b] These metals have been selected as indicator parameters to demonstrate clean closure at the RMWMF due to their typical presence in the wastes stored at the Unit.

[c] Sandia/DOE will continue the long-standing practice of providing radionuclide data to NMED on a voluntary basis, in accordance with: (1) the joint guidance developed by the National Association of Attorneys General (NAAG) and the NAAG/DOE Working Group, *Sharing of Radionuclide Information with States*, dated September 1998, and (2) the data-sharing provisions of the current Agreement-in-Principle between DOE and the State of New Mexico for Environmental Oversight and Monitoring, dated November 29, 2000.

[d] Secondary containment surfaces (bottoms and sides) will be washed up to the secondary containment level.

[e] The interior surfaces of fume hoods will be washed.

One representative sample will be collected from each batch of unused detergent and water solution to be utilized in the decontamination procedure. Two representative grab samples of used wash water and two samples of used decontamination rinse water will be collected from the temporary berms or other containment structures after each wash and rinse cycle. One sample from each pair will be filtered upon collection to remove particulates present in the water. Each sample will be analyzed for the indicator parameters identified in Table 6, as appropriate.

7.5.2.3 Sampling Equipment

Samples of floor sweepings (e.g., soil) will be collected with a disposable scoop, trowel, or equivalent sampling device. Wash and rinse water samples will be collected with a disposable liquid sampling device. Samples will be placed in pre-cleaned 500-milliliter or 1-liter wide-mouth glass jars with screw-top lids, or other approved containers that are appropriate for the analysis.

One sample from each pair of used wash water and used decontamination rinse water samples will be filtered using a 0.45-micron filter to remove particulates.

7.5.2.4 Sample Equipment Decontamination

Pre-cleaned and prepared sample containers and disposable filtration equipment will be obtained from a commercial supplier or the analytical laboratory selected by Sandia/DOE. Decontamination of other disposable sampling equipment (e.g., scoops, trowels, liquid samplers) will not be required for the sampling procedures used in this closure.

If it is determined, during sampling activities, that reusable sampling equipment will be utilized, the equipment will be decontaminated using the following steps:

- Wash the equipment with a detergent and water solution, scrubbing as needed to remove any deposits;
- Rinse the equipment with tap water until the soapy residue is removed;
- Rinse with deionized or distilled water; and
- Allow to air dry or dry with a lint-free cloth.

7.5.2.5 Sample Identification

Each sample will be assigned an identification number that will uniquely identify the sampling area (e.g., floor, fume hood), the grid identifier, the sample type (e.g., soil, rinse water), and any additional information that may be necessary. As an example, the sample numbered F-6925-B-FL-RINSE-01 would indicate the filtered rinse water sample taken from the water used to rinse the floor of Grid B in Building 6925.

7.5.2.6 Sample Preservation and Holding Time

After samples are collected at the site, they will be placed in a cooler with frozen gel packs to maintain a temperature of approximately 4 degrees Celsius. Liquid samples will be preserved with nitric acid to maintain a pH of 2 or less. Analytical holding times will be observed by the laboratory for samples collected under this SAP (e.g., the recommended maximum holding time for metals analysis is 180 days from sample collection until extraction).

7.5.3 Demonstration of Clean Closure

Hazardous waste toxicity characteristic metals have been selected for use as indicator parameters to demonstrate clean closure at the RMWMF, as these constituents are present in many of the wastes commonly treated or stored in the Unit. Other wastes treated or stored in the RMWMF typically are regulated as hazardous waste due to ignitability (D001), corrosivity (D002), reactivity (D003), or the presence of trace amounts of volatile organic solvent constituents (F001-F005). Sampling floor sweepings (soil) or decontamination wash and rinse waters is of limited value for determining the presence of D001, D002, or D003 waste residuals. In addition, given their volatility, F001-F005 constituents would not likely be present on the floor, secondary containment, or interior fume hood surfaces even if these constituents had been released in the past. If residual contamination is present on these surfaces of the RMWMF WMAs, it is more likely to consist of metal constituents than volatile organic compounds. For these reasons, samples will be analyzed for hazardous waste toxicity characteristic metals only, using EPA Method SW 6010B, or an equivalent method.

Analytical results from floor sweeping (soil) samples will be compared to background concentrations that were developed by the NMED for site soils (NMED, 1997) to determine whether the levels in the floor sweepings exceed background and to establish appropriate management requirements for these residuals. Analytical results from decontamination wash and rinse water samples will be compared to the results for the floor sweepings and/or pre-wash water. If the concentrations of indicator parameters in the rinse water are consistent with the concentrations in the soil and/or pre-wash water, the grid area will be considered clean. If the concentrations of indicator parameters are substantially elevated, surface contamination is indicated, and the grid area represented by the sample will be decontaminated again in accordance with the procedures in Section F.5.2.1 of the site-wide closure plan.

7.5.4 Quality Control

QC for sampling and analysis at the RMWMF will be implemented as described in Section F.6 of the site-wide closure plan.

7.5.5 Data Management and Reporting

Data management and reporting will be performed as described in Section F.6 of the site-wide closure plan.

7.6 Decontamination and Verification Procedures

Section F.5.2 of the site-wide closure plan presents general decontamination and verification procedures applicable to all Units at the SNL/NM facility. Prior to closure, this Unit-specific plan will be updated as necessary to incorporate new or improved decontamination practices or technology. Any revisions to this Unit-specific plan will be submitted to NMED for approval prior to initiation of closure activities at the RMWMF.

8.0 TREATMENT PLAN

Treatment operations for RCRA-regulated wastes treated at the RMWMF are described in this section.

The following treatment technologies may be used to treat RCRA-regulated wastes at the RMWMF:

- Chemical deactivation,
- Thermal deactivation,
- Amalgamation,
- Stabilization and solidification,
- Macroencapsulation, and
- Physical treatment.

Sandia/DOE may use each technology to treat any of the wastes in the General Part A for which the treatment technology is included. Treatment at the RMWMF may occur in Buildings 6920, 6921, and 6925. Treatment (except some physical treatment and chemical deactivation of thermal batteries) is and will be conducted in containers; therefore, it is not subject to the miscellaneous unit and environmental performance standards in 20 NMAC 4.1.500/40 CFR 264, Subpart X [7-1-08]. Treatment effectiveness is discussed in Section 8.3.

8.1 Treatment Operations

Waste treatment is performed at the RMWMF for one or more of the following reasons:

- To meet land disposal restrictions (LDRs);
- To allow for the safe storage of the waste; and/or
- To meet TSDF requirements.

All of the treatment at the RMWMF is batch treatment performed on single packages of waste (each package is one 55-gallon drum or less, or a single item that may be larger than a drum. Each type of treatment is performed on batches of 500 pounds of waste or less, with the exception of physical treatment, which may occasionally involve very large, heavy items. Liquid wastes are treated in batches of 60 gallons or less.

Waste treatment may generate secondary waste streams (treatment residues). RCRA-regulated treatment residues may undergo additional on-site treatment and/or be sent to an appropriate off-site TSDF.

The waste treatment processes described in this section are effective in addressing hazardous characteristics in RCRA-regulated wastes, including the following:

- Solid items exhibiting the hazardous waste characteristics of ignitability or reactivity may be chemically deactivated to eliminate the characteristic(s).

- Liquid waste exhibiting the hazardous waste characteristics of ignitability, corrosivity, and/or reactivity may be chemically deactivated to remove the characteristic(s).

- Reactive (explosive) wastes may be treated using thermal deactivation techniques.

- Elemental mercury may undergo amalgamation to reduce or eliminate the leaching potential.

- Liquid wastes and particulates containing hazardous waste toxicity characteristic metals (excluding elemental mercury and high mercury subcategories) may be stabilized and/or solidified to reduce or eliminate the leaching potential of the hazardous waste constituents.

- Debris, and wastes containing hazardous waste toxicity characteristic metals (excluding elemental and high mercury subcategories defined in 20 NMAC 4.1.800/40 CFR 268), may be macroencapsulated to reduce or eliminate the leaching potential of the hazardous waste constituent(s).

- Solid items with hazardous constituents may be physically separated from larger items, and the size of individual pieces may be reduced.

- Pressurized containers may be punctured or opened to release the contents.

Treated wastes and waste residues resulting from treatment of RCRA-regulated wastes may or may not require further management as hazardous wastes, as discussed in Appendix B, Section B.2.5.

Each waste treatment technology or process listed above is described in the following sections.

8.1.1 Chemical Deactivation

Sandia/DOE perform chemical deactivation in containers in the treatment areas in Buildings 6920 and 6921 at the RMWMF. The treatment may take place within the fume hood(s) that are present in each building. The containers vary in size depending on the quantity of waste to be treated, and include laboratory glassware, 5-gallon buckets, and 55-gallon drums.

Chemical deactivation refers to a number of chemical processes that can eliminate the hazardous waste characteristics of ignitability, corrosivity, and/or reactivity. Deactivation can be accomplished by several technologies (e.g., neutralization or chemical oxidation). However, the intent of this section is to identify and describe specific methods or treatment trains which may be used at the RMWMF to deactivate ignitable wastes defined in 20 NMAC 4.1.200/40 CFR 261.21(a)(2) and (4) [7-1-08], corrosive and reactive wastes defined in 20 NMAC 4.1.200/40 CFR 261.23 [7-1-08]. Deactivation may or may not result in a final waste form, depending on the process, and may be used as the first in a series of treatment steps.

Deactivation processes are conducted under carefully controlled conditions so that RCRA-regulated waste with the characteristic of reactivity is allowed to react in a slow, nonviolent

manner. Allowing the reactive potential of the waste to be dissipated in this manner reduces or eliminates the reactive characteristic of the waste. Deactivation of reactive wastes is typically conducted in small batches under laboratory conditions such that process control can be easily maintained.

- Hydrides, deuterides, and tritides are deactivated by slow addition to an ice water bath.

- Deactivation of water reactive metals such as elemental sodium and lithium involves the slow and controlled addition of an appropriate alcohol/water solution. Alcohol/water addition is maintained until the water reactive potential of the waste has been eliminated.

- Deactivation of pyrophoric metal powders and particulates may be achieved by mixing waste in a portland cement matrix.

- Water-soluble oxidizers in particulate form are slowly dissolved in water to deactivate them as the first step in the treatment process. The resulting solution may undergo further treatment (e.g., neutralization and stabilization).

- Water-soluble concentrated liquid oxidizers such as hydrogen peroxide may be diluted with water in a controlled manner to make them safer to handle before deactivation with an appropriate chemical agent such as iron filings.

- The reactive material in thermal batteries may be deactivated through introduction of an electrical current that induces a chemical reaction in the material, deactivating it and generating heat. Batteries are treated one at a time in this manner; this process is not conducted in containers due to the need to dissipate the heat generated during the chemical reaction.

Chemical deactivation to remove the characteristic of corrosivity is the process of removing excess acidity or alkalinity from an aqueous liquid waste. Other uses may include pH adjustment to facilitate subsequent treatment; such pretreatment through deactivation may be necessary to prevent corrosive damage to equipment, deter undesirable reactions, and preclude the formation of unwanted byproducts.

Reagents added to achieve a desired pH are combined with liquid waste inside a mixing vessel or directly in the waste container. Common deactivating reagents include, but are not limited to, sodium hydroxide for acid wastes; and phosphoric acid for alkaline wastes. The selection of reagents is dependent on the quantity of reagent required, cost, availability, and the potential byproduct(s). These deactivation processes are conducted under carefully controlled conditions in which the reagent is added to the waste slowly and mixed thoroughly. This allows the reaction to proceed in a nonviolent manner and allows the energy to be dissipated effectively. Ice may be used if needed to cool the mixture during the reaction. In the case of reactions that are expected to be strongly exothermic, wastes may be treated in small batches under laboratory conditions (similar to the deactivation of reactive wastes) such that process control can be easily maintained.

8.1.2 Thermal Deactivation

Sandia/DOE perform thermal deactivation of reactive RCRA-regulated wastes, including batteries, explosives, and explosive components, in a Sandia-designed and tested portable deactivation device that meets the definition of a container in 20 NMAC 4.1.100/40 CFR 260.10. The device is a thick-walled stainless steel vacuum apparatus equipped with an internal heated plate and sensors to measure temperature and pressure. The explosive deactivation device was designed to contain a detonation of 25 grams TNT-equivalents of explosive waste. The inside diameter of the cylinder is 8 inches, and it is 18 inches long. Because the device is portable, it may be used in any of the treatment areas in Building 6920 or 6921. It is shown in Figure 17.

Reactive waste is placed on the covered tray, inserted into the cold unit, the unit is sealed and filled with an inert atmosphere (e.g., nitrogen), and the temperature of the tray is slowly raised until reaching a temperature at which the explosive being treated decomposes. Personnel use waste characterization data and/or published chemical information (e.g., "DOE Explosives Safety Manual" [DOE, 2002] or other chemical or engineering handbook) to determine the required temperature. The temperature is maintained for two hours to complete the decomposition. The unit is cooled and decomposition gases are vented to a fume hood with a high-efficiency particulate air filtration system.

8.1.3 Amalgamation

Sandia/DOE perform amalgamation of small quantities of elemental mercury in small (e.g., laboratory) containers in the treatment areas in Buildings 6920 and 6921 at the RMWMF. The amalgamation process for liquid elemental mercury involves mixing liquid mercury waste with a powdered base metal. The amalgamation process immobilizes elemental mercury into a solid leach-resistant form that has minimal potential for emission of mercury vapor.

The two important operating parameters for effective treatment are: (1) the ratio of base metal to mercury, and (2) the efficiency of mixing. Copper or zinc is typically used as a base metal, but tin, nickel, gold, and sulfur may also be used. The base metal may be pretreated with acid to improve the effectiveness of the amalgamation reaction. For the small quantities of mercury that are treated at the RMWMF, hand mixing the mercury and base metal using a mortar and pestle or mechanical mixing are sufficient to create an amalgam with uniform properties.

8.1.4 Stabilization and Solidification

Sandia/DOE perform stabilization in containers in the treatment areas in Buildings 6920 and 6921 at the RMWMF. The treatment may take place within the fume hood(s) that are present in each building. Stabilization is a process of binding hazardous waste metals so that the metals become chemically part of the matrix or are physically bound within the matrix. The primary use of stabilization is to immobilize toxicity characteristic metals but many stabilization agents also eliminate free liquids. Typical waste forms suitable for stabilization and/or solidification include liquids, soils, and particulate-type wastes.

Process equipment for mixing waste and binder materials depends on the type of reagents used and the volume of waste to be treated. In-drum mixing is typically used for large volume waste quantities. Once waste and binder have been thoroughly mixed and placed in a container, the mass is allowed to cure and/or set. Smaller batches may be mixed by hand and allowed to cure in smaller containers (e.g., 5-gallon pails, and tubs and trays of various sizes).

Development of appropriate formulas is waste specific. Stabilization agents for toxic metals may include portland cement, pozzolans, thermoplastics, organic polymers, and clays. However, other waste forms may require proprietary reagents that are available for specific applications. Additional reagents may be added to reduce contaminant leachability, reduce cure and/or set time, and increase strength.

Waste characteristics that are important to the success of the stabilization and/or solidification process for liquids may include volume percent of water, oil, solvents, or other organics; pH; and hazardous waste constituents. Waste characterization data are used to determine whether the waste is amenable to stabilization, any necessary pretreatment requirements, and the appropriate binding agent.

Once the stabilization or solidification method is selected, the binding agent is identified based on chemical compatibility with the waste form and contaminants present. Pretreatment may be required to assure compatibility between the waste and the binding agent (e.g., neutralization of liquid wastes to an acceptable pH range of 5.0 to 11.0). Once the proper binding agent(s) have been identified, bench-scale testing is performed to determine optimum amounts of each agent. In the case of low volume waste streams (e.g., less than approximately 0.26 gallons), bench-scale testing may not be practical and treatment is performed without bench-scale testing using the manufacturer's suggested quantities or by estimating binding agent quantities from previous experience. The stabilization process is performed by combining the predetermined quantities of binding agent(s) with the waste and thoroughly mixing, if appropriate. The resulting mixture is staged to allow an appropriate cure time.

8.1.5 Macroencapsulation

Sandia/DOE perform macroencapsulation in containers in Buildings 6920, 6921, and 6925 at the RMWMF. Macroencapsulation is generally applicable to debris or specific wastes, whereas stabilization/solidification (see Section 8.1.4) is generally applicable to liquids, sludges, and particulate-type wastes. Macroencapsulation is the process of completely encasing waste within a polymer coating or concrete, or within a jacket of inert inorganic materials. The primary use of macroencapsulation is to immobilize wastes such as debris-type solids containing hazardous waste constituents by completely surrounding the waste material with a leach-resistant coating.

Sandia/DOE perform macroencapsulation using one of three processes:

- Encasing the waste in concrete, typically within a larger container that serves as a mold.

- Coating the waste with polymer agents within a mold. Polymers typically used for macroencapsulation include, but are not limited to, polyethylene, thermosetting plastics, and resins that can be polymerized under ambient temperatures in the presence of a

catalyst. Equipment used for macroencapsulation may include molds, polymer extrusion equipment, and resin mixing equipment. In-drum macroencapsulation may also be performed with the drum acting as the mold. Temperature control of polymer macroencapsulation processes is critical and carefully maintained to assure that adequate coating occurs.

For example, Sandia/DOE perform macroencapsulation with a chemically inert resin (typically polyethylene), using 30-gallon containers (metal baskets). Each basket containing the solid RCRA-regulated waste items is placed in a 50-gallon mold (similar in size and shape to a 55-gallon drum). The basket is designed to fit into the mold with one to two inches of clearance on all sites, the top, and the bottom. The mold containing the basket and waste items is then filled with melted resin that is heated using a commercially available extrusion unit. Each basket is used only once because it becomes encapsulated within the inert resin and is part of the final waste form. After the resin cools and solidifies, the mold is removed, the waste form is turned over and more polyethylene is added to form final caps on the ends. The completed waste form is a cylinder slightly smaller than a 55-gallon drum.

- Placing the waste inside a commercially available container made of inert or noncorroding materials such as polyethylene or stainless steel. Alternatively, the container may consist of an outer shell with a liner of inert or noncorroding material such as polyethylene or stainless steel. After the wastes and inert void-filler materials are placed in the container, the resin is heated to seal the container and lid (e.g. using a resistance-heated wire system embedded in the container lid). Stainless steel containers or liners are welded closed to seal the container and encapsulate the wastes. Sandia/DOE use containers of various sizes, depending on the volume and dimensions of waste items to be macroencapsulated.

8.1.6 Physical Treatment

Sandia/DOE perform physical treatment (volume reduction) in Buildings 6920 and 6921 at the RMWMF.

The treatment includes:

- Reducing waste volume by using commercially available tools (e.g., hammers, screwdrivers, wrenches, pliers, saws, drills, cutters, etc.) to separate items with hazardous waste constituents from larger items or from each other, including removal of coating and filler materials. In some cases, the RCRA-regulated waste item may undergo further physical treatment or treatment in containers.

- Removing coating and filler materials (e.g. resins and glues) by dissolution in containers (e.g., trays or pails) in order to facilitate separation of items with hazardous waste constituents from each other or from other items. Dissolution may take place within the fume hood(s) that are present in each building. The dissolved material may undergo further treatment in containers.

- Reducing the size of waste items by using tools (e.g. mallets, cutters, etc.) to crush or cut items into smaller pieces. The pieces may undergo further treatment in containers.
- Puncturing aerosol cans within a container to allow recovery of the contents. The liquid contents of the aerosol cans are collected in the container, and any gaseous propellants are filtered through a carbon or other appropriate filter attached to the container. Liquids collected may undergo further treatment in containers.
- Releasing pressurized contents of containers other than aerosol cans (e.g., gas cylinders). Organic gaseous contents are filtered through a carbon filter. All gaseous contents are vented to a chemical fume hood with a high-efficiency particulate air filtration system.

8.2 Preventing Releases to the Atmosphere

Most of the RCRA-regulated wastes treated at the RMWMF are inorganic and are not expected to generate emissions during treatment. Unit personnel perform chemical reactions that could generate emissions (deactivation and stabilization/solidification) in a controlled manner as described above to further minimize potential air emissions. Treatment operations that may generate air emissions of gases, vapors, or particulates are conducted in a controlled manner within fume hoods or with other local ventilation if possible. Each fume hood provides an enclosed work area equipped with a localized exhaust system. Air flow from each fume hood passes through a high-efficiency particulate air filter train before being released to the environment through an exhaust stack. The filters effectively remove particulates entrained in the air flow.

The filters do not remove organic constituents entrained in the air flow. Unit personnel employ the practices described in Section 8.2 of the General Part B to prevent releases of organic constituents to the atmosphere during treatment (20 NMAC 4.1.900/40 CFR 270.14[b][8][vi] and 270.27(a)(2); 20 NMAC 4.1.500/40 CFR 264.179 and Subparts AA, BB, and CC).

8.2.1 Subpart AA

The RMWMF treatment operations do not employ processes subject to the requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart AA.

8.2.2 Subpart BB

During treatment, Sandia/DOE do not routinely manage RCRA-regulated wastes with organic concentrations ≥10 percent by weight in process equipment identified in 20 NMAC 4.1.500/ 40 CFR 264, Subpart BB [7-1-08]. Equipment used in such service at the RMWMF will be used for less than 300 hours per calendar year and is therefore exempt from the requirements of 20 NMAC 4.1.500/40 CFR 264.1052 through 1060 [7-1-08] as noted in 20 NMAC 4.1.500/40 CFR 264.1050(f) [7-1-08]. The equipment location will be noted in the RMWMF records. Equipment use will also be noted in the records.

8.2.3 Subpart CC

Unit personnel follow the practices described in Section 8.2 of the General Part B. Unit personnel do not perform any treatment subject to Container Level 3 standards (20 NMAC 4.1.500/40 CFR 264.1086[c]).

Section B.5.3 in Appendix B to the General Part B also describes procedures to maintain compliance with the air emissions requirements of 20 NMAC 4.1.500/40 CFR 264, Subparts BB and CC [7-1-08].

8.3 Treatment Effectiveness (20 NMAC 4.1.900/40 CFR 270.23[d])

As required in 20 NMAC 4.1.900/40 CFR 270.23(d) [7-1-08], Sandia/DOE evaluate treatment effectiveness by appropriate methods for each batch of waste treated at the RMWMF. In many cases (e.g. stabilization/solidification), Unit personnel treat small samples of a batch of waste using a single agent in various proportions or using various agents to determine which is most effective. That process is then used in treating the rest of the waste, and the data demonstrating that treatment is effective for the samples may be used to demonstrate effectiveness for the rest of the waste. Characterization of the treated waste is described in Appendix B (Section B.2.5.2) of the General Part B.

8.3.1 Chemical Deactivation

Unit personnel check treatment effectiveness using one or more of the following methods (depending on the goal of the treatment performed):

- Visual check for completeness of chemical reaction for solid items that were treated to remove the characteristic of reactivity (e.g., color change or structural change).
- Visual check or ignitability test for liquids that were treated to remove the characteristic of ignitability.
- Knowledge of process to determine whether chemical reaction(s) were completed.
- Check whether treated waste is an oxidizer as defined in 40 CFR Part 173.
- Visual check for liquids that were treated to remove the characteristic of reactivity.
- Fingerprint chemical check for the presence of sulfides and cyanides if their presence caused the waste to be reactive.
- Fingerprint check for pH of liquids that were treated to remove the characteristic of corrosivity.

8.3.2 Thermal Deactivation

Unit personnel check treatment effectiveness through proper operation of the unit (maintaining specified decomposition temperature for specified length of time). In some cases, personnel may visually check for evidence of chemical reaction (e.g., color change or structural change) in the solid item.

8.3.3 Amalgamation

Unit personnel visually check each batch of treated waste to verify that the chemical reaction occurred.

8.3.4 Stabilization and Solidification

Unit personnel check treatment effectiveness using one or more of the following methods (depending on the goal of the treatment performed):

- Visual check for the presence of free liquids.
- Paint filter test to determine whether free liquids are present if the treated waste is amorphous and may contain some liquids.
- Analysis of one or more samples of the treated waste using the TCLP for hazardous waste toxicity characteristic metals. If the stabilization is intended to meet the treatment standards in 20 NMAC 4.1.800/40 CFR 268.40, the analysis will include underlying hazardous constituents as described in Appendix B.

8.3.5 Macroencapsulation

Unit personnel visually check each macroencapsulated item to verify that it is completely encased in the inert resin or concrete. For inert or noncorroding containers and containers with inert or noncorroding liners, Unit personnel check the seal of the liner or container.

8.3.6 Physical Treatment

Unit personnel check treatment effectiveness using one of more of the following methods (depending on the goal of the treatment performed):

- Visual check that item(s) with hazardous waste constituents has(ve) been completely separated from other item(s).
- Visual check that pieces are the desired size.

- Visual check that punctured aerosol cans are empty and the contents are in the container.

- Leaving the container for a time to allow it to continue venting after visual and/or audible evidence indicates it is empty. The length of time would be determined by the size of the container, the contents, and the strength of the evidence.

9.0 REFERENCES

DOE, see U.S. Department of Energy

DHHS, see U.S. Department of Health and Human Services

NAAG, see National Association of Attorneys General

National Association of Attorneys General, 1998, “Announcement and Issuance of Guidance: *Sharing of Radionuclide Information with States*”, dated September 1998.

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New Mexico Environment Department (NMED), 1997, Letter from NMED (Robert S. Dinwiddie) to DOE (Michael Zamorski), entitled “Request for Supplemental Information: Background Concentrations Report, SNL/KAFB,” dated September 24, 1997.

NFPA, see National Fire Protection Association

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

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U.S. Department of Energy (DOE), 2000, “Agreement-in-Principle Between the United States Department of Energy and the State of New Mexico for Environmental Oversight and Monitoring,” dated November 29, 2000.

U.S. Department of Energy (DOE), 2002 "DOE Explosives Safety Manual, LLNL Work Smart Standards Version" Lawrence Livermore National Laboratory, Livermore California

U.S. Department of Health and Human Services (DHHS), 1994. "NIOSH Pocket Guide to Chemical Hazards", National Institute for Occupational Safety and Health.

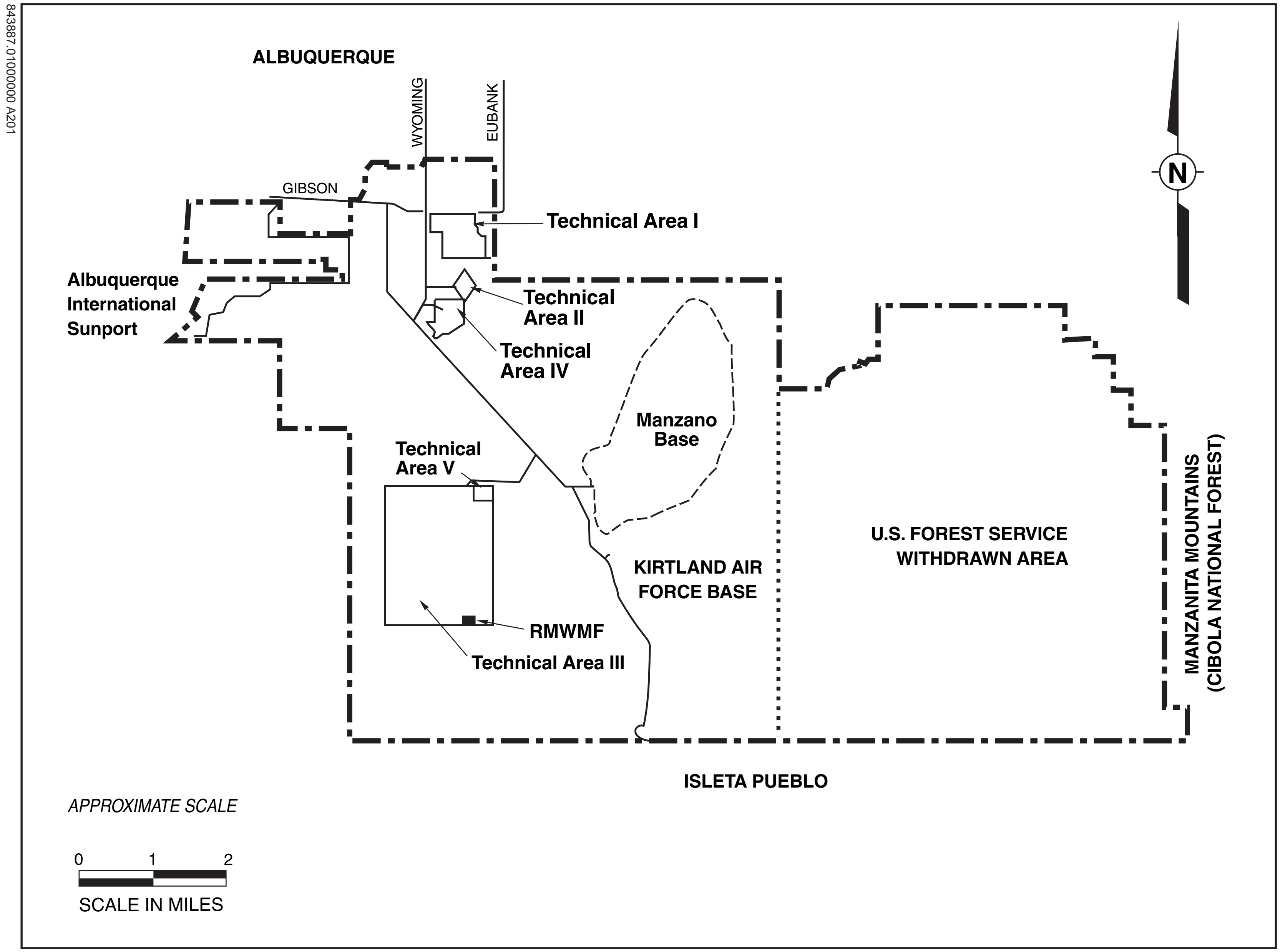

Figure 1
Location Map of the Radioactive and Mixed Waste Management Facility at Sandia National Laboratories/New Mexico

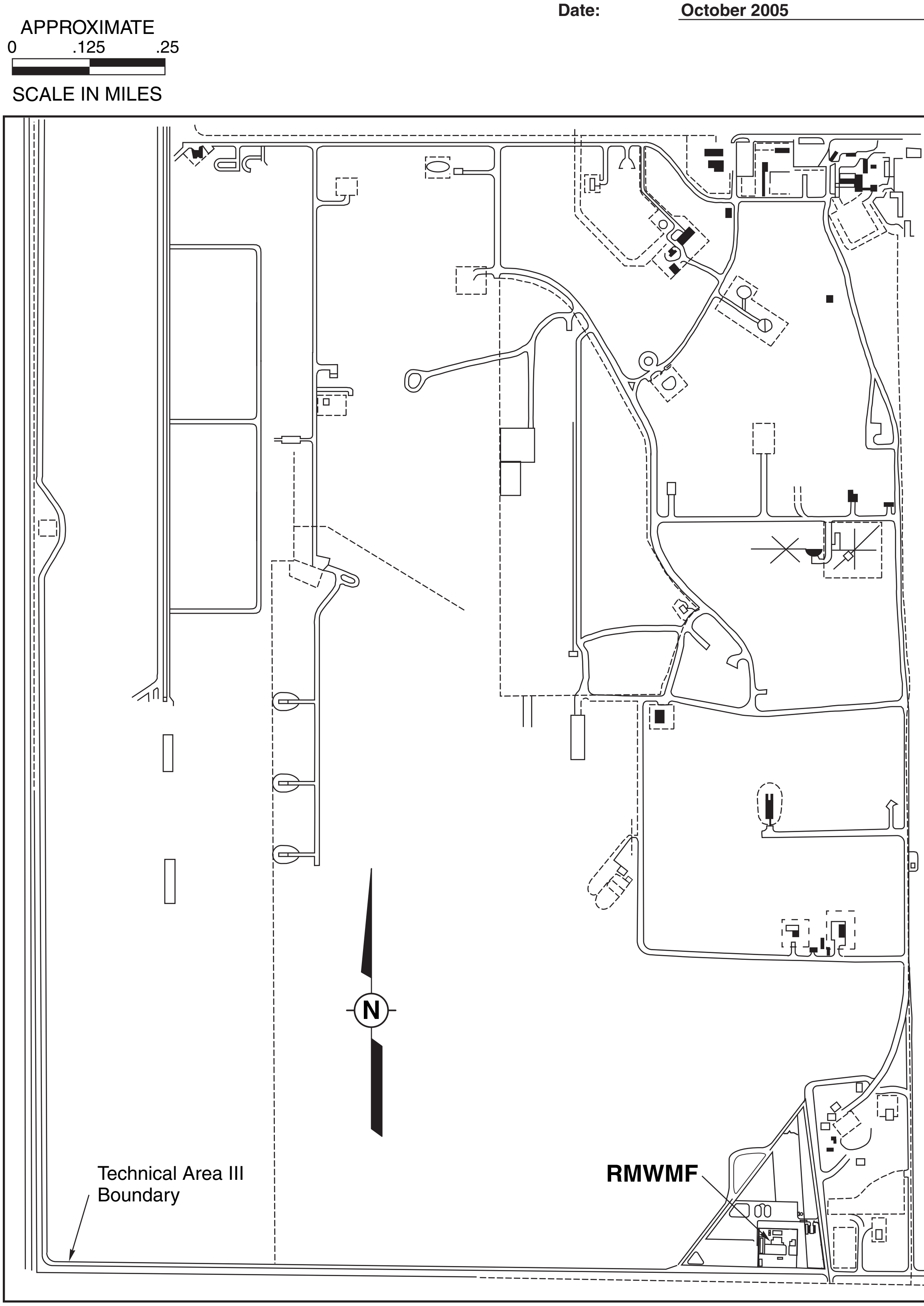

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Figure 2
Location of the Radioactive and
Mixed Waste Management Facility in Technical Area III

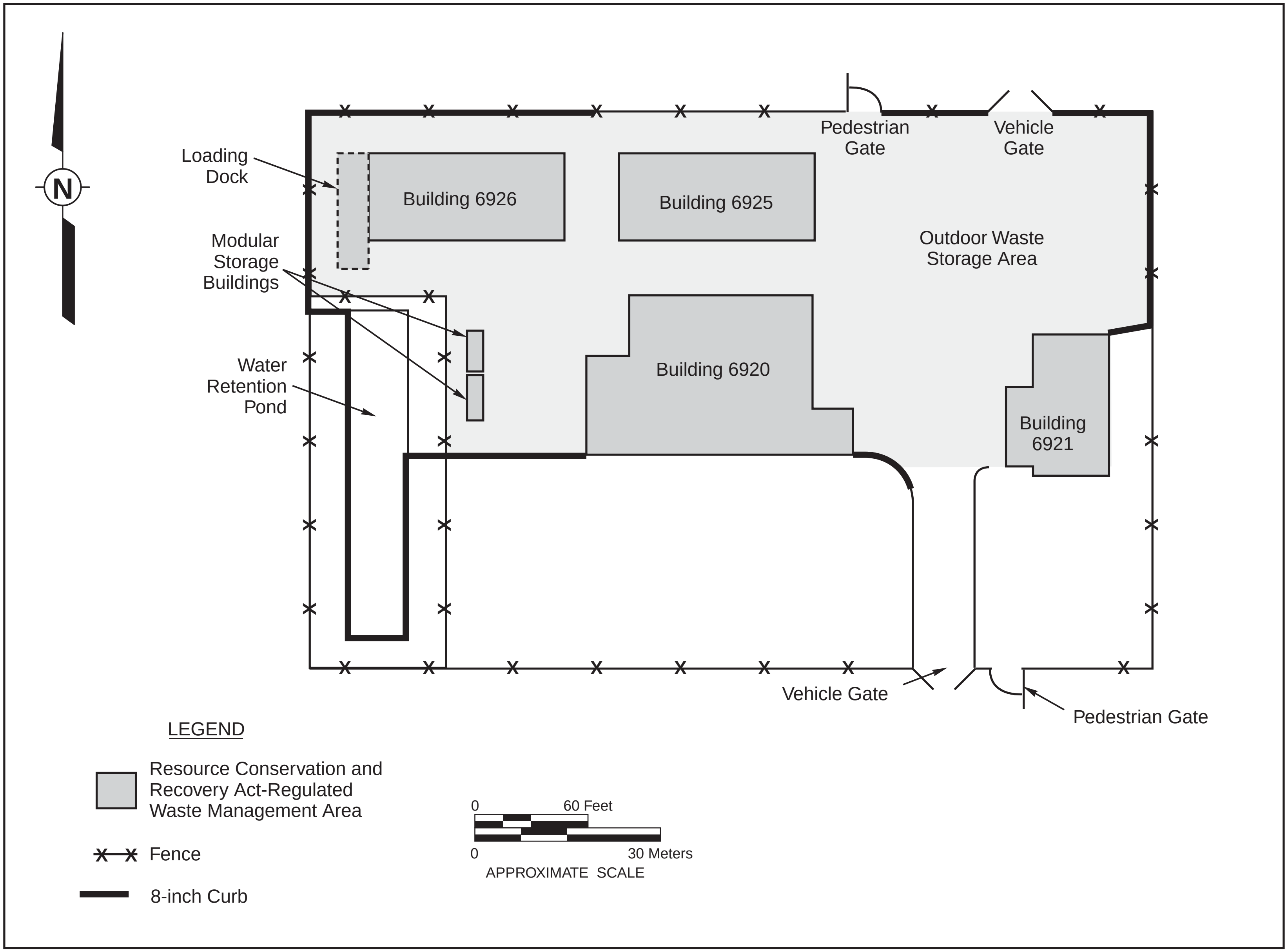

Figure 3
Radioactive and Mixed Waste Management Facility, Unit Layout

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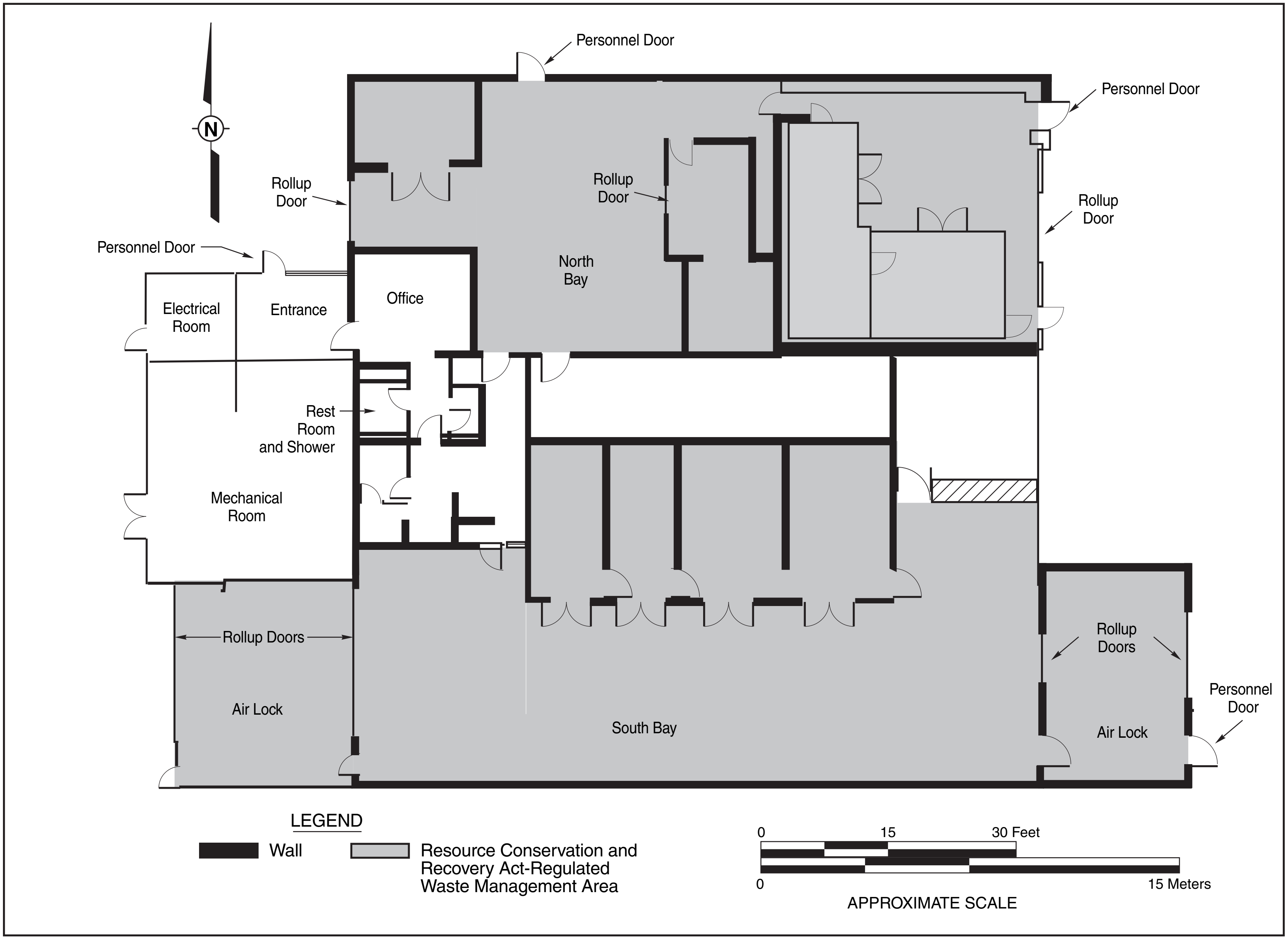

Figure 4

Radioactive and Mixed Waste Management Facility, Building 6920, Resource Conservation and Recovery Act-Regulated Waste Management Areas

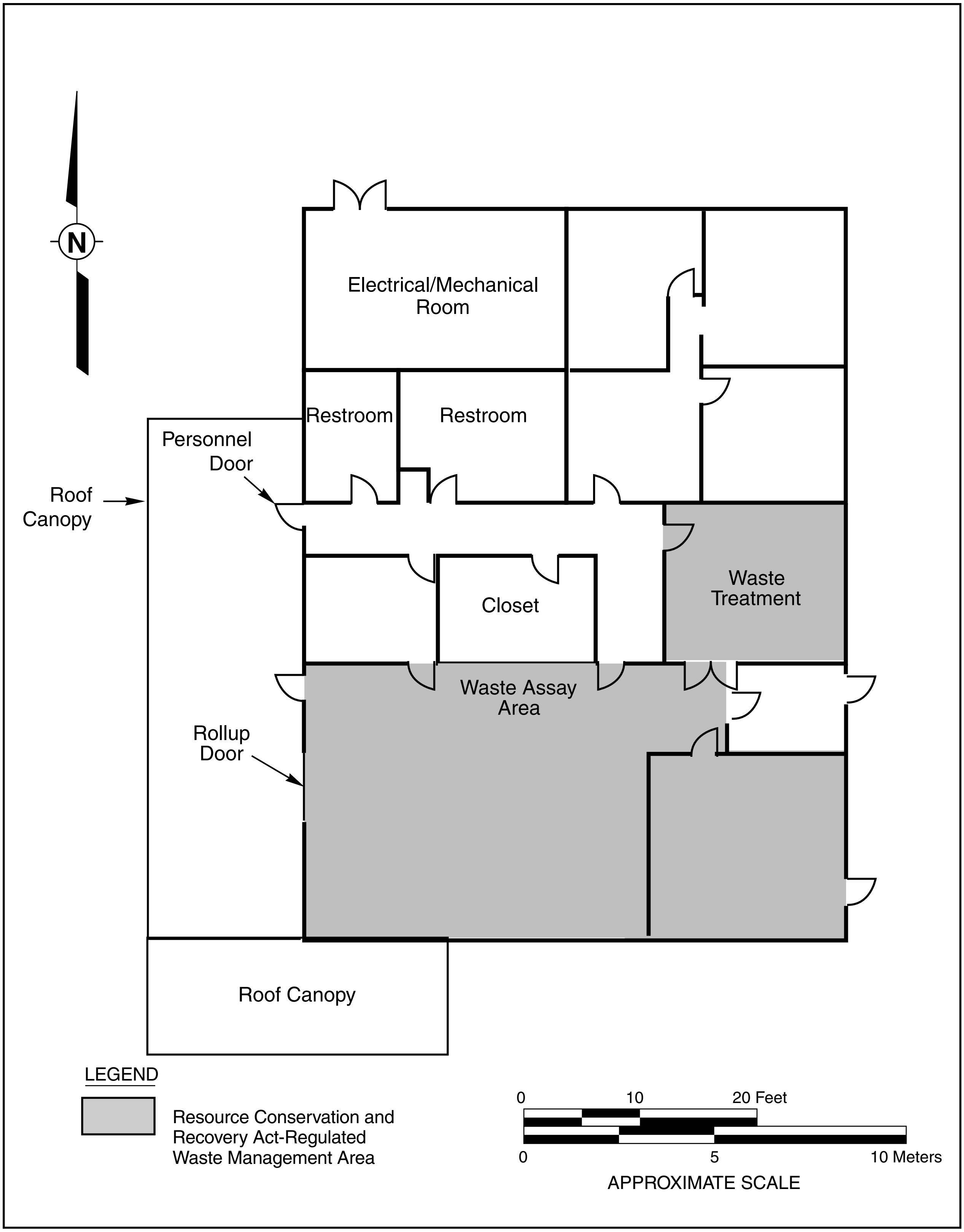

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Figure 5
Radioactive and Mixed Waste Managment Facility, Building 6921, Resource Conservation and Recovery Act-Regulated Waste Management Areas

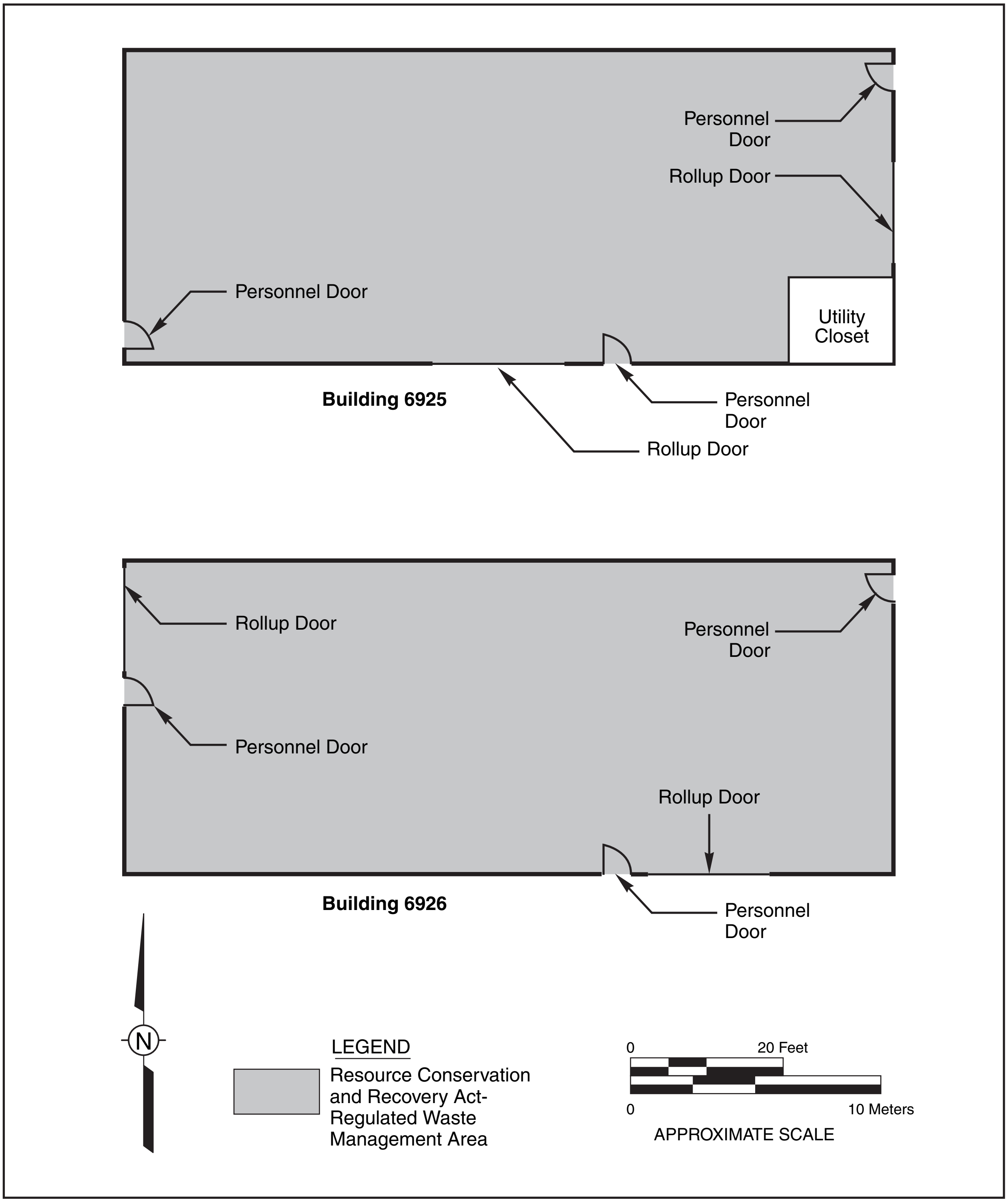


Figure 6

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

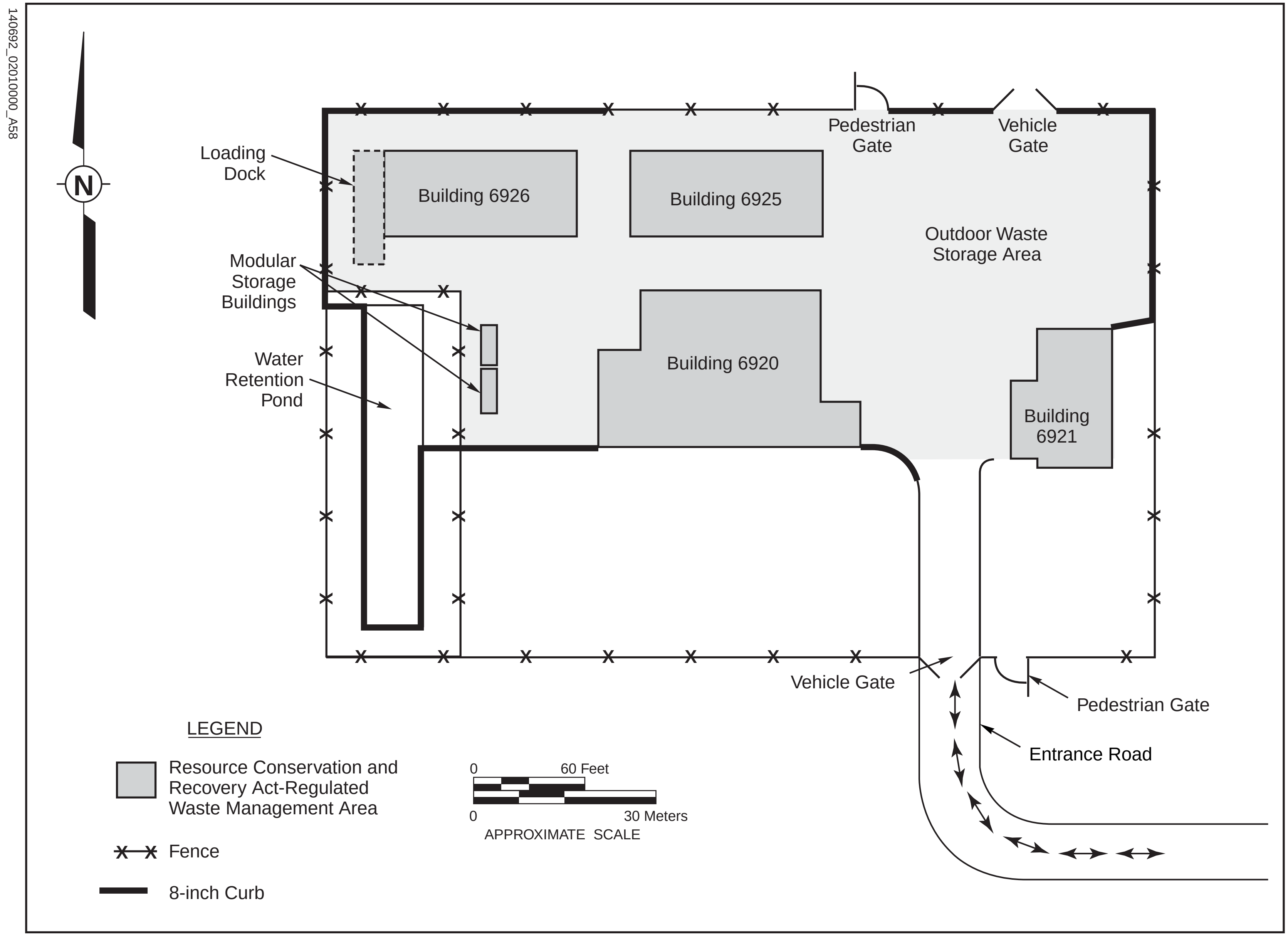
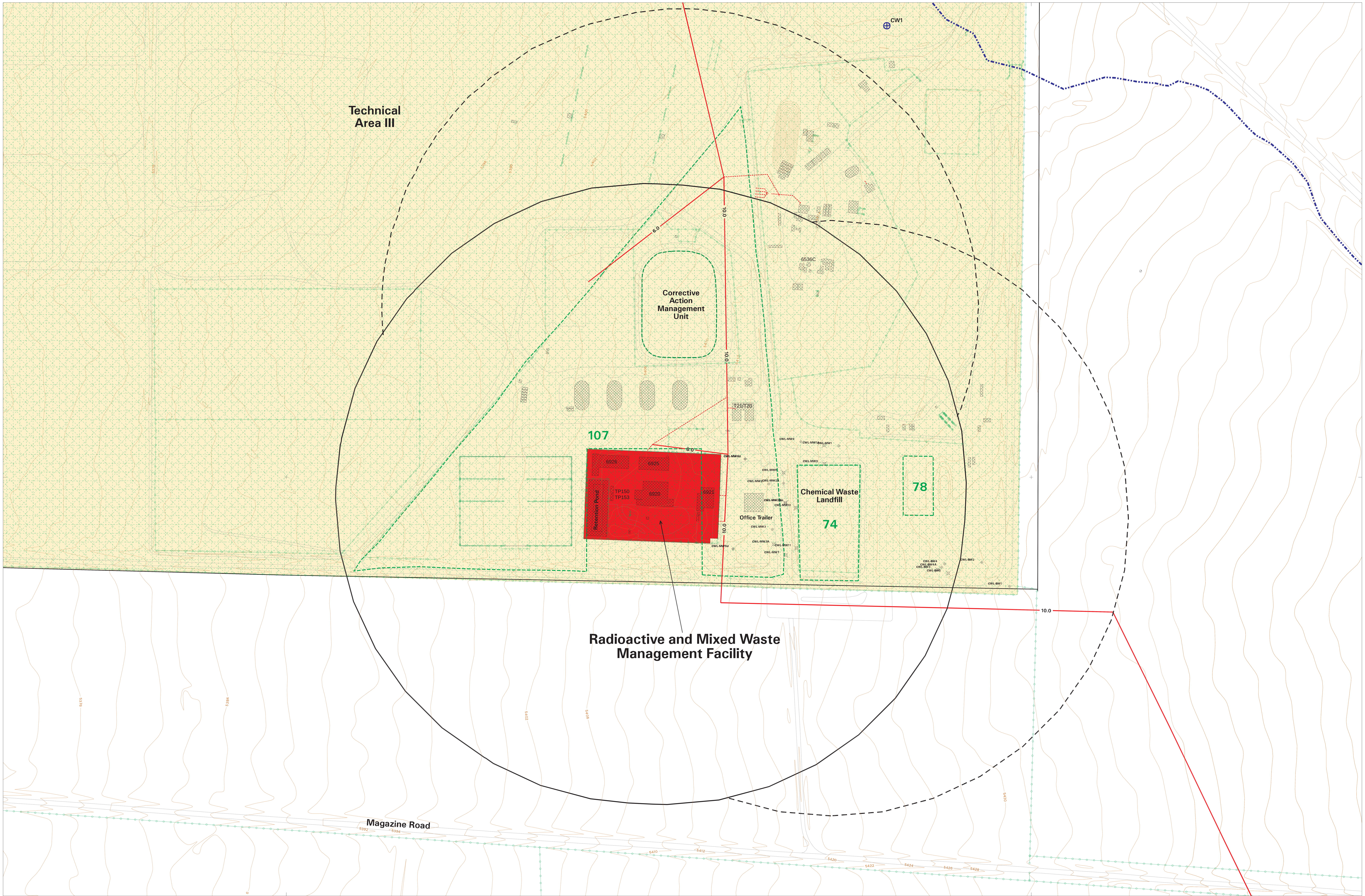


Figure 7
Radioactive and Mixed Waste Management Facility, Traffic Route and Controls



Legend

Wells and Water Features

- Vapor Monitoring Well
- Monitoring Well
- Observation Well
- Production Well
- Production Well (Potable)
- Production Well (Out of Commission)
- Production Well (Abandoned)
- Production Well (Non-Potable)
- Plugged and Abandoned Well
- Spring
- Unknown Water Feature

- Solid Waste Management Unit
- Contour (2 foot)
- Road (all types)
- Fence
- Surface Drainage
- Buildings and Concrete Pads
- Sanitary Sewer Main (active)
- Sanitary Sewer Service (active and inactive)

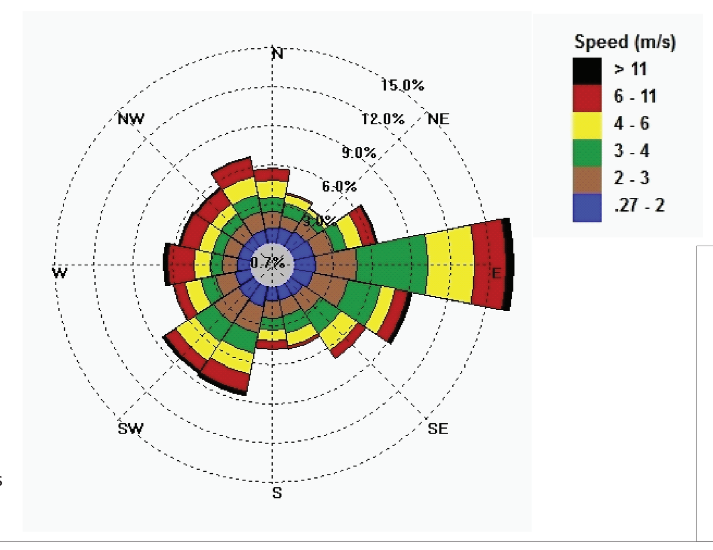
- Radioactive and Mixed Waste Management Facility
- Sandia National Laboratories Technical Area
- 1000 Foot Buffer Around RMWMF
- 1000 Foot Buffer Around other RCRA-regulated Waste Management Facility
- Meteorological Tower

Land Use

- Industrial
- Undefined

Note: The wind direction is the direction from which the wind is blowing. This diagram shows the frequency of occurrence for each wind direction and wind speed. The color indicates the wind speed.

2011 Annual Windrose from Tower CW1

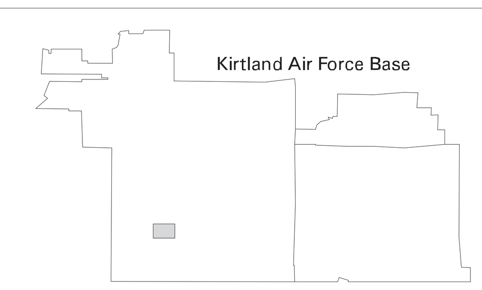


0 120 240
Scale in Feet

0 28 56
Scale in Meters

0 0.028 0.056
Scale in Kilometers

0 0.023 0.045
Scale in Miles



Sandia National Laboratories, New Mexico
Environmental Restoration Geographic Information System

Figure 8
Topographic Map
Radioactive and Mixed Waste Management Facility (RMWMF)
April 2012
Sandia National Laboratories
New Mexico

Compiled by photogrammetric methods from aerial photography dated March 1989, March 1990, September 1991 and July 1992

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum

MAPID=120105

Unclassified | SNL EGIS ORG. 4142

DHelfrich | dh120105.aml | 04/13/12

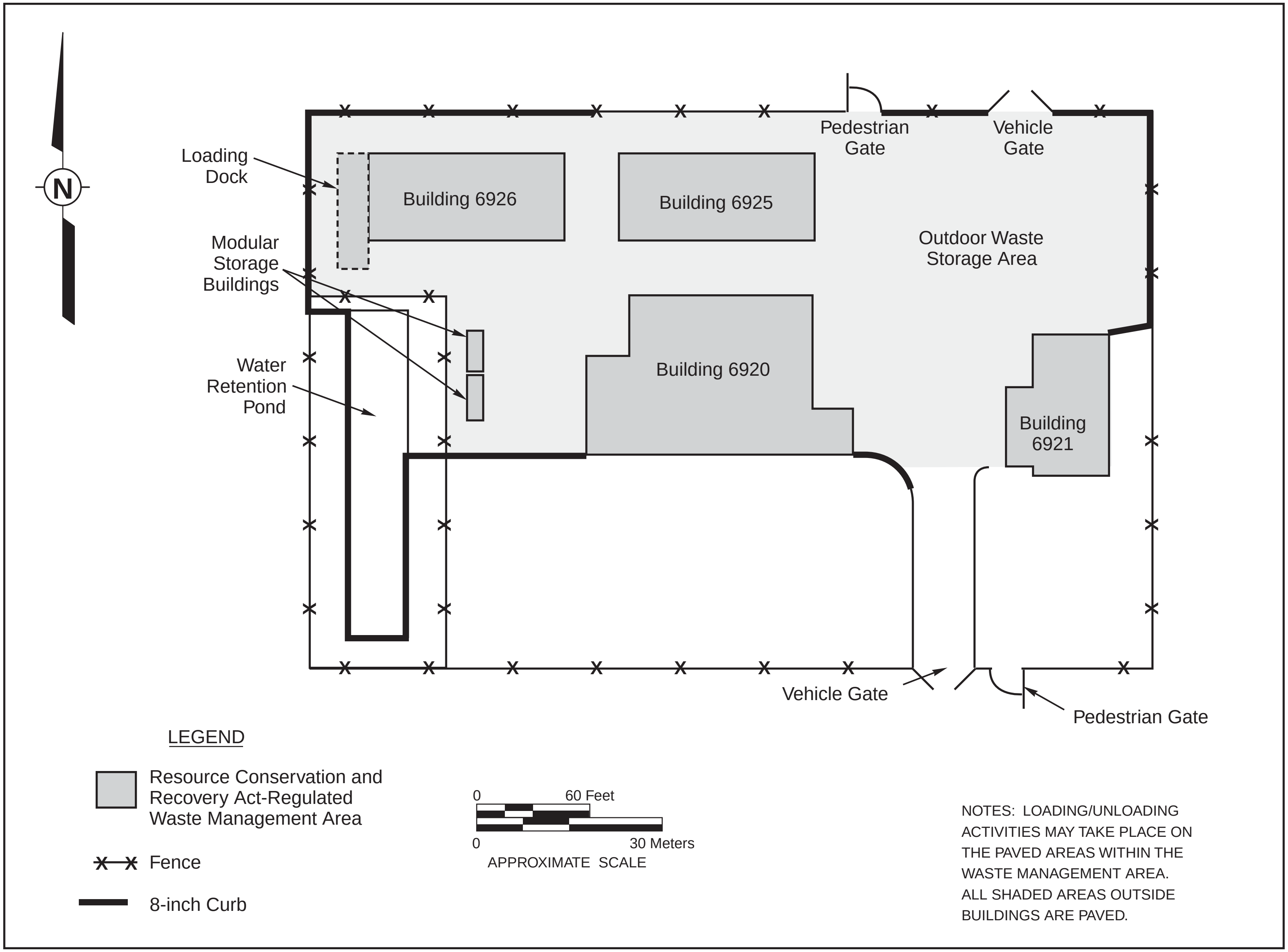


Figure 9
Radioactive and Mixed Waste Management Facility,
Access Control Features

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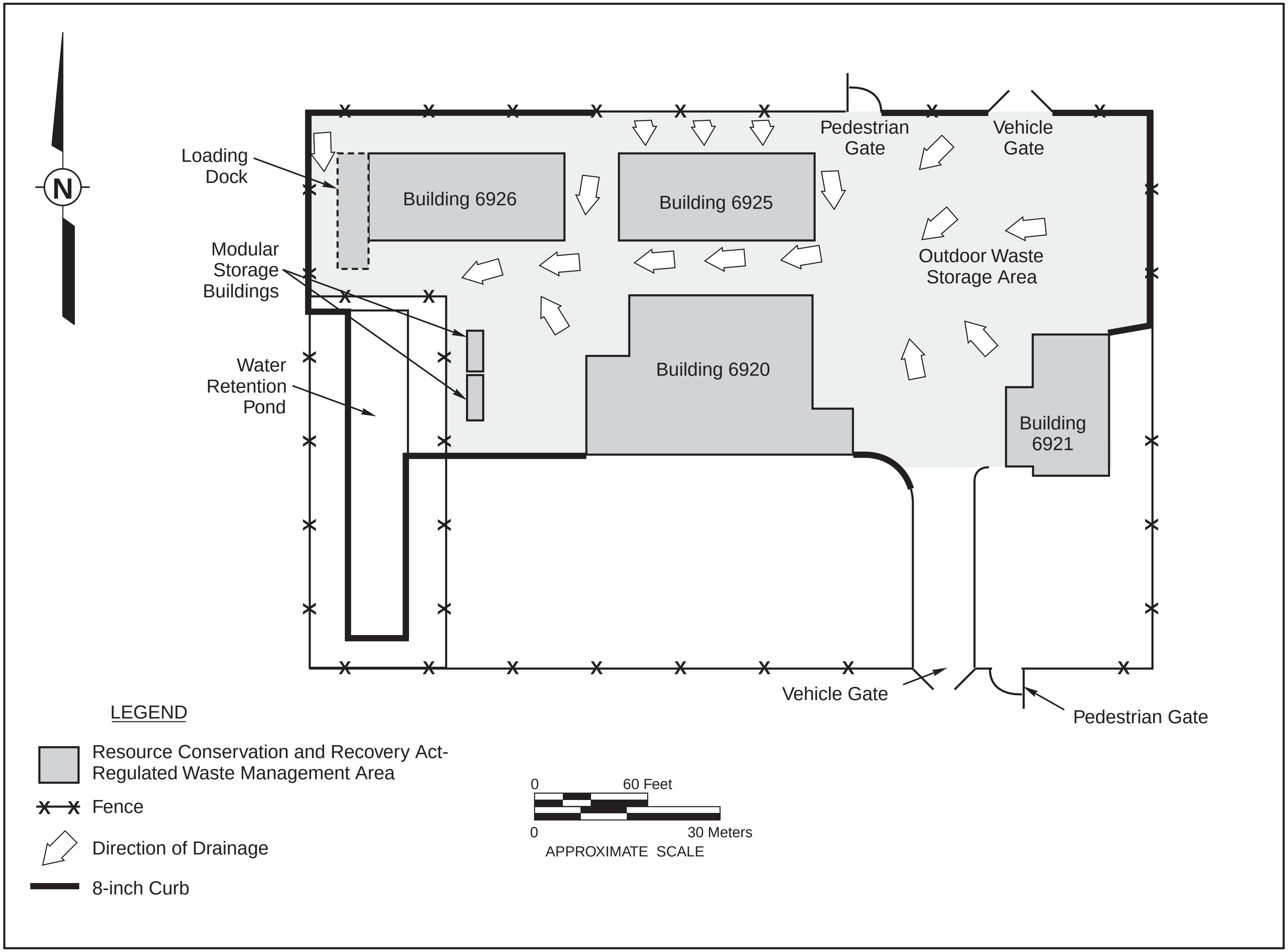

Figure 10
Radioactive and Mixed Waste Management Facility, Drainage Control Features

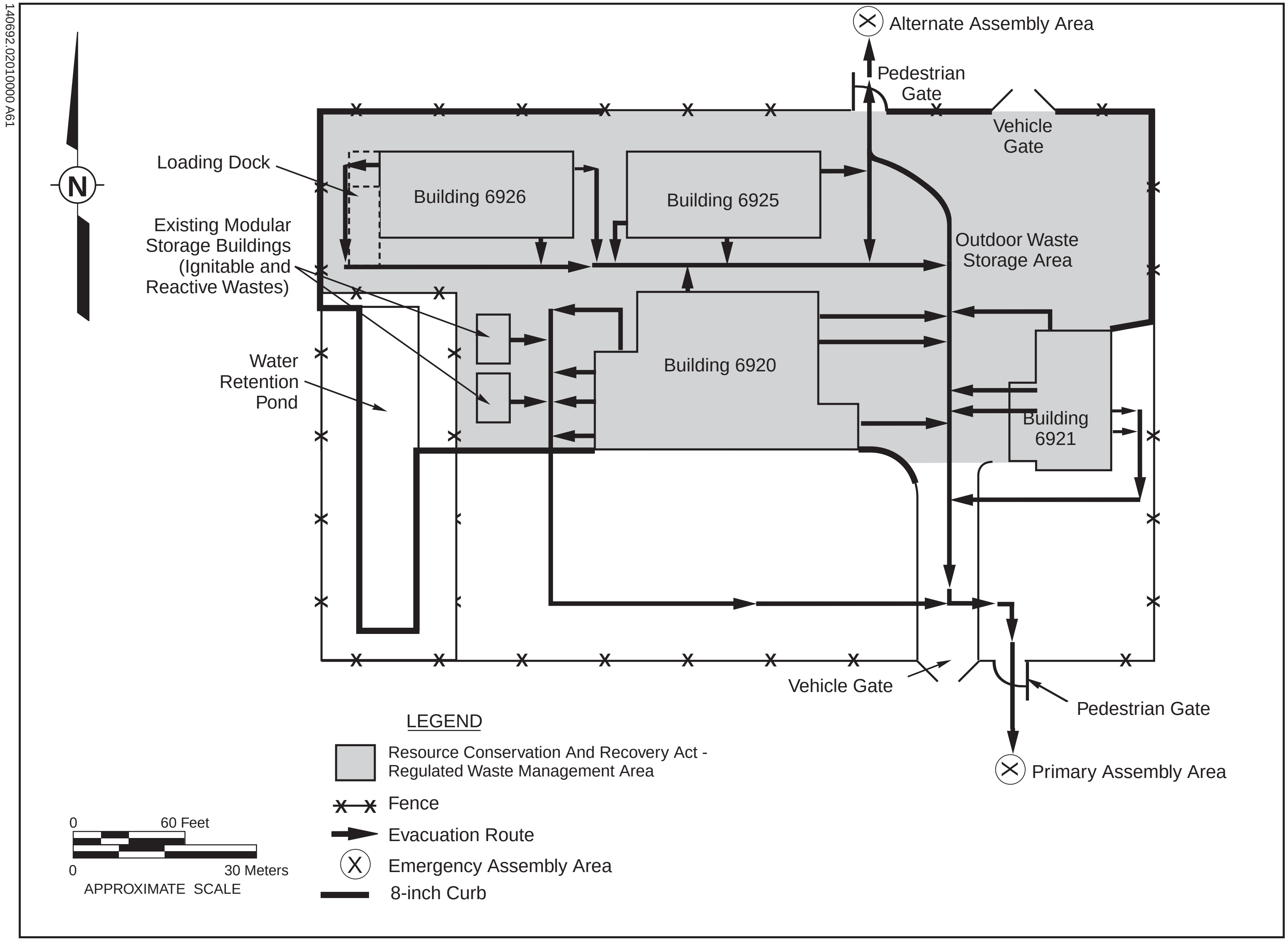

Figure 11

Radioactive and Mixed Waste Management Facility, Evacuation Routes

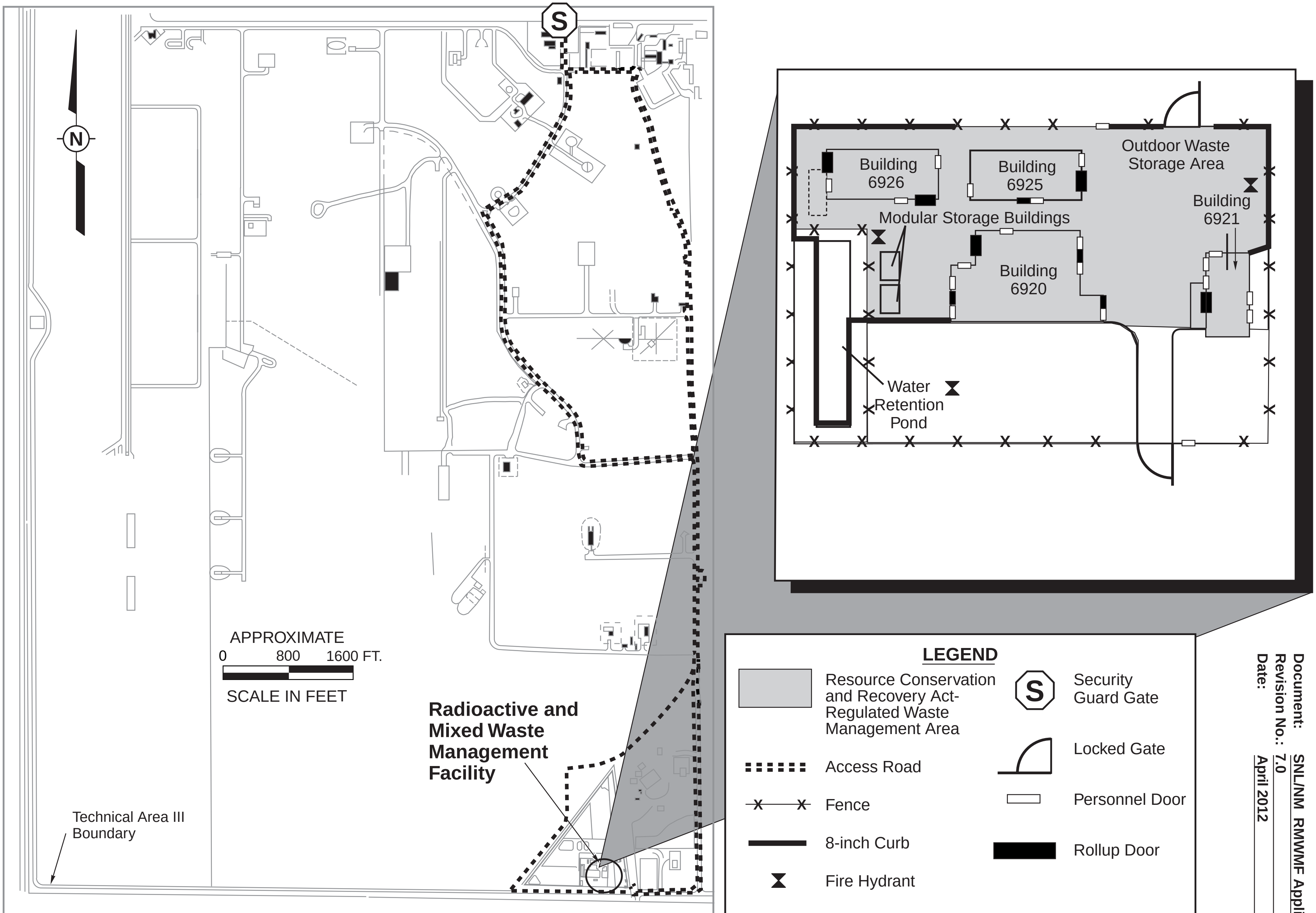

Figure 12

Radioactive and Mixed Waste Management Facility, Emergency Response and Access Information

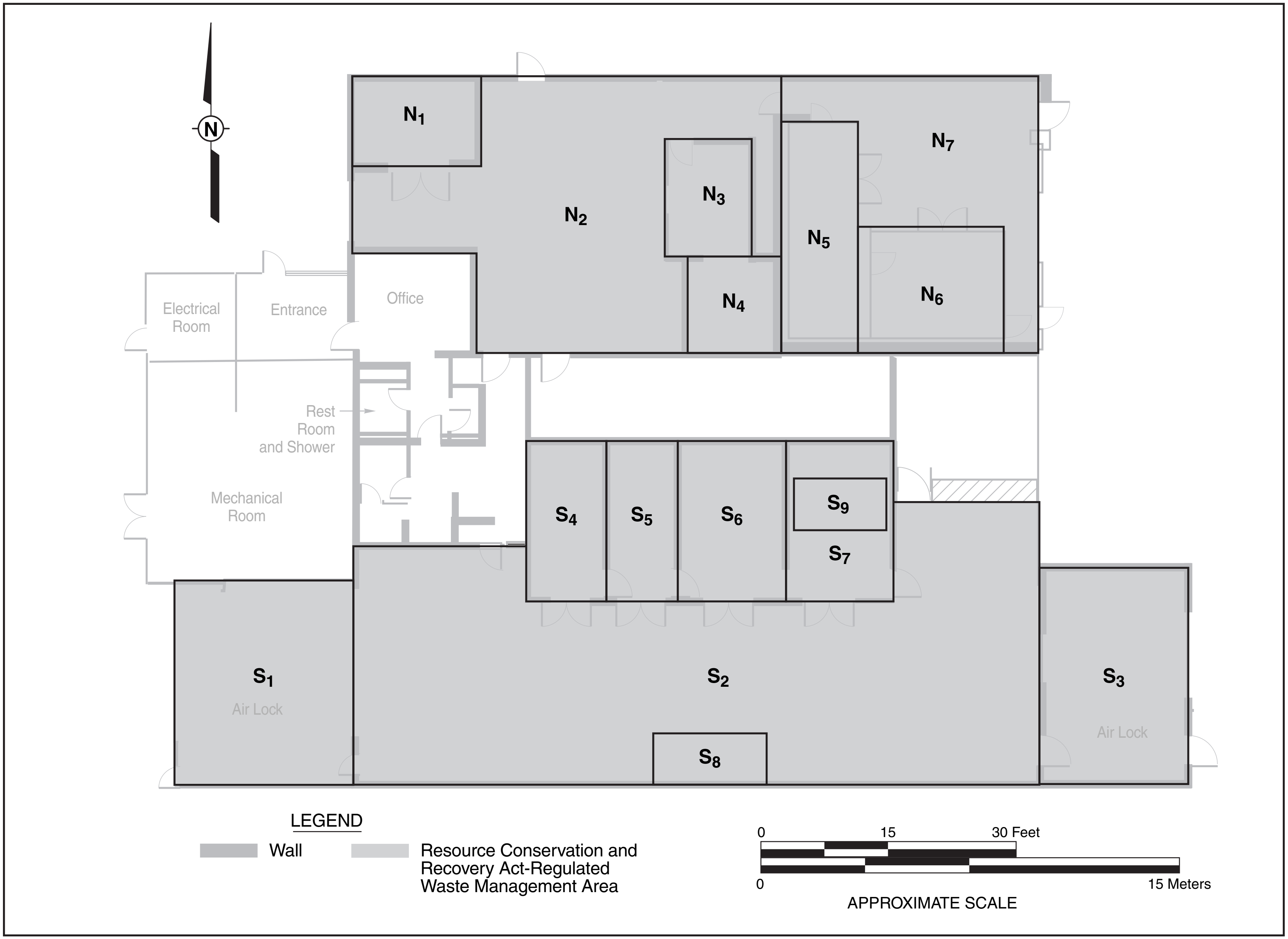

Figure 13
Radioactive and Mixed Waste Management Facility, Building 6920, Closure Grid

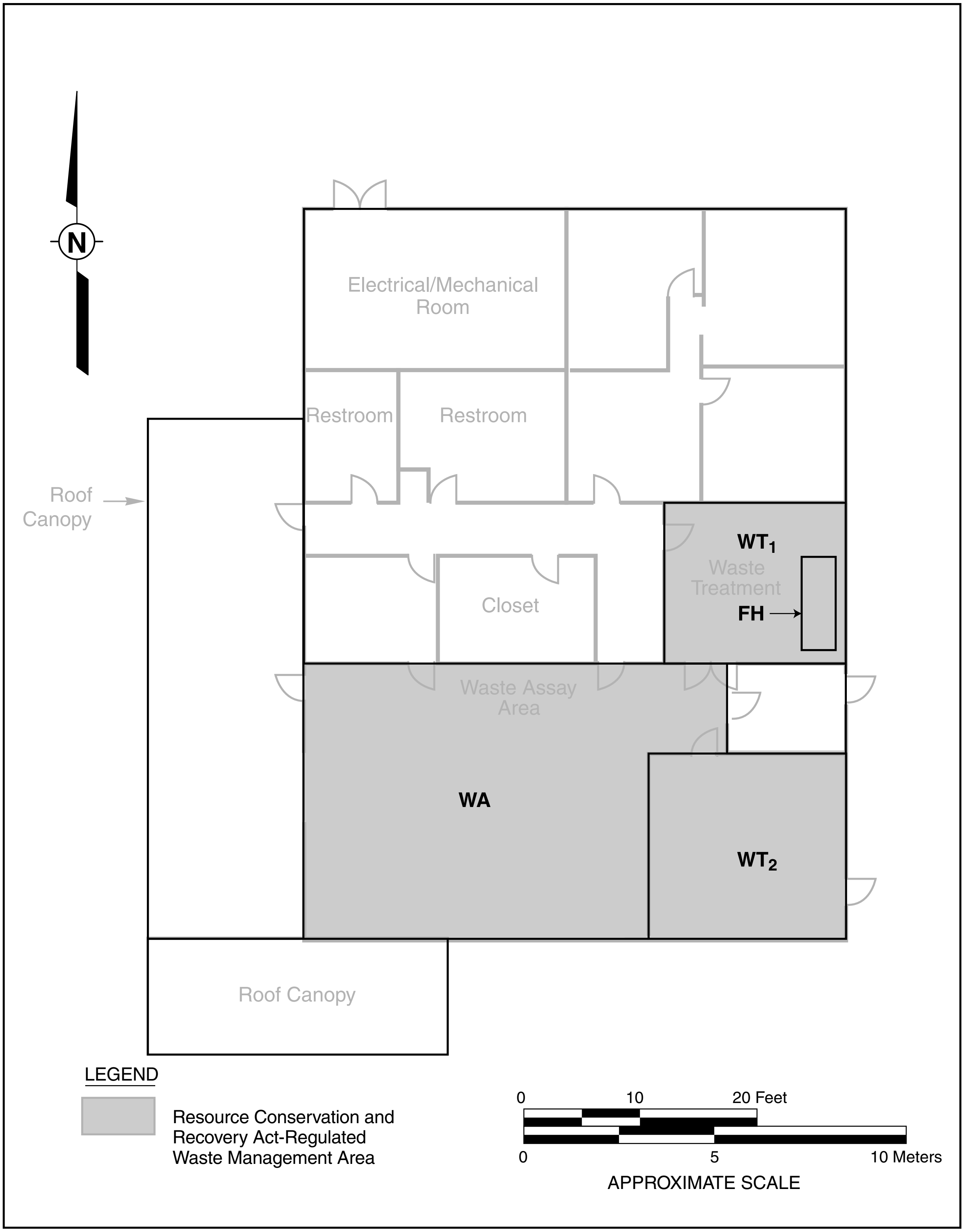

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Figure 14

Radioactive and Mixed Waste Management Facility, Building 6921, Closure Grid

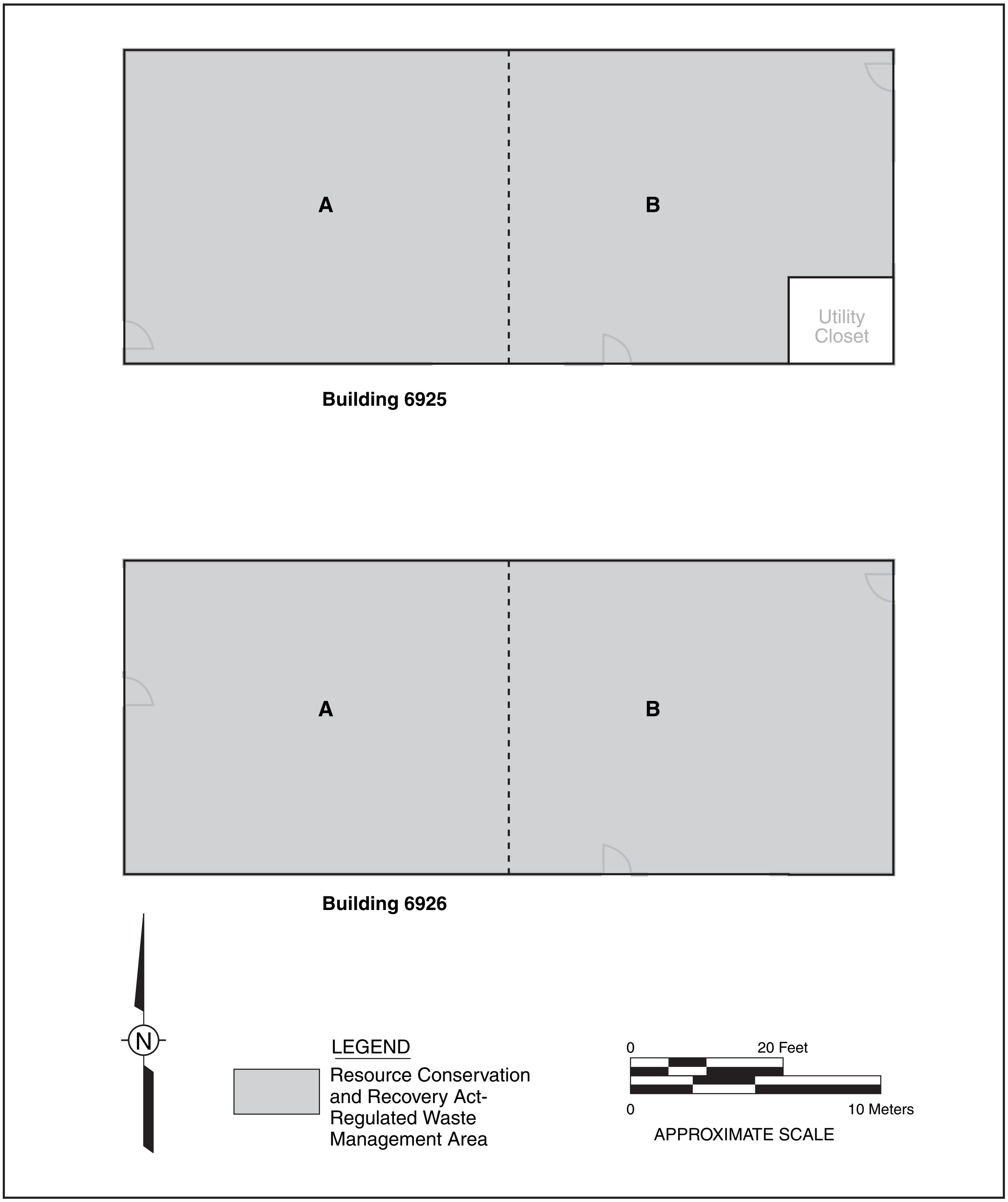

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Figure 15

Radioactive and Mixed Waste Management Facility, Buildings 6925 and 6926, Closure Grid

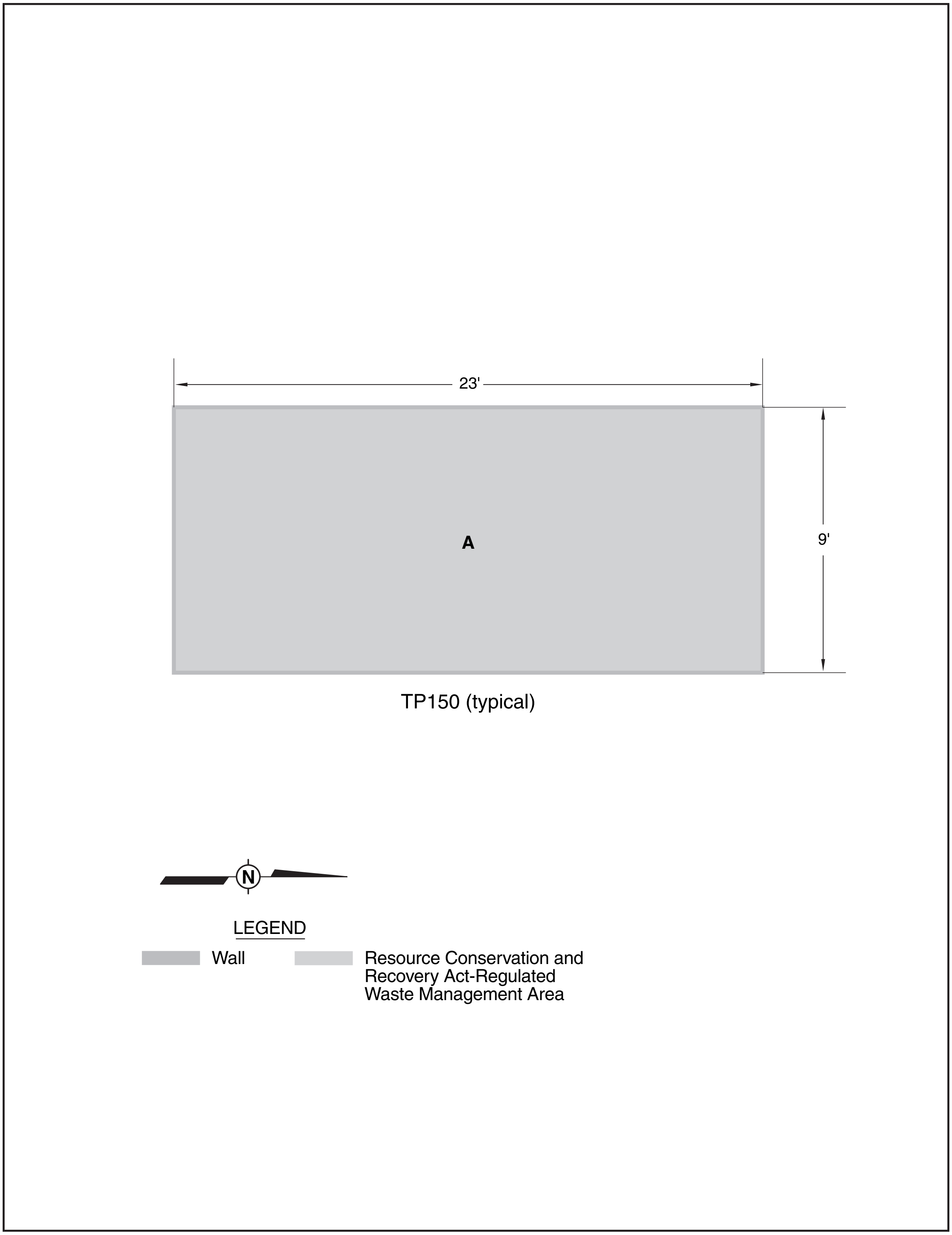

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Figure 16

Radioactive and Mixed Waste Management Facility, Modular Buildings Closure Grid

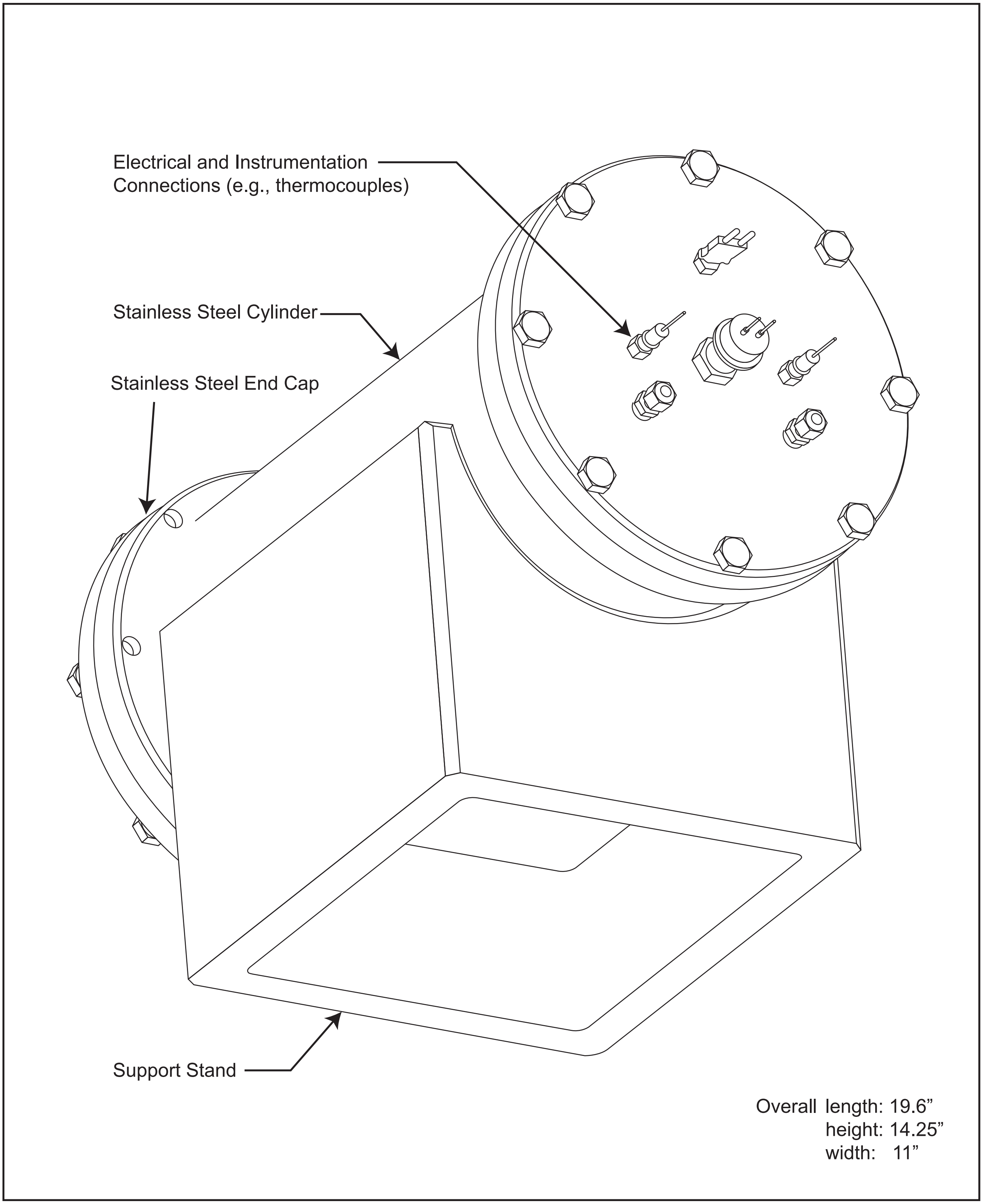

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Figure 17

**Radioactive and Mixed Waste Management Facility
Thermal Deactivation Unit, Exterior Bottom View**

Sandia National Laboratories/New Mexico

Module IV
Reserved

November 2004

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

Prepared for
The U.S. Department of Energy

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Sandia National Laboratories/New Mexico
Auxiliary Hot Cell Facility
Part B Permit Application

Module V

Revision 7.0

April 2012

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

Prepared for
The U.S. Department of Energy

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ACRONYMS AND ABBREVIATIONS

20 NMAC 4.1.*X*00	New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart *X*
40 CFR 2*XX.XX*	Code of Federal Regulations, Title 40, Part 2*XX*, Section 2*XX.XX*
AHCF	Auxiliary Hot Cell Facility
ALARA	as low as reasonably achievable
CMU	concrete masonry unit
DOE	U.S. Department of Energy/National Nuclear Security Administration
EPA	U.S. Environmental Protection Agency
ft	foot/feet
ID	inner diameter
in.	inch(es)
NMED	New Mexico Environment Department
QA	quality assurance
QC	quality control
RCRA	Resource Conservation and Recovery Act
SAP	sampling and analysis plan
Sandia	Sandia Corporation
SNL/NM	Sandia National Laboratories/New Mexico
TA	technical area
TSDF	treatment, storage, and disposal facility
Unit	RCRA-regulated waste management unit
WMA	waste management area

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SANDIA NATIONAL LABORATORIES/NEW MEXICO
AUXILIARY HOT CELL FACILITY
PART B PERMIT APPLICATION

This Sandia National Laboratories/New Mexico (SNL/NM) Auxiliary Hot Cell Facility (AHCF) Part B Permit Application is submitted to address the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subparts V and IX (20 NMAC 4.1.500 and .900), revised October 1, 2003 [7-1-08], requirements specific to Resource Conservation and Recovery Act (RCRA)-regulated waste container storage and treatment operations at the AHCF that require a permit. 20 NMAC 4.1.500 and .900 adopt by reference, with limited exceptions, all of the Code of Federal Regulations, Title 40, Parts 264 and 270 (40 CFR 264 and 270).

Sandia Corporation (Sandia) and the U.S. Department of Energy/National Nuclear Security Administration (DOE), as operator and owner, respectively, of the SNL/NM site, have prepared and revised this module to provide RCRA-regulated waste management unit (Unit)-specific details that supplement the information provided in the "Sandia National Laboratories/New Mexico General Part B Permit Renewal Request/Application", hereinafter referred to as the General Part B. Together, information provided in this module, in the General Part B, and in appendices to the General Part B meet the applicable requirements for the AHCF that are specified in 20 NMAC 4.1.500/40 CFR 264 [7-1-08] and 20 NMAC 4.1.900/40 CFR 270 [7-1-08].

Sandia/DOE also prepared a "Sandia National Laboratories/New Mexico General Part A Permit Renewal Request/Application, Rev. 11.0" (SNL/NM, 2012), hereinafter referred to as the General Part A, included as Part 1 of this comprehensive Part B permit request. The General Part A serves as a companion document to the General Part B and Unit-specific Part B modules, including this AHCF Part B Permit Application.

In the General Part A, the General Part B, its appendices, and this module, a Unit to be permitted may sometimes be referred to as a "facility" (e.g., Auxiliary Hot Cell Facility). The term "facility," as it appears in this context, is used only to denote a building or Unit name and does not imply the regulatory meaning of "facility" as defined in 20 NMAC 4.1.100/40 CFR 260.10 [7-1-08]. However, pursuant to 20 NMAC 4.1.100/40 CFR 260.10 [7-1-08], the SNL/NM site as a whole does meet the regulatory definition of a facility.

The AHCF occupies 5578 square feet in Building 6597 in Technical Area (TA)-V. Operations include storage of RCRA-regulated wastes in containers, repackaging wastes, and treating the wastes as needed to render them more suitable for shipment to off-site treatment and/or disposal facilities. All of the RCRA-regulated wastes listed in the General Part A may be managed at the AHCF. Sandia/DOE currently operate the AHCF under interim status in accordance with the terms of the most recent updates to the Part A submitted to the New Mexico Environment Department (NMED) (April 2012) and the most recent Part B permit request submitted to NMED (April 2012).

1.0 GENERAL UNIT OPERATIONS

This section provides general descriptions of the AHCF waste management areas (WMAs) and specific waste management practices. The information in this section complements the information provided in Section 1.0 of the General Part B.

Specific information in this section regarding Unit operations includes containment systems; requirements for ignitable, reactive, and incompatible wastes; preparedness and prevention; hazards prevention; and container storage practices. Treatment practices are discussed in Section 8.0 of this module.

The specific information provided and documents referenced in this section, together with the general information provided in Section 1.0 of the General Part B, address the applicable hazardous waste management facility requirements of 20 NMAC 4.1.500/40 CFR 264, Subparts I, AA, BB, and CC [7-1-08], and 20 NMAC 4.1.900/40 CFR 270.14 and 270.15 [7-1-08].

1.1 Designated Waste Management Areas

The location of the AHCF at SNL/NM is shown on Figures 1 and 2. The location of the AHCF within TA-V is shown on Figure 2. The AHCF includes four designated WMAs within the high bay of Building 6597: the hot cell; the work area near the hot cell (including the fume hood); the storage silos; and container storage (Figure 3). The high bay of Building 6597 is a concrete and steel structure, with concrete masonry unit (CMU) walls and a concrete floor. The roof consists of steel joists covered with a metal deck, rigid insulation, and a single-ply roof membrane. The east side of the high bay is equipped with an overhead crane that can be used to move large items between the hot cell, the storage silos, and the work area. The floor of the work area is coated with an epoxy-based chemical resistant coating that forms a continuous protective barrier over the concrete floor. The floor of the container storage area will be covered with a similar coating. The high bay area of Building 6597 is also equipped with a system of floor trenches covered with steel plates or grating. These trenches are not used to provide secondary containment for management of RCRA-regulated wastes.

Containers holding RCRA-regulated liquid wastes in the AHCF WMAs will be stored on portable spill pallets or pans. These are commercially available units consisting of a tub made of a heavy-duty inert material such as polyethylene or polypropylene with a heavy-duty inert plastic grating cover. They are designed to be resistant and impervious to corrosives and other liquids. The containers of liquids (up to and including 85-gallon overpack containers) will be stored on the grating. Any liquids released from the containers will drain through the grating into the tub. The pallets come in various sizes and capacities, they are designed for use with 55-gallon drums or other standard containers, and they meet the requirements of 20 NMAC 4.1.900/40 CFR 270.15[a] and [b] [7-1-08] and 20 NMAC 4.1.500/40 CFR 264.175(b)(1-3) [7-1-08].

Each pallet has sufficient capacity to hold the contents of the largest container of liquid stored on it. Containers are typically not stacked on each other on the pallets. Stacked containers are stored as described in Section 1.2.2.2 of the General Part B. Because the spill pallets are designed to hold containers of liquids, the weight of the containers does not exceed the load-bearing capacity of the grating or the pallet.

The containers are stored indoors and are protected from precipitation by the building, and by the slope of the asphalt pavement and gravel-covered soil surface outside the building that directs storm water away from the doorways, meeting the requirements of 20 NMAC 4.1.500/ 40 CFR 264.175(b)(4).

The fume hood in the work area is equipped with a negative pressure ventilation system. In addition, a flexible exhaust hose can be attached to the same system, allowing for localized negative pressure ventilation from the work area. The air flow from the ventilation system passes through a two-stage high-efficiency particulate air filter train before being released to the environment through an exhaust stack. The filters effectively remove particulates entrained in the air flow.

The following sections provide descriptions of the location and capacity of each WMA. Treatment practices are summarized in Section 1.4 and discussed in detail in Section 8.0 of this module.

1.1.1 Hot Cell

The hot cell is located in the high bay area of Building 6597. Waste management activities include repackaging RCRA-regulated wastes for shipment to off-site treatment, storage, and disposal facilities (TSDFs), and reducing waste volume by using tools to separate items with hazardous waste constituents from larger items. Outside overall dimensions of the hot cell are 16 feet (ft), 8 inches (in.) square and 16 ft, 2 in. high. Inside space dimensions are 100 square feet with a height of 13-ft, 10-in. The inside surfaces are lined with stainless steel. An 18-in. thick concrete foundation mat supports the hot cell. The hot cell walls are constructed of inner and outer precast concrete panels that are held apart by threaded rods. The space between the panels is filled with sand. The roof sections are also constructed of reinforced concrete panels with sand between them. Each individual roof panel is designed to structurally support one 5,000-pound point load. Each roof section supports a roof port and roof plug. The hot cell is equipped with manipulator arms that allow personnel to handle items remotely. The storage capacity of the hot cell is equivalent to 900 gallons of RCRA-regulated waste.

1.1.2 Work Area

The work area is located in the corner of the high bay north and east of the hot cell and the permanent shield wall. Activities include treatment and storage. Treatment includes deactivation, stabilization, macroencapsulation, and physical treatment. Personnel also repackage wastes for shipment to off-site TSDFs. The work area (approximately 300 square feet) may be used for storage of up to 1100 gallons of RCRA-regulated waste. The floor of the work area is covered with an epoxy-based coating.

From time to time, a temporary tent-like room may be erected in the work area north of the hot cell and east of the permanent shield wall to accommodate large RCRA-regulated waste items and containers. If the RCRA-regulated item or container must be handled remotely, the temporary room will be built directly against the permanent shield wall to allow the use of the manipulators at the shield wall. Each time the temporary room is erected, package-specific considerations will determine details of the design; however, basic construction will consist of polyvinyl chloride or metal framing, clear or translucent plastic roof and walls, and plastic doors. The temporary room will operate at a slight negative pressure.

A 6-ft-wide walk-in fume hood is located in the work area northeast of the hot cell; it can accommodate two 55-gallon drums placed side by side. Unit personnel treat and repackage RCRA-regulated wastes in the fume hood. The fume hood is included in the storage capacity for the overall work area.

1.1.3 Storage Silos

Four 10-in. inside diameter (ID), 15-ft deep floor silos and two 30-in.-ID, 15-ft-deep floor silos are located in the work area north of the hot cell and east of the permanent shield wall (Figure 3). These silos have removable locking-type shield plugs. The tops of the silos are raised slightly above the general floor level to reduce the possibility for the entry of water into the silo.

Two additional storage silos are located within the hot cell. Each silo is 10-in. ID. One silo is 15-ft deep and the other is 11-ft, 8-in. deep.

Each silo is constructed of concrete, and each is lined with a removable welded stainless steel sleeve. The sleeves do not provide secondary containment for the small quantities of liquid wastes that may be stored in the silos; secondary containment is provided by outer storage containers. The silos are typically used only for storage of RCRA-regulated wastes that exhibit high external radiation dose rates and therefore present hazards to personnel. The maximum waste storage capacity of the silos is 1,455 gallons.

1.1.4 Container Storage (20 NMAC 4.1.900/40 CFR 270.15 and 20 NMAC 4.1.500/ 40 CFR, Subpart I)

Containers of RCRA-regulated waste will be stored in the high bay, south and west of the hot cell, within an area of approximately 3,100 square feet. The footprint of the storage area will vary, depending on the quantity and configuration of the wastes. The floor of the storage area is painted .

The area is equipped with a system of floor trenches covered with grating. These trenches are not used to provide secondary containment for management of RCRA-regulated wastes.

The waste storage capacity is 3,520 gallons.

1.2 Unit Operations

The AHCF WMAs will be used to store any of the wastes bearing U.S. Environmental Protection Agency (EPA) Hazardous Waste Numbers listed in the General Part A. Many of the wastes may also be treated in the AHCF WMAs; specific treatment operations are discussed in Sections 1.4 and 8.0 of this Module.

Information regarding operations requiring a permit at all RCRA-regulated Units at SNL/NM is included in Section 1.1 of the General Part B. Additional Unit-specific information is provided in the following sections.

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

Liquid wastes released from individual containers will accumulate in the spill pallets. Unit personnel will begin taking action to evaluate and remove accumulated liquids in the spill pallets upon discovery. Accumulated liquids are cleaned up as described in Section 1.1.1 of the General Part B.

Sandia/DOE do not store bulk liquids in the storage silos; any liquid wastes will be present in small containers within larger containers that provide secondary containment.

The floor trenches are not used for secondary containment, and Sandia/DOE do not anticipate that liquid RCRA-regulated wastes would enter the trenches. RCRA-regulated waste liquids would only be released from containers of stored liquid wastes upon the (unlikely) failure of the spill pallets, and the largest single container would contain 122 gallons. The liquid would be contained in the trench, and would be handled as described above upon discovery.

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

Any of the ignitable or reactive wastes listed in the General Part A may be managed at the AHCF. Sources of ignition that may be present at the AHCF are those noted in Section 1.1.2.1 of the General Part B: welding activities, open flames, hot surfaces, frictional heat, radiant heat, sparks, and engines. Unit personnel employ the general precautions and practices described in Section 1.1.2 of the General Part B. Additional AHCF-specific features, potential ignition and reaction sources, precautions, and practices include:

- Ignitable and reactive wastes are segregated from other wastes within the storage area. The containers are labeled as described in Section 1.2.1 of the General Part B. Unit personnel typically place a portable sign near the wastes, use prominent labels, or use another method to assist in identifying them as ignitable and/or reactive.

- Containers of wastes are labeled and segregated according to compatibility criteria in 20 NMAC 4.1.500/40 CFR 264 Appendix V. The liquids in containers that are stored together on a spill pallet must be compatible with each other. The spill pallet provides an independent containment system. Likewise, only compatible solids are stored together on a pallet. The pallets of wastes are segregated into different rows and areas; each row or area containing only compatible wastes. Ignitable and reactive wastes are segregated from other wastes in this manner.

- Water-reactive wastes are not routinely stored in the Unit. If water-reactive wastes are present, they will be isolated from water contact as described in Section 1.1.2.1 of the General Part B, and their location will be identified through the use of signs, labels, or some other method.

- Forklifts are not used for waste movement near treatment operations involving ignitable or reactive wastes to minimize potential sources of ignition while containers are or may be open.

- Wastes are mixed together on a very limited basis during the treatment and repackaging operations at the Unit. Ignitable and reactive wastes are treated or mixed on a case-by-case basis. Unit personnel plan each such operation carefully to identify the hazards and potential consequences. Personnel use waste characterization data and/or published chemical information (e.g., "NIOSH Pocket Guide to Chemical Hazards" [DHHS, 1994], or other chemical or engineering handbook) for each waste in the planning process. Personnel then conduct the operations according to the plan in order to control the hazards and prevent uncontrolled reactions. Treatment operations are described in Section 8.0 of this module.

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

The following sections address required equipment, testing and maintenance of equipment, and access to communications or alarm systems at the AHCF.

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

Information about fire hydrants is provided in Section 1.1.3.1 of the General Part B. The fire hydrants closest to the AHCF are shown in Figure 9.

The high bay of Building 6597 is equipped with an automatic fire suppression system; summarized below.

Table 1
Fire Suppression System at the Auxiliary Hot Cell Facility

Building	Applicable NFPA Standard[a]	Sprinkler Design Occupancy Classification	System Type	Sprinkler Actuation[b]
6597	13	Storage	Automatic sprinkler, wet pipe	GB/FS

[a] National Fire Protection Association (NFPA), 2002a.
[b] Sprinklers are either glass bulb or fusible solder type, typically designed to open at temperatures of 155ºF or higher.

Information on other required equipment located at the AHCF is provided in Section 6.0 and Table 3 of this module.

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

Information on equipment testing and maintenance at the AHCF is provided in Appendix C of the General Part B and in Section 4.0 of this module.

1.2.3.3 Access to Communications or Alarm Systems (20 NMAC 4.1.500/40 CFR 264.34)

Information about the types and locations of communications or alarm systems at the AHCF is provided in Section 1.1.3.3 of the General Part B and in Section 6.0 of this module.

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

The following sections address the procedures, equipment, and structures used at the AHCF to prevent hazards. Additional information applicable to the AHCF and all other Units at SNL/NM is included in Section 1.1.4 of the General Part B.

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

AHCF personnel employ the practices described in Section 1.1.4.1 of the General Part B to prevent hazards in unloading. Unit personnel will typically perform loading and unloading activities just inside the rollup doors on the north and south sides of the WMA (Figure 6). The floor is level and in good condition, and there is sufficient room for operating the vehicles and equipment.

Containers will be handled in a manner to prevent shifting and falling. Drums and other containers of RCRA-regulated waste will typically be strapped together on a pallet before being loaded onto vehicles. Containers will typically be transported within the Unit by hand or with drum dollies or pallet jacks.

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

The land surrounding the AHCF slopes gently toward the west. Sheet-flow runon of surface water from surrounding areas outside the TA is prevented from entering the TA by a diversion berm east of TA-V that diverts storm water to the north and south.

The floor of the high bay in Building 6597 is slightly higher than the surrounding ground, serving to direct storm water away from the building. The asphalt and concrete pavement around the AHCF slopes toward a storm drain that directs stormwater toward the west.

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

Sandia/DOE do not anticipate that management of RCRA-regulated wastes at the AHCF will affect water supplies, as described in Section 1.1.4.3 of the General Part B.

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

General measures that are available to Unit personnel are described in Section 1.1.4.4 of the General Part B.

The AHCF is equipped with a minimum of 90 minutes of general emergency lighting along the paths of egress. With respect to waste handling, backup power to the chain hoist will be required only during the short periods that the bridge crane is being used for an in-air transfer of RCRA-regulated waste. The bridge crane locks in place and is inoperable during a power outage. Portable generators can provide backup power to the chain hoist whenever the bridge crane is in use. The chain hoist, and tethers if necessary, will be used to lower any suspended packages to a safe configuration until power is restored unless leaving the package suspended is considered a safe configuration. No other AHCF systems require redundant power supplies.

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

AHCF personnel employ the practices described in Section 1.1.4.5 of the General Part B to prevent undue exposure.

The enclosed work area and localized ventilation system in the fume hood and the local ventilation system in the work area provide additional protection for Unit personnel performing treatment operations. Anticipated emissions from treatment operations are discussed in Section 8.2.

The AHCF has several features (e.g. shielding and remote operation capabilities) that provide protection for personnel managing RCRA-regulated wastes that exhibit high external radiation dose rates. The silos will typically be used to store such wastes, providing additional protection for Unit personnel.

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

AHCF personnel employ the practices described in Section 1.1.4.6 of the General Part B to prevent releases to the atmosphere during storage.

Subpart AA

AHCF storage operations do not employ any of the processes subject to the requirements of 20 NMAC 4.1.500/40 CFR 264 Subpart AA.

Subpart BB

During storage activities, Sandia/DOE do not routinely manage RCRA-regulated wastes with organic concentrations ≥10 percent by weight in process equipment identified in 20 NMAC 4.1.500/40 CFR 264, Subpart BB [7-1-08]. Equipment used in such service at the AHCF will be used for less than 300 hours per calendar year and is therefore exempt from the requirements of 20 NMAC 4.1.500/40 CFR 264.1052 through 1060 [7-1-08] as noted in 20 NMAC 4.1.500/40 CFR 264.1050(f) [7-1-08]. The equipment list will be maintained in the AHCF records. Equipment use will also be noted in the records.

Subpart CC

Unit personnel follow the practices described in Section 1.1.4.6 of the General Part B and maintain compliance with Container Level 1 standards (20 NMAC 4.1.500/40 CFR 264.1086[c]) for containers that are subject to the standards. Such containers may be stored in any of the WMAs at the Unit.

Section B.5.3 in Appendix B to the General Part B also describes procedures to maintain compliance with the air emissions requirements of 20 NMAC 4.1.500/40 CFR 264, Subparts BB and CC [7-1-08].

1.3 Container Storage Practices (20 NMAC 4.1.900/40 CFR 270.15 and 20 NMAC 4.1.500/40 CFR 264 Subpart I)

Container storage practices applicable to the AHCF are presented in the following sections.

1.3.1 Container Types and Labeling

AHCF personnel use the container types and labeling practices described in Section 1.2.1 of the General Part B.

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

AHCF personnel employ the container handling practices described in Section 1.2.1 of the General Part B.

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

The condition of containers at the AHCF is maintained as indicated in Section 1.2.2.1 of the General Part B.

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

AHCF personnel employ the aisle space and storage configuration described in Section 1.2.2.2 of the General Part B. Aisle width is typically 2.5 ft; this is adequate for unobstructed movement of Unit and emergency response personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of Unit operation in an emergency.

Drums and drum-shaped containers that are stacked are stored on pallets, and are not stacked more than three pallets high. Box-shaped containers may be stacked three high without pallets. Containers of solids may also be stored directly on the floor. Containers of liquids are stored on spill pallets and are typically not stacked.

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

AHCF personnel ensure waste compatibility with containers as indicated in Section 1.2.2.3 of the General Part B.

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

AHCF personnel verify the absence of free liquids in containers as indicated in Section 1.2.2.4 of the General Part B before storing containers in areas that are not equipped with secondary containment.

1.4 Treatment Operations

RCRA-regulated wastes are treated at the AHCF by the following methods:

- Chemical deactivation (performed in the work area, including the fume hood).
- Stabilization and solidification (performed in the work area, including the fume hood).

- Macroencapsulation (performed in the work area, including the fume hood, and/or the hot cell).

- Physical treatment (performed in the work area, including the fume hood, and/or the hot cell).

The treatment practices are discussed in detail in Section 8.0 of this module.

2.0 UNIT DESCRIPTION AND INFORMATION

The information provided in this section is submitted to address the applicable requirements of 20 NMAC 4.1.5 and .900/40 CFR 264 270 [7-1-08]. The following subject areas are addressed in this section:

- Unit-specific security procedures and equipment (20 NMAC 4.1.900/40 CFR 270.14[b][4] and 270.14[b][19][viii] [7-1-08]; 20 NMAC 4.1.500/40 CFR 264.14 [7-1-08]);
- Unit-specific traffic patterns, volume, and controls (20 NMAC 4.1.900/40 CFR 270.14[b][10] [7-1-08]);
- Unit-specific location information for compliance with the seismic standard and floodplain requirements (20 NMAC 4.1.900/40 CFR 270.14[b][11] [7-1-08], and 20 NMAC 4.1.500/40 CFR 264.18[a] and [b] [7-1-08]);
- Unit-specific topographic map requirements (20 NMAC 4.1.900/40 CFR 270.14[b][19] [7-1-08]); and
- Unit-specific groundwater monitoring and protection information (20 NMAC 4.1.900/ 40 CFR 270.14[c] [7-1-08], and 20 NMAC 4.1.500/40 CFR 264.90[a] [7-1-08]).

An SNL/NM site-wide facility description addressing additional regulatory requirements is provided in Appendix A of the General Part B.

2.1 Security Procedures and Equipment (20 NMAC 4.1.900/40 CFR 270.14[b][4]; 20 NMAC 4.1.500/40 CFR 264.14)

The following sections describe the security provisions provided at SNL/NM to prevent unknowing or unauthorized entry onto the active portions of the AHCF.

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

The doors to Building 6597 are kept closed and locked. As noted in Appendix A of the General Part B, Sandia security personnel periodically monitor the SNL/NM Technical Area gates during non-operational hours.

Unit personnel have Sandia-issued badges. Individuals who do not have Sandia-issued badges are escorted. These procedures limit access to the AHCF WMAs in accordance with 20 NMAC 4.1.500/40 CFR 264.14(b)(2) [7-1-08].

The AHCF is located in TA-V (Figures 1 and 2). TA-V is enclosed by an 8-ft-high chain-link fence topped with barbed wire. Regular entries into and exits from TA-V are through Building 6577, the Perimeter Access Building, or through the adjoining vehicle gate. TA-V

access control procedures assure that only properly identified and authorized persons, vehicles, and property are allowed entrance to and exit from TA-V.

2.1.2 Warning Signs (20 NMAC 4.1.500/40 CFR 264.14[c])

Building 6597 and the entrance to the AHCF are posted with “Danger: Unauthorized Personnel Keep Out” (or functionally equivalent) signs. The signs contain the warning in English and Spanish are legible from a distance of 25 ft, and can be seen from any approach to the part of Building 6597 that houses the AHCF.

2.2 Traffic Pattern, Volume, and Controls (20 NMAC 4.1.900/40 CFR 270.14[b][10])

General traffic pattern information, traffic volumes, and traffic control signals for the SNL/NM facility are provided in Appendix A of the General Part B.

2.2.1 Traffic Patterns

The primary traffic routes used to transport RCRA-regulated wastes to the AHCF include Wyoming Boulevard, Hardin Boulevard (formerly O Street), P Street, and Pennsylvania Avenue. Pennsylvania Avenue crosses Tijeras Arroyo over the Manzano Bridge. A two-lane paved road to TA-V turns southwestward off Pennsylvania Avenue at a point just over 5 miles south of the Wyoming Entrance gate.

Waste transport vehicles travel along a 2-lane asphalt-paved drive to enter TA-V from the two-lane paved road as shown on Figures A-4 and A-6 in Appendix A of the General Part B. Vehicles must stop at a gate prior to entering or leaving TA-V. Within TA-V, waste is transported on asphalt- or concrete-paved surfaces (Figure 4).

2.2.2 Traffic Volumes

Traffic volumes on Wyoming Boulevard, Hardin Boulevard, and P Street are generally light to moderate. Traffic volumes on Pennsylvania Avenue are generally light. Vehicle types are generally cars, light- and medium-duty trucks, and vans. Flatbed trucks or trailers also use primary traffic routes to transport waste containers.

Fewer than 5 vehicles typically travel to the AHCF per week. These include flatbed trucks and trailers carrying supplies and containers of RCRA-regulated waste to and from the AHCF.

2.2.3 Traffic Control Signals

Within TA-V, there are no traffic control signals or signs. Vehicles must stop at the vehicle gate prior to entering or leaving TA-V. Vehicle presence within TA-V is limited to waste transport

and other work vehicles. Therefore, signals or signs are not necessary to control traffic within TA-V.

2.3 Unit Location Information (20 NMAC 4.1.900/40 CFR 270.14[b][11])

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

The WMAs at the AHCF are not located within 3,000 ft of any faults with Holocene displacements (see Section A.4.2 in Appendix A of the General Part B).

2.3.2 Floodplain Standard (20 NMAC 4.1.900/40 CFR 270.14[b][11][iii]; 20 NMAC 4.1.500/40 CFR 264.18[b])

The WMAs at the AHCF are not located within the 100-year floodplain boundary (see Section A.4.3 in Appendix A of the General Part B).

2.4 Topographic Maps (20 NMAC 4.1.900/40 CFR 270.14[b][19])

Topographic maps and figures are provided herein or referenced to meet the requirements of 20 NMAC 4.1.900/40 CFR 270.14(b)(19) [7-1-08]. Due to the large amount of information, it is not provided on a single map. The maps clearly show the map scale, the date of preparation, and a north arrow (20 NMAC 4.1.900/40 CFR 270.14[b][19][i] and [vi] [7-1-08]). The maps and figures used to fulfill these regulatory requirements include the following:

- An SNL/NM-wide 100-year floodplain map is provided on Figure A-2 in Appendix A of the General Part B (20 NMAC 4.1.900/40 CFR 270.14[b][19][ii] [7-1-08]).

- Surface waters, including intermittent streams, near the AHCF are shown on Figure A-2 in Appendix A of the General Part B and Figure 5 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][iii] [7-1-08]).

- Surrounding land uses are shown on Figures A-2 and A-8 in Appendix A of the General Part B and Figure 5 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][iv] [7-1-08]). The area surrounding the AHCF is occupied by other Sandia-controlled operations (industrial land use).

- Wind roses for SNL/NM are shown on Figure A-2 in Appendix A of the General Part B and Figure 5 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][v] [7-1-08]).

- Legal boundaries of SNL/NM (including the AHCF) is provided as Figure A-2 in Appendix A of the General Part B (20 NMAC 4.1.900/40 CFR 270.14[b][19][vii] [7-1-08]).

- Access control features at the AHCF (e.g., fences, gates) are shown on Figures 5 and 6 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][viii] [7-1-08]).

- Supply wells, monitoring wells, test wells, springs, and surface-water sampling stations near the AHCF are shown on Figure A-2 in Appendix A of the General Part B and Figure 5 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][ix] [7-1-08]).

- The location of the AHCF and associated WMA structures, loading and unloading areas, roads, and sanitary sewers at the AHCF are shown on Figures 5 and 6 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][x] [7-1-08]).

- Drainage control features (e.g., run-on/runoff, drainage barriers) are shown on Figure 7 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][x] and [xi] [7-1-08].

- Locations of the AHCF and AHCF WMAs are shown on Figures 3 and 5 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][xii] [7-1-08]).

Contour lines on all topographic maps are in intervals sufficient to detail natural drainage at SNL/NM and in the vicinity of the AHCF. As provided for in 20 NMAC 4.1.900/40 CFR 270.14(b)(19) [7-1-08], SNL/NM has submitted the maps to the NMED at these scales and contour intervals due to the size of the AHCF, the extent of the SNL/NM facility, and the topographic relief in the area.

2.5 Groundwater Monitoring (20 NMAC 4.1.900/40 CFR 270.14[c]; 20 NMAC 4.1.500/40 CFR 264.90[a])

Groundwater monitoring information is provided in Part 3 of the Sandia/DOE comprehensive Part B permit request. The AHCF is not a regulated unit. There have been no releases of RCRA-regulated waste in the past, nor is the AHCF likely to affect groundwater quality during normal operations or during unusual events.

3.0 WASTE ANALYSIS PLAN

In accordance with 20 NMAC 4.1.900/ 40 CFR 270.14[b][2] and 20 NMAC 4.1.500/40 CFR 264.13, "General Waste Analysis" [7-1-08], waste analysis requirements applicable to all Units, including the AHCF, are addressed in Appendix B of the General Part B.

4.0 INSPECTION PLAN

20 NMAC 4.1.500/40 CFR 264.15 and 264.33 [7-1-08] and 20 NMAC 4.1.900/40 CFR 270.14(b)(5) [7-1-08] require that WMAs and associated systems be inspected on a regular basis and in accordance with procedures to assure their integrity, maintenance, and safe operation.

Unit personnel perform periodic inspections to identify malfunctions, signs of deterioration, operator errors, and discharges or spills that may be causing or may lead to a release of hazardous waste constituents to the environment or may pose a threat to human health. The inspections are performed on a regular schedule based on the likelihood of equipment or system failure and associated consequences. The inspections include safety and emergency equipment, security devices, and operating and structural equipment related to management of RCRA-regulated wastes to ensure that human health and the environment will be protected.

The general Sandia/DOE inspection plan and schedule that meets these requirements are described in the “Site-Wide Inspection Plan”, provided as Appendix C of the General Part B. AHCF personnel conduct inspections in accordance with the site-wide plan.

Specific items and areas that are inspected are listed in Table 2, with the inspection criteria and frequency. The items listed in the table are inspected in each AHCF WMA.

Automatic fire suppression systems are included in Table 2. Unit personnel check to see that the systems are present. Sandia/DOE personnel also test the systems based on the requirements of National Fire Protection Association 25 “Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems” (NFPA, 2002b) as described in Section 1.1.3.2 of the General Part B.

Performing inspections of all areas at the AHCF where RCRA-regulated wastes are handled may expose Unit personnel to unnecessary radiation if the wastes exhibit high external radiation doses. In order to maintain the radiation exposure to levels as low as reasonably achievable (ALARA), Sandia/DOE will conduct alternative inspections of the storage silos when such wastes are present. Instead of directly inspecting the silos or wastes while wastes are stored in the silos, Unit personnel will visually inspect the empty silos and the RCRA-regulated waste containers or packages before the wastes are placed in the silos, and will inspect the containers when they are removed from the silos. If Unit personnel do not observe any indications of deterioration in the empty silos, or damage to or release from the RCRA-regulated waste items as they are removed from the silos, the lack of visible evidence of release will be considered sufficient to determine that there have not been releases of RCRA-regulated wastes.

The visual inspections of all areas at the AHCF may be conducted via camera from a remote area if needed to maintain ALARA conditions for the Unit personnel.

Table 2
Auxiliary Hot Cell Facility Inspection Criteria and Frequency

Inspected Item	Inspection Criteria	Inspection Frequency
SAFETY AND EMERGENCY EQUIPMENT See Table 3 "Emergency Equipment and Locations" in this module for additional information		
Eye wash / safety shower	Operational and in good condition	Monthly
Spill control and cleanup items	Present, quantities per inventory, and in good condition	Monthly
Personal protective equipment	Present, quantities per inventory, and in good condition	Monthly
Fire alarm pull station(s)	Present, accessible, and in good condition	Monthly
Fire alarm(s)	Present	Monthly
Telephone(s)	Present and operational	Monthly
Fire extinguisher(s)	Present, charged, accessible, and in good condition	Monthly
Fire sprinklers and system	Present, appears to be in good condition, sprinklers not obstructed	Monthly
OPERATING AND STRUCTURAL EQUIPMENT		
Building / storage area floor	Clean, no spills, cracks, or excessive wear	Weekly when and where wastes are managed. Monthly otherwise.
Building walls	Not leaking or spalling, in good condition	Weekly when and where wastes are managed. Monthly otherwise.
Building ceiling	Not leaking or spalling, and in good condition	Weekly when and where wastes are managed. Monthly otherwise.
Building lights	Operational and in good condition	Weekly when and where wastes are managed. Monthly otherwise.
Storage silos	Liner in good condition, no cracks or visible deterioration	Prior to waste storage.
Storage silo covers	Top surface in good condition, no cracks or excessive wear	Prior to waste storage. Monthly otherwise.
Loading and unloading areas	Good condition, safe working surface, free of cracks, no spills	Daily when and where wastes are handled. Monthly otherwise.
Waste handling equipment	Good condition, in good repair, operational	Daily when and where wastes are handled. Monthly otherwise.
Treatment area	Good condition, clean, uncluttered, no spills	Prior to treatment. Monthly otherwise.

Table 2 (Concluded)
Auxiliary Hot Cell Facility Inspection Criteria and Frequency

Inspected Item	Inspection Criteria	Inspection Frequency
OPERATING AND STRUCTURAL EQUIPMENT (cont)		
Treatment equipment	Good condition (i.e., no releases or deterioration)	Daily when and where wastes are treated. Prior to use for consumable items. Monthly otherwise.
SECURITY DEVICES		
Warning signs	Present and in good condition	Monthly
Doors	Present, operational, in good condition	Monthly
Locks	Present, operational, in good condition	Monthly
CONTAINERS		
Integrity	Good condition (i.e., no bulging, leaks, corrosion, or deterioration)	Check individual containers as they are handled. Weekly otherwise. *
Closed	Correct lid/cover placement (i.e., properly closed and sealed)	Check individual containers as they are handled. Weekly otherwise.*
Labeling	Correct information, correct location, legible	Check individual containers as they are handled. Weekly otherwise. *
Secondary Containment (e.g., spill pallets for liquid waste)	Adequate volume, free of liquids, good condition (i.e., no cracks, excessive wear)	Check individual containers as they are handled. Weekly otherwise.*
Storage Conditions	Waste compatible with container, container located with compatible wastes	Check individual containers as they are handled. Weekly otherwise.*
Location	Correct aisle space, stable stacking	Check individual containers as they are handled. Weekly otherwise.

* Containers will be inspected prior to placement into and immediately following removal from a storage silo.

The results of inspections by Unit personnel (including any corrective actions required and taken) are recorded on forms identical or similar to the ones presented in Appendix C. The inspection plan (Appendix C and this section) and inspection records for the current calendar year are maintained in Building 6597 or in the TA-V electronic facility documentation system. Inspection records for previous calendar years are maintained in department offices of AHCF personnel or the SNL/NM Records Center.

5.0 PERSONNEL TRAINING

Training requirements for Unit personnel are specified in 20 NMAC 4.1.900/ 40 CFR 270.14[b][12], and 20 NMAC 4.1.500/40 CFR 264.16, [7-1-08] “Personnel Training.” The Sandia/DOE training program is designed and implemented to prepare personnel to operate and maintain safely those areas used for managing RCRA-regulated waste. The training program applies to all employees of the DOE, Sandia, and any subcontractors who have responsibility for the day-to-day management of RCRA-regulated waste at the AHCF.

AHCF personnel receive training in accordance with the “Site-Wide Personnel Training Plan” provided as Appendix D of the General Part B.

Only the following job descriptions identified in Appendix D, Table D-2 are applicable at the AHCF: Training Director, Project Leader, Emergency Coordinator, Chemist, Field Technician, Special Projects Staff, Inspector, and Unit Operations Support Staff.

Training records for AHCF personnel are maintained in the department offices of AHCF personnel.

6.0 CONTINGENCY PLAN AND EMERGENCY RESPONSE

Emergency response requirements for permitted units are specified in 20 NMAC 4.1.500/ 40 CFR 264, Subpart D [7-1-08], "Contingency Plan and Emergency Procedures," and in 20 NMAC 4.1.900/40 CFR 270.14(b)(7) [7-1-08]. The Sandia /DOE "Site-Wide Contingency Plan" is included as Appendix E of the General Part B. Supplemental AHCF-specific information is included in this section, in Figures 8, 9, and 10, and in Tables 3 and 4 of this module. Current copies of the site-wide contingency plan and this supplemental information are maintained in department offices of AHCF personnel, in the TA-V emergency control room, and at the SNL/NM Emergency Operations Center.

The AHCF is located in the northeast (high bay) part of Building 6597 in TA-V at SNL/NM and is used to repackage, store, and treat RCRA-regulated wastes. Building 6597 is a CMU building; the high bay area of the building has a roof height of 35 feet. The AHCF includes four WMAs:

- The hot cell is constructed of precast concrete with a stainless steel lining. A permanent shield wall extends north of the cell. The cell is used for repackaging and treatment.
- The work area is located in the corner of the high bay north and east of the hot cell and the permanent shield wall. Waste management activities in the work area include storage and treatment and may require the use of a temporary room. A 6-ft-wide walk-in fume hood in the work area can be used for storage and treatment.
- Eight floor silos (six in the work area and two in the cell) can be used for storage.
- Containers of RCRA-regulated waste may also be stored in the high bay, typically south and west of the hot cell.

RCRA-regulated wastes bearing the EPA Hazardous Waste Numbers listed in the General Part A may be stored and/or treated at the AHCF WMAs. Wastes will be segregated according to compatibility groups.

During an emergency, Unit personnel will evacuate the unit as described in Section E.5.2 of the site-wide contingency plan. During an emergency, Sandia security officers provide unimpeded access to the AHCF for authorized personnel as directed by the IC.

Figure 8 presents the evacuation routes for the AHCF. Figures 9 and 10 present emergency response and access information for the AHCF. Table 3 lists the emergency equipment typically available at the AHCF. Table 4 lists the emergency coordinators for the AHCF.

Table 3
Auxiliary Hot Cell Facility, Emergency Equipment and Locations

Building 6597

Category	Description/Capabilities	Location
Spill Control and Decontamination Equipment	Fixed shower/eyewash	Near north entrance to Building 6597 high bay
	Absorbent (sufficient absorbent for 55 gallons of liquid when liquid wastes are present)	Near north entrance to Building 6597 high bay
	Spill cleanup items (mops, brooms, and/or shovels)	In equipment storage in Building 6597
	Recovery drums and containers	In equipment storage in Building 6597
	Personal protective equipment (goggles and/or safety glasses, gloves)	Near north entrance to Building 6597 high bay
Internal Communication and Alarm System	Voice communication	
	Fire alarm pull stations (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)	One near each exit door Building 6597 high bay
	Audible fire alarms	Located throughout the building
External Communication System	Telephones	Near north entrance to Building 6597 high bay
	Fire alarm pull stations (pulling handle sends signal to KAFB fire department, does not actuate sprinklers)	One near each exit door in Building 6597 high bay
Fire Extinguishers	Portable (A-B-C)	By personnel doors on the east, south, and west walls
Fire Suppression	Automatic wet-pipe sprinkler system with heat-actuated sprinklers	Coverage throughout the high bay in Building 6597
	Sprinkler head	Hot Cell
	Sprinkler head	In fume hood
	Branch line from the Building 6597 sprinkler system	Temporary Room
	Water supplied by fire hydrant	One hydrant, location shown on Figure 9

KAFB Kirtland Air Force Base

Table 4
Auxiliary Hot Cell Facility, Emergency Coordinator List

December 23, 2011

Facility Emergency Coordinator		Office Phone	Home Phone
Primary	David Siddoway Sandia National Laboratories P.O. Box 5800 Albuquerque, New Mexico	(505) 844-2713 (office) (800) 343-9316 (pager)	(505) 867-0828
First Alternate	Michael Torneby Sandia National Laboratories P.O. Box 5800 Albuquerque, New Mexico	(505) 845-3254 (office) (800) 343-9371 (pager)	(505) 823-2451

One or more of these personnel are routinely available during normal work hours (8:00 am to 4:30 pm, Monday through Friday).

7.0 CLOSURE PLAN

Applicable closure requirements are specified in 20 NMAC 4.1.900/40 CFR 270.14(b)(13), and 20 NMAC 4.1.500/40 CFR 264, Subparts G and I, [7-1-08]. General closure information applicable to all Units at SNL/NM and general sampling and analytical procedures to be used during closure activities are presented in the “Site-Wide Closure Plan” in Appendix F of the General Part B. The site-wide plan in Appendix F includes a description of the SNL/NM facility, waste descriptions, closure performance standards, general closure methods, a sampling and analysis plan (SAP), a general closure schedule, procedures for amendment of the plan, closure certification and letter, survey plat, and post-closure requirements. Unit-specific information for closure of the AHCF is included in this section.

7.1 Unit Description

Sandia/DOE use the AHCF to repackage, store, and treat RCRA-regulated wastes. The AHCF is located in the northeast (high bay) part of Building 6597 (see Figure 11) in TA-V at SNL/NM. Building 6597 is a CMU building. The AHCF includes four designated WMAs within the high bay of Building 6597: the hot cell; the work area near the hot cell (including the fume hood); the storage silos; and a container storage area:

- The hot cell is constructed of precast concrete and is lined with stainless steel. A permanent shield wall extends north of the cell. The cell is used for repackaging and treatment.
- The work area is located in the corner of the high bay north and east of the hot cell and the permanent shield wall. Waste management activities in the work area include storage and treatment. The floor of the work area is coated with an epoxy-based coating. The work area includes a 6-ft-wide walk-in fume hood, which is also used for storage and treatment of waste in containers. The fume hood is equipped with a negative-pressure ventilation system. A flexible exhaust hose can be attached to this system, allowing localized negative-pressure ventilation from the work area. Air flow from the ventilation system passes through a two-stage high-efficiency particulate air filter train before being released to the environment through an exhaust stack. The filter train effectively removes particulates entrained in the air flow.
- Eight floor silos (six in the work area and two in the hot cell) can be used for storage. Each silo is constructed of concrete and lined with a removable welded stainless-steel sleeve.
- Containers of RCRA-regulated waste may also be stored in the southern half of the high bay. The footprint of the storage area will vary, depending on the quantity and configuration of waste containers (e.g., containers may also be stored in the northwest portion of the high bay). The floor of the storage area is painted. The high bay area of building 6597 is also equipped with a system of floor trenches covered with steel plates or grating. These trenches are not used to provide secondary containment for management of RCRA-regulated wastes.

7.2 Estimate of Maximum Waste in Storage (20 NMAC 4.1.500/40 CFR 264.112[b][3])

The maximum volume of RCRA-regulated waste in storage at any time at the AHCF is estimated at 8,075 gallons of liquids and/or solids. This is the maximum volume of RCRA-regulated waste that could be removed from the WMAs as part of closure activities. The maximum total waste volume is broken down as follows:

Building 6597 hot cell	900 gallons
Building 6597 work area	2,200 gallons
Building 6597 container storage area:	3,520 gallons
Building 6597 storage silos:	1,455 gallons

7.3 Closure Conditions

In addition to the general assumptions listed in Section F.5 in the site-wide closure plan, closure activities specified in this plan assume the following conditions were met during the operational life of the AHCF:

- Waste handling and treatment activities that involved opening containers of RCRA-regulated waste were confined to the interiors of the AHCF WMAs. If contamination occurred, it would have been confined to those areas.

- Treatment activities were conducted in a controlled manner, minimizing the potential for releases of RCRA-regulated wastes or hazardous waste constituents.

- If RCRA-regulated wastes or hazardous waste constituents were inadvertently released into the local exhaust systems during treatment activities, they would be only be present in the system up to the first filter.

- Enclosed WMAs (e.g. hot cell and floor silos) are considered independently of other WMAs when evaluating the potential presence of RCRA-regulated wastes or hazardous waste constituents.

- Steel plates over floor trenches were moved only as needed for maintenance. RCRA-regulated wastes or hazardous waste constituents are not present in any section of floor trench that has been covered with steel plates unless there has been a release of RCRA-regulated wastes into that section of trench.

- Covers to each silo have been opened only as needed for storage operations. RCRA-regulated wastes or hazardous waste constituents are not present in each silo unless there has been a release of RCRA-regulated wastes into that silo.

- The container storage area occupied the entire south half of the high bay, and containers were not stored in the northwest corner of the high bay.

- RCRA-regulated wastes or hazardous waste constituents could not be present except in areas in the high bay where wastes were managed.

- The interior floor in the high bay was maintained to retain its integrity by following established maintenance and inspection procedures, breaches of protective coatings did not occur, and a small amount of soil will be present on the floor due to normal traffic and operations.

7.4 Closure Activities and Schedule

This closure will be conducted to support attainment of the closure performance standards outlined in Section F.4 of the site-wide closure plan. Section 7.5.3 of this plan discusses the criteria that will be used to verify that clean closure has been achieved.

7.4.1 Closure Activities

The closure approach and general activities described in Section F.5 of the site-wide closure plan will be applied to closure of the WMAs at the AHCF. With respect to the individual WMAs, Sandia/DOE will use the following approach:

- The floor of the hot cell will be visually examined for evidence of deterioration and releases. The floor will be decontaminated by washing, as described in Section F.5 of the site-wide plan.

- Equipment within the work area will be evaluated to determine whether it is more effective to remove it or decontaminate it. Items that are most likely to be removed include local exhaust systems (up to the first filter), filters, and portable equipment. Items that are most likely to be decontaminated include the interior of the fume hood. The floor of the work area will be decontaminated by sweeping and washing, as described in Section F.5 of the site-wide plan.

- The liners of the silos will be visually examined for evidence of deterioration and releases. The silos are isolated from the rest of the WMAs at the AHCF. Waste management activities in the silos do not include opening, repackaging, or otherwise handling RCRA-regulated waste in a manner that could cause releases of waste or hazardous waste constituents. Therefore, the silos are not contaminated unless there is visual evidence or documentation indicating a release or conditions that could have led to a release of RCRA-regulated wastes or hazardous waste constituents.

- The container storage area will be decontaminated by sweeping and washing, as described in Section F.5 of the site-wide plan.

7.4.2 Closure Schedule

Section F.7 of the site-wide closure plan provides a timeline for closure activities applicable to all permitted Units at the SNL/NM facility. Currently, there is not an estimated date of closure for the AHCF, but a Unit-specific closure schedule will be prepared and submitted to NMED prior to initiation of closure activities at the AHCF.

7.5 Sampling and Analysis Plan

Section F.6 of the site-wide closure plan presents general sample collection equipment and techniques applicable to all Units at the SNL/NM facility. This Unit-specific SAP describes the sampling, analysis, and quality assurance (QA) methodologies Sandia/DOE will use to demonstrate clean closure of the AHCF in accordance with the requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart G [7-1-08], as applicable. It addresses specific details (e.g., the type, number, and location of samples; required analytical constituents; closure criteria; QA and quality control [QC] procedures) regarding RCRA closure of the AHCF.

7.5.1 Sampling and Analysis Scope

This SAP presents procedures for acquisition, analyses, and evaluation of samples of floor sweepings (soil), pre-wash (unused) wash water, used wash water, and used rinse water from the floor of each of the four WMAs at the AHCF (described in Section 7.1). All of the samples will be analyzed to determine concentrations of a set of indicator parameters selected from the range of hazardous waste constituents in the RCRA-regulated wastes managed in the Unit. These indicator parameters and the applicable criteria for clean closure are identified in Tables 5 and 6, and the rationale for their selection is presented in Section 7.5.3.

7.5.2 Sampling Methodology

7.5.2.1 Sample Locations

The floor of each WMA identified in Table 6 will be swept as noted and a sample of the composited floor sweepings from each respective WMA will be collected for analysis.

Two samples of wash water and two samples of used decontamination rinse water will be collected from each WMA identified in Table 6. Used wash water will be contained in temporary berms or other containment devices, sampled, and removed prior to the decontamination rinse step. Used rinse water will be contained similarly, as necessary.

Table 5
Summary of Pre-Wash Sampling Program

Media to be Sampled	Sample Number & Type	Indicator Parameters[a]	Standards for Comparison[b]
Floor sweepings	Single grab from collected material in the work area and container storage area (representative of material removed from entire floor surface)	Barium Cadmium Chromium Lead	130 ppm <1 ppm 17.3 ppm 21.4 ppm
Pre-wash (unused) water	Single grab (one from each batch of detergent/water solution prior to use in decontamination)	Barium Cadmium Chromium Lead	N/A

[a] These metals have been selected as indicator parameters to demonstrate clean closure at the AHCF due to their typical presence in the wastes stored at the Unit.

[b] Analytical results for indicator parameters in floor sweepings will be compared to background concentrations in site soils developed by NMED (NMED, 1997). Analytical results for indicator parameters in floor sweepings and/or pre-wash water will be used in evaluating the decontamination wash water and rinse water.

Table 6
Summary of Post-Wash Sampling Program

Area to be Decontaminated	Number of Grids	Samples Per Grid[a]	Indicator Parameters[b]	Closure Criteria[c] (milligrams per Liter)
Hot Cell	1	4	Barium Cadmium Chromium Lead	Evaluate with respect to concentrations in pre-wash water
Work Area	1	4	Same as above	Evaluate with respect to concentrations in sweepings and/or in pre-wash water
Fume Hood (interior)	1	4	Same as above	Evaluate with respect to concentrations in pre-wash water
Container Storage Area	3	4	Same as above	Evaluate with respect to concentrations in sweepings and/or in pre-wash water

[a] One sample from each pair of floor wash water and rinse water samples will be filtered when collected to remove particulates.

[b] These metals have been selected as indicator parameters to demonstrate clean closure at the AHCF due to their typical presence in the wastes stored at the Unit.

[c] Sandia/DOE will continue the long-standing practice of providing radionuclide data to NMED on a voluntary basis, in accordance with: 1) the joint guidance developed by the National Association of Attorneys General (NAAG), (NAAG, 1998), and 2) the data-sharing provisions of the current Agreement-in-Principle between DOE and the State of New Mexico (DOE, 2000).

7.5.2.2 Sample Collection

One single representative sample will be collected from the composited floor sweepings (e.g., soil) at each WMA identified in Table 6 prior to the decontamination procedure. Each sample will be analyzed for the indicator parameters identified in Table 5.

One representative sample will be collected from each batch of unused detergent and water solution to be utilized in the decontamination procedure. Two representative grab samples of used wash water and two samples of used decontamination rinse water will be collected from the temporary berms or other containment structures after each wash and rinse cycle. One sample from each pair will be filtered upon collection to remove particulates present in the water. Each sample will be analyzed for the indicator parameters identified in Tables 5 and 6.

7.5.2.3 Sampling Equipment

Samples of floor sweepings (e.g., soil) will be collected with a disposable scoop, trowel, or equivalent sampling device. Wash and rinse water samples will be collected with a disposable liquid sampling device. Samples will be placed in pre-cleaned 500-milliliter or 1-liter wide-mouth glass jars with screw-top lids, or other approved containers that are appropriate for the analysis.

One sample from each pair of used wash water and used decontamination rinse water samples will be filtered using a 0.45-micron filter to remove particulates.

7.5.2.4 Sample Equipment Decontamination

Pre-cleaned and prepared sample containers and disposable filtration equipment will be obtained from a commercial supplier or the analytical laboratory selected by Sandia/DOE. Decontamination of other disposable sampling equipment (e.g., scoops, trowels, liquid samplers) will not be required for the sampling procedures used in this closure.

If it is determined, during sampling activities, that reusable sampling equipment will be utilized, the equipment will be decontaminated using the following steps:

- Wash the equipment with a detergent and water solution, scrubbing as needed to remove any deposits;
- Rinse the equipment with tap water until the soapy residue is removed;
- Rinse with deionized or distilled water; and
- Allow to air dry or dry with a lint-free cloth.

7.5.2.5 Sample Identification

Each sample will be assigned an identification number that will uniquely identify the sampling area (e.g., floor), the grid identifier (if applicable), the sample type (e.g., soil, rinse water), and any additional information that may be necessary. As an example, the sample numbered F-AHCF-WA-FL-RINSE-01 would indicate the filtered rinse water sample taken from the water used to rinse the floor of the work area in the AHCF.

7.5.2.6 Sample Preservation and Holding Time

After samples are collected at the site, they will be placed in a cooler with frozen gel packs to maintain a temperature of approximately 4 degrees Celsius. Liquid samples will be preserved with nitric acid to maintain a pH of 2 or less. Analytical holding times will be observed by the laboratory for samples collected under this SAP (e.g., the recommended maximum holding time for metals analysis is 180 days from sample collection until extraction).

7.5.3 Demonstration of Clean Closure

A subset of hazardous waste toxicity characteristic metals has been selected for use as indicator parameters to demonstrate clean closure at the AHCF, as these constituents are present in many of the wastes commonly stored or treated in the Unit. Other wastes stored or treated in the AHCF typically are regulated as hazardous waste due to ignitability (D001), corrosivity (D002), reactivity (D003), or the presence of trace amounts of volatile organic solvent constituents (F001-F005). Sampling floor sweepings (soil) or decontamination wash and rinse waters is of limited value for determining the presence of D001, D002, or D003 waste residuals. In addition, given their volatility, F001-F005 constituents would not likely be present on the floor or interior fume hood surfaces even if these constituents had been released in the past. If residual contamination is present on the floor or interior fume hood surfaces of the AHCF WMAs, it is more likely to consist of metal constituents than volatile organic compounds. For these reasons, samples will be analyzed for the subset of hazardous waste toxicity characteristic metals only, using EPA Method SW 6010B, or an equivalent method.

Analytical results from floor sweeping (soil) samples will be compared to the background concentrations that were developed by the NMED for site soils (NMED, 1997) to determine whether the levels in the floor sweepings exceed background and to establish appropriate management requirements for these residuals. Analytical results from decontamination wash and rinse water samples will be compared to the results for the floor sweepings and/or pre-wash water. If the concentrations of indicator parameters in the rinse water are consistent with the concentrations in the soil and/or pre-wash water, the grid area will be considered clean. If the concentrations of indicator parameters are substantially elevated, surface contamination is indicated, and the grid area represented by the sample will be decontaminated again in accordance with the procedures in Section F.5.2.1 of the site-wide closure plan.

7.5.4 Quality Control

QC for sampling and analysis at the AHCF will be implemented as described in Section F.6 of the site-wide closure plan.

7.5.5 Data Management and Reporting

Data management and reporting will be performed as described in Section F.6 of the site-wide closure plan.

7.6 Decontamination and Verification Procedures

Section F.5.2 of the site-wide closure plan presents general decontamination and verification procedures applicable to all Units at the SNL/NM facility. Prior to closure, this Unit-specific plan will be updated as necessary to incorporate new or improved decontamination practices or technology. Any revisions to this Unit-specific plan will be submitted to NMED for approval prior to initiation of closure activities at the AHCF.

8.0 TREATMENT PLAN

Treatment operations for RCRA-regulated wastes treated at the AHCF are described in this section

The following treatment technologies may be used to treat RCRA-regulated wastes at the AHCF:

- Chemical deactivation,
- Stabilization and solidification,
- Macroencapsulation, and
- Physical treatment.

Sandia/DOE may use each technology to treat any of the wastes in the General Part A that include the particular technology in the process description. The waste management areas at the AHCF that are used for the treatment of RCRA-regulated wastes are the hot cell, and the work area (including the fume hood), as described below.

Because treatment at the AHCF (except some physical treatment) will be conducted in containers, it is not subject to the miscellaneous unit and environmental performance standards in 20 NMAC 4.1.500/40 CFR 264, Subpart X [7-1-08]. Treatment effectiveness for each waste stream is discussed in Section 8.3.

8.1 Treatment Operations

Waste treatment is performed at the AHCF for one or more of the following reasons:

- To meet land disposal restrictions;
- to allow for the safe storage of the waste; and/or
- To meet TSDF requirements.

All of the treatment at the AHCF will be batch treatment performed on single packages of waste (each package is one 55-gallon drum or less, or a single item that may be larger than a drum). Each type of treatment will be performed on batches of 500 pounds of waste or less, with the exception of physical treatment, which may occasionally involve very large, heavy items. Liquid wastes will be treated in batches of 55 gallons or less.

Waste treatment may generate secondary waste streams (treatment residues). RCRA-regulated treatment residues may undergo additional on-site treatment and/or be sent to an appropriate off-site TSDF.

The waste treatment processes described in this section are effective in addressing hazardous characteristics in RCRA-regulated wastes, including the following:

- Solid items exhibiting the hazardous waste characteristics of ignitability or reactivity may be chemically deactivated to eliminate the characteristic(s).

- Liquid waste exhibiting the hazardous waste characteristics of ignitability, corrosivity, and/or reactivity may be chemically deactivated to remove the characteristic(s).

- Liquid wastes and particulates containing hazardous waste toxicity characteristic metals (excluding elemental mercury and high mercury subcategories) may be stabilized and/or solidified to reduce or eliminate the leaching potential of the hazardous waste constituents.

- Debris, and wastes containing hazardous waste toxicity characteristic metals (excluding elemental and high mercury subcategories defined in 20 NMAC 4.1.800/40 CFR 268), may be macroencapsulated to reduce or eliminate the leaching potential of the hazardous waste constituent(s).

- Solid items with hazardous constituents may be physically separated from larger items, and the size of individual pieces may be reduced.

Treated wastes and waste residues resulting from treatment of RCRA-regulated wastes may or may not require further management as hazardous wastes, as discussed in Appendix B, Section B.2.5. Each waste treatment technology or process listed above is described in the following sections.

8.1.1 Chemical Deactivation

Sandia/DOE perform chemical deactivation in containers in the work area (including the fume hood) at the AHCF. The containers vary in size depending on the quantity of waste to be treated, and include laboratory glassware, 5-gallon buckets, and 55-gallon drums.

Chemical deactivation refers to a number of chemical processes that can eliminate the hazardous waste characteristics of ignitability, corrosivity, and/or reactivity. Deactivation can be accomplished by several technologies (e.g., neutralization or chemical oxidation). However, the intent of this section is to identify and describe specific methods or treatment trains which may be used at the AHCF to deactivate ignitable wastes defined in 20 NMAC 4.1.200/40 CFR 261.21(a)(2) and (4) [7-1-08], corrosive and reactive wastes defined in 20 NMAC 4.1.200/ 40 CFR 261.23 [7-1-08]. Deactivation may or may not result in a final waste form, depending on the process, and may be used as the first in a series of treatment steps.

Deactivation processes are conducted under carefully controlled conditions so that RCRA-regulated waste with the characteristic of reactivity is allowed to react in a slow, nonviolent manner. Allowing the reactive potential of the waste to be dissipated in this manner reduces or eliminates the reactive characteristic of the waste. Deactivation of reactive wastes is typically conducted in small batches under laboratory conditions such that process control can be easily maintained.

- Hydrides, deuterides, and tritides are deactivated by slow addition to an ice water bath.

- Deactivation of water reactive metals such as elemental sodium and lithium involves the slow and controlled addition of an appropriate alcohol/water solution. Alcohol/water

addition is maintained until the water reactive potential of the waste has been eliminated.

- Deactivation of pyrophoric metal powders and particulates may be achieved by mixing waste in a portland cement matrix.
- Water-soluble oxidizers in particulate form are slowly dissolved in water to deactivate them as the first step in the treatment process. The resulting solution may undergo further treatment (e.g., neutralization and stabilization).
- Water-soluble concentrated liquid oxidizers such as hydrogen peroxide may be diluted with water in a controlled manner to make them safer to handle before deactivation with an appropriate chemical agent such as iron filings.

Chemical deactivation to remove the characteristic of corrosivity is the process of removing excess acidity or alkalinity from an aqueous liquid waste. Other uses may include pH adjustment to facilitate subsequent treatment; such pretreatment through deactivation may be necessary to prevent corrosive damage to equipment, deter undesirable reactions, and preclude the formation of unwanted byproducts.

Reagents added to achieve a desired pH are combined with liquid waste inside a mixing vessel or directly in the waste container. Common deactivating reagents include, but are not limited to, sodium hydroxide for acid wastes; and phosphoric acid for alkaline wastes. The selection of reagents is dependent on the quantity of reagent required, cost, availability, and the potential byproduct(s). These deactivation processes are conducted under carefully controlled conditions in which the reagent is added to the waste slowly and mixed thoroughly. This allows the reaction to proceed in a nonviolent manner and allows the energy to be dissipated effectively. Ice may be used if needed to cool the mixture during the reaction. In the case of reactions that are expected to be strongly exothermic, wastes may be treated in small batches under laboratory conditions (similar to the deactivation of reactive wastes) such that process control can be easily maintained.

8.1.2 Stabilization and Solidification

Sandia/DOE perform stabilization in containers in the work area, (including the fume hood) at the AHCF. Stabilization is a process of binding hazardous waste metals so that the metals become chemically part of the matrix or are physically bound within the matrix. The primary use of stabilization is to immobilize toxicity characteristic metals but many stabilization agents also eliminate free liquids. Typical waste forms suitable for stabilization and/or solidification include liquids, soils, and particulate-type wastes.

Process equipment for mixing waste and binder materials depends on the type of reagents used and the volume of waste to be treated. In-drum mixing is typically used for large volume waste quantities. Once waste and binder have been thoroughly mixed and placed in a container, the mass is allowed to cure and/or set. Smaller batches may be mixed by hand and allowed to cure in smaller containers (e.g., 5-gallon pails, and tubs and trays of various sizes).

Development of appropriate formulas is waste specific. Stabilization agents for toxic metals may include portland cement, pozzolans, thermoplastics, organic polymers, and clays. However, other waste forms may require proprietary reagents that are available for specific applications. Additional reagents may be added to reduce contaminant leachability, reduce cure and/or set time, and increase strength.

Waste characteristics that are important to the success of the stabilization and/or solidification process for liquids may include volume percent of water, oil, solvents, or other organics; pH; and hazardous waste constituents. Waste characterization data are used to determine whether the waste is amenable to stabilization, any necessary pretreatment requirements, and the appropriate binding agent.

Once the stabilization or solidification method is selected, the binding agent is identified based on chemical compatibility with the waste form and contaminants present. Pretreatment may be required to assure compatibility between the waste and the binding agent (e.g., neutralization of liquid wastes to an acceptable pH range of 5.0 to 11.0). Once the proper binding agent(s) have been identified, bench-scale testing is performed to determine optimum amounts of each agent. In the case of low volume waste streams (e.g., less than approximately 0.26 gallons), bench-scale testing may not be practical and treatment is performed without bench-scale testing using the manufacturer's suggested quantities or by estimating binding agent quantities from previous experience. The stabilization process is performed by combining the predetermined quantities of binding agent(s) with the waste and thoroughly mixing, if appropriate. The resulting mixture is staged to allow an appropriate cure time.

8.1.3 Macroencapsulation

Sandia/DOE perform macroencapsulation in containers in the work area (including the fume hood) and/or the hot cell at the AHCF. Macroencapsulation is generally applicable to debris, whereas stabilization/solidification (see Section 8.1.2) is generally applicable to liquids, sludges, and particulate-type wastes. Macroencapsulation is the process of encasing waste within a polymer coating or concrete, or within a jacket of inert inorganic materials. The primary use of macroencapsulation is to immobilize wastes such as debris-type solids containing hazardous waste constituents by surrounding the waste material with a leach-resistant coating.

Sandia/DOE perform macroencapsulation using one of three processes:

- Encasing the waste in concrete, typically within a larger container that serves as a mold for the concrete.
- Coating the waste with polymer agents within a mold. Polymers typically used for macroencapsulation include, but are not limited to, asphalt, polyethylene, thermosetting plastics, and resins that can be polymerized under ambient temperatures in the presence of a catalyst. Equipment used for macroencapsulation may include molds, polymer extrusion equipment, and resin mixing equipment. In-drum macroencapsulation may also be performed with the drum acting as the mold. Temperature control of polymer macroencapsulation processes is critical and carefully maintained to assure that adequate coating occurs.

- Placing the waste inside a container made of inert or noncorroding materials such as polyethylene or stainless steel. Alternatively, the container may consist of an outer shell with a liner of inert or noncorroding material such as polyethylene or stainless steel. After the wastes and inert void-filler materials are placed in the container, the resin is heated to seal the container and lid (e.g. using a resistance-heated wire system embedded in the container lid). Stainless steel containers or liners are welded closed to seal the container and encapsulate the wastes. Sandia/DOE use containers of various sizes, depending on the volume and dimensions of waste items to be macroencapsulated.

8.1.4 Physical Treatment

Sandia/DOE perform physical treatment (volume reduction through separation) in the work area (including the fume hood) and/or the hot cell at the AHCF. The treatment includes:

- Reducing waste volume by using commercially available tools (e.g., hammers, screwdrivers, wrenches, pliers, saws, drills, cutters, etc.) to separate items with hazardous waste constituents from larger items or from each other, including removal of coating and filler materials. In some cases, the RCRA-regulated waste item may undergo further physical treatment or treatment in containers.

- Reducing the size of waste items by using tools (e.g. mallets, cutters, etc.) to crush or cut items into smaller pieces. The pieces may undergo further treatment in containers.

8.2 Preventing Releases to the Atmosphere

Most of the RCRA-regulated wastes treated at the AHCF are inorganic and are not expected to generate emissions during treatment. Unit personnel perform chemical reactions that could generate emissions (deactivation and stabilization/solidification) in a controlled manner as described above to further minimizes potential air emissions. Treatment operations that may generate air emissions of gases, vapors, or particulates will be conducted in a controlled manner within the fume hood if possible. Air flow from the fume hood passes through a two-stage high-efficiency particulate air filter train before being released to the environment through an exhaust stack. The filters effectively remove particulates entrained in the air flow.

The filters do not remove organic constituents entrained in the air flow. AHCF personnel employ the practices described in Section 8.2 of the General Part B to prevent releases of organic constituents to the atmosphere during treatment (20 NMAC 4.1.900/40 CFR 270.14[b][8][vi] and 270.27(a)(2); 20 NMAC 4.1.500/40 CFR 264.179 and Subparts AA, BB, and CC).

8.2.1 Subpart AA

The AHCF treatment operations do not employ processes subject to the requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart AA.

8.2.2 Subpart BB

During treatment, Sandia/DOE do not routinely manage RCRA-regulated wastes with organic concentrations ≥10 percent by weight in process equipment identified in 20 NMAC 4.1.500/40 CFR 264, Subpart BB [7-1-08]. Equipment used in such service at the AHCF will be used for less than 300 hours per calendar year and is therefore exempt from the requirements of 20 NMAC 4.1.500/40 CFR 264.1052 through 1060 [7-1-08] as noted in 20 NMAC 4.1.500/40 CFR 264.1050(f) [7-1-08]. The equipment location will be noted in the AHCF records. Equipment use will also be noted in the records.

8.2.3 Subpart CC

Unit personnel follow the practices described in Section 8.2 of the General Part B. Unit personnel do not perform any treatment subject to Container Level 3 standards (20 NMAC 4.1.500/40 CFR 264.1086[c]).

Section B.5.3 in Appendix B to the General Part B also describes procedures to maintain compliance with the air emissions requirements of 20 NMAC 4.1.500/40 CFR 264, Subparts BB and CC [7-1-08].

8.3 Treatment Effectiveness (20 NMAC 4.1.900/40 CFR 270.23[d])

As required in 20 NMAC 4.1.900/40 CFR 270.23(d) [7-1-08], Sandia/DOE evaluate treatment effectiveness by appropriate methods for each batch of waste treated at the AHCF. In many cases (e.g. stabilization/solidification), Unit personnel treat small samples of a batch of waste using a single agent in various proportions or using various agents to determine which is most effective. That process is then used in treating the rest of the waste, and the data demonstrating that treatment is effective for the samples may be used to demonstrate effectiveness for the rest of the waste. Characterization of the treated waste is described in Appendix B (Section B.2.5.2) of the General Part B.

8.3.1 Chemical Deactivation

Unit personnel check treatment effectiveness using one or more of the following methods (depending on the goal of the treatment performed):

- Visual check for completeness of chemical reaction for solid items that were treated to remove the characteristic of reactivity (e.g., color change or structural change).
- Visual check or ignitability test for liquids that were treated to remove the characteristic of ignitability.
- Check whether treated waste is an oxidizer as defined in 40 CFR 173.151.
- Visual check for liquids that were treated to remove the characteristic of reactivity.

- Fingerprint chemical check for the presence of sulfides and cyanides if their presence caused the waste to be reactive.

- Fingerprint check for pH of liquids that were treated to remove the characteristic of corrosivity.

8.3.2 Stabilization and Solidification

Unit personnel check treatment effectiveness using one or more of the following methods (depending on the goal of the treatment performed):

- Visual check for the presence of free liquids.

- Paint filter test to determine whether free liquids are present if the treated waste is amorphous and may contain some liquids.

- Analysis of one or more samples of the treated waste using the TCLP for hazardous waste toxicity characteristic metals. If the stabilization is intended to meet the treatment standards in 20 NMAC 4.1.800/40 CFR 268.40, the analysis will include underlying hazardous constituents as described in Appendix B.

8.3.3 Macroencapsulation

Unit personnel visually check each macroencapsulated item to verify that it is completely encased in the inert resin or concrete. For inert or noncorroding containers and containers with inert or noncorroding liners, Unit personnel check the seal of the liner or container.

8.3.4 Physical Treatment

Unit personnel check treatment effectiveness using one of more of the following methods (depending on the goal of the treatment performed):

- Visual check that item(s) with hazardous waste constituents has(ve) been completely separated from other item(s).

- Visual check that pieces are the desired size.

9.0 REFERENCES

DHHS, see U.S. Department of Health and Human Services

DOE, see U.S. Department of Energy

NAAG, see National Association of Attorneys General

National Association of Attorneys General, 1998, "Announcement and Issuance of Guidance: *Sharing of Radionuclide Information with States*", dated September 1998.

National Fire Protection Association (NFPA), 2002a, "Standard for the Installation of Sprinkler Systems," NFPA 13, National Fire Protection Association, Quincy, Massachusetts.

National Fire Protection Association (NFPA), 2002b, "Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems," NFPA 25, National Fire Protection Association, Quincy, Massachusetts.

New Mexico Environment Department (NMED), 1997, Letter from NMED (Robert S. Dinwiddie) to DOE (Michael Zamorski), entitled "Request for Supplemental Information: Background Concentrations Report, SNL/KAFB," dated September 24, 1997.

NFPA, see National Fire Protection Association

NMED, see New Mexico Environment Department.

Sandia National Laboratories/New Mexico (SNL/NM), 2012, "Sandia National Laboratories/New Mexico General Part A Permit Renewal Request/Application," Revision 11.0, Sandia National Laboratories/New Mexico, Albuquerque, New Mexico.

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

U.S. Department of Energy (DOE), 2000, "Agreement-in-Principle Between the United States Department of Energy and the State of New Mexico for Environmental Oversight and Monitoring", dated November 29, 2000.

U.S. Department of Health and Human Services (DHHS), 1994. "NIOSH Pocket Guide to Chemical Hazards", National Institute for Occupational Safety and Health.

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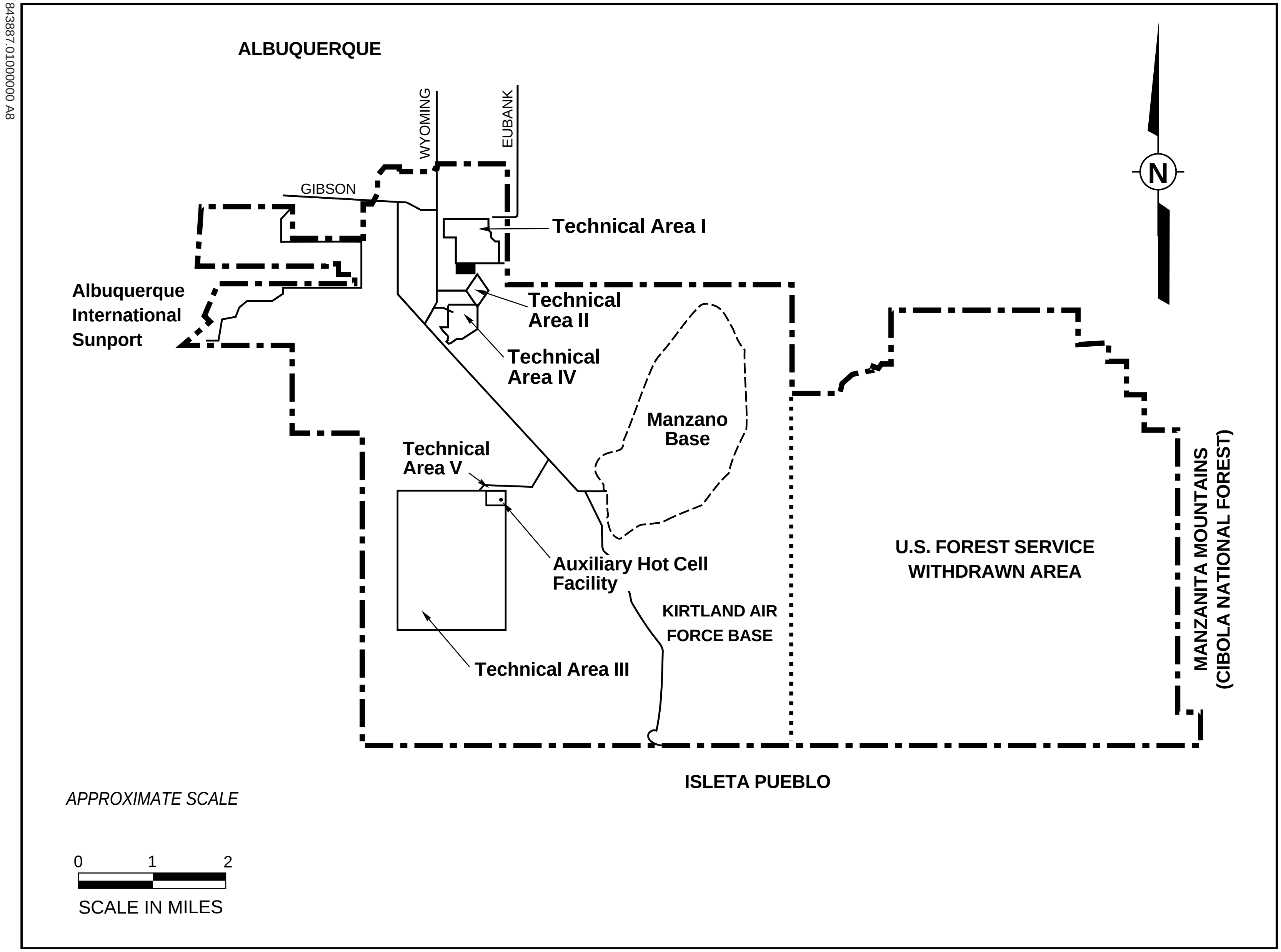


Figure 1
Location Map of the Auxiliary Hot Cell Facility at Sandia National Laboratories/New Mexico

Document: SNL/NM AHCF Application
Revision No.: 3.0
Date: November 2003

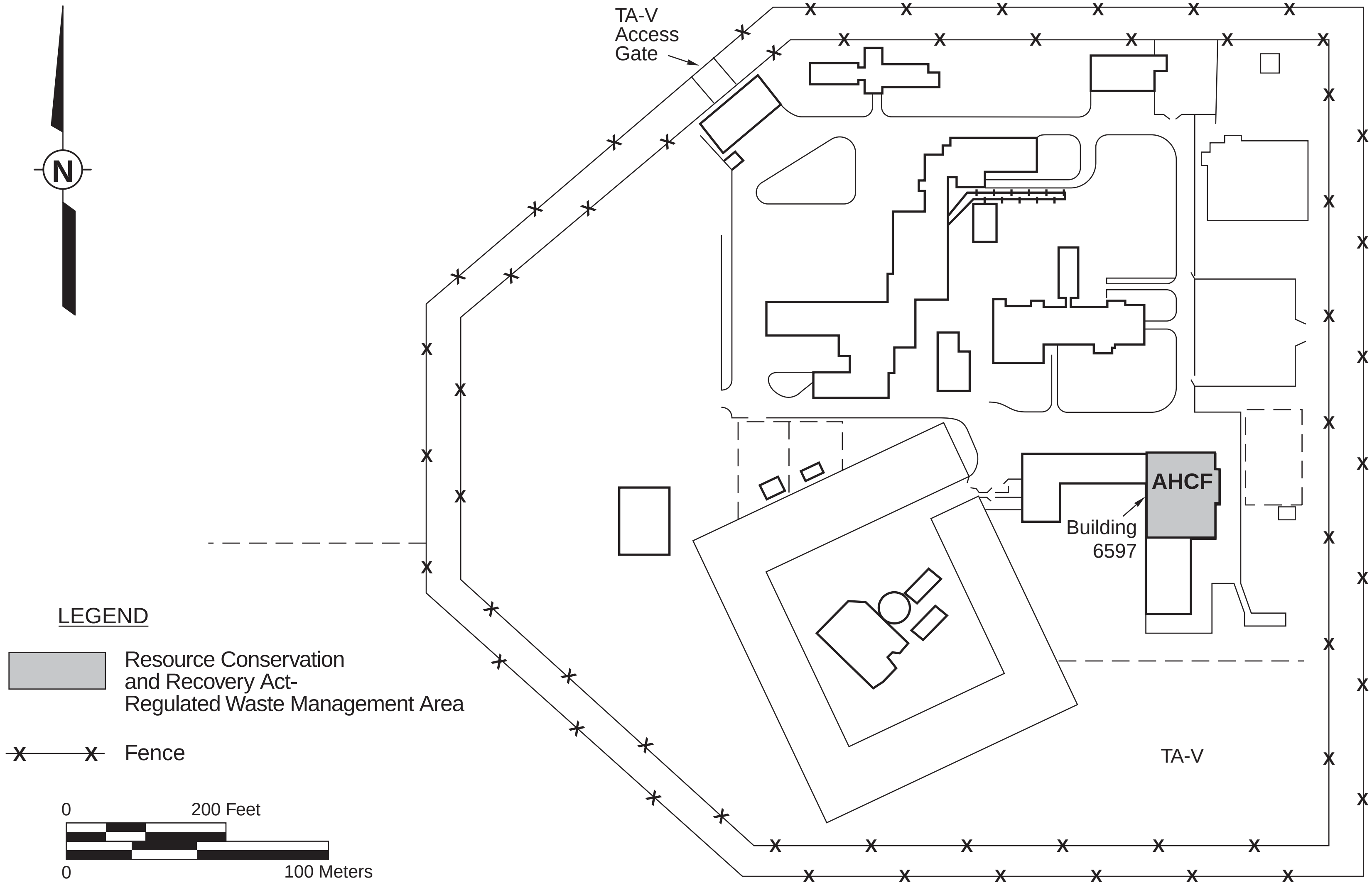


Figure 2

Location of the Auxiliary Hot Cell Facility (AHCF), in Technical Area (TA) V

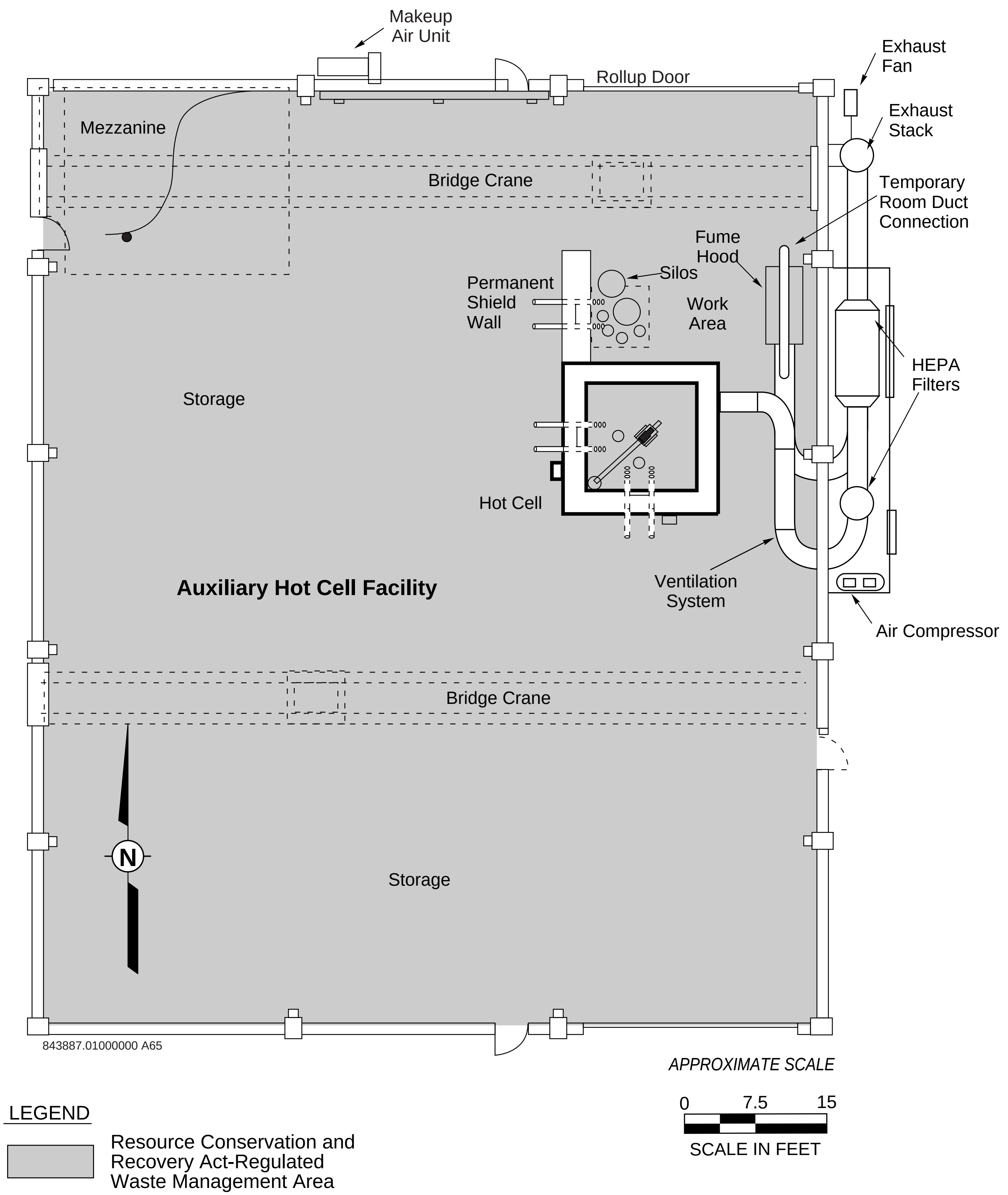


Figure 3
Auxiliary Hot Cell Facility,
Resource Conservation and Recovery Act-
Regulated Waste Management Areas

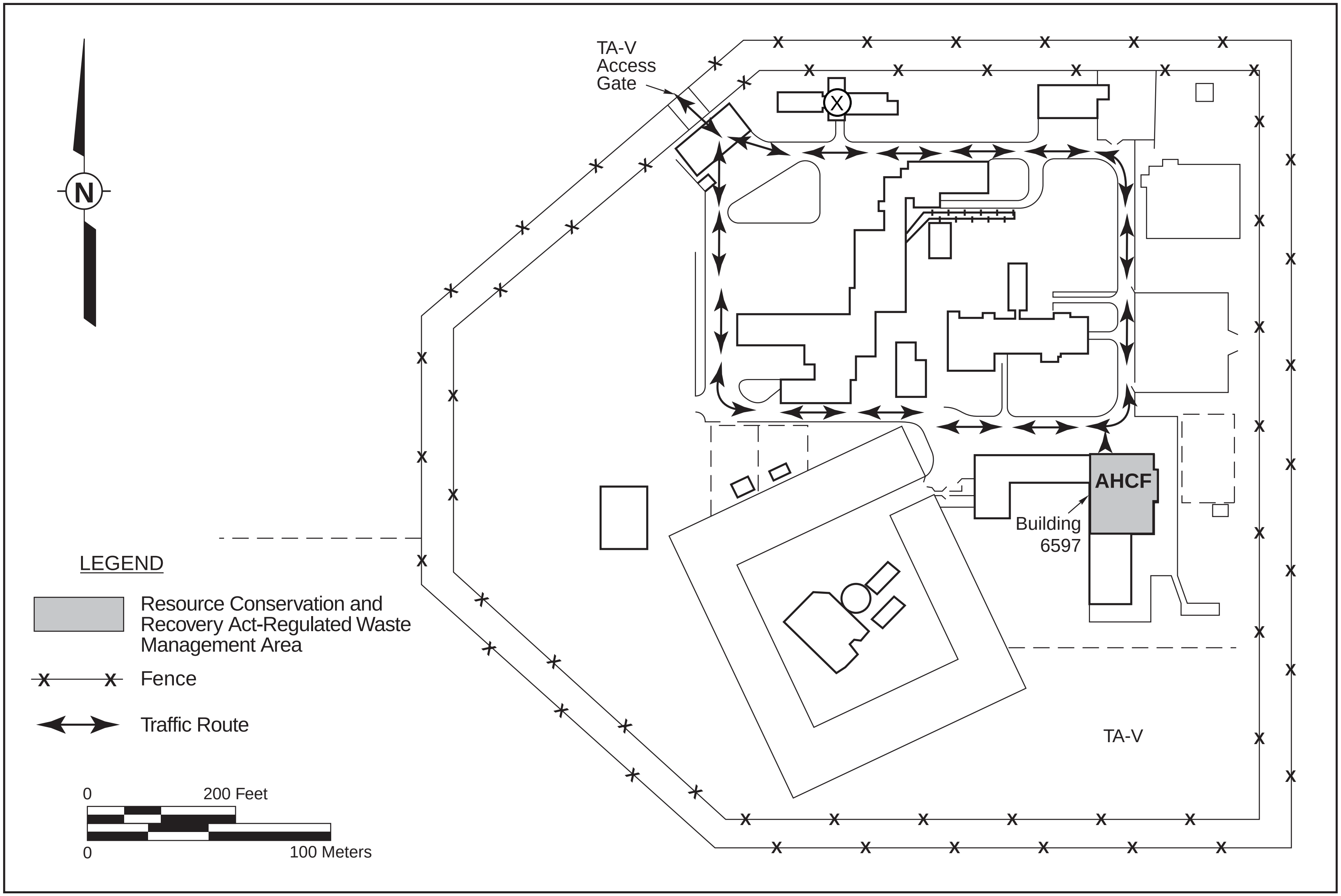
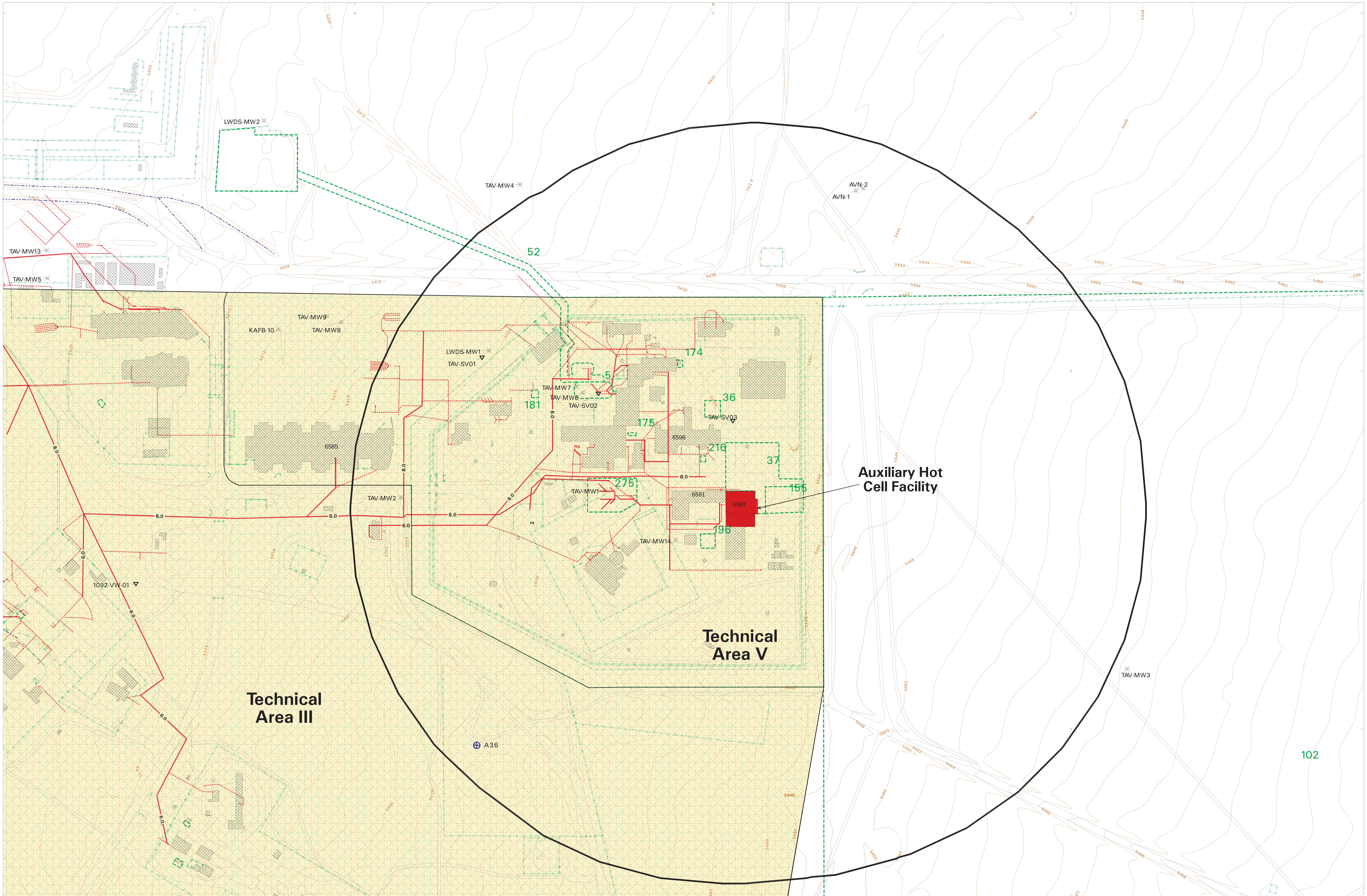


Figure 4

Auxiliary Hot Cell Facility (AHCF), Traffic Routes and Controls



Wells and Water Features

- Vapor Monitoring Well
- Monitoring Well
- Production Well
- Production Well (Potable)
- Production Well (Out of Commission)
- Production Well (Abandoned)
- Production Well (Non-Potable)
- Plugged and Abandoned Well

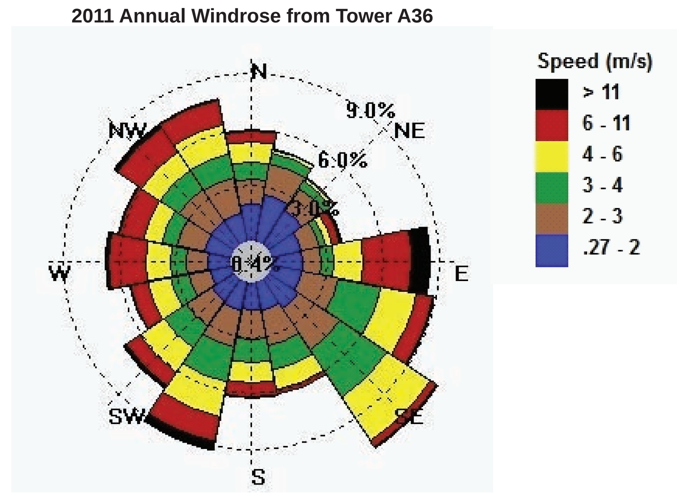
Legend

- Contour (2 Ft)
- Road (all types)
- Fence
- Surface Drainage
- Building and Concrete Pad
- Sanitary Sewer Main (active)
- Sanitary Sewer Service (active and inactive)
- Solid Waste Management Unit
- Sandia National Laboratories Technical Area
- Auxiliary Hot Cell Facility (AHCF)
- 1000 Foot Buffer Around AHCF
- Meteorological Tower

Land Use

- Industrial
- Undefined

2011 Annual Windrose from Tower A36



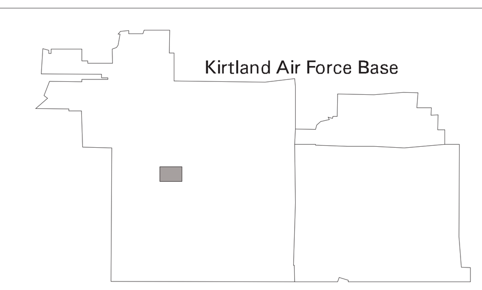
Note: The wind direction is the direction from which the wind is blowing. This diagram shows the frequency of occurrence for each wind direction and wind speed. The color indicates the wind speed.

0 100 200
Scale in Feet

0 24 48
Scale in Meters

0 0.024 0.048
Scale in Kilometers

0 0.019 0.038
Scale in Miles



Sandia National Laboratories, New Mexico
Environmental Restoration Geographic Information System

Figure 5
Topographic Map
Auxiliary Hot Cell Facility (AHCF)
Building 6597
April 2012
Sandia National Laboratories
New Mexico

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone
1927 North American Horizontal Datum, 1929 North American Vertical Datum

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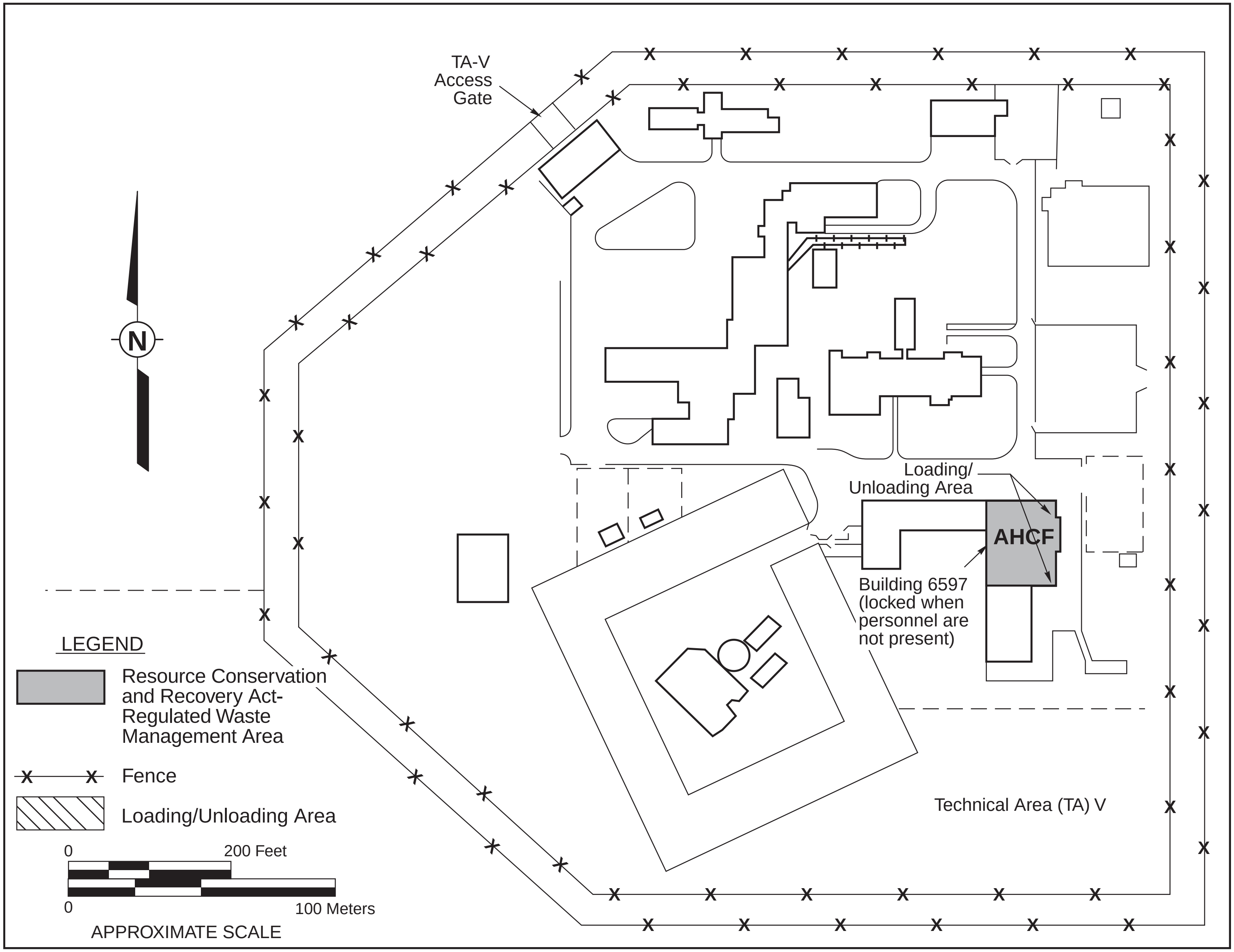

Figure 6

Auxiliary Hot Cell Facility (AHCF), Access Control Features

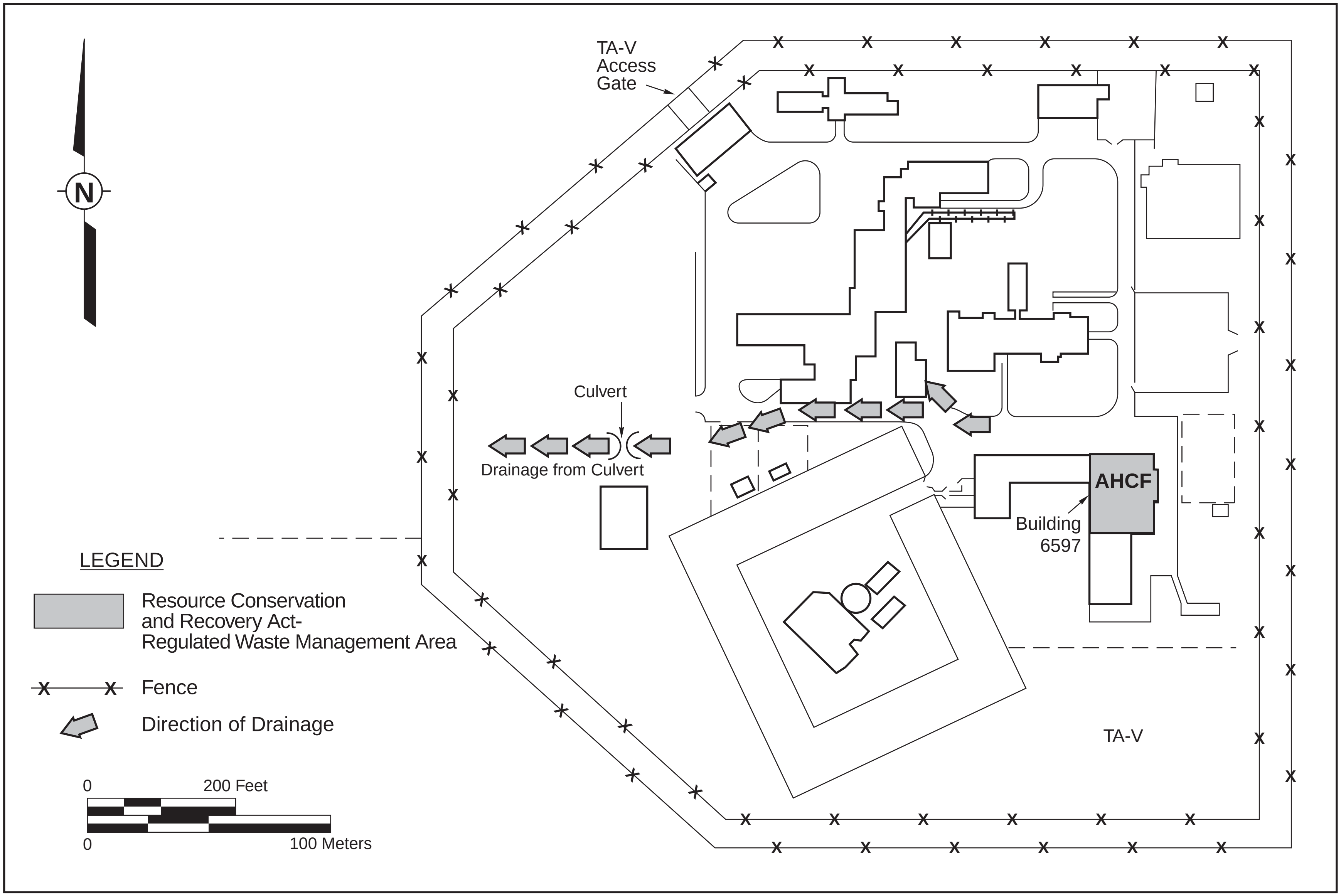

Figure 7

Auxiliary Hot Cell Facility (AHCF), Drainage Control Features

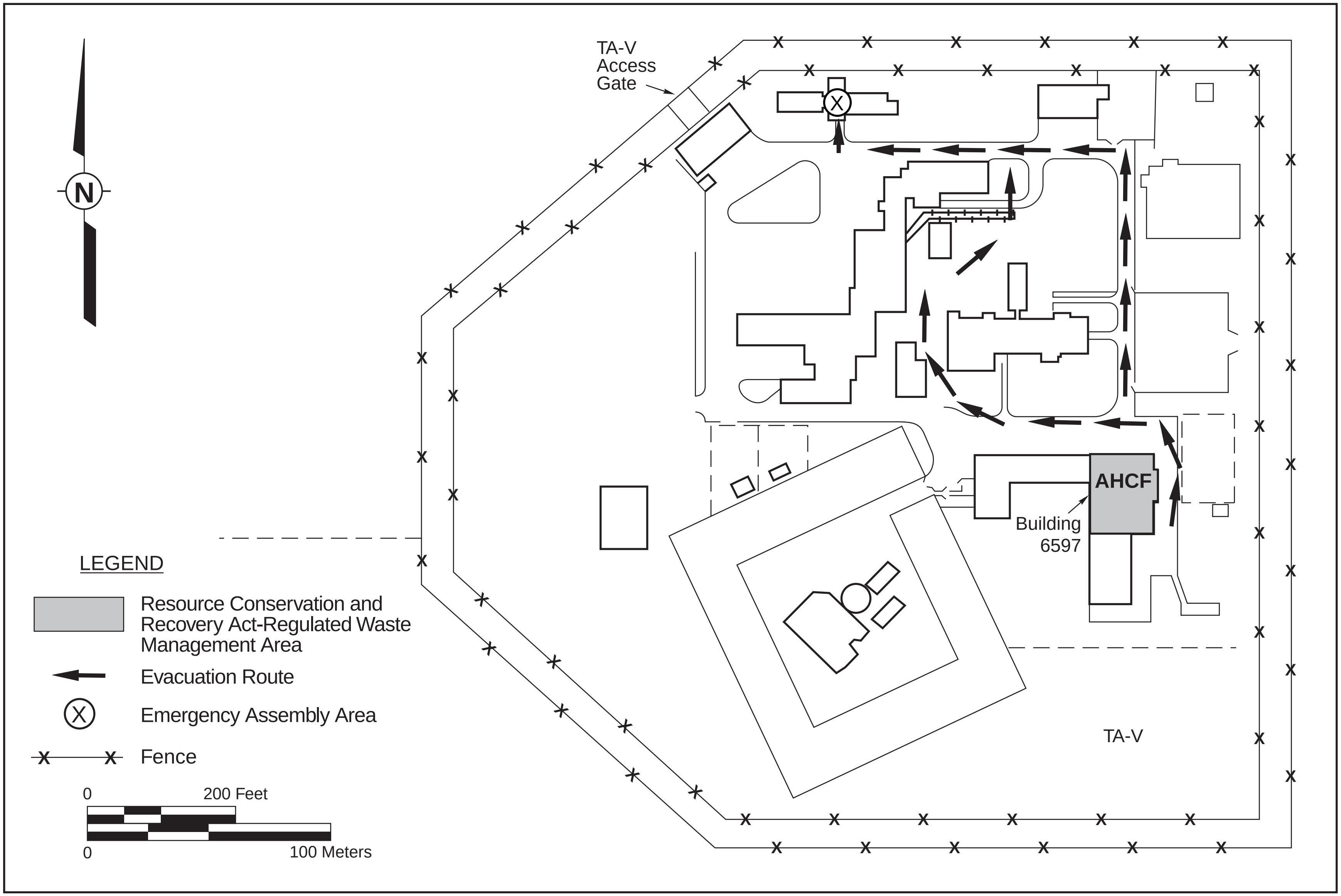

Figure 8

Auxiliary Hot Cell Facility (AHCF), Evacuation Routes

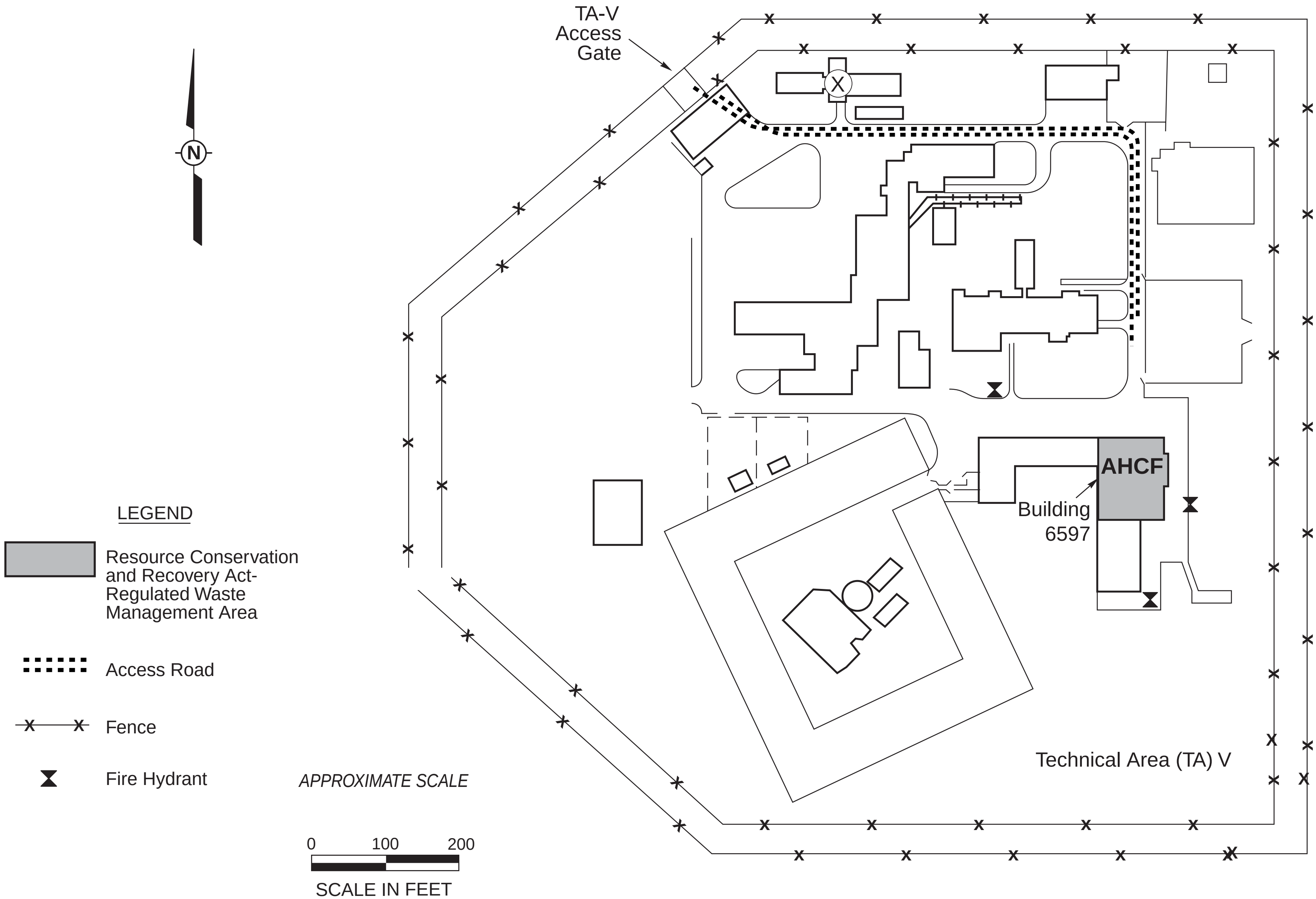

Figure 9
Auxiliary Hot Cell Facility (AHCF), Emergency Response and Access Information

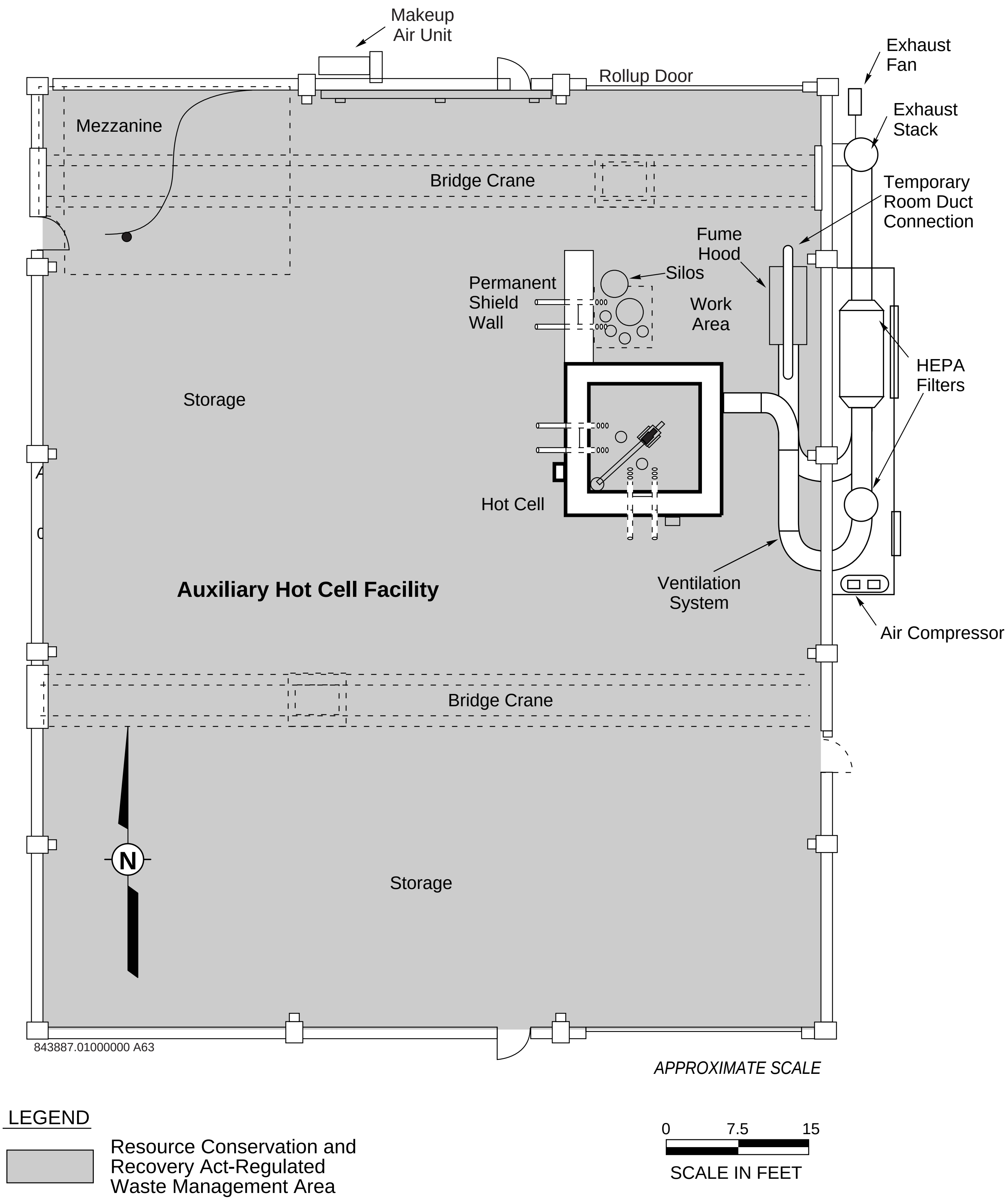

Figure 10

Auxiliary Hot Cell Facility, Emergency Response and Access Information (Detail)

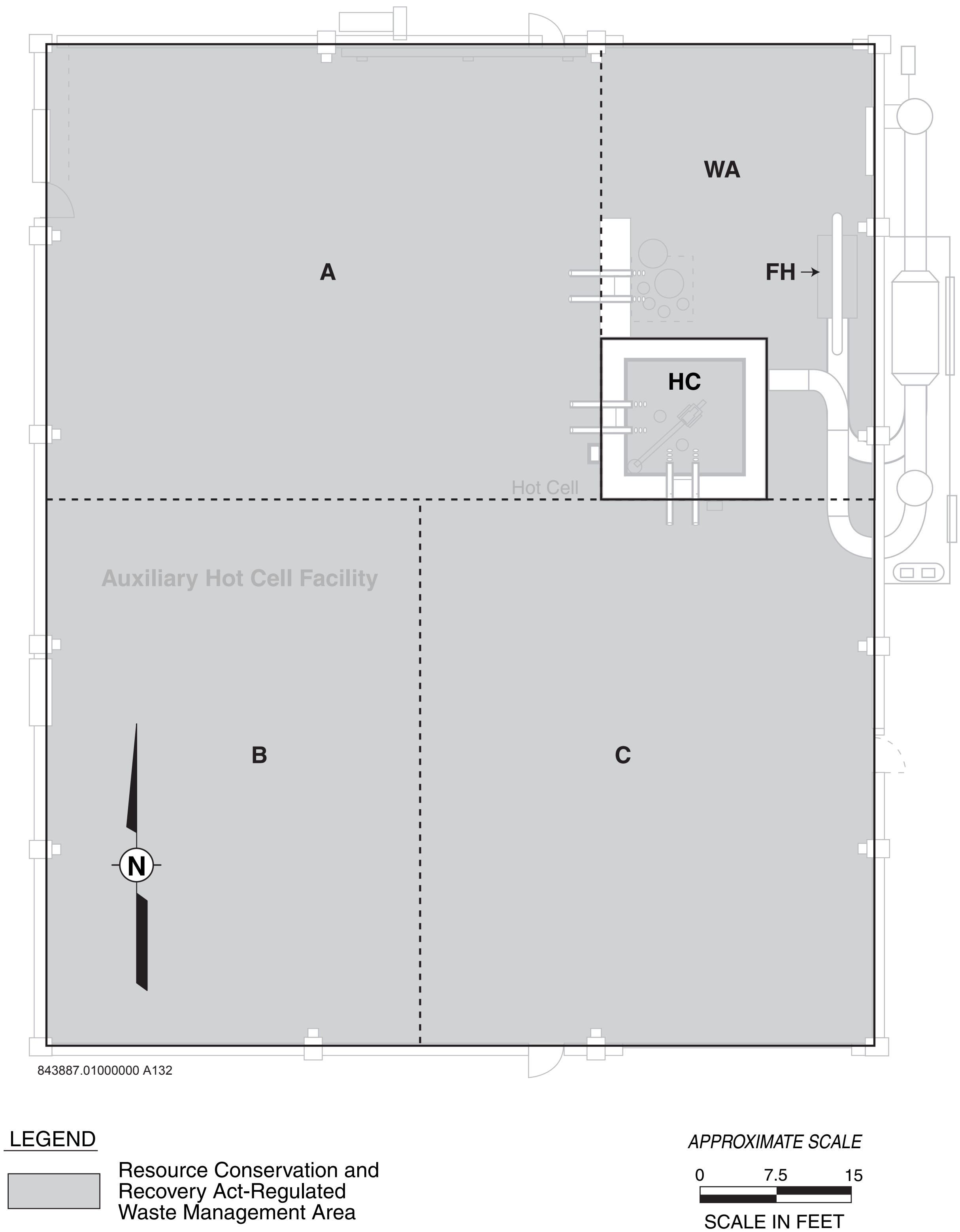

Figure 11

Auxiliary Hot Cell Facility, Closure Grid

Sandia National Laboratories/New Mexico Manzano Storage Bunkers Part B Permit Application

Module VI

Revision 7.0

April 2012

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

Prepared for
The U.S. Department of Energy

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ACRONYMS AND ABBREVIATIONS

20 NMAC 4.1.*X*00	New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart *X*
40 CFR 2*XX.XX*	Code of Federal Regulations, Title 40, Part 2*XX*, Section 2*XX.XX*
DOE	U.S. Department of Energy/National Nuclear Security Administration
EPA	U.S. Environmental Protection Agency
ft	foot/feet
ft^2	square foot/feet
in.	inch(es)
KAFB	Kirtland Air Force Base
MSB	Manzano Storage Bunkers
NMED	New Mexico Environment Department
QA	quality assurance
QC	quality control
RCRA	Resource Conservation and Recovery Act
RMWMF	Radioactive and Mixed Waste Management Facility
SAP	sampling and analysis plan
Sandia	Sandia Corporation
SNL/NM	Sandia National Laboratories/New Mexico
TA	Technical Area
Unit	RCRA-regulated waste management unit
WMA	waste management area

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SANDIA NATIONAL LABORATORIES/NEW MEXICO
MANZANO STORAGE BUNKERS
PART B PERMIT APPLICATION

This Sandia National Laboratories/New Mexico (SNL/NM) Manzano Storage Bunkers (MSB) Part B Permit Application is submitted to address the New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subparts V and IX (20 NMAC 4.1.500 and .900), revised July 1, 2008 [7-1-08], requirements specific to Resource Conservation and Recovery Act (RCRA)-regulated waste container storage operations requiring a permit at the MSB. 20 NMAC 4.1.500 and .900 adopt by reference, with limited exceptions, all of the Code of Federal Regulations, Title 40, Parts 264 and 270 (40 CFR 264 and 270).

Sandia Corporation (Sandia) and the U.S. Department of Energy/National Nuclear Security Administration (DOE), as operator and owner, respectively, of the SNL/NM site, have prepared and revised this module to provide RCRA-regulated waste management unit (Unit)-specific details that supplement the information provided in the "Sandia National Laboratories/New Mexico General Part B Permit Renewal Request/Application", hereinafter referred to as the General Part B. Together, information provided in this module, in the General Part B, and in the appendices to the General Part B meet the applicable requirements for the MSB that are specified in 20 NMAC 4.1.500/40 CFR 264 [7-1-08] and 20 NMAC 4.1.900/40 CFR 270 [7-1-08].

Sandia/DOE also prepared a "Sandia National Laboratories/New Mexico General Part A Permit Renewal Request/Application, Rev. 44.0" (SNL/NM, 2012), hereinafter referred to as the General Part A, included as Part 1 of this comprehensive Part B permit request. The General Part A serves as a companion document to the General Part B and Unit-specific Part B modules, including this MSB Part B Permit Application.

In the General Part A, the General Part B, its appendices, and this module, a Unit to be permitted may sometimes be referred to as a "facility." The term "facility," as it appears in this context, is used only to denote a building or Unit name and does not imply the regulatory meaning of "facility" as defined in 20 NMAC 4.1.100/40 CFR 260.10 [7-1-08]. However, pursuant to 20 NMAC 4.1.100/40 CFR 260.10 [7-1-08], the SNL/NM site as a whole does meet the regulatory definition of a facility.

The MSB are a set of five units, each with approximately 1600 to 2100 square feet (ft^2) of space. They are located in the Manzano Area on Kirtland Air Force Base (KAFB) and are used for storage of RCRA-regulated wastes in containers. The MSB are owned by KAFB and leased to the DOE. All of the RCRA-regulated wastes listed in the General Part A may be managed at the MSB. Sandia/DOE currently operate the MSB under interim status in accordance with the terms of the most recent updates to the Part A submitted to the New Mexico Environment Department (NMED) (April 2012) and the most recent updates to the Part B permit request submitted to NMED (April 2012).

1.0 GENERAL UNIT OPERATIONS

This section provides descriptions of the MSB waste management areas (WMAs) and specific waste management practices. The information in this section complements the information provided in Section 1.0 of the General Part B.

Specific information in this section regarding Unit operations includes containment systems; requirements for ignitable, reactive, and incompatible wastes; preparedness and prevention; hazards prevention; and container storage of RCRA-regulated wastes.

The specific information provided and documents referenced in this section, together with the general information provided in Section 1.0 of the General Part B, address the applicable hazardous waste management facility requirements of 20 NMAC 4.1.500/40 CFR 264, Subparts I, AA, BB, and CC [7-1-08], and 20 NMAC 4.1.900/40 CFR 270.14 and 270.15 [7-1-08].

1.1 Designated Waste Management Areas

The location of the MSB at SNL/NM is shown on Figures 1 and 2. The MSB include five Units: Bunkers 37034, 37045, 37055, 37057, and 37118 (Figure 2). There are five designated waste management areas (one in each bunker) as shown in Figures 3, 4, and 5.

In each MSB bunker, containers holding RCRA-regulated liquid wastes are stored on portable spill pallets or pans. These are commercially available units consisting of a tub made of a heavy-duty inert material such as polyethylene or polypropylene with a heavy-duty inert plastic grating cover. They are designed to be resistant and impervious to corrosives and other liquids. The containers of liquids (up to and including 85-gallon overpack containers) are stored on the grating. Any liquids released from the containers drain through the grating into the tub. The pallets come in various sizes and capacities, they are designed for use with 55-gallon drums or other standard containers, and they meet the requirements of 20 NMAC 4.1.900/40 CFR 270.15[a] and [b] [7-1-08] and 20 NMAC 4.1.500/40 CFR 264.175(b)(1-3).

The pallets come in various sizes and capacities; each pallet has sufficient capacity to hold the contents of the largest container of liquid stored on it. Containers are typically not stacked on each other on the pallets. Stacked containers are stored as described in Section 1.2.2.2 of the General Part B. Because the spill pallets are designed to hold containers of liquids, the weight of the containers does not exceed the load-bearing capacity of the grating or the pallet.

The containers are stored indoors and are protected from precipitation by the bunkers, and by the slope of the concrete paved surface outside the door that directs storm water away from the doorways, meeting the requirements of 20 NMAC 4.1.500/40 CFR 264.175(b)(4).

The MSB are constructed of concrete (walls, roof, and floor) and are covered by earthen materials. The walls and roof of each bunker are rounded. There are three types of bunkers: Type B (37034); Type C (37118); and Type D (37045, 37055, and 37057). The following sections provide descriptions of specific bunker storage structures, locations, and capacities.

1.1.1 Type B Bunker (37034)

Type B bunkers consist of an access tunnel leading to a main chamber that is used for storage of RCRA-regulated wastes. Figure 3 provides a typical floor plan for a Type B bunker. The Type B access tunnel is approximately 20 feet (ft) long, 12 ft wide, and 12.5 ft high. The main chamber is approximately 81 ft long, 26.5 ft wide, and 12.8 ft high. Each bunker is covered by at least 2 ft of earthen fill over a 6-inch (in.) thick concrete roof. The soil surface above and around the bunker is sloped so water drains away from the bunker. Access to the WMA is through two sets of double doors that are 9 ft high and 9 ft wide. One set is at the entrance to the access tunnel, and the other set is at the entrance to the main chamber.

Based on the available floor space (2,146 ft^2) in Bunker 37034, it can hold a maximum of 25,080 gallons of RCRA-regulated wastes.

1.1.2 Type C Bunker (37118)

Type C bunkers do not have an access tunnel and consist entirely of a main chamber used for storage of RCRA-regulated wastes. Figure 4 is a typical floor plan of a Type C bunker. The main chamber is approximately 83 ft long, 29 ft wide, and 12.8 ft high. A 6-in. drain tile is located outside the bunker perimeter. Access to the main chamber is through a set of double doors 8 ft wide and 9.5 ft high. Each bunker is covered by at least 2 ft of earthen fill over a 6-in. thick concrete roof. The soil surface over and around the bunker is sloped so water drains away from the bunker.

Based on the available floor space (2,433 ft^2) in Bunker 37118, it can hold a maximum of 35,200 gallons of RCRA-regulated wastes.

1.1.3 Type D Bunkers (37045, 37055, and 37057)

Type D bunkers consist of an access tunnel leading to a main chamber. Only the main chamber is used for storage of RCRA-regulated wastes. Figure 5 is a typical floor plan of a Type D bunker. Type D access tunnels vary in length from 76 ft to 110 ft and are 9 ft wide and 11 to 12 ft high. The main chamber in each bunker is approximately 61 ft long, 26.5 ft wide, and 12.5 ft high. Access to the WMA of each bunker is through two sets of double doors that are 9 ft high and 9 ft wide. One set is at the entrance to the access tunnel, and the other set is at the entrance to the main chamber. Each bunker is covered by at least 2 ft of earthen fill over a 6-in. thick concrete roof. The soil surface over and around each bunker is sloped so water drains away from each bunker.

Based on the available floor space (1,608 ft^2) in each of the Type D bunkers, each bunker can hold a maximum of 18,480 gallons of RCRA-regulated wastes.

1.2 Unit Operations

The MSB WMAs are used to store any of the RCRA-regulated wastes bearing U.S. Environmental Protection Agency (EPA) Hazardous Waste Numbers listed in the General Part A.

The MSB are not continuously occupied. All personnel sign in on a log upon entering each bunker and sign out when they leave. Waste handling personnel work in pairs and maintain contact with each other. All personnel are trained to check that everyone has signed out and exited the bunker before turning off the lights and closing and locking the doors.

Information regarding operations requiring a permit at all RCRA-regulated Units at SNL/NM is included addressed in Section 1.1 of the General Part B. Additional Unit-specific information is provided in the following sections.

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

Unit personnel begin taking action to evaluate and remove accumulated liquids in the spill pallets upon discovery. Accumulated liquids are cleaned up as described in Section 1.1.1 of the General Part B.

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

Any of the ignitable or reactive wastes listed in the General Part A may be managed at the MSB. Sources of ignition that may be present at the MSB are those noted in Section 1.1.2.1 of the General Part B: welding activities, open flames, hot surfaces, frictional heat, radiant heat, sparks, and engines. Unit personnel employ the general precautions and practices described in Section 1.1.2 of the General Part B. Additional Unit-specific features, potential ignition and reaction sources, precautions, and practices include:

- Ignitable and reactive wastes are segregated from other wastes within each bunker. The containers are labeled as described in Section 1.2.1 of the General Part B. Unit personnel typically place a portable sign near the wastes, use prominent labels, or use another method to assist in identifying them as ignitable and/or reactive. Water-reactive wastes are not routinely stored in the bunkers. If present, they are segregated from other wastes and their location identified clearly through the use of signs, labels, or some other method.

- Containers of wastes are labeled and segregated according to compatibility criteria in 20 NMAC 4.1.500/40 CFR 264 Appendix V. The liquids in containers that are stored together on a spill pallet must be compatible with each other. The spill pallet provides an independent containment system. Likewise, only compatible solids are stored together on a pallet. The pallets of wastes are segregated into different rows and areas,

each row or area containing only compatible wastes. Ignitable and reactive wastes are segregated from other wastes in this manner.

- Containers are not routinely opened during storage at the bunkers, and RCRA-regulated wastes are not repackaged.

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

The following sections address required equipment, testing and maintenance of equipment, and access to communications or alarm systems at the MSB.

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

The MSB are not equipped with automatic fire suppression systems. As noted in Table 2, fire-fighting services are provided by the KAFB fire department tanker trucks. Information on other required equipment located at the MSB is provided in Section 6.0 and Table 2 of this module.

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

Information on equipment testing and maintenance at the MSB is provided in Appendix C of the General Part B and in Section 4.0 of this module.

1.2.3.3 Access to Communications or Alarm Systems (20 NMAC 4.1.500/40 CFR 264.34)

Information about the types and locations of communications or alarm systems at the MSB is provided in Section 1.1.3.3 of the General Part B and in Section 6.0 of this module. Personnel at the Unit typically maintain contact with the emergency coordinator and other personnel at the Radioactive and Mixed Waste Management Facility (RMWMF) through 2-way radios or cellular phones.

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

The following sections address the procedures, equipment, and structures used at the MSB to prevent hazards. Additional information applicable to the MSB and all other Units at SNL/NM is included in Section 1.1.4 of the General Part B.

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

MSB personnel employ the practices described in Section 1.1.4.1 of the General Part B to prevent hazards in unloading. Loading and unloading activities take place on the paved areas immediately outside the bunkers. The surface is sloped gently away from the

door, the pavement is in good condition in the area, and there is sufficient room for operating vehicles.

Transport vehicles carry absorbent spill pillows/pigs and/or additional absorbent. The spill pillows will contain any spill or release of liquid wastes to the concrete surface immediately adjacent to and in front of the bunker doors and prevent run-off to surrounding areas. Personnel will add the additional absorbent or pillows to the contained liquid and place the absorbed waste into appropriate containers as described in Section E.5 of the Site Wide Contingency Plan (Appendix E).

Containers are handled in a manner to prevent shifting and falling, and are typically strapped together or tied down on a pallet before being moved. Containers are moved with a forklift from the storage areas through the access tunnels to the loading areas at each bunker. Containers may be moved by hand or with a drum dolly or hand truck within each bunker.

Waste handling personnel work in pairs at the Unit, and maintain contact with one another. Because the Unit is not routinely occupied, personnel are trained to be particularly aware of current and forecast weather conditions and other operations that could affect waste movement, and to exercise caution in operating equipment such as forklifts.

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

Sheet-flow run-on of surface water from surrounding areas and runoff from the MSB are prevented from entering/leaving the WMAs by the design and construction of the bunkers. The MSB are constructed of concrete and covered by earthen materials. The slope of the earthen materials covering the bunkers prevents run-on of storm water or snow melt. The concrete provides a barrier to moisture. In Type B and Type C bunkers, a 6-ft drain tile is located on the exterior perimeter, so any water that percolates through the earthen fill is drained away from the bunkers. The drive at the front of each bunker is level or sloped slightly away from the bunker doors.

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

Sandia/DOE do not anticipate that management of RCRA-regulated wastes at the MSB will affect water supplies, as described in this section and in Section 1.1.4.3 of the General Part B.

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

General measures that are available to Unit personnel are described in Section 1.1.4.4 of the General Part B. RCRA-regulated waste handling activities at the MSB that are affected by equipment failures or power outages will be suspended in response to such outages.

Electrical power is not required for the safe operation of the MSB WMAs. Equipment and/or power failures will not result in a loss of containment for RCRA-regulated wastes.

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

MSB personnel employ the practices described in Section 1.1.4.5 of the General Part B to prevent undue exposure.

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

MSB personnel employ the practices described in Section 1.1.4.6 of the General Part B to prevent releases to the atmosphere during storage.

<u>Subpart AA</u>

MSB storage operations do not employ any of the processes subject to the requirements of 20 NMAC 4.1.500/40 CFR 264 Subpart AA.

<u>Subpart BB</u>

During storage activities at the MSB, Sandia/DOE do not manage RCRA-regulated wastes with organic concentrations ≥10 percent by weight in process equipment identified in 20 NMAC 4.1.500/40 CFR 264, Subpart BB [7-1-08].

<u>Subpart CC</u>

MSB personnel employ the practices described in Section 1.1.4.6 of the General Part B to prevent releases to the atmosphere in accordance with Container Level 1 standards (20 NMAC 4.1.500/40 CFR 264.1086[c]) for containers that are subject to the standards. Such containers may be stored in any of the bunker WMAs.

Section B.5.3 of Appendix B to the General Part B also describes procedures to maintain compliance with the air emissions requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart CC [7-1-08].

1.3 Container Storage Practices (20 NMAC 4.1.900/40 CFR 270.15 and 20 NMAC 4.1.500/40 CFR 264 Subpart I)

Container storage practices applicable to the MSB are presented in the following sections.

1.3.1 Container Types and Labeling

MSB personnel use the containers types and labeling practices described in Section 1.2.1 of the General Part B.

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

MSB personnel employ the container handling practices described in Section 1.2.2 of the General Part B.

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

The condition of containers at the MSB is maintained as indicated in Section 1.2.2.1 of the General Part B.

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

MSB personnel employ the aisle space and storage configuration described in Section 1.2.2.2 of the General Part B. Aisle width is typically 2.5 ft; this is adequate for unobstructed movement of Unit and emergency response personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of Unit operation in an emergency.

Drums and drum-shaped containers that are stacked are stored on pallets, and are not stacked more than two or three pallets high. Smaller containers may be stacked on a single pallet. Box-shaped containers may be stacked two high without pallets. Containers of solids may also be stored directly on the floor. Containers of liquids are stored on spill pallets and are typically not stacked.

1.3.2.3 Capability of Waste with containers (20 NMAC 4.1.500/40 CFR 264.172)

MSB personnel ensure waste compatibility with containers as indicated in Section 1.2.2.3 of the General Part B.

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

MSB personnel verify the absence of free liquids in containers as indicated in Section 1.2.2.4 of the General Part B before storing containers in areas that are not equipped with secondary containment.

2.0 UNIT DESCRIPTION AND INFORMATION

The information provided in this section is submitted to address the applicable requirements of the 20 NMAC 4.1.500 and .900/40 CFR 264 and 270 [7-1-08]. The following subject areas are addressed in this section:

- Unit-specific security procedures and equipment (20 NMAC 4.1.900/40 CFR 270.14[b][4] and 270.14[b][19][viii] [7-1-08]; 20 NMAC 4.1.500/40 CFR 264.14 [7-1-08]);

- Unit-specific traffic patterns, volume, and controls (20 NMAC 4.1.900/40 CFR 270.14[b][10] [7-1-08]);

- Unit-specific location information for compliance with the seismic standard and floodplain requirements (20 NMAC 4.1.900/40 CFR 270.14[b][11] [7-1-08], and 20 NMAC 4.1.500/40 CFR 264.18[a] and [b] [7-1-08]);

- Unit-specific topographic map requirements (20 NMAC 4.1.900/40 CFR 270.14[b][19] [7-1-08]); and

- Unit-specific groundwater monitoring and protection information (20 NMAC 4.1.900/ 40 CFR 270.14[c] [7-1-08]; 20 NMAC 4.1.500/40 CFR 264.90[a] [7-1-08]).

An SNL/NM site-wide facility description addressing additional regulatory requirements is provided in Appendix A of the General Part B.

2.1 Security Procedures and Equipment (20 NMAC 4.1.900/40 CFR 270.14[b][4]; 20 NMAC 4.1.500/40 CFR 264.14)

The following sections describe the security provisions provided at SNL/NM to prevent unknowing or unauthorized entry onto the active portions of the MSB.

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

The doors of the individual bunkers are locked except when personnel are present. As noted in Appendix A of the General Part B, Sandia security personnel periodically monitor the SNL/NM Units during non-operational hours.

Unit personnel have Sandia-issued badges. Individuals who do not have Sandia-issued badges are escorted. These procedures limit access to the MSB WMAs in accordance with 20 NMAC 4.1.500/40 CFR 264.14(b)(2) [7-1-08].

The MSB are located within the Manzano Base area. The Manzano Base is surrounded by an 8-ft chain-link fence (Figures 1, 2, and 8). Entrance to the Manzano Base area, whether by personnel or vehicles, is through one controlled gate. Manzano Base access control

procedures are designed to assure that only properly authorized persons, vehicles, and property are allowed access to the bunkers.

2.1.2 Warning Signs (20 NMAC 4.1.500/40 CFR 264.14[c])

The entrance to each bunker is posted with "Danger: Unauthorized Personnel Keep Out" (or functionally equivalent) signs. The signs contain the warning in English and Spanish, are legible from a distance of 25 ft, and can be seen from the paved access road approach to each bunker. Additional signs are not necessary because employees and visitors do not approach the bunkers from any other direction.

2.2 Traffic Pattern, Volume, and Controls (20 NMAC 4.1.900/40 CFR 270.14[b][10])

General traffic pattern information, traffic volumes, and traffic control signals for the SNL/NM facility are provided in Appendix A of the General Part B.

2.2.1 Traffic Patterns

The primary traffic routes used to transport RCRA-regulated wastes to the MSB include Wyoming Boulevard, and Pennsylvania Avenue as shown on Figure A-4 in Appendix A of the General Part B. Pennsylvania Avenue crosses Tijeras Arroyo over the Manzano Bridge. The MSB are located approximately 1 mile east of the exit road leading to the entrance of Technical Area (TA)-III and TA-V and at the end of Pennsylvania Avenue. Within Manzano Base, waste is transported to each bunker on 2-lane asphalt-paved roads (Figure 6).

2.2.2 Traffic Volumes

Traffic volumes on Wyoming Boulevard, and Eubank Boulevard are generally light to moderate. Traffic volumes on Pennsylvania Avenue are generally light. Vehicle types are generally cars, light- and medium-duty trucks, and vans. Flatbed trucks or trailers also use primary traffic routes to transport waste containers.

Fewer than 10 vehicles typically travel to the MSB per week. These include flatbed trucks and trailers carrying supplies and containers of RCRA-regulated waste to and from the MSB.

2.2.3 Traffic Control Signals

A stop sign is located approximately 50 ft west of the Manzano Base entrance gate. Traffic control signals within Manzano Base include stop signs, yield signs, and posted speed limits. Traffic routes and controls at Manzano Base are shown on Figure 6.

2.3 Unit Location Information (20 NMAC 4.1.900/40 CFR 270.14[b][11])

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

The WMAs at the MSB are not located within 3,000 ft of any faults with Holocene displacements (see Section A.4.2 in Appendix A of the General Part B).

2.3.2 Floodplain Standard (20 NMAC 4.1.900/40 CFR 270.14[b][11][iii]; 20 NMAC 4.1.500/40 CFR 264.18[b])

The WMAs at the MSB are not located within the 100-year floodplain boundary (see Section A.4.3 in Appendix A of the General Part B).

2.4 Topographic Maps (20 NMAC 4.1.900/40 CFR 270.14[b][19])

Topographic maps and figures are provided herein or referenced to meet the requirements of 20 NMAC 4.1.900/40 CFR 270.14(b)(19) [7-1-08]. Due to the large amount of information, it is not provided on a single map. The maps clearly show the map scale, the date of preparation, and a north arrow (20 NMAC 4.1.900/40 CFR 270.14[b][19][i] and [vi] [7-1-08]). The maps and figures used to fulfill these regulatory requirements include the following:

- An SNL/NM-wide 100-year floodplain map is provided as Figure A-2 in Appendix A of the General Part B (20 NMAC 4.1.900/40 CFR 270.14[b][19][ii] [7-1-08]).
- Surface waters, including intermittent streams, near the MSB are shown on Figure A-2 in Appendix A of the General Part B and Figure 7 of this module (20 NMAC 4.1.900/ 40 CFR 270.14[b][19][iii] [7-1-08]).
- Surrounding land uses are shown on Figures A-2 and A-8 in Appendix A of the General Part B (20 NMAC 4.1.900/40 CFR 270.14[b][19][iv] [7-1-08]). The area surrounding the MSB is occupied by test facilities.
- Wind roses for SNL/NM are shown on Figure A-2 in Appendix A of the General Part B (20 NMAC 4.1.900/40 CFR 270.14[b][19][v] [7-1-08]).
- Legal boundaries of SNL/NM (including the MSB) are shown on Figure A-2 in Appendix A of the General Part B (20 NMAC 4.1.900/40 CFR 270.14[b][19][vii] [7-1-08]).
- Access control features at the MSB (e.g., fences, gates) are shown on Figure 8 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][viii] [7-1-08]).

- Supply wells, monitoring wells, test wells, springs, and surface-water sampling stations near the MSB are shown on Figure A-2 in Appendix A of the General Part B and Figure 7 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][ix] [7-1-08]).

- Locations of Manzano Base and the MSB WMAs, access roads, and loading and unloading areas are shown on Figure 8 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][x] [7-1-08]). There are no sanitary sewers in the vicinity of the MSB.

- Drainage control features (e.g., run-on/runoff, drainage barriers) are shown on Figure 9 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][x] and [xi] [7-1-08]).

- Locations of Manzano Base and MSB WMAs are shown on Figure7 of this module (20 NMAC 4.1.900/40 CFR 270.14[b][19][xii] [7-1-08]).

Contour lines on all topographic maps are in intervals sufficient to detail natural drainage at SNL/NM and in the vicinity of the MSB. As provided for in 20 NMAC 4.1.900/40 CFR 270.14(b)(19) [7-1-08], SNL/NM has submitted the maps to the NMED at these scales and contour intervals due to the size of the MSB, the extent of the SNL/NM facility, and the topographic relief in the area.

2.5 Groundwater Monitoring (20 NMAC 4.1.900/40 CFR 270.14[c] and 20 NMAC 4.1.500/40 CFR 264.90[a])

Groundwater monitoring information is provided in Part 3 of this comprehensive Part B permit request. The MSB is not a regulated unit. There have been no releases of RCRA-regulated waste in the past, nor are the MSB likely to affect groundwater quality during normal operations or during unusual events.

3.0 WASTE ANALYSIS PLAN

In accordance with 40 CFR 270.14[b][2] and 20 NMAC 4.1.500/40 CFR 264.13, "General Waste Analysis" [7-1-08], waste analysis requirements applicable to all Units, including the MSB, are addressed in Appendix B of the General Part B.

4.0 INSPECTION PLAN

20 NMAC 4.1.500/40 CFR 264.15 and 264.33 [7-1-08] and 20 NMAC 4.1.900/40 CFR 270.14(b)(5) [7-1-08] required that WMAs and associated systems be inspected on a regular basis and in accordance with procedures to assure their integrity, maintenance, and safe operation.

Unit personnel perform periodic inspections to identify malfunctions, signs of deterioration, operator errors, and discharges or spills that may be causing or may lead to a release of hazardous waste constituents to the environment or may pose a threat to human health. The inspections are performed on a regular schedule based on the likelihood of equipment or system failure and associated consequences. The inspections include safety and emergency equipment, security devices, and operating and structural equipment related to management of RCRA-regulated wastes to ensure that human health and the environment will be protected.

The general Sandia/DOE inspection plan and schedule that meets these requirements are described in the “Site-Wide Inspection Plan”, provided as Appendix C of the General Part B. Unit personnel conduct inspections in accordance with the site-wide plan.

Specific items and areas that are inspected are listed in Table 1, with the inspection criteria and frequency.

The results of inspections by Unit personnel (including any corrective actions required and taken) are recorded on forms identical or similar to the ones presented in Appendix C of the General Part B. The inspection plan (Appendix C and this section) is maintained at the RMWMF. Inspection records for the current calendar year are maintained at each bunker. Inspection records for previous calendar years are maintained at the RMWMF or the SNL/NM Records Center.

Table 1
Manzano Storage Bunker Inspection Criteria and Frequency

Inspected Item	Inspection Criteria	Inspection Frequency
SAFETY AND EMERGENCY EQUIPMENT See Table 2 "Emergency Equipment and Locations" in this module for additional information		
Portable eye wash	Operational, accessible, in good condition	Monthly
Spill control and cleanup items	Present, quantities per inventory, accessible, in good condition	Monthly
Personal protective equipment	Present, quantities per inventory, and in good condition	Monthly
Smoke alarm	Present	Monthly
Fire extinguisher	Present, charged, accessible, and in good condition	Monthly
OPERATING AND STRUCTURAL EQUIPMENT		
Bunker floor	Clean, no spills or excessive wear	Weekly when and where wastes are managed. Monthly otherwise.
Bunker walls	Not leaking or spalling, in good condition	Weekly when and where wastes are managed. Monthly otherwise.
Bunker ceiling	Not leaking or spalling, and in good condition	Weekly when and where wastes are managed. Monthly otherwise.
Bunker lights	Operational and in good condition	Weekly when and where wastes are managed. Monthly otherwise.
Loading and unloading areas	Good condition, safe working surface, no spills	Daily when and where wastes are handled. Monthly otherwise.
Waste handling equipment	Good condition, in good repair, operational	Daily when and where wastes are handled. Monthly otherwise.
SECURITY DEVICES		
Warning signs	Present and in good condition	Monthly
Doors	Present, operational, in good condition	Monthly
Locks	Present, operational, in good condition	Monthly
CONTAINERS		
Integrity	Good condition (i.e., no bulging, leaks, corrosion, or deterioration)	Check individual containers as they are handled. Weekly otherwise.
Closed	Correct lid/cover placement (i.e., properly closed and sealed)	Check individual containers as they are handled. Weekly otherwise.
Labeling	Correct information, correct location, legible	Check individual containers as they are handled. Weekly otherwise.

Table 1 (Concluded)
Manzano Storage Bunker Inspection Criteria and Frequency

Inspected Item	Inspection Criteria	Inspection Frequency
CONTAINERS (cont)		
Secondary Containment (e.g., spill pallets for liquid waste)	Adequate volume, free of liquids, good condition (i.e., no cracks, excessive wear)	Check individual containers as they are handled. Weekly otherwise.
Storage Conditions	Waste compatible with container, container located with compatible wastes	Check individual containers as they are handled. Weekly otherwise.
Location	Correct aisle space, stable stacking	Check individual containers as they are handled. Weekly otherwise.

5.0 PERSONNEL TRAINING

Training requirements for Unit personnel are specified in 20 NMAC 4.1.900, 40 CFR 270.14[b][12], and 20 NMAC 4.1.500/40 CFR 264.16 [7-1-08], "Personnel Training." The Sandia/DOE training program is designed and implemented to prepare personnel to operate and safely maintain those areas used for managing RCRA-regulated waste at the MSB.

All job descriptions identified in Appendix D, Table D-2 of the General Part B are applicable at the MSB. MSB personnel receive training in accordance with the "Site-Wide Personnel Training Plan" provided in Appendix D of the General Part B.

Training records for MSB personnel are maintained at the RMWMF at SNL/NM.

6.0 CONTINGENCY PLAN

Emergency response requirements for permitted units are specified in 20 NMAC 4.1.500/40 CFR 264, Subpart D [7-1-08], "Contingency Plan and Emergency Procedures," and in 20 NMAC 4.1.900/40 CFR 270.14(b)(7) [7-1-08]. The Sandia/DOE "Site-Wide Contingency Plan" is included as Appendix E of the General Part B. Supplemental MSB-specific information is included in this section, Figures 10-12, and in Tables 2 and 3 of this module. Current copies of the site-wide contingency plan and this supplemental information are maintained at each bunker, at the RMWMF, and at the SNL/NM Emergency Operations Center.

The U.S. Department of Energy and Sandia Corporation use the five bunkers of the MSB to store containers of RCRA-regulated waste. The MSB are located approximately 1 mile east of the road leading to the entrance of TA-III and -V at the end of Pennsylvania Avenue. The WMAs at the MSB include: a Type B bunker (37034); a Type C bunker (37118); and three Type D bunkers (37045, 37055, and 37057). Bunkers are constructed of concrete (walls, roof, and floor) and are covered by earthen materials.

RCRA-regulated wastes bearing the EPA listed in the General Part A Permit may be stored at the MSB WMAs. Waste is segregated based on compatibility groups within each bunker.

Figure 10 presents evacuation routes for the MSB. Figures 11 and 12 present emergency response and access information for the MSB. Table 2 lists the emergency equipment typically available at the MSB and additional spill cleanup equipment available at other SNL/NM Units. Table 3 lists the emergency coordinators for the MSB.

The emergency coordinators are informed of planned work activities at the beginning of each work day; this includes activities at Units that are not routinely staffed (such as the MSB).

Table 2
Manzano Storage Bunkers,
Emergency Equipment and Locations

Category	Description/Capabilities	Location
Spill Control and Decontamination Equipment	Portable Eyewash	By inner door inside each bunker
	Personal protective equipment (chemical-resistant gloves and safety glasses)	By inner door inside each bunker
	Absorbents (sufficient absorbent for 55 gallons of liquid when liquid wastes are present)	By inner door inside each bunker
	Spill cleanup items (mops, brooms, and/or shovels)	In equipment storage at the RMWMF
	Recovery drums and containers	In equipment storage at the RMWMF
Internal Communication and Alarm System	Voice command Portable 2-way radio or equivalent, as needed	Operating personnel
	Smoke Alarms	• Smoke detectors inside each bunker • Strobe light on front outside each bunker
External Communication System	Mobile Telephone or Portable Radio	Available to all operating personnel at the bunker
Fire Extinguishers	Portable (A-B-C)	By entrance door outside each bunker
Fire Suppression	Water to Extinguish Fires	KAFB tanker truck at the KAFB fire station in the Manzano administrative area

KAFB Kirtland Air Force Base
RMWMF Radioactive and Mixed Waste Management Facility

Table 3
Manzano Storage Bunkers,
Facility Emergency Coordinator List

September 15, 2011

Facility Emergency Coordinator		**Office Phone**	**Home Phone**
Primary	Leroy Duran Sandia National Laboratories P.O. Box 5800 Albuquerque, NM 87185	(505) 284-1488 (office) (505) 951-6297 (pager)	(505) 980-4401
First Alternate	Phil Zelle Sandia National Laboratories P.O. Box 5800 Albuquerque, NM 87185	(505) 844-2486 (office) (505) 951-6248 (pager)	(505) 615-7445
Second Alternate	Jesse Farr Sandia National Laboratories P.O. Box 5800 Albuquerque, NM 87185	(505) 284-3041 (office) (505) 951-6336 (pager)	(505) 379-8913
Third Alternate	Jeff Jarry Sandia National Laboratories P.O. Box 5800 Albuquerque, NM 87185	(505) 284-3080 (office) (505) 951-6332 (pager)	(505) 697-2108

One or more of the listed personnel are routinely available at the Radioactive and Mixed Waste Management Facility during normal work hours (7:00 am to 5:30 pm, Monday through Thursday) and can be contacted by radio or telephone during those hours.

7.0 CLOSURE PLAN

Applicable closure requirements are specified in 20 NMAC 4.1.900/40 CFR 270.14(b)(13), and 20 NMAC 4.1.500/40 CFR 264, Subparts G and I [7-1-08]. General closure information applicable to all Units at SNL/NM and general sampling and analytical procedures to be used during closure activities are presented in the "Site-Wide Closure Plan" in Appendix F of the General Part B. The site-wide closure plan includes a description of the SNL/NM facility, waste descriptions, closure performance standards, general closure methods, a sampling and analysis plan (SAP), a general closure schedule, procedures for amendment of the plan, closure certification and letter, survey plat, and post-closure requirements. Unit-specific information for closure of the MSB is included in this section.

7.1 Unit Description

Sandia/DOE use the five bunkers of the MSB to store containers of RCRA-regulated waste. The MSB are located approximately one mile east of the road leading to the entrance of TA-III and -V at the end of Pennsylvania Avenue. The WMAs at the MSB include: a Type B bunker (37034); a Type C bunker (37118); and three Type D bunkers (37045, 37055, and 37057). Bunkers are constructed of concrete (walls, roof, and floor) and are covered by earthen materials.

The Type B bunker is approximately 81 ft long by 26 ft wide, and the Type C bunker is approximately 80 ft long by 27 ft wide (Figure 13). Each of the Type D bunkers is approximately 61 ft long by 26 ft wide (Figure 14).

7.2 Estimate of Maximum Waste in Storage

The maximum volume of RCRA-regulated waste in storage at any time in the MSB is approximately 115,720 gallons of liquids and/or solids. This is the maximum volume of RCRA-regulated waste that could be removed from the WMAs as part of closure activities. The WMAs are located at the bunkers shown in Figure 2. The maximum total waste volume is broken down as follows:

- Type B Bunker (37034): 25,080 gallons
- Type C Bunker (37118): 35,200 gallons
- Type D Bunkers (37045, 37055, and 37057): 55,440 gallons (18,480 each)

7.3 Closure Conditions

In addition to the general assumptions listed in Section F.5 of the site-wide closure plan, partial closure activities specified in this plan assume the following conditions were met during the operational life of the MSB:

- Waste handling activities that involved opening containers of RCRA-regulated waste at the MSB were confined to the interiors of the bunkers. If contamination occurred, it would have been confined to those areas; and

- The interior floors of each WMA were maintained to retain their integrity by following established maintenance and inspection procedures, breaches of protective coatings did not occur, and a small amount of soil will be present on the floors due to normal traffic and operations.

7.4 Closure Activities and Schedule

This closure will be conducted to support attainment of the closure performance standards outlined in Section F.4 of the site-wide closure plan. Section 7.5.3 of this plan discusses the criteria that will be used to verify that clean closure has been achieved.

7.4.1 Closure Activities

The closure approach and general activities described in Section F.5 of the site-wide closure plan will be applied to closure of the WMAs at the MSB. With respect to the individual WMAs, Sandia/DOE will decontaminate the floor of each by sweeping and washing as described in Section F.5 of the site-wide plan in Appendix F.

7.4.2 Closure Schedule

Section F.7 of the site-wide closure plan provides a timeline for closure activities applicable to all permitted Units at the SNL/NM facility. Currently, there is not an estimated date of closure for the bunkers, but a Unit-specific closure schedule will be prepared and submitted to NMED prior to initiation of closure activities at the MSB.

7.5 Sampling and Analysis Plan

Section F.6 of the site-wide closure plan presents general sample collection equipment and techniques applicable to all Units at the SNL/NM facility. This Unit-specific SAP describes the sampling, analysis, and quality assurance (QA) methodologies Sandia/DOE will use to demonstrate clean closure of the MSB in accordance with the requirements of 20 NMAC 4.1.500/40 CFR 264, Subpart G, [7-1-08], as applicable. It addresses specific details (e.g., the type, number, and location of samples; required analytical constituents; closure criteria; QA and quality control [QC] procedures) regarding RCRA closure of the MSB.

7.5.1 Sampling and Analysis Scope

This SAP presents procedures for the acquisition, analyses, and evaluation of samples of floor sweepings (soil), pre-wash (unused) wash water, used wash water, and used rinse water from the floor of each of the five WMAs at the MSB: a Type B bunker (37034); a Type C bunker

(37118); and three Type D bunkers (37045, 37055, and 37057). All of the samples will be analyzed to determine concentrations of a set of indicator parameters selected from the range of hazardous waste constituents in the range of RCRA-regulated wastes managed in the Unit. These indicator parameters and the applicable criteria for clean closure are identified in Tables 4 and 5, and the rationale for their selection is presented in Section 7.5.3.

7.5.2 Sampling Methodology

7.5.2.1 Sample Locations

The floor of each WMA will be swept and a sample of the composited floor sweepings from each WMA will be collected for analysis.

As indicated in Table 5, two samples of used wash water and two samples of used decontamination rinse water will be collected from each floor grid area shown on Figures 13 and 14. Used wash water will be contained in temporary berms or other containment devices, sampled, and removed prior to the decontamination rinse step. Used rinse water will also be contained in temporary berms or other containment devices, as necessary.

7.5.2.2 Sample Collection

One single representative sample will be collected from the composited floor sweepings (e.g., soil) at each WMA prior to the decontamination procedure. Each sample will be analyzed for the indicator parameters identified in Table 4.

One representative sample will be collected from each batch of unused detergent and water solution to be utilized in the decontamination procedure. Two representative grab samples of used wash water and two samples of used decontamination rinse water will be collected from the temporary berms or other containment structures after each wash and rinse cycle. One sample from each pair will be filtered upon collection to remove particulates present in the water. Each sample will be analyzed for the indicator parameters identified in Tables 4 and 5.

7.5.2.3 Sampling Equipment

Samples of floor sweepings (e.g., soil) will be collected with a disposable scoop, trowel, or equivalent sampling device. Wash and rinse water samples will be collected with a disposable liquid sampling device. Samples will be placed in pre-cleaned 500-milliliter or 1-liter wide-mouth glass jars with screw-top lids, or other approved containers that are appropriate for the analysis.

One sample from each pair of used wash water and used decontamination rinse water samples will be filtered using a 0.45-micron filter to remove particulates.

Table 4
Summary of Pre-Wash Sampling Program

Media to be Sampled	Sample Number & Type	Indicator Parameters[a]	Standards for Comparison[b]
Floor sweepings	Single grab from collected material at each WMA (representative of material removed from entire floor surface)	Barium Cadmium Chromium Lead	281 ppm <1 ppm 21.8 ppm 39 ppm
Pre-wash (unused) water	Single grab (one from each batch of detergent/water solution prior to use in decontamination)	Barium Cadmium Chromium Lead	N/A

[a] These metals have been selected as indicator parameters to demonstrate clean closure at the MSB due to their typical presence in the wastes stored at the Unit.

[b] Analytical results for indicator parameters in floor sweepings will be compared to background concentrations in site soils developed by NMED (NMED, 1997). Analytical results for indicator parameters in pre-wash water will be used in evaluating the decontamination wash water and rinse water.

Table 5
Summary of Post-Wash Sampling Program

Area to be Decontaminated	Dimensions of Area to be Decontaminated	Grid Size	Number of Grids	Samples Per Grid[a]	Indicator Parameters[b]	Closure Criteria[c] (milligrams per Liter)
Floor of Bunker 37034	26’ x 81’	26’ x 40.5’	2	4	Barium Cadmium Chromium Lead	Evaluate with respect to concentrations in sweepings and/or in pre-wash water
Floor of Bunker 37118	27’ x 80’	27’ x 40’	2	4	Same as above	Same as above
Floor of Bunker 37045	26’ x 61’	26’ x 30.5’	2	4	Same as above	Same as above
Floor of Bunker 37055	26’ x 61’	26’ x 30.5’	2	4	Same as above	Same as above
Floor of Bunker 37057	26’ x 61’	26’ x 30.5’	2	4	Same as above	Same as above

[a] One sample from each pair of floor wash water and rinse water samples will be filtered when collected to remove particulates.

[b] These metals have been selected as indicator parameters to demonstrate clean closure at the MSB due to their typical presence in the wastes stored at the Unit.

[c] Sandia/DOE will continue the long-standing practice of providing radionuclide data to NMED on a voluntary basis, in accordance with: 1) the joint guidance developed by the National Association of Attorneys General (NAAG), (NAAG, 1998), and 2) the data-sharing provisions of the current Agreement-in-Principle between DOE and the State of New Mexico (DOE, 2000).

7.5.2.4 Sample Equipment Decontamination

Pre-cleaned and prepared sample containers and disposable filtration equipment will be obtained from a commercial supplier or the analytical laboratory selected by Sandia/DOE. Decontamination of other disposable sampling equipment (e.g., scoops, trowels, liquid samplers) will not be required for the sampling procedures used in this closure.

If it is determined, during sampling activities, that reusable sampling equipment will be utilized, the equipment will be decontaminated using the following steps:

- Wash the equipment with a detergent and water solution, scrubbing as needed to remove any deposits;
- Rinse the equipment with tap water until the soapy residue is removed;
- Rinse with deionized or distilled water; and
- Allow to air dry or dry with a lint-free cloth.

7.5.2.5 Sample Identification

Each sample will be assigned an identification number that will uniquely identify the sampling area (e.g., floor), the grid identifier (if applicable), the sample type (e.g., soil, rinse water), and any additional information that may be necessary. As an example, the sample numbered F-37034-A-FL-RINSE-01 would indicate the filtered rinse water sample taken from the water used to rinse the floor of Grid A in Bunker 37034.

7.5.2.6 Sample Preservation and Holding Time

After samples are collected at the site, they will be placed in a cooler with frozen gel packs to maintain a temperature of approximately 4 degrees Celsius. Liquid samples will be preserved with nitric acid to maintain a pH of 2 or less. Analytical holding times will be observed by the laboratory for samples collected under this SAP (e.g., the recommended maximum holding time for metals analysis is 180 days from sample collection until extraction).

7.5.3 Demonstration of Clean Closure

A subset of hazardous waste toxicity characteristic metals has been selected for use as indicator parameters to demonstrate clean closure at the MSB, as these constituents are present in many of the RCRA-regulated wastes commonly stored in the bunkers. Other wastes stored in the MSB typically are regulated as hazardous waste due to ignitability (D001), reactivity (D003), or the presence of trace amounts of volatile organic solvent constituents (F001-F005). Sampling floor sweepings (soil) or decontamination wash and rinse waters is of limited value for determining the presence of D001 or D003 waste residuals. In addition, given their volatility, F001-F005 constituents would not likely be present on the floor surfaces even if these constituents had been released in the past. If residual contamination is present on the

floor surfaces of the MSB WMAs, it is more likely to consist of metal constituents than volatile organic compounds. For these reasons, samples will be analyzed for the subset of hazardous waste toxicity characteristic metals only, using EPA Method SW 6010B, or an equivalent method.

Analytical results from floor sweeping (soil) samples will be compared to the background concentrations that were developed by the NMED for site soils (NMED, 1997) to determine whether the levels in the floor sweepings exceed background and to establish appropriate management requirements for these residuals. Analytical results from decontamination wash and rinse water samples will be compared to the results for the floor sweepings and pre-wash water. If the concentrations of indicator parameters in the rinse water are consistent with the concentrations in the soil and pre-wash water, the grid area will be considered clean. If the concentrations of indicator parameters are substantially elevated, surface contamination is indicated, and the grid area represented by the sample will be decontaminated again in accordance with the procedures in Section F.5.2.1 of the site-wide closure plan.

7.5.4 Quality Control

QC for sampling and analysis at the MSB will be implemented as described in Section F.6 of the site-wide closure plan.

7.5.5 Data Management and Reporting

Data management and reporting will be performed as described in Section F.6 of the site-wide closure plan.

7.6 Decontamination and Verification Procedures

Section F.5.2 of the site-wide closure plan presents general decontamination and verification procedures applicable to all Units at the SNL/NM facility. Prior to closure, this Unit-specific plan will be updated as necessary to incorporate new or improved decontamination practices or technology. Any revisions to this Unit-specific plan will be submitted to NMED for approval prior to initiation of closure activities at the MSB.

8.0 TREATMENT PLAN

Sandia/DOE do not perform treatment of RCRA-regulated wastes requiring a permit at the MSB.

9.0 REFERENCES

DOE, see U.S. Department of Energy

NAAG, see National Association of Attorneys General

National Association of Attorneys General, 1998, "Announcement and Issuance of Guidance: *Sharing of Radionuclide Information with States*", dated September 1998.

New Mexico Environment Department (NMED), 1997, Letter from NMED (Robert S. Dinwiddie) to DOE (Michael Zamorski), entitled "Request for Supplemental Information: Background Concentrations Report, SNL/KAFB," dated September 24, 1997.

NMED, see New Mexico Environment Department.

Sandia National Laboratories/New Mexico (SNL/NM), 2012, "Sandia National Laboratories/New Mexico General Part A Permit Renewal Request/Application," Revision 11.0, Sandia National Laboratories/New Mexico, Albuquerque, New Mexico.

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

U.S. Department of Energy (DOE), 2000, "Agreement-in-Principle Between the United States Department of Energy and the State of New Mexico for Environmental Oversight and Monitoring", dated November 29, 2000.

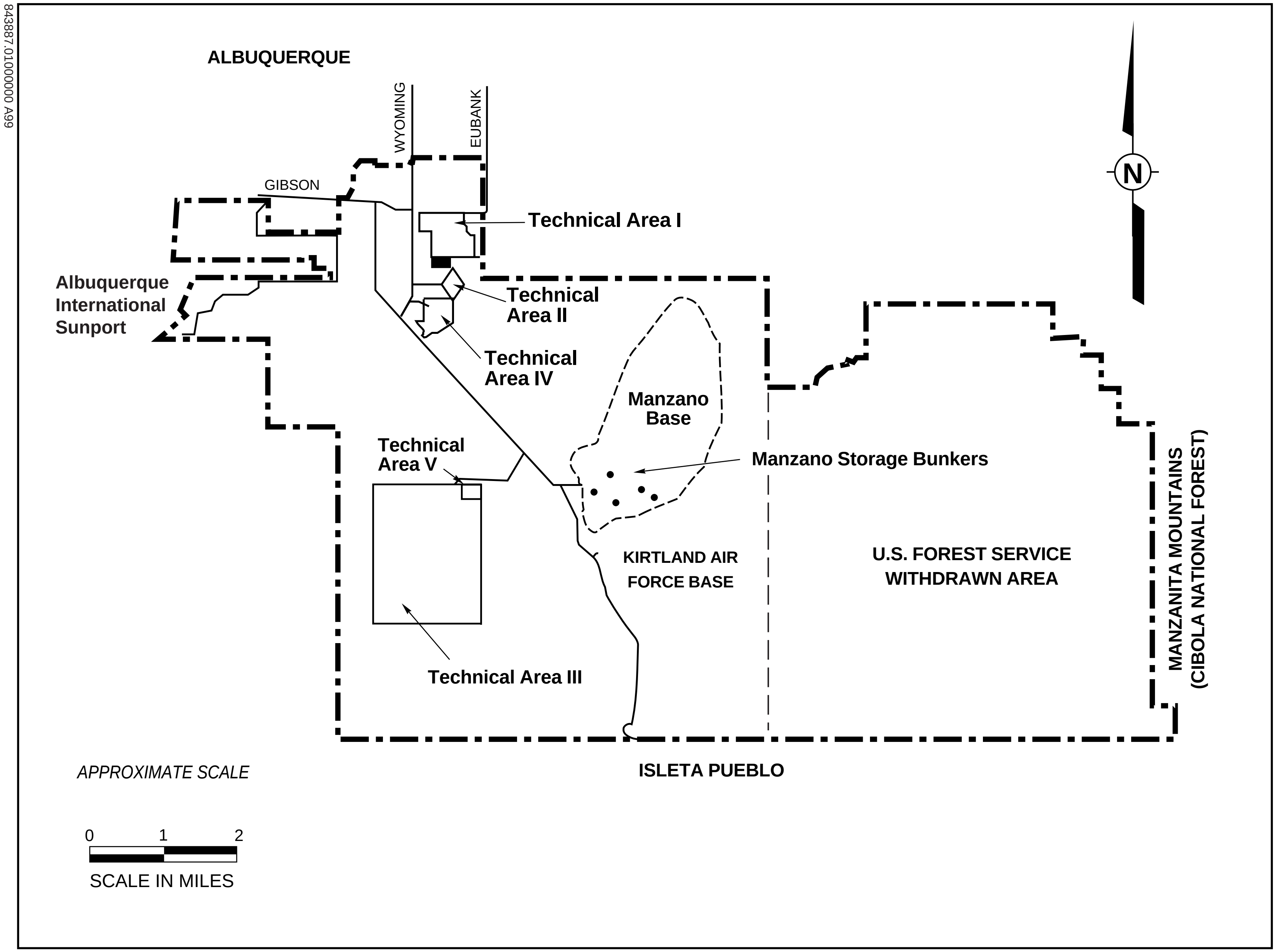


Figure 1
Location Map of the Manzano Storage Bunkers at Sandia National Laboratories/New Mexico

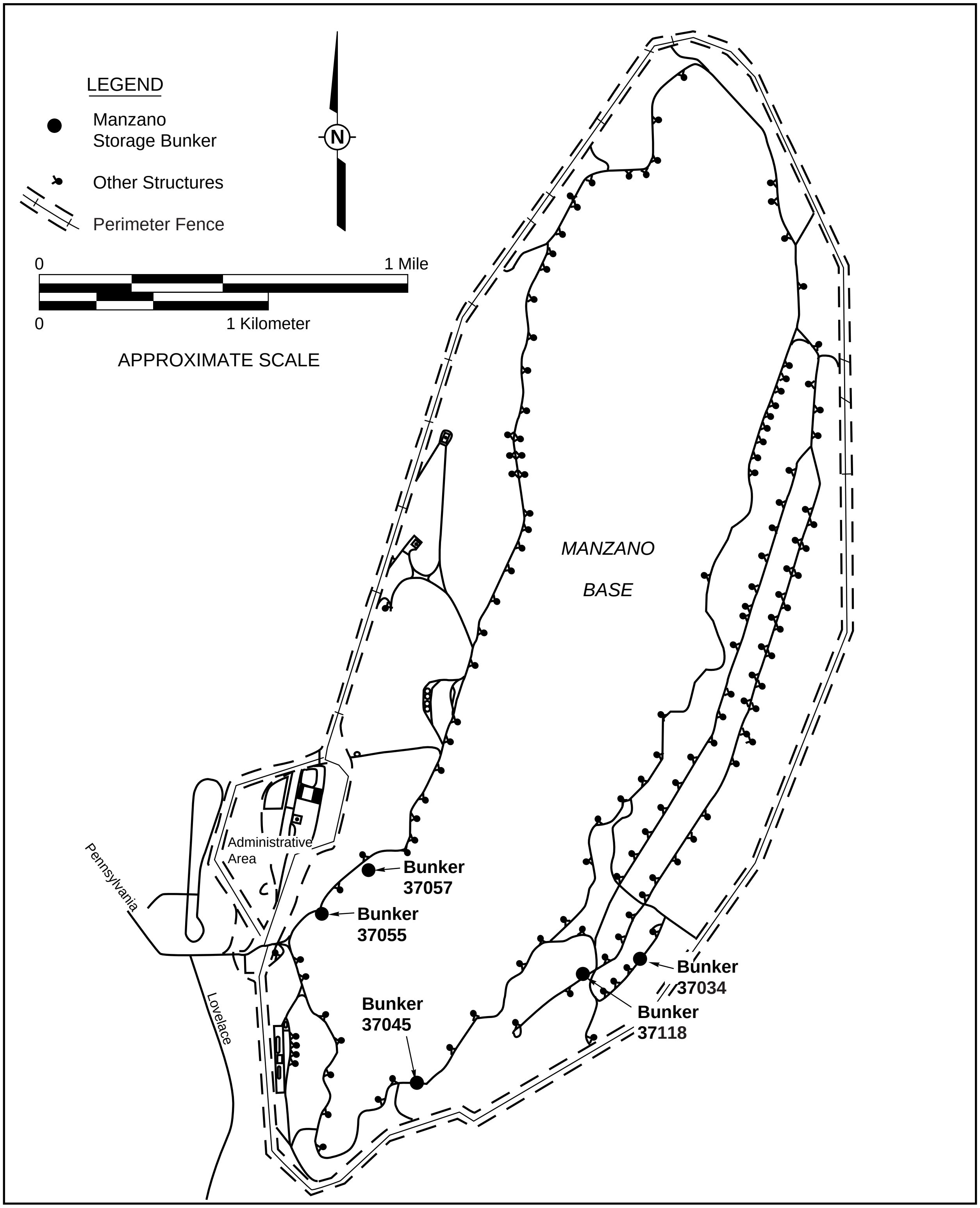


Figure 2

Location of the Manzano Storage Bunkers at Manzano Base

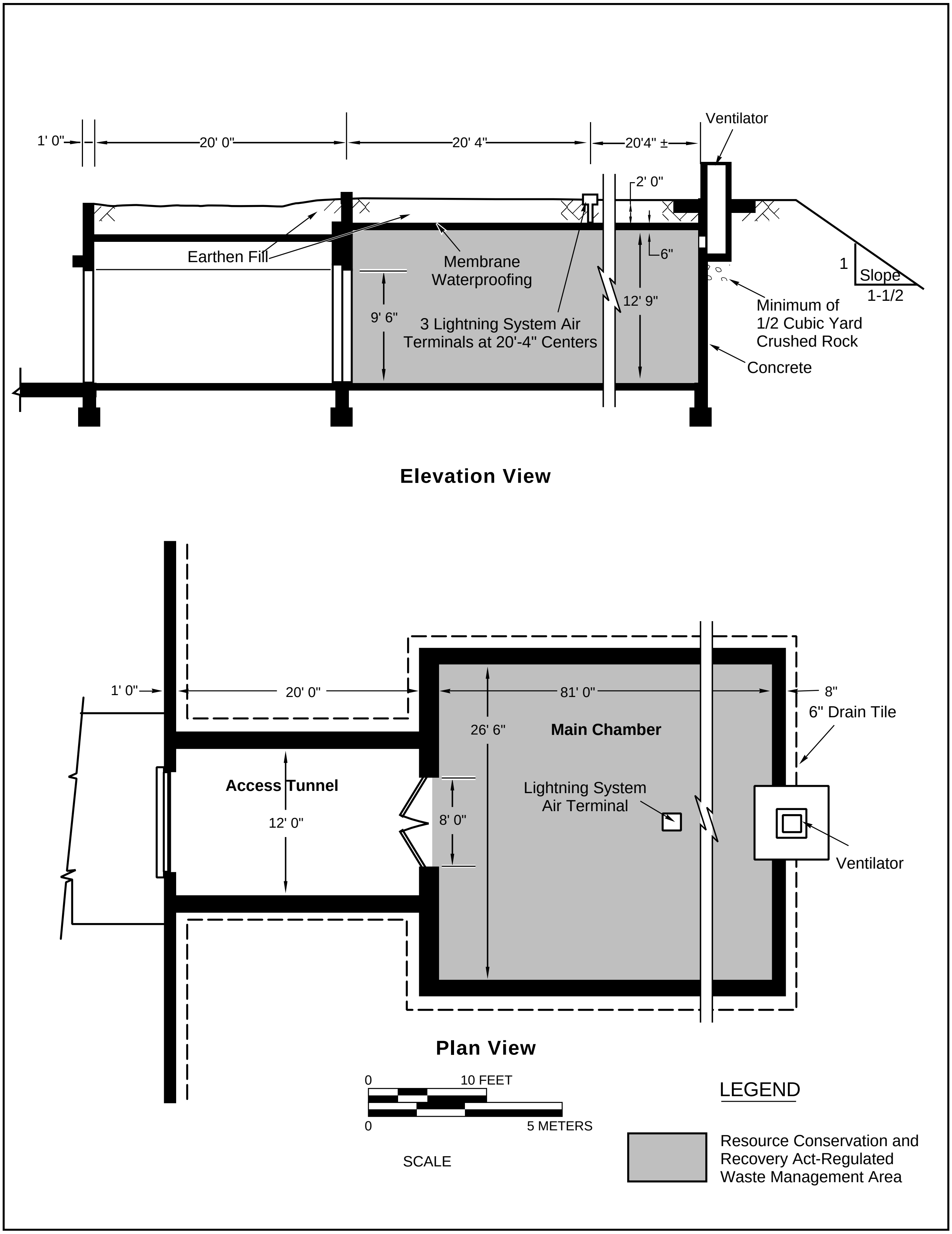


Figure 3
Manzano Storage Bunker, Type B,
Bunker 37034

774470.14000000 A101

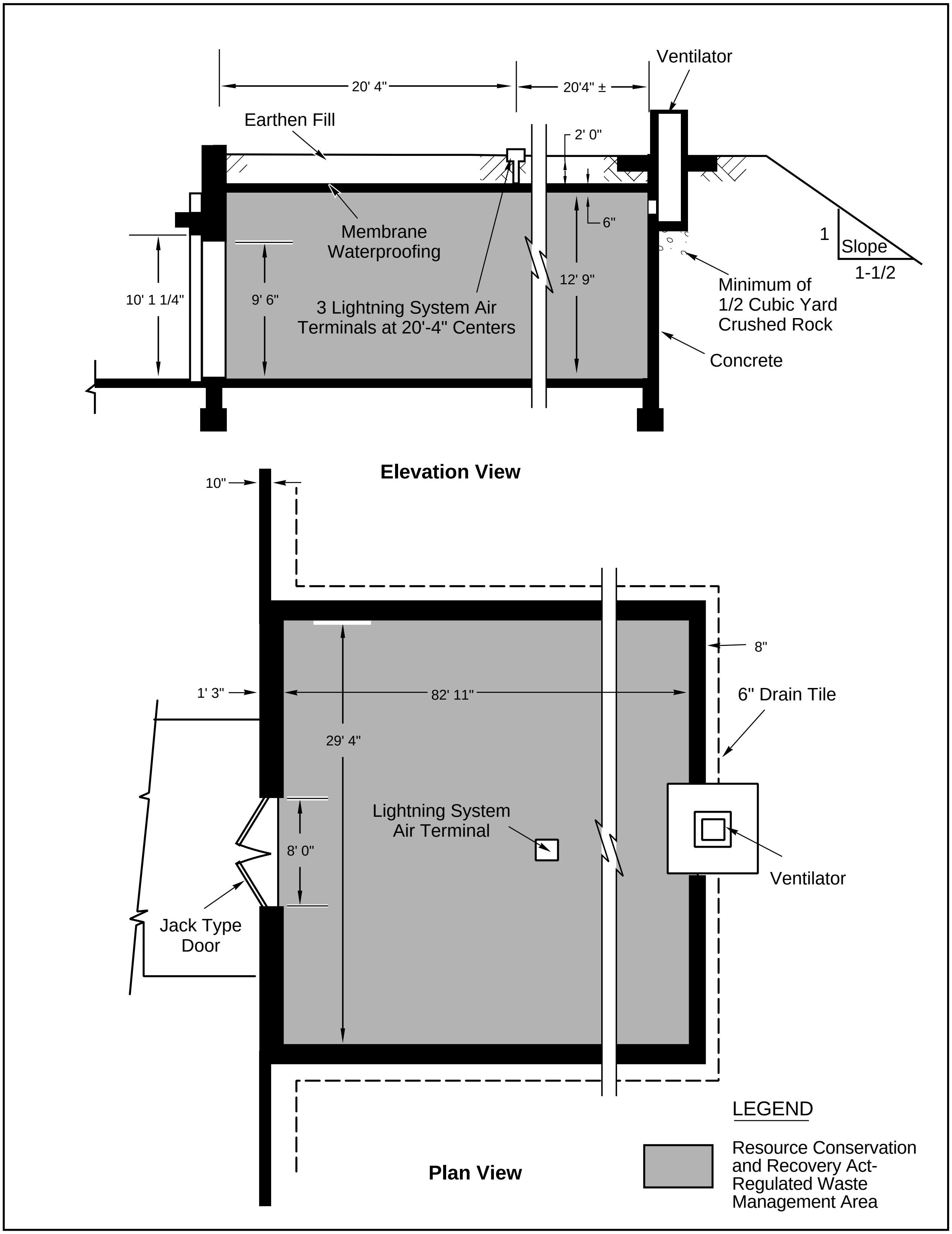


Figure 4
Manzano Storage Bunker, Type C, Bunker 37118

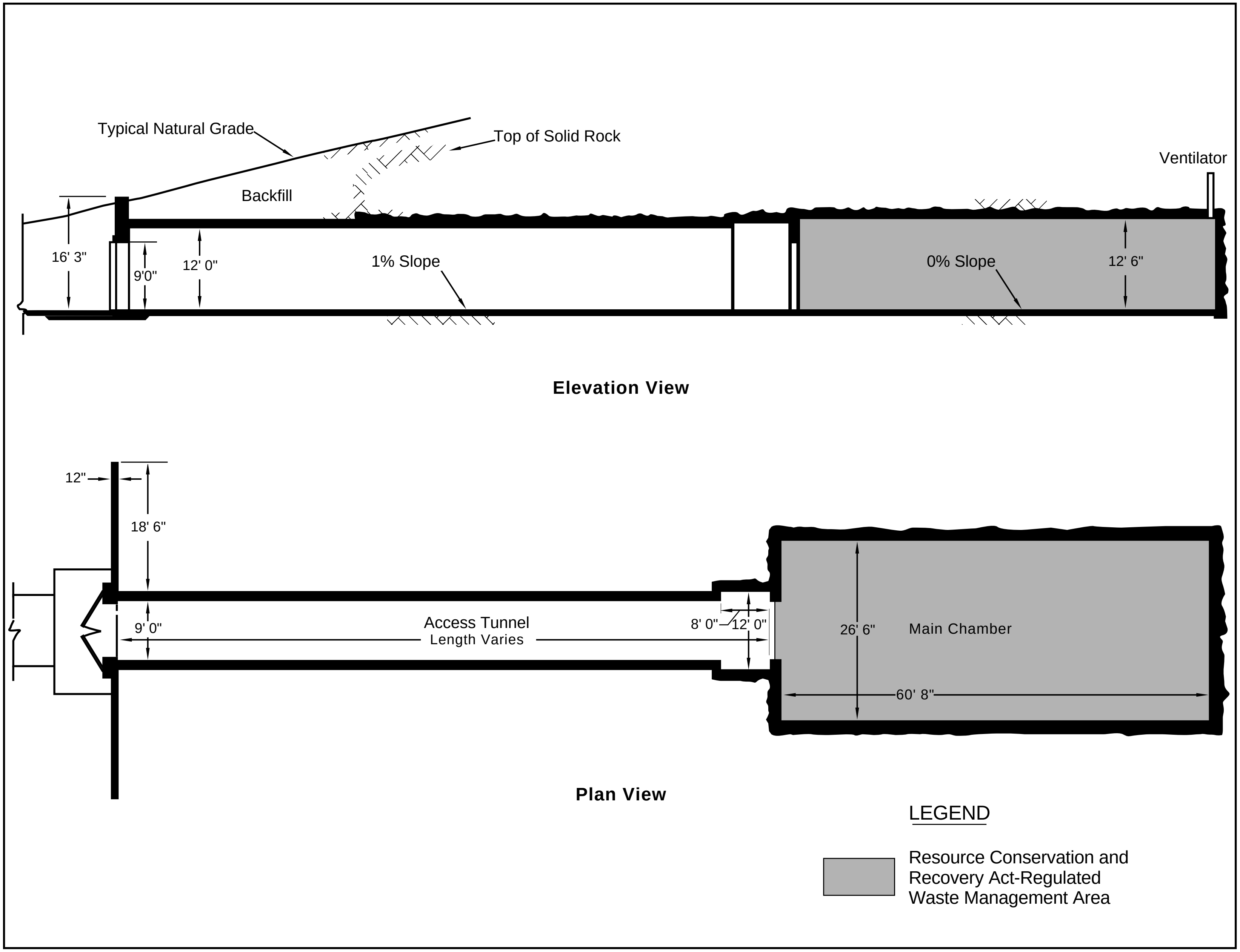


Figure 5
Manzano Storage Bunkers, Type D
Bunkers 37045, 37055, and 37057

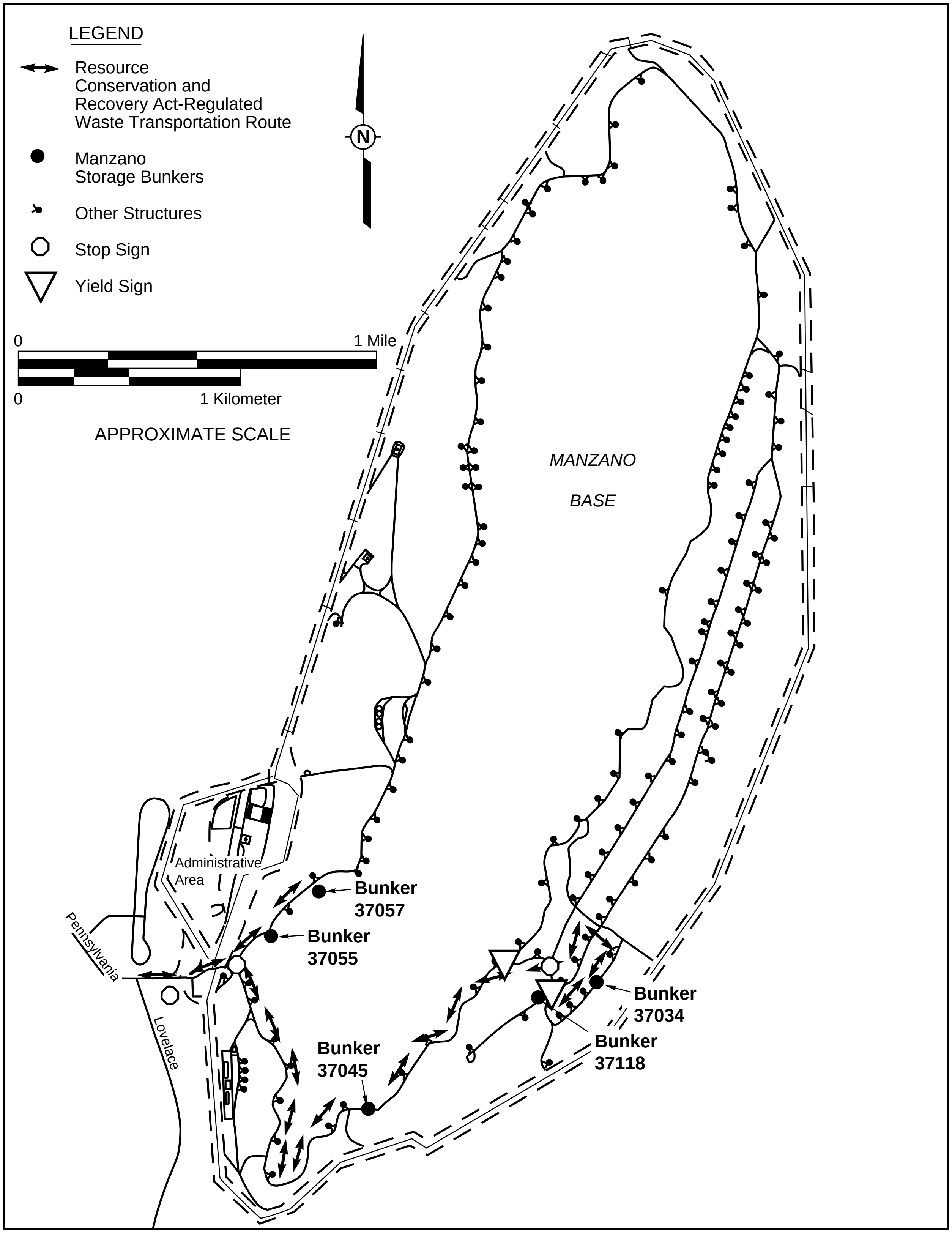
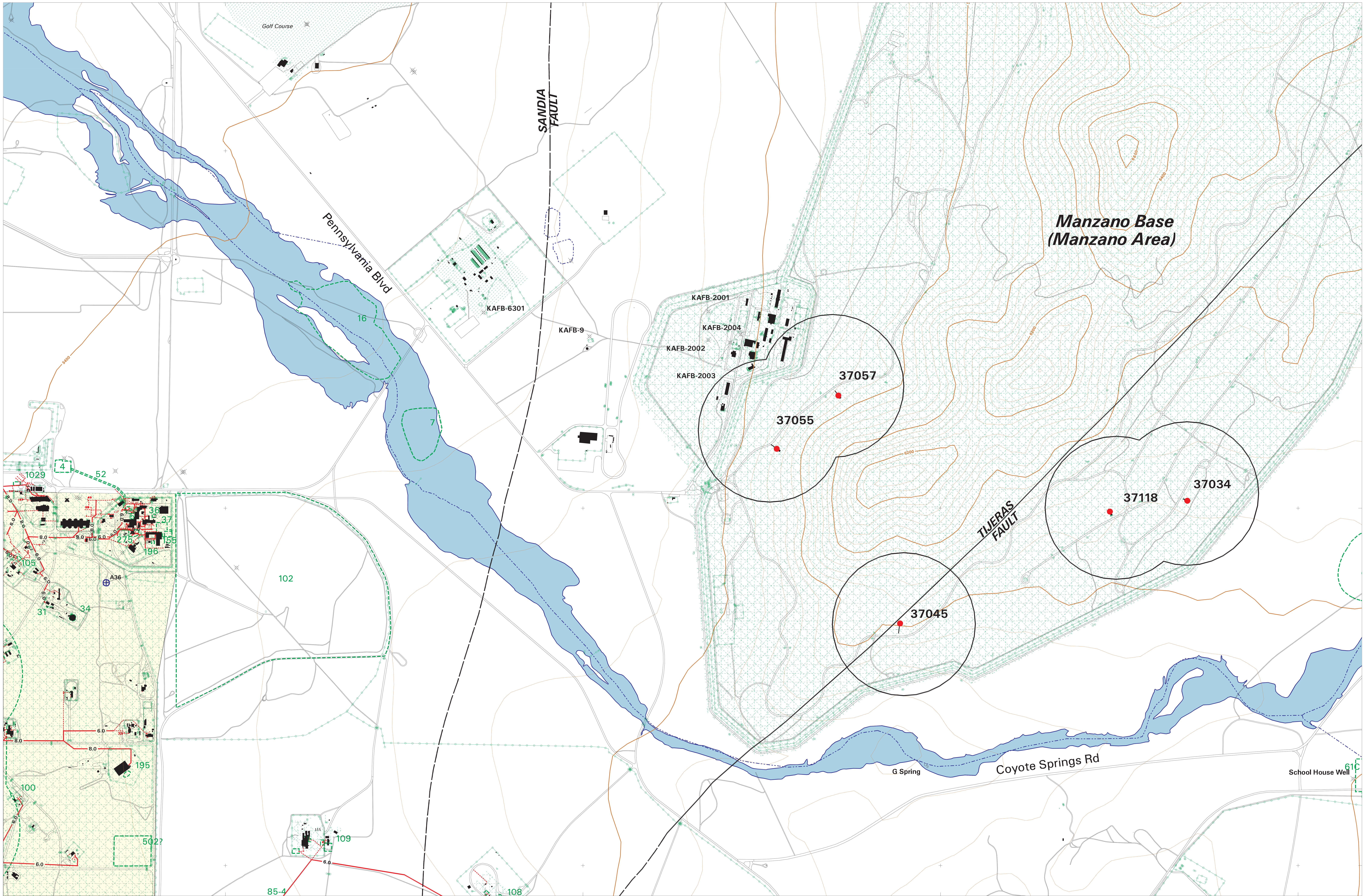


Figure 6

Manzano Storage Bunkers, Traffic Routes and Controls

774470.14000000 A104



Legend

Wells and Water Features

- Vapor Monitoring Well
- Monitoring Well
- Observation Well
- Production Well
- Production Well (Potable)
- Production Well (Out of Commission)
- Production Well (Abandoned)
- Production Well (Non-Potable)
- Plugged and Abandoned Well
- Spring
- Unknown Water Feature

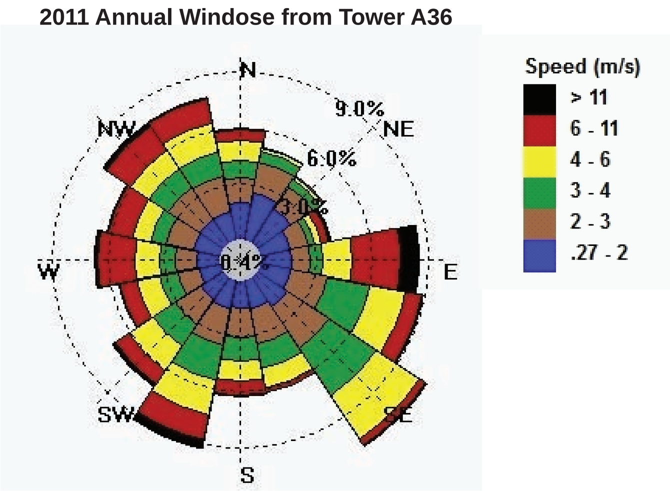
- Meteorological Tower
- Buildings and Concrete Pads
- Contours (40 Ft)
- Road (all types)
- Fence
- Surface Drainage
- Sanitary Sewer Main (active)
- Sanitary Sewer Service (active and inactive)
- Solid Waste Management Unit

- Sandia National Laboraotories Technical Area
- 100 Year Flood Plain Boundary
- Manzano Storage Bunkers (MSB)
- 1000 Foot Buffer Around Manzano Storage Bunkers

Land Use

- Industrial
- Recreational
- Undefined

2011 Annual Windose from Tower A36



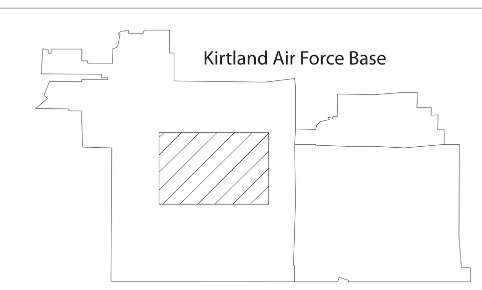
Note: The wind direction is the direction from which the wind is blowing. This diagram shows the frequency of occurrence for each wind direction and speed. The color indicates the wind speed.

0 500 1000
Scale in Feet

0 120 240
Scale in Meters

0 0.12 0.24
Scale in Kilometers

0 0.095 0.189
Scale in Miles



Sandia National Laboratories, New Mexico
Environmental Restoration Geographic Information System

Figure 7
Topographic Map
Manzano Storage Bunkers
37034, 37045, 37055, 37057 and 37118
April 2012
Sandia National Laboratories
New Mexico

Compiled by photogrammetric methods from aerial photography dated March 1989, March 1990, September 1991 and July 1992

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum

		MAPID=120108
Unclassified		SNL EGIS ORG. 4142
D Helfrich	dh120108.aml	04/19/12

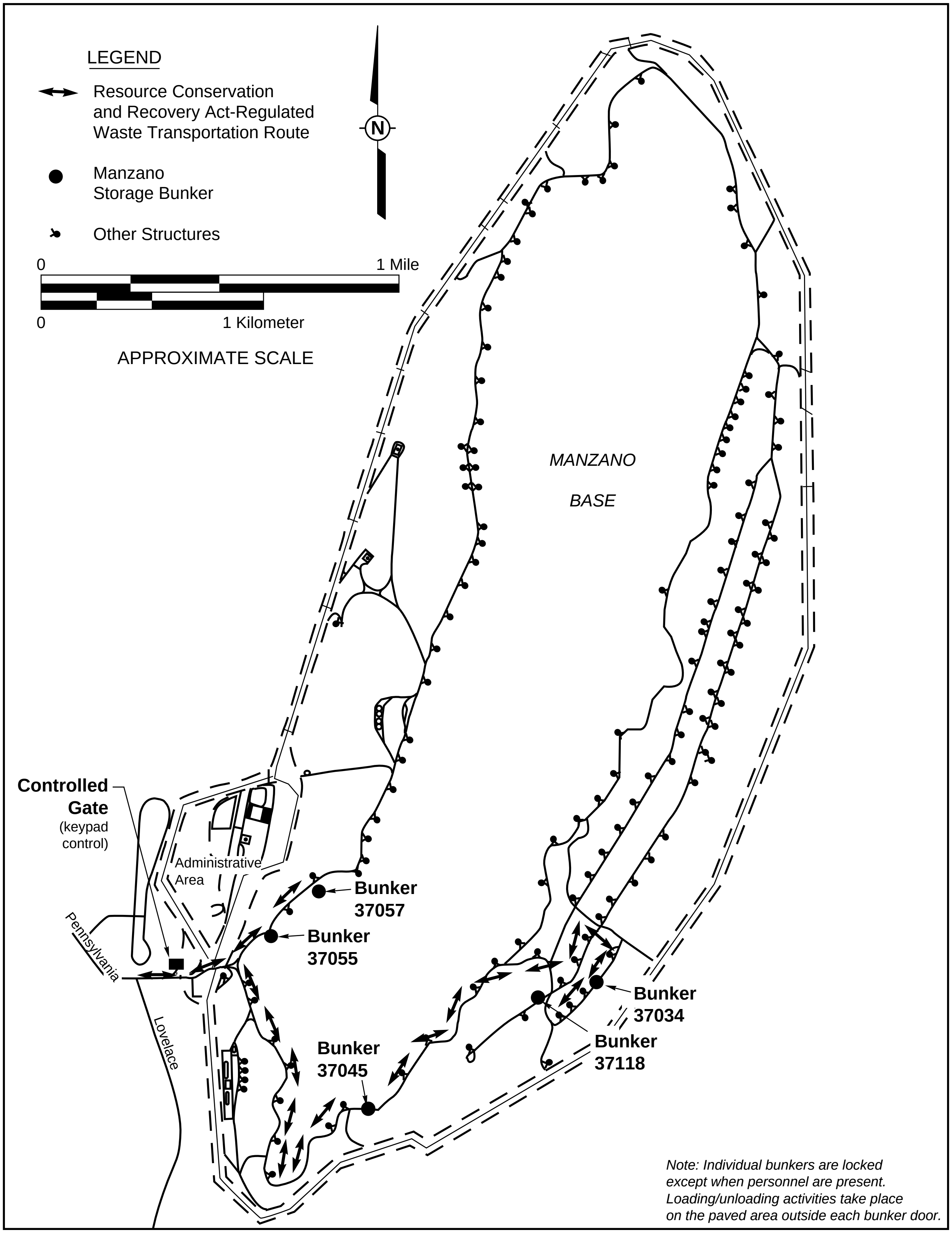


Figure 8

Manzano Storage Bunkers, Access Control Features

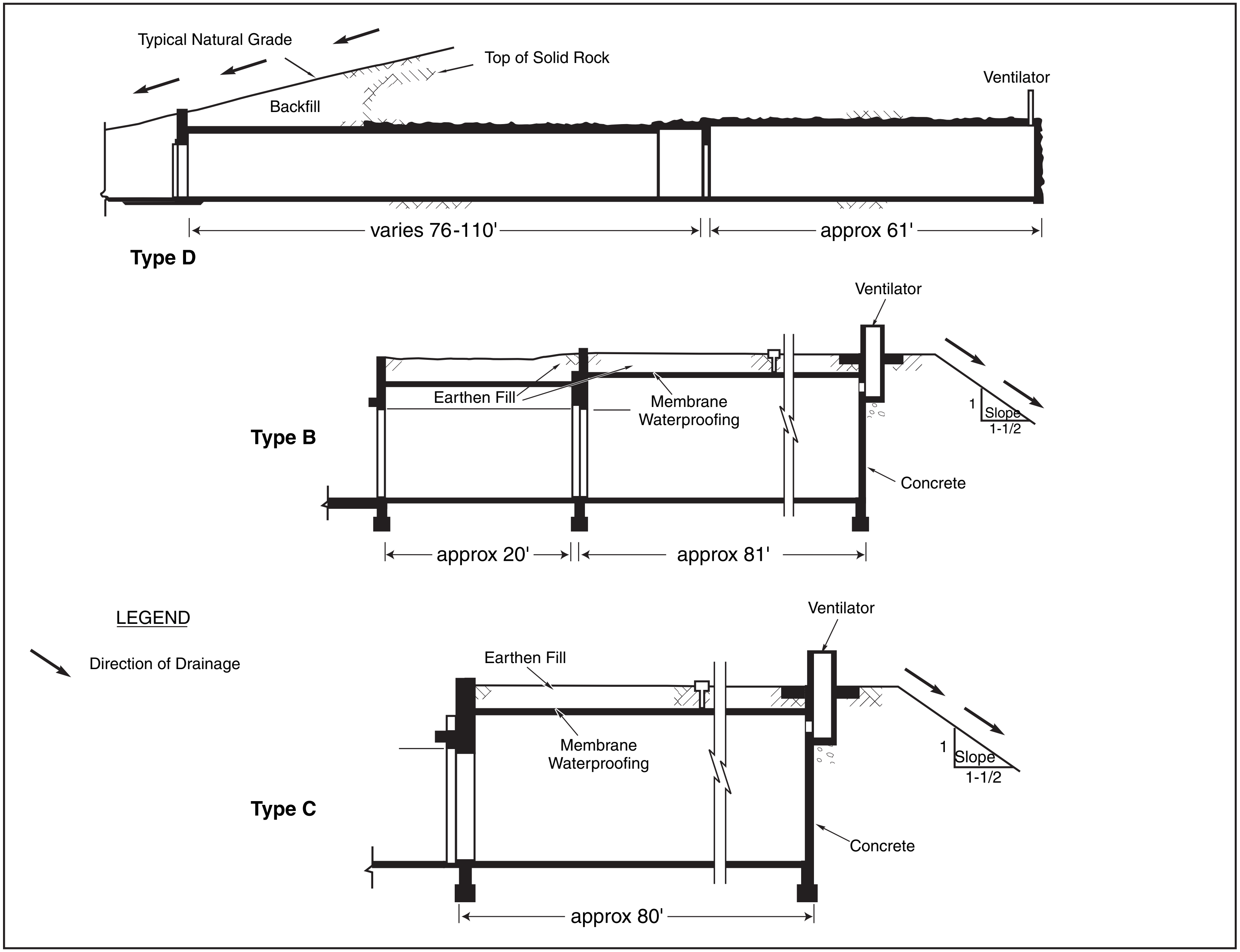


Figure 9
Manzano Storage Bunkers, Drainage Control Features

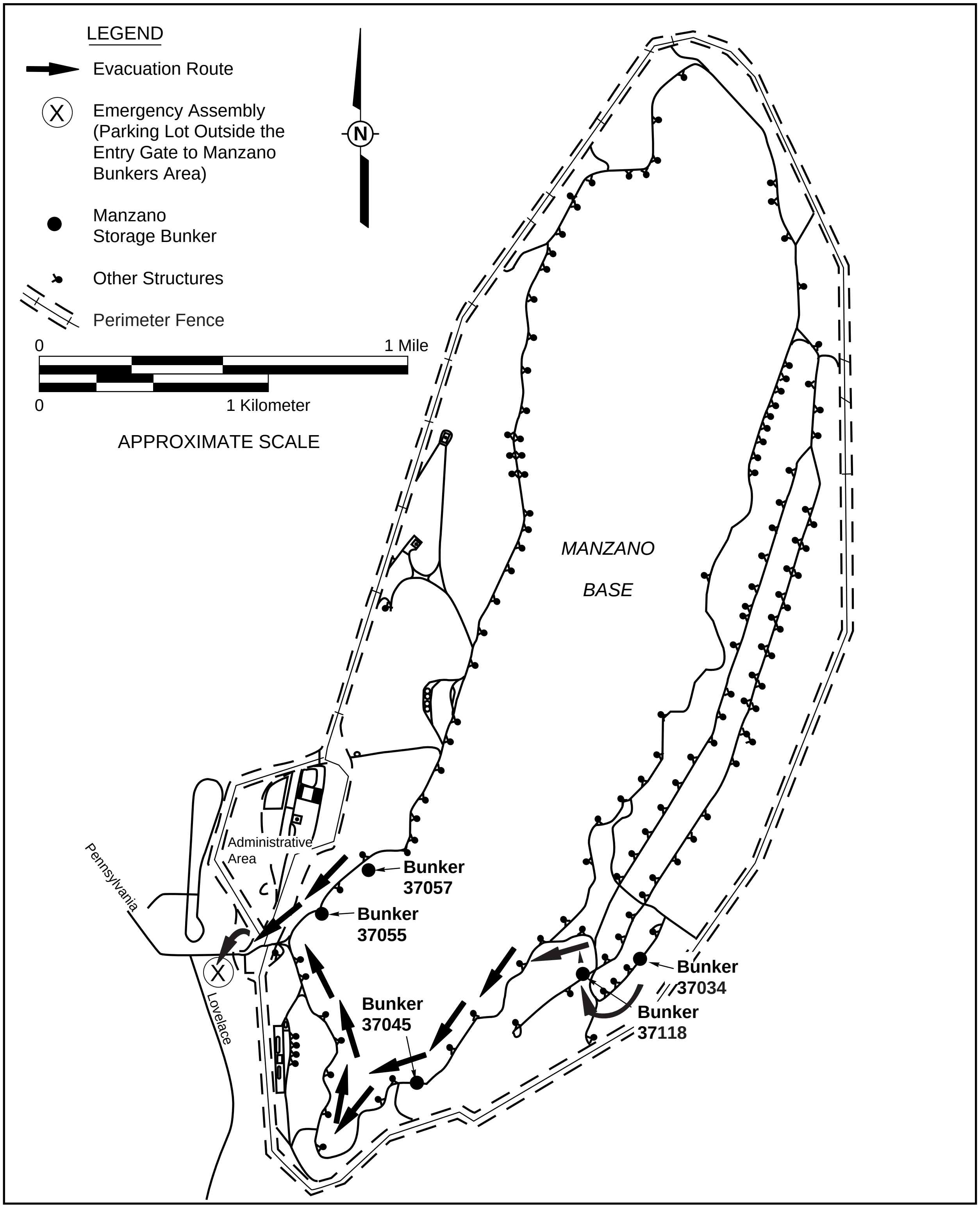


Figure 10

Manzano Storage Bunkers, Evacuation Routes

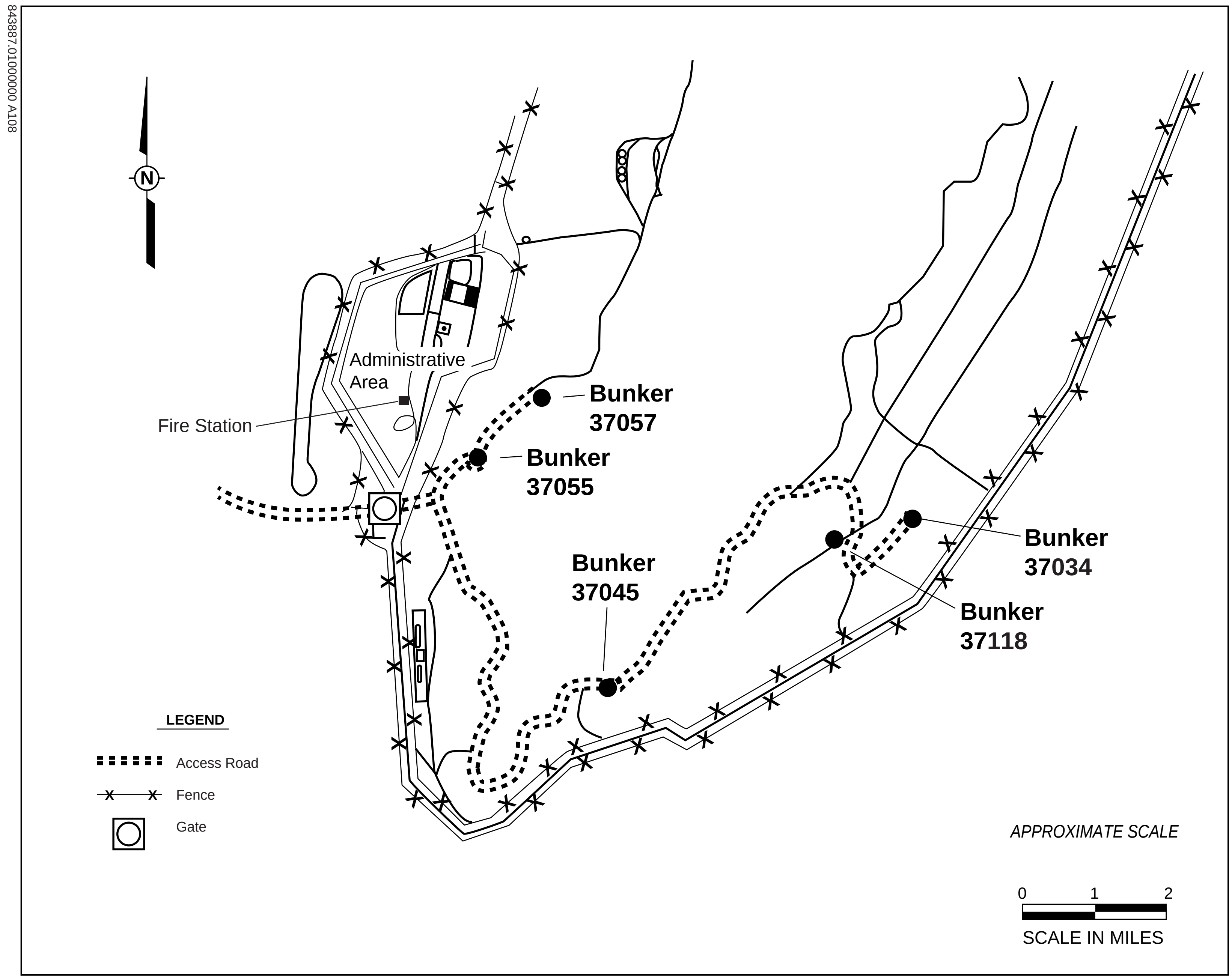
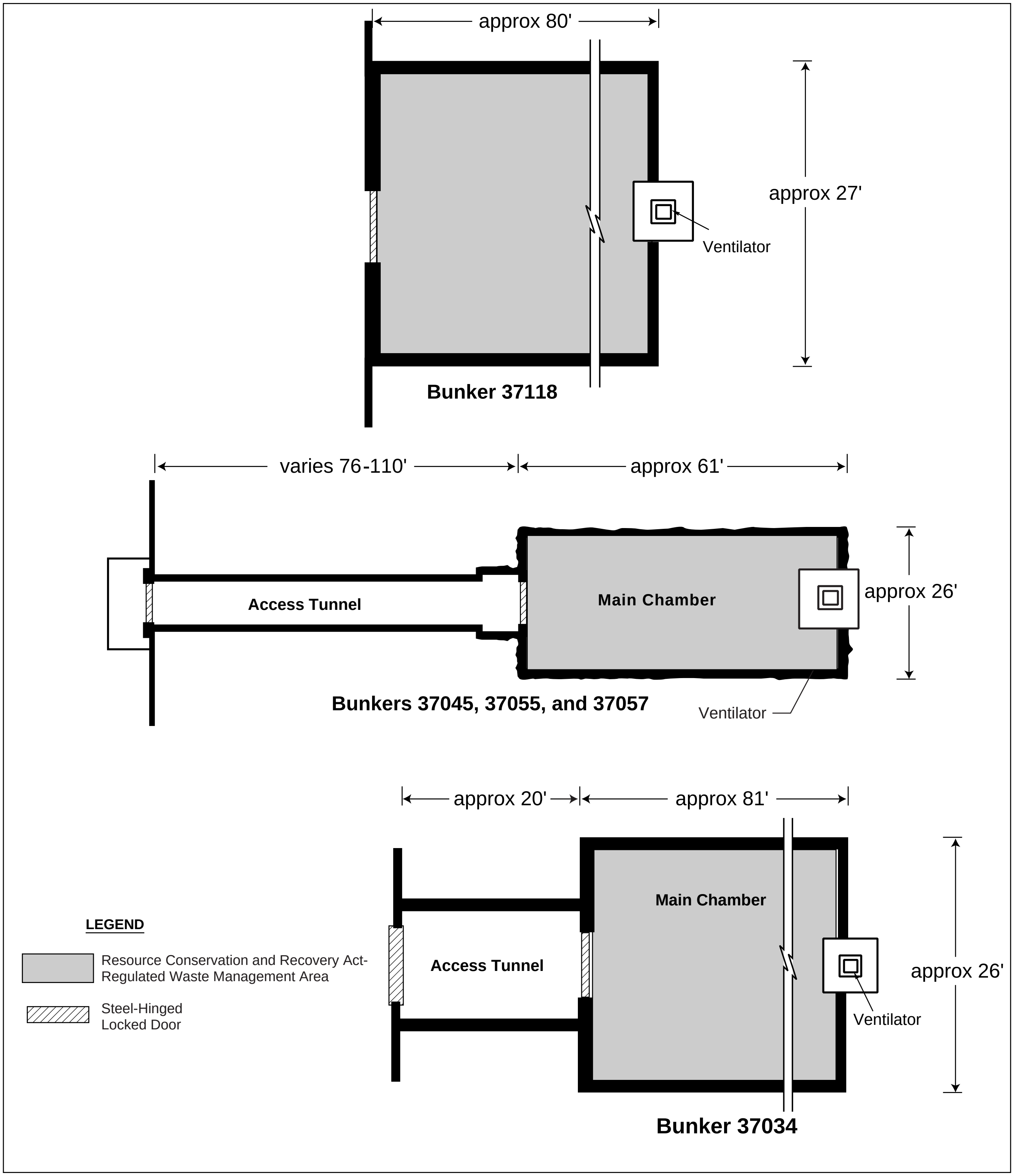


Figure 11

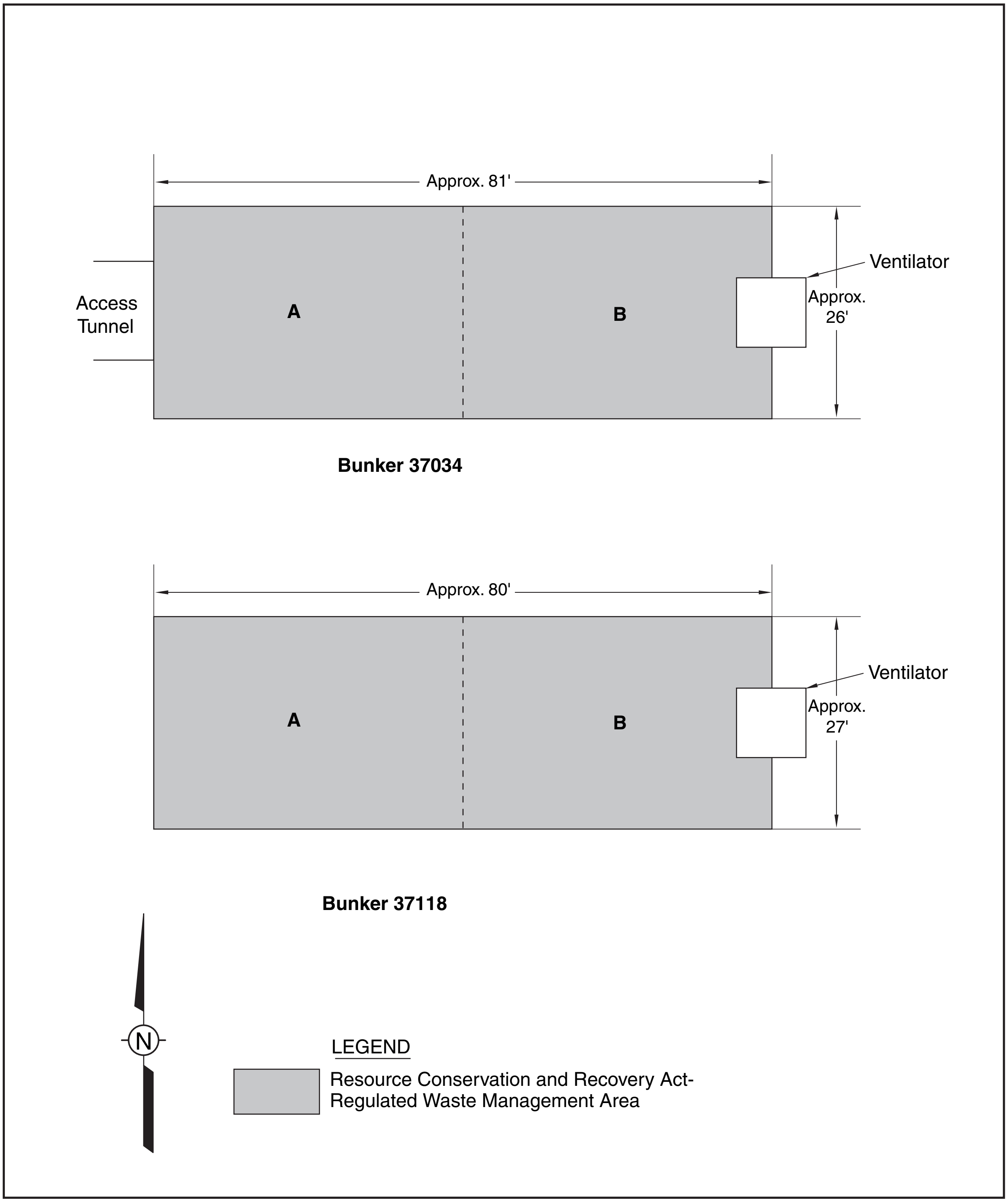
Emergency Response and Access Information in the Vicinity of the Manzano Storage Bunkers



843887.01000000 A109

Figure 12

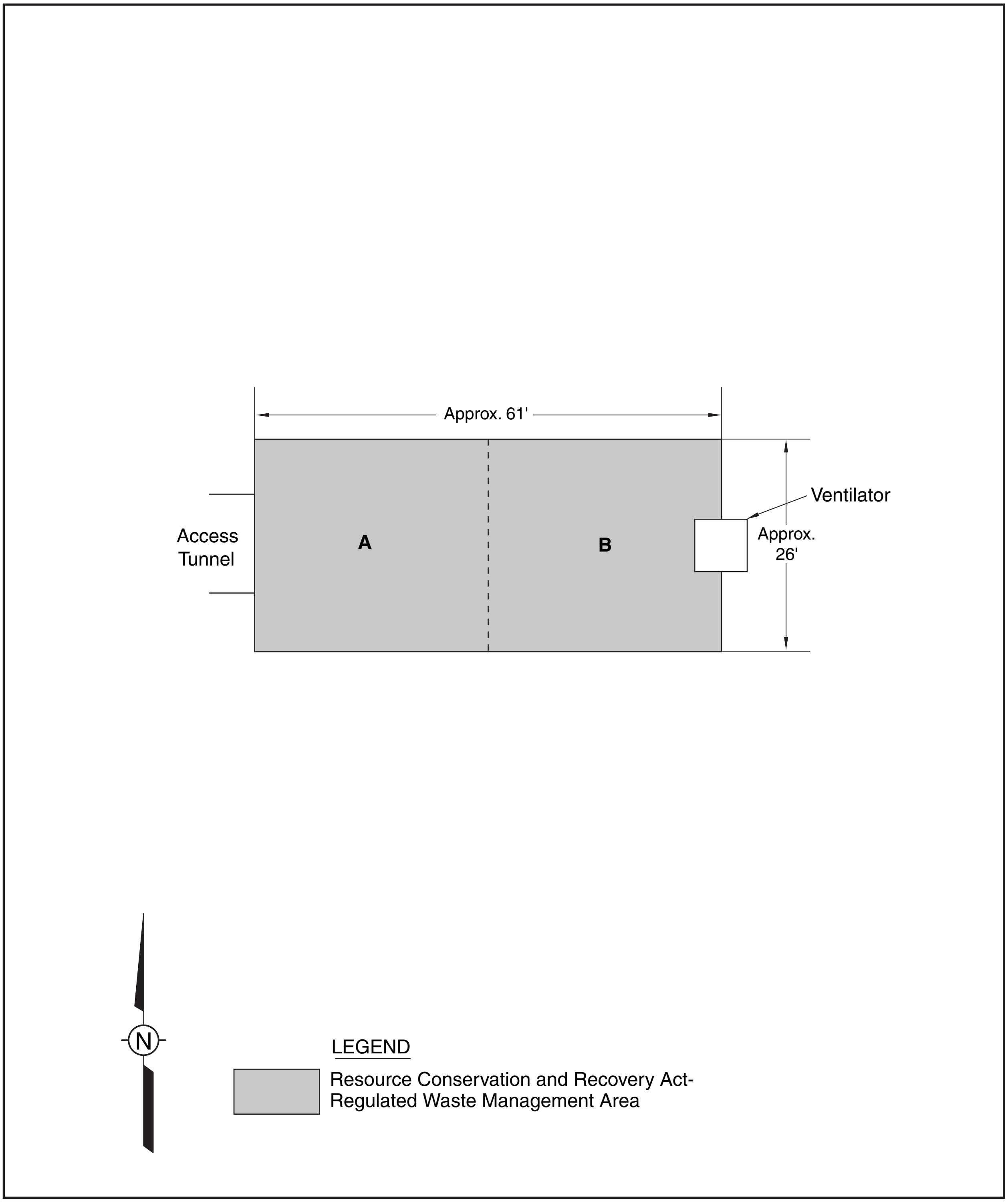
Emergency Response and Access Information at the Manzano Storage Bunkers



843887.01000000 A136

Figure 13

Manzano Storage Bunkers 37034 and 37118
Closure Grid



843887.01000000 A137

Figure 14

Manzano Storage Bunkers 37045, 37055, and 37057 Closure Grid

Volume II
Table of Contents

Table of Contents (Continued)

Part 5—Corrective Action Management Unit

PART 3

GROUNDWATER INFORMATION
REGULATED UNITS

This part addresses information required by 20 NMAC 4.1.900/40 CFR 270.14(c), "Additional information requirements." This provision requires additional information related to protection of groundwater for facilities containing a regulated unit. A regulated unit, defined in 20 NMAC 4.1.500/40 CFR 264.90(a)(2), is a surface impoundment, waste pile, and land treatment unit or landfill that received hazardous waste after July 26, 1982.

Using this definition, the Chemical Waste Landfill (CWL) qualifies as a regulated unit. The CWL is located in the southeastern corner of Technical Area (TA) III at Sandia National Laboratories in New Mexico (SNL/NM). Disposal activities at the CWL were conducted from 1962 until 1985. Separate, shallow, unlined pits were used for the disposal of a variety of hazardous wastes.

The CWL qualified for interim status under 20 NMAC 4.1.900/40 CFR 270.70 and was closed under interim status. The New Mexico Environment Department (NMED) approved final closure on June 2, 2011.

The CWL is undergoing post-closure care under a separate Post-Closure Care Permit (PCCP) issued by the NMED in October 2009. The PCCP took effect June 2, 2011, upon NMED approval of the closure of the landfill.

Protection of groundwater is addressed in the PCCP. The information requirements of 20 NMAC 4.1.900/40 CFR 270.14(c) were addressed during closure of the CWL and application for the post-closure care permit. The CWL is not addressed further in this Comprehensive Part B Permit Request.

REFERENCE

New Mexico Environment Department, October 2009. Hazardous Waste Permit NM5890110518, issued to United States Department of Energy and Sandia Corporation for Sandia National Laboratories, New Mexico Environment Department, Santa Fe, New Mexico.

PART 4

INFORMATION REQUIREMENTS
SOLID WASTE MANAGEMENT UNITS

This part addresses 20 NMAC 4.1.900, 40 CFR 270.14(d), *Information Requirements for Solid Waste Management Units*. This provision requires the following information for each solid waste management unit (SWMU) at the facility:

- The location of each unit on a topographic map,
- Designation of the type of unit,
- General dimensions and structural description,
- When the unit was operated,
- Specification of wastes that have been managed at the unit, to the extent available,
- Available information pertaining to any release of hazardous waste or hazardous constituents, and
- Results of sampling and analysis of groundwater, land surface, and subsurface strata, surface water, or air.

The required information has been provided for each SWMU and for each area of concern (AOC) which the New Mexico Environment Department (NMED) has determined qualifies to be on the permit. This information has been provided in separate documents that are not reproduced here.

Corrective action for releases from SWMUs was addressed under the terms of Module IV of Permit NM5890110518. In April 2004, the Compliance Order on Consent (the Order) became effective between the DOE, Sandia, and the NMED. Corrective action for the SWMUs presented in this Part is conducted under the Order.

DOE and Sandia have completed corrective action at 32 of the SWMUs and AOCs included in this Part, and have submitted three requests for Class 3 modifications to Module IV of Permit NM5890110518. In each permit modification request, DOE and Sandia request that NMED include the SWMU or AOC on Table A.2 “List of Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) Not Currently Requiring Corrective Action.” In conjunction with each request, DOE and Sandia prepared a summary of information relevant to each SWMU or AOC under consideration and provided the summary to NMED. These summaries, called Justification Binders, contain the information in the list above.

Table 1 lists the 32 SWMUs and AOCs that are included in the requests for permit modifications. The Justification Binder for each SWMU and AOC is listed in the table.

Separate site summaries are included in this Part for four SWMUs and three groundwater AOCs that are not included in Table 1.

Figure 1 shows the location of each SWMU and AOC for which:

- corrective action is not complete, or
- NMED has not made a final decision regarding the permit modification requested by DOE and Sandia.

Table 1
Solid Waste Management Units and Areas of Concern Pending Final Decision by NMED

SWMU or AOC Number	SWMU or AOC Name	Justification Binder Date
4	LWDS Surface Impoundments	March 2006
5	LWDS Drainfield	March 2006
8	Open Dump (Coyote Canyon Blast Area)	January 2008 [a]
28-2	Mine Shafts	January 2008
46	Old Acid Waste Line Outfall (Southwest of TA-IV)	March 2006
49	Building 9820 Drains	March 2006
52	LWDS Holding Tanks	March 2006
58	Coyote Canyon Blast Area	January 2008 [a]
68	Old Burn Site	March 2006 [a]
91	Lead Firing Site (Thunder Range)	March 2006
101	Explosive Contaminated Sumps, Drains (Bldg. 9926)	March 2006
105	Mercury Spill, Bldg. 6536	January 2008
116	Building 9990 Septic System	March 2006
138	Bldg. 6630 Septic System	March 2006
140	Bldg. 9965 Septic System (Thunder Range)	March 2006
147	Bldg. 9925 Septic Systems	March 2006
149	Bldg. 9930 Septic System	March 2006 [a]
150	Bldg. 9939/9939A Septic Systems	March 2006
154	Bldg. 9960 Septic Systems	March 2006 [a]
161	Bldg. 6636 Septic System	March 2006
196	Bldg. 6597 Cistern (TA-V)	March 2006
233	Storm Drain System Outfall (South side of TA-IV)	March 2006
234	Storm Drain System Outfall (South side of TA-IV)	March 2006
1090	Building 6721 Septic System (TA-III)	March 2006
1094	Live Fire Range East Septic System, Lurance Canyon	March 2006
1095	Building 9938 Seepage Pit, Coyote Test Field	March 2006
1101	Building 885 Septic System, TA-I	January 2008
1114	Building 9978 Drywell (Coyote Test Field)	March 2006
1115	Former Offices Septic System (Solar Tower Complex)	March 2006
1116	Building 9981A Seepage Pit (Solar Tower Complex)	March 2006
1117	Building 9982 Drywell (Solar Tower Complex)	March 2006
LTES 1	Cable Debris Site	March 2012

a In April 2010, NMED requested additional groundwater information at these SWMUs. DOE and Sandia are currently obtaining the information and will provide it to NMED.

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SWMU 76: MIXED WASTE LANDFILL

Site Description

The Mixed Waste Landfill (MWL) is located approximately 5 miles southeast of Albuquerque International Sunport, and 4 miles south of Technical Area (TA) I, in the north-central portion of TA-III. The MWL disposal area comprises 2.6 acres and accepted low-level radioactive waste and minor amounts of mixed waste from March 1959 to December 1988. The site now encompasses 4.1 acres based on the extent of the evapotranspirative (ET) cover with biointrusion layer that was installed in 2009.

Corrective Action

The MWL is undergoing corrective action in accordance with:

- New Mexico Secretary of the Environment Final Order No. HWB 04-11(M) in the matter of request for a Class 3 Permit Modification for Corrective Measures for the Mixed Waste Landfill No. HWB 04-11(M) (Final Order) and the Compliance

- Compliance Order on Consent (the Order) between the DOE, Sandia, and the NMED, which became effective April 2004.

A Phase 1 RCRA Facility Investigation (RFI) was conducted from 1989 to 1990 and an extensive Phase 2 RFI was completed in 1995. Tritium was identified as the contaminant of primary concern. A groundwater monitoring network was established and groundwater monitoring began in 1990. The Phase 2 RFI Report was submitted to the New Mexico Environment Department (NMED) and the EPA in September 1996. The NMED responded to the Phase 2 RFI Report with technical comments that were addressed by DOE and Sandia in June 1998 and January 1999. A detailed MWL waste inventory, by pit and trench, was provided in the DOE/Sandia responses (SNL/NM June 1998).

The DOE and Sandia were directed to conduct a Corrective Measures Study (CMS) by the NMED in October 2001. The MWL CMS Report, which identified and evaluated corrective measures alternatives for the MWL, was submitted to the NMED in May 2003. The NMED held a public comment period from August 11, 2004 to December 9, 2004 and a public hearing in December 2004. On May 26, 2005, the Secretary of the NMED selected a vegetative soil cover (i.e., an ET cover) with a biointrusion barrier as the final remedy for the MWL. The Secretary requested that a Corrective Measures Implementation Plan (CMIP) incorporating the final remedy be developed within 180 days. The NMED also required that a fate and transport modeling effort and specific monitoring trigger levels be included in the CMIP.

The CMIP was submitted to the NMED in November 2005. The CMIP was conditionally approved by the NMED in December 2008 after DOE/Sandia addressed comments issued by the NMED in November 2006 and October 2008. As part of the comment resolution process, a soil-vapor survey was conducted in the spring of 2008. A final report was submitted to the NMED in August 2008 and approved by the NMED in September 2008.

The MWL ET cover was installed from May through September 2009 and is documented in the MWL Corrective Measure Implementation Report (CMIR) submitted to the NMED in January 2010. After a public comment period, public meeting, and the resolution of NMED comments, the CMIR was approved by the NMED in December 2011. In accordance with the NMED CMIR approval letter and Final Order, DOE and Sandia submitted the revised MWL Long-Term Monitoring and Maintenance Plan (LTMMP) to NMED in March 2012. In 2007 an earlier version of the MWL LTMMP was submitted to NMED; DOE and Sandia withdrew this 2007 document in December 2011.

Groundwater monitoring and reporting to NMED has been conducted at the MWL since 1990. In 2008, four of the original groundwater monitoring wells were decommissioned and four new monitoring wells were installed. The current monitoring well network consists of seven wells, including the four wells installed in 2008. All wells are currently sampled annually for volatile organic compounds, metals, uranium, anions (as bromide, chloride, fluoride, and sulfate), total alkalinity, nitrate plus nitrite, gamma spectroscopy, gross alpha/beta activity, and tritium. Groundwater monitoring is ongoing and will continue for the foreseeable future.

Long-Term Monitoring and Stewardship

The revised LTMMP addresses a comprehensive monitoring, inspection, and maintenance program for the MWL. The monitoring program includes sampling the air, surface soil, subsurface soil vapor and moisture (in the vadose zone), biota, and groundwater on a routine basis, as well as monitoring trigger levels and a trigger evaluation process. The inspection and maintenance program details requirements for the ET cover, site drainage features, and monitoring networks. Requirements for annual reporting of monitoring, inspection, and maintenance activities/results, as well as a review every 5 years of the effectiveness of the ET cover based upon a review of site monitoring and inspection results, is also detailed in the LTMMP. The long term monitoring, inspections, and reporting are designed to ensure that the ET Cover and site conditions remain protective of human health and the environment.

Constituents Investigated

Investigations have included volatile and semivolatile organic compounds, metals including uranium, and radionuclides. Tritium is the contaminant of primary concern at the MWL.

Documentation

Sandia National Laboratories/New Mexico (SNL/NM), September 1990. *Report of the Phase 1 RCRA Facility Investigation of the Mixed Waste Landfill*, Environmental Impact and Restoration Division, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), September 1996. *Report of the Mixed Waste Landfill Phase 2 RCRA Facility Investigation, Sandia National Laboratories, Albuquerque, New Mexico*, Environmental Restoration Project, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), June 1998. *Responses to NMED Technical Comments on the Report of the Mixed Waste Landfill Phase 2 RCRA Facility Investigation Dated September 1996*, Volumes 1 and 2, Environmental Restoration Project, Sandia National Laboratories, Albuquerque, New Mexico. June 15, 1998.

Sandia National Laboratories/New Mexico (SNL/NM), May 2003. *Mixed Waste Landfill Corrective Measures Study Final Report, Sandia National Laboratories/New Mexico*, Environmental Restoration Project, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), November 2005. *Mixed Waste Landfill Corrective Measures Implementation Plan*, Environmental Restoration Project, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), August 2008. "*Investigation Report on the Soil-Vapor Volatile Organic Compounds, Tritium, and Radon Sampling at the Mixed Waste Landfill*, Environmental Restoration Project, Sandia National Laboratories, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), January 2010, Revision 1. *Mixed Waste Landfill Corrective Measures Implementation Report*, Environmental Restoration Project, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), October 2010. *Mixed Waste Landfill Toluene Investigation Report*, Environmental Restoration Project, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), March 2012. *Mixed Waste Landfill Long-Term Monitoring and Maintenance Plan*, Environmental Restoration Operations, Sandia National Laboratories, Albuquerque, New Mexico.

<u>Annual and Quarterly Groundwater Reports</u>

Goering, T.J., G.M. Haggerty, D. Van Hart, and J.L. Peace, December 2002. *Mixed Waste Landfill Groundwater Report, 1990 through 2001, Sandia National Laboratories, Albuquerque, New Mexico*, SAND2002-4098, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), January 2002. *Mixed Waste Landfill Quarterly Groundwater Monitoring Report, MWL-MW4, MWL-MW5 and MWL-MW6, January 2002*, Environmental Restoration Project, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), April 2002. *Mixed Waste Landfill Annual Groundwater Monitoring Report, April 2002*, Environmental Restoration Project, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), July 2002. *Mixed Waste Landfill Quarterly Groundwater Monitoring Report, MWL-MW5 and MWL-MW6, July 2002*, Environmental Restoration Project, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), October 2002. *Mixed Waste Landfill Quarterly Groundwater Monitoring Report, MWL-MW5 and MWL-MW6, October 2002*, Environmental Restoration Project, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), April 2003. *Mixed Waste Landfill Annual Groundwater Monitoring Report, April 2003*, Environmental Restoration Project, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), September 2003. *Mixed Waste Landfill Annual Groundwater Monitoring Report, April 2003, Addendum – Cadmium Verification Sampling, September 2003*, Environmental Restoration Project, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), April 2004. *Mixed Waste Landfill Annual Groundwater Monitoring Report, April 2004*, Environmental Restoration Project, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), November 2006. *Mixed Waste Landfill Annual Groundwater Monitoring Report, April 2006 Sampling Event, Sandia National Laboratories/New Mexico*, Environmental Restoration Project, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), January 2008. *Mixed Waste Landfill Annual Groundwater Monitoring Report, Spring 2007 Sampling Event*, Environmental Restoration Project, Sandia National Laboratories, New Mexico.

Sandia National Laboratories, New Mexico (SNL/NM), May 2009. *Mixed Waste Landfill Annual Groundwater Monitoring Report Calendar Year 2008*, Environmental Restoration Project, Sandia National Laboratories, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), June 2010. *Mixed Waste Landfill Annual Groundwater Monitoring Report, Calendar Year 2009*, Environmental Restoration Project, Sandia National Laboratories, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), September 2011. *Mixed Waste Landfill Groundwater Monitoring Report, Calendar Year 2010*, Environmental Restoration Project, Sandia National Laboratories, Albuquerque, New Mexico.

SWMU 83: LONG SLED TRACK (TA-3)

Site Description

The Long Sled Track is located in the western part of Technical Area III. The first 5,000-ft of the Long Sled Track was built in 1966. In 1985, another 5,000 ft of track was added on to the north end of the existing 5,000 ft for a total of 10,000-ft of sled track. The track is utilized for testing performance of rocket motors and for testing performance of various items in flight and upon impact. It is currently in use.

The Long Sled Track was identified as an Area of Concern during the 1987 SNL Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA). The site was designated ER Site 83 during the Comprehensive Environmental Assessment and Response Program (CEARP) Phase I Installation Assessment. The findings of the CEARP Assessment were uncertain, and further investigation was recommended.

Corrective Action

A radiation survey of the impact area at the south end of the sled track and surrounding areas was completed in 1994. Numerous localized anomalies (areas with radiation levels above background) were located; these were comprised mostly of depleted uranium (DU). Removal of all but one of the anomalies was completed in 1996 as part of the ER Project-Wide Surface Radiation Removal Voluntary Corrective Measure. The one anomaly remaining is a large soil area that is posted as a radiological area.

Further investigation and corrective action have been deferred until the Long Sled Track is decommissioned in the future. No schedule has been established for decommissioning the track.

Constituents Investigated

No investigations have been conducted. Constituents will be determined at the time of the RCRA Facility Investigation (RFI) after the Long Sled Track is decommissioned.

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SWMU 84: GUN FACILITIES (TA-3)

Site Description

The TA-III Gun Facilities at Sandia National Laboratories/New Mexico are located in the west-central portion of Technical Area-III, in and adjacent to Building 6750. The facilities consist of indoor and outdoor test ranges for small and large caliber guns, and other test facilities, including a pit and a concrete bunker. Building 6750 was originally constructed in 1965.

The Gun Facilities were included in the 1987 Comprehensive Environmental Assessment and Response Program (CEARP) Phase I Installation Assessment and were designated ER Site 84; the findings of the CEARP Assessment indicated that there were no hazardous wastes at the Gun Facilities that would be regulated under the Resource Conservation and Recovery Act (RCRA).

Further investigation and corrective action have been deferred until the Gun Facilities are decommissioned in the future. No schedule has been established for decommissioning the facilities.

Corrective Action

A geophysical survey of Site 84 and surrounding areas was conducted during 1994 and 1995; the survey indicated areas that will be included in future investigation.

A radiation survey of the gun facilities and surrounding areas was completed in 1994. Numerous localized anomalies (areas with radiation levels above background) were located. These were removed as part of the ER Project-Wide Surface Radiation Removal Voluntary Corrective Measure; this effort was completed in 1996.

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SWMU 240: SHORT SLED TRACK (TA-3)

Site Description

The 2,000-ft Short Sled Track is located in the central portion of Technical Area-III. It was built in 1951. The track is utilized for testing performance of rocket motors and for testing performance of various items in flight and upon impact. It is currently in use.

The Short Sled Track was identified as an Area of Concern during the 1987 Sandia National Laboratories Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA). The site was designated ER Site 240 during the Comprehensive Environmental Assessment and Response Program (CEARP) Phase I Installation Assessment. The findings of the CEARP Assessment were uncertain, and further investigation was recommended.

Corrective Action

A surface radiation survey of the impact area at the south end of the sled track and surrounding areas was completed in 1994. Numerous localized anomalies (areas with radiation levels above background) were located; these were comprised mostly of depleted uranium (DU). These were removed as part of the ER Project-Wide Surface Radiation Removal Voluntary Corrective Measure; this effort was completed in May 1996.

Surface soil samples were also collected and analyzed for select metals (beryllium, lead, lithium, mercury, niobium, and uranium), high explosives (HEs), and gamma spectroscopy. No HEs were detected above the method detection limits (MDLs) in any samples. Mercury was not detected above its MDL in any samples. Niobium and lithium were found in low concentrations. Lead was detected; concentrations in all samples were below the limits for residential exposure established by the New Mexico Environment Department (NMED, 2012)

Further investigation and corrective action have been deferred until the Short Sled Track is decommissioned in the future. No schedule has been established for decommissioning the track.

Constituents Investigated

Constituents for investigation and corrective action will be determined at the time of the RCRA Facility Investigation after the Short Sled Track is decommissioned.

References

NMED, *Risk Assessment Guidance for Site Investigation and Remediation*, New Mexico Environment Department, February 2012

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TIJERAS ARROYO GROUNDWATER

Site Description

In 1992, the Sandia National Laboratories/New Mexico (SNL/NM) ER Project began conducting groundwater studies at Technical Area-II (TA-II). The TA-II studies along with other Solid Waste Management Unit related investigations eventually were incorporated into the Tijeras Arroyo Groundwater (TAG) Investigation. In addition to work conducted by the ER Project, the TAG Investigation incorporates groundwater investigations conducted by the Kirtland Air Force Base (KAFB) Installation Restoration Program and the City of Albuquerque (COA) Environmental Health Department.

In April 2004, the Compliance Order on Consent (the Order) between the DOE, Sandia, and the NMED became effective. The Order specified TAG as an area of groundwater contamination that required a Corrective Measures Evaluation (CME).

Trichloroethylene (TCE) and nitrate have been identified as the contaminants of concern (COCs) for the TAG study area. TCE is a chlorinated solvent typically used for degreasing operations. Nitrate is principally a degradation product of septic waste. The state and Federal drinking water standard (the maximum contaminant level [MCL]) for TCE is 5 micrograms per liter (µg/L), and the MCL for nitrate is 10 milligrams per liter (mg/L).

The first comprehensive SNL/NM groundwater document was prepared in 1996 with major updates in 2002 and 2005. In addition, groundwater analytical results have been reported annually since 1996.The types of studies conducted in the TAG study area include groundwater sampling, soil-vapor sampling, borehole sampling, aquifer testing, colloidal borescope, borehole geophysical surveys, seismic surveys, and site-specific soil sampling. Process knowledge has been acquired by the review of engineering drawings, historical aerial photography, utility plans, and various documents.

The TAG study area is currently defined as an approximately eight-square mile, rectangular area that is centered on the intersection of Wyoming and Hardin Boulevards in the north-central portion of KAFB. The study area is bounded on the east by Manzano Base, on the west by the KAFB boundary along Yale Boulevard, on the north by Lomas Boulevard, and on the south by a line that extends from the Tijeras Arroyo Golf Course to Montessa Park.

The potential release sites of TCE and/or nitrate in the TAG study area include sewage lagoons, waste-water outfalls, septic systems, landfills, sewer lines, and the Tijeras Arroyo Golf Course. Based upon the historical use and disposal of chlorinated solvents, the extent of TCE in groundwater is probably associated with multiple aqueous releases of solvents and subsequent vapor-phase transport through the vadose zone. Nitrate in groundwater is probably derived from the release of sanitary waste and the application of fertilizers.

The hydrogeologic setting of the TAG study area is dominated by two water-bearing zones, the perched groundwater system and the regional aquifer, both of which are present within the upper Santa Fe Group. The perched groundwater system is not used for water supply. The COA, KAFB, and the Veterans Administration (VA) utilize the regional aquifer for water-supply purposes. In the central portion of the study area, the upper surface of the perched groundwater system is present at depths ranging from approximately 220 to 330 feet (ft) below ground surface (bgs); the perched groundwater system covers approximately 3.5 square miles

and may extend across the northern boundary of KAFB. The direction of groundwater flow in the perched system is to the southeast. Discontinuous, yet overlapping multiple lenses of unsaturated alluvial-fan sediments serve as a perching horizon beneath the perched system and above the regional aquifer. The upper surface of the regional aquifer is present at approximately 440 to 570 ft bgs in the central portion of the study area. In the TAG study area, the direction of groundwater flow in the regional aquifer is principally to the northwest towards the KAFB, COA, and VA water-supply wells. Groundwater in the perched system merges with the regional aquifer southeast of Tijeras Arroyo.

Historically, the maximum concentrations of TCE and nitrate in the perched groundwater system have been 9.6 µg/L and 44 mg/L, respectively. For the regional aquifer, the historical maximum concentrations of TCE and nitrate have been 3.2 µg/L and 49 mg/L, respectively. Based on approximately 20 years of groundwater monitoring, the nature and extent of contamination in the TAG study can be summarized as follows:

- The distribution of TCE in the perched system is sporadic across the study area and is indicative of discrete TCE occurrences, not widespread contamination.
- The occurrence of TCE in the regional aquifer is negligible.
- The distribution of nitrate above the background level (4 mg/L) is laterally widespread in the perched system, yet discontinuous across the study area.
- Concentrations of nitrate in the regional aquifer above the background level (4 mg/L) are scattered across the TAG study area.

Constituents Investigated

Numerous constituents have been included in groundwater monitoring in this area; these include volatile organic compounds, semivolatile organic compounds, and metals. TCE and nitrate have been identified as constituents of concern, as discussed above.

Additional Information

Additional information is available from the following:

Sandia National Laboratories/New Mexico (SNL/NM), September 2011. *Annual Groundwater Monitoring Report, Calendar Year 2010 Groundwater Protection Program,* Environmental Management Department and Environmental Programs and Assurance, Sandia National Laboratories, Albuquerque, New Mexico, September 1, 2011.

New Mexico Environment Department (NMED), December 2011. *Approval, Annual Groundwater Monitoring Report, Calendar Year 2010, September 2011, Sandia National Laboratories EPA ID# NM5890110518, HWB-SNL-11-010*, New Mexico Environment Department, Santa Fe, New Mexico, December 9, 2011.

BURN SITE GROUNDWATER

Site Description

The Burn Site production well was drilled in 1986 to provide non-potable water for fire suppression during burn tests. In 1996, the Sandia National Laboratories/New Mexico (SNL/NM) Environmental Restoration (ER) Project reported elevated concentrations of nitrate in the Burn Site production well. SNL/NM personnel installed a downgradient monitoring well (CYN-MW1D) in 1997 in order to determine the extent of potential contamination. The sampling of this well revealed elevated levels of nitrate exceeding the U.S. Environmental Protection Agency (EPA) maximum concentration level (MCL) of 10 milligrams per liter (mg/L). Additional groundwater monitoring wells were installed from 1999 through 2010 to define the nature and extent of contamination at the site. Currently, there is a network of ten groundwater monitoring wells in the Burn Site Groundwater (BSG) study area.

The BSG study area is located in Lurance Canyon located within the boundaries of the U.S. Forest Service Withdrawn Area, which is permitted to the Department of Energy (DOE). Lurance Canyon is one of three large canyons in the Manzanita Mountains that form the headwaters of the Arroyo del Coyote.

The Lurance Canyon Burn Site test facility is identified as Solid Waste Management Unit (SWMU) 94 and is currently used for testing fire survivability of transportation containers and other components. SWMU 94 lies within SWMU 65, the Lurance Canyon Explosive Test Site, which was formerly used for high explosive (HE) tests, liquid and solid propellant burn tests, and open pit burn tests in the late 1960s to the early 1980s. Historical aerial photographs indicate that the transition of testing activities from high explosives testing and jet propulsion 4 (JP-4) fuel fires in excavated pits (SWMU 65) to tests using portable steel burn pans (SWMU 94) occurred between 1971 and 1982. Waste water from numerous test units was released into an unlined pit.

In April 2004, the Compliance Order on Consent (the Order) between the DOE, Sandia, and the NMED became effective. The Order specified the Burn Site as an area of groundwater contamination that required a Corrective Measures Evaluation (CME).

The constituent of concern (COC) for the BSG study area is nitrate. Although numerous source investigations of surface soils and subsurface soils have been completed in the BSG study area, the source of nitrate contamination in groundwater has not been identified. October 2011 sampling results show that the perchlorate concentration in samples from the CYN-MW6 well in the center of the study area remains slightly above the 4 ug/L screening level for perchlorate. This concentration is consistent with the average concentration reported since the start of perchlorate monitoring in March 2006.

The hydrogeology conceptual model of the BSG study area is presented in reports issued in 2001, 2004 and 2008. The semi-confined aquifer in the BSG study area occurs in fractured Precambrian igneous and metamorphic rocks and generally flows to the west.

Based on approximately 16 years of groundwater monitoring, the nature and extent of contamination in the BSG study can be summarized as follows:

- The distribution of nitrate contaminants suggests downward movement through fractures and faults to the aquifer.
- The activities creating the sources these contaminants have ceased, thus preventing further environmental releases of contaminants.
- The nearest down-gradient drinking water well is approximately 10 miles west of the BSG study area.

Constituents Investigated

Numerous constituents have been included in groundwater monitoring in this area; these include volatile organic compounds, semivolatile organic compounds, explosives, propellants, hydrocarbons, and metals. Nitrate has been identified as a constituent of concern, as discussed above.

Additional Information

Additional information is available from the following:

Sandia National Laboratories/New Mexico (SNL/NM), September 2011. *Annual Groundwater Monitoring Report, Calendar Year 2010 Groundwater Protection Program,* Environmental Management Department and Environmental Programs and Assurance, Sandia National Laboratories, Albuquerque, New Mexico, September 1, 2011.

New Mexico Environment Department (NMED), December 2011. *Approval, Annual Groundwater Monitoring Report, Calendar Year 2010, September 2011, Sandia National Laboratories EPA ID# NM5890110518, HWB-SNL-11-010*, New Mexico Environment Department, Santa Fe, New Mexico, December 9, 2011.

TECHNICAL AREA V GROUNDWATER

Site Description

The Sandia National Laboratories/New Mexico (SNL/NM) Environmental Restoration (ER) Project has reported concentrations of trichloroethylene (TCE) exceeding the U.S. Environmental Protection Agency (EPA) maximum concentration level (MCL) in groundwater from Technical Area (TA) V monitoring wells since 1993. The other primary groundwater contaminant at TA-V is nitrate, which has exceeded New Mexico Environment Department (NMED) maximum background level and occasionally has exceeded EPA MCL in several wells. TCE and nitrate have been identified as the contaminants of concern (COCs) for the TA-V study area. TCE is a chlorinated solvent typically used for degreasing operations. Nitrate is principally a degradation product of septic waste. The MCL for TCE is 5 micrograms per liter (µg/L), and the MCL for nitrate is 10 milligrams per liter (mg/L). Groundwater contamination at TA-V is the result of waste water disposal.

In April 2004, the Compliance Order on Consent (the Order) between the DOE, Sandia, and the NMED became effective. The Order specified TA-V as an area of groundwater contamination that required a Corrective Measures Evaluation (CME).

TA-V is located in the south central portion of Kirtland Air Force Base (KAFB). TA-V is located in the northeastern corner of TA-III and occupies approximately 35 acres. TA-V is a research and testing area. TA-V has 12 designated solid waste management units (SWMUs): three (SWMUs 4, 5, and 52) are associated with the Liquid Waste Disposal System (LWDS); the remaining nine are within boundaries of TA-V and TA-III.

The numerous investigations that have occurred at the TA-III and TA-V SWMUs have resulted in the following activities:

- Drilling and sampling 26 boreholes
- Installing 18 groundwater monitoring wells
- Collecting 139 surface passive soil vapor samples
- Installing and sampling numerous shallow geoprobe points
- Performing quarterly groundwater monitoring
- Performing slug tests and analyses on monitoring wells.

The LWDS Drain Field received approximately 6.4 million gallons of reactor coolant water from 1963 to 1967. All disposal activities at these sites have ceased, and none are currently in operation. TCE was found in sludge samples from the LWDS tanks associated with the Drain Field, in low concentrations in soil samples around the LWDS Drain Field, and also in low concentrations at the TA-V Seepage Pits. No record of solvent use and/or disposal was kept for any TA-V facilities. However, interviews with TA-V personnel reveal that solvents were used at various locations.

The hydrogeologic setting of TA-V is complex. Groundwater occurs within two interfingering Santa Fe Group lithofacies, the alluvial fan facies, and the Ancestral Rio Grande (ARG) fluvial facies. These two lithofacies have distinct hydrologic characteristics that influence the direction and rate of groundwater flow. Low- to moderate-permeability alluvial-fan facies interfinger with high-permeability ARG facies.

Groundwater occurs at TA-V at approximately 500 feet (ft) below ground surface in the regional aquifer. The groundwater potentiometric surface has a subtle groundwater mound beneath TA-V. Groundwater flow directions are radial from the subtle mound, but eventually all groundwater flows to the northwest in the direction of regional flow. The horizontal gradient is approximately 0.003 ft/ft. Hydraulic conductivities range from 10^{-2} ft/ minute in the ARG facies to 10^{-5}ft/minute in alluvial fan facies. Estimated horizontal flow velocities for both units range from 4 to 10 ft/year.

Investigations of groundwater quality in the TA-V study area have been conducted by DOE and Sandia over the past 19 years. Groundwater monitoring at TA-V began in October 1992. TCE was first detected in monitoring well LWDS-MW1 in October 1993 and was later detected in another well in September 1995. Since then, low concentrations of TCE have been consistently detected during quarterly sampling events.

TCE is present in low concentrations in the regional aquifer beneath TA-V. The highest TCE concentrations are not directly under the Drain Field source; rather, the highest concentrations have migrated in the localized direction of groundwater flow. Maximum historical TCE concentrations reported at TA-V were 23 to 26 µg/L in the central portion of the study area on November 13, 2000. TCE has consistently exceeded the MCL since 1993 in the central portion, and concentrations at four other monitoring wells have exceeded the MCL during recent sampling events. TCE has been found only in water-table completion wells and has not been detected 100 ft below the water table based on data collected from three deep wells.

Nitrate is present in groundwater in all wells at TA-V, generally at concentrations ranging from less than 5 to more than 10 mg/L. Nitrate concentrations have exceeded the MCL in samples from five monitoring wells, although concentrations do not appear to be increasing over time. The highest reported concentration for TA-V wells is 19 mg/L (November 2000 and February 2001.)

Based on approximately 19 years of groundwater monitoring, the nature and extent of contamination in the TA-V study can be summarized as follows:

- The subtle groundwater mound beneath the TA-V is most likely a result of the waste water disposal from the TA-V Seepage Pits and LWDS Drain Field. However, it is possible that both wastewater discharge and geologic variations are contributing to subtle groundwater mound beneath TA-V.

- Aqueous transport of contaminants by infiltration of the wastewater is the most probable transport mechanism for both volatile organic and inorganic constituents through the vadose zone and into the aquifer.

- The TCE plume in TA-V groundwater appears to originate from the TA-V Seepage Pits and LWDS Drain Field area.

- The primary source of TCE in groundwater at TA-V was from the approximately 40 to 60 million gallons of waste water from TA-V Seepage Pits and LWDS Drain Field in the 1960s.

Constituents Investigated

Numerous constituents have been included in groundwater monitoring in this area; these include volatile organic compounds, semivolatile organic compounds, and metals. TCE and nitrate have been identified as constituents of concern, as discussed above.

Additional Information

Additional information is available from the following:

Sandia National Laboratories/New Mexico (SNL/NM), September 2011. *Annual Groundwater Monitoring Report, Calendar Year 2010 Groundwater Protection Program,* Environmental Management Department and Environmental Programs and Assurance, Sandia National Laboratories, Albuquerque, New Mexico, September 1, 2011.

New Mexico Environment Department (NMED), December 2011. *Approval, Annual Groundwater Monitoring Report, Calendar Year 2010, September 2011, Sandia National Laboratories EPA ID# NM5890110518, HWB-SNL-11-010*, New Mexico Environment Department, Santa Fe, New Mexico, December 9, 2011.

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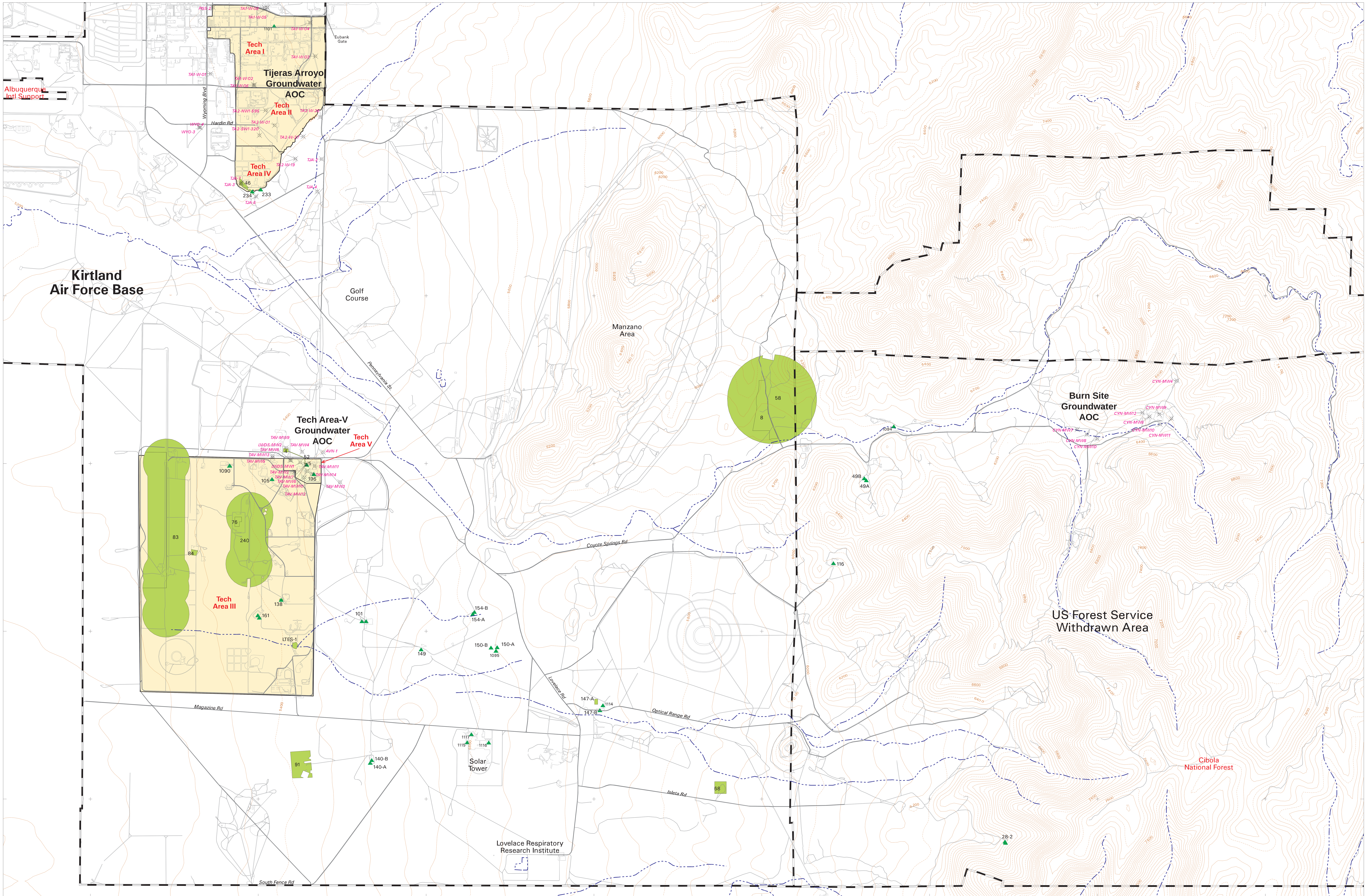
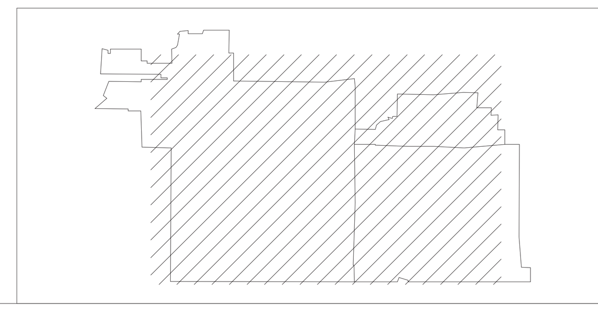


Legend

Monitoring Well associated with Area of Concern
Solid Waste Management Unit < 1.0 acre
Solid Waste Management Unit
SNL Technical Area
Major Road
Paved and unpaved Road
Drainage Feature
40-Foot Contour
KAFB Boundary

0 1600 3200
Scale in Feet
0 384 768
Scale in Meters
0 0.384 0.768
Scale in Kilometers
0 0.303 0.606
Scale in Miles



Sandia National Laboratories, New Mexico
Environmental Geographic Information System

Figure 1
Location of Solid Waste Management Units and Areas of Concern Qualified to be on the Permit, at Sandia National Laboratories, New Mexico April 2012

Compiled by photogrammetric methods from aerial photography dated March 1989, March 1990, September 1991 and July 1992
Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum

dh120110.aml | 1:24000 | MAPID=120110
SNL EGIS ORG. 4142
D Helfrich | 04/25/12

Sandia National Laboratories/New Mexico
Long-Term Stewardship Program

POST-CLOSURE CARE PLAN FOR THE CORRECTIVE ACTION MANAGEMENT UNIT TECHNICAL AREA III

APRIL 2012

United States Department of Energy
Sandia Site Office

Sandia National Laboratories is a multi-program laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.

POST-CLOSURE CARE PLAN FOR THE CORRECTIVE ACTION MANAGEMENT UNIT TECHNICAL AREA III SANDIA NATIONAL LABORATORIES/NEW MEXICO LONG-TERM STEWARDSHIP PROGRAM

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National Nuclear Security Administration under contract DE-AC04-94AL85000.

POST-CLOSURE CARE PLAN FOR THE CORRECTIVE ACTION MANAGEMENT UNIT TECHNICAL AREA III SANDIA NATIONAL LABORATORIES/NEW MEXICO LONG-TERM STEWARDSHIP PROGRAM

APRIL 2012

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List of Abbreviations/Acronyms

CAMU	Corrective Action Management Unit
CFR	Code of Federal Regulations
CSS	CWL and Sanitary Sewer Line
CWL	Chemical Waste Landfill
DOE	U.S. Department of Energy/National Nuclear Security Administration
EPA	U.S. Environmental Protection Agency
ER	Environmental Restoration
GCL	geosynthetic clay liner
HDPE	high-density polyethylene
HSWA	Hazardous and Solid Waste Amendments
KAFB	Kirtland Air Force Base
LCRS	leachate collection and removal system
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
PCIF	Post-Closure Inspection Form
PSL	primary subliner
PVC	polyvinyl chloride
QA	quality assurance
RCRA	Resource Conservation and Recovery Act
SNL/NM	Sandia National Laboratories/New Mexico
TA	Technical Area
VCP	vitrified clay pipe
VSA	vertical sensor array
VZMS	vadose zone monitoring system

Table 1
Regulatory Cross-Reference
Post-Closure Care Plan for the Corrective Action Management Unit, Technical Area III

The following table provides a list of regulatory citations for which information is provided for a Post-Closure Care Plan as required by 20.4.1.500 NMAC incorporating 40 CFR Section 264.552(e)(4)(iv). All regulatory citations that follow are contained in 20.4.1 NMAC, but are abbreviated and identified by the appropriate CFR section. The table also identifies the location(s) where requirements are addressed. Additional information may be required by the NMED under 20.4.1.900 NMAC incorporating 40 CFR 270.14 (b)(20).

40 CFR Citation	Regulatory Requirement	Location/Section in This Document
Part 264	STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND CONTAINMENT	See below
Subpart S	Corrective Action for Solid Waste Management Units	
264.552	CAMU	
264.552(e)	Requirements for CAMUs to include the following:	
264.552(e)(4)	Closure and post-closure requirements	
264.552(e)(4)(iv)	Post-closure requirements as necessary to protect human health and the environment, to include, for areas where wastes will remain in place, monitoring and maintenance activities, and the frequency with which such activities shall be performed to ensure the integrity of any cap, final cover, or other containment system	All sections

CAMU = Corrective Action Management Unit.
CFR = Code of Federal Regulations.
NMAC = New Mexico Administrative Code.
NMED = New Mexico Environment Department.

Table 2
Regulatory Guidance
Post-Closure Care Plan for the Corrective Action Management Unit, Technical Area III

Table 2 identifies guidance that supplements the CAMU post-closure requirements (see Table 1). Because the CAMU post-closure requirements are general in nature, the DOE and Sandia have identified additional guidance that is useful in preparing a complete post-closure care plan. Although the provisions identified below as guidance are not independently applicable to the CAMU, this guidance (provisions from 20.4.1.500 NMAC, 40 CFR 264, Subparts B, D, E, G, H, and N, and 20.4.1.900 NMAC, 40 CFR 270.14) defined the scope of the document, identifying the post-closure topics to be addressed in the plan. In promulgating the CAMU rule, EPA recognized that post-closure requirements for a CAMU would be established on a site-specific basis: ―…EPA proposes not to apply part 264 Subpart G procedural requirements to CAMUs…, in favor of using the remedy selection and permit modification process that will serve to establish comprehensively the technical requirements for the remedy….Technical requirements for closure and post-closure of CAMUs, therefore, will be established on a site-specific basis." (EPA, 1990). This table also includes provisions identified as necessary by the NMED (NMED, December 2003). The contents of this plan establish site-specific requirements for the post-closure period for the CAMU.

40 CFR Citation	Regulatory Requirement	Location/Section in This Document
Part 264	STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND CONTAINMENT	See below
Subpart B	General Facility Standards	
264.14	Security	
264.14(b)	A facility must have:	
264.14(b)(2)	An artificial or natural barrier which completely surrounds the active portion of the facility and a means to control entry, at all times, through the gates or other entrances to the active portion of the facility	2.5 Description of Security Fences
264.14(c)	A sign with the legend, ―Danger-Unauthorized Personnel Keep Out" must be posted at each entrance to the active portion of the facility, and at other locations, in sufficient numbers to be seen from any approach to this active portion	
264.15	General Inspection Requirements	3.5 Inspection/Maintenance Activities and Frequencies
264.15(a)	Inspect the facility for malfunctions and deterioration, operator errors, and discharges which may be causing–or may lead to–(1) release of hazardous waste constituents to the environment, or (2) a threat to human health	3.6 Inspection Schedule, Corrective Actions, and Recorded Results

40 CFR Citation	Regulatory Requirement	Location/Section in This Document
264.15(b)	Develop and follow a written schedule for inspecting monitoring equipment, safety and emergency equipment, security devices, and operating and structural equipment that are important to preventing, detecting, or responding to environmental or human health hazards	3.6 Inspection Schedule, Corrective Actions, and Recorded Results
264.15(c)	Remedy any deterioration or malfunction of equipment or structures, which the inspection reveals on a schedule which ensures that the problem does not lead to an environmental or human health hazard. Where a hazard is imminent or has already occurred, remedial action must be taken immediately.	
264.15(d)	Must record inspections in an inspection log or summary. Records must be kept for at least three years from the date of inspection.	
Subpart D	Contingency Plan and Emergency Procedures	See below
264.56	Emergency Procedures	
264.56(j)	Note in the operating record the time, date, and details of any incident that requires implementing the contingency plan. Submit a written report on the incident to the Regional Administrator within 15 days after the incident.	3.9 Record Keeping and Reporting
Subpart E	Manifest System, Record Keeping and Reporting	See below
264.75	Biennial Report	3.9 Record Keeping and Reporting
Subpart G	Closure and Post-Closure	See below
264.117	Post-Closure Care and Use of Property	1.0 Introduction 3.0 Post-Closure Care
264.118	Post-Closure Plan; Amendment of Plan	1.0 Introduction 3.0 Post-Closure Care
264.118(b)	The post-closure plan must identify the activities that will be carried on after closure of each disposal unit and the frequency of these activities, and include at least:	See below
264.118(b)(1)	A description of the planned monitoring activities and frequencies at which they will be performed to comply with the requirements of Subparts F, K, L, M, N, and X of this part during the post-closure care period	3.4 VZMS Leak Detection Monitoring 3.5 Inspection/Maintenance Activities and Frequencies 3.6 Inspection Schedule, Corrective Actions, and Recorded Results

40 CFR Citation	Regulatory Requirement	Location/Section in This Document
264.118(b)(2)	A description of the planned maintenance activities, and frequencies at which they will be performed to ensure the integrity of the cap and final cover and the function of the monitoring equipment are in accordance with Subparts F, K, L, M, N, and X of this part	3.4 VZMS Leak Detection Monitoring 3.5 Inspection/Maintenance Activities and Frequencies 3.6 Inspection Schedule, Corrective Actions, and Recorded Results
264.118(b)(3)	The name, address, and phone number of the person or office to contact about the hazardous waste disposal unit or facility during the post-closure care period	3.1 Point of Contact Concerning Facility During Post-Closure Care
264.118(c)	After final closure has been certified, the person or office specified in §264.118(b)(3) must keep the approved post-closure plan during the remainder of the post-closure period	
264.118(d)	Amendment of plan	3.2 Amendment of Post-Closure Care Plan
264.119	Post-Closure Notices	3.3 Post-Closure Notices
264.120	Certification of Completion of Post-Closure Care	3.10 Certification of Completion of Post-Closure Care
Subpart H	Financial Requirements	See below
264.140	Applicability	
264.140(c)	States and the Federal government are exempt from the requirements of this subpart	4.0 Financial Assurance and Liability Requirements
Subpart N	Landfills	See below
264.310	Closure and Post-Closure Care	
264.310(b)	After final closure, the owner or operator must comply with all post-closure requirements contained in §§264.117 through 264.120, including maintenance and monitoring throughout the post-closure care period. The owner or operator must:	3.0 Post-Closure Care
264.310(b)(1)	Maintain the integrity and effectiveness of the final cover, including making repairs to the cap as necessary to correct the effects of settling, subsidence, erosion, or other events	3.5.1 Final Cover System Inspection and Maintenance
264.310(b)(3)	Maintain and monitor the leak detection system in accordance with §264.301(c)(3)(iv) and (4) and §264.303(c), and comply with all other applicable leak detection system requirements of this part	3.5.4 VZMS Inspection and Maintenance
264.310(b)(5)	Prevent run-on and runoff from eroding or otherwise damaging the final cover	3.5.2 Storm-Water Diversion Structures Inspection and Maintenance

40 CFR Citation	Regulatory Requirement	Location/Section in This Document
Part 270	EPA ADMINISTERED PERMIT PROGRAMS: THE HAZARDOUS WASTE PERMIT PROGRAM	See below
Subpart B	Permit Application	
270.14	Contents of Part B: General Requirements	
270.14(b)	General information requirements. The following information is required for all HWM facilities, except as §264.1 provides otherwise:	
270.14(b)(1)	A general description of the facility	2.0 Facility Description
270.14(b)(2)	Chemical and physical analysis of the hazardous waste to be handled at the facility	Appendix A 2.2 Description of Hazardous Remediation Waste
270.14(b)(3)	A copy of the waste analysis plan	Appendix B to the General Part B in Part 2 of the Comprehensive Part B Permit Request
270.14(b)(4)	A description of the security procedures and equipment required by §264.14.	
264.14	Security	See below
264.14(b)	A facility must have:	
264.14(b)(2)	An artificial or natural barrier, which completely surrounds the active portion of the facility; and a means to control entry, at all times, through the gates or other entrances to the active portion of the facility.	2.5 Description of Security Fences
264.14(c)	A sign with the legend, ―Danger-Unauthorized Personnel Keep Out" must be posted at each entrance to the active portion of the facility, and at other locations, in sufficient numbers to be seen from any approach to this active portion.	
270.14(b)(5)	A copy of the general inspection schedule required by §264.15(b)	See below
264.15	General Inspection Requirements	
264.15(b)	Develop and follow a written schedule for inspecting monitoring equipment, safety and emergency equipment, security devices, and operating and structural equipment that are important to preventing, detecting, or responding to environmental or human health hazards	3.5 Inspection/Maintenance Activities and Frequencies

40 CFR Citation	Regulatory Requirement	Location/Section in This Document
270.14(b)(6)	A justification of any request for a waiver(s) of the preparedness and prevention requirements of Part 264, Subpart C	A waiver from Part 264, Subpart C, preparedness and prevention requirements, is not requested.
270.14(b)(7)	A copy of the contingency plan as required by Part 264, Subpart D	Appendix D
270.14(b)(8)(v)	Prevent undue exposure of personnel to hazardous waste	Appendix D
270.14(b)(10)	Traffic pattern	2.2 Location, Conditions, and Description of the CAMU
270.14(b)(11)	Facility location information – requires compliance with §264.18(a) and (b)	See below
264.18	Location Standards	
264.18(a)	Seismic considerations	2.2.1 Seismic Considerations
264.18(b)	Floodplains	2.2.2 Floodplain
270.14(b)(13)	A copy of the post-closure plan required by §§264.118 and 264.197	See below
264.118	Post-Closure Plan; Amendment of Plan	1.0 Introduction
264.197	Closure and Post-Closure Care	3.0 Post-Closure Care
270.14(b)(14)	For hazardous waste disposal units that have been closed, documentation that notices required under §264.119 have been filed	See below
264.119	Post-Closure Notices	3.3 Post-Closure Notices
270.14(b)(16)	Where applicable, the most recent post-closure care estimate for the facility prepared in accordance with §264.144 plus a copy of the documentation required to demonstrate financial assurance under §264.145	Not Applicable
270.14(b)(18)	Where appropriate, proof of coverage by a State financial mechanism in compliance with §§264.149 or 264.150	Not Appropriate
270.14(b)(19)	Topographic map	2.2 Location, Conditions, and Description of the CAMU
270.14(c)	Additional information requirements	Not Applicable; exempt under §264.90(b)(2)
270.14(d)	Information requirements for solid waste management units	Information regarding SWMUs is provided in Part 4 of the Comprehensive Part B Permit Request.

CAMU = Corrective Action Management Unit.
CFR = Code of Federal Regulations.
DOE = U.S. Department of Energy.
EPA = U.S. Environmental Protection Agency.
HWM = Hazardous waste management.
NMAC = New Mexico Administrative Code.
NMED = New Mexico Environment Department.
RCRA = Resource Conservation and Recovery Act
SNL/NM = Sandia National Laboratories/New Mexico.
SWMU = Solid Waste Management Unit.
VZMS = Vadose Zone Monitoring System.
§ = Section.

1.0 Introduction

This post-closure care plan identifies the post-closure activities that will be performed at the Corrective Action Management Unit (CAMU) in Technical Area (TA)-III at Sandia National Laboratories/New Mexico (SNL/NM). The CAMU is used for the containment of hazardous remediation waste that was generated during Environmental Restoration (ER) Project remediation activities. The CAMU was designed and operated in compliance with the ―Class III Permit Modification for the Management of Hazardous Remediation Wastes in the Corrective Action Management Unit, Technical Area III, Sandia National Laboratories/New Mexico Environmental Restoration Project," as modified (SNL/NM, September 1997, reprinted June 2002), hereafter referred to as the CAMU Permit. This plan is designed to meet the Resource Conservation and Recovery Act (RCRA) post-closure requirements in Title 40 of the Code of Federal Regulations (CFR) §264.552(e)(4)(iv).

SNL/NM (EPA Identification Number NM5890110518) is a multidisciplinary laboratory engaged in the research and development of weapons and alternative energy sources. SNL/NM is managed and operated for the U.S. Department of Energy/National Nuclear Security Administration (DOE) by Sandia Corporation (Sandia), a wholly-owned subsidiary of Lockheed Martin Corporation, with work also performed for others. Generation and management of hazardous waste occur at SNL/NM as a result of these activities. SNL/NM is located south of Albuquerque, New Mexico, within the boundaries of Kirtland Air Force Base (KAFB) (Figure 2-1) in Bernalillo County.

The CAMU underwent closure in 2003. NMED approved completion of closure on May 10, 2004 (NMED, 2004). DOE/Sandia conduct post-closure care activities at the CAMU in accordance with the post-closure care requirements in the Closure Plan for the Corrective Action Management Unit (SNL/NM, 2003), Appendix D of the CAMU Permit.

Sandia/DOE submitted a comprehensive Part B permit request for ongoing hazardous and mixed hazardous/radioactive waste management activities at 12 units (Units) at SNL/NM in February 2002. The Part B permit request has been updated numerous times to reflect changes in operations at SNL/NM, and to incorporate additional information as required by NMED. The Part B permit request currently addresses ongoing operations at nine Units and post-closure care at the CAMU. The permit request consists of 5 parts:

- Part 1: General Part A for SNL/NM
- Part 2: General Part B for SNL/NM waste management units

- Part 3: Additional Groundwater Information
- Part 4: Information on Solid Waste Management Units
- Part 5: CAMU Post-Closure Care Plan (PCCP)

The information in Part 2 includes general information in the General Part B and six appendices which is applicable to all hazardous waste management units at SNL/NM, including the CAMU. Where applicable, this PCCP refers to sections in Part 2; the text is not reproduced in this Part. Together, the information in this PCCP and in Part 2 address the applicable regulatory requirements in Table 2.

2.0 Facility Description

This chapter presents the facility characteristics and provides the context within which post-closure activities will occur.

2.1 General Description of SNL/NM

SNL/NM is described in the previous section.

2.2 Location, Conditions, and Description of the CAMU

Prior to closure, the CAMU was a 19-acre site located in the southeast corner of TA-III, within the boundaries of Solid Waste Management Unit 107. A facility location map showing the topography of the area, the location of the SNL/NM TAs, and the location of the CAMU is presented in Figure 2-2.

The regional aquifer in the area of the CAMU is located within the Santa Fe group at a depth of approximately 485 feet below ground surface. Groundwater appears to flow toward the northwest at a rate of approximately 2 feet per year (SNL/NM, 1992; SNL/NM, 1993).

Several major well fields have been developed in the regional aquifer to support the City of Albuquerque, KAFB, and surrounding areas. The closest well field is located approximately 5 miles north-northwest and downgradient of the CAMU. Within that well field, the closest downgradient water supply well is KAFB-4, located approximately 4.3 miles north-northwest of the CAMU.

The surface winds at SNL/NM are light, averaging 9 miles per hour. The prevailing wind direction is from the east with speed generally less than 8 miles per hour (Figure 2-2). However, winds from the west and southwest are also common in this part of New Mexico. Additional information about SNL/NM is included in Appendix A to the General Part B in Part 2.

Prior to closure, the CAMU consisted of four waste staging areas (i.e., the bulk waste staging area, the Sprung™ structures, the containerized waste staging area, and the treated waste staging area); a treatment pad; and a containment cell. Support areas at the CAMU included an equipment decontamination pad, storm-water retention ponds, and less-than-90-day areas for the containment-cell leachate collection tanks and the decontamination-pad wash water storage tanks. The waste staging, treatment pad, and support areas at the CAMU were closed under RCRA, and all hazardous waste and hazardous waste residues were removed. The CAMU containment cell was closed with waste remaining in place. The containment cell and supporting infrastructure are subject to the post-closure requirements established in this post-closure care plan. Figure 2-3 presents the pre-closure configuration of the CAMU.

2.2.1 Seismic Considerations

As defined by 40 CFR §264.18(a)(2), there are no faults or fault traces with Holocene displacements located within 200 feet of the CAMU facility.

2.2.2 Floodplain

The locations of the 100-year floodplains in the vicinity of the CAMU are shown in Figure 2-2. As defined in 40 CFR §264.18(b)(2)(i), the CAMU facility is not located within a 100-year floodplain.

2.3 Description of the CAMU Containment Cell

The CAMU containment cell consists of an engineered liner system and final cover system that were designed to prevent the migration of hazardous constituents to the environment from leachate and hazardous waste decomposition products generated during the post-closure period. In addition to the cell liner and final cover system, the containment cell incorporates a vadose zone monitoring system (VZMS) and a leachate collection and removal system (LCRS). Figures 2-4, 2-5, 2-6, and 2-7 present details on the containment cell and associated features.

The CAMU containment cell contains approximately 31,800 cubic yards of remediation wastes that were generated as part of the voluntary corrective action activities conducted during closure of the Chemical Waste Landfill (CWL), an interim status landfill located adjacent to the CAMU.

Construction quality assurance (QA) for the containment cell and associated liner system and the LCRS is documented in the CAMU Containment Cell Construction Quality Assurance Report–Phase II Subsurface Components (SNL/NM, April 1999). Construction QA for the final cover system is documented in the ―CAMU Containment Cell Cover Construction Quality Assurance Report, Sandia National Laboratories/New Mexico, Environmental Restoration Project" (SNL/NM October 2003).

2.3.1 Containment Cell Liner System

The engineered containment cell liner system includes bottom liner system and side-wall liner system components.

2.3.1.1 Bottom Liner System Components

The bottom liner system components include the following in descending order:

- LCRS
- Geomembrane liner
- Geosynthetic clay liner (GCL)

Each of these bottom liner system components is discussed in detail as follows.

LCRS. The LCRS is designed to collect and withdraw leachate from the cell during operations and during the post-closure care period. The LCRS includes a lined sump in the north end of the containment cell, a collection pipe in a central trench located above the geomembrane liner, a manually-operated pump that removes liquids that collect in the sump, and a geocomposite drainage layer.

The central trench traverses the bottom of the containment cell from the south to the north and is sloped approximately 1 percent toward the north. The bottom of the containment cell is sloped approximately 2 percent to drain toward the central trench. The trench receives any leachate from the geocomposite drainage layer. The collection pipe in the bottom of the trench is constructed of slotted 4-inch-diameter polyvinyl chloride (PVC) pipe and provides access for a portable pump to the LCRS sump. The pump delivers leachate to55-gallon drums or other

suitable containers. Additional details of the leachate collection process and system maintenance are presented in Sections 2.3.4 and 3.5.3.

Geomembrane Liner. A 60-mil high-density polyethylene (HDPE) geomembrane liner system lies across the entire containment cell and below the LCRS. The liner system acts as the initial barrier for preventing leachate migration out of the containment cell. A second 60-mil HDPE liner system is located in the LCRS sump area to provide redundancy.

GCL. A GCL underlies the geomembrane and functions as a leachate barrier layer in the event that the overlying HDPE geomembrane fails. The GCL is located directly above the prepared wicking materials in the bottom of the cell and over the prepared side slopes. The GCL consists of nonwoven, geotextile outer layers needle-punched through an inner layer of low-permeability sodium bentonite.

2.3.1.2 Sidewall Liner System Components

The side-wall liner system components include the following in descending order:

- Protective cover sheet
- Geomembrane
- GCL
- Prepared subgrade

Protective Cover Sheet. A 60-mil HDPE cover sheet lies above the LCRS trench on the north and south side slopes of the cell. The protective cover sheet is field-welded to the geomembrane liner system at the edges of the LCRS trench.

Geomembrane. A 60-mil HDPE geomembrane liner system comprises the uppermost layer on the side-walls of the cell. The geomembrane provides the initial barrier for the prevention of leachate migration out of the containment cell.

GCL. The side-wall liner system GCL is identical to the bottom liner system GCL described in Section 2.3.1.1.

Prepared Subgrade. The prepared subgrade lies below and in direct contact with the GCL. The base below the subgrade is compacted and free of roots, debris, large voids, and rocks greater than 0.5 inches in diameter.

2.3.2 Final Cover System

The final cover system design incorporates a capillary barrier and vegetation cover for primary hydraulic control. An HDPE liner positioned at the base of the final cover system provides reinforced hydraulic control. In addition to the vegetative cover, engineering controls will be applied to prevent or minimize erosion losses. These include slope control, surface runoff control, and perimeter flow control. The crown of the final cover slopes to the north, south, east, and west at a 3-percent grade. Transition slopes range from 8:1 to 4:1. This design facilitates low-profile mounding and gentle slopes that enhance resistance to erosion caused by wind and precipitation. A plan-view drawing of the completed containment cell showing the final cover configuration and associated perimeter drainage pathways are presented in Figure 2-8. The final cover system components, as shown on Figure 2-9, include the following in descending order:

- Topsoil and native soil blend
- Filter sand and pea gravel
- Bedding sand and HDPE liner

Topsoil and Native Soil Blend Layers. The purpose of the topsoil and native soil blend layers is to provide growing media for the vegetative cover, which consists of native plants. This enhances evapotranspiration and reduces infiltration. The 6-inch-thick topsoil layer is comprised of existing surface soil stripped from the containment cell area during CAMU construction, other SNL/NM surface soil, and off-site surface soil with properties similar to the soil in the vicinity of the CAMU. The 36-inch-thick native soil blend layer underlies the topsoil layer and is free of organic matter, rubble, trash, and deleterious substances. The topsoil layer provides a suitable root bed for the vegetation cover while the underlying native soil blend layer allows for more moisture storage and facilitates further root penetration.

The uppermost portion of the topsoil layer contains a 1-inch-thick gravel mulch layer used to armor the cover surface and reduce the effects of erosion.

Filter Sand/Pea Gravel Layers. A capillary barrier, comprised of a 4-inch-thick filter sand layer and a 6-inch-thick pea gravel layer, lies beneath the native soil blend. Because capillary pressure in a soil matrix is inversely proportionate to the effective pore size (i.e., the smaller the pore size, the higher the capillary pressure), the downward migration of percolating water is suspended when it arrives at the fine/coarse-grained soil interface. The sand layer beneath the

native soil blend promotes lateral movement of percolating water and reduces migration of fines into the pea gravel layer.

Bedding Sand Layer and HDPE Liner. An 8-inch-thick bedding sand layer underlies the pea gravel layer and provides cushion protection to the underlying HDPE liner. The HDPE liner is included in the final cover design as an additional measure of protection. The flexible HDPE membrane liner consists of premium grade, 60-mil-thick, textured HDPE produced from specially formulated polyethylene resin. The HDPE liner lies over the waste material, buttress soil, and extended slope, and is keyed into the anchor trench along the perimeter of the containment cell.

2.3.3 VZMS

The VZMS is designed to provide real-time information on containment cell performance with respect to early detection of leaks from the containment cell.

The VZMS consists of the following three subsystems:

- The Primary Subliner (PSL) Monitoring Subsystem
- The Vertical Sensor Array (VSA) Monitoring Subsystem
- The CWL and Sanitary Sewer Line (CSS) Monitoring Subsystem

The three subsystems, shown on Figures 2-10 and 2-11, are used in an integrated fashion to detect leakage from the containment cell, and to provide information that can be used to distinguish between leakage from the containment cell and false detections caused by environmental factors beyond the control of the CAMU operation (e.g., leakage from the sanitary sewer line or constituent migration from the CWL).

2.3.3.1 PSL Monitoring Subsystem

The PSL Monitoring Subsystem is the primary monitoring subsystem of the VZMS and is designed to provide early leak-detection capability. It consists of five parallel-trending, sub-horizontal, vitrified clay pipes (VCPs) located 5 feet below the containment cell bottom liner, with horizontal spacing of 17 to 27 feet (see Figures 2-10 and 2-11). The PSL VCP provides sufficient porosity for moisture detection, thus eliminating the need for holes or screens. A PVC access tube is connected to the ends of each VCP to facilitate the deployment of a neutron probe for moisture monitoring. The neutron probe is manually moved through the VCP during

monitoring events. Figure 2-12 presents a cross-sectional view of the PSL monitoring subsystem components.

2.3.3.2 VSA Monitoring Subsystem

The VSA Monitoring Subsystem provides both lateral and vertical soil gradient information on *in situ* soil moisture, soil temperature monitoring, and soil gas sampling as required. It consists of 11 vertical boreholes located below the containment cell, including one beneath the LCRS sump (see Figures 2-10 and 2-11). Each borehole contains a sampling point at 5 and 15 feet below the containment cell liner, as well as the following three components: a time-domain reflectometry soil-moisture content probe, a temperature sensor, and an active soil-gas sampler. Instrumentation cabling and tubing is ducted to the surface outside of the containment cell liner perimeter. Figure 2-13 presents a cross-sectional view of the VSA Monitoring Subsystem components.

2.3.3.3 CSS Monitoring Subsystem

The CSS Monitoring Subsystem is designed to detect and identify leakage of moisture and hazardous constituents from the sanitary sewer line should such leakage occur, as well as volatile organic compounds that could potentially migrate from the CWL toward the containment cell. The CSS subsystem consists of six vertical, 20-foot-deep boreholes, spaced approximately 100 feet apart in a line parallel to the sanitary sewer line (see Figures 2-10 and 2-11). Each borehole is equipped with a well screen suitable for soil gas sampling or for deployment of a neutron probe for soil moisture monitoring. Figure 2-14 presents a cross-sectional view of the CSS monitoring subsystem components.

2.3.4 Leachate Collection

The leachate that collects in the LCRS sump over time will be pumped into 55-gallon drums or other suitable containers and accumulated in a designated area at the north end of the containment cell. The leachate (EPA Hazardous Waste Number F039) is characterized as outlined in the Waste Analysis Plan (Appendix B to the General Part B in Part 2).

2.4 Description of Storm-Water Diversion Structures

During the post-closure care period, the function of storm-water diversion structures associated with the containment cell is to prevent storm-water run-on and runoff from eroding the final cover. As shown in Figure 2-8, the two storm-water diversion structures associated with the containment cell are the site diversion ditch and the containment cell perimeter drainage swale. Storm-water run-on is diverted away from the containment cell by the site diversion ditch where

it is directed toward existing surface-water drainage features. Storm-water runoff from the containment cell cover is directed to the perimeter drainage swale where it is discharged off site via an outfall.

2.5 Description of Security Fences

General information applicable to all SNL/NM Units, including the CAMU, is presented in Section A.2 of Appendix A to the General Part B in Part 2. Due to the remote location of the CAMU in TA-III, the general SNL/NM traffic patterns will neither affect nor be affected by CAMU post-closure operations. Traffic within the CAMU will be light and only occur during periodic post-closure care operations. Additional information about traffic is included in Appendix A.

Figure 2-15 shows the post-closure perimeter and boundary for the CAMU containment cell area. A contiguous four-strand, barbed-wire fence with two main gates delineates this boundary. The gates are locked when operating personnel are not present. The gates are locked when operating personnel are not present; only authorized personnel control access. Warning signs stating, ―Danger—Unauthorized Personnel Keep Out" are posted on all sides of the CAMU fence at 100-foot intervals, at the main gate, and at the emergency exit. The signs contain the warning in English and Spanish, are legible from a distance of at least 25 feet, and can be seen from any approach to the CAMU.

3.0 Post-Closure Care

This section documents how Sandia/DOE will comply with the post-closure requirements contained in 40 CFR §264.552(e)(4)(iv). In addition, this section outlines the procedures necessary to protect human health and the environment, including monitoring and maintenance activities, and the frequency with which such activities shall be performed to ensure the integrity of the final cover and waste containment cell is maintained. Sandia/DOE will conduct the following activities to protect human health and the environment:

- Maintain the integrity and effectiveness of the final cover by making repairs as necessary to correct the effects of settling, subsidence, erosion, plant or animal intrusion, or other events that compromise the final cover

- Maintain and monitor the LCRS and the VZMS as specified herein

- Prevent run-on and runoff from eroding or otherwise damaging the final cover
- Maintain fencing, security signs, and locks
- Prepare for and respond to emergencies that may arise during post-closure care activities at the CAMU
- Maintain training, operating, inspection, and monitoring, and other required records
- Report to the NMED

3.1 Point of Contact Concerning Facility During Post-Closure Care

Points of contact during the post-closure care period are identified below.

The DOE contact person is:

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

The Sandia contact person is:

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

3.2 Amendment of the Post-Closure Care Plan

At any time during the post-closure care period, the DOE and SNL/NM may submit a written notification or request to the NMED for a permit modification to amend the post-closure care plan. The DOE and SNL/NM will submit a written request for a permit modification to authorize a change in the approved post-closure care plan as needed.

3.3 Post-Closure Notices

A copy of the post-closure notice required by 20.4.1.500 NMAC incorporating 40 CFR 264.119 is provided in Appendix A.

3.4 VZMS Leak Detection Monitoring Frequency and Assessment

Frequency. During the initial stages of the post-closure care period, the PSL, VSA, and CSS monitoring subsystems of the VZMS was monitored on a monthly basis for one year. Monitoring is now and will continue to be performed on a quarterly and annual basis for the remainder of the monitoring period. Sandia/DOE may periodically reevaluate the VZMS monitoring data and may request future permit modifications to make changes in the monitoring requirements for the VZMS. A summary of the VZMS post-closure monitoring frequency, parameters, and methods are presented in Table 3-1. Sampling and analysis plans for the PSL, VSA, and CSS monitoring subsystems are outlined in Appendix B.

Table 3-1
VZMS Post-Closure Monitoring Frequency, Parameters, and Methods

Time Frame	Monitoring Frequency	Monitoring System	Monitoring Parameter	Monitoring Method
Years 2–30[a]	Quarterly[c]	PSL	Moisture Content	Neutron Probe
		VSA	Soil Moisture Content Temperature	TDR probe Temperature Sensor
		CSS	Moisture Content	Neutron Probe
	Annually[b]	VSA	Active Soil Gas	Method TO-14 or equivalent, as revised and updated
		CSS		

[a]Closure was completed in October 2003.
[b]Active soil-gas sampling will be conducted annually unless increased soil moisture is detected, in which case active soil-gas sampling will be conducted on a quarterly basis until stable conditions are achieved.
CSS = Chemical Waste Landfill and sanitary sewer line.
EPA = U.S. Environmental Protection Agency.
PSL = Primary subliner.
TDR = Time domain reflectometer.
TO-14 = EPA Method TO-14 (EPA, November 1986). Sandia/DOE may use an equivalent method such as TO-15 that includes the same analyte list, method detection limits equal to or lower than the TO-14 limits, and provides the same or higher level of data quality.
VSA = Vertical sensor array.
VZMS = Vadose zone monitoring system.

Assessment. The VZMS monitoring system is used to verify containment cell integrity and performance. As part of each monitoring event, soil moisture content and soil gas results obtained from the VZMS will be evaluated to determine if there has been leakage or a release of soil gas from the containment cell and, if so, the character and magnitude of the leak or release.

Soil Moisture. In the case of An unexplained soil moisture increase greater than approximately 4 percent (expressed as gravimetric percent moisture content) at a monitoring location(s) that suggests a leak from the containment cell will trigger a secondary assessment and confirmation/rejection phase. Sandia/DOE will collect and analyze a second round of samples. If the second analysis confirms that the trigger level has been exceeded, Sandia/DOE will notify NMED confirming that the trigger level has been exceeded during the particular sampling event. Sandia/DOE will evaluate the soil moisture data to determine the likely location and source of the moisture and report the results in writing to NMED within 180 days. If the sanitary sewer line is determined to be the likely source of the increased moisture, Sandia/DOE will continue monitoring and will take additional action if necessary to locate, reduce, and/or eliminate the source of the moisture. If the CAMU containment cell is determined to be the likely source of the increased moisture, Sandia/DOE will take further action as required by NMED.

Soil Gas. If a soil-gas sample result exceeds a trigger level of 20 parts per million by volume (ppmv) total volatile organic compounds (VOCs), Sandia/DOE will immediately confirm the result by collecting and analyzing additional samples. If the second analysis confirms that the trigger level has been exceeded, Sandia/DOE will notify NMED confirming that the trigger level has been exceeded during the particular sampling event. Sandia/DOE will evaluate the soil gas data in the vicinity of the CAMU (including data for the CWL) to determine the source of the soil gas, and to evaluate whether the increased soil gas will cause groundwater contamination of any hazardous constituent to exceed the drinking water maximum contaminant levels (MCLs) established by EPA, and will report the results in writing to NMED within 180 days. Sandia/DOE will take further action as required by NMED.

3.5 Inspection/Maintenance/Repair Activities and Frequencies

The CAMU systems will be routinely inspected during the post-closure care period. The CAMU systems associated with the containment cell that will require inspection and maintenance/repair during the post-closure care period include: 1) the final cover; 2) surface-water diversion structures; 3) the LCRS; 4) the VZMS; and 5) the perimeter security fence, security signs, and gate locks. Inspection and maintenance of these systems will be performed throughout the post-closure care period. The inspection and maintenance routines will be performed on a regularly scheduled basis to ensure the integrity of the waste containment cell, the LCRS, and supporting systems for each system. The inspection/maintenance schedule is summarized in Table 3-2. The individual inspection and maintenance elements are detailed in the following sections.

Table 3-2
CAMU Post-Closure Inspection and Maintenance Schedule

CAMU System to be Inspected	Inspection Parameters	Inspection Frequency	Maintenance/Repair Implementation	Maintenance/Repair Frequency
Final Cover System	Existence of invasive plants or plants with the potential for forming deep roots (at least 8 feet deep at maturity).	Quarterly	Physically remove or otherwise eliminate the invasive or deep-rooting plant	Within 60 days of identification or as soon as seasonal conditions are most favorable for eliminating the plants
	Settlement of cover surface in excess of 6 inches		Repair cover system damage that exceeds prescribed limits, relocate animals if possible and repair burrows.	Within 60 days of discovery of needed repairs [a]
	Animal intrusion burrows in excess of 4 inches in diameter or burrows that appear to be of species able to burrow 6 ft or greater in depth			
	Erosion of cover soil in excess of 6 inches deep			
	Contiguous areas of no vegetation >200 ft2		Revegetate barren areas that exceed prescribed limits	Within 60 days of discovery or needed repairs or as soon as possible if seasonal conditions are not appropriate within 60 days.
Final Cover System	Full biological inspection, including: • Approximate percentage vegetative coverage (actively photosynthesizing) • Approximate percentage native vegetation of the total vegetative cover • Main plant species growing on the CAMU cover and the approximate percentage of the cover populated by each species.	Annually [b]	Remove plants, revegetate barren areas, relocate animals if possible and repair burrows, augment soil and/or reseed per biologist recommendations	Follow schedule above for each item
Storm-Water Diversion Structures	Channel or side-wall erosion in excess of 6 inches deep	Quarterly	Repair erosion that exceeds prescribed limits	Within 60 days of discovery of needed repairs [a]
	Accumulations of silt in excess of 6 inches deep		Remove silt and debris accumulations that exceed prescribed limits	
	Debris that blocks more than 1/3 of the channel width			

Table 3-2 *(Continued)*
CAMU Post-Closure Inspection and Maintenance Schedule

CAMU System to be Inspected	Inspection Parameters	Inspection Frequency	Maintenance/Repair Implementation	Maintenance/Repair Frequency
LCRS	Leachate in sump	Monthly/ Quarterly[c]	Manually activate pump/inspect for leachate collection	Monthly/Quarterly[c]
	Pump	Quarterly	Maintain pump	Within 60 days of discovery of needed repairs [a]
	Plumbing		Maintain plumbing	
VZMS	• Protective casings • Access covers and doors • Instrumentation access boxes • Compression caps	Monthly/ Quarterly	Maintain protective casings, access covers and doors, instrumentation access boxes, and compression caps	Within 60 days of discovery of needed repairs [a]
	• Locks		Clean/replace locks	
	• Electronic monitoring systems		Maintain calibration and proper operating condition of electronic monitoring systems	
	• Aboveground VZMS components		Ensure aboveground VZMS components are protected from weather	
	• Monitoring equipment (pump), tubing, gauges, valves, etc.) in need of repair/maintenance			
Security Fence	Presence of wind-blown plants and debris	Quarterly	• Remove wind-blown plants and debris	Within 60 days of discovery of needed repairs [a]
	Condition of fence wires, posts, gates, gate locks, and warning signs		• Repair broken wire sections and posts • Repair and oil gates • Clean or replace locks • Repair or replace warning signs	

Table 3-2 *(Continued)*
CAMU Post-Closure Inspection and Maintenance Schedule

CAMU System to be Inspected	Inspection Parameters	Inspection Frequency	Maintenance/Repair Implementation	Maintenance/Repair Frequency
Safety and Emergency Equipment [d]	• Spill control materials, including sorbent material, brooms and shovels are present, accessible, and in good condition • Fire extinguisher is present, charged, accessible, and in good condition • Portable eyewash station is operational and in good condition	Monthly	Repair or replace	As soon as possible

[a]Maintenance/repairs will be performed as necessary, based upon the results of inspections.
[b]This inspection will be conducted quarterly until the vegetative cover is successfully established and annually thereafter
[c]The LCRS pump and plumbing will be maintained and repaired based on the results of the quarterly inspections.
[d]See Table 1 in Appendix D for equipment details
CAMU = Corrective Action Management Unit.
ft^2 = Square foot (feet).
LCRS = Leachate Collection and Removal System.
VZMS = Vadose Zone Monitoring System.

Examples of forms used for recording inspections and maintenance/repair are included in Appendix C. These forms are subject to change; any forms used will be functionally equivalent to those shown.

3.5.1 Final Cover System Inspection/Maintenance/Repair

Inspection. The final cover will be inspected on a quarterly basis. Cover inspections will note the following:

- Presence of species of deep-rooted plants (those with roots at least 8 feet deep at maturity) such as shrubs and trees;
- Settlement of the cover surface in excess of 6 inches;
- Presence of animal intrusion burrows in excess of 4 inches in diameter or burrows of species able to burrow 6 feet or deeper;
- Erosion of the cover soil in excess of 6 inches deep;

- Contiguous areas with no vegetation in excess of 200 square feet; and
- Any other conditions that may impact the cover's integrity.

The vegetative cover will also be inspected on a quarterly basis until it is successfully established. A successful vegetative cover consists of the following:

- Total percent foliar coverage equals 20 percent (i.e., 20 percent of the land surface is covered with living plants versus 80 percent bare surface area);
- Of the 20 percent total foliar coverage, 50 percent or greater comprises native perennial species, and 50 percent or less comprises annual species; and
- No contiguous bare spots greater than 200 square feet (approximately 14 by 14 feet) are present.

Once the vegetative cover is successfully established, Sandia/DOE will continue to monitor it on an annual basis.

Maintenance/Repair. Cover damage that exceeds the limits described under —Inspection" will be repaired to a condition that meets or exceeds the original design. Repair specifications are listed as follows:

- Backfilling and compacting settlement areas, animal intrusion burrows, and areas of erosion using off-site soil with properties similar to the soil in the vicinity of the CAMU. Sandia/DOE will make reasonable attempts to relocate animals prior to backfilling their burrows.
- Preventing deep-rooted plants from becoming established by identifying them during inspections and killing or removing them within 60 days or as soon as seasonal conditions are favorable.
- Re-seeding areas with no vegetation in excess of 200 square feet within 60 days, and, where necessary, re-establishing the topsoil layer and gravel mulch surface treatment to provide a suitable seedbed. If seasonal conditions (e.g., temperature) are not appropriate for establishing vegetation, Sandia/DOE will complete repairs as soon as possible when appropriate conditions occur.

3.5.2 Storm-Water Diversion Structures Inspection/Maintenance/Repair

Inspection. During the post-closure care period, the function of storm-water diversion structures associated with the containment cell is to prevent run-on and runoff from eroding the

final cover. The storm-water diversion structures will be inspected on a quarterly basis to verify structural integrity. Inspections will note erosion of the channels or side-walls in excess of 6 inches deep and accumulations of silt greater than 6 inches deep or debris that blocks more than one-third of the channel width.

Maintenance/Repair. Based upon the results from the storm-water diversion structure inspections, erosion that exceeds the limits described under –Inspection” will be repaired to a condition that meets or exceeds the original design. Silt and debris accumulations that exceed these limits will be removed.

3.5.3 LCRS Inspection/Maintenance/Repair

Inspection. Following closure, the amount of leachate that accumulates within the leachate collection system is expected to gradually diminish because the primary hydraulic control provided by the containment cell cover system will inhibit percolation of meteoric water through the waste, and the majority of soil placed in the cell has been stabilized with cement, causing it to be hydrophilic. As described in Section 2.3.4, liquids that collect in the LCRS sump will be pumped directly into 55-gallon drums or other suitable containers. The LCRS pump will be manually activated on a schedule consistent with the inspection and maintenance schedule for the VZMS outlined in Attachment 1. When the pump is manually activated, it will be operated to remove leachate from the sump until it experiences cavitation. At this point the pump will be deactivated. If the pump experiences cavitation without pumping any leachate from the sump, operating personnel will perform an inspection of the collection pipe in the bottom of the LCRS sump to determine whether the pump is experiencing cavitation due to an insufficient leachate level or whether the pump has malfunctioned. If the pump has malfunctioned, Sandia/DOE will determine the cause and repair or replace the pump. The pump assembly may be removed and properly stored until needed.

Maintenance/Repair. The LCRS pump and plumbing will be maintained/repaired as necessary based upon the results of quarterly inspections.

3.5.4 VZMS Inspection/Maintenance/Repair

Inspection. During regularly scheduled monitoring events (see Table 3-1), the VZMS components will be inspected. The inspection will note the condition of the components including protective casings, access covers and doors, instrumentation access boxes, compression caps, locks, and electronic monitoring systems.

Maintenance/Repair. The VZMS components will be maintained/repaired as needed based upon inspection results. Activities may include, but are not limited to, maintaining protective casings, access covers/doors, and instrumentation access boxes in good repair and well marked, ensuring the PSL and CSS compression caps are in good repair, cleaning or replacing locks as necessary, and maintaining calibration and proper operating condition of all electronic monitoring systems. Maintenance/repair activities will also include ensuring that all aboveground VZMS components are protected from the weather.

3.5.5 Security Fence Inspection/Maintenance/Repair

Inspection. The fence, gates, and warning signs will be inspected on a quarterly basis. The inspections will document the condition of the fence; including fence wires, posts, gates, gate locks, and warning signs; and will note excessive accumulations of wind-blown plants and debris that would obscure warning signs, block access to the containment cell, or interfere with waste management activities, VZMS components, or monitoring of any kind.

Maintenance/Repair. The fence, gates, and warning signs will be maintained/repaired as needed to maintain them in good condition - as indicated by quarterly inspections. Activities may include, but are not limited to, removing excessive accumulations of wind-blown plants and debris, repairing broken wire sections and posts, repairing and oiling gates, cleaning or replacing locks, and repairing or replacing warning signs.

3.6 Inspection Schedule, Remedial Actions, and Recorded Results

The inspection and maintenance schedule for the CAMU systems associated with the containment cell is provided in Attachment 1. Inspection results for each of the CAMU systems will be recorded on an inspection form. Biological inspections will be also be recorded on and inspection form. Examples of forms for both inspections are included in Appendix C.

Remedial actions will be taken to ensure protection of human health and the environment and mitigate any potential hazards. If an inspection of the CAMU reveals defects, deterioration, damage, or potential hazards, Sandia/DOE will take corrective action in a timely manner so the problem does not lead to an environmental or human health hazard. If an inspection reveals that a nonemergency problem (e.g., security devices, or operational equipment are found to be damaged, incomplete, or inoperable) has developed, remedial action including repairs, maintenance, and replacement will be completed as soon as practical. If a hazard appears imminent or a hazardous situation already exists, remedial action will be initiated immediately and completed as soon as possible. Any remedial action taken pursuant to an inspection will be

noted on the CAMU PCIF. If the identified hazard meets the definition of an emergency, the Site-Wide Contingency Plan (Appendix E to the General Part B in Part 2) will be implemented together with the CAMU-specific provisions in Appendix D, and standard notification procedures will be followed.

Inspection results will be recorded in an inspection log to be maintained for at least three years from the date of inspection. The inspection forms will include the date and time of inspection, the name of the inspector, a notation of the observations made, and the date and nature of any repairs or other remedial actions.

3.7 Contingency Plan and Emergency Response

Any fire, explosion, or unplanned sudden or gradual release of RCRA-regulated hazardous waste or hazardous waste constituents that significantly threaten human health or the environment outside of a unit are defined as emergencies requiring implementation of a contingency plan.

The Site-Wide Contingency Plan for responding to emergencies at hazardous waste management units at SNL/NM is included in Appendix E of the General Part B in Part 2. Supplemental information applicable to the CAMU is included in Appendix D.

3.8 Personnel Training

The Site-Wide Personnel Training Plan for RCRA_regulated hazardous waste management units, including the CAMU, is included in Appendix D of the General Part B in Part 2. Duties, qualifications, and training for CAMU personnel is included in this plan as Appendix E.

3.9 Record Keeping and Reporting

The following records will be maintained at the SNL/NM Records Center:

- A current copy of the CAMU Permit
- A current copy of the post-closure care plan
- Correspondence and other documents from governmental agencies related to post-closure care
- A written operating record that includes:
- Completed inspection forms for the last three years

- Monitoring, testing, or analytical data and records of actions taken to prevent or mitigate releases of RCRA-regulated hazardous waste or constituents to the environment
- Written standard operating procedures (current editions)
- Training records for current personnel
- VZMS records
- Leachate generation and management records
- Records documenting emergencies that required implementation of the CAMU contingency plan

Sandia/DOE will comply with the record-keeping provisions of 20.4.1.500 NMAC incorporating 40 CFR 264.74 concerning the availability, retention, and disposition of records.

During the post-closure care period, Sandia/DOE will submit a CAMU activity summary report to the NMED on an annual basis. The report will summarize the inspection and maintenance activities, monitoring results, and problems that either endangered or presented significant potential to endanger human health and the environment for the reporting period.

3.10 Certification of Completion of Post-Closure Care

Within 60 days of the end of the post-closure care period for the CAMU, DOE and Sandia will submit to the NMED, by registered mail, a certification that post-closure care for the CAMU was performed in accordance with the specifications of the approved post-closure care plan. Responsible officials of DOE and Sandia, as well as an independent registered professional engineer, will sign the certification. Documentation supporting the independent registered professional engineer's certification of completion of post-closure will be furnished to the NMED upon request. In addition, Sandia/DOE will prepare a final post-closure report summarizing pertinent information regarding post-closure monitoring, maintenance, and repair activities and any variances from the approved post-closure plan and the reasons for the variances. The post-closure care report will be provided with the certification to the NMED within 60 days of the end of the post-closure period. Transmittal of the report will include a request from Sandia and DOE for NMED approval of termination of the post-closure care period for the CAMU.

4.0 Financial Assurance and Liability Requirements

Under 20.4.1.500 NMAC incorporating 40 CFR 264.140(c) and Public Law 108-199, federal facilities, including SNL/NM, are exempt from financial assurance requirements.

5.0 Potential for Exposure

During the post-closure care period, the CAMU containment cell will be monitored and maintained in a manner that will ensure protection of human health and the environment. Although waste will remain in place within the containment cell, the potential for exposure is highly unlikely for the following reasons:

- All waste emplaced in the containment cell has met negotiated treatment or risk-based standards, resulting in extremely low or nondetectable concentrations of many of the hazardous constituents.
- Engineered barriers will minimize the potential for the migration of liquids into the containment cell and transport of liquids from the containment cell out into the surrounding environment.
- Security measures will maintain restricted access to the area.
- Inspections, maintenance, and repairs will be performed on a regular basis.

6.0 References

EPA, see U.S. Environmental Protection Agency.

New Mexico Environment Department (NMED), December 2003, –Notice of Deficiency: Post Closure Care Plan for the Corrective Action Management Unit, Technical Area 3, Sandia National Laboratories/New Mexico Environmental Restoration Project, June 2003, Sandia National Laboratories, NM5890110518, HWB-SNL-03-025," New Mexico Environment Department, Santa Fe, New Mexico, December 12, 2003.

NMED, see New Mexico Environment Department.

Sandia National Laboratories/New Mexico (SNL/NM), April 1999, –CAMU Containment Cell Construction Quality Assurance Report–Phase II Subsurface Components," Environmental Restoration Project, Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), September 1997, “Class III Permit Modification Request for the Management of Hazardous Remediation Waste in the Corrective Action Management Unit, Technical Area III,” Environmental Restoration Project, Sandia National Laboratories, Albuquerque, New Mexico (as modified).

Sandia National Laboratories/New Mexico (SNL/NM), 1993, “Chemical Waste Landfill Groundwater Assessment Plan,” Sandia National Laboratories, Albuquerque, New Mexico.

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Sandia National Laboratories/New Mexico (SNL/NM), October 2003, “CAMU Containment Cell Construction Quality Assurance Report,” Sandia National Laboratories, Albuquerque, New Mexico.

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U.S. Environmental Protection Agency (EPA), 1993, “Special Conditions Pursuant to the 1984 Hazardous and Solid Waste Amendments (HSWA) to RCRA for Sandia National Laboratory, EPA I.D. Number NM5890110518, effective August 26, 1993 through September 20, 2002,” U.S. Environmental Protection Agency, Region 6, Dallas, Texas.

U.S. Environmental Protection Agency (EPA), 1990, “Corrective Action for Solid Waste Management Units at Hazardous Waste Management Facilities: Proposed Rule,” 55 Federal Register 30798, 30844, U.S. Environmental Protection Agency, Washington, D.C., July 27, 1990.

U.S. Environmental Protection Agency (EPA), November 1986. “Test Methods for Evaluating Solid Waste,” 3rd ed., Update 3, SW-846, Office of Solid Waste and Emergency Response, U.S. Environmental Protection Agency, Washington, D.C.

FIGURES

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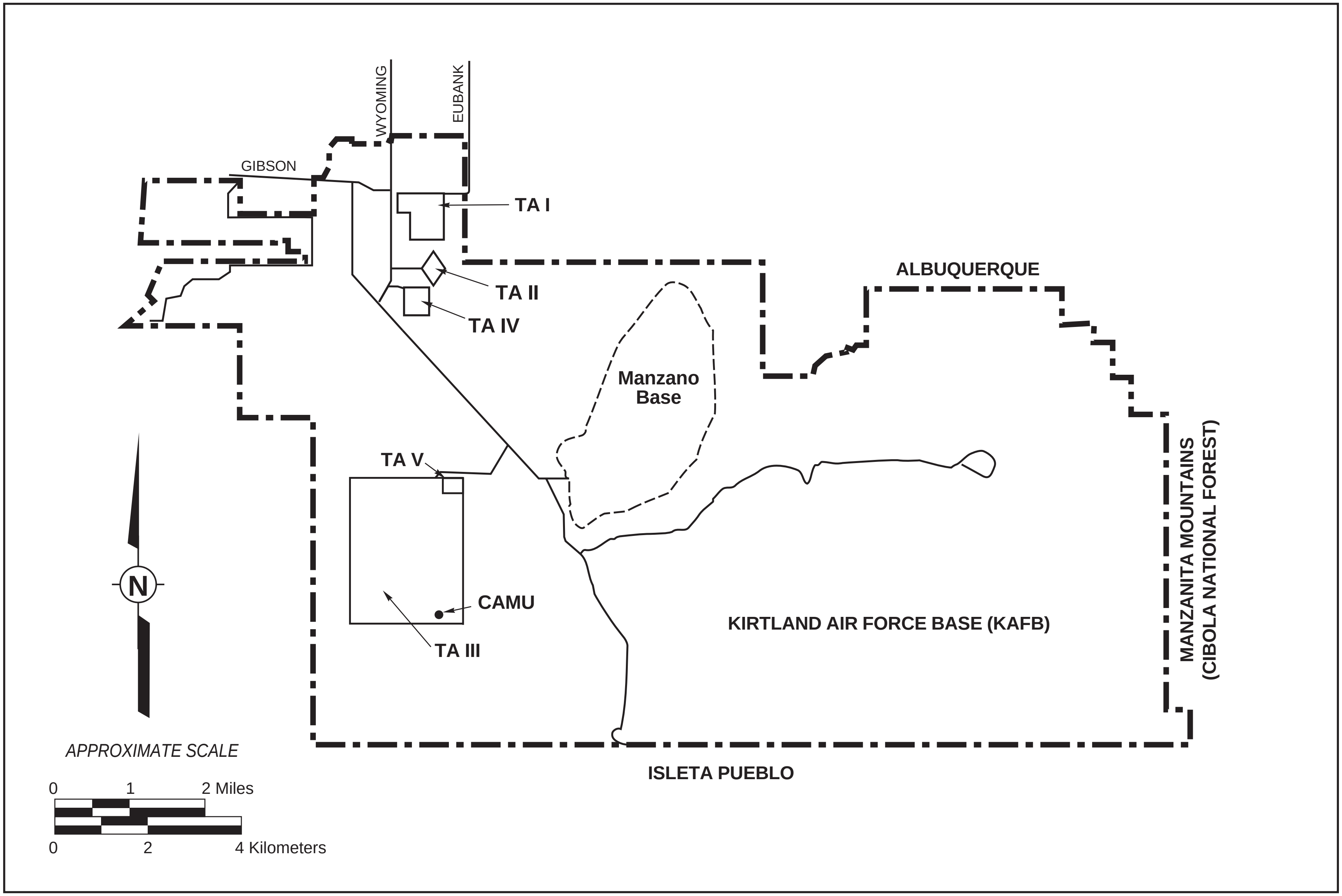
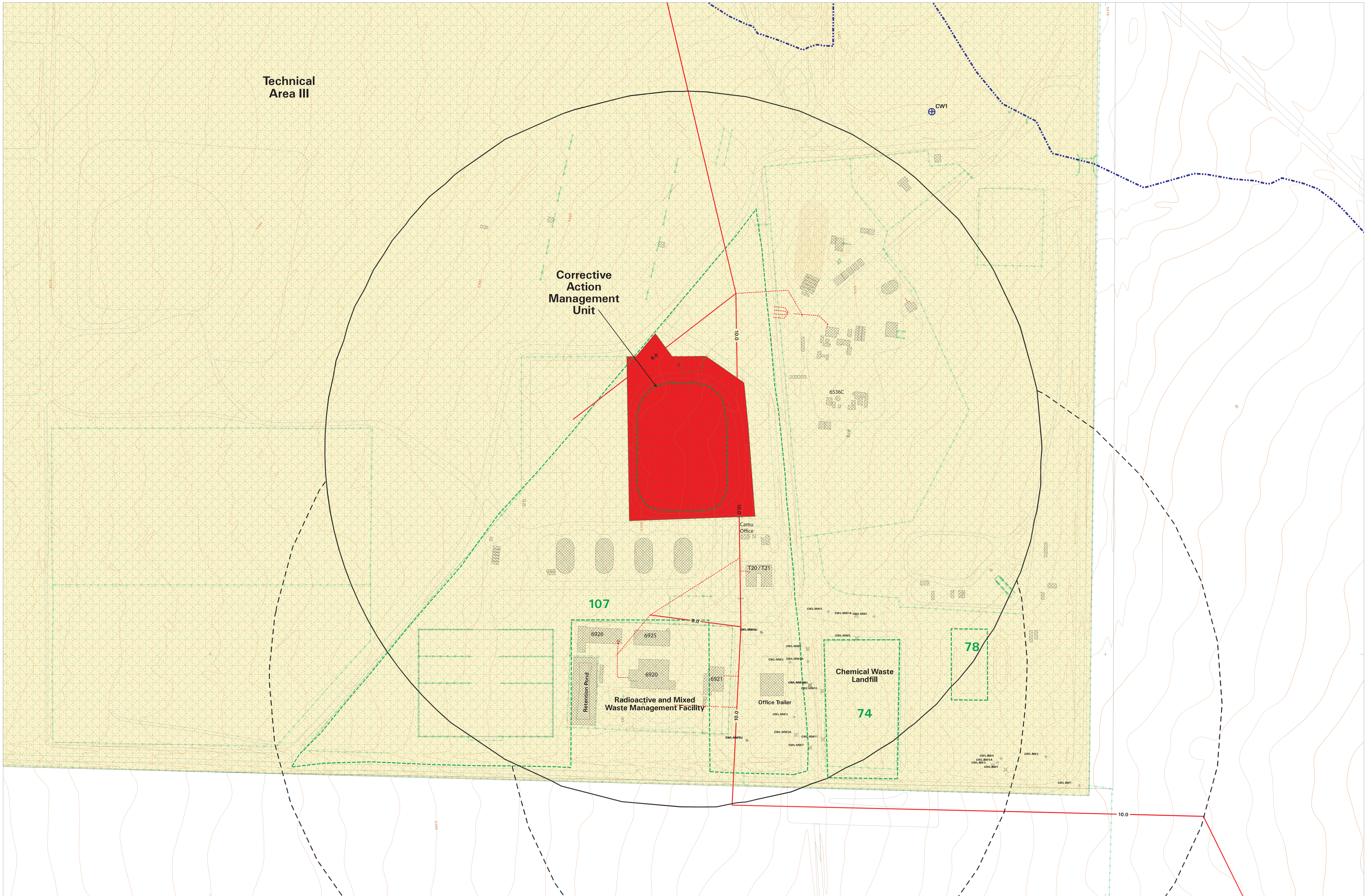


Figure 2-1

Sandia National Laboratories/New Mexico Technical Areas (TA) and the Corrective Action Management Unit (CAMU) in Relation to KAFB



Legend

Wells and Water Features

- Vapor Monitoring Well
- Monitoring Well
- Observation Well
- Production Well
- Production Well (Potable)
- Production Well (Out of Commission)
- Production Well (Abandoned)
- Production Well (Non-Potable)
- Plugged and Abandoned Well
- Spring
- Unknown Water Feature

- Solid Waste Management Unit
- Contour (2 foot)
- Road (all types)
- Fence
- Surface Drainage
- Buildings and Concrete Pads
- Sanitary Sewer Main (active)
- Sanitary Sewer Service (active and inactive)

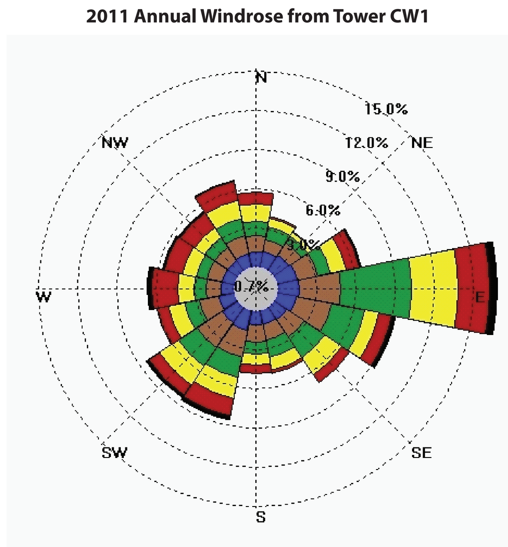
- Corrective Action Management Unit
- Sandia National Laboratories Technical Area
- 1000 Foot Buffer Around CAMU
- 1000 Foot Buffer Around other RCRA-regulated Waste Management Facility
- Meteorological Tower

Land Use

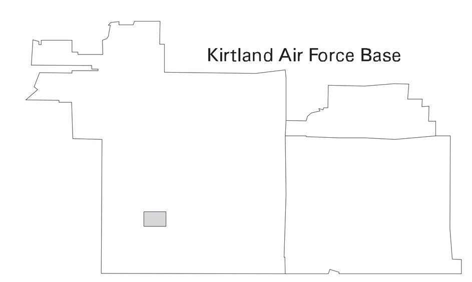
- Industrial
- Undefined

Note: The wind direction is the direction from which the wind is blowing. This diagram shows the frequeency of occurrence for each wind direction and wind speed. The color indicates the wind speed.

2011 Annual Windrose from Tower CW1



0 100 200
Scale in Feet
0 24 48
Scale in Meters
0 0.024 0.048
Scale in Kilometers
0 0.019 0.038
Scale in Miles



Sandia National Laboratories, New Mexico
Environmental Restoration Geographic Information System

Figure 2-2
Topographic Map
Corrective Action Management Unit (CAMU)
April 2012
Sandia National Laboratories
New Mexico

Compiled by photogrammetric methods from aerial photography dated March 1989, March 1990, September 1991 and July 1992

Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone 1927 North American Horizontal Datum, 1929 North American Vertical Datum

	MAPID=120109
Unclassified	SNL EGIS ORG. 4142
DHelfrich dh120109.aml	04/19/12

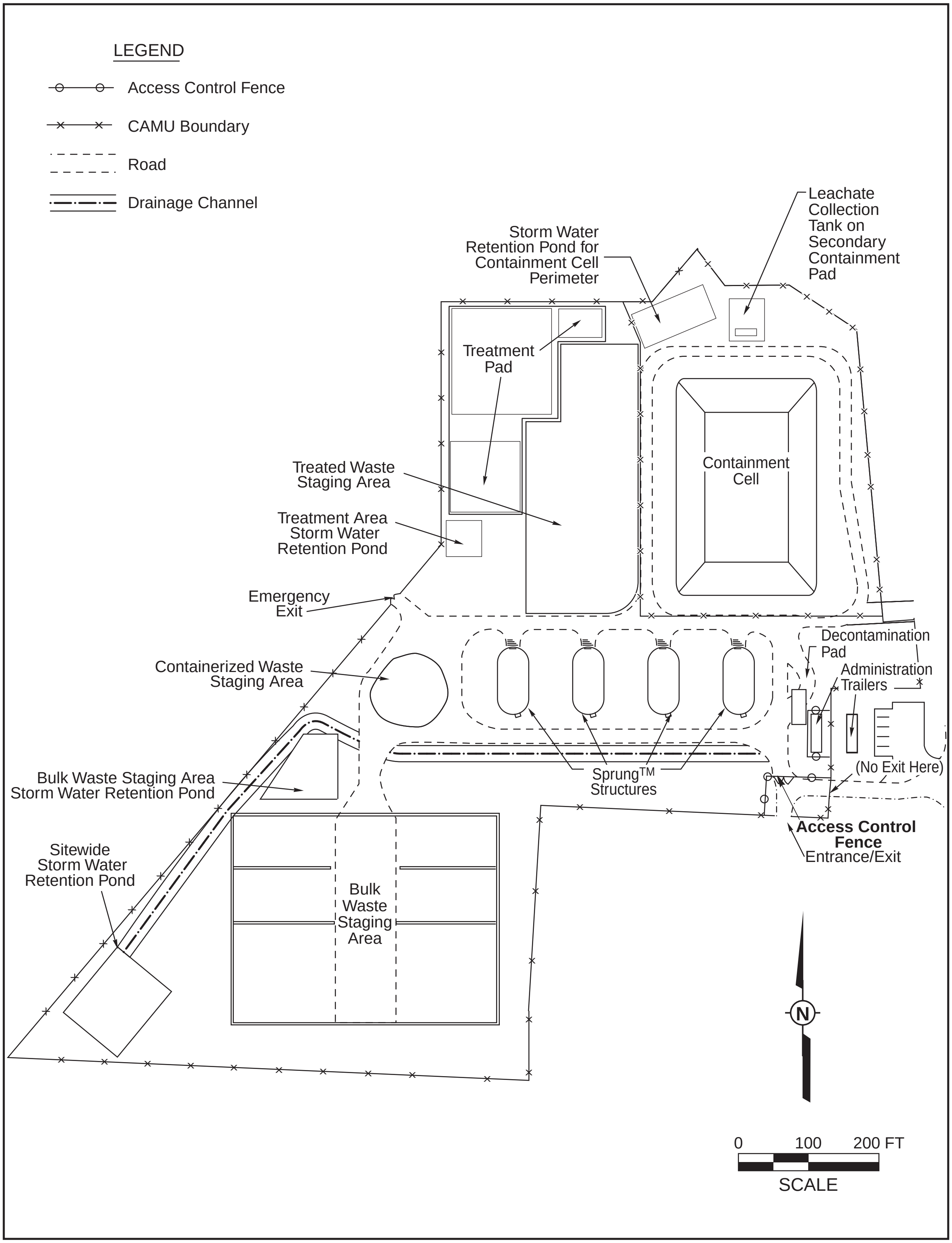


Figure 2-3

Areal Configuration of the Corrective Action Management Unit (CAMU) During Operation

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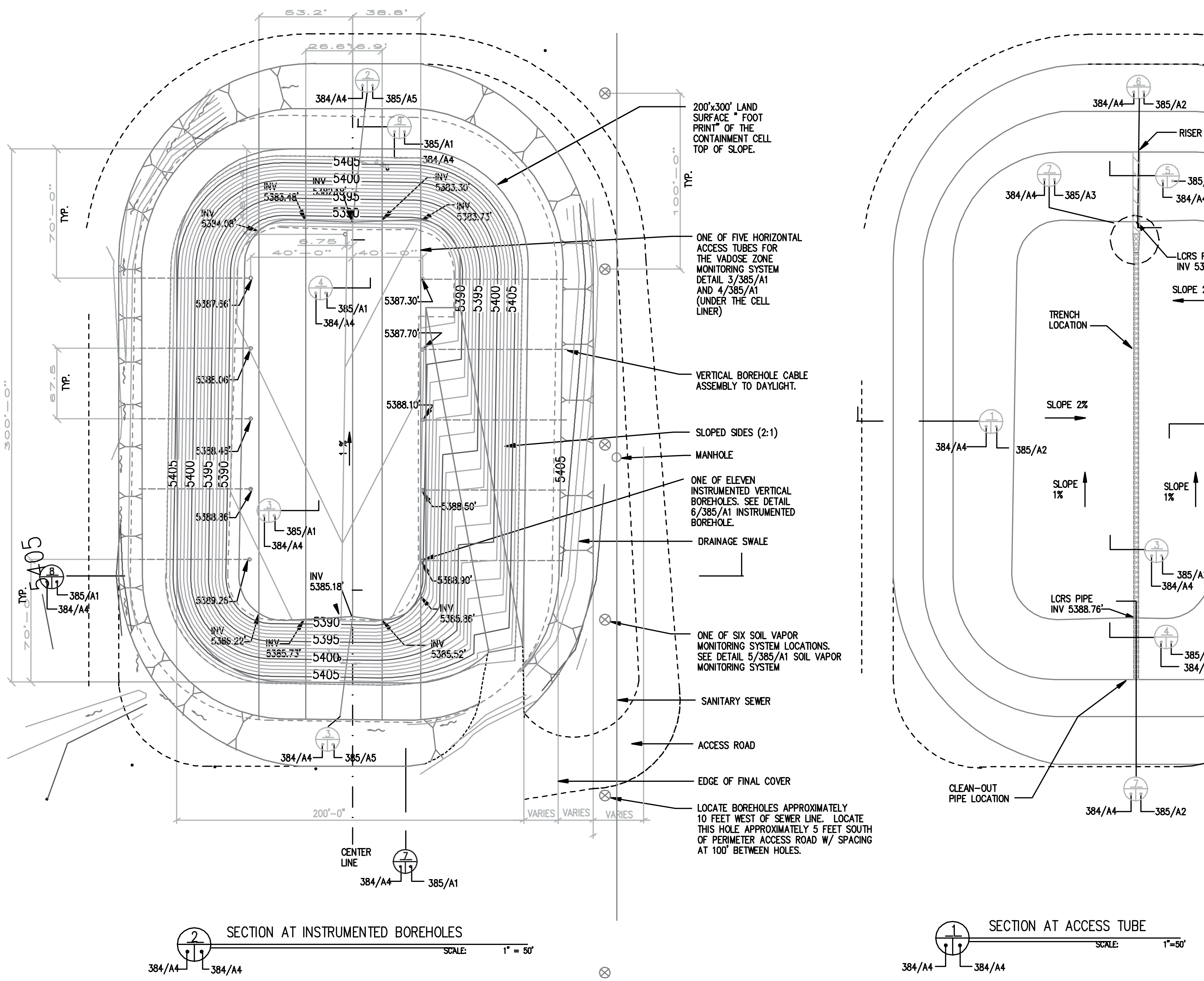

GENERAL NOTES

KEYED NOTES

Figure 2-4
Corrective Action Management Unit Containment Cell Site Plan

P.O. OR W.O. / PROJECT NO.	REV	DATE	DESCRIPTION	DWN	CKD	APP

U.S. DEPARTMENT OF ENERGY
MANAGEMENT SUPPORT DIVISION
KIRTLAND AIR FORCE BASE EAST — ALBUQUERQUE, NEW MEXICO

SANDIA NATIONAL LABORATORIES PLANT ENGINEERING
ALBUQUERQUE, NEW MEXICO, LIVERMORE, CALIFORNIA; TONOPAH, NEVADA

SITE PLANS – ENLARGED CELL	P.O. OR W.O.	CN4666
HAZARDOUS WASTE CORRECTIVE ACTION MANAGMENT UNIT	PROJECT NO.	TW0647
	DRAWN BY	DEH
	CHECKED BY	
	APPROVED BY	WLW
CIVIL — CAMU	DATE	7/29/1996
IT CORPORATION — SIZE D+ — DRAWING NO./SHEET	SEQ.	09

CAD DRAWING
COMPUTER SYSTEMS DEPT. 7901
SITE UTILITIES DEPT. 7909
FILE NAME: c-4001camu.dwg
REFERENCE FILES:

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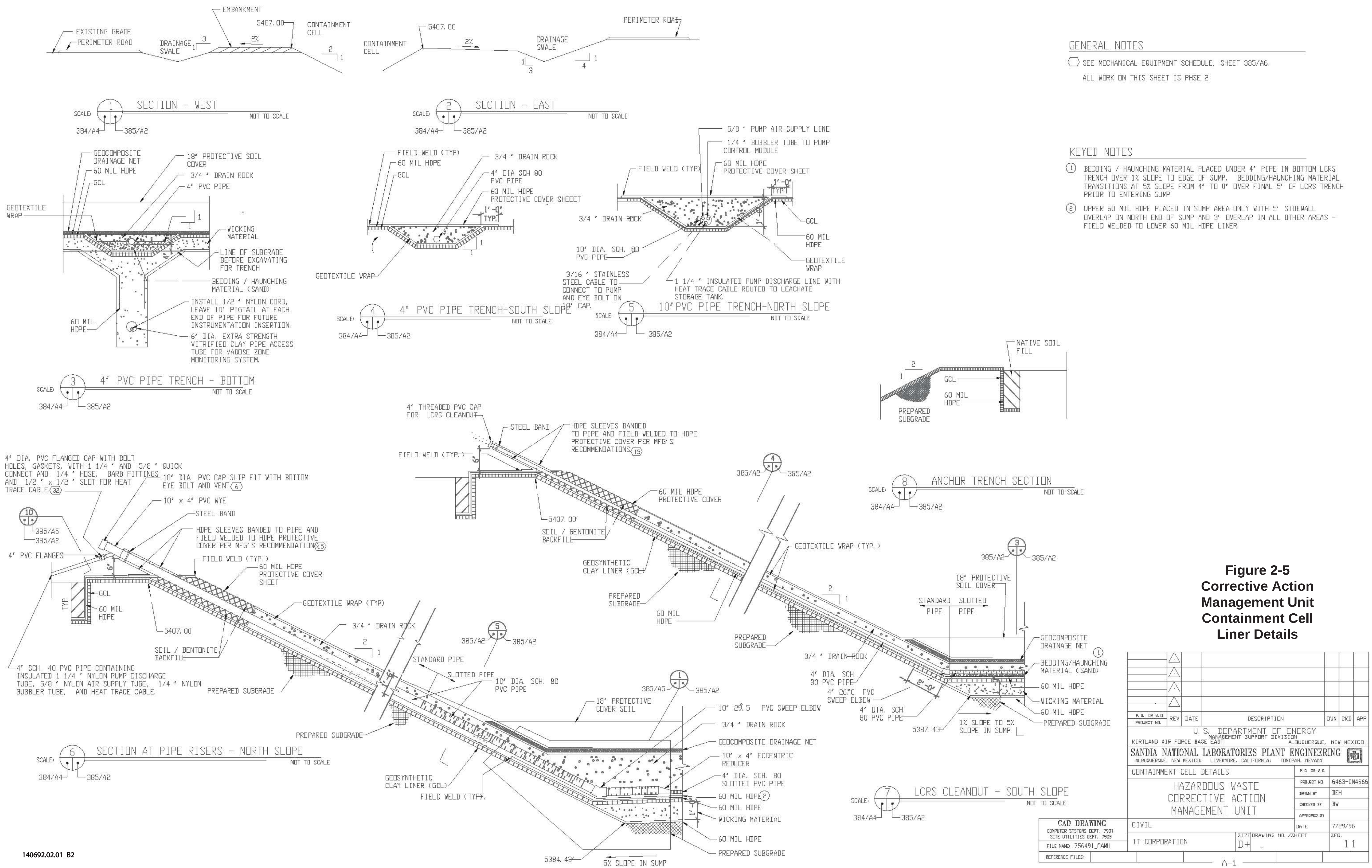

Figure 2-5
Corrective Action Management Unit Containment Cell Liner Details

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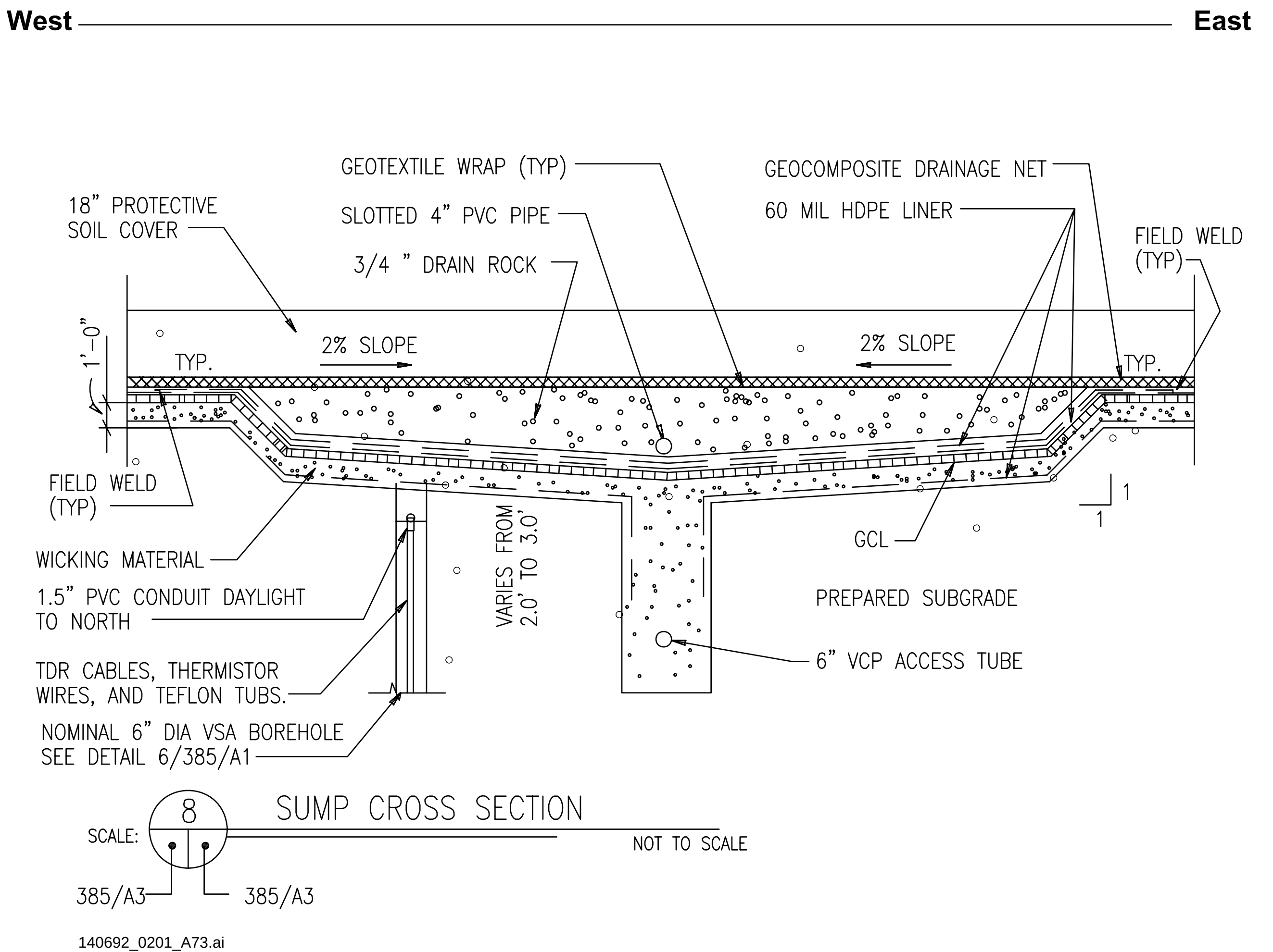

Figure 2-6
West-East Cross-Section of Containment Cell

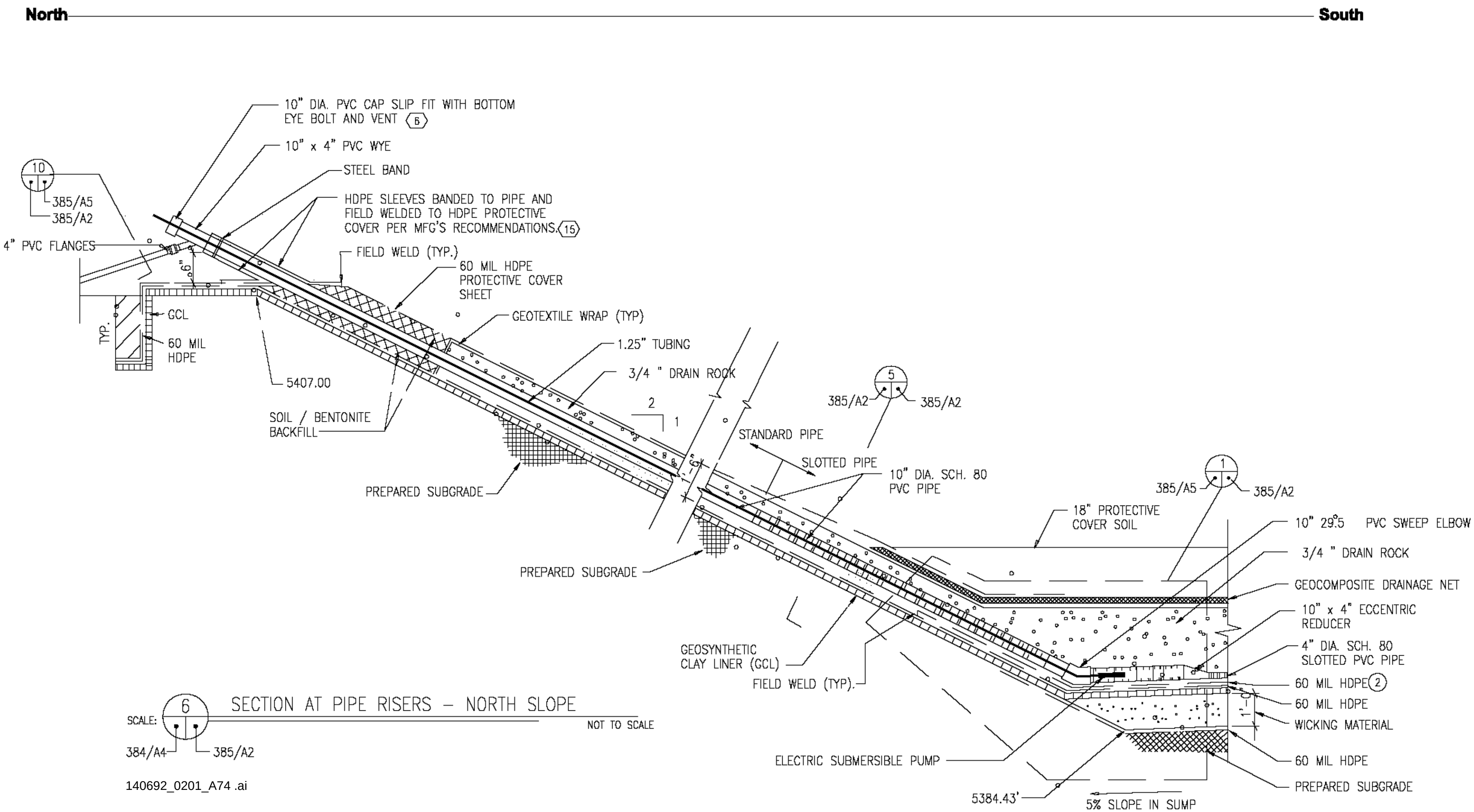

Figure 2-7
North-South Cross-Section of LCRS Sump

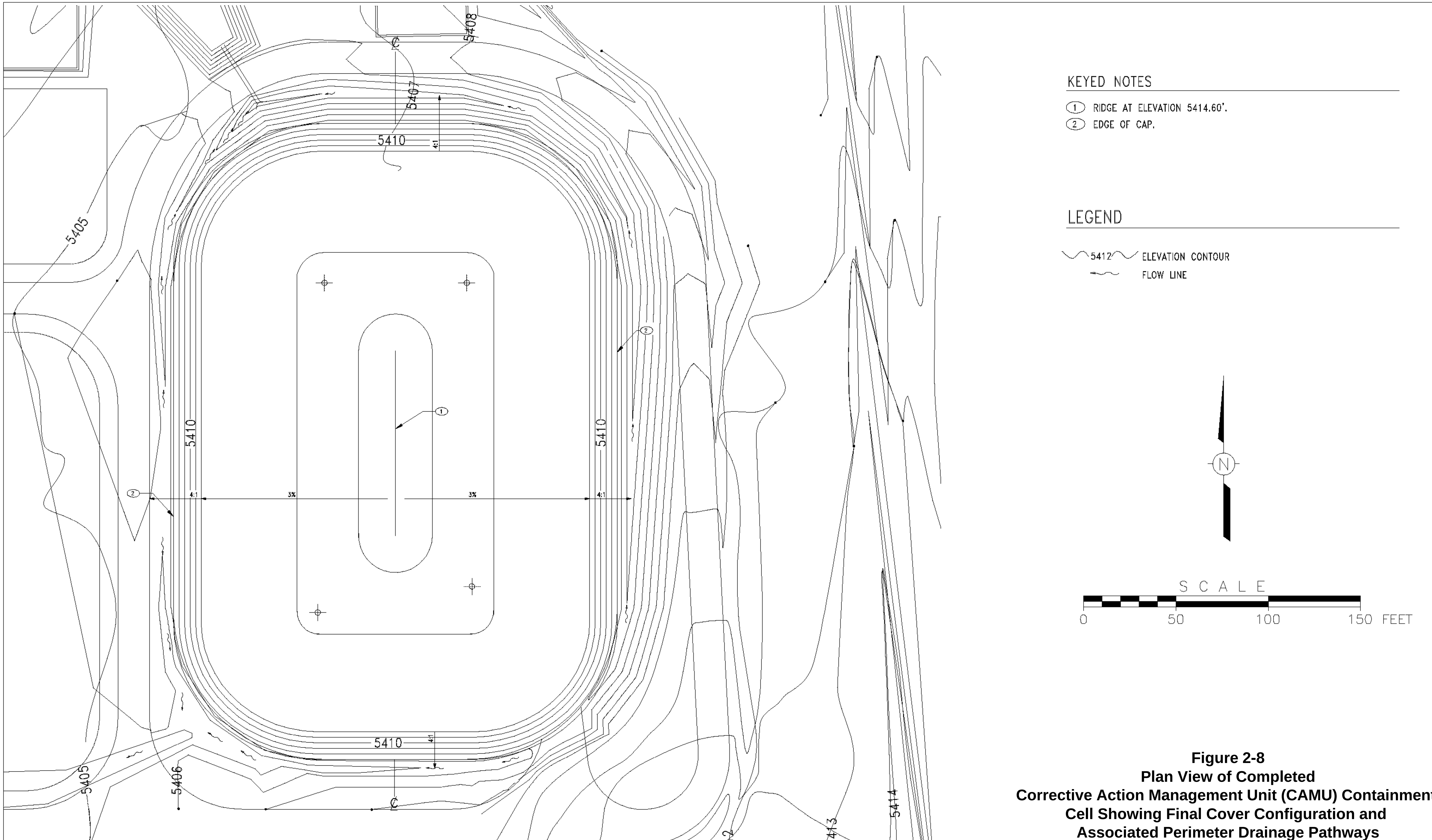

Figure 2-8
Plan View of Completed
Corrective Action Management Unit (CAMU) Containment
Cell Showing Final Cover Configuration and
Associated Perimeter Drainage Pathways

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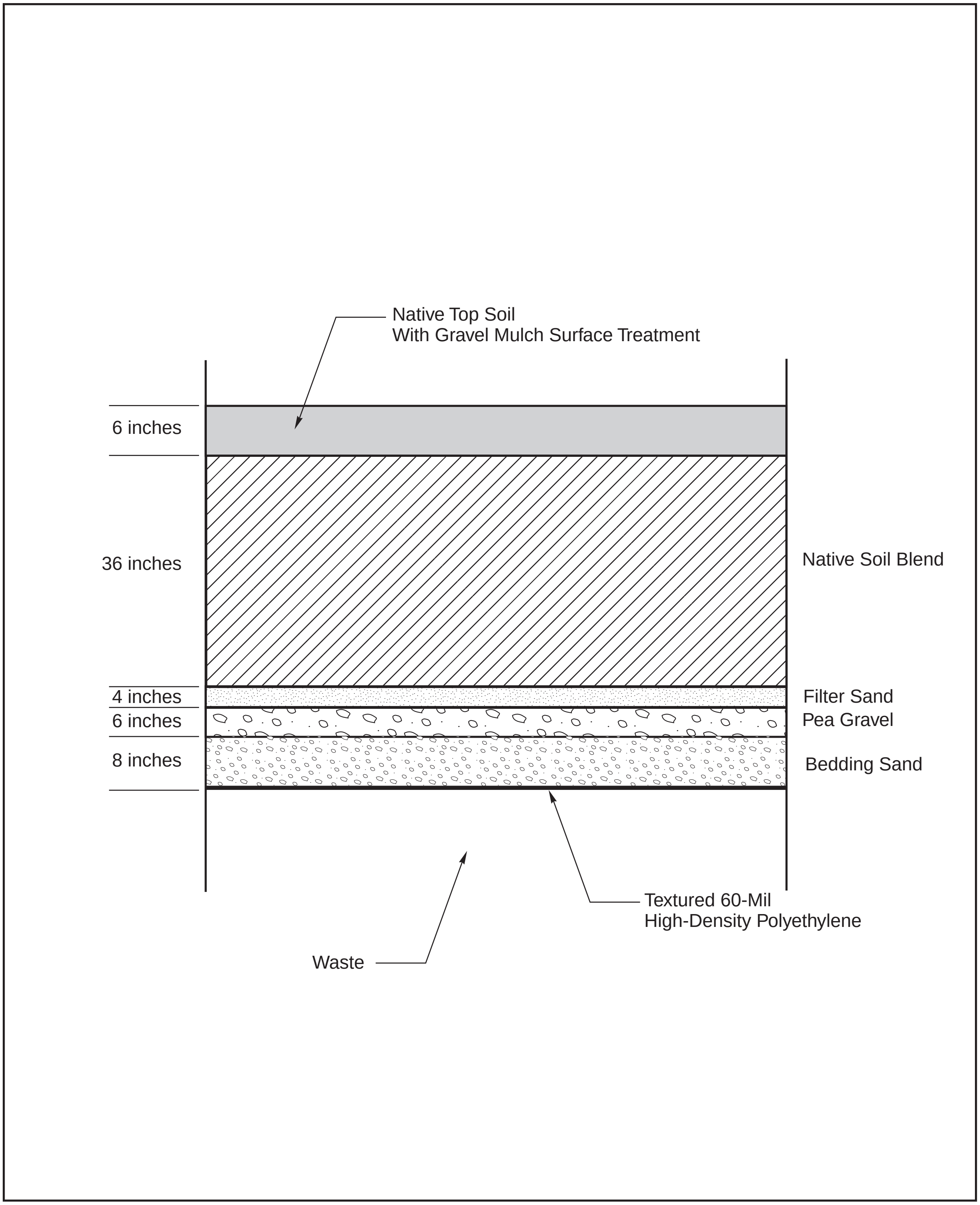

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Figure 2-9

Schematic Cross-Section of Final Cover System

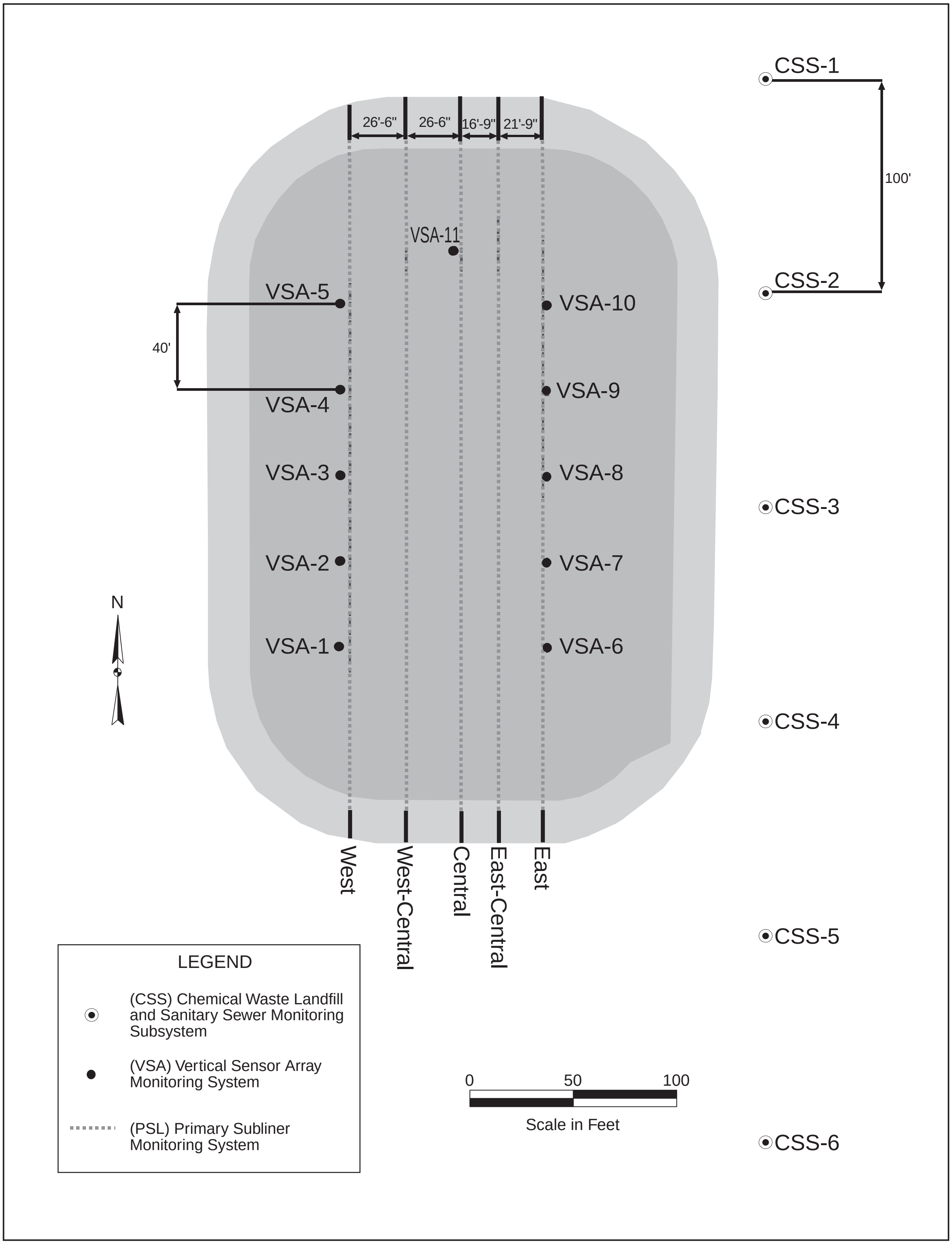

Figure 2-10

Plan View of CAMU Containment Cell and Vadose Zone Monitoring System

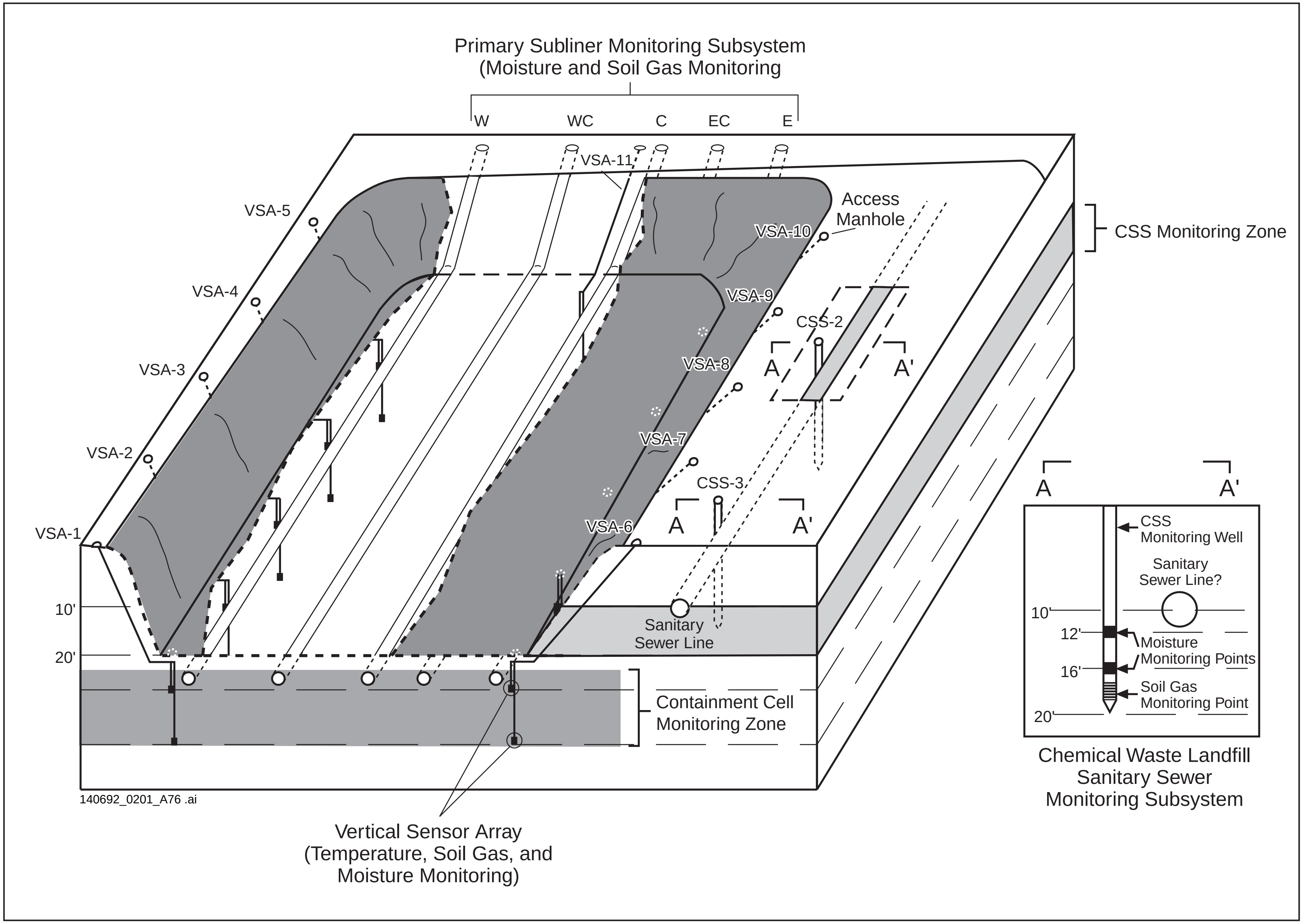

Figure 2-11

Block Diagram of CAMU Containment Cell and Vadose Zone Monitoring System

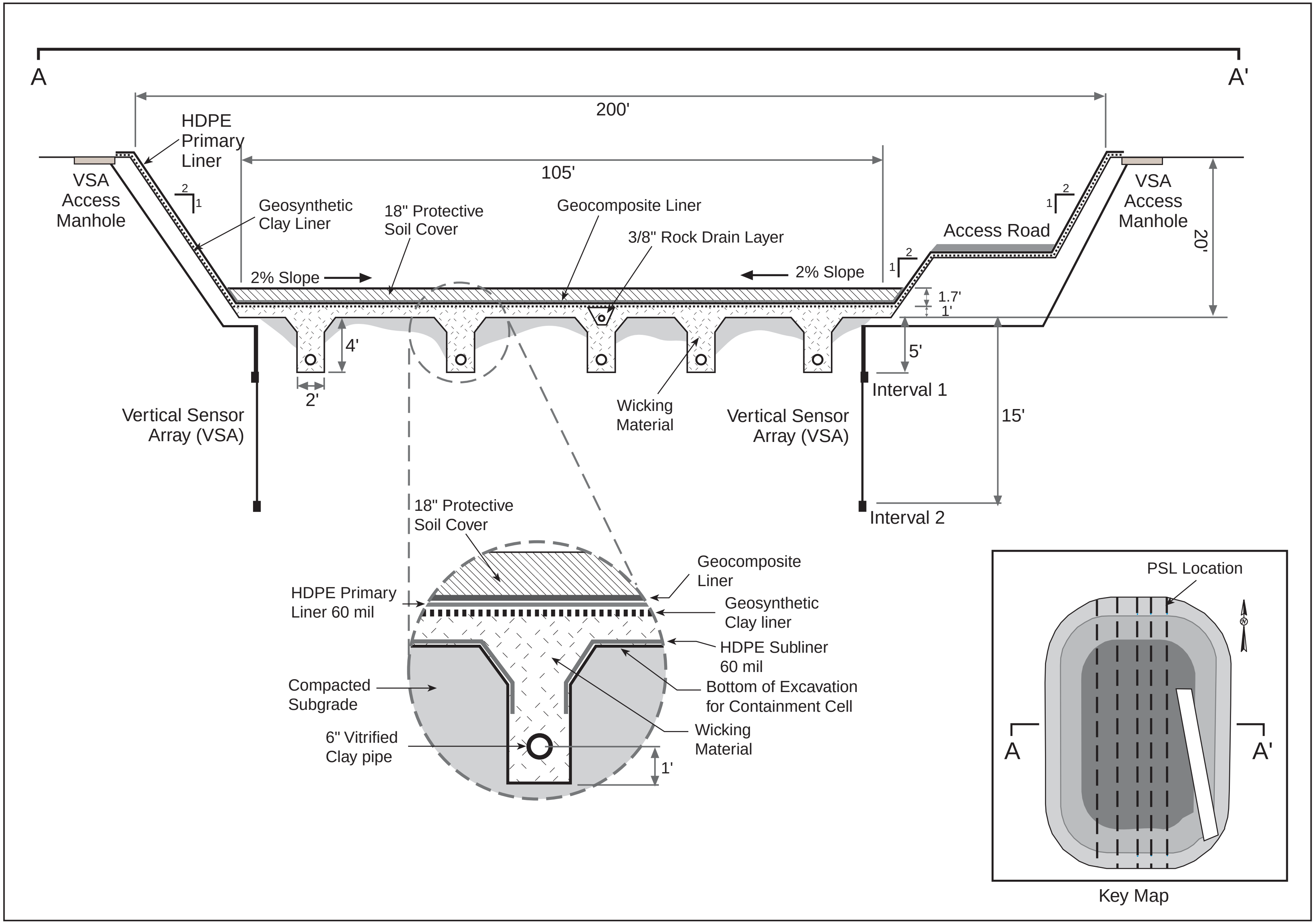

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Figure 2-12

Cross-Sectional View of CAMU Containment Cell and Primary Subliner Monitoring Subsystem

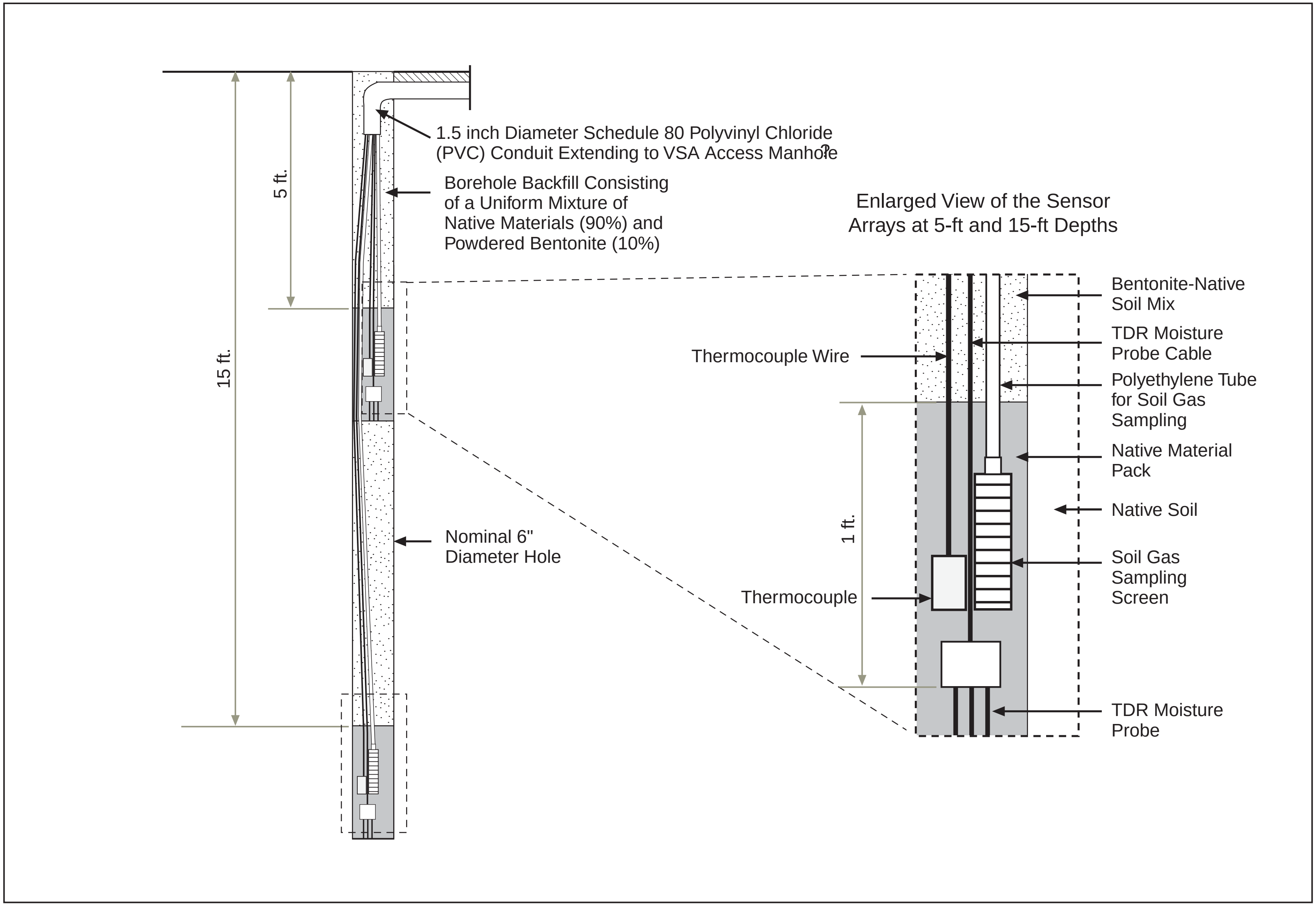

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Figure 2-13

Configuration of Vertical Sensor Array Monitoring Subsystem

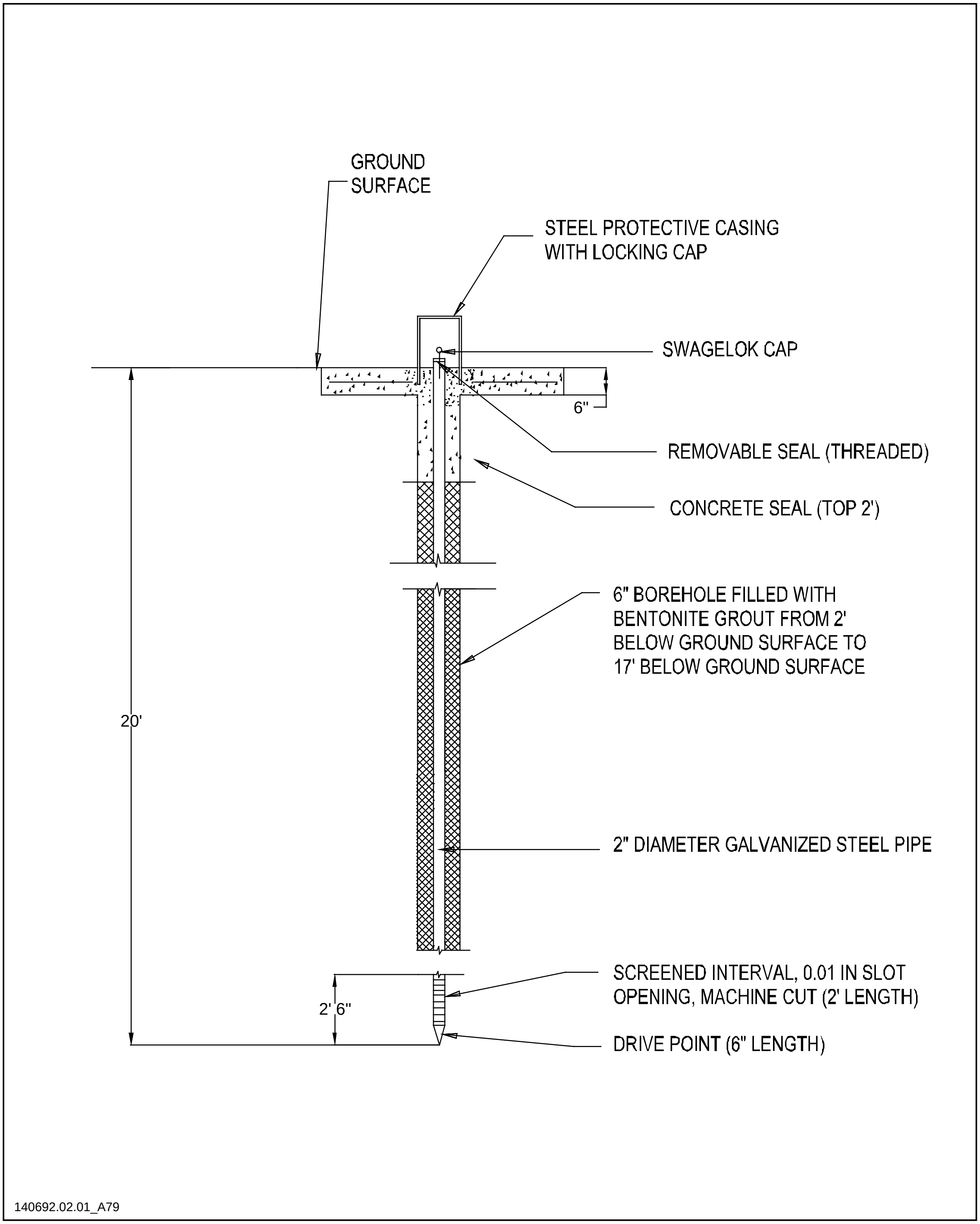

Figure 2-14

Configuration of Chemical Waste Landfill and Sanitary Sewer Monitoring Subsystem

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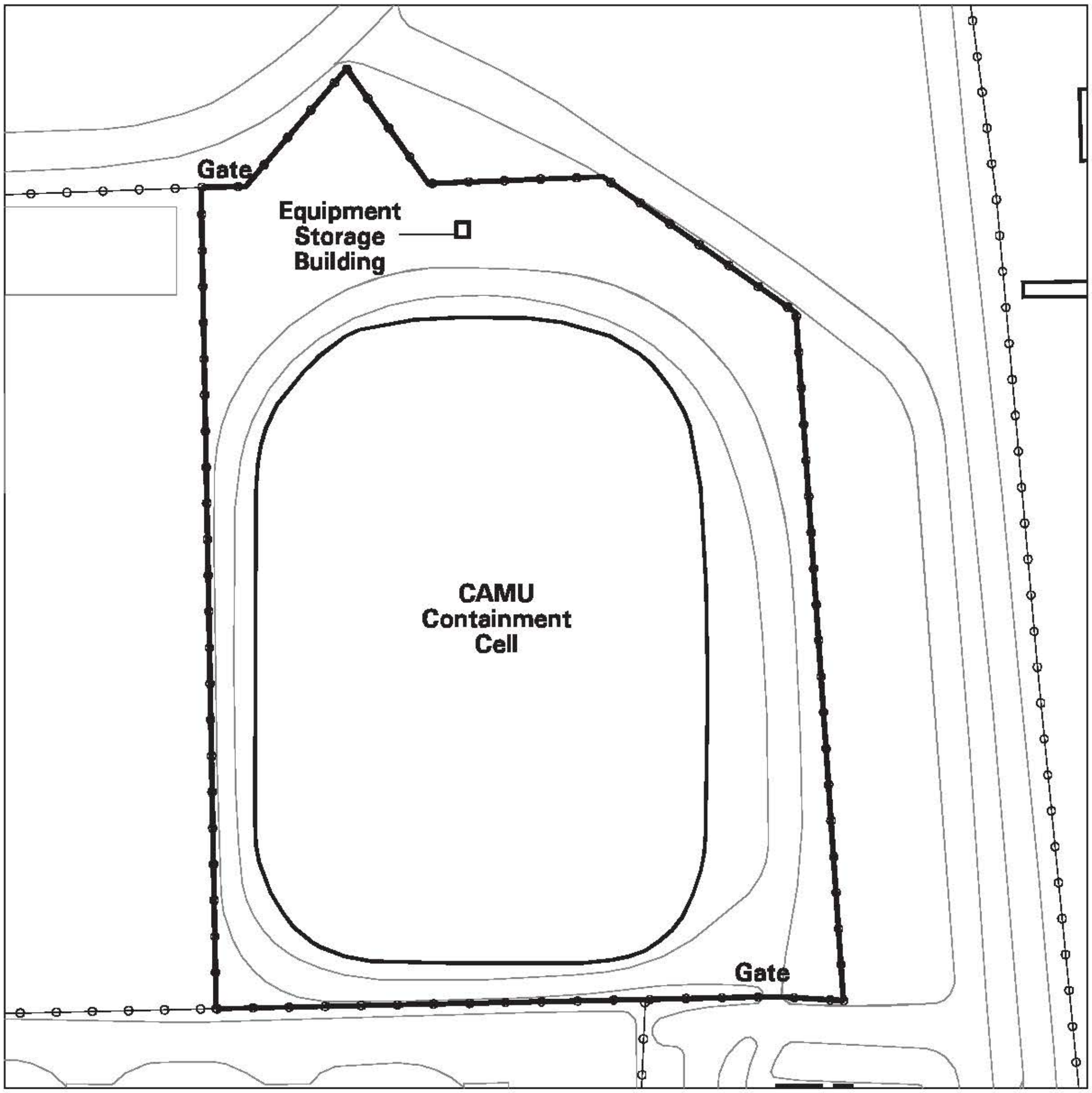

Legend

CAMU Perimeter

Road

Fence

Building / Structure

Figure 2-15
CAMU Post-Closure Boundary and Access Point

0 50 100
Scale in Feet

0 12 24
Scale in Meters

N

Sandia National Laboratories, New Mexico
Environmental Geographic Information System

APPENDIX A

POST-CLOSURE NOTICE FOR THE CORRECTIVE ACTION MANAGEMENT UNIT TECHNICAL AREA III SANDIA NATIONAL LABORATORIES/NEW MEXICO

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

CERTIFIED MAIL - RETURN RECEIPT REQUESTED DEC 3 2003

Ms. Mary E. Herrera
County Clerk, Bernalillo County – 6th Floor
One Civic Plaza NW
Albuquerque, NM 87102

Dear Ms. Herrera:

On behalf of the Department of Energy (DOE) and Sandia Corporation, DOE is submitting a post-closure notice for the Corrective Action Management Unit (CAMU) at Sandia National Laboratories/ New Mexico (SNL/NM).

The CAMU is a facility regulated by the New Mexico Environment Department (NMED) under the Resource Conservation and Recovery Act (RCRA). The CAMU is located in the southeast corner of SNL/NM Technical Area III within the boundaries of Kirtland Air Force Base, on federal land controlled by the DOE. The facility was used for the treatment, storage, and containment of hazardous remediation waste generated by environmental restoration activities at SNL/NM. The CAMU is now closed under RCRA, with waste remaining in place at the facility. The NMED continues to regulate the CAMU through the post-closure care period.

Submittal of a post-closure notice to the local zoning authority satisfies requirements imposed by the NMED in the CAMU permit. Under the permit provisions, we are required to provide the following information:

- The legal description of the CAMU containment cell is provided on the enclosed survey plat. This survey plat was also transmitted to the Bernalillo County Zoning, Building, and Planning Commission and to the NMED on October 15, 2003.
- The CAMU containment cell contains approximately 31,000 cubic yards of hazardous remediation waste that meets permit-imposed treatment standards.
- Land use is restricted to prevent disturbance of the CAMU containment cell.

If you have any questions regarding this submittal, please contact Joe Estrada of my staff at (505) 845-5326.

Sincerely,

Karen L. Boardman for
Manager

Enclosure

Mary Herrera Bern. Co. LTR R 13.00
2003223014
6006052
Page: 1 of 3
12/16/2003 01:38P
Bk-A70 Pg-2538

Enclosures

cc w/encl.:
L. King, USEPA, Region 6 (Via Certified Mail, 2 copies)
K. Thomas, USEPA, Region 6
W. Moats, NMED-HWB (Via Certified Mail)
M. Gardipe, NNSA/SC/ERD
C. Voorhees, NMED-OB, Santa Fe
D. Bierley, NMED-OB
S. Martin, NMED-HWB, Santa Fe
M. Reynolds, Legal, NNSA/SSO

cc w/o encl.:
J. Estrada, NNSA/SSO, MS 0184
F. Nimick, SNL, MS 1087

CERTIFICATION STATEMENT FOR APPROVAL AND FINAL RELEASE OF DOCUMENTS

Document title: CAMU Post-Closure Notice, Submittal to Bernalillo County Clerk's Office, November 2003

Document author: M.J. Davis, Dept. 6135

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

Signature: Pete B. Davies   11/21/03

Peter B. Davies
Director
Geoscience & Environment Center
Division 6100
Sandia National Laboratories/New Mexico
Albuquerque, New Mexico 87185
Operator

Date

and

Signature: Kenneth E. Zamora for   12/2/03

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

Date

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

DEC 3 2003

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Ron Curry, Secretary
New Mexico Environment Department
P.O. Box 26110
1190 St. Francis Drive, N4050
Santa Fe, NM 87502-0110

cc: David Miller
Mike Irwin
Dick Fate
MJ Davis
Amy Blumberg
Matt Shain
ESHSEC Record

MB 12/4/03

Dear Mr. Curry:

On behalf of the Department of Energy (DOE) and Sandia Corporation, DOE is submitting a post-closure notice for the Corrective Action Management Unit (CAMU) at Sandia National Laboratories/ New Mexico (SNL/NM). The CAMU is authorized under the Hazardous and Solid Waste Amendments Module of the Resource Conservation and Recovery Act Permit for SNL/NM (EPA ID No. NM5890110518). The CAMU is now closed under RCRA, with wastes remaining in place.

Submittal of a post-closure notice is required under Section 4.4 of Appendix D, Class III Permit Modification Request for the Management of Hazardous Remediation Waste at the Corrective Action Management Unit, Technical Area III, September 1997, Reprinted June 2002. The post-closure notice has also been submitted to the Bernalillo County Clerk's Office. Documentation of the title record filing is enclosed.

Under the permit provisions, we are required to provide the following information:

- The location of the CAMU is documented on the survey plat transmitted to you and to the Bernalillo County Zoning, Building and Planning Commission on October 15, 2003.
- The CAMU containment cell contains approximately 31,000 cubic yards of hazardous remediation waste that meets permit-imposed treatment standards.
- Land use is restricted to prevent disturbance of the CAMU containment cell.

If you have any questions regarding this submittal, please contact Joe Estrada of my staff at (505) 845-5326.

Sincerely,

Kenneth E. Zamora for

Karen L. Boardman
Manager

cc w/o enclosure:
J. Kieling, NMED-HWB, Santa Fe
W. Moats, NMED (Via Certified Mail)
L. King, USEPA, Region VI (Via Certified Mail, 2 copies)
C. Voorhees, NMED-OB, Santa Fe
D. Bierley, NMED-OB
S. Martin, NMED-HWB, Santa Fe
K. Thomas, USEPA, Region VI
S. Fish, Bernalillo County Zoning, Building and Planning Commission
J. Estrada, NNSA/SSO, MS 0184
M. Reynolds, NNSA/SSO
M. Gardipe, NNSA/SC/ERD
F. Nimick, SNL, MS 1089
A, Blumberg, SNL, MS 0141
CAMU Site Operational Record, Attn: M. Shain, SNL, MS 1151

CERTIFICATION STATEMENT FOR APPROVAL AND FINAL RELEASE OF DOCUMENTS

Document title: CAMU Post-Closure Notice, Submittal to Bernalillo County Clerk's Office, November 2003

Document author: M.J. Davis, Dept. 6135

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

Signature: Pete B. Davies 11/21/03

Peter B. Davies
Director
Geoscience & Environment Center
Division 6100
Sandia National Laboratories/New Mexico
Albuquerque, New Mexico 87185
Operator

Date

and

Signature: Kenneth E. Zamora for 12/2/03

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

Date

APPENDIX B

SAMPLING AND ANALYSIS PLANS FOR THE VADOSE ZONE MONITORING SYSTEM AT THE CORRECTIVE ACTION MANAGEMENT UNIT TECHNICAL AREA III SANDIA NATIONAL LABORATORIES/NEW MEXICO

APPENDIX B-1

SAMPLING AND ANALYSIS PLAN FOR THE PRIMARY SUBLINER MONITORING SYSTEM

APRIL 2012

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List of Figures

List of Abbreviations/Acronyms

ASTM	American Society for Testing and Materials
CAMU	Corrective Action Management Unit
CPN	California Pacific Nuclear
EPA	U.S. Environmental Protection Agency
FOP	Field Operating Procedure
PSL	primary subliner
QA	quality assurance
QC	quality control
SAP	Sampling and Analysis Plan
SNL/NM	Sandia National Laboratories/New Mexico
VCP	vitrified clay pipe

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1.0 Introduction

The Primary Subliner (PSL) is one of three vadose zone monitoring systems associated with the containment cell. Monitoring using the PSL Monitoring Subsystem will be conducted to verify containment cell integrity and performance. This Sampling and Analysis Plan (SAP) summarizes the general monitoring and sampling strategy for the PSL that will be used during the post-closure period.

The PSL is the primary monitoring system for the containment cell and is designed to provide early leak-detection capability. It consists of five parallel-trending, horizontal, vitrified clay pipes (VCPs) located 5 feet below the containment cell bottom liner, with horizontal spacing of 17 to 27 feet. The PSL VCP provides sufficient porosity for moisture detection, thus eliminating the need for holes or screens. A polyvinyl chloride access tube is connected to the ends of each VCP to facilitate the deployment of a neutron probe for moisture monitoring. The access tubes open on the north and south sides of the containment cell. The neutron probe is manually moved through the VCP during monitoring events.

2.0 Monitoring and Sampling Strategy

Monitoring requirements for the post-closure care period are specified in Table 3-1, Section 3.4 of the Post-Closure Care Plan. Monitoring is performed to verify containment cell performance.

2.1 Monitoring Methods

Moisture monitoring in the PSL subsystem involves measuring soil moisture content through each VCP using a neutron probe. The moisture sensor will be a California Pacific Nuclear (CPN) 503DR Hydroprobe Moisture Depth Gauge, or equivalent. The CPN 503DR probe uses a 50.0-millicurie americium-241:beryllium neutron source for moisture content measurement. With the custom-made cable-and-winch system available at Sandia National Laboratories/New Mexico (SNL/NM), the CPN 503DR probe can be configured to move through each VCP while communicating with the control box on the surface.

Following neutron logging, the calculated moisture content data can be entered onto a computer spreadsheet for evaluation. Moisture monitoring will be conducted in accordance with Field Operating Procedure 08-20 “Soil Moisture Determination Utilizing Neutron Logging (SNL/NM, 2011).

2.2 Field and Laboratory Quality Assurance/Quality Control

FOP 08-20 provides instructions for PSL monitoring and sampling operations. For each scheduled sampling event prescribed by Table 3-1 of the Post-Closure Care Plan, field and laboratory quality assurance (QA) samples shall include duplicate samples and field blanks. Samples will be submitted to an analytical laboratory under contract to Sandia that meets the QA/quality control (QC) requirements of SW-846.

The CPN 503DR Hydroprobe Moisture Depth Gauge is a geophysical means of measuring soil moisture content. The CPN neutron probe is used to measure absorption of emitted neutrons. The assumption is made that the hydrogen in soil moisture is the dominant absorber of the emitted neutrons. For the PSL monitoring system, the correlation and QA/QC checks described in FOP 08-20 will be performed as needed.

2.2.1 CPN 503DR Hydroprobe Moisture Depth Gauge QA/QC

The CPN 503DR probe is operated in accordance with FOP 08-20 and the operating manual (CPN, 1984). The standard count measures the proper function of the gauge electronics and also compensates for the source decay. This measurement should be performed daily when the probe is used, as described in the FOP.

2.2.2 CPN 503DR Hydroprobe Moisture Depth Gauge Correlation

The correlation of neutron counts to soil moisture content using the CPN 503DR neutron probe was initially performed in a vessel that duplicated as close as possible the *in situ* characteristics at the field measuring location. The correlation setup that was used for the PSL is shown in Figure 2-1.

The probe was inserted into the access tube within the vessel, and count readings were taken for a known soil moisture content in the repacked native soil. The resulting neutron count/soil moisture content relationship was used to develop the initial correlation currently for the instrument, which associates a neutron count to a known soil moisture content. A mathematical formula was developed that correlates a neutron count to a known moisture content. Actual soil moisture contents can be determined as described in American Society for Testing and Materials (ASTM) Methods ASTM D2216, "Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass," and ASTM D4643, "Test Method for Determination of Water (Moisture) Content of Soil by the Microwave Oven Method," or with the aid of a previously calibrated time-domain reflectometry system.

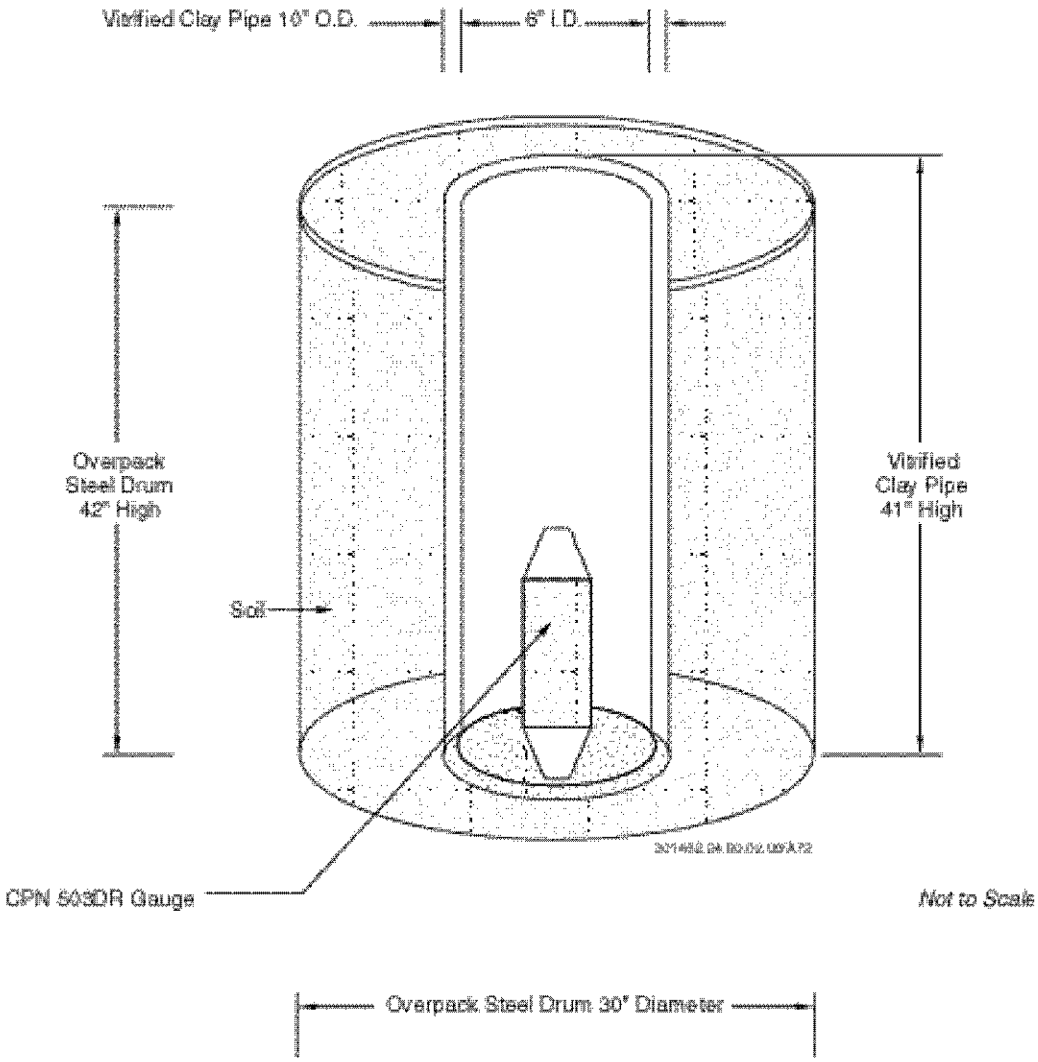

Figure 2-1
CPN 503DR Hydroprobe Moisture Depth Gauge Correlation Setup for the PSL

To ensure the accuracy of the moisture measurement using the correlation formula the neutron probe must be recalibrated to account for source decay and drift of the electronic counting system. During calibration the probe response is restored to the same condition as existed when the correlation formula was determined. The probe will be returned to the manufacturer annually for calibration.

3.0 References

California Pacific Nuclear (CPN), 1984. "CPN 503DR Hydroprobe Moisture Depth Gauge Operating Manual," California Pacific Nuclear, Martinez, California.

CPN, see California Pacific Nuclear.

EPA, see U.S. Environmental Protection Agency.

Sandia National Laboratories/New Mexico (SNL/NM), February 2011. FOP 08-20, "Soil Moisture Determination Utilizing Neutron Logging" Sandia National Laboratories, Albuquerque, New Mexico.

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

APPENDIX B-2

SAMPLING AND ANALYSIS PLAN FOR THE VERTICAL SENSOR ARRAY MONITORING SYSTEM

APRIL 2012

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List of Abbreviations/Acronyms

CAMU	Corrective Action Management Unit
EPA	U.S. Environmental Protection Agency
FOP	Field Operating Procedure
PC	personal computer
QA	quality assurance
QC	quality control
SAP	Sampling and Analysis Plan
TDR	time-domain reflectometry
TO	toxic organic
VSA	Vertical Sensor Array

1.0 Introduction

The Vertical Sensor Array (VSA) monitoring subsystem provides both lateral and vertical soil gradient information on *in situ* soil moisture, with options for soil temperature monitoring and soil gas sampling. Sampling and analysis of the VSA monitoring system will be conducted to verify containment cell integrity and performance. This Sampling and Analysis Plan (SAP) summarizes the general monitoring and sampling strategy that will be used for the VSA during the post-closure period.

The VSA monitoring subsystem consists of 11 vertical boreholes located below the containment cell. Each borehole contains a sampling point at 5 and 15 feet below the containment cell liner. Sampling points contain the following three components: a time-domain reflectometry (TDR) soil-moisture content probe, a temperature sensor, and an active soil-gas sampler. Instrumentation cabling and tubing is ducted to the surface outside of the containment cell liner perimeter. The cabling and tubing connection ends for each VSA borehole are located within individual weatherproof, aboveground enclosures positioned around the perimeter of the containment cell.

2.0 Monitoring and Sampling Strategy

Monitoring requirements for the VSA are outlined in Table 3-1 in Section 3.4 of the Post-Closure Care Plan. Monitoring is performed to verify containment cell performance.

2.1 Monitoring Methods

The TDR moisture content measuring package consists of the following equipment or equivalent: Campbell Scientific, Inc. Model CS610-L TDR moisture probes with coaxial cables, a reflectometer (Campbell Scientific, Inc. Model TDR100), computer interface software, and a notebook computer to display the data (Campbell Scientific, Inc., April 2002). To promote accurate measurement of soil moisture in the vadose zone below the containment cell, TDR probes are inserted into native material at a 15-foot-deep sampling point or inserted in compacted backfill of native material at a 5-foot-deep sampling point to duplicate the native material effective pore size. Because moisture data is collected from only one monitoring depth at a time, a system composed of a single reflectometer and laptop personal computer (PC) for data acquisition may be used. When a soil moisture measurement is needed, the reflectometer is connected to the coaxial cable of an individual TDR probe. Moisture content values are displayed on the laptop PC and recorded in a field logbook. The TDR moisture sampling

package will use Campbell Scientific, Inc. (or similar) data acquisition software (Campbell Scientific, Inc., April 2002).

The temperature sampling package includes thermistors, wiring, and a datalogger. The thermistors consist of 20 AWG Type T duplex insulated copper/constantan wires welded with a TIGTech, Inc. (Lexington, Massachusetts) Model 116 SRL thermocouple welder. A voltage proportional to the surrounding temperature is generated at the juncture of the two dissimilar metals and measured by a Campbell Scientific, Inc. 23X datalogger. Campbell Scientific, Inc. Graphterm™ software (or similar) is used to facilitate datalogger operation and data retrieval.

TDR moisture monitoring and temperature monitoring (if performed) will be conducted in accordance with Field Operating Procedure (FOP) 08-21 “Soil Moisture Monitoring Using Time Domain Reflectometry (SNL/NM 2009).

2.2 Sampling Methods

The soil gas-sampling package consists of a 2-inch-diameter and 6-inch-long, end-capped and slotted polyvinyl chloride screen at the sampling location, connected to the ground surface by 1/4-inch-inside-diameter Teflon™ tubing. Soil gas sampling will be conducted in accordance with FOP 08-22 “Soil Vapor Sampling” (SNL/NM 2011).

2.3 Analytical Procedures

An analytical laboratory under contract to Sandia will be used to provide the analytical services. Laboratory sample custody, sample analysis, data management, reporting, and sample disposal will be performed in accordance with established laboratory procedures. Analytical procedures will follow established laboratory standard operating procedures based upon the referenced U.S. Environmental Protection Agency (EPA) method. Active soil gas sampling will be conducted for selected volatile organic compounds included in EPA Method TO-14 or an equivalent method such as TO-15 that includes the same analyte list, method detection limits equal to or lower than the TO-14 limits, and provides the same or higher level of data quality. (EPA, January 1999).

2.4 Field and Laboratory Quality Assurance/Quality Control

Table 2-1 lists the field procedures that are used in support of this SAP. These procedures provide instructions for conducting VSA monitoring and sampling operations. For each scheduled sampling event prescribed by Table 3-1 of the Post-Closure Care Plan, field and laboratory quality assurance (QA) samples will include duplicate samples and field blanks. Samples will be submitted to an analytical laboratory under contract to Sandia that meets the QA/quality control (QC) requirements of SW-846 (EPA, November 1986).

Table 2-1
Applicable SNL/NM Operating Procedures

Number	Administrative and Field Operating Procedure Title
FOP 08-21[a]	Soil Moisture Monitoring Using Time Domain Reflectometry
FOP 08-22[b]	Soil Vapor Sampling

[a]SNL/NM 2009.
[b]SNL/NM 2011.
FOP = Field Operating Procedure.
SNL/NM = Sandia National Laboratories/New Mexico.
TDR = Time-domain reflectometry.

This section describes the calibration and QA/QC procedures associated with the TDR monitoring technique. TDR is a method used for determining *in situ* soil moisture content. The TDR system includes a probe assembly with coaxial cabling and a reflectometer that is used for generating and receiving an electromagnetic signal. The following calibrations and/or QA/QC checks are recommended for the TDR soil moisture content monitoring technique.

2.4.1 PC Data Acquisition Software

The PC data acquisition software used with TDR requires no calibration or testing other than to ensure there is proper transfer of instructions to and data from the reflectometer. Proper operation of the data acquisition software and reception of the TDR probe signal by the reflectometer is tested by using the PC and software to initiate signal generation and checking that the reflectometer measures the desired signal magnitude, location, and detail. Confirmation of proper data reception is best accomplished by first ensuring that the signal measured by the reflectometer can be seen on the PC screen. The data file generating the PC display can be imported into a graphics-capable software program such as Microsoft® Excel or Sigmaplot® to

confirm that the probe signal dimensions shown on the PC screen are the same as those stored in the data file.

2.4.2 Reflectometer

The reflectometer is operated and tested according to the operator's manual. Reflectometer settings must be found that present the start and end points of the TDR probe (Figure 2-1). The start and end points of the probe are the critical points that must appear unambiguously on the screen. Proper settings are a function of cable composition and length, probe type, soil composition, soil moisture, and soil solution conductivity. The soil moisture content can be determined based upon the empirical relationship between the apparent probe waveform length and the moisture content in typical soils, as defined by Ledieu et al. (1986). During normal field TDR measurement of soil moisture content the actual displayed waveform should be checked to ensure that the complete waveform is being captured. Erroneous moisture measurements can be generated from incomplete waveforms. Further information may be obtained from the Campbell Scientific, Inc. TDR instruction manual (Campbell Scientific, Inc., April 2002), and from Klute (1986), Knight (1992), Kachanoski et al. (1992), Dasberg and Hopmans (1992), and Topp et al. (1980).

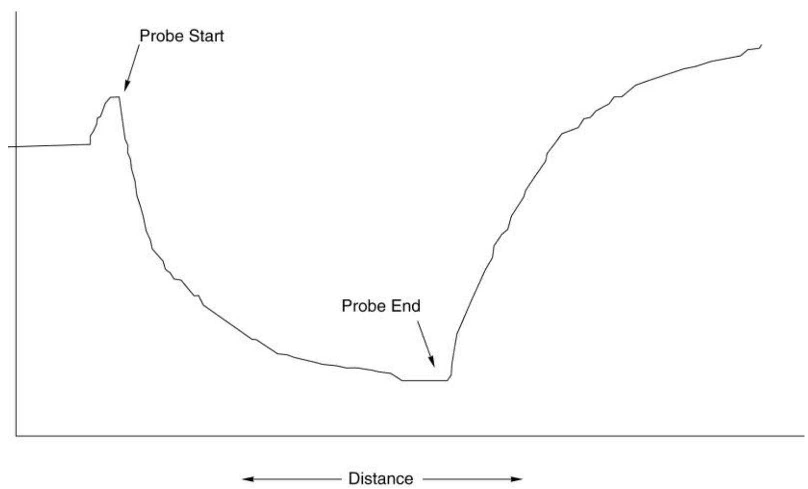

Figure 2-1

Typical Reflectometer Screen Display of the TDR Probe Waveform, Used to Derive Soil Moisture Content.

3.0 References

Campbell Scientific, Inc., April 2002. "TDR100 Instruction Manual," Campbell Scientific, Inc., Logan, Utah.

Dasberg, S., and J.W. Hopmans, 1992. "Time Domain Reflectometry Calibration for Uniformly and Nonuniformly Wetted Sandy and Clayey Loam Soil," *Soil Science Society of America Journal*, 56:1341-1345.

EPA, see U.S. Environmental Protection Agency.

Kachanoski, R.G., E. Pringle, and A. Ward, 1992. "Field Measurement of Solute Travel Times Using Time Domain Reflectometry," *Soil Science Society of America Journal*, 56:46-52.

Klute, A. (Ed), 1986. *Methods of Soil Analysis, Part 1, Physical and Mineralogical Methods*, 2nd Edition, Soil Science Society of America, Inc., Madison, Wisconsin.

Knight, J. H., 1992. "Sensitivity of Time Domain Reflectometry Measurements to Lateral Variations in Soil Water Content," *Water Resources Research*, Vol. 28, No. 9.

Ledieu, J., P. DeRidder, P. DeClerck, and S. Dautrebande, 1986. "A Method of Measuring Soil Moisture by Time-Domain Reflectometry," *Journal of Hydrology*, 88:319-328.

Sandia National Laboratories/New Mexico (SNL/NM), 2009. FOP 08-21 "Soil Moisture Monitoring Using Time Domain Reflectometry" Sandia National Laboratories, Albuquerque, New Mexico.

Sandia National Laboratories/New Mexico (SNL/NM), 2011. FOP 08-22 "Soil Vapor Sampling" Sandia National Laboratories, Albuquerque, New Mexico.

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

Topp, G.C., J.L. Davis, and A.P. Annan, 1980. "Electromagnetic Determination of Soil Water Content: Measurements in Coaxial Transmission Lines," *Water Resources Research*, Vol. 16, No. 3, pp. 574-582.

U.S. Environmental Protection Agency (EPA), November 1986. "Test Methods for Evaluating Solid Waste," 3rd ed., SW-846, as revised and updated, Office of Solid Waste and Emergency Response, U.S. Environmental Protection Agency, Washington, D.C.

U.S. Environmental Protection Agency (EPA), January 1999. *Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air -- Second Edition* (EPA/625/R-96/010b), as revised and updated, U.S. Environmental Protection Agency, Washington, D.C.

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APPENDIX B-3

SAMPLING AND ANALYSIS PLAN FOR THE CHEMICAL WASTE LANDFILL AND SANITARY SEWER LINE MONITORING SYSTEM

APRIL 2012

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List of Abbreviations/Acronyms

ASTM	American Society for Testing and Materials
CPN	California Pacific Nuclear
CSS	Chemical Waste Landfill and Sanitary Sewer Line
CWL	Chemical Waste Landfill
EPA	U.S. Environmental Protection Agency
FOP	Field Operating Procedure
QA	quality assurance
QC	quality control
SAP	Sampling and Analysis Plan
SNL/NM	Sandia National Laboratories/New Mexico
TO	toxic organic
VOC	volatile organic compound

1.0 Introduction

The Chemical Waste Landfill (CWL) and Sanitary Sewer Line (CSS) monitoring subsystem is designed to allow detection and identification of leakage from the sanitary sewer line, as well as volatile organic compounds (VOCs) that could potentially migrate from the CWL towards the containment cell. This Sampling and Analysis Plan (SAP) summarizes the general monitoring and sampling strategy that can be used for the CSS monitoring system during the post-closure care period.

The CSS monitoring subsystem is located east of the containment cell and consists of six vertical, 20-foot-deep boreholes, spaced approximately 100 feet apart in a line parallel to the north-south oriented sanitary sewer line. Each borehole is equipped with galvanized steel casing suitable for deployment of a neutron probe for soil moisture monitoring and a soil gas sampling port used to collect soil gas samples.

2.0 Monitoring and Sampling Strategy

Monitoring will be conducted as specified in Table 3-1, Section 3.4 of the Post-Closure Care Plan. The CSS monitoring system can be used to perform the following activities:

- Detect liquid releases from the sanitary sewer line, thereby providing information to eliminate false positive detections at the other vadose zone monitoring systems. Potential releases from the sanitary sewer line would be of an aqueous nature and could contain nitrates and perhaps phosphates and sulfates. VOCs originating from the sanitary sewer line are not anticipated.

- Detect VOC vapors migrating northwest through the vadose zone toward the containment cell from residual contamination at the CWL.

2.1 Monitoring Methods

A neutron probe will be used at the CSS monitoring locations to measure soil moisture. During a monitoring event, the probe is manually lowered to the selected monitoring point inside the galvanized steel casing.

The primary moisture sensor will be a California Pacific Nuclear (CPN) 503DR Hydroprobe Moisture Depth Gauge or an equivalent soil moisture neutron probe. The CPN 503DR probe uses a 50.0-millicurie americium-241:beryllium neutron source for moisture content

measurement. Moisture monitoring within the CSS will be conducted following Field Operating Procedure (FOP) 08-20 "Soil Moisture Determination Utilizing Neutron Logging" " (SNL/NM, 2011a).

2.2 Sampling Methods

The CSS monitoring points will be used for soil gas sampling to detect and identify VOC vapors that may potentially migrate toward the containment cell from the CWL. Soil gas sampling will be conducted in accordance with FOP 08-22 "Soil Vapor Sampling" (SNL/NM, 2011b).

2.3 Analytical Procedures

An analytical laboratory under contract to Sandia will be used to provide the analytical services. Laboratory sample custody, sample analysis, data management, reporting, and sample disposal will be performed in accordance with established laboratory procedures. Analytical procedures will follow established laboratory standard operating procedures based upon the referenced U.S. Environmental Protection Agency (EPA) method. Active soil gas sampling will be conducted for selected VOCs included in EPA Method TO-14 an equivalent method such as TO-15 that includes the same analyte list, method detection limits equal to or lower than the TO-14 limits, and provides the same or higher level of data quality. (EPA, January 1999).

2.4 Field and Laboratory Quality Assurance/Quality Control

Table 2-1 lists the field procedures that are used in support of this SAP. These procedures provide instructions for CSS monitoring and sampling operations. For each scheduled sampling event prescribed by Table 3-1 of the Post-Closure Care Plan, field and laboratory quality assurance (QA) samples will include duplicate samples and field blanks. Samples will be submitted to an analytical laboratory under contract to Sandia that meets the QA/quality control (QC) requirements of SW-846 (EPA, November 1986).

Table 2-1
Applicable SNL/NM Operating Procedures

Number	Administrative and Field Operating Procedure Title
FOP 08-20[a]	Soil Moisture Determination Using Neutron Logging
FOP 08-22[b]	Soil Vapor Sampling

[a]SNL/NM February 2011.
[b]SNL/NM June 2011.
CPN = California Pacific Nuclear.
FOP = Field Operating procedure.
SNL/NM = Sandia National Laboratories/New Mexico.

The CPN 503DR Hydroprobe Moisture Depth Gauge is a geophysical means of calculating soil moisture content. The CPN neutron probe is used to measure absorption of emitted neutrons. The assumption is made that the hydrogen in soil moisture is the dominant absorber of the emitted neutrons. For the CSS, the correlation and QA/QC checks described in FOP 08-20 will be performed as needed.

2.4.1 CPN 503DR Hydroprobe Moisture Depth Gauge QA/QC

The CPN 503DR probe is operated in accordance with FOP 08-20 and the operating manual (CPN, 1984). The standard count measures the proper function of the gauge electronics and also compensates for the source decay. This measurement should be performed daily when the probe is used as described in the FOP.

2.4.2 CPN 503DR Hydroprobe Moisture Depth Gauge Correlation

The correlation of neutron counts to soil moisture content using the CPN 503DR neutron probe was initially performed in a vessel that duplicated as close as possible the *in situ* characteristics at the field measuring location. The correlation setup that was used for the CSS is shown in Figure 2-1.

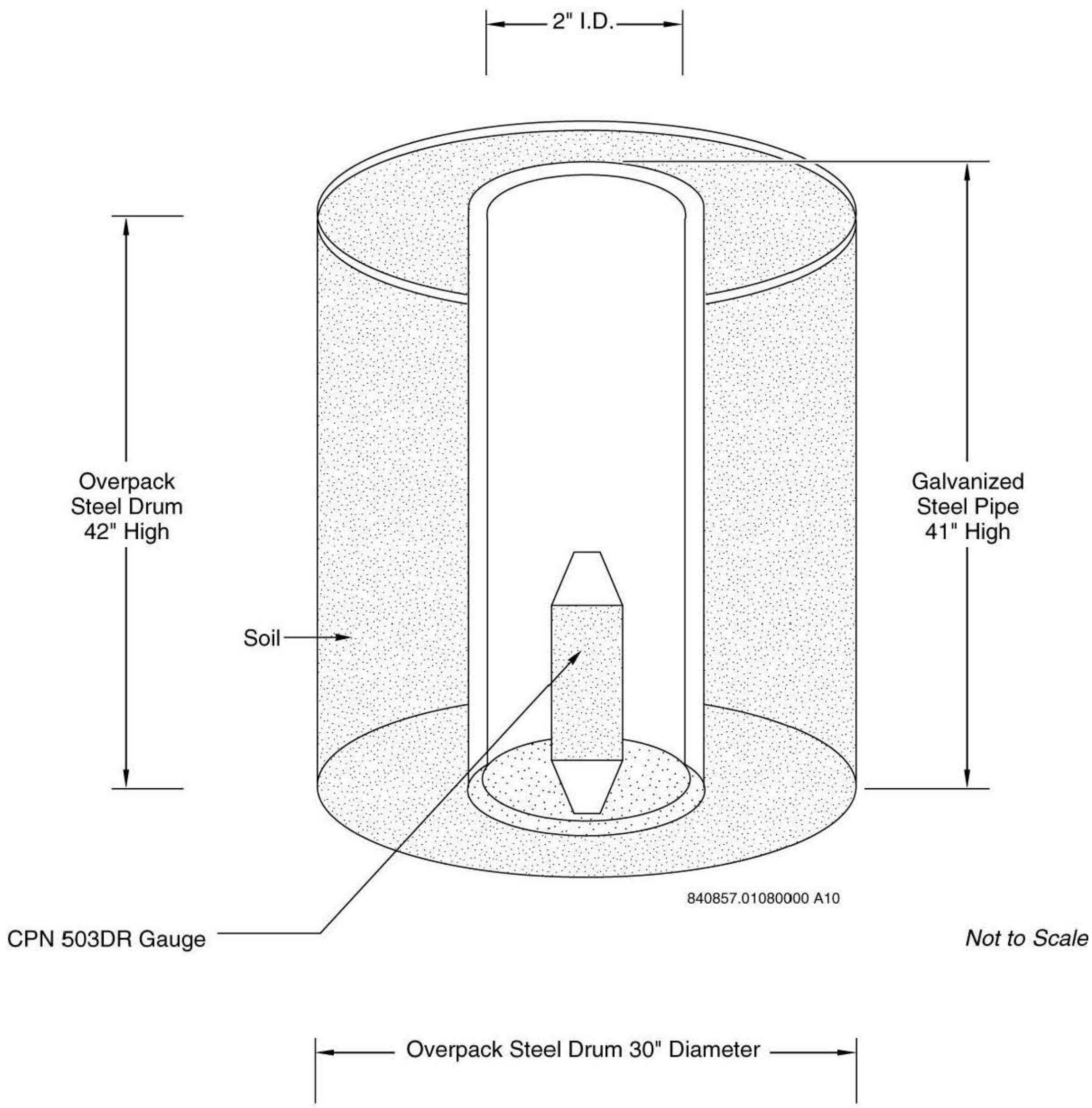

Figure 2-1

CPN 503DR Hydroprobe Moisture Depth Gauge Correlation Setup for the CSS

The probe was inserted into the access tube within the vessel and count readings were taken for a known soil moisture content in the repacked native soil. The resulting neutron count/soil moisture content relationship was used to develop the correlation for the instrument, which associates a neutron count to a known soil moisture content. A mathematical formula was developed that correlates a neutron count to a known moisture content. Actual soil moisture contents can be determined as described in American Society for Testing and Materials (ASTM) Methods ASTM D2216, "Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass," and ASTM D4643, "Test Method for Determination of Water (Moisture) Content of Soil by the Microwave Oven Method," or with the aid of a previously calibrated time-domain reflectometry system.

To ensure the accuracy of the moisture measurement using the correlation formula the neutron probe must be recalibrated to account for source decay and drift of the electronic counting system. During calibration the probe response is restored to the same condition as existed when the correlation formula was determined. The probe will be returned to the manufacturer annually for calibration.

3.0 References

California Pacific Nuclear (CPN), 1984. "CPN 503DR Hydroprobe Moisture Depth Gauge Operating Manual," California Pacific Nuclear, Martinez, California.

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Sandia National Laboratories/New Mexico (SNL/NM), 2011a. FOP 08-20, "Soil Moisture Determination Utilizing Neutron Logging" Sandia National Laboratories, Albuquerque, New Mexico.

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APPENDIX C

INSPECTION FORMS FOR THE CORRECTIVE ACTION MANAGEMENT UNIT TECHNICAL AREA III SANDIA NATIONAL LABORATORIES/NEW MEXICO

CAMU
Post-Closure Inspection Form - Example

1. Date of Inspection ______________________

2. Time of Inspection ______________________

3. Name of Designated Inspector ______________________

Provide explanatory notes for each parameter not inspected or each action required. Include any remedial steps required.

CONTAINMENT CELL COVER SYSTEM			
Inspection Parameters	***Parameter Inspected (Yes or No)***	***Action Required (Yes or No)***	***Note Number***
A. Plants comprising the vegetative cover have the potential for forming deep roots.			
B. Visible settlement of the soil cover in excess of 6 inches.			
C. Animal intrusion burrows in excess of 4 inches in diameter.			
D. Erosion of the soil cover in excess of 6 inches deep.			
E. Contiguous areas of no vegetation greater than 200 ft^2.			
II. SURFACE-WATER DIVERSION STRUCTURES			
Inspection Parameters	***Parameter Inspected (Yes or No)***	***Action Required (Yes or No)***	***Note Number***
A. Channel or sidewall erosion in excess of 6 inches deep.			
B. Channel sediment accumulation in excess of 6 inches deep.			
C. Debris that blocks more than 1/3 of the channel width.			

CAMU
Post-Closure Inspection Form – Example (continued)

III. LEACHATE COLLECTION AND REMOVAL SYSTEM (LCRS)[1]			
Inspection Parameters	***Parameter Inspected (Yes or No)***	***Action Required (Yes or No)***	***Note Number***
Initial 12-month period following closure A. Leachate is pumped from the LCRS collection sump [If Yes, record the amount of liquid pumped into collection drum].			
Remainder of the post-closure period A. Activate leachate pump on a quarterly basis. Pump until cavitation. Perform a video camera inspection if no leachate is removed.			
B. LCRS pump/plumbing in need of repair/maintenance.			
[1]Only designated, experienced, and trained personnel shall inspect LCRS leachate levels and remove, sample, and store leachate from the LCRS. The CAMU Task Leader or his/her qualified designee shall verify the field technician's qualifications.			
IV. VADOSE ZONE MONITORING SYSTEM (VZMS)			
Inspection Parameters	***Parameter Inspected (Yes or No)***	***Action Required (Yes or No)***	***Note Number***
A. Protective casings, access covers and doors, instrumentation access boxes, and compression caps in need of repair/maintenance.			
B. Locks in need of cleaning or replacement.			
C. Electronic monitoring system in need of calibration/repair/ maintenance.			
D. Aboveground VZMS components exposed to weather.			
E. Monitoring equipment (pump, tubing, gauges, valves, etc.) in need of repair/maintenance			

CAMU
Post-Closure Inspection Form – Example (concluded)

V. SECURITY FENCE			
Inspection Parameters	***Parameter Inspected (Yes or No)***	***Action Required (Yes or No)***	***Note Number***
A. Accumulation of wind-blown plants and debris.			
B. Fence wires and posts in need of repair/maintenance.			
C. Gates in need of oiling/repair/maintenance.			
D. Locks in need of cleaning or replacement.			
E. Warning signs in need of repair or replacement.			
VI. PREVIOUS DEFICIENCIES			
Inspection Parameter	***Parameter Inspected (Yes or No)***	***Action Required (Yes or No)***	***Note Number***
Uncorrected/undocumented previous deficiencies.			

NOTES

Note Number	***Description***

Action assigned to: Date action completed:

Action assigned to: Date action completed:

Action assigned to: Date action completed:

Action assigned to:______________________________Date action completed:________________

Inspector's Signature ______________________________
Original to: CAMU Operating Record
Copy to: SNLRecords Center,

AdditionalComments:____

Corrective Action Management Unit
Post-Closure Inspection Form
Biology Inspection Checklist for the CAMU Cover - Example

Approximate vegetative coverage (actively photosynthesizing): ______%
Approximate percent native vegetation of the total vegetative cover: ______%

Listed below are the main plant species identified growing on the CAMU cover and the approximate percentage of the cover populated by each species.

Scientific Name	Common name (optional)	% of total cover[a]

[a]Percentage of total CAMU cover populated by actively-photosynthesizing plants of this species

Corrective Action Management Unit
Biology Inspection Checklist for the CAMU Cover - Example (continued)

Are there any contiguous areas of no vegetation greater than 200 square feet? (Approximately 14 x14 ft.): ____________

If "Yes," mark such areas on a map and attach to this checklist. Improve such area(s) with native vegetation via soil augmentation, scarification, and/or reseeding.

Are there any very deeply rooted (roots greater than 8 feet deep at maturity) plant species present on the cover? ____________

If "Yes," describe the plant(s) and their general distribution or mark such areas on a map and attach to this checklist, and remove plant(s) from the cover.

Notes: ____

____

____

____

Inspection for animal burrow intrusion into CAMU cover

Are any burrows present on the cover?___________

Does any burrow(s) appear to be active?__________

If burrows with an entrance diameter of 4 inches or greater are present or appear to be that of a species that is able to burrow 6 feet or greater, describe below and/or indicate the location(s) on a map and attach to this checklist. Take appropriate actions as necessary to repair cover damage that exceeds prescribed limits.

Notes:____

____

Biological Aspects Map – [note: sketch map to locate specific features will be attached as appropriate]

Inspector's Signature: ____________________________________ Date: __________________

Original to: Corrective Action Management Unit Operating Record
Copy to: SNL Records Center

APPENDIX D

CONTINGENCY PLAN AND EMERGENCY RESPONSE ADDENDUM FOR THE CORRECTIVE ACTION MANAGEMENT UNIT

APRIL 2012

CONTINGENCY PLAN AND EMERGENCY RESPONSE ADDENDUM FOR THE CORRECTIVE ACTION MANAGEMENT UNIT

Emergency response requirements for Resource Conservation and Recovery Act (RCRA)-regulated units are specified in 20 4.1.500 of the New Mexico Administrative Code (NMAC) incorporating Title 40 of the Code of Federal Regulations (CFR), Part 264, Subpart D [7-1-08], “Contingency Plan and Emergency Procedures,” and in 20 NMAC 4.1.900/40 CFR 270.14(b)(7) [7-1-08]. The Sandia National Laboratories/New Mexico and U.S. Department of Energy Site-Wide Contingency Plan is included in Appendix E of the SNL/NM General Part B Permit, in Part 2. Supplemental information specific to the Corrective Action Management Unit (CAMU), Technical Area (TA)-III is included in this attachment, and in Figure 1, and Tables 1 and 2.

The CAMU is a 3.75-acre area located in the southeast corner of TA-III at SNL/NM. The CAMU was used for treatment, storage, and containment of RCRA- and Toxic Substances Control Act (TSCA)-regulated wastes. The unit was closed under RCRA with wastes remaining in place in the containment cell. The CAMU containment cell contains approximately 31,800 cubic yards of RCRA and TSCA-regulated wastes. All aboveground facilities, including the Bulk Waste Staging Area, Containerized Waste Staging Area, and the Sprung™ Structures have been clean-closed.

The CAMU containment cell is a landfill containing approximately 31,800 cubic yards of RCRA-and TSCA-contaminated soils. The soil also contain low levels of tritium (up to 20,000 picocuries per liter). The tritium levels are at or below the federal drinking water standard. The containment cell is covered with a 5-foot-thick, evapotranspiration-type cover system consisting of a layer of 60-mil high-density polyethylene on top of the waste, which, in turn, is covered by bedding sand, pea gravel, filter sand, a native soil blend, and a topsoil layer.

The CAMU also incorporates a less-than-90-day waste accumulation area at the north end of the containment cell. This area is used to accumulate containers of leachate periodically pumped from the containment cell leachate collection and removal system (LCRS). The leachate consists of water with very low levels of RCRA contaminants, polychlorinated biphenyls (PCBs), and tritium. Containers of leachate (55-gallon drums or other suitable containers) are stored on portable spill pallets.

Safety and emergency equipment is stored in a small building adjacent to the less-than-90-day accumulation area or in the office which is located just outside the main entrance near the southeast end of the containment cell.

Figure 1 presents the evacuation routes and assembly areas at the CAMU. Table 1 lists the emergency equipment typically available at the CAMU, which will be tested on a monthly basis and maintained as necessary to ensure proper operation. Table 2 lists the emergency coordinators for the CAMU.

Table 1
Corrective Action Management Unit
Emergency Equipment and Locations

Category	Description	Location
Spill Control Equipment	Spill Control Materials, including sorbent material, brooms, and shovels	Leachate Storage Area Shed
Fire Extinguisher	Portable, Multi-Class	One near the Leachate Storage Area and Containment Cell, and One in CAMU office
Communications: (Internal/External)	Mobile telephone or portable radio or equivalent	Carried by personnel as needed
	Telephone	CAMU office
Water Supply	Fire Hydrant	One outside the southeast entrance to the CAMU
Environmental Safety and Health	Portable eyewash station	Leachate Storage Area Shed (during waste handling activities)
Evacuation	Voice command by on-site personnel or signaled by three blasts of a vehicle warning horn.	Designated Assembly Area (See Figure 1)

CAMU = Corrective Action Management Unit.

Table 2
Corrective Action Management Unit
Emergency Coordinator List

April 2012

Facility Emergency Coordinator		Office Phone	Home Phone
Primary	Don Schofield Sandia National Laboratories P.O. Box 5800 Albuquerque, NM 87185	(505) 844-4088 (office) (505) 259-7098 (cell) (505) 951-6153 (pager)	(505) 268-6888
First Alternate	Robert Ziock Sandia National Laboratories P.O. Box 5800 Albuquerque, NM 87185	(505) 845-0485 (office) (505) 238-3668 (cell) (505) 951-6160 (pager)	(505) 255-4714
Second Alternate	Danielle Nieto Sandia National Laboratories P.O. Box 5800 Albuquerque, NM 87185	(505) 845-7706 (office) (505) 239-3989 (cell) (505) 951-6537 (pager)	(505) 239-3989

One or more of these personnel are available when operations are occurring at the CAMU.

Leachate Management. Leachate will be collected and managed by personnel who have received training in hazardous waste management. Whenever leachate is being pumped, poured, or otherwise handled, all personnel involved in the operation will have access to a communications equipment to contact Kirtland Air Force Base (KAFB) emergency personnel, if necessary. Site personnel will clean up spills immediately, and the required notifications shall be made. At least one verification sample will be collected to ensure complete cleanup has been achieved.

Container Management. The less-than-90-day waste accumulation area consists of a pad approximately 2,500 square feet in size. The pad design is rectangular and consists of compacted subgrade and a 6-inch aggregate base course surface. Containerized leachate is accumulated in 55-gallon drums or other suitable containers on spill containment pallets to prevent the accidental discharge of leachate to the ground surface. The drums will be maintained in a manner that maintains sufficient aisle space to allow the unobstructed movement of personnel and equipment to any portion of the less-than-90-day waste accumulation area. Up to 100 drums of leachate can be present in the area at one time.

CAMU Access. The CAMU is located inside TA-III and is surrounded contiguous four-strand, barbed-wire fence that delineates the boundary. Locked gates located at the northern and southern perimeter boundaries provide access to the CAMU containment cell and leachate storage area.

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FIGURES

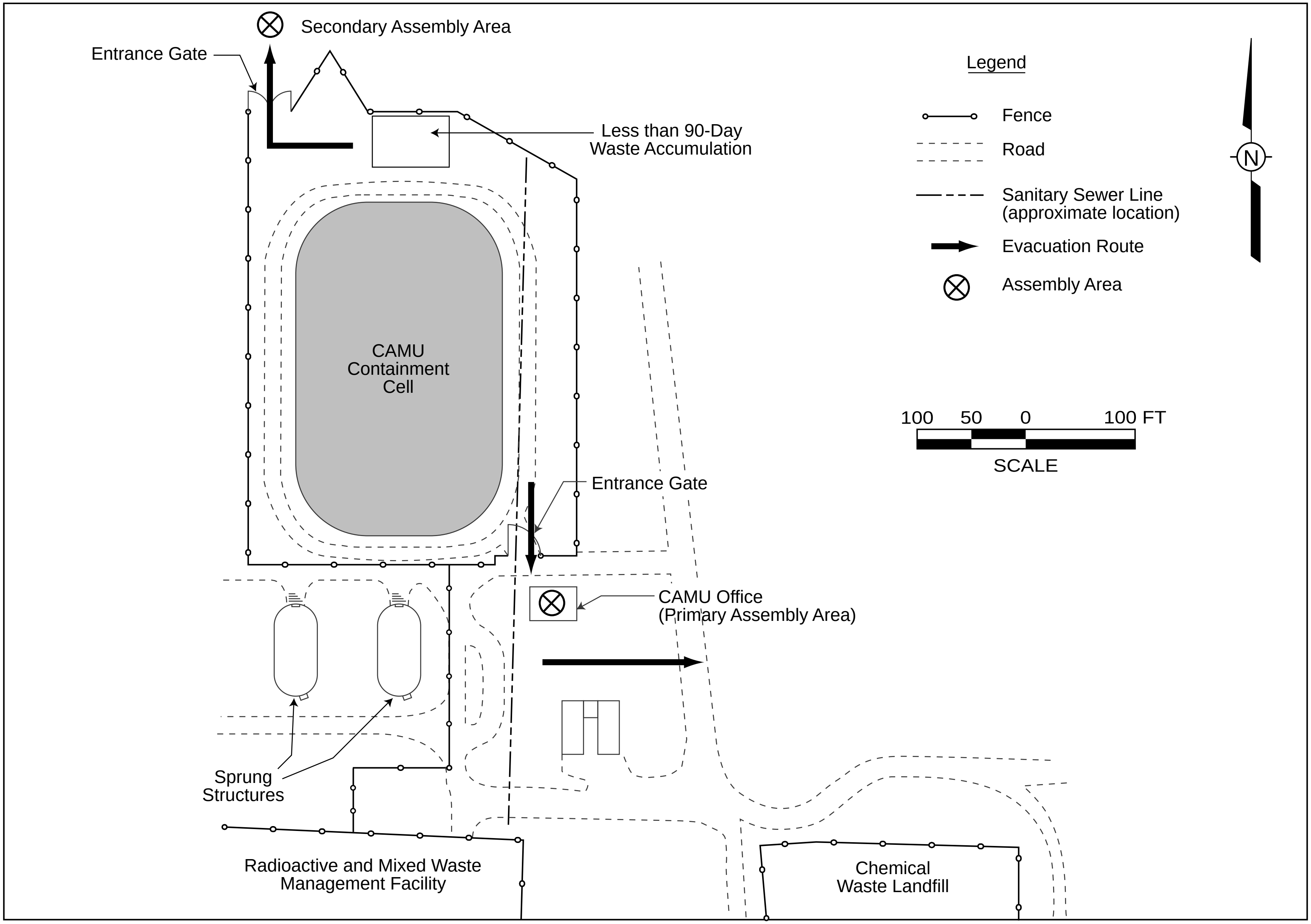

Figure 1

Local Area Map of CAMU Evacuation Routes

APPENDIX E

PERSONNEL TRAINING PROGRAM FOR THE POST-CLOSURE CARE PERIOD AT THE CORRECTIVE ACTION MANAGEMENT UNIT TECHNICAL AREA III SANDIA NATIONAL LABORATORIES/NEW MEXICO

PERSONNEL TRAINING PROGRAM FOR THE POST-CLOSURE CARE PERIOD AT THE CORRECTIVE ACTION MANAGEMENT UNIT TECHNICAL AREA 3 SANDIA NATIONAL LABORATORIES/NEW MEXICO ENVIRONMENTAL RESTORATION PROJECT

APRIL 2012

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Table of Contents

List of Figures

List of Abbreviations/Acronyms

CAMU	Corrective Action Management Unit
OSHA	Occupational Safety and Health Administration
SNL/NM	Sandia National Laboratories/New Mexico

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1.0 Introduction

This document describes the personnel training program for inspection, monitoring, and maintenance of the Sandia National Laboratories/New Mexico (SNL/NM) Corrective Action Management Unit (CAMU) containment cell. The primary objective of this training program is to prepare CAMU personnel to perform job duties in a safe, environmentally sound, and technically competent manner. To achieve this objective, the program provides all employees with training relevant to their positions. CAMU personnel receive classroom and on-the-job training designed specifically to teach them how to perform their duties safely and in conformance with the CAMU Post-Closure Permit. CAMU personnel receive the required training before being allowed to work in unsupervised positions.

1.1 Relevance of Training to Job Position

This training program provides employees with training relevant to their positions and training necessary to safely perform their actual job tasks. Personnel will be trained in operations specific to their job duties.

1.2 Implementation of Training Program

The training program is implemented to ensure that all CAMU personnel receive the appropriate training in a timely manner. Personnel do not work in unsupervised positions until they successfully complete the indicated training requirements.

2.0 Outline of the Training Program

2.1 Job Title/Job Description

Job titles, descriptions, and qualifications for CAMU positions are provided in Figures 2-1 and 2-2. The job descriptions include job duties and education, skills, or experience requirements.

2.2 Training Content, Frequency, and Techniques

The training program includes a combination of formal classroom sessions, reviews of written documents, and on-the-job training as described in Appendix D to the General Part B in Part 2 of the Comprehensive Part B Permit Request. The training content is shown in Table D-1 in Appendix D. All CAMU personnel receive all training listed in Table D-1.

Figure 2-1

Job Title, Description, and Qualifications
CAMU Project Leader/Operations Coordinator

Job Title: Corrective Action Management Unit (CAMU) Project Leader/Operations Coordinator

Job Description: To provide ongoing oversight, supervision, and coordination at the CAMU during the post-closure care period for vadose zone monitoring and inspection and maintenance of the containment cell and Vadose Zone Monitoring System (VZMS) in compliance with the Post-Closure Permit. Examples of duties:

Coordinate and implement monthly/quarterly VZMS monitoring activities.

Compile and archive VZMS monitoring data into the Environmental Restoration Data Management System.

Produce annual monitoring results reports and other reports.

Maintain/revise sampling and analysis plans for VZMS monitoring, as required.

Coordinate and implement leachate removal and management activities.

Ensure necessary inspections and required maintenance are properly conducted.

Assure the maintenance of records, such as training records, inspection and maintenance records, and data reports, as specified in the Post-Closure Permit.

Supervise the inventory, maintenance, and repair of all tools, supplies, equipment, and vehicles (i.e., ensure that they are in good working order) used for monitoring and maintenance operations.

Provide oversight of CAMU Field Technicians.

Required Education, Skill, and/or Experience:

Bachelors' degree in chemistry, biology, physical science, engineering, environmental science, or

Minimum of 5 years experience in waste management operations and/or environmental restoration, and

Project management experience.

Figure 2-2
Job Title, Description, and Qualifications
CAMU Field Technician

Job Title: Corrective Action Management Unit (CAMU) Field Technician

Job Description: To perform post-closure monitoring, inspection, and maintenance activities as instructed by the CAMU Project Leader/Operations Coordinator. Examples of duties:

Perform VZMS monitoring activities.

Perform inspection and maintenance activities.

Assist CAMU Project Leader/Operations Coordinator with leachate removal and management activities.

Required Education, Skill, and/or Experience:

High school diploma or equivalent (e.g., General Education Development [GED])

3.0 Training Records

Training records will be kept to document the type, amount, and dates of training received for each assigned employee. Contents of these records will include the following at a minimum:

- The name of the employee
- Job title and a written job description
- Training requirements for each job position
- Records that document training received, such as amount, dates, and certificates; attendance or signature lists; memoranda of training; or reports from computerized training databases

Training records for current employees will be kept until the end of the post-closure care period. Training records for any former employee will be kept for a minimum of three years from the last date the employee worked at the unit. A current approved training program and training records for unit personnel for the previous 12 months are maintained at the CAMU administration trailer. All other training records and documentation are maintained by the CAMU Project Leader/Operations Coordinator or designee at the SNL/NM Records Center.