TA50

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Albuquerque Operations Office
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CERTIFIED MAIL – RETURN RECEIPT REQUESTED

Mr. Benito J. Garcia, Chief
Hazardous and Radioactive Materials Bureau
New Mexico Environment Department
2044 Galisteo St., Building A
P. O. Box 26110
Santa Fe, NM 87505

RED LANL G/P '99

Dear Mr. Garcia:

Subject: Resource Conservation and Recovery Act (RCRA) Permit Renewal Submittal – Los Alamos National Laboratory (LANL) General Part B Permit Application, Revision 1.0; TA-50 Part B Permit Renewal Application, Revision 1.0; and TA-54 Part B Permit Renewal Application, Revision 0.0 – LANL Hazardous Waste Facility Permit No. NM0890010515-1

The purpose of this letter is to submit and request approval of the included permit renewal applications. The original LANL RCRA Hazardous Waste Facility Permit was issued to the U. S. Department of Energy and the University of California by the New Mexico Environmental Improvement Division (now the New Mexico Environment Department [NMED]) on November 8, 1989, and was to be effective for a period of ten years. This permit renewal application is being submitted to meet the requirements of the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart IX, §§ 270.10(h), 270.30(b), and 270.50(a), as revised January 1, 1997, regarding the duration of and reapplication for hazardous waste permits. LANL's Hazardous Waste Facility Permit and the U. S. Environmental Protection Agency identification numbers are NM0890010515-1 and NM0890010515 respectively.

The enclosed version of the LANL General Part B Permit Application, Revision 1.0 (General Part B), amends the original version submitted to NMED in August 1996. The amendments include updated information regarding LANL waste management procedures developed since the submittal of the original, and changes in the document format to meet guidance regarding the organization of the permit discussed in meetings between LANL and the RCRA Permits Management Program (RPMP) of the NMED Hazardous and Radioactive Materials Bureau. Based upon the RPMP guidance, LANL's renewed permit will consist of separate permit chapters for facility-wide management procedures, and additional chapters setting forth specific permit conditions for individual LANL Technical Areas (TAs) that operate RCRA treatment, storage, or disposal units. The General Part B is intended to present information that will be used for development of the facility-wide sections of the permit and to avoid duplication of information in the individual TA specific permit applications and potential permit chapters by serving as a common reference.

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The General Part B submits three types of information:

- The first six sections consist of facility-wide information including an introduction with a listing of regulatory requirements for permit applications and the document location for the information addressing those requirements, descriptions of facility operations, a listing of other applicable federal laws, and the application certification.

- The next six appendices contain a facility description and the most recent versions of LANL's hazardous waste analysis, inspection, personnel training, contingency, and closure plans. These are presented as discrete documents that may be amended or incorporated in their entirety into corresponding sections of the renewed permit.

- The final portion of the document consists of supplements that provide reference material supporting the permit application, including copies of contracts between the U. S. Department of Energy and the County of Los Alamos, traffic studies, and 100-year floodplain studies.

Supplement 6 has been reserved at this time to provide information regarding potential management of off-site generated waste streams at LANL. Complete information regarding this waste management option and related waste streams is not available at this time, but will be submitted as an addition to this document as the information is developed.

Two new TA specific permit renewal applications are attached to this submittal. These include the TA-50 Part B Permit Renewal Application, Revision 1.0, and the TA-54 Part B Permit Renewal Application, Revision 1.0. These documents include information developed for existing hazardous waste management units and for mixed hazardous and radioactive component management units previously operated under 20 NMAC 4.1, Subpart VI standards. This includes regulatory references, unit descriptions, waste management operations, and corrective action information. The documents cite the facility-wide plans contained in the General Part B where appropriate.

If you should have any questions or comments concerning this permit renewal submittal, please contact Jody Plum of my staff at (505) 665-5042.

Sincerely,

OFFICIAL CHECKED BY
Norman Lo-Doux

For David A. Gurulé
Area Manager

LAAME:3JP-101

Enclosure

cc w/enclosure:
John Kieling
RCRA Permits Management Program
Hazardous and Radioactive Materials Bureau
New Mexico Environment Department
2044 Galisteo Street, Building A
P. O. Box 26110
Santa Fe, NM 87505

CERTIFICATION
Los Alamos National Laboratory
General Part B Permit Application
(Revision 1.0)
October 1998

CERTIFICATION BY TECHNICAL AREA 50 REPRESENTATIVES

TA-50 Radioactive Liquid Waste

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.

Steven W. Hanson
Group Leader for Environmental Management-
Radioactive Liquid Waste Group; Facility Manager
for Facility Management Unit 84
Los Alamos National Laboratory

9·30·98
Date Signed

Thomas E. Baca
Division Director for Environmental Management
Division
Los Alamos National Laboratory

9-30-98
Date Signed

CERTIFICATION
Los Alamos National Laboratory
General Part B Permit Application
(Revision 1.0)
October 1998

TA-50-Waste Characterization, Reduction, and Repackaging Facility and Radioactive Materials Research, Operations, and Demonstration Facility

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.

Sara B. Helmick
Sara B. Helmick
Facility Manager for Facility Management
Unit 66
Los Alamos National Laboratory

9/28/98
Date Signed

F B Wampler /for
Alexander J. Gancarz
Division Director for Chemical Science and
Technology Division
Los Alamos National Laboratory

9/29/98
Date Signed

CERTIFICATION
Los Alamos National Laboratory
General Part B Permit Application
(Revision 1.0)
October 1998

CERTIFICATION BY TECHNICAL AREA 54, AREAS L AND G REPRESENTATIVES

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.

Anthony R. Stanford
Group Leader for Environmental Management-Solid Waste Operations Group; Facility Manager for Facility Management Unit 64
Los Alamos National Laboratory

9/29/98
Date Signed

Thomas E. Baca
Division Director for Environmental Management Division
Los Alamos National Laboratory

9/30/98
Date Signed

CERTIFICATION
Los Alamos National Laboratory
General Part B Permit Application
(Revision 1.0)
October 1998

CERTIFICATION BY TECHNICAL AREA 54 WEST REPRESENTATIVES

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.

Sara B. Helmick

Sara B. Helmick
Facility Manager for Facility Management Unit 66
Los Alamos National Laboratory

9/29/99
Date Signed

F B Wampler for

Alexander J. Ganczz
Division Director for Chemical Science and Technology Division
Los Alamos National Laboratory

9/29/98
Date Signed

Part B Permit Application
Los Alamos National Laboratory
Technical Area-50

Revision 1.0

Prepared by:
Los Alamos National Laboratory
Hazardous and Solid Waste Group (ESH-19)
Los Alamos, New Mexico 87545

January 1999

TABLE OF CONTENTS

LIST OF ATTACHMENTS . . . iii
LIST OF TABLES . . . iv
LIST OF FIGURES . . . v
LIST OF MAPS . . . vi
LIST OF ABBREVIATIONS/ACRONYMS . . . vii

1.0 INTRODUCTION . . . 1-1

2.0 UNIT DESIGNS, FACILITY OPERATIONS, AND PROCEDURES TO PREVENT HAZARDS . . . 2-1
2.1 CONTAINER STORAGE AREAS [20 NMAC 4.1, Subpart V, §264.175(b) and Subpart IX, §§270.15(a)(1) through (3)] . . . 2-1
TA-50-37 Container Storage Area . . . 2-2
TA-50-1 RLWTF Container Storage Area . . . 2-2
TA-50-1 Decon Ops Facility Container Storage Area . . . 2-3
TA-50-114 Container Storage Area . . . 2-3
TA-50-69 WCRRF Indoor Container Storage Area . . . 2-3
TA-50-69 WCRRF Outdoor Container Storage Area . . . 2-4
2.1.1 Storage Containers . . . 2-5
2.1.2 Storage Locations and Quantities . . . 2-5
2.1.3 Storage Configuration . . . 2-5
2.1.4 Aisle Space [20 NMAC 4.1, Subpart V, §264.35] . . . 2-5
2.1.5 Permitted and Prohibited Waste Identification . . . 2-6
2.1.6 Condition of Containers [20 NMAC 4.1, Subpart V, §264.171, §264.173, and §264.174] . . . 2-6
2.1.7 Compatibility of Waste with Containers . . . 2-6
2.1.8 Management of Containers . . . 2-7
2.1.9 Containment Systems . . . 2-7
2.1.10 Inspection Schedules and Procedures . . . 2-7
2.1.11 Closure . . . 2-8
2.1.12 Support Agreements with Outside Agencies [20 NMAC 4.1, Subpart V, §264.37] . . . 2-8
2.2 TREATMENT UNITS . . . 2-8
2.2.1 TA-50-1 RLWTF Cementation Treatment Unit . . . 2-8
2.2.2 TA-50-37 Electrochemical Treatment Unit . . . 2-9
2.3 TA-50 NON-RCRA ACTIVITIES . . . 2-9
2.4 WASTES GENERATED . . . 2-10
APPENDIX 2A: Transportainers

3.0 OTHER FEDERAL LAWS . . . 3-1

4.0 CORRECTIVE ACTION FOR SOLID WASTE MANAGEMENT UNITS . . . 4-1
4.1 SWMU DESCRIPTIONS . . . 4-1
4.1.1 Radioactive Liquid Waste Treatment Facility . . . 4-1
4.1.2 Tanks and Waste Lines . . . 4-2
4.1.3 Container Storage Areas . . . 4-3
4.1.4 Operational Releases/Outfalls . . . 4-4

TABLE OF CONTENTS
(Continued)

4.1.5 Disposal Area 4-4
4.1.6 Decontamination Area 4-4
4.1.7 Septic System 4-5
4.1.8 Incinerator Complex 4-5
4.1.9 Cementation Unit 4-5
4.2 ADDITIONAL SWMU INFORMATION 4-5
4.3 RELEASES 4-6
4.3.1 Description of Releases at TA-50 4-6
4.3.2 Characterization of Releases 4-6
4.3.3 Corrective Actions 4-7
APPENDIX 4A: Solid Waste Management Unit (SWMU) Characterization Sheets for SWMUs at Technical Area (TA)-50

5.0 CERTIFICATION 5-1

6.0 REFERENCES 6-1

LIST OF ATTACHMENTS

ATTACHMENT	TITLE
A	Facility Description
B	Waste Analysis Plan TA-50 Treatment Units
C	Inspection Plan
D	Personnel Training Plan
E	Contingency Plan
F	Closure Plan
G	Container Management
H	Authorized Waste
I	Treatment Operations

LIST OF TABLES

TABLE NO.	TITLE	PAGE
1-1	Regulatory References and Corresponding Permit Application Location	1-3
2-1	TA-50 RCRA Hazardous and Mixed Waste Management Units Waste Types Managed and Design Capacity	2-11
2-2	Waste Container Types Stored	2-12
4-1	TA-50 Solid Waste Management Unit Descriptions	4-8

LIST OF FIGURES

FIGURE NO.	TITLE	PAGE
2-1	TA-50-37 Container Storage Area and Electrochemical Treatment Unit	2-13
2-2	TA-50-1 RLWTF Container Storage Area and Cementation Treatment Unit	2-14
2-3	TA-50-1 Decontamination Operations Facility and TA-50-114 Container Storage Area	2-15
2-4	WCRRF TA-50-69, Indoor and Outdoor Container Storage Areas	2-16

LIST OF MAPS

MAP NO.	TITLE	PAGE
4-1	Solid Waste Management Units at Technical Area (TA) 50	4-11

LIST OF ABBREVIATIONS/ACRONYMS

20 NMAC 4.1	*New Mexico Administrative Code*, Title 20, Chapter 4, Part 1
BWTU	Batch Waste Treatment Unit
CAI	Controlled-Air Incinerator
CFR	*Code of Federal Regulations*
CSA	container storage area
Decon Ops	Decontamination Operations
DOT	U.S. Department of Transportation
EPA	U.S. Environmental Protection Agency
ETU	electrochemical treatment unit
FRP	fiberglass-reinforced plywood
LANL	Los Alamos National Laboratory
MDA	Material Disposal Area
NMED	New Mexico Environment Department
RAMROD	Radioactive Materials Research, Operations, and Demonstration
RCRA	Resource Conservation and Recovery Act
RLWTF	Radioactive Liquid Waste Treatment Facility
SWB	standard waste box
SWMU	solid waste management unit
TA	Technical Area
TRU	transuranic
UST	underground storage tank
WAP	waste analysis plan
WCRRF	Waste Characterization, Reduction, and Repackaging Facility
WIPP	Waste Isolation Pilot Plant

1.0 INTRODUCTION

This technical area (TA)-specific Part B Permit Application for TA-50, hereinafter referred to as the TA-50 Part B, has been prepared for submittal to the New Mexico Environment Department (NMED) to meet certain requirements of the New Mexico Hazardous Waste Act and implementing regulations, specifically the *New Mexico Administrative Code*, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), revised January 1, 1997 [1-1-97].

This TA-50 Part B contains only the information specific to the waste management units at TA-50 at Los Alamos National Laboratory (LANL). General information applicable to all waste management units at LANL is provided in the *Los Alamos National Laboratory General Part B Permit Application* (LANL 1998b), hereinafter referred to as the LANL General Part B. The LANL General Part B is referenced in this TA-50 Part B, as necessary, to demonstrate that, together, all required elements are addressed.

This TA-50 Part B addresses container storage areas (CSAs) and treatment units located at TA-50 that support waste management operations at the Waste Characterization, Reduction, and Repackaging Facility (WCRRF), the Radioactive Materials Research, Operations, and Demonstration (RAMROD) Facility at TA-50-37, the Decontamination Operations (Decon Ops) Facility, and the Radioactive Liquid Waste Treatment Facility (RLWTF). These CSAs and treatment units are included in the *Los Alamos National Laboratory General Part A Permit Application* (LANL 1998a), which addresses all LANL hazardous and mixed waste management operations. These waste management units are being designated for the storage and treatment of mixed low-level and mixed transuranic (TRU), low-level, TRU, and/or hazardous wastes.

This TA-50 Part B addresses the following hazardous and mixed waste management units at TA-50:

- TA-50-37 CSA
- TA-50-1, Room 59 RLWTF CSA
- TA-50-1 Decon Ops Facility CSA
- TA-50-114 CSA
- TA-50-69 WCRRF Indoor CSA
- TA-50-69 WCRRF Outdoor CSA
- TA-50-1 Room 60A RLWTF cementation treatment unit
- TA-50-37 Room 117 planned electrochemical treatment unit

In the context of this TA-50 Part B, the term *facility* is used only to denote names of operations and does not imply the regulatory meaning of *facility,* as defined in 20 NMAC 4.1, Subpart I, §260.10. However, the LANL facility as a whole does meet the regulatory definition of a facility. Any references to LANL personnel include University of California and/or subcontracted personnel.

Table 1-1 provides a list of regulatory references and the corresponding section locations in this TA-50 Part B and the LANL General Part B. Where applicable, regulatory citations reference 20 NMAC 4.1 which adopts, with a few limited exceptions, all of the *Code of Federal Regulations* (CFR), Title 40, Parts 260 through 266, 268, and 270. 20 NMAC 4.1, Subparts V, VIII, and IX contain regulations equivalent to 40 CFR Parts 264, 268, and 270, respectively.

Table 1-1. Regulatory References and Corresponding Permit Application Location

Regulatory Reference[a]				
20 NMAC 4.1, Subpart IX	20 NMAC 4.1, Subparts V, VIII	Description of Requirement	Location in this TA-50 Part B	Location in LANL General Part B
§270.10(a)	—	Permit Application	Entire Document	Entire Document
§270.10(g)(1)	—	Updating Permit Applications	1.0	NA[b]
§270.11(a)	—	Signatories	5.0	5.0
§270.11(d)	—	Certification	5.0	5.0
§270.13	—	Contents of Part A Permit Application	NA	Part A[c]
§270.13(a)	—	Activities Conducted	NA	Part A
§270.13(b)	—	Name, Mailing Address, and Location	NA	Part A
§270.13(c)	—	Principal Standard Industrial Classification (SIC) Codes	NA	Part A
§270.13(d)	—	Operator Information	NA	Part A
§270.13(e)	—	Owner Information	NA	Part A
§270.13(f)	—	Whether Located on Indian Lands	NA	Part A
§270.13(g)	—	New or Existing Facility	NA	Part A
§270.13(h)	—	Scale Drawing and Photographs	NA	Part A
§270.13(i)	—	Description of Waste Processes	NA	Part A
§270.13(j)	—	Specification and Quantity of Hazardous Waste	NA	Part A
§270.13(k)	—	List of Permits and Construction Approvals	NA	Part A
§270.13(l)	—	Topographic Map	NA	Part A
§270.13(m)	—	Description of Nature of Business	NA	Part A
§270.13(n)	—	Hazardous Debris	NA	Part A
§270.14(b)(1)	—	General Facility Description	Attachment A	Appendix A
§270.14(b)(2)	§264.13(a)	Chemical and Physical Analyses	Attachment B	Appendix B
§270.14(b)(3)	§264.13	Waste Analysis Plan	Attachment B	Appendix B
§270.14(b)(4)	§§264.14(a)-(c)	Security Procedures and Equipment	Attachment A	NA
§270.14(b)(5)	§§264.15(a)-(d)	General Inspection Requirements	Attachment C	Appendix C
	§264.1088	Inspection and Monitoring for Units Subject to Subpart CC Requirements	Attachments C,G,I	NA
§270.14(b)(6)	264, Subpart C	Request for Waiver from Preparedness and Prevention Requirements of Subpart C	NA	NA
§270.14(b)(7)	264, Subpart D	Contingency Plan	Attachment E	Appendix E

Table 1-1. Regulatory References and Corresponding Permit Application Location (Continued)

Regulatory Reference[a]				
20 NMAC 4.1, Subpart IX	20 NMAC 4.1, Subparts V, VIII	Description of Requirement	Location in this TA-50 Part B	Location in LANL General Part B
	§264.51	Contingency Plan Design and Implementation	NA	Appendix E
	§§264.52(a), (c)-(f)	Contingency Plan Content	NA	Appendix E
	§§264.52(e), (f)	Contingency Plan Content	Attachment E	NA
	§264.53	Contingency Plan Copies	Attachment E	Appendix E
	§264.54	Contingency Plan Amendment	Attachment E	Appendix E
	§264.55	Emergency Coordinator	Attachment E	Appendix E
	§264.56	Emergency Procedures	Attachment E	Appendix E
§270.14(b)(8)	264, Subpart C	Preparedness and Prevention	Attachments G,I	2.0
	§264.31	Design and Operation of Facility	Attachments G,I	2.0
	§264.32	Required Equipment	Attachments G,I	2.0
	§264.33	Testing and Maintenance of Equipment	Attachments G,I	2.0
	§264.34	Communications/Alarm System	Attachments G,I	2.0
	§264.35	Required Aisle Space		NA
	§264.37	Arrangements with Local Authorities	NA	5.0/7.0
§270.14(b)(9)	§§264.17(a)-(c)	Prevention of Accidental Ignition or Reaction	2.0	2.0[b]
§270.14(b)(10)	—	Traffic Pattern, Volume, and Controls	Attachment A	Appendix A
§270.14(b)(11)	§264.18(a)	Facility Location Information	Attachment A	Appendix A
§§270.14(b)(11)(i), (ii)	§264.18(a)	Seismic Standard	Attachment A	Appendix A[b]

Table 1-1. Regulatory References and Corresponding Permit Application Location (Continued)

Regulatory Reference[a]				
20 NMAC 4.1, Subpart IX	20 NMAC 4.1, Subparts V, VIII	Description of Requirement	Location in this TA-50 Part B	Location in LANL General Part B
§§270.14(b)(11)(iii)-(v)	§264.18(b)	Floodplain Standard	Attachment A	Appendix A
	§264.18(c)	Other Location Standards	NA	NA
§270.14(b)(12)	§§264.16(a)-(e)	Personnel Training	Attachment D	Appendix D
§270.14(b)(13)	264, Subpart G	Closure and Post-Closure Plans	Attachment F	Appendix F
	§264.111	Closure Performance Standard	Attachment F	Appendix F
	§§264.112(a), (b)	Written Content of Closure Plan	Attachment F	Appendix F
	§264.112(c)	Amendment of Closure Plan	Attachment F	Appendix F
	§264.112(d)	Notification of Partial and Final Closure	Attachment F	Appendix F
	§264.112(e)	Removal of Wastes and Decontamination/Dismantling of Equipment	Attachment F	Appendix F
	§264.113	Time Allowed for Closure	Attachment F	Appendix F
	§264.114	Disposal/Decontamination	Attachment F	NA
	§264.115	Certification of Closure	NA	Appendix F
	§264.116	Survey Plat	NA	Appendix F
	§264.117	Post-Closure Care and Use of Property	NA	Appendix F
	§264.118	Post-Closure Plan; Amendment of Plan	NA	Appendix F[b]
	§264.119	Post-Closure Notices	Attachment F	Appendix F
	§264.120	Certification of Post-Closure	Attachment F	Appendix F
§270.14(b)(14)	§264.119	Post-Closure Notices	Attachment F	Appendix F

Table 1-1. Regulatory References and Corresponding Permit Application Location (Continued)

Regulatory Reference[a]			Location in this TA-50 Part B	Location in LANL General Part B
20 NMAC 4.1, Subpart IX	20 NMAC 4.1, Subparts V, VIII	Description of Requirement		
§270.14(b)(15)	§§264.142 & 143	Closure Cost Estimate	Attachment F	Appendix F
§270.14(b)(16)	§§264.144	Post-Closure Cost Estimate	Attachment F	Appendix F
§270.14(b)(17)	§264.147	Liability Insurance	Attachment F	Appendix F
§270.14(b)(18)	§§264.149 & 150	Proof of Financial Coverage	Attachment F	Appendix F
§§270.14(b)(19) (i), (vi), (vii), (x)	—	Topographic Maps	Attachment A	Appendix A[c]
§270.14(b)(19)(ii)	§264.18(b)	100-Year Floodplain	Attachment A	Appendix A
§270.14(b)(19)(iii)	—	Surface Waters	Attachment A	Appendix A[c]
§270.14(b)(19)(iv)	—	Land Use	Attachment A	Appendix A
§270.14(b)(19)(v)	—	Wind Rose	Attachment A	Appendix A
§270.14(b)(19) (viii)	§264.14(b)	Access Control	Attachment A	NA
§270.14(b)(19)(ix)	—	Wells	Attachment A	Appendix A
§270.14(b)(19)(x)	—	Buildings, Fire Control Facilities	Attachments A, E	Appendix A[c]
§270.14(b)(19)(xi)	—	Drainage Barriers	Attachment A	NA
§270.14(b)(19) (xii)	—	Location of Operational Units	2.0/ Attachment A	Appendix A
§270.14(b)(20)	—	Other Federal Laws	3.0	3.0
§270.14(b)(21)	§§268.5 & 6	Notice of Approval for Land Disposal Facility Extension	NA	NA
§270.14(c)	§264.90	Groundwater Monitoring Requirements	Attachment A	Appendix A
§270.14(d)(1)	—	Requirements for Solid Waste Management Units (SWMUs)	4.0	4.0[b]

Table 1-1. Regulatory References and Corresponding Permit Application Location (Continued)

Regulatory Reference[a]				
20 NMAC 4.1, Subpart IX	20 NMAC 4.1, Subparts V, VIII	Description of Requirement	Location in this TA-50 Part B	Location in LANL General Part B
§270.14(d)(1)(i)	—	Location of SWMUs on Topographic Map	4.0	NA[b]
§270.14(d)(1)(ii)	—	Types of SWMUs	4.0	NA[b]
§270.14(d)(1)(iii)	—	Structural Description of SWMUs	4.0	NA[b]
§270.14(d)(1)(iv)	—	Dates of Operation	4.0	NA[b]
§270.14(d)(1)(v)	—	Waste Types Managed at SWMUs	4.0	NA[b]
§270.14(d)(2)	—	Information on Releases from SWMUs	4.0	NA[b]
§270.15	§264, Subpart I	Containers	2.0/ Attachments G,I	NA
	§264.178	Closure	Attachment F	NA
§270.15(e)	§264.179	Air Emission Control Equipment	2.0	NA
§270.16	264, Subpart J	Tank Systems	NA	NA
§270.17	264, Subpart K	Surface Impoundments	NA	NA
§270.19	264, Subpart D	Incinerators	NA	NA
§270.23	264, Subpart X	Miscellaneous Units	NA	NA
§270.25	264, Subpart BB	Air Emission Standards for Equipment Leaks	Attachments B,G,I	Appendix B
§270.27	264, Subpart CC	Air Emission Standards for Tanks, Surface Impoundments, and Containers	2.0/ Attachments B,G,I	Appendix B

[a] NA = not applicable

[b] Requirements or additional information provided in the *Los Alamos National Laboratory General Part B Permit Application*, 1998.

[c] Some of the topographic map requirements are addressed in the *Los Alamos National Laboratory's General Part A Permit Application*, Revision 0.0 (LANL 1998a) and in the *Los Alamos National Laboratory's Response to Request for Supplemental Information: General Part A Permit Application*, Revision 0.0. (LANL 1998b)

2.0 UNIT DESIGNS, FACILITY OPERATIONS, AND PROCEDURES TO PREVENT HAZARDS

The information provided in this section is submitted in accordance with the requirements of the *New Mexico Administrative Code*, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart V (revised January 1, 1997 [1-1-97]; 40 *Code of Federal Regulations* (CFR) 264, Subparts B, C, and I applicable to owners and operators of hazardous waste facilities; and 20 NMAC 4.1, Subpart IX, §§270.14(b)(8) and (9), and §270.15 [1-1-97].

This section describes general unit designs, descriptions, and process information applicable to the Resource Conservation and Recovery Act (RCRA) hazardous and mixed waste management units at Technical Area (TA) 50. Further information is provided in Attachments G and I to this TA-specific Part B Permit Application (hereinafter referred to as the TA-50 Part B).

Table 2-1 lists waste types to be managed and design capacity for each TA-50 container storage area (CSA) and treatment unit. Figures 2-1 through 2-4 depict the locations of the CSAs and treatment units.

2.1 CONTAINER STORAGE AREAS [20 NMAC 4.1, Subpart V, §264.175(b) and Subpart IX, §§270.15(a)(1) through (3)]

TA-50 CSAs are designed and operated to meet 20 NMAC 4.1, Subpart V, and 40 CFR 264, Subpart B, C, and I requirements. The following CSAs are addressed in this TA-50 Part B:

- TA-50-37 CSA (Figure 2-1)
- Radioactive Liquid Waste Treatment Facility (RLWTF) CSA in TA-50-1 (Figure 2-2)
- Decontamination Operations (Decon Ops) Facility and TA-50-114 CSAs (Figure 2-3)
- Waste Characterization, Reduction, and Repackaging Facility (WCRRF) Indoor CSA in TA-50-69 (Figure 2-4)
- WCRRF Outdoor CSA at TA-50-69 (Figure 2-4)

The CSAs at TA-50 will be used for storage or staging of mixed low-level and mixed transuranic (TRU) waste during waste management activities at TA-50-37, WCRRF, RLWTF, and Decon Ops Facility. The wastes characterized and stored at these facilities are generated at various TAs at

Los Alamos National Laboratory (LANL) and transported to TA-50. This section describes TA-50 CSAs.

TA-50-37 Container Storage Area

TA-50-37 is a two-story building that contains offices, laboratories, two process bays, an egress bay, a mechanical equipment area, and a CSA. The original building was constructed in 1975; the second process bay (Room 114) and offices were added in 1979; the egress bay (Room 116) was constructed in 1986; and Rooms 117 and 118 were added in 1990. Previously, TA-50-37 was the Treatment Development Facility, which housed the Controlled-Air Incinerator (CAI). LANL received a Toxic Substances Control Act incineration permit for the CAI in 1984, and a RCRA operating permit for hazardous waste in 1989. In 1995, it was determined that waste incineration would not be performed at the CAI. In 1996, closure of the CAI was initiated in accordance with an approved New Mexico Environment Department (NMED) closure plan. The CAI closure was approved by NMED in 1998. TA-50-37 will now be used for waste characterization and verification, waste treatment technology development and implementation, and other activities necessary to support LANL programs. The TA-50-37 CSA will also be used to support the waste characterization and verification activities and the planned electrochemical treatment operation in Room 117. The TA-50-37 CSA consists of Rooms 112, 115, 117, and 118, and is located on the first floor of the building encompassing areas in the west-central, south-central, and eastern portions of the building (Figure 2-1). Room 112 is located on the first floor in the west-central portion of TA-50-37 and measures approximately 41 ft wide and 75 ft long; Room 115 is located on the first floor of TA-50-37 between Rooms 112 and 114 and measures 10 ft wide and 21 ft long; Room 117 is located on the first floor in the eastern portion of TA-50-37 and measures 21 ft wide and 40 ft long; and Room 118 is located on the first floor in the eastern portion of TA-50-37, north of and adjacent to Room 117, and measures 31 ft wide and 40 ft long. The long dimension of each CSA room is oriented southwest-northeast.

TA-50-1 RLWTF Container Storage Area

The RLWTF, located in TA-50-1, was constructed in 1963. The main building is constructed of reinforced concrete columns and beams with pumice block walls and steel joists for roof support. The TA-50-1 RLWTF CSA consists of Room 59 (Figure 2-2) and features pre-engineered construction with steel framing and insulated metal roofing and siding. Room 59 is located on the

north side of the east wing of TA-50-1 and measures approximately 21 ft wide and 44 ft long. The long dimension is oriented east-west.

TA-50-1 Decon Ops Facility Container Storage Area

The Decon Ops Facility CSA is located in the basement of the southern portion of TA-50-1 and consists of Rooms 34B/34C, 35, 36, and 38/38A (Figure 2-3). Room 34B is located in the southern portion of TA-50-1 and measures approximately 40 ft wide and 47 ft long. The long dimension is oriented east-west. Room 34C is located between Rooms 34B and 36 and measures approximately 3 ft wide and 13 ft long; the long dimension is oriented north-south. Room 35 is located in the southern portion of TA-50-1 and measures approximately 20 ft wide and 40 ft long. The long dimension is oriented north-south. Room 36 is located in the southern portion of TA-50-1 between Rooms 34C and 35 and adjacent to Room 38/38A. Room 36 measures approximately 20 ft wide and 32 ft long. The long dimension is oriented east-west. Room 38/38A is located in the southern portion of TA-50-1, adjacent to and south of Room 36. Room 38/38A consists of Rooms 38 and 38A, which together measure approximately 10 ft wide and 24 ft long. The long dimension is oriented east-west.

TA-50-114 Container Storage Area

The TA-50-114 CSA is a storage locker located south of the eastern wing of TA-50-1 and east of TA-50-1 Room 34B (Figure 2-3). The TA-50-114 CSA is used by both the RLWTF and the Decon Ops Facility. The locker is a metal prefabricated building approximately 9 ft by 23 ft by 9 ft high, has three doors, and is anchored to a concrete pad. The long dimension is oriented east-west. The CSA is separated into two separate lockers by a metal wall, and has a grated floor above a recessed area on which the waste containers are placed.

TA-50-69 WCRRF Indoor Container Storage Area

TA-50-69 is located in the southwest quadrant of TA-50. When constructed in 1979, the primary mission of the WCRRF (formerly the Size Reduction Facility) was to size reduce large metallic items (e.g., glove boxes and other process equipment) that were TRU-contaminated and repackage them into standard-sized containers amenable to disposal at the Waste Isolation Pilot Plant (WIPP). The facility was first used to size reduce mixed TRU waste in 1982. The original function of the WCRRF has been expanded to include other activities related to hazardous and

mixed waste management (e.g., waste characterization and experimental process demonstration support).

TA-50-69 is a single-story building constructed in two phases. The original structure (45 ft by 52 ft) was built in 1979, to house the main process room (Room 102) and personnel change rooms. An unloading area (Room 103) and a vehicle airlock entrance (Room 104) were added to the building in 1986. The dimensions of the 1986 addition are 20 ft by 36 ft. The longest dimension of the building is now 88 ft, and the building is oriented northwest-southeast. A mezzanine was also added in 1986 over the western third of the main process room. The exterior walls of TA-50-69 are load-bearing and constructed of structural steel framing with a plastic veneer finish on polystyrene insulation and gypsum wallboard. The interior walls are similarly constructed. The epoxy-painted floor of the building is a reinforced concrete slab on compacted fill. The TA-50-69 WCRRF Indoor CSA consists of Rooms 102 and 103 (Figure 2-4). Room 102, the main process room, measures approximately 45 ft wide and 52 ft long. The long dimension is oriented northwest-southeast. Room 103, the unloading area, measures approximately 18 ft wide and 19 ft long and is located adjacent to and southeast of Room 102. A 12-ft by 20-ft roll-up vehicle access door is located at the southernmost end of Room 103, separating the unloading area (Room 103) from the vehicle airlock entrance (Room 104). Room 104 is not part of the WCRRF Indoor CSA. This design allows for unobstructed transport of oversized fiberglass-reinforced plywood (FRP) boxes from outside the facility, through the vehicle airlock entrance, into the unloading area, and into the glove box cutting enclosure.

TA-50-69 WCRRF Outdoor Container Storage Area

The TA-50-69 WCRRF Outdoor CSA is located in the southwest corner of TA-50. The WCRRF Outdoor CSA (Figure 2-4) asphalt and concrete pad is not lined or coated, measures 24 ft wide and 90 ft long, with an additional strip 12 ft wide and 90 ft long added to the southeast end. The asphalt and concrete pad is approximately 4 in. thick. The long dimension of this CSA is oriented east-southeast. The pad slopes gently (approximately 1 to 5 percent) from west to east and up to 2.5 percent toward the centerline. TA-50-69 was constructed before 1980, and was first used to store mixed waste in 1982. Transportainers and other weather protective structures within the WCRRF Outdoor CSA provide optional weather protection for containers of various sizes. Appendix 2A of this section provides detailed information regarding standard transportainers. Four monuments have been surveyed, marking the four corners of the large portion of the WCRRF

Outdoor CSA, and a rope barrier is used to visually delineate its boundary. Four additional monuments will be surveyed after the footprint of the CSA changes, marking the four corners of the smaller portion of the WCRRF Outdoor CSA. A tape barrier will be used to delineate its boundary.

2.1.1 Storage Containers

Containers that will be used to store wastes at the CSAs addressed in this TA-50 Part B include 5-, 30-, 55-, 83-, 85-, and 110-gal. steel and/or poly drums; standard FRP boxes; steel standard waste boxes (SWBs); metal overpack boxes; steel B25 boxes; various small containers; and oversized, irregularly-shaped FRP boxes. Table 2-2 lists container types for each CSA and treatment unit.

2.1.2 Storage Locations and Quantities

Table 2-1 identifies the following for each TA-50 hazardous and mixed waste management unit identified in this TA-50 Part B:

- RCRA unit type (i.e., S01, T04)
- Process design capacity identified in the *Los Alamos National Laboratory General Part A Permit Application* (LANL 1998a) (the maximum quantity that will be stored, staged, or treated)
- Types of waste to be stored, staged, or treated
- Total design capacity for each unit and each room in a CSA, where applicable (provided in gal. and drum equivalents)

2.1.3 Storage Configuration

Storage configuration to be used at each CSA is described in Attachment G to this TA-50 Part B.

2.1.4 Aisle Space [20 NMAC 4.1, Subpart V, §264.35]

Aisle space between waste containers in the TA-50 CSAs is adequate to provide access for inspection purposes and to allow the unobstructed movement of personnel and of fire protection and decontamination equipment in the event of an emergency. Attachment G to this TA-50 Part B describes the specific waste storage method and configurations for the CSAs.

2.1.5 Permitted and Prohibited Waste Identification

Wastes to be staged/stored in the TA-50 CSAs include RCRA-regulated mixed low-level waste, mixed TRU waste, and hazardous waste. Non-RCRA-regulated low-level and TRU wastes may also be stored in the TA-50 CSAs. At all TA-50 CSAs except the TA-50-1 RLWTF CSA and TA-50-1, Room 36, the wastes to be stored are solids and wastes that are either suspect or known to contain free liquids. At the TA-50-1 RLWTF CSA, Room 59, and TA-50-1, Room 36, only solid wastes will be stored. Further information on the wastes to be stored and treated at TA-50 is provided in the waste analysis plan (WAP), Appendix B of the LANL General Part B. Table 2-1 provides additional information on the wastes to be stored in the TA-50 CSAs.

2.1.6 Condition of Containers [20 NMAC 4.1, Subpart V, §264.171, §264.173, and §264.174]

As required by 20 NMAC 4.1, Subpart V, §264.171, any container that is not in good condition (e.g., severe rusting, apparent structural defects) will be overpacked, or the wastes will be transferred and repackaged in containers that are in good condition before being placed into storage. All containers will be kept closed during storage, in accordance with 20 NMAC 4.1, Subpart V, §264.173(a), except when waste is added to or removed from the container or when a container's contents need to be repackaged. Containers will be handled and stored at all times in a manner that will not rupture a container nor cause it to leak, as required by 20 NMAC 4.1, Subpart V, §264.173(b).

Any container of waste at any TA-50 CSA or treatment unit that shows signs of structural instability or leakage will be overpacked in a U.S. Department of Transportation (DOT)-approved container, or the waste will be transferred into a container that is in good condition, as required by 20 NMAC 4.1, Subpart V, §264.171. When specified by DOT, liners will be used inside the waste container.

2.1.7 Compatibility of Waste with Containers

The container materials and liners will be selected to ensure that the ability of the container to contain the waste is not impaired as required by 20 NMAC 4.1, Subpart V, §264.172. Based on manufacturer's tolerance specifications, container material and liners used will not react with, and will be compatible with, the waste.

2.1.8 Management of Containers

Waste containers will be closed during storage and staging, except when it is necessary to add or remove waste, as allowed by 20 NMAC 4.1, Subpart V, §264.173(a). Some mixed waste containers are vented and have carbon composite filters that allow gases (e.g., hydrogen), if any, to be released, but prevent the release of airborne particulates. Waste containers will be closed or vented, handled, staged, and stored to prevent rupture, leakage, or spillage, as required by 20 NMAC 4.1, Subpart V, §264.173(b). Containers will be managed at all TA-50 waste management units, in accordance with written procedures established by the contractor to minimize the potential for damage to or spillage from waste containers. All waste handlers at TA-50 will be thoroughly trained in the safe use of waste container handling and transport equipment. Because the TA-50 yard area is graded and paved, jarring of containers during transport will be minimized. To protect the integrity of waste containers received at the TA-50 CSAs, only equipment designed for moving waste containers will be used. Small waste containers may be handled manually or with dollies. Each TA-50 waste management unit is equipped with structures and equipment to facilitate safe loading, unloading, and movement of waste containers, as described in Attachment G to this TA-50 Part B.

2.1.9 Containment Systems

Secondary containment and other appropriate spill safeguards are incorporated in the design of the TA-50 CSAs and treatment units. Containment systems are described in Attachment G to this TA-50 Part B.

2.1.10 Inspection Schedules and Procedures

Inspections will be performed at each CSA according to the schedule in the Inspection Plan, Appendix C of the LANL General Part B. The inspections will identify any leaking containers, deterioration of containers, and loss of integrity of a containment system, as required by 20 NMAC 4.1, Subpart V, §264.174. The inspections will include checking the structural integrity of the steel drums and boxes (e.g., for bulging or warping). The Inspection Plan, Appendix C of the LANL General Part B, contains more detailed information regarding inspection requirements and how they are met.

2.1.11 Closure

RCRA-permitted CSAs and treatment units identified in this TA-50 Part B will be closed to meet the closure requirements of 20 NMAC 4.1, Subpart IX, §270.14(b)(13) and 20 NMAC 4.1, Subpart V, Part 264, Subpart G. General closure information applicable to all LANL hazardous and mixed waste management units is provided in the LANL General Part B, Appendix F. The closure plan specific to TA-50 CSAs and treatment units is provided in Attachment F to this TA-50 Part B.

2.1.12 Support Agreements with Outside Agencies [20 NMAC 4.1, Subpart V, §264.37]

Information on support agreements with outside agencies, as required by 20 NMAC 4.1, Subpart V, §264.37, is provided in Section 2.0 of the LANL General Part B.

2.2 TREATMENT UNITS

TA-50 treatment units are designed and operated to meet 20 NMAC 4.1, Subpart V, and 40 CFR 264, Subpart B and C requirements. The following treatment units are addressed in this TA-50 Part B.

- RLWTF cementation treatment unit in TA-50-1, Room 60A (Figure 2-2)
- Planned electrochemical treatment unit (ETU) in TA-50-37, Room 117 (Figure 2-1)

The treatment units at the TA-50-1 RLWTF and TA-50-37 addressed in this TA-50 Part B will be used to treat mixed waste. The RLWTF cementation treatment unit is used for cementation of mixed TRU waste generated by RLWTF pretreatment operations. The planned ETU at TA-50-37, Room 117 will be used to treat aqueous mixed wastes containing metals, nitrates, sulfides, and low concentrations of organic constituents.

2.2.1 TA-50-1 RLWTF Cementation Treatment Unit

The cementation treatment unit is located on the north side of the east wing of TA-50-1 (Figure 2-2) in Room 60A and measures 19-ft 6-in. by 18-ft 6-in. The long dimension of the cementation treatment unit in Room 60A is oriented north-south. The RLWTF treatment unit is used for the cementation of mixed TRU waste generated by the RLWTF Pretreatment Plant operations. The cementation process is the portion of the Pretreatment Plant process that is subject to RCRA permitting. Attachment I to this TA-50 Part B details the cementation treatment unit and RCRA-regulated process. The location of TA-50-1, Room 60A, is identified in Figure 2-2. Following cementation, the drums of solidified mixed TRU waste are stored temporarily in the

TA-50-1 RLWTF CSA, Room 59, and transported to RCRA-permitted units within LANL for storage.

2.2.2 TA-50-37 Electrochemical Treatment Unit

The planned electrochemical treatment process will be conducted in Room 117 of TA-50-37 (Figure 2-1). Room 117 is located on the first floor in the eastern portion of TA-50-37 and measures 21 ft wide and 40 ft long. Attachment I to this TA-50 Part B describes the electrochemical treatment system components and their functions. Drums of waste to be treated in the ETU will be staged in the TA-50-37 CSA, Room 117.

2.3 TA-50 NON-RCRA ACTIVITIES

LANL personnel will conduct waste characterization, waste segregation, and decontamination at TA-50-37, WCRRF, and Decon Ops CSAs. These waste management activities do not require RCRA permitting. These characterization activities will support the December 10, 1993 Consent Agreement between the NMED, the U.S. Department of Energy, and the University of California. The Consent Agreement resolved the New Mexico Hazardous Waste Act Compliance Order 93-03 regarding a remedial action plan for placing mixed waste currently stored at LANL TA-54, Area G into storage complying with Compliance Order 93-03. The WAP of the LANL General Part B describes activities for obtaining sufficient waste characterization information for RCRA-compliant storage at the TA-50 CSAs.[1]

The TA-50-37, WCRRF, and Decon Ops CSAs addressed in this TA-50 Part B will be used to stage waste to support the waste management activities described above in a manner that continues to be protective of human health and the environment. The waste containers to be staged at these CSAs will be transported from other generator sites at LANL for characterization, waste segregation, or decontamination, and subsequently will be transported to RCRA-permitted units within LANL for storage.

Waste characterization activities at TA-50-37 and the WCRRF may be performed in glove boxes. Decon Ops Facility activities will decontaminate decommissioned, radioactively contaminated

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[1] Use of the term "RCRA-compliant storage" refers to the container storage requirements in 20 NMAC 4.1, Subpart V, Part 264, and 20 NMAC 4.1, Subpart IX, Part 270.

glove boxes and other waste items by removing external lead shielding. The waste characterization and decontamination activities to be performed are not regulated under 20 NMAC 4.1, Subpart V, Part 264. However, siting the processes within permitted CSAs will allow for efficient processing of waste and ensure that before, during, and after characterization or decontamination activities, candidate drums and glove boxes are managed in a manner that continues to be protective of human health and the environment.

2.4 WASTES GENERATED

Newly generated RCRA-regulated wastes at TA-50 may accumulate from either maintenance, spill cleanup, or treatment activities. Hazardous and mixed wastes generated from these activities will be accumulated in satellite accumulation areas or less-than-90-day storage areas, and then packed in containers (e.g., drums or boxes) for transport to RCRA-permitted storage or treatment areas, in accordance with 20 NMAC 4.1, Subpart III, §262.34(c), and LANL procedures.

Table 2-1. TA-50 RCRA Hazardous and Mixed Waste Management Units Waste Types Managed and Design Capacity

RCRA Hazardous Waste Management Unit	RCRA Unit Type	Part A Design Capacity[a]	Waste Types	Room	Total Design Capacity (gal.)	Drum Equivalents[b]
TA-50-37 (CSA)	S01	21,850 gal.	Mixed low-level, mixed TRU, and hazardous waste in solid form or containing free liquids[c]	112 115 117 118	2,330 220 3,630 18,000	42 4 66 327
			TOTAL		24,180	439
TA-50-1 (RLWTF CSA)	S01	3,695 gal. and 15 yd^3	Solid mixed low-level, mixed TRU, and hazardous waste[c]	59	1,210	27
TA-50-1 (Decon Ops CSA)	S01		Mixed low-level, mixed TRU, and hazardous waste in solid form or containing free liquids[c]	34B/34C 35 36[g] 38/38A	3,305 250 3,030 750	60[d] 4[e] 55[f] 14
			TOTAL		7,335	
TA-50-114 (Decon Ops/ RLWTF CSA)	S01		Mixed low-level, mixed TRU, and hazardous waste in solid form or containing free liquids[c]	NA	1,210	22
TA-50-69 (WCRRF Indoor CSA)	S01	31,500 gal.	Mixed low-level, mixed TRU, and hazardous waste in solid form or containing free liquids[c]	102 103	1,500	27
TA-50-69 (WCRRF Outdoor CSA)	S01		Mixed low-level, mixed TRU, and hazardous waste in solid form or containing free liquids	[h]	30,000	545
TA-50-1 (RLWTF Cementation Treatment Unit)	T04	660/day	Mixed low-level and mixed TRU waste in solid form or containing free liquids	60A	660/day	660/day
TA-50-37 (ETU)	T04	NA	Liquid mixed low-level, mixed TRU, and hazardous waste	117	600/day	NA

[a] Based on *Los Alamos National Laboratory General Part A Permit Application*, 1998a.
[b] Based on 55-gal. drum unless indicated otherwise.
[c] Non-RCRA-regulated TRU and low-level waste also is stored at CSA.
[d] Based on five 55-gal. drums and the largest glove box (15 yd^3 or 3,030 gal.–55 drum equivalents).
[e] Based on four 55-gal. and one 30-gal. drum equivalents.
[f] Based on the largest glovebox.
[g] Only solid waste in Room 36.
[h] Transportainers may be substituted or supplemented with other weather protective structures.

Table 2-2. Waste Container Types Stored

Waste Management Unit	5-gal.	30-gal.	55-gal.	83-gal.	85-gal.	110-gal.	FRPs	SWBs	B25 Boxes	Other
TA-50-37 CSA										
Rm 112	X	X	X	X	X			X		X[a]
Rm 115	X	X	X							X[b]
Rm 117	X	X	X	X	X	X				
Rm 118	X	X	X	X	X	X				
TA-50-1 (RLWTF CSA)										
Rm 59	X	X	X	X	X			X		X[a, c-g]
TA-50-1 (Decon CSA)										
Rm 34B	X	X	X	X	X	X	X	X	X	X[c, d]
Rm 35	X	X	X	X	X	X				
Rm 36	X	X	X	X	X	X	X			X[d]
Rm 38/38A	X	X	X					X		X[e]
TA-50-114 CSA	X	X	X	X	X					X[b, e, f]
TA-50-69 (Indoor CSA)	X	X	X	X	X	X	X	X	X	X[g]
TA-50-69 (Outdoor CSA)	X	X	X	X	X	X	X	X	X	X[g]
TA-50-1, Rm 60A (RLWTF Cementation Treatment Unit)	X	X	X	X	X					X
TA-50-37, Rm 117 (ETU)	X	X	X	X	X	X				X

[a] Strong/tight container
[b] Various small 5- to 15-gal.containers
[c] Crates
[d] Glove boxes
[e] Fiber/cardboard boxes
[f] Equipment in plastic bags
[g] Irregular containers

(For informational purposes only)

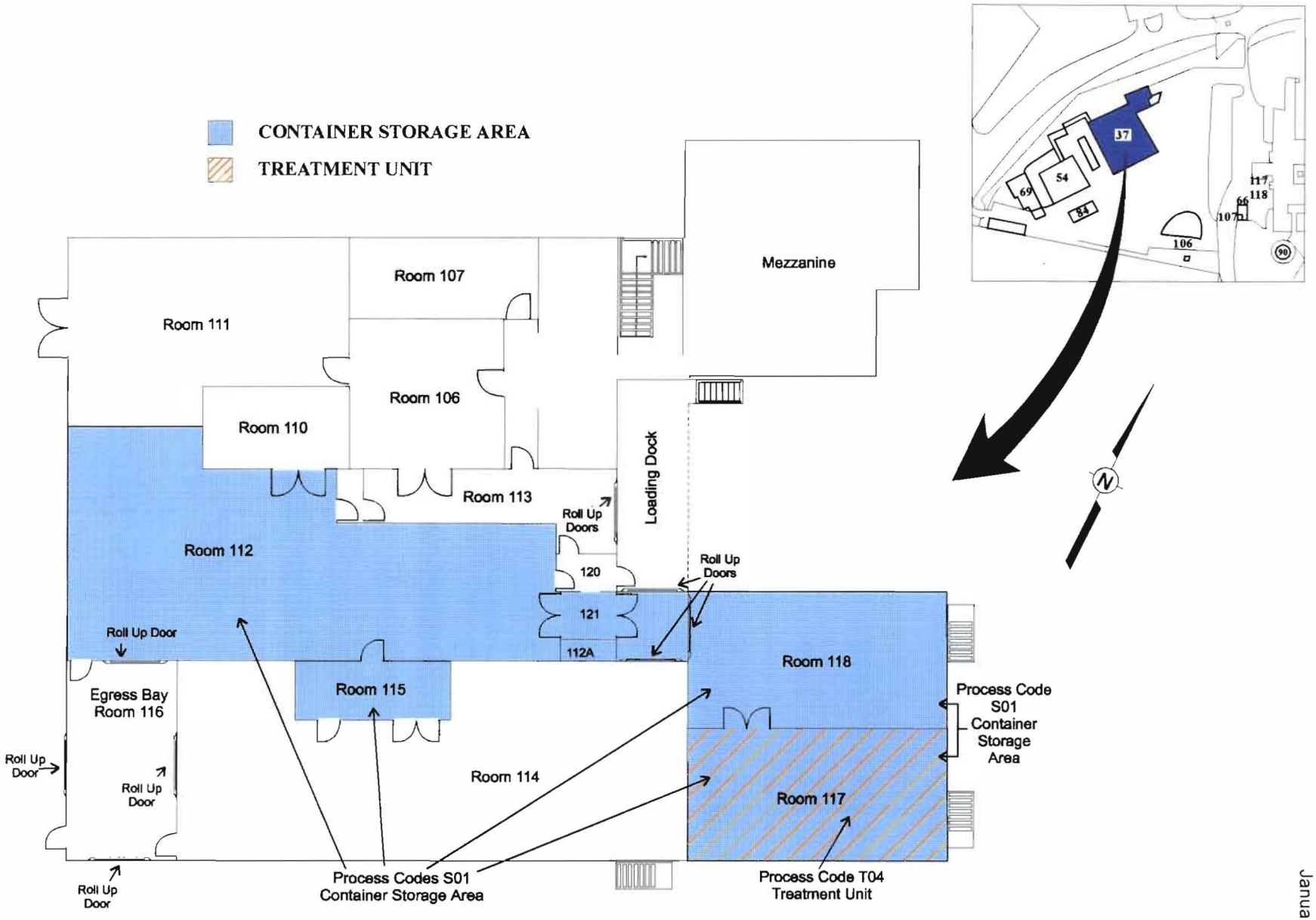


Figure 2-1. TA-50-37 Container Storage Area and Electrochemical Treatment Unit

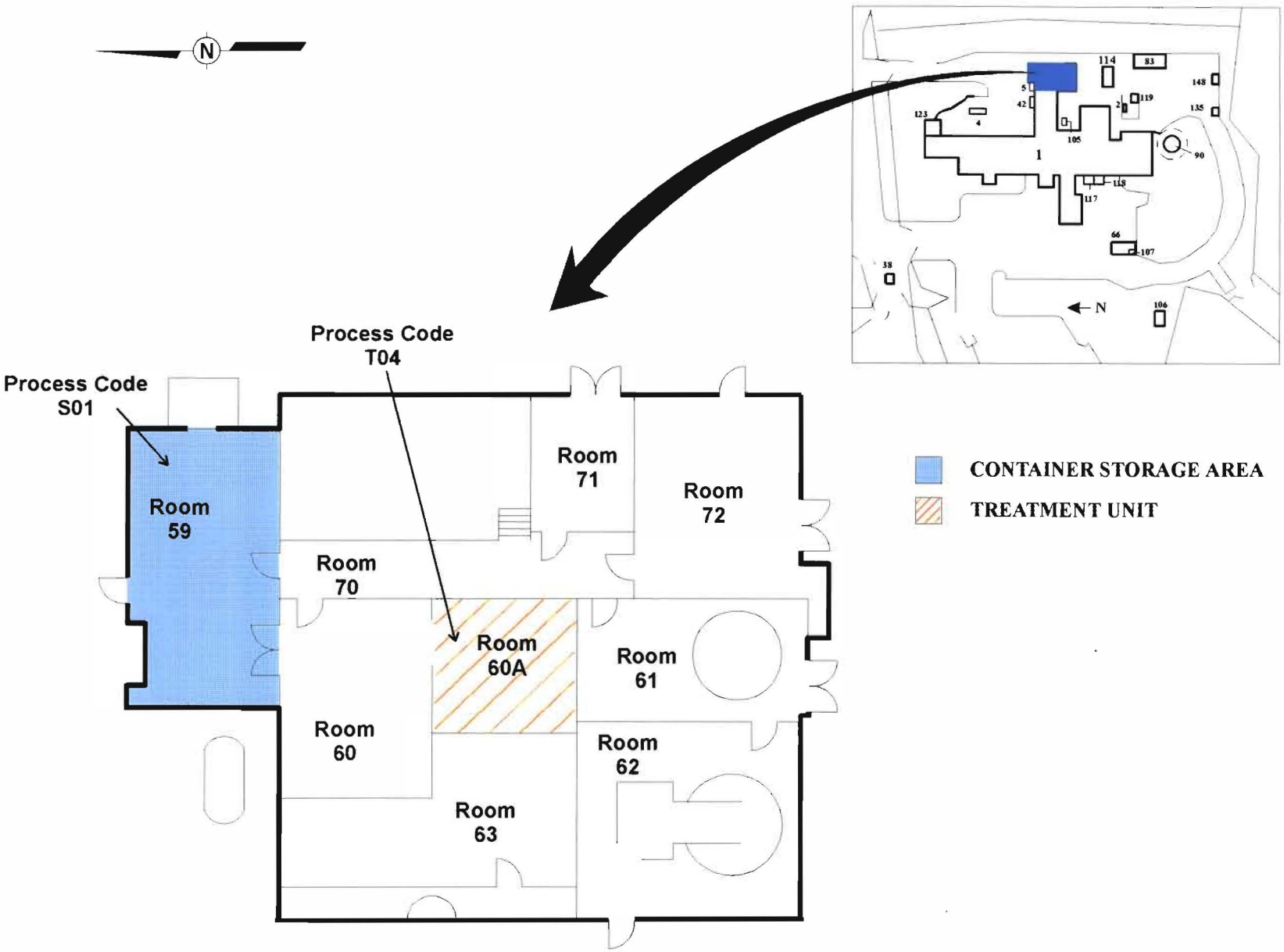


Figure 2-2. TA-50-1 RLWTF Container Storage Area and Cementation Treatment Unit

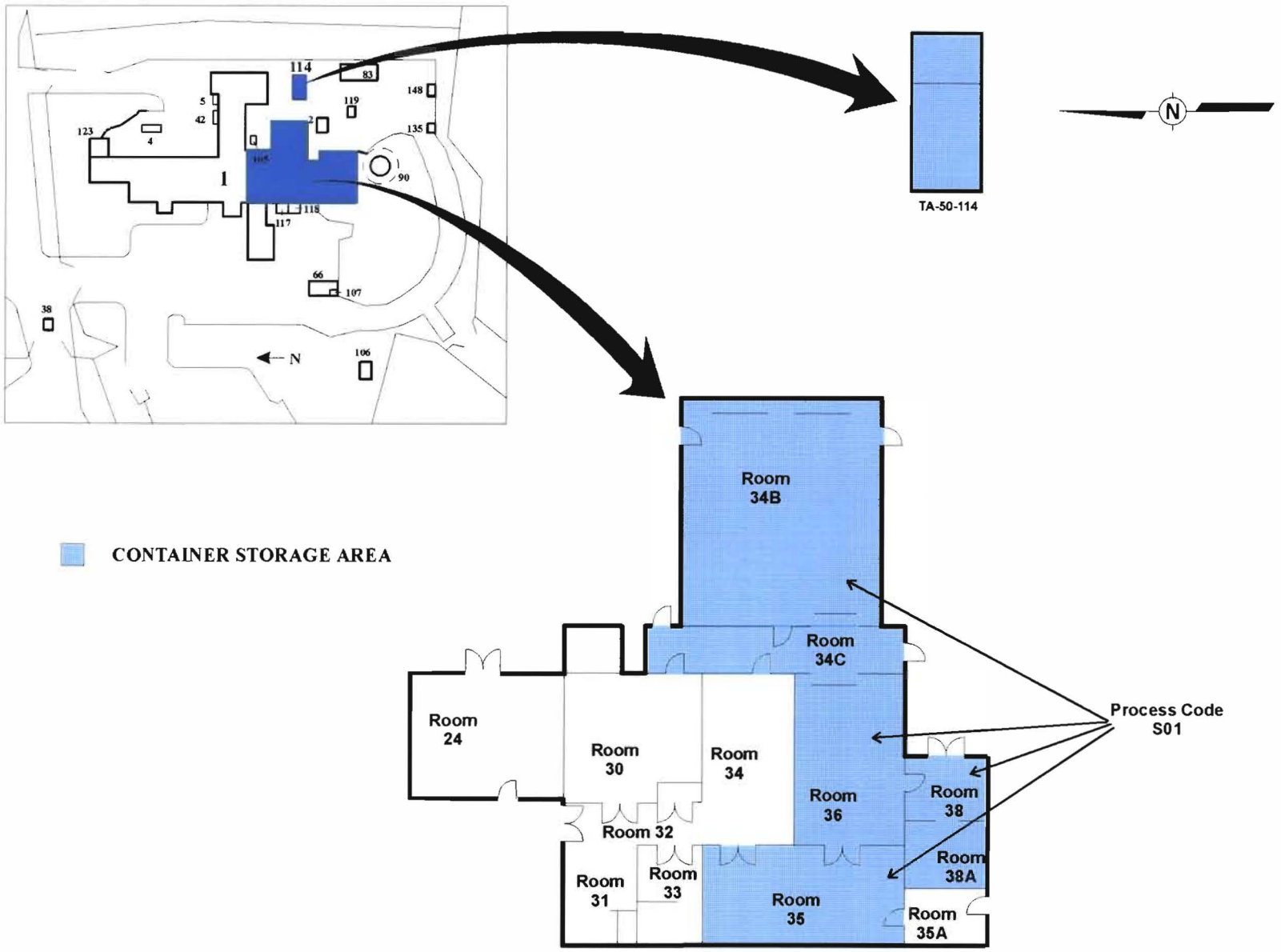
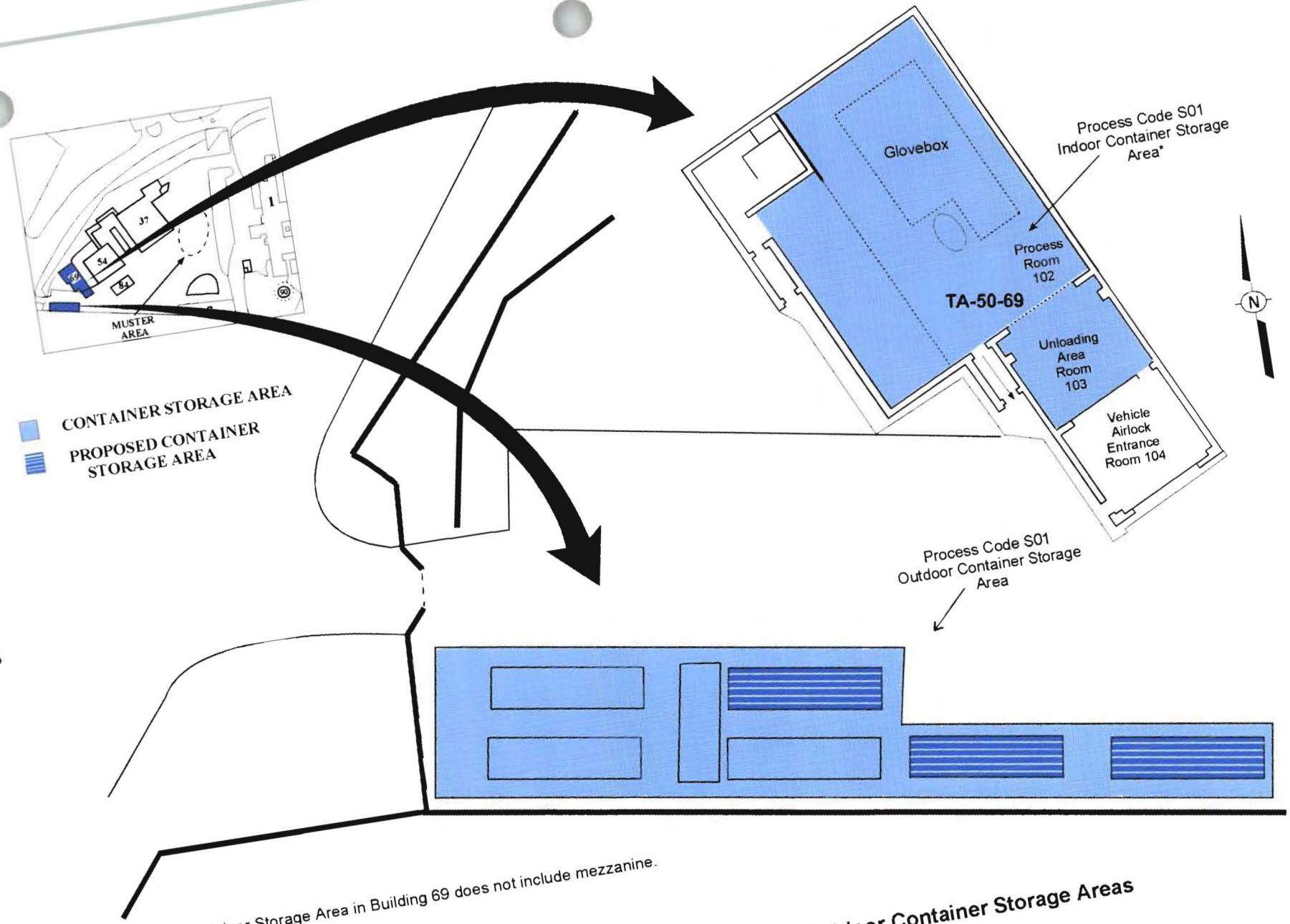


Figure 2-3. TA-50-1 Decontamination Operations Facility and TA-50-114 Container Storage Area



*Note: Container Storage Area in Building 69 does not include mezzanine.

Figure 2-4. WCRRF TA-50-69, Indoor and Outdoor Container Storage Areas

APPENDIX 2A

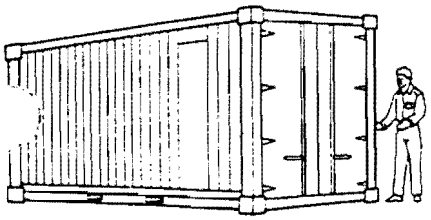
TRANSPORTAINERS

TRANSPORTAINER INFORMATION

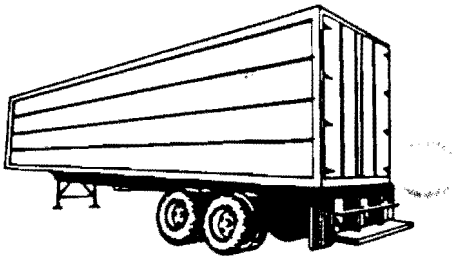
Maritime freight containers (transportainers) are routinely used at LANL to provide security and weather protection for temporary storage. LANL procures this type of equipment from a variety of vendors specializing in the reconditioning of used transportainers. Stringent federal transportation criteria govern the design and acceptance of transportainers for the specified intended use. Transportainers that no longer meet these specifications are commonly sold to suppliers who recondition them for resale. The following guidelines reflect specifications typical of reconditioned maritime freight containers designed to transport containerized, non-perishable cargo.

The exterior dimensions of the transportainers are typically 8 ft wide, 8.5 ft tall, and either 20 or 40 ft long. The sidewalls and roof of the transportainers are constructed of 14-gauge corrugated steel. The sidewalls are welded to 5-in.-channel beam supports. All joints and seams are continuously welded. The transportainers are equipped with four corner castings and lifting eyes to allow the transportainers to be stacked or hooked together. The corner posts and lifting eyes are 0.25-in. steel welded to corner castings. The floor has 0.125-in. steel-channel cross members. The joists are spaced 12 to 14 in. on center. Either a 1.125-in. or 1.25 in. hardwood decking is screwed into the joists. The decking is applied such that there are no visible gaps between planks. The transportainer door panels are of double-seam construction with double-sealing (two-flap) gaskets. For added security, the hinge pins are constructed of stainless steel and the locking handles are made of hardened steel. The door hardware bolts are welded so that they cannot be unbolted. Each transportainer is equipped with one-way side vents to equalize ambient pressure differentials inside the transportainer.

The 8-ft by 40-ft transportainers are typically designed to ship 30 tons of cargo. Transportainer cargo load specifications stipulate a 5-to-1 safety margin. For additional information, see the attached transportainer vendor specifications and figures.



MALOY
MOBILE STORAGE



415 RANKIN RD. NE, ALBUQUERQUE, NM 87107
PH# (505) 344-6123 • FAX# (505) 344-3351

Freight Container Designation	Length (External)					S			P			K_1 Max.		K_2 Max.	
	ft	in	tol.	mm	tol.	ft	in	mm	ft	in	mm	in	mm	in	mm
1A	40	0	$^{+0}_{-\frac{3}{8}}$	12190	$^{+2}_{-8}$	39	4	11984	7	5	2258	¾	19	⅜	10
1B	29	11¼	$^{+0}_{-\frac{3}{8}}$	9125	$^{+0}_{-10}$	29	3¼	8918	7	5	2258	⅝	16	⅜	10
1C	19	10½	$^{+0}_{-\frac{1}{4}}$	6055	$^{+3}_{-2}$	19	2½	5852	7	5	2258	½	13	⅜	10
1D	9	9¾	$^{+0}_{-\frac{3}{16}}$	2990	$^{+1}_{-4}$	9	1¾	2786	7	5	2258	⅜	10	⅜	10

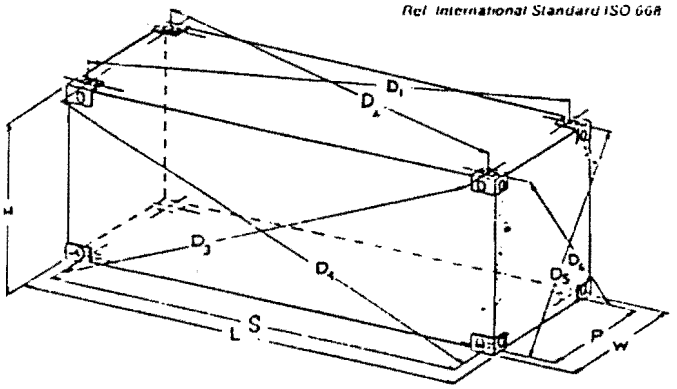
K_1 = Difference between D_1 and D_2 or between D_3 and D_4, i.e.:
$K_1 = D_1 - D_2$ or $K_1 = D_2 - D_1$ or $K_1 = D_3 - D_4$ or $K_1 = D_4 - D_3$

K_2 = Difference between D_5 and D_6, i.e. $K_2 = D_5 - D_6$ or $D_6 - D_5$

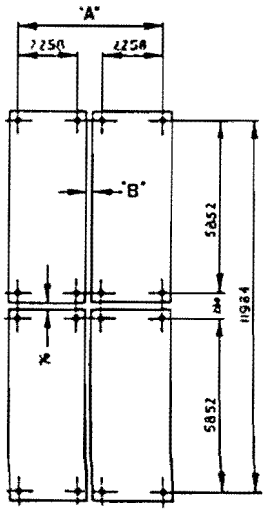
WIDTH (external) Containers 1A, 1B, 1C, 1D = 8 ft $^{+0}_{-\frac{3}{16}}$ in 2435 $^{+3}_{-2}$ mm

HEIGHT (external) Containers 1A, 1B, 1C, 1D = 8 ft $^{+0}_{-\frac{3}{16}}$ in 2435 $^{+3}_{-2}$ mm

Ref International Standard ISO 668



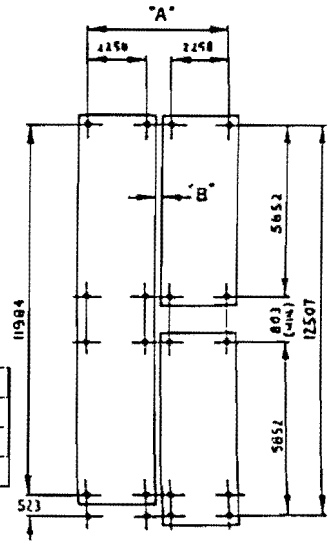
Typical corner casting location of two 20' containers in a 40' container space



SPACING	
"A"	"B"
4774	80
4719	25

NOTE Nominal measurements referring to the center of the corner castings

Typical corner casting location of two 20' containers lashed at the midpoint



SPACING	
"A"	"B"
4774	80
4719	25

NOTE Nominal measurements referring to the center of the corner castings

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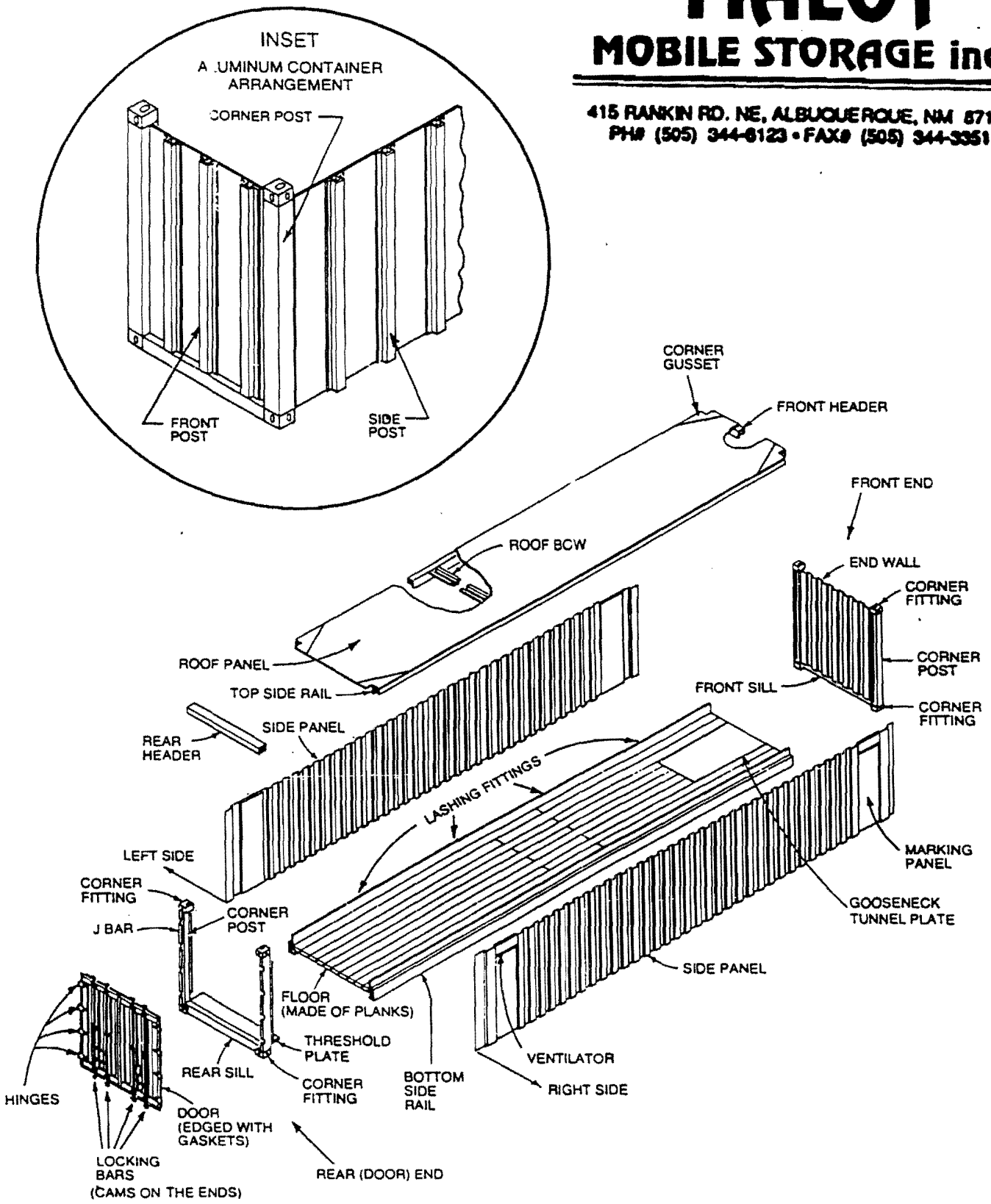
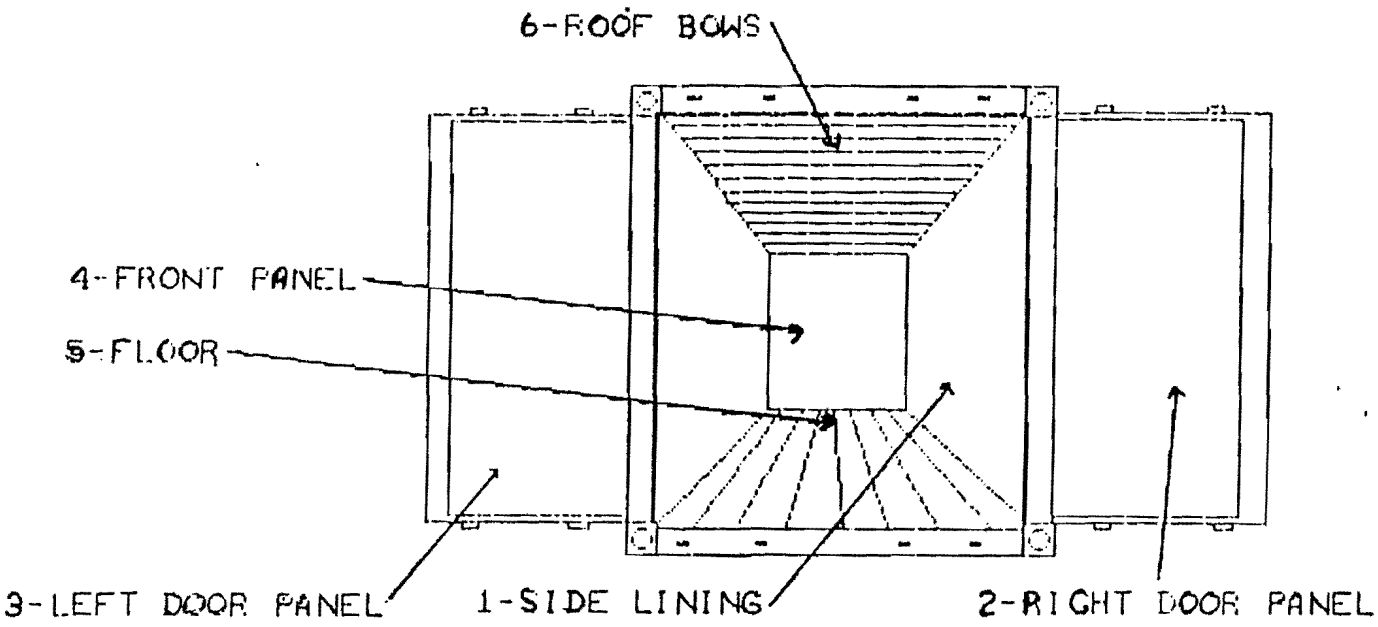
MOBILE STORAGE inc.

415 RANKIN RD. NE, ALBUQUERQUE, NM 87107
PH# (505) 344-6123 • FAX# (505) 344-3351



General arrangement of 40 foot container components



20ft.

OUTSIDE DIMENSIONS

8ft.6in. HIGH
8ft. WIDE
20ft. LONG

INSIDE DIMENSIONS

7ft.4in. HIGH
7ft.6in. WIDE
19ft.5in LONG

SQ.FT. = 160
CU.FT. = 1097
APROX. WT. = 5200 lbs.

40ft.

OUTSIDE DIMENSIONS

8ft.6in. HIGH
8ft. WIDE
40ft. LONG

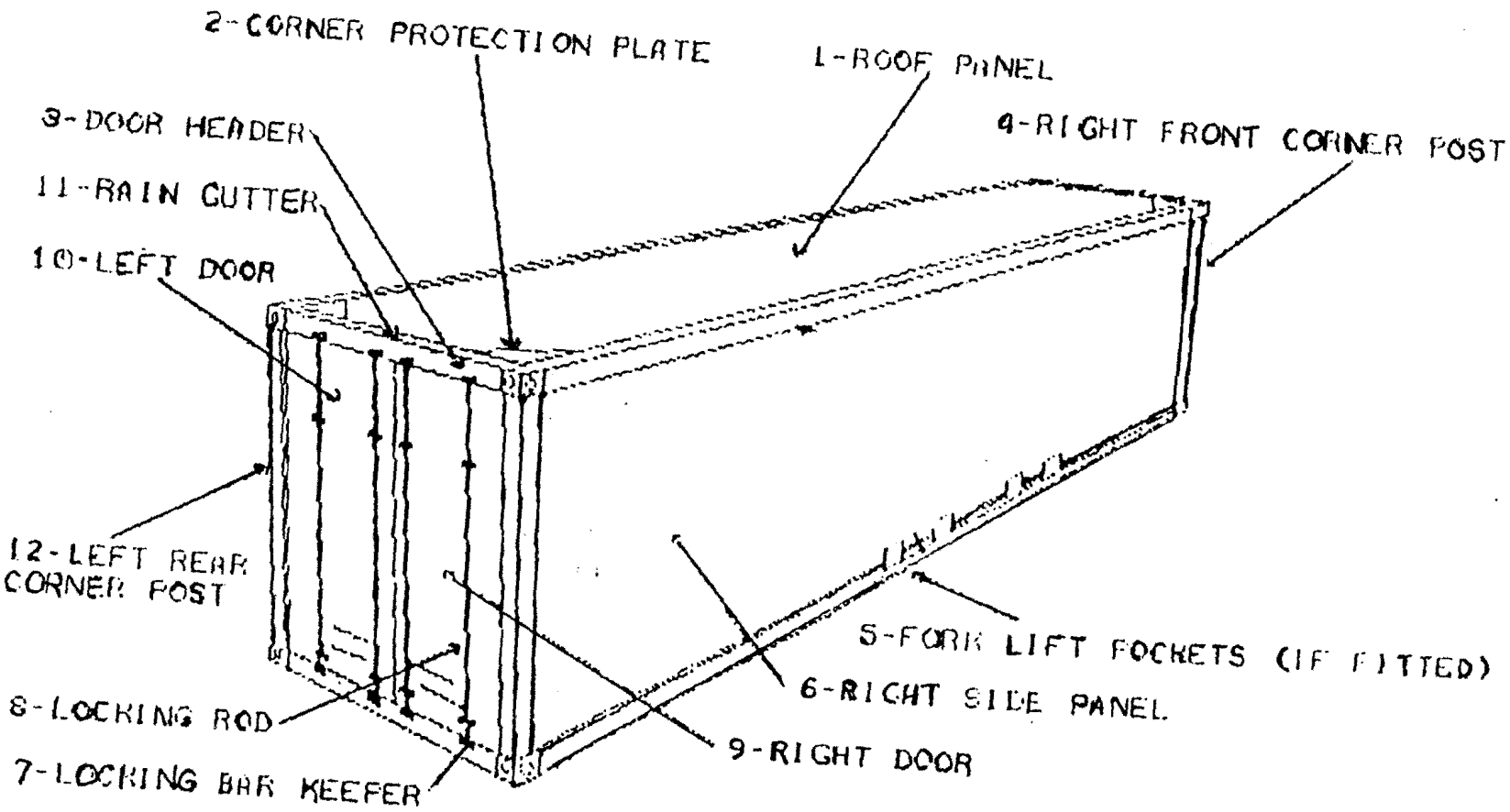
INSIDE DIMENSIONS

7ft.9in. HIGH
7ft.6in. WIDE
39ft.6in. LONG

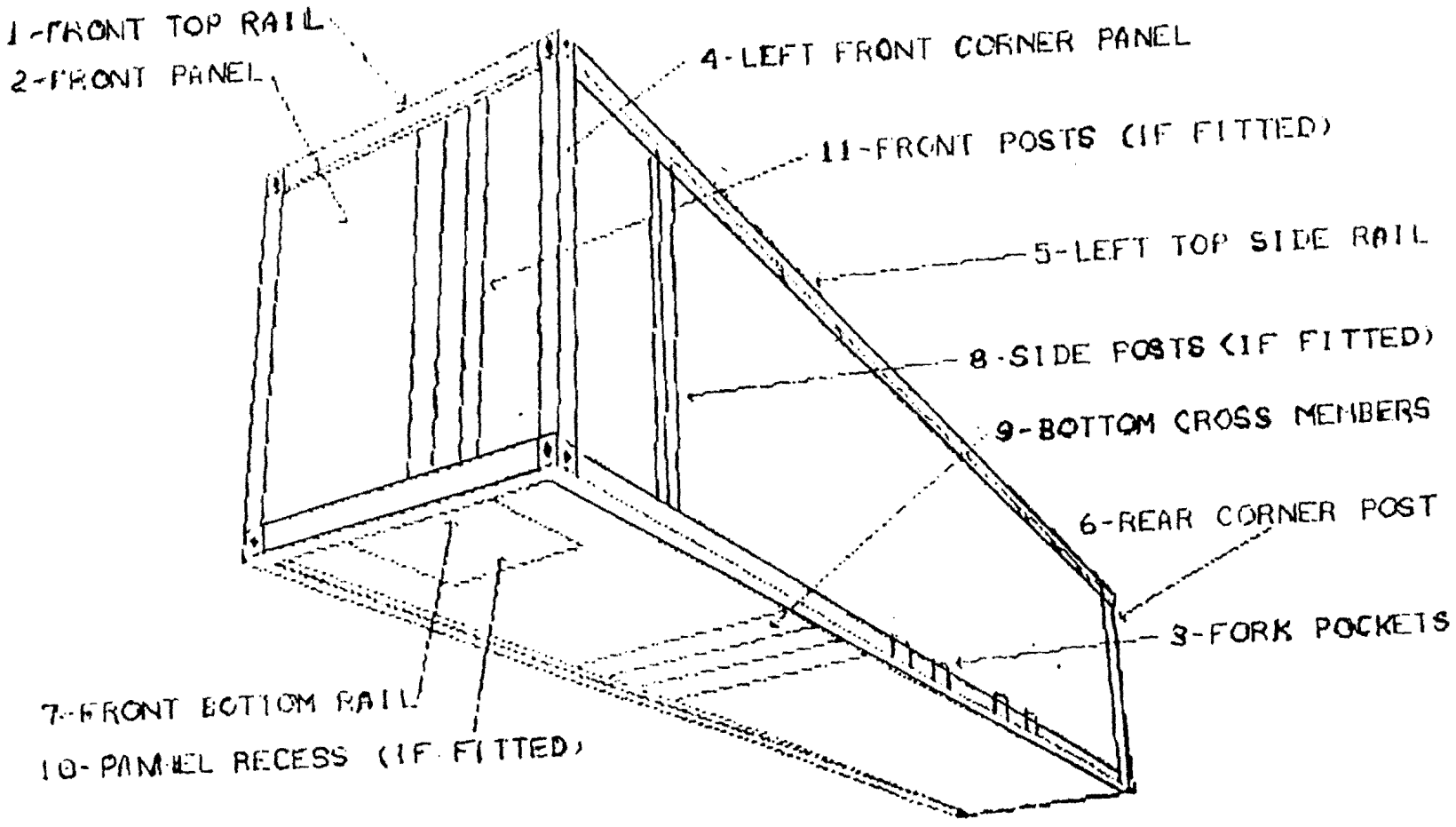
SQ.FT. = 320
CU.FT. = 2265
APROX. WT. = (STEEL) 9000 lbs.
(ALUM.) 7800 lbs.

ALL CONTAINERS MADE OF 14 GAUGE STEEL
WITH HARDWOOD FLOORS ON 3in. STEEL I-BEAMS
(16in. (TERS)

MALOY MOBILE STORAGE



MALOY MOBILE STORAGE



3.0 OTHER FEDERAL LAWS

A discussion of federal laws, as required by the *New Mexico Administrative Code*, Title 20, Chapter 4, Part 1, Subpart IX, §270.3 and §270.14(b)(20), revised January 1, 1997, is provided in Section 3.0 of the *Los Alamos National Laboratory General Part B Permit Application* (Los Alamos National Laboratory 1998b).

4.0 CORRECTIVE ACTION FOR SOLID WASTE MANAGEMENT UNITS

This section describes the solid waste management units (SWMUs) that have been identified in Technical Area (TA) 50 at Los Alamos National Laboratory (LANL). Appendix 4A contains SWMU characterization sheets in response to requirements in the *New Mexico Administrative Code*, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart IX, §270.14(d). The source for the characterization sheets is Revision 1.0 of LANL's "Solid Waste Management Units Report," hereinafter referred to as the SWMU Report (LANL 1994). The characterization sheets include designation of unit type, structural descriptions, period of use, and wastes managed.

LANL uses the definition of a SWMU as presented in the U.S. Environmental Protection Agency (EPA) "Module VIII: Special Conditions Pursuant to the 1984 Hazardous and Solid Waste Amendments to Resource Conservation and Recovery Act (RCRA) for LANL, EPA I.D. NM0890010515" (EPA 1990; 1994), hereinafter referred to as Module VIII, which states that SWMUs are "any discernible unit at which solid wastes have been placed at any time, irrespective of whether the unit was intended for the management of solid or hazardous waste. Such units include any area at or around a facility at which solid wastes have been routinely and systematically released."

4.1 SWMU DESCRIPTIONS

Several types of SWMUs are present in TA-50. These SWMUs include those identified for corrective actions in Module VIII, as modified following a Class III permit modification effective May 19, 1994; SWMUs that are active RCRA units; and SWMUs identified in the SWMU Report. The descriptions in this section were compiled from the "RFI Work Plan for Operable Unit 1147" (LANL 1992a); the "RFI Work Plan for Operable Unit 1148" (LANL 1992b); and from the SWMU Report. Brief unit and waste descriptions are also provided in Table 4-1. Map 4-1 shows the locations of the SWMUs in TA-50.

4.1.1 Radioactive Liquid Waste Treatment Facility

The Radioactive Liquid Waste Treatment Facility (RLWTF), located in TA-50-1, is used to treat radioactive liquid wastes received from other TAs. The 37,000-ft^2 TA-50-1 facility houses several treatment components that primarily remove transuranics (TRUs) from liquid wastes through

processes of neutralization, flocculation/clarification, pH control, ion exchange, and filtration. The RLWTF is identified as SWMU No. 50-001(a) in Module VIII.

Waste lines and manholes comprise a system through which liquid waste is transferred to the RLWTF from many of the active TAs at LANL. The transfer system, identified as SWMU No. 50-001(b), is continuously monitored by a drip-tray and conductivity-probe leak monitoring system.

4.1.2 Tanks and Waste Lines

SWMUs at TA-50 include various tanks and waste lines. SWMU No. 50-002(a), identified in Module VIII, is a tank farm (TA-50-2) that includes six flow-through process tanks, the largest of which has a 75,000-gal. capacity. The tank farm is comprised of six underground storage tanks (USTs) that manage wastes associated with the RLWTF. Two of the USTs receive incoming waste, two store treated liquid wastes, one collects sludge, and one stores wastes generated during decontamination and decommissioning activities.

Two additional tanks (TA-50-67 and TA-50-68) are encased in an underground vault (TA-50-66) located approximately 30 ft west of the southwest corner of TA-50-1. Radioactive caustic liquid waste and radioactive acidic liquid waste received from the TA-55 Plutonium Facility are managed in tanks TA-50-67 and TA-50-68, respectively. These tanks are listed as SWMU Nos. 50-002(b) and 50-002(c) in Module VIII.

An aboveground storage tank, TA-50-5, is located adjacent to the north wall of Room 60D in TA-50-1. This 4,000-gal. tank was used to store nitric acid, which was intended to recharge an ion-exchange column. The tank, SWMU No. 50-002(d), stored nitric acid product only; it has not been used to store waste.

In addition to the active tanks and associated waste transfer lines, several other decommissioned tanks and lines are identified in Module VIII as SWMUs at TA-50. SWMU No. 50-004(a), comprised of a 520-ft section of 6-in.-diameter vitrified clay pipe, transported industrial waste to TA-50. This waste line was removed in 1975, because of radioactive contamination. A concrete vault and three stainless-steel-lined concrete storage tanks (formerly TA-50-3) comprise SWMU No. 50-004(b). The tanks, ranging in volume from 1,000 to 4,500 gal., managed waste from the

Omega Reactor. The tanks and the vault were removed in 1989. SWMU No. 50-004(c) is comprised of 16 waste lines and associated manholes at various locations within TA-50 that were removed between 1981 and 1989. These waste lines were used to transport radioactive industrial wastes.

The Batch Waste Treatment Unit (BWTU) was located in the basement of TA-50-1. The BWTU (SWMU No. 50-005) consisted of a 500-gal. pressure vessel, filtering system, condenser, vacuum transfer lines, transfer pump, and associated transfer lines. The unit was RCRA-permitted for hazardous waste treatment; it has undergone RCRA closure (Certification Report 1994).

4.1.3 Container Storage Areas

SWMU No. 50-003(a) is a mixed waste container storage area (CSA) located in TA-50-1, Room 59. This active RCRA mixed waste CSA is used to store containers of cemented mixed TRU sludge. This sludge results from waste treatment operations in Room 60A. A CSA located in TA-50-114 is identified as SWMU No. 50-003(d). This active RCRA CSA is permitted for hazardous waste storage and, additionally, operates under interim status for mixed waste container storage. Details regarding SWMU Nos. 50-003(a) and 50-003(d) are included in Section 2.1 and Attachment G of this TA-50 Part B.

A hazardous waste CSA located in TA-50-37, Room 117, is identified as SWMU No. 50-007. This CSA is permitted for hazardous and mixed waste storage. In addition, mixed waste CSAs in Rooms 115 and 118 of TA-50-37 are included as part of SWMU No. 50-007. The three active mixed waste CSAs currently operate under interim status. SWMU No. 50-007 is included in this TA-50 Part B and is detailed in Section 2.1 and Attachment G of this TA-50 PartB.

A mixed waste CSA inside TA-50-69, the Waste Characterization, Reduction, and Repackaging Facility (WCRRF), is identified as SWMU No. 50-008. A mixed waste CSA located outside TA-50-69 has not yet been assigned a SWMU number. These two CSAs, the WCRRF Indoor and Outdoor CSAs, currently operate under interim status. Details regarding SWMU No. 50-008 are included in Section 2.1 and Attachment G of this TA-50 Part B.

Some CSAs have not yet been assigned SWMU numbers. Three CSAs are located in Rooms 35, 36, and 38/38A of TA-50-1. These CSAs will be used for storage of hazardous and mixed waste

during non-RCRA-regulated activities (e.g., waste characterization, segregation of lead from glove boxes). Section 2.1 and Attachment G of this TA-50 Part B further describe the CSAs.

Additional CSAs, TA-50-137, -138, -139, and -140, were previously identified as RCRA-permitted CSAs. These units were never constructed and were never used to manage hazardous waste.

4.1.4 Operational Releases/Outfalls

Operational releases and outfalls located in TA-50 comprise three SWMUs identified in Module VIII. A portion of Upper Ten Site Canyon received two accidental releases of radioactive wastes and chemicals as a result of a sump overflow in TA-50-2. This site is identified as SWMU No. 50-006(a). Airborne releases via stack emissions from the RLWTF and other treatment facilities at TA-50 have contaminated some soil in the area. These airborne releases are identified as SWMU No. 50-006(c). The area where discharge of treated liquid effluent from the RLWTF to Mortandad Canyon is identified as SWMU No. 50-006(d) because previous analyses of the effluent indicated the presence of chemicals, radionuclides, and heavy metals.

4.1.5 Disposal Area

Material Disposal Area (MDA) C is an 11.8-acre disposal site that comprises approximately one-half of TA-50. MDA C, identified as SWMU No. 50-009 in Module VIII, consists of six pits that were used for the disposal of radioactive and hazardous waste (Pits 1 through 6), one unnumbered pit for disposal of chemical wastes, 107 disposal shafts, and one unnumbered shaft that was used for a single disposal of strontium-90. Pits 1 through 4 measure approximately 610 ft long, 40 ft wide, and 25 ft deep. Pit 5 is approximately 705 ft long, 110 ft wide, and 18 ft deep. Pit 6 is approximately 505 ft long, 100 ft wide, and 25 ft deep. The chemical pit measures approximately 180 ft long, 25 ft wide, and 12 ft deep. The disposal shafts vary in depth and diameter. Table 4-1 lists the various types of waste that were disposed of at MDA C. Waste disposal at MDA C ceased by 1969, and the MDA C was officially decommissioned in 1974.

4.1.6 Decontamination Area

A vehicle decontamination area at TA-50-1, Room 34B, is used to clean vehicles and radioactively contaminated large objects. This area has been in use since 1963; it was enclosed in 1983. Liquid wastes generated during decontamination are transferred to TA-50-2 via the floor drain and waste line. The vehicle decontamination area is identified as SWMU No. 50-010.

4.1.7 Septic System

SWMU No. 50-011(a), identified in Module VIII, consists of a decommissioned septic system that was located near the south end of TA-50-1. This septic system was comprised of a septic tank (TA-50-10), a manhole (TA-50-9), a sanitary distribution box (TA-50-11), and a seepage pit. The septic system managed sanitary waste only. All components of the septic system were removed in 1983. A new septic system, installed in 1983, is identified as SWMU No. 50-011(b).

4.1.8 Incinerator Complex

An incinerator complex (SWMU No. 50-007) was housed in TA-50-37. The incinerator complex was comprised of the incinerator, various waste-feed components, and two waste-feed tanks. The incinerator was located in Room 112; the waste-feed system and tanks were located in Room 115. The unit was used to treat solid and liquid wastes containing chlorinated and fluorinated hydrocarbons, carcinogenic materials, and TRU wastes. The incinerator unit, a RCRA-permitted hazardous waste treatment unit, has undergone RCRA closure (Certification Report 1997).

4.1.9 Cementation Unit

A cementation unit [SWMU No. 50-001(a)] is located in Room 60A of TA-50-1. The unit is used to solidify TRU-contaminated sludge generated during the treatment of low-level, acidic, and caustic liquid wastes received from the TA-55 Plutonium Facility. The cementation unit currently operates under interim status for mixed waste treatment. Details regarding SWMU No. 50-001(a) are included in Section 2.2 and Attachment I of this TA-50 Part B.

4.2 ADDITIONAL SWMU INFORMATION

The SWMU characterization sheets (Appendix 4A) identify SWMUs at TA-50 by a unique number designation the upper-left corner of each sheet. The individual units grouped within a SWMU are designated by a letter following the SWMU number. The SWMU characterization sheet includes the name, type, and period of operation for each unit. The unit description includes information on the unit, such as location, size, dates of operation for the individual units within a SWMU, materials of construction, waste descriptions, and release information (if any).

4.3 RELEASES

4.3.1 Description of Releases at TA-50

Some of the SWMUs listed in Table 4-1 have released, or are suspected to have released, hazardous waste or hazardous constituents. In 1990, LANL initiated drilling activities to test the integrity of the waste tanks comprising SWMU No. 50-002. Cuttings from the boreholes revealed that some of the soil appeared wet and, based on field screening, were found to be radioactively contaminated.

SWMU No. 50-004(a), a waste line in the vicinity of TA-50-37, has leaked. Radioactively contaminated soil discovered during waste line decommissioning activities was cleaned up to levels as low as reasonably achievable. Potential chemical contaminants were not analyzed at the time of decommissioning.

Accidental releases from the RLWTF have contaminated sections of Upper Ten Site Canyon [SWMU No. 50-006(a)] with radioactive and chemical wastes. Airborne contaminants released through stack emissions from the RLWTF, and other treatment facilities at TA-50 have contaminated soil at various locations within TA-50 [SWMU No. 50-006(c)]. Liquid effluent from the treatment plant, released prior to the issuance of a National Pollutant Discharge Elimination System permit, has contaminated sections of Mortandad Canyon with a variety of chemical, radiological, and heavy metal wastes [SWMU No. 50-006(d)].

Several sampling efforts at MDA C (SWMU No. 50-009) have confirmed the presence of low-level radioactive contamination of soil in and near its perimeter. Soil at the north and east perimeter of the site contain tritium, uranium, and various isotopes of plutonium at levels above naturally occuring background levels. Soil along the west ends of disposal Pits 2, 4, 5, and 6 also contain above background levels of tritium and various plutonium isotopes.

4.3.2 Characterization of Releases

Potential releases from SWMUs, if any, are described on the SWMU characterization sheet (Appendix 4A); in the "RFI Work Plan for Operable Unit 1147" (LANL 1992a); and in the "RFI Work Plan for Operable Unit 1148" (LANL 1992b). Release descriptions in Appendix 4A include the material released and the nature of the release. However, because of the nature of the releases,

the exact volume released is not always known. The timing of the releases can only be estimated by the period of operation and sampling events.

4.3.3 Corrective Actions

Pursuant to 20 NMAC 4.1, Subpart V, §264.101(a), corrective actions are required for releases of hazardous waste or hazardous constituents. Table 4-1 lists some of the documented releases of RCRA-hazardous waste or hazardous constituents from the TA-50 SWMUs. However, because the TA-50 SWMUs are located in areas where waste historically has been and currently is managed, they will be investigated and remediated, as necessary and with EPA and New Mexico Environment Department approval, during LANL Environmental Restoration Project corrective action activities. Corrective action will follow the RCRA Facility Investigation/Corrective Measures Study process.

Table 4-1. TA-50 Solid Waste Management Unit Descriptions[a]

SWMU No.	Unit Type	Unit Description	Waste Description	Status
50-001(a)	RLWTF	A 37,000-ft^2 facility located at TA-50-1 that houses various components used to treat radioactive liquid waste	Radioactive liquid waste and potentially hazardous constituents	Active
	Associated cementation unit	Mixed waste treatment unit located at TA-50-1, Room 60A	Mixed waste sludge	Interim status[b]
50-001(b)	Waste lines and manholes	Liquid waste transfer system	Radioactive liquid waste and potentially hazardous constituents	Active
50-002(a)	Tank farm	Six flow-through process tanks and associated waste transfer lines	Radioactive liquid waste and sludge and potentially hazardous constituents	Active
50-002(b)	Underground storage tank	One of two tanks (TA-50-67) contained in an underground vault located approximately 30 ft west of the southwest corner of TA-50-1	Radioactive liquid waste and potentially hazardous waste	Active
50-002(c)	Underground storage tank	One of two tanks (TA-50-68) contained in an underground vault located approximately 30 ft west of the southwest corner of TA-50-1	Radioactive liquid waste and potentially hazardous waste	Active
50-002(d)	Aboveground storage tank	4,000-gal. nitric acid storage tank	Unit stored product only; no waste stored	Active
50-003(a)	Container storage	Mixed waste container storage area located in TA-50-1, Room 59 used primarily to store drums of solidified, TRU-contaminated sludge	Potentially mixed waste	Interim status[b]
50-003(d)	Container storage	Container storage area located in TA-50-114	Hazardous and mixed waste	Interim status[b]
50-004(a)	Decommissioned waste line	520-ft section of 6-in.-diameter, vitrified clay pipe removed from the vicinity of TA-50-37	Radioactive liquid waste and potentially hazardous constituents	Decommissioned

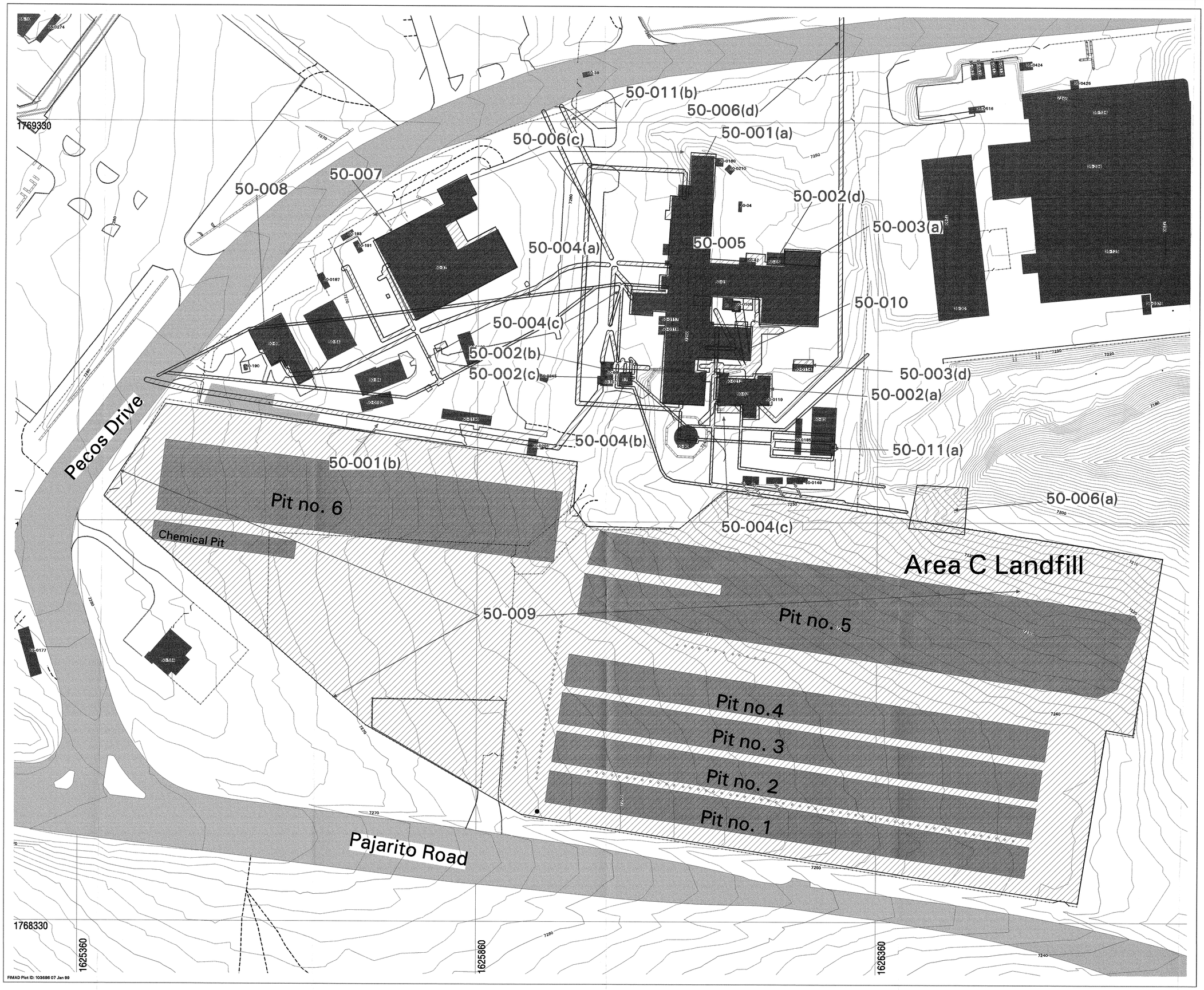
Table 4-1. TA-50 Solid Waste Management Unit Descriptions[a] (Continued)

SWMU No.	Unit Type	Unit Description	Waste Description	Status
50-004(b)	Decommissioned tank farm	An underground concrete vault and three stainless-steel-lined concrete storage tanks removed in 1989	Radioactive liquid waste and potentially hazardous constituents	Decommissioned
50-004(c)	Decommissioned waste lines and manholes	16 waste lines and associated manholes in TA-50 removed between 1981 and 1989	Radioactive liquid waste and potentially hazardous constituents	Decommissioned
50-005	Batch Waste Treatment Unit	500-gal. pressure vessel and associated waste-processing components located in TA-50-1	Hazardous waste	RCRA closure
50-006(a)	Operational releases/outfall	Section of Upper Ten Site Canyon contaminated as a result of a sump overflow	Radioactive liquid waste and hazardous chemicals	Active
50-006(c)	Operational releases/outfall	Contaminated soil caused by airborne releases from the RLWTF and other treatment facilities at TA-50	Soil contaminated with radioactive and chemical waste	Active
50-006(d)	Operational releases/outfall	Outfall of treated liquid effluent from the RLWTF to Mortandad Canyon	Soil contaminated with a variety of chemicals, radionuclides, and heavy metals	Active
50-007	Incinerator complex	An incinerator, various waste feed components, two waste feed tanks	Hazardous and mixed waste	RCRA closure
		Three container storage areas housed in TA-50-37		Interim status[b]
50-008	Container storage	Container storage area located inside TA-50-69	Mixed waste	Interim status[b]
50-009	MDA C	11.8-acre disposal area (consisting of pits and shafts) located on the north side of Pajarito Road at TA-50	Radioactive, mixed, hazardous, and solid waste	Decommissioned

Table 4-1. TA-50 Solid Waste Management Unit Descriptions[a] (Concluded)

SWMU No.	Unit Type	Unit Description	Waste Description	Status
50-010	Decontamination area	Vehicle decontamination area in TA-50-1	Radioactive waste and potentially hazardous waste	Interim status[b]
50-011(a)	Septic system	Decommissioned septic system that consisted of a septic tank, a manhole, a sanitary distribution system, and a seepage pit	Sanitary waste	Decommissioned
50-011(b)	Septic system	New septic system installed in 1983	Sanitary waste	Active
TBD[c]	Container storage	Container storage area located outside TA-50-69	Mixed waste	Interim status[b]
TBD[c]	Container storage	Container storage areas located in TA-50-1, Rooms 35, 36, and 38/38A	Radioactive and mixed waste	Interim status[b]
TBD[c]	Container storage	Container storage area located in TA-50-137	Hazardous waste	TBD[d]
TBD[c]	Container storage	Container storage area located in TA-50-138	Hazardous waste	TBD[d]
TBD[c]	Container storage	Container storage area located in TA-50-139	Hazardous waste	TBD[d]
TBD[c]	Container storage	Container storage area located in TA-50-140	Hazardous waste	TBD[d]

[a] Information compiled from SWMU Report (LANL 1994); Module VIII (EPA 1994); and "RFI Work Plan for Operable Unit 1147" (LANL 1992a).
[b] SWMU/Interim Status — submitted in this TA-50 Part B.
[c] TBD = SWMU Number to be determined.
[d] TBD = SWMU status to be determined.



LEGEND

- Contours, 10 ft
- Contours, 2 ft
- Fence, Industrial
- Fence, Security
- Waste Lines
- Retaining Wall
- Road/Parking, Dirt
- Road/Parking, Paved
- Building or Structure
  - 50-1 = Radioactive Liquid Waste Treatment Plant
  - 50-37 = Radioactive Materials Research, Operations, and Demonstration Facility
  - 50-69 = Waste Characterization, Reduction, and Repackaging Facility
- Disposal Pit (location approximate)
- Solid Waste Management Units
- Paved Road
- Disposal Shaft (location approximate)
- Strontium-90 Disposal Shaft

8878-A

Map 4-1

Solid Waste Management Units at Technical Area (TA) 50

FACILITY for INFORMATION, MANAGEMENT, ANALYSIS and DISPLAY
EARTH & ENVIRONMENTAL SCIENCES DIVISION (EES-5)
LOS ALAMOS NATIONAL LABORATORY, Los Alamos, New Mexico

Produced by: Belinda Scheber
Date: January 07, 1999 FIMAD Plot ID: 103686

N

State Plane Coordinate System, New Mexico Central Zone.
1983 North American Datum

Grid provides NM State Plane coordinates in feet.
Grid interval, in feet: 500

0 15 30 45 60
METERS
0 50 100 150 200
FEET

Notes: The information on this map is provisional and the accuracy has not been confirmed. Feature locations are dependent on scale and symbology and should not be relied upon to establish legal claims. Basemap Sources: Boundary, structure, and utility data are from Los Alamos National Laboratory Engineering Division and Los Alamos County Utility and Engineering Departments. Contour data is from Los Alamos National Laboratory Environmental Restoration Program aerial survey, September 1991.

APPENDIX 4A

SOLID WASTE MANAGEMENT UNIT (SWMU) CHARACTERIZATION SHEETS FOR SWMUs AT TECHNICAL AREA (TA)-50

(From: Los Alamos National Laborary, 1994,
"Solid Waste Management Units Report,"
Revision 1, LAUR 90-3400,
Los Alamos National Laboratory,
Los Alamos, New Mexico.)

SUMMARY

LOCATION : TA-50
TYPE OF UNIT(s) : TREATMENT PLANT
UNIT USE : TREATMENT
OPERATIONAL STATUS : ACTIVE
PERIOD OF USE : 1963 - PRESENT
HAZARDOUS RELEASE : KNOWN
RADIOACTIVE RELEASE : KNOWN

MATERIALS MANAGED : RADIOACTIVE WASTE
HAZARDOUS WASTE
SUSPECTED MIXED WASTE

UNIT INFORMATION

The radioactive liquid waste treatment facility [50-001(a)] at TA-50 covers 37,000 square feet (60,000 square feet tot floor space) and is designed primarily to remove transuranics. Its design capacity is 250 gpm. The facility provides neutralization, flocculation/clarification, pH control, ion exchange and filtration. The facility includes a wiped fi evaporator (not yet operational), located in Room 71, Building 1; two clariflocculators, located in Room 116; a pH adjustment tank, located in Room 16; a horizontal evaporator storage tank, located in Room 70A; a decant storage tank (used as an auxiliary sludge storage tank), located in Room 61; a rotary drum vacuum filter, located in Room 116B; two gravity filtration devices, located in Room 116; a 100,000 gallon steel emergency holding tank, TA-50-90, added in 198 and two waste mixers where chemicals are mixed with waste for treatment, located in Room 116. A drum-tumbler operatio in Room 60A is used for cementation of TRU sludge prior to shipment to the Waste Isolation Pilot Plant. The facility has an outfall to Mortandad Canyon regulated under an NPDES permit (see "Operational Releases"). Liquid waste is transferred to the radioactive waste treatment facility from many of the active technical areas. Drainlines [50-001(b)] that transport liquid waste to the treatment facility are identified below.

FROM	STATUS	WASTES MANAGED
TA-55 to TA-50-66	Active	Acidic and caustic waste
Collector manhole TA-50-72 to grit chamber in TA-50-1	Active	LL radioactive industrial waste
TA-50-69 and TA-50-37	Active	LL radioactive industrial waste
TA-2, -3, -35, -43, -48 and -52, via manhole TA-50-72	Active	LL radioactive industrial waste
Manhole TA-50-7	Active	LL radioactive industrial waste
TA-55, via monitor pit TA-50-57 and manhole TA-50-72	Active	LL radioactive industrial waste

The majority of waste flows to TA-50 through double-encased polyethylene and stainless steel piping. There was a low-level radioactive industrial waste line from TA-50-3 until 1989, when the structure was removed.

LL : low-level

WASTE INFORMATION

The waste treated at this facility is radioactive waste. It is suspected that some waste streams entering the plant contain hazardous constituents.

RELEASE INFORMATION

Releases from the treatment facility are described in 50-006.

SWMU CROSS-REFERENCE LIST

SWMU NUMBER	CEARP IDENTIFICATION NUMBER(S)	RFA UNIT	E.R. RELEASE SITE INFO.	ASSOCIATED STRUCTURES
50-001(a)	TA50-3-CA-A-RW	50.006-50.011 50.019 50.022-50.024		TA-50-1, -90
50-001(b)	TA50-1-UST-A-HW/RW		Tsk 5 : 11-17	TA-50-1, -2, -7, -35, -37, -43, -48, -52, -57, -66, -69, -72

SUMMARY

LOCATION : TA-50
TYPE OF UNIT(s) : UNDERGROUND TANK
UNIT USE : TREATMENT/STORAGE
OPERATIONAL STATUS : ACTIVE/INACTIVE
PERIOD OF USE : 1963 - PRESENT
HAZARDOUS RELEASE : UNKNOWN
RADIOACTIVE RELEASE : UNKNOWN

MATERIALS MANAGED : RADIOACTIVE WASTE
SUSEPCTED MIXED WASTE

UNIT INFORMATION

The Radioactive Waste Treatment Facility includes three sets of underground storage tanks. The first set of tanks is a tank farm known collectively as TA-50-2 [50-002(a)] and includes six flow-through process tanks, the largest having a volume of 75,000 gallons. Two of the tanks handle the incoming waste, one is for sludge, and the other two are for treated liquid waste storage. The sixth tank receives liquid from decontamination and decommissioning activities. The wastes are transported from TA-50-1 to TA-50-2 via a system of waste transfer lines. Six buried cast-iron lines transport liquid wastes and sludges from treatment and holding tanks in TA-50-1 to their associated tanks in TA-50-2. Four buried steel lines transport wastes from Room 61 in TA-50-1 to holding tanks in TA-50-2. Three additional cast-iron lines transport waste from drains in TA-50-1 to a tank in TA-50-2. In addition, two tanks TA-50-67 and TA-50-68 [50-002(b) and 50-002(c)] in an underground vault, TA-50-66, handle the caustic and acid liquid wastes respectively from two underground lines from the Plutonium Facility at TA-55. From TA-50-66 these wastes are transported via two double encased stainless steel lines to Room 60 in the TA-50-1 treatment plant. These liquids contain significant amounts of transuranics and are monitored carefully for criticality control before treatment. An outdoor, aboveground storage tank, TA-50-5 [50-002(d)], is located adjacent to the north wall of TA-50-1. The tank is used to store nitric acid and is associated with a concrete containment structure. TA-50-12 was used to hold limestone chips to neutralize nitric acid vapors. The limestone chips were removed when the containment wall was built around TA-50-5 in 1988. TA-50-5 does not handle waste but stores nitric acid for ion exchange column regeneration.

WASTE INFORMATION

The waste treated or stored as a part of the radioactive waste treatment facility is identified as radioactive. It is suspected that some waste streams contain hazardous constituents.

RELEASE INFORMATION

In July, 1990, the Laboratory initiated drilling activities to test the integrity of the waste tanks. Cuttings from some of the boreholes around the grit chamber were wet and, upon surveying, found to be radioactively contaminated. Results of further investigation suggest that the pipeline connecting to the grit chamber was the source of a leak. Samples of the wet soil were collected and submitted to the HSE-9 analytical laboratory for analysis. Analytical results are pending.

NOTES

Three stainless steel tanks that were formerly 50-002(b) have been decommissioned and are described as 50-004(b).

SWMU CROSS-REFERENCE LIST

SWMU NUMBER	CEARP IDENTIFICATION NUMBER(S)	RFA UNIT	E.R. RELEASE SITE INFO.	ASSOCIATED STRUCTURES
50-002(a)	TA50-1-UST-A-RW/RW TA50-3-CA-A-RW	50.029- 50.032	Tsk 5 : 3-5	TA-50-2
50-002(b)	TA50-3-CA-A-RW		Tsk 5 : 7 8	TA-50-67
50-002(c)	TA50-3-CA-A-RW	? 50.014	Tsk 5 : 7 8	TA-50-68
50-002(d)	TA50-3-CA-A-RW	? 50.014	Tsk 5 : 18 23	TA-50-5, -12

? Indicates uncertainty with RFA Unit

SUMMARY

LOCATION : TA-50
TYPE OF UNIT(s) : CONTAINER STORAGE AREA
UNIT USE : STORAGE
OPERATIONAL STATUS : ACTIVE
PERIOD OF USE : 1963 - PRESENT
HAZARDOUS RELEASE : NONE
RADIOACTIVE RELEASE : NONE

MATERIALS MANAGED : SUSPECTED MIXED WASTE
HAZARDOUS WASTE
RADIOACTIVE WASTE

UNIT INFORMATION

There are five drum storage areas in conjunction with the Radioactive Waste Treatment Facility. The primary storage area is located in Building 1, Room 600 [50-003(a)]. The source of the waste is the cementing unit in Room 60A. A second container storage area is located in Room 130 of building TA-50-1 [50-003(b)]. The area is a satellite storage area for the analytical laboratory. The waste stored is samples from the laboratory. There is a temporary storage (less than 90 days) area at TA-50-2 [50-003(c)] that has been active since 1985. It consists of polyethylene 200 or 30 gallon tanks and numerous 55 gallon drums. The drums are stored on asphalt. The source of the waste is the isotope processing unit and the waste goes either into the radioactive waste tank or the neutralization tank. The polyethylene "tuff" tanks are enclosed within a steel cage. Recently a modular shed [50-003(d)] has been constructed behind TA-50-1 in which acidic wastes picked up from the ICON facility (TA-46) are stored. There is also an inflatable berm in this area which is also used for storage. A November 1988 field survey found four barrels under a tarp near TA-50-125 [50-003(e)].

WASTE INFORMATION

The waste in Room 600 is transuranic. The waste in Room 130 and TA-50-2 is low level, transuranic, and/or hazardous. The waste in the shed and berm is acidic waste. The contents of the four barrels is unknown.

RELEASE INFORMATION

There are no known releases from these container storage areas.

SWMU CROSS-REFERENCE LIST

SWMU NUMBER	CEARP IDENTIFICATION NUMBER(S)	RFA UNIT	E.R. RELEASE SITE INFO.	ASSOCIATED STRUCTURES
50-003(a)	**	50.025	Tsk 5 : 28	IN TA-50-1
50-003(b)	**		Tsk 5 : 29	IN TA-50-1
50-003(c)	**	50.033	Tsk 5 : 30	AT TA-50-2
50-003(d)	**		Tsk 5 : 31	BEHIND TA-50-1
50-003(e)	TA50-11-CA-A-HW/RW			NEAR TA-50-125

** No corresponding E. R. Program unit.

SUMMARY

LOCATION : TA-50
TYPE OF UNIT(s) : WASTE LINE
UNIT USE : TRANSPORT
OPERATIONAL STATUS : DECOMMISSIONED
PERIOD OF USE : 1963 - 1989
HAZARDOUS RELEASE : UNKNOWN
RADIOACTIVE RELEASE : KNOWN

MATERIALS MANAGED : SUSPECTED MIXED WASTE
RADIOACTIVE WASTE
HAZARDOUS WASTE

UNIT INFORMATION

In 1975, 520 feet of radioactive contaminated waste line [50-004(a)] was removed at TA-50 in the region where the incinerator is now located, TA-50-37. Contaminated soil and the vitrified clay pipe were taken to Area G and buried. In 1989, the underground concrete vault and three tanks that made up the TA-50-3 Tank Farm [50-004(b)] were removed. These were stainless steel underground storage tanks, ranging in volume from 1,000 to 4,500 gallons. The tanks were used to store waste from the Omega West reactor and could be used in an emergency for the storage of other wastes. The tank vault also received waste from undefined experiments in TA-50-1, via inactive waste line no. 50. Several other drainlines and associated manholes [50-004(c)] have been removed in TA-50.

STRUCTURE NO.	SIZE/MATERIAL	YEAR REMOVED	DESCRIPTION
Waste line no. 44	28', 6" dia, vitrified clay	1984	Connected waste line no. 45 to waste line no. 46 at manhole no. 6
Waste line no. 45	588', 5" dia, PVC	1984	Connected waste line no. 43 at Pecos Dr. to waste line no. 44 near manhole no. 6
Waste line no. 45a, manhole no. 55, manhole no. 56	67', 6" dia, PVC	1984	Drained from manhole no. 73 to manhole no. 56 via manhole no. 55. Manhole nos. 55 and no. 56 were also removed.
Waste line no. 46	41', 6" dia, cast iron	1984	Influent line connecting manhole no. 6 to TA-50-1
Waste line no. 47	14', 4" dia, cast iron	1984	Connected the soil lab in TA-50-1 to manhole no. 6.
Waste line no. 48	95', 6" dia, cast iron	1984	From tank TA-50-3 to manhole no. 6 via manhole no. 7.
Waste line no. 48a	44', 3" dia, cast iron	1984	Connected manhole no. 78 to manhole no. 6.
Waste line no. 49	305', 3" dia, cast iron	1981	Connected TA-35 with TA-50-3.
Waste line no. 54	65', 3" dia, cast iron	1981	Connected waste line no. 49 to overflow tank at TA-50-2.
Waste line no. 55	6" dia, 244' of cast iron, 165' of vitrified clay pipe	1981	Connected TA-50-1 and TA-50-2 to outfall in Ten Site Canyon
Waste line no. 56	29', 4" dia, cast iron	1983	Connected TA-50-1 to waste line no. 58
Waste line no. 65	3150', 3" dia, cast iron	1989	Connected TA-52 to a waste line junction at TA-50-3 Tank Farm.
Waste line no. 67	6" dia, 26' of cast iron, 250' of vitrified clay pipe	1981	Connected an emergency drain in TA-50-2 to an outfall in Ten Site Canyon
Waste line manhole no. 6		1984	Main collector manhole for influent waste lines 42, 44, 45, 46, 47, and 65.

WASTE INFORMATION

The waste consisted of constituents in an acidic matrix. It is suspected that some waste streams contained hazardous constituents.

RELEASE INFORMATION

The lines in the vicinity of TA-50-37 [50-004(a)] were known to have leaked occasionally. Generally, soil contamination by radionuclides, if discovered during waste line decommissioning activities [50-004(c)], was cleaned up to as low as reasonably achievable by removing affected soil and pipe. Chemical constituents which may have been present were usually not sampled for at the time of decommissioning. During excavation of the TA-50-3 vault and tanks [50-004(b)] soil surrounding and beneath the vault were screened for both radioactive and chemical contamination. Levels of contamination were found to be below cleanup levels; the trench was backfilled with soil.

(continued)

NOTES

SWMU No. 50-004(b) was formerly SWMU No. 50-002(b).

SWMU CROSS-REFERENCE LIST

SWMU NUMBER	CEARP IDENTIFICATION NUMBER(S)	RFA UNIT	E.R. RELEASE SITE INFO.	ASSOCIATED STRUCTURES
50-004(a)	TA50-12-CA-I-HW/RW		Tsk 5 : 53	NEAR TA-50-37
50-004(b)	TA50-2-UST-I-HW/RW		Tsk 5 : 10 54	TA-50-3
50-004(c)	**		Tsk 5 : 49 51 52 55-57 59-65	TA-50-1, -2, -3; MANHOLES 6, 7, 55, 56, 73, 78

** No corresponding E. R. Program unit.

DRAFT

SUMMARY

LOCATION : TA-50
TYPE OF UNIT(s) : TREATMENT PLANT
UNIT USE : TREATMENT
OPERATIONAL STATUS : ACTIVE
PERIOD OF USE : 1983 - PRESENT
HAZARDOUS RELEASE : NONE
RADIOACTIVE RELEASE : NONE

MATERIALS MANAGED : HAZARDOUS WASTE

UNIT INFORMATION

A liquid waste batch treatment system is located in Building 1, Room 24, at TA-50. Wastes that have been treated include cyanide, chromate plating solutions and solutions of acids and bases, and heavy metals. The unit is underlain by concrete and includes a Kynar-lined tank and associated Kynar-lined and stainless steel pipeline. The tank is used to treat electroplating waste containing copper and lead. It was put into use in May 1988. The plant also has a Kynar-lined blowdown tank in Room 24. This tank had not been used at the time of the VSI. Mercury reclamation is done on an intermittent basis in Room 34. Mercury is washed in acid and/or solvents and double distilled. The capacity has been estimated at 35 pounds per day. The process is not operated regularly because of the current lack of personnel. The area is estimated to be 60 square feet.

WASTE INFORMATION

The wastes handled at the Room 24 unit are cyanide, chromate plating solutions, acids, bases, and heavy metals including lead. Mercury is handled by the unit in Room 34.

RELEASE INFORMATION

There is no evidence of release from this facility.

SWMU CROSS-REFERENCE LIST

SWMU NUMBER	CEARP IDENTIFICATION NUMBER(S)	RFA UNIT	E.R. RELEASE SITE INFO.	ASSOCIATED STRUCTURES
50-005	TA50-7-CA-I/A-NW	50.026 50.027	Tak 5 : 24 25	TA-50-1

SUMMARY

LOCATION : TA-50
TYPE OF UNIT(s) : OPERATIONAL RELEASE
UNIT USE : DISPOSAL
OPERATIONAL STATUS : ACTIVE
PERIOD OF USE : 1963 - PRESENT
HAZARDOUS RELEASE : SUSPECTED
RADIOACTIVE RELEASE : KNOWN

MATERIALS MANAGED : SUSPECTED MIXED WASTE
RADIOACTIVE WASTE
HAZARDOUS WASTE
SOLID WASTE

UNIT INFORMATION

There have been several releases of radioactive wastes and unknown chemicals at TA-50 over the years. Upper Ten Site Canyon is reported to have contamination [50-006(a)] from overflow of a sump. Stained, potentially contaminated soil [50-006(b)] is present directly beneath an active radiator that is part of the west wall of building TA-50-37. Routine airborne releases of plutonium from the radioactive liquid waste treatment plant have deposited on the surrounding soil [50-006(c)]. Treated liquid effluent from the treatment plant has discharged to Mortandad Canyon since 1963 [50-006(d)]; the discharge is now regulated under an NPDES permit. More recently, the liquid effluent from the TA-21 Treatment Plant has been piped to TA-50 for discharge to Mortandad Canyon as well. The area surrounding an aboveground tank for diesel fuel [50-006(e)] was contaminated by releases from the tank. It was located south of TA-50-37. Underground lines extended from the tank to TA-50-37. The tank and the lines were removed in May, 1990.

WASTE INFORMATION

The spill into Upper Ten Site Canyon [50-006(a)] consisted of liquid from the TA-50 Waste Treatment Facility (see 50-001); it was primarily radioactive waste, but may have contained hazardous constituents. The stained soil beneath the radiator at TA-50-37 [50-006(b)] contains hydraulic oil. Airborne releases [50-006(c)] included plutonium; other constituents, if present, are unknown. Outfall of effluent from the treatment plant at TA-50 [50-006(d)] is currently monitored under the routine environmental surveillance program. Analysis of effluent in the early 1980s indicated the presence of radionuclides and metals. The area around the diesel tanks [50-006(e)] received diesel fuel.

RELEASE INFORMATION

Releases through the outfall have caused an inventory of chemicals, heavy metals, and radionuclides to be present in Mortandad Canyon. Sampling near the outfall will continue in response to the 1988 DOE Environmental Survey Report, which cited the stream channel as Environmental Problem 9. In addition, elevated plutonium is present in surface soil at TA-50 from airborne stack emissions. The hydraulic oil beneath the fan at TA-50-37 is unlikely to have caused hazardous releases. Contaminated soil from around the diesel tank was removed and landfarmed.

SWMU CROSS-REFERENCE LIST

SWMU NUMBER	CEARP IDENTIFICATION NUMBER(S)	RFA UNIT	E.R. RELEASE SITE INFO.	ASSOCIATED STRUCTURES
50-006(a)	TA50-5-CA-I-HW/RW		Tsk 5 : 21	SOUTHEAST OF TA-50-1
50-006(b)	**		Tsk 5 : 20 22	WEST WALL OF TA-50-37
50-006(c)	TA50-6-CA-A-RW		Tsk 5 : 19	AROUND TA-50-1
50-006(d)	TA50-4-O/CA-A-HW/RW		Tsk 5 : 1 6	FROM TA-50-1
50-006(e)	TA50-3-CA-A-RW		Tsk 5 : 48	SOUTH OF TA-50-37

** No corresponding E. R. Program unit.

SUMMARY

LOCATION : TA-50
TYPE OF UNIT(s) : INCINERATOR
UNIT USE : TREATMENT/STORAGE
OPERATIONAL STATUS : ACTIVE
PERIOD OF USE : 1975 - PRESENT
HAZARDOUS RELEASE : NONE
RADIOACTIVE RELEASE : KNOWN

MATERIALS MANAGED : MIXED WASTE
HAZARDOUS WASTE

UNIT INFORMATION

The incinerator complex (TA-50-37) was designed and constructed to develop incineration methods for wastes containing transuranics. The design matrix feed rate of this facility is 50 kg/hr. Upgrades are under way to convert the unit from a research and development facility to a production facility. These changes should be on line by the end of 1991. The incinerator is located in Room 112 and the feed system is located in Room 115 of Building 37. The liquid feed system prep room is bermed and contains no floor drains. The inventory permitted in this room is 600 gallons and release containment is designed to hold 110 percent of the maximum inventory. Containers are opened and handled under barrel hood with an exhaust blower capacity of about 1000 cfm. An off-gas treatment unit is associated with the incinerator complex. The exhaust air system from the room includes two HEPA filters. Room 115 of TA-50-37 is permitte to store radioactive waste for the indoor feed system for the incinerator. At one time, Room 115 was used to empty glass vials containing scintillation liquid. The liquid is stored at TA-54, Area L awaiting startup of the incinerator The solids were disposed of at TA-54, MDA-G as empty containers. The waste comes from throughout the facility.

WASTE INFORMATION

The wastes incinerated include organic liquids; chlorinated, fluorinated hydrocarbons; carcinogenic materials; and transuranic waste from the plutonium processing facility. Liquid effluent generated by the off-gas aqueous scrub syste is filtered for solids removal prior to transfer via a double contained instrumented pipeline to the TA-50 Building 1 Industrial Waste Treatment Facility. Ash will be immobilized in concrete prior to shipment to the Waste Isolati to Plant.

RELEASE INFORMATION

The unit has many release controls associated with it.

SWMU CROSS-REFERENCE LIST

SWMU NUMBER	CEARP IDENTIFICATION NUMBER(S)	RFA UNIT	E.R. RELEASE SITE INFO.	ASSOCIATED STRUCTURES
50-007	TA50-9-IN-A-HW/RW	50.035 50.036	Tsk 5 : 26	TA-50-37

SUMMARY

LOCATION : TA-50
TYPE OF UNIT(s) : VOLUME REDUCTION
UNIT USE : OTHER: VOLUME REDUCTION
OPERATIONAL STATUS : ACTIVE
PERIOD OF USE : 1983 - PRESENT
HAZARDOUS RELEASE : NONE
RADIOACTIVE RELEASE : NONE

MATERIALS MANAGED : MIXED WASTE

UNIT INFORMATION

The Size Reduction Facility in Building TA-50-69 is a prototype facility designed to reduce the volume of and repackage various types of metallic waste contaminated with transuranics. Operations were initiated in August of 1983. Through FY85, a total volume of 3,106 cubic feet of transuranic waste had been reduced by a factor of 3.7 to 1. This facility is moderately contaminated with transuranics and associated radionuclides.

WASTE INFORMATION

The waste consists of transuranic and metallic waste, including lead.

RELEASE INFORMATION

There is no evidence of release at this facility. There are no outfalls associated with this unit; all liquid wastes are processed at the radioactive waste treatment facility. Stack emissions also are monitored.

SWMU CROSS-REFERENCE LIST

SWMU NUMBER	CEARP IDENTIFICATION NUMBER(S)	RFA UNIT	E.R. RELEASE SITE INFO.	ASSOCIATED STRUCTURES
50-008	TA50-8-CA-A-RW		Tak 5 : 27	IN TA-50-69

SUMMARY

LOCATION : TA-50
TYPE OF UNIT(s) : MATERIAL DISPOSAL AREA
UNIT USE : DISPOSAL
OPERATIONAL STATUS : INACTIVE
PERIOD OF USE : 1948 - 1969
HAZARDOUS RELEASE : UNKNOWN
RADIOACTIVE RELEASE : KNOWN

MATERIALS MANAGED : MIXED WASTE
HAZARDOUS WASTE
SOLID WASTE

UNIT INFORMATION

MDA-C is located on the north side of Pajarito Rd adjacent to TA-50. There is approximately 3,650,000 cubic feet of waste at MDA-C within an area of 11.8 acres. MDA-C is composed of six radioactive pits, one chemical pit and 107 shafts. Pits 1 through 4 were approximately 185.9 m x 12.2 m in area. Pit 5 was approximately 214.9 m long x 33.5 m wide x 5.5 m deep. Pit 6 was approximately 153.9 m long x 30.5 m wide x 7.0 m deep. The chemical pit was approximately 54.9 m long x 7.6 m wide and may have been 3.7 m deep. The shafts vary in diameter and depth, and many are lined with corrugated metal pipe. Pit 1 was used from 1948-1951; Pit 2 was used from 1950-1951; Pit 3 was used from 1951-1953; Pit 4 was used from 1951-1955; Pit 5 was used from 1948-1951; and Pit 6 was used from 1956-1959. The chemical pit was active from 1960-1964. Pit disposal ended in 1964 and shaft disposal ended in 1969. Studies in the late 1970s indicated animal intrusion into the waste and other problems. The surface was improved in 1984 by adding soil cover at a depth greater or equal to six inches with an average cover of approximately two feet, recontouring, and seeding with native grasses. The new surface cover was applied to the eastern half and the extreme western end of the site and consisted of an additional 0.15 meter of topsoil over 0.5 meter of crushed tuff. The new cover was not applied to the extreme southwest corner of Area C because this area does not include any of the waste trenches.

WASTE INFORMATION

The types of radioactive waste buried in Area C include building debris from the demolition of TA-1 and TA-10, rc contaminated trash, sludge from waste treatment plants and depleted uranium chips. Plutonium-contaminated sodium boots from TA-35 were buried in shafts. Noncombustible waste was put in the west end of pit 5 in 1957. The chemical pit contained, according to reports, a variety of chemicals, pyrophoric metals, hydrides and powders, sealed vessels containing sodium potassium alloys or compressed gases, and equipment not suitable for salvage. No high explosives have ever been disposed of in the pit. Natural uranium contaminated objects were placed in the pit, according to reports. Before closing Area C, the safety office placed approximately 200 gas cylinders which were full or partially full and covered them with approximately ten feet of compact fill. The record indicates that warnings were made that some full nickel carbonyl cylinders may have been put into the chemical pit. Carboys of di- or triethylbenzene from the whole body counter at TA-43 were deposited on the ground where the solar panels were located (the solar panels have since been removed). Parts of the Clementine Reactor (see SWMU No. 2-003) are buried in MDA-C.

RELEASE INFORMATION

During the 1986 DOE Environmental Survey (Environmental Problem 22), above background levels of radioactivity were found adjacent to the site. The source of elevated radioactivity has not been determined.

SWMU CROSS-REFERENCE LIST

SWMU NUMBER	CEARP IDENTIFICATION NUMBER(S)	RFA UNIT	E.R. RELEASE SITE INFO.	ASSOCIATED STRUCTURES
50-009	MDA-C	50.034	Tsk 5 : 32-42	MDA-C

SUMMARY

LOCATION : TA-50
TYPE OF UNIT(s) : DECONTAMINATION FACILITY
UNIT USE : TREATMENT
OPERATIONAL STATUS : ACTIVE
PERIOD OF USE : 1963 - PRESENT
HAZARDOUS RELEASE : NONE
RADIOACTIVE RELEASE : NONE

MATERIALS MANAGED : RADIOACTIVE WASTE

UNIT INFORMATION

A radioactive decontamination facility for the laboratory is located in the lower level at the south end of TA-50-1. The facility is used to clean radioactive contamination from vehicles and other objects. Liquid wastes produced during decontamination go to the tank farm at TA-50, via floor drain and drainline, and solid wastes go to TA-54 for storage (TRU) or burial (LL). The decontamination takes place at the facility in hoods, gloveboxes, and open areas.

WASTE INFORMATION

The wastes generated are generally radioactive.

RELEASE INFORMATION

There is no evidence of routine or systematic releases at this facility.

SWMU CROSS-REFERENCE LIST

SWMU NUMBER	CEARP IDENTIFICATION NUMBER(S)	RFA UNIT	E.R. RELEASE SITE INFO.	ASSOCIATED STRUCTURES
50-010	TA50-10-CA-A-RW		Tsk 5 : 9	IN TA-50-1

SUMMARY

LOCATION : TA-50
TYPE OF UNIT(s) : SEPTIC SYSTEM
UNIT USE : TREATMENT/DISPOSAL
OPERATIONAL STATUS : INACTIVE/ACTIVE
PERIOD OF USE : 1963 - PRESENT
HAZARDOUS RELEASE : UNKNOWN
RADIOACTIVE RELEASE : UNKNOWN

MATERIALS MANAGED : SANITARY WASTE

UNIT INFORMATION

A decommissioned septic system [50-011(a)] included a septic tank, TA-50-10, a manhole, TA-50-9, and a sanitary distribution box, TA-50-11. In addition, Zia Company engineering drawing Z-4856 indicates that a seepage pit was installed on the east side of the sanitary distribution box in 1978. All components of the septic system were removed in 1983. An active sanitary waste system of drainlines [50-011(b)] was installed in 1983 to discharge sanitary sewage from TA-50 to the treatment lagoons at TA-35. The lines are 6-inch ductile iron pipe and were installed to replace the earlier septic tank system. The drainlines are operational and subject to monitoring.

WASTE INFORMATION

The septic systems managed sanitary waste only.

RELEASE INFORMATION

The septic system was removed in 1983; it is unknown if there were hazardous releases. No known releases have occurred from the active sanitary waste system.

NOTES

Former SWMU Nos. 50-011(b) and (c) were contiguous parts of the septic system and have been included within 50-011(a).

SWMU CROSS-REFERENCE LIST

SWMU NUMBER	CEARP IDENTIFICATION NUMBER(S)	RFA UNIT	E.R. RELEASE SITE INFO.	ASSOCIATED STRUCTURES
50-011(a)	**		Tsk 5 : 50	TA-50-10, -9, -11
50-011(b)	**		Tsk 5 : 2	
50-011(misc)			Tsk 5 : 58	

** No corresponding E. R. Program unit.

5.0 CERTIFICATION

In accordance with the *New Mexico Administrative Code*, Title 20, Chapter 4, Part 1, Subpart IX, §270.11(d), revised January 1, 1997, 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.

Dennis Erickson
Division Director for Environment, Safety, and Health Division
Los Alamos National Laboratory, Operator

1/13/99
Date Signed

David Gurule
Area Manager, Los Alamos Area Office
U.S. Department of Energy Albuquerque Operations
Owner/Operator

1/15/99
Date Signed

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ATTACHMENT A

FACILITY DESCRIPTION

TABLE OF CONTENTS

LIST OF FIGURES ii
LIST OF MAPS iii
LIST OF ABBREVIATIONS/ACRONYMS iv

A.1 FACILITY DESCRIPTION [20 NMAC 4.1, Subpart IX, §270.14(b)(1) and §270.14(b)(19)(xi)] A-1
A.1.1 Topographic Maps [20 NMAC 4.1, Subpart IX, §270.14(b)(19)] A-3
A.1.2 TA-50-37 . . . . . A-4
A.1.3 TA-50-1 . . . . . A-4
A.1.3.1 RLWTF CSA and Cementation Treatment Unit A-4
A.1.3.2 TA-50-1 Decon Ops Facility A-4
A.1.4 TA-50-114 . . . . . A-5
A.1.5 WCRRF A-5
A.1.6 Meteorology and Hydrology A-5
A.1.6.1 Wells and Surface Waters [20 NMAC 4.1, Subpart IX, §270.14(b)(19)(iii) and (ix)] A-5
A.1.7 Surrounding Land Use [20 NMAC 4.1, Subpart IX, §270.14(b)(19)(iv)] A-6

A.2 LOCATION INFORMATION - ENVIRONMENTAL DESCRIPTION [20 NMAC 4.1, Subpart IX, §270.14(b)(11)] A-6
A.2.1 Geology A-6
A.2.1.1 Seismology [20 NMAC 4.1, Subpart IX, §§270.14(b)(11)(i) and (ii), and Subpart V, §264.18(a)] A-7
A.2.1.2 Stratigraphy A-7
A.2.1.3 Soils A-7
A.2.1.4 Erosional Processes A-8
A.2.2 Floodplain Standard [20 NMAC 4.1, Subpart IX, §270.14(b)(11)(iii) and §270.14(b)(19)(ii), and Subpart V, §264.18(b)] A-8

A.3 GROUNDWATER MONITORING [20 NMAC 4.1, Subpart IX, §270.14(c), and Subpart V, §264.90(a)] A-8

A.4 TRAFFIC PATTERNS AND CONTROL [20 NMAC 4.1, Subpart IX, §270.14(b)(10)] A-9
A.4.1 Routes of Travel A-9
A.4.2 Traffic Control Signals A-9

A.5 SECURITY [20 NMAC 4.1, Subpart IX, §270.14 (b)(4) and §270.14(b)(19)(viii) and Subpart V, §264.14] A-9

A.6 REFERENCES A-10

LIST OF FIGURES

FIGURE NO.	TITLE	PAGE
A-1	Location of TA-50 in Relation to Other Laboratory TAs and Surrounding Landholdings	A-11
A-2	TA-50 Site Map	A-12
A-3	TA-50-37 Container Storage Area and Electrochemical Treatment Unit	A-13
A-4	TA-50-1 RLWTF Container Storage Area and Cementation Treatment Unit	A-14
A-5	TA-50-1 Decontamination Operations Facility and TA-50-114 Container Storage Area	A-15
A-6	WCRRF TA-50-69 Indoor and Outdoor Container Storage Areas	A-16
A-7	Regional Surface Faulting	A-17
A-8	Conceptual Block Diagram Schematic of the Stratigraphy of the TA-50 Site	A-18
A-9	Location of Access Road and Traffic Control Signals at Technical Area (TA) 50	A-19
A-10	TA-50 Security Fences and Entry Gates	A-20

LIST OF MAPS

MAP NO.	TITLE	PAGE
A-1	Contour Map Showing the Locations of the Hazardous and Mixed Waste Units at Technical Area (TA) 50	A-21

LIST OF ABBREVIATIONS/ACRONYMS

CAI	controlled air incinerator
CSA	container storage area
Decon Ops	Decontamination Operations
DOE	U.S. Department of Energy
ETU	Electrochemical Treatment Unit
LANL	Los Alamos National Laboratory
MDA	Material Disposal Area
NMAC	*New Mexico Administrative Code*
NPDES	National Pollutant Discharge Elimination System
RCRA	Resource Conservation and Recovery Act
RLWTF	Radioactive Liquid Waste Treatment Facility
TA	Technical Area
TRU	transuranic
WCRRF	Waste Characterization, Reduction, and Repackaging Facility

ATTACHMENT A
FACILITY DESCRIPTION

Attachment A provides information in accordance with the applicable requirements of the *New Mexico Administrative Code*, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), revised January 1, 1997 [1-1-97]. The following requirements are addressed in this technical area (TA)-specific Part B Permit Application for TA-50 (hereinafter referred to as the TA-50 Part B):

- A general description of TA-50 [20 NMAC 4.1, Subpart IX, §270.14(b)(1)[1-1-97]]
- Site-specific location information for compliance with seismic and floodplain standard requirements [20 NMAC 4.1, Subpart IX, §§270.14(b)(11)(i) through (iii), §270.14(b)(19)(ii) [1-1-97], and 20 NMAC 4.1, Subpart V, §§264.18(a) and (b)[1-1-97]]
- Site-specific environmental information [20 NMAC 4.1, Subpart IX, §270.14(b)(1)[1-1-97]]
- Site-specific groundwater monitoring and protection information [20 NMAC 4.1, Subpart IX, §270.14(c) [1-1-97], and 20 NMAC 4.1, Subpart V, §264.90(a)[1-1-97]]
- Site-specific traffic patterns and control [20 NMAC 4.1, Subpart IX, §270.14(b)(10)[1-1-97]]
- Site-specific security [20 NMAC 4.1, Subpart IX, §270.14(b)(4)[1-1-97]]
- Topographic map requirements [20 NMAC 4.1, Subpart IX, §270.14(b)(19)[1-1-97]]

A general Los Alamos National Laboratory (LANL)-wide facility description addressing additional regulatory requirements is provided in Section 2.0 of the *Los Alamos National Laboratory General Part B Permit Application* (LANL 1998b), hereinafter referred to as the LANL General Part B.

A.1 FACILITY DESCRIPTION [20 NMAC 4.1, Subpart IX, §270.14(b)(1) and 270.14(b)(19)(xi)] TA-50 is situated on approximately 15 acres of U.S. Department of Energy (DOE)-controlled land south of the Los Alamos town site. TA-50 is located at the northeast corner of the intersection of Pajarito Drive and Pecos Road, on the finger mesa bounded by Mortandad Canyon to the north and Two-Mile Canyon to the south. Mesa-top elevations at TA-50 range from approximately 7,250 to 7,280 ft above mean sea level. Figure A-1 depicts the TA-50 location within the LANL site boundary, and its location relative to other TAs. Figure A-2 depicts facilities, structures, and hazardous and mixed waste units within the TA-50 boundary. Nearby facilities are described in Section A.1.7 of this attachment. The nearest point of unrestricted public access to TA-50 outside the LANL site boundary is the Royal Crest Trailer Park 1,500 meters (m) (3,770 ft) north of TA-50.

The residential areas of Los Alamos and White Rock are within a 17-kilometer (km) (10-mile) radius of TA-50 and together have a population of approximately 18,200.

This attachment describes site-specific information applicable to the following Resource Conservation and Recovery Act (RCRA) hazardous and mixed waste management units at TA-50:

- TA-50-37 container storage area (CSA) Rooms 112, 115, 117, and 118
- Radioactive Liquid Waste Treatment Facility (RLWTF) CSA in TA-50-1, Room 59
- RLWTF and Decontamination Operations (Decon Ops) CSA in TA-50-114
- Decon Ops Facility CSA in TA-50-1, Rooms 34B and C, 35, 36, 38, and 38A
- Waste Characterization, Reduction, and Repackaging Facility (WCRRF) Indoor CSA in TA-50-69, Rooms 102 and 103
- WCRRF Outdoor CSA
- RLWTF Cementation Treatment Unit at TA-50-1, Room 60A
- Electrochemical Treatment Unit (ETU) in TA-50-37, Room 117

TA-50 hazardous and/or mixed waste management units have been identified in previous Part A or Part B permit applications. These hazardous and/or mixed waste management units are currently in one of the following status categories:

- Hazardous and/or mixed waste unit currently permitted for storage and treatment or operating under interim status pursuant to 20 NMAC 4.1, Subparts V and VI [1-1-97]
- Hazardous waste unit closed pursuant to 20 NMAC 4.1, Subpart V, revised November 1, 1995 and 20 NMAC 4.1, Subpart V [1-1-97]
- Hazardous and/or mixed waste management unit identified in the Part A, but never constructed
- Non-RCRA-regulated unit associated with decontamination activities

The units previously identified in Part A or Part B permit applications are identified under the applicable status category below.

Units currently operating under either a hazardous waste permit or interim status requirements of 20 NMAC 4.1, Subparts V and VI [1-1-97], for hazardous and/or mixed waste storage and treatment:

- CSAs for hazardous and/or mixed waste
  - TA-50-114 Storage Shed
  - TA-50-1 Room 59
  - TA-50-1 Rooms 35, 36, 38/38A
  - TA-50-1 Room 34B - Equipment Cleanup Area
  - TA-50-37 Rooms 115, 117, 118
  - TA-50-69 Outside CSA, Inside CSA
- TA-50-1 Room 60A mixed waste treatment unit (waste solidification/cementation)

These units are included in this TA-50 Part B and described further in Section 2.0 and Attachments G and I.

Unit closed pursuant to 20 NMAC 4.1, Subpart V [1-1-97]:

- The controlled air incinerator (CAI) and storage areas in TA-50-37.

Unit closed pursuant to 20 NMAC 4.1, Subpart V, revised November 1, 1995:

- The Batch Waste Treatment Unit at TA-50-1

Units identified as hazardous/mixed waste storage, but never constructed:

- Modular Storage Buildings 137 and 138
- TA-50-139 and storage pads
- TA-50-140 and storage pads

Non-RCRA-regulated unit associated with mixed waste decontamination activities:

- A centralized Decon Ops Facility at TA-50 is used for cleanup of equipment, some of which is associated with hazardous and mixed waste operations. One decontamination area is located in the south wing of TA-50-1 in Room 34B, which is a high bay that can accommodate equipment of all sizes, including heavy equipment.

A.1.1 Topographic Maps [20 NMAC 4.1, Subpart IX, §270.14(b)(19)]

Maps and figures provided in this attachment and in the *Los Alamos National Laboratory General Part A Permit Application* (LANL 1998a), hereinafter referred to as the General Part A, meet the requirements of 20 NMAC 4.1, Subpart IX, §270.14(b)(19) [1-1-97]. The General Part A includes the LANL-wide 100-year floodplain map and the location map of water supply wells, monitoring wells, test wells, springs, and surface water sampling stations. Other maps and figures are introduced throughout and provided at the end of this attachment. A topographic map of TA-50

is provided as Map A-1. Contour lines are at intervals of 1 in. = 200 ft, which is sufficient to detail natural drainage in the vicinity of TA-50. The topographic map clearly shows a map scale, the date of preparation, a north arrow, the locations of the hazardous and mixed waste units, and surrounding topography at TA-50.

A.1.2 TA-50-37

The TA-50-37 CSA is located on the first floor of TA-50-37 and consists of Rooms 112, 115, 117, and 118, encompassing contiguous areas in the west-central, south-central, and eastern portions of the building (Figure A-3). The TA-50-37 CSA will be used to stage waste undergoing characterization and verification activities at TA-50-37. Detailed information about the TA-50-37 CSA is provided in Section 2.1 and Attachment G of the TA-50 Part B.

The TA-50-37 ETU will be located in TA-50-37, Room 117. Figure A-3 depicts the location of the ETU. After electrochemical treatment operations, drums of mixed transuranic (TRU) waste and mixed low-level waste will be stored temporarily in Room 117. The remaining rooms of the TA-50-37 CSA will also be used for container storage in support of the TA-50-37 waste characterization and electrochemical treatment activities. The ETU is further described in Section 2.2 and Attachment I of the TA-50 Part B.

A.1.3 TA-50-1

TA-50-1 houses the RLWTF CSA and cementation treatment unit and the Decon Ops Facility CSA. Figures A-4 and A-5 depict the location of these units.

A.1.3.1 RLWTF CSA and Cementation Treatment Unit

The cementation treatment unit is located in TA-50-1, Room 60A. After cementation treatment operations in Room 60A, drums of solidified mixed TRU waste will be stored temporarily in TA-50-1, Room 59, adjacent to Room 60 (Figure A-4). The RLWTF CSA and cementation treatment unit are further described in Sections 2.1, 2.2, and Attachments G and I of the TA-50 Part B.

A.1.3.2 TA-50-1 Decon Ops Facility

The Decon Ops Facility CSA is located in the basement of the southern portion of TA-50-1 and consists of Rooms 34B/34C, 35, 36, and 38/38A (Figure A-5). The Decon Ops Facility CSA will

be used to stage waste to facilitate the decontamination operations. The TA-50-1 Decon Ops Facility CSA is further described in Section 2.1 and Attachment G of the TA-50 Part B.

A.1.4 TA-50-114

The TA-50-114 CSA is a storage locker located south of the eastern wing of TA-50-1 and east of TA-50-1, Room 34 (Figure A-5). The locker contains an elevated grated floor above a divided recessed area on which the waste containers are placed. The TA-50-114 CSA will provide extra storage for both the RLWTF and the Decon Ops Facility. The TA-50-114 CSA is further described in Section 2.1 and Attachment G of the TA-50 Part B.

A.1.5 WCRRF

The WCRRF is located in TA-50-69 in the southwest quadrant of TA-50. The TA-50-69 WCRRF Indoor CSA consists of Rooms 102 and 103 in TA-50-69 (Figure A-6) and will be used to stage contaminated gloveboxes and other mixed TRU and mixed low-level wastes associated with WCRRF operations. The TA-50-69 WCRRF Indoor CSA is further described in Section 2.1 and Attachment G of the TA-50 Part B.

The TA-50-69 Outdoor CSA is located in the southwest corner of TA-50. Transportainers and other weather protective structures at the WCRRF Outdoor CSA (Figure A-6) will be used to store waste. The WCRRF Outdoor CSA is further described in Section 2.1 and Attachment G of the TA-50 Part B.

A.1.6 Meteorology and Hydrology

The climate and surface winds are described in the LANL General Part B.

A.1.6.1 Wells and Surface Waters [20 NMAC 4.1, Subpart IX, §270.14(b)(19)(iii) and (ix)]

A map showing the locations of supply wells, monitoring wells, test wells, springs, surface-water sampling stations, and National Pollutant Discharge Elimination System (NPDES)-outfalls is included in the General Part A.

The only hydrological characteristic specific to operations conducted at TA-50 is surface runoff in the small drainage off the mesa for brief periods during spring snowmelt and intense summer thunderstorms. Surface grading and other storm water controls prevent accumulation of storm

water and snowmelt (see Map A-1, Appendix A, LANL General Part B). Summer storms on the Pajarito Plateau can generate high discharge rates and may reach a maximum discharge in less than two hours. High discharge rates can transport suspended and bed sediments down the canyons. Snow, however, melts slowly in the spring and runs off over a period of several weeks to several months at a low discharge rate. Stream flow is ephemeral in Canada del Buey to the north and Pajarito Canyon to the south of Mesita del Buey, occurring primarily during snowmelt or thunderstorms. Situated on top of the mesa, TA-50 is not affected by stream flooding or runoff.

A.1.7 Surrounding Land Use [20 NMAC 4.1, Subpart IX, §270.14(b)(19)(iv)]

No industrial facilities, except for those within the LANL TAs, are near TA-50. The following buildings or facilities are located within the TA-50 boundary:

- RLWTF, TA-50-1
- TA-50-37
- Engineering Sciences and Applications Division, TA-50-54
- WCRRF, TA-50-69
- Portable office trailer, TA-50-84
- Portable office trailer, TA-50-196
- U.S. West relay facility, TA-50-184
- Material Disposal Area (MDA) C Landfill (inactive)

As depicted on Figure A-1, the TAs that border TA-50 include: TA-35, TA-40, TA-55, TA-63, and TA-66. TA-35, located northeast of TA-50, includes facilities that conduct nuclear safeguards research and development. TA-40, which is south and west of TA-50, is used in developing special detonators for the initiation of high-explosive systems. The facilities at TA-55, west of TA-50, conduct plutonium processing and metallurgy research. TA-63, located east of TA-50, is not developed. TA-66, southeast of TA-50, includes the Advanced Technology Assessment Center. The types of activities conducted, the separation distances, and administrative controls ensure that these nearby TAs do not affect the safety of operations conducted at TA-50.

A.2 LOCATION INFORMATION - ENVIRONMENTAL DESCRIPTION [20 NMAC 4.1, Subpart IX, §270.14(b)(11)]

A.2.1 Geology

Geologic aspects (Longmire 1996) of interest at TA-50 include the following:

- Detailed stratigraphy of the upper units of the Bandelier Tuff, including contacts between units that may form barriers to migration or create paths to divert liquid or vapor movement

- Joints in the Bandelier Tuff that may provide paths for liquid and vapor movement
- Mineralogy of the geologic strata that may be important in the retardation of contaminant movement
- Faulting that may provide zones of fracturing along which contaminant transport may be enhanced
- Surficial erosion that could potentially transport contaminants

A.2.1.1 Seismology [20 NMAC 4.1, Subpart IX, §§270.14(b)(11)(i) and (ii), and Subpart V, §264.18(a)]

TA-50 is located in Los Alamos, New Mexico; therefore, pursuant to 20 NMAC 4.1, Subpart IX, 270.14(b)(11)(i) and 20 NMAC 4.1, Subpart V, Appendix VI [1-1-97], the seismic standard of 20 NMAC 4.1, Subpart V, 264.18(a) [1-1-97], is applicable.

A geologic field investigation, which consisted of exploratory trenching, was conducted within 3,000 ft of TA-50 during the fall of 1992 and summer of 1993. Based on trench stratigraphy, no evidence of Holocene faulting was observed (Woodward-Clyde Federal Services 1995). Therefore, TA-50 is in compliance with the seismic standards of 20 NMAC 4.1, Subpart IX, §§270.14(b)(11)(i) and (ii), and Subpart V, §264.18(a)[1-1-97]. Figure A-7 details regional surface faulting.

A.2.1.2 Stratigraphy

TA-50 is located in the central part of the Pajarito Plateau. A simplified stratigraphy of the TA-50 site, as well as estimated thickness of rock units, is shown on Figure A-8.

A.2.1.3 Soils

The soils on Mesita del Buey were derived from Bandelier Tuff bedrock and formed under a semiarid climate. Soils on the mesa top are mainly thin, well-drained, sandy loams. The subsoil is a reddish-brown clay, gravelly clay, or clay loam with depth to tuff bedrock about 20 to 50 cm (8 to 20 in.). These soils are classified in the Unified Soil Classification System as sandy loam, sandy loam-sandy clay, loam, clay loam-loam, and clay loam.

TA-50 is a Hackroy-Rock outcrop complex and Carjo loam. The Hackroy-Rock outcrop complex consists primarily of rock outcrop and Hackroy soils. The Hackroy soils typically range from a brown, sandy loam in the top 8 cm to a reddish-brown clay from 8 to 30 cm in depth. Permeability

rates range from 5 to 15 cm per hour (cm/hr) in the top layers down to 0.15 to 0.50 cm/hr in the lower layers. The shrink-swell potential is low. Available water-holding capacity is 0.11 to 0.21 cm per cm (cm/cm), and the soil pH is 6.6 to 7.8. The Carjo soils typically range from a grayish-brown loam in the top 10 cm to a brown clay loam from 10 to 30 cm in depth. Permeability rates range from 1.5 to 5 cm/hr in the top layer, down to 0.15 to 5 cm/hr in the lower layers. The shrink-swell potential is low to moderate. Available water-holding capacity is 0.14 to 0.21 cm/cm, and the soil pH is 6.3 to 7.8 (Nyhan et al. 1978).

The slopes between TA-50 mesa top and canyon bottoms consists of steep rock outcrops and patches of shallow, undeveloped colluvial soils. The south-facing canyon walls of Pajarito Canyon are steep and have little or no soil material or vegetation, whereas the north-facing walls of Canada del Buey have areas of thin dark-colored soils. Native vegetation at TA-50 is mainly brome grass, false tarragon, blue grama, wormwood, Colorado piñon, and one-seed juniper.

A.2.1.4 Erosional Processes

Erosion of material on Mesita del Buey occurs primarily by shallow runoff on the relatively flat pans of the mesa, by deeper runoff in channels, and by rockfall and colluvial transport on the canyon walls. Wind erosion of disturbed soils also occurs. Mesita del Buey cliff-forming units are eroded primarily by lateral cliff retreat and not vertical erosion.

A.2.2 Floodplain Standard [20 NMAC 4.1, Subpart IX, §270.14(b)(11)(iii) and §270.14(b)(19)(ii), and Subpart V, §264.18(b)]

The CSAs addressed in the TA-50 Part B are not located within the 100-year floodplain boundary. In accordance with 20 NMAC 4.1, Subpart IX, §270.14(b)(11)(iii), additional floodplain information is provided in the LANL General Part B, Appendix A.

A.3 GROUNDWATER MONITORING [20 NMAC 4.1, Subpart IX, §270.14(c), and Subpart V, §264.90(a)]

Requirements for groundwater monitoring and protection specified in 20 NMAC 4.1, Subpart IX, §270.14(c)[1-1-97], and Subpart V, §264.90(a)[1-1-97], apply to owners and operators of the following regulated units only: surface impoundments, waste piles, land treatment units, and landfills. This document addresses TA-50 CSAs and two treatment units—one for cementation and the other for electrochemical treatment. The CSAs and treatment units are not regulated units subject to 20 NMAC 4.1, Subpart IX, §270.14(c)[1-1-97].

A.4 TRAFFIC PATTERNS AND CONTROL [20 NMAC 4.1, Subpart IX, §270.14(b)(10)]

The only local access road to TA-50 is Pajarito Road. Approximately 8,000 automobiles traverse Pajarito Road daily as stated in *Environmental Surveillance at Los Alamos During 1990* (LANL 1992). The DOE controls all of the area within the Laboratory site boundary and has the authority to completely restrict access. LANL routinely closes Pajarito Road for activities such as the transport of hazardous waste to and from TA-50.

A.4.1 Routes of Travel

The primary traffic routes that may be used to transport hazardous and mixed waste to and from TA-50 include Pajarito Road, Pecos Drive, and Mesita del Buey Road; lesser used traffic routes may include Diamond Drive and West Jemez Road (State Road 501) (Figure A-9). After waste containers are received at TA-50, they may be moved minimal distances on road surfaces within the TA.

A.4.2 Traffic Control Signals

Traffic control signals within TA-50 include stop signs, posted speed limits, and other traffic and pedestrian control signs. The locations of existing signs at TA-50 are shown on Figure A-9.

A.5 SECURITY [20 NMAC 4.1, Subpart IX, §270.14 (b)(4) and §270.14(b)(19)(viii) and Subpart V, §264.14]

Security at TA-50 is predominantly maintained with artificial barriers. These barriers prevent the unknowing entry and minimize the possibility for unauthorized entry of persons or livestock into the area and, thus, satisfy the requirements of 20 NMAC 4.1, Subpart V, §§264.14(a) and (b)(2) [1-1-97].

Eight-ft-high chain-link security fences surround the entire perimeter of TA-50. Bilingual (i.e , English and Spanish) warning signs are posted on the fences at approximately 50- to 75-ft intervals. In accordance with the requirements of 20 NMAC 4.1, Subpart V, §264.14(c)[1-1-97], warning signs are also posted at the entrances to each area that will manage hazardous and mixed waste and will be visible from any approach to these areas. The legends on the posted signs indicate "Danger—Hazardous Waste Storage Area" and "Unauthorized Persons Keep Out." The signs are legible from a distance of 25 ft. Additionally, signs will be posted at the entrance to each hazardous and mixed waste management area to address requirements associated with entering and working in the area.

There are three entry gates to TA-50. Two entry gates are located north of TA-50-1. The third entry gate is located at TA-50-38 on Pecos Drive, northeast of TA-50-37. This gate may be used to secure entrance to TA-50 from Pecos Drive. It is closed and locked during nonoperational hours. Additionally, a fire access and shipping gate is located west of TA-50-69 and is routinely kept closed and locked. When this gate is opened for shipments of material or waste, facility personnel are present in the yard west of TA-50-69 to limit egress by unauthorized persons. TA-50 is patrolled by Protection Technology Los Alamos security personnel during nonoperational hours to ensure that unauthorized entry has not occurred. The security fences are inspected weekly by on-site personnel, and repairs are made as necessary. In accordance with 20 NMAC 4.1, Subpart IX, §270.14(b)(19)(viii)[1-1-97], the locations of the security fences and entry gates at TA-50 are shown on Figure A-10.

TA-50 Buildings 1, 37, and 69, Storage Locker TA-50-114, and TA-50-69 Outdoor CSA are always locked. Access to TA-50 (Buildings 1, 37, and 69) is gained via badge readers. Doors to the buildings, storage lockers, and transportainers are locked; keys to these doors are distributed to designated personnel only. Building access also limits access to individual CSAs and treatment units.

A.6 REFERENCES

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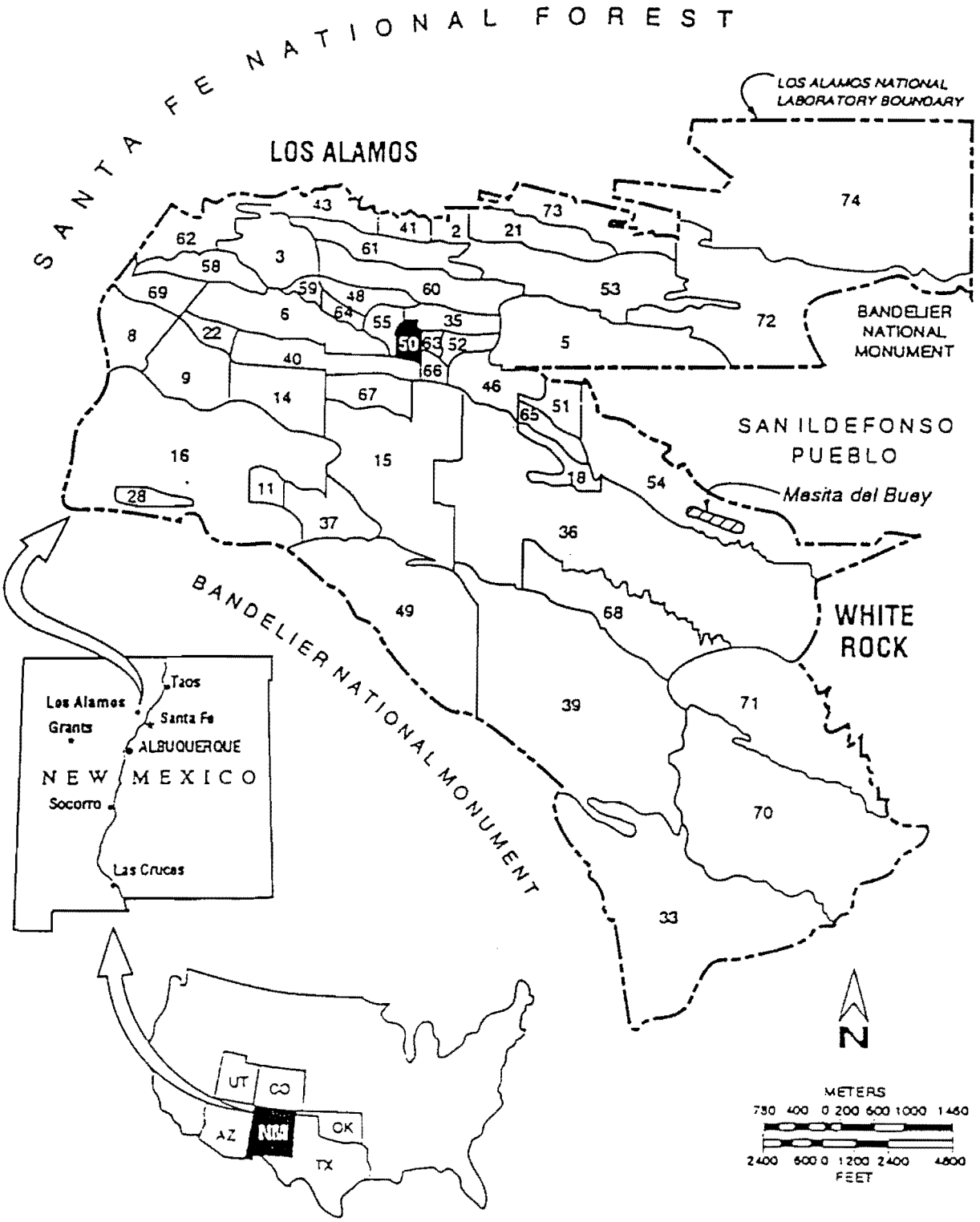
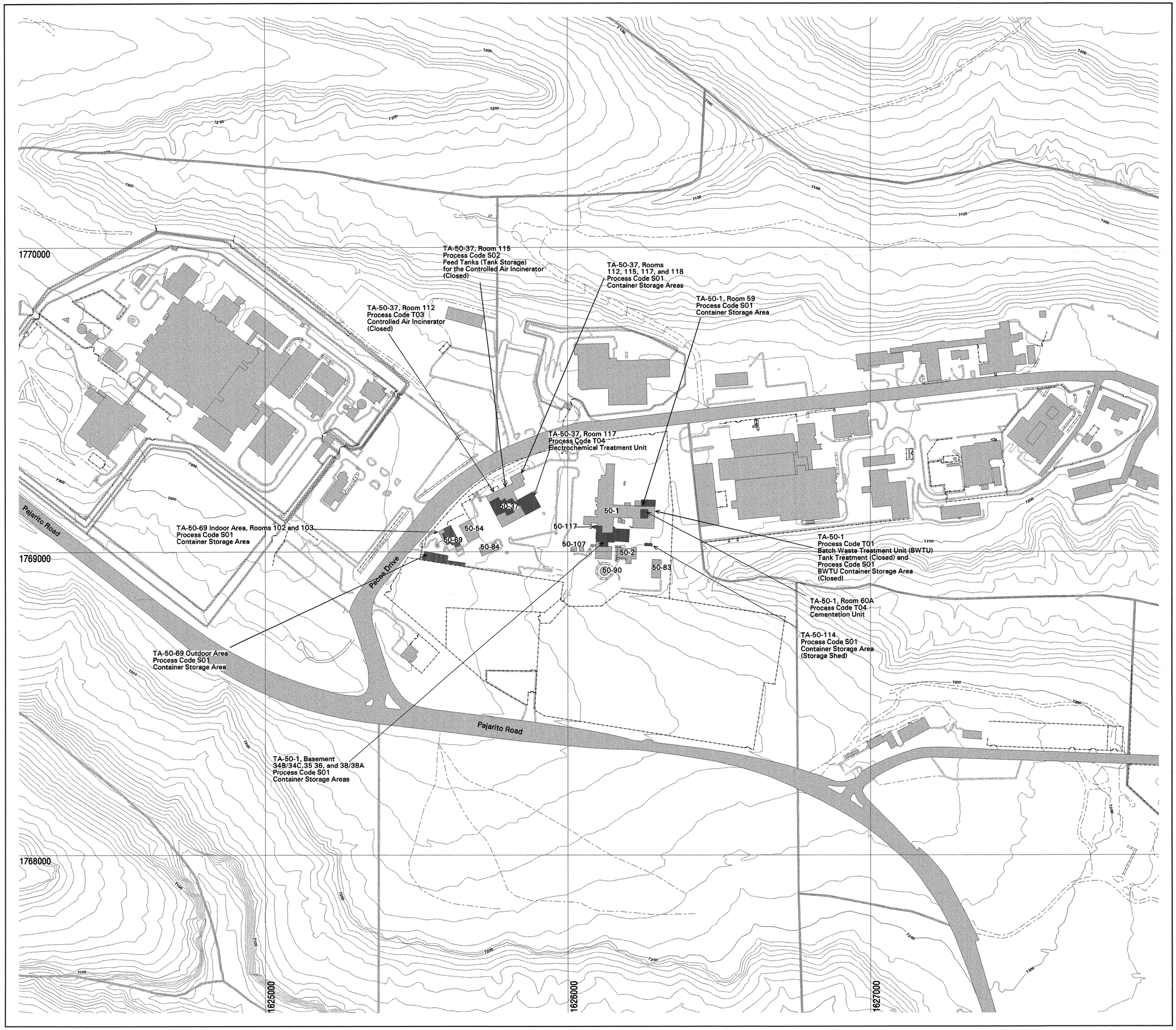


Figure A-1. Location of TA-50 in Relation to Other Laboratory TAs and Surrounding Landholdings



LEGEND

- Boundary, TA
- Contour, 10 foot
- Contour, 100 foot
- Fence, Industrial
- Fence, Security
- Retaining Wall
- Road, Paved
- Road, Dirt
- Structure
- Regulated Unit

8878-B

Map A-1

Contour Map Showing the Locations of the Hazardous and Mixed Waste Units at Technical Area (TA) 50

FACILITY for INFORMATION, MANAGEMENT, ANALYSIS and DISPLAY

EARTH & ENVIRONMENTAL SCIENCES DIVISION (EES-5)
LOS ALAMOS NATIONAL LABORATORY, Los Alamos, New Mexico

Produced by: Belinda Scheber

Date: January 07, 1999 FIMAD Plot ID: G107308

N

State Plane Coordinate System, New Mexico Central Zone.
1983 North American Datum

Grid provides NM State Plane coordinates in feet.
Grid interval, in feet: 1000
Feet per inch on map = 150

SCALE 1:1800

0 46 92 138 184

METERS

0 150 300 450 600

FEET

Notice: The information on this map is provisional and the accuracy has not been confirmed. Feature locations are dependent on scale and symbology and should not be relied upon to establish legal claims. Basemap Sources: Boundary, structure, and utility data are from Los Alamos National Laboratory Engineering Division and Los Alamos County Utility and Engineering Departments. Contour data is from Los Alamos National Laboratory Environmental Restoration Program aerial survey, September 1991.

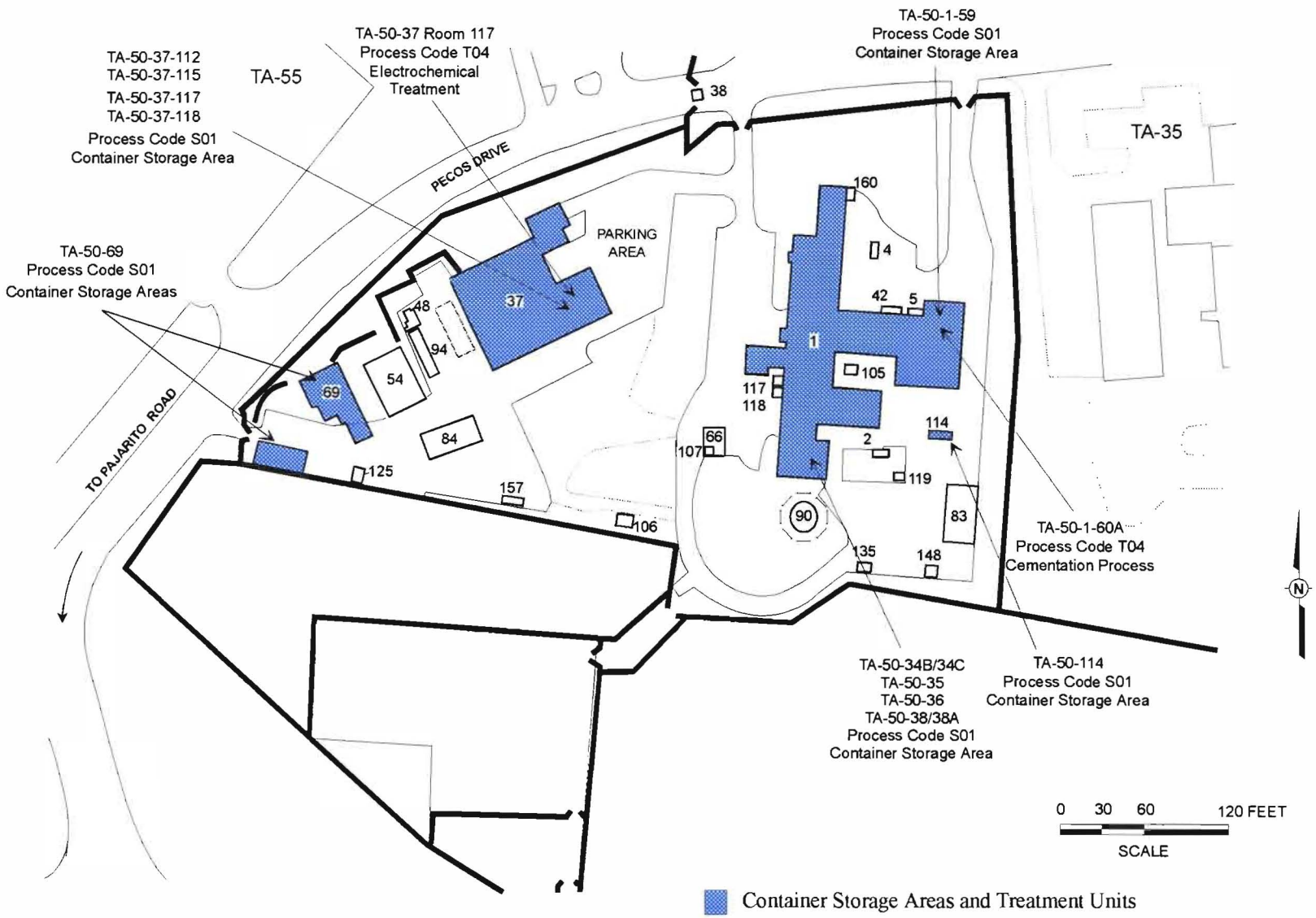


Figure A-2. TA-50 Site Map

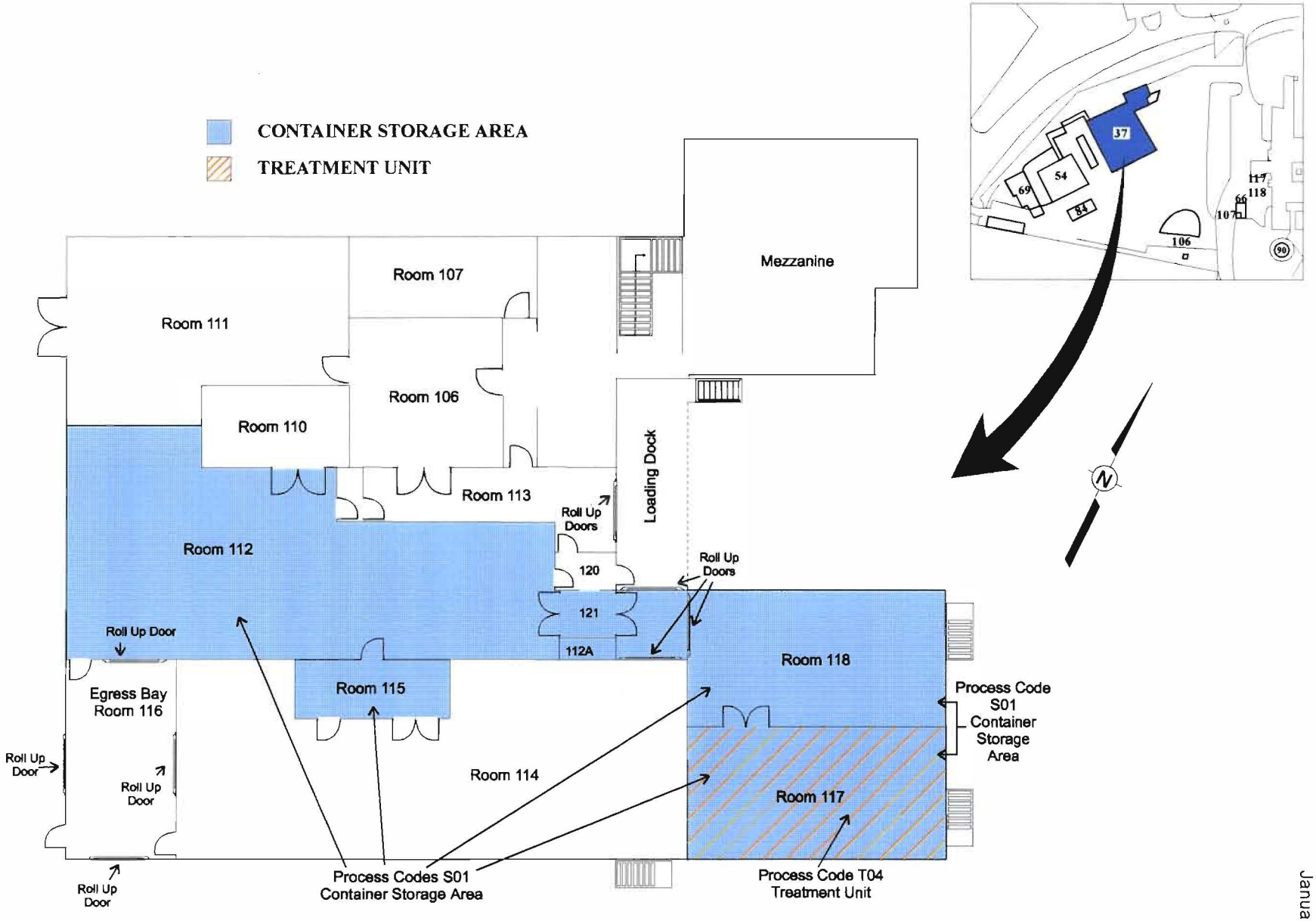


Figure A-3. TA-50-37 Container Storage Area and Electrochemical Treatment Unit

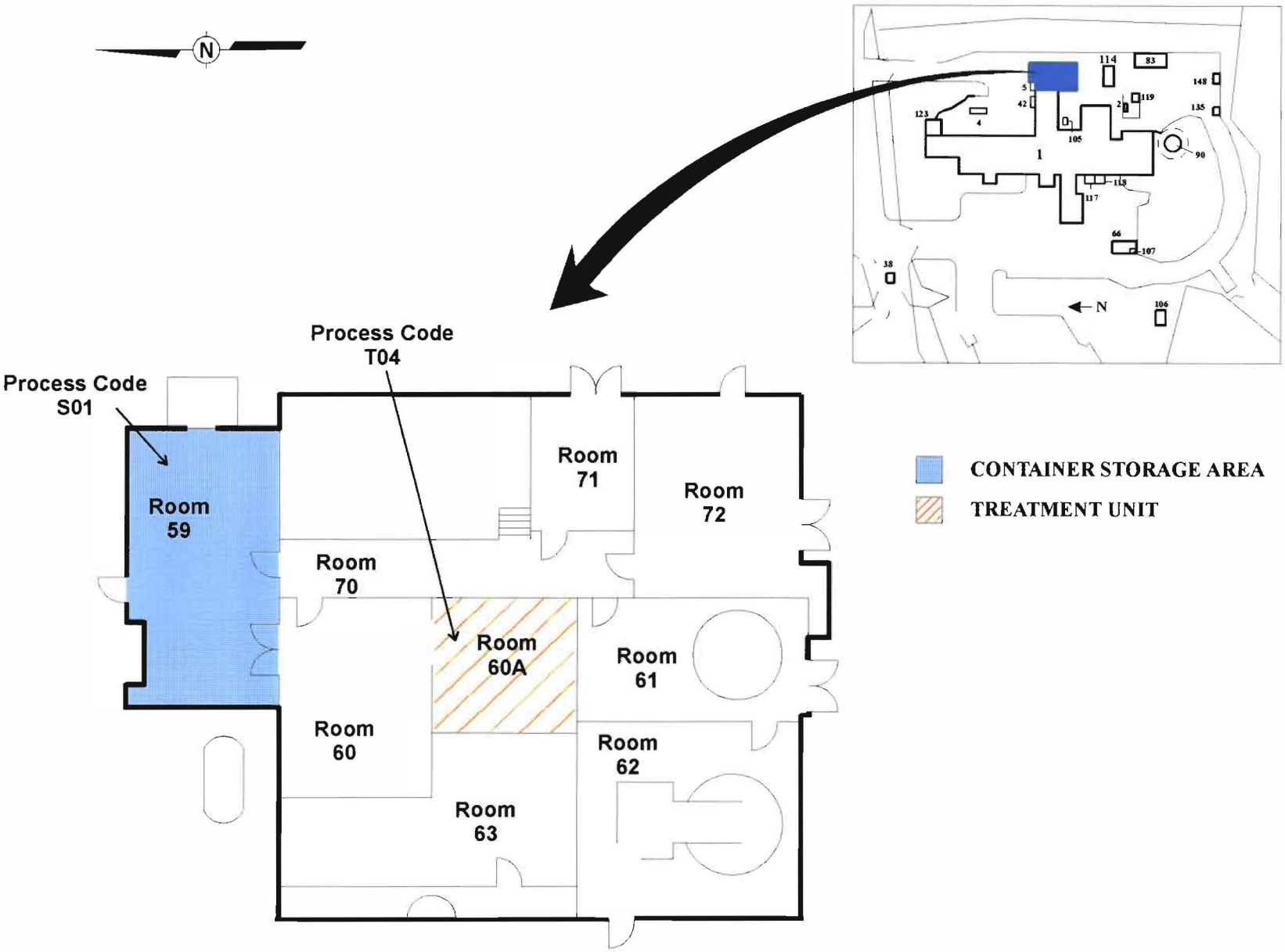


Figure A-4. TA-50-1 RLWTF Container Storage Area and Cementation Treatment Unit

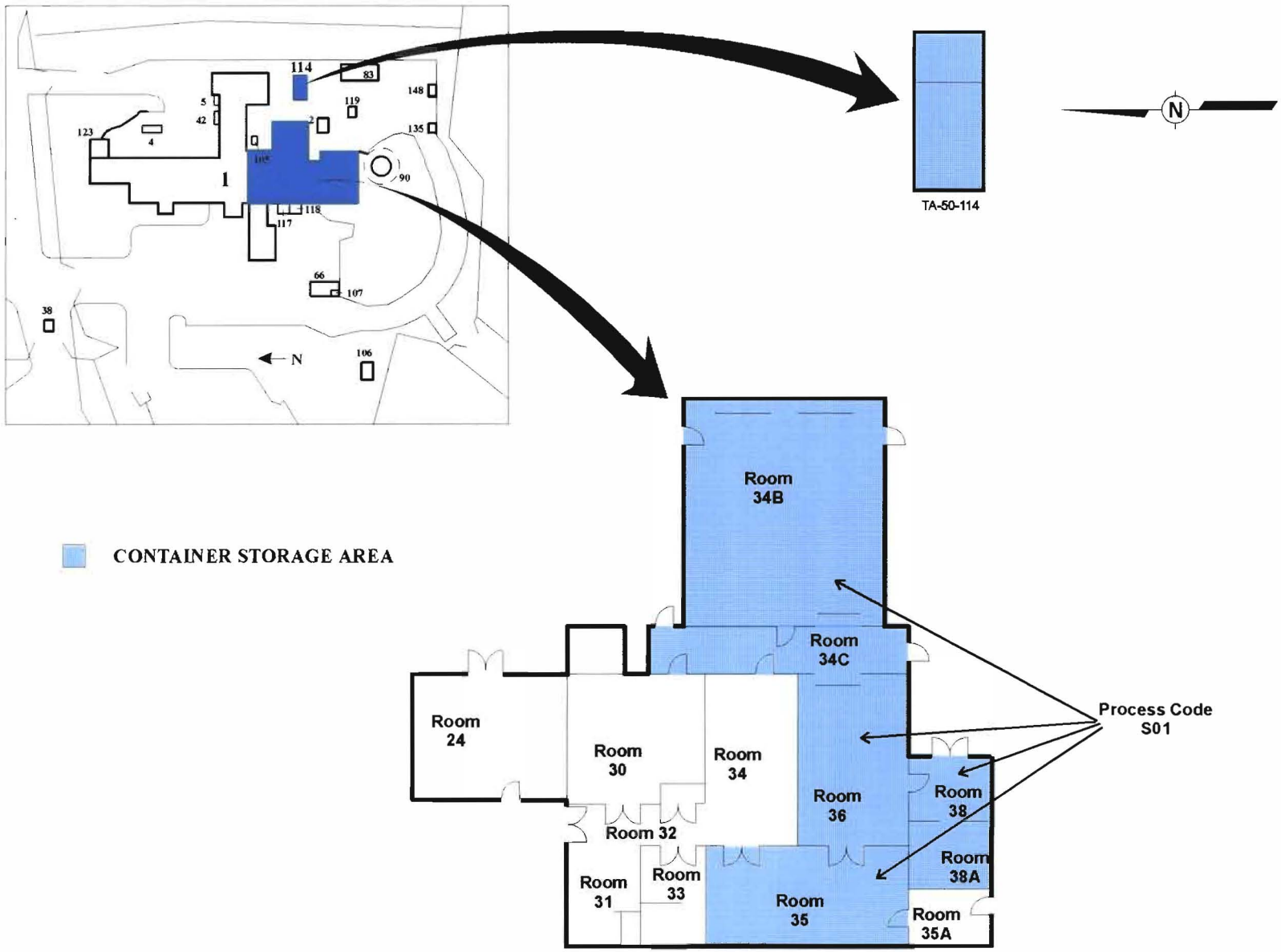
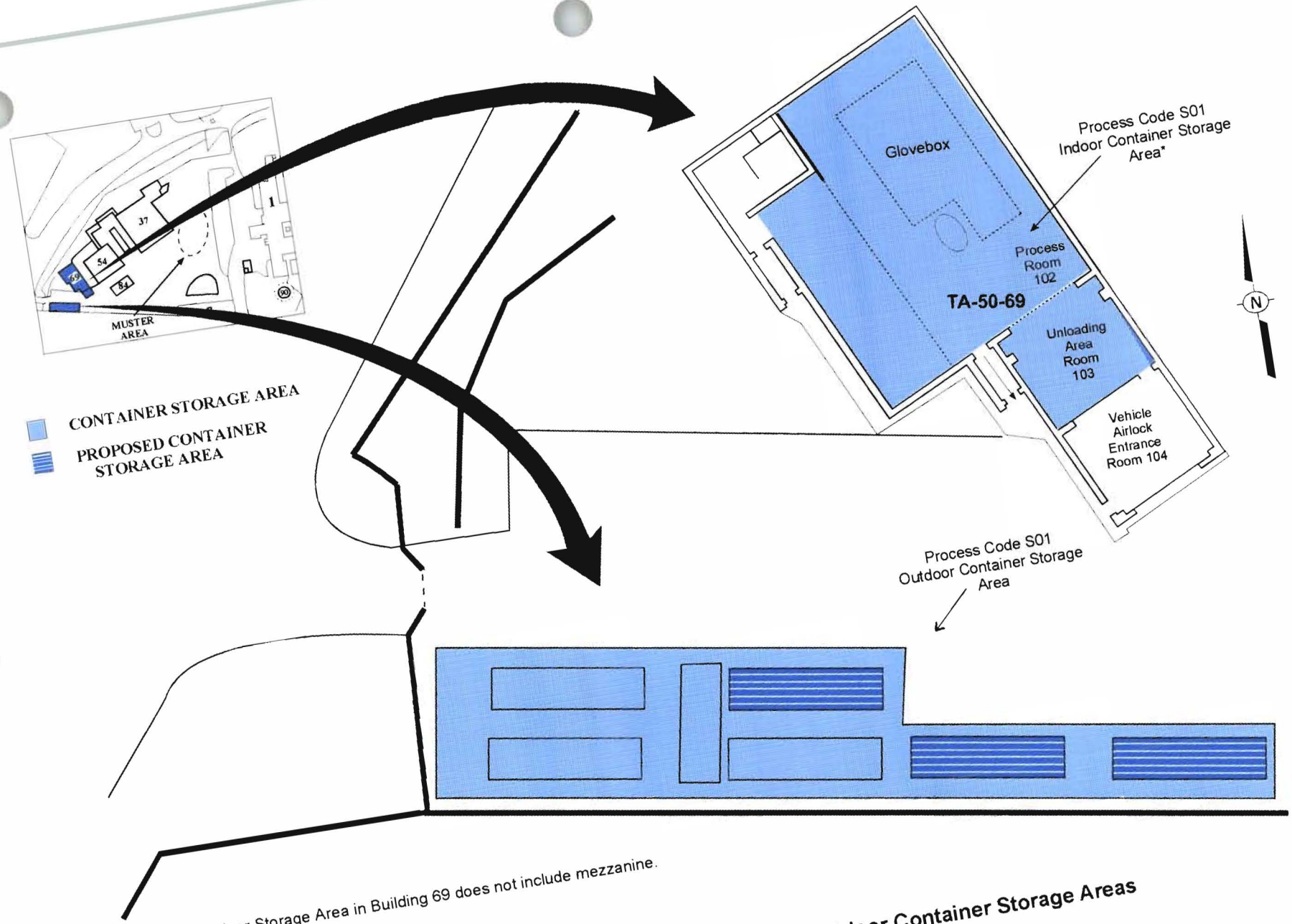


Figure A-5. TA-50-1 Decontamination Operations Facility and TA-50-114 Container Storage Area



*Note: Container Storage Area in Building 69 does not include mezzanine.

Figure A-6. WCRRF TA-50-69, Indoor and Outdoor Container Storage Areas

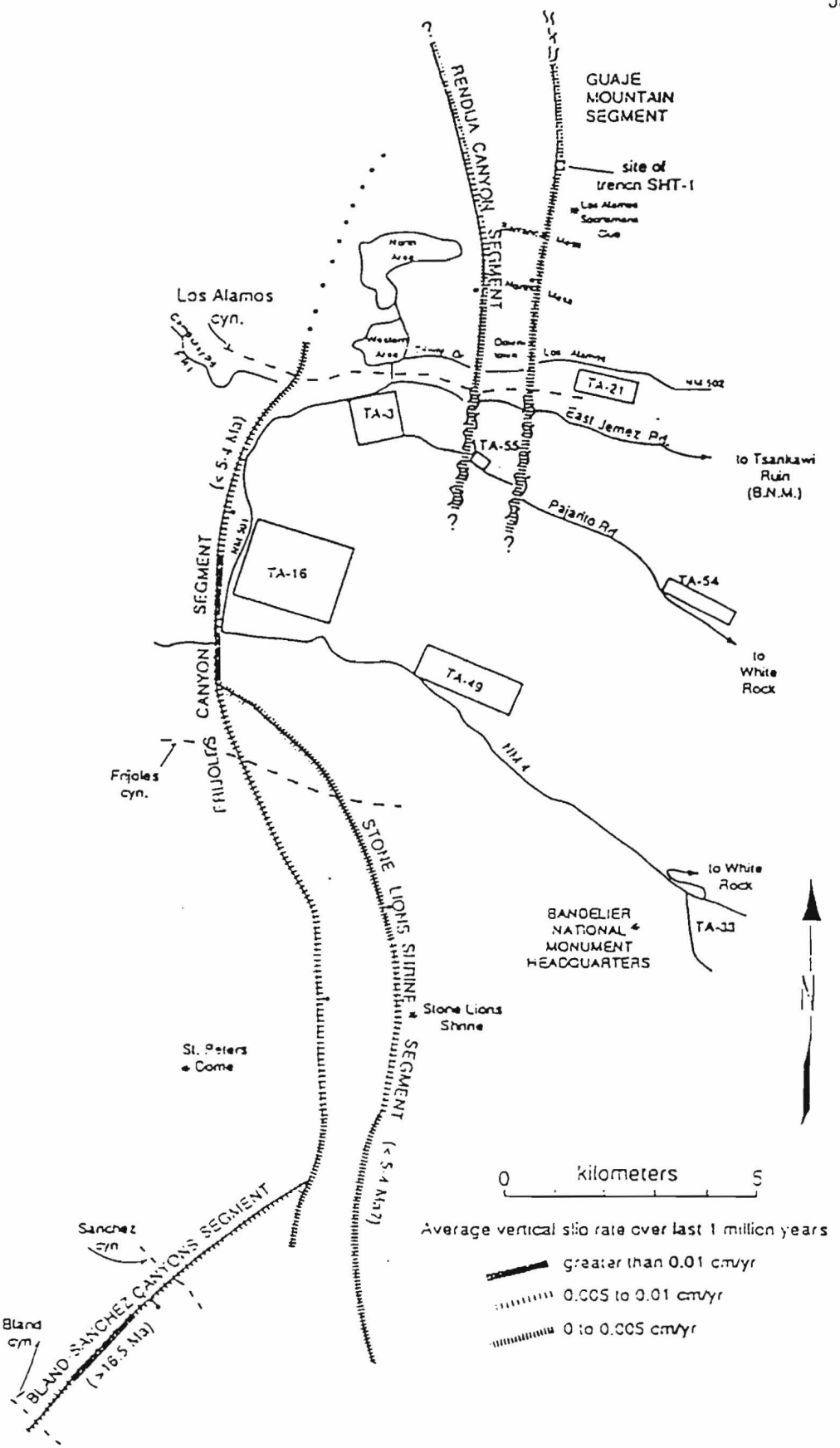


Figure A-7. Regional Surface Faulting

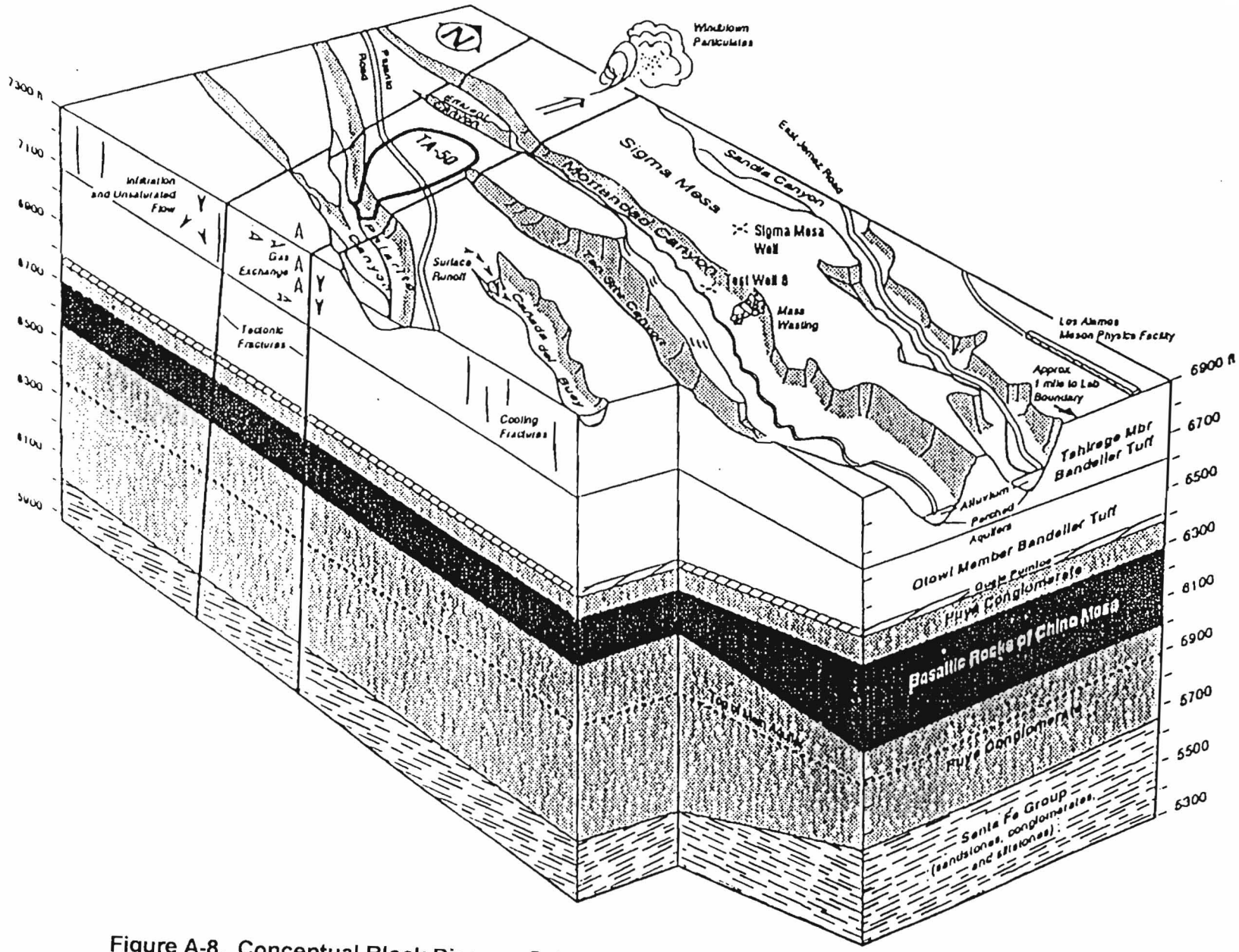


Figure A-8. Conceptual Block Diagram Schematic of the Stratigraphy of the TA-50 Site

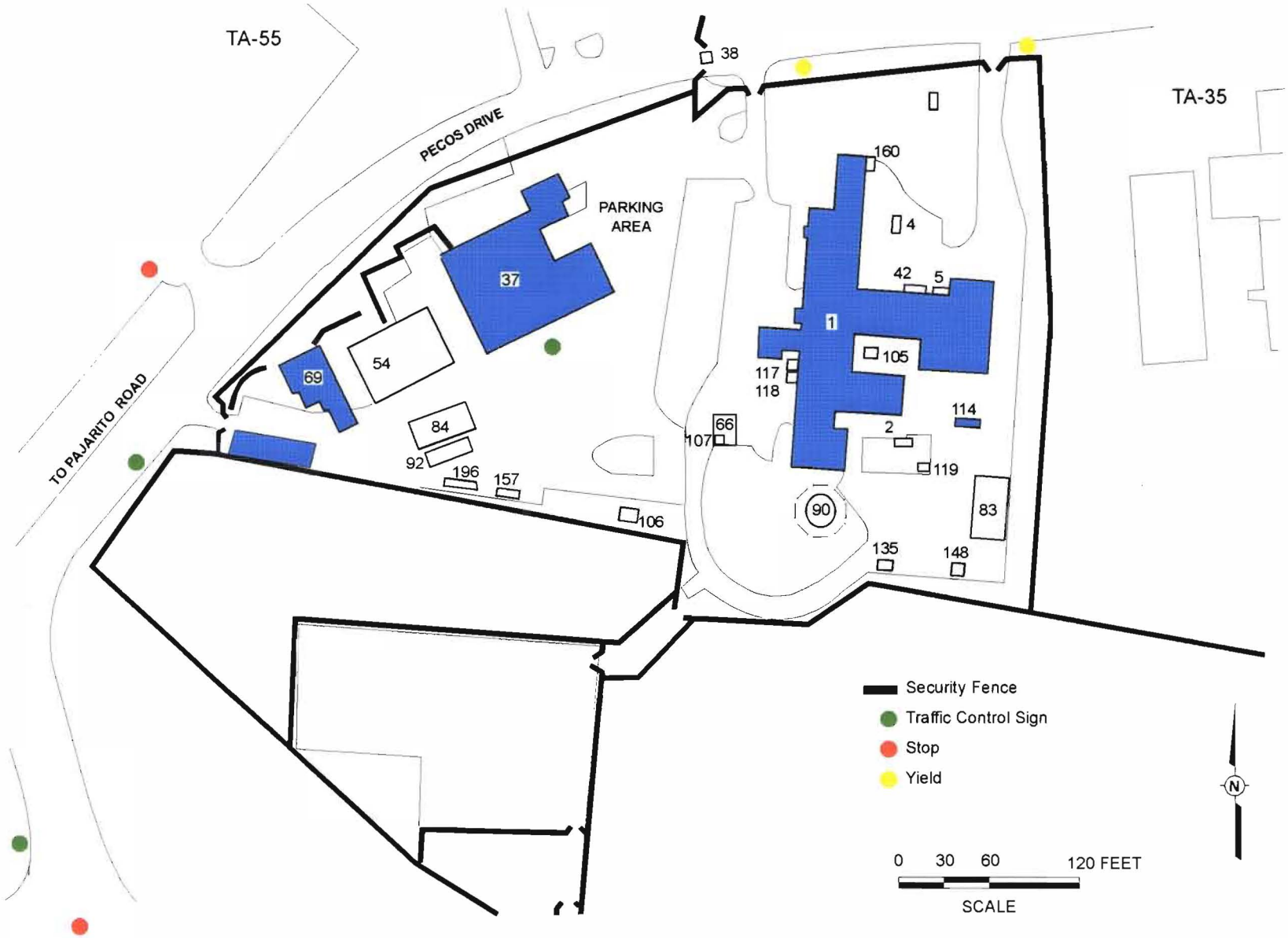


Figure A-9. Location of Access Road and Traffic Control Signs at Technical Area (TA) 50

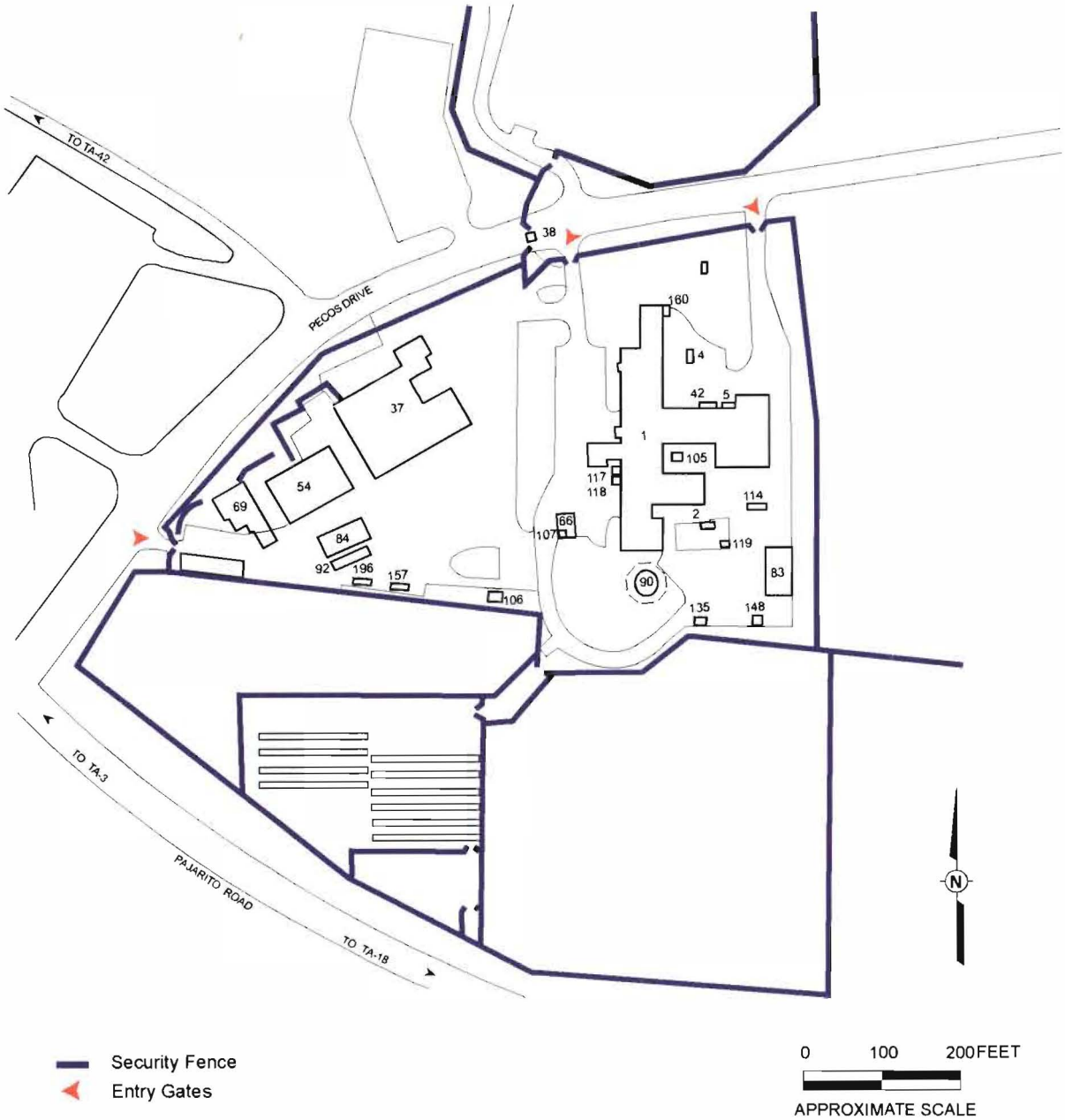


Figure A-10. TA-50 Security Fences and Entry Gates

ATTACHMENT B

WASTE ANALYSIS PLAN
TA-50 TREATMENT UNITS

TABLE OF CONTENTS

LIST OF TABLES ii
LIST OF ABBREVIATIONS/ACRONYMS iii

B.1 INTRODUCTION B-1

B.2 WASTE-GENERATING PROCESSES, ACTIVITIES, AND IDENTIFICATION B-2
B.2.1 Hazardous Waste B-2
B.2.2 Mixed TRU Waste B-3
B.2.3 Mixed Low-Level Wastes Managed B-3

B.3 WASTE ANALYSIS PARAMETERS [20 NMAC 4.1, Subpart V, §264.13(a)(1)] B-3
B.3.1 Proposed Analytical Parameters and Characterization Methods [20 NMAC 4.1, Subpart V, §264.13(b)(1) and Subpart IX, §270.14(b)(2)] . . . B-4
B.3.2 Criteria and Rationale for Parameter Selection [20 NMAC 4.1, Subpart V, §264.13(b)(1)] B-4

B.4 CHARACTERIZATION [20 NMAC 4.1, Subpart V, §264.13(a)(1) and §264.13(b)(2) and Subpart IX, §270.14(b)(2)] B-4
B.4.1 Waste Profiling System [20 NMAC 4.1, Subpart V, §264.13(a)(3) and §§264.13(b)(4) and (5), and Subpart IX, §270.14(b)(2)] B-5
B.4.2 Acceptable Knowledge [20 NMAC 4.1, Subpart V, §264.13(a)(2) and §264.13(b)(5) and Subpart IX, §270.14(b)(2)] B-5
B.4.3 Sampling and Analysis [20 NMAC 4.1, Subpart V, §264.13(a)(3) and §§264.13(b)(2), (3) and (4) and Subpart IX, §270.14(b)(2)] B-5
B.4.3.1 RLWTF Cementation Treatment Unit Samples B-6
B.4.3.2 ETU Samples B-6
B.4.4 Sample Handling, Preservation, and Storage [20 NMAC 4.1, Subpart V, §264.13(b)(3)] B-7
B.4.5 Analytical Laboratory Selection and Analytical Methods [20 NMAC 4.1, Subpart V, §264.13(b)(2)] B-7
B.4.6 Verification and Reevaluation Frequencies [20 NMAC 4.1, Subpart V, §264.13(a)(3) and §264.13(b)(4)] B-7

B.5 SPECIAL PROCEDURAL REQUIREMENTS B-8
B.5.1 Procedures for Ignitable and Reactive Wastes [20 NMAC 4.1, Subpart V, §264.17] B-8
B.5.2 Procedures for Incompatible Wastes [20 NMAC 4.1, Subpart V, §264.17] . . B-8
B.5.3 Procedures to Ensure Compliance with LDR Requirements [20 NMAC 4.1, Subpart VIII, §268.7(a) and §§268.7(b)(3), (4), and (5)] B-8
B.5.4 Procedures to Ensure Compliance with Subpart CC Requirements [20 NMAC 4.1, Subpart V, Part 264, Subpart CC] B-9

B.6 REFERENCES B-10

LIST OF TABLES

TABLE NO.	TITLE	PAGE
B-1	Description of Mixed Low-Level and Mixed TRU Waste Treated at the RLWTF Cementation Unit	B-11
B-2	Descriptions of RCRA-Regulated Waste to be Treated at the TA-50 Electrochemical Treatment Unit	B-12
B-3	Parameters, Characterization Methods, and Rationale for Mixed TRU Waste	B-20
B-4	Parameters, Characterization Methods, and Rationale for RCRA-Regulated Waste	B-21
B-5	Recommended Sample Containers, Preservation Techniques, and Holding Times	B-23

LIST OF ABBREVIATIONS/ACRONYMS

20 NMAC 4.1	*New Mexico Administrative Code*, Title 20, Chapter 4, Part 1
40 CFR	Title 40 of the *Code of Federal Regulations*
ASTM	American Society for Testing and Materials
CSA	container storage area
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
EPA	U.S. Environmental Protection Agency
ETU	electrochemical treatment unit
GC/MS	gas chromatography/mass spectrometry
LANL	Los Alamos National Laboratory
LDR	land disposal restriction
ppmw	parts per million by weight
Pu	plutonium
QAPP	*Transuranic Waste Characterization Quality Assurance Program Plan* (DOE 1995)
QA/QC	quality assurance and quality control
R&D	research and development
RCRA	Resource Conservation and Recovery Act
RLWTF	Radioactive Liquid Waste Treatment Facility
SVOC	semivolatile organic compound
SW-846	*Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (EPA 1997)
TA	Technical Area
TC	toxicity characteristic
TCLP	toxicity characteristic leaching procedure
TRU	transuranic
VOA	volatile organic analyte
VOC	volatile organic compound
WAP	waste analysis plan
WIPP	Waste Isolation Pilot Plant
WPF	Waste Profile Form

ATTACHMENT B

WASTE ANALYSIS PLAN
TA-50 TREATMENT UNITS

B.1 INTRODUCTION

Waste analysis requirements are specified in the *New Mexico Administrative Code*, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart IX, §270.14(b)(2), revised January 1, 1997 [1-1-97]; 20 NMAC 4.1, Subpart V, §264.13 [1-1-97], "General Waste Analysis;" and in 20 NMAC 4.1, Subpart VIII, §268.7 [1-1-97], "Waste Analysis and Recordkeeping." 20 NMAC 4.1 adopts, with a few limited exceptions, Title 40 of the *Code of Federal Regulations* (40 CFR), Parts 260 through 266, Part 268, and Part 270 [1-1-97]. 20 NMAC 4.1, Subparts V, VIII, and IX [1-1-97], contain equivalent regulations to 40 CFR Parts 264, 268, and 270, respectively. This attachment to the Los Alamos National Laboratory (LANL) Technical Area (TA) 50 Part B Permit Application (hereinafter referred to as the TA-50 Part B) provides the waste analysis plan (WAP) applicable to operations at TA-50 for the following treatment units:

- TA-50-1 Radioactive Liquid Waste Treatment Facility (RLWTF) Cementation Unit
- TA-50-37 Room 117 Electrochemical Treatment Unit (ETU)

Additional information on these units is provided in Section 2.0 and Attachments A, G, and I of the TA-50 Part B.

This WAP addresses hazardous waste, mixed transuranic (TRU) waste, and mixed low-level waste identified as wastewaters and non-wastewaters pursuant to land disposal restriction (LDR) regulations specified at 20 NMAC 4.1, Subpart VIII, Part 268 [1-1-97]. The contents of this WAP generally follow 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). The WAP applicable to TA-50 container storage areas (CSAs) is provided in the *Los Alamos National Laboratory General Part B Permit Application* (LANL 1998), hereinafter referred to as the LANL General Part B.

TA-50 is located at the northeast corner of the intersection of Pajarito Drive and Pecos Road, on the finger mesa bounded by Mortandad Canyon to the north and Two Mile Canyon to the south. Mesa-top elevations at TA-50 range from approximately 7,250 to 7,280 ft above mean sea level. The RLWTF is located on the north side of the east wing of TA-50-1. The cementation treatment unit is in Room 60A. The CSA in Room 59 is used for Resource Conservation and Recovery Act (RCRA) interim storage of mixed waste in containers. Figure A-4 of Attachment A shows the location of Room 60A in TA-50-1. The ETU will be located in the southeast corner of TA-50-37 in Room 117. Room 117 is equipped with administrative and engineering controls to support the electrochemical treatment technology. The area is permitted for storage of up to 3,630 gallons of hazardous waste in containers and has been used for RCRA interim status storage of mixed waste in containers. Figure A-3 of Attachment A shows the location of Room 117 in TA-50-37.

B.2 WASTE-GENERATING PROCESSES, ACTIVITIES, AND IDENTIFICATION

Mixed TRU and mixed low-level waste treated by the RLWTF cementation treatment unit will be primarily from plutonium processing activities at TA-55. Hazardous, mixed TRU and mixed low-level waste staged, stored, or treated by the TA-50-37 ETU will be primarily from research and development (R&D) activities, and processing and recovery operations at LANL. Tables B-1 and B-2 provide information on hazardous, mixed TRU, and mixed low-level waste that will potentially be managed at the TA-50-1 RLWTF cementation treatment unit and the TA-50-37 ETU in Room 117, including brief waste descriptions and waste-generating processes. The characterization basis for hazardous waste designation (i.e., process knowledge and/or analysis), potential EPA Hazardous Waste Number(s), potential hazardous constituents in and/or characteristics of the waste, and regulatory limits of specific constituents are also listed in Tables B-1 and B-2.

B.2.1 Hazardous Waste

LANL generates a variety of hazardous waste streams, most in relatively small quantities. The composition of the R&D waste streams are unique to the activity, but typically consist of laboratory reagents, solvents, test samples, and analytical wastes. Other hazardous wastes consist of small quantities of acids, bases, organics, inorganics, and miscellaneous chemicals. Descriptions of the hazardous wastes that will potentially be treated by the ETU and their waste-generating processes are provided in Table B-2.

B.2.2 Mixed TRU Waste

Mixed TRU waste is waste that has both a RCRA hazardous waste component and a TRU waste component. Mixed TRU waste generated at LANL is primarily from R&D activities, processing and recovery operations, and decontamination and decommissioning projects. LANL categorizes and identifies waste as described in Appendix B of the LANL General Part B. Mixed TRU waste treated by the TA-50-1 RLWTF cementation treatment unit is typically acidic or caustic. Aqueous mixed TRU waste to be staged, stored, and treated at the ETU at TA-50-37 Room 117 will be primarily from R&D activities and processing and recovery operations at LANL. The mixed TRU waste will originate as aqueous effluents and evaporator distillates from plutonium processing and related activities at TA-55. The TA-50-37 ETU will not be used for treating legacy or existing mixed TRU waste streams because current waste management practices at LANL prohibit aqueous TRU or aqueous mixed TRU waste. Any mixed TRU waste to be treated by the ETU will be considered future mixed TRU waste.

B.2.3 Mixed Low-Level Wastes Managed

Mixed waste to be treated by the TA-50-1 RLWTF cementation treatment unit is generated by plutonium-processing activities at TA-55. Hazardous and mixed waste staged, stored, and treated by the TA-50-37 Room 117 ETU will be generated primarily from R&D activities and processing and recovery operations at LANL. Table B-1 provides information on mixed low-level liquid waste, including brief waste descriptions and waste-generating processes. The characterization basis for hazardous waste designation (i.e., process knowledge and/or analysis), potential EPA Hazardous Waste Number(s), potential hazardous constituents in and/or characteristics of the waste, and regulatory limits of specific constituents are also listed in Table B-1.

B.3 WASTE ANALYSIS PARAMETERS [20 NMAC 4.1, Subpart V, §264.13(a)(1)]

A detailed chemical and physical characterization will be performed for hazardous, mixed TRU, and mixed low-level wastes for management purposes, as required by RCRA. Waste analysis parameters will be selected to ensure that this characterization contains all the information necessary to properly store and treat waste in accordance with RCRA general facility standards and LDR requirements. Characterization will be performed using the procedures described in Section B.4 and the LANL General Part B, Appendix B.

B.3.1 Proposed Analytical Parameters and Characterization Methods [20 NMAC 4.1, Subpart V, §264.13(b)(1) and Subpart IX, §270.14(b)(2)]

Proposed analytical parameters, characterization methods, and test methods for hazardous, mixed TRU, and mixed low-level waste to be staged, stored, and/or treated at TA-50 are summarized in Tables B-3 and B-4, along with the rationale for the selected parameters. The analytical parameters were selected based on acceptable knowledge for the various waste forms described in Tables B-1 and B-2. Tables B-3 and B-4 also list the proposed test methods for obtaining the characterization data, pursuant to 20 NMAC 4.1, Subpart V, §264.13(b)(2) [1-1-97].

B.3.2 Criteria and Rationale for Parameter Selection [20 NMAC 4.1, Subpart V, §264.13(b)(1)]

Waste analysis parameters selected to characterize hazardous, mixed TRU, and mixed low-level waste are in conformance with RCRA waste analysis requirements, pursuant to 20 NMAC 4.1, Subpart V, §264.13(b)(1) [1-1-97]. These parameters are based on knowledge of raw materials and physical/chemical processes of waste-generating activities, and may be supported by analytical results. The rationale for the selected parameters are identified in Tables B-3 and B-4. Waste analysis parameters selected to characterize mixed TRU waste also incorporate characterization requirements of the *Transuranic Waste Characterization Quality Assurance Program Plan* (U.S. Department of Energy [DOE] 1995) (QAPP) and are described further in the LANL General Part B.

B.4 CHARACTERIZATION [20 NMAC 4.1, Subpart V, §264.13(a)(1) and §264.13(b)(2) and Subpart IX, §270.14(b)(2)]

Mixed TRU and mixed low-level waste generated at LANL to be treated in the RLWTF cementation treatment unit flows through separate double-walled stainless steel pipelines into separate holding tanks (i.e., one for acidic waste and one for caustic waste). The waste is then neutralized for treatment in the Pretreatment Plant. Hazardous, mixed TRU, and mixed low-level waste generated at LANL to be staged, stored, and/or treated in the TA-50-37 Room 117 ETU will be divided into general groups based on when the waste is generated and the degree of difficulty involved in sampling the waste. The distinction is made between legacy, existing, and future waste (defined in the LANL General Part B) to identify the quality of information available on the waste and the subsequent need for additional sampling and analysis.

The LANL waste generator characterizes hazardous, mixed TRU, and mixed low-level waste using the generator waste profiling system, acceptable knowledge, and/or sampling and analysis. These

methods are described in the following sections. For mixed TRU wastes, additional characterization will be implemented to meet requirements of the Waste Isolation Pilot Plant (WIPP) WAP as described in the LANL General Part B.

B.4.1 Waste Profiling System [20 NMAC 4.1, Subpart V, §264.13(a)(3) and §§264.13(b)(4) and (5), and Subpart IX, §270.14(b)(2)]

LANL waste generators utilize a waste-profiling system to maintain detailed and accurate waste characterization information for existing (i.e., currently-generated) waste. The waste-profiling system requires each waste generator to provide a detailed description of the waste on a standardized Waste Profile Form (WPF). An example WPF and more details are provided in the LANL General Part B, Appendix B. The WPF must be completed prior to any waste acceptance at the RLWTF cementation unit for treatment or waste treatment or storage at the TA-50-37 Room 117 ETU. Waste generators must provide new WPFs when a process change results in a change in waste composition or when a new waste is generated; otherwise, WPFs are reevaluated annually. For an unchanged waste stream, this annual reevaluation conforms to the characterization frequency requirement of 20 NMAC 4.1, Subpart V, 264.13(b)(4) [1-1-97].

B.4.2 Acceptable Knowledge [20 NMAC 4.1, Subpart V, §264.13(a)(2) and §264.13(b)(5) and Subpart IX, §270.14(b)(2)]

The physical nature of some waste forms (e.g., debris) and health and safety risks to personnel from exposure to radioactive material constrain or restrict extensive sampling and analysis of some waste. Therefore, acceptable knowledge is a method used to characterize waste at LANL. For the generation of future waste streams, LANL will implement an acceptable knowledge certification program to ensure that acceptable knowledge used for waste characterization is documented and auditable. Acceptable knowledge, process knowledge, supplemental waste analysis data, sampling surrogate wastes, and facility records of analysis, are described in the LANL General Part B, Appendix B, Section 4.0.

B.4.3 Sampling and Analysis [20 NMAC 4.1, Subpart V, §264.13(a)(3) and §§264.13(b)(2), (3) and (4) and Subpart IX, §270.14(b)(2)]

To ensure that proper procedures are followed for sample collection, preservation, and shipping; analysis; quality assurance and quality control (QA/QC); and occupational safety and health, personnel involved in sampling and analysis of hazardous and mixed waste will comply with LANL-specific protocols consistent with EPA's *Test Methods for Evaluating Solid Waste,*

Physical/Chemical Methods (EPA 1997) (SW-846) and the QAPP for mixed TRU waste. Sampling will be conducted using LANL sampling procedures to ensure that a representative sample is collected. Liquid wastes that will require sampling are the wastes received at the TA-50-37 ETU. Solid wastes that will require sampling are the sludges from the RLWTF pretreatment process and precipitates that collect at the bottom of the electrochemical treatment cell in the ETU. The ETU precipitates will be generated in small quantities and will be collected on filter paper using a vacuum filtration system. Samples will be analyzed by the analytical methods listed in Tables B-3 and B-4. The results of the final analyses will be used to determine waste disposal options following treatment.

B.4.3.1 RLWTF Cementation Treatment Unit Samples

Each batch of sludge to treated in the cementation unit will be sampled and analyzed for radionuclide concentration and hazardous constituents (e.g., volatile organic compounds [VOCs], semivolatile organic compounds [SVOCs], and the toxicity characteristic (TC) contaminants listed in 20 NMAC 4.1, Subpart II, §261.24 [1-1-97], and listed in Table B-3.) A batch of sludge is cemented when approximately 250 grams of plutonium 239 has accumulated in sludge tank TK-7.

RLWTF sampling personnel will collect samples from a sample port on the TK-7 sludge tank on a day prior to or the day the sludge is cemented. TK-7 is a continuously stirred and recirculated tank, ensuring a representative sample. Five samples are collected, one for each of the following: VOCs, SVOCs, metals, radionuclides, and percent solids. Sampling information is recorded in the TA-50-1 Room 60 plant logbook. Personnel initiate a chain-of-custody form to accompany each sample taken.

B.4.3.2 ETU Samples

The ETU will treat only homogeneous liquid wastes. Homogeneous waste streams will be sampled and analyzed for the presence of hazardous constituents (e.g., VOCs, SVOCs, and metals) and for the TC contaminants listed in 20 NMAC 4.1, Subpart II, §261.24 [1-1-97]. Waste generated in the treatment process will be analyzed according to the Toxicity Characteristic Leaching Procedure (TCLP) and will be managed based on TCLP results.

Waste selected for treatment in the TA-50-37 Room 117 ETU will be sampled and analyzed. Initially, the waste will be characterized based on acceptable knowledge as documented on the

WPF. Prior to selecting the waste for treatment in the ETU, LANL personnel will review documented acceptable knowledge, WPF information, and any analytical data that will be available from the waste generator or waste management group. Subsequently, ETU operators will conduct sampling and analysis prior to treatment to verify the WPF information in order to determine the waste's suitability for electrochemical treatment. Finally, following completion of each electrochemical treatment, the treated liquid effluent and any solid-form wastes will be sampled and analyzed for all applicable parameters listed in Table B-4.

B.4.4 Sample Handling, Preservation, and Storage [20 NMAC 4.1, Subpart V, §264.13(b)(3)]

Table B-5 presents SW-846 recommendations for sample containers, preservation techniques, and holding times associated with sample collection. RLWTF and ETU personnel will follow these recommendations to ensure that sampling and analysis meet quality objectives for data.

B.4.5 Analytical Laboratory Selection and Analytical Methods [20 NMAC 4.1, Subpart V, §264.13(b)(2)]

Analytical laboratories at LANL and/or approved subcontractor laboratories will perform the qualitative and quantitative chemical analyses specified in Tables B-3 and B-4 of this WAP. Requirements for analytical laboratories and criteria for selection are described in the LANL General Part B, Appendix B.

B.4.6 Verification and Reevaluation Frequencies [20 NMAC 4.1, Subpart V, §264.13(a)(3) and §264.13(b)(4)]

Analysis may be performed to verify the accuracy of the initial waste characterization based on acceptable knowledge, to verify that applicable treatment standards have been met, when there is a change in a waste-generating process, when the generator requests a review, or when analytical results indicate a change in a waste stream. All verification analyses will be conducted in conformance with appropriate EPA-approved methods. Waste streams to be analyzed for verification will be randomly selected. Verification will be used to support waste characterization information provided on the WPF, as well as the certification program, for the waste stream. Routinely generated waste streams treated by the ETU must be reevaluated annually to verify that the waste process has not changed. The annual reevaluation is conducted as described in the LANL General Part B. Verification analysis for mixed TRU waste will be conducted as described in the LANL General Part B.

B.5 SPECIAL PROCEDURAL REQUIREMENTS

Waste management requirements at the TA-50-37 ETU specific to ignitable, reactive, and incompatible wastes, as well as compliance with LDR and Subpart CC regulations, are described below.

B.5.1 Procedures for Ignitable and Reactive Wastes [20 NMAC 4.1, Subpart V, §264.17]

Pursuant to 20 NMAC 4.1, Subpart V, §264.17 [1-1-97], ignitable and reactive wastes will be segregated during staging, storage, and/or treatment at the TA-50-37 Room 117 ETU. In addition, liquid-bearing containers will be stored on self-containment pallets. Thus, in the event of a spill or release of ignitable or reactive waste, mixing will be precluded.

B.5.2 Procedures for Incompatible Wastes [20 NMAC 4.1, Subpart V, §264.17]

Pursuant to 20 NMAC 4.1, Subpart V, §264.17 [1-1-97], incompatible wastes will be segregated during staging, storage, and/or treatment. Mixed TRU and mixed low-level waste generated at LANL to be treated in the cementation treatment unit flows through separate double-walled stainless steel pipelines into separate holding tanks (i.e., one for acidic waste and one for caustic waste). The segregation scheme at the TA-50-37 Room 117 ETU will separate waste by EPA Hazardous Waste Number or by compatibility group. In addition, liquid-bearing containers will be stored on self-containment pallets. Thus, in the event of a spill or release of incompatible waste, commingling will be precluded.

B.5.3 Procedures to Ensure Compliance with LDR Requirements [20 NMAC 4.1, Subpart VIII, §268.7(a) and §§268.7(b)(3), (4), and (5)]

The goal of the ETU is to remove RCRA hazardous characteristics from waste, resulting in nonhazardous waste. If the RCRA hazardous component of a characteristic waste has not been successfully removed to below regulatory levels, the waste will either be treated again in the ETU to further lower the level of the RCRA regulated component(s) or managed as a hazardous or mixed waste as described in the LANL General Part B. Solutions that remain after electrochemical treatment that were classified as RCRA listed waste will continue to be managed as hazardous or mixed waste as described in the LANL General Part B.

All wastes remaining from or generated by the RLWTF cementation treatment and ETU processes will be assessed for compliance with LDR standards. LDR standards will not be applicable to those waste streams whose RCRA characteristics are removed as a result of treatment. Final waste

analysis conducted on all liquid effluents and cleaning solutions and all solid residues destined for further treatment or disposal will be used to assess the levels of constituents in wastes or waste extracts in accordance with 20 NMAC 4.1, Subpart VIII, Part 268 [1-1-97]. This information, including generator notifications and certifications, will be provided to the appropriate waste management group for subsequent management of any hazardous or mixed waste. LANL wastes are not land disposed unless they meet the applicable LDR treatment standards. All analytical results completed in support of LDR requirements will be retained in the facility operating record. For wastes that meet treatment standards and that will be disposed in a permitted facility without further treatment, an LDR notification form will be prepared and will accompany the shipment of waste to the receiving facility.

B.5.4 Procedures to Ensure Compliance with Subpart CC Requirements [20 NMAC 4.1, Subpart V, Part 264, Subpart CC]

Hazardous wastes treated, stored, or disposed of in tanks, surface impoundments, or containers are subject to 40 CFR Subpart CC standards for volatile organic emissions. Subpart CC standards for containers require that containers be covered so that there are no detectable emissions. These standards are not applicable to containers of waste with less than 500 parts per million by weight (ppmw) average volatile organics concentration, containers of less than 0.1 m^3 (approximately 26-gal.) capacity, and containers that have received waste before December 6, 1995. Pursuant to §264.1080(b)(6) [1-1-97], Subpart CC requirements do not apply to waste management units that are used solely for managing mixed waste. For wastes not eligible for exemption under §264.1082, the applicable Subpart CC requirements for control of air pollutant emissions from each hazardous waste management unit subject to the regulations will apply.

Waste streams staged, stored, or treated at TA-50 may be subject to Subpart CC, Air Emission Standards, based on applicability criteria specified in 20 NMAC 4.1, §264.1080 [1-1-97]. Containers with greater than 500 ppmw average volatile organics concentration and equal to or greater than 0.1 m^3 capacity will be managed in accordance with 40 CFR §264.1086 requirements. Containers of hazardous waste that are less than or equal to 0.45 m^3 (approximately 119-gal.) capacity and meet U.S. Department of Transportation (DOT) specifications under 49 CFR Part 178, will be covered while they are in storage so that there are no detectable emissions. All other containers subject to Subpart CC requirements will be inspected and monitored, as required at 40 CFR §264.1088(b).

The RLWTF cementation treatment unit does not treat any waste stream subject to Subpart CC requirements. The ETU may on occasion treat hazardous waste streams. Hazardous waste not meeting the exemption criteria established at §264.1082, Subpart CC, will not be treated in the ETU. However, to be protective of human health and the environment, ETU operations in TA-50-37 Room 117 will be conducted under a walk-in fume hood equipped with a carbon adsorption filter to prevent uncontrolled air emissions from escaping the room and spreading to other areas of TA-50-37. This enclosure will be inspected and monitored in compliance with 20 NMAC 4.1, §264.15 [1-1-97].

B.6 REFERENCES

Los Alamos National Laboratory (LANL), 1998, *Los Alamos National Laboratory General Part B Permit Application*, Los Alamos National Laboratory, Los Alamos, New Mexico.

U.S. Department of Energy (DOE), 1995, *Transuranic Waste Characterization Quality Assurance Program Plan*, CAO-94-1010, Current Revision, Carlsbad Area Office, Carlsbad, New Mexico.

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, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, D.C.

U.S. Environmental Protection Agency (EPA), 1997 and all approved updates, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, SW-846, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C.

Table B-1. Description of Mixed Low-Level and Mixed TRU Waste[a] Treated at the RLWTF Cementation Unit

Waste Description	Waste Generating Activity[b]	Basis for Hazardous Waste Designation	Potential EPA[c] Hazardous Waste Numbers	Potential Hazardous Constituents and/or Characteristics in the Waste	Regulatory Limits[d] (milligrams per liter)
Mixed low-level waste • Corrosive liquid wastes	Radiochemistry research, plutonium (Pu)-processing operations, and analytical chemistry	Acceptable knowledge[e]	D001	Ignitability	NA[f]
			D002	Corrosivity	NA[f]
			D007	Chromium	5.0
			D009	Mercury	0.2
			D010	Selenium	1.0
			D011	Silver	5.0
			D036	Nitrobenzene	2.0
Mixed TRU waste • Aqueous waste • TRUPACT-II Content Code LA 111/211	Pu-processing operations and decontamination and decommissioning activities	Acceptable knowledge[e]	D004	Arsenic	5.0
			D005	Barium hydroxide	100.0
			D006	Cadmium	1.0
			D007	Chromium	5.0
			D008	Lead	5.0
			D009	Mercury	0.2
			None	Beryllium hydroxide	None

[a] Based upon preliminary information from the Los Alamos National Laboratory, 1994, *Draft Transuranic Waste Stream Hazardous Material Characterization Study*, Revision 0.0, Los Alamos National Laboratory, Los Alamos, New Mexico.

[b] Denotes information from the *Report for the Characterization Review of Low-Level Mixed Waste*, 1995, Los Alamos National Laboratory, Los Alamos, New Mexico.

[c] U.S. Environmental Protection Agency

[d] 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, 1997 and all approved updates), the extract from a representative sample of the waste contains any of the contaminants listed (D004–D043) at a concentration equal to or greater than the respective value given in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart II, Part 261, Subpart C [1-1-97].

[e] Acceptable knowledge is broadly defined as process knowledge, supplemental waste analysis data, and/or facility records of analysis, U.S. Environmental Protection Agency, 1994, *Waste Analysis at Facilities that Generate, Treat, Store, and Dispose of Hazardous Waste, A Guidance Manual, OSWER 9938.4-03*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, D.C.

[f] Refers to the P- and U-listed wastes found in the Los Alamos National Laboratory, 1998, *Los Alamos National Laboratory General Part A Permit Application*, Revision 0.0, Los Alamos National Laboratory, Los Alamos, New Mexico.

Table B-2. Descriptions of RCRA-Regulated Waste to be Treated at the TA-50 Electrochemical Treatment Unit

Waste Description[a]	Waste-Generating Process Description[a]	Basis for Characterization[a]	Potential EPA[b] Hazardous Waste Numbers	Potential Hazardous Constituents and/or Characteristics in the Waste	Regulatory Limits[c] (milligrams per liter)
Spent solvents and contaminated solvent mixtures	Research and development activities Laser research Organic and inorganic chemistry research (e.g., solvent extractions, liquid chromatography solvents, polymer synthesis, and distillations) Cleaning Degreasing operations	Acceptable knowledge[d] Sampling and analysis[e]	D001	Ignitability	NA[f]
			D002	Corrosivity	NA
			D003	Reactivity	NA
			D004	Arsenic	5.0
			D005	Barium	100.0
			D007	Chromium	5.0
			D008	Lead	5.0
			D009	Mercury	0.2
			D010	Selenium	1.0
			D011	Silver	5.0
			D018	Benzene	0.5
			D019	Carbon tetrachloride	0.5
			D021	Chlorobenzene	100.0
			D022	Chloroform	6.0
			D028	1,2-Dichloroethane	0.5
			D030	2,4-Dinitrotoluene	0.13[g]
			D032	Hexachlorobenzene	0.13[g]
			D035	Methyl ethyl ketone	200.0
			D036	Nitrobenzene	2.0
			D038	Pyridine	5.0[g]
			D040	Trichloroethylene	0.5
			D043	Vinyl chloride	0.2
			F001	Tetrachloroethylene Trichloroethylene Methylene chloride 1,1,1-Trichloroethane Carbon tetrachloride Chlorofluorocarbons	NA
			F002	Tetrachloroethylene Trichloroethylene 1,1,1-Trichloroethane 1,1,2-Trichloro-1,2,2-trifluoroethane	NA

Table B-2. Descriptions of RCRA-Regulated Waste to be Treated at the TA-50 Electrochemical Treatment Unit (Continued)

Waste Description[a]	Waste-Generating Process Description[a]	Basis for Characterization[a]	Potential EPA[b] Hazardous Waste Numbers	Potential Hazardous Constituents and/or Characteristics in the Waste	Regulatory Limits[c] (milligrams per liter)
Spent solvents and contaminated solvent mixtures (continued)	Research and development activities Laser research Organic and inorganic chemistry research (e.g., solvent extractions, liquid chromatography solvents, polymer synthesis, and distillations) Cleaning Degreasing operations	Acceptable knowledge Sampling and analysis	F003	Xylene, Acetone, Ethyl acetate, Ethyl ether, Methanol, Methyl isobutyl ketone, n-Butyl alcohol	NA
			F005	Toluene, Methyl ethyl ketone, Carbon disulfide, Isobutanol, Pyridine, Benzene	NA
Paint and paint-related wastes	Painting and finishing operations General facility maintenance	Acceptable knowledge Sampling and analysis	D001	Ignitability	NA
			D005	Barium	100.0
			D006	Cadmium	1.0
			D007	Chromium	5.0
			D008	Lead	5.0
			D009	Mercury	0.2
			D011	Silver	5.0
			F003	Xylene	NA
			F005	Toluene	NA
Photographic processing and photocopier wastes	Photographic film processing Photocopying operations	Acceptable knowledge Sampling and analysis	D001	Ignitability	NA
			D002	Corrosivity	NA
			D007	Chromium	5.0
			D008	Lead	5.0
			D009	Mercury	0.2
			D011	Silver	5.0

Table B-2. Descriptions of RCRA-Regulated Waste to be Treated at the TA-50 Electrochemical Treatment Unit (Continued)

Waste Description[a]	Waste-Generating Process Description[a]	Basis for Characterization[a]	Potential EPA[b] Hazardous Waste Numbers	Potential Hazardous Constituents and/or Characteristics in the Waste	Regulatory Limits[c] (milligrams per liter)
Corrosive liquid wastes	Analytical chemistry	Acceptable knowledge	D001	Ignitability	NA
	Electroetching	Sampling and analysis	D002	Corrosivity	NA
	Electropolishing		D004	Arsenic	5.0
	Electroplating		D005	Barium	100.0
	High speed circuit-etching		D006	Cadmium	1.0
	Waste simulant research		D007	Chromium	5.0
	Biological research		D008	Lead	5.0
	Scrubber operations		D009	Mercury	0.2
			D010	Selenium	1.0
			D011	Silver	5.0
			D038	Pyridine	5.0[g]
			F002	Tetrachloroethylene Methylene chloride Trichloroethylene 1,1,1-Trichloroethane Chlorobenzene 1,1,2-Trichloro-1,2,2-trifluoroethane Ortho-dichlorobenzene Trichlorofluoromethane 1,1,2-Trichloroethane	NA
			F003	Methanol	NA
			F005	Toluene, Methyl ethyl ketone, Carbon disulfide, Isobutanol, Pyridine, Benzene, 2-Ethoxyethanol, 2-Nitropropane	NA

Table B-2. Descriptions of RCRA-Regulated Waste to be Treated at the TA-50 Electrochemical Treatment Unit (Continued)

Waste Description[a]	Waste-Generating Process Description[a]	Basis for Characterization[a]	Potential EPA[b] Hazardous Waste Numbers	Potential Hazardous Constituents and/or Characteristics in the Waste	Regulatory Limits[c] (milligrams per liter)
Contaminated, noncorrosive, aqueous solutions and oils	Vacuum pump maintenance Analytical spectrometry Equipment cleaning and maintenance Electrolytic silver recovery Synthesis reactions Polishing and finishing operations Chemical and biological research	Acceptable knowledge Sampling and analysis	D001	Ignitability	NA
			D003	Reactivity	NA
			D004	Arsenic	5.0
			D005	Barium	100.0
			D006	Cadmium	1.0
			D007	Chromium	5.0
			D008	Lead	5.0
			D009	Mercury	0.2
			D010	Selenium	1.0
			D011	Silver	5.0
			D018	Benzene	0.5
			D038	Pyridine	5.0[g]
			D040	Trichloroethylene	0.5
			F002	Tetrachloroethylene Methylene chloride Trichloroethylene 1,1,1-Trichloroethane Chlorobenzene 1,1,2-Trichloro-1,2,2-trifluoroethane Ortho-dichlorobenzene Trichlorofluoromethane 1,1,2-Trichloroethane	NA
			F003	Xylene, Acetone, Ethyl acetate, Ethyl benzene, Ethyl ether, Methyl isobutyl ketone, n-Butyl alcohol Cyclohexanone, Methanol,	NA
			F005	Toluene, Methyl ethyl ketone, Carbon disulfide, Isobutanol, Pyridine, Benzene, 2-Ethoxyethanol, 2-Nitropropane	NA

Table B-2. Descriptions of RCRA-Regulated Waste to be Treated at the TA-50 Electrochemical Treatment Unit (Continued)

Waste Description[a]	Waste-Generating Process Description[a]	Basis for Characterization[a]	Potential EPA[b] Hazardous Waste Numbers	Potential Hazardous Constituents and/or Characteristics in the Waste	Regulatory Limits[c] (milligrams per liter)
Mercury wastes	Lamp replacement Chemical and biological research Mercury spill cleanup	Acceptable knowledge Sampling and analysis Material Safety Data Sheets	D002 D003 D009 U151	Corrosivity Reactivity Mercury Mercury	NA NA 0.2 NA
Battery fluids	Equipment maintenance	Acceptable knowledge Sampling and analysis	D002 D006 D007 D008 D009 D011	Corrosivity Cadmium Chromium Lead Mercury Silver	NA 1.0 5.0 5.0 0.2 5.0
Unused liquid reagent chemicals	Discarded off-specification unused liquid reagent chemicals	Acceptable knowledge	D001 D002 All P- and U-listed waste codes	Ignitability Corrosivity Discarded commercial chemical products and off-specification species	

Table B-2. Descriptions of RCRA-Regulated Waste to be Treated at the TA-50 Electrochemical Treatment Unit (Continued)

Waste Description[a]	Waste-Generating Process Description[a]	Basis for Characterization[a]	Potential EPA[b] Hazardous Waste Numbers	Potential Hazardous Constituents and/or Characteristics in the Waste	Regulatory Limits[c] (milligrams per liter)
Nonradioactive or suspect waste items to be surveyed	Various wastes generated in a location where radioactive contamination was possible	Acceptable knowledge Sampling and analysis	D001	Ignitability	NA
			D002	Corrosivity	NA
			D003	Reactivity	NA
			D004	Arsenic	5.0
			D005	Barium	100.0
			D006	Cadmium	1.0
			D007	Chromium	5.0
			D008	Lead	5.0
			D009	Mercury	0.2
			D010	Selenium	1.0
			D011	Silver	5.0
			D018	Benzene	0.5
			D022	Chloroform	6.0
			D038	Pyridine	5.0[a]
			F001	1,1,1-Trichloroethane	NA
			F002	1,1,1-Trichloroethane	NA
				Methyl chloride	
			F003	Acetone	NA
				Ethyl acetate	
				Methanol	
				Methyl isobutyl ketone	
				Xylene	
			F005	Methyl ethyl ketone	NA
				Pyridine	
				Toluene	
			P012	Arsenic oxide	NA
			P029	Copper cyanide	NA
			P030	Cyanides, N.O.S.	NA
			P098	Potassium cyanide	NA
			P106	Sodium cyanide	NA
			P113	Thallium oxide	NA
			P120	Vanadium oxide	NA
			U075	Dichlorofluoromethane	NA

Table B-2. Descriptions of RCRA-Regulated Waste to be Treated at the TA-50 Electrochemical Treatment Unit (Continued)

Waste Description[a]	Waste-Generating Process Description[a]	Basis for Characterization[a]	Potential EPA[b] Hazardous Waste Numbers	Potential Hazardous Constituents and/or Characteristics in the Waste	Regulatory Limits[c] (milligrams per liter)
Nonradioactive or suspect waste items to be surveyed (continued)	Various wastes generated in a location where radioactive contamination was possible		U077	Ethylene dichloride	NA
			U121	Trichlorfluoromethane	NA
			U131	Hexachloroethane	NA
			U144	Acetic acid, lead salt	NA
			U145	Lead phosphate	NA
			U188	Phenol	NA
			U190	Phthalic anhydride	NA
			U204	Selenious acid	NA
			U216	Thallium chloride	NA
			U219	Thiourea	NA
			U226	Methyl chloroform	NA
Oil wastes	Equipment maintenance operations	Acceptable knowledge	D004	Arsenic	5.0
			D005	Barium	100.0
			D006	Cadmium	1.0
			D007	Chromium	5.0
			D008	Lead	5.0
			D009	Mercury	0.2
			D010	Selenium	1.0
			D028	1,2-Dichloroethane	0.5
			F001	Tetrachloroethylene[h]	NA
				Trichloroethylene[h]	
				Methylene chloride	
				1,1,1-Trichloroethane	
				Carbon tetrachloride[h]	
				Chlorinated fluorocarbons	

Table B-2. Descriptions of RCRA-Regulated Waste to be Treated at the TA-50 Electrochemical Treatment Unit (Continued)

Waste Description[a]	Waste-Generating Process Description[a]	Basis for Characterization[a]	Potential EPA[b] Hazardous Waste Numbers	Potential Hazardous Constituents and/or Characteristics in the Waste	Regulatory Limits[c] (milligrams per liter)
Oil wastes (continued)	Equipment maintenance operations	Acceptable knowledge	F002	Tetrachloroethylene[h] Trichloroethylene[h] 1,1,1-Trichloroethane 1,1,2-Trichloro-1,2,2-trifluoroethane	NA
			F003	Xylene, Acetone, Ethyl acetate, Ethyl ether, Methyl isobutyl ketone, n-Butyl alcohol, Methanol	NA
			F005	Toluene, Methyl ethyl ketone,[h] Carbon disulfide, Isobutanol, Pyridine[h], Benzene[h]	NA

[a] Denotes information from Los Alamos National Laboratory (LANL), 1995, *Report for the Characterization Review of Low-Level Mixed Waste, Final Draft* and its related database. The TAs shown in this table were identified by LANL as waste generation points. Future waste may be generated at additional TAs.
[b] U.S. Environmental Protection Agency.
[c] A solid waste exhibits the characteristic of toxicity if the extract from a representative sample of the waste contains any of the contaminants listed at a concentration equal to or greater than the respective value given in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart II, 261, Subpart C (1-1-97).
[d] Acceptable knowledge: Indicates process knowledge may be used as the basis for hazardous waste designation.
[e] Limited and/or preliminary analysis: In reference to the basis for hazardous waste classification, indicates that sampling and analysis have been performed but that the data may not be completely documented or that data may exist but may not be verifiable.
[f] Not applicable: Refers to the absence of regulatory limits for ignitable, corrosive, and reactive characteristic wastes and F-, P-, and U-listed wastes.
[g] The quantitation limit is greater than the calculated regulatory level. The quantitation limit therefore becomes the regulatory level (20 NMAC 4.1), Subpart II, 261.24, Table 1 (1-1-97).
[h] Process knowledge provided information that these constituents may have been used as solvents. Toxicity characteristic (TC) regulatory levels may also apply and will be evaluated.

Table B-3. Parameters, Characterization Methods, and Rationale for Mixed TRU Waste

Analytical Parameter	Test Method	Method Number	Rationale
Physical waste form	Waste inspection procedure Visual exam Acceptable knowledge		Verify waste container contents
Metals in waste: Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver	Total and/or TCLP Inductively-coupled plasma atomic emission spectroscopy Atomic absorption Manual cold vapor atomic absorption Anodic stripping voltametry Acceptable knowledge[f]	SW-846[a] (1311, 6010B, 7060A[d], 7061A)[a] (1311, 6010B, 7080A[e], 7081)[a, d] (1311, 6010B, 7130[e], 7131)[a, d] (1311, 6010B, 7190[e], 7191)[a, d] (1311, 6010B, 7420[e], 7421)[a, d] (1311, 7470B, 7471A, 7472)[a, c] (1311, 6010B, 7740, 7741A, 7742)[a] (1311, 6010B, 7760A[e], 7761)[a, d] or equivalent methods[b]	Determine total and/or TCLP metals concentration in samples
pH	pH electromagnetic measurement pH paper Soil and waste pH	SW-846 (9040B, 9041A, 9045C)[a] or equivalent methods[b]	Determine corrosivity

[a] U.S. Environmental Protection Agency, 1997 and all approved updates, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846.*
[b] Equivalent methods, subject to EPA approval, may be substituted.
[c] Method being revised per the January 1998 *SW-846* Draft Update IVA.
[d] Method being integrated into Method 7010, per the January 1998 *SW-846* Draft Update IVA.
[e] Method being integrated into Method 7000B, per the January 1998 *SW-846* Draft Update IVA.
[f] Acceptable knowledge is broadly defined as process knowledge, supplemental waste analysis data, and/or facility records of analysis, U.S. Environmental Protection Agency, 1994, *Waste Analysis at Facilities that Generate, Treat, Store, and Dispose of Hazardous Waste, A Guidance Manual*, *OSWER 9938.4-03*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, D.C.

Table B-4. Parameters, Characterization Methods, and Rationale for RCRA-Regulated Waste

Analytical Parameter[a]	Test Method	Method Numbers	Rationale
VOCs in waste: Acetone Benzene Carbon tetrachloride Chlorobenzene Chloroform 1,2-Dichloroethane 1,1-Dichloroethylene F-listed solvents Methyl ethyl ketone Methylene chloride 1,1,1-Trichloroethane Trichloroethylene Tetrachloroethylene Xylene	Total VOC and/or TCLP VOC analysis by GC/MS Acceptable knowledge for heterogeneous wastes	ASTM Method D4547-91[b] EPA/540/4-91/001[c] SW-846 (1311, 8240, 8240A, 8240B, 8260, 8260A, 8275A)[d] or equivalent methods[e]	Determine total VOC and/or TCLP VOC concentrations
SVOCs in waste: 1,4-Dichlorobenzene 2,4-Dinitrotoluene Hexachlorobenzene Hexachlorobutadiene Hexachloroethane Nitrobenzene Pentachlorophenol Pyridine 2,4,6-Trichlorophenol	Total SVOC and/or TCLP SVOC analysis by GC/MS Acceptable knowledge for heterogeneous waste	SW-846 (1311, 8250, 8250A, 8270B, 8270C)[d] or equivalent methods[e]	Determine total SVOC and/or TCLP SVOC concentrations

Table B-4. Parameters, Characterization Methods, and Rationale for RCRA-Regulated Waste (Continued)

Analytical Parameter[a]	Test Method	Method Numbers	Rationale
Metals in waste: Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver	Total and/or TCLP metals analysis Inductively-coupled plasma spectroscopy Atomic absorption spectroscopy Cold vapor atomic absorption spectroscopy Acceptable knowledge for heterogeneous wastes	SW-846 (3051, 1311, 6010, 6010A, 6010B, 6020, 7060, 7060A, 7061A)[d] (3051, 1311, 6010, 6010A, 6010B, 6020, 7080, 7080A, 7081)[d] (3051, 1311, 6010, 6010A, 6010B, 6020, 7130, 7131, 7131A)[d] (3051, 1311, 6010, 6010A, 6010B, 6020, 7190, 7191)[d] (3051, 1311, 6010, 6010A, 6010B, 6020, 7420, 7421)[d] (1311, 7470, 7470A, 7470B, 7471, 7471A, 7472)[d] (3051, 1311, 6010, 6010A, 6010B, 6020, 7740, 7741, 7741A, 7742)[d] (3051, 1311, 6010, 6010A, 6020, 7760A, 7761)[d] or equivalent methods[e]	Determine total and/or TCLP metals concentrations
Reactive Cyanide Reactive Sulfide	Colorimetric or titrametric measurement of hydrogen cyanide and hydrogen sulfide released from waste following reflux distillation under acidic conditions	SW-846, Test Method to Determine Hydrogen Cyanide Released from Wastes SW-846, Test Method to Determine Hydrogen Sulfide Released from Wastes[e,f] SW-846 (9010A, 9012, 9013)[d] or equivalent method[e]	Determine concentrations of reactive cyanides and sulfides
pH	pH electrometric measurement pH paper	SW-846 (9040B, 9041A, 9045C)[c] or equivalent method	Determine corrosivity
Ignitability	Pensky-Martens closed cup Setaflash closed cup	SW-846 (1010 and 1020A)[c] or equivalent method	Determine ignitability

[a] Information contained in this column is from the LANL Hazardous and Solid Waste Group (ESH-19) WPF database.
[b] American Society for Testing and Materials (ASTM), 1991, *Standard Practice for Sampling Waste and Soils for Volatile Organic Compounds*, *ASTM D4547-91*, Annual Book of ASTM Standards, Philadelphia, Pennsylvania.
[c] EPA 1991, *Soil Sampling and Analysis for Volatile Organic Compounds*, *EPA/540/4-9/001*, Office of Research and Development.
[d] EPA 1997 and all approved updates, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, SW-846, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C.
[e] Equivalent methods, subject to EPA approval, may be substituted.
[f] SW-846 Sections 7.3.3.2 and 7.3.4.2 contain specialized methods to determine if a cyanide- or sulfide-containing waste exhibits the reactivity characteristic.

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

Analyte Class and Sample Type	Container	Preservative	Holding Time
Volatile Organics			
Concentrated Waste Samples	8-oz (240-mL) wide-mouth glass with Teflon liner	None	14 days
Liquid Samples			
No residual chlorine present	2 x 40-mL vials with Teflon-lined septum caps	Cool to 4°C[b]	14 days
Residual chlorine present	2 x 40-mL vials with Teflon-lined septum caps	Collect sample in a 4-oz volatile organic analyte (VOA) container that has been pre-preserved with 4 drops of 10% sodium thiosulfate[d]. Gently mix sample and transfer to a 40-mL VOA vial. Cool to 4°C.	14 days
Acrolein and acrylonitrile	2 x 40-mL vials with Teflon-lined septum caps	Adjust to pH[c] of 4 - 5. Cool to 4°C	14 days
Semivolatile Organics			
Concentrated Waste Samples	8-oz (240-mL) wide-mouth glass with Teflon liner	None	Samples must be extracted within 14 days and analyzed within 40 days following extraction.
Liquid Samples			
No residual chlorine present	4 x 1-liter amber glass with Teflon-lined lid	Cool to 4°C	Samples must be extracted within 14 days and analyzed within 40 days following extraction.
Residual chlorine present	2 x 40-mL vials with Teflon-lined septum caps	Collect sample in a 4-oz VOA container that has been pre-preserved with 4 drops of 10% sodium thiosulfate[d]. Gently mix sample and transfer to a 40-mL VOA vial. Cool to 4°C.	14 days

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

Analyte Class and Sample Type	Container	Preservative	Holding Time
Metals			
Liquid Samples			
Total	1-liter polyethylene	Add nitric acid to pH of less than 2	180 days
Chromium VI	500-mL polyethylene	Cool to 4°C	24 hours
Mercury	500-mL polyethylene	Add nitric acid to pH of less than 2 Cool to 4°C	28 days

[a] EPA 1997 and all approved updates, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, *SW-846*, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C.
[b] Adjust to pH (see footnote c) of less than 2 with sulfuric acid, hydrochloric acid, or solid sodium bisulfate.
[c] A term used to describe the hydrogen-ion activity of a system
[d] Pre-preservation may be performed in the laboratory prior to field use.

ATTACHMENT C

INSPECTION PLAN

TABLE OF CONTENTS

LIST OF TABLES ii
LIST OF ABBREVIATIONS/ACRONYMS iii

C.1 INSPECTION AND MONITORING FOR UNITS SUBJECT TO SUBPART CC REQUIREMENTS [20 NMAC 4.1, Subpart V, Part 264, Subpart CC, §264.1088] . . . C-1

C.2 INSPECTION - TREATMENT UNITS C-2
C.2.1 RLWTF Cementation Unit Inspections C-3
C.2.2 ETU Inspections C-3

C.3 REFERENCES C-4

LIST OF TABLES

TABLE NO.	TITLE	PAGE
C-1	Electrochemical Treatment System Components Inspection Schedule	C-5

LIST OF ABBREVIATIONS/ACRONYMS

20 NMAC 4.1	*New Mexico Administrative Code*, Title 20, Chapter 4, Part 1
CFR	*Code of Federal Regulations*
CSA	container storage area
DOT	U. S. Department of Transportation
ESH-5	Industrial Hygiene and Safety Group
ETU	electrochemical treatment unit
HEPA	high-efficiency particulate air
LANL	*Los Alamos National Laboratory*
RLWTF	Radioactive Liquid Waste Treatment Facility
TA	Technical Area
TRU	transuranic

ATTACHMENT C

INSPECTION PLAN

General inspection schedules and requirements applicable to the mixed low-level and mixed transuranic (TRU) mixed waste and hazardous waste container storage areas (CSAs) and treatment units located at Technical Area (TA)-50 are addressed in Appendix C of the *Los Alamos National Laboratory General Part B Permit Application* (Los Alamos National Laboratory [LANL] 1998), hereinafter referred to as the LANL General Part B.

C.1 INSPECTION AND MONITORING FOR UNITS SUBJECT TO SUBPART CC REQUIREMENTS [20 NMAC 4.1, Subpart V, Part 264, Subpart CC, §264.1088]

Hazardous wastes treated, stored, or disposed of in tanks, surface impoundments, or containers are subject to the *New Mexico Administrative Code*, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart V, Part 264, Subpart CC standards for volatile organic emissions after October 6, 1996. Subpart CC standards for containers require that containers be covered so that there are no detectable emissions. These standards are not applicable to containers of waste with less than 500 parts per million by weight (ppmw) average volatile organics concentration, containers of less than a 0.1-m^3 (approximately 26-gal.) capacity, and containers that have received waste before December 6, 1995. Currently, pursuant to 40 *Code of Federal Regulations* (CFR), §264.1080(b)(6), the requirements of Subpart CC do not apply to waste management units that are used solely for managing mixed waste.

Containers of hazardous waste that are less than or equal to 0.45 m^3 (approximately 119-gal.) capacity and meet U.S. Department of Transportation (DOT) specifications under 49 CFR Part 178 will be covered while they are in storage so that there are no detectable emissions. All other containers subject to Subpart CC requirements will be inspected and monitored, as required at 40 CFR §264.1088(b).

Compliance with 20 NMAC 4.1, Part 264 [1-1-97], Subpart CC is required for equipment that treats hazardous waste with organic concentrations greater than 500 ppmw. All wastes that will be managed in the Radioactive Liquid Waste Treatment Facility (RLWTF) Cementation Unit and electrochemical treatment unit (ETU) will have organic concentrations that are less than 500 ppmw. Testing for Subpart CC compliance will be performed for organic compounds on waste

streams where waste profile data indicate or suggest the presence of organics. Hazardous waste not meeting the exemption criteria established at 20 NMAC 4.1, §264.1082, Subpart CC, will not be treated in the ETU.

However, to be protective of human health and the environment, operations at the TA-50-37 ETU will be conducted under a walk-in fume hood equipped with a carbon adsorption filter to prevent uncontrolled air emissions from escaping the room and spreading to other parts of TA-50-37. This enclosure will be inspected and monitored, in compliance with 20 NMAC 4.1, §264.15. The portion of TA-50-37 that includes Room 117 is designed with a separate exhaust and supply air system and stack. Supply air to this area is filtered using medium-grade filters and is provided for all ventilation and exhaust makeup requirements. Exhaust air from the fume hood and ventilation system is filtered both through two high-efficiency particulate air (HEPA) filters set in series (to capture particulates) and through a carbon filter (to collect organic vapors) prior to release to the atmosphere outside TA-50-37.

C.2 INSPECTION - TREATMENT UNITS

Treatment unit personnel will conduct routine inspections of the treatment unit equipment components to identify equipment malfunction, deterioration, and operator errors that might lead to a release of mixed waste and pose a threat to human health and the environment. Additionally, the ancillary mixed waste storage areas will be inspected to ensure no releases to the environment have occurred or may potentially occur. Inspections of treatment equipment components will be conducted every day each treatment system is operated for the purpose of identifying problems promptly and allowing for timely repair and cleanup. Operators of treatment units will be responsible for conducting inspections, and original inspection records will be kept in an inspection logbook maintained by the treatment group. The inspection logbook will include name and signature of the inspector, date and time of inspection, inspection observations, and corrective actions needed and taken. Alternatively, the Hazardous and Mixed Waste Facility Inspection Record Form (provided in Appendix C of the LANL General Part B) may be used to record inspections. Inspection records will be retained for a minimum of three years from the inspection date.

If an inspection indicates corrective action is warranted, any and all actions taken, along with time, date, and other pertinent information, will be recorded on the inspection/logbook form, which will be completed each day of operations and during all subsequent inspections until corrective actions are completed. If a condition is found in which a release to the environment is imminent or has already occurred, the condition will be assessed. If this assessment indicates human health or the environment might be adversely affected, the Contingency Plan (provided in the LANL General Part B) will be implemented. Hazardous and mixed waste operations will be inspected to ensure aisle space is maintained around the treatment units to allow unobstructed movement of personnel and any fire protection, spill control, or decontamination equipment that may be needed to respond to an emergency at the treatment unit.

C.2.1 RLWTF Cementation Unit Inspections

Inspections of TA-50-1, Room 59 for proper waste container management, structural integrity of the walls and floors, and proper operation of security and lighting systems will be performed on an established routine basis when waste is present. The Room 60 cementation treatment equipment, including tanks, pipes, ventilation system, filters, and hoists are also inspected. Each drum and lid is inspected before cemented waste is introduced.

C.2.2 ETU Inspections

Inspections of TA-50-37, Room 117 for proper waste container management; structural integrity of the walls, floors, sumps, and grates; presence of spills or leaks; and proper operation of security and lighting systems will be performed on an established routine basis when waste is present in Room 117. The Building Manager, or a designated representative, will perform the weekly inspections and maintain copies of the inspection records. Table C-1 summarized the components of the ETU to be inspected.

The Room 117 ventilation system, equipped with two sets of HEPA filters and a carbon filter, will be inspected by Industrial Hygiene and Safety Group (ESH-5) personnel (or their organizational equivalents). The system will initially be tested upon startup for proper air flow rate and functioning of filters. The filters will be checked annually for functioning and replacement, as necessary. Documentation of the inspection will be maintained by ESH-5, with a copy sent to the appropriate Facility Manager.

C.3 REFERENCES

20 NMAC 4.1, Subpart V, Part 264. "Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities." Santa Fe, New Mexico, New Mexico Environmental Improvement Board.

49 CFR Part 178. "Specifications for Packagings." *Code of Federal Regulations*, Washington, D.C., Office of the Federal Register, National Archives and Records Administration.

LANL. 1998. *Los Alamos National Laboratory General Part B Permit Application*. Los Alamos, New Mexico, Los Alamos National Laboratory.

Table C-1. Electrochemical Treatment System Components Inspection Schedule

Item	Types of Problems	Frequency
Waste feed containers and electrolytic cell	Improper functioning; signs of leaks or deterioration	Every operating day
Waste feed pumps and tubing/piping	Leaks, clogs, deterioration	Every operating day
Monitoring equipment (pH and temperature monitors, voltmeters, ammeters, coulometers, chart recorder)	Malfunction, deterioration, lack of routine calibration	Every operating day
Rectifiers	Malfunction, deterioration	Every operating day
Scrubber	Malfunction, need to add additional buffering solutions, leaks, deterioration	Every operating day
Waste storage container	Leaks, spills, inadequate secondary containment, improper segregation of incompatibles, missing waste labels, improperly closed containers, deterioration of containers	Every operating day
Aisle space	Less than 2 ft of space maintained between waste container grouping or system components managing wastes	Every operating day
General housekeeping	Tripping and electrical hazards, acid and basic reagent materials not properly stored in separate cabinets, other reagent solutions not properly stored, signs of hazardous materials spills	Every operating day
Spill and Fire Control Equipment	Not present in Room 117; not in good working order	Every operating day

ATTACHMENT D

PERSONNEL TRAINING PLAN

ATTACHMENT D

PERSONNEL TRAINING PLAN

Personnel working at the container storage areas and the treatment units located at Technical Area 50 will be trained appropriately, as discussed in Appendix D of the *Los Alamos National Laboratory General Part B Permit Application* (Los Alamos National Laboratory 1998).

D.1 REFERENCE

LANL. 1998. *Los Alamos National Laboratory General Part B Permit Application*. Los Alamos, New Mexico, Los Alamos National Laboratory.

ATTACHMENT E

CONTINGENCY PLAN

TABLE OF CONTENTS

LIST OF TABLES ii
LIST OF FIGURES iii
LIST OF ABBREVIATIONS/ACRONYMS iv

E.1 EMERGENCY PROCESS SHUTDOWN PRIOR TO EVACUATION E-1

E.2 REFERENCE E-1

APPENDIX E1: List of TA-50 Emergency Equipment

LIST OF TABLES

TABLE NO.	TITLE	PAGE
E-1	TA-50 Evacuation Route and Emergency Equipment Figures	E-2

LIST OF FIGURES

FIGURE NO.	TITLE	PAGE
E-1	TA-50-37 Container Storage Area and Treatment Unit Evacuation Route and Emergency Equipment	E-3
E-2	TA-50-1 RLWTF, Decontamination Operations Facility and TA-50-114 Evacuation Route	E-4
E-3	TA-50-1 RLWTF Container Storage Area and Treatment Unit Emergency Equipment	E-5
E-4	TA-50-1 Decontamination Operations Facility and TA-50-114 Container Storage Areas Emergency Equipment	E-6
E-5	TA-50-69 WCRRF Indoor Container Storage Area Emergency Equipment	E-7
E-6	WCRRF TA-50-69, Indoor and Outdoor Container Storage Areas Evacuation Route	E-8

LIST OF ABBREVIATIONS/ACRONYMS

CAS	Central Alarm Station
CSA	container storage area
ERP	emergency response plan
ESH-1	Health Physics Operations Group
ESH-5	Industrial Hygiene and Safety Group
ESH-10	Hazardous Materials Response Group
HEPA	high-efficiency particulate air
LANL	Los Alamos National Laboratory
MSDS	material safety data sheet
PA	public address
PPE	personal protective equipment
RLWTF	Radioactive Liquid Waste Treatment Facility
TA	Technical Area
UV	ultraviolet
WCRRF	Waste Characterization, Reduction, and Repackaging Facility

ATTACHMENT E
CONTINGENCY PLAN

In the event of an emergency at a container storage area (CSA) or treatment unit at Technical Area (TA)-50, the Los Alamos National Laboratory (LANL)-wide contingency plan presented in Appendix E of the *Los Alamos National Laboratory General Part B Permit Application* (LANL 1998) (hereinafter referred to as the LANL General Part B) will be implemented. Personnel involved in waste handling and emergency response are trained in the TA-50-specific use of personal protective equipment (PPE) and emergency procedures, as described in more detail in the LANL General Part B, Appendices D and E. Whenever hazardous or mixed waste is being handled at TA-50, personnel involved in the operation will have immediate access to an internal alarm or emergency communication device, either directly or through visual or voice contact with another employee. TA-specific evacuation routes and muster areas at TA-50 are depicted on the figures listed in Table 1-1. Emergency equipment available for use at TA-50 hazardous and mixed waste management units are listed in Appendix E1 and indicated in the figures listed in Table E-1.

E.1 EMERGENCY PROCESS SHUTDOWN PRIOR TO EVACUATION

Unit-specific emergency response plans (ERPs) provide emergency shutdown procedures for unit-specific equipment. TA-50 personnel are familiar with the applicable ERP, receive emergency evacuation training, and participate in equipment shutdown exercises. Personnel are instructed to shut down equipment prior to evacuating a building unless an immediate building evacuation is announced or signaled. In the case of an immediate evacuation, a selected team may shut down designated equipment in an evacuated area. The team will be equipped with the proper equipment, clothing, and breathing apparatus. If they are on location, the Health Physics Operations Group (ESH-1), the Industrial Hygiene and Safety Group (ESH-5), and/or the Hazardous Materials Response Group (ESH-10) personnel (or their organizational equivalents) will provide advice and assistance.

E.2 REFERENCE

LANL. 1998. *Los Alamos National Laboratory General Part B Permit Application*. Los Alamos, New Mexico, Los Alamos National Laboratory.

Table E-1

TA-50 Evacuation Route and Emergency Equipment Figures

Waste Management Unit	Figure
TA-50-37 CSA and Electrochemical Treatment Unit Evacuation Route and Emergency Equipment	E-1
TA-50-1 Radioactive Liquid Waste Treatment Facility (RLWTF), Decontamination Operations Facility, and TA-50-114 Evacuation Route	E-2
TA-50-1 RLWTF CSA and Treatment Unit Emergency Equipment	E-3
TA-50-1 Decontamination Operations Facility and TA-50-114 CSAs Emergency Equipment	E-4
TA-50-69 Waste Characterization, Reduction, and Repackaging Facility (WCRRF) Indoor CSA Emergency Equipment	E-5
WCRRF TA-50-69 Indoor and Outdoor CSA Evacuation Route	E-6

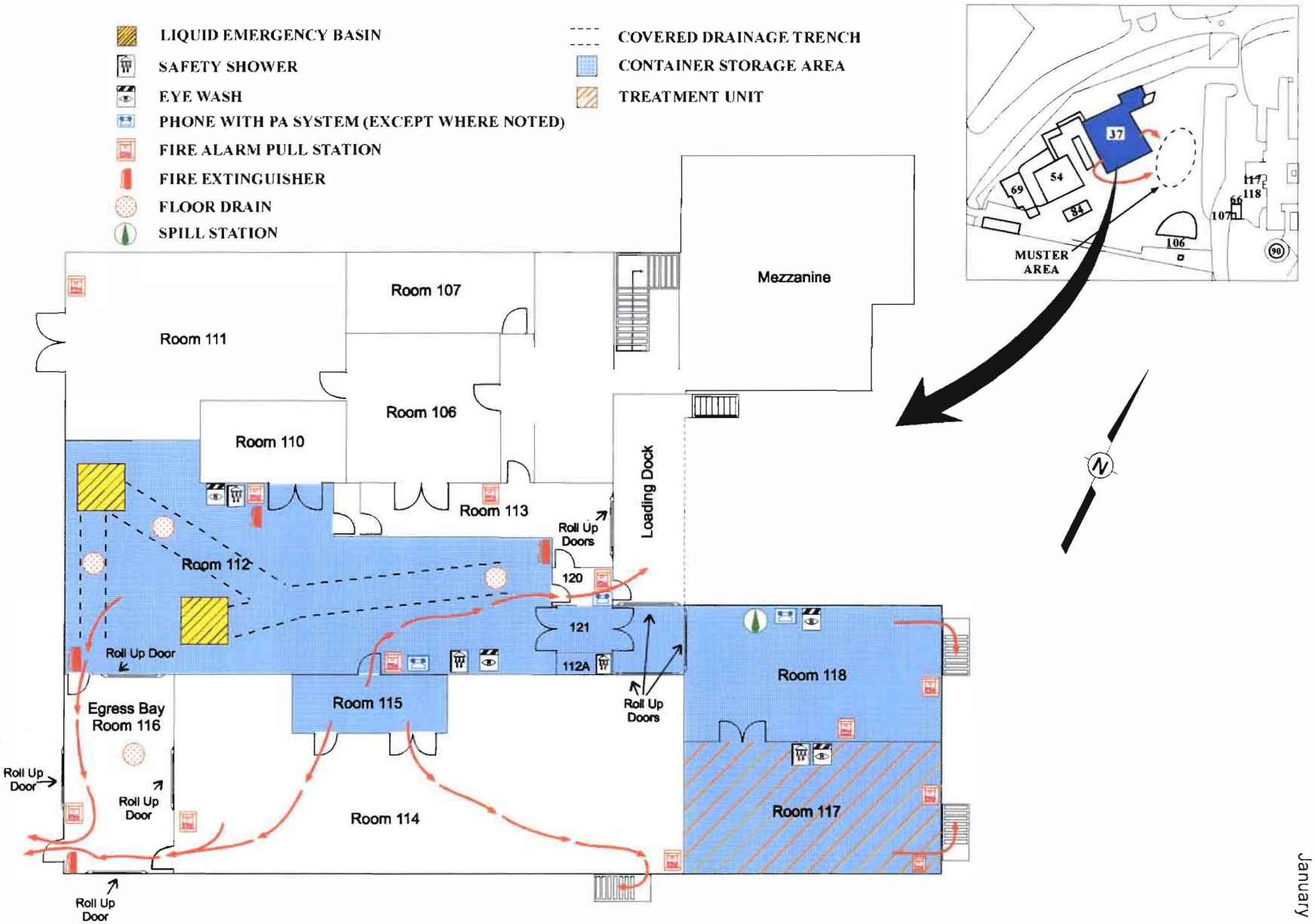


Figure E-1. TA-50-37 Container Storage Area and Treatment Unit Evacuation Route and Emergency Equipment

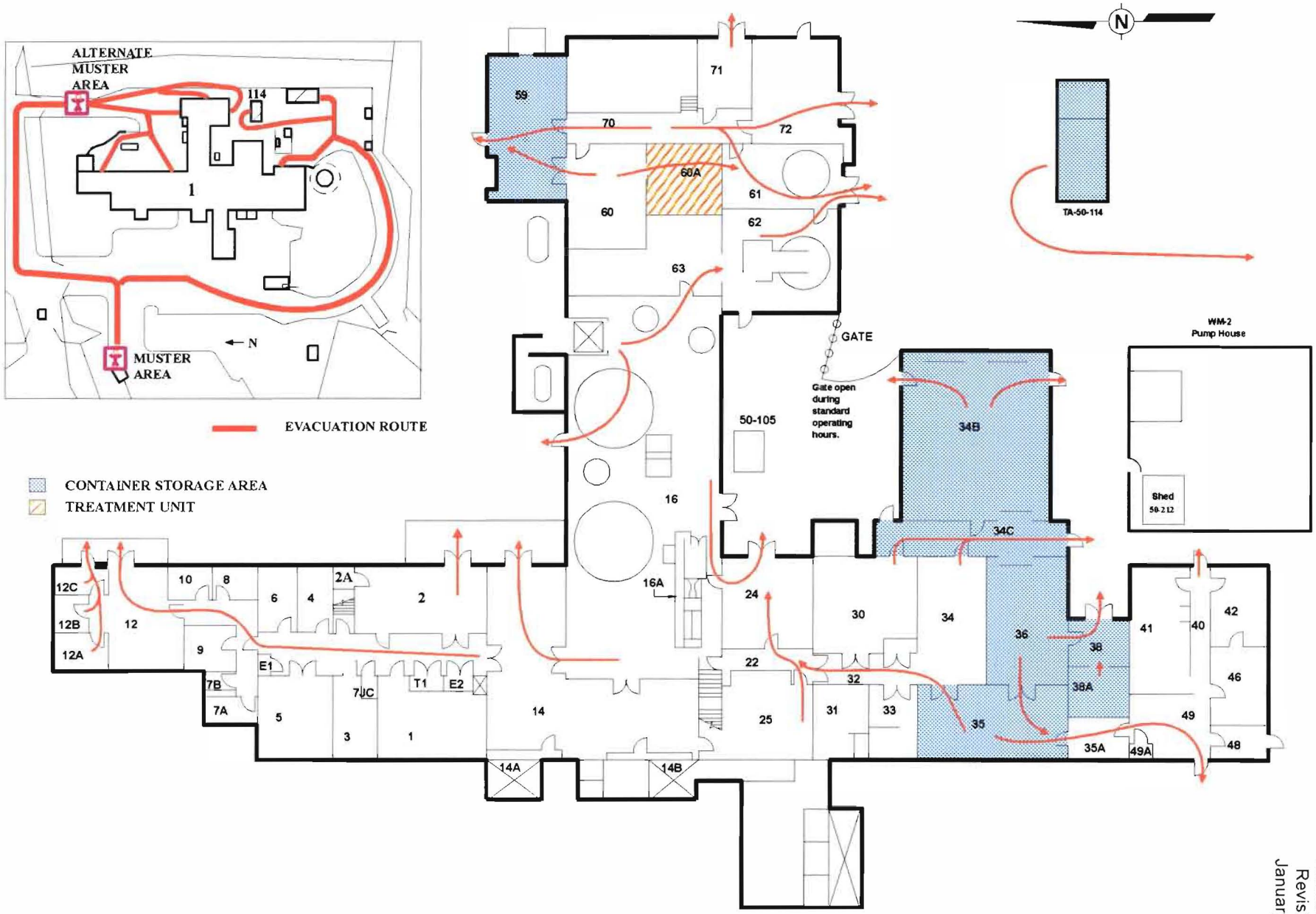


Figure E-2. TA-50-1 RLWTF, Decontamination Operations Facility and TA-50-114 Evacuation Route

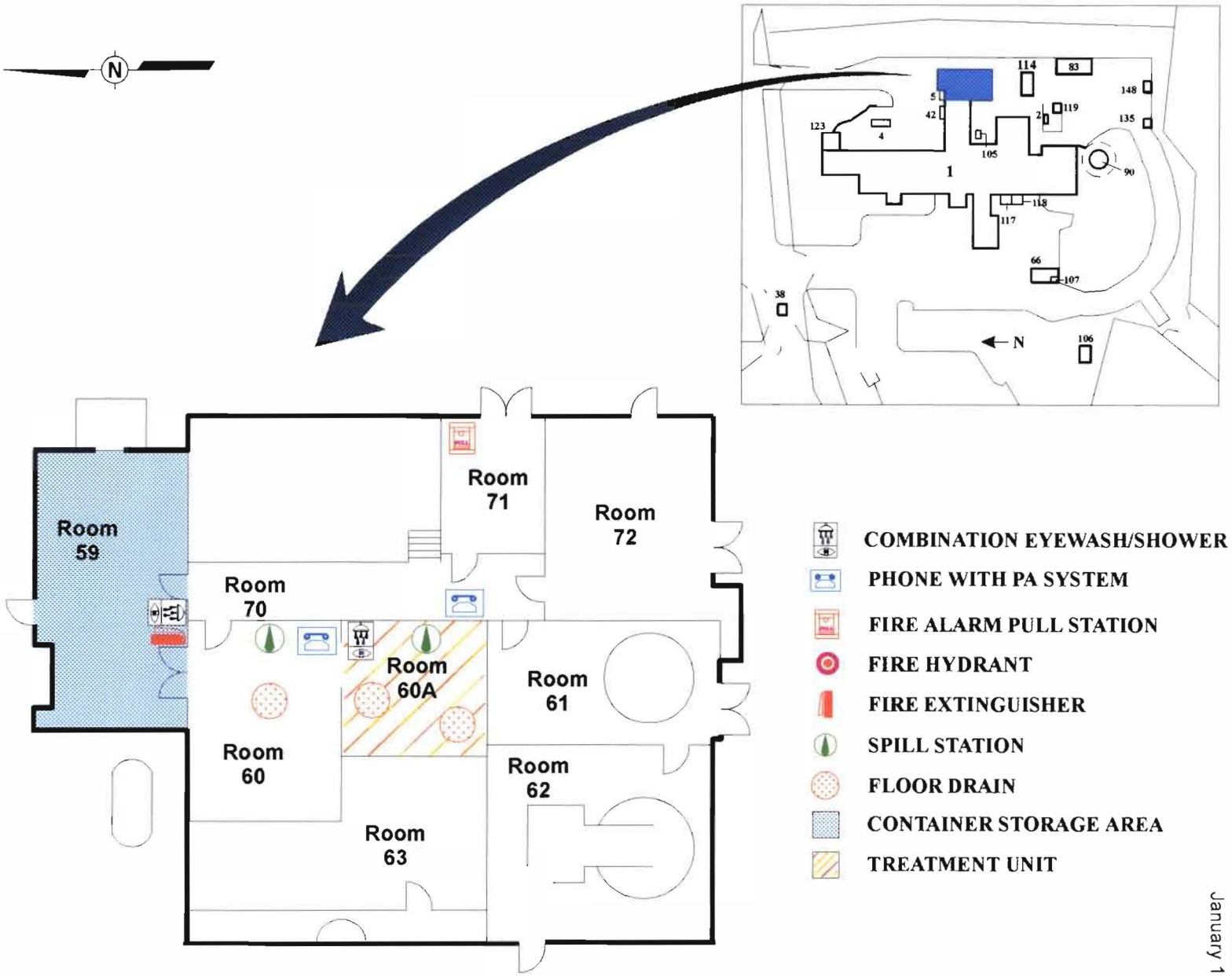


Figure E-3. TA-50-1 RLWTF Container Storage Area and Treatment Unit Emergency Equipment

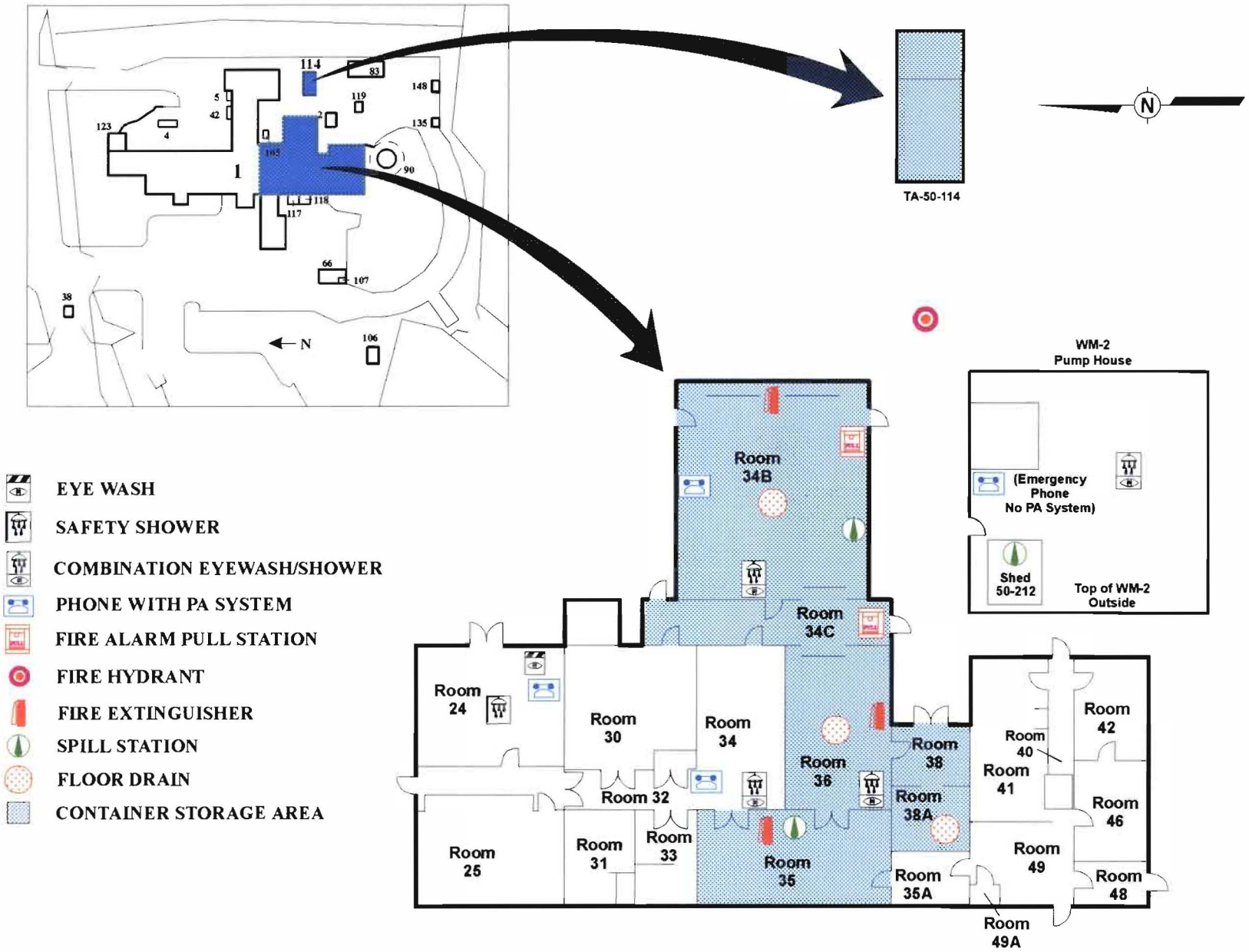


Figure E-4. TA-50-1 Decontamination Operations Facility and TA-50-114 Container Storage Areas Emergency Equipment

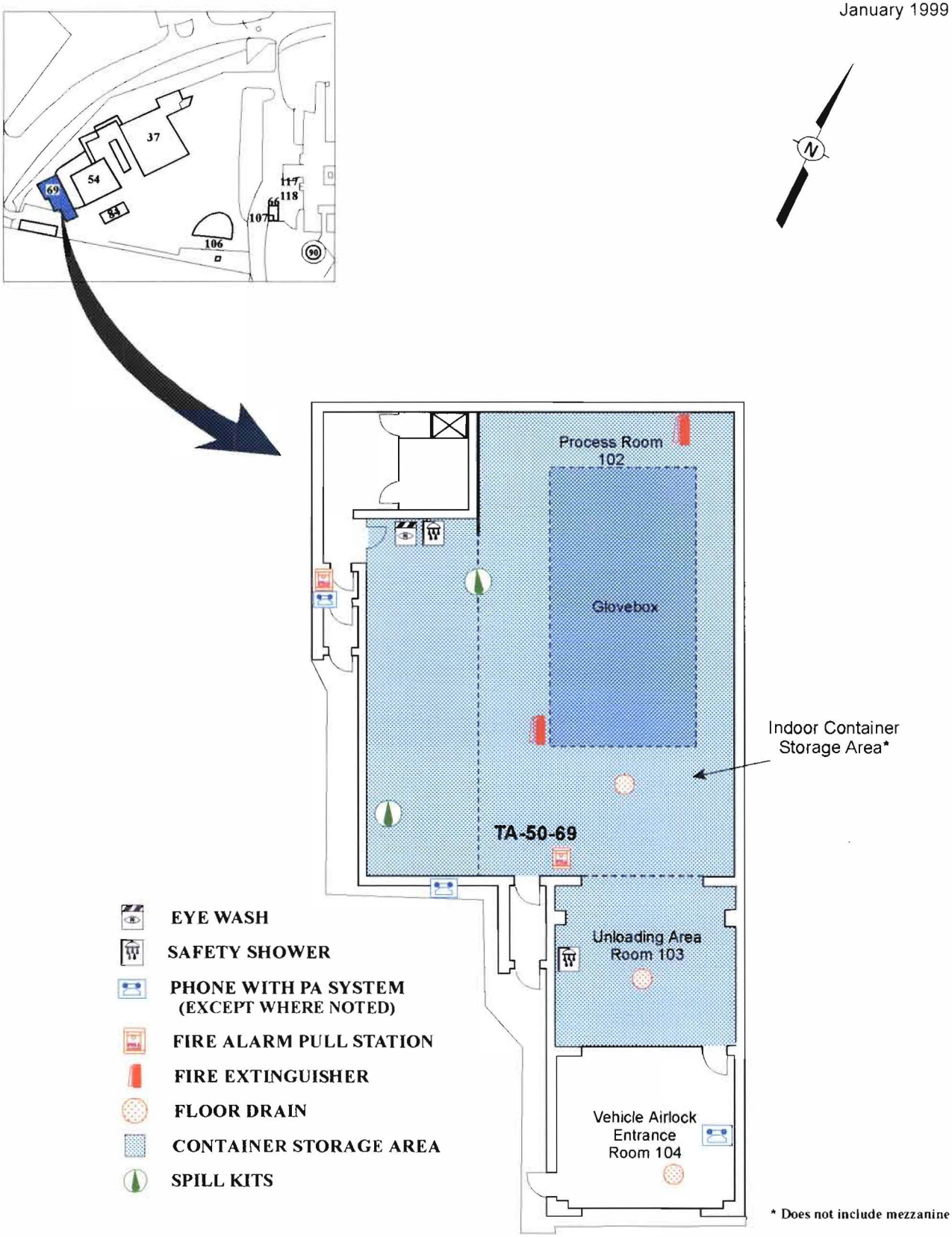
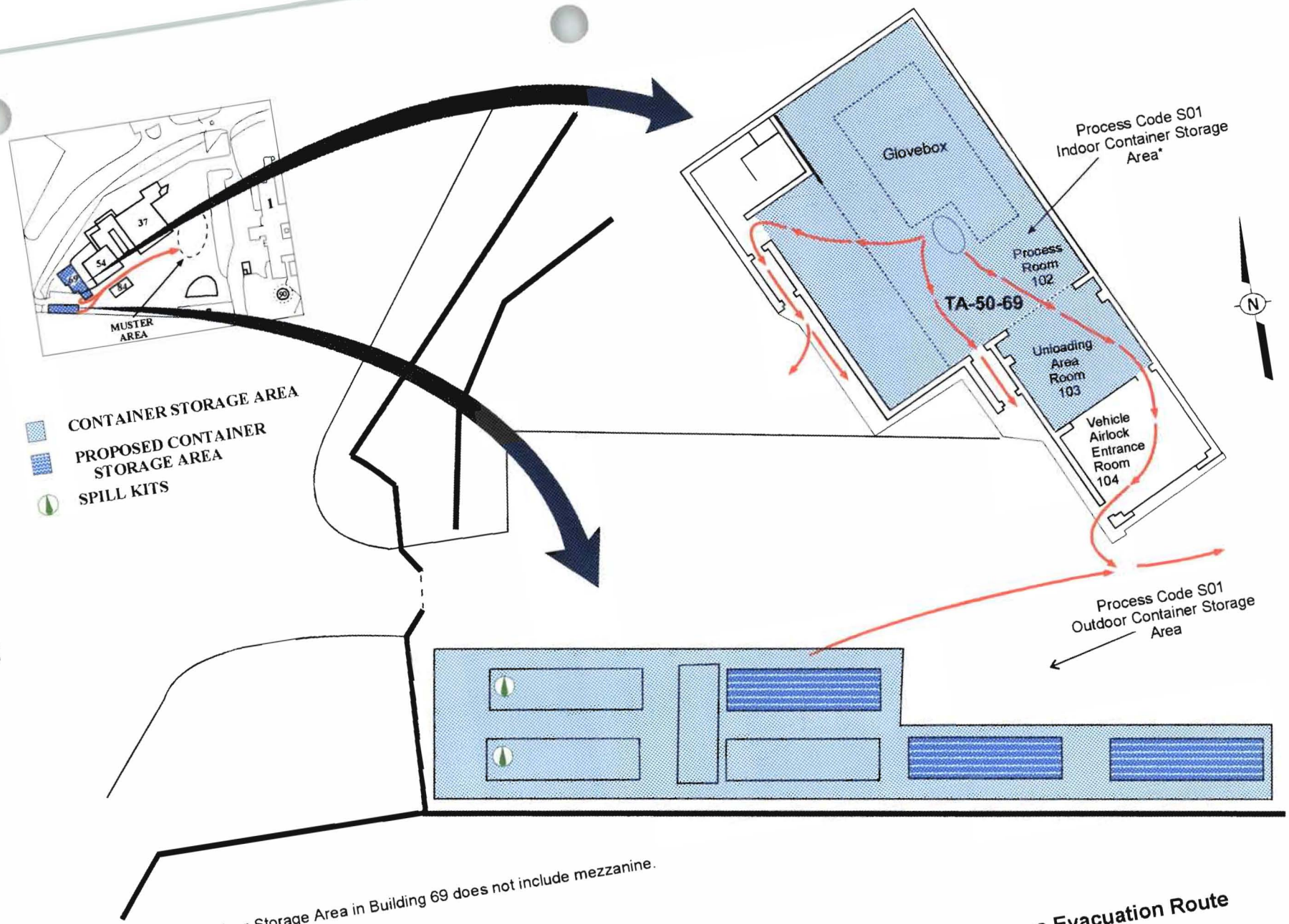


Figure E-5. TA-50-69 WCRRF Indoor Container Storage Area Emergency Equipment



*Note: Container Storage Area in Building 69 does not include mezzanine.

Figure E-6. WCRRF TA-50-69, Indoor and Outdoor Container Storage Areas Evacuation Route

APPENDIX E1

Appendix E1
List of TA-50 Emergency Equipment

TA-50 Building 37, Container Storage Area and Electrochemical Treatment Unit

Fire Control Equipment

- FIRE EXTINGUISHERS

  Description of General Capabilities
  The fire extinguishers are portable Class B and C units. Fire extinguishers are accessible for use by any employee in the event of fire.

  Fire Extinguisher Locations
  3 High Bay Room 112
  1 Room 116

- EVACUATION ALARMS

  Description of General Capabilities
  The evacuation alarm may be activated by manual pull stations. Upon activation, fire alarm horns and strobes provide audible and visual signals for personnel notification. The fire alarm control panel continuously monitors all fire suppression and detection systems and transmits signals to the Central Alarm Station (CAS). The CAS is continually monitored.

  Evacuation Alarm Manual Pull Locations
  2 High Bay Room 112
  1 Room 113
  2 Room 114
  1 Room 116
  2 Room 117
  2 Room 118
  1 Room 120

- AUTOMATIC FIRE SUPPRESSION SYSTEM

  Description of General Capabilities
  There are several types of fire suppression systems in TA-50-37. The heated portions of the building, other than Rooms 115 and 117, are equipped with a wet-pipe sprinkler system. The loading dock and the Room 114 high-efficiency particulate air (HEPA)-filter plenum have an antifreeze-filled sprinkler system. The facility main HEPA-filter plenum is provided with a dry-pipe sprinkler system. These systems are equipped with fusible-link heads that activate at 100°C (212°F). The sprinkler flows are monitored to automatically initiate a fire alarm. Room 115 has two ultraviolet (UV) sensors, temperature sensors, and a smoke detector. Room 117 is protected by a deluge sprinkler system with thermal detectors that activate at 88°C (190°F). The fire alarm control panel continuously monitors all fire suppression and detection systems and transmits signals to the CAS.

Appendix E1
List of TA-50 Emergency Equipment (Continued)

TA-50 Building 37, Container Storage Area and Electrochemical Treatment Unit (Continued)

Fire Control Equipment (Continued)

- FIRE HYDRANTS

  Description of General Capabilities
  Two fire hydrants provide fire fighting water for TA-50-37. Both fire hydrants are located within a 46 m (150 ft) hose lay distance from TA-50-37. All fire hydrants are supplied by a 20-cm (8-in.) water line connected to the 12-inch water main on Pecos Drive. A separate 7-cm (3-in.) line supplies domestic and process water.

  Location of Fire Hydrants
  1 Northeast corner of Building 84
  1 West of Building 69
  1 Northeast of Building 37

Spill Control Equipment

- CURBING AND DRAINS

  All rooms in the TA-50-37 CSA that handle radioactive and chemical waste have secondary containment provided by either berms, pits, trenches or floor drains. Containment is designed to handle all liquids stored.

- SPILL CENTERS

  Description of General Capabilities
  The spill centers contain absorbent pillows and "pigs."

  Spill Center Location
  A spill center is located in Room 118. Absorbent is used in the event of a small spill. The TA-50-37 spill coordinator must be notified when there is a spill that threatens human health or the environment.

Communication Equipment

- TELEPHONES AND BUILDING-WIDE PUBLIC ADDRESS SYSTEM

  Description of General Capabilities
  Telephones for internal communication at LANL and off-site communication with federal, state, county, and other agencies are available. Emergency call lists are posted at telephones in TA-50-37 and at muster stations. The telephone system is linked to the public address (PA) system and can be used to notify personnel throughout the building of an emergency.

Appendix E1
List of TA-50 Emergency Equipment (Continued)

TA-50 Building 37, Container Storage Area and Electrochemical Treatment Unit (Continued)

Communication Equipment (Continued)

Locations of Telephones
Telephones are located throughout TA-50-37. Cellular phones and personal pagers are available for use by TA-50-37 personnel. Personnel working in Rooms 115 and 117 will carry cellular phones to ensure immediate access to communication equipment or will have immediate access to communication equipment through visual or voice contact with another employee.

Decontamination Equipment

- SAFETY SHOWERS

Description of General Capabilities
Safety showers are available to personnel who receive a chemical splash to the skin. Specific material safety data sheets (MSDSs) for the chemicals are available to personnel working with the chemicals to determine if the application of water is indicated for decontamination.

Location of Safety Showers
1 Room 112A
2 Room 112
1 Room 117

- EMERGENCY EYE WASHES

Description of General Capabilities
Emergency eye washes are available to personnel who receive a chemical splash to the eye(s). Specific MSDSs for the chemicals are available to personnel working with the chemicals to determine if the application of water is indicated for decontamination.

Location of Eye Washes
2 Room 112
1 Room 117
1 Room 118

Appendix E1
List of TA-50 Emergency Equipment (Continued)

TA-50, Building 1 Decontamination Operations Facility, Rooms 34B/34C, 35, 36, and 38/38A and TA-50, Building 114 Container Storage Area

Fire Control Equipment

- FIRE EXTINGUISHERS

  Description of General Capabilities
  The fire extinguishers are portable units of approximately 9 to 15 pounds capacity used in wet chemical laboratory applications. All fire extinguishers are Class B, C and are accessible for use by any worker in the event of fire.

  Fire Extinguisher Locations
  1 in Room 34B
  1 in Room 35
  1 in Room 36 (Personnel in Rooms 38/38A have access to Room 36 fire extinguisher)
  1 Outside Room 24 (Personnel working in TA-50-114 have access to this fire extinguisher)

- FIRE ALARM PULL BOXES CONNECTED TO THE CENTRAL ALARM STATION

  Description of General Capabilities
  The fire alarm may be activated by any employee using the fire alarm pull boxes in the event of fire. Upon activation, fire alarm horns and strobes provide audible and visual signals for personnel notification. A simultaneous alarm at the CAS is activated. The CAS is continually monitored.

  Fire Alarm Pull Stations

  There are fire alarm pull stations located in Rooms 34B and 34C. The fire alarm pull station located in Room 34C is accessible to personnel working in Rooms 35, 36, and 38/38A.

  Personnel working in TA-50-114 have access to the fire alarm pull station located outside Room 24.

- AUTOMATIC FIRE SUPPRESSION SYSTEM

  Description of General Capabilities
  TA-50-1, except for the computer room (Room 114), is protected by a single-zone sprinkler system equipped with sprinkler heads rated at 100°C (212°F). The computer room is equipped with a halon system activated by heat detectors rated at 60°C (140°F). Both systems provide an audible building alarm when activated. A simultaneous alarm is also activated at the CAS.

  Fire Suppression Sprinkler Locations
  A fire suppression sprinkler system is located throughout the facility except for Room 114.

Appendix E1
List of TA-50 Emergency Equipment (Continued)

TA-50, Building 1 Decontamination Operations Facility, Rooms 34B/34C, 35, 36, and 38/38A and TA-50, Building 114 Container Storage Area (Continued)

Fire Control Equipment (Continued)

- FIRE HYDRANTS

  Description of General Capabilities
  Fire hydrants provide water for fire fighting. All fire hydrants are supplied by an 8-inch water line connected to the 12-inch water main on Pecos Drive.

  Location of Fire Hydrants

  A fire hydrant is located outdoors approximately 15 feet from the southeast corner of Room 34B, due west of TA-50-114.

Spill Control Equipment

- CURBING AND DRAINS

  All TA-50-1 Decon Operations Facility rooms that handle radioactive and chemical waste are curbed and are equipped with floor drains that drain to the radioactive liquid waste storage tanks. The approximately 760,000 L (200,000 gal.) storage capacity plus curbed area storage would be adequate to contain water generated during fire fighting.

- SPILL CENTERS

  Description of General Capabilities
  The spill centers contain absorbent pillows and "pigs." The spill shed, TA-50-212, contains Neutrasorb and loose absorbents for all liquids. The shed also contains various absorbent socks and pillows, chemical sponges, chemical mops, acid-spill cleanup kits, and basic PPE.

  Spill Center Location
  Spill centers are located in Rooms 34B and 35. Personnel working in Rooms 36 and 38/38A have access to the spill center in Room 35. Personnel working in TA-50-114 have access to the spill shed, TA-50-212. The TA-50-1 spill coordinator must be notified when there is a spill that threatens human health or the environment.

Appendix E1
List of TA-50 Emergency Equipment (Continued)

TA-50, Building 1 Decontamination Operations Facility, Rooms 34B/34C, 35, 36, and 38/38A and TA-50, Building 114 Container Storage Area (Continued)

Communication Equipment

- TELEPHONES AND BUILDING-WIDE PUBLIC ADDRESS SYSTEM

  Description of General Capabilities
  Telephones with PA capabilities for internal and external communication are available for use by any employee. Fires and evacuations are announced via the building PA system. Fire and evacuation alarms are activated in the event of a fire or in case an evacuation is required. The fire alarm is a double slow whoop sound. The evacuation alarm is a high-pitched wailing sound.

  Locations of Telephones
  Telephones with PA capabilities are located in Rooms 34 and 34B. Personnel working in Rooms 35, 36, and 38/38A have access to these phones to summon assistance in case of an emergency. Personnel working in TA-50-114 have access to the phone in Room 24 and the emergency phone located outside, on top of WM-2. When working in the hazardous and mixed waste management areas, personnel will have immediate access to emergency communication equipment either directly or through visual or voice contact with another employee.

Decontamination Equipment

- SAFETY SHOWERS

  Description of General Capabilities
  Safety showers are available to personnel who receive a chemical splash to the skin. Specific MSDSs for the chemicals are available to personnel working with hazardous and mixed waste to determine if the application of water is indicated for decontamination.

  Location of Safety Showers
  Safety showers are located in Rooms 34, 34B, and 36. Personnel working in Room 35 have immediate access to the showers in Rooms 34 and 36. Personnel working in Room 38/38A have immediate access to the shower in Room 36. Personnel working in TA-50-114 have access to the shower outside, on top of WM-2.

- EMERGENCY EYE WASHES

  Description of General Capabilities
  Emergency eye washes are available to personnel who receive a chemical splash to the eye(s). Specific MSDSs for the chemicals are available to personnel working with hazardous and mixed waste to determine if the application of water is indicated for decontamination.

Appendix E1
List of TA-50 Emergency Equipment (Continued)

TA-50, Building 1 Decontamination Operations Facility, Rooms 34B/34C, 35, 36, and 38/38A and TA-50, Building 114 (Continued)

Decontamination Equipment (Continued)

- EMERGENCY EYE WASHES (Continued)

  Location of Eye Washes and Material Safety Data Sheets
  Eye washes are located in Rooms 34, 34B, and 36. Personnel working in Room 38/38A have immediate access to the eyewash in Room 36. Personnel working in Room 35 have immediate access to the eyewashes in Rooms 34 and 36. Personnel working in TA-50-114 have access to the eyewash located outside, on top of WM-2. MSDSs are located in Rooms 34B and 49.

Appendix E1
List of TA-50 Emergency Equipment (Continued)

TA-50, Building 1 Radioactive Liquid Waste Treatment Facility, Rooms 59 and 60A

Fire Control Equipment

- FIRE EXTINGUISHERS

  Description of General Capabilities
  The fire extinguishers are portable units of approximately 9 to 15 pounds capacity. Fire extinguishers are accessible for use by any employee in the event of fire.

  Fire Extinguisher Locations
  1 in Room 59 — Type A, B, C (Halon)
  1 in Room 24 — Type B, C (CO_2)
  1 in Breezeway outside Room 24 — Type B, C (CO_2)

- FIRE ALARM PULL BOXES CONNECTED TO THE CENTRAL ALARM STATION

  Description of General Capabilities
  The fire alarm may be activated by any employee using the fire alarm pull boxes in the event of fire. Upon activation, fire alarm horns and strobes provide audible and visual signals for personnel notification. A simultaneous alarm at the CAS is activated. The CAS is continually monitored.

  Fire Alarm Pull Box Locations
  There is a fire alarm pull station located in Room 71 that is accessible to personnel working in Rooms 59, 60, and 60A.

- AUTOMATIC FIRE SUPPRESSION SYSTEM

  Description of General Capabilities
  TA-50-1 facility, except for the computer room (Room 114), is protected by a single-zone sprinkler system equipped with sprinkler heads rated at 100°C (212°F). The computer room is equipped with a halon system activated by heat detectors rated at 60°C (140°F). Both systems provide an audible building alarm when activated. A simultaneous alarm is also activated at the CAS.

  Fire Suppression Sprinkler Locations
  A fire suppression sprinkler system is located throughout the facility except for Room 114.

- FIRE HYDRANTS

  Description of General Capabilities
  Fire hydrants provide water for fire fighting. All fire hydrants are supplied by an 8-inch water line connected to the 12-inch water main on Pecos Drive.

Appendix E1
List of TA-50 Emergency Equipment (Continued)

TA-50, Building 1 Radioactive Liquid Waste Treatment Facility, Rooms 59 and 60A (Continued)

Fire Control Equipment (Continued)

Location of Fire Hydrants
A fire hydrant is located outdoors, north of Room 59.

Spill Control Equipment

- CURBING AND DRAINS

  All TA-50-1 areas that handle radioactive and chemical waste are curbed and are equipped with floor drains that drain to the radioactive liquid waste storage tanks. The storage capacity of approximately 760,000 L (200,000 gal.) plus curbed area storage would be adequate to contain water generated during fire fighting.

- SPILL CENTERS

  Description of General Capabilities

  The spill centers in Rooms 60 and 60A contain the following:

  Trash can with absorbent for all liquids
  Absorbent socks
  Absorbent padding
  Absorbent pillows

  The spill center in the storage shed TA-50-212 contains the following:

  Acid neutralizer absorbent
  Absorbent(s) for all liquids
  Absorbent socks, padding, and pillows
  Chemical sponges
  Chemical mops
  Acid spill cleanup kit
  PPE — Tyvek suits, booties, gloves, face shields

  Spill Center Locations
  Spill centers are located in Rooms 60, 60A, and storage shed TA-50-212. Personnel working in Rooms 59, 60, and 60A have immediate access to the spill centers in Rooms 60 and 60A. All TA-50-1 personnel have access to the spill center in storage shed TA-50-212 located south of TA-50-1. The TA-50-1 spill coordinator must be notified when there is a spill that threatens human health or the environment.

Appendix E1
List of TA-50 Emergency Equipment (Continued)

TA-50, Building 1 Radioactive Liquid Waste Treatment Facility, Rooms 59 and 60A (Continued)

Communication Equipment

- TELEPHONES AND BUILDING-WIDE PUBLIC ADDRESS SYSTEM

  Description of General Capabilities
  Telephones with PA capabilities for internal and external communication are available for use by any employee. Fires and evacuations are announced via the building PA system. Fire and evacuation alarms are activated in the event of a fire or in case an evacuation is required. The fire alarm is a double slow whoop sound. The evacuation alarm is a high-pitched wailing sound.

  Locations of Telephones
  Telephones with PA capabilities are located in Rooms 60 and 70. These telephones are accessible to personnel working in Rooms 59, 60, and 60A to summon assistance in case of an emergency. When working in the hazardous and mixed waste management areas, personnel will have immediate access to emergency communication equipment either directly or through visual or voice contact with another employee.

Decontamination Equipment

- SAFETY SHOWERS

  Description of General Capabilities
  Safety showers are available to personnel who receive a chemical splash to the skin. Specific MSDSs for the chemicals are available to personnel working with hazardous and mixed waste to determine if the application of water is indicated for decontamination.

  Location of Safety Showers
  Safety showers are located in Rooms 59 and 60A.

- EMERGENCY EYE WASHES

  Description of General Capabilities
  Emergency eye washes are available to personnel who receive a chemical splash to the eye(s). Specific MSDSs for the chemicals are available to personnel working with hazardous and mixed waste to determine if the application of water is indicated for decontamination

  Location of Eye Washes
  Eye washes are located in Rooms 59 and 60A. Personnel working in Room 60 have access to the eyewashes in Rooms 59 and 60A.

Appendix E1
List of TA-50 Emergency Equipment (Continued)

TA-50, Building 69 Waste Characterization, Reduction, and Repackaging Facility Indoor and Outdoor Container Storage Areas

Fire Control Equipment

- FIRE EXTINGUISHERS

  Description of General Capabilities
  The fire extinguishers are portable Class A, B, and C units of approximately 9 to 15 pounds capacity used in wet chemical laboratory applications. The fire extinguishers are accessible for use by any employee in the event of fire.

  Fire Extinguisher Locations
  2 fire extinguishers are located in TA-50-69, Room 102
  1 fire extinguisher is located within 20 feet of the Waste Characterization, Reduction, and Repackaging Facility (WCRRF) outdoor CSA

- FIRE ALARM PULL BOXES CONNECTED TO THE CENTRAL ALARM STATION

  Description of General Capabilities
  The fire alarm may be activated by any employee using the fire alarm pull boxes in the event of a fire. Upon activation, fire alarm horns and strobes provide audible and visual signals for personnel notification. A simultaneous alarm at the CAS is activated. The CAS is continually monitored. The fire alarm is a pulsing sound. The evacuation alarm is a wailing sound that can be heard throughout TA-50-69 and at the WCRRF outdoor CSA.

  Fire Alarm Pull Box Locations
  Two fire alarm pull stations are located in the WCRRF. Personnel working at the WCRRF outdoor CSA may use the pull stations in the WCRRF in the event of a fire.

- AUTOMATIC FIRE SUPPRESSION SYSTEM

  Description of General Capabilities
  A wet-pipe automatic sprinkler system that is hydraulically designed for ordinary hazard Group II coverage is in place throughout TA-50-69. This system is activated at 100°C (212°F). The glovebox cutting and disassembly modules are equipped with an automatic water deluge sprinkler system. One sprinkler head is mounted on the west wall of the cutting module and one sprinkler head is mounted on the east wall of the disassembly module. Additionally, a manually operated CO_2 system is in place inside the cutting enclosure which allows an operator to apply CO_2 to minor flare-ups that can originate on the waste item being cut up with the plasma-torch. The CO_2 system cannot over pressurize the enclosure.

  Fire Suppression Sprinkler Locations
  Described above.

Appendix E1
List of TA-50 Emergency Equipment (Continued)

TA-50, Building 69 Waste Characterization, Reduction, and Repackaging Facility Indoor and Outdoor Container Storage Areas (Continued)

Fire Control Equipment (Continued)

- FIRE HYDRANT

  Description of General Capabilities
  Fire hydrants provide water for fire fighting. All fire hydrants are supplied by an 8-inch water line connected to the 12-inch water main on Pecos Drive.

  Location of Fire Hydrants
  A fire hydrant is located approximately 55 feet west of TA-50-69.

Spill Control Equipment

- CURBING AND DRAINS

  The main process room (Room 102) and unloading area (Room 103) at TA-50-69 provide secondary containment by use of curbs or floor drains. The storage capacity plus curbed area storage would be adequate to contain water generated during fire fighting.

- SPILL CENTERS

  Description of General Capabilities
  The spill centers contain absorbent pillows and "pigs."

  Spill Center Location
  2 Room 102
  2 Outdoor CSA

Communication Equipment

Description of General Capabilities
Telephones with PA capabilities for internal and external communication are available for use by any employee. Fire and evacuation alarms are activated in the event of a fire or in case an evacuation is required. The fire alarm is a double slow whoop sound. The evacuation alarm is a high-pitched wailing sound. The PA system can be heard at the TA-50-69 outdoor CSA. When working at the CSAs, personnel will have immediate access to emergency communication equipment either directly or through visual or voice contact with another employee.

Location of Communication Equipment
3 telephones with PA capabilities are located in TA-50-69. Personnel working at the TA-50-69 outdoor CSA will carry cellular phones or will have immediate access to communication equipment through visual or voice contact with another employee.

Appendix E1
List of TA-50 Emergency Equipment (Continued)

TA-50, Building 69 Waste Characterization, Reduction, and Repackaging Facility Indoor and Outdoor Container Storage Areas (Continued)

Decontamination Equipment

- SAFETY SHOWERS

  Description of General Capabilities
  Safety showers are available to personnel who receive a chemical splash to the skin. Specific MSDSs for the chemicals being managed are available to personnel working with hazardous or mixed waste to determine if the application of water is indicated for decontamination.

  Location of Safety Showers
  Safety showers are located in TA-50-69, Room 102, and Room 103. One standard shower is located adjacent to the change room in TA-50-69.

- EYEWASHES

  Description of General Capabilities
  Eyewashes are available to personnel who receive a chemical splash to the eye(s). Specific MSDSs for the chemicals being managed are available to personnel working with hazardous or mixed waste to determine if the application of water is indicated for decontamination.

  Location of Eyewashes and Material Safety Data Sheets
  An eyewash is located in TA-50-69, Room 102. The safety shower and eyewash in TA-50-69 are available to personnel working at the TA-50-69 outdoor CSA. MSDSs are located in TA-50-69.

ATTACHMENT F

CLOSURE PLAN

TABLE OF CONTENTS

LIST OF TABLES iii
LIST OF FIGURES iv
LIST OF ABBREVIATIONS/ACRONYMS v

F.1 GENERAL CLOSURE INFORMATION [20 NMAC 4.1, Subpart V, Subpart G] F-2
F.1.1 Closure Performance Standard [20 NMAC 4.1, Subpart V, §264.111] F-2
F.1.2 Partial and Final Closure Activities [20 NMAC 4.1, Subpart V, §§264.112(b) and (d)] F-3
F.1.3 Closure Schedule [20 NMAC 4.1, Subpart V, §264.112(b)(6) and §264.113] F-3
F.1.4 Amendment of the Closure Plan [20 NMAC 4.1, Subpart V, §264.112(c)] . . F-4
F.1.5 Financial and Liability Requirements [20 NMAC 4.1, Subpart V, §264.140 (c)] F-4
F.1.6 Closure Certification [20 NMAC 4.1, Subpart V, §264.115] F-4
F.1.7 Security F-4
F.1.8 Closure Report F-4
F.1.9 Survey Plat and Post-Closure Requirements [20 NMAC 4.1, Subpart V, §264.116, §§264.117 through 264.120] F-5
F.1.10 Procedures for Decontamination and Closure of TA-50 CSAs and Treatment Units F-5
F.1.11 Sampling and Analytical Procedures [20 NMAC 4.1, Subpart V, §264.112(b)(4)] F-7
F.1.12 Equipment Decontamination F-7
F.1.13 Decontamination Verification F-7

F.2 CLOSURE PROCEDURES FOR TA-50-37 CSA [20 NMAC 4.1, Subpart V, §264.112] F-9
F.2.1 Description of Waste and Estimate of Maximum Inventory of Hazardous Waste F-9
F.2.2 Decontamination and Closure of the TA-50-37 CSA F-9

F.3 CLOSURE PROCEDURES FOR THE TA-50-1 RLWTF CSA [20 NMAC 4.1, Subpart V, §264.112] F-10
F.3.1 Description of Waste and Estimate of Maximum Inventory of Hazardous Waste F-10
F.3.2 Decontamination and Closure of the TA-50-1 RLWTF CSA F-10

F.4 CLOSURE PROCEDURES FOR THE TA-50-1 DECON OPS CSA [20 NMAC 4.1, Subpart V, §264.112] F-10
F.4.1 Description of Waste and Estimate of Maximum Inventory of Hazardous Waste F-11
F.4.2 Decontamination and Closure of the Decon Ops CSA F-11

F.5 CLOSURE PROCEDURES FOR THE TA-50-114 CSA [20 NMAC 4.1, Subpart V, §264.112] F-11
F.5.1 Description of Waste and Estimate of Maximum Inventory of Hazardous Waste F-11
F.5.2 Decontamination and Closure of the TA-50-114 CSA F-12

TABLE OF CONTENTS
(Continued)

F.6 CLOSURE PROCEDURES FOR THE TA-50-69 WCRRF INDOOR CSA [20 NMAC 4.1, Subpart V, §264.112] F-12
F.6.1 Description of Waste and Estimate of Maximum Inventory of Hazardous Waste F-12
F.6.2 Decontamination and Closure of the WCRRF Indoor CSA F-13

F.7 CLOSURE PROCEDURES FOR THE TA-50-69 WCRRF OUTDOOR CSA [20 NMAC 4.1, Subpart V, §264.112] F-13
F.7.1 Description of Waste and Estimate of Maximum Inventory of Hazardous Waste F-13
F.7.2 Decontamination and Closure of the WCRRF Outdoor CSA F-13

F.8 CLOSURE PROCEDURES FOR THE TA-50-1 ROOM 60A RLWTF CEMENTATION TREATMENT UNIT [20 NMAC 4.1, Subpart V, §264.112] F-16
F.8.1 Description of Waste and Estimate of Maximum Inventory of Hazardous Waste F-16
F.8.2 Decontamination and Closure of the RLWTF Cementation Treatment Unit F-16

F.9 CLOSURE PROCEDURES FOR THE TA-50-37 ETU [20 NMAC 4.1, Subpart V, §264.112] F-17
F.9.1 Description of Waste and Estimate of Maximum Inventory of Hazardous Waste F-18
F.9.2 Decontamination and Closure of the TA-50-37 ETU F-18

F.10 REFERENCES F-19

LIST OF TABLES

TABLE NO.	TITLE	PAGE
F-1	Schedule for TA-50 Closure Activities	F-20

LIST OF FIGURES

FIGURE NO.	TITLE	PAGE
F-1	TA-50 at Los Alamos National Laboratory	F-21
F-2	TA-50 Container Storage Areas and Treatment Units	F-22

LIST OF ABBREVIATIONS/ACRONYMS

20 NMAC 4.1	*New Mexico Administrative Code*, Title 20, Chapter 4, Part 1
ALARA	as low as reasonably achievable
CSA	container storage area
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
Decon Ops	Decontamination Operations
EPA	U.S. Environmental Protection Agency
ETU	Electrochemical Treatment Unit
FRP	fiberglass-reinforced plywood
LANL	Los Alamos National Laboratory
NMED	New Mexico Environment Department
QA/QC	quality assurance/quality control
RCRA	Resource Conservation and Recovery Act
RLWTF	Radioactive Liquid Waste Treatment Facility
SW-846	*Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (EPA 1997)
SWB	standard waste box
TA	technical area
TRU	transuranic
WCRRF	Waste Characterization, Reduction, and Repackaging Facility

ATTACHMENT F
CLOSURE PLAN

This closure plan describes the activities necessary to close Resource Conservation and Recovery Act (RCRA)-permitted hazardous and mixed waste container storage areas (CSAs) and treatment units located at Technical Area (TA)-50 of the Los Alamos National Laboratory (LANL). The procedures described in this attachment supplement general closure procedures described in Appendix F, "Closure Plan," of the *Los Alamos National Laboratory General Part B Permit Application* (LANL 1998b), hereinafter referred to as the LANL General Part B.

This attachment describes the closure procedures for the TA-50 CSAs and treatment units. Figure F-1 shows the location of TA-50 at LANL. The locations of the CSAs and treatment units listed below are shown on Figure F-2, and details regarding their respective design, process, and operational procedures are discussed in Section 2.0 and Attachments G and I of the Part B Permit Application for TA-50 (hereinafter referred to as the TA-50 Part B). Unit-specific closure plans are included in this attachment for units at TA-50 in the following sequence:

- General closure information applicable to the CSAs and treatment units at TA-50
- TA-50-37 CSA
- TA-50-1 Radioactive Liquid Waste Treatment Facility (RLWTF) CSA
- TA-50-1 Decontamination Operations (Decon Ops) Facility CSA
- TA-50-114 CSA
- TA-50-69 Waste Characterization, Reduction, and Repackaging Facility (WCRRF) Indoor CSA
- TA-50-69 WCRRF Outdoor CSA
- TA-50-1 Room 60A RLWTF Cementation Treatment Unit
- TA-50-37 Room 117 Electrochemical Treatment Unit (ETU)

The activities described in this attachment meet the closure requirements of the *New Mexico Administrative Code*, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart IX, §270.14(b)(13), and 20 NMAC 4.1, Subpart V, Part 264, Subpart G, revised January 1, 1997 [1-1-97]. General closure

information applicable to all hazardous and mixed waste management units at LANL and general sampling and analytical procedures to be used during closure activities are presented in the LANL General Part B, Appendix F, "Closure Plan."

Site-specific and unit-specific closure procedures for RCRA-permitted CSAs and treatment units at TA-50 are described in this attachment. Closure will include removal of waste from the unit to be closed and decontamination of structures and equipment contaminated by waste materials through normal RCRA-regulated container storage or treatment operations (see Section 2.0 and Attachments G and I of the TA-50 Part B). Radiological exposures during closure activities will be maintained as low as reasonably achievable (ALARA) to protect worker and public health and safety, as required by the Atomic Energy Act and LANL policy.

F.1 GENERAL CLOSURE INFORMATION [20 NMAC 4.1, Subpart V, Subpart G]

This attachment is prepared in accordance with the requirements of 20 NMAC 4.1, Subpart V, Part 264, Subpart G [1-1-97], and other subparts as applicable, and 20 NMAC 4.1, Subpart IX, §270.14(b)(13) [1-1-97]. The name and address of the primary facility contact person, a copy of LANL-wide, site-specific and unit-specific closure plans, and any approved closure plan revisions will be maintained at LANL, as described in the LANL General Part B, Appendix F, "General Closure Information."

F.1.1 Closure Performance Standard [20 NMAC 4.1, Subpart V, §264.111]

As described in the LANL General Part B, Appendix F, "Closure Performance Standard," RCRA-permitted hazardous waste CSAs and treatment units described in the TA-50 Part B will be closed to meet the following standards:

- 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 hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground or surface waters or atmosphere
- Comply with the container management requirements of 20 NMAC 4.1, Subpart V, §264.178 [1-1-97], and other applicable sections of 20 NMAC 4.1, Subpart V, Part 264 [1-1-97] for the closure of specific hazardous waste management units.

These standards will be met by removing waste and other equipment from the CSAs or treatment units as appropriate. Surfaces or areas that may have come into contact with RCRA-regulated wastes in the course of normal container storage or treatment operations will be decontaminated if operating records, surface samples, or visual inspection indicates contamination is present. Removable equipment that may have been contaminated by waste management operations may be decontaminated, reclaimed or recycled, or disposed of, as appropriate. Decontamination activities will be conducted to ensure the removal of waste residues from the waste storage and treatment units addressed in this permit application to meet closure performance standards. Closure will be considered complete when all equipment and structures associated with operation of the area(s) undergoing closure have been decontaminated, reclaimed, recycled, or disposed of; decontamination has been appropriately verified; and closure certification has been submitted to the Secretary of the New Mexico Environment Department (NMED) (see Section F.1.6).

F.1.2 Partial and Final Closure Activities [20 NMAC 4.1, Subpart V, §§264.112(b) and (d)]
This closure plan has been written for implementation of partial closures (hereinafter referred to as closures) at TA-50 (i.e., closure of a CSA or room within a CSA, or closure of a treatment unit in an area that contains other active waste management units) rather than final closure of the LANL facility. Closure will consist of closing one or more of the RCRA-regulated waste management units at TA-50, while leaving the other RCRA-regulated waste management units at LANL in service. In the event of a closure, the procedures described in the following sections will apply to the unit(s) to be closed. Closure will be complete when the unit and related equipment and structures have been decontaminated, disposed of, or recycled, as appropriate; decontamination has been verified (see Section F.1.13); and the NMED has approved the closure. Final closure will occur when LANL's remaining RCRA-regulated waste management units are closed (see LANL General Part B, Appendix F, "Partial and Final Closure Activities").

F.1.3 Closure Schedule [20 NMAC 4.1, Subpart V, §264.112(b)(6) and §264.113]
Closure will not begin until the final wastes have been removed from the unit scheduled for closure. Closure activities will occur in accordance with the approved LANL-wide closure plan contained in the LANL General Part B, Appendix F, "Closure Schedule," and the site-specific and unit-specific closure plans in this attachment. Closure will be conducted in accordance with the schedule in Table F-1.

F.1.4 Amendment of the Closure Plan [20 NMAC 4.1, Subpart V, §264.112(c)]

If it is necessary to amend the closure plan for any of the units at TA-50 addressed in this plan, LANL will submit, in accordance with 20 NMAC 4.1, Subpart V, §264.112 [1-1-97], a written notification of, or request for, a permit modification as described in the LANL General Part B, Appendix F, "Amendment of the Closure Plan."

F.1.5 Financial and Liability Requirements [20 NMAC 4.1, Subpart V, §264.140 (c)]

Financial and liability requirements are described in the LANL General Part B, Appendix F.

F.1.6 Closure Certification [20 NMAC 4.1, Subpart V, §264.115]

As described in the LANL General Part B, Appendix F, "Closure Certification," within 60 days after completion of closure activities for each of the CSAs, rooms within a CSA, or treatment units at TA-50, the U.S. Department of Energy (DOE) will submit to the Secretary of the NMED via certified mail a certification that the unit has been closed in accordance with the specifications of the approved closure plan. The certification will be attested to by a registered professional engineer and will be signed by the appropriate DOE official in accordance with 20 NMAC 4.1, Subpart V, §264.115 [1-1-97]. Documentation supporting the independent registered engineer's certification will be furnished to the Secretary of the NMED upon request, as specified at 20 NMAC 4.1, Subpart V, §264.115 [1-1-97]. A copy of the certification and supporting documentation will be maintained by both DOE/Los Alamos Area Office and LANL's Hazardous and Solid Waste Group or their organizational equivalents at the time of closure.

F.1.7 Security

As described in the LANL General Part B, Appendix F, "Security," the nature of operations at TA-50 requires that this site remain under the permanent care of DOE or another authorized federal agency. Consequently, fences and site security will be maintained for as long as necessary to prohibit public access and to meet DOE requirements for radiation protection.

F.1.8 Closure Report

Upon completion of the closure activities for each unit addressed in this permit application for TA-50, a closure report will be prepared and made available to the Secretary of the NMED. The report will document the closure and the information listed in the LANL General Part B, Appendix F, "Closure Report."

F.1.9 Survey Plat and Post-Closure Requirements [20 NMAC 4.1, Subpart V, §264.116, §§264.117 through 264.120]

As described in the LANL General Part B, Appendix F, "Survey Plat and Post-Closure Requirements," and the TA-50 Part B, LANL will, at the time of closure, remove RCRA-regulated hazardous wastes and constituents from permitted units, and will either decontaminate, recycle, or dispose of all structures and equipment. If decontamination to established cleanup levels is not achievable, LANL will amend this closure plan to address appropriate closure procedures or post-closure care requirements pursuant to 20 NMAC 4.1, Subpart V, §§264.117 through 264.120 [1-1-97]. Additional information regarding the applicability of post-closure requirements to LANL is contained in the LANL General Part B, Appendix F, "Survey Plat and Post-Closure Requirements."

F.1.10 Procedures for Decontamination and Closure of TA-50 CSAs and Treatment Units

Procedures that will be followed for decontamination and closure of a CSA, room within a CSA, or treatment unit may include one or more of the following, as appropriate:

1. Removal of all wastes from the room(s) or other structure(s) undergoing closure
2. Inspection and repair of wall and floor surfaces of the room(s) or other structure(s) to ensure effective wash water containment if washdown procedures are necessary
3. Decontamination, recycling, removal, and/or disposal of portable equipment from the room(s) or other structure(s)
4. Washdown of floors, walls, and remaining equipment that have come in contact with RCRA-regulated hazardous wastes to meet decontamination criteria if operational records, surface samples, or visual inspection confirms the necessity of decontamination
5. Washdown of recessed areas (i.e., sumps) as appropriate
6. Removal or (bio)remediation of contaminated soils from the unit (if applicable)

Wastes will be removed from the room(s) or unit(s) scheduled for closure prior to the start of closure activities. Containers will be removed using appropriate container handling equipment and will be transported to approved on-site facilities or RCRA permitted off-site treatment or disposal facilities in accordance with U.S. Department of Transportation (DOT) regulations, LANL policy, and other applicable regulations.

If washdown procedures are determined to be necessary because of contamination from waste management activities, wall and floor surfaces affected by the contamination in the room(s) or unit(s) scheduled for closure will be inspected to identify defects or other conditions (e.g. cracks) that could result in a failure to contain wash water generated by washdown activities. Appropriate steps will be taken to repair or replace surfaces or structures to preclude the possibility of containment failure during closure activities.

After all waste has been removed from the affected room(s) and before decontamination of the main floor and wall surfaces of the room(s), all portable equipment (e.g., secondary-containment pallets, wooden pallets, and miscellaneous equipment) will be removed from the room(s) or unit(s). This equipment will be reused, recycled, or disposed of, as appropriate. If necessary the equipment will be decontaminated prior to its reuse, recycling, or disposal.

Walls and floors of the room(s) undergoing closure that have come in contact with RCRA-regulated wastes will be wiped down with a solution of water and detergent (wash water). Decontamination verification will be performed as described in Section F.1.13. The walls, floors, and equipment in the room(s) undergoing closure that have come in contact with RCRA-regulated hazardous wastes will be pressure-washed or wiped down with mops or sponges using a minimum amount of wash water. Wash water that collects in sumps, recessed areas, or temporary bermed areas will be transferred into DOT-approved containers where it will be sampled and analyzed in accordance with procedures described in the LANL General Part B, Appendix F, "Sampling and Analytical Procedures." Used wash water that is nonhazardous and nonradioactive will be managed appropriately in accordance with LANL policy. Used wash water that is hazardous and radioactive will be managed at an on-site facility appropriate for the regulated constituents present.

For indoor units, soil contamination is not expected to be a concern. However, if soil sampling is deemed necessary based on analytical evidence or the operational history of the unit, soil samples will be collected from the area showing evidence of contamination by waste management operations to determine the rate and extent of any potential soil contamination following the sampling and analytical procedures described in the LANL General Part B, Appendix F, "Sampling and Analytical Procedures."

F.1.11 Sampling and Analytical Procedures [20 NMAC 4.1, Subpart V, §264.112(b)(4)]

Procedures and methods for sample collection, analysis, and sample documentation for soil, sediment, and liquid samples are detailed in the LANL General Part B, Appendix F, "Sampling and Analytical Procedures." Sampling and analysis associated with closure activities at TA-50 will be conducted in accordance with the procedures and methods described in the LANL General Part B, Appendix F, which correspond to applicable procedures contained in *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (U.S. Environmental Protection Agency [EPA] 1997) (SW-846). Radiological sampling and analysis will be conducted in accordance with procedures established by LANL's Inorganic Trace Analysis Group or their organizational equivalent at the time of closure.

F.1.12 Equipment Decontamination

All sampling equipment used in closure activities at TA-50 will be clean and unused until removed from a factory-sealed wrapper immediately prior to use (see LANL General Part B, Appendix F, "Sampling and Analytical Procedures"). Equipment rinsate blanks will be collected and analyzed in accordance with LANL quality assurance/quality control (QA/QC) policies (see LANL General Part B, Appendix F, "Field and Laboratory QA/QC"). Reusable tools and equipment used during closure activities will be cleaned with a detergent and water solution and scrubbed as necessary to remove any residue. Residue, disposable equipment, and reusable equipment that cannot be decontaminated will be containerized and managed as hazardous or mixed waste at an approved on-site facility, depending on the regulated constituents present. The used wash water will be collected and analyzed for the parameters listed in the LANL General Part B, Table F-6. If the used wash water is nonhazardous and nonradioactive, the water will be managed appropriately in accordance with LANL policy. Otherwise, it will be managed at an appropriate on-site facility, depending on the regulated constituents present.

F.1.13 Decontamination Verification

The need for decontamination and decontamination verification will be determined based on operational records, analytical evidence, or visual inspection of surfaces or equipment within regulated units. If there are no operational records, analytical evidence, or visual evidence of contamination, then decontamination will not be performed. For those regulated units or equipment requiring decontamination, decontamination verification will be conducted using sampling and analytical procedures identified in the LANL General Part B, Appendix F, "Sampling

and Analytical Procedures," and in accordance with the most current version of SW-846 (EPA 1997).

Wash water used in the decontamination process will be sampled to determine waste water handling requirements. Wash waters will be analyzed only for those constituents identified from waste management activities associated with the CSA or treatment unit. The item or structure cleaned will be considered contaminated if the used wash water shows a significant increase (i.e., determined using statistical methods defined in SW-846) in the listed analytical parameters over the clean wash water. If subsequent wash cycles are deemed necessary, additional clean wash water samples will be taken for each additional washing. For mixed waste, radioactive monitoring will also be performed to ensure that radioactivity levels are within established DOE and LANL limits.

If visual inspections or record reviews indicate that soil contamination could have occurred as a result of waste management activities at a site, a comparison of closure sampling data to existing background soil data from appropriate areas of TA-50 will be used to establish the source of any RCRA-regulated hazardous waste or hazardous constituents present in the soil. If the comparison of soil data indicates that contamination from container storage activities or treatment processes has occurred, the soil will be remediated in-place if an appropriate (bio)remediation technology is available, or will be removed and managed in accordance with applicable regulations. Additional contaminated soil remediation or excavations will be performed until subsequent soil samples confirm that the decontamination criteria listed below are met.

Successful decontamination of a room within a CSA, an entire CSA, or a treatment unit will be achieved by meeting one of the following criteria:

1. No detectable RCRA-regulated constituent residues from the management of authorized RCRA-regulated wastes are identified in samples collected during closure activities.

2. Detectable concentrations of RCRA-regulated constituents in samples collected during closure activities are at or below existing regulatory action-levels [EPA Region 9 Preliminary Remediation Goals] established by the NMED.

3. Analytical results of samples collected during closure activities identify no statistically significant concentrations of RCRA-regulated constituents above baseline data or above established background concentrations.

4. Detectable concentrations of RCRA-regulated constituents in samples collected during closure activities are at or below levels agreed upon with the NMED to be protective of human health and the environment based on the results of risk assessment methods.

5. Detectable concentrations of RCRA-regulated constituents that cannot be removed or decontaminated to acceptable criteria as described above will be allowed to remain provided that these RCRA-regulated constituents do not pose an unacceptable risk when combined with technical or administrative control measures agreed upon with the NMED.

F.2 CLOSURE PROCEDURES FOR TA-50-37 CSA [20 NMAC 4.1, Subpart V, §264.112]

The TA-50-37 CSA consists of Rooms 112, 115, 117, and 118, which are located on the first floor of TA-50-37 (Figure F-2). This CSA will be used to store drums of various sizes, standard waste boxes (SWBs), steel B25 boxes, and fiberglass-reinforced plywood (FRP) boxes before, during, and after waste characterization activities at TA-50-37. More detailed information on this CSA is provided in Section 2.1 and Attachment G of the TA-50 Part B.

F.2.1 Description of Waste and Estimate of Maximum Inventory of Hazardous Waste

The waste stored at the TA-50-37 CSA will be generated from various research activities, material processing and recovery operations, and decontamination and decommissioning operations conducted at TA-3, TA-21, TA-50, and TA-55. Most of the wastes stored in this CSA will be RCRA-regulated, mixed low-level, mixed transuranic (TRU), and hazardous wastes. The *Los Alamos National Laboratory General Part A Permit Application* (LANL 1998a), hereinafter referred to as the LANL General Part A, provides additional information on wastes to be stored. The design capacities for each room in this CSA are as follows:

- Room 112 - 2,330 gal.
- Room 115 - 220 gal.
- Room 117 - 3,630 gal.
- Room 118 - 18,000 gal.

The total volume of RCRA-regulated waste stored at any time at the TA-50-37 CSA will not exceed 21,850 gal., which is the process design capacity specified in the LANL General Part A.

F.2.2 Decontamination and Closure of the TA-50-37 CSA

To the extent possible, all contaminated equipment, structures, and surfaces of the TA-50-37 CSA, or from individual rooms within this CSA undergoing closure, that have come in contact with

RCRA-regulated hazardous wastes will be decontaminated, recycled, or disposed of to meet the closure performance standard.

F.3 CLOSURE PROCEDURES FOR THE TA-50-1 RLWTF CSA [20 NMAC 4.1, Subpart V, §264.112]

The TA-50-1 RLWTF CSA consists of Room 59, located on the north side of the east wing of TA-50-1 (Figure F-2). More detailed information on this CSA is provided in Section 2.1 and Attachment G of the TA-50 Part B.

F.3.1 Description of Waste and Estimate of Maximum Inventory of Hazardous Waste

Wastes identified for storage at the TA-50-1 RLWTF CSA , Room 59, will include RCRA-regulated, mixed low-level, mixed TRU, and hazardous wastes. The LANL General Part A provides additional information on wastes to be stored. The design capacity of the TA-50-1 RLWTF CSA, Room 59, is 1,210 gal. The total volume of RCRA-regulated waste stored at any time at the TA-50-1 RLWTF and Decon Ops and TA-50-114 CSAs will not exceed 3,695 gal. plus 15 yd^3, which is the process design capacity for TA-50-1 CSAs specified in the LANL General Part A.

F.3.2 Decontamination and Closure of the TA-50-1 RLWTF CSA

To the extent possible, all contaminated equipment, structures, and floor or wall surfaces of the TA-50-1 RLWTF CSA, Room 59, that have come in contact with RCRA-regulated hazardous wastes will be decontaminated, recycled, or disposed of to meet the closure performance standard.

F.4 CLOSURE PROCEDURES FOR THE TA-50-1 DECON OPS CSA [20 NMAC 4.1, Subpart V, §264.112]

The TA-50-1 Decon Ops CSA consists of Rooms 34B/34C, 35, 36, and 38/38A, which are located in the basement of the southern portion of TA-50-1 (Figure F-2). The Decon Ops CSA will be used to store drums, SWBs, FRP boxes, steel B25 boxes, and containers of various sizes on wooden pallets or secondary containment pallets. Room 36 of this CSA will be used for storage of decommissioned radioactively contaminated glove boxes before removal of external lead shielding, and to store lead wastes in drums, FRP boxes, or other containers. More detailed information on the Decon Ops CSA is provided in Section 2.1 and Attachment G of the TA-50 Part B.

F.4.1 Description of Waste and Estimate of Maximum Inventory of Hazardous Waste

Wastes that will be stored in the Decon Ops CSA will include RCRA-regulated, mixed low-level, mixed TRU wastes, and hazardous wastes. The LANL General Part A provides additional information on wastes to be stored. The wastes stored at this CSA will be generated by research activities, material processing and recovery operations, decontamination and decommissioning operations, and environmental remediation/restoration activities conducted at various TAs throughout LANL. The design capacities of each of the rooms in the Decon Ops CSA are as follows:

- Room 34B - 275 gal. plus 15 yd^3
- Room 35 - 250 gal.
- Room 36 - 3,030 gal.
- Room 38/38A - 750 gal.

The total volume of RCRA-regulated waste stored at any time at the TA-50-1 RLWTF and Decon Ops and TA-50-114 CSAs will not exceed 3,695 gal. plus 15 yd^3, which is the process design capacity for TA-50-1 CSAs specified in the LANL General Part A.

F.4.2 Decontamination and Closure of the Decon Ops CSA

To the extent possible, all contaminated equipment, structures, and floor or wall surfaces of the Decon Ops CSA, or of individual room(s) within this CSA undergoing closure, that have come in contact with RCRA-regulated hazardous wastes will be decontaminated, recycled, or disposed of to meet the closure performance standard.

F.5 CLOSURE PROCEDURES FOR THE TA-50-114 CSA [20 NMAC 4.1, Subpart V, §264.112]

The TA-50-114 CSA is a storage locker located south of the eastern wing of TA-50-1 and east of TA-50-1, Room 34B (Figure F-2). This storage locker is a prefabricated, metal building anchored to a concrete pad. Its recessed floor provides secondary containment for wastes stored in the locker. More detailed information on waste management activities at TA-50-114 is provided in Section 2.1 and Attachment G of the TA-50 Part B.

F.5.1 Description of Waste and Estimate of Maximum Inventory of Hazardous Waste

The TA-50-114 CSA will be used by both the RLWTF and the Decon Ops Facility for storage of RCRA-regulated, mixed low-level, mixed TRU waste, and hazardous waste. The LANL General

Part A provides additional information on wastes to be stored. The wastes stored at this CSA will be generated by research activities, material processing and recovery operations, decontamination and decommissioning operations, and environmental remediation/restoration activities conducted at various TAs throughout LANL. The design capacity of the TA-50-114 CSA is 1,210 gal., or approximately 22 55-gal. drums. The total volume of RCRA-regulated waste stored at any time at the TA-50-1 RLWTF and Decon Ops and TA-50-114 CSAs will not exceed 3,695 gal. plus 15 yd^3, which is the process design capacity for TA-50-1 CSAs specified in the LANL General Part A.

F.5.2 Decontamination and Closure of the TA-50-114 CSA

To the extent possible, all contaminated equipment, structures, and floors and wall surfaces of the TA-50-114 CSA that have come in contact with RCRA-regulated hazardous wastes will be decontaminated, recycled, or disposed of to meet the closure performance standard.

F.6 CLOSURE PROCEDURES FOR THE TA-50-69 WCRRF INDOOR CSA [20 NMAC 4.1, Subpart V, §264.112]

The WCRRF Indoor CSA is located in Room 102/103 of TA-50-69 at the west end of TA-50 (Figure F-2). Wastes will be stored in drums of various sizes, FRP boxes, SWBs, and other miscellaneous containers. More detailed information on waste management activities conducted at this CSA is provided in Section 2.1 and Attachment G of the TA-50 Part B.

F.6.1 Description of Waste and Estimate of Maximum Inventory of Hazardous Waste

Wastes managed at the WCRRF Indoor CSA will include RCRA-regulated, mixed low-level wastes, mixed TRU wastes, and hazardous wastes. The LANL General Part A provides additional information on wastes to be stored. The wastes stored at this CSA will be generated through research activities, material processing and recovery operations, decontamination and decommissioning operations, and environmental remediation/restoration activities conducted at various TAs throughout LANL. The design capacity of the Indoor CSA is 1,500 gal. The total volume of RCRA-regulated waste in storage at any time at the WCRRF Indoor and Outdoor CSAs will not exceed 31,500 gal., which is the process design capacity specified in the LANL General Part A.

F.6.2 Decontamination and Closure of the WCRRF Indoor CSA

To the extent possible, all contaminated equipment, structures, and floor and wall surfaces in the WCRRF Indoor CSA that have come in contact with RCRA-regulated hazardous wastes will be decontaminated, recycled, or disposed of to meet the closure performance standard.

F.7 CLOSURE PROCEDURES FOR THE TA-50-69 WCRRF OUTDOOR CSA [20 NMAC 4.1, Subpart V, §264.112]

The WCRRF Outdoor CSA is located adjacent to TA-50-69 at the west end of TA-50 (Figure F-2). Wastes will be stored at this CSA on secondary containment pallets in transportainers or other structures designed to protect the waste from weather. The structures are located on an asphaltic concrete pad. The waste is stored in a structure before being moved into TA-50-69 for processing and storage. Wastes will be stored in drums of various sizes, FRP boxes, SWBs, and other miscellaneous containers. Additional information regarding the operation of this CSA is provided in Section 2.1 and Attachment G of the TA-50 Part B.

F.7.1 Description of Waste and Estimate of Maximum Inventory of Hazardous Waste

Wastes managed at the WCRRF Outdoor CSA will include RCRA-regulated, mixed low-level, mixed TRU, and hazardous wastes. The LANL General Part A provides additional information on wastes to be stored. The wastes stored at this CSA will be generated through research activities, material processing and recovery operations, decontamination and decommissioning operations, and environmental remediation/restoration activities conducted at various TAs throughout LANL. The design capacity of the WCRRF Outdoor CSA is 30,000 gal. The total volume of RCRA-regulated waste in storage at any time at the WCRRF Indoor and Outdoor CSAs will not exceed 31,500 gal., which is the process design capacity specified in the LANL General Part A.

F.7.2 Decontamination and Closure of the WCRRF Outdoor CSA

Closure of the WCRRF Outdoor CSA will require decontamination, recycling, or disposal of transportainers and other equipment used for waste storage and handling, decontamination or removal of contaminated portions of the asphaltic concrete pad underlying this CSA if shown to be contaminated, and sampling of surrounding soils showing evidence of contamination to determine their disposition. If decontamination is needed or selected as the method to meet the closure performance standard, samples of unused wash water solutions and used wash water will be collected and analyzed as described in the LANL General Part B, Appendix F, "Sampling and

Analytical Procedures," to establish contamination levels for the surfaces or materials being decontaminated, and to confirm that decontamination criteria have been achieved as described in Section F.1.13 of this attachment.

Secondary-containment pallets, transportainers, and other structures used to containerize and protect wastes at the WCRRF Outdoor CSA will be decontaminated, recycled, or disposed. Decontamination procedures will be similar for all portable equipment. If needed and selected as the method to meet the closure performance standard, secondary containment pallets and similar equipment will be washed and the used wash water collected in temporary bermed areas, sumps, or recesses. Collected wash water will be transferred into DOT-approved containers for sampling and analysis as described in the LANL General Part B, Appendix F, "Sampling and Analytical Procedures." After the results of sample analyses are received, the collected wash water will be disposed of in accordance with appropriate regulations and LANL policy. If regulated contaminants are present in collected wash water below established action levels, the wash water will be disposed of in LANL's industrial wastewater sewer system. Wash cycles will be repeated until the equipment is decontaminated in accordance with the decontamination verification criteria described in Section F.1.13 of this attachment.

Normal operations at the WCRRF Outdoor CSA will not expose outer surfaces of transportainers to waste contamination. Therefore, unless there is evidence of accidental outer surface contamination by spillage of regulated wastes either on the outside, or leakage from interior spills, the outer surfaces will only be sampled for radiological contamination. If outer surfaces of a transportainer(s) are found to be contaminated with RCRA-regulated constituents, those surfaces will be decontaminated following the procedures described for transportainer interior surfaces.

If necessary, the inside of the transportainers will be pressure washed or wiped down and rinsed with wash water. Portable berms will be used to provide containment for the wash water generated in this process. Collected wash water will be transferred into DOT-approved containers for sampling and analysis as described in the LANL General Part B, Appendix F, "Sampling and Analytical Procedures." If analyses indicate that the wash water is contaminated, the washdown procedure will be repeated and subsequent wash water samples will be collected and analyzed as before. Wash cycles and analyses will be repeated until the unit has been decontaminated to meet the closure performance standard. Used wash water that is nonhazardous and

nonradioactive will be disposed of in LANL's industrial wastewater sewer. Wash water that is found to be contaminated will be managed at an appropriate on-site facility.

Operational records (e.g., inspection findings, occurrence reports), visual inspection, and analytical data (if necessary) will be used to determine if the asphaltic concrete pad at the WCRRF Outdoor CSA was contaminated by RCRA-regulated hazardous waste management operations. Those areas suspected of being contaminated will either be removed from the pad, or washed with a wash water solution. Removal, containerization, and disposal of contaminated asphaltic concrete is likely to be the option of choice, however, if washdown procedures are selected as the management option, portable berms or other containment structures will be used to collect wash water from the pad locations being cleaned. The used wash water will be collected and transferred to DOT-approved containers, sampled, and analyzed in accordance with the procedures described in the LANL General Part B, Appendix F, "Sampling and Analytical Procedures." Used wash water that is nonhazardous and nonradioactive will be disposed of in the LANL industrial wastewater sewer. Wash water that is contaminated with regulated wastes will be managed at an appropriate on-site facility.

Used wash water from the WCRRF Outdoor CSA asphaltic concrete pad may exhibit anomalously high levels of organic compounds due to leaching of pad constituents by the washdown process. Record reviews (e.g., manufacturer's specifications, Material Safety Data Sheets) and additional analyses will be performed to determine whether leaching of organic constituents from the pad materials contributed to the concentration of organic compounds in the used wash water. If leaching from the asphaltic concrete material is determined to be the source of contamination, baseline concentrations of these constituents for unused wash water will be adjusted accordingly.

Record reviews and visual inspection of soils along the margins of the WCRRF Outdoor CSA will be used to identify areas where soil contamination from RCRA-regulated waste management activities could have occurred. Soil sampling will be conducted in any suspected contaminated areas and in those areas where the asphaltic concrete pad has been removed due to contamination with RCRA-regulated constituents. Before closure activities begin, soil samples will be collected from appropriate areas and analyzed in accordance with LANL General Part B, Appendix F, "Sampling and Analytical Procedures," to serve as background samples. A statistically representative number of soil samples will be collected from contaminated area(s) to a six-in.

depth. Samples will be equally spaced to ensure representative sampling of the contaminated area(s). If contamination resulting from container storage activities is discovered, the contaminated soils will be either (bio)remediated in place, or removed for proper disposal. The area will be resampled until the decontamination criteria described in Section F.1.13 of this attachment are achieved.

F.8 CLOSURE PROCEDURES FOR THE TA-50-1 ROOM 60A RLWTF CEMENTATION TREATMENT UNIT [20 NMAC 4.1, Subpart V, §264.112]

The TA-50-1 RLWTF cementation treatment unit is located in Room 60A of TA-50-1 (Figure F-2). This unit will be used to solidify, by cementation, RCRA-regulated, mixed low-level, and mixed TRU wastes generated by the RLWTF. The solidification process will be accomplished by mixing waste sludges with cement in a drum tumbler, as described in Section 2.2 and Attachment I of the TA-50 Part B.

F.8.1 Description of Waste and Estimate of Maximum Inventory of Hazardous Waste

Wastes that will be treated at the RLWTF cementation treatment unit will include RCRA-regulated, mixed low-level, and mixed TRU wastes generated by the RLWTF at TA-50. The wastes treated by this unit will consist of sludges that will be mixed with cement, other solids, and other liquids in drums where the mixture will solidify. The drum in which mixing and solidification of a waste occurs will also serve as the container in which that treated waste is disposed. The maximum inventory of RCRA-regulated waste stored at any time at the RLWTF cementation treatment unit will not exceed 660 gal.

F.8.2 Decontamination and Closure of the RLWTF Cementation Treatment Unit

All mixed wastes present at the RLWTF cementation treatment unit will be removed before closure activities begin. These wastes will be transported in compliance with applicable regulations and LANL policy to appropriate on- or off-site storage, treatment, or disposal areas.

Dismantling and decontamination, recycling, or disposal of the cementation treatment unit and adjacent areas will be accomplished by qualified personnel, as described in the LANL General Part B, Appendix F, "Closure Plan." All equipment associated with the cementation treatment unit that has come in direct contact with mixed waste will be disposed of as mixed waste, decontaminated and reused, or decontaminated and disposed of as solid or radioactive-only

waste. The treatment unit equipment components and plumbing that will be disposed of will be dismantled and placed in appropriate containers. Oversized pieces of equipment will be wrapped in plastic sheeting before removal.

If decontamination of the cementation treatment unit equipment is deemed necessary, this procedure will be performed in Room 60A of the RLWTF, which is equipped with appropriate containment capabilities to collect used wash water. Equipment components and plumbing may be decontaminated by rinsing with water and detergent, as described in the LANL General Part B, Appendix F, "Closure Plan." Decontamination will be performed by qualified and properly trained personnel in accordance with procedures described in the LANL General Part B, Appendix F, "Closure Plan."

Decontamination of equipment components will be demonstrated by analyzing samples of the final rinsate water in accordance with procedures described in the LANL General Part B, Appendix F, "Sampling and Analytical Procedures." If sampling indicates that the decontamination criteria described in Section F.1.13 of this attachment have not been achieved, washdown procedures will be repeated and additional samples will be collected. The process will be repeated until the decontamination criteria described in Section F.1.13 are achieved, or until alternative closure criteria meeting the closure performance standard are identified.

Wastes generated through the closure of the RLWTF cementation treatment unit will be sampled and analyzed in accordance with the procedures described in the LANL General Part B, Appendix F, "Sampling and Analytical Procedures." These wastes will be transported to appropriate on- or off-site facilities for treatment, storage, or disposal, in compliance with applicable regulations and LANL policy.

F.9 CLOSURE PROCEDURES FOR THE TA-50-37 ETU [20 NMAC 4.1, Subpart V, §264.112]

The ETU will be located in Room 117 of TA-50-37 (Figure F-2). As described in Section 2.2 of the TA-50 Part B, this treatment unit will consist of electrochemical cells and auxiliary equipment used to treat RCRA-regulated, mixed low-level, and mixed TRU wastes. The ETU will be located adjacent to the CSA in Room 117 of TA-50-37. Therefore, most of the wastes subject to the ETU operation will be stored in an area subject to closure, as described in Section 2.0 of the TA-50 Part B.

F.9.1 Description of Waste and Estimate of Maximum Inventory of Hazardous Waste

Wastes treated at the TA-50-37 Room 117 ETU will include RCRA-regulated, hazardous, mixed low-level, and mixed TRU wastes containing metals, cyanides, nitrates, sulfides, and low concentrations of organic constituents. These waste constituents will be removed from incoming untreated wastes by electrochemical extraction, decomposition, precipitation, and oxidation as a result of the treatment process, resulting in various treatment residues and a wastewater solution containing only low-level radioactivity. The maximum inventory of RCRA-regulated wastes located with the ETU at any time will not exceed 600 gal.

F.9.2 Decontamination and Closure of the TA-50-37 ETU

All RCRA-regulated wastes present at the ETU will be removed before closure activities begin. These wastes will be transported in compliance with applicable regulations and LANL policy to appropriate on-site treatment, storage, or disposal areas.

Dismantling and decontamination, recycling, or disposal of the ETU and adjacent areas will be accomplished by qualified personnel, as described in the LANL General Part B, Appendix F, "Closure Plan." All equipment associated with the ETU that has come in direct contact with mixed waste will be disposed of as mixed waste, decontaminated and reused, or decontaminated and disposed of as solid or radioactive-only waste. The ETU equipment components and plumbing that will be disposed of will be dismantled and placed in appropriate containers. Oversized pieces of equipment will be wrapped in plastic sheeting before removal.

If decontamination of ETU equipment is deemed necessary, this procedure will be performed in Room 117 of the TA-50-37, which is equipped with appropriate containment capabilities to collect used wash water. Equipment components and plumbing may be decontaminated by rinsing with water, rinsing with a dilute acid solution to dissolve any precipitated residuals, and final rinsing with water. Decontamination will be performed by qualified and properly trained personnel in accordance with procedures described in the LANL General Part B, Appendix F, "Closure Plan."

Decontamination of equipment components will be demonstrated by analyzing samples of the final rinsate water in accordance with procedures described in the LANL General Part B, Appendix F, "Sampling and Analytical Procedures." If sampling indicates that the decontamination criteria described in Section F.1.13 of this attachment have not been achieved, washdown procedures

will be repeated and additional samples will be collected. The process will be repeated until the decontamination criteria described in Section F.1.13 are achieved, or until alternative closure criteria meeting the closure performance standard are identified.

Wastes generated through the closure of the TA-50-37 ETU will be sampled and analyzed in accordance with the procedures described in the LANL General Part B, Appendix F, "Sampling and Analytical Procedures." These wastes will be transported to appropriate on- or off-site facilities for treatment, storage, or disposal, in accordance with applicable regulations and LANL policy.

F.10 REFERENCES

EPA. 1997 and all approved updates. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*. SW-846, Office of Solid Waste and Emergency Response, U.S. Environmental Protection Agency, Washington, D.C.

LANL. 1998a. *Los Alamos National Laboratory General Part A Permit Application.* Los Alamos, New Mexico, Los Alamos National Laboratory.

LANL. 1998b. *Los Alamos National Laboratory General Part B Permit Application.* Los Alamos, New Mexico, Los Alamos National Laboratory.

Table F-1. Schedule for TA-50 Closure Activities

ACTIVITY	DAY - 45 - 30 0 60 90 180
Final receipt of waste	----------X
Notify the NMED of intent to begin closure	------X
Remove or treat all wastes	----------X
Begin and conduct final closure activities	X----------X
Remove and decontaminate equipment	
Decontaminate structures	
Sample and analyze	
Verify decontamination of equipment, structures, and soils (if applicable)	
Submit final report to the NMED	X

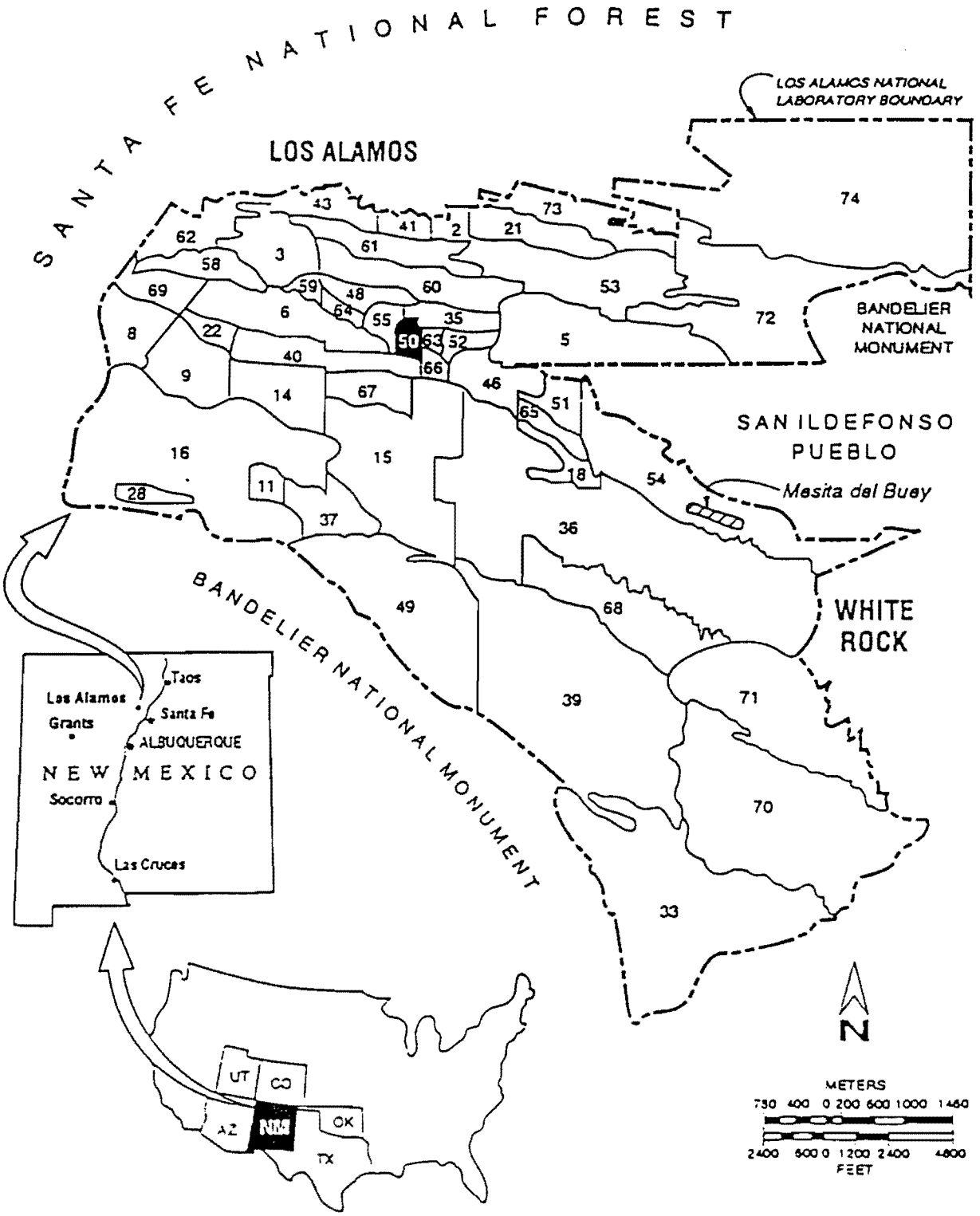


Figure F-1. TA-50 at Los Alamos National Laboratory

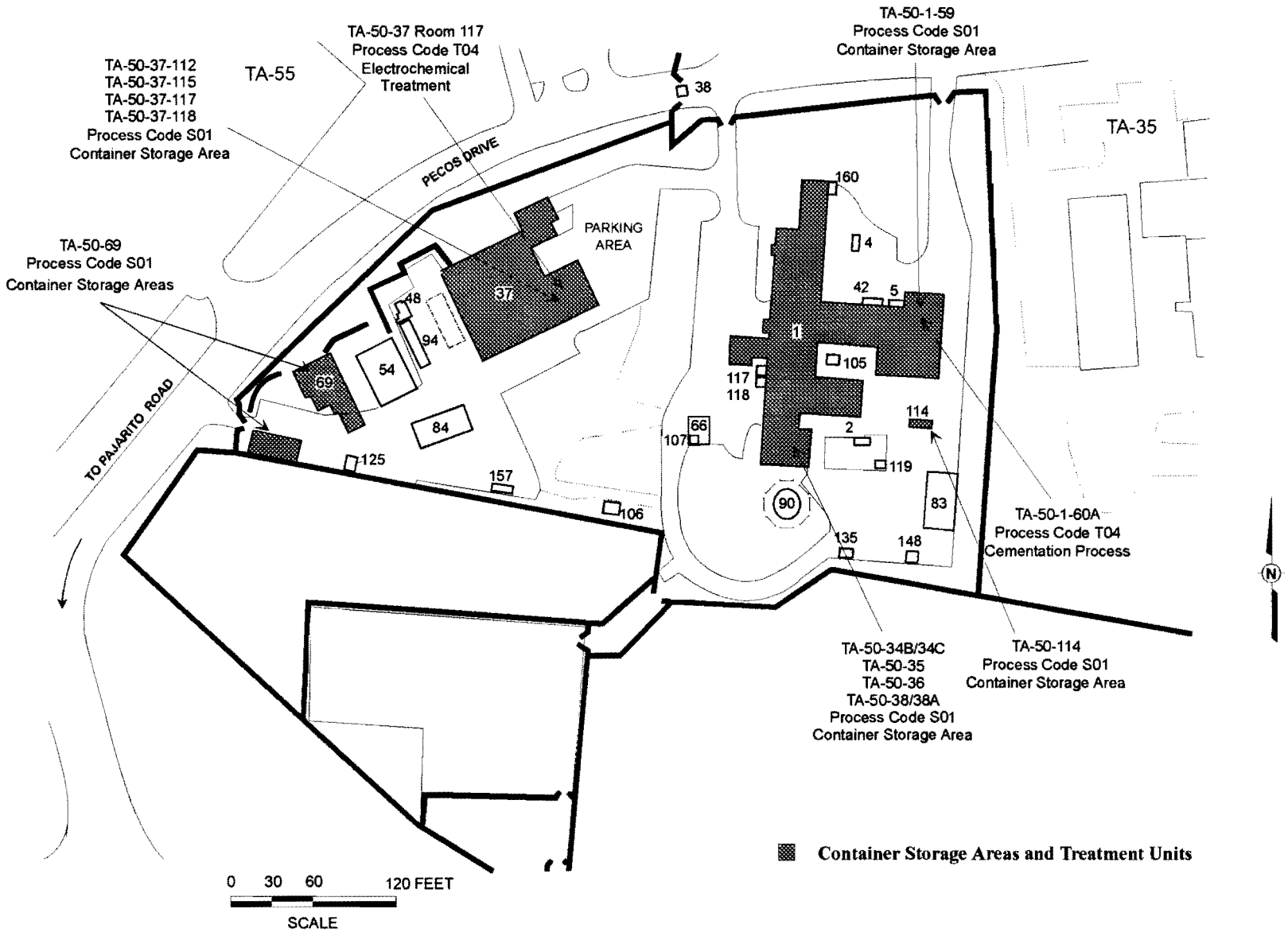


Figure F-2. TA-50 Container Storage Areas and Treatment Units

ATTACHMENT G

CONTAINER MANAGEMENT

TABLE OF CONTENTS

LIST OF FIGURES iii
LIST OF ABBREVIATIONS/ACRONYMS iv

G.1 USE AND MANAGEMENT OF CONTAINERS G-1
G.1.1 Description of Containers G-1
G.1.1.1 Standard 55-Gallon Drums G-1
G.1.1.2 Fiberglass-Reinforced Plywood Boxes G-1
G.1.1.3 Standard Waste Boxes G-2
G.1.1.4 Overpacks G-2
G.1.2 TA-50 Container Management Practices G-2
G.1.2.1 Storage Configuration G-2
G.1.2.2 Movement of Containers G-3
G.1.2.3 Waste Container Labeling G-3
G.1.3 Ignitable, Reactive, or Incompatible Waste [20 NMAC 4.1, Subpart IX, §270.14(b)(9) and §§270.15(c) and (d); and Subpart V, §264.17, §264.176, and §264.177] G-4
G.1.4 Containment G-5

G.2 PROCEDURES TO PREVENT HAZARDS [20 NMAC 4.1, Subpart IX, §270.14(b)(8), and Subpart V, Part 264 Subpart C] G-6
G.2.1 TA-50 - Runoff and Runon Controls [20 NMAC 4.1, Subpart V, §264.31 and §264.175(b); and Subpart IX, §§270.15(a)(4) and (5)] G-6
G.2.1.1 Indoor CSAs G-7
G.2.1.2 Outdoor CSAs G-7
G.2.2 TA-50 - Impact to Groundwater [20 NMAC 4.1, Subpart V, §264.31] G-8
G.2.3 TA-50 - Air Emission Standards [20 NMAC 4.1, Subpart V, §§264.31 and 264.179] G-8
G.2.4 TA-50 - Power Failure [20 NMAC 4.1, Subpart IX, §270.14(b)(8)] G-9
G.2.5 TA-50 - Required Equipment [20 NMAC 4.1, Subpart V, §264.32] G-10
G.2.5.1 TA-50 - Audible Alarm Systems G-10
G.2.5.2 TA-50 - Emergency Fire Equipment G-10
G.2.5.3 TA-50 - Spill Control Equipment G-11
G.2.5.4 TA-50 - Personal Protective Equipment [20 NMAC 4.1, Subpart V, §264.32] G-12
G.2.5.5 TA-50 - Personnel Decontamination Equipment G-12
G.2.5.6 TA-50 - Testing and Maintenance of Equipment [20 NMAC 4.1, Subpart V, §264.33] G-12

G.3 UNIT-SPECIFIC CONTAINER MANAGEMENT PRACTICES G-12
G.3.1 Unit-Specific Storage Configuration G-12
G.3.1.1 TA-50-37 CSA G-12
G.3.1.2 RLWTF Storage Configuration G-13
G.3.1.3 Decontamination Operations Storage Configuration G-13
G.3.1.4 TA-50-114 Storage Configuration G-13
G.3.1.5 TA-50-69 Waste Characterization, Reduction, and Repackaging Facility Indoor CSA Storage Configuration G-13
G.3.1.6 TA-50-69 WCRRF Outdoor CSA Storage Configuration G-14

TABLE OF CONTENTS
(Continued)

G.3.2 Unit-Specific Movement of Containers G-14
G.3.2.1 TA-50-37 CSA G-14
G.3.2.2 TA-50-1 RLWTF CSA G-15
G.3.2.3 TA-50-1 Decon Ops Facility G-15
G.3.2.4 TA-50-114 Container Storage Area G-16
G.3.2.5 TA-50-69 WCRRF G-16

G.4 UNIT-SPECIFIC CONTAINMENT AND OVERFLOW CONTROLS G-16
G.4.1 TA-50-37 CSA G-16
G.4.1.1 Room 112 . . . . . G-16
G.4.1.2 Room 115 . . . . . G-17
G.4.1.3 Room 117 . . . . . G-17
G.4.1.4 Room 118 . . . . . G-17
G.4.2 RLWTF CSA G-18
G.4.3 Decon Ops Facility CSA G-18
G.4.3.1 Room 34B/34C G-18
G.4.3.2 Room 35 . . . . . G-18
G.4.3.3 Room 36 . . . . . G-18
G.4.3.4 Room 38/38A G-19
G.4.4 TA-50-114 CSA G-20
G.4.5 TA-50-69 WCRRF Indoor CSA G-20
G.4.5.1 Room 102 . . . . . G-20
G.4.5.2 Room 103 . . . . . G-21
G.4.6 TA-50-69 WCRRF Outdoor CSA G-22

G.5 UNIT-SPECIFIC PROCEDURES TO PREVENT HAZARDS G-22
G.5.1 Fire Protection Systems G-22
G.5.2 Personal Protective Equipment G-23

G.6 REFERENCES G-24

LIST OF FIGURES

FIGURE NO.	TITLE	PAGE
G-1	TA-50-37 Container Storage Area and Treatment Unit Evacuation Route and Emergency Equipment	G-25
G-2	TA-50-1 RLWTF Container Storage Area and Treatment Unit Emergency Equipment	G-26
G-3	TA-50-1 Decontamination Operations Facility and TA-50-114 Container Storage Areas Emergency Equipment	G-27
G-4	WCRRF TA-50-69, Indoor and Outdoor Container Storage Areas and Emergency Equipment	G-28

LIST OF ABBREVIATIONS/ACRONYMS

20 NMAC 4.1	*New Mexico Administrative Code*, Title 20, Chapter 4, Part 1
CAM	continuous air monitor
CSA	container storage area
Decon Ops	Decontamination Operations
DOT	U.S. Department of Transportation
EPA	U.S. Environmental Protection Agency
FRP	fiberglass-reinforced plywood
HEPA	high-efficiency particulate air
LACFD	Los Alamos County Fire Department
LANL	Los Alamos National Laboratory
MDA	Material Disposal Area
MSDS	material safety data sheet
NFPA	National Fire Protection Association
NMED	New Mexico Environment Department
NPDES	National Pollutant Discharge Elimination System
PPE	personal protective equipment
RCRA	Resource Conservation and Recovery Act
RCT	radiological control technician
RLWTF	Radioactive Liquid Waste Treatment Facility
RTR	real-time radiography
SPCC	Spill Prevention Control and Countermeasure
SWB	standard waste box
TA	Technical Area
TRU	transuranic
WCRRF	Waste Characterization, Reduction, and Repackaging Facility

ATTACHMENT G
CONTAINER MANAGEMENT

G.1 USE AND MANAGEMENT OF CONTAINERS

This attachment specifies container management practices and procedures to prevent hazards for each TA-50 container storage area (CSA) and treatment unit and describes containers to be staged or stored at the Los Alamos National Laboratory (LANL) Technical Area (TA)-50 hazardous and waste management units. This information fulfills the requirements of the *New Mexico Administrative Code*, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart V, Part 264, Subpart I (as revised January 1, 1997 [1-1-97]).

G.1.1 Description of Containers

Resource Conservation and Recovery Act (RCRA)-regulated mixed low-level and mixed transuranic (TRU) wastes, hazardous waste, and non-RCRA-regulated low-level and TRU wastes will be staged or stored at the CSAs addressed in the TA-specific Part B Permit Application for TA-50 (hereinafter referred to as the TA-50 Part B). Containers that will be used to store these wastes include 5-, 30-, 55-, 83-, 85-, and 110-gal. steel drums; standard fiberglass-reinforced plywood (FRP) boxes; steel standard waste boxes (SWBs); metal overpack boxes; steel B25 boxes; various small containers; and oversized, irregularly-shaped plain plywood and FRP boxes. Table 2-2 of Section 2.0 of the TA-50 Part B lists container types for each CSA and treatment unit. Some mixed waste containers are vented and have carbon composite filters that allow gases (e.g., hydrogen), if present, to be released, but prevent the release of airborne particulates.

G.1.1.1 Standard 55-Gallon Drums

The most common drum to be used for storage is the 55-gal. drum. The standard 55-gal. drum in use is constructed of 16-gauge steel, has an approximate 22-in. inner diameter, and a usable inside height of approximately 33 in. Standard 55-gal. drums meet the U.S. Department of Transportation (DOT) requirements.

G.1.1.2 Fiberglass-Reinforced Plywood Boxes

Standard-size FRP boxes used for storage measure 4 ft by 4 ft by 8 ft. The outer surface of the FRP boxes is coated with a 0.06- to 0.12-in.- (60- to 120-mil)-thick layer of epoxy-impregnated

fiberglass. At times, nonstandard-size FRP boxes are designed and constructed to contain odd-shaped or oversized waste.

G.1.1.3 Standard Waste Boxes

Two different types of SWBs will be used for storage. One type is constructed of 14-gauge steel and has rounded ends. It measures 52 in. by 69 in. by 36 in., has continuous welds on all four sides and on the bottom, and has a lid with a closed-cell neoprene gasket that is secured in place with bolts. The second type of SWB is also constructed of 14-gauge steel, but is rectangular in shape. Its dimensions are 56 in. by 72 in. by 37 in. It has continuous welds on all four sides and on the bottom and a lid that is clamped and welded in place.

G.1.1.4 Overpacks

The metal overpack containers vary in size and have continuous welds both inside and outside on all four sides and on the bottom. The lid has a gasket made of closed-cell neoprene and can be strapped closed or clipped down. The metal overpacks are elevated by design with risers for ease of handling. B25 overpacks are constructed of 16-gauge welded carbon steel, are a standard size of 4 ft by 4 ft by 6 ft, and are elevated by design. All B25 overpacks have a rubber gasket with either a bolt-on, clip-pinned, or hinged lid.

Overpacks may be used when a container's integrity is suspect, or if cracks or leaks are observed. The 85-gal. drums are commonly used to overpack 55-gal. drums, and 110-gal. drums are used to overpack 85-gal. drums. The 85-gal. overpacks are constructed of 16-gauge steel, at a minimum. Universal sorbent is generally added to the interior of the overpack. The lid is secured to the overpack with a 12-gauge bolt ring complete with a 5/8-in. closure bolt. Rounded-end SWBs will be used to overpack drums of various sizes that contain mixed TRU waste. Metal boxes will be used as overpacks for FRP boxes.

G.1.2 TA-50 Container Management Practices

G.1.2.1 Storage Configuration

Any waste stored will be positioned in an area of the room that is removed from the location of worker activity or traffic that is unrelated to the management of the waste itself. Security posts and a chain will be used to alert workers to the presence of waste containers. To facilitate container movement, storage, and inspection, all drums holding wastes that do not contain free liquids will

be stored on elevation devices. Storage configurations for each CSA are described in Section G.3.1.

G.1.2.2 Movement of Containers

All waste received at TA-50 waste management units (six CSAs and two treatment units) will be manifested and transported from LANL waste generator or storage locations in accordance with applicable DOT regulations. Wastes will be transported to TA-50 on Pajarito Road, Pecos Drive, and Mesita del Buey Road. Lesser-used traffic routes may include Diamond Drive and West Jemez Road (State Road 501). Waste containers will be moved minimal distances on road surfaces within TA-50. LANL procedures establish vehicle and operator qualifications and provide specifications for loading and transporting waste. Waste received at TA-50 meets site-specific waste acceptance criteria to ensure wastes and their containers are appropriate for use in the various CSAs and treatment units. The waste acceptance criteria is established to ensure wastes destined for TA-50 are identified as to form, packaged in DOT-approved containers appropriate for the waste, and markings and labels required by applicable U.S. Environmental Protection Agency (EPA) and DOT regulations are used. In addition, waste acceptance criteria require waste containers to be in good condition without signs of corrosion or structural defects.

TA-50 personnel will use proper handling equipment, appropriate to a container's size and weight, to help prevent hazards while moving containers within the CSAs and treatment units. Equipment used at each CSA and treatment unit for moving containers is described in Section G.3.2. All damaged containers (e.g., severely corroded drums) will be repaired or overpacked, or the wastes repackaged in new containers before being staged at the CSAs.

G.1.2.3 Waste Container Labeling

All waste containers will be marked with a bar code identification number that corresponds to a number in LANL's waste management database. This database is composed of information supplied by the waste generator before storage and by waste management personnel after the waste has been received. This information includes the name and location of the waste generator, waste characterization information, packaging, waste certification, receiving site, and storage location. All containers that hold a RCRA-regulated hazardous or mixed waste will be labeled with a hazardous waste label that lists the appropriate EPA hazardous waste number(s). Containers holding mixed waste will also be marked with a radioactive material tag. All containers will be

clearly marked to identify the contents and the date each period of accumulation begins. In the event that a container is repackaged, repackaging personnel will ensure the new container is properly labeled. When waste containers are moved during storage, their waste package identification numbers (bar codes), origin and destination, and package changes (e.g., overpack volume, overpack dimensions) will be documented. The waste management database will then be updated to reflect any new information.

G.1.3 Ignitable, Reactive, or Incompatible Waste [20 NMAC 4.1, Subpart IX, §270.14(b)(9) and §§270.15(c) and (d); and Subpart V, §264.17, §264.176, and §264.177]

To prevent accidental ignition or reaction of ignitable, reactive, or incompatible waste at the TA-50 CSAs and treatment units, TA-50 personnel will manage hazardous and mixed waste using the precautions described in this section.

If containerized ignitable and/or reactive wastes (e.g., discarded materials contaminated with ignitable spent solvents, reactive metal debris) are stored at any of the CSAs, the containers will be located at least 50 ft from the unit property line at all times (refer to Map 2 of the *Los Alamos National Laboratory General Part A Permit Application* [LANL 1998a]). All ignitable and reactive wastes will be protected from sources of ignition or reaction, in accordance with 20 NMAC 4.1, Subpart V §264.17(a)[1-1-97]. Policies and controls are in place at TA-50 that minimize the possibility of accidental ignition. Most mechanical equipment operated within the areas is grounded to minimize the potential for sparking by dissipating static charges. In addition, conduit boxes and other utilities in TA-50-37, Room 117 are explosion-proof. Smoking is not allowed in or near the CSAs. "No Smoking" signs are conspicuously placed wherever there is a potential hazard from ignitable or reactive waste, as required by 20 NMAC 4.1, Subpart V, §264.17(a)[1-1-97]. Together, these measures meet the requirements of 20 NMAC 4.1, Subpart V, §§264.17(a) and (b), and §264.176 [1-1-97].

Incompatible wastes, if any, will be segregated during storage. In addition, incompatible wastes will not be mixed, and waste will not be placed in a container that previously held an incompatible waste, as required by 20 NMAC 4.1, Subpart V, §§264.177(a) and (b), and Subpart IX, §270.15(d)[1-1-97]. Incompatible liquid-bearing solid wastes (e.g., dewatered sludges) will be stored on secondary containment pallets or devices, or will be segregated by storage over separate secondary containment areas to meet the requirements of 20 NMAC 4.1, Subpart V,

§264.177(c)[1-1-97]. Pursuant to the requirements of 20 NMAC 4.1, Subpart V, §264.172 [1-1-97], only containers constructed of or lined with materials that will not react with and are otherwise compatible with the waste to be stored will be used for storage at the CSAs addressed in this TA-50 Part B.

Waste management database information and results of waste characterization activities provide documentation of compliance with the requirements for ignitable, reactive, or incompatible wastes, pursuant to 20 NMAC 4.1, Subpart V, §264.17(c)[1-1-97]. Wastes carrying the EPA Hazardous Waste Numbers F020, F021, F022, F023, F026, or F027 will not be stored in TA-50 CSAs; therefore, the requirements of 20 NMAC 4.1, Subpart V, §264.175(d)[1-1-97] are not applicable.

G.1.4 Containment

To demonstrate compliance with 20 NMAC 4.1, Subpart IX, §270.15(b)(1)[1-1-97], information documented in LANL's waste management databases will be used to initially verify the absence of free liquids in containers. In addition, suspect containers received at the TA-50 CSAs will have been characterized with real-time radiography (RTR) to verify the presence or absence of free liquids within the container. The FRP boxes that hold glove boxes do not contain any free liquids. Any free liquids discovered during past inspections would have been removed from the FRP boxes at TA-54, Area G, or elsewhere, before any transport or continued storage. FRP boxes that have poor structural integrity are overpacked in metal containers to facilitate safe transport and storage.

Containers holding suspect or known liquids will be stored over secondary containment or on secondary containment pallets or devices. FRP boxes, SWBs, and steel B25 boxes are elevated by design. The secondary containment areas, pallets, or devices used in the TA-50 CSAs will be constructed of impervious, corrosion-resistant materials compatible with the wastes, and will have the capacity to contain at least 10 percent of the total volume of the potential liquid-bearing containers or the volume of the largest potential liquid-bearing container, whichever is greater. Containers will be placed on elevated grates within these pallets or devices to prevent contact with potentially accumulated liquids.

Elevated containers, secondary containment pallets or devices, and the steel grate floor over the recessed secondary containment areas provide protection from potential contact with standing

liquids that could be introduced through fire suppression activities. Together, these waste management practices and design features satisfy the requirements of 20 NMAC 4.1, Subpart IX, §270.15(b)(2) and Subpart V, §264.175(c)[1-1-97]. For the CSAs that will store wastes that may contain free liquids, secondary containment systems are described in Section G.4.

G.2 PROCEDURES TO PREVENT HAZARDS [20 NMAC 4.1, Subpart IX, §270.14(b)(8), and Subpart V, Part 264 Subpart C]

In accordance with 20 NMAC 4.1, Subpart V, Subpart C [1-1-97]; and Subpart IX, §270.14(b)(8)[1-1-97], the TA-50 CSAs and treatment units addressed in this TA-50 Part B are designed and operated to minimize the possibility of fire, explosion, or unplanned releases of hazardous constituents to any environmental medium. Sections G.2.1 through G.2.5 describe the general preventive procedures, structures, and equipment at the TA-50 hazardous and mixed waste management areas to meet these requirements. Any information specific to each CSA or treatment unit is provided in Section G.5. Adherence to the procedures and proper use of the structures and equipment will help to prevent hazards and exposure to personnel and releases to the environment.

G.2.1 TA-50 – Runoff and Runon Controls [20 NMAC 4.1, Subpart V, §264.31 and §264.175(b); and Subpart IX, §§270.15(a)(4) and (5)]

Runoff from the TA-50 hazardous and mixed waste management areas to other areas or to the environment will be prevented. Engineered secondary containment is present or secondary containment pallets or devices are provided in each area where potential liquid-bearing containers may be stored. All secondary containment systems are sufficient to contain at least 10 percent of the volume of potential liquid-bearing containers or the volume of the largest container, whichever is greater, in accordance with the requirements of 20 NMAC 4.1, Subpart V, §264.175(b)(3) [1-1-97].

As a practice at TA-50, runoff and erosion controls are designed to guide surface water away from waste management activities and into the natural drainages. Storm water runoff from TA-50 feed to Mortandad Canyon. Treated liquid effluent is also discharged to Mortandad Canyon from TA-50-1. The treated liquid is piped to tanks inside TA-50-2 prior to release to Mortandad Canyon. The effluent is subject to full chemical analysis. Should this analysis show that a violation of the CWAs NPDES discharge parameters, LANL personnel will notify the New Mexico Environment Department (NMED).

G.2.1.1 Indoor CSAs

For the indoor CSAs, runon into the CSA from outdoors is not likely to occur. Positive surface drainage will direct potential runon away from each CSA. Map 3 of the General Part A (LANL 1998a) shows the contours and surface drainage around TA-50. The northern and eastern portions of TA-50 drain mainly to an unlined channel on the boundary between TA-50 and TA-35 (east of TA-50), although some flow diverges into a shallow channel running southward between TA-50-37 and TA-50-1.

To meet the requirements of 20 NMAC 4.1, Subpart IX, §270.15(a)(5)[1-1-97], any liquids that may accumulate within the self-containment pallets or devices, trenches and pits, or glove box enclosure will be removed as soon as possible to prevent overflow. The accumulated liquid will be sampled and analyzed. Depending upon the volume of the accumulated liquid, a high-efficiency particulate air (HEPA) vacuum, portable pump, universal sorbents, and/or other methods suitable for retrieval will be used to remove the liquid. Accumulated liquids are removed as soon as possible. The collected liquids and/or sorbents will be transferred to compatible containers, which will be stored temporarily at the respective CSA pending sample analysis, which will dictate how the wastes will be managed. Should a spill occur during waste handling activities, the spill and/or residual material will be sampled and managed in accordance with the contingency plan (Appendix E of the LANL General Part B).

G.2.1.2 Outdoor CSAs

Runon into the outdoor CSAs (i.e., TA-50-114 CSA and TA-50-69 Outdoor CSA) is prevented because both CSAs are elevated by design. The Waste Characterization, Reduction, and Repackaging Facility (WCRRF) Outdoor CSA is sloped sufficiently to prevent the accumulation of precipitation. In addition, drainage swales located in the vicinity of the WCRRF Outdoor CSA divert storm water away from the CSA. One drainage swale is located just south of the WCRRF Outdoor CSA, between the CSA and material disposal area (MDA)-C. A second drainage swale is located on the west side of the WCRRF Outdoor CSA between Pecos Drive and the TA-50 fence line. Inspections of TA-50 waste management facilities, areas that may be prone to soil erosion, and drainage control structures are conducted as described in the *Storm Water Pollution Prevention Plan for Technical Area 50 Waste Treatment Facilities* (LANL 1993). Together, the

containment design and operations meet the requirements of 20 NMAC 4.1, Subpart V, §264.175(b), and Subpart IX, §270.15(a)(4)[1-1-97].

Surface runoff (e.g., precipitation) at the WCRRF Outdoor CSA will be managed according to the Clean Water Act and National Pollutant Discharge Elimination System (NPDES) criteria. At the WCRRF Outdoor and Indoor CSAs, liquids that may accumulate in the self-containment pallets as a result of leaks or spills will be collected into a container using a portable pump and/or sorbents, depending on the volume of accumulated liquid. Accumulated liquids will be removed as soon as possible, sampled and analyzed in accordance with the LANL General Part B, Appendix E, Contingency Plan.

G.2.2 TA-50 – Impact to Groundwater [20 NMAC 4.1, Subpart V, §264.31]

It is not anticipated that there will be any impact to groundwater or other water supplies as a result of waste-handling operations at TA-50 CSAs. With the exception of the WCRRF Outdoor CSA and TA-50-114, all other CSAs are located inside buildings. Any material spilled during waste management activities will be remediated pursuant to the LANL General Part B, Appendix E, Contingency Plan, as part of normal operations. Any material spilled from waste management activities associated with the WCRRF Outdoor CSA will also be remediated pursuant to the LANL General Part B, Appendix E, Contingency Plan.

The depth to groundwater at TA-50 is approximately 1,000 ft (Purtymun and Johansen 1974). Geologic units underlying TA-54 (located 4 miles east of TA-50) include layers of unsaturated volcanic tuff and ash, the moisture content of which ranges from 0.2 to 2.0 percent by weight (IT Corporation 1987). Because the moisture content is insufficient for moisture migration through the Bandelier Tuff, no impact to groundwater is expected.

All water supply lines at TA-50 are under pressure and are equipped with backflow prevention devices to prevent contamination of these lines during emergencies. Therefore, no impact to water supplies is expected.

G.2.3 TA-50 – Air Emission Standards [20 NMAC 4.1, Subpart V, §§264.31 and 264.179]

Hazardous wastes treated, stored, or disposed of in tanks, surface impoundments, or containers are subject to the 20 NMAC 4.1, Subpart V, Part 264, Subpart CC standards for volatile organic

emissions after October 6, 1996. Subpart CC standards for containers require that containers be covered so that there are no detectable emissions. These standards are not applicable to containers of waste with less than 500 parts per million by weight (ppmw) average volatile organics concentration, containers of less than a 0.1-m^3 (approximately 26-gal.) capacity, and containers that have received waste before December 6, 1995. Currently, pursuant to §264.1080(b)(6), the requirements of Subpart CC do not apply to waste management units that are used solely for managing mixed waste.

The TA-50-1 Radioactive Liquid Waste Treatment Facility (RLWTF) CSA (Room 59) is used exclusively to store mixed low-level and mixed TRU waste; therefore, 20 NMAC 4.1, §264.1080 standards are not applicable. The CSAs at TA-50-1, TA-50-114, and TA-50-69 (Indoor and Outdoor CSAs) are used primarily to store mixed low-level wastes. They may also be used to store hazardous waste.

Containers of hazardous waste that are less than or equal to 0.45 m^3 (approximately 119-gal.) capacity and meet DOT specifications under 49 CFR Part 178 will be covered while they are in storage so that there are no detectable emissions. All other containers subject to Subpart CC requirements will be inspected and monitored, as required at 40 CFR §264.1088(b).

G.2.4 TA-50 – Power Failure [20 NMAC 4.1, Subpart IX, §270.14(b)(8)]

In the event of a power failure at a TA-50 hazardous and mixed waste management unit, operations would cease and personnel would exit the affected building. Operations at the affected TA-50 hazardous and mixed waste areas would be discontinued temporarily if electrical power was not restored quickly, or if container handling equipment failed. A power failure or equipment failure would not affect containment within the TA-50 CSAs or treatment units.

Electrical power is supplied to TA-50-37 and TA-50-69 by a 13.4-kV overhead distribution line through an underground conduit to an on-site substation that provides distribution to the building. Supplied power is used to operate continuous air monitors (CAMs) and other electrical equipment in the buildings. Additionally, an uninterruptable power source has been installed to operate the CAMs in the event of a power outage. Electrical power is supplied to TA-50-1 by a 13.2-kV aerial transmission line extending along Pecos Drive.

G.2.5 TA-50 – Required Equipment [20 NMAC 4.1, Subpart V, §264.32]

Subpart V, §264.32 of 20 NMAC 4.1 [1-1-97] requires specific equipment to be in place in hazardous waste facilities. This equipment includes an internal communications or alarm system; a telephone or two-way radios; portable fire extinguishers, fire control equipment, and water of sufficient volume and pressure for fire suppression; spill control equipment; and decontamination equipment. The Contingency Plan, Attachment E of this TA-50 Part B, provides a summary list of the emergency equipment available and locations at TA-50. Figures G-1 through G-4 of this section depict TA-50 emergency equipment locations.

G.2.5.1 TA-50 – Audible Alarm Systems

Whenever waste is to be handled at any of the hazardous and mixed waste management areas at TA-50, all personnel involved will have immediate access to an internal alarm or emergency communication device, either directly or through visual or voice contact with another individual in accordance with 20 NMAC 4.1, Subpart V, §264.34 [1-1-97]. In the event of an emergency, this communication equipment will allow personnel to contact the operating group management, the Emergency Management and Response Office, and/or the Central Alarm Station operator (Contingency Plan, Appendix E of the LANL General Part B).

Each building at TA-50 described in this TA-50 Part B is equipped with an audible alarm system to alert personnel to evacuate the area. The alarm systems may be activated by using fire alarm pull stations. Each building also has a public address system for announcing fires or evacuations and telephones with paging capabilities located throughout the buildings. Paging telephones are used to page on-site personnel and may be used in the event of an emergency to communicate the location and nature of hazardous conditions to personnel in the area. The alarm system is interrupted when the paging telephone system is activated to allow personnel to hear the announcement. Personnel can also use these phones to summon assistance from local emergency response teams in case of emergency. Personnel may carry pagers, two-way radios, and/or cellular telephones so they can contact or be contacted by on-site and LANL emergency support personnel at all times.

G.2.5.2 TA-50 – Emergency Fire Equipment

TA-50-1, TA-50-37, and TA-50-69 are equipped with fire extinguishers and fire suppression systems. Depending on the size of a fire and the fuel source, fire extinguishers may be used by

on-site personnel. However, LANL policy encourages immediate evacuation of the area and notification of appropriate emergency personnel. The fire alarm control panel continuously monitors all fire suppression and detection systems and transmits signals to the Los Alamos County Fire Department (LACFD) through LANL's central alarm system (Contingency Plan, Appendix E of the LANL General Part B). The TA-50 sprinkler systems are supplied by water at adequate volume and pressure to suppress a fire.

Fire hydrants installed according to National Fire Protection Association (NFPA) standards are located near the northeast and southeast corners of TA-50-37; outside TA-50-1, approximately 15 ft from the southeast corner of Room 34B, which is adjacent to Room 36; and approximately 55 ft west of TA-50-69. Water is supplied to the fire hydrants by a municipal water system through 8-in. pipes at an adequate volume and pressure (i.e., 200 gal. per minute and 90 lbs per in.^{2} static pressure) to supply a water hose in the event of a fire.

G.2.5.3 TA-50 – Spill Control Equipment

Chemical spill centers are located in TA-50 buildings at the locations depicted on Figures G-1 through G-4, and are summarized in the Contingency Plan, Attachment E of this TA-50 Part B. The spill centers contain spill control equipment, personal protective equipment (PPE), and sorbents. Personnel working in any hazardous or mixed waste management area have immediate access to these spill centers. Trained personnel may use this equipment to mitigate small containable spills when they are certain their actions will not put themselves or others at risk.

The possibility of spills or releases at TA-50 are minimized by best management practices and appropriate operational methods. Secondary containment and other appropriate spill safeguards are incorporated in the design of the TA-50 CSAs and treatment units, as described in Section G.4. However, it is possible that a release of waste or other potentially hazardous materials could occur during TA-50 operations. The LANL Spill Prevention Control and Countermeasure(s) (SPCC) Plan describes appropriate response measures for a spill or release of hazardous materials. The TA-50 site-specific SPCC Implementation Plan provides specific details of the TA-50 spill prevention program. Spill containment and cleanup supplies are maintained in operational areas in each TA-50 facility. Safety equipment for use at TA-50 is stored at TA-54, approximately three miles east of TA-50.

G.2.5.4 TA-50 – Personal Protective Equipment [20 NMAC 4.1, Subpart V, §264.32]

To prevent undue personnel exposure, appropriate PPE will be worn by personnel working at TA-50 hazardous and mixed waste facilities. A radiological control technician (RCT) will provide guidance on additional PPE to be worn while working with mixed waste containers. Hard hats will be worn while heavy equipment is being operated.

G.2.5.5 TA-50 – Personnel Decontamination Equipment

Personnel decontamination equipment available includes safety showers, eye washes, and standard showers located adjacent to change rooms at locations depicted on Figures G-1 through G-4. Material safety data sheets (MSDSs) located at all operations areas provide useful exposure information.

G.2.5.6 TA-50 – Testing and Maintenance of Equipment [20 NMAC 4.1, Subpart V, §264.33]

All of the communications and alarm systems and fire protection, spill control, and decontamination equipment described above are tested and/or maintained according to the inspection schedule detailed in the Inspection Plan, Appendix C of the LANL General Part B. The frequency of inspection is adequate to ensure proper operation in the event of an emergency. Repair and replacement of emergency equipment is performed as required.

G.3 UNIT-SPECIFIC CONTAINER MANAGEMENT PRACTICES

G.3.1 Unit-Specific Storage Configuration

Section 2.0, Tables 2-1 and 2-2 of this TA-50 Part B identify waste types and container types to be staged and stored in each TA-50 CSA and treatment unit, respectively. This section describes the unit-specific storage configuration of the wastes to be staged and stored.

G.3.1.1 TA-50-37 CSA

For waste stored in Rooms 112, 117, and 118, adequate space will be maintained between rows of containers to allow for inspection of all containers and the unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of container storage. Drums and various small containers may be stacked to a maximum of two high. Larger containers (e.g., FRPs and SWBs) will not be stacked.

The physical dimensions of Room 115 limit container storage to four drums. Therefore, minimum aisle space between the containers is not required. Containers will not be stacked in Room 115.

G.3.1.2 RLWTF Storage Configuration

In the RLWTF CSA in TA-50-1, Room 59 all the stored waste will be generated from the cementation process; therefore, no incompatible or liquid wastes will be stored in this CSA. Adequate space will be maintained between containers to allow for inspection of all containers and adequate aisle space will be maintained between rows of containers. Drums and various small containers will be placed directly on the concrete floor and may be stacked to a maximum of two high.

G.3.1.3 Decontamination Operations Storage Configuration

Containers will not be stacked in the Decontamination Operations (Decon Ops) Facility CSA. Any waste stored in rooms of this CSA where operations are taking place will be positioned in an area that is away from worker activity or traffic unrelated to the management of the waste. Security posts and a chain will be used to alert workers to the presence of waste containers in either of these rooms. Adequate space will be maintained around each pallet of waste containers to allow for inspection of all containers.

G.3.1.4 TA-50-114 Storage Configuration

Containers will be stored in the TA-50-114 CSA in a row along each wall and two rows down the center of the west side locker, stacked to a maximum of two levels with smaller containers (i.e., 5-gal. and smaller) on top. Containers will be placed directly on the grating that is elevated above the floor of the storage locker. The containers will be positioned so that adequate space will be maintained between the rows to allow for inspection of all containers.

G.3.1.5 TA-50-69 Waste Characterization, Reduction, and Repackaging Facility Indoor CSA Storage Configuration

Waste to be stored in the TA-50-69 WCRRF Indoor CSA will be positioned in an area away from any worker activity or traffic that is unrelated to the management of the waste itself. Palletized drums will be banded together when stored to eliminate the potential for any waste container to be knocked over while moving equipment is operated. Adequate space will be maintained around each storage pallet to allow for inspection of all containers. The volume and placement of waste

managed in the WCRRF Indoor CSA will not require aisle spacing. Containers will not be stacked in the WCRRF Indoor CSA.

Non-liquid-bearing waste will be stored in containers connected to the packaging/bagout module of the glove box enclosure. The maximum storage in this area at any given time is the equivalent of one 55-gal. drum, one 30-gal. drum, and one SWB. Potential liquid-bearing wastes may be stored inside the glove box enclosure. Waste containers stored inside the glove box will not require aisle spacing. Incompatible wastes will not be stored inside the glove box enclosure.

G.3.1.6 TA-50-69 WCRRF Outdoor CSA Storage Configuration

At the WCRRF Outdoor CSA, drums containing only non-liquid-bearing waste will be stacked to a maximum of two high. Potential liquid-bearing wastes will be stored on secondary containment. SWBs and B25 boxes will be stacked to a maximum of two high. Other containers may be stacked to a maximum of two high. Adequate space will be maintained between rows of container types or containment pallets.

Container storage rows in transportainers are oriented north and south. The physical dimensions of the WCRRF Outdoor CSA and its alignment relative to TA-50-69 allow for waste to be loaded and unloaded along the north side of each transportainer. Waste will be stored inside each transportainer in one of two configurations. Non-liquid-bearing waste will be stored on dollies in rows along both walls of the transportainer, with a main aisle running down the center. Containers stored on dollies will be rotated during routine inspections so that the entire drum can be inspected. The physical dimensions of the pallets and transportainer width precludes a center aisle configuration. Pallets will be placed against one wall of the transportainer, with a main aisle running along the opposite wall. Adequate space is maintained between the pallets and between the pallets and the transportainer wall to allow for visual inspection. To facilitate container movement, storage, and inspection, all drums and irregular containers holding wastes that do not contain free liquids will be stored on either wooden pallets or dollies.

G.3.2 Unit-Specific Movement of Containers

G.3.2.1 TA-50-37 CSA

Flatbed trucks or trailers will be used to transport containers to the TA-50-37 CSA for storage and processing. The packaged wastes will be unloaded onto the loading dock, onto the ground, or into

the egress bay. A lift truck equipped with a drum grappler will be used to unload drums from the delivery truck one at a time. The drum grapplers are equipped to prevent drums from being damaged. Metal SWBs and other large containers will be handled with a forklift. Once characterization activities are completed, the waste containers will be repackaged, if necessary, and loaded from staging areas onto trucks for shipment to other on-site waste management facilities.

The method used to move drums during TA-50-37 waste characterization operations will be based on the type of structure on which the drum is located. Drums on dollies will be moved manually. Drums located on elevation pallets or devices will be moved using pallet handlers or lift trucks equipped with drum grapplers. Drums containing liquids will be set on dollies only for placement at process equipment stations. Lift trucks will also be used to return drums from dollies to elevation pallets or devices. Forklifts will be used to move SWBs and FRP boxes in Room 112. The overhead crane may be used instead of lift trucks for moving heavy or large containers within Room 114. The use of proper handling equipment, appropriate to a container's size and weight, will help to prevent hazards while moving containers within the CSA. Damaged containers (e.g., severely corroded drums) will be repaired or overpacked, or the wastes repackaged in new containers before being stored in the CSA. Repackaging personnel will ensure that new containers are properly labeled.

G.3.2.2 TA-50-1 RLWTF CSA

After treatment operations in Room 60A, drums of solidified waste will be stored in TA-50-1, Room 59. The drums will be moved from Room 60A to Room 59 with an overhead crane and/or a drum dolly. Palletized drums in the Room 59 CSA will be handled with a forklift equipped with tines. Individual waste drums will be manipulated with a drum-grapple attachment on the forklift. Small containers may be handled manually or with a dolly. An overhead hoist may be used for moving heavy or large containers within Room 59.

G.3.2.3 TA-50-1 Decon Ops Facility

Flatbed trucks or trailers will be used to transport containers to TA-50-1 for staging and processing. Cranes and/or forklifts equipped with tines will be used to move FRP crates (containing gloveboxes) into Room 36. A bridge crane may be used to move waste containers within Room 36. A hoist may be used to move containers in Room 38/38A. Dollies or forklifts

equipped with a drum-grapple attachment will be used to move drums or other containers into, within, and out of Rooms 34B, 35, 36, and 38/38A. Small containers may be handled manually or with a dolly.

G.3.2.4 TA-50-114 Container Storage Area

Drum dollies or forklifts will be used to move drums or other containers out of the RLWTF and Decon Ops Facility to TA-50-114 for storage. Individual waste drums will be manipulated with a drum-grapple attachment on the forklift. Small containers may be handled manually or with a dolly.

G.3.2.5 TA-50-69 WCRRF

Flatbed trucks or trailers will be used to transport containers to TA-50-69 for storage and processing. A forklift will be used to move containers at the WCRRF Outdoor CSA, from outside the building into the WCRRF airlock, and then within the WCRRF Indoor CSA. FRP boxes and palletized drums will be handled with a forklift equipped with tines. Individual drums of waste will be manipulated with a drum-grapple attachment on the forklift. Small containers may be handled manually or with a dolly. Inside TA-50-69, two cranes are available to move heavy objects. Load limits are restricted to the rated capacity of these cranes for safe operation.

G.4 UNIT-SPECIFIC CONTAINMENT AND OVERFLOW CONTROLS

G.4.1 TA-50-37 CSA

This section describes information related to containment systems specific to each room within the TA-50-37 CSA.

G.4.1.1 Room 112

The floor of Room 112 is concrete and painted with epoxy paint. There are floor trenches, drains, and recessed areas in Room 112. The trenches drain toward a recess in the northwest corner of the room. Additional smaller recesses, located next to the floor drains, allow access to the drains, which are connected to a tank located within the recess in the northwest corner of Room 112. Pumps are located in the two largest recessed areas in the room. Fire-suppression liquids would collect in the trenches, drains, and recessed areas. Liquids that may collect in the recessed areas will be pumped to the floor drains and then into the sump tank located in the recessed area in the northwest corner of the room. Collected liquids will be held in the tank until they are sampled and analyzed, in accordance with the LANL General Part B, Appendix E, Contingency Plan.

G.4.1.2 Room 115

The floor of Room 115 is concrete and painted with epoxy paint. Six-in.-high concrete berms are located at the doorways to Room 115 to provide secondary containment. Secondary containment is provided by the concrete berms in the room. The secondary containment capacity of the room is approximately 700 gal. Collected liquids will be held in DOT-approved containers until they are sampled and analyzed in accordance with the LANL General Part B, Appendix E, Contingency Plan.

G.4.1.3 Room 117

The epoxy-painted concrete floor of Room 117 is recessed approximately 3 ft below a steel grate surface. The recessed floor area, which provides secondary containment, is divided into two areas, one approximately twice the size of the other. In addition, each recessed floor area is sloped toward its own sump, which is approximately 336 gal. and further recessed. Each sump area contains a pump and piping that connects the sump to its own standpipe. The pumps and standpipes may be used to remove liquids that may accumulate in the sump areas. Collected liquids will be held in DOT-approved containers for subsequent sampling and analysis in accordance with the LANL General Part B, Appendix E, Contingency Plan. The secondary containment areas are constructed of epoxy-painted concrete. The epoxy paint is compatible with the wastes to be stored.

In Room 117, all containers holding suspected or known free liquids will be stored on the steel grate floor over recessed secondary containment.

G.4.1.4 Room 118

The concrete floor of Room 118 is epoxy-painted and slopes toward a sump which is approximately 400 gal. The sump, which is covered by a steel grate, is located in the center of the room. In the event of a spill, the steel grate will be removed to facilitate clean up. The sump contains a pump connected to a standpipe used to remove any liquids that may accumulate in the sump. Collected liquids will be held in DOT-approved containers until they are sampled and analyzed in accordance with the LANL General Part B, Appendix E, Contingency Plan.

G.4.2 RLWTF CSA

Because only solid waste will be stored in Room 59, secondary containment requirements are not applicable to the RLWTF CSA.

G.4.3 Decon Ops Facility CSA

This section describes information related to containment systems specific to each room within the Decon Ops Facility CSA.

G.4.3.1 Room 34B/34C

For containers stored in Room 34B, adequate aisle space between rows of wooden pallets or secondary pallets will be maintained at all times. RCRA-regulated waste will be moved through, but not stored in, Room 34C.

G.4.3.2 Room 35

Because of the small volume and placement of waste in Room 35, aisle spacing requirements do not apply. Up to three containers of non-liquid-bearing waste may be stored in containers that are connected to the Characterization Glove Box. Up to three containers of either non-liquid-bearing or potential liquid-bearing waste may be stored in containers that are connected to the Drum Coring Glove Box. The walls of Room 35 are painted concrete block. There are no floor drains in Room 35 and there is no noticeable slope to the floor. The floor is concrete overlain with waxed linoleum tile. In the past, Room 35 has been used for routine decontamination of miscellaneous equipment. Therefore, permanent equipment and fixtures not associated with the CSA are located in the room and include laboratory hoods, cabinets, and a wire security cage.

G.4.3.3 Room 36

In Room 36, the lead removal process will occur in approximately the center of the room, but away from worker traffic, and only one glove box will be processed in the room at any one time. During glove box processing, no other container types will be stored in Room 36. When containers are stored in Room 36, adequate aisle space will be maintained around each pallet to allow for inspection of all containers.

The walls of Room 36 are painted concrete block and the concrete floor is epoxy painted. The floor slopes gently toward two recessed tanks designed for cadaver storage and a central floor

drain, both of which are connected to the RLWTF. During glove box processing operations the two recessed tanks and central floor drain are plugged. The floor level of Room 36 is slightly higher than Rooms 35 and 38/38A, and there is a slight ramp up to the threshold of the door separating Room 36 from Rooms 38/38A. Room 36 was originally designed as a cadaver room to decontaminate casualties of nuclear criticality accidents. Therefore, permanent equipment and fixtures not associated with waste storage are located in the room, and include two recessed cadaver tanks and an autopsy table. In 1990, a permanent glove box was installed for the decontamination of radioactively contaminated precious metals.

Room 36 is designated to store only lead (EPA Hazardous Waste Number D008) containerized in either drums or FRP boxes or in the form of lead-lined glove boxes of various sizes. Containers of non-RCRA-regulated, low-level waste will also be stored in this room. Before lead removal, the glove boxes may be stored in FRP boxes. Candidate glove boxes for storage may be mixed TRU, mixed low-level, or hazardous waste. Only nonliquid waste with the EPA Hazardous Waste Number D008 will be stored in Room 36; therefore, no provisions are necessary for storing incompatible wastes in this room.

G.4.3.4 Room 38/38A

For containers stored in Room 38/38A, adequate aisle space between rows of wooden pallets or secondary containment pallets will be maintained at all times. Room 38/38A will remain locked at all times, except times when waste is being added or removed. The floor level of Room 38/38A is slightly lower than Room 36, and there is a slight upward ramp to the threshold of the door separating the two rooms. The walls of Room 38/38A are cast-in-place concrete and painted. The concrete floor is epoxy painted. A blind sump measuring 33 in. by 39 in. is located roughly in the center of Room 38. The sump has been sealed, locked, and epoxy painted. There is no noticeable slope in Room 38/38A. Room 38/38A was originally designed as a hot cell to decontaminate highly contaminated equipment using manipulator arms. Equipment and other items were placed on a cart and isolated in Room 38A where the decontamination took place. Permanent structures and equipment located in Room 38/38A not associated with waste storage include iron rails used to transport the equipment cart, manipulator arms, an overhead crane, and permanent shelving.

Any moisture potentially conveyed into the room by the equipment cart rails will be contained within the blind sump and removed upon discovery when routine inspections are conducted.

Collected liquids will be held in DOT-approved containers until they are sampled and analyzed in accordance with the LANL General Part B, Appendix E, Contingency Plan.

G.4.4 TA-50-114 CSA

In the TA-50-114 CSA, containers will be stored on an elevated grated floor above a divided secondary containment. The elevated grated floor provides secondary containment in case of spills and prevents contact between the containers and any standing liquids from spills. The secondary containment capacity is sufficient to contain 10% of the volume of containers or the volume of the largest container, whichever is greater. Collected liquids will be held in DOT-approved containers until they are sampled and analyzed in accordance with the LANL General Part B, Appendix E, Contingency Plan. Incompatible wastes will be segregated above different sections of the secondary containment, which will ensure that commingling would not occur in the event that a container is breached.

G.4.5 TA-50-69 WCRRF Indoor CSA

This section describes containment systems specific to each room within the TA-50-69 WCRRF Indoor CSA. Rooms 102 and 103 of TA-50-69 historically have been used to store contaminated glove boxes and other mixed wastes associated with WCRRF operations. There is no physical barrier between these two rooms. A steel mezzanine added to the western third of the main process room is used for storage of materials and equipment. The mezzanine is not part of the WCRRF Indoor CSA.

G.4.5.1 Room 102

A large glove box enclosure is inside the main process room for size reduction of radioactively contaminated metallic items. The glove box enclosure measures 15 ft wide, 30 ft long, and 10 ft high and is constructed of type 304 stainless steel with a high-polish finish. It was originally assembled in four separate modules: airlock, disassembly, cutting, and packaging/bagout. The modules are bolted together and seal welded. Although assembled as four modules, the structure is a single continuous volume, entirely self-contained, and meets all the requirements for containment of free liquids. The glove box enclosure was leak-tested before use. A floor drain is located near the glove box enclosure and is connected directly to the RLWTF. As a precaution, the floor drain grate will be replaced by a metal plate and rubber gasket whenever waste containers that are known or suspected to contain free liquids are managed at the WCRRF Indoor CSA. Drums

holding suspect or known liquids will be stored on secondary containment pallets, or inside the glove box enclosure. The secondary containment pallets provide secondary containment in case of spills and prevents contact between the containers and any standing liquid. Collected liquids will be held in DOT-approved containers until they are sampled and analyzed in accordance with the LANL General Part B, Appendix E, Contingency Plan. To facilitate container movement, storage, and inspection, all drums and irregular containers that do not contain free liquids will be stored on either wooden pallets or dollies.

Additional controls are in place in the glove box enclosure. The glove box enclosure is airtight and provides a containment system that meets the requirements of 20 NMAC 4.1, Subpart V, §264.175(b)[1-1-97]. The glove box enclosure is designed with sufficient secondary containment capacity to contain at least 10 percent of the volume of the potential liquid-bearing containers, or the volume of the largest potential liquid-bearing container, whichever is greater. Containers inside the glove box enclosure will be elevated to prevent contact with potentially accumulated liquid. Any accumulated liquid in the glove box enclosure will be removed as soon as possible after discovery to prevent overflow. Collected liquids will be held in DOT-approved containers until they are sampled and analyzed in accordance with the LANL General Part B, Appendix E, Contingency Plan. The design and operation of the secondary containment pallets and glove box enclosure meet the requirements of 20 NMAC 4.1, Subpart V, §264.175(b)[1-1-97], and Subpart IX, §§270.15(a)(1) through (4)[1-1-97].

G.4.5.2 Room 103

A floor drain is located in the eastern part of Room 103. The drain is plumbed directly to the RLWTF. As a precaution, the floor drain grate will be replaced by a metal plate and rubber gasket whenever waste containers that are known or suspected to contain free liquids are managed at the WCRRF Indoor CSA. In the event of a spill, the collected liquids will be held in DOT-approved containers until they are sampled and analyzed in accordance with the LANL General Part B, Appendix E, Contingency Plan. Equipment that is located inside Room 103, but not associated with the CSA, includes a chemical decontamination fume hood, continuous feed welding system, and Heliarc welding system.

G.4.6 TA-50-69 WCRRF Outdoor CSA

Whenever incompatible wastes are stored in the WCRRF Outdoor CSA, separate secondary containment pallets are used to keep the wastes segregated to ensure that commingling does not occur in the event that a container is breached.

G.5 UNIT-SPECIFIC PROCEDURES TO PREVENT HAZARDS

G.5.1 Fire Protection Systems

TA-50-37 CSA

TA-50-37, Rooms 112, 114, and 118 have wet-pipe sprinkler systems that are equipped with fusible-link heads that are heat activated at 100°C (212°F). The sprinkler flows are monitored to automatically initiate a fire alarm. TA-50-37, Room 115 has two ultraviolet fire detection sensors. Room 117 is protected by a dry-pipe, open-sprinkler-head, deluge fire suppression system.

TA-50-1 CSAs

TA-50-1 has a single-zone, heat-activated sprinkler system for the entire building (including the RLWTF and Decon Ops Facility), except for the computer room (Room 114). Room 114 is equipped with a halon system that is activated by heat detectors rated at 60°C (140°F). At all times, all manual pull stations and the heat-activated sprinkler system are connected to the LACFD through LANL's central alarm system (Contingency Plan, Attachment E of this TA-50 Part B).

TA-50-114 CSA

Although the TA-50-114 CSA storage locker is not equipped with an automatic sprinkler system, a fire extinguisher and fire alarm pull station are located within 50 ft of the CSA outside TA-50-1, Room 24. A fire hydrant is located within 20 ft of TA-50-114.

TA-50-69 WCRRF Indoor CSA

TA-50-69 has an automatic wet-pipe sprinkler system in the main building and in the large glove box enclosure. The sprinkler system is heat-activated at 100°C (212°F). Although the TA-50-69 Outdoor CSA transportainers and weather protective structures are not equipped with automatic sprinkler systems, one fire extinguisher is located within 20 ft of the CSA and personnel may use the fire alarm pull station in the WCRRF main building in the event of a fire.

G.5.2 Personal Protective Equipment

Personnel working in TA-50 CSAs will wear the PPE described in this section. Attachment I describes the PPE to be worn by personnel working in the treatment units.

TA-50-37 CSA

At the TA-50-37 CSA, workers will wear protective work uniforms, steel-toed shoes, gloves, and dosimeter badges when containers of waste are loaded or unloaded at the CSAs. Hardhats will be worn while heavy equipment is operated. Operators will wear anti-C coveralls, surgical gloves, booties, and respirators when unpackaging a waste item, cutting open a waste box, and during large bag-out efforts. Workers will wear surgical gloves, laboratory coats, booties, and dosimeter badges while working through the glove box enclosure gloves. All visitors will wear anti-C lab coats, dosimeter badges, safety glasses as described, and booties. At TA-50-37, PPE for daily use is located in the change room and near the personnel access door. Examples of PPE maintained are as follows: anti-C coveralls, lab coats, surgical gloves, face shields, booties, and socks.

TA-50-1 CSAs

While working with waste containers in the TA-50-1 Room 59 CSA, coveralls, gloves, and steel-toed shoes will be worn. While working with waste containers in TA-50-1 Room 35, coveralls, gloves, and steel-toed shoes will be worn. Respirators may also be worn in Room 35 while activities are being conducted at the waste characterization glove box. While working with waste containers in TA-50-1 Room 36, coveralls, respirators, steel-toed shoes, gloves, and booties will be worn. Labcoats and steel-toed shoes are required while working in TA-50-1, Rooms 34B and 38/38A.

PPE for daily use is located at the Decon Ops Facility and the RLWTF. Additional PPE is maintained in the PPE shed TA-50-105 and in TA-50-1, Rooms 110 and 111. Examples of PPE maintained are as follows: Tyvek/Saranex, paper, and cotton coveralls; lab coats; various types of disposable gloves; face shields; booties and socks; skull caps; and tee shirts. Full face air purifying respirators and air purifying cartridges are maintained in Room 115.

TA-50-114 CSA

While working in TA-50-114, lab coats and steel-toed shoes will be worn.

TA-50-69 WCRRF CSAs

At TA-50-69 CSAs, workers will wear protective work uniforms, steel-toed shoes, gloves, and dosimeter badges when containers are loaded or unloaded at the CSAs. Hardhats will be worn while heavy equipment is operated. Operators will wear anti-C coveralls, surgical gloves, booties, and respirators when unpackaging a waste item, cutting open a waste box, and during large bag-out efforts. Workers will wear surgical gloves, laboratory coats, booties, and dosimeter badges while working through the glove box enclosure gloves. Workers inside the glove box enclosure airlock will wear anti-C coveralls, surgical gloves, booties, dosimeter badges, and respirators. Workers inside the glove box cutting enclosure will wear at least two layers of anti-C coveralls, surgical gloves, booties, dosimeter badges, and air-purifying respirators with supplied breathing air. All visitors will wear anti-C lab coats, dosimeter badges, safety glasses, and booties.

G.6 REFERENCES

IT Corporation. 1987. "Hydrogeologic Assessment of Technical Area 54, Areas G and L, Los Alamos National Laboratory." Docket No. NMHWA 001007, IT Corporation, Albuquerque, New Mexico.

LANL. 1993. *Storm Water Pollution Prevention Plan for Technical Area 50 Waste Treatment Facilities*. Los Alamos, New Mexico, Los Alamos National Laboratory.

LANL. 1998a. *Los Alamos National Laboratory General Part A Permit Application*. Rev. 0.0, April 1998. Los Alamos, New Mexico, Los Alamos National Laboratory.

LANL. 1998b. *Los Alamos National Laboratory General Part B Permit Application*. Los Alamos, New Mexico, Los Alamos National Laboratory.

Purtymun and Johansen. 1974. "General Geohydrology of the Pajarito Plateau." New Mexico Geological Society Guidebook, 25th Field Conference, Central Northern New Mexico.

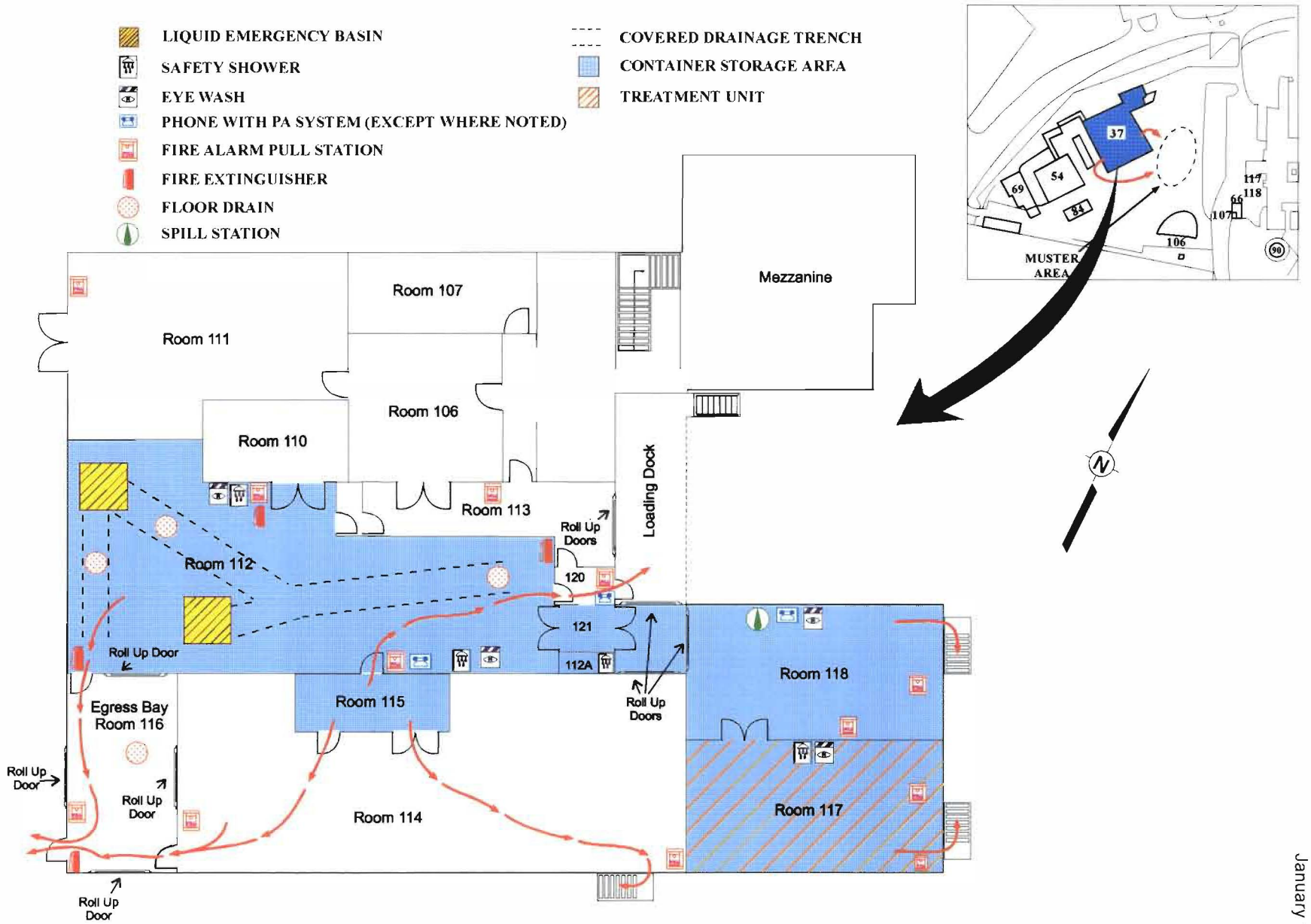


Figure G-1. TA-50-37 Container Storage Area and Treatment Unit Evacuation Route and Emergency Equipment

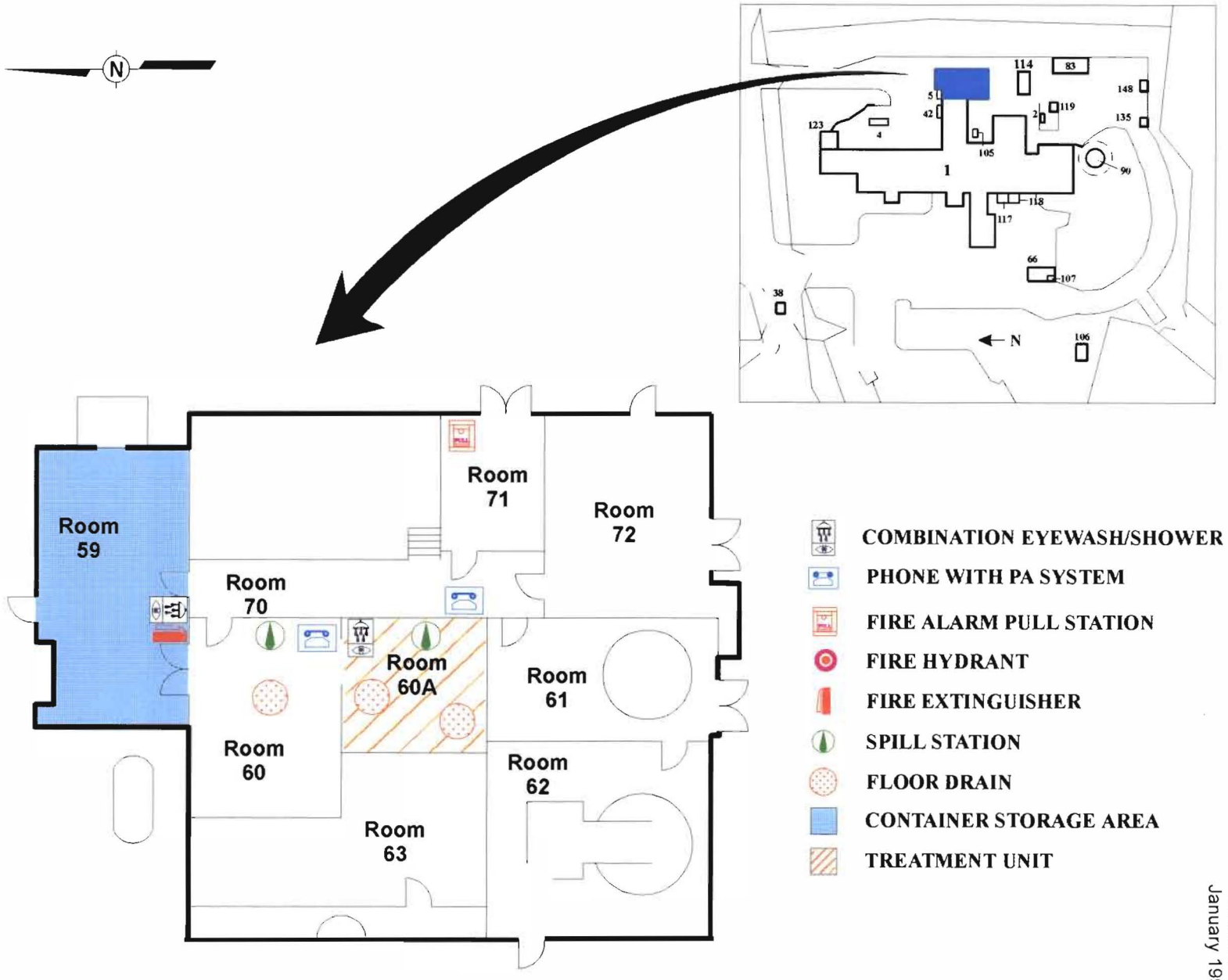


Figure G-2. TA-50-1 RLWTF Container Storage Area and Treatment Unit Emergency Equipment

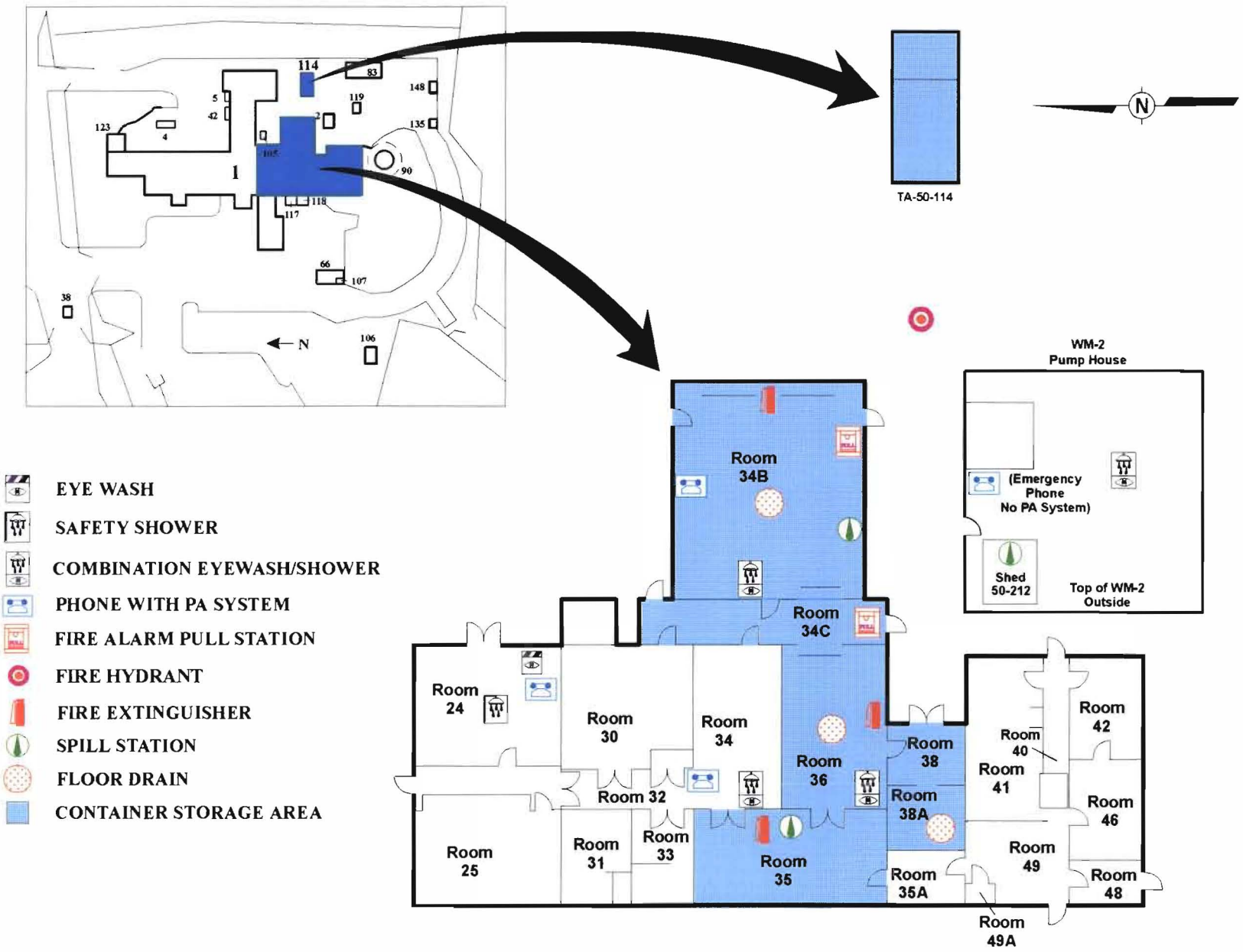
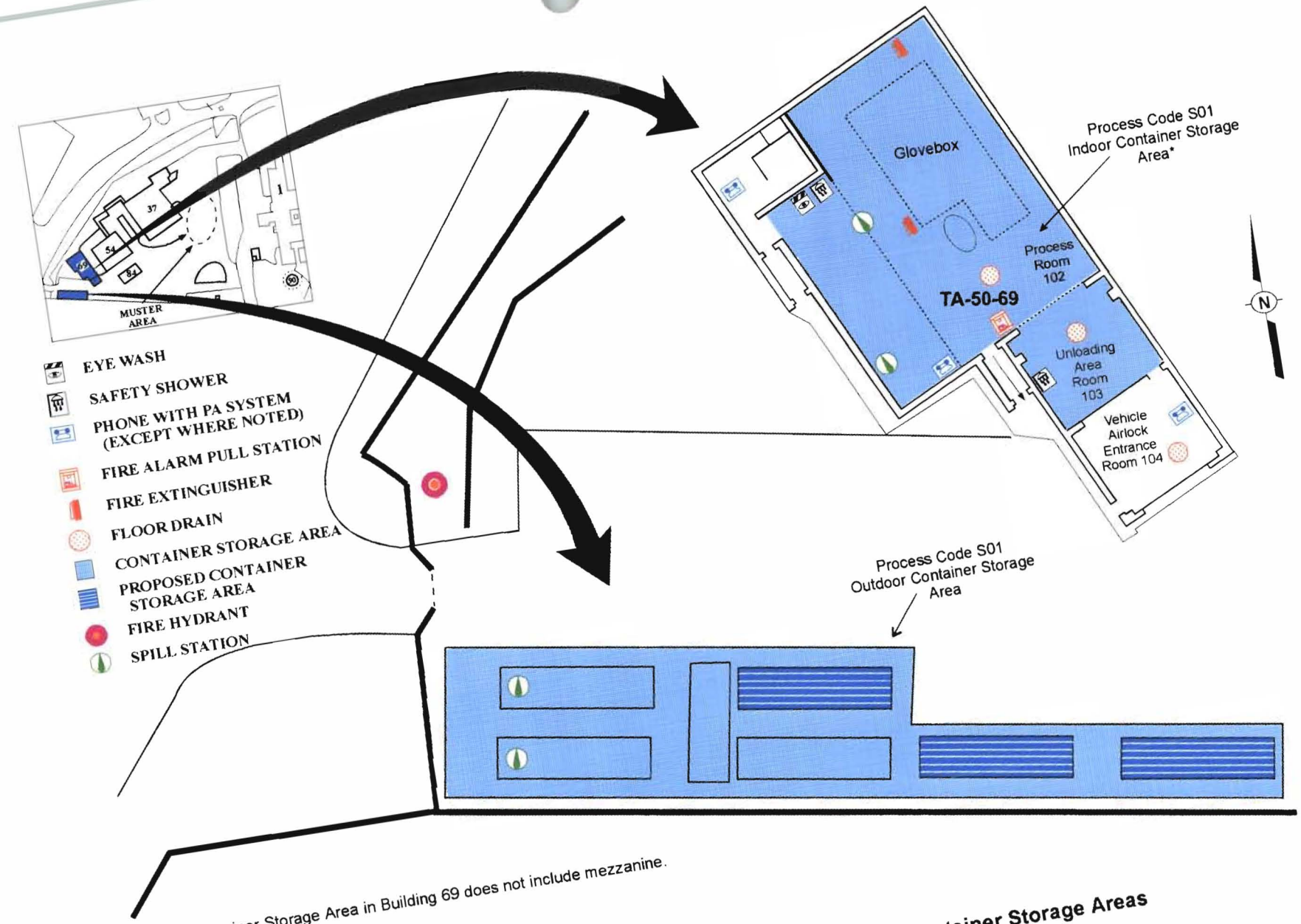


Figure G-3. TA-50-1 Decontamination Operations Facility and TA-50-114 Container Storage Areas Emergency Equipment



*Note: Container Storage Area in Building 69 does not include mezzanine.

Figure G-4. WCRRF TA-50-69, Indoor and Outdoor Container Storage Areas and Emergency Equipment

ATTACHMENT H

AUTHORIZED WASTE

ATTACHMENT H
AUTHORIZED WASTE

The attached excerpt from the *Los Alamos National Laboratory General Part A Permit Application* (April 1998) lists the wastes authorized for storage and/or treatment at Technical Area 50 container storage areas and treatment units.

Los Alamos National Laboratory General Part A Permit Application

Revision 0.0

Prepared by:

Los Alamos National Laboratory
Hazardous and Solid Waste Group (ESH-19)
Los Alamos, New Mexico 87545

April 1998

Please print or type with ELITE type (12 characters per inch) in the unshaded areas only

Form Approved, OMB No. 2050-0034 Expires 10/31/99
GSA No. 0248-EPA-OT

For EPA Regional Use Only	EPA United States Environmental Protection Agency Washington, DC 20460 # Hazardous Waste Permit Application Part A *(Read the Instructions before starting)*	
Date Received Month Day Year		

I. Installation's EPA ID Number *(Mark 'X' in the appropriate box)*

[ ] A. First Part A Submission

[X] B. Part A Amendment # LANL General Part A, Rev. 0.0

C. Installation's EPA ID Number	D. Secondary ID Number *(If applicable)*
NM089001051 5	

II. Name of Facility

LOS ALAMOS NATIONAL LABORATORY

III. Facility Location *(Physical address not P.O. Box or Route Number)*

A. Street

Street *(Continued)*

City or Town	State	Zip Code
LOS ALAMOS	NM	87545 —

County Code *(If known)*	County Name
028	LOS ALAMOS

B. Land Type	C. Geographic Location		D. Facility Existence Date
(Enter code)	*LATITUDE (Degrees, minutes, & seconds)*	*LONGITUDE (Degrees, minutes & seconds)*	Month Day Year
F	35 49 051	106 14 015	01 01 1943

IV. Facility Mailing Address

Street or P.O. Box

PO BOX 1663

City or Town	State	Zip Code
LOS ALAMOS	NM	87545 —

V. Facility Contact *(Person to be contacted regarding waste activities at facility)*

Name *(Last)*	*(First)*
PRZYBYLEK	TYLER

Job Title	Phone Number *(Area Code and Number)*
ACTING AREA MANAGER	505 — 665 — 5027

VI. Facility Contact Address *(See Instructions)*

A. Contact Address Location	Mailing	Other	B. Street or P.O. Box
	X		528 35TH STREET

City or Town	State	Zip Code
LOS ALAMOS	NM	87544 —

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Form Approved, OMB No. 2050-0034 Expires 10/31/99
GSA No. 0248-EPA-OT

EPA I.D. Number *(Enter from page 1)*	Secondary ID Number *(Enter from page 1)*
NM089001051 5	

VII. Operator Information *(See Instructions)*

Name of Operator			
UNIVERSITY OF CALIFORNIA			
Street or P.O. Box			
PO BOX 1663			
City or Town	**State**	**ZIP Code**	
LOS ALAMOS	NM	87545 —	
Phone Number *(Area Code and Number)*	**B. Operator Type**	**C. Change of Operator Indicator**	**Date Changed** Month Day Year
505 — 667 — 5061	F	Yes [ ] No [X]	

VIII. Facility Owner *(See Instructions)*

A. Name of Facility's Legal Owner			
US DEPARTMENT OF ENERGY			
Street or P.O. Box			
528 35TH STREET			
City or Town	**State**	**ZIP Code**	
LOS ALAMOS	NM	87544 —	
Phone Number *(Area Code and Number)*	**B. Owner Type**	**C. Change of Owner Indicator**	**Date Changed** Month Day Year
505 — 667 — 5061	F	Yes [ ] No [X]	

IX. SIC Codes *(4-digit, in order of significance)*

Primary		Secondary	
9711	*(Description)* NATIONAL SECURITY		*(Description)*
Secondary		**Secondary**	
	(Description)		*(Description)*

X. Other Environmental Permits *(See Instructions)*

A. Permit Type *(Enter code)*	B. Permit Number	C. Description
		NPDES STORM WATER GENERAL PERMIT:
N	NMR00A384	LANL Site University of California
N	NMR10A236	DARHT Facility Construction
N	NMR10A469	TA-9 and 16 Steam System Upgrade
N	NMR10A607	RLW X-Country Line Eros. Proj.
N	NMR10A622	Wildlands Fire Management Program
N	NMR10A746	Guaje Well Field Improvements
N	NMR10A946	Fire Protection Improvements
N	NM0028355	NPDES

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Form Approved, OMB No. 2050-0034 Expires 10/31/99
GSA No. 0248-EPA-OT

EPA I.D. Number *(Enter from page 1)*												Secondary ID Number *(Enter from page 1)*											
N	M	0	8	9	0	0	1	0	5	1	5												

XI. Nature of Business *(Provide a brief description)*

LANL's central mission is the reduction of global nuclear danger supported by research that also contributes to conventional defense, civilian, and industrial needs. This includes programs in nuclear, medium energy, and space physics; hydrodynamics; conventional explosives; chemistry; metallurgy; radiochemistry; space nuclear systems; controlled thermonuclear fusion; laser research; environmental technology; geothermal, solar, and fossil energy research; nuclear safeguards; biomedicine; health and biotechnology; and industrial partnerships.

XII. Process Codes and Design Capacities

A. PROCESS CODE - *Enter the code from the list of process codes below that best describes each process to be used at the facility. Thirteen 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), describe the process (including its design capacity) in the space provided in Item XIII.*

B. PROCESS DESIGN CAPACITY - *For each code entered in column 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 column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.*

C. PROCESS TOTAL NUMBER OF UNITS - *Enter the total number of units used with the corresponding process code.*

PROCESS CODE	PROCESS	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
	Disposal:	
D79	Underground Injection	Gallons; Liters; Gallons Per Day; or Liters Per Day
D80	Landfill	Acre-feet or Hectare-meter
D81	Land Treatment	Acres or Hectares
D82	Ocean Disposal	Gallons Per Day or Liters Per Day
D83	Surface Impoundment	Gallons or Liters
D99	Other Storage	Any Unit of Measure Listed Below
	Storage:	
S01	Container (Barrel, Drum, Etc.)	Gallons or Liters
S02	Tank	Gallons or Liters
S03	Waste Pile	Cubic Yards or Cubic Meters
S04	Surface Impoundment	Gallons or Liters
S05	Drip Pad	Gallons or Liters
S06	Containment Building	Cubic Yards or Cubic Meters
S99	Other Disposal	Any Unit of Measure Listed Below
	Treatment:	
T01	Tank	Gallons Per Day or Liters Per Day
T02	Surface Impoundment	Gallons Per Day or Liters Per Day
T03	Incinerator	Short Tons Per Hour; Metric Tons Per Hour; Gallons Per Hour; Liters Per Hour; or Btu's 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; or Btu's Per Hour
T80	Boiler	Gallons or Liters
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; or Btu's Per Hour
T82	Lime Kiln	
T83	Aggregate Kiln	
T84	Phosphate Kiln	
T85	Coke Oven	
T86	Blast Furnace	
T87	Smelting, Melting, Or Refining Furnace	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; or Btu's Per Hour
T88	Titanium Dioxide Chloride Process 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	Cubic Yards or Cubic Meters
	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; or Kilograms Per Hour
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; or Btu's Per Hour
X04	Geologic Repository	Cubic Yards or Cubic Meters
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
				Btu's Per Hour	I

EPA I.D. Number *(Enter from Page 1)*
NM0890010515

Secondary ID Number *(Enter from Page 1)*

XII. Process Codes and Design Capabilities *(Continued)*

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

Line Number		A. Process Code (From list above)			B. PROCESS DESIGN CAPACITY 1. Amount (Specify)	B. PROCESS DESIGN CAPACITY 2. Unit Of Measure (Enter code)	C. Process Total Number Of Units	For Official Use Only
X	1	S	0	2	5 3 3 . 7 8 8	G	0 0 1	
					Technical Area 50, Buildings 1 and 114			
	1	S	0	1	3,695	G	0 0 4	
	2	S	0	1	15	Y	0 0 1	
	3							
	4							
	5							
	6							
	7							
	8							
	9							
1	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 lines sequentially, taking into account any lines that will be used for "other" processes (i.e., D99, S99, T04 and X99) in Item XIII.

XIII. Other Processes (Follow instructions from Item XII for D99, S99, T04 and X99 process codes)

Line Number (Enter # in w/XII)		A. Process Code (From list above)			B. PROCESS DESIGN CAPACITY 1. Amount (Specify)	B. PROCESS DESIGN CAPACITY 2. Unit Of Measure (Enter code)	C. Process Total Number Of Units	D. Description Of Process
X	1	T	0	4				In-situ Vitrification
	3	T	0	4	660	U	0 0 1	Solidification

EPA I.D. Number *(Enter from Page 1)*
NM0890010515

Secondary ID Number *(Enter from Page 1)*

XII. Process Codes and Design Capabilities *(Continued)*

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

Line Number		A. Process Code (From list above)			B. PROCESS DESIGN CAPACITY 1. Amount (Specify)	B. PROCESS DESIGN CAPACITY 2. Unit Of Measure (Enter code)	C. Process Total Number Of Units	For Official Use Only					
X	1	S	0	2	5 3 3 . 7 8 8	G	0 0 1						
Technical Area 50, Building 37													
	1	S	0	1	21,850	G	0 0 3						
	2	S	0	2	310	G	0 0 2 *						
	3	T	0	3	1.5×10^6	I	0 0 1 *						
	4				*Units are no longer receiving waste. They are currently undergoing closure in accordance with New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Subpart VI (3-1-97), requirements.								
	5												
	6												
	7												
	8												
	9												
1	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 lines sequentially, taking into account any lines that will be used for "other" processes (i.e., D99, S99, T04 and X99) in Item XIII.*

***XIII. Other Processes** (Follow instructions from Item XII for D99, S99, T04 and X99 process codes)*

Line Number (Enter # in w/XII)		A. Process Code (From list above)			B. PROCESS DESIGN CAPACITY 1. Amount (Specify)	B. PROCESS DESIGN CAPACITY 2. Unit Of Measure (Enter code)	C. Process Total Number Of Units	D. Description Of Process
X	1	T	0	4				In-situ Vitrification

EPA I.D. Number *(Enter from Page 1)*
NM0890010515

Secondary ID Number *(Enter from Page 1)*

XII. Process Codes and Design Capabilities *(Continued)*

***EXAMPLE FOR COMPLETING ITEM XII** (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	5 3 3 . 7 8 8	G	0 0 1	
Technical Area 50, Building 69 and Associated Outdoor Storage Area								
	1	S	0	1	31,500	G	0 0 2	
	2							
	3							
	4							
	5							
	6							
	7							
	8							
	9							
1	0							
1	1							
1	2							
1	3							

***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 lines sequentially, taking into account any lines that will be used for "other" processes (i.e., D99, S99, T04 an X99) in Item XIII.*

***XIII. Other Processes** (Follow instructions from Item XII for D99, S99, T04 and X99 process codes)*

Line Number (Enter # in w/XII)		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	1	T	0	4				In-situ Vitrification

EPA I.D. Number *(Enter from Page 1)*
NM0890010515

Secondary ID Number *(Enter from Page 1)*

XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D[1])
Technical Area 50, Buildings 1 and 114							
1	D001	1,020	K	S01			Hazardous Waste (HW)
2	D002	820	K	S01			HW
3	D003	50	K	S01			HW
4	D004	70	K	S01			HW
5	D005	80	K	S01			HW
6	D006	210	K	S01			HW
7	D007	380	K	S01			HW
8	D008	1,570	K	S01			HW
9	D009	660	K	S01			HW
10	D010	90	K	S01			HW
11	D011	470	K	S01			HW
12	D016	10	K	S01			HW
13	D017	10	K	S01			HW
14	D018	90	K	S01			HW
15	D019	10	K	S01			HW
16	D021	10	K	S01			HW
17	D022	60	K	S01			HW
18	D026	10	K	S01			HW
19	D027	10	K	S01			HW
20	D028	740	K	S01			HW
21	D029	740	K	S01			HW
22	D030	30	K	S01			HW
23	D031	10	K	S01			HW
24	D032	10	K	S01			HW
25	D033	10	K	S01			HW
26	D034	10	K	S01			HW
27	D035	30	K	S01			HW
28	D036	10	K	S01			HW
29	D037	10	K	S01			HW
30	D038	30	K	S01			HW
31	D039	10	K	S01			HW
32	D040	30	K	S01			HW
33	D041	10	K	S01			HW
34	D042	10	K	S01			HW
35	D043	10	K	S01			HW

EPA I.D. Number *(Enter from Page 1)*
NM0890010515

Secondary ID Number *(Enter from Page 1)*

XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 50, Buildings 1 and 114 (Continued)							
36	F001	2,050	K	S01			HW
37	F002	1,850	K	S01			HW
38	F003	510	K	S01			HW
39	F004	30	K	S01			HW
40	F005	2,500	K	S01			HW
41	F009	10	K	S01			HW
42	F027	10	K	S01			HW
43	P003	10	K	S01			HW
44	P006	10	K	S01			HW
45	P011	10	K	S01			HW
46	P012	10	K	S01			HW
47	P015	10	K	S01			HW
48	P029	10	K	S01			HW
49	P030	10	K	S01			HW
50	P031	10	K	S01			HW
51	P033	10	K	S01			HW
52	P038	10	K	S01			HW
53	P043	10	K	S01			HW
54	P048	10	K	S01			HW
55	P056	50	K	S01			HW
56	P063	10	K	S01			HW
57	P068	10	K	S01			HW
58	P073	10	K	S01			HW
59	P076	10	K	S01			HW
60	P078	10	K	S01			HW
61	P092	10	K	S01			HW
62	P095	10	K	S01			HW
63	P096	10	K	S01			HW
64	P098	10	K	S01			HW
65	P104	10	K	S01			HW
66	P105	10	K	S01			HW
67	P106	10	K	S01			HW
68	P112	10	K	S01			HW
69	P113	10	K	S01			HW
70	P119	10	K	S01			HW

EPA I.D. Number *(Enter from Page 1)*
NM0890010515

Secondary ID Number *(Enter from Page 1)*

XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D[1])
Technical Area 50, Buildings 1 and 114 (Continued)							
71	P120	10	K	S01			HW
72	U001	10	K	S01			HW
73	U002	10	K	S01			HW
74	U003	10	K	S01			HW
75	U007	10	K	S01			HW
76	U008	10	K	S01			HW
77	U009	10	K	S01			HW
78	U012	10	K	S01			HW
79	U018	10	K	S01			HW
80	U019	10	K	S01			HW
81	U022	10	K	S01			HW
82	U029	10	K	S01			HW
83	U031	10	K	S01			HW
84	U033	10	K	S01			HW
85	U037	10	K	S01			HW
86	U041	10	K	S01			HW
87	U044	10	K	S01			HW
88	U045	10	K	S01			HW
89	U052	10	K	S01			HW
90	U055	10	K	S01			HW
91	U056	10	K	S01			HW
92	U057	10	K	S01			HW
93	U067	10	K	S01			HW
94	U068	10	K	S01			HW
95	U070	10	K	S01			HW
96	U075	10	K	S01			HW
97	U077	10	K	S01			HW
98	U080	70	K	S01			HW
99	U085	10	K	S01			HW
100	U091	10	K	S01			HW
101	U092	10	K	S01			HW
102	U103	10	K	S01			HW
103	U108	10	K	S01			HW
104	U109	10	K	S01			HW
105	U112	10	K	S01			HW

EPA I.D. Number *(Enter from Page 1)*
NM0890010515

Secondary ID Number *(Enter from Page 1)*

XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D[1])
Technical Area 50, Buildings 1 and 114 (Continued)							
106	U115	10	K	S01			HW
107	U117	10	K	S01			HW
108	U121	10	K	S01			HW
109	U122	10	K	S01			HW
110	U123	10	K	S01			HW
111	U124	10	K	S01			HW
112	U131	10	K	S01			HW
113	U133	10	K	S01			HW
114	U134	10	K	S01			HW
115	U135	10	K	S01			HW
116	U136	10	K	S01			HW
117	U140	10	K	S01			HW
118	U144	10	K	S01			HW
119	U145	10	K	S01			HW
120	U151	10	K	S01			HW
121	U153	10	K	S01			HW
122	U154	10	K	S01			HW
123	U159	10	K	S01			HW
124	U160	10	K	S01			HW
125	U161	10	K	S01			HW
126	U162	10	K	S01			HW
127	U163	10	K	S01			HW
128	U165	10	K	S01			HW
129	U167	10	K	S01			HW
130	U168	10	K	S01			HW
131	U169	10	K	S01			HW
132	U170	10	K	S01			HW
133	U188	10	K	S01			HW
134	U190	10	K	S01			HW
135	U196	10	K	S01			HW
136	U204	10	K	S01			HW
137	U210	10	K	S01			HW
138	U211	10	K	S01			HW
139	U213	10	K	S01			HW
140	U216	10	K	S01			HW

EPA I.D. Number *(Enter from Page 1)*
NM0890010515

Secondary ID Number *(Enter from Page 1)*

XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D[1])
Technical Area 50, Buildings 1 and 114 (Continued)							
141	U218	10	K	S01			HW
142	U219	10	K	S01			HW
143	U220	10	K	S01			HW
144	U223	10	K	S01			HW
145	U225	10	K	S01			HW
146	U226	100	K	S01			HW
147	U227	10	K	S01			HW
148	U228	20	K	S01			HW
149	U239	10	K	S01			HW
150	U240	10	K	S01			HW
151	U246	10	K	S01			HW
152	D001	50	K	S01			Mixed Low-Level Waste (MLLW)
153	D002	30	K	S01	T04		MLLW
154	D003	10	K	S01			MLLW
155	D004	20	K	S01	T04		MLLW
156	D005	20	K	S01			MLLW
157	D006	2,300	K	S01	T04		MLLW
158	D007	2,390	K	S01	T04		MLLW
159	D008	5,410	K	S01	T04		MLLW
160	D009	170	K	S01	T04		MLLW
161	D010	20	K	S01			MLLW
162	D011	20	K	S01	T04		MLLW
163	D018	10	K	S01			MLLW
164	D019	20	K	S01			MLLW
165	D021	10	K	S01			MLLW
166	D022	10	K	S01			MLLW
167	D027	10	K	S01			MLLW
168	D028	730	K	S01			MLLW
169	D029	730	K	S01			MLLW
170	D030	20	K	S01			MLLW
171	D031	10	K	S01			MLLW
172	D032	10	K	S01			MLLW
173	D033	10	K	S01			MLLW
174	D034	10	K	S01			MLLW
175	D035	10	K	S01			MLLW

EPA I.D. Number *(Enter from Page 1)*
NM0890010515

Secondary ID Number *(Enter from Page 1)*

XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D[1])
Technical Area 50, Buildings 1 and 114 (Continued)							
176	D036	10	K	S01			MLLW
177	D037	20	K	S01			MLLW
178	D038	10	K	S01			MLLW
179	D039	10	K	S01			MLLW
180	D040	10	K	S01			MLLW
181	D041	10	K	S01			MLLW
182	D042	10	K	S01			MLLW
183	D043	10	K	S01			MLLW
184	F001	1,400	K	S01	T04		MLLW
185	F002	180	K	S01	T04		MLLW
186	F003	100	K	S01	T04		MLLW
187	F004	10	K	S01			MLLW
188	F005	820	K	S01	T04		MLLW
189	P003	10	K	S01			MLLW
190	P012	10	K	S01			MLLW
191	P015	10	K	S01			MLLW
192	P029	10	K	S01			MLLW
193	P030	10	K	S01			MLLW
194	P031	10	K	S01			MLLW
195	P038	10	K	S01			MLLW
196	P056	10	K	S01			MLLW
197	P063	10	K	S01			MLLW
198	P068	10	K	S01			MLLW
199	P073	10	K	S01			MLLW
200	P076	10	K	S01			MLLW
201	P078	10	K	S01			MLLW
202	P095	10	K	S01			MLLW
203	P096	10	K	S01			MLLW
204	P098	10	K	S01			MLLW
205	P106	10	K	S01			MLLW
206	P113	10	K	S01			MLLW
207	P120	10	K	S01			MLLW
208	U001	10	K	S01			MLLW
209	U002	10	K	S01			MLLW

EPA I.D. Number *(Enter from Page 1)*
NM0890010515

Secondary ID Number *(Enter from Page 1)*

XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D[1])
Technical Area 50, Buildings 1 and 114 (Continued)							
210	U003	10	K	S01			MLLW
211	U012	10	K	S01			MLLW
212	U019	10	K	S01			MLLW
213	U022	10	K	S01			MLLW
214	U029	10	K	S01			MLLW
215	U031	10	K	S01			MLLW
216	U037	10	K	S01			MLLW
217	U044	10	K	S01			MLLW
218	U045	10	K	S01			MLLW
219	U052	10	K	S01			MLLW
220	U056	10	K	S01			MLLW
221	U057	10	K	S01			MLLW
222	U075	10	K	S01			MLLW
223	U077	10	K	S01			MLLW
224	U080	10	K	S01			MLLW
225	U108	10	K	S01			MLLW
226	U112	10	K	S01			MLLW
227	U115	10	K	S01			MLLW
228	U117	10	K	S01			MLLW
229	U121	10	K	S01			MLLW
230	U122	10	K	S01			MLLW
231	U123	10	K	S01			MLLW
232	U131	10	K	S01			MLLW
233	U133	10	K	S01			MLLW
234	U134	10	K	S01			MLLW
235	U135	10	K	S01			MLLW
236	U140	10	K	S01			MLLW
237	U144	10	K	S01			MLLW
238	U145	10	K	S01			MLLW
239	U151	10	K	S01			MLLW
240	U154	10	K	S01			MLLW
241	U159	10	K	S01			MLLW
242	U160	10	K	S01			MLLW
243	U161	10	K	S01			MLLW
244	U165	10	K	S01			MLLW

EPA I.D. Number *(Enter from Page 1)*
NM0890010515

Secondary ID Number *(Enter from Page 1)*

XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D[1])
Technical Area 50, Buildings 1 and 114 (Continued)							
245	U169	10	K	S01			MLLW
246	U188	10	K	S01			MLLW
247	U190	10	K	S01			MLLW
248	U196	10	K	S01			MLLW
249	U204	10	K	S01			MLLW
250	U210	10	K	S01			MLLW
251	U211	10	K	S01			MLLW
252	U213	10	K	S01			MLLW
253	U216	10	K	S01			MLLW
254	U218	10	K	S01			MLLW
255	U219	10	K	S01			MLLW
256	U220	10	K	S01			MLLW
257	U225	10	K	S01			MLLW
258	U226	10	K	S01			MLLW
259	U227	10	K	S01			MLLW
260	U228	10	K	S01			MLLW
261	U239	10	K	S01			MLLW
262	U246	10	K	S01			MLLW
263	D001	50	K	S01			Mixed Transuranic Waste (MTRUW)
264	D002	30	K	S01	T04		MTRUW
265	D003	10	K	S01			MTRUW
266	D004	20	K	S01	T04		MTRUW
267	D005	20	K	S01			MTRUW
268	D006	2,300	K	S01	T04		MTRUW
269	D007	2,390	K	S01	T04		MTRUW
270	D008	5,410	K	S01	T04		MTRUW
271	D009	170	K	S01	T04		MTRUW
272	D010	20	K	S01			MTRUW
273	D011	20	K	S01	T04		MTRUW
274	D018	10	K	S01			MTRUW
275	D019	20	K	S01			MTRUW
276	D021	10	K	S01			MTRUW
277	D022	10	K	S01			MTRUW
278	D027	10	K	S01			MTRUW
279	D028	730	K	S01			MTRUW

Please print or type with ELITE type (12 characters per inch) in the unshaded areas only

Form Approved. OMB No. 2050-0034 Expires 10/1/99
GSA No. 0246-EPA-OT

EPA I.D. Number (Enter from page 1)	Secondary ID Number (Enter from page 1)
N M 0 8 9 0 0 1 0 5 1 5	

XV. Map

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.

XVI. Facility Drawing

All existing facilities must include a scale drawing of the facility (See instructions for more detail).

XVII. Photographs

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).

XVIII. Certification(s)

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.

Owner Signature: CS Przybylek	Date Signed: 4/30/98
Name and Official Title (Type or print): Tyler Przybylek, Acting Area Manager, DOE/LAAO	
Owner Signature	Date Signed
Name and Official Title (Type or print)	
Operator Signature: CS Przybylek	Date Signed: 4/30/98
Name and Official Title (Type or print): Tyler Przybylek, Acting Area Manager, DOE/LAAO	
Operator Signature: [illegible]	Date Signed: 4/22/98
Name and Official Title (Type or print): Dennis J. Erickson, Division Director, LANL ES&H Division	

XIX. Comments

Note: Mail completed form to the appropriate EPA Regional or State Office. (Refer to instructions for more information)

EPA I.D. Number *(Enter from Page 1)*
NM0890010515

Secondary ID Number *(Enter from Page 1)*

XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D[1])
Technical Area 50, Buildings 1 and 114 (Continued)							
280	D029	730	K	S01			MTRUW
281	D030	20	K	S01			MTRUW
282	D031	10	K	S01			MTRUW
283	D032	10	K	S01			MTRUW
284	D033	10	K	S01			MTRUW
285	D034	10	K	S01			MTRUW
286	D035	10	K	S01			MTRUW
287	D036	10	K	S01			MTRUW
288	D037	20	K	S01			MTRUW
289	D038	10	K	S01			MTRUW
290	D039	10	K	S01			MTRUW
291	D040	10	K	S01			MTRUW
292	D041	10	K	S01			MTRUW
293	D042	10	K	S01			MTRUW
294	D043	10	K	S01			MTRUW
295	F001	1,400	K	S01	T04		MTRUW
296	F002	180	K	S01	T04		MTRUW
297	F003	100	K	S01	T04		MTRUW
298	F004	10	K	S01			MTRUW
299	F005	820	K	S01	T04		MTRUW
300	P003	10	K	S01			MTRUW
301	P012	10	K	S01			MTRUW
302	P015	10	K	S01			MTRUW
303	P029	10	K	S01			MTRUW
304	P030	10	K	S01			MTRUW
305	P031	10	K	S01			MTRUW
306	P038	10	K	S01			MTRUW
307	P056	10	K	S01			MTRUW
308	P063	10	K	S01			MTRUW
309	P068	10	K	S01			MTRUW
310	P073	10	K	S01			MTRUW
311	P076	10	K	S01			MTRUW
312	P078	10	K	S01			MTRUW
313	P095	10	K	S01			MTRUW
314	P096	10	K	S01			MTRUW

EPA I.D. Number *(Enter from Page 1)*
NM0890010515

Secondary ID Number *(Enter from Page 1)*

XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D[1])
Technical Area 50, Buildings 1 and 114 (Continued)							
315	P098	10	K	S01			MTRUW
316	P106	10	K	S01			MTRUW
317	P113	10	K	S01			MTRUW
318	P120	10	K	S01			MTRUW
319	U001	10	K	S01			MTRUW
320	U002	10	K	S01			MTRUW
321	U003	10	K	S01			MTRUW
322	U012	10	K	S01			MTRUW
323	U019	10	K	S01			MTRUW
324	U022	10	K	S01			MTRUW
325	U029	10	K	S01			MTRUW
326	U031	10	K	S01			MTRUW
327	U037	10	K	S01			MTRUW
328	U044	10	K	S01			MTRUW
329	U045	10	K	S01			MTRUW
330	U052	10	K	S01			MTRUW
331	U056	10	K	S01			MTRUW
332	U057	10	K	S01			MTRUW
333	U075	10	K	S01			MTRUW
334	U077	10	K	S01			MTRUW
335	U080	10	K	S01			MTRUW
336	U108	10	K	S01			MTRUW
337	U112	10	K	S01			MTRUW
338	U115	10	K	S01			MTRUW
339	U117	10	K	S01			MTRUW
340	U121	10	K	S01			MTRUW
341	U122	10	K	S01			MTRUW
342	U123	10	K	S01			MTRUW
343	U131	10	K	S01			MTRUW
344	U133	10	K	S01			MTRUW
345	U134	10	K	S01			MTRUW
346	U135	10	K	S01			MTRUW
347	U140	10	K	S01			MTRUW
348	U144	10	K	S01			MTRUW
349	U145	10	K	S01			MTRUW

EPA I.D. Number *(Enter from Page 1)*
NM0890010515

Secondary ID Number *(Enter from Page 1)*

XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D[1])
Technical Area 50, Buildings 1 and 114 (Continued)							
350	U151	10	K	S01			MTRUW
351	U154	10	K	S01			MTRUW
352	U159	10	K	S01			MTRUW
353	U160	10	K	S01			MTRUW
354	U161	10	K	S01			MTRUW
355	U165	10	K	S01			MTRUW
356	U169	10	K	S01			MTRUW
357	U188	10	K	S01			MTRUW
358	U190	10	K	S01			MTRUW
359	U196	10	K	S01			MTRUW
360	U204	10	K	S01			MTRUW
361	U210	10	K	S01			MTRUW
362	U211	10	K	S01			MTRUW
363	U213	10	K	S01			MTRUW
364	U216	10	K	S01			MTRUW
365	U218	10	K	S01			MTRUW
366	U219	10	K	S01			MTRUW
367	U220	10	K	S01			MTRUW
368	U225	10	K	S01			MTRUW
369	U226	10	K	S01			MTRUW
370	U227	10	K	S01			MTRUW
371	U228	10	K	S01			MTRUW
372	U239	10	K	S01			MTRUW
373	U246	10	K	S01			MTRUW

EPA I.D. Number *(Enter from Page 1)*
NM0890010515

Secondary ID Number (enter from Page 1)

XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. *(enter code)*	B. Estimated Annual Quantity of Waste	C. Unit of Measure *(Enter code)*	D. Processes (1) PROCESS CODES *(Enter code)*			(2) PROCESS DESCRIPTION *(If a code is not entered in D[1])*
Technical Area 50, Building 37							
1	D001	1,000	P	S01			Hazardous Waste (HW)
2	D002	100	P	S01			HW
3	D003	100	P	S01			HW
4	D004	100	P	S01			HW
5	D005	100	P	S01	S02	T01	HW
6	D006	10,000	P	S01			HW
7	D007	10,000	P	S01			HW
8	D008	100,000	P	S01			HW
9	D009	1,000	P	S01			HW
10	D010	100	P	S01			HW
11	D011	100	P	S01			HW
12	D018	100	P	S01			HW
13	D019	100	P	S01			HW
14	D020	100	P	S01			HW
15	D021	100	P	S01			HW
16	D022	100	P	S01			HW
17	D023	100	P	S01			HW
18	D024	100	P	S01			HW
19	D025	100	P	S01			HW
20	D026	100	P	S01			HW
21	D027	100	P	S01			HW
22	D028	10,000	P	S01			HW
23	D029	10,000	P	S01			HW
24	D030	100	P	S01			HW
25	D031	100	P	S01			HW
26	D032	100	P	S01			HW
27	D033	100	P	S01			HW
28	D034	100	P	S01			HW
29	D035	100	P	S01			HW
30	D036	100	P	S01			HW
31	D037	100	P	S01			HW
32	D038	100	P	S01			HW
33	D039	100	P	S01			HW
34	D040	100	P	S01			HW
35	D041	100	P	S01			HW

EPA I.D. Number *(Enter from Page 1)*
NM0890010515

Secondary ID Number (enter from Page 1)

XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. *(enter code)*	B. Estimated Annual Quantity of Waste	C. Unit of Measure *(Enter code)*	D. Processes (1) PROCESS CODES *(Enter code)*			(2) PROCESS DESCRIPTION *(If a code is not entered in D(1))*
Technical Area 50, Building 37 (Continued)							
36	D042	100	P	S01			HW
37	D043	100	P	S01			HW
38	F001	10,000	P	S01			HW
39	F002	1,000	P	S01			HW
40	F003	1,000	P	S01			HW
41	F004	100	P	S01			HW
42	F005	10,000	P	S01			HW
43	F006	100	P	S01			HW
44	F007	100	P	S01			HW
45	F008	100	P	S01			HW
46	F009	100	P	S01			HW
47	F027	100	P	S01			HW
48	F028	100	P	S01			HW
49	K044	100	P	S01			HW
50	K045	100	P	S01			HW
51	K047	100	P	S01			HW
52	P001	100	P	S01			HW
53	P002	100	P	S01			HW
54	P003	100	P	S01			HW
55	P004	100	P	S01			HW
56	P005	100	P	S01			HW
57	P006	100	P	S01			HW
58	P007	100	P	S01			HW
59	P008	100	P	S01			HW
60	P009	100	P	S01			HW
61	P010	100	P	S01			HW
62	P011	100	P	S01			HW
63	P012	100	P	S01			HW
64	P013	100	P	S01			HW
65	P014	100	P	S01			HW
66	P015	100	P	S01			HW
67	P016	100	P	S01			HW
68	P017	100	P	S01			HW
69	P018	100	P	S01			HW
70	P020	100	P	S01			HW

EPA I.D. Number *(Enter from Page 1)*
NM0890010515

Secondary ID Number (enter from Page 1)

XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. *(enter code)*	B. Estimated Annual Quantity of Waste	C. Unit of Measure *(Enter code)*	D. Processes (1) PROCESS CODES *(Enter code)*			D. Processes (2) PROCESS DESCRIPTION *(If a code is not entered in D(1))*
Technical Area 50, Building 37 (Continued)							
71	P021	100	P	S01			HW
72	P022	100	P	S01			HW
73	P023	100	P	S01			HW
74	P024	100	P	S01			HW
75	P026	100	P	S01			HW
76	P027	100	P	S01			HW
77	P028	100	P	S01			HW
78	P029	100	P	S01			HW
79	P030	100	P	S01			HW
80	P031	100	P	S01			HW
81	P033	100	P	S01			HW
82	P034	100	P	S01			HW
83	P036	100	P	S01			HW
84	P037	100	P	S01			HW
85	P038	100	P	S01			HW
86	P039	100	P	S01			HW
87	P040	100	P	S01			HW
88	P041	100	P	S01			HW
89	P042	100	P	S01			HW
90	P043	100	P	S01			HW
91	P044	100	P	S01			HW
92	P045	100	P	S01			HW
93	P046	100	P	S01			HW
94	P047	100	P	S01			HW
95	P048	100	P	S01			HW
96	P049	100	P	S01			HW
97	P050	100	P	S01			HW
98	P051	100	P	S01			HW
99	P054	100	P	S01			HW
100	P056	100	P	S01			HW
101	P057	100	P	S01			HW
102	P058	100	P	S01			HW
103	P059	100	P	S01			HW
104	P060	100	P	S01			HW
105	P062	100	P	S01			HW

EPA I.D. Number *(Enter from Page 1)*
NM0890010515

Secondary ID Number (enter from Page 1)

XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. *(enter code)*	B. Estimated Annual Quantity of Waste	C. Unit of Measure *(Enter code)*	D. Processes (1) PROCESS CODES *(Enter code)*			D. Processes (2) PROCESS DESCRIPTION *(If a code is not entered in D(1))*
Technical Area 50, Building 37 (Continued)							
106	P063	100	P	S01			HW
107	P064	100	P	S01			HW
108	P065	100	P	S01			HW
109	P066	100	P	S01			HW
110	P067	100	P	S01			HW
111	P068	100	P	S01			HW
112	P069	100	P	S01			HW
113	P070	100	P	S01			HW
114	P071	100	P	S01			HW
115	P072	100	P	S01			HW
116	P073	100	P	S01			HW
117	P074	100	P	S01			HW
118	P075	100	P	S01			HW
119	P076	100	P	S01			HW
120	P077	100	P	S01			HW
121	P078	100	P	S01			HW
122	P081	100	P	S01			HW
123	P082	100	P	S01			HW
124	P084	100	P	S01			HW
125	P085	100	P	S01			HW
126	P087	100	P	S01			HW
127	P088	100	P	S01			HW
128	P089	100	P	S01			HW
129	P092	100	P	S01			HW
130	P093	100	P	S01			HW
131	P094	100	P	S01			HW
132	P095	100	P	S01			HW
133	P096	100	P	S01			HW
134	P097	100	P	S01			HW
135	P098	100	P	S01			HW
136	P099	100	P	S01			HW
137	P101	100	P	S01			HW
138	P102	100	P	S01			HW
139	P103	100	P	S01			HW
140	P104	100	P	S01			HW

EPA I.D. Number *(Enter from Page 1)*
NM0890010515

Secondary ID Number (enter from Page 1)

XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. *(enter code)*	B. Estimated Annual Quantity of Waste	C. Unit of Measure *(Enter code)*	D. Processes* (1) PROCESS CODES *(Enter code)*			(2) PROCESS DESCRIPTION *(If a code is not entered in D(1))*
Technical Area 50, Building 37 (Continued)							
141	P105	100	P	S01			HW
142	P106	100	P	S01			HW
143	P107	100	P	S01			HW
144	P108	100	P	S01			HW
145	P109	100	P	S01			HW
146	P110	100	P	S01			HW
147	P111	100	P	S01			HW
148	P112	100	P	S01			HW
149	P113	100	P	S01			HW
150	P114	100	P	S01			HW
151	P115	100	P	S01			HW
152	P116	100	P	S01			HW
153	P118	100	P	S01			HW
154	P119	100	P	S01			HW
155	P120	100	P	S01			HW
156	P121	100	P	S01			HW
157	P122	100	P	S01			HW
158	P123	100	P	S01			HW
159	U001	100	P	S01			HW
160	U002	100	P	S01			HW
161	U003	100	P	S01			HW
162	U004	100	P	S01			HW
163	U005	100	P	S01			HW
164	U006	100	P	S01			HW
165	U007	100	P	S01			HW
166	U008	100	P	S01			HW
167	U009	100	P	S01			HW
168	U010	100	P	S01			HW
169	U011	100	P	S01			HW
170	U012	100	P	S01			HW
171	U014	100	P	S01			HW
172	U015	100	P	S01			HW
173	U016	100	P	S01			HW
174	U017	100	P	S01			HW
175	U018	100	P	S01			HW

EPA I.D. Number *(Enter from Page 1)*
NM0890010515

Secondary ID Number (enter from Page 1)

XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. *(enter code)*	B. Estimated Annual Quantity of Waste	C. Unit of Measure *(Enter code)*	D. Processes (1) PROCESS CODES *(Enter code)*			(2) PROCESS DESCRIPTION *(If a code is not entered in D[1])*
Technical Area 50, Building 37 (Continued)							
176	U019	100	P	S01			HW
177	U020	100	P	S01			HW
178	U021	100	P	S01			HW
179	U022	100	P	S01			HW
180	U023	100	P	S01			HW
181	U024	100	P	S01			HW
182	U025	100	P	S01			HW
183	U026	100	P	S01			HW
184	U027	100	P	S01			HW
185	U028	100	P	S01			HW
186	U029	100	P	S01			HW
187	U030	100	P	S01			HW
188	U031	100	P	S01			HW
189	U032	100	P	S01			HW
190	U033	100	P	S01			HW
191	U034	100	P	S01			HW
192	U035	100	P	S01			HW
193	U036	100	P	S01			HW
194	U037	100	P	S01			HW
195	U038	100	P	S01			HW
196	U039	100	P	S01			HW
197	U041	100	P	S01			HW
198	U042	100	P	S01			HW
199	U043	100	P	S01			HW
200	U044	100	P	S01			HW
201	U045	100	P	S01			HW
202	U046	100	P	S01			HW
203	U047	100	P	S01			HW
204	U048	100	P	S01			HW
205	U049	100	P	S01			HW
206	U050	100	P	S01			HW
207	U051	100	P	S01			HW
208	U052	100	P	S01			HW
209	U053	100	P	S01			HW
210	U055	100	P	S01			HW

EPA I.D. Number *(Enter from Page 1)*
NM0890010515

Secondary ID Number (enter from Page 1)

XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. *(enter code)*	B. Estimated Annual Quantity of Waste	C. Unit of Measure *(Enter code)*	D. Processes (1) PROCESS CODES *(Enter code)*			D. Processes (2) PROCESS DESCRIPTION *(If a code is not entered in D(1))*
Technical Area 50, Building 37 (Continued)							
211	U056	100	P	S01			HW
212	U057	100	P	S01			HW
213	U058	100	P	S01			HW
214	U059	100	P	S01			HW
215	U060	100	P	S01			HW
216	U061	100	P	S01			HW
217	U062	100	P	S01			HW
218	U063	100	P	S01			HW
219	U064	100	P	S01			HW
220	U066	100	P	S01			HW
221	U067	100	P	S01			HW
222	U068	100	P	S01			HW
223	U069	100	P	S01			HW
224	U070	100	P	S01			HW
225	U071	100	P	S01			HW
226	U072	100	P	S01			HW
227	U073	100	P	S01			HW
228	U074	100	P	S01			HW
229	U075	100	P	S01			HW
230	U076	100	P	S01			HW
231	U077	100	P	S01			HW
232	U078	100	P	S01			HW
233	U079	100	P	S01			HW
234	U080	100	P	S01			HW
235	U081	100	P	S01			HW
236	U082	100	P	S01			HW
237	U083	100	P	S01			HW
238	U084	100	P	S01			HW
239	U085	100	P	S01			HW
240	U086	100	P	S01			HW
241	U087	100	P	S01			HW
242	U088	100	P	S01			HW
243	U089	100	P	S01			HW
244	U090	100	P	S01			HW
245	U091	100	P	S01			HW

EPA I.D. Number *(Enter from Page 1)*
NM0890010515

Secondary ID Number (enter from Page 1)

XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. *(enter code)*	B. Estimated Annual Quantity of Waste	C. Unit of Measure *(Enter code)*	D. Processes (1) PROCESS CODES *(Enter code)*			D. Processes (2) PROCESS DESCRIPTION *(If a code is not entered in D(1))*
Technical Area 50, Building 37 (Continued)							
246	U092	100	P	S01			HW
247	U093	100	P	S01			HW
248	U094	100	P	S01			HW
249	U095	100	P	S01			HW
250	U096	100	P	S01			HW
251	U097	100	P	S01			HW
252	U098	100	P	S01			HW
253	U099	100	P	S01			HW
254	U101	100	P	S01			HW
255	U102	100	P	S01			HW
256	U103	100	P	S01			HW
257	U105	100	P	S01			HW
258	U106	100	P	S01			HW
259	U107	100	P	S01			HW
260	U108	100	P	S01			HW
261	U109	100	P	S01			HW
262	U110	100	P	S01			HW
263	U111	100	P	S01			HW
264	U112	100	P	S01			HW
265	U113	100	P	S01			HW
266	U114	100	P	S01			HW
267	U115	100	P	S01			HW
268	U116	100	P	S01			HW
269	U117	100	P	S01			HW
270	U118	100	P	S01			HW
271	U119	100	P	S01			HW
272	U120	100	P	S01			HW
273	U121	100	P	S01			HW
274	U122	100	P	S01			HW
275	U123	100	P	S01			HW
276	U124	100	P	S01			HW
277	U125	100	P	S01			HW
278	U126	100	P	S01			HW
279	U127	100	P	S01			HW
280	U128	100	P	S01			HW

EPA I.D. Number *(Enter from Page 1)*
NM0890010515

Secondary ID Number (enter from Page 1)

XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. *(enter code)*	B. Estimated Annual Quantity of Waste	C. Unit of Measure *(Enter code)*	D. Processes (1) PROCESS CODES *(Enter code)*			D. Processes (2) PROCESS DESCRIPTION *(If a code is not entered in D[1])*
Technical Area 50, Building 37 (Continued)							
281	U129	100	P	S01			HW
282	U130	100	P	S01			HW
283	U131	100	P	S01			HW
284	U132	100	P	S01			HW
285	U133	100	P	S01			HW
286	U134	100	P	S01			HW
287	U135	100	P	S01			HW
288	U136	100	P	S01			HW
289	U137	100	P	S01			HW
290	U138	100	P	S01			HW
291	U139	100	P	S01			HW
292	U140	100	P	S01			HW
293	U141	100	P	S01			HW
294	U142	100	P	S01			HW
295	U143	100	P	S01			HW
296	U144	100	P	S01			HW
297	U145	100	P	S01			HW
298	U146	100	P	S01			HW
299	U147	100	P	S01			HW
300	U148	100	P	S01			HW
301	U149	100	P	S01			HW
302	U150	100	P	S01			HW
303	U151	100	P	S01			HW
304	U152	100	P	S01			HW
305	U153	100	P	S01			HW
306	U154	100	P	S01			HW
307	U155	100	P	S01			HW
308	U156	100	P	S01			HW
309	U157	100	P	S01			HW
310	U158	100	P	S01			HW
311	U159	100	P	S01			HW
312	U160	100	P	S01			HW
313	U161	100	P	S01			HW
314	U162	100	P	S01			HW
315	U163	100	P	S01			HW

EPA I.D. Number *(Enter from Page 1)*
NM0890010515

Secondary ID Number (enter from Page 1)

XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. *(enter code)*	B. Estimated Annual Quantity of Waste	C. Unit of Measure *(Enter code)*	D. Processes (1) PROCESS CODES *(Enter code)*			(2) PROCESS DESCRIPTION *(If a code is not entered in D[1])*
Technical Area 50, Building 37 (Continued)							
316	U164	100	P	S01			HW
317	U165	100	P	S01			HW
318	U166	100	P	S01			HW
319	U167	100	P	S01			HW
320	U168	100	P	S01			HW
321	U169	100	P	S01			HW
322	U170	100	P	S01			HW
323	U171	100	P	S01			HW
324	U172	100	P	S01			HW
325	U173	100	P	S01			HW
326	U174	100	P	S01			HW
327	U176	100	P	S01			HW
328	U177	100	P	S01			HW
329	U178	100	P	S01			HW
330	U179	100	P	S01			HW
331	U180	100	P	S01			HW
332	U181	100	P	S01			HW
333	U182	100	P	S01			HW
334	U183	100	P	S01			HW
335	U184	100	P	S01			HW
336	U185	100	P	S01			HW
337	U186	100	P	S01			HW
338	U187	100	P	S01			HW
339	U188	100	P	S01			HW
340	U189	100	P	S01			HW
341	U190	100	P	S01			HW
342	U191	100	P	S01			HW
343	U192	100	P	S01			HW
344	U193	100	P	S01			HW
345	U194	100	P	S01			HW
346	U196	100	P	S01			HW
347	U197	100	P	S01			HW
348	U200	100	P	S01			HW
349	U201	100	P	S01			HW
350	U202	100	P	S01			HW

EPA I.D. Number *(Enter from Page 1)*
NM0890010515

Secondary ID Number (enter from Page 1)

XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. *(enter code)*	B. Estimated Annual Quantity of Waste	C. Unit of Measure *(Enter code)*	D. Processes (1) PROCESS CODES *(Enter code)*			(2) PROCESS DESCRIPTION *(If a code is not entered in D(1))*
Technical Area 50, Building 37 (Continued)							
351	U203	100	P	S01			HW
352	U204	100	P	S01			HW
353	U205	100	P	S01			HW
354	U206	100	P	S01			HW
355	U207	100	P	S01			HW
356	U208	100	P	S01			HW
357	U209	100	P	S01			HW
358	U210	100	P	S01			HW
359	U211	100	P	S01			HW
360	U212	100	P	S01			HW
361	U213	100	P	S01			HW
362	U214	100	P	S01			HW
363	U215	100	P	S01			HW
364	U216	100	P	S01			HW
365	U217	100	P	S01			HW
366	U218	100	P	S01			HW
367	U219	100	P	S01			HW
368	U220	100	P	S01			HW
369	U221	100	P	S01			HW
370	U222	100	P	S01			HW
371	U223	100	P	S01			HW
372	U225	100	P	S01			HW
373	U226	100	P	S01			HW
374	U227	100	P	S01			HW
375	U228	100	P	S01			HW
376	U230	100	P	S01			HW
377	U231	100	P	S01			HW
378	U232	100	P	S01			HW
379	U233	100	P	S01			HW
380	U234	100	P	S01			HW
381	U235	100	P	S01			HW
382	U236	100	P	S01			HW
383	U237	100	P	S01			HW
384	U238	100	P	S01			HW
385	U239	100	P	S01			HW

EPA I.D. Number *(Enter from Page 1)*
NM0890010515

Secondary ID Number (enter from Page 1)

XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. *(enter code)*	B. Estimated Annual Quantity of Waste	C. Unit of Measure *(Enter code)*	D. Processes (1) PROCESS CODES *(Enter code)*			D. Processes (2) PROCESS DESCRIPTION *(If a code is not entered in D(1))*
Technical Area 50, Building 37 (Continued)							
386	U240	100	P	S01			HW
387	U242	100	P	S01			HW
388	U243	100	P	S01			HW
389	U244	100	P	S01			HW
390	U246	100	P	S01			HW
391	U247	100	P	S01			HW
392	U248	100	P	S01			HW
393	U249	100	P	S01			HW
394	U326	100	P	S01			HW
395	U353	100	P	S01			HW
396	U359	100	P	S01			HW
397	D001	1,170	K	S01			Mixed Low-Level Waste (MLLW)
398	D002	610	K	S01			MLLW
399	D003	60	K	S01			MLLW
400	D004	390	K	S01			MLLW
401	D005	360	K	S01			MLLW
402	D006	57,130	K	S01			MLLW
403	D007	59,610	K	S01			MLLW
404	D008	135,280	K	S01			MLLW
405	D009	4,120	K	S01			MLLW
406	D010	430	K	S01			MLLW
407	D011	480	K	S01			MLLW
408	D018	20	K	S01			MLLW
409	D019	450	K	S01			MLLW
410	D021	170	K	S01			MLLW
411	D022	100	K	S01			MLLW
412	D027	70	K	S01			MLLW
413	D028	18,250	K	S01			MLLW
414	D029	18,160	K	S01			MLLW
415	D030	410	K	S01			MLLW
416	D031	10	K	S01			MLLW
417	D032	260	K	S01			MLLW
418	D033	180	K	S01			MLLW
419	D034	90	K	S01			MLLW
420	D035	10	K	S01			MLLW

EPA I.D. Number *(Enter from Page 1)*
NM0890010515

Secondary ID Number (enter from Page 1)

XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. *(enter code)*	B. Estimated Annual Quantity of Waste	C. Unit of Measure *(Enter code)*	D. Processes (1) PROCESS CODES *(Enter code)*			D. Processes (2) PROCESS DESCRIPTION *(If a code is not entered in D(1))*
Technical Area 50, Building 37 (Continued)							
421	D036	30	K	S01			MLLW
422	D037	50	K	S01			MLLW
423	D038	10	K	S01			MLLW
424	D039	120	K	S01			MLLW
425	D040	280	K	S01			MLLW
426	D041	10	K	S01			MLLW
427	D042	90	K	S01			MLLW
428	D043	40	K	S01			MLLW
429	F001	35,050	K	S01			MLLW
430	F002	4,540	K	S01			MLLW
431	F003	2,300	K	S01			MLLW
432	F004	130	K	S01			MLLW
433	F005	20,430	K	S01			MLLW
434	P003	10	K	S01			MLLW
435	P012	10	K	S01			MLLW
436	P015	10	K	S01			MLLW
437	P029	10	K	S01			MLLW
438	P030	10	K	S01			MLLW
439	P031	10	K	S01			MLLW
440	P038	10	K	S01			MLLW
441	P056	20	K	S01			MLLW
442	P063	10	K	S01			MLLW
443	P068	10	K	S01			MLLW
444	P073	10	K	S01			MLLW
445	P076	10	K	S01			MLLW
446	P078	10	K	S01			MLLW
447	P095	10	K	S01			MLLW
448	P096	10	K	S01			MLLW
449	P098	10	K	S01			MLLW
450	P106	10	K	S01			MLLW
451	P113	10	K	S01			MLLW
452	P120	10	K	S01			MLLW
453	U001	10	K	S01			MLLW
454	U002	10	K	S01			MLLW
455	U003	10	K	S01			MLLW

EPA I.D. Number *(Enter from Page 1)*
NM0890010515

Secondary ID Number (enter from Page 1)

XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. *(enter code)*	B. Estimated Annual Quantity of Waste	C. Unit of Measure *(Enter code)*	D. Processes (1) PROCESS CODES *(Enter code)*			D. Processes (2) PROCESS DESCRIPTION *(If a code is not entered in D(1))*
Technical Area 50, Building 37 (Continued)							
456	U012	10	K	S01			MLLW
457	U019	10	K	S01			MLLW
458	U022	10	K	S01			MLLW
459	U029	10	K	S01			MLLW
460	U031	10	K	S01			MLLW
461	U037	10	K	S01			MLLW
462	U044	10	K	S01			MLLW
463	U045	10	K	S01			MLLW
464	U052	10	K	S01			MLLW
465	U056	10	K	S01			MLLW
466	U057	10	K	S01			MLLW
467	U075	10	K	S01			MLLW
468	U077	10	K	S01			MLLW
469	U080	10	K	S01			MLLW
470	U108	10	K	S01			MLLW
471	U112	10	K	S01			MLLW
472	U115	10	K	S01			MLLW
473	U117	10	K	S01			MLLW
474	U121	10	K	S01			MLLW
475	U122	10	K	S01			MLLW
476	U123	10	K	S01			MLLW
477	U131	10	K	S01			MLLW
478	U133	10	K	S01			MLLW
479	U134	10	K	S01			MLLW
480	U135	10	K	S01			MLLW
481	U140	10	K	S01			MLLW
482	U144	10	K	S01			MLLW
483	U145	10	K	S01			MLLW
484	U151	20	K	S01			MLLW
485	U154	10	K	S01			MLLW
486	U159	10	K	S01			MLLW
487	U160	10	K	S01			MLLW
488	U161	10	K	S01			MLLW
489	U165	10	K	S01			MLLW
490	U169	10	K	S01			MLLW

EPA I.D. Number *(Enter from Page 1)*
NM0890010515

Secondary ID Number (enter from Page 1)

XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. *(enter code)*	B. Estimated Annual Quantity of Waste	C. Unit of Measure *(Enter code)*	D. Processes (1) PROCESS CODES *(Enter code)*			D. Processes (2) PROCESS DESCRIPTION *(If a code is not entered in D(1))*
Technical Area 50, Building 37 (Continued)							
491	U188	10	K	S01			MLLW
492	U190	10	K	S01			MLLW
493	U196	10	K	S01			MLLW
494	U204	10	K	S01			MLLW
495	U210	10	K	S01			MLLW
496	U211	10	K	S01			MLLW
497	U213	10	K	S01			MLLW
498	U216	10	K	S01			MLLW
499	U218	10	K	S01			MLLW
500	U219	10	K	S01			MLLW
501	U220	10	K	S01			MLLW
502	U225	10	K	S01			MLLW
503	U226	70	K	S01			MLLW
504	U227	10	K	S01			MLLW
505	U228	10	K	S01			MLLW
506	U239	10	K	S01			MLLW
507	D001	1,170	K	S01			Mixed Transuranic Waste (MTRUW)
508	D002	610	K	S01			MTRUW
509	D003	60	K	S01			MTRUW
510	D004	390	K	S01			MTRUW
511	D005	360	K	S01			MTRUW
512	D006	57,130	K	S01			MTRUW
513	D007	59,610	K	S01			MTRUW
514	D008	135,280	K	S01			MTRUW
515	D009	4,120	K	S01			MTRUW
516	D010	430	K	S01			MTRUW
517	D011	480	K	S01			MTRUW
518	D018	20	K	S01			MTRUW
519	D019	450	K	S01			MTRUW
520	D021	170	K	S01			MTRUW
521	D022	100	K	S01			MTRUW
522	D027	70	K	S01			MTRUW
523	D028	18,250	K	S01			MTRUW
524	D029	18,160	K	S01			MTRUW
525	D030	410	K	S01			MTRUW

EPA I.D. Number *(Enter from Page 1)*
NM0890010515

Secondary ID Number (enter from Page 1)

XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. *(enter code)*	B. Estimated Annual Quantity of Waste	C. Unit of Measure *(Enter code)*	D. Processes (1) PROCESS CODES *(Enter code)*			D. Processes (2) PROCESS DESCRIPTION *(If a code is not entered in D(1))*
Technical Area 50, Building 37 (Continued)							
526	D031	10	K	S01			MTRUW
527	D032	260	K	S01			MTRUW
528	D033	180	K	S01			MTRUW
529	D034	90	K	S01			MTRUW
530	D035	10	K	S01			MTRUW
531	D036	30	K	S01			MTRUW
532	D037	50	K	S01			MTRUW
533	D038	10	K	S01			MTRUW
534	D039	120	K	S01			MTRUW
535	D040	280	K	S01			MTRUW
536	D041	10	K	S01			MTRUW
537	D042	90	K	S01			MTRUW
538	D043	40	K	S01			MTRUW
539	F001	35,050	K	S01			MTRUW
540	F002	4,540	K	S01			MTRUW
541	F003	2,300	K	S01			MTRUW
542	F004	130	K	S01			MTRUW
543	F005	20,430	K	S01			MTRUW
544	P003	10	K	S01			MTRUW
545	P012	10	K	S01			MTRUW
546	P015	10	K	S01			MTRUW
547	P029	10	K	S01			MTRUW
548	P030	10	K	S01			MTRUW
549	P031	10	K	S01			MTRUW
550	P038	10	K	S01			MTRUW
551	P056	20	K	S01			MTRUW
552	P063	10	K	S01			MTRUW
553	P068	10	K	S01			MTRUW
554	P073	10	K	S01			MTRUW
555	P076	10	K	S01			MTRUW
556	P078	10	K	S01			MTRUW
557	P095	10	K	S01			MTRUW
558	P096	10	K	S01			MTRUW
559	P098	10	K	S01			MTRUW
560	P106	10	K	S01			MTRUW

EPA I.D. Number *(Enter from Page 1)*
NM0890010515

Secondary ID Number (enter from Page 1)

XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. *(enter code)*	B. Estimated Annual Quantity of Waste	C. Unit of Measure *(Enter code)*	D. Processes (1) PROCESS CODES *(Enter code)*			D. Processes (2) PROCESS DESCRIPTION *(If a code is not entered in D(1))*
Technical Area 50, Building 37 (Continued)							
561	P113	10	K	S01			MTRUW
562	P120	10	K	S01			MTRUW
563	U001	10	K	S01			MTRUW
564	U002	10	K	S01			MTRUW
565	U003	10	K	S01			MTRUW
566	U012	10	K	S01			MTRUW
567	U019	10	K	S01			MTRUW
568	U022	10	K	S01			MTRUW
569	U029	10	K	S01			MTRUW
570	U031	10	K	S01			MTRUW
571	U037	10	K	S01			MTRUW
572	U044	10	K	S01			MTRUW
573	U045	10	K	S01			MTRUW
574	U052	10	K	S01			MTRUW
575	U056	10	K	S01			MTRUW
576	U057	10	K	S01			MTRUW
577	U075	10	K	S01			MTRUW
578	U077	10	K	S01			MTRUW
579	U080	10	K	S01			MTRUW
580	U108	10	K	S01			MTRUW
581	U112	10	K	S01			MTRUW
582	U115	10	K	S01			MTRUW
583	U117	10	K	S01			MTRUW
584	U121	10	K	S01			MTRUW
585	U122	10	K	S01			MTRUW
586	U123	10	K	S01			MTRUW
587	U131	10	K	S01			MTRUW
588	U133	10	K	S01			MTRUW
589	U134	10	K	S01			MTRUW
590	U135	10	K	S01			MTRUW
591	U140	10	K	S01			MTRUW
592	U144	10	K	S01			MTRUW
593	U145	10	K	S01			MTRUW
594	U151	20	K	S01			MTRUW
595	U154	10	K	S01			MTRUW

EPA I.D. Number *(Enter from Page 1)*
NM0890010515

Secondary ID Number (enter from Page 1)

XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. *(enter code)*	B. Estimated Annual Quantity of Waste	C. Unit of Measure *(Enter code)*	D. Processes (1) PROCESS CODES *(Enter code)*			D. Processes (2) PROCESS DESCRIPTION *(If a code is not entered in D(1))*
Technical Area 50, Building 37 (Continued)							
596	U159	10	K	S01			MTRUW
597	U160	10	K	S01			MTRUW
598	U161	10	K	S01			MTRUW
599	U165	10	K	S01			MTRUW
600	U169	10	K	S01			MTRUW
601	U188	10	K	S01			MTRUW
602	U190	10	K	S01			MTRUW
603	U196	10	K	S01			MTRUW
604	U204	10	K	S01			MTRUW
605	U210	10	K	S01			MTRUW
606	U211	10	K	S01			MTRUW
607	U213	10	K	S01			MTRUW
608	U216	10	K	S01			MTRUW
609	U218	10	K	S01			MTRUW
610	U219	10	K	S01			MTRUW
611	U220	10	K	S01			MTRUW
612	U225	10	K	S01			MTRUW
613	U226	70	K	S01			MTRUW
614	U227	10	K	S01			MTRUW
615	U228	10	K	S01			MTRUW
616	U239	10	K	S01			MTRUW

EPA I.D. Number *(Enter from Page 1)*
NM0890010515

Secondary ID Number *(Enter from Page 1)*

XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D[1])
Technical Area 50, Building 69							
1	D001	25,360	K	S01			Hazardous Waste (HW)
2	D002	20,550	K	S01			HW
3	D003	1,200	K	S01			HW
4	D004	1,700	K	S01			HW
5	D005	1,900	K	S01			HW
6	D006	5,250	K	S01			HW
7	D007	9,400	K	S01			HW
8	D008	39,200	K	S01			HW
9	D009	16,400	K	S01			HW
10	D010	2,150	K	S01			HW
11	D011	11,700	K	S01			HW
12	D016	10	K	S01			HW
13	D017	20	K	S01			HW
14	D018	2,270	K	S01			HW
15	D019	40	K	S01			HW
16	D021	110	K	S01			HW
17	D022	1,450	K	S01			HW
18	D026	180	K	S01			HW
19	D027	80	K	S01			HW
20	D028	18,400	K	S01			HW
21	D029	18,300	K	S01			HW
22	D030	730	K	S01			HW
23	D031	10	KQ	S01			HW
24	D032	300	K	S01			HW
25	D033	210	K	S01			HW
26	D034	120	K	S01			HW
27	D035	670	K	S01			HW
28	D036	50	K	S01			HW
29	D037	50	K	S01			HW
30	D038	580	K	S01			HW
31	D039	200	K	S01			HW
32	D040	570	K	S01			HW
33	D041	10	K	S01			HW
34	D042	100	K	S01			HW
35	D043	60	K	S01			HW

EPA I.D. Number *(Enter from Page 1)*
NM0890010515

Secondary ID Number *(Enter from Page 1)*

XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D[1])
Technical Area 50, Building 69 (Continued)							
36	F001	51,170	K	S01			HW
37	F002	46,030	K	S01			HW
38	F003	12,770	K	S01			HW
39	F004	660	K	S01			HW
40	F005	61,560	K	S01			HW
41	F009	20	K	S01			HW
42	F027	20	K	S01			HW
43	P003	10	K	S01			HW
44	P006	10	K	S01			HW
45	P011	10	K	S01			HW
46	P012	10	K	S01			HW
47	P015	10	K	S01			HW
48	P029	10	K	S01			HW
49	P030	10	K	S01			HW
50	P031	10	K	S01			HW
51	P033	10	K	S01			HW
52	P038	10	K	S01			HW
53	P043	10	K	S01			HW
54	P048	10	K	S01			HW
55	P056	1,030	K	S01			HW
56	P063	10	K	S01			HW
57	P068	10	K	S01			HW
58	P073	10	K	S01			HW
59	P076	60	K	S01			HW
60	P078	70	K	S01			HW
61	P092	10	K	S01			HW
62	P095	10	K	S01			HW
63	P096	10	K	S01			HW
64	P098	10	K	S01			HW
65	P104	10	K	S01			HW
66	P105	10	K	S01			HW
67	P106	10	K	S01			HW
68	P112	10	K	S01			HW
69	P113	10	K	S01			HW
70	P119	10	K	S01			HW

EPA I.D. Number *(Enter from Page 1)*
NM0890010515

Secondary ID Number *(Enter from Page 1)*

XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in D[1])
Technical Area 50, Building 69 (Continued)							
71	P120	10	K	S01			HW
72	U001	10	K	S01			HW
73	U002	310	K	S01			HW
74	U003	10	K	S01			HW
75	U007	10	K	S01			HW
76	U008	10	K	S01			HW
77	U009	10	K	S01			HW
78	U012	10	K	S01			HW
79	U018	10	K	S01			HW
80	U019	90	K	S01			HW
81	U022	10	K	S01			HW
82	U029	10	K	S01			HW
83	U031	10	K	S01			HW
84	U033	10	K	S01			HW
85	U037	10	K	S01			HW
86	U041	10	K	S01			HW
87	U044	10	K	S01			HW
88	U045	10	K	S01			HW
89	U052	10	K	S01			HW
90	U055	10	K	S01			HW
91	U056	10	K	S01			HW
92	U057	10	K	S01			HW
93	U067	10	K	S01			HW
94	U068	10	K	S01			HW
95	U070	20	K	S01			HW
96	U075	50	K	S01			HW
97	U077	10	K	S01			HW
98	U080	1,690	K	S01			HW
99	U085	10	K	S01			HW
100	U091	180	K	S01			HW
101	U092	10	K	S01			HW
102	U103	10	K	S01			HW
103	U108	10	K	S01			HW
104	U109	10	K	S01			HW
105	U112	10	K	S01			HW

EPA I.D. Number *(Enter from Page 1)*
NM0890010515

Secondary ID Number *(Enter from Page 1)*

XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D[1])
Technical Area 50, Building 69 (Continued)							
106	U115	10	K	S01			HW
107	U117	10	K	S01			HW
108	U121	10	K	S01			HW
109	U122	230	K	S01			HW
110	U123	10	K	S01			HW
111	U124	10	K	S01			HW
112	U131	10	K	S01			HW
113	U133	10	K	S01			HW
114	U134	180	K	S01			HW
115	U135	80	K	S01			HW
116	U136	10	K	S01			HW
117	U140	10	K	S01			HW
118	U144	10	K	S01			HW
119	U145	10	K	S01			HW
120	U151	240	K	S01			HW
121	U153	10	K	S01			HW
122	U154	40	K	S01			HW
123	U159	20	K	S01			HW
124	U160	10	K	S01			HW
125	U161	90	K	S01			HW
126	U162	10	K	S01			HW
127	U163	10	K	S01			HW
128	U165	10	K	S01			HW
129	U167	10	K	S01			HW
130	U168	10	K	S01			HW
131	U169	10	K	S01			HW
132	U170	10	K	S01			HW
133	U188	10	K	S01			HW
134	U190	10	K	S01			HW
135	U196	10	K	S01			HW
136	U204	10	K	S01			HW
137	U210	100	K	S01			HW
138	U211	40	K	S01			HW
139	U213	10	K	S01			HW
140	U216	10	K	S01			HW

EPA I.D. Number *(Enter from Page 1)*
NM0890010515

Secondary ID Number *(Enter from Page 1)*

XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D[1])
Technical Area 50, Building 69 (Continued)							
141	U218	10	K	S01			HW
142	U219	10	K	S01			HW
143	U220	100	K	S01			HW
144	U223	10	K	S01			HW
145	U225	10	K	S01			HW
146	U226	2,540	K	S01			HW
147	U227	10	K	S01			HW
148	U228	420	K	S01			HW
149	U239	170	K	S01			HW
150	U240	10	K	S01			HW
151	U246	10	K	S01			HW
152	D001	1,170	K	S01			Mixed Low-Level Waste (MLLW)
153	D002	610	K	S01			MLLW
154	D003	60	K	S01			MLLW
155	D004	390	K	S01			MLLW
156	D005	360	K	S01			MLLW
157	D006	57,130	K	S01			MLLW
158	D007	59,610	K	S01			MLLW
159	D008	135,280	K	S01			MLLW
160	D009	4,120	K	S01			MLLW
161	D010	430	K	S01			MLLW
162	D011	480	K	S01			MLLW
163	D018	20	K	S01			MLLW
164	D019	450	K	S01			MLLW
165	D021	170	K	S01			MLLW
166	D022	100	K	S01			MLLW
167	D027	70	K	S01			MLLW
168	D028	18,250	K	S01			MLLW
169	D029	18,160	K	S01			MLLW
170	D030	410	K	S01			MLLW
171	D031	10	K	S01			MLLW
172	D032	260	K	S01			MLLW
173	D033	180	K	S01			MLLW
174	D034	90	K	S01			MLLW
175	D035	10	K	S01			MLLW

EPA I.D. Number *(Enter from Page 1)*
NM0890010515

Secondary ID Number *(Enter from Page 1)*

XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D[1])
Technical Area 50, Building 69 (Continued)							
176	D036	30	K	S01			MLLW
177	D037	50	K	S01			MLLW
178	D038	10	K	S01			MLLW
179	D039	120	K	S01			MLLW
180	D040	280	K	S01			MLLW
181	D041	10	K	S01			MLLW
182	D042	90	K	S01			MLLW
183	D043	40	K	S01			MLLW
184	F001	35,050	K	S01			MLLW
185	F002	4,540	K	S01			MLLW
186	F003	2,300	K	S01			MLLW
187	F004	130	K	S01			MLLW
188	F005	20,430	K	S01			MLLW
189	P003	10	K	S01			MLLW
190	P012	10	K	S01			MLLW
191	P015	10	K	S01			MLLW
192	P029	10	K	S01			MLLW
193	P030	10	K	S01			MLLW
194	P031	10	K	S01			MLLW
195	P038	10	K	S01			MLLW
196	P056	20	K	S01			MLLW
197	P063	10	K	S01			MLLW
198	P068	10	K	S01			MLLW
199	P073	10	K	S01			MLLW
200	P076	10	K	S01			MLLW
1	P078	10	K	S01			MLLW
202	P095	10	K	S01			MLLW
203	P096	10	K	S01			MLLW
204	P098	10	K	S01			MLLW
205	P106	10	K	S01			MLLW
206	P113	10	K	S01			MLLW
207	P120	10	K	S01			MLLW
208	U001	10	K	S01			MLLW
209	U002	10	K	S01			MLLW
210	U003	10	K	S01			MLLW

EPA I.D. Number *(Enter from Page 1)*
NM0890010515

Secondary ID Number *(Enter from Page 1)*

XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 50, Building 69 (Continued)							
211	U012	10	K	S01			MLLW
212	U019	10	K	S01			MLLW
213	U022	10	K	S01			MLLW
214	U029	10	K	S01			MLLW
215	U031	10	K	S01			MLLW
216	U037	10	K	S01			MLLW
217	U044	10	K	S01			MLLW
218	U045	10	K	S01			MLLW
219	U052	10	K	S01			MLLW
220	U056	10	K	S01			MLLW
221	U057	10	K	S01			MLLW
222	U075	10	K	S01			MLLW
223	U077	10	K	S01			MLLW
224	U080	10	K	S01			MLLW
225	U108	10	K	S01			MLLW
226	U112	10	K	S01			MLLW
227	U115	10	K	S01			MLLW
228	U117	10	K	S01			MLLW
229	U121	10	K	S01			MLLW
230	U122	10	K	S01			MLLW
231	U123	10	K	S01			MLLW
232	U131	10	K	S01			MLLW
233	U133	10	K	S01			MLLW
234	U134	10	K	S01			MLLW
235	U135	10	K	S01			MLLW
236	U140	10	K	S01			MLLW
237	U144	10	K	S01			MLLW
238	U145	10	K	S01			MLLW
239	U151	20	K	S01			MLLW
240	U154	10	K	S01			MLLW
241	U159	10	K	S01			MLLW
242	U160	10	K	S01			MLLW
243	U161	10	K	S01			MLLW
244	U165	10	K	S01			MLLW
245	U169	10	K	S01			MLLW

EPA I.D. Number *(Enter from Page 1)*
NM0890010515

Secondary ID Number *(Enter from Page 1)*

XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D[1])
Technical Area 50, Building 69 (Continued)							
246	U188	10	K	S01			MLLW
247	U190	10	K	S01			MLLW
248	U196	10	K	S01			MLLW
249	U204	10	K	S01			MLLW
250	U210	10	K	S01			MLLW
251	U211	10	K	S01			MLLW
252	U213	10	K	S01			MLLW
253	U216	10	K	S01			MLLW
254	U218	10	K	S01			MLLW
255	U219	10	K	S01			MLLW
256	U220	10	K	S01			MLLW
257	U225	10	K	S01			MLLW
258	U226	70	K	S01			MLLW
259	U227	10	K	S01			MLLW
260	U228	10	K	S01			MLLW
261	U239	10	K	S01			MLLW
262	U246	10	K	S01			MLLW
263	D001	1,170	K	S01			Mixed Transuranic Waste (MTRUW)
264	D002	610	K	S01			MTRUW
265	D003	60	K	S01			MTRUW
266	D004	390	K	S01			MTRUW
267	D005	360	K	S01			MTRUW
268	D006	57,130	K	S01			MTRUW
269	D007	59,610	K	S01			MTRUW
270	D008	135,280	K	S01			MTRUW
271	D009	4,120	K	S01			MTRUW
272	D010	430	K	S01			MTRUW
273	D011	480	K	S01			MTRUW
274	D018	20	K	S01			MTRUW
275	D019	450	K	S01			MTRUW
276	D021	170	K	S01			MTRUW
277	D022	100	K	S01			MTRUW
278	D027	70	K	S01			MTRUW
279	D028	18,250	K	S01			MTRUW
280	D029	18,160	K	S01			MTRUW

EPA I.D. Number *(Enter from Page 1)*
NM0890010515

Secondary ID Number *(Enter from Page 1)*

XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D[1])
Technical Area 50, Building 69 (Continued)							
281	D030	410	K	S01			MTRUW
282	D031	10	K	S01			MTRUW
283	D032	260	K	S01			MTRUW
284	D033	180	K	S01			MTRUW
285	D034	90	K	S01			MTRUW
286	D035	10	K	S01			MTRUW
287	D036	30	K	S01			MTRUW
288	D037	50	K	S01			MTRUW
289	D038	10	K	S01			MTRUW
290	D039	120	K	S01			MTRUW
291	D040	280	K	S01			MTRUW
292	D041	10	K	S01			MTRUW
293	D042	90	K	S01			MTRUW
294	D043	40	K	S01			MTRUW
295	F001	35,050	K	S01			MTRUW
296	F002	4,540	K	S01			MTRUW
297	F003	2,300	K	S01			MTRUW
298	F004	130	K	S01			MTRUW
299	F005	20,430	K	S01			MTRUW
300	P003	10	K	S01			MTRUW
301	P012	10	K	S01			MTRUW
302	P015	10	K	S01			MTRUW
303	P029	10	K	S01			MTRUW
304	P030	10	K	S01			MTRUW
305	P031	10	K	S01			MTRUW
306	P038	10	K	S01			MTRUW
307	P056	20	K	S01			MTRUW
308	P063	10	K	S01			MTRUW
309	P068	10	K	S01			MTRUW
310	P073	10	K	S01			MTRUW
311	P076	10	K	S01			MTRUW
312	P078	10	K	S01			MTRUW
313	P095	10	K	S01			MTRUW
314	P096	10	K	S01			MTRUW
315	P098	10	K	S01			MTRUW

EPA I.D. Number *(Enter from Page 1)*
NM0890010515

Secondary ID Number *(Enter from Page 1)*

XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			(2) PROCESS DESCRIPTION (If a code is not entered in D[1])
Technical Area 50, Building 69 (Continued)							
316	P106	10	K	S01			MTRUW
317	P113	10	K	S01			MTRUW
318	P120	10	K	S01			MTRUW
319	U001	10	K	S01			MTRUW
320	U002	10	K	S01			MTRUW
321	U003	10	K	S01			MTRUW
322	U012	10	K	S01			MTRUW
323	U019	10	K	S01			MTRUW
324	U022	10	K	S01			MTRUW
325	U029	10	K	S01			MTRUW
326	U031	10	K	S01			MTRUW
327	U037	10	K	S01			MTRUW
328	U044	10	K	S01			MTRUW
329	U045	10	K	S01			MTRUW
330	U052	10	K	S01			MTRUW
331	U056	10	K	S01			MTRUW
332	U057	10	K	S01			MTRUW
333	U075	10	K	S01			MTRUW
334	U077	10	K	S01			TRUM
335	U080	10	K	S01			MTRUW
336	U108	10	K	S01			MTRUW
337	U112	10	K	S01			MTRUW
338	U115	10	K	S01			MTRUW
339	U117	10	K	S01			MTRUW
340	U121	10	K	S01			MTRUW
341	U122	10	K	S01			MTRUW
342	U123	10	K	S01			MTRUW
343	U131	10	K	S01			MTRUW
344	U133	10	K	S01			MTRUW
345	U134	10	K	S01			MTRUW
346	U135	10	K	S01			MTRUW
347	U140	10	K	S01			MTRUW
348	U144	10	K	S01			MTRUW
349	U145	10	K	S01			MTRUW
350	U151	20	K	S01			MTRUW

EPA I.D. Number *(Enter from Page 1)*
NM0890010515

Secondary ID Number *(Enter from Page 1)*

XIV. Description of Hazardous Wastes *(Continued)*

Line Number	A. EPA Hazardous Waste No. (Enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter code)			D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in D(1))
Technical Area 50, Building 69 (Continued)							
351	U154	10	K	S01			MTRUW
352	U159	10	K	S01			MTRUW
353	U160	10	K	S01			MTRUW
354	U161	10	K	S01			MTRUW
355	U165	10	K	S01			MTRUW
356	U169	10	K	S01			MTRUW
357	U188	10	K	S01			MTRUW
358	U190	10	K	S01			MTRUW
359	U196	10	K	S01			MTRUW
360	U204	10	K	S01			MTRUW
361	U210	10	K	S01			MTRUW
362	U211	10	K	S01			MTRUW
363	U213	10	K	S01			MTRUW
364	U216	10	K	S01			MTRUW
365	U218	10	K	S01			MTRUW
366	U219	10	K	S01			MTRUW
367	U220	10	K	S01			MTRUW
368	U225	10	K	S01			MTRUW
369	U226	70	K	S01			MTRUW
370	U227	10	K	S01			MTRUW
371	U228	10	K	S01			MTRUW
372	U239	10	K	S01			MTRUW
373	U246	10	K	S01			MTRUW

ATTACHMENT I

TREATMENT OPERATIONS

TABLE OF CONTENTS

LIST OF TABLES ii
LIST OF FIGURES iii
LIST OF ABBREVIATIONS/ACRONYMS iv

I.1 TREATMENT OPERATIONS I-1
I.1.1 TA-50-1 RLWTF Cementation Treatment Process I-1
I.1.1.1 Cementation Unit Components I-2
I.1.1.2 Safety Features I-2
I.1.1.3 Sampling Methods I-4
I.1.1.4 Air Emission Standards I-4
I.1.1.5 Waste Analysis for Compliance with Land Disposal Restrictions . . I-4
I.1.1.6 Record Keeping I-4
I.1.2 TA-50-37 Electrochemical Treatment Process I-5
I.1.2.1 Waste Feed System Components I-5
I.1.2.2 ETU Components I-6
I.1.2.3 Safety Features I-8
I.1.2.4 Waste Analysis I-10
I.1.2.5 Sampling Methods I-10
I.1.2.6 Sampling Frequency I-10
I.1.2.7 Analytical Parameters and Rationale I-11
I.1.2.8 Test Methods I-11
I.1.2.9 Waste Analysis Requirements for Compliance with LDR I-12
I.1.2.10 Air Emission Standards I-13
I.1.2.11 Waste Generated I-13

I.2 REFERENCES I-15

LIST OF TABLES

TABLE NO.	TITLE	PAGE
I-1	Description of Mixed Low-Level and Mixed TRU Waste Treated at the RLWTF Cementation Unit	I-16
I-2	Descriptions of RCRA-Regulated Waste to be Treated at the TA-50 Electrochemical Treatment Unit	I-17
I-3	Parameters, Characterization Methods, and Rationale for Mixed TRU Waste	I-25
I-4	Parameters, Characterization Methods, and Rationale for RCRA-Regulated Waste	I-26
I-5	Recommended Sample Containers, Preservation Techniques and Holding Times	I-28

LIST OF FIGURES

FIGURE NO.	TITLE	PAGE
I-1	TA-50-1 - Cementation Unit - Room 60A, CSA - Room 59, Pretreatment Operation - Room 60	I-30
I-2	Electrochemical Treatment Process Flow	I-31
I-3	Single Cell Electrochemical Treatment System	I-32
I-4	Divided Electrochemical Treatment System	1-33

LIST OF ABBREVIATIONS/ACRONYMS

20 NMAC 4.1	*New Mexico Administrative Code*, Title 20, Chapter 4, Part 1
CFR	*Code of Federal Regulations*
CSA	container storage area
DOT	U.S. Department of Transportation
EPA	U.S. Environmental Protection Agency
ETU	electrochemical treatment unit
HEPA	high-efficiency particulate air
LANL	Los Alamos National Laboratory
LDR	Land Disposal Restriction
RCRA	Resource Conservation and Recovery Act
RLWTF	Radioactive Liquid Waste Treatment Facility
SOP	safe operating procedure
SVOC	semivolatile organic compound
SW-846	*Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (EPA 1997)
TA	Technical Area
TCLP	Toxicity Characteristic Leaching Procedure
TRU	transuranic
VOC	volatile organic compound
WPF	Waste Profile Form

ATTACHMENT I
TREATMENT OPERATIONS

I.1 TREATMENT OPERATIONS

This attachment provides an overview of the general operation and process information for the treatment units located at Technical Area (TA) 50 of the Los Alamos National Laboratory (LANL). The Radioactive Liquid Waste Treatment Facility (RLWTF) cementation treatment unit is housed in TA-50 Building 1 (TA-50-1) and the electrochemical treatment unit (ETU) is housed in TA-50-37.

I.1.1 TA-50-1 RLWTF Cementation Treatment Process

The RLWTF treatment unit in Room 60A of TA-50-1 is used for cementation of mixed transuranic (TRU) waste generated by the RLWTF Pretreatment Plant operations (Table I-1). The design capacity of this treatment unit is 660 gal./day. Figure I-1 excerpted from the *EM-R1W Detailed Operating Procedure for TA-50-1, Room 60 – Pretreatment Plant* depicts the cementation process.

The solidification is accomplished by mixing the sludge with cement in a drum and tumbling it in a drum tumbler located in Room 60A. The drum tumbler is housed inside a ventilated enclosure that exhausts to a high-efficiency particulate air (HEPA)-filtered stack. Sludge is pumped from a sludge tank to a transparent metering tank in Room 60. The transparent metering tank is used to measure the required quantity of sludge from the sludge tanks for cementation in a drum. An empty U.S. Department of Transportation (DOT)-approved drum is prepared for tumbling. The small bung on the drum lid is replaced with a customized bung equipped with a nipple that allows the drum to be vented. A small carbon filter is attached to the vent nipple on the customized bung installed on the drum lid, and the drum is vented through this filter. A 5-mil-thick plastic bag with the bottom removed is used as a spill guard. One end of the plastic bag is inserted in the drum. Operators add vermiculite, Portland cement, and then weigh the drum. Sodium silicate is then added to the drum. The drum is attached to a monorail hoist and lifted into the drum tumbler. The drum tumbler accommodates two drums and is installed inside an enclosure that vents to a monitored HEPA-filtered stack. After the drum is lowered into the tumbler, a sludge transfer hose is inserted into the drum, and the plastic drum liner is secured around the hose to prevent splashing. The sludge is then drained from the sludge tank into the drum. The sludge hose is removed from the drum and the drum lid is sealed to the drum with a bead of adhesive. The lid ring on the drum is tightened and the drum tumbler enclosure hatch is closed.

The drum tumbler is started, checked for leaks, and the drum is tumbled. The drum tumbler is stopped and the enclosure hatch is opened. The vent nipple on the customized bung is replaced by a LANL-approved carbon filter, and the drum is vented through this filter. The drum is removed from the tumbler using the monorail hoist. After the drum is weighed on a platform scale, it is moved by the hoist to a dolly that holds the drum at an angle until the cement hardens.

RLWTF personnel obtain samples and submit them for analysis as described in the latest revision of the detailed operating procedures for RLWTF sampling. Safety features associated with the cementation unit are described in the latest revision of the safe operating procedure (SOP) for the TA-50-1 pretreatment operations.

An overhead hoist located in Room 60A may be used for moving heavy or large containers within this room. After cementation treatment operations in Room 60A, drums of solidified waste will be moved to the TA-50-1 RLWTF container storage area (CSA) in Room 59. The drums will be moved from Room 60A to Room 59 with the overhead hoist and/or a drum dolly. Small containers may be handled manually or with a drum dolly.

I.1.1.1 Cementation Unit Components

The Resource Conservation and Recovery Act (RCRA)-permitted components associated with the cementation treatment process located in Room 60A are as follows:

- Drum tumbler (Room 60A). The drum tumbler is used for cementation of sludges in drums. The drum tumbler is housed inside a ventilated containment box that exhausts to a HEPA-filter stack. The containment box is approximately 9 ft-6 in. long by 4 ft wide by 4 ft-6 in. high and tumbles two drums simultaneously.
- Metering tank (Room 60A). Feed tank TK6 is used for measuring the required quantity of sludge from the Rooms 60 and 60A sludge tanks for cementation in a drum. TK6 is a 22-gal. tank located 10 ft above the floor in the southeast corner of Room 60A.

The containment box for the drum tumbler and feed tank TK6 is the identified mixed waste unit associated with the cementation process.

I.1.1.2 Safety Features

The RLWTF cementation unit is configured to minimize hazards, and appropriate measures are taken to conduct safe operations and to minimize potential emissions. Engineering control

measures for cementation treatment operations include alarm systems, electrical current breakers (surge protectors), and emergency high level alarms. RLWTF personnel follow instructions in the SOP for the TA-50-1 Pretreatment Plant. The cementation unit is equipped with engineering controls such as:

- Remote handling equipment
- Ventilation - single-stage HEPA filtration on exhaust from Room 60A. TA-50-1 ventilation system provides HEPA-filtered exhaust for the process area that may contain radioactive materials. The process exhaust system plenum contains a filter box with filters arranged to provide maximum surface area exposure. The process exhaust system is equipped with interlocks that automatically shut off supply fans if power is lost to the exhaust system. The system is equipped with timers that provide startup delays to prevent surge losses.
- High-level alarms on all tanks containing liquid waste
- If more than 22 gallons of sludge is accidentally transferred to TK-6, the excess automatically drains to the overflow reservoir. After the TK-6 is emptied, the sludge is drained from the overfill reservoir back into TK-6 by opening the bottom valve.
- If a drum develops a leak, operations stop immediately.
- The treatment area has overflow pipes to nearby tanks.
- During an emergency shutdown the Sludge Feed Pump Number 5 to Tank 8 is turned off prior to evacuation of Room 60A if the sludge cementation process is in operation.

Personal Protective Equipment

Personnel at the TA-50-1 RLWTF, Room 60A treatment unit will wear respirators, gloves, coveralls, steel-toed boots, and booties. All visitors will wear anti-C lab coats, safety glasses, and booties.

Power Failure

The RLWTF cementation unit would shut down in the event of power failure. There would be no pressure or gas buildup or any threat of system rupture or failure as a result of an emergency system shutdown. A 1200-kW backup power generator at TA-50-1 will power the entire facility in the event of a power failure. A smaller generator for powering local operations is also maintained at TA-50-1 and will be used during RLWTF Pretreatment Plant operations if necessary.

I.1.1.3 Sampling Methods

RLWTF sampling personnel will collect samples from a sample port on the TK-7 sludge tank on a day prior to or the day the sludge is cemented. TK-7 is a continuously stirred and recirculated tank, ensuring a representative sample. Five samples are collected, one for each of the following: volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), metals, radionuclides, and percent solids. Sampling information is recorded in the TA-50-1 Room 60 plant logbook. Personnel initiate a chain-of-custody form to accompany each sample taken.

I.1.1.4 Air Emission Standards

All air and water discharges from the single permitted stack at TA-50-1 and the outfall in Mortandad Canyon are monitored routinely in accordance with the directive on General Environmental Protection Program Requirements. Process exhaust stack parameters are monitored daily through monitoring station ASE-004. Continuous air monitors provide the primary means of detecting and preventing the release of radioactivity.

I.1.1.5 Waste Analysis for Compliance with Land Disposal Restrictions

Mixed TRU waste is treated at the RLWTF by cementation to stabilize the waste to form a noncorrosive solid matrix for storage and to meet waste acceptance criteria for disposal at the Waste Isolation Pilot Plant. The U.S. Environmental Protection Agency (EPA) Hazardous Waste Numbers that potentially apply to these wastes are provided in Table B-5 of the *Los Alamos National Laboratory General Part B Permit Application* (LANL 1998) (hereinafter referred to as the LANL General Part B). Matrix parameter codes are applied to mixed TRU wastes. (Matrix Parameter Code L1000, Aqueous Liquids/Slurries: defined as aqueous liquids and slurries that meet the EPA Land Disposal Restriction [LDR] criteria for wastewaters (i.e., <1 percent total suspended solids). The TRUPACT-II content codes used to more specifically describe mixed TRU waste are cross-referenced to matrix parameter codes in Appendix B, Table B-4 and fully described in Section B.1.2.3 of the LANL General Part B.

I.1.1.6 Record Keeping

Operators record on a Daily Operations & Activity Log the influent tank levels; sludge drawoff; other influent such as backwash, batch waste, amount of lime, iron and polymer added; plant start-up time; plant shut-down; effluent tank levels; and samples taken, time, and type. Operators complete the Room 60 and 60A Treatment Log at the end of each run of any part of the

Pretreatment Plant activities. RLWTF personnel inspect drums and complete the Drum Inspection Form which accompanies each drum that contains sludge. The analytical chemist completes the Room 60, Sludge Laboratory Analysis Form to verify that the sludge is ready for solidification.

RLWTF personnel record inspections on the Hazardous and Mixed Waste Facility Inspection Record Form, the Inspection Record for Monorail Overhead Underhung Hoists, and the Preoperational Inspection Record for Overhead Cranes and Hoists and maintain these records.

I.1.2 TA-50-37 Electrochemical Treatment Process

Electrochemical treatment will be used to treat RCRA-listed and characteristic wastes containing metals, cyanides, nitrates, sulfides, and low concentrations (less than 10 percent by weight) of organic constituents. Metals will be electrochemically extracted from the waste solutions and deposited on cathodes; cyanides are decomposed to carbon dioxide; nitrates will be reduced to nitrogen; sulfides will complex with other heavy metals in the waste stream and precipitate out of solution; and organics will be oxidized to carbon dioxide and water. The remaining wastewater solution will contain low-level radioactivity and will continue to be managed as radioactive waste. Figure I-2 provides a process flow diagram for wastes to be treated by the ETU. Table I-2 lists the regulated wastes to be treated in the ETU. The following sections provide specific information on the characteristics of the wastes prior to and following electrochemical treatment.

An overhead crane in Room 117 may be used for moving heavy or large equipment associated with the ETU at TA-50-37. After treatment operations in Room 117 are complete, drums of solidified waste will be moved to the TA-50-37 CSA in Room 118. The drums will be moved from Room 117 to Room 118 with a drum dolly.

I.1.2.1 Waste Feed System Components

The waste feed system will include the following components:

- Container to hold the liquid waste feed
- Portable pump to circulate the waste feed through the treatment system
- Removable agitator in the feed container to ensure uniform mixing of the waste feed

If the waste feed container is the original overpacked drum in which the waste was shipped to TA-50-37, Room 117, the portable pump and agitator will be inserted into the drum. The drums

will be placed on a spill containment tray. The waste will be pumped to the electrolytic system reservoir where it will undergo treatment, flow back to the feed container, and continue to be circulated via the metering pump until treatment is determined to be complete.

Alternatively, waste from DOT-approved shipping containers will be placed into a polyethylene batch waste feed container. The waste feed container may range in size to a maximum of 300 gal. The waste feed container will be placed into another container to provide secondary containment. The secondary containment will be sized to contain the entire contents of the waste feed batch container, in the event that a leak should develop. The quantity of waste that is batch-treated depends on the initial quantity of waste available for a particular treatment run.

The waste feed pump, tubing/piping, and agitator will all be constructed of polyethylene or another similar inert plastic material.

I.1.2.2 ETU Components

Electrochemical treatment will be performed under two different configurations. The first configuration will include an undivided cell where the waste solution will circulate freely between the anodes and cathodes in the electrolytic cell. The second configuration will include a divided cell, where a membrane will separate the anodic and cathodic compartments of the electrolytic cell. Use of the divided or undivided cell will depend on the constituent(s) of concern being removed or degraded in a particular waste stream, and the concentration of the constituent(s) in the waste. The divided cell is more effective at treating low concentration wastes. In both the divided and undivided cells, there are three basic types of reactions that could take place: oxidation, reduction, or precipitation. For treatment involving reduction the "active reaction" is cathodic (occurs at the cathode) while for treatment involving oxidation the "active reaction" is anodic (occurs at the anode). The following are the three basic reactions that occur in the electrochemical treatment process. The RCRA-regulated waste to be treated follows one or more of these reactions.

Oxidation:	Anodic:	$A^{x+} - ye^- \rightarrow A^{(x+y)+}$
	Cathodic:	$2H^+ + 2e^- \rightarrow H_2\uparrow$
Reduction:	Anodic:	$H_2O \rightarrow \frac{1}{2}O_2 + 2H^+ + 2e^-$
	Cathodic:	$A^{x+} + ye^- \rightarrow A^{(x-y)+}$
Precipitation:		$B^{x-} + M^{x+} \rightarrow MB\downarrow$

M = metal

Undivided Electrochemical Cell System

The first configuration will include an undivided cell where the waste solution circulates freely between the anodes and cathodes in the electrochemical cell. Figure I-3 provides a schematic of the undivided cell system. The process and main system components are described as follows:

1. Waste will be pumped from the waste feed container through piping into the undivided electrochemical treatment cell.

2. The undivided electrochemical cell will be a commercially available benchtop unit, constructed of polyethylene or another similar inert plastic material with inlet and outlet ports, flow distributor, and slots for electrode placement. The cathode material used will depend on the composition of the waste to be treated. Once waste has been pumped into the cell through the inlet port, the waste will passively overflow through the outlet port back through polyethylene (or similar plastic) piping into the waste feed container. The electrochemical cell will be placed in secondary containment sized to hold the entire contents of the cell and equipped with a liquids detector. If liquids are detected in the secondary containment, the waste feed pumps will automatically shut off.

3. Electrical power will be supplied to the unit through a rectifier or pulse rectifier. (A rectifier is a device that converts alternating electrical current into direct electrical current). The unit will be equipped with controls to select and change the electrical current and voltage applied to the electrodes in the electrochemical cell. The rectifier will be equipped with surge control and will automatically shut off in the event of an electrical surge to the system.

4. Auxiliary equipment will include pH meters in both the electrochemical cell and batch waste feed container, thermometers or thermocouples in the electrochemical cell and batch waste feed container, voltmeters, ammeters, a digital coulometer (to measure the amount of electricity used in the electrolytic process), and a multi-channel chart recorder to collect process data.

Divided Electrochemical Cell System

The second configuration will include a divided cell, where a membrane will separate the anodic and cathodic compartments of the electrolytic cell. Figure I-4 provides a schematic of the divided cell system.

The process and main divided cell system components are described as follows:

1. Waste will be pumped by a pump from the waste feed container through piping into the membrane-divided electrochemical treatment cell(s). Depending on the waste constituents, the batch feed container will either become the analyte reservoir or the catholyte reservoir. An appropriate electrolyte solution will be placed into the opposing catholyte or analyte container (whichever container is not used for holding waste feed). Both analyte and catholyte containers will be equipped with separate pumps and piping systems constructed of polyethylene or a similar inert plastic material.

2. The divided electrochemical cell will be a commercially available, 30-gal. benchtop unit equipped with numerous electrodes that will be separated by plastic to prevent their direct contact with the waste and electrolytic solutions. Up to ten 30-gal. units may be operated either in parallel or series for a maximum total waste treatment capacity of 300 gal. per run. Units set up in parallel will be used to process larger waste batches. Units set up in series will be used to treat progressively lower concentrations of waste constituents. Once waste has been pumped into the cell through the inlet ports, the waste and electrolytic solutions will passively overflow from the outlet ports back through polyethylene (or similar plastic) piping back into the appropriate analyte or catholyte feed containers. The electrochemical cell will be placed in secondary containment sized to hold the entire contents of the cell and equipped with a liquids detector. If liquids are detected in the secondary containment, the waste feed pumps will automatically shut off.

3. Electrical power will be supplied to the unit through a rectifier or pulse rectifier. The unit will be equipped with controls to select and change the electrical current and voltage applied to the electrodes in the electrochemical cell(s). Current and voltage can be set to vary with each of the up to 10 electrochemical cells that can be included in the divided cell system configuration. The rectifier will be equipped with surge control to automatically shut off in the event of an electrical surge to the system.

4. Auxiliary equipment will include pH meters in both the electrochemical cells and batch feed containers, thermometers or thermocouples in the electrochemical cells and batch feed containers, voltmeters, ammeters, a digital coulometer, and a multichannel chart recorder to collect process data.

I.1.2.3 Safety Features

The ETU will be configured to minimize hazards, and appropriate measures will be taken to conduct safe operations and to minimize potential emissions. Engineering control measures for treatment operations include alarms systems, electrical current breakers (surge protectors),

automatic acid/caustic dispensers to maintain pH levels during cyanide waste treatment, a chemical fume hood, and pollution control equipment. The ETU will have the following safety features:

- Containers of hazardous and mixed waste will be stored indoors in secondary containment to contain leaks hazards and eliminate precipitation runon/runoff problems.
- Acidic and basic waste solutions and treatment reagents will be located at different locations within the room and be stored within separate secondary containment to minimize hazards associated with the mixing of acids and bases.
- All equipment will be located within the Room 117 walk-in fume hood to collect any and all possible off-gases. The ventilation system will be connected to the carbon and HEPA filtering system of the building.
- The ETU will be equipped with various scrubbers that may be used, depending on the waste stream type being treated. A caustic scrubber will be in place for acidic and chlorine gases (a potassium iodide scrubber may also be used for chlorines) and acidic scrubber for ammonia gases.
- The systems will have a leakage detection control alarm which will turn off all waste feed pumps if a leak is detected.
- A secondary containment alarm will be in place to detect whether liquids are present in the secondary containment surrounding the electrochemical treatment cell. If liquids are detected, the waste feed pumps will automatically shut off.
- A liquid level sensor in the electrochemical treatment cell will be designed to turn off pumps if liquid levels drop below necessary operation levels.
- An automatic dispenser of caustic solution will operate to dispense caustic solution into the treatment system during the treatment of cyanide wastes if the pH alarm detects that the pH is too low.
- The ETU is equipped with an emergency shutoff control to shut down electrical power to the rectifier.
- All equipment that will come in contact with hazardous and mixed waste will be constructed of nonreacting polyethylene or similar inert plastic material (e.g., polyvinyl chloride).

Personal Protective Equipment

Personnel working at the TA-50-37, Room 117 ETU will wear, at a minimum, a labcoat, protective glasses, protective gloves, and booties. As determined by waste constituents, personnel may be

instructed to wear anti-C coveralls, face shields, respirators, and booties. All visitors will wear anti-C lab coats, safety glasses, and booties.

I.1.2.4 Waste Analysis

Waste selected for treatment in the TA-50-37 Room 117 ETU will be sampled and analyzed. Initially, the waste will be characterized based on acceptable knowledge as documented on the Waste Profile Form (WPF). Prior to selecting the waste for treatment in the ETU, LANL personnel will review documented acceptable knowledge, WPF information and any analytical data that will be available from the waste generator or waste management group. Subsequently, ETU operators will conduct sampling and analysis prior to treatment to verify the WPF information in order to determine the waste's suitability for electrochemical treatment. Finally, following completion of each electrochemical treatment, the treated liquid effluent and any solid wastes will be sampled and analyzed for all applicable parameters listed in Table I-3.

I.1.2.5 Sampling Methods

Electrochemical treatment system operators will use EPA-approved methods for collecting samples of solid and liquid wastes for analysis.

- *Liquid samples* will be collected using a coliwasa-type sampling apparatus. Other equivalent EPA sampling methods (e.g., use of tubing or dipper) from *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (SW-846) (EPA 1997 or current revision) may be substituted for the coliwasa sampler.

- *Solid wastes* that will require sampling include the precipitates that will collect at the bottom of the electrochemical treatment cell. These will be generated in small quantities and collected on filter paper using a vacuum filtration system. Samples will be collected using a small stainless steel or plastic scoop.

I.1.2.6 Sampling Frequency

Sampling of each waste stream will be initially conducted for all applicable parameters listed in Table I-3. If similar waste streams are subsequently bulked to create a single batch of waste for electrochemical processing, that bulked batch will also be sampled for all applicable parameters listed in Table I-3. The treated liquid effluent and any solid-form wastes will also be sampled for all applicable parameters listed in Table 2-3. The results of the final analyses will be used to determine waste disposal options following treatment.

I.1.2.7 Analytical Parameters and Rationale

Table I-3 identifies the parameters for analyses to be performed on each waste stream and the rationale for those parameters.

Following characterization, wastes of similar type (i.e., those containing similar constituents and pH levels) may be bulked into the waste feed system for simultaneous treatment.

- Due to the low concentration of organics (less than 10 percent by weight), which will be contained in an aqueous solution, incompatibility of organic-containing wastes is not anticipated to be of concern.
- Wastes of dissimilar pH levels will not be bulked for treatment in order to prevent uncontrolled reactions. Temperature and pH in the waste feed container will be monitored continuously during treatment to ensure that uncontrolled reactions are not occurring in the treatment system.

I.1.2.8 Test Methods

Before any waste analysis activities are initiated, a thorough review of the radioactive characteristics of the waste stream will be performed. Samples acceptable for analysis must meet the following criteria:

- Alpha-emitting particles must fall below a concentration of 1 microcurie per gram of solid or 1 microcurie per liter of liquid;
- Gross beta activity must not exceed 1 nanocurie per gram of solid or 1 nanocurie per liter of liquid; and
- Gross gamma or tritium activity must not exceed 800 nanocuries per gram of solid or 800 nanocuries per liter of liquid.

Once radioactivity levels have been determined to be within an acceptable range, the remaining analyses identified in Table I-4 will be performed. All test methods used will be EPA-approved methods from SW-846, including updates, or other EPA-approved methods.

Analytical equipment available for waste stream analysis includes the following. Not all equipment will necessarily be used for each electrochemical treatment run. Additionally, some of the equipment will not be used for definitive waste characterization in compliance with *New Mexico Administrative Code*, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart V, §264.13 [1-1-97].

Rather, certain pieces of equipment are used during the course of a particular treatment run to monitor specific constituents in order to assess the progress of electrochemical treatment.

- Inductively Coupled Plasma - Atomic Emissions Spectroscopy and Atomic Absorption for analyzing metal constituents
- Gas Chromatograph/Mass Spectrometer for analyzing volatile and semivolatile organic constituents
- Ultraviolet for analyzing inorganic and organic constituents
- Stripping Voltametry for analyzing metals
- Ion Sensitive Electrodes for analyzing inorganic cations and ions

I.1.2.9 Waste Analysis Requirements for Compliance with LDR

In compliance with the LDR Standards of 20 NMAC 4.1, Subpart VIII, Part 268 [1-1-97], the goal of the treatment process is to treat wastes that were originally characteristically hazardous under 20 NMAC 4.1, Subpart II, Part 261, Subpart C [1-1-97] so they no longer exhibit a hazardous characteristic. These treated wastes will then no longer be required to be managed as hazardous waste. A secondary goal for wastes that are listed as hazardous wastes under 20 NMAC 4.1, Subpart II, Part 261 Subpart D [1-1-97] will be to use electrochemical treatment to meet LDR treatment standards for the listed waste. Listed wastes that are treated by electrochemical treatment will continue to be managed as listed wastes following treatment.

All wastes remaining from or generated by the electrochemical treatment process will be assessed for compliance with LDR standards. The goal is to meet LDR standards by removing constituents that cause the waste stream to be a RCRA characteristic waste (i.e., identified as one or more of D002 through D043). Final waste analysis conducted on all liquid effluents and cleaning solutions and all solid residues destined for further waste treatment or disposal will assess the levels of constituents in wastes or waste extracts, in accordance with 20 NMAC 4.1, Subpart VIII, Part 268 [1-1-97], to allow the determination of whether or not the wastes meet LDR treatment standards.

I.1.2.10 Air Emission Standards

Compliance with 20 NMAC 4.1, Subpart V Part 264, Subparts BB and CC is required for certain equipment that manages hazardous waste with organic concentrations of at least 10 percent by weight and greater than 500 ppmw, respectively. All wastes managed in the RLWTF Cementation Unit and that will be managed in the ETU will have organic concentrations that are less than 10 percent by weight and average volatile organic concentrations less than 500 ppmw. Testing for Subpart BB and CC compliance will be performed for organic compounds on waste streams where waste profile data indicate or suggest the presence of organics. Hazardous waste not meeting the exemption criteria established at §264.1082, Subpart CC, will not be treated in the ETU.

However, to be protective of human health and the environment, operations at the TA-50-37 ETU will be conducted under a walk-in fume hood equipped with a carbon adsorption filter to prevent uncontrolled air emissions from escaping the room and spreading to other parts of TA-50-37. This enclosure will be inspected and monitored, in compliance with 40 CFR §264.15. The portion of TA-50-37 that includes Room 117 is designed with a separate exhaust and supplied air system and stack. Supplied air to this area is filtered using medium-grade filters and is provided for all ventilation and exhaust makeup requirements. Exhaust air from the fume hood and ventilation system is filtered both through two HEPA filters set in series (to capture particulates) and through a carbon filter prior to release to the atmosphere outside TA-50-37.

I.1.2.11 Waste Generated

Waste generated by the electrochemical treatment process will include a solid fraction and a liquid fraction. For proper subsequent management, the treated wastes will be classified as mixed waste, hazardous-only waste, radioactive-only waste, or solid waste. Mixed waste and hazardous waste will be classified as RCRA characteristic waste, in accordance with 20 NMAC 4.1, Subpart II, Part 261, Subpart C [1-1-97], or RCRA listed waste, in accordance with 20 NMAC 4.1, Subpart II, Part 261, Subpart D [1-1-97].

Following completion of each electrochemical treatment, the treated liquid effluent and any solid-form wastes will be sampled and analyzed for all applicable parameters listed in Table 3-1 of the Waste Analysis Plan, Attachment B of this TA-50 Part B. The waste generator will be required to complete the WPF. An example WPF and details are provided in Appendix B of the LANL General

Part B (LANL 1998). Subsequently, a Chemical Waste Disposal Request form will be submitted to waste management personnel for transport of the waste from TA-50-37 Room 117 to a suitable LANL waste management area.

The solid fraction generated as a result of electrochemical treatment will include metals that are electrochemically extracted from the waste solutions and deposited on the cathodes, or precipitated and collected at the bottom of the treatment cell. Solid fraction wastes will be managed as follows:

- Recovered metals will be monitored for radioactivity. The metals are expected to be free of radioactive contamination. Metals that are free of radioactivity will be reused for other laboratory activities (e.g., converted to sulfates, chlorides, nitrates, sulfides for laboratory uses, or returned to the plating shop for reuse in plating processes). Alternatively, the metals will be subsequently managed in accordance with applicable solid and hazardous waste regulations. If radioactivity is detected, the recovered metals will be sent to low-level radioactive or mixed waste storage areas at TA-54 for subsequent management.

- The small quantity of precipitate that collects at the bottom of the treatment system will be filtered from the liquid waste solution using a vacuum filtration system and paper filters. Waste derived from the treatment of listed hazardous wastes, will be classified as mixed waste and will be sent to TA-54 for subsequent mixed waste management. Waste derived from the treatment of characteristic wastes will be analyzed according to the Toxicity Characteristic Leaching Procedure (TCLP) to see whether the characteristic has been removed. The waste will then be properly managed as either hazardous or nonhazardous waste, depending on TCLP results.

Liquid wastes remaining after electrochemical treatment will either be radioactive waste or mixed waste. Options for managing liquid wastes include the following:

- If, after analysis, the RCRA component of a characteristic mixed waste has not been successfully removed to a low enough level to remove the characteristic, the solution will either be rerun through the ETU process to further lower the level of the RCRA-regulated components or sent to TA-54 for subsequent management as mixed waste.

- Solutions treated to remove RCRA hazardous characteristics are containerized for treatment and disposal at the TA-50-1 RLWTF. In the event that the liquid fraction is not suitable for treatment at the TA-50-1 RLWTF, it will be containerized and sent to TA-54 for subsequent management as radioactive-only waste, if the characteristic components are below regulatory levels.

- Any solutions that remain after electrochemical treatment that are classified as RCRA listed waste will continue to be managed as mixed waste and sent to TA-54 for subsequent management.

- Liquid waste removed from the gas scrubbing system or resulting from equipment cleanup will be analyzed to determine whether they qualify as mixed or hazardous wastes prior to its proper disposal. This determination will factor in whether listed or characteristic hazardous wastes were treated in the ETU when the scrubber was operated or when the equipment was cleaned. Depending on the wastewater composition, it will either be managed at the TA-50-1 RLWTF, sent to TA-54 for subsequent hazardous and/or mixed waste management, or disposed as nonradioactive and nonhazardous wastewater in the LANL facility-wide wastewater treatment system, or an alternate proper treatment or disposal unit.

I.2 REFERENCES

EPA. 1997 and all approved updates. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* SW-846, Office of Solid Waste and Emergency Response, U.S. Environmental Protection Agency, Washington, D.C.

LANL. 1998. *Los Alamos National Laboratory General Part B Permit Application.* Los Alamos, New Mexico. Los Alamos National Laboratory.

Table I-1. Description of Mixed Low-Level and Mixed TRU Waste[a] Treated at the RLWTF Cementation Unit

Waste Description	Waste Generating Activity[b]	Basis for Hazardous Waste Designation	Potential EPA[c] Hazardous Waste Numbers	Potential Hazardous Constituents and/or Characteristics in the Waste	Regulatory Limits[d] (milligrams per liter)
Mixed low-level waste • Corrosive liquid wastes	Radiochemistry research, plutonium (Pu)-processing operations, and analytical chemistry	Acceptable knowledge[e]	D001	Ignitability	NA[f]
			D002	Corrosivity	NA[f]
			D007	Chromium	5.0
			D009	Mercury	0.2
			D010	Selenium	1.0
			D011	Silver	5.0
			D036	Nitrobenzene	2.0
Mixed TRU waste • Aqueous waste • TRUPACT-II Content Code LA 111/211	Pu-processing operations and decontamination and decommissioning activities	Acceptable knowledge[e]	D004	Arsenic	5.0
			D005	Barium hydroxide	100.0
			D006	Cadmium	1.0
			D007	Chromium	5.0
			D008	Lead	5.0
			D009	Mercury	0.2
			None	Beryllium hydroxide	None

[a] Based upon preliminary information from the Los Alamos National Laboratory, 1994, *Draft Transuranic Waste Stream Hazardous Material Characterization Study*, Revision 0.0, Los Alamos National Laboratory, Los Alamos, New Mexico.

[b] Denotes information from the *Report for the Characterization Review of Low-Level Mixed Waste,* 1995, Los Alamos National Laboratory, Los Alamos, New Mexico.

[c] U.S. Environmental Protection Agency

[d] 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, 1997 and all approved updates), the extract from a representative sample of the waste contains any of the contaminants listed (D004–D043) at a concentration equal to or greater than the respective value given in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart II, Part 261, Subpart C [1-1-97].

[e] Acceptable knowledge is broadly defined as process knowledge, supplemental waste analysis data, and/or facility records of analysis, U.S. Environmental Protection Agency, 1994, *Waste Analysis at Facilities that Generate, Treat, Store, and Dispose of Hazardous Waste, A Guidance Manual, OSWER 9938.4-03*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, D.C.

[f] Refers to the P- and U-listed wastes found in the Los Alamos National Laboratory, 1998, *Los Alamos National Laboratory General Part A Permit Application,* Revision 0.0, Los Alamos National Laboratory, Los Alamos, New Mexico.

Table I-2. Descriptions of RCRA-Regulated Waste to be Treated at the TA-50 Electrochemical Treatment Unit

Waste Description[a]	Waste-Generating Process Description[a]	Basis for Characterization[a]	Potential EPA[b] Hazardous Waste Numbers	Potential Hazardous Constituents and/or Characteristics in the Waste	Regulatory Limits[c] (milligrams per liter)
Spent solvents and contaminated solvent mixtures	Research and development activities	Acceptable knowledge[d]	D001	Ignitability	NA[f]
	Laser research	Sampling and analysis[e]	D002	Corrosivity	NA
	Organic and inorganic chemistry research (e.g., solvent extractions, liquid chromatography solvents, polymer synthesis, and distillations)		D003	Reactivity	NA
			D004	Arsenic	5.0
			D005	Barium	100.0
			D007	Chromium	5.0
			D008	Lead	5.0
			D009	Mercury	0.2
			D010	Selenium	1.0
			D011	Silver	5.0
			D018	Benzene	0.5
	Cleaning		D019	Carbon tetrachloride	0.5
	Degreasing operations		D021	Chlorobenzene	100.0
			D022	Chloroform	6.0
			D028	1,2-Dichloroethane	0.5
			D030	2,4-Dinitrotoluene	0.13[g]
			D032	Hexachlorobenzene	0.13[g]
			D035	Methyl ethyl ketone	200.0
			D036	Nitrobenzene	2.0
			D038	Pyridine	5.0[g]
			D040	Trichloroethylene	0.5
			D043	Vinyl chloride	0.2
			F001	Tetrachloroethylene Trichloroethylene Methylene chloride 1,1,1-Trichloroethane Carbon tetrachloride Chlorofluorocarbons	NA
			F002	Tetrachloroethylene Trichloroethylene 1,1,1-Trichloroethane 1,1,2-Trichloro-1,2,2-trifluoroethane	NA

Table I-2. Descriptions of RCRA-Regulated Waste to be Treated at the TA-50 Electrochemical Treatment Unit (Continued)

Waste Description[a]	Waste-Generating Process Description[a]	Basis for Characterization[a]	Potential EPA[b] Hazardous Waste Numbers	Potential Hazardous Constituents and/or Characteristics in the Waste	Regulatory Limits[c] (milligrams per liter)
Spent solvents and contaminated solvent mixtures (continued)	Research and development activities Laser research Organic and inorganic chemistry research (e.g., solvent extractions, liquid chromatography solvents, polymer synthesis, and distillations) Cleaning Degreasing operations	Acceptable knowledge Sampling and analysis	F003	Xylene, Acetone, Ethyl acetate, Ethyl ether, Methanol, Methyl isobutyl ketone, n-Butyl alcohol	NA
			F005	Toluene, Methyl ethyl ketone, Carbon disulfide, Isobutanol, Pyridine, Benzene	NA
Paint and paint-related wastes	Painting and finishing operations General facility maintenance	Acceptable knowledge Sampling and analysis	D001	Ignitability	NA
			D005	Barium	100.0
			D006	Cadmium	1.0
			D007	Chromium	5.0
			D008	Lead	5.0
			D009	Mercury	0.2
			D011	Silver	5.0
			F003	Xylene	NA
			F005	Toluene	NA
Photographic processing and photocopier wastes	Photographic film processing Photocopying operations	Acceptable knowledge Sampling and analysis	D001	Ignitability	NA
			D002	Corrosivity	NA
			D007	Chromium	5.0
			D008	Lead	5.0
			D009	Mercury	0.2
			D011	Silver	5.0

Table I-2. Descriptions of RCRA-Regulated Waste to be Treated at the TA-50 Electrochemical Treatment Unit (Continued)

Waste Description[a]	Waste-Generating Process Description[a]	Basis for Characterization[a]	Potential EPA[b] Hazardous Waste Numbers	Potential Hazardous Constituents and/or Characteristics in the Waste	Regulatory Limits[c] (milligrams per liter)
Corrosive liquid wastes	Analytical chemistry	Acceptable knowledge	D001	Ignitability	NA
	Electroetching	Sampling and analysis	D002	Corrosivity	NA
	Electropolishing		D004	Arsenic	5.0
	Electroplating		D005	Barium	100.0
	High speed circuit-etching		D006	Cadmium	1.0
			D007	Chromium	5.0
	Waste simulant research		D008	Lead	5.0
	Biological research		D009	Mercury	0.2
	Scrubber operations		D010	Selenium	1.0
			D011	Silver	5.0
			D038	Pyridine	5.0[g]
			F002	Tetrachloroethylene Methylene chloride Trichloroethylene 1,1,1-Trichloroethane Chlorobenzene 1,1,2-Trichloro-1,2,2-trifluoroethane Ortho-dichlorobenzene Trichlorofluoromethane 1,1,2-Trichloroethane	NA
			F003	Methanol	NA
			F005	Toluene, Methyl ethyl ketone, Carbon disulfide, Isobutanol, Pyridine, Benzene, 2-Ethoxyethanol, 2-Nitropropane	NA

Table I-2. Descriptions of RCRA-Regulated Waste to be Treated at the TA-50 Electrochemical Treatment Unit (Continued)

Waste Description[a]	Waste-Generating Process Description[a]	Basis for Characterization[a]	Potential EPA[b] Hazardous Waste Numbers	Potential Hazardous Constituents and/or Characteristics in the Waste	Regulatory Limits[c] (milligrams per liter)
Contaminated, noncorrosive, aqueous solutions and oils	Vacuum pump maintenance Analytical spectrometry Equipment cleaning and maintenance Electrolytic silver recovery Synthesis reactions Polishing and finishing operations Chemical and biological research	Acceptable knowledge Sampling and analysis	D001	Ignitability	NA
			D003	Reactivity	NA
			D004	Arsenic	5.0
			D005	Barium	100.0
			D006	Cadmium	1.0
			D007	Chromium	5.0
			D008	Lead	5.0
			D009	Mercury	0.2
			D010	Selenium	1.0
			D011	Silver	5.0
			D018	Benzene	0.5
			D038	Pyridine	5.0[g]
			D040	Trichloroethylene	0.5
			F002	Tetrachloroethylene Methylene chloride Trichloroethylene 1,1,1-Trichloroethane Chlorobenzene 1,1,2-Trichloro-1,2,2-trifluoroethane Ortho-dichlorobenzene Trichlorofluoromethane 1,1,2-Trichloroethane	NA
			F003	Xylene, Acetone, Ethyl acetate, Ethyl benzene, Ethyl ether, Methyl isobutyl ketone, n-Butyl alcohol Cyclohexanone, Methanol,	NA
			F005	Toluene, Methyl ethyl ketone, Carbon disulfide, Isobutanol, Pyridine, Benzene, 2-Ethoxyethanol, 2-Nitropropane	NA

Table I-2. Descriptions of RCRA-Regulated Waste to be Treated at the TA-50 Electrochemical Treatment Unit (Continued)

Waste Description[a]	Waste-Generating Process Description[a]	Basis for Characterization[a]	Potential EPA[b] Hazardous Waste Numbers	Potential Hazardous Constituents and/or Characteristics in the Waste	Regulatory Limits[c] (milligrams per liter)
Mercury wastes	Lamp replacement Chemical and biological research Mercury spill cleanup	Acceptable knowledge Sampling and analysis Material Safety Data Sheets	D002 D003 D009 U151	Corrosivity Reactivity Mercury Mercury	NA NA 0.2 NA
Battery fluids	Equipment maintenance	Acceptable knowledge Sampling and analysis	D002 D006 D007 D008 D009 D011	Corrosivity Cadmium Chromium Lead Mercury Silver	NA 1.0 5.0 5.0 0.2 5.0
Unused liquid reagent chemicals	Discarded off-specification unused liquid reagent chemicals	Acceptable knowledge	D001 D002 All P- and U-listed waste codes	Ignitability Corrosivity Discarded commercial chemical products and off-specification species	

Table I-2. Descriptions of RCRA-Regulated Waste to be Treated at the TA-50 Electrochemical Treatment Unit (Continued)

Waste Description[a]	Waste-Generating Process Description[a]	Basis for Characterization[a]	Potential EPA[b] Hazardous Waste Numbers	Potential Hazardous Constituents and/or Characteristics in the Waste	Regulatory Limits[c] (milligrams per liter)
Nonradioactive or suspect waste items to be surveyed	Various wastes generated in a location where radioactive contamination was possible	Acceptable knowledge Sampling and analysis	D001	Ignitability	NA
			D002	Corrosivity	NA
			D003	Reactivity	NA
			D004	Arsenic	5.0
			D005	Barium	100.0
			D006	Cadmium	1.0
			D007	Chromium	5.0
			D008	Lead	5.0
			D009	Mercury	0.2
			D010	Selenium	1.0
			D011	Silver	5.0
			D018	Benzene	0.5
			D022	Chloroform	6.0
			D038	Pyridine	5.0[a]
			F001	1,1,1-Trichloroethane	NA
			F002	1,1,1-Trichloroethane	NA
				Methyl chloride	
			F003	Acetone	NA
				Ethyl acetate	
				Methanol	
				Methyl isobutyl ketone	
				Xylene	
			F005	Methyl ethyl ketone	NA
				Pyridine	
				Toluene	
			P012	Arsenic oxide	NA
			P029	Copper cyanide	NA
			P030	Cyanides, N.O.S.	NA
			P098	Potassium cyanide	NA
			P106	Sodium cyanide	NA
			P113	Thallium oxide	NA
			P120	Vanadium oxide	NA
			U075	Dichlorofluoromethane	NA

Table I-2. Descriptions of RCRA-Regulated Waste to be Treated at the TA-50 Electrochemical Treatment Unit (Continued)

Waste Description[a]	Waste-Generating Process Description[a]	Basis for Characterization[a]	Potential EPA[b] Hazardous Waste Numbers	Potential Hazardous Constituents and/or Characteristics in the Waste	Regulatory Limits[c] (milligrams per liter)
Nonradioactive or suspect waste items to be surveyed (continued)	Various wastes generated in a location where radioactive contamination was possible		U077	Ethylene dichloride	NA
			U121	Trichlorfluoromethane	NA
			U131	Hexachloroethane	NA
			U144	Acetic acid, lead salt	NA
			U145	Lead phosphate	NA
			U188	Phenol	NA
			U190	Phthalic anhydride	NA
			U204	Selenious acid	NA
			U216	Thallium chloride	NA
			U219	Thiourea	NA
			U226	Methyl chloroform	NA
Oil wastes	Equipment maintenance operations	Acceptable knowledge	D004	Arsenic	5.0
			D005	Barium	100.0
			D006	Cadmium	1.0
			D007	Chromium	5.0
			D008	Lead	5.0
			D009	Mercury	0.2
			D010	Selenium	1.0
			D028	1,2-Dichloroethane	0.5
			F001	Tetrachloroethylene[h]	NA
				Trichloroethylene[h]	
				Methylene chloride	
				1,1,1-Trichloroethane	
				Carbon tetrachloride[h]	
				Chlorinated fluorocarbons	

Table I-2. Descriptions of RCRA-Regulated Waste to be Treated at the TA-50 Electrochemical Treatment Unit (Continued)

Waste Description[a]	Waste-Generating Process Description[a]	Basis for Characterization[a]	Potential EPA[b] Hazardous Waste Numbers	Potential Hazardous Constituents and/or Characteristics in the Waste	Regulatory Limits[c] (milligrams per liter)
Oil wastes (continued)	Equipment maintenance operations	Acceptable knowledge	F002	Tetrachloroethylene[h] Trichloroethylene[h] 1,1,1-Trichloroethane 1,1,2-Trichloro-1,2,2-trifluoroethane	NA
			F003	Xylene, Acetone, Ethyl acetate, Ethyl ether, Methyl isobutyl ketone, n-Butyl alcohol, Methanol	NA
			F005	Toluene, Methyl ethyl ketone,[h] Carbon disulfide, Isobutanol, Pyridine[h], Benzene[h]	NA

[a] Denotes information from Los Alamos National Laboratory (LANL), 1995, *Report for the Characterization Review of Low-Level Mixed Waste, Final Draft* and its related database. The TAs shown in this table were identified by LANL as waste generation points. Future waste may be generated at additional TAs.
[b] U.S. Environmental Protection Agency.
[c] A solid waste exhibits the characteristic of toxicity if the extract from a representative sample of the waste contains any of the contaminants listed at a concentration equal to or greater than the respective value given in the New Mexico Administrative Code, Title 20, Chapter 4, Part 1 (20 NMAC 4.1), Subpart II, 261, Subpart C (1-1-97).
[d] Acceptable knowledge: Indicates process knowledge may be used as the basis for hazardous waste designation.
[e] Limited and/or preliminary analysis: In reference to the basis for hazardous waste classification, indicates that sampling and analysis have been performed but that the data may not be completely documented or that data may exist but may not be verifiable.
[f] Not applicable: Refers to the absence of regulatory limits for ignitable, corrosive, and reactive characteristic wastes and F-, P-, and U-listed wastes.
[g] The quantitation limit is greater than the calculated regulatory level. The quantitation limit therefore becomes the regulatory level (20 NMAC 4.1), Subpart II, 261.24, Table 1 (1-1-97).
[h] Process knowledge provided information that these constituents may have been used as solvents. Toxicity characteristic (TC) regulatory levels may also apply and will be evaluated.

Table I-3. Parameters, Characterization Methods, and Rationale for Mixed TRU Waste

Analytical Parameter	Test Method	Method Number	Rationale
Physical waste form	Waste inspection procedure Visual exam Acceptable knowledge		Verify waste container contents
Metals in waste: Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver	Total and/or TCLP Inductively-coupled plasma atomic emission spectroscopy Atomic absorption Manual cold vapor atomic absorption Anodic stripping voltametry Acceptable knowledge[f]	SW-846[a] (1311, 6010B, 7060A[d], 7061A)[a] (1311, 6010B, 7080A[e], 7081)[a, d] (1311, 6010B, 7130[e], 7131)[a, d] (1311, 6010B, 7190[e], 7191)[a, d] (1311, 6010B, 7420[e], 7421)[a, d] (1311, 7470B, 7471A, 7472)[a, c] (1311, 6010B, 7740, 7741A, 7742)[a] (1311, 6010B, 7760A[e], 7761)[a, d] or equivalent methods[b]	Determine total and/or TCLP metals concentration in samples
pH	pH electromagnetic measurement pH paper Soil and waste pH	SW-846 (9040B, 9041A, 9045C)[a] or equivalent methods[b]	Determine corrosivity

[a] U.S. Environmental Protection Agency, 1997 and all approved updates, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846.*
[b] Equivalent methods, subject to EPA approval, may be substituted.
[c] Method being revised per the January 1998 *SW-846* Draft Update IVA.
[d] Method being integrated into Method 7010, per the January 1998 *SW-846* Draft Update IVA.
[e] Method being integrated into Method 7000B, per the January 1998 *SW-846* Draft Update IVA.
[f] Acceptable knowledge is broadly defined as process knowledge, supplemental waste analysis data, and/or facility records of analysis, U.S. Environmental Protection Agency, 1994, *Waste Analysis at Facilities that Generate, Treat, Store, and Dispose of Hazardous Waste, A Guidance Manual, OSWER 9938.4-03*, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, D.C.

Table I-4. Parameters, Characterization Methods, and Rationale for RCRA-Regulated Waste

Analytical Parameter[a]	Test Method	Method Numbers	Rationale
VOCs in waste: Acetone Benzene Carbon tetrachloride Chlorobenzene Chloroform 1,2-Dichloroethane 1,1-Dichloroethylene F-listed solvents Methyl ethyl ketone Methylene chloride 1,1,1-Trichloroethane Trichloroethylene Tetrachloroethylene Xylene	Total VOC and/or TCLP VOC analysis by GC/MS Acceptable knowledge for heterogeneous wastes	ASTM Method D4547-91[b] EPA/540/4-91/001[c] SW-846 (1311, 8240, 8240A, 8240B, 8260, 8260A, 8275A)[d] or equivalent methods[e]	Determine total VOC and/or TCLP VOC concentrations
SVOCs in waste: 1,4-Dichlorobenzene 2,4-Dinitrotoluene Hexachlorobenzene Hexachlorobutadiene Hexachloroethane Nitrobenzene Pentachlorophenol Pyridine 2,4,6-Trichlorophenol	Total SVOC and/or TCLP SVOC analysis by GC/MS Acceptable knowledge for heterogeneous waste	SW-846 (1311, 8250, 8250A, 8270B, 8270C)[d] or equivalent methods[e]	Determine total SVOC and/or TCLP SVOC concentrations

Table I-4. Parameters, Characterization Methods, and Rationale for RCRA-Regulated Waste (Continued)

Analytical Parameter[a]	Test Method	Method Numbers	Rationale
Metals in waste: Arsenic Barium Cadmium Chromium Lead Mercury Selenium Silver	Total and/or TCLP metals analysis Inductively-coupled plasma spectroscopy Atomic absorption spectroscopy Cold vapor atomic absorption spectroscopy Acceptable knowledge for heterogeneous wastes	SW-846 (3051, 1311, 6010, 6010A, 6010B, 6020, 7060, 7060A, 7061A)[d] (3051, 1311, 6010, 6010A, 6010B, 6020, 7080, 7080A, 7081)[d] (3051, 1311, 6010, 6010A, 6010B, 6020, 7130, 7131, 7131A)[d] (3051, 1311, 6010, 6010A, 6010B, 6020, 7190, 7191)[d] (3051, 1311, 6010, 6010A, 6010B, 6020, 7420, 7421)[d] (1311, 7470, 7470A, 7470B, 7471, 7471A, 7472)[d] (3051, 1311, 6010, 6010A, 6010B, 6020, 7740, 7741, 7741A, 7742)[d] (3051, 1311, 6010, 6010A, 6020, 7760A, 7761)[d] or equivalent methods[e]	Determine total and/or TCLP metals concentrations
Reactive Cyanide Reactive Sulfide	Colorimetric or titrametric measurement of hydrogen cyanide and hydrogen sulfide released from waste following reflux distillation under acidic conditions	SW-846, Test Method to Determine Hydrogen Cyanide Released from Wastes SW-846, Test Method to Determine Hydrogen Sulfide Released from Wastes[e,f] SW-846 (9010A, 9012, 9013)[d] or equivalent method[e]	Determine concentrations of reactive cyanides and sulfides
pH	pH electrometric measurement pH paper	SW-846 (9040B, 9041A, 9045C)[c] or equivalent method	Determine corrosivity
Ignitability	Pensky-Martens closed cup Setaflash closed cup	SW-846 (1010 and 1020A)[c] or equivalent method	Determine ignitability

[a] Information contained in this column is from the LANL Hazardous and Solid Waste Group (ESH-19) WPF database.
[b] American Society for Testing and Materials (ASTM), 1991, *Standard Practice for Sampling Waste and Soils for Volatile Organic Compounds, ASTM D4547-91*, Annual Book of ASTM Standards, Philadelphia, Pennsylvania.
[c] EPA 1991, *Soil Sampling and Analysis for Volatile Organic Compounds, EPA/540/4-9/001*, Office of Research and Development.
[d] EPA 1997 and all approved updates, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, SW-846, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C.
[e] Equivalent methods, subject to EPA approval, may be substituted.
[f] SW-846 Sections 7.3.3.2 and 7.3.4.2 contain specialized methods to determine if a cyanide- or sulfide-containing waste exhibits the reactivity characteristic.

Table I-5. Recommended Sample Containers, Preservation Techniques, and Holding Times[a]

Analyte Class and Sample Type	Container	Preservative	Holding Time
Volatile Organics			
Concentrated Waste Samples	8-oz (240-mL) wide-mouth glass with Teflon liner	None	14 days
Liquid Samples			
No residual chlorine present	2 x 40-mL vials with Teflon-lined septum caps	Cool to 4°C[b]	14 days
Residual chlorine present	2 x 40-mL vials with Teflon-lined septum caps	Collect sample in a 4-oz volatile organic analyte (VOA) container that has been pre-preserved with 4 drops of 10% sodium thiosulfate[d]. Gently mix sample and transfer to a 40-mL VOA vial. Cool to 4°C.	14 days
Acrolein and acrylonitrile	2 x 40-mL vials with Teflon-lined septum caps	Adjust to pH[c] of 4 - 5. Cool to 4°C	14 days
Semivolatile Organics			
Concentrated Waste Samples	8-oz (240-mL) wide-mouth glass with Teflon liner	None	Samples must be extracted within 14 days and analyzed within 40 days following extraction.
Liquid Samples			
No residual chlorine present	4 x 1-liter amber glass with Teflon-lined lid	Cool to 4°C	Samples must be extracted within 14 days and analyzed within 40 days following extraction.
Residual chlorine present	2 x 40-mL vials with Teflon-lined septum caps	Collect sample in a 4-oz VOA container that has been pre-preserved with 4 drops of 10% sodium thiosulfate[d]. Gently mix sample and transfer to a 40-mL VOA vial. Cool to 4°C.	14 days

Table I-5. Recommended Sample Containers, Preservation Techniques, and Holding Times[a] (Continued)

Analyte Class and Sample Type	Container	Preservative	Holding Time
Metals			
Liquid Samples			
Total	1-liter polyethylene	Add nitric acid to pH of less than 2	180 days
Chromium VI	500-mL polyethylene	Cool to 4°C	24 hours
Mercury	500-mL polyethylene	Add nitric acid to pH of less than 2 Cool to 4°C	28 days

[a] EPA 1997 and all approved updates, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, *SW-846*, Office of Solid Waste and Emergency Response, U.S. Government Printing Office, Washington, D.C.
[b] Adjust to pH (see footnote c) of less than 2 with sulfuric acid, hydrochloric acid, or solid sodium bisulfate.
[c] A term used to describe the hydrogen-ion activity of a system
[d] Pre-preservation may be performed in the laboratory prior to field use.

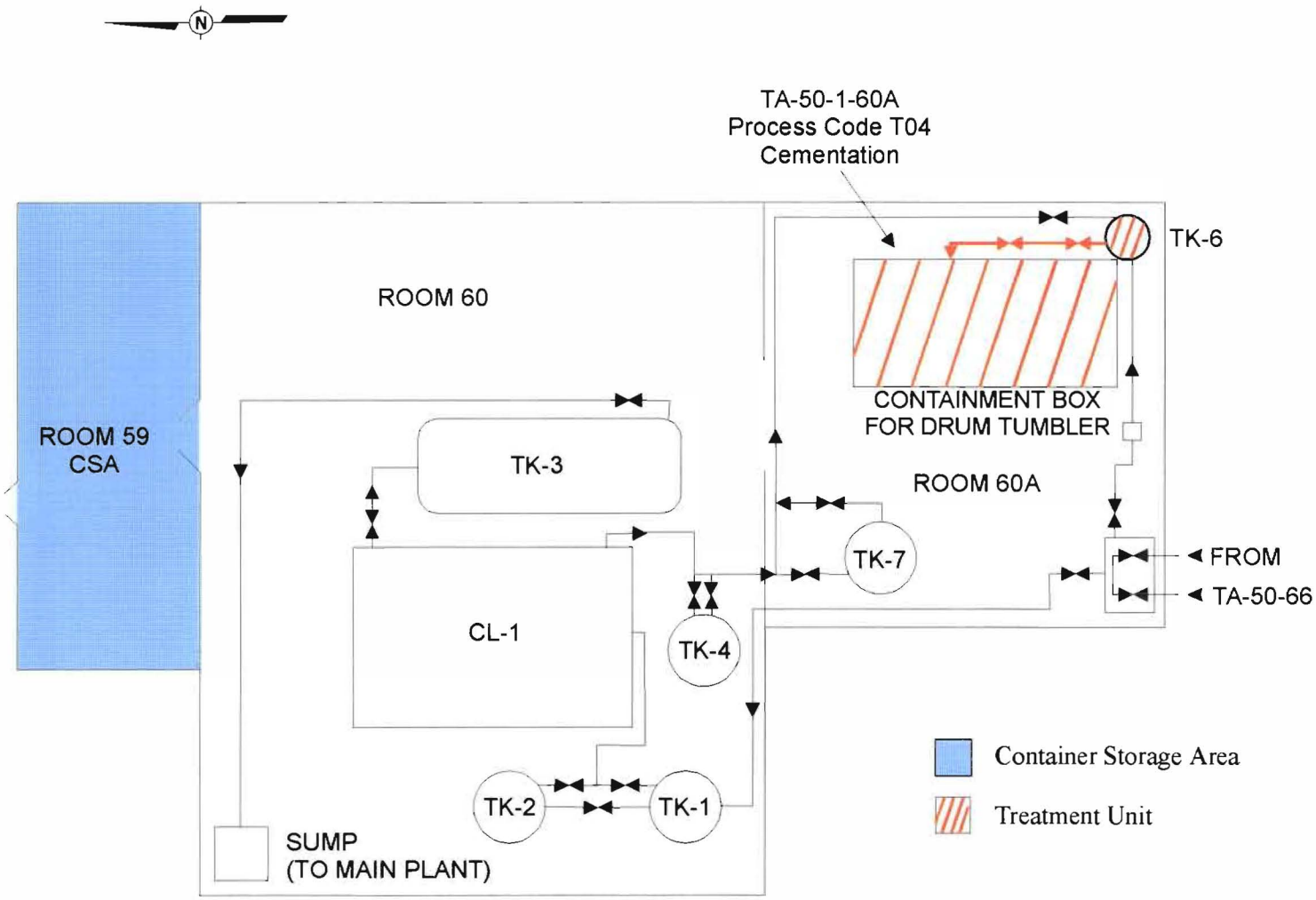
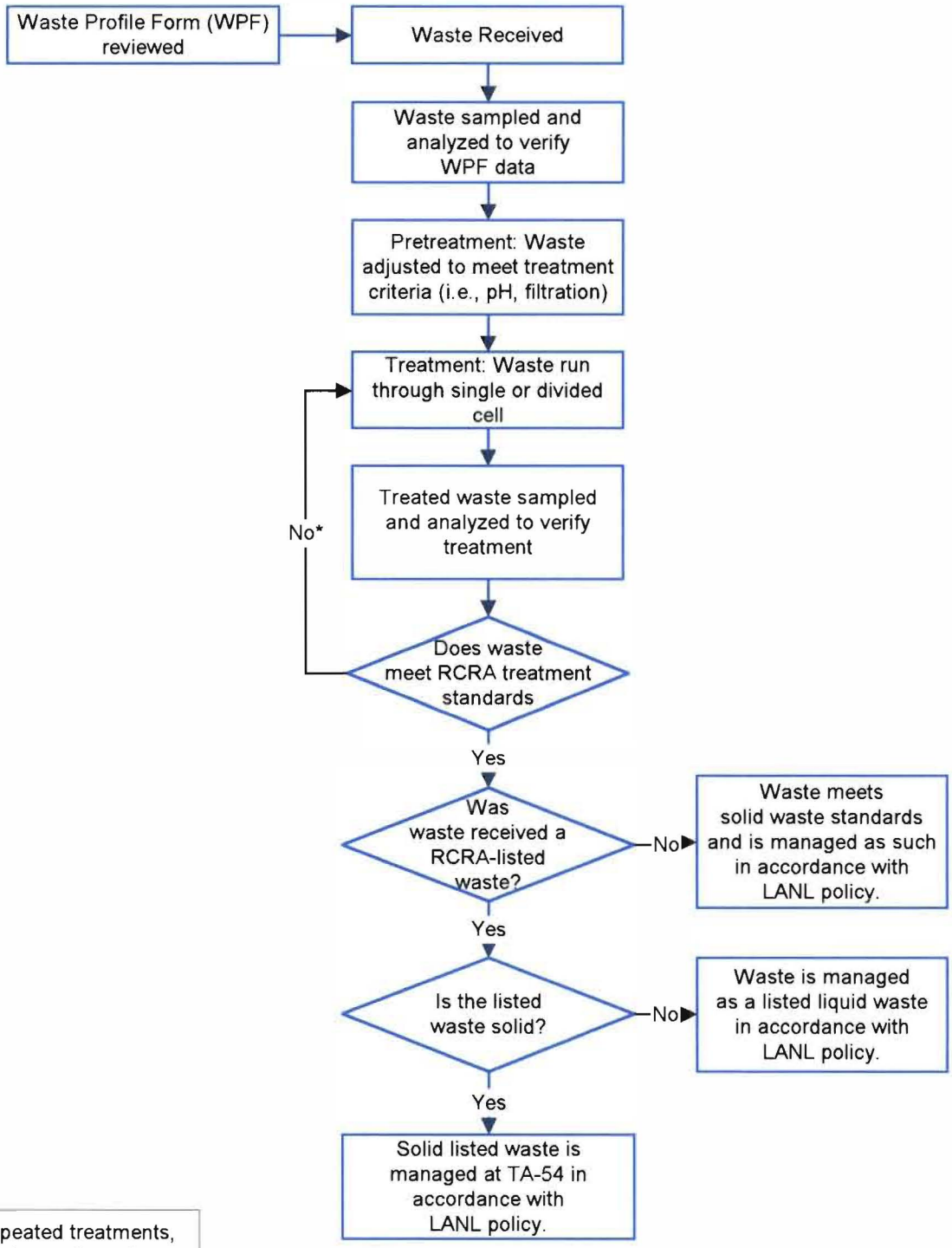


Figure I-1. TA-50-1 - Cementation Unit - Room 60A, CSA - Room 59, Pretreatment Operation - Room 60



*Note: After repeated treatments, if waste is not clean, alternate treatment methods are used.

Figure I-2. Electrochemical Treatment Process Flow

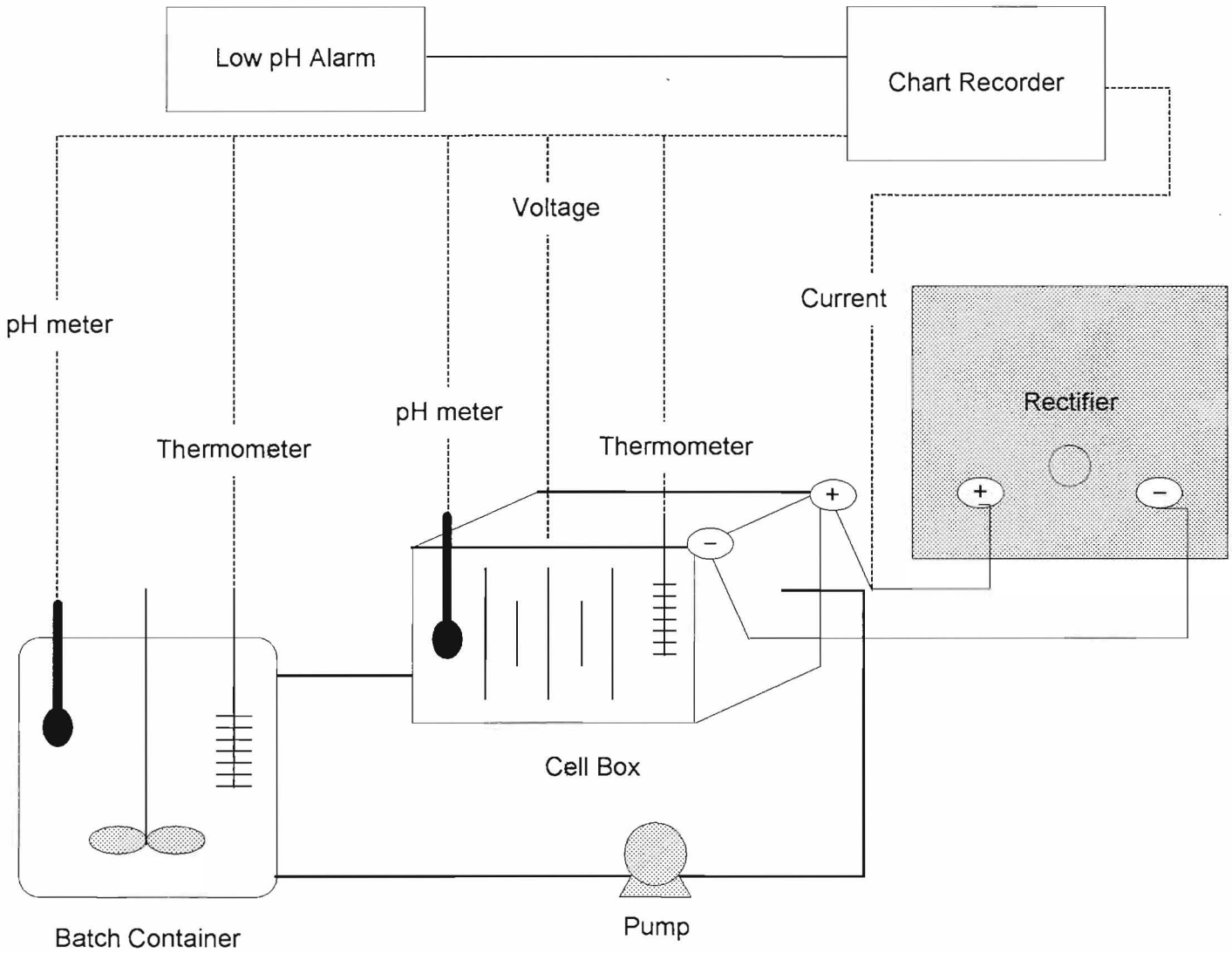


Figure I-3. Single Cell Electrochemical Treatment System

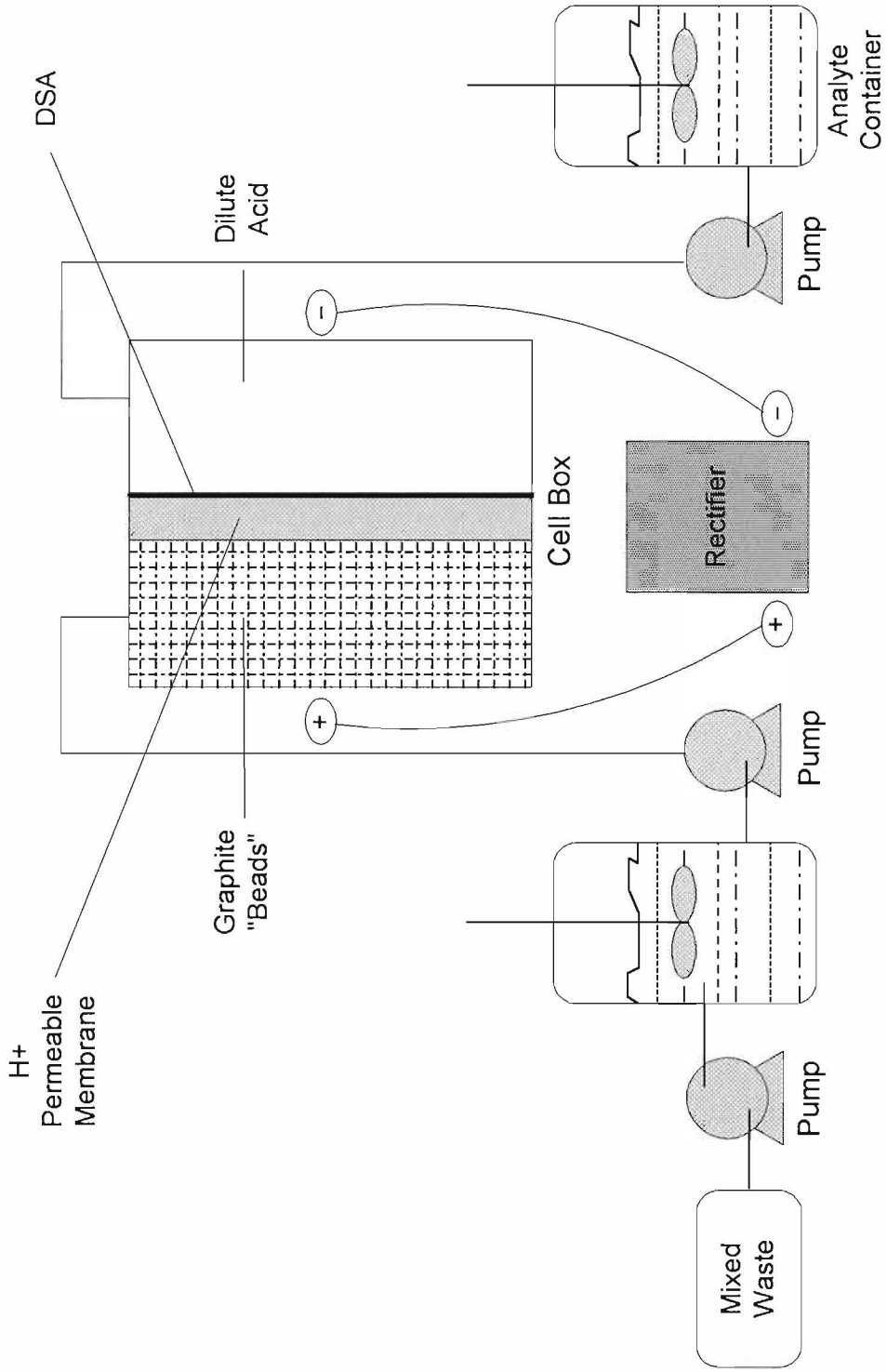


Figure I-4. Divided Electrochemical Treatment System