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Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

03-RCA-0009

OCT 10 2002

Ms. Laura E. Ruud, Permit Specialist
Nuclear Waste Program
State of Washington
Department of Ecology
1315 W. Fourth Avenue
Kennewick, Washington 99336

Dear Ms. Ruud:

QUARTERLY NOTIFICATION OF CLASS 1 MODIFICATIONS TO THE HANFORD FACILITY RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) PERMIT, DANGEROUS WASTE (DW) PORTION (QUARTER ENDING SEPTEMBER 30, 2002– PERMIT CONDITION I.C.3)

In accordance with Condition I.C.3. of the Hanford Facility RCRA Permit, enclosed for your notification are the Class 1 modifications to the Hanford Facility RCRA Permit, DW Portion. Modifications this quarter included updating information in Part II, Part III, Part V, and general maintenance of the RCRA Permit, DW Portion. The Part II Class 1 modifications pertain to the List of Attachments. The Part III Class 1 modifications pertain to the 305-B Storage Facility and PUREX Storage Tunnels. The Part V Class 1 modifications pertain to the 303-K Storage Facility. The Class 1 modifications are being made to ensure that all activities conducted are in compliance with the RCRA Permit, DW Portion.

If you have any questions, please contact Anthony C. McKarns, Regulatory Compliance and Analysis Division, at (509) 376-8981.

Joel Hebdon, Director
Regulatory Compliance and Analysis Division
U.S. Department of Energy
Richland Operations Office

Richard H. Gurske, Director
Environmental and Regulation
Fluor Hanford, Inc.

Roby D. Enge, Director
Environment, Safety, and Health
Pacific Northwest National Laboratory

RCA:TCM

Enclosures

cc: See page 2

cc w/encls:
F. W. Bond, Ecology
L. J. Cusack, Ecology
B. G. Erlandson, BNI
R. Gay, CTUIR
A. K. Ikenberry, PNNL
F. C. Jamison, Ecology
R. Jim, YN
R. J. Landon, BHI
P. Sobotta, NPT
S. A. Thompson, FHI
M. A. Wilson, Ecology
Administrative Record
HF Operating Record, G1-27
Ecology NWP Kennewick Library
Environmental Portal, LMSI

cc w/o encls:
M. Y. Anderson-Moore, Ecology
G. P. Davis, Ecology
R. D. Enge, PNNL
R. H. Gurske, FHI

Hanford Facility RCRA Permit Modification Notification Forms

List of Attachments

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Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
Hanford Facility RCRA Permit	List of Attachments

Description of Modification:

List of Attachments:

LIST OF ATTACHMENTS

The following listed documents are attached in their entirety. However, only those portions of the attachments specified in Parts I through VI are enforceable conditions of this Permit and subject to the permit modification requirements of Condition I.C.3. Changes to portions of the attachments, which are not subject to the permit modification process, shall be addressed in accordance with Conditions I.E.8., I.E.11., I.E.13., I.E.15. through I.E.20., and I.E.22. Ecology has, as deemed necessary, modified specific language in these attachments. These modifications are described in the conditions (Parts I through VI), and thereby supersede the language of the attachment.

Attachment 1	Hanford Federal Facility Agreement and Consent Order, (as amended)
Attachment 2	Hanford Facility Legal Description, from Class 1 Modification, dated January 7, 1999
Attachment 3	Permit Applicability Matrix, (as revised on March 22, 2000)
Attachment 4	Hanford Emergency Management Plan, DOE/RL-94-02, Revision 2, as amended and approved modifications
Attachment 5	Purgewater Management Plan, July 1990
Attachment 6	Hanford Well Maintenance and Inspection Plan, BHI-01265, Revision 0, May 1999
Attachment 7	Policy on Remediation of Existing Wells and Acceptance Criteria for RCRA and CERCLA, June 1990
Attachment 8	616 Nonradioactive Dangerous Waste Storage Facility, retired during Revision 6 of the RCRA Permit ~~616 Nonradioactive Dangerous Waste Storage Facility Part A, Form 3, Revision 7, March 4, 1997, and Part B Permit Application, DOE/RL-89-03, Revision 2, October 1991, and Chapter 11, Closure Plan/Financial Assurance for Closure, DOE/RL-89-03, Revision 2A, May 1999~~
Attachment 9	616 Nonradioactive Dangerous Waste Shipping Lists, retired during Revision 6 of the RCRA Permit
Attachment 11	183-H Solar Evaporation Basins Closure/Post-Closure Plan, retired during Revision 6 of the RCRA Permit ~~DOE/RL-88-04, Revision 3, June 1991 (superseded by Attachment 37)~~
Attachment 12	Decommissioning Work Plan *Concrete Sampling - 183-H Solar Evaporation Basins*, retired during Revision 6 of the RCRA Permit ~~DWP-H-080-00001, Revision A-3, August 1991~~
Attachment 13	Decommissioning Work Plan *Core Drill Sampling - 183-H Solar Evaporation Basins (Phase I)*, retired during Revision 6 of the RCRA Permit ~~DWP-H-080-00005, Revision A-1, February 1991~~
Attachment 14	183-H Solar Evaporation Basins Vadose Zone Sampling Plan, retired during Revision 6 of the RCRA Permit ~~WHC-SD-EN-AP-056, Revision 0, June 1991~~
Attachment 15	Decommissioning Work Plan *Berm Removal for 183-H Solar Evaporation Basins*, retired during Revision 6 of the RCRA Permit ~~DWP-H-026-00008, Revision A-0, January 1991~~

Modification Class: [1 2 3]	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation

A. General Permit Provisions

1. Administrative and Informational changes.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:	Reviewed by Ecology:
R. H. Gurske 10Oct02 Date	J. B. Hebdon 10/10/02 Date	Date	L.E. Ruud Date

[1] Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
Hanford Facility RCRA Permit	List of Attachments

Description of Modification:

List of Attachments:

Attachment 16	300 Area Solvent Evaporator Closure Plan, retired during Revision 6 of the RCRA Permit ~~DOE/RL-88-08, Revision 3B, September 1992 (Clean Closed, July 31, 1995)~~
Attachment 17	2727-S Nonradioactive Dangerous Waste Storage Facility Closure Plan, retired during Revision 6 of the RCRA Permit ~~DOE/RL-88-37, Revision 3, January 1992 (Clean Closed, July 31, 1995)~~
Attachment 18	305-B Storage Facility, and approved modifications ~~Part A, Form 3, Revision 1, September 25, 1990, and Part B Permit Application, DOE/RL-90-01, Revision 2, October 1992, and approved modifications~~
Attachment 19	Simulated High-Level Waste Slurry TSD Closure Plan, retired during Revision 6 of the RCRA Permit ~~DOE/RL-88-08, Revision 6A, November 1994 (Clean Closed, October 23, 1995)~~
Attachment 20	218-E-8 Borrow Pit Demolition Site Closure Plan, retired during Revision 6 of the RCRA Permit ~~DOE/RL-92-53, Revision 1, October 1994 (Clean Closed, November 28, 1995)~~
Attachment 21	200 West Ash Pit Demolition Site Closure Plan, retired during Revision 6 of the RCRA Permit ~~DOE/RL-92-54, Revision 1, September 1994 (Clean Closed, November 28, 1995)~~
Attachment 22	2101-M Pond Closure Plan, retired during Revision 6 of the RCRA Permit ~~DOE/RL-88-41, Revision 2A, July 1993 (Clean Closed, November 28, 1995)~~
Attachment 23	216-B-3 Expansion Ponds Closure Plans, retired during Revision 6 of the RCRA Permit ~~DOE/RL-89-28, Revision 2, October 1994 (Clean Closed, July 31, 1995)~~
Attachment 24	Hanford Patrol Academy Demolition Sites Closure Plan, retired during Revision 6 of the RCRA Permit ~~DOE/RL-92-39, Revision 1, December 1994 (Clean Closed, November 28, 1995)~~
Attachment 25	105-DR Large Sodium Fire Facility Closure Plan, retired during Revision 6 of the RCRA Permit ~~DOE/RL-90-25, Revision 2, March 1995 (Partial Closure Plan Completed October 1, 1996)~~
Attachment 26	304 Concretion Facility Closure Plan, retired during Revision 6 of the RCRA Permit ~~DOE/RL-90-03, Revision 2A, March 1995 (Clean Closed, January 21, 1996)~~
Attachment 27	Permit Modification Schedule (as revised on May 18, 1999)
Attachment 28	PUREX Storage Tunnels, and approved modifications ~~Part A, Form 3, Revision 5, October 1996, and Part B, DOE/RL-90-24, Revision 4, April 1997, and approved modifications~~
Attachment 29	4843 Alkali Metal Storage Facility Closure Plan, retired during Revision 6 of the RCRA Permit ~~DOE/RL-90-49, Revision 1, September 1995 (Clean Closed, April 14, 1997)~~
Attachment 30	3718-F Alkali Metal Treatment and Storage Facility Closure Plan, retired during Revision 6 of the RCRA Permit ~~DOE/RL-91-35, Revision 2, November 1995 (Clean Closed, August 4, 1998)~~

Modification Class: [1 2 3]	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation

A. General Permit Provisions

1. Administrative and Informational changes.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:	Reviewed by Ecology:
RH Gurske 10/8/02	10/8/02		
R. H. Gurske Date	J. B. Hebdon Date	Date	L.E. Ruud Date

[1] Class 1 modifications requiring prior Agency approval.

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Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
Hanford Facility RCRA Permit	List of Attachments

Description of Modification:

List of Attachments:

Attachment 31	300 Area Process Trenches, and approved modifications ~~Modified Closure Plan and Part A, Form 3, DOE/RL-93-73, Revision 4, May 1995, and approved modifications~~
Attachment 32	303-K Storage Facility Closure Plan, retired during Revision 6 of the RCRA Permit~~, DOE/RL-90-04, Revision 2A, June 1995~~
Attachment 33	Hanford Facility Dangerous Waste Permit Application General Information Portion, DOE/RL-91-28, Revision 5C~~4, May 1998~~, and approved modifications
Attachment 34	Liquid Effluent Retention Facility Part A, Form 3, Revision 6~~5~~, ~~October 1996,~~ 200 Area Effluent Treatment Facility Part A, Form 3, Revision 3~~2~~, ~~October 1996,~~ Liquid Effluent Retention Facility and 200 Area Effluent Treatment Facility, Part B Permit Application, DOE/RL-97-03, Revision 0, July 1997, and approved modifications
Attachment 35	242-A Evaporator Part A, Form 3, Revision 7, ~~October 1996,~~ and Part B Permit Application, DOE/RL-90-42, Revision 1, July 1997, and approved modifications
Attachment 36	325 Hazardous Waste Treatment Units Part A, Form 3, Revision 4B~~4~~, ~~June 1997,~~ and Part B Permit Application, DOE/RL-92-35, Revision 1, July 1997, and approved modifications
Attachment 37	183-H Solar Evaporation Basins, and approved modifications
Attachment 38	303-K Storage Facility Sampling and Analysis Plan, retired during Revision 6 of the RCRA ~~HNF-SD-ENV-AP-005, Revision 0, July 14,1997~~
Attachment 39	Errata Sheet for the 303-K Storage Facility Sampling and Analysis Plan, retired during Revision 6 of the RCRA Permit ~~August 1, 1997~~
Attachment 40	100-D Ponds, retired during Revision 6 of the RCRA Permit~~Part A, Form 3, Revision 4, June 1994; and Closure Plan, DOE/RL-92-71, Revision 2, March 1998 (Clean Closed, August 9, 1999)~~
Attachment 41	1325-N and 1301-N Part A, Form 3, Revision 7, ~~February 1997,~~ and DOE/RL-96-39, Revision 0, Appendix A
Attachment 42	1324-N and 1324-NA Part A, Form 3, Revision 3, ~~June 1994,~~ and DOE/RL-96-39, Revision 0, Appendix B
Attachment 46	300 Area Waste Acid Treatment System, retired during Revision 6 of the RCRA Permit ~~Part A, Form 3, Revision 5, dated October 1, 1996, and Closure Plan, DOE/RL-90-11, Revision 2, dated May 1999~~
Attachment 47	Corrective Measures Study for the 100-NR-1 and 100-NR-2 Operable Units, DOE/RL-95-111, Revision 0, July 1997
Attachment 48	Engineering Evaluation/Cost Analysis for the 100-N Area Ancillary Facilities and Integration Plan, DOE/RL-97-22, Revision 1, March 1998

Modification Class: [1 2 3]	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation

A. General Permit Provisions

1. Administrative and Informational changes.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:	Reviewed by Ecology:
R. H. Gurske 10/6/02 Date	J. B. Hebdon 10/10/02 Date	Date	L.E. Ruud Date

[1] Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
Hanford Facility RCRA Permit	List of Attachments

Description of Modification:
Hanford Facility RCRA Permit, Part I.H:

I.H DOCUMENTS TO BE MAINTAINED AT FACILITY SITE

The Permittees shall maintain at the Facility, or some other location approved by Ecology, the following documents and amendments, revisions, and modifications to these documents:

1. This Permit and all Attachments;
2. ~~All dangerous waste Part B Permit applications, post-closure Permit applications; and closure plans; and~~
2. The Facility Operating Record.

All dangerous waste Part B permit applications, post closure permit applications, and closure plan applications are entered in the Administrative Record.

These documents shall be maintained for ten (10) years after post-closure care or corrective action for the Facility, whichever is later, has been completed and certified as complete.

Modification Class: [1 2 3] Please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation
A. General Permit Provisions
1. Administrative and Informational changes.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:	Reviewed by Ecology:
R. H. Gurske 10/8/02 Date	for J. B. Hebdon 10/10/02 Date	Date	L.E. Ruud Date

[1] Class 1 modifications requiring prior Agency approval.
[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.
[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form	
Unit: 616 Nonradioactive Dangerous Waste Storage Facility	Permit Part & Chapter: Part III, Chapter 1 and Attachment 8

Description of Modification:
Hanford Facility RCRA Permit, III.1.A:

CHAPTER 1

616 Nonradioactive Dangerous Waste Storage Facility

Clean Closed 9/5/2001
(Clean Closed, September 5, 2001)

The 616 Nonradioactive Dangerous Waste Storage Facility (NRDWSF) ~~is~~ was an active storage unit for dangerous wastes that are shipped to off-site commercial treatment or disposal facilities.

This ~~Chapter sets forth the closure requirements for this non-active~~ TSD unit was clean closed September 5, 2001, in accordance with the approved Closure Plan contained in Attachment 8, that was retired during Revision 6 of this Permit.

~~III.1.A. COMPLIANCE WITH APPROVED CLOSURE PLAN~~

~~The Permittees shall comply with all the requirements set forth in the 616 NRDWSF Closure Plan, Chapter 11 of the 616 NRDWSF Part B Permit application, found in Attachment 8 Enforceable portions of the application are listed below; all subsections, figures, and tables included in these portions are also enforceable, unless stated otherwise:~~

~~Part A, Form 3, Permit Application, Revision 7, March 1997~~

~~Section 2.2 Topographic Maps~~

~~Chapter 11.0 Closure and Post-Closure Requirements, from Class 3 Modification, for Revision 7~~

~~Section 13.8 Other Requirements~~

~~Appendix 4B Drawing H-6-1553, Architectural Plan, Elevations and Sections, Rev. 4 and 2 ECNs as amended in Class 1 Modification dated July 1998~~

~~Appendix 4B Drawing H-6-1556, Structural Plan and Sections, Revision 4, and six (6) ECNs from Class 1 Modification dated July 1998~~

~~Appendix 7A Building Emergency Plan, HNF-IP-0263-616, dated July 1, 1998, as amended in Class 2 Modification for Revision 5~~

~~Appendix 8A Training Plan, HNF-1276, Rev. 1, dated May 1998, as amended in Class 2 Modification for Revision 5~~

Modification Class: [1 2 3] Please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation

A. General Permit Provisions
1. Administrative and Informational changes.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:	Reviewed by Ecology:
R H Gurske 10 Oct 02	[signature] 10/10/02		
R. H. Gurske Date	J. B. Hebdon Date	Date	L.E. Ruud Date

[1] Class 1 modifications requiring prior Agency approval.
[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.
[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should ...ically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
616 Nonradioactive Dangerous Waste Storage Facility	Part III, Chapter 1

Description of Modification:

Hanford Facility RCRA Permit, III.1.B:

~~III.1.B. AMENDMENTS TO THE APPROVED PERMIT APPLICATION~~

~~III.1.B.a. Reserved~~

~~III.1.B.b. Page 3-16, lines 29 and 30. The following line is added to the end of the paragraph: "The laboratory verification results shall be obtained in accordance with WAC 173-303-110."~~

~~III.1.B.c. Page 2-16, lines 25 and 27. The address "7601 West Clearwater, Suite 102" shall be changed to "1315 West Fourth Avenue" and the telephone number "509-546-2990" shall be changed to "509-735-7581."~~

~~III.1.B.d. First Comment Package requested deletion~~

~~III.1.B.e. Table 7-1, Sections 3.1, 4.0 (first paragraph), 8.2, 8.3, 8.4, 11.0, and 12.0 are added as enforceable portions of Appendix 7A.~~

~~III.1.B.f. Portions of DOE/RL-94-02 that are not made enforceable by inclusion in the applicability matrix for that document, are not made enforceable by reference in this document.~~

~~III.1.B.g. Within thirty (30) days of issuance of this Permit, the Permittees will revise and submit to Ecology, Section 9.5 of Appendix 7A, to more accurately identify the quantity and capacity of spill control equipment available at the unit.~~

~~III.1.B.h. Appendix 7A, add "at 616 NRDWSF" to the titles of Sections 9.2, 9.4, and 9.5.~~

~~III.1.B.i. Before any waste is received at the unit, the Permittees will revise and submit to Ecology, Sections 9.2, 9.4, and 9.5 of Appendix 7A, to include emergency equipment needed to identify, measure, monitor, and protect against possible toxic fume hazards described in Section 6.1.5. Upon approval by Ecology, this information shall be incorporated into this Permit as a Class 1 Modification. If necessary, Ecology will amend the requirements through a Class 2 or 3 Modification to the Permit.~~

~~III.1.B.j. Appendix 7A, Figure 1, revise title to read "616 Nonradioactive Dangerous Waste Storage Facility Evacuation Routes."~~

~~III.1.B.k. Appendix 7A, Section 8.2. In the event of a WAC 173-303 emergency, the Owner/Operator must notify Ecology, and appropriate local authorities, that the unit is in compliance with Sections 8.2 and 8.3 of Appendix 7A before operations are resumed in the affected areas.~~

~~III.1.B.l. The Permittee must review and immediately amend the emergency response documentation, if necessary, whenever: (a) Applicable regulations, or the facility Permit, are revised, (b) The plan fails in an emergency, (c) The unit changes (in its design, construction, operation, maintenance, or other circumstances) in a way that materially increases the potential for fires, explosions, or releases of dangerous waste constituents, or in a way that changes the response necessary in an emergency, or (d) The list of emergency equipment changes.~~

~~III.1.B.m. In first comment package asked to be deleted~~

~~III.1.B.n. The approved Waste Analysis Plan (WAP) is compliant for receipt of on-site waste and off-site waste from USDOE owned and operated units (i.e., 712 Building and the Federal Building). The Permittee is not to receive other off-site waste at this unit until the WAP has been revised to include waste acceptance/verification criteria for the receipt of off-site waste.~~

Modification Class: [1 2 3]	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation

A. General Permit Provisions

1. Administrative and Informational changes.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:	Reviewed by Ecology:
R. H. Gurske 10/10/02 Date	J. B. Hebdon 10/10/02 Date	Date	L.E. Ruud Date

[1] Class 1 modifications requiring prior Agency approval.

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[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
Hanford Facility RCRA Permit	Part V, Chapter 2

Description of Modification:
Hanford Facility RCRA Permit, V.2:

CHAPTER 2

300 Area Solvent Evaporator
(Clean Closed, July 31, 1995)

The 300 Area Solvent Evaporator (300 ASE) unit was operated as an evaporation treatment unit for dangerous wastes. This Chapter sets forth the closure requirements for this TSD unit.

This unit was~~has been~~ Clean Closed on July 31, 1995, in accordance with the approved Closure Plan contained in Attachment 16, that was retired during Revision 6 of this Permit.

Modification Class: [1 2 3]	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation
A. General Permit Provisions
1. Administrative and Informational changes.

Submitted by Co-Operator:		Reviewed by RL Program Office:		Reviewed by Ecology:		Reviewed by Ecology:	
R. H. Gurske	Date	J. B. Hebdon	Date		Date	L.E. Ruud	Date

[1] Class 1 modifications requiring prior Agency approval.
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Hanford Facility RCRA Permit Modification Notification Form	
Unit: Hanford Facility RCRA Permit	Permit Part & Chapter: Part V, Chapter 3

Description of Modification:
Hanford Facility RCRA Permit, Part V.3:

CHAPTER 3

2727-S Nonradioactive Dangerous Waste Storage Facility
(Clean Closed, July 31, 1995)

The 2727-S NRDWSF unit was operated as a storage unit for dangerous wastes. This Chapter sets forth the closure requirements for this TSD unit.

This unit was~~has been~~ Clean Closed on July 31, 1995, in accordance with the approved Closure Plan contained in Attachment 17, that was retired during Revision 6 of this Permit.

Modification Class: [1 2 3] Please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation
A. General Permit Provisions
1. Administrative and Informational changes.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:	Reviewed by Ecology:
R H Gurske 10/7/02	10/10/02		
R. H. Gurske Date	J. B. Hebdon Date	Date	L.E. Ruud Date

[1] Class 1 modifications requiring prior Agency approval.
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[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form	
Unit: Hanford Facility RCRA Permit	Permit Part & Chapter: Part V, Chapter 4

Description of Modification:
Hanford Facility RCRA Permit, Part V.4:

CHAPTER 4

Simulated High Level Waste Slurry Treatment and Storage Unit
(Clean Closed, October 23, 1995)

The Simulated High Level Waste Slurry (SHLWS) unit was operated as a TSD unit for simulated slurry as a test operation in connection with the grout project. This Chapter sets forth the closure requirements for this TSD unit.

This unit was~~has been~~ Clean Closed on October 23, 1995, in accordance with the approved Closure Plan contained in Attachment 19, that was retired during Revision 6 of this Permit.

Modification Class: [1 2 3] Please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation
A. General Permit Provisions
1. Administrative and Informational changes.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:	Reviewed by Ecology:
RHGurske 10/8/02	10/10/02		
R. H. Gurske Date	J. B. Hebdon Date	Date	L.E. Ruud Date

[1] Class 1 modifications requiring prior Agency approval.
[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.
[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
Hanford Facility RCRA Permit	Part V, Chapter 5

Description of Modification:
Hanford Facility RCRA Permit, Part V.5:

CHAPTER 5

218-E-8 Borrow Pit Demolition Site
(Clean Closed, November 28, 1995)

The 218-E-8 Borrow Pit Demolition Site (218 BPDS) unit was operated as an open burning/open detonation unit for dangerous wastes. This Chapter sets forth the closure requirements for this TSD unit.

This unit was~~has been~~ Clean Closed on November 28, 1995, in accordance with the approved Closure Plan contained in Attachment 20, that was retired during Revision 6 of this Permit.

Modification Class: [1 2 3] Please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation
A. General Permit Provisions
1. Administrative and Informational changes.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:	Reviewed by Ecology:
R. H. Gurske Date	for J. B. Hebdon Date	Date	L.E. Ruud Date

[1] Class 1 modifications requiring prior Agency approval.
[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.
[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
Hanford Facility RCRA Permit	Part V, Chapter 6

Description of Modification:
Hanford Facility RCRA Permit, Part V.6

CHAPTER 6

200 West Area Ash Pit Demolition Site
(Clean Closed, November 28, 1995)

The 200 West Area Ash Pit Demolition Site (200 APDS) unit was operated as an open burning/open detonation unit for dangerous wastes. This Chapter sets forth the closure requirements for this TSD unit.

This unit was~~has been~~ Clean Closed on November 28, 1995, in accordance with the approved Closure Plan contained in Attachment 21, that was retired during Revision 6 of this Permit

Modification Class: [1 2 3]	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation
A. General Permit Provisions
1. Administrative and Informational changes.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:	Reviewed by Ecology:
R. H. Gurske 10/4/02	J. B. Hebdon 10/4/02		L.E. Ruud
R. H. Gurske Date	J. B. Hebdon Date	Date	Date

[1] Class 1 modifications requiring prior Agency approval.
[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.
[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form	
Unit: Hanford Facility RCRA Permit	Permit Part & Chapter: Part V, Chapter 7

Description of Modification:
Hanford Facility RCRA Permit, Part V.7:

CHAPTER 7

2101-M Pond

(Clean Closed, November 28, 1995)

The 2101-M Pond unit was operated as a disposal unit for potentially dangerous waste. This chapter sets forth closure requirements for this TSD unit.

This unit was~~has been~~ Clean Closed on November 28, 1995, in accordance with the approved Closure Plan contained in Attachment 22, that was retired during Revision 6 of this Permit.

Modification Class: [1 2 3] Please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation

A. General Permit Provisions
   1. Administrative and Informational changes.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:	Reviewed by Ecology:
RHGurske 10Oct02	10/10/02		
R. H. Gurske Date	J. B. Hebdon Date	Date	L.E. Ruud Date

[1] Class 1 modifications requiring prior Agency approval.
[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.
[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form	
Unit: Hanford Facility RCRA Permit	Permit Part & Chapter: Part V, Chapter 8

Description of Modification:
Hanford Facility RCRA Permit, Part V.8:

CHAPTER 8

216-B-3 Expansion Ponds
(Clean Closed, July 31, 1995)

The 216-B-3 Expansion Ponds unit was operated as a treatment and disposal unit for dangerous waste. This chapter sets forth the closure requirements for this TSD unit.

This unit was~~has been~~ Clean Closed on July 31, 1995, in accordance with the approved Closure Plan contained in Attachment 23, that was retired during Revision 6 of this Permit.

Modification Class: [1 2 3]	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation

A. General Permit Provisions
1. Administrative and Informational changes.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:	Reviewed by Ecology:
R. H. Gurske Date	J. B. Hebdon Date	Date	L.E. Ruud Date

[1] Class 1 modifications requiring prior Agency approval.
[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.
[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form	
Unit: Hanford Facility RCRA Permit	Permit Part & Chapter: Part V, Chapter 9

Description of Modification:
Hanford Facility RCRA Permit, Part V.9:

CHAPTER 9

Hanford Patrol Academy Demolition Site
(Clean Closed, November 28, 1995)

The Hanford Patrol Academy Demolition Site (HPADS) unit was operated as an open burning/open detonation unit for dangerous waste. This Chapter sets forth the closure requirements for this TSD unit.

This unit was~~has been~~ Clean Closed on November 28, 1995, in accordance with the approved Closure Plan contained in Attachment 24, that was retired during Revision 6 of this Permit.

Modification Class: [1 2 3]	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation
A. General Permit Provisions
1. Administrative and Informational changes.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:	Reviewed by Ecology:
R. H. Gurske 10Oct02	J. B. Hebdon 10/10/02		
R. H. Gurske Date	J. B. Hebdon Date	Date	L.E. Ruud Date

[1] Class 1 modifications requiring prior Agency approval.
[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.
[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form	
Unit: Hanford Facility RCRA Permit	Permit Part & Chapter: Part V, Chapter 10

Description of Modification:
Hanford Facility RCRA Permit, Part V.10:

CHAPTER 10

105-DR Large Sodium Fire Facility
(Partial Closure Plan Completed, October 1, 1996)

The Large Sodium Fire Facility (LSFF) was a research laboratory used to conduct experiments for studying the behavior of alkali metals. This facility was also used for the treatment of alkali metal dangerous wastes.

This unit completed the closure plan on October 1, 1996, in accordance with the approved Closure Plan contained in Attachment 25, that was retired during Revision 6 of this Permit.

Modification Class: [1 2 3]	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation
A. General Permit Provisions
1. Administrative and Informational changes.

Submitted by Co-Operator:		Reviewed by RL Program Office:		Reviewed by Ecology:		Reviewed by Ecology:	
RHGurske	10Oct02		10/10/02				
R. H. Gurske	Date	J. B. Hebdon	Date		Date	L.E. Ruud	Date

[1] Class 1 modifications requiring prior Agency approval.
[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.
[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form	
Unit: Hanford Facility RCRA Permit	Permit Part & Chapter: Part V, Chapter 11

Description of Modification:
Hanford Facility RCRA Permit, Part V.11:

CHAPTER 11

304 Concretion Facility
(Clean Closed, January 21, 1996)

The 304 Concretion Facility (304 Facility) was used for the treatment of dangerous wastes produced during the fuel fabrication process. These wastes consist of beryllium/Zircalloy-2 chips and Zircalloy-2 chips and fines.

This Unit was~~has been~~ Clean Closed on January 21, 1996, in accordance with the approved Closure Plan contained in Attachment 26, that was retired during Revision 6 of this Permit.

Modification Class: [1 2 3]	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation
A. General Permit Provisions
1. Administrative and Informational changes.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:	Reviewed by Ecology:
R. H. Gurske 10/10/02 Date	for J. B. Hebdon 10/10/02 Date	Date	L.E. Ruud Date

[1] Class 1 modifications requiring prior Agency approval.
[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.
[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form	
Unit: Hanford Facility RCRA Permit	Permit Part & Chapter: Part V, Chapter 12

Description of Modification:
Hanford Facility RCRA Permit, Part V.12:

CHAPTER 12

4843 Alkali Metal Storage Facility Closure Plan
(Clean Closed, April 14, 1997)

The 4843 Alkali Metal Storage Facility (4843 AMSF) is an inactive storage facility which is currently undergoing permanent closure activities. This TSD unit was operated as a storage unit for dangerous waste and alkali metals.

This unit was~~has been~~ clean closed on April 14, 1997, in accordance with the approved closure plan contained in Attachment 29, that was retired during Revision 6 of this Permit.

Modification Class: [1 2 3]	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation
A. General Permit Provisions
1. Administrative and Informational changes.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:	Reviewed by Ecology:
R. H. Gurske 10/10/02	J. B. Hebdon 10/10/02		L.E. Ruud
R. H. Gurske Date	J. B. Hebdon Date	Date	L.E. Ruud Date

[1] Class 1 modifications requiring prior Agency approval.
[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.
[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form	
Unit: Hanford Facility RCRA Permit	Permit Part & Chapter: Part V, Chapter 13

Description of Modification:
Hanford Facility RCRA Permit, Part V.13:

CHAPTER 13

3718-F Alkali Metal Treatment and Storage Facility Closure Plan
(Clean Closed, August 4, 1998)

The 3718-F Alkali Metal Treatment and Storage Facility was operated to treat and store alkali metal waste from the Fast Flux Test Facility, and from various laboratories that used alkali metals for experiments. Contaminated equipment was treated using water, methanol, isopropyl alcohol, or 2-butoxy ethanol. Bulk waste was treated by burning to eliminate the ignitability and reactive characteristics. After the burn treatment, the waste was neutralized with acid to a pH between 2 and 12.5.

This unit was~~has been~~ Clean Closed on August 4, 1998, in accordance with the approved Closure Plan contained in Attachment 30, that was retired during Revision 6 of this Permit.

Modification Class: [1 2 3] Please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation
A. General Permit Provisions
1. Administrative and Informational changes.

Submitted by Co-Operator:	Reviewed by ~~RL~~ Program Office:	Reviewed by Ecology:	Reviewed by Ecology:
RHGurske 10/10/02	for 10/10/02		
R. H. Gurske Date	for J. B. Hebdon Date	Date	L.E. Ruud Date

[1] Class 1 modifications requiring prior Agency approval.
[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.
[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form	
Unit: Hanford Facility RCRA Permit	**Permit Part & Chapter:** Part V, Chapter 15

Description of Modification:
Hanford Facility RCRA Permit, Part V.15:

CHAPTER 15

100 D Ponds
(Clean Closed, August 9, 1999)

The 100 D Ponds was operated as a liquid effluent disposal site for dangerous wastes. This unit was~~has been~~ Clean Closed on August 9, 1999, in accordance with the approved Clean Closure Plan contained in Attachment 40, that was retired during Revision 6 of this Permit.

Modification Class: [1 2 3]	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation
A. General Permit Provisions
1. Administrative and Informational changes.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:	Reviewed by Ecology:
RH Gurske 10Oct02	10/10/02		
R. H. Gurske Date	J. B. Hebdon Date	Date	L.E. Ruud Date

[1] Class 1 modifications requiring prior Agency approval.
[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.
[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
Hanford Facility RCRA Permit	Part V, Chapter 20

Description of Modification:

Hanford Facility RCRA Permit, Part V.20:

CHAPTER 20

300 Area Waste Acid Treatment System

(Partial Closure Plan Completed, December 3, 2001)

The 300 Area Waste Acid Treatment System (300 WATS) was~~is~~ a tank system that was used to treat and store nonrecoverable uranium-bearing waste acid from reactor fuel fabrication operations. Waste acid neutralization occurred in portions of what now is the 300 Area WATS before operation of the system as a *Resource Conservation and Recovery Act* (RCRA) *of 1976* unit. The~~is~~ Closure Plan detailed~~s~~ closure of RCRA components and areas, and of contamination resulting from RCRA operations. This unit consisted~~s~~ of portions of four (4) buildings and two (2) tank farms: 334-A Building, 313 Building, 303-F Building, 333 Building, 334 (tank 4), and 311 Tank Farms (tanks 40 and 50).

This unit was Clean Closed on August 9, 1999, in accordance with the approved Closure Plan contained in Attachment 46, that was retired during Revision 6 of this Permit. Clean closure ~~has been~~ was given for structures above the ground using the visually verifiable clean debris rule and table in the *Ecology Guidance for Clean Closure of Dangerous Waste Facilities Publication #94-111* (August, 1994). Transition of WATS from EM-60 to EM-40 will be done to complete disposition of "unclosed" soils beneath the units to be cleaned in conjunction with the 300-FF-2 CERCLA OU remedial action and to complete WATS RCRA closure.

~~This unit is undergoing modified closure to the performance standards of the Dangerous Waste Regulations, Washington Administrative Code (WAC) 173-303-610, 173-303-640, and Permit Condition II.K with respect to all dangerous waste, materials, and media (i.e., soil) contaminated from RCRA operations of the WATS unit.~~

~~V.20.A. COMPLIANCE WITH APPROVED MODIFIED CLOSURE PLAN~~

~~The Permittees shall comply with all requirements set forth in Attachment 46, including Appendix 6A, Phased Closure Documentation (Phase 1 and 2) and Addendum (Phase 3). Enforceable portions of the plan are listed below; all subsections, figures, and tables included in these portions are also enforceable, unless otherwise stated. The Permittees shall also comply with all the requirements in the 300-FF-2 Record of Decision.~~

~~Part A, Form 3, Permit Application, from Class 1 Modification for quarter ending March 31, 2002.Revision 5, October 1, 1996~~

~~Chapter 2.0 Facility Description~~
~~Chapter 6.0 Closure Strategy and Performance Standards~~
~~Chapter 7.0 Closure Activities~~
~~Chapter 8.0 Post-closure~~
~~Appendix 6A Phased Closure Documentation~~
~~Addendum to 6A Phase 3 Closure Documentation (HNF-2814)~~

~~V.20.B AMENDMENTS TO THE APPROVED CLOSURE PLAN~~

~~V.20.B.a. Phases one (1), two (2), and three (3), Decontamination and Inspection Plans shall be added in their entirety to the approved Closure Plan (DOE/RL-90-11, Revision 2, dated May 1999)~~

~~V.20.B.b. The Permittee will review the modified closure option in five (5) years (January 2006). The purpose of the review will be to determine if this TSD can be clean closed.~~

~~V.20.B.c. 300-FF-2 CERCLA OU Record of Decision. The Permittees shall comply with the above referenced document, which details the final status for complete disposition of "unclosed" soils beneath the units to be cleaned in conjunction with the 300-FF-2 OU remedial action and to complete WATS RCRA closure.~~

Modification Class: [1 2 3]	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation

A. General Permit Provisions
1. Administrative and Informational changes.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:	Reviewed by Ecology:
R. H. Gurske 10/4/02 Date	J. B. Hebdon 10/4/02 Date	Date	L.E. Ruud Date

[1] Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Forms

Attachment 33, General Information Portion

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Page 2 of 2: Attachment 33, General Information Portion

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
Hanford Facility RCRA Permit	List of Attachments, Attachment 33 General Information Portion

Description of Modification:

List of Attachments, Attachment 33:

Remove and replace Attachment 33, with the attached Attachment 33, Revision 5C. Attachment 33 was revised to reflect the approved/rejected modification forms from Ecology dated September 11, 2001 and November 28, 2001 for the June 30, 2001 quarterly Class 1 modification package.

Modification Class: [1 2 3]	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation

A. General Permit Provisions

1. Administrative and Informational changes.

Submitted by Co-Operator:		Reviewed by RL Program Office		Reviewed by Ecology:	
R. H. Gurske	25sept02 Date	for J. B. Hebdon	10/10/02 Date	L. E. Ruud	Date

[1] Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Forms

Attachment 33, General Information Portion

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Chapter 7.0
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HANFORD FACILITY
DANGEROUS WASTE PERMIT APPLICATION,
GENERAL INFORMATION PORTION

FOREWORD

The Hanford Facility, located in southeastern Washington State, is owned by the U.S. Government and operated by the U.S. Department of Energy. Dangerous waste and mixed waste (containing both dangerous and radioactive components) are generated and managed on the Hanford Facility. Waste components are regulated in accordance with the *Resource Conservation and Recovery Act of 1976*, the *Hazardous and Solid Waste Amendments of 1984*, and/or the *State of Washington Hazardous Waste Management Act of 1976* (as administered through the Washington State Department of Ecology *Dangerous Waste Regulations*, Washington Administrative Code 173-303); or the *Atomic Energy Act of 1954*.

The permitting framework for the Hanford Facility was established by the original 1989 *Hanford Federal Facility Agreement and Consent Order* (Ecology et al. 1996). The original document addressed the Hanford Facility as a single *Resource Conservation and Recovery Act* facility (U.S. Environmental Protection Agency/State Identification Number WA7890008967) consisting of approximately 70, storage, and/or disposal units. Approximately 25 percent of these units are, or are anticipated to be, 'operating'; approximately 50 percent are 'undergoing closure'; and approximately 25 percent are, or are anticipated to be, 'dispositioned through other options' under the *Hanford Federal Facility Agreement and Consent Order*.

The initial *Hanford Facility Resource Conservation and Recovery Act Permit* became effective in September 1994, and is comprised of two portions, a Dangerous Waste Portion, issued by Ecology, and a Hazardous and Solid Waste Amendments Portion, issued by the U.S. Environmental Protection Agency, Region 10. The Dangerous Waste Portion is issued to five Permittees: the U.S. Department of Energy, Richland Operations Office, as the owner/operator, and to four of its contractors, as co-operators. The Hazardous and Solid Waste Amendments Portion, and Part IV, "Corrective Action" of the Dangerous Waste Portion is issued to the U.S. Department of Energy, Richland Operations Office, as the owner/operator and contractors.

The *Hanford Facility Dangerous Waste Permit Application* is considered to be a single application organized into a General Information Portion (this document, DOE/RL-91-28) and a Unit-Specific Portion. The scope of the Unit-Specific Portion is limited to individual 'operating' treatment, storage, and/or disposal units for which Part B permit application documentation has been, or is anticipated to be, submitted. Documentation for treatment, storage, and/or disposal units 'undergoing closure', or for units that are, or are anticipated to be, 'dispositioned through other options', will continue to be submitted by the Permittees in accordance with the provisions of the *Hanford Federal Facility Agreement and Consent Order*. However, the scope of the General Information Portion includes information that could be used to discuss 'operating' units, units 'undergoing closure', or units being 'dispositioned through other options'.

The permit modification process is used to incorporate treatment, storage, and/or disposal units as permitting documentation for these units is finalized. The units to be included in annual modifications are specified in a schedule contained in the Dangerous Waste Portion of the *Hanford Facility Resource Conservation and Recovery Act Permit*. Treatment, storage, and/or disposal units will remain in interim status until incorporated into the Permit or dispositioned through other options.

Both the General Information and Unit-Specific portions of the *Hanford Facility Dangerous Waste Permit Application* address the contents of the Part B permit application guidance documentation prepared by the Washington State Department of Ecology (Ecology 1987 and 1996) and the U.S. Environmental Protection Agency (40 Code of Federal Regulations 270), with additional

information needs defined by revisions of Washington Administrative Code 173-303 and by the *Hazardous and Solid Waste Amendments*. For ease of reference, the alpha-numeric section identifiers from the Washington State Department of Ecology's permit application guidance documentation follow, in brackets, the chapter headings and subheadings. Documentation contained in the General Information Portion is broader in nature and could be used by multiple treatment, storage, and/or disposal units (i.e., either 'operating' units, units 'undergoing closure', or units being 'dispositioned through other options'). A checklist indicating where information is contained in the General Information Portion, in relation to the Washington State Department of Ecology guidance documentation, is located in the Contents Section.

The intent of the General Information Portion is: (1) to provide an overview of the Hanford Facility; and (2) to assist in streamlining efforts associated with treatment, storage, and/or disposal unit-specific Part B permit application, preclosure work plan, closure work plan, closure plan, closure/postclosure plan, or postclosure permit application documentation development, and the *Hanford Facility Resource Conservation and Recovery Act Permit* modification process. Wherever appropriate, the Unit-Specific Portion of the application, as well as preclosure work plan, closure work plan, closure plan, closure/postclosure plan, or postclosure permit application documentation, will make cross-reference to the General Information Portion, rather than duplicating text. Thus, *Hanford Facility Resource Conservation and Recovery Act Permit* modifications involving general information will require updating only the General Information Portion instead of each unit-specific document.

'Dangerous Waste', as used in the title of the *Hanford Facility Dangerous Waste Permit Application*, refers to waste subject to Washington Administrative Code 173-303 requirements and to requirements of the *Hazardous and Solid Waste Amendments*, including those for which the state of Washington has not yet been granted authority by the U.S. Environmental Protection Agency. Throughout the *Hanford Facility Dangerous Waste Permit Application*, 'mixed waste' refers to waste containing both dangerous and radioactive components. The radioactive component of mixed waste is interpreted by the U.S. Department of Energy to be regulated under the *Atomic Energy Act*; the nonradioactive dangerous component of mixed waste is interpreted to be regulated under the *Resource Conservation and Recovery Act* and Washington Administrative Code 173-303. It is the position of the U.S. Department of Energy that any procedures, methods, data, or information contained in the *Hanford Facility Dangerous Waste Permit Application* that relate solely to the radioactive component of mixed waste are outside the scope of the permit application and the *Hanford Facility Resource Conservation and Recovery Act Permit*, but are included for the sake of completeness. It is the position of the Washington State Department of Ecology that the radioactive component influences safe management of mixed waste and therefore information about this component is necessary to ensure compliance with Washington Administrative Code 173-303 and the *Hanford Facility Resource Conservation and Recovery Act Permit*. Both agencies acknowledge the other's position, but to avoid a conflict on the issue, the U.S. Department of Energy, Richland Operations Office has agreed to provide information on radioactive constituents without agreeing with the Washington State Department of Ecology's position. The Washington State Department of Ecology has agreed to accept the information in this context without giving up its position.

Application Checklist

In accordance with the Washington State Department of Ecology's Dangerous Waste Permit Application Requirements (Ecology 1996), an application checklist has been completed by providing the facility name and indicating where the listed material has been placed in the General Information Portion. This is particularly important when the General Information Portion does not closely follow the outline of the checklist and guidance or to designate where information is more appropriately placed in the Unit-Specific Portion. The completed checklist is contained within this section of this Dangerous Waste Permit application documentation.

As noted in the Introduction of the Washington State Department of Ecology's 1996 guidance document, this document only includes a detailed discussion of requirements for treatment and storage in tanks and containers. Requirements for land-based and incinerator units are in a document entitled *Dangerous Waste Management Facility Permit Application: Additional Requirements for Facilities Which Dispose of Dangerous Wastes or Manage Them in Land-based Units* (Ecology 1987). The 1996 guidance document advises that when preparing an application for land-based units use both guidance documents in conjunction. To provide continuity in numbering, the major outline headings for land-based and incinerator units have been provided by the Washington State Department of Ecology in the application checklist included in its 1996 guidance document.

The application checklist provided by the Washington State Department of Ecology has been modified to include citations for Chapter 173-303 Washington Administrative Code and for 40 Code of Federal Regulations Parts 264 and 270. In addition, the title of the checklist has been modified to indicate that the checklist contents do not just refer to "Treatment and Storage in Tanks and Containers".

Facility Name Hanford Facility Dangerous Waste Permit Application, General Information Portion

Date Application Received _____

State of Washington
Part B Permit Application Review Checklist

		Technically Adequate?	Location in Application
Citations for the Chapter 173-303 Washington Administrative Code (WAC) are followed by those for 40 Code of Federal Regulations (CFR) Parts 264 and 270. The federal citations are always in brackets. For example: "806(2)[270.10(d)]" refers to WAC 173-303-806(2) and 40 CFR 270.10(d).			
A.	**Part A Form** 806(2), 810(12)(a), 810(13) [270.10(d), 270.11(a) and (d), 270.13]		Chapter 1.0
B.	**Facility Description and General Provisions** 806(4)(a)(i),(x),(xi),(xviii) [270.14(b)(1),(10),(19)]		Chapter 2.0
B-1	General Description 806(4)(a)(i) [270.14(b)(1)]		2.1
B-1(a)	Facility Description		2.1.1
B-1(b)	Construction Schedule		2.1.2
B-2	Topographic Map		2.2
B-2a	General Requirements 806(4)(a)(xviii) [270.14(b)(19)]		2.2.1
B-2b	Additional Requirements for Land Disposal Facilities		2.2.2
B-3	Seismic Consideration 806(4)(a)(xi) [270.14(b)(11)(i) and (ii), 264.18(a)]		2.3
B-4	Traffic Information 806(4)(a)(x) [270.14(b)(10)]		2.4
C.	**Waste Analysis** 806(4)(a)(ii) and (iii), 300 [270.14(3), 264.13(b) and (c)]		Chapter 3.0
C-1	Chemical, Biological and Physical Analyses 806(4)(a)(ii), 806(4)(b)(ii) and (v); 806(4)(c)(x); 140; 300; 395; 630(7)(c) and (9); 640(1)(b), (2)(c), (3)(a), and (10) [270.14(b)(2), 264.13(a), 268.7, 268.9]		3.1
C-1a C-1b C-1c	Waste In Piles Landfilled Wastes Wastes Incinerated and Wastes Used in Performance Tests		3.1.3 3.1.4 3.1.5
C-2	Waste Analysis Plan 806(4)(a)(iii), 140, 300(5) and (6) [270.14(b)(3), 264.13(b) and (c), 268.7 and 268.9]		3.2

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		Technically Adequate?	Location in Application
C-2a	Detailed Chemical, Physical, and/or Biological Analysis		3.2
C-2a(1)	Parameters and Rationale 806(4)(b)(ii)(A); 140 (LDR); 300(2), (5)(a), and (5)(f); 395(1) and (2); 630(7)(c); 640(1)(b), (2)(c) and (3)(a) [270.15(b)(1), 270.24, 270.25, 264.13(b)(1) and (8), 264.17, 264.191(b)(2), 264.192(a)(2), 264.1034(d), 264.1064(d), 268.7]		3.2
C-2a(2)	Analytical Methods 110, 300(5)(b) [264.13(b)(2) and (8), Part 264 Subparts AA, BB, and CC] - Washington State has not adopted the CC requirements yet.		3.2
C-2a(3)	Generator-Supplied Analyses 300(3), (5)(g), and (e) [264.13(b)(5)]		3.2
C-2b	Additional Requirements for Wastes Generated Off-site 806(4)(a)(iii), 300(6) [264.13(c)]		3.2
C-2b(1)	Parameters and Rationale to Confirm Identity of Off-site Waste 300(3), (5)(a), and 5(g) [264.13(a)(4) and (b)(1)]		3.2
C-2b(2)	Analytical Methods to Confirm Identity of Off-site Waste 300(3) and (5)(b) [264.13(b)(2)]		3.2
C-2b(3)	Representative Sampling of Incoming Off-site Wastes 300(3) and (5)(c), 110(2) [264.13(b)(3), Part 261, Appendix I]		3.2
C-2c	Methods for Collecting Samples for Detailed and Confirming Analyses 300(5)(c), 110(2) [264.13(b)(3), 264.1034(d), Part 261, Appendix I]		3.2
C-2d	Frequency of Analyses 300(4),(5)(d) [264.13(b)(4)]		3.2
C-3	Manifest System 370 [264.71, 264.72]		3.3
C-3a	Procedures for Receiving Shipments 370(2),(3),(4) [264.71]		3.3.1
C-3b	Response to Significant Discrepancies 370(4) [264.72]		3.3.2
C-3c	Provisions for Non-acceptance of Shipment 370(5)		3.3.3
C-3c(1)	Non-acceptance of Undamaged Shipment 370(5)(b)		3.3.3.1

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		Technically Adequate?	Location in Application
C-3c(2)	Activation of Contingency Plan for Damaged Shipment 370(5)(c)		3.3.3.2
C-4	Tracking System 380		3.4
D.	**Process Information** 806(4)(b) - (c), 630 through 670 [270.15 - 270.26, 264 Subparts I - BB]		Chapter 4.0
D-1	Containers 806(4)(b), 630 [270.15, 264 Subpart I]		4.2
D-1a	Description of Containers 630(4) [264.172]		Unit-Specific Portion
D-1b	Container Management Practices 630(5) and (8); 340(3) [264.35, 264.173]		Unit-Specific Portion
D-1c	Container Labelling 806(4)(b)(iii), 395(6), 630(3)		Unit-Specific Portion
D-1d	Containment Requirements for Storing Containers		Unit-Specific Portion
D-1d(1)	Secondary Containment System Design 806(4)(b)(i) and (iv), 630(7) [270.15(a); 264.175(a), (b), and (d)]		Unit-Specific Portion
D-1d(1)(a)	System Design 806(4)(b)(i), 630(7) (a) and (d) [270.15(a), 264.175(b)]		Unit-Specific Portion
D-1d(1)(b)	Structural Integrity of Base 806(4)(b)(i), 630(7)(a) [270.15(a), 264.175(b)]		Unit-Specific Portion
D-1d(1)(c)	Containment System Capacity 806(4)(b)(i)(A) and (C), 630(7)(a) [270.15(a)(3), 264.175(b)(3)]		Unit-Specific Portion
D-1d(1)(d)	Control of Run-on 806(4)(b)(i)(D), 630(7)(b) [270.15(a)(4), 264.175(b)(4)]		Unit-Specific Portion
D-1d(2)	Removal of Liquids from Containment System 806(4)(b)(i)(E), 630(7)(a)(ii) [270.15(a)(5), 264.175(b)(5)]		Unit-Specific Portion
D-1e	Demonstration that Containment Is Not Required Because Containers Do Not Contain Free Liquids, Wastes That Exhibit Ignitability or Reactivity, or Wastes Designated F020 - 023, F026, or F027 806(4)(b)(ii), 630(7)(c) [270.15(b)(2), 264.175(c)]		Unit-Specific Portion

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		Technically Adequate?	Location in Application
D-1f	Prevention of Reaction of Ignitable, Reactive, and Incompatible Wastes in Containers		Unit-Specific Portion
D-1f(1)	Management of Certain Reactive Wastes in Containers 806(4)(b)(iv), 630(8)(a) [270.15(c), 264.176]		Unit-Specific Portion
D-1f(2)	Management of Ignitable and Certain Other Reactive Wastes in Containers 806(4)(b)(iv), 630(8)(b) [270.15(c), 264.176]		Unit-Specific Portion
D-1f(3)	Design of Areas to Manage Incompatible Wastes 806(4)(b) (iv), 630(9)(c) [270.15(c), 264.177]		Unit-Specific Portion
D-2	Tank Systems 806(4)(c), 640, 395(6) [270.16, 264.190 through 264.199, 264.1030 through 264.1065]		4.3
D-2a	Design, Installation and Assessment of Tanks Systems 806(4)(c)(i),(ii),(v), and (vi), 640(2) and (3) [270.16(a), (b), (e), and (f), 264.191, 264.192]		Unit-Specific Portion
D-2a(1)	Design Requirements 640(2)(c), (3)(a) [264.191(b), 264.192(a)]		Unit-Specific Portion
D-2a(2)	Integrity Assessments 640(2)(a),(c) and (e); (3)(a),(b) and (g) [264.191(a) and (b) 264.192(a),(b), and (g)]		Unit-Specific Portion
D-2a(3)	Additional Requirements for Existing Tanks 640(2)(a) and (c)(v) [264.191(a) and (b)(5)]		Unit-Specific Portion
D-2a(4)	Additional Requirements for New Tanks 640(3)(c), (e), (f) and (g) [264.192(b),(d), and (e)]		Unit-Specific Portion
D-2a(5)	Additional Requirements for New On-ground or Underground Tanks 640(3)(a)(iii), (iv), and (v); 640(3)(d) [264.192(a)(3),(4), and (5), and (c)]		Unit-Specific Portion
D-2b	Secondary Containment and Release Detection for Tank Systems 640(4), 806(4)(c)(vii) [270.16(g), 264.193]		Unit-Specific Portion
D-2b(1)	Requirements for All Tank Systems		Unit-Specific Portion
D-2b(2)	Additional Requirements for Specific Types of Systems		Unit-Specific Portion
D-2b(2)(a)	Vault Systems 640(4)(e)(ii) [264.193(e)(2)]		Unit-Specific Portion

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		Technically Adequate?	Location in Application
D-2b(2)(b)	Double-walled Tanks 640(4)(e)(iii) [264.193(e)(3)]		Unit-Specific Portion
D-2b(2)(c)	Ancillary Equipment 640(4)(f) [264.193(f)]		Unit-Specific Portion
D-2c	Variances from Secondary Containment Requirements 640(4)(g) and (h), 640(1)(b) and 806(c)(viii) [270.16(h), 264.193(g) and (h), 264.190(a)]		Unit-Specific Portion
D-2d	Tank Management Practices 806(4)(c)(iii),(iv),(ix); 640(5)(a) and (b) [270.16(c),(d), and (i), 264.194(a) and (b)]		Unit-Specific Portion
D-2e	Labels or Signs 806(4)(c)(xi), 395(6), 640(5)(d)		Unit-Specific Portion
D-2f	Air Emissions 806(4)(c)(xii), 640(5)(e)		Unit-Specific Portion
D-2g	Management of Ignitable or Reactive Wastes in Tank Systems 806(4)(c)(x), 640(9) [270.16(f), 264.198]		Unit-Specific Portion
D-2h	Management of Incompatible Wastes in Tank Systems 806(4)(c)(x), 640(10) [270.16(f), 264.199]		Unit-Specific Portion
D-3 D-4 D-5 D-6 D-7	Waste Piles Surface Impoundments Incinerators Landfills Land Treatment		4.4 4.5 4.6 4.7 4.8
D-8	Air Emissions Control 806(4)(j) and (k), 110 (test methods), 690, 691 [270.24, 270.25, Part 264 Subparts AA, BB, and CC] - Washington State has not adopted the CC requirements yet.		4.10
D-8a	Process Vents 806(4)(j), 110, 690 [270.24, 264.1030 - 264.1035 (Subpart AA)]		4.10.1
D-8a(1)	Applicability of Subpart AA Standards 690 [270.24(b), 264.1030, 264.1034(d), 264.1035(b)(2)]		4.10.1

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		Technically Adequate?	Location in Application
D-8a(1)(a)	Process Vents Subject to Subpart AA Standards		4.10.1
D-8a(1)(b)	Process Vents Not Subject to Subpart AA Standards		4.10.1
D-8a(1)(c)	Re-evaluating Applicability of Subpart AA Standards 690 [270.24(b)(3), 264.1030]		4.10.1
D-8a(2)	Process Vents - Demonstrating Compliance 806(4)(j), 110, 690 [270.24, 264.1030 - 264.1035]		4.10.1
D-8a(2)(a)	The Basis for Meeting Limits/ Reductions 806(4)(j)(ii), 110, 690 [270.24(b), 264.1032, 264.1034(c), 264.1035(b)(2) and (b)(3)]		4.10.1
D-8a(2)(b)	Demonstrating Compliance via Selected Method 806(4)(j)(ii), 110, 690 [270.24(b), 264.1032, 264.1034(c), 264.1035(b)(2) and (b)(3)]		4.10.1
D-8a(2)(c)	Design Information and Operating Parameters for Closed Vent Systems and Control Devices 806(4)(j)(iv), 110, 690 [270.24(d), 264.1032(b), 264.1033, 264.1034, 264.1035(b)(3) and (b)(4), 264.1035(c)]		4.10.1
D-8a(2)(d)	Re-evaluating Compliance with Subpart AA Standards 806(4)(j)(ii), 690 [270.24(b), 264.1030, 264.1035(b)(2)]		4.10.1
D-8b	Equipment Leaks 806(4)(k), 110, 691 [270.25, 264.1050 - 264.1064, 264.1033, 264.1034(c), 264.1035(b) and (c)]		4.10.2
D-8b(1)	Applicability of Subpart BB Standards 806(4)(k), 110, 691 [270.25, 264.1050, 264.1063]		4.10.2
D-8b(1)(a)	Equipment Subject to Subpart BB		4.10.2
D-8b(1)(b)	Re-evaluating Applicability of Subpart BB Standards 110, 691(1) [264.1063(d) - (g), 264.1064(k)]		4.10.2
D-8b(2)	Equipment Leaks - Demonstrating Compliance		4.10.2

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		Technically Adequate?	Location in Application
D-8b(2)(a)	Procedures for Identifying Equipment Location and Method of Compliance, Marking Equipment, and Ensuring Records are Up-to-date 806(4)(k), 691 [270.25, 264.1050 - 264.1064]		4.10.2
D-8b(2)(b)	Demonstrating Compliance with D-8b(1)(a) and (2)(a) Procedures 806(4)(k), 691 [270.25, 264.1050 - 264.1059]		4.10.2
D-8b(2)(c)	Closed Vent Systems or Control Devices: Showing Compliance with Emission Reduction Standards 806(4)(k), 110, 690, 691 [270.25, 264.1033 - 264.1035, 264.1052 - 264.1055, 264.1059, 264.1060, 264.1063]		4.10.2
D-8c	Tanks and Containers [270.27, 270.15, 270.16, Part 264 Subpart CC]		4.10.3
D-8c(1)	Applicability of Subpart CC Standards [264.1080, 264.1082]		4.10.3
D-8c(2)	Tank Systems and Container Areas - Demonstrating Compliance Provide the documentation required by 270.27(a)(1) - (a)(3) and (a)(5) - (a)(6).		4.10.3
D-9	Waste Minimization [264.73(b)(9), 264.75(h) and (i)]		Chapter 10.0
D-10	Groundwater Monitoring for Land-based Units		Chapter 5.0
E.	**Releases from Solid Waste Management Units** 806(4)(a)(xxiii) and (xxiv), 645, 646 [270.14(d)]		Chapter 2.0
E-1	Solid Waste Management Units and Known and Suspected Releases of Dangerous Wastes or Constituents		2.5
E-1a	Solid Waste Management Units		2.5
E-1b	Releases		2.5
E-2	Corrective Actions Implemented (If you have been conducting corrective action under a RCRA Section 3008(h), 7003, or 3013 order; under a Model Toxics Control Act (MTCA) order; as an independent MTCA cleanup; or under another authority.)		2.5

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		Technically Adequate?	Location in Application
F.	**Procedures to Prevent Hazards** 806(4)(a)(iv),(v),(vi),(viii),(ix), 310, 320, 340 [270.14(b)(4),(5),(6),(8); 264.14, 264.15, 264.17, 264.30 - 264.35]		Chapter 6.0
F-1	Security 806(4)(a)(iv), 310(1) and (2) [270.14(b)(4), 264.14]		6.1
F-1a	Security Procedures and Equipment 806(4)(a)(iv), 310(2) [270.14(b)(4), 264.14]		6.1.1
F-1b	Waiver 310(1) [264.14(a)]		6.1.2
F-2	Inspection Plan 806(4)(a)(v), 320, 340 [270.14(b)(5), 264.15]		6.2
F-2a	General Inspection Requirements 806(4)(a)(v), 320(1), 320(2)(a),(b) and (c), 340(1)(d) [270.14(b)(5), 264.15(a) and (b), 264.33, 264.34, 264.35]		6.2.1
F-2b	Inspection Log 320(2)(d) [264.15(d)]		6.2.2
F-2c	Schedule for Remedial Action for Problems Revealed 320(3) [264.15(c)]		6.2.3
F-2d	Specific Process or Waste Type Inspection Requirements		6.2.4
F-2d(1)	Container Inspections 806(4)(a)(v), 630(3) and (6), 320(2)(c) and (3) [270.14(b)(5), 264.15(c), 264.174]		Unit-Specific Portion
F-2d(2)	Tank System Inspections and Corrective Actions 640(6) and (7) [270.14(b)(5), 264.195]		Unit-Specific Portion
F-2d(2)(a)	Tank System Inspections 806(4)(a)(v), 640(6) [264.195]		Unit-Specific Portion
F-2d(2)(b)	Tank Systems - Corrective Actions 640(7) [264.196]		Unit-Specific Portion
F-2d(3)	Storage of Ignitable or Reactive Wastes 806(4)(a)(v), 395(1)(d) [no equivalent federal requirement]		Unit-Specific Portion
F-2d(4)	Air Emissions Control and Detection - Inspections, Monitoring, and Corrective Actions (806(4)(a)(v) [270.14(b)(5), 264.1033 (e) - (k); 264.1035; 264.1052; 264.1053; 264.1058; 264.1064; 264.1067, 264.1088, 264.1091]		Unit-Specific Portion

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		Technically Adequate?	Location in Application
F-2d(4)(a)	Process Vents 806(4)(a)(v) [264.1033; 264.1034(b) and (c); 264.1035(b)(3), (b)(4), and (c)]		Unit-Specific Portion
F-2d(4)(b)	Equipment Leaks 806(4)(a)(v) [264.1052 - 264.1064]		Unit-Specific Portion
F-2d(4)(c)	Tanks and Containers [270.14(b)(5), 270.27((a)(6), 264.1088, 264.1091] Department of Ecology has not yet adopted the CC requirements.		Unit-Specific Portion
F-2d(5) F-2d(6) F-2d(7) F-2d(8) F-2d(9)	Waste Pile Inspection Surface Impoundment Inspection Incinerator Inspection Landfill Inspection Land Treatment Facility Inspection		Unit-Specific Portion
F-3	Preparedness and Prevention Requirements 806(4)(a)(vi), 340 [270.14(b)(6), Part 264 Subpart C]		6.3
F-3a	Equipment Requirements 340(1) and (2) [264.32, 264.34]		6.3.1 and Unit-Specific Portion
F-3b	Aisle Space Requirement 340(3) [264.35]		6.3.2
F-4	Preventive Procedures, Structures, and Equipment 806(4)(a)(viii) [270.14(b)(8)]		6.4
F-5	Prevention of Reaction of Ignitable, Reactive, and/or Incompatible Wastes 806(4)(a)(ix),(b)(v), and (c)(x); 395(1)(a),(b) and (c); 630(9)(a) and (b); 640(9)(10) [270.14(b)(9), 264.17(a) and (b), 264.177(a) and (b)]		6.5 and Unit-Specific Portion
F-5a	Precautions to Prevent Ignition or Reaction of Ignitable or Reactive Waste 806(4)(a)(ix), 395(1)(a) and (c) [270.14(b)(9), 264.17(a)]		Unit-Specific Portion
F-5b	Precautions for Handling Ignitable or Reactive Waste and Mixing Incompatible Wastes 806(4)(a)(ix), (b)(v), and (c)(x); 395(1)(b) and (c); 630(9)(a) and (b); 640(9) and (10) [270.14(b)(9), 264.17(b), 264.177(a) and (b)]		Unit-Specific Portion
F-5b(1)	Ignitable or Reactive Wastes In Tanks 806(4)(c)(x), 640(9) [270.16(j), 264.198]		Unit-Specific Portion

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		Technically Adequate?	Location in Application
F-5b(2)	Incompatible Wastes In Containers or Tanks 806(4)(b)(v) and (4)(c)(x), 630(9) (a) and (b), 640(10) [270.15(d), 270.16(j) 264.17(b) and (c), 264.177(a) and (b), 264.199]		Unit-Specific Portion
G.	**Contingency Plan** 806(4)(a)(vii), 340, 350, 360, 640(7), 650(5), 660(6) [270.14(b)(7), 264.50 through 264.56]		Chapter 7.0
G-1	General Information		Attachment 4 of HF RCRA Permit (DW Portion)
G-2	Emergency Coordinators 350(3)(d), 360(1) [264.52(d), 264.55]		Attachment 4 of HF RCRA Permit (DW Portion) and Unit-Specific Portion
G-3	Circumstances Prompting Implementation 350(1) and (2), 360(2) [264.51, 264.52(a), 264.56(a) and (b)]		Attachment 4 of HF RCRA Permit (DW Portion) and Unit-Specific Portion
G-4	Emergency Response Procedures 350(3)(a) and (b), 360(2)(a),(b), and (c) [264.52(a), 264.56]		Attachment 4 of HF RCRA Permit (DW Portion) and Unit-specific Portion
G-4a	Notification 360(2)(a) [264.56(a)] Note that the facility must also notify under WAC 173-303-145.		Attachment 4 of HF RCRA Permit (DW Portion) and Unit-Specific Portion
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Part B Permit Application Review Checklist

		Technically Adequate?	Location in Application
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Part B Permit Application Review Checklist

		Technically Adequate?	Location in Application
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TABLE

Table 1-1. Hanford Facility Treatment, Storage, and/or Disposal Units 1-2

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1.0 PART A [A]

This chapter addresses Section A of the Washington State Department of Ecology's (Ecology) *Dangerous Waste Permit Application Requirements* (permit application guidance) (Ecology 1987 and 1996). This permit application guidance calls for a discussion of the Part A forms for the Hanford Facility.

The Hanford Facility is a single *Resource Conservation and Recovery Act* (RCRA) *of 1976* facility, and as such has been issued a single identification number by the U.S. Environmental Protection Agency (EPA) and Ecology (EPA/State Identification Number WA7890008967). The Hanford Facility consists of approximately 70 treatment, storage, and/or disposal (TSD) units (Table 1-1). These TSD units include, but are not limited to, tank systems, surface impoundments, container storage areas, containment buildings, landfills, and miscellaneous units.

The current *Hanford Facility Dangerous Waste Part A Permit Application* (HF Part A) (DOE/RL-88-21) consists of four "Dangerous Waste Permit General Information, Form 1s" (submitted at the facility level for each co-operator); a single "Notice of Dangerous Waste Activities, Form 2" (submitted at the facility level); and approximately 70 "Dangerous Waste Permit Application, Form 3s" (submitted at the unit level). The HF Part A consolidates into a single document the current revisions of all Part A permit application forms. Thus, the contents of this document have not been reproduced for inclusion in the Part A chapter of the *Hanford Facility Dangerous Waste Permit Application, General Information Portion*.

The HF Part A is designed to facilitate the insertion of new or revised material and is updated three times a year. All revisions to Part A, Form 3s for interim status TSD units are carried out in accordance with the requirements of the *Dangerous Waste Regulations*, Washington Administrative Code (WAC) 173-303-805(7). All revisions to Part A, Form 3s for final status TSD units are carried out in accordance with Condition I.C.3. of the Hanford Facility RCRA Permit (HF RCRA Permit), Dangerous Waste Portion (DW Portion). These revisions include those for TSD units that have been clean closed (refer to Chapter 11.0, Section 11.1.1.1 and 11.5). The Part A, Form 3s for clean-closed TSD units are revised to include the word "CLOSED" across the front of the form and the date the closure certification was accepted by Ecology. The Part A, Form 3s for interim status TSD units that have been procedurally closed in accordance with Section 6.3.3 of the *Hanford Federal Facility Agreement and Consent Order* (Tri-Party Agreement) also are revised to include the word "CLOSED" across the front of the form and the date the procedural closure certification was accepted by Ecology.

1 Table 1-1. Hanford Facility Treatment, Storage, and/or Disposal Units.

Unit name and type[1]	Document[2] type	Classification[3]	Waste type[4]	Location[5]	Co-Op[6]	Project[7]
'Operating' Treatment, Storage, and/or Disposal Units						
Double-Shell Tank System (TS)	B	3,4	M	200EW	CHG	RPP
204-AR Waste Unloading Station (T)	B	4	M	200E	CHG	RPP
242-A Evaporator (TS)	B	3,4	M	200E	FH	WM
222-S Laboratory Complex (TS)	B	1,2,3,4	M	200W	FH	AS
200 Area Effluent Treatment Facility (TS)	B	1,2,3,4	M	200E	FH	WM
Liquid Effluent Retention Facility (TS)	B	6,7	M	200E	FH	WM
Central Waste Complex (TS)	B	1,2	M	200W	FH	WM
Waste Receiving and Processing (TS)	B	1,2	M	200W	FH	WM
Low-Level Burial Grounds (SD)	B	1,11	M	200EW	FH	WM
T Plant Complex (TS)	B	1,2,3,4,10,13	M	200W	FH	WM
616 Nonradioactive Dangerous Waste Storage Facility (S)	B	1	H	600	FH	WM
PUREX Storage Tunnels (S)	B	12	M	200E	FH	RC
325 Hazardous Waste Treatment Units (TS)	B	1,2,3,4	M	300	PNNL	ST
305-B Storage Unit (S)	B	1	M	300	PNNL	ST
Waste Encapsulation and Storage Facility (S)	B	1	M	200E	FH	WM
IHLW Interim Storage Unit	U	1	M	200	FH	WM
PFP Treatment Unit	B	2	M	200	FH	NMS
Treatment, Storage, and/or Disposal Units 'Undergoing Closure'						
224-T Transuranic Waste Storage and Assay Facility (S)	O	1	M	200W	FH	RC
207-A South Retention Basin (S)	U	6	M	200E	BHI	ER
216-B-3 Expansion Ponds (TD)	C	7,8,15	M	200E	Other	WM
216-B-63 Trench (TD)	C/PC	7,8	M	200E	BHI	ER
200 West Area Ash Pit Demolition Site (T)	C	13,15	H	200W	Other	WM
218-E-8 Borrow Pit Demolition Site (T)	C	13,15	H	200E	Other	WM
Hanford Patrol Academy Demolition Sites (T)	C	13,15	H	600	Other	WM
2727-S Storage Facility (S)	C	1,15	H	200W	Other	WM
4843 Alkali Metal Storage Facility (S)	C	1,15	M	400	Other	FFTF
105-DR Large Sodium Fire Facility (TS)	PC	1,13,17	H	100	BHI	ER
3718-F Alkali Metal Treatment and Storage Area (TS)	C	1,4,13	M	300	Other	RC
304 Concretion Facility (TS)	C	1,2,15	M	300	Other	RC
300 Area Solvent Evaporator (TS)	C	1,4,15	M	300	Other	RC
300 Area Waste Acid Treatment System (TS)	C	3,4,13	M	300	FH	RC
303-M Oxide Facility (T)	C	9	M	300	FH	RC
303-K Storage Unit (S)	C	1	M	300	FH	FTRC
1706-KE Waste Treatment System (TS)	C	3,13	M	100	FH	SNM
2101-M Pond (D)	C	8,15	H	200E	Other	BWIP
Hexone Storage and Treatment Facility (TS)	C	1,3,4	M	200W	BHI	ER
241-CX Tank System (S)	U	3	M	200E	BHI	ER
183-H Solar Evaporation Basins (TS)	C/PP	3,4	M	100	BHI	ER
1324-N Surface Impoundment (T)	C/PC	7	H	100	BHI	ER
1301-N Liquid Waste Disposal Facility (D)	C/PC	11	M	100	BHI	ER
1325-N Liquid Waste Disposal Facility (D)	C/PC	11	M	100	BHI	ER
1324-NA Percolation Pond (TD)	C/PC	8,13	H	100	BHI	ER
100-D Ponds (TD)	C/PC	8,13	H	100	Other	ER
216-S-10 Pond and Ditch (D)	C/PC	8	M	200W	BHI	ER
216-A-29 Ditch (TD)	C/PC	8,13	M	200E	BHI	ER
216-B-3 Main Pond (TD)	C/PC	7,8	M	200E	BHI	ER
216-A-10 Crib (D)	C/PC	11	M	200E	BHI	ER
216-U-12 Crib (D)	C/PC	11	M	200W	BHI	ER
216-A-36B Crib (D)	C/PC	11	M	200E	BHI	ER

Unit name and type[1]	Document[2] type	Classification[3]	Waste type[4]	Location[5]	Co-Op[6]	Project[7]
216-A-37-1 Crib (D)	C/PC	11	M	200E	BHI	ER
300 Area Process Trenches (D)	C/PP	8	M	300	BHI	ER
Nonradioactive Dangerous Waste Landfill (D)	C/PC	11	H	600	BHI	ER
Simulated High-Level Waste Slurry Treatment/Storage (TS)	C	1,2,15	M	1100	Other	ST
Treatment, Storage, and/or Disposal Units which are, or are Anticipated to be, 'Dispositioned through Other Options'						
PUREX Plant (TS)	O[a]	3,4,10	M	200E	BHI	ER
241-Z Treatment and Storage Tanks (TS)	O[a]	3,4	M	200W	FH	NMS
B Plant Complex (TS)	O[a]	1,3,4,10	M	200E	BHI	ER
221-T Containment Systems Test Facility (T)	O[b]	13	H	200W	Other	FFTF
2727-WA Sodium Reactor Experiment Sodium Storage Building (S)	O[b]	1	M	200W	Other	WM
437 Maintenance and Storage Facility (T)	O[b]	4	M	400	FH	FFTF
324 Pilot Plant (T)	O[b]	4,16	M	300	Other	ST
Biological Treatment Test Facilities (T)	O[b]	13,16	M	300	Other	ST
Physical and Chemical Treatment Test Facilities (TS)	O[b]	1,13,16	M	300	Other	ST
Thermal Treatment Test Facilities (T)	O[b]	13,16	M	300	Other	ST
332 Storage Facility (S)	O[b]	1,16	M	300	Other	ST
Sodium Storage Facility and Sodium Reaction Facility (TS)	O[c]	3,4	M	400	FH	FFTF
600 Area Purgewater Storage and Treatment Facility (TS)	O[d]	12,13	M	600	BHI	ER
Single-Shell Tank System (TS)	O[e]	3,4,5	M	200EW	CHG	RPP
Grout Treatment Facility (TSD)	O[f]	3,4,7,11	M	200E	CHG	RPP
Hanford Waste Vitrification Plant (TS)	O[g]	1,3,4,12,13	M	200E	N/A	N/A

1

KEY:

[1] UNIT NAME AND TYPE — Name of Hanford Facility TSD unit and type (in parentheses). The letters designate the unit type as follows:
T – Treatment
S – Storage
D – Disposal.

[2] DOCUMENT TYPE — Type of documentation submitted, and/or anticipated to be submitted, to support disposition:
B – Part B
C – Closure plan
PC – Partial closure
PP – Postclosure plan
W – Closure work plan
U – Undetermined
O – Other options:

[a] TSD unit being closed, or anticipated to be closed, under Section 8.0 of the *Hanford Federal Facility Agreement and Consent Order* (Tri-Party Agreement)

[b] Procedural closure in accordance with Section 6.3.3 of the Tri-Party Agreement or in response to withdrawal requests submitted in fulfillment of Tri-Party Agreement Milestone M-20-45

[c] To be designated as a TSD unit if the Fast Flux Test Facility sodium is determined to have no beneficial use

[d] Interim status TSD unit to be closed in accordance with the *Purgewater Management Plan* [Attachment 5 of the HF RCRA Permit (DW Portion)]

[e] TSD unit subject to the closure work plan/closure plan process in accordance with Tri-Party Agreement Milestone M-45-06

[f] Interim status TSD unit in a standby mode

[g] Interim status TSD unit is to be superseded by a high-level waste immobilization facility.

KEY:

[3] CLASSIFICATION

1 – Container – Storage
2 – Container – Treatment
3 – Tank – Storage
4 – Tank – Treatment
5 – Waste pile
6 – Surface impoundment – Storage
7 – Surface impoundment – Treatment
8 – Surface impoundment – Disposal
9 – Incinerator
10 – Containment Building
11 – Landfill
12 – Miscellaneous – Storage
13 – Miscellaneous – Treatment
14 – Land treatment
15 – Certified clean closure; regulatory acceptance letter received.
16 – Certified procedural closure; regulatory acceptance letter received.
17 – Certified partial clean closure; regulatory acceptance letter received.

[4] WASTE TYPE

M – TSD unit manages, managed, or is/was anticipated to manage mixed waste and dangerous waste.
H – TSD unit manages, managed, or is/was anticipated to manage dangerous waste.

[5] LOCATION

The area of the Hanford Facility in which the TSD unit is located:
100 –100 Area
200E – 200 East Area
200W – 200 West Area
200EW – Parts of a TSD unit are located in both the 200 East and the 200 West Areas
300 – 300 Area
400 – 400 Area
600 – 600 Area
1100 –1100 Area

[6] CO-OP

Co-operator with the U.S. Department of Energy, Richland Operations Office as the owner/operator:
BHI – Bechtel Hanford, Inc.
PNNL – Pacific Northwest National Laboratory
FH – Fluor Daniel Hanford, Inc.
Other – Closed.
Co-operator with the U.S. Department of Energy, Office of River Protection:
CHG –CH2M Hill Hanford Group

[7] PROJECT

Hanford Projects are as follows:
RPP – River Protection Project
WM – Waste Management
ER – Environmental Restoration
ST – Science and Technology.
AS – Analytical Services
RC – River Corridor
FFTF – Fast Flux Test Facility
NMS – Nuclear Material Stabilization
SNF – Spent Nuclear Fuel

1

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2.0 FACILITY DESCRIPTION AND GENERAL PROVISIONS [B AND E]

This chapter describes the Hanford Site and Hanford Facility and addresses general provisions and information needs identified in Sections B and E of Ecology's permit application guidance (Ecology 1987 and 1996). Topics discussed include the following:

- General description
- Topography
- Location information
- Seismic consideration
- Traffic information
- Waste management units.

Provisions included in Standard Conditions of the HF RCRA Permit (Part I of the DW Portion) also are addressed.

The information contained in Chapter 2.0 need not be duplicated in the Unit-Specific Portion of the *Hanford Facility Dangerous Waste Permit Application* or in preclosure work plan, closure work plan, closure plan, closure/postclosure plan, or postclosure permit application documentation, but will be cross-referenced as appropriate (including the Glossary contained in Appendix 2B of the General Information Portion).

2.1 GENERAL DESCRIPTION [B-1]

The Hanford Facility is owned by the U.S. Government and operated by the U.S. Department of Energy, Richland Operations Office (DOE-RL) and the U.S. Department of Energy, Office of River Protection (DOE-ORP). At the time of this documentation the HF RCRA Permit is issued to DOE-RL as the owner/operator. Dangerous waste and mixed waste (containing both dangerous and radioactive components) are generated and managed on the Hanford Facility. Waste components are regulated in accordance with the RCRA, the *Hazardous and Solid Waste Amendments* (HSWA) *of 1984*, and/or the *State of Washington Hazardous Waste Management Act of 1976* (as administered through Ecology's *Dangerous Waste Regulations*, WAC 173-303); or the *Atomic Energy Act of 1954*.

The permitting framework for the Hanford Facility was established by the original 1989 Tri-Party Agreement. The original document addressed the Hanford Facility as a single RCRA facility (EPA/State Identification Number WA7890008967) consisting of over 60 TSD units. Approximately 25 percent of these units are, or are anticipated to be, 'operating'; approximately 50 percent are 'undergoing closure'; and approximately 25 percent are, or are anticipated to be, 'dispositioned through other options' under the Tri-Party Agreement (refer to Chapter 1.0, Table 1-1).

The original Tri-Party Agreement also established a stepwise permitting process that provided for the issuance of an initial RCRA permit for less than the entire Hanford Facility. Any TSD units not included in the initial permit were to be incorporated through a permit modification. The TSD units not yet incorporated into the RCRA permit were to continue to operate under interim status. Subsequent amendments of the Tri-Party Agreement have retained the RCRA permitting approach established by the original 1989 document.

The initial HF RCRA Permit became effective in September 1994, and is comprised of two portions, a DW Portion, issued by Ecology, and a HSWA Portion, issued by the EPA, Region 10. The DW Portion is issued to four Permittees: DOE-RL, as the owner/operator, and to three of its contractors, as co-operators. The HSWA Portion is issued to DOE-RL, as the owner/operator.

For purposes of the *Hanford Facility Dangerous Waste Permit Application*, the U.S. Department of Energy's contractors are identified as 'co-operators' and sign in that capacity (refer to Condition I.A.2. of the HF RCRA Permit [DW Portion]). Any identification of these contractors as an 'operator' elsewhere in

the application is not meant to conflict with the contractors' designation as co-operators but rather is based on the contractors' contractual status with the U.S. Department of Energy, Richland Operations Office.

The permit modification process will be used at least annually to incorporate additional TSD units as permitting documentation for these units is finalized. The units to be included in annual modifications are specified in a schedule contained as Attachment 27 of the HF RCRA Permit (DW Portion). Hanford Facility TSD units will remain in interim status until incorporated into the HF RCRA Permit. Reference to the HF RCRA Permit in the remainder of this document refers to the most recent revision, unless otherwise specified.

The *Hanford Facility Dangerous Waste Permit Application* is considered to be a single application organized into a General Information Portion (this document, DOE/RL-91-28) and a Unit-Specific Portion. The scope of the Unit-Specific Portion is limited to individual, 'operating' TSD units for which Part B permit application documentation has been, or is anticipated to be, submitted (refer to Chapter 1.0, Table 1-1). Documentation for TSD units 'undergoing closure', or for units that are, or are anticipated to be, 'dispositioned through other options', will continue to be submitted by the Permittees in accordance with the provisions of the Tri-Party Agreement. However, the scope of the General Information Portion includes information that could be used to discuss 'operating' units, units 'undergoing closure', or units being 'dispositioned through other options'. Alternatives for addressing Hanford Facility TSD units are identified as follows:

- 'Operating' TSD unit (submittal of Part B permit application documentation)
- TSD unit 'undergoing closure'
  - Clean closure (submittal of closure plan documentation)
  - Modified closure (submittal of closure/postclosure plan and postclosure permit application documentation)
  - Closure as a land disposal unit (submittal of closure/postclosure plan and postclosure permit application documentation)
  - Closure in conjunction with an operable unit (in accordance with Section 6.1 of the Tri-Party Agreement).
- TSD unit 'dispositioned through other options'
  - Procedural closure (in accordance with Section 6.3.3 of the Tri-Party Agreement or in response to withdrawal requests submitted in fulfillment of Tri-Party Agreement Milestone M-20-45)
  - Facility decommissioning process (in accordance with Section 8.0 of the Tri-Party Agreement)
  - TSD unit operating under interim status in accordance with a specific agreement between DOE-RL and the regulators [e.g., Purgewater Management Plan (Attachment 5 of the HF RCRA Permit)]
  - TSD unit subject to the closure work plan/closure plan process in accordance with Tri-Party Agreement Milestone M-45-06 [e.g., Single-Shell Tank Closure Work Plan (DOE/RL-89-16)].

Further discussion of these alternatives is included in Sections 2.1.1.3 and 2.5.

The intent of the General Information Portion is: (1) to provide an overview of the Hanford Facility; and (2) to assist in streamlining efforts associated with TSD unit-specific Part B permit application, preclosure work plan, closure work plan, closure plan, closure/postclosure plan, or postclosure permit application documentation development and the HF RCRA Permit modification process. Wherever appropriate, the Unit-Specific Portion of the application, as well as preclosure work plan, closure work plan, closure plan, closure/postclosure plan, or postclosure permit application documentation, will make cross-reference to the General Information Portion, rather than duplicating text. Thus, HF RCRA Permit modifications involving general information will require updating only the General Information Portion instead of each unit-specific document.

2.1.1 Facility Description [B-1a]

This section includes a general description and/or discussion of the following:

- Hanford Site
- Hanford Facility
- Hanford Facility permitting
- Hanford Site Missions
- Description of dangerous waste management operations and processes
- Other processes regulated under WAC 173-303
- Other environmental permits.

2.1.1.1 Hanford Site

The Hanford Site covers approximately 1,450 square kilometers of semiarid land that is owned by the U.S. Government and managed by the DOE-RL (Figure 2-1). The city of Richland adjoins the southeastern most portion of the Hanford Site boundary and is the nearest population center.

In early 1943, the U.S. Army Corps of Engineers selected the Hanford Site as the location for plutonium production for national defense. For over 20 years, activities were primarily dedicated to the continuation of plutonium production and managing the waste generated. In later years, activities became increasingly diverse, involving research and development for advanced reactors and renewable energy technologies. The end of the Cold War brought the shutdown of most of the Hanford Site's plutonium production and management facilities. Current missions are to safely clean up and manage the legacy waste on the Hanford Site, and to develop and deploy science and technology (DOE/RL-96-92).

The Hanford Site is divided into numerically designated areas (Drawing H-6-958 in Appendix 2A). These areas served as the location for reactor, chemical separation, and related activities for the production and purification of special nuclear materials (Appendix 2B) and other nuclear activities. The reactors are located along the Columbia River in the 100 Areas. The reactor fuel reprocessing units are in the 200 Areas, which are on a plateau approximately 11 kilometers from the Columbia River. The 300 Area, located adjacent to and north of Richland, contains the reactor fuel manufacturing plants, the research and development laboratories, and the Environmental and Molecular Sciences Laboratory. The 400 Area, 8 kilometers northwest of the 300 Area, contains the Fast Flux Test Facility designed for testing liquid metal reactor systems. The 600 Area covers all locations not specifically given an area designation. Adjacent to and north of Richland, the 1100 Area contains offices associated with administration, maintenance, transportation, and materials procurement and distribution. Offices also are located in the 700 Area, which is in downtown Richland.

Where general information for the Hanford Site is discussed in this permit application portion, such information also applies to the Hanford Facility, unless otherwise designated.

2.1.1.2 Hanford Facility

The Hanford Facility currently contains over 60 TSD units (refer to Chapter 1.0, Table 1-1) described in the HF Part A. The boundary of the Hanford Facility, as defined in Attachment 2 of the HF RCRA Permit (DW Portion), is shown in Figure 2-1. As noted in Figure 2-1, this facility definition only excludes land owned by Washington State. However, a Permit Applicability Matrix contained as Attachment 3 of the HF RCRA Permit (DW Portion) does indicate that Permit conditions do not apply to lands north and east of the Columbia River, unless TSD activities are initiated there or corrective action activities need to be undertaken there.

The Permittees, in their comments on the second draft of the HF RCRA Permit (DW Portion) issued by Ecology for public review in 1994 (DOE-RL et al. 1994), defined the Hanford Facility as consisting of the contiguous portion of the Hanford Site that contains TSD units and, for the purposes of RCRA,

is owned by the U.S. Government and operated by the DOE-RL (excluding lands north and east of the Columbia River, river islands, lands under the exclusive jurisdiction or control by the Bonneville Power Administration, lands leased to the Washington Public Power Supply System, and lands owned by or leased to Washington State) (Figure 2-2).

Exclusion of the noted lands by the Permittees is based on the following rationale. The lands north and east of the Columbia River contain no TSD units. These lands are under consideration for non-U.S. Department of Energy use and for ownership transfer (DOE/EIS-0222). In addition, the DOE-RL has no control over Bonneville Power Administration lands or lands that are owned by or leased to Washington State (e.g., US Ecology site). The U.S. Department of Energy lands leased to the Washington Public Power Supply System are to be covered by a separate dangerous waste permit and, therefore, are not included in the HF RCRA Permit. The legal description of the Hanford Facility, set forth by the Permittees in Appendix 2C, is based on this rationale and is consistent with the facility definition provided to Ecology in 1994 (DOE-RL et al. 1994), with one exception. This exception covers the addition of land now occupied by the Environmental and Molecular Sciences Laboratory. The physical description of the Hanford Facility (including structures, appurtenances, and improvements) is included in Appendix 2A.

Depending on context, the term 'facility', as used in the *Hanford Facility Dangerous Waste Permit Application*, also could refer to building nomenclature (Appendix 2B). In this context, the term 'facility' either remains uncapitalized or as part of the title for various TSD units [e.g., 616 Nonradioactive Dangerous Waste Storage Facility (616 NRDWSF)].

2.1.1.3 Hanford Facility Permitting

This section describes the permitting approach for the Hanford Facility. This approach accommodates requirements established by applicable regulations and authorities, the Tri-Party Agreement, the HF RCRA Permit, and the *Hanford Facility Dangerous Waste Permit Application*. As noted in the Introduction and Definition Sections of the HF RCRA Permit (DW Portion), the Permit is intended to be consistent with the terms and conditions of the Tri-Party Agreement. Coordination with the Tri-Party Agreement is addressed in Condition I.A.3. of the HF RCRA Permit (DW Portion).

2.1.1.3.1 Applicable Regulations and Authorities

The requirements of RCRA and the *State of Washington Hazardous Waste Management Act* (as administered through WAC 173-303) pertain to all Hanford Facility units that were used to treat, store, and/or dispose of hazardous waste on or after November 19, 1980; State-only dangerous waste on or after March 12, 1982; mixed waste on or after August 19, 1987; and units at which such waste will be treated, stored, and/or disposed in the future, except as provided by WAC 173-303-200 and WAC 173-303-802.

Until 1994, none of EPA's RCRA authorizations to Washington State included delegation for HSWA provisions. On January 12, 1994, Washington State submitted a program revision application for additional program approvals related to the corrective action provisions of HSWA. On March 30, 1994, the EPA published a proposal to approve this application in accordance with 40 CFR 271.21(b)(4). On November 4, 1994, the EPA made a final decision that Washington State's hazardous waste program revision satisfies all of the requirements necessary to qualify for final authorization. This authority was incorporated as Part IV of the HF RCRA Permit, Revision 6, issued by Ecology on March 28, 2000.

'Dangerous waste' means hazardous, dangerous, or extremely hazardous waste as defined by RCRA and/or WAC 173-303 (refer to Appendix 2B of this document). 'Mixed waste' means waste that contains both dangerous and radioactive components (Appendix 2B). The radioactive component of mixed waste is interpreted by the U.S. Department of Energy to be regulated under the *Atomic Energy Act*; the nonradioactive dangerous component of mixed waste is interpreted to be regulated under RCRA and WAC 173-303. It is the position of the U.S. Department of Energy that any procedures, methods, data, or

information contained in the *Hanford Facility Dangerous Waste Permit Application* that relate solely to the radioactive component of mixed waste are outside the scope of the permit application and the HF RCRA Permit, but are included for the sake of completeness. It is the position of Ecology that the radioactive component influences safe management of mixed waste and therefore information about this component is necessary to ensure compliance with WAC 173-303 and the HF RCRA Permit. Both agencies acknowledge the other's position, but to avoid a conflict on the issue, the DOE-RL has agreed to provide information on radioactive constituents without agreeing with Ecology's position. Ecology has agreed to accept the information in this context without giving up its position.

The Hanford Facility 'operating' TSD units include, but are not limited to, tank systems, surface impoundments, container storage areas, containment buildings, landfills, and miscellaneous units (refer to Chapter 1.0, Table 1-1) that were, are, or are anticipated to be, involved in dangerous and/or mixed waste activities. The scope of the Unit-Specific Portion is limited to individual 'operating' TSD units for which Part B permit application documentation has been, or is anticipated to be, submitted. However, the scope of the General Information Portion includes information that could be used to discuss 'operating' units, units 'undergoing closure', or units being 'dispositioned through other options'. Unit-specific documentation for TSD units 'undergoing closure', or for units that are, or are anticipated to be, 'dispositioned through other options', will continue to be submitted by the Permittees in accordance with the provisions of the Tri-Party Agreement.

In accordance with the stepwise RCRA permitting process defined for the Hanford Facility in the Tri-Party Agreement, those TSD units that are not yet incorporated into the HF RCRA Permit (DW Portion) will continue to operate under interim status. Interim status capacity expansion of the Hanford Facility is in accordance with the provisions of WAC 173-303-281, as applicable, and WAC 173-303-805(7).

Dangerous waste and the dangerous waste component of mixed waste on the Hanford Facility are subject to land disposal restrictions (LDR) (40 CFR 268 and WAC 173-140). Ecology has not received authorization from the EPA to administer LDR provisions of RCRA pursuant to Section 3006 (refer to Section 6.1 of the Tri-Party Agreement Action Plan). When this authorization is received, Ecology will review applicable LDR requirements for purposes of requirements administration.

2.1.1.3.2 Hanford Federal Facility Agreement and Consent Order

The Tri-Party Agreement, as initially established in 1989 and subsequently amended, is a legal document covering Hanford Site environmental compliance and restoration and remediation activities. Reference to the Tri-Party Agreement in the *Hanford Facility Dangerous Waste Permit Application* refers to the most recent amendment of the document, unless specified otherwise. The Tri-Party Agreement is divided into two parts, the Agreement and Consent Order and the Action Plan.

Purposes of the Tri-Party Agreement as related to RCRA permitting include the following:

- To provide a framework for permitting TSD units and to promote an orderly, effective investigation and cleanup of contamination on the Hanford Site
- To ensure compliance with the RCRA and the *State of Washington Hazardous Waste Management Act* for TSD units, including requirements covering permitting, compliance, closure, and postclosure care
- To establish a procedural framework and schedule for developing, prioritizing, implementing, and monitoring appropriate response actions on the Hanford Site in accordance with the CERCLA, the National Contingency Plan, the Superfund guidance and policy, RCRA, and RCRA guidance and policy

- To identify TSD units that require permits; to establish schedules to achieve compliance with interim and final status requirements and to complete Part B permit application documentation for such units in accordance with the Tri-Party Agreement Action Plan; to identify TSD units that will undergo closure; to close such units in accordance with applicable laws and regulations; to require postclosure care where necessary; and to coordinate closure with any inter-connected remedial action on the Hanford Site

- To minimize the duplication of analysis and documentation.

The Tri-Party Agreement Action Plan, an enforceable part of the Tri-Party Agreement, establishes methods, procedures, and plans for (1) compliance, permitting, and closure under the RCRA and the *State of Washington Hazardous Waste Management Act* and (2) cleanup of the Hanford Site under CERCLA and RCRA corrective action provisions. The Tri-Party Agreement Action Plan also specifies which regulatory agency (i.e., either Ecology or EPA) has lead responsibility.

Appendix B of the Tri-Party Agreement Action Plan contains a listing of Hanford Facility TSD units. In accordance with Section 5.3 of the Tri-Party Agreement Action Plan, any additional TSD units that are identified are to be added to Appendix B. Within the Tri-Party Agreement Action Plan, Section 2.4 and Appendix D include the identification of major milestones established to achieve compliance with RCRA and WAC 173-303 TSD requirements. Such milestones (M) include those for submittal of Part B permit application, closure plan, closure/postclosure plan, and withdrawal request documentation (M-20-00), submittal of preclosure work plan and closure work plan (M-45-06) documentation, installation of RCRA groundwater monitoring wells (M-24-00), and RCRA past-practice site investigations and remedial actions.

In Section 6.2 of the Tri-Party Agreement Action Plan, the permitting process for the over 60 TSD units that comprise the Hanford Facility is described. Figure 2-3, taken from Section 6.2 of the Tri-Party Agreement Action Plan, depicts a flowchart for processing all dangerous waste permitting documentation for 'operating' TSD units by the Permittees. This process applies to existing TSD units, units subject to interim status capacity expansion, and new units (i.e., units that do not have interim status and must have a permit before construction). The process for TSD units 'undergoing closure' is addressed in more detail in Section 2.5. Figure 2-4, taken from Section 6.3 of the Tri-Party Agreement Action Plan, depicts a flowchart for processing closure plan documentation.

The review of each submittal to the regulator is to be conducted in accordance with a process supported by the development of working drafts, project manager meetings, and workshops. In accordance with Section 4.1 of the Tri-Party Agreement Action Plan, project manager meetings are held to discuss progress, address issues, and review plans pertaining to a specific TSD unit. These meetings are held monthly, unless the project managers for the three parties (DOE-RL, Ecology, and the EPA) agree that a meeting is not appropriate. Workshops also are held between the Permittees and the regulators, on an as-needed basis, to address and resolve comments associated with the working drafts.

At the end of the review and comment response process, final documentation is readied for an 'operating' TSD unit and serves as the basis for incorporation of that unit into the HF RCRA Permit (DW Portion). For example, for finalized, TSD unit-specific Part B permit application documentation submitted by the Permittees, a final permit decision will be made by Ecology pursuant to WAC 173-303-840. Specific conditions for this TSD unit will be incorporated into Part III of the HF RCRA Permit (DW Portion) during the next annual Class 3 permit modification (refer to Section 2.1.1.3.3). A process flowchart for modification of the HF RCRA Permit is included as Figure 2-5.

A similar documentation finalization process is in place for TSD units 'undergoing closure' (Figure 2-4), and is discussed in more detail in Section 2.5. Chapter 1.0, Table 1-1, identifies Hanford Facility TSD units that are 'undergoing closure'. Preclosure work plan, closure work plan, closure plan, closure/postclosure plan, or postclosure permit application documentation is to be developed for most of

these TSD units in accordance with Sections 2.4, 5.3, 6.3, and 8.0 and Appendix D of the Tri-Party Agreement Action Plan.

Chapter 1.0, Table 1-1 also identifies a number of Hanford Facility TSD units for which procedural closure has been granted, or will be sought, in accordance with Section 6.3 of the Tri-Party Agreement Action Plan or in response to withdrawal requests submitted in fulfillment of Tri-Party Agreement Milestone M-20-45. Procedural closure is used for those units that were classified as being TSD units, but actually were never used to treat, store, or dispose of hazardous waste on or after November 19, 1980; State-only dangerous waste on or after March 12, 1982; and mixed waste on or after August 19, 1987, except as provided by WAC 173-303-200 or WAC 173-303-802. Procedural closure is discussed in more detail in Section 2.5.1.3.

2.1.1.3.3 Hanford Facility Resource Conservation and Recovery Act Permit

The initial HF RCRA Permit became effective in September 1994, and is comprised of two portions, a DW Portion and a HSWA Portion.

The HF RCRA Permit (DW Portion) is divided as follows:

Part I: Standard Conditions. Part I contains conditions that are similar to those appearing in all dangerous waste permits issued by Ecology.

Part II: General Facility Conditions. Part II combines typical DW Portion conditions with those conditions intended to address issues specific to the Hanford Facility. Where appropriate, the General Facility Conditions apply to all final status dangerous waste management activities on the Hanford Facility. Where appropriate, the General Facility Conditions also address dangerous waste management activities that might not be directly associated with distinct TSD units or that could be associated with many TSD units (i.e., spill reporting, training, contingency planning, etc.).

Part III: Unit-Specific Conditions for Operating TSD Units. Part III contains those permit requirements that apply to each individual TSD unit operating under final status. Conditions for each TSD unit are found in a permit chapter dedicated to that TSD unit. These unit-specific permit chapters contain references to Standard and General Facility Conditions (Parts I and II), as well as additional requirements that are intended to ensure that each TSD unit is operated in an efficient and environmentally protective manner. The Unit-Specific Portion of the *Hanford Facility Dangerous Waste Permit Application* provides Part B permit application documentation that serves as the basis for Part III chapters of the HF RCRA Permit (DW Portion).

Part IV: Corrective Actions for Past-Practices Activities. Part IV references the HSWA Portion.

Part III of the HSWA Portion, Corrective Action, contains these requirements that apply to the identification of solid waste management units (SWMUs) on the Hanford Facility and conduct of investigations and remediations at such SWMUs. Further discussion of SWMUs is contained in Section 2.5. The corrective action for DOE-RL activities on the Hanford Facility will be as specified in the Tri-Party Agreement. For those SWMUs not covered by the Tri-Party Agreement, RCRA corrective requirements will be addressed by Part III of the HSWA Portion. Thus, the applicability of Part III of the HSWA Portion primarily pertains to those portions of the Hanford Facility where activities are conducted by a lessee or other entity not contractually connected to, and not under the direction of, the DOE-RL.

Subsequent to the issuance of the initial HF RCRA Permit, the EPA delegated HSWA authority for corrective action provisions to Ecology (i.e., on November 4, 1994; refer to Section 2.1.1.3.1). However, all permits issued by the EPA prior to final authorization of Washington State for corrective action will continue to be administered by the EPA until the issuance, or reissuance after modification, of a state RCRA permit (59 FR 55322). Thus, the EPA will continue to administer the corrective action provisions

for the Hanford Facility through the HF RCRA Permit (HSWA Portion) until a future modification incorporates these provisions into the DW Portion. At that time, those EPA-issued permit provisions for which Washington State is authorized will expire; provisions for which Washington State is not authorized will continue in effect under the HSWA Portion.

The EPA delegated HSWA authority for Corrective Action to Ecology on November 4, 1994. On March 28, 2000, Ecology incorporated this authority into Parts II and IV of the HF RCRA Permit. Part II includes general sitewide conditions that address corrective action at solid waste management units and other areas of concern. Unit-Specific Conditions for Corrective Action are included in Part IV of the HF RCRA Permit. Revision 6 incorporated Permit requirements that apply to specific RCRA past-practice units that are undergoing corrective action under the Tri-Party Agreement. RCRA past-practice units could include solid waste management units and other areas of concern (i.e., releases that are not at solid waste management units and do not constitute a solid waste management unit) that are undergoing corrective action. For CERCLA and RCRA past-practice units, the corrective action conditions are structured around continued coordination with, and reliance on, the investigation and cleanup requirements established under the Tri-Party Agreement. For TSD units identified in the Tri-Party Agreement, the corrective action conditions contemplate use of closure and post-closure processes to satisfy corrective actions

Part V: Unit-Specific Conditions for TSD Units Undergoing Closure. Part V contains those requirements that apply to specific TSD units undergoing closure. Requirements for each TSD unit undergoing closure are found in a permit chapter dedicated to that TSD unit. These unit-specific permit chapters could contain references to Standard Conditions (Part I) and General Facility Conditions (Part II), and additional requirements that are intended to ensure that each TSD unit is closed in an efficient and environmentally protective manner. Further discussion of the permitting process for TSD units 'undergoing closure' is contained in Section 2.5.

Part VI: Unit-Specific Conditions for Units in Postclosure. Part VI contains requirements that apply to those specific TSD units that have completed (or will complete) modified or landfill closure requirements (refer to Chapter 11.0, Section 11.1.1) and now, or in the future, only need to meet postclosure standards. As set out in Section 5.3 of the Tri-Party Agreement Action Plan, certain TSD units will be permitted for postclosure care pursuant to WAC 173-303 and the HSWA. Requirements for each TSD unit undergoing postclosure care are found in a chapter, within Part VI, dedicated to that unit. These unit-specific chapters could contain references to Standard Conditions (Part I) and General Conditions (Part II), as well as the unit-specific conditions.

The conditions of the HF RCRA Permit (DW Portion) are applied to the Hanford Facility as defined by a Permit Applicability Matrix (Attachment 3, DW Portion) referenced in Condition I.A.1.b. As noted in Condition I.E.2., compliance with the DW Portion constitutes compliance at those areas subject to the HF RCRA Permit for the purpose of enforcement with WAC 173-303-140, -180, -280 through -395, -600 through -680, -810, and -830.

The HF RCRA Permit (DW Portion) is organized to allow a stepwise permitting process as defined in the Tri-Party Agreement. As TSD unit-specific Part B permit application, closure plan, closure/postclosure plan, and postclosure permit application documentation is finalized by the Permittees, and approved by Ecology, additional Unit-Specific Conditions are incorporated into the HF RCRA Permit through the permit modification process.

Modifications to incorporate additional TSD units into the HF RCRA Permit (DW Portion) are conducted in accordance with the Class 3 permit modification procedure specified in WAC 173-303-830 or -840. Except for minor modifications (i.e., Class 1 and Class 1), proposed modifications (i.e., Class 2 and 3) are subject to public comment. The permittees may request temporary authorization for Class 2 or 3 modifications in accordance with WAC 173-303-830(4)(e). Condition I.C.3. of the HF RCRA Permit

(DW Portion) incorporates a Class 3 Permit Modification Schedule into the HF RCRA Permit (DW Portion) (i.e., Attachment 27). This schedule identifies which TSD units have been, or are to be, incorporated into the HF RCRA Permit (DW Portion) during each annual Class 3 permit modification cycle. Provision of such a schedule supports the planning needs of the Permittees and regulators who process permitting documentation. This schedule also supports the planning needs of the public and affected Indian Tribes who review and comment on this documentation. In summary, the M-20-00 Milestones found in Appendix D of the Tri-Party Agreement Action Plan are complemented by the Class 3 Permit Modification Schedule (Attachment 27) of the HF RCRA Permit (DW Portion). The former specifies when the permitting documentation process for a TSD unit is to be initiated, while the latter specifies when this process is to be finalized.

The permit modification process is outlined in Figure 2-5. A permit modification does not affect the 10-year term of the HF RCRA Permit [Condition I.C.1. of the HF RCRA Permit (DW Portion)], unless the Permit is revoked and reissued under WAC 173-303-830(3), or terminated under WAC 173-303-830(5), or continued in accordance with WAC 173-303-806(7). In accordance with the stepwise permitting process, only those portions of the HF RCRA Permit (DW Portion) newly proposed for incorporation would be open to public comment. Revocation and reissuance means the existing permit is revoked and an entirely new permit is issued, to include all TSD units permitted as of that date. In this case, all conditions of the permit to be reissued would be open to public comment and a new term would be specified for the reissued permit.

2.1.1.3.4 Hanford Facility Dangerous Waste Permit Application

The *Hanford Facility Dangerous Waste Permit Application* is considered to be a single application organized into a General Information Portion (this document, DOE/RL-91-28) and a Unit-Specific Portion. The scope of the Unit-Specific Portion is limited to individual, 'operating' TSD units for which Part B permit application documentation has been, or is anticipated to be, submitted. Documentation for TSD units 'undergoing closure', or for units that are, or are anticipated to be, 'dispositioned through other options', will continue to be submitted by the Permittees in accordance with the provisions of the Tri-Party Agreement. 'Dangerous waste', as used in the title of the application, refers to waste subject to WAC 173-303 requirements and to requirements of the HSWA, including those for which Ecology has not yet been granted authority by the EPA.

Both the General Information and Unit-Specific portions of the *Hanford Facility Dangerous Waste Permit Application* address the contents of the Part B permit application guidance documentation prepared by Ecology (Ecology 1987 and 1996) and the EPA (40 CFR 270), with additional information needs defined by revisions of WAC 173-303 and by the HSWA. For ease of reference, the alpha-numeric section identifiers from Ecology's permit application guidance documentation follow, in brackets, the chapter headings and subheadings. Both the General Information and the Unit-Specific portions permit applications are organized as follows:

- Foreword
- Contents
- Chapter 1.0: Part A [A]
- Chapter 2.0: Facility Description and General Provisions [B and E]
- Chapter 3.0: Waste Analysis [C]
- Chapter 4.0: Process Information [D-1 through D-8]
- Chapter 5.0: Groundwater Monitoring for Land-Based Units [D-10]
- Chapter 6.0: Procedures to Prevent Hazards [F]
- Chapter 7.0: Contingency Plan [G]
- Chapter 8.0: Personnel Training [H]
- Chapter 9.0: Exposure Information Report
- Chapter 10.0: Waste Minimization [D-9]
- Chapter 11.0: Closure and Financial Assurance [I]

- Chapter 12.0: Reporting and Recordkeeping
- Chapter 13.0: Other Federal and State Laws [J]
- Chapter 14.0: Part B Certification [K]
- Chapter 15.0: References.

A checklist indicating where information is included in either the General Information Portion or the Unit-Specific Portion, in relation to Ecology's permit application guidance documentation, is located in the Contents Section.

Documentation contained in the General Information Portion is broader in nature and generally applies to multiple TSD units included in the Unit-Specific Portion. Where appropriate, the Unit-Specific Portion makes cross-reference to the General Information Portion, rather than duplicating text. Thus, the General Information Portion could be used by the regulators as a source for both Unit-Specific and General Facility Permit Conditions. To support such use, the General Information Portion is included in its entirety in the "List of Attachments" (i.e., Attachment 33) of the HF RCRA Permit (DW Portion). However, only portions of this attachment will be enforceable. As noted in the Permit, "[O]nly those portions of the Attachments specified in Parts I through VI are enforceable Conditions of this Permit and subject to the Permit modification requirements of Condition I.C.3." The intent of the General Information Portion is: (1) to provide an overview of the Hanford Facility; and (2) to assist in streamlining efforts associated with TSD unit-specific Part B permit application, preclosure work plan, closure work plan, closure plan, closure/postclosure plan, or postclosure permit application documentation development, and the HF RCRA Permit modification process.

2.1.1.4 Hanford Site Missions

Current missions are to safely clean up and manage the legacy wastes on the Hanford Site, and to develop and deploy science and technology (DOE/RL-96-92). To facilitate achievement of these missions, work generally is organized into one of the following projects:

- River Protection
- Waste Management
- River Corridor and Nuclear Material Stabilization Environmental Restoration
- Science and Technology.

A brief discussion of the mission of these projects follows. The TSD units associated with these projects are identified in Chapter 1.0, Table 1-1. 'Operating' TSD units, and their relationship to Hanford's Missions and project missions, are described further in Chapter 4.0. The TSD units 'undergoing closure' or being 'dispositioned through other options' are described briefly in Section 2.5. Project descriptions that follow are based primarily on strategic planning and mission documents (DOE/RL-93-102 and DOE/RL-96-92).

2.1.1.4.1 River Protection

The River Protection Project mission is to store, treat, and immobilize mixed waste (including current and future tank waste) in an environmentally sound, safe, secure, and cost-effective manner. The project's material management responsibilities include mixed waste stored in the Single-Shell Tank (SST) System and the Double-Shell Tank (DST) System. The primary project disposition responsibilities center on retrieval of both SST and DST waste. Once retrieved, the waste will be immobilized to stable, high-level and low-level forms (Appendix 2B) suitable for disposal.

2.1.1.4.2 Waste Management

The Waste Management Project addresses the handling of solid waste, liquid effluents, and spent nuclear fuel. Two subprojects, Solid Waste Project and 200 Area Liquid Waste Processing Project, currently manage dangerous and mixed waste.

Solid Waste Storage and Disposal, Solid Waste Treatment, Waste Receiving and Processing Facility. The mission of these Projects is to treat, store, and dispose of a wide variety of solid materials that fall into radioactive, dangerous, mixed, and transuranic waste classes. Material management responsibilities consist of managing solid waste stored or buried in burial grounds (including retrievable transuranic waste, Appendix 2B) or stored in designated solid waste storage and/or treatment units. The Projects are also responsible for managing receipt of newly generated solid waste from onsite generating units and from offsite generators.

Waste Encapsulation and Storage Facility. The mission of the WESF Project is to store cesium and strontium capsules and unencapsulated salts, for which no commercialization contract exists. It is expected that the capsule material will be dispositioned with the DST System tank waste unless a viable use is identified.

200 Area Liquid Effluents Project. The Liquid Effluents Project provides integrated liquid effluent management to support cleanup of the Hanford site. Its mission is to responsibly manage current and future liquid effluent streams in a safe, cost-effective, and environmentally-compliant manner. Waste volume reduction support is also provided to tank waste remediation. The mission is achieved through planning and integration, stakeholder interaction, definition of requirements for generators, and provision of timely storage, treatment and disposal capability. The Liquid Effluents Project receives, treats, and disposes of liquid effluents from other projects.

2.1.1.4.3 River Corridor and Nuclear Material Stabilization

The River Corridor Project manages the PUREX Storage Tunnels, the 224-T Transuranic Waste Storage and Assay Facility, the 300-M Oxide Facility, the 303-K Storage Unit and the 300 Area Waste Acid Treatment Facility. The last four units are non operating TSD's that will be closed. The Nuclear Materials Stabilization Project manages the Plutonium Finishing Plant and the 241-Z Treatment and Storage Tanks. These projects will disposition stored nuclear materials. As stored material is dispositioned, the project facilities will be deactivated and transferred to the Environmental Restoration Project for disposition. An example of this process is the deactivation, stabilization, and decommissioning of the PUREX Plant. The project material management responsibilities include managing storage of residual special nuclear material stored in the Plutonium Finishing Plant and stored unirradiated uranium. Management of this material includes responsibility for the facilities used for storage. Facilities not closed under RCRA will be managed under Section 8.0 of the Tri-Party Agreement Action Plan (refer to Section 2.5.2.1).

2.1.1.4.4 Environmental Restoration

The Environmental Restoration Project is divided into five subprojects: (1) Surveillance/Maintenance and Transition, (2) Decommissioning and N Area Projects, (3) Groundwater Management, (4) Remedial Action and Waste Disposal, and (5) Groundwater and Vadose Zone Integration.

Surveillance/Maintenance and Transition. The Surveillance/Maintenance and Transition subproject is responsible for the disposition of surplus facilities and closure of TSD units. The material management responsibilities of the Surveillance/Maintenance and Transition subproject include the management of existing surplus facilities, including several types of facilities that are no longer in use. The Surveillance/Maintenance and Transition subproject also will be responsible for ultimately receiving additional facilities from all Hanford Site projects to consolidate Surveillance/Maintenance and Transition activities. This responsibility includes establishing the criteria for transferring additional facilities between the Surveillance/Maintenance and Transition portion and the remaining Hanford Site projects. Hence, a key interface exists between the Environmental Restoration Project and Facility Transition Project.

Decommissioning Project. The Decommissioning Project deactivation subprojects are responsible for managing the deactivation and decommissioning of facilities as final remediation.

233-S Plutonium Concentration Facility Decommissioning Project. The 233-S Plutonium Concentration Facility Decommissioning Project is responsible for Decontamination and decommissioning activities for the 233-S laboratory building located in 200-West Area. The facility poses special challenges to workers and work methods due to high levels of radiation.

Remedial Action and Waste Disposal. The Remedial Action and Waste Disposal subproject is responsible for managing environmental contamination from source areas, including contaminated soils, debris, and other solid waste contained in RCRA, CERCLA, or other TSD units managed under the Environmental Restoration Program. The management responsibilities of this subproject are focused on materials contained in these sites. This subproject is responsible for the design, construction, and operation of the Environmental Restoration Disposal Facility (ERDF). The ERDF is a land disposal facility administered under CERCLA authority meeting the substantive requirements of RCRA and WAC 173-303.

Groundwater and Vadose Zone Integration. The Groundwater/Vadose Zone/Columbia River subproject's mission is to manage and integrate activities on the Hanford Site that are necessary to provide protection of the water resources of the Hanford Site. A key element of the mission is to infuse sound scientific and technical rationale into the decision making process to provide effective and credible solutions to reduce (or eliminate) the environmental impacts to the vadose zone, groundwater, and Columbia River. The planning and integration of these activities requires active participation by all related DOE-RL project organizations and their respective contractors, as well as Tribal Nations, stakeholders, and regulators. To achieve this mission, the project is committed to several objectives:

- Identify steps needed to establish requirements for all activities to contain contamination and assume protection of groundwater resources and the Columbia River
- Define the process to establish a broad and thorough approach to understanding transport mechanisms and pathways to the Columbia River
- Integrate science, research, and technology development, focused on vadose zone and groundwater remediation, as major components of the Hanford Site's mission
- Establish a strong and effective independent technical review process to include participation by a panel of experts from applicable fields of science and technology, by national laboratories, and by the National Academy of Sciences
- Involve Hanford Site regulators, Tribal Nations, and stakeholders in the development and implementation of the plan.

2.1.1.4.5 Science and Technology

The Science and Technology Project covers a broad spectrum of activities supporting science and technology development. The project responsibilities for management and disposition of materials are limited to quantities associated with past, current, and future development activities.

2.1.1.5 Description of Dangerous Waste Management Operations and Processes

A brief description of dangerous waste management operations and processes for Hanford Facility TSD units is contained in Section 2.5 (for units 'undergoing closure' or being 'dispositioned through other options') and in Chapter 4.0, Section 4.1 (for 'operating' units). Additional detail for 'operating' TSD units is contained in the Unit-Specific Portion.

2.1.1.6 Other Processes Regulated Under the Dangerous Waste Regulations

Other Hanford Site processes or activities regulated under Ecology's *Dangerous Waste Regulations* include recycling (e.g., WAC 173-303-017, -120, -500), generator activities [e.g., WAC 173-303-170), treatment-by-generator (WAC 173-303-170(3)(b)], transport (e.g., WAC 173-303-240), permits by rule (e.g., WAC 173-303-802), and research, development, and demonstration (RD&D) permits (WAC 173-303-809). The activities in this section are not included within the scope of this permit application documentation or of the HF RCRA Permit (DW Portion), except where specific language has been included in the Permit.

2.1.1.7 Other Environmental Permits

Other environmental permits that are, or could be, required by the Hanford Facility are addressed in Chapter 13.0.

2.1.2 Construction Schedule [B-1b]

This section addresses the scheduling of construction of new TSD units, or the remodeling of existing units, and the timing of associated permitting activities. Discussions in this section are general, and are based primarily on information contained in WAC 173-303-335, the Tri-Party Agreement, and in U.S. Department of Energy Orders addressing design and construction processes. Additional discussion of construction activities relating to 'operating' TSD units is included in Chapter 4.0.

Existing provisions of the Tri-Party Agreement serve as a means for the timely dissemination to the regulators of construction and associated permitting information that can be used for scheduling purposes. Articles XL and XLVIII of the Tri-Party Agreement outline provisions for DOE-RL to provide cost, schedule, and scope planning and reporting information to Ecology and the EPA. Such information identifies construction activities and schedules related to existing or planned TSD units. In some cases, as outlined in Sections 2.0 and 11.0 and Appendix D of the Tri-Party Agreement Action Plan, construction commitments are associated with Tri-Party Agreement milestones and are tracked as part of milestone statusing activities. Project manager meetings also are used to discuss planned construction, permitting activities, and required timeframes.

Several U.S. Department of Energy Orders establish requirements for the planning and scheduling of construction activities. Requirements to be addressed depend on several factors, including the cost and function of a proposed project. Figure 2-6 provides a generic project schedule keyed to the project process outlined in U.S. Department of Energy Orders. This schedule also illustrates general timeframes for associated permitting documentation. Figure 2-6 illustrates that detailed design information, sufficient to fulfill Part B documentation needs, might not be available until 1 to 2 years before the start of construction. In general, the final status permitting process for a TSD unit of moderate complexity takes at least 3 years. Thus, if a final status permit is required before the initiation of construction, construction delays could be incurred. If such construction is associated with TSD units that are not yet incorporated into the HF RCRA Permit (DW Portion), delays could be avoided by proceeding with construction under interim status or interim status capacity expansion (WAC 173-303-281, -805; refer to Section 2.1.1.3.1). The granting of interim status capacity expansion will be considered on a case-by-case basis, in accordance with WAC 173-303-281, as applicable, and WAC 173-303-805(7).

The generic project schedule shown in Figure 2-6 might not be applicable to TSD units on the Hanford Facility subject to privatization. A discussion of privatization is contained in Section 2.5.1.5.

2.2 TOPOGRAPHIC MAP [B-2]

This section addresses general topographic map requirements for the Hanford Facility and additional requirements for land disposal facilities.

2.2.1 General Requirements [B-2a]

This section provides topographic and locational information for the Hanford Facility and 'operating' TSD units included in the Unit-Specific Portion. In addition, information on prevailing wind directions and floodplain area is provided.

2.2.1.1 Hanford Facility

Drawing H-6-958 in Appendix 2A provides a general overview of the Hanford Site and surrounding area. The drawing illustrates the following:

- Boundary of the Hanford Site (for area shown)
- Contours (at 6.1-meter intervals) sufficient to show surface water flow
- Fire control services
- Access roads, internal roads, railroads, perimeter gates, and barricades
- Longitudes and latitudes.

2.2.1.2 Treatment, Storage, and Disposal Units

General locational maps for Hanford Facility TSD units (refer to Chapter 1.0, Table 1-1) are discussed in Appendix 2A. The specific locations of these TSD units are included in the HF Part A (DOE/RL-88-21). Specific locational information for 'operating' TSD units is contained in topographic maps provided in the Unit-Specific Portion. These maps (unit specific) show a distance of at least 305 meters around the TSD unit, and are often drawn at a scale of 1 centimeter equal to 20 meters (1:2,000). The contour interval (0.5 meter) clearly shows the pattern of surface water flow in the vicinity of each TSD unit. In addition, the following information is included on one or more maps contingent upon scale:

- Map scale
- Date
- Prevailing wind direction
- A north arrow
- Surrounding land use
- Location of the unit
- Access road location
- Access control
- Groundwater monitoring wells (if applicable).
- 100-year floodplain area
- Surrounding land uses
- Location of access control
- Well locations
- Buildings
- Structures (e.g., sewers, loading and unloading areas).

2.2.1.3 Prevailing Wind Directions

Prevailing wind directions across the Hanford Site are presented in Figure 2-7. Prevailing wind directions in the 200 East and 200 West Areas (located approximately in the center of the Hanford Site) are from the northwest in all months of the year. Secondary maxima occur for southwesterly winds.

Monthly average wind speeds are lowest during the winter months, averaging 9.7 to 11.3 kilometers per hour, and highest during the summer, averaging 14.5 to 16.1 kilometers per hour. Wind speeds that are well above average usually are associated with southwesterly winds. However, the summertime drainage winds generally are northwesterly and frequently reach 50 kilometers per hour. Estimates of wind extremes have been summarized (PNL-4622). Information on the likelihood and frequency of strong winds and tornados in the region have been summarized in a final environmental impact statement

(DOE/EIS-0113), the Hanford Meteorological Station climatological summary (PNL-4622), and reports from the National Severe Storms Forecast Center.

2.2.1.4 Floodplain Area

Three sources of potential flooding of the Hanford Facility are considered: (1) the Columbia River, (2) the Yakima River, and (3) storm-induced run-off in ephemeral streams draining the Hanford Facility. No perennial streams occur in the central part of the Hanford Facility.

The Federal Emergency Management Agency has not prepared floodplain maps for the Columbia River through the Hanford Site. The flow of the Columbia River is largely controlled by several upstream dams that are designed to reduce major flood flows. Based on a U.S. Army Corps of Engineers study of the flooding potential of the Columbia River that considered historic data and water storage capacity of the dams on the Columbia River (COE 1969), the U.S. Department of Energy (RLO-76-4) has estimated the probable maximum flood (Figure 2-8). The estimated probable maximum flood would have a larger floodplain than either the 100- or 500-year floods.

The 100-year floodplain for the Yakima River, as determined by the Federal Emergency Management Agency (FEMA 1980), is shown in Figure 2-9.

The only other potential source of flooding of the Hanford Facility is run-off from a large precipitation event in the Cold Creek watershed. This event could result in flooding of the ephemeral Cold Creek. PNL (PNL-4219) has given an estimate of the probable maximum flood using conservative values of precipitation, infiltration, surface roughness, and topographic features. The 100-year flood is less than the probable maximum flood as shown in Figures 2-8 and 2-9.

The location of individual 'operating' TSD units with respect to the identified floodplains is addressed in the Unit-Specific Portion.

2.2.2 Additional Requirements for Land Disposal Facilities [B-2b]

For land disposal units, the topographic map or maps (contingent upon scale) indicate the following:

- TSD unit boundaries
- Property boundaries
- Proposed point of compliance
- Proposed groundwater monitoring well locations.

References are provided to publications with maps showing:

- Locations of the uppermost aquifer and aquifers hydraulically interconnected beneath the unit (including flow direction and rate)
- If present, the extent of the plume of contamination that has entered the groundwater from a regulated unit.

Only one Hanford Facility 'operating' TSD unit is classified as a land disposal unit, Low-Level Burial Grounds (LLBG) (refer to Chapter 1.0, Table 1-1). The additional requirements for this TSD unit will be provided through a combination of information contained in the General Information Portion (e.g., in Chapter 5.0) and in the Unit-Specific Portion [e.g., LLBG Part B permit application documentation (DOE/RL-88-20)].

2.3 SEISMIC CONSIDERATION [B-3]

The Hanford Facility is located in Zone 2B as identified in the *Uniform Building Code* (ICBO 1991). For a proposed TSD unit or an expansion of an existing unit, a demonstration that the unit is designed to

withstand the maximum horizontal acceleration of the "design earthquake" for Zone 2B will be made in the Unit-Specific Portion.

No active faults, or evidence of a fault that has had displacement during Holocene times, have been found on the Hanford Facility (DOE/RW-0164). The youngest faults recognized on the Hanford Facility occur on Gable Mountain, approximately 1.6 kilometers north of the 200 East Area, and 7.2 kilometers northeast of the 200 West Area. These faults are of Quaternary age and are considered 'capable' by the U.S. Nuclear Regulatory Commission (NUREG-0892).

2.4 TRAFFIC INFORMATION [B-4]

The regional public highway network traversing the Hanford Site (Washington State Highways 24 and 240), nonrestricted access roadways (Route 10, and portions of Route 4S located south of the Wye Barricade), and restricted access roadways are shown in Figure 2-10.

Roadways east of the Yakima Barricade and north of the Wye Barricade, and within the 300 and 400 Areas, are restricted to authorized personnel only. Other U.S. Department of Energy roadways are subject to such restrictions or closure as the U.S. Department of Energy might require.

2.4.1 Hanford Site Roadways

Figure 2-10 shows the major roads throughout the Hanford Site. These roads are classified as either primary or secondary routes. The primary routes include Routes 4S, 10, 2S, 3, 6, and 11A, as well as various avenues within each area. The primary routes are constructed of bituminous asphalt (usually 5-centimeters thick, but the thickness of the asphalt layer will vary with each road) with an underlying aggregate base in accordance with U.S. Department of Transportation requirements. The secondary routes are constructed of layers of an oil and rock mixture with an underlying aggregate base. The aggregate base consists of various types and sizes of rock found onsite. The present load-bearing capacities of these roads are unknown; however, loads as large as 9.8 kilograms per square centimeter have been transported without observable damage to road surfaces. All roads originally were constructed to meet the requirements for the American Association of State Highway and Transportation Officials HS-20-44 load rating (AASHTO 1983). An HS-20-44 loading represents a two-axle tractor (front axle loading of 3,630 kilograms and rear axle loading of 14,500 kilograms) plus a single-axle trailer with a 14,500-kilogram axle loading.

2.4.2 Traffic Control Signs, Signals, and Procedures

Standard traffic control signs are used throughout the Hanford Site (e.g., octagonal stop signs, triangular yield signs). Speed limits are posted throughout the Hanford Site, and the maximum posted speed is 88 kilometers per hour on major thoroughfares. Inside the various areas, posted speeds are reduced to a maximum of 56 kilometers per hour and held to speeds as low as 24 kilometers per hour.

2.5 WASTE MANAGEMENT UNITS

This section addresses waste management units (Appendix 2B), including provisions in Section E of Ecology's permit application guidance; Part IV of the HF RCRA Permit (DW Portion); and the HF RCRA Permit (HSWA Portion). The Tri-Party Agreement classifies and outlines the approach for addressing over 2,000 waste management units on the Hanford Site. These waste management units are identified in the *Hanford Site Waste Management Units Report* (DOE/RL-88-30) (Units Report). The Units Report is updated annually if determined necessary per the Tri-Party Agreement. Because of the comprehensive nature of the Units Report, the list of waste management units is more extensive than that required by Section 3004(u) of HSWA. The classification of Hanford Site waste management units is illustrated in Figure 2-12 and includes the following:

- Solid waste management units
  - 'Operating' TSD units
  - TSD units 'undergoing closure'
    - Non-land disposal TSD units
    - Land disposal TSD units
  - Past-practice units
    - RCRA past-practice
    - CERCLA past-practice
  - Other SWMUs
- Other waste management units
  - Facilities subject to decommissioning
  - Miscellaneous waste management units.

The remainder of this section briefly addresses these classes of waste management units, with the exception of 'operating' TSD units. 'Operating' TSD units are addressed in Chapter 4.0, Section 4.1.

2.5.1 Solid Waste Management Units [E]

A SWMU is any discernable location at a facility, as defined for the purposes of corrective action, where solid wastes have been placed at any time, irrespective of whether the location was intended for the management of solid or dangerous waste. Such locations include any area at a facility at which solid wastes, including spills, have been routinely and systematically released. Such units include regulated units as defined by chapter 173-303 WAC." The requirements to address corrective action have been incorporated into the HF RCRA Permit. The Hanford Site contains approximately 1,100 SWMUs. The remainder of this section, as well as Appendix 2D, provides an overview of Hanford Site SWMUs, with the exception of 'operating' TSD units. An overview of 'operating' TSD units is provided in Chapter 4.0, Section 4.1.

2.5.1.1 Treatment, Storage, and/or Disposal Units 'Undergoing Closure'

This section contains an overview of the documentation process for TSD units 'undergoing closure', as well as a brief description of these units.

2.5.1.1.1 Overview of Treatment, Storage, and/or Disposal Units 'Undergoing Closure'

The Tri-Party Agreement Action Plan defines a TSD as:

"a RCRA term referring to the treatment, storage, or [and/or] disposal of hazardous waste. Under RCRA, TSD activity can occur only at units which received or stored hazardous waste after November 19, 1980, the effective date of the RCRA regulations" (refer to Section 2.1.1.3.1).

Furthermore, the Tri-Party Agreement Action Plan defines a TSD unit as:

"a unit used for treatment, storage, or [and/or] disposal of hazardous waste and is required to be permitted and/or closed pursuant to RCRA requirements as determined in this Action Plan."

Chapter 1.0, Table 1-1, identifies Hanford Facility TSD units that are 'undergoing closure', i.e., TSD units that are no longer active but handled hazardous waste on or after November 19, 1980; State-only dangerous waste on or after March 12, 1982; mixed waste on or after August 19, 1987; and treated, stored, and/or disposed of such waste, except as provided by WAC 173-303-200 or WAC 173-303-802. Preclosure work plan, closure work plan, closure plan, closure/postclosure plan, or postclosure permit application documentation is to be developed for most of these TSD units in accordance with Sections 2.4, 5.3, 6.3, or 8.0 and Appendix D of the Tri-Party Agreement Action Plan. Figure 2-4 depicts a flowchart for processing closure documentation. In accordance with Section 5.3 of the Tri-Party

Agreement Action Plan, all TSD units that undergo closure, irrespective of permit status, will be closed in accordance with WAC 173-303-610. Conditions for TSD units undergoing closure are contained in Parts V and VI of the HF RCRA Permit (DW Portion).

For some TSD units 'undergoing closure', it will be possible to remove dangerous waste and waste constituents to Hanford Site background levels (DOE/RL-92-23 and DOE/RL-92-24), as approved by Ecology, or health-based levels defined in accordance with WAC 173-303-610(2)(b), and thereby achieve 'clean closure'. If the waste constituents are at or below agreed to cleanup levels, the TSD unit is considered closed and no further dangerous waste activities are required. For the most part, non-land disposal TSD units (Figure 2-4) will be dispositioned in this manner.

If dangerous waste constituents present at the TSD unit are above MTCA (WAC 173-340) Method B levels, but below MTCA Method C levels, then a 'modified' closure option could be used (refer to Chapter 11.0, Section 11.1.1.2). Requirements for a modified closure are specified in Condition II.K.3 of the HF RCRA Permit (DW Portion).

If levels of dangerous waste constituents are left in place above MTCA Method C levels, TSD units 'undergoing closure' are closed as a landfill (Figure 2-4). Land disposal unit closures are addressed in Section 5.5 and 6.3 of the Tri-Party Agreement Action Plan and WAC 173-303-610. In accordance with Section 6.3.2 of the Tri-Party Agreement Action Plan, units closing as a landfill or under modified closure will require the submittal of a postclosure permit application (i.e., for units "closed as a landfill" Figure 2-4 'transitions' to Figure 2-3, the Permitting Process Flowchart). Where applicable, a postclosure permit application will contain a description of modified closure institutional controls, a description of the landfill final cover, cover maintenance and inspection, groundwater monitoring, and corrective actions if required, that could occur during the postclosure period. Land disposal units 'undergoing closure' most likely will be addressed using the approach discussed in Section 2.5.1.2.

2.5.1.1.2 Description of Specific Treatment, Storage, and/or Disposal Units 'Undergoing Closure'

This section contains a brief description of the TSD units 'undergoing closure'. Information presented in this section has been compiled from existing documents with the primary sources of information as follows: HF Part A, the Tri-Party Agreement, Hanford Site strategic planning and mission documents (DOE/RL-93-102 and DOE/RL-96-92), and the Hanford Site Environmental Permitting Status Report (DOE/RL-96-63). The locations of these TSD units, as well as any operable units cited, are discussed in Appendix 2A. A discussion of 'operable units' is found in Section 2.5.1.2.

2.5.1.1.2.1 207-A South Retention Basin

The 207-A South Retention Basin, located in the 200 East Area, provided interim storage of 242-A Evaporator process condensate before the condensate was discharged to the 216-A-37-1 Crib. The basin consists of three coated, concrete cells with a total capacity of 794,934 liters. The closure plan will be coordinated with the past-practice documentation for the 200-PW-4 operable unit.

2.5.1.1.2.2 216-B-3 Expansion Ponds

The 216-B-3 Expansion Ponds, located in the 200 East Area, consist of three interconnected percolation ponds: 216-B-3A, -3B, and -3C. These ponds received cooling water and steam condensate from various 200 East Area buildings. The process design capacity was 105,839,784 liters per day. This TSD unit is included in the HF RCRA Permit (DW Portion, Part V, Chapter 8) and has been clean closed.

2.5.1.1.2.3 216-B-63 Trench

The 216-B-63 Trench, located in the 200 East Area, received mixed waste effluents from the B Plant chemical sewer. The trench also received corrosive dangerous waste from the regeneration of

demineralizer columns at B Plant. Treatment of waste occurred by the sequential discharges of acidic and caustic effluents. The process capacity for treatment and disposal was 473,175 liters per day. The closure/postclosure plan will be coordinated with the past-practice documentation for the 200-BP-11 operable unit. This unit has a Part A, Form 3 and has been incorporated into the RCRA Part A Manual as Section 4.2.3.6.

2.5.1.1.2.4 200 West Area Ash Pit Demolition Site

The 200 West Area Ash Pit Demolition Site was used to detonate explosive, ignitable, shock-sensitive, and/or reactive discarded chemical product. The process design capacity for treatment was 568 liters. This TSD unit has been included in the HF RCRA Permit (DW Portion, Part V, Chapter 6) and has been clean closed.

2.5.1.1.2.5 218-E-8 Borrow Pit Demolition Site

The 218-E-8 Borrow Pit Demolition Site, located in the 200 East Area, was used to detonate explosive, ignitable, shock-sensitive, and/or reactive discarded chemical product. The process design capacity for treatment was 568 liters. This TSD unit is included in the HF RCRA Permit (DW Portion, Part V, Chapter 5) and has been clean closed.

2.5.1.1.2.6 Hanford Patrol Academy Demolition Sites

The Hanford Patrol Academy Demolition Sites, located in the 600 Area, were used to detonate explosive, ignitable, shock-sensitive, and/or reactive discarded chemical product. The process design capacity for treatment was 568 liters. This TSD unit is included in the HF RCRA Permit (DW Portion, Part V, Chapter 9) and has been clean closed.

2.5.1.1.2.7 2727-S Storage Facility

The 2727-S Storage Facility, located in the 200 West Area, stored dangerous waste for eventual shipment offsite. The maximum storage capacity was 102,206 liters. This TSD unit is included in the HF RCRA Permit (DW Portion, Part V, Chapter 3) and has been clean closed.

2.5.1.1.2.8 4843 Alkali Metal Storage Facility

The 4843 Alkali Metal Storage Facility, located in the 400 Area, stored mixed alkali metal waste generated from the Fast Flux Test Facility and various other operations. The maximum design storage capacity was 83,279 liters. This unit is no longer storing dangerous waste. This TSD unit is included in the HF RCRA Permit (DW Portion, Part V, Chapter 12) and has been clean closed.

2.5.1.1.2.9 105-DR Large Sodium Fire Facility

The 105-DR Large Sodium Fire Facility, located in the 100 Areas, was a research laboratory located in the 105-DR Reactor Building. This TSD unit was used to study the behavior of nonradioactive molten alkali metal and fires and treated up to 100 liters per day of alkali metal. Treatment consisted of heating the alkali metals to the point of oxidation. This TSD unit had the capacity to store up to 20,000 liters of dangerous waste. This TSD unit is included in the HF RCRA Permit (DW Portion, Part V, Chapter 10). A portion of the TSD unit has been clean closed in accordance with the approved closure plan. The balance of the TSD unit will undergo decontamination and decommissioning.

2.5.1.1.2.10 3718-F Alkali Metal Treatment and Storage Area

The 3718-F Alkali Metal Treatment and Storage Area, located in the 300 Area, was used to treat and store alkali metal waste from the Fast Flux Test Facility and various laboratories. The alkali metal was treated in a burn shed that oxidized the metal. Used equipment was treated in chemical reaction tanks by

dissolving the waste in either water or alcohol. The treatment capacity was 100 liters per day and had a storage capacity of 2,000 liters. This TSD unit is no longer storing or treating dangerous waste. This TSD unit is included in the HF RCRA Permit (DW Portion, Part V, Chapter 13), was clean closed.

2.5.1.1.2.11 304 Concretion Facility

The 304 Concretion Facility, located in the 300 Area, treated and stored pyrophoric waste from the 300 Area fuel fabrication processes. The waste was treated by encapsulation in solid concrete blocks at a rate of 2,082 liters per day. The storage capacity was 4,164 liters. This TSD unit is included in the HF RCRA Permit (DW Portion, Part V, Chapter 11) and has been clean closed.

2.5.1.1.2.12 300 Area Solvent Evaporator

The 300 Area Solvent Evaporator was a treatment tank used to treat mixed waste spent solvents. Containers of spent solvent were stored on a concrete pad adjacent to the evaporator. The treatment capacity for this unit was 833 liters per day, with a storage capacity of 833 liters. This TSD unit is included in the HF RCRA Permit (DW Portion, Part V, Chapter 2) and has been clean closed.

2.5.1.1.2.13 300 Area Waste Acid Treatment System

The 300 Area Waste Acid Treatment System was used for the storage and treatment of mixed waste generated during the fuel fabrication operations in the 300 Area. The system also was used for disposing of used and/or unneeded chemicals. This system operated in various buildings and tanks throughout the 300 Area. Two treatment processes were used. One treatment process, tank neutralization, had a capacity of 14,006 liters per day. The other treatment process was used to separate the solids from the liquids in the waste. The initial separation process, performed using a centrifuge, had a capacity of 11,356 liters per day; the final separation process, performed using a filter press, had a capacity of 4,542 liters per day. Existing storage capacity was 16,504 liters. It is anticipated that the unit will be incorporated into the HF RCRA Permit (DW Portion, Part V, Chapter 20) during the next revision of the HF RCRA Permit.

2.5.1.1.2.14 303-M Oxide Facility

The 303-M Oxide Facility, located in the 300 Area, was proposed to be used to treat mixed waste from the 300 Area fuel fabrication process. The waste that was to be treated was pyrophoric chips and fines.

2.5.1.1.2.15 303-K Storage Facility

The 303-K Storage Facility, located in the 300 Area, was used for the storage of mixed waste. Both liquid and solid mixed waste were stored in the unit. The liquid waste was stored within a portion of the 303-K Building. The solid waste was stored outside on an asphalt, concrete, and gravel pad. The storage capacity of this unit was 41,639 liters. This TSD unit is included in the HF RCRA Permit (DW Portion, Part V, Chapter 14).

2.5.1.1.2.16 2101-M Pond

The 2101-M Pond, located in the 200 East Area, received effluents from drains in the 2101-M Laboratory and cooling and heating effluents from the 2101-M Building. The process design capacity was 70,976 liters per day. This TSD unit is included in the HF RCRA Permit (DW Portion, Part V, Chapter 7) and has been clean closed.

2.5.1.1.2.17 Hexone Storage and Treatment Facility

The Hexone Storage and Treatment Facility, located in the 200 West Area, received mixed waste effluents from the REDOX Plant. The mixed waste was stored in two 90,850-liter below grade tanks. The waste was treated in a distillation system at a rate of 11,356 liters per day that separated the

radioactive component of the waste from the dangerous waste component. The treatment process used railroad cars that had a storage capacity of 151,416 liters. This unit has a Part A, Form 3 and has been incorporated into the RCRA Part A Manual as Section 4.2.2.3.

2.5.1.1.2.18 241-CX Tank System

The 241-CX Tank System, located in the 200 East Area, consists of three tanks (241-CX-70, -71, -72) that stored various mixed wasted streams from the operation of the Hot Semiworks Complex. The combined storage capacity for these tanks is 126,205 liters. The closure plan will be coordinated with the past-practice documentation for the 200-SO-1 operable unit. This unit has a Part A, Form 3, and has been incorporated into the Part A Manual as Section 4.2.2.11.

2.5.1.1.2.19 183-H Solar Evaporation Basins

The 183-H Solar Evaporation Basins, located in the 100 Areas, were used for the treatment and storage of mixed waste generated by fuels fabrication facilities in the 300 Area. In addition, nonradioactive dangerous waste also was discharged to the basins on a nonroutine basis. The four basins had the capacity of treating 2,650 liters of waste per day by evaporation and capacity to store up to 8,202,962 liters in all four basins. This unit is included in the HF RCRA Permit (DW Portion, Part VI, Chapter 2).

2.5.1.1.2.20 1324-N Surface Impoundment

The 1324-N Surface Impoundment, located in the 100 Areas, was a lined pond with a capacity of 1,514,160 liters. The unit was used to treat nonradioactive waste effluents from the regeneration of demineralizer columns. Acidic and caustic waste was sequentially added to the pond, which served to neutralize the waste. The closure/postclosure plan for the 1324-N Surface Impoundment will be coordinated with the corrective measures study (CMS) for the 100-NR-1 operable unit. This unit is included in the HF RCRA Permit (DW Portion, Part VI, Chapter 2).

2.5.1.1.2.21 1301-N Liquid Waste Disposal Facility

The 1301-N Liquid Waste Disposal Facility, located in the 100 Areas, was a percolation unit designed to dispose of liquid waste via the soil column. This TSD unit received radioactive process and cooling waste effluents from N Reactor for disposal. The unit also received dangerous waste generated from laboratories and may have received waste from spills within the reactor building. The maximum design capacity of the unit was 16,352,900 liters per day. The closure/postclosure plan for the 1301-N Liquid Waste Disposal Facility will be coordinated with the CMS for the 100-NR-1 operable unit. This unit has been incorporated into the HF RCRA Permit (DW Portion, Part V, Chapter 17).

2.5.1.1.2.22 1325-N Liquid Waste Disposal Facility

The 1325-N Liquid Waste Disposal Facility, located in the 100 Areas, was a percolation unit designed to dispose of liquid waste via the soil column. This TSD unit received radioactive process and cooling waste effluents from N Reactor for disposal. The unit also received dangerous waste generated from laboratories and may have received waste from spills within the reactor building. The maximum design capacity of the unit was 16,353,000 liters per day. The closure/postclosure plan for the 1325-N Liquid Waste Disposal Facility will be coordinated with the CMS for the 100-NR-1 operable unit. This unit has been incorporated into the HF RCRA Permit (DW Portion, Part V, Chapter 16).

2.5.1.1.2.23 1324-NA Percolation Pond

The 1324-NA Percolation Pond, located in the 100 Areas, received corrosive dangerous waste from the regeneration of demineralizer columns. Acidic and caustic waste was sequentially added to the pond, which served to neutralize the waste. The maximum amount of water discharged to this TSD unit was

3,785,400 liters per day. The closure/postclosure plan for the 1324-NA Percolation Pond will be coordinated with the CMS for the 100-NR-1 operable unit. This unit has been incorporated into the HF RCRA Permit (DW Portion, Part V, Chapter 18).

2.5.1.1.2.24 100-D Ponds

The 100-D Ponds, a percolation unit located in the 100 Areas, were designed to dispose of liquid waste via the soil column. Approximately 170,343 liters per day were treated. The unit received corrosive dangerous waste from the regeneration of three ion exchange columns and from process water generated from the 183-D Filter Water Plant. Acidic and caustic waste was sequentially added to the pond, which served to neutralize the waste in the pond. This unit has been incorporated into the HF RCRA Permit (DW Portion, Part V, Chapter 15).

2.5.1.1.2.25 216-S-10 Pond and Ditch

The 216-S-10 Pond and Ditch, a percolation unit located in the 200 West Area, was designed to dispose of liquid waste via the soil column. This TSD unit received waste effluents that consisted of water tower overflow, cooling water, and rainwater. In addition, discharges of dangerous waste to the pond and ditch consisted of simulated DST slurry. This unit was designed to percolate 567,810 liters per day of waste effluents. The closure plan will be coordinated with the past-practice documentation for the 200-RO-1 operable unit. This unit has a Part A, Form 3, and has been incorporated into the RCRA Part A Manual, as Section 4.2.3.2.

2.5.1.1.2.26 216-A-29 Ditch

The 216-A-29 Ditch, located in the 200 East Area, was a percolation unit designed to dispose of liquid waste via the soil column. The unit received process and cooling mixed waste effluents from the PUREX Plant and corrosive dangerous waste from the regeneration of demineralizer columns in the PUREX Plant. The process design capacity was 22,712,400 liters per day. The closure plan will be coordinated with the past-practice documentation for the 200-BP-11 operable unit. This unit has a Part A, Form 3, and has been incorporated into the RCRA Part A Manual, as Section 4.2.3.4.

2.5.1.1.2.27 216-B-3 Main Pond

The 216-B-3 Main Pond, a percolation unit located in the 200 East Area, was designed to dispose of liquid waste via the soil column. This TSD unit consisted of the 213-B-3 Main Pond and a portion of the 216-B-3-3 Ditch. The unit received effluents from various 200 East Area operations, including PUREX Plant, B Plant Complex, 242-A Evaporator, and other units. The types of effluent included process and cooling effluents, chemical sewer effluents, and corrosive dangerous waste from the regeneration of demineralizer columns in the PUREX Plant. Treatment of waste occurred by the sequential discharges of acidic and caustic effluents. The capacity for treatment and disposal for this unit was 3,179,736 liters per day. The closure plan will be coordinated with the past-practice documentation for the 200-BP-11 operable unit. This unit has a Part A, Form 3, and has been incorporated into the RCRA Part A Manual, as Section 4.2.3.5.

2.5.1.1.2.28 216-A-10 Crib

The 216-A-10 Crib, located in the 200 East Area, was a percolation unit designed to dispose of liquid waste via the soil column. This TSD unit received process distillate mixed waste effluents from the PUREX Plant. The unit disposed of 272,549 liters per day of waste effluent. The closure plan will be coordinated with the past-practice documentation for the 200-PO-2 operable unit. This unit has a Part A, Form 3, and has been incorporated into the RCRA Part A Manual, as Section 4.2.3.7.

2.5.1.1.2.29 216-U-12 Crib

The 216-U-12 Crib, located in the 200 West Area, was a percolation unit designed to dispose of liquid waste via the soil column. This TSD unit received process condensate mixed effluents from the UO_3 Plant. The unit disposed of 189,270 liters per day of waste effluents. The closure plan will be coordinated with the past-practice documentation for the 200-UP-2 operable unit. This unit has a Part A, Form 3, and has been incorporated into the RCRA Part A Manual, as Section 4.2.3.8.

2.5.1.1.2.30 216-A-36B Crib

The 216-A-36B Crib, located in the 200 East Area, was a percolation unit designed to dispose of liquid waste via the soil column. This TSD unit received mixed waste effluents from the PUREX Plant. The unit disposed of 439,106 liters per day of waste effluents. The closure plan will be coordinated with the past-practice documentation for the 200-PO-2 operable unit. This unit has a Part A, Form 3, and has been incorporated into the RCRA Part A Manual, as Section 4.2.3.9.

2.5.1.1.2.31 216-A-37-1 Crib

The 216-A-37-1 Crib, located in the 200 East Area, was a percolation unit designed to dispose of liquid waste via the soil column. This TSD unit received process condensate mixed waste effluents from the 242-A Evaporator. The unit disposed of 327,059 liters per day of waste effluents. The closure plan will be coordinated with the past-practice documentation for the 200-PO-4 operable unit. This unit has a Part A, Form 3, and has been incorporated into the RCRA Part A Manual, as Section 4.2.3.10.

2.5.1.1.2.32 300 Area Process Trenches

The 300 Area Process Trenches, a percolation unit, was designed to dispose of liquid waste via the soil column. This TSD unit received process and cooling water from operations in the 300 Area. The unit also received dangerous waste from several research and development laboratories and from the fuel fabrication process. The process trenches were designed to dispose of 11,356,200 liters per day. The closure/postclosure plan has been coordinated with the 300-FF-1 CERCLA documentation. The 300 Area Process Trenches is incorporated into the HF RCRA Permit (DW Portion, Part IV, Chapter 1).

2.5.1.1.2.33 Nonradioactive Dangerous Waste Landfill

The Nonradioactive Dangerous Waste Landfill, located in the 600 Area, was used for the disposal of nonradioactive dangerous waste. This TSD unit consisted of 19 unlined trenches of which six trenches were used to dispose of dangerous waste, nine trenches were used to dispose of asbestos waste, and one trench was used to dispose of nonhazardous waste. The total design capacity was 6,167 cubic meters. The closure/postclosure plan for the Nonradioactive Dangerous Waste Landfill will be coordinated with the CMS for the 200-IU-3 operable unit. This unit has a Part A, Form 3, and has been incorporated into the RCRA Part Part A Manual, as Section 4.5.3.1.

2.5.1.1.2.34 Simulated High-Level Waste Slurry Treatment/Storage

The Simulated High-Level Waste Slurry Treatment/Storage unit treated and stored a simulated high-level waste slurry. The treatment process consisted of neutralization and immobilization using grout. The unit had a treatment capacity of 757 liters per day and a storage capacity of 75,708 liters. This unit is included in the HF RCRA Permit (DW Portion, Part V, Chapter 4) and has been clean closed.

2.5.1.1.2.35 224-T Transuranic Waste Storage and Assay Facility

The 224-T TRUSAF is a container storage unit located in the 200 West Area. The 224-T TRUSAF provides a centralized unit for storage of transuranic, transuranic mixed, low-level, and mixed waste (Appendix 2B) from various Hanford Facility operations and from other U.S. Department of Energy and

U.S. Department of Defense facilities. The transuranic mixed waste has been removed from the facility and the facility will be managed under Section 8 of the TPA. The 224-T TRUSAF currently is managed under the River Corridor Project.

2.5.1.1.2.36 616 Nonradioactive Dangerous Waste Storage Facility (NRDWSF)

The 616 Nonradioactive Dangerous Waste Storage Facility (616 NRDWSF) is located between the 200 East and 200 West Areas of the Hanford Facility. The 616 NRDWSF provided container storage for nonradioactive dangerous waste, including TSCA PCB waste, generated in the research and development laboratories, process operations, construction, waste site cleanup/remediation, environmental monitoring, maintenance, and transportation functions throughout the Hanford Facility. Waste was stored at the 616 NRDWSF until arrangements could be made to ship the waste to an offsite treatment, storage, and/or disposal facility. The maximum process design capacity for the storage facility was 108,395 liters (28,635 gallons). At the time of this reporting, the facility was undergoing closure.

The 616 NRDWSF currently is managed under the Waste Management Project (Solid Waste Storage and Disposal). The 616 NRDWSF is incorporated as Chapter 1 of Part III of the HF RCRA Permit. The unit presently is undergoing closure.

2.5.1.2 Past-Practice Units

Section 3.3 of the Tri-Party Agreement Action Plan defines a 'past-practice unit' as a waste management unit where waste or substances (intentionally or unintentionally) have been disposed and that is not subject to regulation as a TSD unit (Appendix 2B) (Figure 2-12). Because of the relatively large number of past-practice units on the Hanford Site, a process has been established for organizing these units into groups called 'operable units' (Appendix 2A). The concept of operable units is to group the numerous units (primarily by type and geographic area) into manageable components for investigation and remedial action and to prioritize the cleanup work to be done on the Hanford Site. Each of the operable units is to be subject to an investigation in the form of either a CERCLA or a RCRA past-practice process as described in Section 7.3 and 7.4, respectively, of the Tri-Party Agreement Action Plan.

As noted in Article III, Article IV, Article XXIV, and Article XXXII of the Tri-Party Agreement, and Sections 3.3, 5.5, and 6.1 of the Tri-Party Agreement Action Plan, some TSD units 'undergoing closure', primarily land disposal units, will be investigated and managed in conjunction with past-practice units; these units have been assigned to appropriate operable units. Those TSD units not assigned to an operable unit are typically treatment or storage units that are likely to be 'clean closed' rather than closed as a land disposal unit (refer to Section 2.5.1.1 and Chapter 11.0). The information necessary for performing RCRA closures within an operable unit will be provided in coordination with various RCRA facility investigation (RFI)/CMS documents (Appendix 2B). These documents will include a coordinated past-practice site investigation/RCRA closure/RCRA corrective action approach in order to efficiently implement applicable regulations. Coordination of the remediation of past-practice operable units with TSD closures will enable RCRA TSD units located within past-practice operable units to have the same cleanup standards. This coordination will minimize the possibility of having different cleanup standards for coincident or adjacent parcels of land.

The coordination approach spelled out in the Tri-Party Agreement Action Plan also is supported by Condition II.K. of the DW Portion of the HF RCRA Permit, "Soil and Groundwater Performance Standards". Condition II.K.7. of the HF RCRA Permit (DW Portion) is particularly relevant. This condition specifies that, when agreed to by Ecology, integration of other statutorily or regulatory mandated cleanups could be accommodated by the HF RCRA Permit (DW Portion). Results from other cleanup investigation activities could be used whenever possible to supplement and/or replace TSD unit closure investigation activities. All, or appropriate parts of, multipurpose cleanup and closure documents could be incorporated into the HF RCRA Permit (DW Portion) through the permit modification process. Cleanup and closures conducted under any statutory authority with oversight by either Ecology or EPA,

which meets the equivalent of the technical requirements of Condition II.K. of the HF RCRA Permit (DW Portion), could be considered as satisfying the requirements of the HF RCRA Permit (DW Portion). Further discussion of Condition II.K. of the HF RCRA Permit (DW Portion) is contained in Chapters 5.0 and 11.0 of this permit application.

The Tri-Party Agreement requires that the HF RCRA Permit (DW Portion) be the vehicle for the public to become involved in the RCRA past-practice remediation process. Section 7.4 of the Tri-Party Agreement Action Plan contains the information on how the documentation for RCRA past-practice remediation process will be conducted. The milestones to provide the joint documentation of closure/postclosure plans for land disposal units and past-practice operable unit work plans are contained in Appendix D of the Tri-Party Agreement Action Plan. The mechanism for addressing the RCRA past-practice process will be included in a future HF RCRA Permit modification.

2.5.1.3 Procedural Closure

Chapter 1.0, Table 1-1, identifies a number of Hanford Facility TSD units for which procedural closure will be sought in accordance with Section 6.3 of the Tri-Party Agreement Action Plan or in response to withdrawal requests submitted in fulfillment of Tri-Party Agreement Milestone M-20-45. Procedural closure has been approved for three units to date. Procedural closure is used for those units that were classified as being TSD units, but never actually were used to treat, store, or dispose of hazardous waste on or after November 19, 1980; State-only dangerous waste on or after March 12, 1982; and mixed waste on or after August 19, 1987, except as provided by WAC 173-303-200 or WAC 173-303-802. Because another option is being pursued for these units, these units are not included within the scope of the *Hanford Facility Dangerous Waste Permit Application*. A brief description of the TSD units being considered for procedural closure follows. The locations of these units are discussed in Appendix 2A.

2.5.1.3.1 221-T Containment Systems Test Facility

The 221-T Containment Systems Test Facility, located in the 200 West Area, was proposed as a research laboratory to be used to perform experiments with alkali metal compounds. Proposed treatment consisted of heating alkali metal waste in a tank equipped with an offgas system. The unit was procedurally closed in February 1999 (DOE/RL-88-21).

2.5.1.3.2 2727-WA Sodium Reactor Experiment Sodium Storage Building

The 2727-WA Sodium Reactor Experiment Sodium Storage Building, located in the 200 West Area, was proposed for storage of 208-liter containers of mixed waste sodium. The sodium to be stored, in metallic form, was used as a primary coolant in a sodium cooled nuclear reactor. The unit was procedurally closed in February 1999 (DOE/RL-88-21).

2.5.1.3.3 437 Maintenance and Storage Facility

The 437 Maintenance and Storage Facility, located in the 400 Area, was proposed for maintenance and repair of equipment from the Fast Flux Test Facility. Treatment of dangerous waste was to be conducted by removing residual sodium from waste materials. The process was to consist of placing sodium contaminated material in a tank and reacting surface sodium contamination with water.

2.5.1.3.4 324 Pilot Plant

The 324 Pilot Plant, located in the 300 Area, was proposed for treatment of radioactive alkali metals, including sodium, lithium, and sodium-potassium alloy. Procedural closure was approved on June 9, 1997.

2.5.1.3.5 Biological Treatment Test Facilities

The Biological Treatment Test Facilities, located in the 300 Area, were proposed for treatment of mixed waste via biological treatment R&D processes. Waste constituents in soil, effluent, and groundwater, through the use of microorganisms, could be treated for various chemical constituents, such as organics, nitrates, chromium, and cyanide. Procedural closure was approved on December 10, 1996.

2.5.1.3.6 Physical and Chemical Treatment Test Facilities

The Physical and Chemical Treatment Test Facilities, located in the 300 Area, were proposed to test various treatment technologies based on guidance received from EPA and Ecology. Treatment technologies were proposed to include the following:

- pH adjustment
- Ion exchange for selective removal of contaminants from waste solutions
- Waste concentration by evaporation
- Waste dissolution such as waste retrieval from storage tanks by pH adjustment or fusion
- Precipitation/filtration and solvent extraction from solutions, slurries, and sludges
- Solids washing for separation of contaminants from sludges
- Catalytic destruction methods; for example: electrolytic generation of oxidants such as silver, cerium, and other electrochemically-enhanced processes for decontaminating metals and oxidizing non-metals
- Grouting.

Procedural closure was approved on May 13, 1996.

2.5.1.3.7 Thermal Treatment Test Facilities

The Thermal Treatment Test Facilities, located in the 300 Area, were proposed for treatment of mixed waste via thermal treatment R&D processes. The primary thermal treatment processes are in situ vitrification and waste vitrification. Other thermal processes were proposed to include the following:

- Plasma arc pyrolysis
- In situ heating of soils and sludges for removal of organics
- Metal melting for volume reduction and immobilization of contaminated metals
- Gamma induced oxidation of organic chemicals
- Thermal treatment for the drying and decomposition of liquid slurries
- In can melting of soil waste and liquid slurries
- Microwave heating to dry and immobilize liquid and solid waste.

Procedural closure was approved on May 13, 1996.

2.5.1.3.8 332 Storage Facility

The 332 Storage Facility, located in the 300 Area, was proposed for the storage of small quantities of mixed and dangerous waste and waste samples in various sized containers from 3.8 to 321.8 liters. Procedural closure was approved on April 21, 1997.

2.5.1.4 Units with Other Dispositions

This section addresses dispositions for the Fast Flux Test Facility, the 600 Area Purgewater Facility, and the Single-Shell Tank System. The locations of these units are discussed in Appendix 2A.

2.5.1.4.1 Sodium Storage Facility and Sodium Reaction Facility

The 400 Area was developed for the experimentation of breeder reactor technologies, development of isotopes for medical uses, and development and testing of equipment and materials under high radiation fields. The Fast Flux Test Facility (FFTF) was the main reactor used in this experimentation. In 1993, the U.S. Department of Energy announced its decision to shutdown the FFTF. Shutdown began in December 1993 (DOE/RL-93-102) and it was estimated to take about 5 years to place FFTF in an industrially and radiologically safe condition. On January 15, 1997, the Secretary of Energy announced a decision directing that the FFTF be maintained in a standby condition. This will allow the U.S. Department of Energy to determine whether the facility should play a future role in the DOE dual track tritium production strategy and whether it is feasible to use the facility for medical isotope production.

A study to determine if liquid sodium coolant removed from the FFTF has any beneficial use was originally scheduled to be completed in 1998. Due to the decision to maintain FFTF in standby, the decision will be deferred until the final status of FFTF is determined. It is anticipated that one beneficial use for this sodium will be in support of the Tank Waste Remediation System Project. In the event that a beneficial use for the sodium cannot be found, the Sodium Storage Facility and Sodium Reaction Facility will be relied upon to process the sodium for disposal. This TSD unit is being designed and constructed as a RCRA-compliant unit, in the event that the FFTF sodium is determined to be a waste. Additional information on the Sodium Storage Facility and Sodium Reaction Facility is contained in the HF Part A.

Construction of the Sodium Storage Facility under interim status has been completed. The Sodium Reaction Facility will not be constructed until a final decision has been made regarding the disposition of FFTF sodium. When future plans for the Sodium Storage Facility and Sodium Reaction Facility become more definitive, these facilities may be identified as a TSD unit to be added to the HF RCRA Permit (DW Portion) Class 3 Permit Modification Schedule (refer to Chapter 2.0, Section 2.1.1.3.3).

2.5.1.4.2 600 Area Purgewater Storage and Treatment Facility

The 600 Area Purgewater Storage and Treatment Facility is located northeast of the 200 East Area. Liquids associated with groundwater activities and other processes are stored and treated by solar evaporation at the facility. Two above ground modular containment units are located at the facility. Only one of the units is in use. The storage capacity of this single unit is 3,785,400 liters. The facility is permitted per WAC 173-303-400 Interim Status Standards as a chemical, physical, and biological treatment unit per Subpart Q of 40 CFR 265.

The 600 Area Purgewater Storage and Treatment Facility will continue operation as an interim status unit until an alternate disposal pathway can be developed for purgewater. The facility will be closed soon after the development of the alternate pathway. This unit has a Part A, Form 3, and is included in the RCRA Part A Manual as Section 4.5.2.2.

2.5.1.4.3 Single-Shell Tank System

The SST System, located in both the 200 East Area and 200 West Area, was built to store and treat mixed waste. There are 149 tanks that range in capacity from 208,197 to 3,785,400 liters with a total storage design capacity of 348,390,160 liters. Treatment in the system occurs when solids, interstitial liquids, or cooling liquids are removed from the tanks. The treatment design rate is 2,271,240 liters per day.

In accordance with Milestone M-45-06 of the Tri-Party Agreement Action Plan, the current estimate for completion of closure of the SST System is September 30, 2024. The first closure plan for a SST operable unit or tank farm is scheduled to be submitted to Ecology on November 30, 2004. In the interim period before a closure plan is submitted, a closure work plan was submitted to Ecology (DOE/RL-89-16). This closure work plan will be used by Ecology as a roadmap for the eventual closure

of the SST System. The closure work plan contains an integration process and the status of the process on achieving closure. Known issues, and how these issues are being addressed, are included in the work plan. Because of the uncertainties on the resolution of these issues and the closure process, the work plan will evolve and be updated as these uncertainties are resolved. Eventually, the closure work plan will develop into the closure plan. The format of the closure work plan is similar to a closure plan. The areas covered in the work plan include waste retrieval, operable unit characterization, technology development to support closure, and the regulatory pathway and strategy for achieving closure.

2.5.1.4.4 Grout Treatment Facility

The GTF, located in the 200 East Area, is classified as a tank treatment and storage, a surface impoundment, a miscellaneous treatment, and a land disposal unit. Per Amendment Four of the Tri-Party Agreement, the GTF has been placed in a standby mode until other alternatives for processing DST System waste are studied. The GTF was to treat DST System waste by combining this waste with grout-forming solids and, if necessary, chemical additives. The treatment process forms a cementious slurry that was to be pumped to lined concrete disposal vaults. The disposal vaults were to be managed as surface impoundments when the grout slurry was liquid and closed as landfills after the grout slurry hardened. Part B documentation for the GTF is contained in the Unit-Specific Portion of this permit application (DOE/RL-88-27). The GTF will remain under interim status as long as this TSD unit is in a standby mode. Further work on Part B documentation for the GTF has been suspended while this TSD unit is in a standby mode.

Low-activity waste immobilization facilities have been proposed to supersede the GTF. Development of low-activity waste immobilization facilities currently is being managed under the Tank Waste Remediation System Project. As currently planned, the GTF disposal vault will be used for the interim storage of the immobilized low-activity waste product produced by the privatization contractor. The disposal vault would continue to be operated by the Tank Waste Remediation System Project. Part B permit application documentation for storage of the low-activity waste product is scheduled to be submitted by December 2000.

2.5.1.4.5 Hanford Waste Vitrification Plant

Under milestones set in the original Tri-Party Agreement, construction of the HWVP was to begin in 1992 and to be completed in 1998. The HWVP, designed to meet the original Tri-Party Agreement milestones, is classified as a tank treatment and storage, a container storage (canister storage building), and a miscellaneous unit. Per Amendment Four of the Tri-Party Agreement, construction of a high-level waste vitrification plant, such as the HWVP, was delayed until 2002 to accommodate changes in waste management planning and prioritization. Hot startup of a high-level waste vitrification plant has been delayed until 2009 (per Tri-Party Agreement Milestone M-51-03).

The HWVP was to be constructed in the 200 East Area (DOE/RL-88-21). Mixed waste, received from a pretreatment unit, was to be treated at the HWVP in a series of tanks and a melter, classified as a miscellaneous unit. Treatment was to include concentration by evaporation, adjustment with chemicals and glass forming materials, and immobilization in borosilicate glass (vitrification). Part B documentation for the HWVP is contained in the Unit-Specific Portion of this permit application (DOE/RL-89-02). Further work on this documentation has been suspended. Current plans call for a high-level waste immobilization facility.

Development of a high-level waste immobilization facility currently is being managed under the River Protection Project. As currently planned, the immobilized high-level waste product will be stored in the Canister Storage Building.

2.5.1.5 Other Solid Waste Management Units

The HF RCRA Permit (HSWA Portion) addresses both SWMUs that are located on the DOE-RL-managed property of the Hanford Facility as well as SWMUs that are not located on DOE-RL-managed property. In accordance with the HF RCRA Permit (HSWA Portion), any SWMUs located on DOE-RL-managed property are, or will be, included in the Tri-Party Agreement and assigned to operable units. The processes and procedures to be followed, and the schedules of compliance for investigation and subsequent remediation, will be contained in the Tri-Party Agreement. An example of a type of 'other SWMU' is inactive miscellaneous underground storage tanks.

The SWMUs not located on DOE-RL-managed property will undergo investigations and remediations, as necessary, in accordance with the requirements and schedules identified in the HF RCRA Permit (HSWA Portion). Additional information on Hanford Site SWMUs is contained in Appendix 2D.

2.5.2 Other Waste Management Units

Of the approximately 1,600 Hanford Site waste management units, approximately 470 are classified as 'other waste management units', rather than SWMUs (DOE/RL-88-30). These 'other waste management units' are comprised mainly of one-time spills to the environment, sanitary waste disposal facilities (i.e., septic tanks), and facilities managed or addressed by the Fluor Hanford or Environmental Restoration Projects.

2.5.2.1 Facilities Subject to Decommissioning

This section addresses waste management units that could be handled under Section 8.0 of the Tri-Party Agreement Action Plan, "Facility Decommissioning Process," or under the HF RCRA Permit (DW Portion). Section 8.0 defines an additional process for the identification and decommissioning of key Hanford facilities (e.g., PUREX Plant, Plutonium Finishing Plant, B Plant Complex, Fast Flux Test Facility) (Appendix 2A). Facilities that are fully dispositioned under the TSD unit closure process, or dispositioned in conjunction with an operable unit cleanup, are not addressed under Section 8.0. The TSD units subject to Section 8.0 have physical closure actions that need to be done in conjunction with the physical disposition actions in the facility (e.g., removal of structural components).

Section 8.0 of the Tri-Party Agreement Action Plan enables DOE-RL and the regulators to enter into negotiations for transition or disposition of key facilities within 3 months of a shutdown notice or decision to proceed with disposition, respectively. Provisions of this section enable the conduct of regulated and nonregulated work in an orderly sequence to ensure coordination with other cleanup actions. Within Section 8.0, the processes and key planning documents associated with the decommissioning phases of transition, surveillance and maintenance, and disposition are defined.

The nature of the decommissioning process has led DOE-RL and the regulators to evaluate the timing of RCRA closure at key facilities. The phased decommissioning process, combined with other requirements, often makes completion of RCRA closure activities during the transition or surveillance and maintenance phases impracticable. In cases where timely completion of TSD unit closure is practicable, a complete closure plan will be prepared for implementation during the transition phase. In cases where physical conditions and/or unknowns prevent timely completion of closure, a preclosure work plan will be prepared for implementation during the transition phase. The preclosure work plan will detail actions to be completed during the transition phase to facilitate full RCRA closure in the future.

Hanford Facility TSD units that are, or may become key Hanford facility units, subject to Section 8.0 of the Tri-Party Agreement Action Plan, are identified in Chapter 1.0, Table 1-1. In these cases, TSD unit-specific conditions within Parts III and V of the HF RCRA Permit (DW Portion) will need to be crafted to address Section 8.0 considerations. The SST System will not follow Section 8.0 of the

Tri-Party Agreement Action Plan, but will instead be addressed in accordance with the *Single-Shell Tank Closure Work Plan* (DOE/RL-89-16).

2.5.2.1.1 PUREX Plant

The PUREX Facility, located in the 200 East Area, consists of two separate TSD units, the PUREX Plant (202-A Building) and the PUREX Storage Tunnels (refer to Chapter 4.0, Section 4.1.2.11). The PUREX Plant is a canyon building that was used for the recovery of uranium and plutonium from irradiated reactor fuel. Liquid-liquid processes were used to separate the plutonium and uranium from fission products and to separate the plutonium from the uranium.

In 1991, the PUREX Plant ceased operations and was placed in a standby mode. In December 1992, the U.S. Department of Energy notified DOE-RL that the PUREX Plant would no longer operate and directed the PUREX Plant to transition into deactivation. In accordance with Section 8.0 of the Tri-Party Agreement Action Plan, a preclosure work plan (DOE/RL-95-78) has been submitted to address those components of the PUREX Plant contained in the Part A, Form 3, permit application documentation for this unit. The PUREX Storage Tunnels (DOE/RL-90-24) will continue to store mixed waste for an undetermined number of years, and are classified as an 'operating' unit (refer to Chapter 4.0, Section 4.1.2.11).

2.5.2.1.2 241-Z Treatment and Storage Tanks

The 241-Z is a tank treatment and storage unit located in the 241-Z Building in the 200 West Area. Mixed waste generated at the Plutonium Finishing Plant is transferred into the 241-Z treatment and storage tanks. Waste accumulated in the tank system is treated chemically to meet acceptance criteria for transferring waste to the DST System. Treatment consists of chemical additions to adjust pH, to ensure aluminum compounds remain solubilized, and to provide the appropriate percentage of stable solids. Following treatment, the waste is stored until authorization is received to transfer the waste to the DST System.

The 241-Z currently is managed under the Nuclear Material Stabilization Project. Permitting documentation for this TSD unit could be handled in accordance with Section 8.0 of the Tri-Party Agreement Action Plan. The 241-Z will continue to operate under interim status.

2.5.2.1.3 B Plant Complex

The B Plant Complex is a tank treatment and storage, container storage, and containment building unit located in the 200 East Area. The B Plant Complex current activities include storage of low-level mixed waste and containerized non-liquid mixed waste. Solid mixed waste is stored on the canyon deck. A low-level waste concentrator currently is inactive with no intention of resuming operations. Solid mixed waste stored on the canyon decks consists of radioactively contaminated failed process equipment and jumpers (or isolated components thereof) containing lead used as weights, counterweights, or radiation shielding. The solid mixed waste also could be contaminated with residues from waste processing of tank waste.

The B Plant Complex currently is managed under the Environmental Restoration Project. Permitting documentation for this TSD unit will be handled in accordance with Section 8.0 of the Tri-Party Agreement Action Plan.

2.5.2.1.4 Fast Flux Test Facility

Pending permitting considerations associated with the Fast Flux Test Facility are addressed in Section 2.5.1.4.1.

2.5.2.2 Miscellaneous Waste Management Units

Examples of miscellaneous waste management units are one-time spills to the environment and sanitary waste disposal facilities (i.e., septic tanks). All such known units are identified in the Units Report (DOE/RL-88-30). The term "miscellaneous waste management unit" used in this context is different from that defined in WAC 173-303-040 for a "miscellaneous TSD unit" (refer to Appendix 2B of this document).

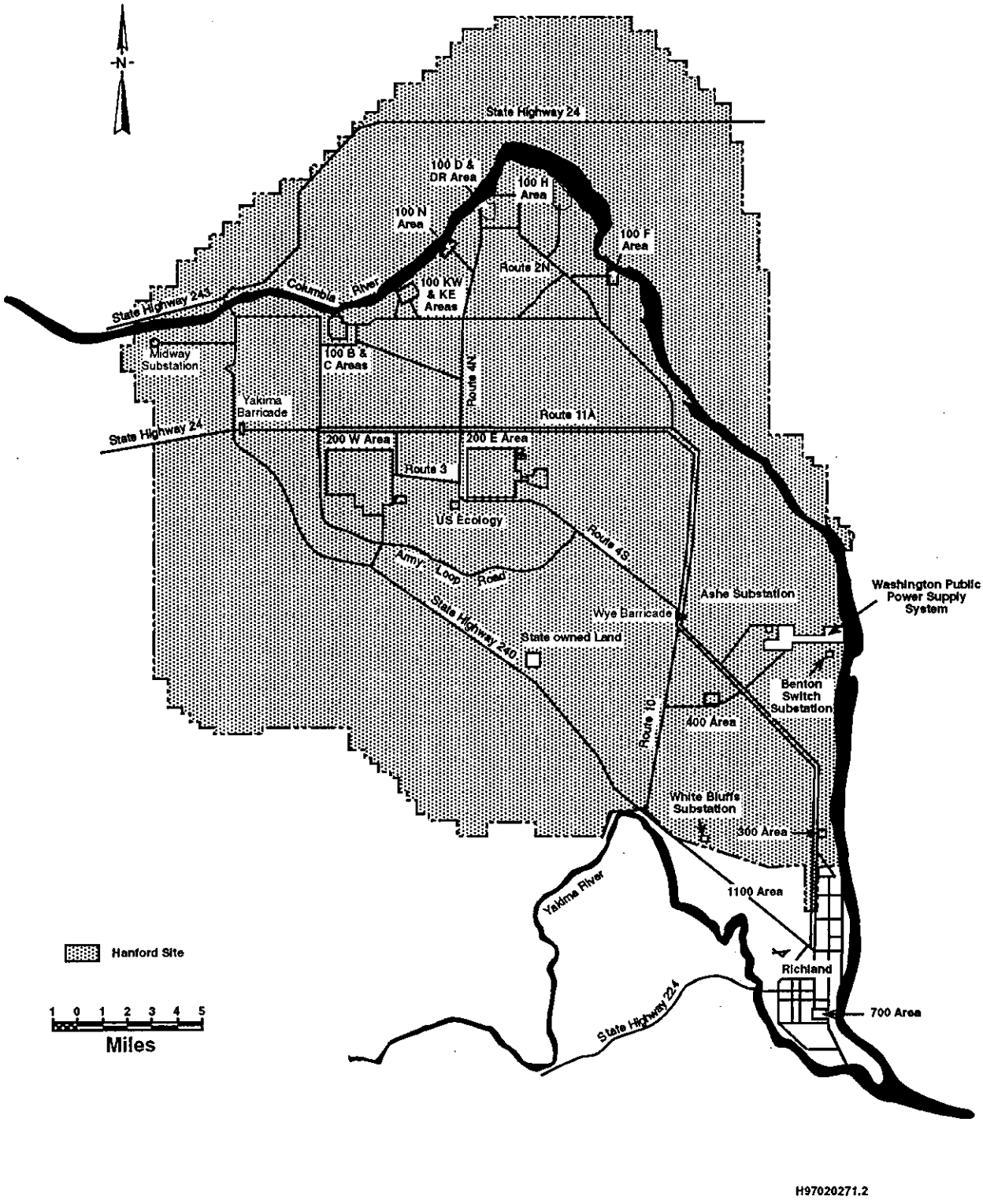


Figure 2-1. Hanford Site [coincides with Hanford Facility boundary as defined in the HF RCRA Permit (DW Portion), Attachment 2].

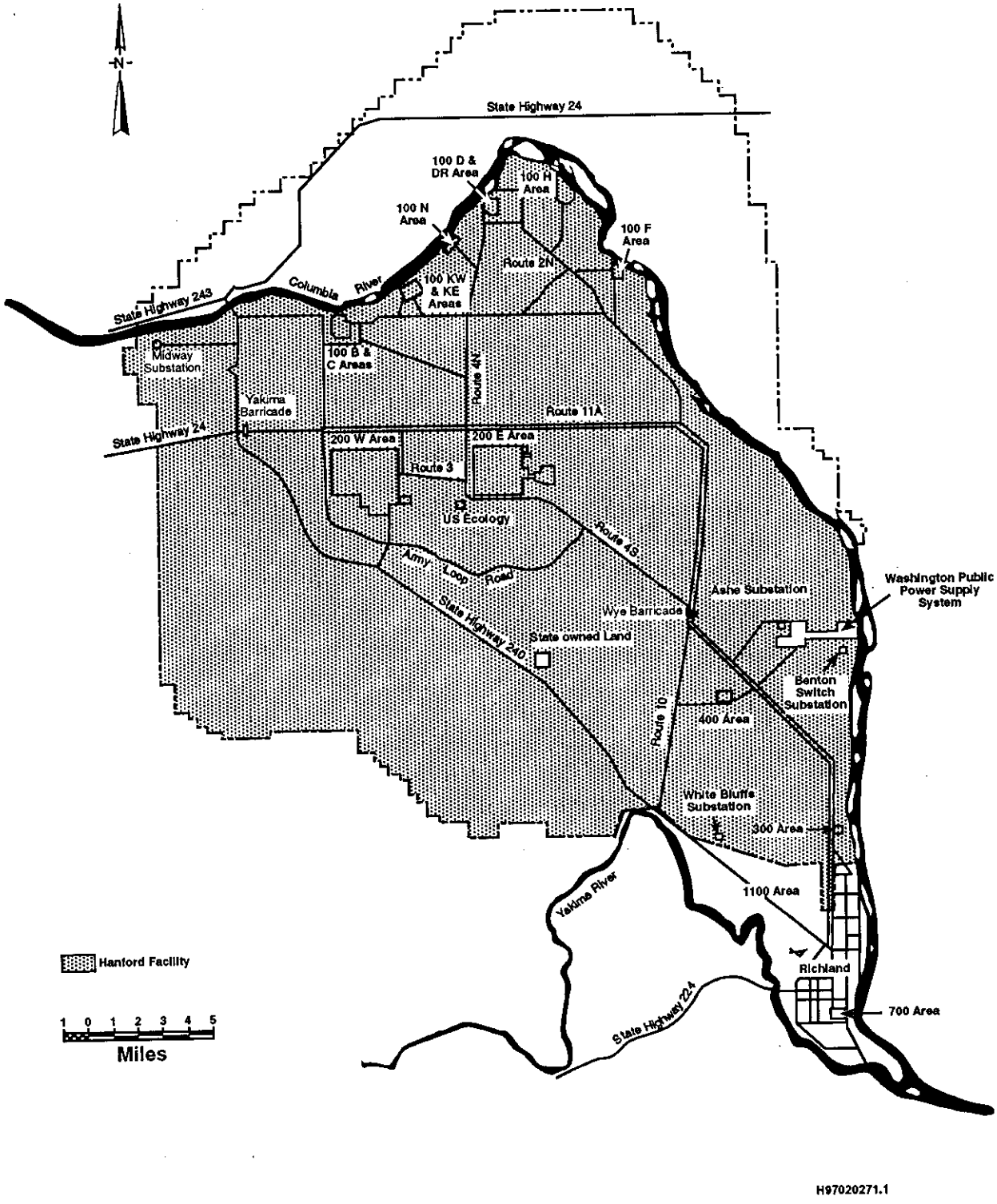


Figure 2-2. Hanford Facility Boundary (as defined in Appendix 2C, Legal Description).

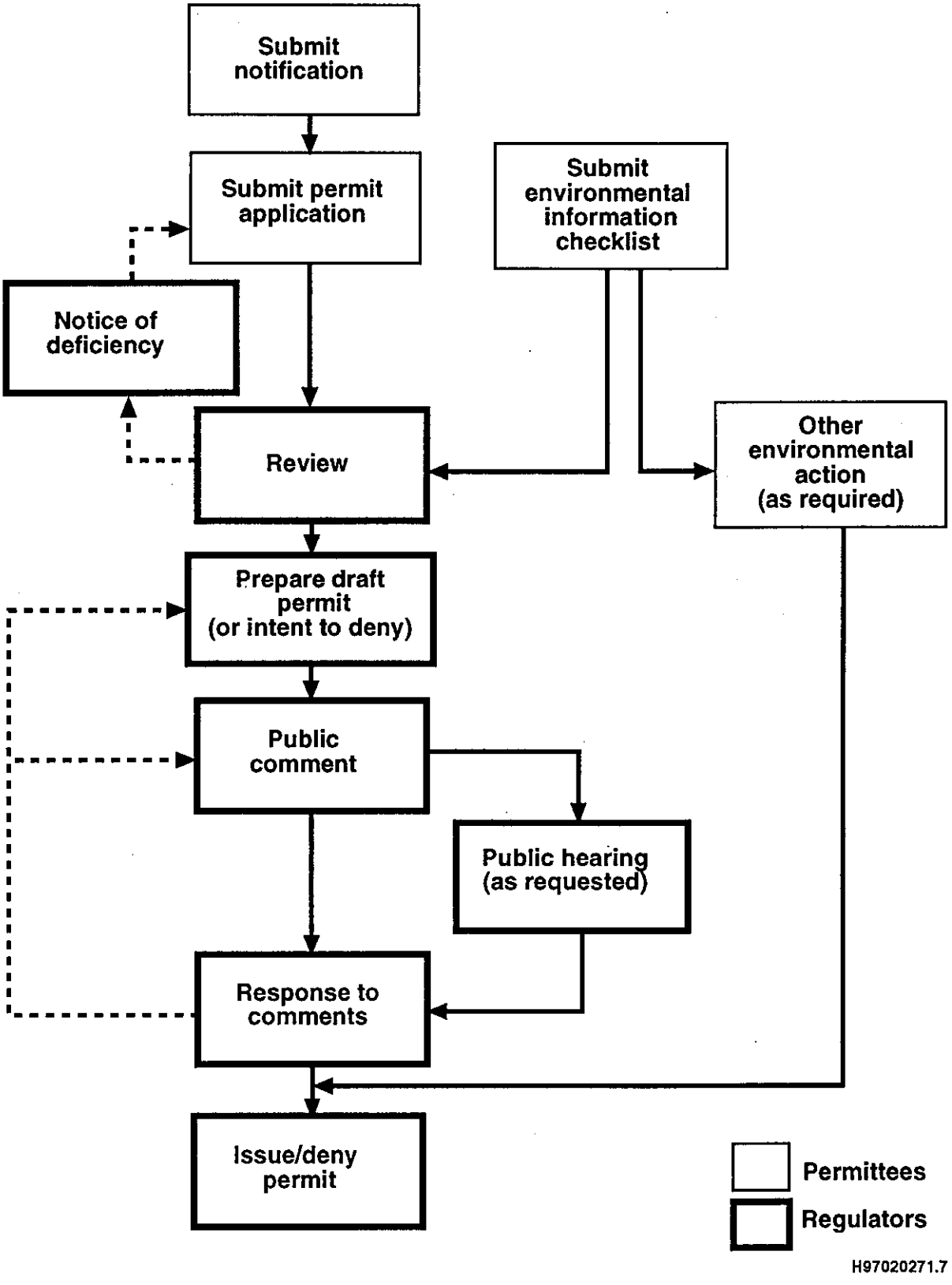


Figure 2-3. Permitting Process Flowchart (adapted from Tri-Party Agreement).

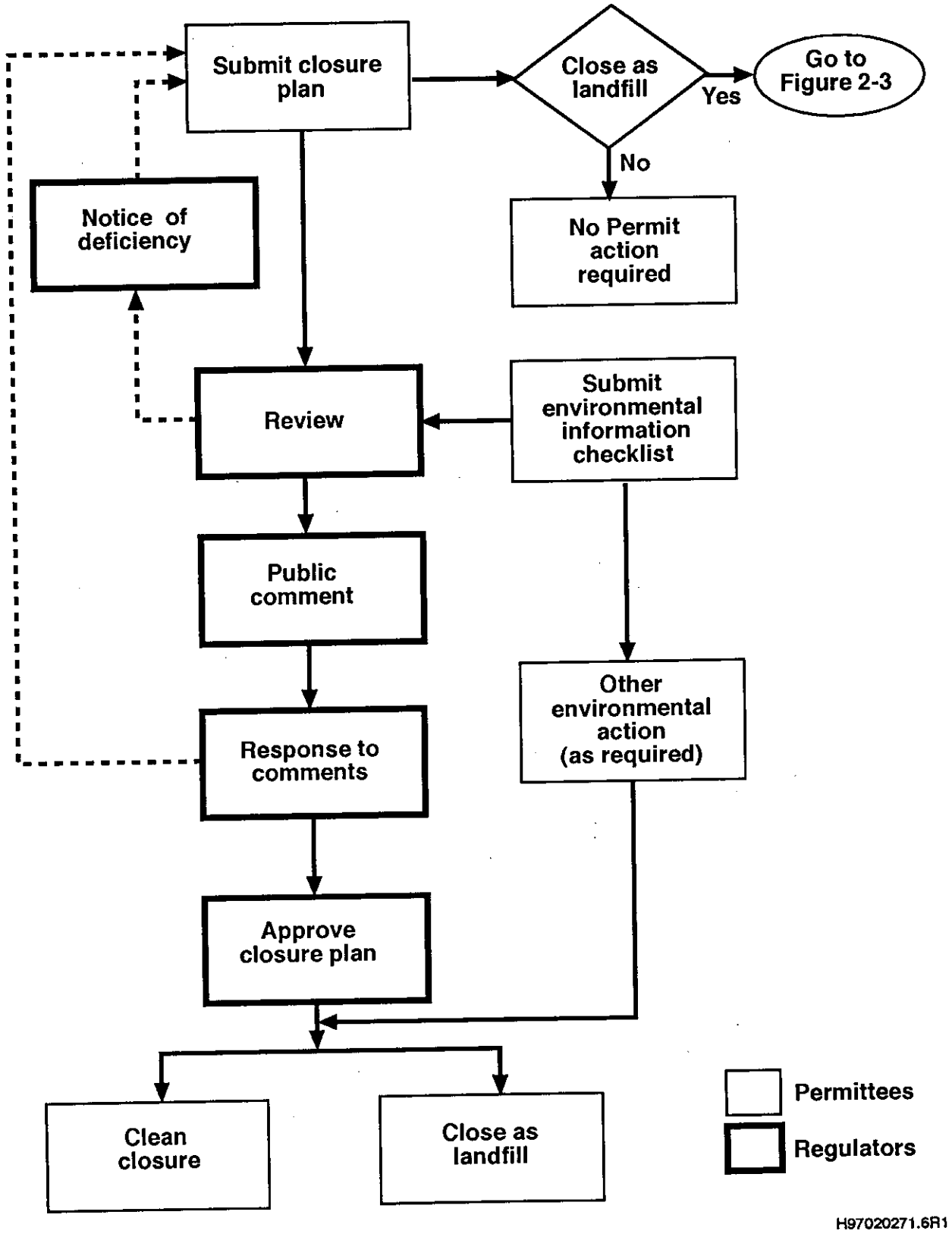


Figure 2-4. Closure Process Flowchart (adapted from Tri-Party Agreement).

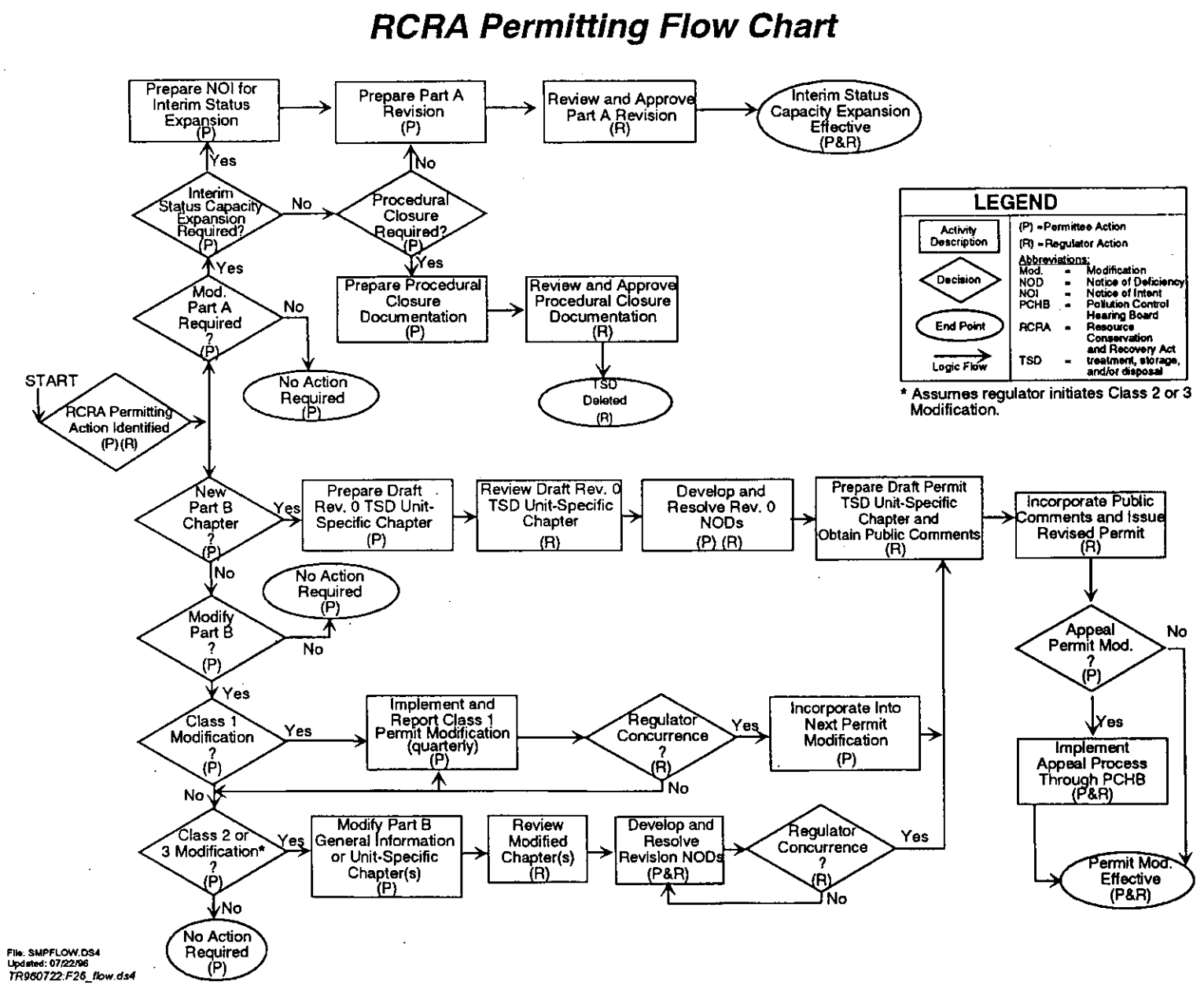


Figure 2-5. Permit Modification Flowchart.

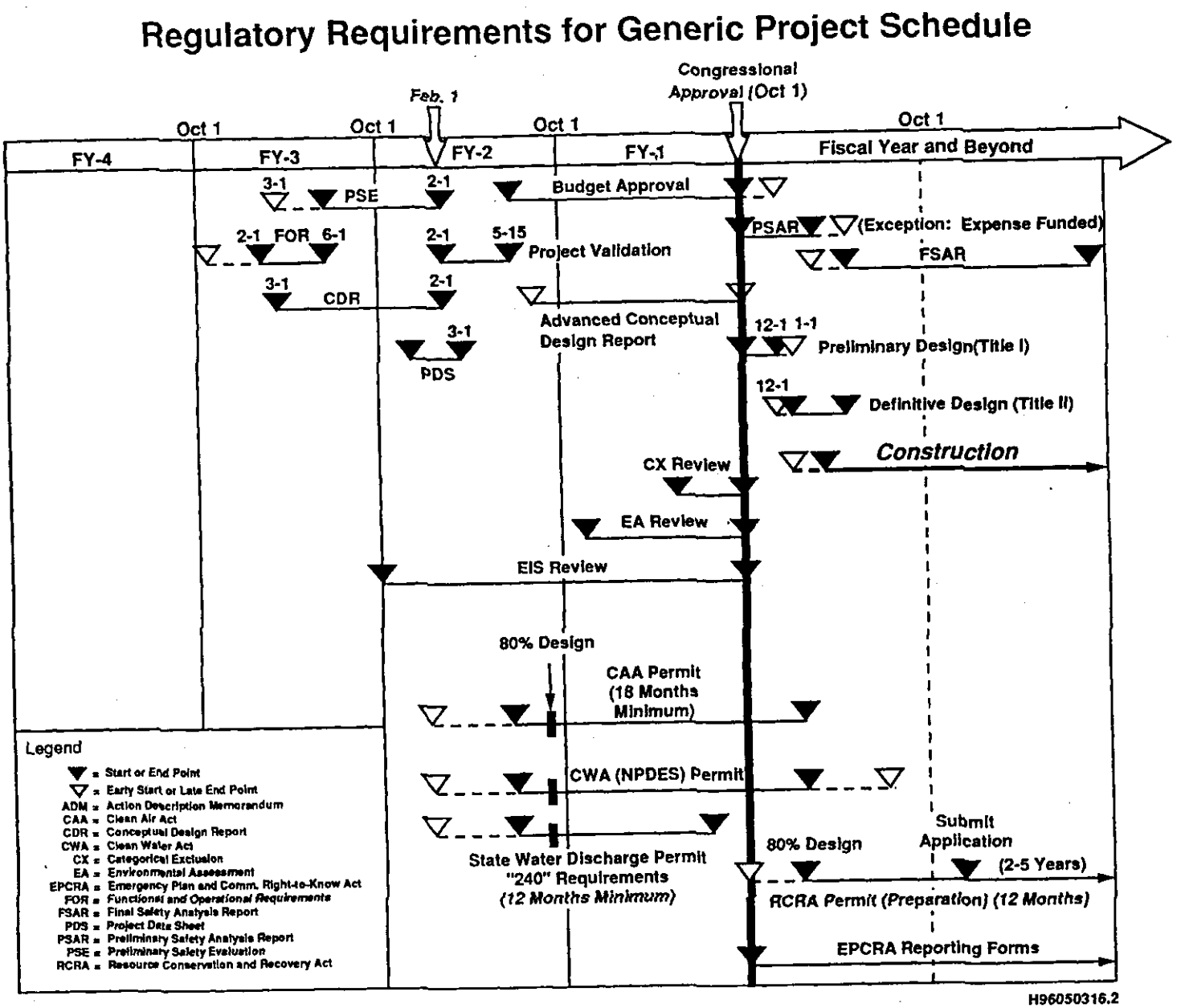


Figure 2-6. Generic Project Schedule.

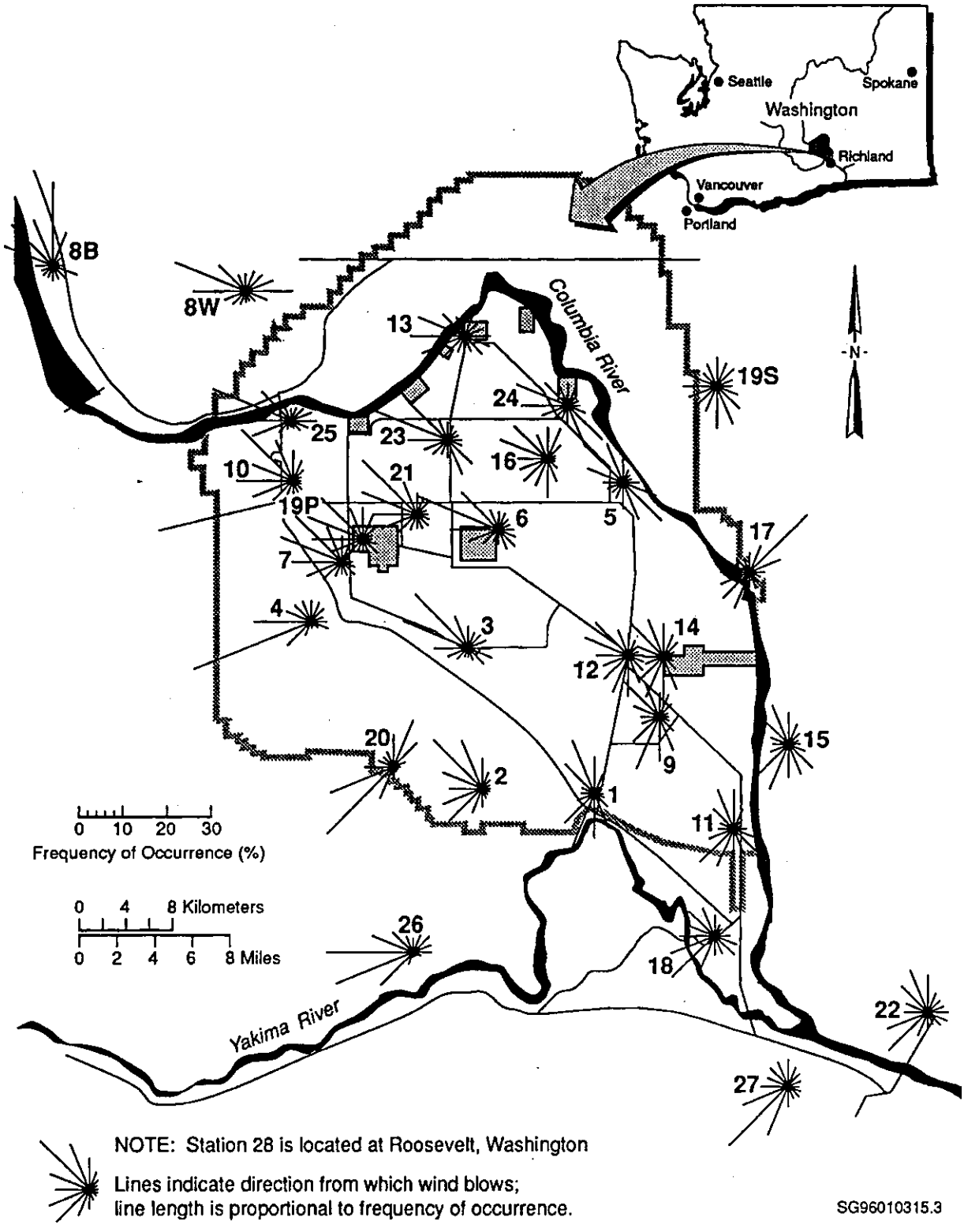


Figure 2-7. Prevailing Wind Direction for the Hanford Site (adapted from PNNL-11139).

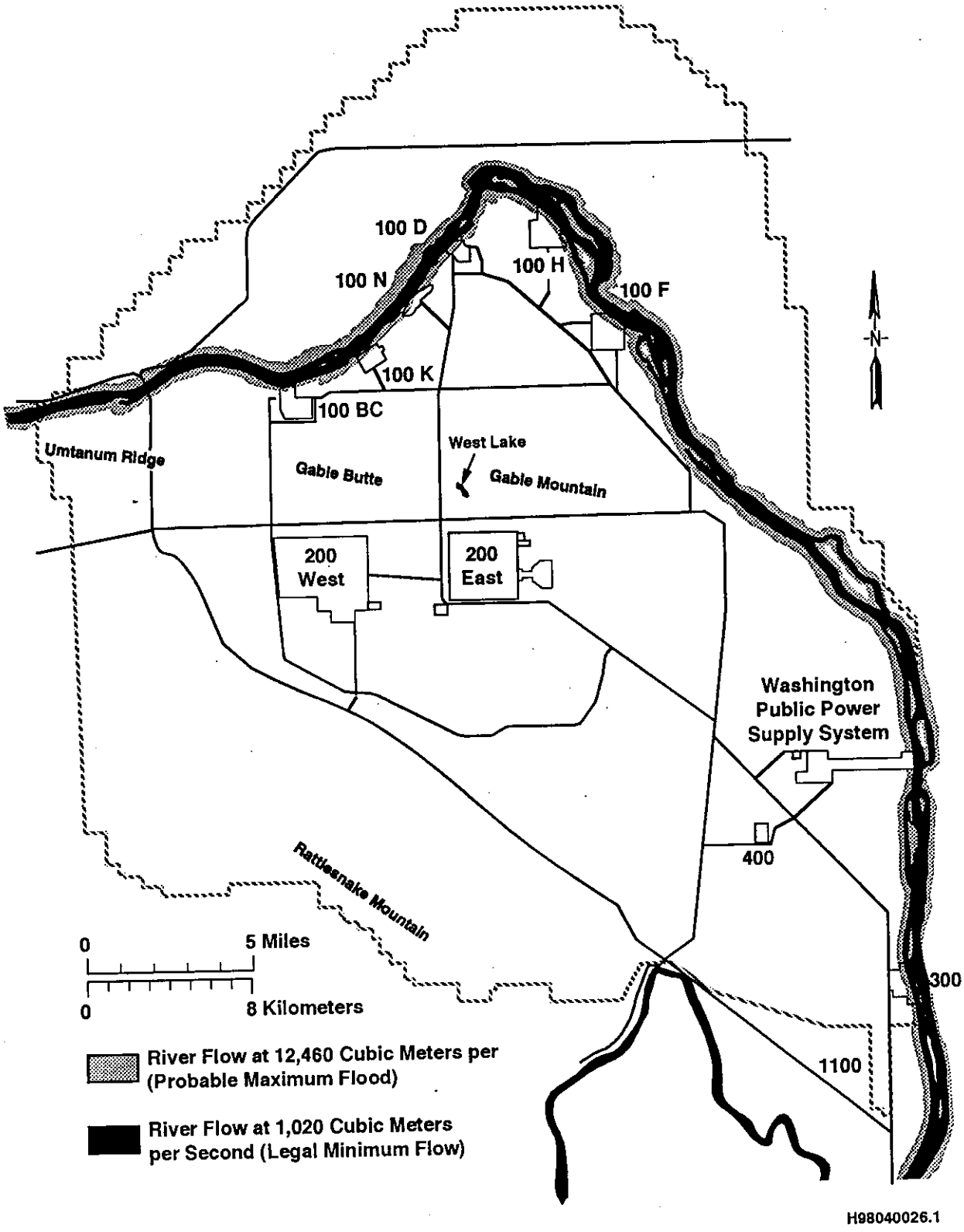


Figure 2-8. Columbia River Floodplain (probable maximum flood) (adapted from DOE/EIS-0222).

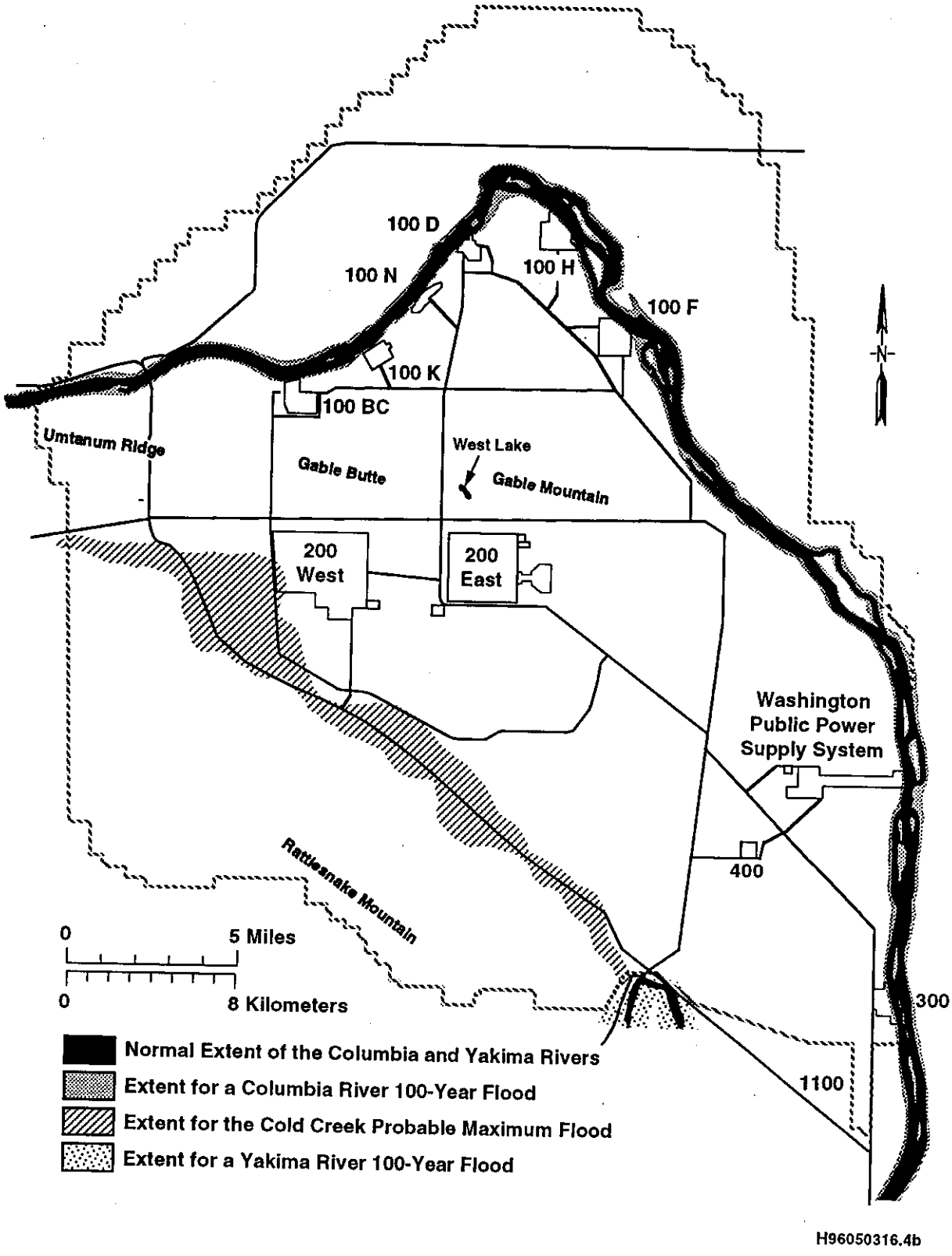


Figure 2-9. 100-Year Floodplain of the Columbia River and Yakima River and the Cold Creek Probable Maximum Flood (adapted from DOE/EIS-0222).

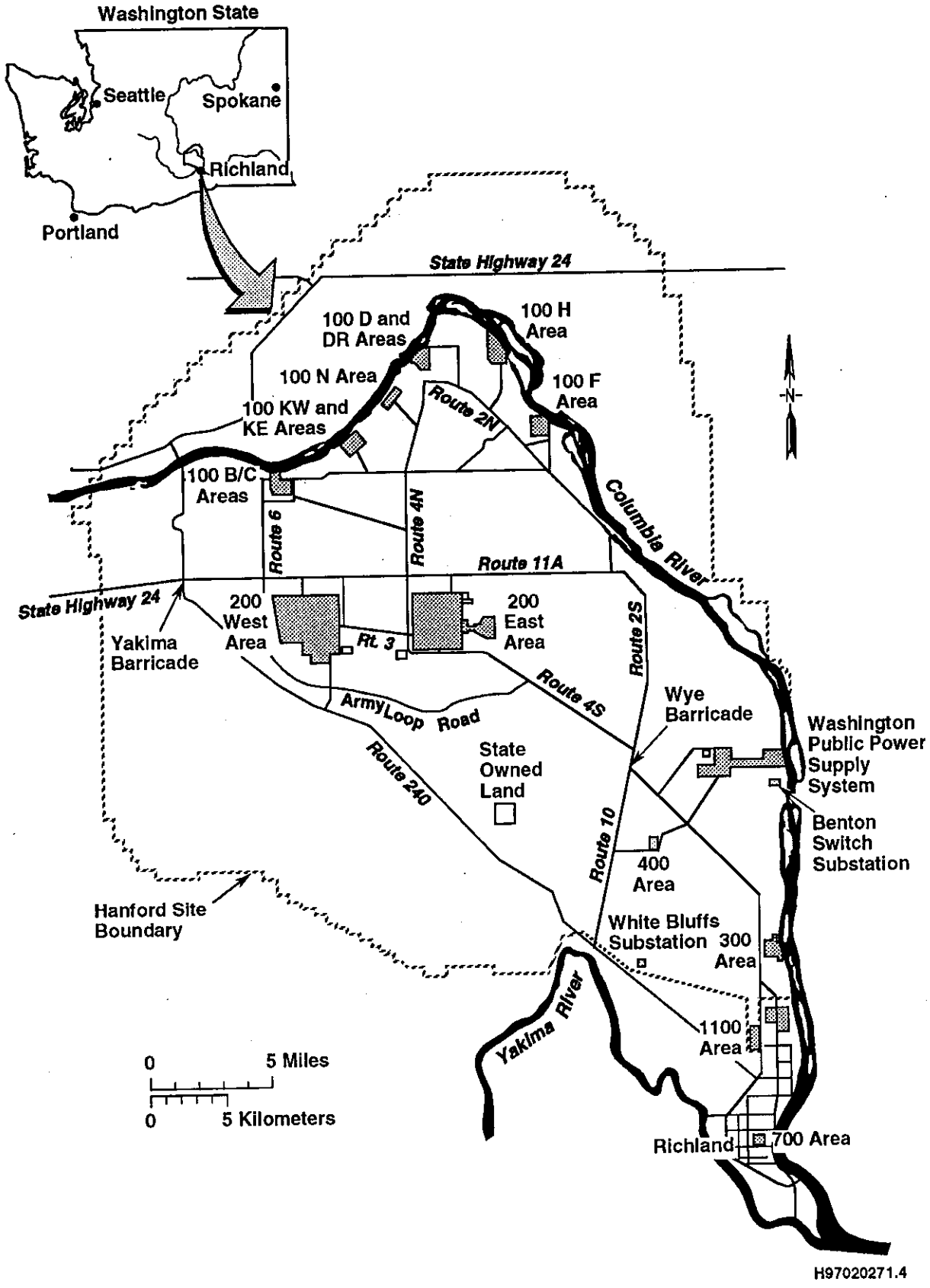
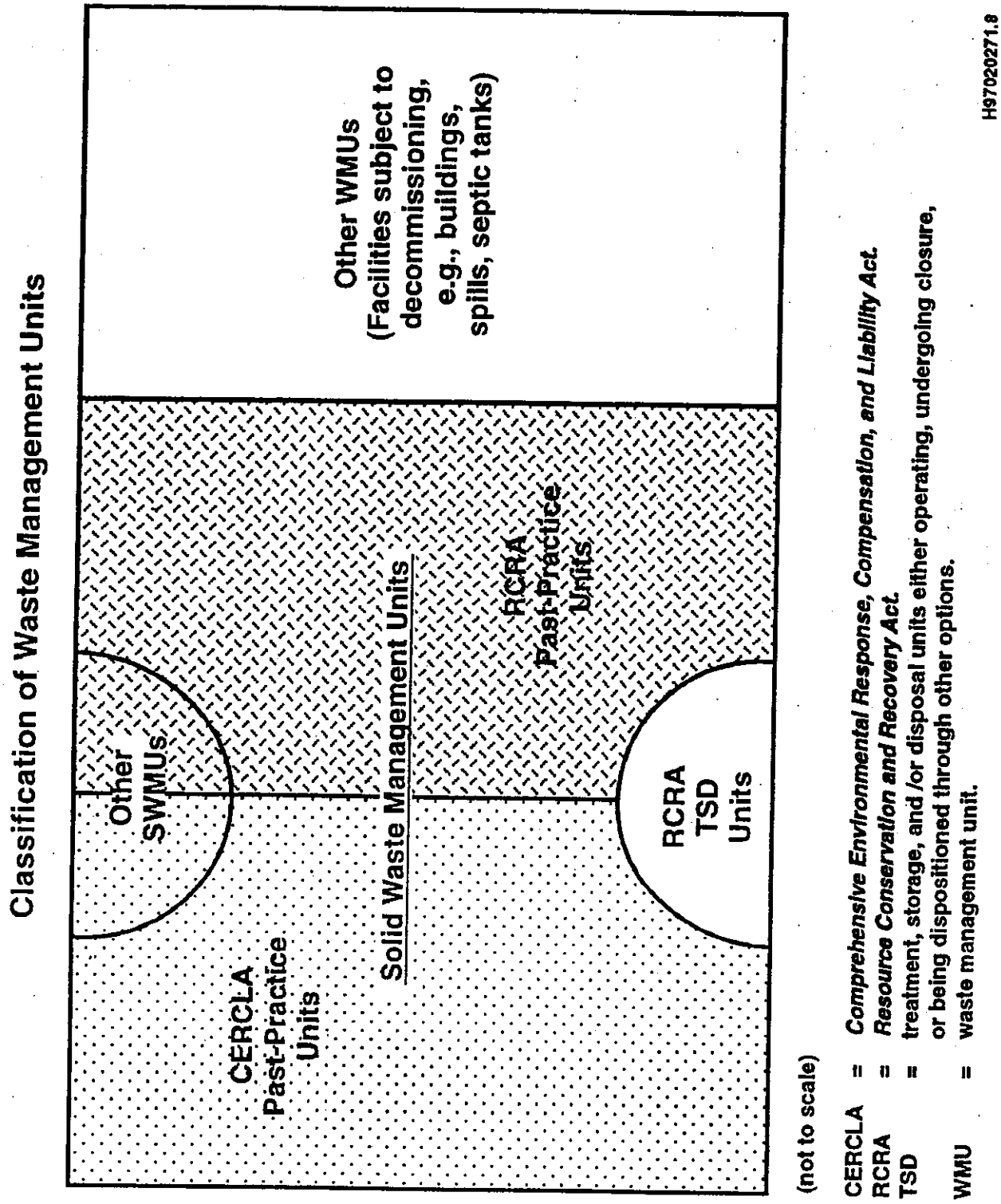


Figure 2-10. Hanford Site Roadways (adapted from DOE/EIS-0222).



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3.0 WASTE ANALYSIS [C]

This chapter provides general information, specified in Section C of Ecology's permit application guidance (Ecology 1987 and 1996), on the analysis and handling of waste treated, stored, and/or disposed on the Hanford Facility. Topics discussed include the following:

- Chemical, biological, and physical analyses
- Waste analysis plan
- Manifest system
- Tracking system
- Other waste analysis documentation.

Provisions contained in Conditions I.E. (Duties and Requirements), II.A. (Facility Contingency Plan), II.D. (Waste Analysis), II.E. (Quality Assurance/Quality Control), II.N. (Receipt of Dangerous Wastes Generated Offsite), II.P. (Manifest System), and II.Q. (On-Site Transportation) of the HF RCRA Permit (DW Portion) also are discussed.

Detailed information on the characteristics of the waste treated, stored, and/or disposed at individual 'operating' TSD units is contained in the Unit-Specific Portion of this permit application. Detailed information on waste treated, stored, and/or disposed at individual TSD units 'undergoing closure' or being 'dispositioned through other options' has been, or is anticipated to be, submitted in accordance with the provisions of the Tri-Party Agreement.

3.1 CHEMICAL, BIOLOGICAL, AND PHYSICAL ANALYSIS [C-1]

The Hanford Facility treats, stores, and/or disposes of dangerous and/or mixed waste designated as: (1) characteristic dangerous waste (ignitable, corrosive, toxic, reactive); (2) toxic and persistent (by WAC 173-303 criteria); and (3) listed (e.g., due to the presence of spent solvents and discarded pure chemical products). The waste form ranges from liquid to hard crystalline material (e.g., salt cake stored in the DST System), as well as contaminated equipment, paper, rags, etc. A general overview of waste characteristics and process information for each 'operating' TSD unit (as of May 1, 1998) is contained in Chapter 4.0. Such an overview for TSD units 'undergoing closure' or being 'dispositioned through other options' is found in Chapter 2.0, Section 2.5).

Specific information on the type (i.e., DW numbers) and volume of waste that could be managed by each TSD unit is contained in the HF Part A. Part A permit application information is based primarily on process information with additional information provided by waste sampling and analysis programs.

3.1.1 Land Disposal Restrictions

Dangerous waste and the dangerous waste component of mixed waste on the Hanford Facility are subject to LDR requirements contained in 40 CFR 268, WAC 173-303-140, Condition II.S of the HF RCRA Permit (DW Portion), Condition II.G of the HF RCRA Permit (HSWA Portion), and in Section 6.1 and Milestone M-26-00 of the Tri-Party Agreement Action Plan. Under the regulations, waste is prohibited from land disposal unless the waste meets treatment standards specified in 40 CFR 268, Subpart D or meets requirements for a treatability variance. In addition, certain hazardous debris that have been contaminated with a listed hazardous waste may be excluded if managed pursuant to 40 CFR 261.3(f) and WAC 173-303-070(2)(c). Other environmental media, such as soils contaminated with listed waste, may be excluded from regulation if a determination is made by Ecology that the soil no longer contains a hazardous waste (i.e., contained-in determination).

The specified technologies for treatment of LDR waste are identified in the regulations for some waste in lieu of meeting a specific concentration requirement. While treatment capability generally exists for the dangerous waste subject to LDR, treatment currently is not available for most of the mixed waste subject to LDR that requires storage on the Hanford Facility. Provisions in the Tri-Party Agreement and in the *Federal Facility Compliance Act of 1992* (refer to Chapter 13.0, Section 13.1.1.2) allow for storage of land disposal restricted waste until treatment and disposal capability is available. A brief summary of LDR provisions, described in Section 6.1 of the Tri-Party Agreement Action Plan, follows.

In fulfillment of Section 6.1 and Milestone M-26-00 of the Tri-Party Agreement Action Plan, the DOE-RL submitted to Ecology and the EPA in October 1990 the *Hanford Land Disposal Restrictions Plan for Mixed Wastes* (LDR Plan) (DOE/RL-90-41). This plan described a process for managing mixed waste subject to LDR and identified actions to be taken by the DOE-RL to achieve full compliance with LDR requirements. These actions are to be in accordance with approved schedules specified in the LDR Plan and in the work schedule found in Appendix D of the Tri-Party Agreement Action Plan. The DOE-RL submits annual reports (e.g., DOE/RL--99-01) updating the LDR Plan and any prior annual reports, including plans and schedules (refer to Chapter 12.0, Section 12.1.39). The annual report also describes activities taken to achieve compliance and describes the activities to be taken in the next year toward achieving full compliance.

Should it become necessary to seek an exemption from a disposal prohibition pursuant to 40 CFR 268.6; an extension to the effective date of any land disposal restriction pursuant to 40 CFR 268.5; a variance from a treatment standard pursuant to 40 CFR 268.44; an equivalent technology pursuant to 40 CFR 268.42(c); and/or an exemption pursuant to WAC 173-303-140(6), the records documenting the quantities and date each waste was placed under such exemption, extension, or variance will be maintained as required by WAC 173-303-380(1)(i).

The TSD units will follow the provisions of their waste analysis plans (refer to Section 3.2) to determine which, if any, LDR apply to their waste. Waste analysis plan provisions for 'operating' TSD units are found in the Unit-Specific Portion of this permit application.

3.1.2 Air Emissions

Air emissions from the Hanford Facility are required to be addressed under the dangerous waste regulations (WAC 173-303-690 and -691) and RCRA (40 CFR 264 Subpart AA, BB, and CC). Information pertaining to these requirements is included in Chapter 4.0, Section 4.10.

3.1.3 Waste in Piles [C-1a]

Waste piles and containment buildings associated with TSD units 'undergoing closure' and with units being 'dispositioned through other options' are shown in Chapter 1.0, Table 1-1.

3.1.4 Landfilled Wastes [C-1b]

Currently only one 'operating' TSD unit, the LLBG, is classified as a landfill. Information for this unit, currently operating under interim status, is found in the HF Part A, in Chapter 4.0 of the General Information Portion (refer to Section 4.1.2.8), and in the Unit-Specific Portion (DOE/RL-88-20). Landfills associated with TSD units 'undergoing closure' and with units being 'dispositioned through other options' are shown in Chapter 1.0, Table 1-1, and briefly described in Chapter 2.0, Section 2.5, and in Chapter 4.0, Section 4.1.2.8.

3.1.5 Wastes Incinerated and Wastes Used in Performance Tests [C-1c]

No incinerator units currently are found on the Hanford Facility. If incinerator units are established in the future, and if waste is used in performance tests, information for each unit will be entered into the HF Part A and into the Unit-Specific Portion of this permit application.

3.2 WASTE ANALYSIS PLAN [C-2]

This section contains a discussion of waste analysis plans and related quality assurance information. The TSD units incorporated into Part III of the HF RCRA Permit (DW Portion) will address waste analysis and quality assurance in accordance with Conditions II.D. and II.E. of the HF RCRA Permit (DW Portion), respectively, and/or in accordance with any unit-specific conditions.

The WAC 173-303-300 requires a facility owner or operator to confirm the knowledge about a dangerous waste before this waste is treated, stored, and/or disposed. The purpose for such knowledge is to ensure that this dangerous waste is managed properly. Waste analysis plans contained in the Unit-Specific Portion of this permit application address the requirements of WAC 173-303-300(5). For TSD units that receive waste from offsite sources, the waste analysis plan includes measures for confirming that each dangerous waste received matches the identity of the waste specified on the accompanying manifest or shipping paper in accordance with WAC 173-303-300(5)(g).

Development and/or revision of TSD unit-specific waste analysis plans generally are carried out using guidance provided by the EPA (EPA/PB94-963-603). The data quality objective (DQO) process developed by the EPA (EPA/600/R-96/055) is a key tool in determining the type, quantity, and quality of data needed to support waste analysis. For Hanford Facility TSD units, DQOs are developed jointly between unit-specific representatives and the regulators in DQO workshops. The DQOs identify data needed for proper waste handling and treatment along with any data needed to ensure protection of the environment. After identification of the data needed, the appropriate parameters, sampling and analytical methods, and quality assurance levels are selected. Where possible, sampling and analytical methods will be conducted in accordance with SW-846 (EPA/230/02-89-042) or WAC 173-303-110. However, because of the radioactive nature of the mixed waste, sampling and analytical methods could be modified, from those published by EPA and Ecology, to accommodate the special handling needs of mixed waste samples; the intent of EPA's and Ecology's methodologies will be attained where feasible and appropriate.

As noted in Condition II.E.5. of the HF RCRA Permit (DW Portion), the DQO process can be used to determine the level of quality assurance and quality control for the collection, preservation, transportation, and analysis of each sample that is required for the implementation of the HF RCRA Permit. The DQOs are approved by Ecology, in writing, or through incorporation of the TSD unit waste analysis plans into Part III of the HF RCRA Permit (DW Portion).

Additional information on the quality assurance and quality control for individual TSD units can be found in the Unit-Specific Portion of this permit application. The information is integrated, as appropriate, with the quality assurance and control program discussed in Article XXXI of the Tri-Party Agreement and Sections 6.5 and 7.8 and Appendix F of the Tri-Party Agreement Action Plan. The Tri-Party Agreement reiterates the commitment to the DQO process as a means of specifying the appropriate levels of quality assurance and quality control.

Specific activities for each 'operating' TSD unit are governed by procedures. In accordance with WAC 173-303-806(4)(a)(ii), a description of procedures pertinent to dangerous waste management activities could be incorporated into the HF RCRA Permit (DW Portion).

Conditions II.F. and II.K. of the HF RCRA Permit (DW Portion) address groundwater monitoring and closure performance standards, respectively. Of particular relevance to the quality assurance and quality

control of these activities are environmental investigation instructions. The environmental investigation instructions applicable to each 'operating' TSD unit are briefly described in the Unit-Specific Portion of this permit application. Current copies of these instructions are maintained on file and can be located by accessing the 'Records Contacts' identified in Chapter 12.0, Section 12.1.

3.3 MANIFEST SYSTEM [C-3]

The Hanford Facility manages dangerous and/or mixed waste from both onsite and offsite sources. Management of waste received from, or sent to, offsite sources is addressed in this section; managing of waste from onsite sources is addressed in Section 3.4.

Offsite shipments of dangerous and/or mixed waste to and from the Hanford Facility are subject to the manifest system requirements specified in WAC 173-303-370 and -180, respectively. The TSD units incorporated into Part III or Part V of the HF RCRA Permit (DW Portion) will address manifest system requirements in accordance with Conditions I.E.17., I.E.18., II.N., and II.P. of the HF RCRA Permit (DW Portion) and/or in accordance with any unit-specific conditions.

Additional manifest system information specific to individual TSD units can be found in the Unit-Specific Portion of this permit application. Manifest system records for TSD units incorporated into Part III or Part V of the HF RCRA Permit (DW Portion) are maintained on file (refer to Chapter 12.0, Section 12.1) and can be located by accessing the 'Records Contacts' identified in Chapter 12.0, Section 12.1.

3.3.1 Procedures for Receiving Shipments [C-3a]

The Hanford Facility receives dangerous and mixed waste from offsite (including foreign) sources. Such waste is subject to the manifest system requirements specified in WAC 173-303-370 and to the reporting requirements specified in WAC 173-303-390(1) and WAC 173-303-390(2). The TSD units incorporated into Part III of the HF RCRA Permit (DW Portion) will receive offsite waste in accordance with Condition II.N. of the HF RCRA Permit (DW Portion) and/or in accordance with any unit-specific conditions.

Notification for foreign waste receipt is made in accordance with WAC 173-303-290. Notification of subsequent shipments of the same waste from the same foreign source in the same calendar year is not required.

3.3.2 Response to Significant Discrepancies [C-3b]

Appendix 2B contains a definition of 'Significant Discrepancy' taken from the HF RCRA Permit (DW Portion). The TSD units incorporated into Part III of the HF RCRA Permit (DW Portion) will respond to significant discrepancies in accordance with WAC 173-303-370(4) and WAC 173-303-390(1), Conditions I.E.17. and I.E.18. of the HF RCRA Permit (DW Portion), and/or in accordance with any unit-specific conditions.

3.3.3 Provisions for Non-acceptance of Shipment [C-3c]

This section addresses non-acceptance of undamaged shipments and activation of the contingency plan for damaged shipments.

3.3.3.1 Non-acceptance of Undamaged Shipment [C-3c(1)]

Provisions for non-acceptance of shipments are contained in WAC 173-303-370(5). The TSD units incorporated into Part III of the HF RCRA Permit (DW Portion) will address these provisions in accordance with WAC 173-303-370(5) and WAC 173-303-390(1), Conditions I.E.17., I.E. 18., and

II.P.1. of the HF RCRA Permit (DW Portion), and/or in accordance with any unit-specific conditions. Additional discussion of waste acceptance criteria for 'operating' TSD units is contained in the Unit-Specific Portion of this permit application.

3.3.3.2 Activation of Contingency Plan for Damaged Shipment [C-3c(2)

Attachment 4 of the HF RCRA Permit (DW Portion) contains the *Hanford Emergency Management Plan* (DOE/RL-94-02). As specified in Condition II.A. and Attachment 3 of the HF RCRA Permit (DW Portion), the *Hanford Emergency Management Plan* applies to operating TSD units incorporated into Part III of the HF RCRA Permit (DW Portion), TSD units undergoing closure or post closure in Part V, and Part VI of the HF RCRA permit (DW Portion), and areas of the Hanford Facility between TSD unit boundaries to the extent of hazardous substance releases that threaten human health or the environment Furthermore, the environment. As stated in the *Hanford Emergency Management Plan* (DOE/RL-94-02). The hazardous substance releases are limited to transportation events occurring on the Hanford Facility.

TSD units incorporated into Part III of the HF RCRA Permit (DW Portion) will address damaged shipment response in accordance with the contingency plan documentation developed for each TSD unit.

3.4 TRACKING SYSTEM [C-4]

The Hanford Facility has one EPA/State identification number and is considered to be a single RCRA facility. The boundaries of the Hanford Facility, as defined in Attachment 2 of the HF RCRA Permit (DW Portion), are shown in Chapter 2.0, Figure 2-1; roadways on the Hanford Facility are shown in Chapter 2.0, Figure 2-10. With the exception of conditions specified in Condition II.P.2 of the HF RCRA Permit (DW Portion), transportation along these roadways is considered to be onsite. Condition II.P.2. of the HF RCRA Permit (DW Portion) defines transportation of dangerous waste along State Highways 240, 24, and 243, and Route 4 South (Stevens Drive) (Chapter 2.0, Figure 2-10) to be offsite shipments requiring manifesting, unless such routes are closed to general public access at the time of the shipment.

Onsite transfers of dangerous or mixed waste are not subject to the manifesting requirements specified in WAC 173-303-370 and -180. However, all onsite waste transfers are conducted in a manner to ensure protection of human health and the environment. Waste tracking forms for the transfer of waste onsite are used. These waste tracking forms effectively track waste inventories from generation through treatment, storage, and/or disposal.

The TSD units incorporated into Part III of the HF RCRA Permit (DW Portion) will address onsite transportation in accordance with Conditions II.Q. of the HF RCRA Permit (DW Portion) and/or in accordance with any unit-specific conditions. Condition II.Q. of the HF RCRA Permit (DW Portion) specifies that documentation must accompany any onsite dangerous waste that is transported to or from any TSD unit subject to the HF RCRA Permit through or within the 600 Area unless the roadway is closed to general public access at the time of shipment. Waste transported by rail or by pipeline is exempt from Condition II.Q. of the HF RCRA Permit (DW Portion). Onsite waste tracking records for TSD units incorporated into Part III of the HF RCRA Permit (DW Portion) are maintained on file and can be located by accessing the 'Records Contacts' identified in Chapter 12.0, Section 12.1.

3.5 OTHER WASTE ANALYSIS DOCUMENTATION

Part of the activities associated with closure implementation for a TSD unit is to perform a DQO process (refer to Section 3.2 and Chapter 11.0, Section 11.1.2). This process assists in determining the data needs for closure. The results of the DQO process are documented in a signed DQO agreement or in a sampling and analysis plan (SAP). Sampling and analysis activities are carried out in accordance with the SAP. Once the sampling activities are completed, and the analytical data validated, a report is prepared that

evaluates the data. The report contains a recommendation on whether or not clean closure can be achieved. Condition II.D.1. of the HF RCRA Permit (DW Portion) addresses the need for a SAP for TSD units included in Part V.

3.5.1 Sampling and Analysis Plan

A SAP is prepared to document the DQO strategy developed to support closure of a TSD unit. The SAP describes the type of media that will be sampled, i.e., soil, concrete, gravel, or asphalt. The sample locations, number of samples per location, and the constituents that will be analyzed for also are discussed. In addition, the procedures that will be used to take the samples and prepare the samples for shipment to the laboratory are identified. The types of analytical methods that will be used by the laboratory are listed. Various tables and figures are included in the plan that support discussions on where samples will be taken, what constituents will be analyzed, and the number of samples.

3.5.2 Data Evaluation Report

A data evaluation report is prepared once the data have been analyzed and the results have been validated. This report discusses the sampling activities undertaken and the analytical results from the media sampled to support the closure of a TSD unit. The sample collection methods and field quality assurance and control methods are reviewed. Any field deviations from the SAP that occurred are documented in the report. The previously agreed upon closure performance standards or cleanup levels are identified. Results of the data validation for each sample analyte are discussed. The analytical data are evaluated and organized into categories; for example, organics, metals, and/or anions. Finally, a conclusion section is prepared that states the results of comparing the analytical data with the closure performance standards or cleanup levels. This comparison serves as the basis for a decision on whether or not clean closure can be achieved. Various tables also are included that contain information on the analytical results for each sample, data validation qualifiers for each sample, and a comparison of the data for each sample to the associated closure performance standards or cleanup levels.

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4.0 PROCESS INFORMATION [D]

This chapter provides general process information on the management of dangerous waste and mixed waste for Hanford Facility TSD units and addresses the provisions identified in Section D of Ecology's permit application guidance (Ecology 1987 and 1996). Also addressed are provisions contained in Conditions II.L., II.R., II.U., and II.V. of the HF RCRA Permit (DW Portion).

A brief description of process information for 'operating' TSD units is provided. A brief description of process information for TSD units 'undergoing closure' and for units being 'dispositioned through other options' is found in Chapter 2.0, Section 2.5.

Also included is a discussion of the processes used to control design and operational information, and the method for transmitting design and operational changes to the regulators. In addition, a discussion of certification is included, as it pertains to supporting certain RCRA and dangerous waste permitting activities. Furthermore, mapping and marking activities conducted to meet HF RCRA Permit (DW Portion) requirements are summarized.

Activities conducted on the Hanford Facility that involve only the management of radioactive waste are not considered by the DOE to be regulated under the RCRA or WAC 173-303 and, therefore, are not fully addressed in this chapter (refer to Chapter 2.0, Section 2.1.1.3.1). References to such activities are included for informational purposes only.

4.1 OVERVIEW

The Hanford Facility treats, stores, and/or disposes of dangerous and mixed waste generated on the Hanford Facility. Mixed waste generated offsite also is managed within certain TSD units. The Hanford Facility 'operating' TSD units are located in the 200, 300, 400, and 600 Areas (refer to Chapter 1.0, Table 1-1 and Appendix 2A). These TSD units are described briefly, by area, in the remainder of this section. For each of the 'operating' TSD units, the following information is provided: the classification of the TSD unit (e.g., surface impoundment, container storage unit, etc.); the type of waste processed at the TSD unit (dangerous and/or mixed waste); and a brief description of the waste management process or processes conducted at the TSD unit. Information presented in this chapter has been compiled from existing documents with the primary sources of information as follows: the HF Part A, the Tri-Party Agreement, the *Hanford Mission Plan* (DOE/RL-93-102), and the *Hanford Site Environmental Permitting Status Report* (DOE/RL-96-63).

More detailed process information for 'operating' TSD units is presented in the HF Part A, Form 3s (refer to Chapter 1.0). These Form 3s contain an identification of specific dangerous waste numbers, process design capacities, and estimated annual quantities of waste handled.

Management of 'operating' TSD units is conducted in accordance with the current Hanford Missions (refer to Chapter 2.0, Section 2.1.1.4): to safely clean up and manage the legacy waste on the Hanford Site, and to develop and deploy science and technology (DOE/RL-96-92). To facilitate achievement of the Hanford Mission, work generally is organized into one of the following projects:

- River Protection
- Waste Management
- River Corridor
- Nuclear Material Stabilization
- Fast Flux Test Facility
- Environmental Restoration
- Science and Technology.

The relationship of 'operating' TSD units to the Hanford Mission and to onsite projects also is described. All TSD units discussed, except where noted, will operate under interim status until incorporated into the HF RCRA Permit (DW Portion) in accordance with the Class 3 Permit Modification Schedule (refer to Chapter 2.0, Section 2.1.1.3.3).

4.1.1 100 Areas

The 100 Areas contain no 'operating' TSD units.

4.1.2 200 Areas

The 200 East and 200 West Areas encompass the chemical separations plants used for the reprocessing of nuclear materials. These reprocessing plants generated various dangerous and mixed waste that was discharged to the soil column or stored in underground storage tanks (referred to as tank farms). The original mission for the plants in the 200 Areas was in support of nuclear weapons development and production related to national defense. The end of the Cold War prompted the shutdown of chemical separations activities supporting this original mission.

Most of the 'operating' TSD units are located in the 200 East and/or 200 West Areas (refer to Chapter 2.0, Figure 2-1 and Appendix 2A). A brief description of the 'operating' TSD units located in the 200 Areas is provided in the following sections.

4.1.2.1 Double-Shell Tank System

Mixed waste is managed in the DST System, a tank treatment and storage unit located in the 200 Areas. The DST System includes 28 tanks of approximately 4,000,000-liter capacity, six smaller tanks in concrete vaults, ancillary equipment such as diversion boxes and waste transfer pipelines, and the 204-AR Waste Unloading Station (204-AR) (refer to Section 4.1.2.2). The DST System waste is treated by the addition of chemicals to control corrosion, by mixing using equipment such as airlift circulators or pumps, and could be treated by evaporation in four of the aging waste tanks (Appendix 2B). However, there are no future plans to perform evaporation in these tanks. The waste eventually will be retrieved, treated as necessary, and disposed (DOE/RL-93-102; Tri-Party Agreement).

The DST System currently is managed under the River Protection Project. Part B documentation for the DST System is contained in the Unit-Specific Portion of this permit application (DOE/RL-90-39).

4.1.2.2 204-AR Waste Unloading Station

The 204-AR is a miscellaneous treatment unit located in the 200 East Area. This unit is used for the unloading and treatment of liquid mixed waste received from railroad tank cars and tanker trucks. The waste is generated from a variety of activities conducted in the 100, 200, 300, and 400 Areas. During unloading operations, the pH of the waste can be adjusted chemically in-line during pump out to meet the corrosion protection requirements of the DST System.

The 204-AR currently is managed under the River Protection Project. The 204-AR will be addressed in Part B permit application documentation for the DST System (DOE/RL-90-39).

4.1.2.3 242-A Evaporator

The 242-A Evaporator is a tank treatment and storage unit located in the 200 East Area. The 242-A Evaporator consists of process vessels and support systems for heating, evaporating, and condensing waste stored in the DST System. Thus, processing of waste through the 242-A Evaporator enables additional tank volume to become available to support such site activities as surplus facility decontamination, waste retrieval from DST and SST tanks, and waste vitrification. The

242-A Evaporator receives a mixed waste stream from the DST System that contains radionuclides, inorganic, and trace organic constituents. Treatment of the waste at the 242-A Evaporator results in two mixed waste streams. One mixed waste stream (slurry) contains the majority of the radionuclides and inorganic constituents and the nonvolatile organics. The other mixed waste stream (process condensate) contains greatly reduced concentrations of radionuclides and volatile organics. The slurry is routed back to the DST System for storage pending further treatment. The process condensate is routed to the Liquid Effluent Retention Facility (LERF) (refer to Section 4.1.2.4) for storage and treatment until transferred to the 200 Area ETF (refer to Section 4.1.2.5) for final treatment.

The 242-A Evaporator currently is managed under the Waste Management Project (200 Area Liquid Waste Processing Facilities). The 242-A Evaporator (based on documentation contained in DOE/RL-90-42) was incorporated into the HF RCRA Permit (DW Portion) and is currently operating under final status provisions contained in Chapter 5 of Part III of the HF RCRA Permit.

4.1.2.4 Liquid Effluent Retention Facility

The LERF, located in the 200 East Area, is classified as a surface impoundment. The LERF provides treatment and storage of 242-A Evaporator process condensate and dilute aqueous waste streams from other waste management and remediation activities. Treatment is performed by flow and pH equalization of the waste to improve 200 Area ETF performance. The wastewater is stored and treated until transferred to the 200 Area ETF for treatment. The LERF is a retention facility consisting of three basins (surface impoundments). Each basin is constructed with two liners, a leachate collection system between the liners, and a floating cover.

The LERF currently is managed under the Waste Management Project (200 Area Liquid Waste Processing Facilities). The LERF (based on documentation contained in DOE/RL-97-03) was incorporated into the HF RCRA Permit (DW Portion) and is currently operating under final status provisions contained in Chapter 4 of Part III of the HF RCRA Permit.

4.1.2.5 200 Area Effluent Treatment Facility

The 200 Area ETF is a tank and container treatment and storage unit located in the 200 East Area. This TSD unit treats and stores 242-A Evaporator process condensate and dilute aqueous waste streams from other-waste management and remediation activities. The 200 Area ETF contains a series of systems to reduce the concentration of organic, inorganic, and radioactive constituents (except tritium).

The 200 Area ETF process involves two treatment trains. The waste water enters the primary treatment train where the inorganic and radioactive constituents are removed, and organic constituents are destroyed. The components of the primary treatment train include, but are not limited to, filtration, pH adjustments, ultraviolet light oxidation, reverse osmosis, and ion exchange. Treated effluent is collected in tanks, sampled to verify that discharge requirements have been met, and discharged to an approved disposal site. Once the discharge requirements have been met, the treated effluent is considered delisted and is no longer managed as a dangerous waste (40 CFR 261, Appendix IX, Table 2). The solids that are removed from the waste water enter the secondary treatment train where the solids are dried and packaged for storage and/or disposal.

The 200 Area ETF currently is managed under the Waste Management Project (200 Area Liquid Waste Processing Facilities). The 200 Area ETF (based on documentation contained in DOE/RL-97-03) was incorporated into the HF RCRA Permit (DW Portion) and is currently operating under final status provisions contained in Chapter 4 of Part III of the HF RCRA Permit.

4.1.2.6 Central Waste Complex

The CWC is located in the 200 West Area. This storage and treatment unit consists of multiple storage structures (e.g., storage modules, buildings, and storage pads). Treatment includes absorption and solidification of free liquids, neutralization of corrosive materials, and stabilization and encapsulation of solid waste matrices. The CWC provides the capacity to store onsite and offsite mixed waste, low-level waste, transuranic waste, and *Toxic Substance Control Act* polychlorinated biphenyl (PCB) waste.

The CWC currently is managed under the Waste Management Project (Solid Waste Storage and Disposal). Part B documentation for the CWC is contained in the Unit-Specific Portion of this permit application (DOE/RL-91-17).

4.1.2.7 Waste Receiving and Processing Facility

The WRAP will treat and store mixed waste, low-level waste, and transuranic waste. This TSD unit, located in the 200 West Area directly north of the CWC, will have the capability to change the physical form of the radioactive and/or mixed waste through compaction (volume reduction), repackaging, stabilization, solidification of liquids, neutralization, etc. The treated transuranic waste eventually will be transported for disposal at the Waste Isolation Pilot Plant in New Mexico (when this plant becomes operational) or to another transuranic waste disposal site.

The WRAP currently is managed under the Waste Management Project (Solid Waste Project). Part B documentation for WRAP is contained in the Unit-Specific Portion of this permit application (DOE/RL-91-16).

4.1.2.8 Low-Level Burial Grounds

The LLBG are a land-based unit consisting of eight burial grounds located in the 200 East Area and 200 West Area. Seven of the eight burial grounds (218-E-12B, 218-E-10, 218-W-3A, 218-W-3AE, 218-W-4C, 218-W-5, and 218-W-6) are, or will be, used for the disposal of mixed waste and are subject to WAC 173-303. Current plans call for designating one of the burial grounds (218-W-4B), and portions of burial grounds 218-E-10, 218-E-12B, 218-W-3A, 218-W-3AE, 218-W-4C, and 218-W-5 as SWMUs (Appendix 2A). These areas received solid waste prior to enactment of HSWA as described in Chapter 2.0, Section 2.5.1. The SWMU portions of the LLBG will continue to accept for disposal low-level (radioactive) waste only.

The LLBG consist of both lined and unlined trenches of various sizes and depths. Mixed waste is disposed in lined trenches or in unlined trenches for which an exemption from the liner/leachate collection system requirements is sought. The unlined trenches that are not exempt from liner/leachate collection system requirements are used for radioactive waste disposal and are not subject to RCRA or WAC 173-303 regulations. Trenches 31 and 34 of the 218-W-5 Burial Ground are currently being for greater than 90-day container storage. At a future date these trenches will be managed in a disposal configuration.

The LLBG currently is managed under the Waste Management Project (Solid Waste project). Part B documentation for the LLBG is contained in the Unit-Specific Portion of this permit application (DOE/RL-88-20).

4.1.2.9 T Plant Complex

The T Plant Complex consists of two main structures: the 221-T Building and the 2706-T Building and various support structures and storage units. The T Plant Complex provides storage (tank, container, and miscellaneous equipment) and treatment (tank, container, and decontamination activities) of mixed (radioactive and dangerous) waste before transfer to an onsite TSD unit or an offsite TSD facility. Types

of waste processing at these buildings and various support structures or units could include characterization, verification, assay, sampling and analysis, repackaging, and various treatments. Waste equipment or useable equipment could be stored temporarily, and treatment or decontamination of equipment could be performed at various facilities at the T Plant Complex.

The tank systems housed in the 221-T building are used to manage mixed waste. The tank systems are used to store and treat waste generated by equipment decontamination activities and other treatment activities in the 221-T and 2706-T Buildings. The 2706-T Building waste is transferred to the 221-T Building via the 211-T collection sump. Alternatively, the 2706-T Building waste could be pumped directly to a railroad tank car or tanker truck. The liquid waste is pumped from the tanks to a railroad tank car or tanker truck and transferred to an onsite TSD unit or an offsite TSD Facility when a sufficient quantity is collected. The liquid mixed waste also could be transferred from storage tanks by underground pipelines to the DST System.

The T Plant Complex currently is managed under the Waste Management Project (Solid Waste Project). Part B documentation for the T Plant Complex is contained in the Unit-Specific Portion of this permit application (DOE/RL-95-36).

4.1.2.10 PUREX Storage Tunnels

The PUREX Facility, located in the 200 East Area, consists of two separate TSD units, the PUREX Plant (202-A Building) (refer to Chapter 2.0, Section 2.5.2.1.1) and the PUREX Storage Tunnels, a miscellaneous storage unit. The PUREX Storage Tunnels include two underground railroad storage tunnels used for the long-term storage of material removed from the PUREX Plant and from other onsite activities. Tunnel number 1 provides storage space for eight railroad cars. Between June 1960 and January 1965, all eight railroad car positions were filled and the tunnel subsequently sealed. Tunnel Number 2 provides storage space for 40 railroad cars. The first railroad car was placed in Tunnel Number 2 in December 1967. Space for additional railroad cars is still available in Tunnel Number 2.

The PUREX Storage Tunnels currently are managed under the River Corridor Project. The PUREX Storage Tunnels (based on documentation contained in DOE/RL-90-24) was incorporated into the HF RCRA Permit (DW Portion) and currently is operating under final status provisions contained in Chapter 3 of Part III of the HF RCRA Permit.

4.1.2.11 222-S Laboratory Complex

The 222-S Laboratory Complex has a tank storage/treatment unit and container storage units located in the 200 West Area. The 222-S Laboratory Complex provides analytical support services for the Hanford Site and includes the storage and treatment of dangerous and/or mixed waste generated during analytical operations. The 222-S Laboratory Complex consists of four areas: the 219-S Waste Handling Facility, the 222-S Dangerous and Mixed Waste Storage Area, and Room 2-B Storage (222-S DMWSA), Room 2-B, and Room 4-E storage areas.

The 219-S Waste Handling Facility is located north of the 222-S Analytical Laboratory and consists of three active storage/treatment tanks. Liquid mixed waste-flows by gravity to the 219-S Waste Handling Facility tanks where the waste is treated to adjust the pH before transfer to an onsite TSD unit or offsite TSD Facility.

The 222-S DMWSA is located on the north side of the 222-S Analytical Laboratory building. The 222-S DMWSA consists of two metal storage structures resting on a concrete pad. The 222-S DMWSA provides storage for various sized containers or other packages and overpacks of mixed and/or dangerous waste.

In addition, a portion of Room 2-B, and Room 4-E, located within the 222-S Analytical Laboratory, provides for container storage of various sized containers or other packages and overpacks of mixed waste.

The 222-S Laboratory Complex is managed under Fluor Hanford Analytical Services. The Part B Permit Application for the 222-S Laboratory Complex is scheduled to be included in the HF RCRA Permit Modification Package (Mod. F).

4.1.3 300 Area

The 300 Area historically was used for the fabrication of the 100 Areas reactor fuels and for the main RD&D activities. Fuel fabrication activities ceased when N Reactor was placed in standby and shutdown. Current activities include RD&D supporting the waste management and environmental restoration and remediation mission, including the development of new technologies for the treatment and disposal of the waste accumulated throughout the life of the Hanford Site. A brief description of the two 'operating' TSD units located in the 300 Area follows.

4.1.3.1 325 Hazardous Waste Treatment Units

The 325 HWTUs are contained within the 325 Building that is located within the 300 Area. The 325 HWTUs consist of three units: the Hazardous Waste Treatment Unit (HWTU), the Shielded Analytical Laboratory (SAL), and the Radioactive Liquid Waste Tank (RLWT) system, which are located in portions of the basement and ground floors. The regulated waste managed in the 325 HWTUs includes dangerous waste that designates as listed waste; waste from nonspecific sources, selected waste from specific sources, characteristic waste, and state-only. Permitted waste treatment processes include pH adjustment, ion exchange, carbon absorption, oxidation, reduction, and waste concentration by evaporation, precipitation, filtration, solvent extraction, phase separation, solids washing, catalytic destruction, and solidification and/or stabilization. The HWTU consists of two rooms on the main floor of the 325 Building (Rooms 520 and 528). Dangerous waste is stored and/or treated in the HWTU. The treatment processes used in the unit are bench-scale operations that are portable and can be conducted at various locations within the HWTU.

RCRA activities at the SAL include storage and treatment of dangerous waste generated during analytical work within the SAL and potentially from other onsite and/or offsite facilities. Operations are conducted by manipulator or other remote equipment. The RLWT system receives liquid mixed waste from the SAL and the HWTU, and from a 90-day tank accumulation system in the 325 Building. Waste is stored and treated in the RLWT prior to transfer to the Double-Shell Tank system for storage.

The 325 HWTUs currently are managed under the Science and Technology Project. The 325 HWTUs (based on documentation contained in DOE/RL-92-35) was incorporated into the HF RCRA Permit (DW Portion) and currently is operating under final status provisions contained in Chapter 6 of Part III of the HF RCRA Permit.

4.1.3.2 305-B Storage Unit

The 305-B is a container storage unit in the 300 Area. This unit is used to receive, store, and prepare dangerous and mixed waste for shipment. Waste managed at the 305-B is generated primarily in support of RD&D activities. Waste is characterized by the generating unit as required for designation and transported to the 305-B by truck or light utility vehicle. On receipt at the 305-B, the waste is placed into the proper storage area depending on the waste type and quantity. When a sufficient quantity of waste has been accumulated, the waste is inspected for shipment, and transported to an onsite TSD unit (for mixed waste, e.g., CWC; refer to Section 4.1.2.6) or an offsite TSD facility (for dangerous waste).

The 305-B currently is managed under the Science and Technology Project. The 305-B (based on documentation contained in DOE/RL-90-01) was incorporated into the initial HF RCRA Permit (DW Portion) and is operating under final status provisions contained in Chapter 2 of Part III of the HF RCRA Permit (DW Portion).

4.1.4 400 Area

The 400 Area contains no 'operating' TSD units.

4.1.5 600 Area

The 600 Area includes everything within the Hanford Facility boundary that is not within any other specific area (Chapter 2.0, Figure 2-2).1. At the present time, there are no 'operating' TSD units in the 600 Area.

4.2 CONTAINERS [D-1]

The Hanford Facility 'operating' TSD units with container handling capabilities (refer to Chapter 1.0, Table 1-1) include the following:

- 200 Area ETF
- CWC
- WRAP
- T Plant Complex
- 222-S Laboratory Complex
- 325 HWTUs
- 305-B
- LLBG.

The T Plant Complex also includes a containment building.

4.3 TANK SYSTEMS [D-2]

The Hanford Facility 'operating' TSD units with tank systems (refer to Chapter 1.0, Table 1-1) include the following:

- DST System
- 242-A Evaporator
- 200 Area ETF
- T Plant Complex
- 222-S Laboratory Complex
- 325 HWTUs.

4.4 WASTE PILES [D-3]

No Hanford Facility 'operating' TSD units currently are classified as waste piles.

4.5 SURFACE IMPOUNDMENTS [D-4]

The LERF is the only Hanford Facility 'operating' TSD unit classified as a surface impoundment (refer to Chapter 1.0, Table 1-1).

4.6 INCINERATORS [D-5]

No Hanford Facility 'operating' TSD units currently are classified as incinerators.

4.7 LANDFILLS [D-6]

The LLBG are the only Hanford Facility 'operating' TSD unit classified as a landfill (Chapter 1.0, Table 1-1).

4.8 LAND TREATMENT [D-7]

No Hanford Facility 'operating' TSD units currently are classified as land treatment units.

4.9 MISCELLANEOUS UNITS

The PUREX Storage Tunnels and WESF are the only Hanford Facility 'operating' TSD units classified as miscellaneous units (refer to Chapter 1.0, Table 1-1).

4.10 AIR EMISSIONS CONTROL [D-8]

Air emissions released from certain or applicable Hanford Facility TSD units are regulated under the dangerous waste regulations (WAC 173-303-690 and -691) and RCRA (40 CFR 264 Subpart AA, BB, and CC). The following sections discuss air emissions on the Hanford Facility.

4.10.1 Process Vents [D8-8a]

Hanford Facility process vents associated with specific separation processes identified in WAC 173-303-690(1)(b), which are used to manage hazardous waste with organic concentrations of at least 10 parts per million by weight, are regulated under WAC 173-303-690. Threshold limits that require emission controls apply to the summation of all applicable emission sources for the entire Hanford Facility.

To determine whether the threshold limits are exceeded, thereby requiring emission controls, the applicable processes were identified first for each TSD unit. Of the Hanford Facility TSD units, only the 242-A Evaporator and 200 Area ETF currently operate processes that contribute to the Hanford Facility organic emissions release rate.

Estimates for a 1995 242-A Evaporator campaign (Campaign 95-1) yielded a maximum emission rate of 0.316 kilogram per hour and a 212-kilogram total release (WHC-SD-WM-PE-056). Future plans are to operate an average of two campaigns per year with organic emissions similar to Campaign 95-1. Performance tests for volatile organic compound emissions at the 200 Area ETF were completed in January of 1996. These tests yielded an average emission rate of 0.35 gram per minute measured at stream number G6 of the ventilation offgas system. When combined, the 242-A Evaporator and 200 Area ETF emission rates total 0.337 kilogram per hour. This combined release rate is well below the threshold of 1.4 kilograms per hour or 2,800 kilograms per year.

In summary, the process vents on the Hanford Facility currently do not exceed the threshold limits triggering process controls under the regulations. However, the amount of organic emissions could change as waste streams are changed, or TSD units are brought online or are deactivated. The organic air emissions summation will be re-evaluated periodically as conditions warrant. Further details regarding process vents are discussed in the applicable Unit-Specific Portion of this permit application.

4.10.2 Equipment Leaks [D-8b]

The organic air emissions released from Hanford Facility equipment leaks are regulated under dangerous waste regulations WAC 173-303-691. These regulations apply to equipment that manages hazardous waste with organic concentrations of at least 10 percent by weight. Individual TSD units managing waste with organic concentrations of at least 10 percent by weight include special precautions and equipment to

mitigate air emissions from leakage. Further details specific to individual TSD units can be found in the Unit-Specific Portion of this permit application.

4.10.3 Tanks, Containers, and Surface Impoundments [D-8c]

Certain organic air emissions released from Hanford Facility hazardous waste tanks, containers, and surface impoundments are regulated under 40 CFR 264, Subpart CC. These regulations apply to tanks, containers, and surface impoundments used to manage certain organic-containing hazardous waste. Mixed waste has been deferred from the regulations under Subpart CC. Therefore, only individual TSD units on the Hanford Facility that manage hazardous waste (not mixed waste) will address Subpart CC. Further details specific to individual TSD units can be found in the Unit-Specific Portion of this permit application.

4.11 WASTE MINIMIZATION [D-9]

Waste minimization information is presented in Chapter 10.0.

4.12 GROUNDWATER MONITORING FOR LAND-BASED UNITS [D-10]

Groundwater monitoring for land-based units is presented in Chapter 5.0.

4.13 DESIGN AND OPERATIONAL INFORMATION

This section presents a discussion of the processes used to control design and operational information, and the method for transmitting design and operational changes to the regulators in accordance with the HF RCRA Permit (DW Portion). In addition, a discussion of certification is included, as it pertains to supporting certain RCRA and dangerous waste permitting activities. Furthermore, mapping and marking activities conducted to meet HF RCRA Permit (DW Portion) requirements are summarized.

4.13.1 Transmittal of Design Information to Regulatory Agencies

Design of TSD units on the Hanford Facility is controlled in accordance with an established engineering control system. This system serves as the basis for meeting HF RCRA Permit (DW Portion) design information requirements. Standard engineering practices ensure that uniform methods are in place to control tasks such as design review, configuration control, change control, specification preparation, and review and approval requirements. These practices are used on all engineering, development, and project work on the Hanford Facility that result in a documented design or deliverable hardware end item.

Developments of, and changes to, design specifications and drawings related to TSD units on the Hanford Facility are carried out in accordance with the engineering practices of the contractor responsible for the activity. Although there is some variation among contractors, no work affecting design (excluding emergency response activities that will be conducted in accordance with contingency plans) is allowed to be performed at a TSD unit until an approved design drawing or appropriate engineering design directive has been issued. This process ensures that components and materials selected meet system requirements while providing a means for configuration control.

Condition II.L. of the HF RCRA Permit (DW Portion) establishes general requirements for design and operation of TSD units incorporated into Part III of the HF RCRA Permit, particularly those related to 'critical systems'. 'Critical systems' are defined in the Definitions section of the HF RCRA Permit (DW Portion) as follows:

> *"The term Critical Systems as applied to determining whether a permit modification is required means those specific portions of a TSD unit's structure or equipment whose failure could lead to*

the release of dangerous waste into the environment and/or systems which include processes which treat, transfer, store or dispose of regulated wastes."

Critical systems are defined, as applicable, for each 'operating' TSD unit within the Unit-Specific Portion of this permit application.

Condition II.L.1. of the HF RCRA Permit (DW Portion) addresses the need for proper design, construction, maintenance, and operational controls to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous substances that could threaten human health or the environment. Existing Hanford Site design standards (DOE Order 6430.1A) generally address these requirements and are factored into Hanford Facility design and construction activities.

Condition II.L.2 of the HF RCRA Permit (DW Portion) establishes general requirements for design changes, nonconformance, and as-built drawings. Condition II.L.2.b. of the HF RCRA Permit (DW Portion) requires that during construction of a project subject to the HF RCRA Permit, changes to the approved design, plans, and specifications be documented with an engineering change notice (ECN). Condition II.L.2.b. of the HF RCRA Permit (DW Portion) further requires:

- All ECNs be maintained in the TSD unit-specific portion of the Hanford Facility Operating Record (refer to Chapter 12.0, Section 12.1.35) and be available to Ecology upon request or during the course of an inspection
- Copies of ECNs affecting any critical system be provided to Ecology within 5 working days of initiating the ECN
- Ecology to review an ECN modifying a critical system and inform the Permittees within 2 working days in writing whether the proposed ECN, when issued, will require a Class 1, 2, or 3 permit modification. If after 2 working days Ecology has not responded, it will be deemed as acceptance of the ECN by Ecology.

Condition II.L.2.c. of the HF RCRA Permit (DW Portion) requires that during construction of a project subject to the HF RCRA Permit, any work completed that does not meet or exceed the standards of the approved design, plans and specifications be documented with a nonconformance report (NCR). Condition II.L.2.c. of the HF RCRA Permit (DW Portion) further requires:

- All NCRs be maintained in the TSD unit-specific portion of the Hanford Facility Operating Record (refer to Chapter 12.0, Section 12.1.35) and be available to Ecology upon request or during the course of an inspection
- Copies of NCRs affecting any critical system be provided to Ecology within 5 working days after identification of the nonconformance
- Ecology to review an NCR affecting a critical system and inform the Permittees within 2 working days in writing whether a permit modification is required of any nonconformance and whether prior approval is required from Ecology before work proceeds that affects the nonconforming item. If after 2 working days Ecology has not responded, it will be deemed as acceptance and no permit modification is required.

Condition II.L.2.d. of the HF RCRA Permit (DW Portion) requires that upon completion of a construction project subject to the HF RCRA Permit, as-built drawings be prepared. These as-built drawings are to incorporate the design and construction modifications resulting from all project ECNs and NCRs as well as modifications made pursuant to WAC 173-303-830. Completed as-built drawings are to be placed within the TSD unit-specific portion of the Hanford Facility Operating Record (refer to Chapter 12.0,

Section 12.1.36) within 12 months of completing construction, or within an alternate period of time specified in Part III of the HF RCRA Permit (DW Portion).

On an ongoing basis, a tabulation of design changes [for those TSD units incorporated into Part III of the HF RCRA Permit (DW Portion)] can be located by accessing the 'Records Contact' identified in Chapter 12.0, Section 12.1.

4.13.2 Utilization of Aperture Cards

Design drawings included as part of unit-specific documentation normally will be provided in an 27.9-centimeter by 43.2-centimeter format. Drawings provided in this format, for the most part, will exhibit a sufficient degree of legibility to support document review. In selected cases, it could be necessary to enlarge certain portions of drawings to enhance legibility. To support this need, drawings included as part of unit-specific documentation also will be provided in an aperture card format.

4.13.3 Replacement or Upgrading With Functionally Equivalent Components

All maintenance on the Hanford Facility is controlled and performed in accordance with an established work control system. The work control system ensures that the proper documentation is prepared for the activity, and also provides a means to track work from initiation to completion. The work control system also addresses replacement or upgrading with functionally equivalent materials. This system serves as the basis for meeting HF RCRA Permit (DW Portion) equivalent component requirements.

Condition II.R. of the HF RCRA Permit (DW Portion) establishes general requirements for the substitution of an equivalent or superior product for any equipment or materials specified in the HF RCRA Permit. Use of these products is not considered a permit modification. However, a substitution will not be considered equivalent unless it is at least as effective as the original equipment or materials in protecting human health and the environment.

Condition II.R. of the HF RCRA Permit (DW Portion) also requires substitution documentation to be placed in the TSD unit-specific portion of the Hanford Facility Operating Record within 7 days after the change is put into effect. The substitution documentation is to be accompanied by a narrative explanation, and the date the substitution became effective. The location of substitution documentation for TSD units incorporated into Part III the HF RCRA Permit (DW Portion) can be determined by accessing the 'Records Contact' identified in Chapter 12.0, Section 12.1.

4.13.4 Professional Engineer Certification

Certifications in accordance with WAC 173-303-810(13)(a) by an independent qualified registered professional engineer/registered professional engineer are required to support certain RCRA and dangerous waste permitting activities on the Hanford Facility (e.g., tank integrity assessments, closures, etc.). Certifications will be performed in accordance with practices used by TSD facilities throughout the rest of Washington State. Multiple certifications by the same individual will not nullify the individual's independent status.

4.13.5 Mapping and Marking of Underground Pipelines

Conditions II.U. and II.V. of the HF RCRA Permit (DW Portion) specify requirements for the mapping and marking of underground pipelines, respectively. These conditions apply to dangerous waste underground pipelines, including active, inactive, and abandoned pipelines that contain or contained dangerous waste subject to the provisions of WAC 173-303. The requirements associated with these mapping and marking conditions were further clarified and refined through a value engineering study conducted in May 1995 (ICF KH ENG-W-95-2160).

Condition II.U. of the HF RCRA Permit (DW Portion) specifies a time-phased approach be taken for the mapping of underground pipelines, involving the following:

- Condition II.U.1. of the HF RCRA Permit (DW Portion) required the Permittees to complete a methodology report within 24 months of the effective date of the HF RCRA Permit (i.e., by September 27, 1996). This report (DOE/RL-96-50) was completed and describes the methods used to generate information required by Conditions II.U.2., II.U.3., and II.U.4. of the HF RCRA Permit (DW Portion).

- Condition II.U.2. of the HF RCRA Permit (DW Portion) required the Permittees to complete an initial submittal within 36 months of the effective date of the HF RCRA Permit (i.e., by September 29, 1997). The submittal was completed and consisted of maps showing the location of dangerous waste underground pipelines that are located outside of the fences enclosing the 200 East, 200 West, 300, 400, 100N, and 100K Areas. The maps (aperture cards) showing the location of these pipelines were submitted to Ecology on September 29, 1997.

- Condition II.U.3. of the HF RCRA Permit (DW Portion) required the Permittees to complete an initial submittal within 48 months of the effective date of the HF RCRA Permit (i.e., by September 28, 1998). This submittal-was completed and consists of pipeline schematics for dangerous waste underground pipelines within the 200 East, 200 West, 300, 400, 100N, and 100K Areas. Information that is to accompany these schematics also is specified in Condition II.U.3. of the HF RCRA Permit (DW Portion). These schematics are to be maintained in the Hanford Facility Operating Record (refer to Chapter 12.0, Section 12.1.40) and updated annually. The results of the value engineering study (ICF KH ENG-W-95-2160) determined that the information required by Condition II.U.3. of the HF RCRA Permit (DW Portion) (i.e., pipeline attributes, pipeline status, and direction of flow) could be incorporated into the Condition II.U.4. of the HF RCRA Permit (DW Portion) submittal. Thus, the enhanced Condition II.U.4. of the HF RCRA Permit (DW Portion) submittal satisfied Condition II.U.3. of the HF RCRA Permit (DW Portion).

- Condition II.U.4. of the HF RCRA Permit (DW Portion) required the Permittees to complete an initial submittal within 48 months of the effective date of the HF RCRA Permit (i.e., by September 28, 1998). This submittal consisted of maps showing the location of dangerous waste underground pipelines within the 200 East, 200 West, 300, 400, 100N, and 100K Areas. The methodology report (DOE/RL-96-50) submitted to satisfy Condition II.U.1 provides the methods used to present, qualify, archive, etc. the required information. These maps are to be maintained in the Hanford Facility Operating Record (refer to Chapter 12.0, Section 12.1.40) and updated.

- annually. The maps were updated and incorporated into the Hanford Facility Operating Record on September 30, 1999.

Condition II.V. of the HF RCRA Permit (DW Portion) specified that within 36 months of the effective date of the HF RCRA Permit (DW Portion) (i.e., by September 29, 1997), the pipelines specified in Condition II.U.2. of the HF RCRA Permit (DW Portion) are to be marked. These pipelines are to be marked at the point the pipelines pass beneath a fence enclosing the 200 East, 200 West, 300, 400, 100N, or 100K Areas, at the origin and destination, at any point the pipelines cross an improved road, and every 100 meters along the pipeline corridor where practicable. The markers are to be labeled with a sign that reads "Buried Dangerous Waste Pipe" and visible from a distance of 15 meters. The value engineering study (ICF KH ENG-W-95-2160) concluded that equivalent worded signs, already in place, could be used to meet this condition. Ecology was notified on September 29, 1997 that Permit Condition II.V. was complete.

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5.0 GROUNDWATER MONITORING FOR LAND-BASED UNITS [D-10]

This chapter describes the groundwater monitoring activities for land-based TSD units (dangerous waste surface impoundment, land treatment, or landfill units) by addressing the provisions identified in Section D-10 of Ecology's permit application guidance (Ecology 1987 and 1996). Furthermore, the chapter discusses groundwater monitoring provisions contained in Condition II.F. of the HF RCRA Permit (DW Portion). The general groundwater monitoring information contained in this chapter (e.g., Section 5.3, "Aquifer Identification") need not be duplicated in the Unit-Specific Portion of the *Hanford Facility Dangerous Waste Permit Application,* but can be cross-referenced as appropriate. Pertinent information also can be cross-referenced in preclosure work plan, closure work plan, closure plan, closure/postclosure plan, or postclosure permit application documentation (refer to Chapter 2.0, Section 2.5).

Currently, Hanford Facility RCRA groundwater monitoring activities are structured to provide groundwater monitoring information for individual land-based TSD units. This approach was outlined in the original Tri-Party Agreement and largely has been retained throughout subsequent amendments of the Tri-Party Agreement and throughout interactions with the regulators. This chapter primarily addresses this TSD unit-specific groundwater monitoring approach. However, a need to more fully integrate Hanford Site groundwater monitoring activities has become increasingly evident. Such integration also would support the *Cost and Management Efficiency Initiative* (Ecology et al. 1994). A collaborative effort to develop a groundwater monitoring strategy based on the data quality objective process (EPA540-R-93-0071 and EPA/600/R-96-055)currently is underway. This process is being used to justify why data are being collected, how the data are expected to be used to make decisions, and how much data are needed to meet criteria specified by the stakeholders. The results of this effort will be incorporated through the provision of a revised *Hanford Site Ground Water Protection Management Plan* (DOE/RL-89-12).

A summary of RCRA groundwater monitoring activities on the Hanford Facility is contained in the *Hanford Site Groundwater Monitoring for Fiscal Year* 1997 (PNNL-11793). This report summarizes monitoring information for two land-based 'operating' TSD units, LERF and LLBG (refer to Chapter 4.0, Sections 4.1.2.4 and 4.1.2.8, respectively). A more detailed description of the groundwater programs for these units is contained in the Unit-Specific Portion of this permit application [i.e., DOE/RL-97-03 (LERF) and DOE/RL-88-20 (LLBG)]. The aforementioned *Hanford Site Groundwater Monitoring Report* also summarizes monitoring information for land-based TSD units 'undergoing closure' (refer to Chapter 2.0, Section 2.5). For certain of these TSD units, more detailed information is contained in closure plan/postclosure plan documentation. The content of this chapter focuses on groundwater monitoring for 'operating' TSD units. However, this information also is relevant to TSD units 'undergoing closure'.

Unit-specific groundwater monitoring programs are designed to comply with applicable regulations and agreements for TSD units operating under both interim status (WAC 173-303-400 and WAC 173-303-805) and final status (WAC 173-303-645 and WAC 173-303-806). The following is a generalized discussion of the RCRA groundwater monitoring requirements for a TSD unit. This discussion provides background information relevant to subsequent, more specific groundwater monitoring discussions. In these discussions, the term 'RCRA' refers to both federal and state groundwater monitoring regulations as appropriate.

The RCRA groundwater monitoring programs are implemented under two types of groundwater monitoring regulations: interim status and final status. A land-based TSD unit operating under interim status must have implemented a monitoring program capable of determining the impact of the TSD unit on groundwater quality in the uppermost aquifer beneath the TSD unit. The interim status program can take the form of either detection monitoring or assessment monitoring. An interim status corrective

action order, however, may be issued (by the regulators) when the facility releases hazardous waste to the environment. 'Detection-level' monitoring also is referred to as 'indicator evaluation' monitoring in the regulations for interim status facilities; 'detection-level' is used throughout this chapter to refer to this type of monitoring for both interim status and final status TSD units. At a minimum, an interim status detection monitoring system must include one upgradient and three downgradient groundwater monitoring wells. A generalized configuration for such a system is shown in Figure 5-1. The LLBG and LERF currently are monitored under interim status regulations. Final status groundwater requirements for the LERF, which has been incorporated into the HF RCRA Permit (DW Portion), will take effect when Ecology approves the final status groundwater monitoring plan. Final status groundwater requirements for the LLBG will take effect when this TSD unit is incorporated into the HF RCRA Permit (DW Portion). A groundwater monitoring plan for LLBG that meets final status requirements may be implemented before this time if approved by Ecology.

Before the installation of a detection monitoring system, a groundwater monitoring plan must be developed and followed. This plan details well locations, procedures, requirements for vadose zone and aquifer characterization, and well installation; sample collection, preservation, and transportation; and sample analysis. Chain-of-custody control must be developed and followed. Additionally, relevant components of the DQO process are to be incorporated in a site-specific 120 groundwater monitoring plan and a quality assurance project plan (QAPjP). Methods to be used to interpret groundwater monitoring data also are specified.

Under interim status, groundwater monitoring data obtained from the detection monitoring system are used to establish background groundwater quality through quarterly sampling and analysis of several water quality parameters (as specified in 40 CFR 265.92) for 1 year. After the first year, sampling and analysis must be conducted at least annually for the parameters related to groundwater quality, and semiannually for the indicator parameters related to groundwater contamination (i.e., pH, specific conductance, total organic carbon, and total organic halogen).

If a confirmed statistically significant evidence of contamination (i.e., as revealed in indicator parameters) in the groundwater exists, the regulatory agency is notified and a groundwater quality assessment monitoring plan developed. The objective of assessment monitoring is to determine if dangerous waste or dangerous waste constituents from the regulated unit have entered the groundwater and, if so, the concentration, rate, and extent of migration of the constituents in the groundwater. This determination is achieved through quarterly sampling and could require the installation of additional wells and/or additional sampling of existing wells. Monitoring must continue during the active life of the facility, and for disposal facilities during the postclosure care period unless the regulated unit is to be clean closed.

For final status TSD units, there could be a three-stage groundwater monitoring program that involves detection, compliance, and corrective action, as warranted (EPA-230/02-89-042). A final status detection monitoring system must include both background (generally upgradient) and compliance (generally downgradient) wells (Figure 5-1). Wells installed to support interim status could be used as final status monitoring wells. A groundwater monitoring plan is developed to address each final status monitoring stage, using the DQO process. Also specified in each plan are methods to be used to conduct and interpret groundwater monitoring data. The choice of an appropriate statistical method depends on the monitoring stage and the nature of the data. A flow chart that guides the selection of the appropriate method to be used for data interpretation is presented in Figure 5-2.

The final status detection monitoring program is designed to determine whether a RCRA-regulated unit has adversely affected the groundwater quality in the uppermost aquifer beneath the site. This is accomplished by testing for statistically significant changes in concentrations of constituents of interest in a downgradient monitoring well relative to baseline levels. These baseline levels could be obtained from upgradient (or background) wells, and are referred to as interwell (or between-well) comparisons.

Alternatively, if baseline values are obtained from historical measurements from that same well, the comparisons are referred to as intrawell (or within-well) comparisons. If a statistically significant increase (or pH decrease) over baseline condition occurs in a downgradient compliance well, a compliance monitoring program might be initiated. A compliance monitoring program must be initiated after the owner and/or operator cannot successfully demonstrate that a source other than the regulated TSD unit has caused the contamination or that the increase resulted from an error in sampling, analysis, or evaluation.

In a compliance monitoring program, the monitoring objective is to determine whether groundwater protection standards have been exceeded. This is accomplished by comparing the concentration of a constituent of concern to groundwater protection standards, such as an alternate concentration limit, maximum concentration limit, background, health-based standards, or any other standards that constitute applicable, relevant, and appropriate requirements. Monitoring must continue at the TSD unit, if a detection monitoring is conducted, through the postclosure care period.

A third stage, a corrective action program, is initiated if a groundwater protection standard is exceeded at the point of compliance. Exceeded is defined as statistically significant evidence of increased contamination. Corrective action could consist of additional vadose zone and aquifer characterization and the removal or treatment in place of the dangerous constituents.

The remainder of this chapter includes a more specific discussion of the implementation of Hanford Facility groundwater monitoring activities.

5.1 EXEMPTION FROM GROUNDWATER PROTECTION REQUIREMENTS [D-10a]

An exemption from the groundwater monitoring requirements as allowed under WAC 173-303-645(1)(b)(i), (ii), and (iv) is not requested at this time.

5.2 INTERIM STATUS PERIOD GROUNDWATER MONITORING DATA [D-10b]

In 1986, interim status groundwater monitoring for four Hanford Facility TSD units was implemented through a *Consent Agreement and Compliance Order* (Ecology DE-86-133). Three of these TSD units are undergoing closure and are currently in interim status or in final status. The fourth TSD unit, the LLBG, is an 'operating' unit. As specified in the Tri-Party Agreement, permit application documentation for the LLBG was submitted in 1989 (DOE/RL-88-20); in accordance with the Class 3 Permit Modification Schedule (refer to Chapter 2.0, Section 2.1.1.3.3), the status of this TSD unit is anticipated to change from interim to final in 1999. Final status is sought for at least one other 'operating' TSD unit requiring a groundwater monitoring system, the LERF (DOE/RL-97-03). The initial permit application documentation for the LERF was submitted in June 1991; in accordance with the Class 3 Permit Modification Schedule (refer to Chapter 2.0, Section 2.1.1.3.3), the status of this TSD unit change from interim to final in 1998. With the exception of the 183-H Solar Evaporation Basins and the 300 Area Process Trenches (refer to Chapter 2.0, Section 2.5.1.1.2), other land-based TSD units 'undergoing closure' (refer to Chapter 1.0, Table 1-1 and Chapter 2.0, Section 2.5) are not scheduled to be entered into the HF RCRA Permit (DW Portion) until 1998 later.

The interim status groundwater monitoring program implemented for a TSD unit is summarized in the following sections. The information presented includes a (1) summary of the existing hydrogeologic data, (2) description of the general well design, (3) discussion of the groundwater monitoring system design, (4) summary of the interim status groundwater sampling and analysis plan for monitoring wells, and (5) preliminary description of the statistical procedures used to assess water quality results. In

addition, a summary is presented on the techniques and methods used to characterize the uppermost aquifer beneath the Hanford Site in support of the monitoring well system design.

5.2.1 Interim Status Groundwater Monitoring Approach

A specific investigative approach is taken to support the design of each TSD unit groundwater monitoring system in the interim status period. This approach consists of the following two elements.

- Establish an initial groundwater monitoring well system from which stratigraphic, hydrogeologic, and background water quality information can be obtained for the uppermost aquifer. Data from this initial system are used to determine the need for additional monitoring wells.
- Provide hydrogeologic properties of the uppermost aquifer system beneath the TSD unit using data collected from the monitoring well system and from previously collected or published data.

Groundwater monitoring plans are developed for each TSD unit to address these elements. These groundwater monitoring plans contain specific details regarding characterization needs and details regarding the monitoring system design. The groundwater monitoring plans also contain a sampling and analysis plan.

Groundwater monitoring plans were developed for the two 'operating' TSD units: LLBG (WHC-SD-EN-AP-015) and LERF (WHC-SD-AP-024). Two assessment monitoring plans also have been prepared for the LLBG (WHC-SD-EN-AP-021 and -022). In each case, the assessment monitoring indicated that the detection was a 'false positive', and the LLBG resumed detection monitoring. Interim status groundwater monitoring plans also have been developed for land-based TSD units 'undergoing closure' (refer to Chapter 1.0, Table 1-1 and Chapter 2.0, Section 2.5).

As part of groundwater monitoring system installation, subsurface sediment samples are collected during drilling at each well location. Grab samples, as a minimum, are described and classified in the field (Appendix 2B) and are considered adequate for general geologic and some physical/chemical analysis. Selected samples, collected by various techniques, are submitted to a laboratory for analyses to determine various physical and chemical properties.

Data collected from installation of the monitoring system and from previously collected or published data are summarized in a characterization report. Characterization reports have been completed for both land-based 'operating' TSD units for which final status is sought and are summarized in the respective Part B permit application documentation [i.e., DOE/RL-88-20 (LLBG) and DOE/RL-97-03 (LERF)]. Groundwater monitoring information for land-based TSD units 'undergoing closure' is summarized in 'borehole completion data packages' (Appendix 2B), Hanford Site groundwater monitoring annual reports, and in quarterly reports.

Groundwater is collected and analyzed from monitoring wells under the interim status programs. During the first year of monitoring, samples are collected quarterly to establish background water quality for each well. Statistical evaluations of subsequent data are compared with these background concentrations to provide an indication of whether dangerous constituents from the TSD unit are significantly affecting the groundwater quality.

The annual groundwater monitoring report provides an interpretation of the data obtained through the sampling and analysis programs for the interim status groundwater projects, including such information for the LLBG, LERF, and other RCRA units. Groundwater monitoring results have been, and will continue to be, reported in the annual groundwater monitoring report released by March 1 of each calendar year.

5.2.2 Investigative Methods

The techniques and methods used to assess the hydrogeologic properties of the uppermost aquifer beneath the Hanford Site are summarized in this section.

5.2.2.1 Existing Hanford Site Hydrogeologic Information

Hydrogeologic information has been collected since activities began on the Hanford Site in the mid-1940s. Much of the information on subsurface geology is derived from the analyses and interpretations of boreholes and wells completed in and around the Hanford Site. These data are available in formal borehole data packages and in the well file library (refer to Chapter 12.0, Section 12.1.26). Some of the historical data have been entered into the Hanford Environmental Information System (HEIS). Data used in the Unit-Specific Portion are documented in groundwater monitoring plans, reports, and in unit-specific Part B permit application documentation.

There are numerous reports that provide interpretations of raw data. Much of what is known about the geology, hydrology, climatology, and meteorology of the Hanford Site has been compiled in the Consultation Draft Site Characterization Plan (DOE/RW-0164, volumes 1, 2, and 3). Hanford Site studies include a summary of groundwater quality (WHC-EP-0260) and a compilation of water table elevation maps (WHC-EP-0394).

5.2.2.2 General Well Design

As required by WAC 173-303-400(3)(a) and 40 CFR 265.91, the interim status groundwater monitoring system includes the completion of monitoring wells to obtain representative groundwater samples from the uppermost aquifer beneath each of the land-based TSD units. Wells are designed to meet the requirements of WAC 173-160.

In some circumstances, wells that existed before implementing the RCRA groundwater monitoring requirements are used as part of the monitoring network. Authorization and criteria for using groundwater wells that existed before the lists of the RCRA parameters were established are provided in a letter from Ecology and the EPA dated July 16, 1990 (EPA and Ecology 1990). No pre-RCRA wells currently are used for RCRA monitoring at the LLBG or the LERF.

Details on the individual well completion methods are provided in the TSD unit-specific groundwater monitoring plans. Specifications for well designs (e.g., WHC-S-014) and procedures for performing the well installations are contained in contractor procedure manuals.

5.2.2.3 Well Locations

The locations of the interim status monitoring wells for the individual TSD units are documented in the TSD unit-specific groundwater monitoring plans, unit-specific borehole data packages, and in the Unit-Specific Portion of this permit application.

5.2.2.4 Downgradient and Upgradient Interim Status Wells

At least one monitoring well is installed hydraulically upgradient from each TSD unit. Their number, location(s), and depth(s) must be sufficient to yield groundwater samples that are representative of the background groundwater quality in the uppermost aquifer beneath the TSD unit and not impacted by the TSD unit.

There must be at least three groundwater monitoring wells located hydraulically downgradient of the TSD boundary (e.g., point of compliance) (Figure 5-1). Their number, locations, and depths of the wells are designed for the detection of any statistically significant amount of dangerous waste or dangerous waste constituents that might migrate from the TSD unit to the uppermost aquifer.

The upgradient and downgradient well locations for each TSD unit are selected on the basis of water table elevations and any other applicable information available at the time of well installation. The well locations for TSD units are found in the interim status groundwater monitoring plans and in the

Unit-Specific Portion of this permit application. Specific well location coordinates and elevations are found in the Hanford Well Information System (HWIS) database.

5.2.2.5 General Hydrogeologic Investigative Techniques

Characterization of the hydrogeologic properties of land-based TSD units may be based on information gained from borehole sediment samples, geophysical logging, aquifer testing, water level measurements, and other pertinent sources of information (EPA 1986b). The unit-specific permit application documentation contains details regarding sample collection intervals and tests performed.

Limited hydraulic properties have been obtained from field determinations as well as permeameter testing in the laboratory. Aquifer testing (constant-discharge production and recovery phases) was performed primarily before 1989. Increased restrictions on purgewater disposal resulted in the use of alternative testing methods from 1989 until recently. Slug testing was the primary method used to obtain field information on the aquifer properties until 1998. A combined suite of hydraulic tests has been used to determine hydrologic properties. Slug tests, borehole tracer-dilution tests, tracer pump-back tests, and constant-rate pumping tests are used in selected new wells. Descriptions of the test methods used to obtain hydraulic property information are provided in unit-specific permit application documentation, assessment monitoring plans and reports, and other investigation plans and reports. Contaminant plume and trend information is also used to assist in determining groundwater flow and contaminant movement.

5.2.3 Interim Status Data

Groundwater monitoring activities performed during the interim status period are summarized in this section.

5.2.3.1 Sampling and Analysis Plan

Sampling and analysis plans are found in the unit-specific groundwater monitoring plans. The aspects of the groundwater sampling and analysis plans that have been used, and currently are being used for the interim status program monitoring wells, are described in this section. Representative groundwater samples from the uppermost aquifer beneath the Hanford Facility are obtained and analyzed for the purpose of detecting potential contaminant releases from TSD units. All interim status sampling activities on the Hanford Facility currently are performed in accordance with EPA SW-846 protocol or an equivalent EPA-approved method (EPA/230/02-89-042).

The following sections describe the general methods used in the acquisition of groundwater samples.

5.2.3.1.1 Static Water-Level Measurements

The static water level is measured, recorded, and remeasured until reproducible results are obtained before purging or sampling monitoring wells. Procedures for water level measurements are found in subcontractor procedure manuals.

5.2.3.1.2 Well Purging

Monitoring wells are purged before sample collection to obtain groundwater samples that are representative of groundwater. Most monitoring wells are purged until a minimum of three casing volumes of water have been removed from the wells; the wells may be sampled after field parameters stabilize (Section 5.2.3.1.4). Methods of minimizing or eliminating purge volumes before sampling currently are being evaluated.

5.2.3.1.3 Sample Withdrawal

After the monitoring well has been purged, the pumping rate is reduced and samples are withdrawn. Multiple groundwater samples are obtained for laboratory analyses during the sampling event. Samples typically are collected and bottled in the following order:

- Bottles with septum caps (volatiles)
- Unfiltered samples (major-ions, cyanide, semivolatiles, metals)

- Filtered samples (metals).

5.2.3.1.4 Field Analyses

Temperature, pH, turbidity, and specific conductance are measured and recorded during well purging and sample withdrawal. Groundwater samples for laboratory analysis are generally not collected until each of these parameters has stabilized.

5.2.3.1.5 Chain of Custody

Chain-of-custody procedures are followed in collecting interim status data to ensure the compositional integrity of groundwater samples from the time of collection through laboratory analysis and data reporting.

5.2.3.1.6 Quality Assurance and Quality Control Procedures

Quality assurance and quality control procedures are applied to both field and laboratory data to ensure the reliability and validity of the data. The Tri-Party Agreement (Article XXXI, Paragraph 105, and Sections 6.5 and 7.8 of the Tri-Party Agreement Action Plan) also specifies quality assurance and quality control requirements that are to be implemented.

5.2.3.2 Analytical Data

Analytical data on the interim status groundwater program are presented in the following sections.

5.2.3.2.1 Groundwater Elevations

Groundwater elevation data have been obtained since RCRA groundwater monitoring began. Water levels also are available for existing wells prior to the RCRA groundwater monitoring program. Water level data are compiled into the HEIS database. Hanford sitewide groundwater maps are produced at least annually.

5.2.3.2.2 Results of Water Quality Analyses

Quarterly samples are collected for the first year to establish background water quality. Constituents analyzed for are specified by 40 CFR 265.92 (b)(1)(2)(3). Specific analytical parameters are specified in unit-specific permit application documentation. After the first year, the wells are sampled for 40 CFR 265.92 (b)(2) groundwater quality parameters at least annually and are sampled for 40 CFR 265.92 (b)(3) indicator parameters and site-specific parameters semiannually. The TSD units in assessment-level monitoring require sampling quarterly or an agreed upon sampling frequency. The constituents analyzed for are detailed in the groundwater monitoring plans and in the unit-specific permit application documentation.

All groundwater quality data from the monitoring well network are entered into the Hanford Environmental Information System (HEIS) database-for permanent storage and are available electronically. Data from the HEIS database may be downloaded to smaller databases for data validation, data reduction, and trend analysis. Results are summarized in Quarterly reports and in the annual groundwater monitoring report.

5.2.3.2.3 Statistical Results

Statistical analyses of the sampling results for indicator parameters (including pH, specific conductance, total organic carbon, and total organic halogens) are discussed in unit-specific permit application documentation. Detailed statistical analysis methods have been documented (WHC-SA-1124-FP). Results of statistical analyses are presented in groundwater monitoring annual reports (e.g., DOE/RL-91-03, PNNL-13116).

5.3 AQUIFER IDENTIFICATION [D-10c]

The characteristics of the uppermost aquifer beneath the Hanford Site and regional hydrogeologic factors influencing this aquifer are summarized in the following section. This summary begins with a brief description of the regional physiographic and geomorphic setting of the Hanford Site. The climate and meteorology of the region also are summarized to address aquifer recharge potential from precipitation. An overview of the regional geologic framework follows, as this framework provides a major influence on aquifer characteristics. A description of the physical characteristics of the uppermost aquifer and a summary of contaminant travel time determinations comprise the remainder of this section. Hydrogeologic terms used in this discussion are defined in the glossary contained in Appendix 2B. A brief parenthetical explanation follows the initial use of these terms within the text.

The hydrogeologic information discussed for the Hanford Site also applies to the Hanford Facility, unless otherwise designated.

5.3.1 Physiographic and Geomorphic Setting

This section addresses the physiographic and geomorphic setting of the Hanford Site, or a description of the nature and origin of landforms. The Hanford Site is situated within the Pasco Basin of south-central Washington (Figure 5-3). The Pasco Basin is bounded on the north by the Saddle Mountains, on the west by Umtanum Ridge, Yakima Ridge, and the Rattlesnake Hills, and on the south by Rattlesnake Mountain, all anticlinal folds of the Yakima Fold Belt (a physiographic subdivision of the Columbia Plateau characterized by anticlinal upwarps and synclinal downwarps of the underlying bedrock). The Pasco Basin is bounded on the east by the Palouse slope, a monocline (broad fold) that inclines to the east (Figure 5-3).

Surface topography seen at the Hanford Site is the result of: (1) anticlinal ridges, (2) Pleistocene cataclysmic flooding (flooding resulting from glacial activity occurring north of the Hanford Site 13,000 to 10,000 years ago), (3) Holocene eolian activity (relatively recent wind activity), and (4) land sliding. Since the end of the Pleistocene, winds have locally reworked the flood sediments, depositing dune sands in the lower elevations and loess (windblown silt) around the margins of the Pasco Basin. Sand dunes have largely stabilized except where these dunes have been reactivated because of the disturbance of anchoring vegetation (WHC-SD-ER-TI-0003).

5.3.2 Climate and Meteorology

The Hanford Site is located in a semiarid desert area. The climate in the vicinity of the Hanford Site is largely influenced by the rain-shadow effect of the Cascade Range located in western Washington. This effect results in cold air drainage across the region that largely controls the wind regime of the Hanford Site.

Climatological data have been collected at the Hanford Meteorological Station, located between the 200 Areas, since 1945 (PNL-6415). Temperature and precipitation data also are available from nearby locations for the period 1912 through 1943. A summary of these data through 1980 has been published (PNNL-11139). Data from the Hanford Meteorological Station are representative of the general climatic conditions for the region and describe the specific climate of the 200 Areas Plateau.

5.3.2.1 Wind

Prevailing wind directions on the 200 Areas Plateau are from the northwest in all months of the year (refer to Chapter 2.0, Figure 2-8). Secondary maxima occur for southwesterly winds.

Monthly average wind speeds are lowest during the winter months, averaging 10 to 11 kilometers per hour, and highest during the summer, averaging 15 to 16 kilometers per hour. Wind speeds that are well above average usually are associated with southwesterly winds. However, the summertime drainage winds generally are northwesterly and frequently reach 50 kilometers per hour. Estimates of wind extremes have been summarized by Stone et al. (PNL-4622). Information on the likelihood and frequency of strong winds and tornadoes in the region have been summarized in a final environmental impact statement (DOE/EIS-0113), the Hanford Meteorological Station climatological summary (PNL-4622), and by the National Severe Storms Forecast Center.

5.3.2.2 Temperature and Humidity

Ranges of daily temperatures vary from normal maxima of 1.6°C in early January to 35°C in late July. The record maximum temperature is 46°C, and the record minimum temperature is -32.7°C.

The annual average relative humidity at the Hanford Meteorological Station is 54 percent. It is highest during the winter months, averaging approximately 75 percent, and lowest during the summer months, averaging approximately 35 percent.

5.3.2.3 Precipitation

Precipitation measurements have been made at the Hanford Meteorological Station since 1945. Average annual precipitation at the Hanford Meteorological Station is 16 centimeters per year. Most of the precipitation occurs during the winter, with nearly half of the annual amount occurring in the months of November through February. Days with greater than 1.3 centimeter precipitation occur less than 1 percent of the year. Rainfall intensities of 0.5 inch (1.3 centimeter) per hour persisting for 1 hour are expected once every 10 years. Rainfall intensities of 2.54 centimeter per hour for 1 hour are expected only once every 500 years. Winter monthly average snowfall ranges from 0.76 centimeter in March to 13.5 centimeter in January. The record snowfall of 59.4 centimeters occurred in January 1950. Snowfall accounts for approximately 38 percent of all precipitation during the months of December through February.

5.3.3 Regional Geology

The regional geology provides the framework for understanding the stratigraphic (rock layers) and structural (rock deformation) controls on the aquifers beneath the Hanford Site. An overview of the regional geology and a description of the primary stratigraphic units that comprise these aquifers are provided in this section.

The Hanford Site lies in the Pasco Basin near the eastern limit of the Yakima Fold Belt. The Pasco Basin is divided by the Gable Mountain anticline into the Wahluke syncline to the north and the Cold Creek syncline to the south. The Pasco Basin is underlain by Miocene-aged (approximately 17 to 8.5 million years before present) volcanic (molten rock) flows of the Columbia River Basalt Group and late Miocene-to Pleistocene-aged sediments (approximately 10.5 million to 12,000 years before present) that overlie the basalts. The basalts and sediments thicken into the Pasco Basin and generally reach maximum thicknesses in the Cold Creek syncline in the vicinity of the 200 Areas. Hanford Site structure and stratigraphy are illustrated in Figures 5-3 and 5-4, respectively, and described in WHC-SD-ER-TI-0003. A brief review of this information follows.

The Columbia River Basalt Group is greater than 3,658-meters thick beneath the Pasco Basin. The sequence of volcanic flows within the Pasco Basin can be divided into the Grande Ronde, Wanapum, and Saddle Mountains formations (major rock divisions) (listed from oldest to youngest). The youngest formation of the Group, the Saddle Mountain Basalt, is characterized by a sequence of volcanic flows and intercalated sedimentary units called interbeds.

Late Miocene to Quaternary sediments overly the basalts. Most of this sedimentary sequence can be divided into two main units: the Ringold Formation of late Miocene to middle-Pliocene age (approximately 10.5 million to 3 million years before present) and the Hanford formation of Pleistocene to Recent age (approximately 1 million to 12,000 years before present).

The Ringold Formation was formed by fluvial-lacustrine (stream-lake) processes. This formation comprises the basal part of the sedimentary sequence above the basalt. The Ringold Formation is up to 185-meters thick at the Hanford Site in the deepest part of the Cold Creek syncline south of the 200 West Area, and up to 170-meters thick in the western Wahluke syncline. The Ringold Formation pinches out against Gable Mountain, Yakima Ridge, Saddle Mountains, and Rattlesnake Mountain anticlines. The Ringold Formation is largely absent in the northern and northeastern parts of the 200 East Area and adjacent areas to the north in the vicinity of West Lake, located south of Gable Mountain. The Ringold Formation is composed of unindurated to semi-indurated (loose to semi-hardened) clay, silt, fine to coarse-grained sand, or granule to cobble gravel that can be divided into five facies (lateral subdivisions of a rock type) (WHC-SD-EN-EE-004). The five facies include: (1) fluvial gravel (generally with a fine to medium sand matrix); (2) fluvial sand; (3) overbank deposits (sediments deposited beyond the natural levee of a stream or river during a flooding event) and paleosols (ancient soils) composed of silty sand to clay; (4) lacustrine sandy silts to clays; and (5) basaltic alluvium or fanglomerate deposited at the foot of ridges (anticlines).

The distribution of facies associations within the Ringold Formation forms the basis for three stratigraphic subdivisions (WHC-SD-EN-EE-004). The first of these subdivisions forms the lower half of the formation and is characterized by intervals dominated by fluvial gravel and sand (facies 1 and 2) that interfinger with intervals containing fine-grained deposits (facies 3 and 4). Interstratified deposits typical of the fluvial sand (facies 2) and overbank-paleosol facies (facies 3) associations dominate the second subdivision. The third and uppermost subdivision is dominated by the lacustrine facies association (facies 4). Facies 5 are mainly found in the vicinity of the anticlinal ridges to the west and north of the Hanford Site.

Other less extensive stratigraphic units within the Pasco Basin overlie the Ringold Formation and underlie the Hanford formation. These units include a laterally discontinuous Plio-Pleistocene unit and pre-Missoula gravels. The pre-Missoula gravels are approximately equivalent in age to the Plio-Pleistocene unit.

The Hanford formation was formed by glaciofluvial processes. During Pleistocene glaciation, eastern Washington was subjected to a number of cataclysmic floods that resulted from the breakup of ice dams impounding glacial lakes in Idaho, Montana, and northeastern Washington. The Hanford formation generally can be divided into two main facies: coarse-grained or gravelly deposits and fine-grained or sandy and silt deposits. The Hanford formation also is commonly divided into two informal members: the Pasco gravels and the Touchet beds (DOE/RW-0164). The Pasco gravels generally correspond to the gravelly facies, and the Touchet beds correspond to the sandy to silty facies. The Hanford formation is thickest in the Cold Creek bar in the vicinity of the 200 West and 200 East Areas where the formation is up to 64 meters thick. Hanford formation deposits are absent on ridges approximately 360 meters above sea level.

Holocene surficial deposits consist of silt, sand, and gravel that form a thin (less than 4.9-meter) veneer across much of the Pasco Basin. These sediments were deposited by a mix of eolian and alluvial processes during the past 10,000 years.

Details of the geology for 'operating' TSD units for which final status is sought are provided in groundwater monitoring plans included in the unit-specific portion.

5.3.4 Regional and Hanford Site Hydrology

The regional and Hanford Site surface and groundwater hydrology are discussed in the following sections. Primary surface-water features associated with the Hanford Site and region are the Columbia River and its major tributaries, the Yakima, Snake, and Walla Walla Rivers. With regard to groundwater hydrology, the uppermost aquifer is primarily in the Ringold Formation and the vadose zone (unsaturated zone above the water table) is primarily in the Hanford formation. The Hanford formation comprises the upper 9 to 91 meters of the vadose zone throughout most of the Hanford Site, but extends below the regional water table in parts of the 200 East Area and eastward towards the Columbia River.

5.3.4.1 Surface Hydrology

Surface drainage enters the Pasco Basin from several other surrounding basins. Within the Pasco Basin, the Columbia River is joined by major tributaries including the Yakima, Snake, and Walla Walla Rivers. Two intermittent streams traverse through the Hanford Site: Cold Creek and Dry Creek (refer to Chapter 2.0, Section 2.2.1.4). Water drains through these creeks during the wetter winter and spring months. No perennial streams originate within the Pasco Basin.

Total estimated precipitation over the Pasco Basin averages 16 centimeters per year (Section 5.3.2.3). Mean annual run-off from the Pasco Basin is estimated to be less than 3.1×10^7 cubic meters per year, or approximately 3 percent of the total precipitation. Recharge from infiltration of precipitation is highly variable on the Hanford Site both spatially and from year to year. The rate of natural recharge depends primarily on soil texture, vegetation, and climate, and ranges from near zero, where fine-grained soils and deep-rooted vegetation are present, to >10 cm/yr (4 in/yr) in areas where soils are coarse textured and bare of vegetation (Gee et al. 1992; PNNL-10285).

Within the vicinity of the Hanford Site, primary surface-water features are the Columbia and Yakima Rivers. West Lake, about 4 hectares in size and less than 0.9-meter deep, is the only natural lake within the Hanford Site. Waste water ponds, cribs, and ditches associated with waste management activities also are present on the Hanford Site.

5.3.4.2 Groundwater

Confined and semiconfined aquifer systems occur beneath the Hanford Site in the basalt flow tops, flow bottom zones, and sedimentary interbeds (DOE/RW-0164, volume 2, pp. 3.6-1). These deeper aquifers are intercalated with aquitards consisting of basalt flow interiors. Vertical flow across the aquitards within the basalt aquifer system is inferred from water level or potentiometric surface data, but the leakage is not quantified and direct measurements are not available (DOE/RW-0164, volume 2, pp. 3.6-17). The multiaquifer system within the Pasco Basin has been conceptualized as consisting of four primary hydrogeologic units: (1) Hanford and Ringold formation sediments, (2) Saddle Mountain Basalt, (3) Wanapum Basalt, and (4) Grande Ronde Basalt. The discussion in the following sections focuses on the uppermost aquifer systems within the Ringold and Hanford formations and within the Saddle Mountains Basalt, the aquifer comprised of the Rattlesnake Ridge interbed.

5.3.5 Uppermost Aquifer

The unconfined to semiconfined aquifer associated with the sedimentary units stratigraphically above the basalts is the uppermost regionally extensive aquifer beneath the Hanford Site. The water table ranges in depth from 0 meter at West Lake and the Columbia and Yakima Rivers, to greater than 106.7 meters near the center of the Hanford Site. Groundwater within this aquifer system is contained within the glaciofluvial sands and gravels of the Hanford formation and the fluvial-lacustrine sediments of the Ringold Formation. The position of the water table beneath the western portion of the Hanford Site is generally within the coarse-grained gravel units of the Ringold Formation (WHC-SD-EN-EE-004). In the

northern and eastern portions of the Hanford Site, the water table is generally within the Hanford formation. Hydraulic conductivities for the Hanford formation (610 to 3,048 meters per day) are much greater than those of the coarse-grained gravel units of the Ringold Formation (186 to 930 meters per day) (RHO-RE-SR-87-24, WHC-SD-EN-EE-004). Stratigraphic divisions of these units and their hydrologic properties are discussed in detail in the geology and hydrology of the Hanford Site (WHC-SD-ER-TI-0003).

This aquifer system is approximately 152-meters thick near the center of the Pasco Basin. Laterally, the aquifer system is bounded by anticlinal basalt ridges that extend above the water table. A generalized east-west geologic cross-section showing the position of the water table and major stratigraphic units beneath the Hanford Site is presented in Figure 5-5.

The base of the uppermost aquifer generally is regarded as the basalt surface. On a local scale where the Ringold Formation is present, the silts and clays of the Formation's lower mud unit and the Formation's fine-grained units (WHC-SD-EN-EE-004) form a confining layer. Thus, in the strict sense, the groundwater is unconfined above this layer and semiconfined below this layer.

Significant water level changes have occurred on the Hanford Site. Water levels in the uppermost aquifer have risen because of artificial recharge mechanisms. Waste water ponds on the Hanford Site have artificially recharged the uppermost aquifer below the 200 East and 200 West Areas. Recharge from the 200 Areas waste water disposal units is estimated to be approximately 10 times the natural recharge on the Hanford Site (RHO-ST-42). The increase in water table elevations was most rapid from 1950 to 1960 and apparently stabilized between 1970 and 1980, when only small increases in water table elevations occurred. Waste water discharges from the 200 Areas have been reduced since 1984 and the water levels have declined significantly. Other artificial recharge mechanisms include excessive application of imported irrigation water or impoundment of streams.

The general direction of groundwater flow is primarily from natural recharge areas west of the Hanford Site to discharge areas toward the Columbia River. The general west-to-east flow pattern is interrupted locally by the groundwater mounds in the 200 Areas. From the 200 Areas, there is also a component of groundwater flow to the north, between Gable Mountain and Gable Butte. Figure 5-6 illustrates the water table conditions beneath the Hanford Site.

Details of the hydrology for 'operating' TSD units for which final status is sought are provided in the unit-specific groundwater monitoring plans and permit application documentation.

5.3.6 Uppermost Confined Aquifer

The Rattlesnake Ridge aquifer is the uppermost fully-confined aquifer system that occurs beneath the Hanford Site. As discussed previously, Ringold Formation sediments are semiconfined in some areas. The Rattlesnake Ridge aquifer consists of the flow bottom of the Elephant Mountain Basalt member, the flow top of the Pomona basalt, and the Rattlesnake Ridge interbed. The thickness of the Rattlesnake Ridge interbed, which is the principal transmissive zone within the aquifer, ranges from 15 to 25 meters beneath the 200 Areas and generally thickens toward the west (RHO-ST-42, RHO-RE-ST-12P). Erosional windows (gaps in the rock) in the Elephant Mountain basalt confining layer exist locally. This could allow hydraulic communication between the Rattlesnake Ridge aquifer and the overlying unconfined aquifer (RHO-RE-ST-12P). More recent information on the hydrogeology, flow dynamics, and hydrochemistry of the uppermost confined aquifer system is available in PNL-10158 and 10817.

Natural recharge to the Rattlesnake Ridge aquifer occurs in the higher elevations surrounding the Pasco Basin to the west, north, and northeast. The flow of groundwater generally is toward the northeast beneath the 200 West Area and possibly east to north beneath the 200 East Area. The aquifer is heterogeneous in composition because the aquifer consists of a basalt flow top and flow bottom, a clayey

basalt conglomerate, an epiclastic fluvial-floodplain unit, an air-fall tuff, and a volcaniclastic unit derived from fluvial reworking of the tuff and detrital sediments (RHO-RE-ST-12P). This heterogeneity produces variability of groundwater flow through the aquifer (RHO-RE-ST-12P).

5.3.7 Contaminant Travel Times

The travel time of a contaminant from the Hanford Site to the Columbia River is the sum of the time required for the contaminant to travel through the vadose zone to reach the water table and the time required for the contaminant to travel in the groundwater to the Columbia River. Travel time determinations can be based on small- or large-scale field measurements of transport rates or on calculations supported by laboratory scale measurements of the transport parameters. Further discussion of contaminant travel time is contained in Chapter 9.0.

The parameters that affect the travel time in the unconfined aquifer are the following:

- Distance
- Permeability (or hydraulic conductivity)
- Porosity
- Hydraulic gradient
- Dispersivity
- Retardation
- Heterogeneity (geologic structure).

In addition to these parameters, the vadose zone travel times are further affected by the relative permeability, the moisture content, and the recharge rate. Because of the variability of the sediments, the calculation of travel times based on laboratory derived parameters is considered less accurate than the large scale field measurements. The following sections summarize the work that has been done in determining travel times in the vadose zone and unconfined aquifer.

5.3.7.1 Vadose Zone

The travel time through the vadose zone depends on the moisture content, which in turn depends on the recharge rate. In the cases of artificial recharge where near saturated conditions have been maintained down to the water table (e.g., 216-B-3 Expansion Ponds), the flow velocity is nearly equal to the saturated hydraulic conductivity of the soil column. This implies a travel time on the order of days. For other cases where the natural recharge is the driving force, the travel time varies considerably depending on the assumed recharge. Several calculations have been done (DOE/EIS-0013) for natural recharge in the 200 East Area ranging from 0.5 centimeter per year to 5.0 centimeters per year. These values were chosen to reflect current and possibly future wetter conditions. The computational results indicated travel times on the order of 900 years to 100 years, respectively, for conservative contaminants. An estimate of travel time as a function of recharge in a 60-meter deep vadose zone has been provided by Gee (Gee et al. 1992).

5.3.7.2 Saturated Zone

More than 20 estimates of travel times from the 200 East and 200 West Areas to the Columbia River have been made by investigators using a number of different methodologies and assumptions. A review of the various travel time estimates has been made over the past 40 years (PNL-6328). These estimates can be classified as being based on one of the following methods: (1) extrapolation of local groundwater velocity measurements, (2) mathematical methods, and (3) monitoring the movement of contaminant plumes.

The rate and direction of groundwater flow in the vicinity of the 100 Areas are greatly influenced by the level of the Columbia River. This can severely alter the groundwater gradient and even cause flow to be reversed up to 305 meters inland during periods of high water. A similar effect occurs in the 300 Area (WHC-SD-ER-TI-0003).

5.4 CONTAMINANT PLUME DESCRIPTION [D-10d]

Ecology regulations [WAC 173-303-806(4)(a)(xx)(D)] require "A description of any plume of contamination that has entered the groundwater from a regulated unit at the time that the application was submitted..." This section contains a description of contaminant plumes identified in the aquifers beneath the Hanford Site. Information provided in this section is relevant to SWMU discussions contained in Chapter 2.0, Section 2.5 and Appendix 2D.

Groundwater contamination currently is monitored under a comprehensive groundwater monitoring and long-term surveillance program. The results of the monitoring program along with isopleth maps are prepared and published annually (e.g., PNNL-13116). Contaminant plumes are primarily delineated using isopleth maps (i.e., maps with lines connecting points of equal concentration or values).

5.4.1 Radionuclide Contamination

Isopleth maps are prepared to track the movement of radiological contaminant plumes (e.g., tritium, gross beta) in the unconfined groundwater flow system beneath the Hanford Site. A study of these plumes can be used to provide an early indication of the rate and direction of contaminant movement. An example of an isopleth map delineating a contamination plume is shown in Figure 5-7 (PNNL-13116). This figure depicts the distribution of average tritium concentrations in the unconfined aquifer in 1996. Tritium and iodine-129 are the most widespread radionuclides in the unconfined aquifer (PNNL-13116). More detailed information on distribution and levels of radionuclide contamination can also be found in numerous other site-specific reports. A detailed bibliography of groundwater related reports is provided in PNNL 13116.

5.4.2 Nonradioactive Contamination

The most common nonradioactive inorganic contaminants that have been observed in groundwater are nitrate, cyanide, fluoride, and hexavalent chromium. Among the nonradioactive organic contaminants routinely observed in the groundwater samples are carbon tetrachloride, trichloroethylene, cis-1,2-dichloroethene, and chloroform (PNNL-11793).

Nitrate, like tritium, can be used to define the extent of contamination because nitrate is present in many waste streams at the Hanford Site and is mobile in the groundwater (PNNL-11793). Isopleth maps are prepared to show levels of nitrate concentrations in the groundwater. The configuration of the nitrate plumes can be found in PNNL (1997, Figure S.2). Additional information on nonradioactive contamination is found in groundwater status reports (e.g., PNNL-11793).

It should be noted that the present extent of detectable contamination is primarily the result of past liquid waste discharges to the ground.

5.5 DETECTION MONITORING PROGRAM [D-10e]

The final status detection monitoring program is designed to detect the impact of the land-based TSD unit on groundwater quality in the uppermost unconfined aquifer beneath the unit. The final status detection monitoring plan contains details regarding the following:

- Design of the monitoring well network (number and locations of monitoring wells, well construction)

- Frequency of groundwater monitoring
- Type and behavior of chemical parameters that will be used to indicate the presence of groundwater contamination
- Sampling, analysis, and statistical procedures that will be used
- Methods by which regular determinations of the groundwater flow rate and direction will be determined.

A description of unit-specific monitoring networks is found in the Unit-Specific Portion of this permit application. Final status requirements are applicable to land-based TSD units on incorporation into the HF RCRA Permit (DW Portion).

The following sections provide the necessary data and information to support the implementation of a final status detection monitoring program at land-based TSD units.

5.5.1 Indicator Parameters, Waste Constituents, Reaction Products to be Monitored [D-10e(1)]

The monitoring parameters are selected on the basis of suitability to groundwater monitoring at land-based TSD units, and do not necessarily apply to the entire Hanford Facility. The following criteria are considered in the selection of monitoring parameters for each land-based TSD unit:

- Process knowledge and/or use of the TSD unit
- Present in significant quantity in the waste that has been disposed
- Relative mobility and low retardation with respect to groundwater flow, and the stability and persistence in the environment
- Lack of significant natural presence of the parameters in the groundwater
- Ease of detection and minimal sampling and analytical interferences (detectability)
- Usefulness as indicators of other potential contaminants
- Lack of data interpretation problems caused by common laboratory and field contaminants.

5.5.1.1 Dangerous Waste Characterization [D-10e(1)(a)]

A list of the dangerous waste numbers that could be disposed in each land-based TSD unit is included in the HF Part A and in unit-specific permit application, preclosure work plan, closure work plan, closure plan, and closure/postclosure plan documentation. These sources include, to the degree possible, compositions, quantities, and dates of waste disposal, and have, or will, form the basis for the selection of the unit-specific monitoring parameters and constituents.

5.5.1.2 Behavior of Constituents [D-10e(1)(b)]

The mobility, stability, and persistence of waste constituents and their reaction products that have been disposed at a TSD unit are of prime importance in determining the proper unit-specific monitoring parameters and constituents. Constituents that generally are mobile and persistent through the unsaturated zone and into the saturated zone are useful indicators of chemical migration from a waste disposal site.

Parameters such as distribution or sorption coefficients for inorganic (e.g., Freeze and Cherry 1979, pp. 402-408) and organic constituents (Lyman et al. 1982) and chemical solubilities are used in these evaluations. Other important properties that are considered for organic constituents are vapor pressure and the Henry's Law constant (used to evaluate to what degree compounds will be partitioned into the aqueous phase and to what degree this phase is likely to migrate as a vapor).

5.5.1.3 Detectability [D-10e(1)(c)]

The detectabilities (the presence or absence) of the groundwater sampling parameters for each land-based TSD unit are to be given in terms of the method detection limit for each of the constituents listed. The practical quantification limits (PQLs) are used to determine if concentration is quantifiable. The PQLs represent the lowest concentrations of analytes in groundwater that can be reliably determined within

specified limits of precision and accuracy by the standard analytical methods under routine laboratory operating conditions. Specific requirements are addressed in the unit-specific groundwater monitoring plans.

5.5.2 Groundwater Monitoring Program [D-10(e)(2)]

This section describes a comprehensive program to be used during the final status detection monitoring program. The final status detection monitoring system is designed to detect the migration of releases of dangerous waste or dangerous waste constituents within the uppermost unconfined aquifer at compliance points immediately downgradient from potential leak sources. The groundwater will be monitored as required during the active life of the regulated unit (including the closure/postclosure care period).

Groundwater monitoring requirements are contained in Condition II.F. of the HF RCRA Permit (DW Portion).

5.5.2.1 Description of Wells [D-10e(2)(a)]

The basis for locating the monitoring wells around individual land-based TSD units, and the well locations selected to achieve the desired coverage with the minimum number of wells, are discussed in the following sections.

5.5.2.1.1 Background

Groundwater monitoring wells that are required to be installed will be in compliance with the general groundwater monitoring requirements of WAC 173-303-645(8). These wells will yield groundwater samples from the uppermost unconfined aquifer that are representative of the quality of background water immediately upgradient of the unit and the quality of water passing beneath the unit. A determination of background quality may include sampling of wells that are not hydraulically upgradient of the waste management area.

5.5.2.1.2 Design Approach for Monitoring Wells

Tentative locations for monitoring wells are identified along the downgradient sides (point of compliance) of the TSD unit. Initial well locations are determined based on consideration of the interpreted direction of groundwater flow crossing the unit.

The groundwater monitoring system must be capable of yielding groundwater samples for analysis and must consist of the following:

- Monitoring wells installed hydraulically upgradient from the limit of the TSD unit. The number, location, and depths of the wells must be sufficient to yield groundwater samples that are (1) representative of groundwater quality in the uppermost aquifer near the unit and (2) not affected by leakage from the unit
- Monitoring wells installed hydraulically downgradient at the boundary of the TSD unit. The number, location, and depth of the wells must allow for the detection of dangerous waste or dangerous waste constituents that migrate from the TSD unit to the uppermost aquifer
- All monitoring wells must be cased in a manner that maintains the integrity of the monitoring well borehole. This casing must allow collection of representative groundwater samples and prevent contamination of the samples or the aquifer.

Existing wells might be used as part of the monitoring network provided the wells are: (1) in compliance with WAC 173-160; or (2) meeting criteria as 'equivalent' to a RCRA standard well; or (3) meeting specific DQOs for each monitoring well [Attachment 7 of the HF RCRA Permit (DW portion)]. The reasoning for selection of the location of the individual wells is, or will be, included in unit-specific permit application documentation. Well remediation and abandonment will be accomplished in

accordance with WAC 173-160 and the requirements of Condition II.F.2. of the HF RCRA Permit (DW Portion).

5.5.2.1.3 Well Maintenance and Remediation

Monitoring well maintenance, remediation, and abandonment will be performed in accordance with Attachment 6 of the HF RCRA Permit (DW Portion), WAC 173-160, the Tri-Party Agreement, and the HF RCRA Permit (DW Portion). Condition II.F.2. of the HF RCRA Permit (DW Portion) specifically addresses requirements for well remediation and abandonment, involving the following:

- Development of a well inspection plan involving inspection of wells at least once every 5 years; placement of inspection documentation in the Hanford Facility Operating Record (refer to Chapter 12.0, Section 12.1.26)
- Evaluation of wells in accordance with Sections 4.2 through 4.8.3 of Attachment 6 of the HF RCRA Permit (DW Portion) and Attachment 7 of the HF RCRA Permit (DW Portion)
- Provision of written notice to Ecology at least 72 hours before the Permittees remediate (excluding maintenance activities) or abandon any well subject to the HF RCRA Permit
- Construction of wells pursuant to the HF RCRA Permit in compliance with WAC 173-160.

5.5.2.1.4 Monitoring Well Locations and Design

To comply with groundwater monitoring requirements, monitoring wells (i.e., point of compliance) at land-based TSD units are located at intervals along "the hydraulically downgradient limit of the waste management area..." [WAC 173-303-645(6)(a)]. The waste management area is defined as "the limit projected in the horizontal plane of the area on which waste will be placed during the active life of the regulated unit" [WAC 173-303-645(6)(b)]. If the facility contains more than one regulated unit, the waste management area is described by an imaginary line circumscribing the several regulated units. These regulations, therefore, require that monitoring wells be placed as close as reasonably possible to the edge of the regulated unit (i.e., unit boundary). Installation of monitoring wells will be based on the following criteria:

- Satisfy the regulatory requirements for a groundwater monitoring system that consists of a sufficient number of wells installed at appropriate locations and depths to yield groundwater samples that:
  - (1) represent the composition of background groundwater that has not been impacted by a TSD unit.
  - (2) represent the composition of groundwater passing the point of compliance.
- Location of monitoring wells should ensure a high level of confidence that dangerous waste or dangerous constituents migrating from a regulated unit would be reliably detected.
- Wells should be placed in locations that will afford the collection of hydrogeologic information.

5.5.2.2 Equipment Decontamination [D-10e(2)(b)]

All field equipment decontamination and sampling activities will comply with aspects of a health and safety plan and procedures manuals. The procedures are intended to prevent cross-contamination between boreholes during drilling activities. Field equipment decontamination activities will be reported in field documentation.

5.5.3 Background Values [D-10e(3)]

Background values are defined as the concentrations of chemical, physical, biological, or radiological constituents, or other characteristics in or of groundwater at a particular point in time and upgradient of a unit, that have not been affected by that unit. Background groundwater quality for detection monitoring can be based on sampling of wells that are not upgradient from the unit if (1) hydrogeologic conditions do not allow the owner or operator to determine what wells are upgradient or (2) sampling at other wells will provide a better indication of background groundwater composition that is as or more representative than

that obtained from samples from upgradient wells [WAC 173-303-645(8)(a)(i) and (b) and 40 CFR 264.97(a)(1)]. In this case, baseline values will be determined using historical measurements from each well.

Background or baseline values will be determined for final status detection-level groundwater monitoring parameters. These include general contamination indicator parameters such as specific conductance, pH, total organic carbon, total organic halogen, or heavy metals and site-specific parameters (waste constituents or reaction products) that will provide a reliable indication of the presence of dangerous constituents in groundwater. The site-specific parameters (described in unit-specific permit application documentation) will be selected based on (1) the types, quantities, and concentrations of waste constituents present; (2) the mobility, stability, and persistence of the waste constituents; (3) the detectability of the parameters; and (4) existing data.

Background or baseline values are used to determine whether a RCRA-regulated unit has adversely affected the groundwater quality in the uppermost aquifer beneath the site. This is accomplished by testing for statistically significant changes in concentrations of constituents of interest in a downgradient monitoring well relative to baseline levels. These baseline levels could be obtained from upgradient (or background) wells, and are referred to as interwell (or between-well) comparisons. Alternatively, if baseline values are obtained from historical measurements from that same well, the comparisons are referred to as intrawell (or within-well) comparisons. Requirements for sampling frequency are discussed in Section 5.5.4.5.1. Statistical analyses are presented in Section 5.5.4.7.

Background data (used for inter-well comparisons) subsequently will be reviewed for seasonal variations, trends, and significant differences among the wells. The background statistics and/or statistical methodology might be modified, if required, to address temporal or spatial variation. Background data also will be reevaluated if changes in groundwater flow direction results in changes in definition of upgradient wells. Additionally, baseline data (used for intra-well comparisons) will be updated periodically (every one to two years) and must be modified for non-detects, seasonal variations, or trend.

5.5.4 Sampling, Analysis, and Statistical Procedures [D-10e(4)]

This section provides information on the groundwater sampling, analysis, and statistical evaluation procedures that are proposed for use with the monitoring well system. The choice of an appropriate statistical test depends on the type of monitoring (i.e., detection or compliance) and the nature of the data (e.g., the proportion of values in the data set that are below detection limit, and whether spatial variability exists) (Figure 5-2). Statistical procedures under final detection or compliance monitoring program status are discussed in Section 5.5.4.7 and Section 5.6.7.4, respectively. As the postclosure monitoring program will be implemented at least 30 years in the future, actual protocols and procedures likely will be equivalent to those cited in this section.

5.5.4.1 Sample Collection [D-10e(4)(a)]

The groundwater monitoring system proposed for use on the Hanford Facility is designed to provide representative groundwater quality data from the uppermost aquifer beneath each land-based TSD unit. Procedures to be followed during the collection of groundwater samples from the network have been developed and will be available to all onsite personnel and to the regulators. These procedures will be consistent with those listed in EPA SW-846.

5.5.4.1.1 Static Water Level Measurements

Before purging or sampling the monitoring well, the static water elevation will be measured, recorded, and remeasured until reproducible results are obtained. The measurements will be taken as depth-to-water from the top of the well casing and the values will be subtracted from the surveyed

elevation of the casing to obtain the elevation of the water table. Graduated steel measuring tapes or other approved devices will be used for the measurements.

5.5.4.1.2 Well Purging

Monitoring wells will be purged using a dedicated pump before samples are collected. This action will be taken to obtain groundwater samples that are representative of the formation water, rather than of the stagnant water from the well casing. Groundwater that has occupied the well casing for a long duration often is oxidized and might not be indicative of true formation water.

As a guideline, high-yielding monitoring wells will be purged until a minimum of three casing volumes have been removed. However, a well will not be considered ready for sample collection until concurrent measurements of pH, specific conductivity, and water temperature have stabilized to at least plus or minus 10 percent over two well volumes pumped (EPA 600/2-85-104). Wells with excessively long purge times could be considered adequately purged when the parameters listed previously have stabilized. Purging of low-yielding monitoring wells (i.e., those that are pumped dry) will consist of removing all standing water. Methods of minimizing or eliminating purge volumes before sampling currently are being evaluated. If the results are favorable, alternate purging and sample-collection techniques will be documented and reflected in revised groundwater monitoring plans.

The pumping rate at each well will be chosen to minimize turbidity and aquifer stress. Generally, the rate of pumping during sampling will be kept below the rate used during well development (EPA 600/2-85-104).

Water levels, pumping rates, and values of sampling parameters (i.e., pH, specific conductance, and temperature) will be recorded in field logbooks and transferred to a sample groundwater field record form.

Requirements for purgewater management are specified in Condition II.F.1. of the HF RCRA Permit (DW Portion). This condition specifies that purgewater be handled in accordance with requirements of Attachment 5 of the HF RCRA Permit (DW Portion).

5.5.4.1.3 Field Analysis

During well purging and sample withdrawal, field determinations of temperature, turbidity, pH, and specific conductance will be measured and recorded. The stabilization of these parameters will be an indication that well water has been purged and formation water is being sampled. Other methods of determining the presence of formation water (e.g., measuring the concentration of specific ionic species during the well purging process) might be proposed at a future time.

5.5.4.1.4 Sample Withdrawal

After the monitoring well has been purged, water samples will be withdrawn from the well using a dedicated pump. The sample withdrawal rate will be kept to approximately 1 liter per minute as recommended for groundwater sampling when volatile organic compounds are involved (EPA 600/2-85-104).

Samples will be collected and containerized in the order of volatilization sensitivity of the parameters to be analyzed. Samples to be analyzed for volatile organic compounds or other organics will not be filtered.

5.5.4.2 Sample Preservation and Shipment [D-10e(4)(b)]

Sample container and preservation methods that will be used during the groundwater monitoring program are in accordance with EPA SW-846. Measurements of pH and specific conductance will be taken in the field on unpreserved samples and documented on field records.

Precleaned and prelabeled sample containers will be supplied for each monitoring well and will include the appropriate preservatives. To ensure zero head space, the containers for samples analyzed for volatile organic compounds will be filled to slightly more than full before being capped. Samples typically are collected in the following order:

- Bottles with septum caps (volatiles)
- Unfiltered samples (major-ions, cyanide, semivolatiles)
- Filtered samples (metals).

Immediately after collection, the sample containers will be placed in sealed, insulated coolers packed with ice to cool the ambient temperature to approximately 4°C. The samples will be transported to the laboratory for arrival within sufficient time to meet holding time requirements. Field parameter record forms and approved sample analysis request forms will be attached to the sealed containers.

5.5.4.3 Analytical Procedures [D-10e(4)(c)]

The laboratory(ies) approved for the groundwater monitoring program will use standard laboratory procedures as listed in EPA SW-846 or an alternate equivalent. Alternate procedures, when used, will meet the guidelines of EPA SW-846, Chapter 1.0.

Quality control samples, e.g., field duplicates, blanks, and spiked samples, will be collected and analyzed to assess the performance of the sampling program and the analytical laboratories.

5.5.4.4 Chain of Custody [D-10e(4)(d)]

Chain-of-custody procedures will be followed to ensure the integrity of groundwater samples and to trace the possession and handling of the individual samples from the time of collection through laboratory analyses and data reporting.

Additional quality assurance and quality control methods include sample labels, sample seals, field logbooks, sample analysis request sheets, and laboratory notebooks.

5.5.4.5 Additional Requirements for Compliance Point Monitoring [D-10e(4)(d)]

The following sections discuss additional requirements for compliance point (downgradient) monitoring.

5.5.4.5.1 Sample Frequency [D-10e(4)(e)(i)]

In compliance with regulations, all wells (compliance and background) will be sampled at least semiannually during detection monitoring [WAC 173-303-645(9)(d) and 40 CFR 264.98(d)] and during the active and postclosure period of each land-based TSD unit. The default sampling requirement of taking a sequence of four samples from each well during each sampling interval will be followed, if it is appropriate for the proposed statistical evaluation method (e.g., analysis of variance procedures). In this case, these four samples will be taken at an interval that ensures, to the greatest extent technically feasible, that an independent sample is obtained. This requirement could be accomplished by reference to the uppermost aquifer's effective porosity, hydraulic conductivity, and hydraulic gradient, and the fate and transport characteristics of the potential contaminants. An alternate sampling procedure approved by Ecology will be used, if the owner/operator finds it to be protective of human health and the environment [EPA/230/02-89-042, page 2-8, WAC 173-303-656(8)(g)(ii) and 40 CFR 264.97(g)(2)]. Specific

sampling requirements (frequency and/or interval) will be presented in unit-specific permit application documentation.

5.5.4.5.2 Compliance Point Groundwater Quality Values [D-10e(4)(e)(ii)]

The groundwater quality data obtained from the compliance point monitoring wells will be documented in a form that expresses each groundwater sampling parameter, the analytical value of the concentration in groundwater from the most recent sampling event, the analytical detection limit, and the background (for inter-well comparisons) or baseline (for intra-well comparisons) concentration limit for each parameter. Summary statistics, if needed, will be provided.

5.5.4.6 Annual Determination [D-10e(4)(f)]

Groundwater flow rates and flow direction within the uppermost aquifer will be determined annually for those land-based TSD units being monitored. Average horizontal flow rates and directions could be determined in several ways, e.g.: (1) movement of groundwater plumes over time; (2) in situ measurement devices (e.g., downhole flow meter); or (3) calculated from the groundwater gradient and aquifer properties using the Darcian flow theory:

$v_h = K_h i_h / n_e$
where
v_h = the horizontal groundwater velocity
K_h = the horizontal hydraulic conductivity
i_h = the horizontal hydraulic gradient
n_e = the effective porosity.

The value of K_h will be determined from hydraulic property investigations performed on monitoring wells. The average value of i_h at the location of each monitoring well will be calculated from the water table elevations. Effective porosities range between 10 percent and 30 percent (RHO-ST-42, p. 3-12). These data will enable the groundwater flow velocity to be determined in the vicinity of each monitoring well.

5.5.4.7 Statistical Determination for Detection Monitoring Program [D-10e(4)(g)]

The concentrations of constituents of concern in compliance point wells will be compared with background (inter-well comparisons) or with baseline (intra-well comparisons) values semiannually to determine whether there is statistically significant evidence of contamination. Statistical methods appropriate for a final status detection monitoring program will include analysis of variance, tolerance intervals, predication intervals, control charts, test of proportions, or other statistical methods approved by Ecology [WAC 173-303-645(8)(h)]. The type of monitoring, the nature of the data, the proportions of nondetects, and temporal variation are important factors to consider when selecting appropriate statistical methods. The statistical evaluation procedures chosen will be based on the EPA guidance document, *Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities - Interim Final Guidance* and its addendum (EPA/530-SW-89-026 and EPA 1992) and Provisional Standard Guide for Developing Appropriate Statistical Approaches for Ground-Water Detection Monitoring Programs developed by American Society for Testing and Materials (ASTM PS64-96). Specifics will be addressed in unit-specific permit application documentation.

The background (or baseline values) and the statistical approach will be evaluated and updated periodically. If changes in groundwater-flow directions result in changes in definition of upgradient well(s) or changes in site conditions, background (or baseline) values will be reestablished. If statistical evaluation methods are no longer effective to achieve the objective because of changing site conditions, a new statistical approach will be proposed in the unit-specific groundwater monitoring plan.

5.5.4.8 Reporting

The results of the statistical evaluation will be reported to Ecology in RCRA quarterly letters and annual groundwater monitoring reports. The statistical results could include a list of groundwater parameters analyzed, detection limits and background or baseline values for each parameter, and the quantified laboratory results. For a particular TSD unit, if statistically significant evidence of contamination is obtained and the owner/operator decide not to make a false-positive claim, the following steps will be taken.

- Ecology will be notified in writing within 7 days of the finding with a report indicating which indicator parameters and or constituents have shown a statistically significant increase over the background or baseline values.
- A determination will be made as to whether dangerous constituents are present, and if so, in what concentration;
- The owner/operator may resample within one month and repeat the analysis for those compounds detected in the above;
- The dangerous constituents detected either in the initial analysis or in the second confirmation analysis will form the basis for compliance monitoring.
- Within 90 days or time agreed to in writing by Ecology, a plan will be submitted to Ecology to establish a compliance monitoring program meeting the requirements of WAC 173-303-645(10) or 40 CFR 264.99.

In case of a false-positive claim, the following will be taken:

- Notify Ecology in writing within 7 days of the finding (i.e., exceedance) and indicate that a false-positive claim will be made;
- Submit a report to Ecology within 90 days or time agreed to in writing by Ecology. This report should demonstrate that a source other than the regulated unit caused the contamination or that the contamination resulted from an error in sampling, analysis, or evaluation or natural variation in groundwater chemistry;
- Submit an application for a permit modification, if necessary, to make any appropriate changes to the detection-monitoring program within 90 days or time agreed to in writing by Ecology;
- Continue to monitor in accordance with the detection-monitoring program;
- Submit an application for a permit modification, if the detection monitoring program no longer satisfies the requirements [of WAC 173-303-645(9)], to make any appropriate changes to the program within 90 days or time agreed to in writing by Ecology.

Groundwater monitoring records will be retained in the Hanford Facility Operating Record as discussed in Chapter 12.0, Section 12.1.26.

5.6 COMPLIANCE MONITORING PROGRAM [D-10f]

A compliance monitoring program will be established for a land-based TSD unit if groundwater sampling during detection-level monitoring reveals statistically significant evidence of contamination (confirmed by verification sampling) at the point of compliance. In a compliance monitoring program, the monitoring objective is to determine whether groundwater protection standards have been exceeded. This is accomplished by comparing the concentration of a constituent of concern to groundwater protection standards such as maximum concentration limit and alternate concentration limit; background; or applicable, relevant, and appropriate requirements.

5.6.1 Waste Description [D-10f(1)]

Waste that could be managed by TSD units is included in the HF Part A. If required, additional information will be provided on (1) the results of any direct sampling of the waste, (2) a list of expected waste constituents, and (3) an estimate of the composition and physical properties of any immiscible fluids that could be expected to have been derived from the waste.

5.6.2 Characterization of Contaminated Groundwater [D-10f(2)]

If a compliance-level monitoring program at a given TSD unit is considered necessary, a complete characterization of groundwater will be provided in which an increase in dangerous chemicals above appropriate reference levels is indicated. In general, the characterization of groundwater could include (1) concentrations of each constituent detected in 40 CFR 264, Appendix IX, (2) concentrations of major anions and cations, and/or (3) concentrations of any other appropriate constituents [e.g., Table I of WAC 173-303-645(5)]. However, specific requirements will be proposed in unit-specific permit application documentation. Disposal of purgewater is determined by analytical results of the groundwater. If the analytical results exceed the criteria established in Attachment 5 of the HF RCRA Permit (DW Portion), the purgewater is contained. All other purgewater is returned to the ground or as specified in Attachment 5 of the HF RCRA Permit (DW Portion) and complies with Permit Condition II.F.

5.6.3 Dangerous Constituents to be Monitored [D-10f(3)]

If compliance monitoring is required, the DQO process will be used to guide the selection of constituents of concern, sampling and analysis, statistical methods, etc. If other groundwater constituents indicative of migrating waste products are identified, the list of groundwater parameters will be revised to include such constituents.

5.6.4 Concentration Limits [D-10f(4)]

With enactment of compliance-level monitoring, maximum concentration limits will be identified for applicable groundwater monitoring parameters listed in Table 1 of WAC 173-303-645, and other appropriate constituents for the specific TSD unit. Alternate concentration limits will be proposed after considering the observed concentrations of chemical constituents in the groundwater that might have been derived from the regulated unit in question. The Hanford Site groundwater background (DOE/RL-96-61), and other standards that are applicable, relevant, and appropriate requirements, will be considered when proposing an alternate concentration limit. Concentration limits will be proposed in unit-specific permit application documentation.

If, during compliance-level monitoring, the reference concentration limits for a given groundwater parameter or parameters are significantly exceeded, a corrective action program will be established (Section 5.7).

5.6.5 Groundwater Monitoring System [D-10f(6)]

The compliance-level groundwater monitoring system will be designed to determine whether groundwater protection standards have been exceeded. Thus, the compliance-level groundwater monitoring system will comply with WAC 173-303-645(10) or agreement for a compliance monitoring program.

5.6.5.1 Description of Wells [D-10f(6)(a)]

The system design will consist of those wells installed under the detection-level monitoring program and any additional wells that are determined to be required after assessing the detection efficiency of the present well network.

5.6.5.2 Representative Samples [D-10f(6)(b)]

The compliance monitoring system will be designed to provide groundwater samples that are representative of groundwater composition at the point of compliance.

5.6.5.3 Location of Background Monitoring Wells that Are Not Upgradient [D-10f(6)(c)]

Background groundwater composition could be based on samples from wells that are not upgradient from the TSD unit. The justification of well locations for unit background water quality is addressed in unit-specific permit application documentation.

5.6.6 Background Values [D-10f(7)]

Background concentration values, if appropriate, will be proposed for each groundwater monitoring parameter identified for the compliance-level monitoring program. The exact sampling periods, frequencies, and statistical methods used to establish the background values will be presented in unit-specific permit application documentation. Background values will be established in conjunction with the Hanford Sitewide background study (DOE/RL-96-61). Background will be established for additional constituents identified in the Appendix IX analysis, if necessary. It is anticipated that those procedures and techniques used to establish background conditions under the final status detection-level monitoring program will be applied.

5.6.7 Sampling, Analysis, and Statistical Procedures [D-10f(8)]

A proposed sampling and analysis plan, including procedures for sample collection, sample preservation and shipment, analytical methods, and chain-of-custody controls, will be prepared if compliance-level monitoring becomes necessary. The basic information for sample collection, sample preservation and shipment, analytical methods, and chain-of-custody procedures will not likely change from the proposed plans submitted under the detection-level monitoring program (Section 5.5). To comply with WAC 173-303-645(10)(f), the compliance-level monitoring wells will be sampled at least semiannually for the specified groundwater parameters and waste constituents. If verified groundwater monitoring results indicate that appropriate groundwater protection standards (e.g., maximum concentration limit or alternate concentration limit; or applicable, relevant, and appropriate requirements) are exceeded at any monitoring well along the line of compliance, written notification will be made to Ecology within 7 days of the finding. An application for a permit modification to establish a corrective action program (Section 5.7) will be submitted within 90 days [WAC 173-303-645(10)(g)] or time agreed to in writing by Ecology. In the case of a false positive claim, the owner/operator will notify Ecology within 7 days in accordance with WAC 173-303-645(10)(i).

5.6.7.1 Sample Collection [D-10f(8)(a)]

This information will not likely change from the proposed plans submitted under the detection-level monitoring program (Section 5.5.4). The number of samples collected will be specified in the unit-specific documentation (e.g., groundwater monitoring plan).

5.6.7.2 Additional Requirements for Compliance Point Monitoring [D-10f(8)(e)]

Under compliance monitoring, additional activities will be conducted, if necessary, to provide a more protective monitoring program.

5.6.7.2.1 Sample Frequency [D-10f(8)(e)(I))]

Under compliance monitoring, downgradient compliance wells will be sampled semiannually [WAC 173-303-645(10)(f)].

5.6.7.2.2 Compliance Point Groundwater Quality Values [D-10f(8)(e)(iii)]

Analytical groundwater quality data will be prepared in an appropriate form for full statistical analysis. These data will exist primarily in tabular form and will consist of raw data from each individual sample obtained during each sampling event. The presentation of the statistical evaluation of the data will depend on the monitoring objectives (Section 5.6.4).

5.6.7.3 Annual Determination of Hydraulic Gradient [D-10f(8)(f)]

Under compliance monitoring, the hydraulic gradient will be determined annually and the efficiency of the monitoring well network will be addressed. If warranted, additional monitoring wells will be installed.

5.6.7.4 Statistical Determination for Compliance Monitoring Program [D-10f(8)(g)]

Statistical evaluation of groundwater monitoring data will comply with requirements set forth in the WAC 173-303-645 (8)(h) final status regulations. Procedures outlined in the following EPA technical guidance documents will be followed:

- *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities: Interim Final Guidance* (EPA/530-SW-89-026)
- *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities - Draft Addendum to Interim Final Guidance* (EPA 1992).
- *Provisional Standard Guide for Developing Appropriate Statistical Approaches for Ground-Water Detection Monitoring Programs* (ASTM PS64-96).

For a compliance-level groundwater monitoring program, the choice of an appropriate statistical method depends on the type of groundwater concentration limit and whether the compliance well exceeds the concentration limit. Appropriate statistical methods include, but are not limited to, tolerance limit, prediction limit, and the Combined Shewhart-CUSUM control chart. Specifics will be proposed in unit-specific groundwater monitoring documentation (e.g., groundwater monitoring plan).

Groundwater monitoring records will be retained in the Hanford Facility Operating Record as discussed in Chapter 12.0, Section 12.1.26.

5.7 CORRECTIVE ACTION PROGRAM [D-10g]

If, at the point of compliance, dangerous constituents are measured in the groundwater at concentrations that exceed accepted groundwater protection standards, sufficient data, supporting information, and analyses will be provided to establish a corrective action program.

A description of the groundwater monitoring plan that will be used to assess the effectiveness of the corrective action measures will be submitted. This groundwater monitoring plan could be similar in scope to a compliance-level monitoring program developed under Section 5.6 and will include all relevant information pertaining to the location and description of monitoring wells, groundwater sampling and analysis plans, statistical methods, and quality assurance and quality control procedures [WAC 173-303-645(11)(d)].

The concentrations established in the Hanford Sitewide background study, in conjunction with local background concentrations and applicable risk-based standards, will determine groundwater protection standards for each land-based TSD unit. This will reduce the time and costs currently being expended for sampling unit-specific background wells, and will further benefit cleanup efforts by the uniform application of cleanup standards across the Hanford Site. The Hanford Sitewide groundwater background study is discussed in DOE/RL-96-61.

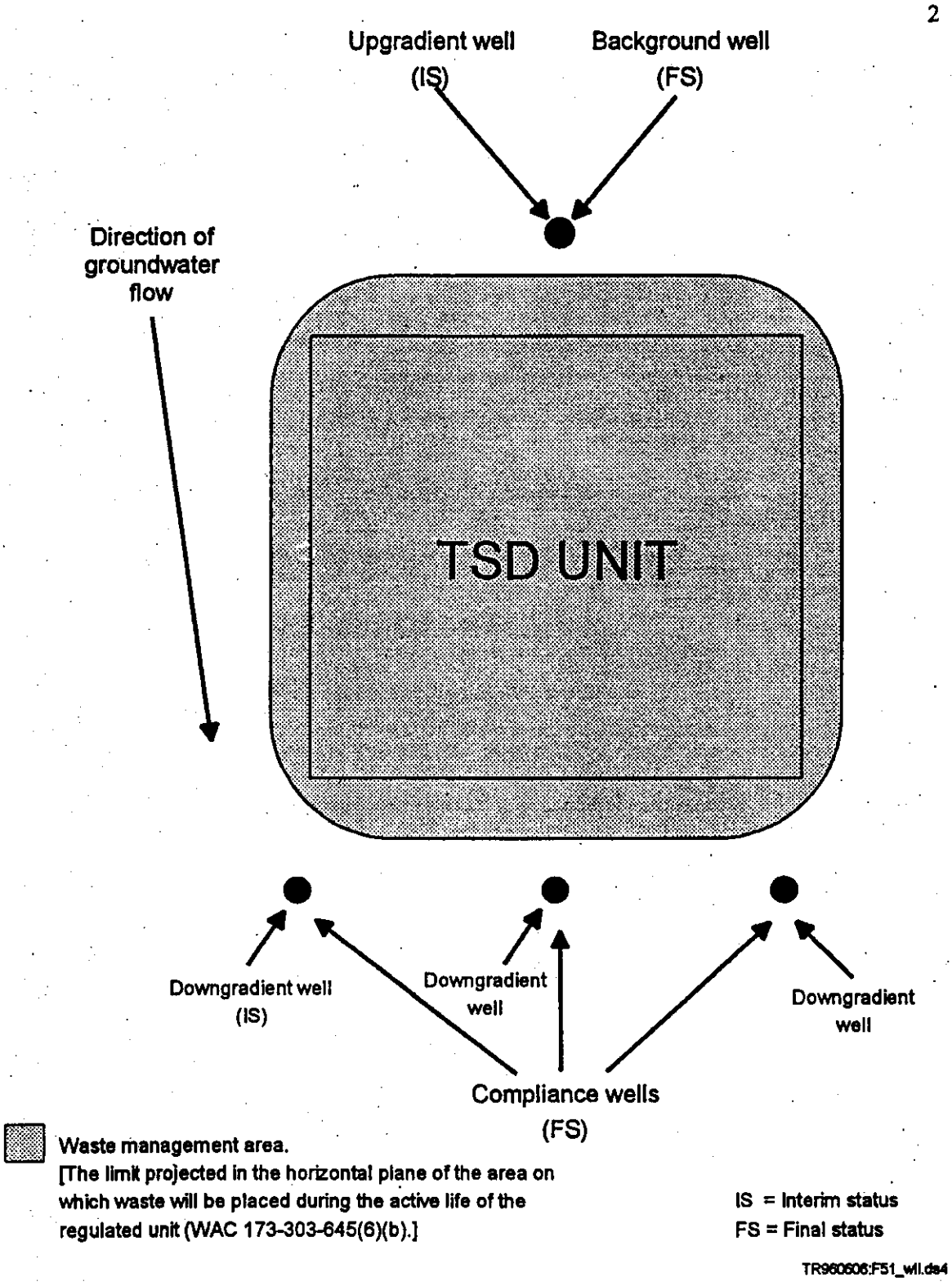


Figure 5-1. Generalized Configuration for a Detection Monitoring Groundwater Well System.

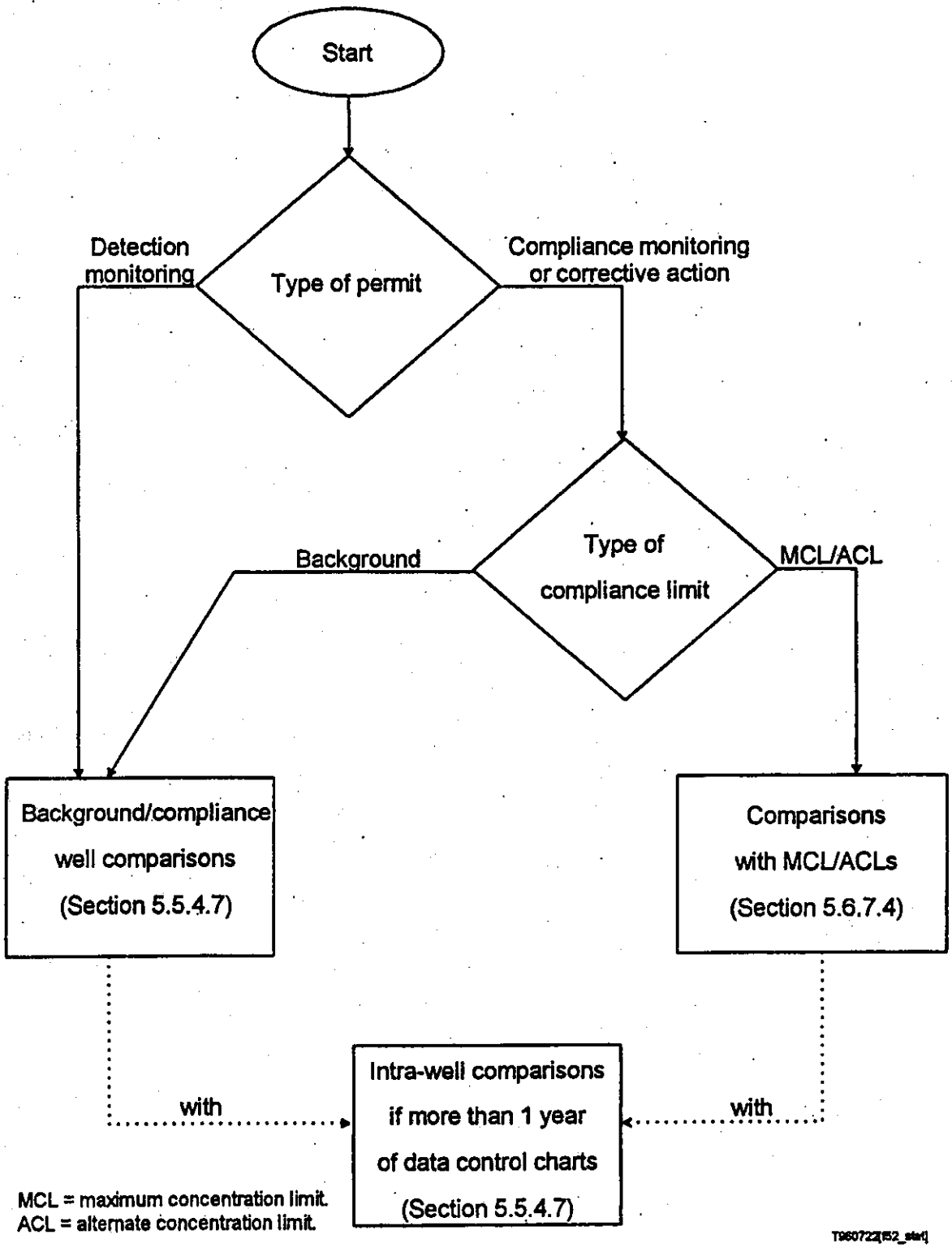


Figure 5-2. Flow Chart for Selection of Appropriate Statistical Method Used for Data Interpretation.

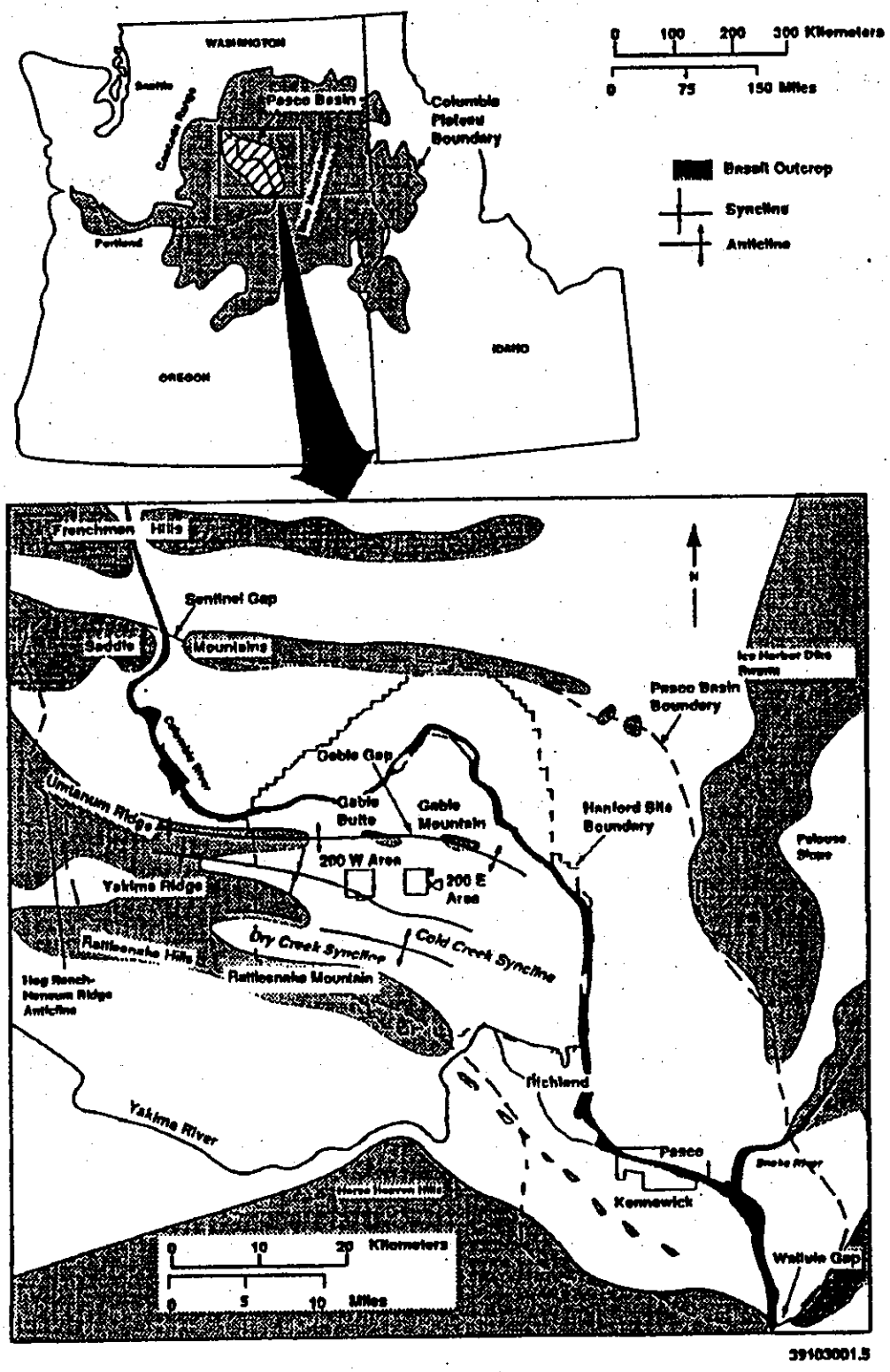


Figure 5-3. Location of Bounding Structures of the Pasco Basin.

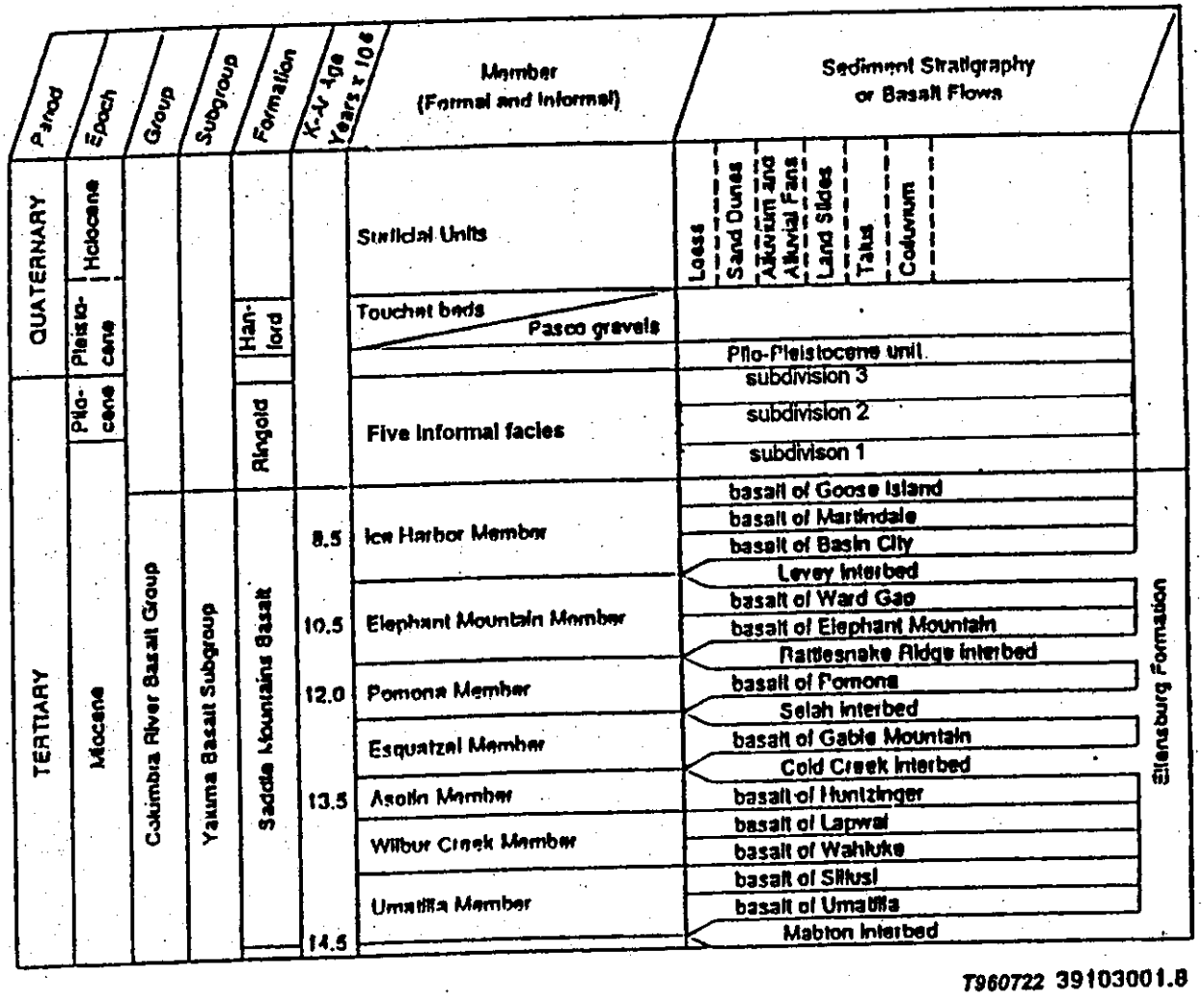
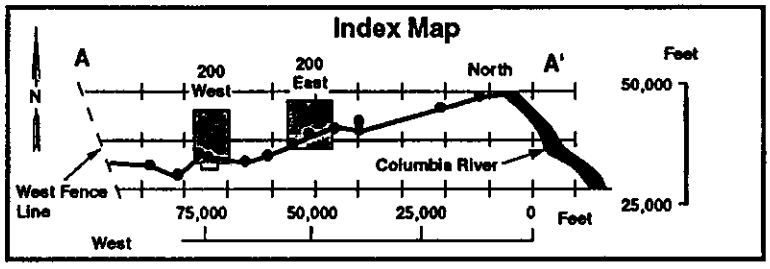


Figure 5-4. Generalized Stratigraphic Column of Formations at the Hanford Site.



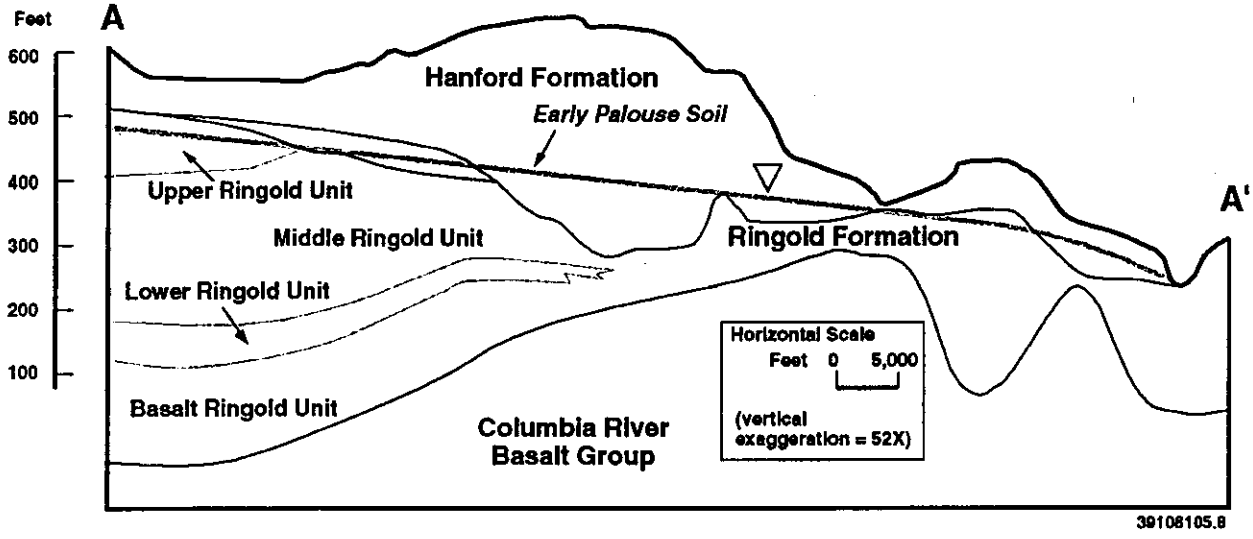


Figure 5-5. Generalized Geologic Cross-Section Through the Hanford Site (RHO-ST-23).

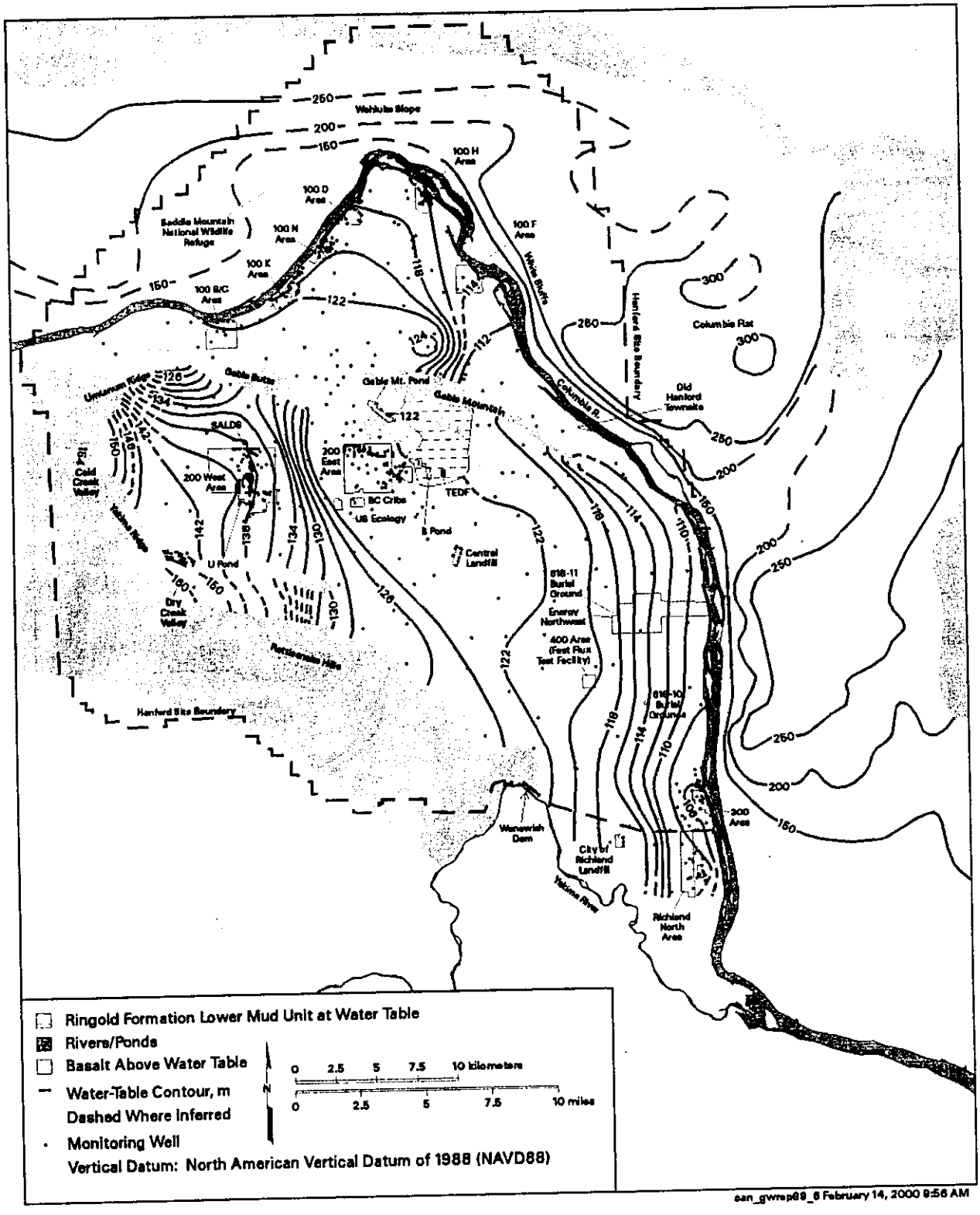


Figure 5-6. Water Table Map of the Hanford Site.

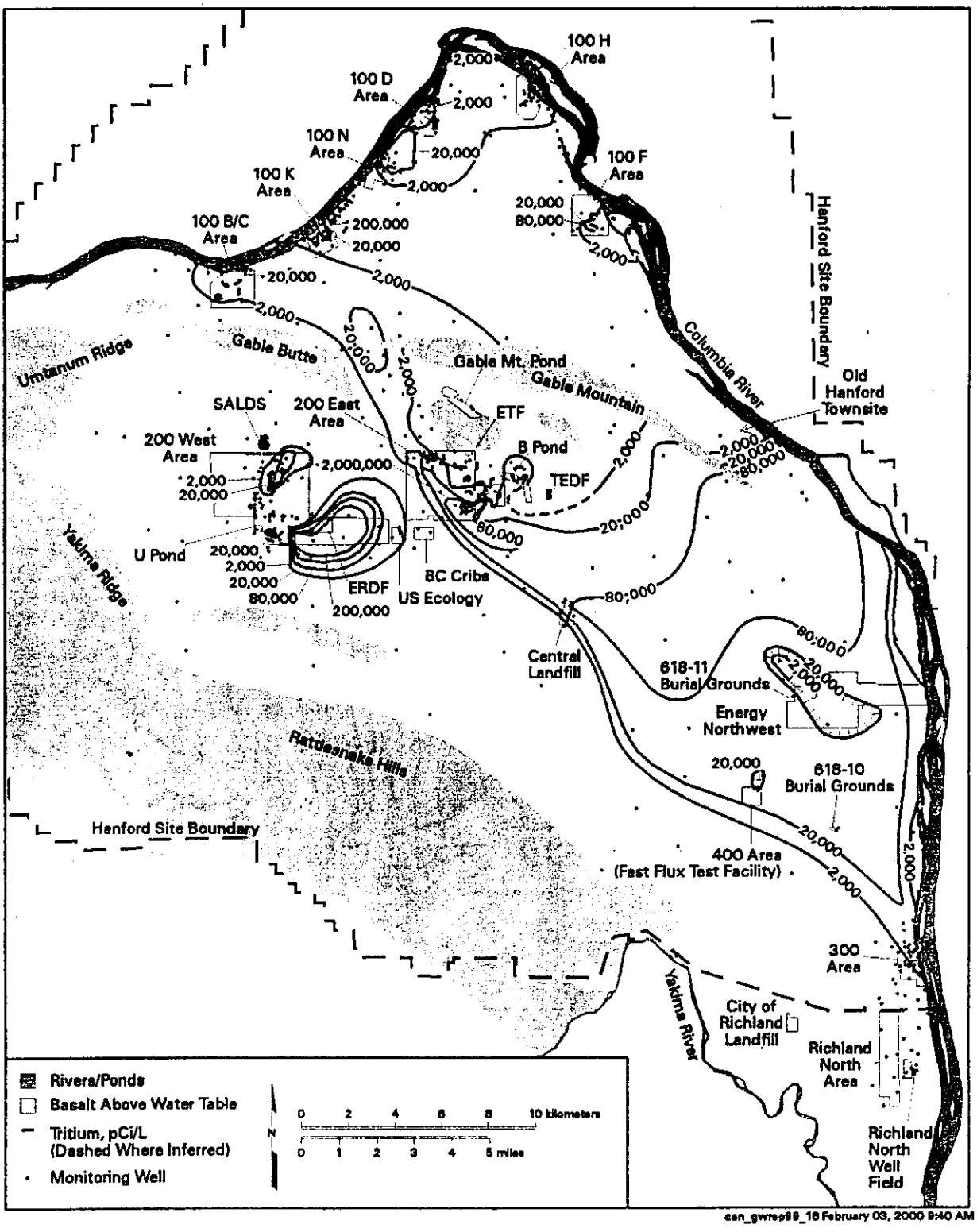


Figure 5-7. Distribution of Tritium on the Hanford Site (PNNL-13116).

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6.0 PROCEDURES TO PREVENT HAZARDS [F]

This chapter addresses the provisions of Section F of Ecology's permit application guidance (Ecology 1987 and 1996), and includes a discussion of the following topics:

- Security
- Inspection schedule
- Preparedness and prevention requirements
- Preventive procedures, structures, and equipment
- Prevention of reaction of ignitable, reactive, and/or incompatible wastes.

Also addressed are provisions contained in Conditions II.M. (Security) and II.O. (General Inspection Requirements) of the HF RCRA Permit (DW Portion).

Procedures to prevent hazards for individual TSD units are included in the Unit-Specific Portion of this permit application or, if appropriate, in unit-specific preclosure work plan, closure work plan, closure plan, closure/postclosure plan, or postclosure permit application documentation.

6.1 SECURITY [F-1]

The following sections describe the security measures, equipment, and warning signs used to control entry to the Hanford Facility and to meet Condition II.M. of the HF RCRA Permit (DW Portion). Security information for individual TSD units is provided in the Unit-Specific Portion of this permit application or, if appropriate, in unit-specific preclosure work plan, closure work plan, closure plan, closure/postclosure plan, or postclosure permit application documentation.

6.1.1 Security Procedures and Equipment [F-1a]

The section describes the 24-hour surveillance system, warning signs, and barriers used to provide security and control access to the Hanford Facility. WAC 173-303-310(2)(b), a 24-hour surveillance system, or WAC 173-303-310(2)(c), artificial or natural barriers, are met at the Hanford Facility level and are not the responsibility of the TSD unit. Operating TSD units contained in Part III of the HF RCRA Permit (DW Portion) may be required to comply with requirements in WAC 173-303-310(2)(c) based on established Part III permit conditions. A 24-hour surveillance system, warning signs, and artificial and natural barriers are used to provide security and control access to the Hanford Facility. The entire Hanford Facility is a controlled access area. The Hanford Facility maintains around-the-clock surveillance for protection of government property, classified information, and special nuclear materials. The Hanford Patrol maintains a continuous presence of protective force personnel to provide additional security.

The majority of TSD units are located within, or in the vicinity of, the 200 Areas (refer to Chapter 1.0, Table 1-1, Appendix 2A). Staffed barricades are maintained around the clock at checkpoints on vehicular access roads leading to these areas (Yakima, Wye, and Rattlesnake Barricades; Drawing H-6-958 in Appendix 2A). Unstaffed barricades/fences are maintained for the 300 Area. All personnel accessing locations on the Hanford Site (except for publicly accessible locations) must have a U.S. Department of Energy-issued security identification badge indicating the appropriate authorization. Personnel also could be subject to a random search of items carried into or out of the Hanford Site. Additional means to bar entry or control access (e.g., fences, locked entry doors) are discussed in the Unit-Specific Portion of this permit application or, if appropriate, in unit-specific preclosure work plan, closure work plan, closure plan, closure/postclosure plan, or postclosure permit application documentation.

Operating TSD units in Part III of the HF RCRA Permit (DW Portion) must comply with the requirements found in WAC 173-303-310(2)(a) regarding the placement of signs. Security information for operating TSD units regarding the placement of signs is provided in the Unit-Specific portion of this

permit application. Security information for non-operating TSD units incorporated into Part III, Part V, or Part VI of the HF RCRA Permit (DW Portion) regarding the placement of signs are determined on a case-by-case basis. Security information for non-operating TSD units may be documented in unit-specific preclosure work plan, closure work plan, closure plan, closure/postclosure plan, or postclosure permit application documentation, as appropriate.

Signs are, or will be, posted at area boundaries within the Hanford Site stating "NO TRESPASSING. SECURITY BADGES REQUIRED BEYOND THIS POINT. AUTHORIZED VEHICLES ONLY. PUBLIC ACCESS PROHIBITED" (or an equivalent legend). In addition, warning signs stating "DANGER--UNAUTHORIZED PERSONNEL KEEP OUT" (or an equivalent legend) are, or will be, posted at operating TSD units or at active portions of operating TSD units within the Hanford Facility. These signs are, or will be, written in English, legible from a distance of 7.6 meters, and visible from all angles of approach.

6.1.2 Waiver [F-1b]

Waivers of the security procedures and equipment requirements for the Hanford Facility currently are not requested.

6.2 INSPECTION SCHEDULE [F-2]

This section addresses the general inspection requirements for the Hanford Facility. The TSD unit-specific inspection activities are addressed in the Unit-Specific Portion of this permit application or, if appropriate, in unit-specific preclosure work plan, closure work plan, closure plan, closure/postclosure plan, or postclosure permit application documentation.

6.2.1 General Inspection Requirements [F-2a]

General inspection requirements for the Hanford Facility are specified in Condition II.O. of the HF RCRA Permit (DW Portion). This condition requires the following:

- Facility inspections to be conducted in accordance with the provisions of WAC 173-303-320(2)
- Inspections of the 100, 200 East, 200 West, 300, and 400 Areas to be conducted annually
- Inspection of the banks of the Columbia River, contained within the Hanford Facility boundary, to be conducted two times per year (i.e., one at the low water mark of the year, and one at a time chosen by the Permittees)
- Visual inspection for malfunctions, deterioration, operator errors, and discharges that might cause or lead to the release of dangerous waste constituents to the environment or that threaten human health
- Notification to Ecology at least 7 days before conducting these inspections to allow Ecology representatives to be present during the inspection
- Remedial action to be taken, if required, in accordance with a schedule agreed to by Ecology.

6.2.2 Inspection Log [F-2b]

Documentation of the inspections conducted in accordance with Condition II.O. of the HF RCRA Permit (DW Portion) is placed in the Hanford Facility Operating Record, General Information File (refer to Chapter 12.0, Section 12.1.30).

6.2.3 Schedule for Remedial Action for Problems Revealed [F-2c]

In accordance with Condition II.O of the HF RCRA Permit (DW Portion), remedial action schedules will be developed for any problems discovered during a Hanford Facility inspection. These schedules will be agreed to by Ecology.

6.2.4 Specific Process or Waste Type Inspection Requirements [F-2d]

As noted in Chapter 1.0, Table 1-1, the Hanford Facility includes TSD units with container handling capabilities, tank systems, surface impoundments, containment buildings, landfills, waste piles, and miscellaneous units. Inspections requirements for each of the TSD units are addressed in the Unit-Specific Portion of this permit application or, if appropriate, in unit-specific preclosure work plan, closure work plan, closure plan, closure/postclosure plan, or postclosure permit application documentation.

6.3 PREPAREDNESS AND PREVENTION REQUIREMENTS [F-3]

The emergency preparedness and prevention measures taken for the Hanford Facility are described in this section. Most of the Hanford Facility 'operating' TSD units are equipped with internal communication systems to relay emergency or other information to unit personnel. The internal communication systems include telephones, various alarm systems, and hand-held or vehicle two-way radios. Alarm systems exist at various locations throughout the Hanford Facility to allow personnel to respond appropriately to various emergency situations, including the following: building evacuations, take-cover events, and fire and/or explosion. Telephones are located throughout the Hanford Facility and provide both internal and external communication. In addition, the following external communication systems are available for notifying persons assigned to emergency response organizations:

- Fire alarm pull boxes and fire sprinkler flow monitoring devices - connected to a system monitored around the clock by the Hanford Fire Department
- Emergency telephone numbers 911 (or 375-2400 for PNNL facilities) - on notification, the Hanford Patrol Operations Center notifies and/or dispatches required emergency responders
- Crash alarm telephone system - consists of selected telephones that are disassociated from the regular system and are connected automatically to control stations
- Two-way radio system - consists of hand-held or vehicle radios; the system accesses the Hanford Facility emergency network and can summon the Hanford Fire Department, Hanford Patrol, and/or any other assistance needed to deal with emergencies.

6.3.1 Equipment Requirements [F-3a]

Equipment requirements are listed in Attachment 4 of the HF RCRA Permit (DW Portion). Unit-specific equipment requirements are listed in the Unit-Specific Portion of the permit application.

6.3.2 Aisle Space Requirement [F-3b]

Aisle space requirements for 'operating' TSD units are addressed in the Unit-Specific Portion of this permit application.

6.4 PREVENTIVE PROCEDURES, STRUCTURES, AND EQUIPMENT [F-4]

Preventive procedures are in place to ensure that unloading activities are conducted in a safe manner and that run-off of liquid, if spilled during waste unloading operations, is contained and disposed of properly. In those areas of TSD units where significant risk of exposure to dangerous and/or mixed waste exists, personnel are required to wear protective suits and/or respiratory devices, depending on the specific hazard. Provisions are in place at specific TSD units to ensure that backup power is provided for equipment critical to operations. Preventive measures information specific to TSD units is contained in the Unit-Specific Portion of this permit application or, if appropriate, in unit-specific preclosure work plan, closure work plan, closure plan, closure/postclosure plan, or postclosure permit application documentation.

Description of actions designed to control and mitigate effects to human health and the environment for any spill or release between TSD unit boundaries (i.e., onsite transportation) are described in Attachment 4 of the HF RCRA Permit (DW Portion) and where appropriate in the Unit-Specific Portion of this permit application.

6.5 PREVENTION OF REACTION OF IGNITABLE, REACTIVE, AND/OR INCOMPATIBLE WASTES [F-5]

Procedures and precautions to prevent the reaction of ignitable and reactive waste at 'operating' TSD units are described in the Unit-Specific Portion of this permit application. Procedures and precautions to prevent the reaction of incompatible waste are described in Attachment 4 of the HF RCRA Permit (DW Portion).

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7.0 CONTINGENCY PLAN [G]

This chapter addresses the provisions identified in Section G of Ecology's permit application guidance (Ecology 1987 and 1996). The WAC 173-303 requirements for a contingency plan are satisfied by portions of the *Hanford Emergency Management Plan* [Attachment 4 of the HF RCRA Permit (DW Portion)], together with TSD unit-specific documentation established to meet contingency plan requirements contained in the Unit-Specific Portion of this permit application. Contingency plan documentation, if appropriate, also could be contained in preclosure work plan, closure work plan, closure plan, closure/postclosure plan, or postclosure permit application documentation.

The Hanford Emergency Management Plan includes description of actions pertaining to certain releases of hazardous substances as defined in WAC 173-303-040. Releases of hazardous substances that threaten human health and the environment resulting from transportation activities occurring on the Hanford Facility are subject to the HF RCRA Permit (DW Portion) (refer to Condition II.A. and to Permit Attachment 3, the Permit Applicability Matrix).

A matrix describing which portions of the *Hanford Emergency Management Plan* meet contingency planning requirements is included as an appendix to the *Hanford Emergency Management Plan*. A matrix will also be included for operating units, as necessary, in the TSD Unit-Specific Portion of this permit application.

The emergency preparedness documentation approach described above will also be used for dangerous and mixed waste management activities subject to WAC 173-303-350 at the Hanford Facility.

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8.0 PERSONNEL TRAINING [H]

This chapter addresses the provisions identified in Section H of Ecology's permit application guidance (Ecology 1987 and 1996). This chapter focuses on a description of the training programs implemented to meet the requirements of Condition II.C. (Personnel Training) of the HF RCRA Permit (DW Portion).

This chapter discusses personnel training requirements based on WAC 173-303 and the HF RCRA Permit (DW Portion). In accordance with WAC 173-303-806(4)(a)(xii), the *Hanford Facility Dangerous Waste Part B Permit Application* must contain two items: (1) "an outline of both the introductory and continuing training programs by owners or operators to prepare persons to operate or maintain the TSD facility in a safe manner as required to demonstrate compliance with WAC 173-303-330" and (2) "a brief description of how training will be designed to meet actual job tasks in accordance with the requirements in WAC 173-303-330(1)(d)." The HF RCRA Permit, (DW portion) Condition II.C (Personnel Training) contains training requirements applicable to Hanford Facility personnel and non-Facility personnel.

The general facility training information contained in this chapter need not be duplicated in the Unit-Specific Portion of the *Hanford Facility Dangerous Waste Permit Application,* but could be cross-referenced, as appropriate. Pertinent information also can be cross-referenced, if appropriate, in preclosure work plan, closure work plan, closure plan, closure/postclosure plan, or postclosure permit application documentation.

8.1 OUTLINE OF INTRODUCTORY AND CONTINUING TRAINING PROGRAMS

The introductory and continuing training programs are designed to prepare personnel to manage and maintain the TSD unit in a safe, effective, and environmentally sound manner. In addition to preparing personnel to manage and maintain TSD units under normal conditions, the training programs ensure that personnel are prepared to respond in a prompt and effective manner should abnormal or emergency conditions occur. Emergency response training is consistent with the description of actions contained in Chapter 7.0, Contingency Plan. The introductory and continuing training programs contain the following objectives:

- Teach Hanford Facility personnel to perform their duties in a way that ensures the Hanford Facility's compliance with WAC 173-303
- Teach Hanford Facility personnel dangerous waste management procedures (including implementation of the contingency plan) relevant to the job titles/positions in which they are employed, and
- Ensure Hanford Facility personnel can respond effectively to emergencies.

8.1.1 Introductory Training

Introductory training includes general Hanford Facility training and TSD unit-specific training. General Hanford Facility training is described in DOE/RL-91-28, Section 8.1, and is provided in accordance with the HF RCRA Permit (DW Portion), Condition II.C.2. TSD unit-specific training is provided to Hanford Facility personnel allowing those personnel to work unescorted, and in some cases, is required for escorted access. Hanford Facility personnel cannot perform a task for which they are not properly trained, except to gain required experience while under the direct supervision of a supervisor or coworker who is properly trained. Hanford Facility personnel must be trained within 6 months after their employment at or assignment to the Hanford Facility, or to a new job title/position at the Hanford Facility, whichever is later.

General Hanford Facility training: Condition II.C.2. of the HF RCRA Permit (DW Portion) requires Hanford Facility personnel to receive general facility training within 6 months of hire. This training provides an orientation on dangerous waste management activities being conducted on the Hanford Facility and includes the following:

- Description of emergency signals and appropriate personnel response
- Identification of contacts for information regarding dangerous waste management activities
- Introduction to waste minimization concepts
- Identification of contact(s) for emergencies involving dangerous waste
- Familiarization with the applicable portions of the *Hanford Emergency Management Plan* [Attachment 4 of the HF RCRA Permit (DW Portion)].

Each Permittee has access to a general facility training module that meets the requirements listed for Condition II.C.2. of the HF RCRA Permit (DW Portion).

Condition II.C.4. of the HF RCRA Permit (DW Portion) requires the Permittees to provide the necessary training to non-Facility personnel (i.e., visitors, subcontractors) as appropriate for the locations and activities undertaken. At a minimum, this training describes dangerous waste management hazards on the Hanford Facility.

Contingency Plan training: Hanford Facility personnel receive training on applicable portions of the *Hanford Emergency Management Plan* [Attachment 4 of the HF RCRA Permit (DW Portion)] in general Hanford Facility training. In addition, Hanford Facility personnel receive training on content of the description of actions contained in contingency plan documentation in Chapter 7.0 and Appendix 7A to be able to effectively respond to emergencies.

Emergency Coordinator training: Hanford Facility personnel who perform emergency coordinator duties in WAC 173-303-360 (e.g., Building Emergency Director) in the Hanford Incident Command System receive training on implementation of the contingency plan and fulfilling the position within the Hanford Incident Command System. These Hanford Facility personnel must also become thoroughly familiar with applicable contingency plan documentation, operations, activities, location, and properties of all waste handled, location of all records, and the unit/building layout.

Operations training: Dangerous waste management operations training (e.g., waste designation training, shippers training) is determined on a unit-by-unit basis and shall consider the type of waste management unit (e.g., container management unit) and the type of activities performed at the waste management unit (e.g., sampling). For example, training provided for management of dangerous waste in containers is different than the training provided for management of dangerous waste in a tank system. Common training required for compliance within similar waste management units can be provided in general training and supplemented at the TSD unit. Training provided for TSD unit-specific operations is identified in the training plan documentation based on: (1) whether a general training course exists, (2) the training needs to ensure waste management unit compliance with WAC 173-303, and (3) training commitments agreed to with Ecology.

8.1.2 Continuing Training

Continuing training meets the requirements for WAC 173-303-330(1)(b) and includes general Hanford Facility training and TSD unit-specific training.

General Hanford Facility training: Annual refresher training is provided for general Hanford Facility training. Refer to description above in Section 8.1.1.

Contingency plan training: Annual refresher training is provided for contingency plan training. Refer to description above in Section 8.1.1.

Emergency coordinator training: Annual refresher training is provided for emergency coordinator training. Refer to description above in Section 8.1.1.

Operations training: Refresher training occurs on many frequencies (i.e., annual, every other year, every three years) for operations training. When justified, some training will not contain a refresher course and will be identified as a one-time only training course. The TSD unit-specific training plan documentation will specify the frequency for each training course. Refer to description above in Section 8.1.1.

8.2 DESCRIPTION OF TRAINING DESIGN

Proper design of a training program ensures personnel who perform duties on the Hanford Facility related to WAC 173-303-330(1)(d) are trained to perform their duties in compliance with WAC 173-303. Actual job tasks, referred to as duties, are used to determine training requirements. The first step taken to ensure Hanford Facility personnel have received the proper training is to determine and document the waste management duties by job title/position. The second step compares waste management duties to general waste management unit training curriculum. If general waste management unit training curriculum does not address the waste management duties, the training curriculum is supplemented and/or on-the-job training is provided. The third step summarizes the content of a training course necessary to ensure that the training provided to each job title/position addresses associated waste management duties. The last step is to assign training curriculum to Hanford Facility personnel based on the previous evaluation. The training plan documentation contains this process.

Waste management duties include those specified in Section 8.1 as well as those contained in WAC 173-303-330(1)(d). Training elements of WAC 173-303-330(1)(d) applicable to TSD unit operations will be specified in the Unit-Specific portion of this permit application.

Hanford Facility personnel who perform these duties receive training pertaining to their duties. The training plan documentation described in the Unit-Specific portion of this permit application contains specific information regarding the types of training Hanford Facility personnel receive based on the outline in Section 8.1.

8.3 TREATMENT, STORAGE, AND/OR DISPOSAL UNIT-SPECIFIC TRAINING

In accordance with HF RCRA Permit (DW Portion), Condition II.C.3, the Unit-Specific portion of this permit application or, if appropriate, in preclosure work plan, closure work plan, closure plan, closure/postclosure plan, or postclosure permit application-documentation contains a description of the training plan. The training plan ensures that personnel training is conducted as required by WAC 173-303-330, as specified in Condition II.C.1. of the HF RCRA Permit (DW Portion). The training plan contributes to the assurance that TSD units are operated and maintained in accordance with requirements of the EPA, Ecology, and DOE-RL.

Training plan documentation is maintained outside of the *Hanford Facility Dangerous Waste Part B Permit Application* and the HF RCRA Permit. Therefore, changes made to the training plan documentation are not subject to the HF RCRA Permit modification process. However, the training plan documentation is prepared to comply with WAC 173-303-330(2).

Documentation prepared to meet the training plan consists of hard copy and/or electronic media as provided by HF RCRA Permit (DW Portion), Condition II.C.1. The training plan documentation consists

of one or more documents and/or a training database with all the components identified in the core document.

The Hanford Site contractors are responsible for developing and administering the courses required by the training programs, and for establishing formal retraining dates for these courses. The TSD unit management is responsible for identifying TSD unit- and job-specific training requirements for TSD unit personnel and for ensuring personnel complete the appropriate training.

In administering certain training courses, a retraining date could be set by TSD unit management. The formal retraining date is a date (day/month/year) counting from the most recent initial training date or another baseline date established for the training. The formal retraining date remains the same each year regardless of when retraining is completed. Retraining is to occur within 30 days of the formal retraining date. While it is preferable to complete retraining within the 30 days before the formal retraining date, managers have the ability to authorize personnel for 30 days beyond the formal retraining date, thus allowing a 60-day window in which to satisfy the retraining requirements.

8.4 TRAINING RECORDS

As specified in Condition II.C.1. of the HF RCRA Permit (DW Portion), each Hanford Facility Permittee maintains documentation in accordance with WAC 173-303-330(2) and (3). Training records could be maintained in hard copy form or by using electronic data storage. At a minimum, training records will consist of course attendance rosters correlating the training received with the personnel who were in attendance. Training records are maintained in accordance with the requirements of the *Privacy Act of 1974*. Training records for personnel are available for inspection purposes through 59 FR 17091, which gives federal, state, and local government officers 'routine use' access to training records where a regulatory program being implemented is applicable to a DOE or contractor program. Further discussion of the maintenance of Hanford Facility and TSD unit-specific personnel training records is included in Chapter 12.0, Section 12.1.20.

8.5 TRAINING DIRECTOR

One person does not function as the training director on the Hanford Facility. A TSD unit manager has overall responsibility for all training required by WAC 173-303-330 and Condition II.C. of the HF RCRA Permit (DW Portion) at the TSD unit under this manager's control. To meet requirements of a training director in WAC 173-303-330(1)(a), the position is shared among TSD unit personnel, central training organization personnel, and other support organization personnel. A TSD unit manager can access training resources and experts from many different areas on a variety of subject matters rather than relying on the knowledge of a limited number of persons. This shared responsibility ensures the identification of the appropriate training requirements and that the Hanford Facility dangerous waste training programs for each Permittee meet all applicable dangerous waste management requirements.

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9.0 EXPOSURE INFORMATION REPORT

This chapter discusses exposure information for the Hanford Facility. Requirements for submittal of exposure information, administered by EPA, are contained in 40 CFR 270.10(j). Such information only is required for dangerous waste constituents in Part B permit application documentation pertaining to a surface impoundment or a landfill. Guidance for preparing an exposure information report is contained in EPA's *Permit Applicants' Guidance Manual for Exposure Information Requirements under RCRA Section 3019* (Guidance Manual) (EPA 1986a). This Guidance Manual states that the information provided must address, at a minimum, the following three areas:

- Reasonably foreseeable potential releases from both normal operations and accidents, including releases associated with transportation to or from the facility
- The potential pathways of human exposure to dangerous wastes or constituents resulting from these releases
- The potential magnitude and nature of the human exposure resulting from such releases.

The Guidance Manual further states that the "EPA does not expect applicants to develop major, expensive new pieces of information..." to address these three areas.

This chapter is intended to provide an overview of available information regarding the potential for exposure to dangerous and/or mixed waste present at, or released from, 'operating' surface impoundment or landfill units on the Hanford Facility. These 'operating' TSD units currently include the LLBG and the LERF. Part B documentation for both of these units is contained in the Unit-Specific Portion of this permit application (i.e., DOE/RL-88-20 and DOE/RL-97-03, respectively).

The LLBG and LERF are located within, or near, the 200 Areas of the Hanford Facility (Appendix 2A). Thus, the focus of this chapter is to address reasonably foreseeable potential releases from both normal operations and accidents within the 200 Areas. This information includes releases associated with potential environmental transport pathways and routes of human exposure to dangerous and/or mixed waste. The information contained in this chapter need not be duplicated in the Unit-Specific Portion of this permit application, but will be cross-referenced, as appropriate. Information in this chapter also could be cross-referenced by preclosure work plan, closure work plan, closure plan, closure/postclosure plan, or postclosure permit application documentation, as appropriate. Most of the land-based TSD units 'undergoing closure' are located within the 200 Areas. In general, the exposure information discussed in this chapter would be the same information used to conduct an analysis of most TSD units in the 200 Areas.

9.1 GENERAL INFORMATION

This section provides general information for the Hanford Facility and for the LLBG and LERF. Also provided is a checklist (Table 9-1) that identifies sections of the *Hanford Facility Dangerous Waste Permit Application* where information relevant to Chapter 9.0 discussions can be found.

9.1.1 Risk Assessment Reports and Information

This section summarizes health and risk assessment reports and other relevant information for the Hanford Facility and for the LLBG and LERF. The discussion is limited to dangerous waste constituents.

9.1.1.1 Hanford Facility

A description of the Hanford Site and Hanford Facility is contained in Chapter 2.0. The Hanford Site maintains a sitewide environmental surveillance program to assess onsite and offsite environmental impacts and offsite human health exposures. This program monitors air, surface water, sediment, agricultural products, vegetation, soil, and wildlife. A description of this program is contained in the *Hanford Site Environmental Monitoring Plan* (Monitoring Plan) (DOE/RL-91-50).

Exposure information resulting from the Hanford Site environmental monitoring program is prepared and issued annually (Environmental Report) (e.g., PNNL--12088). The Environmental Report provides a summary of environmental data that are collected to characterize Hanford Site environmental management activities. This information is used to assess the exposure that results from the release of all effluents, from both ongoing and past operations, based on the contaminants that continue to reside in the soil and groundwater pathway.

A risk-based cleanup strategy has been prepared for the Hanford Site (PNL-10651). This study concluded that existing land use and access restrictions protect public health and safety. The current airborne, groundwater, and surface water exposures to the general public are much below background and are anticipated to be lower in the future. The study concluded that over the near-term (current through the remediation phase of Hanford Site cleanup), the primary exposure pathway of concern is through the air. Although the consequences associated with inhalation are large, the probability of occurrence is low. Over the long-term (post remediation phase), the study concluded that the exposure pathway of primary concern is groundwater. With regard to hazardous chemicals, the potential ingestion of carbon tetrachloride was found to be the single largest contributor of carcinogenic risk over the long-term. Similarly, nitrates were found to be the single largest contributor of noncarcinogenic risk.

The content of this chapter is based on information contained in the Monitoring Plan (DOE/RL-91-50), the Environmental Report (e.g., PNNL--12088), a risk-based cleanup strategy (PNL-106515), and DOE/EIA-0113, as well as a number of other general and specific documents that are cited throughout the text.

9.1.1.2 Surface Impoundment and/or Landfill TSD Units

This section summarizes risk assessment reports and information specific to the LLBG and LERF that addresses dangerous waste constituents (i.e., radiological studies are not included).

The LLBG, classified as a land-based unit, are located in the 200 Areas (refer to Appendix 2A). Three of the four operational burial grounds comprising this TSD unit are located in the 200 West Area; the remaining burial ground is located in the 200 East Area. (refer to Chapter 4.0, Section 4.1.2.8 and DOE/RL-88-20).

Reports containing exposure information relevant to the LLBG include:

- *Estimation of the Release and Transport of Lead through Soils and Groundwater at the Hanford Site 218-E-12B Burial Ground* (PNL 1992)
- *Estimation of the Release and Transport of Nickel through Soils and Groundwater at the Hanford Site 218-E-12B Burial Ground* (PNL 1994)
- *Extrapolation of Migration Modeling for Large Metal Components Containing Lead and Nickel Alloys at the 218-E-12B Burial Ground* (USN 1995)
- *Environmental Impact Statement on the Disposal of Decommissioned, Defueled Cruiser, Ohio Class, and Los Angeles Class Naval Reactor Plants* (USN 1996).

- Solid Waste Burial Ground Interim Safety Basis (WHC-SD-W105-SAR-001).

These reports evaluate the release and transport potential of metals from the disposal of defueled naval reactor compartments.

The LERF, located in the 200 East Area (refer to Appendix 2A), is classified as a surface impoundment. The LERF provides interim treatment and storage of mixed effluent received from the 242-A Evaporator and other onsite sources (refer to Chapter 4.0, Section 4.1.2.4.). A baseline environmental survey has been performed on LERF that provided an assessment of potential impacts to the environment from operating LERF. In addition, the final safety analysis report examined the risk to human health associated with the release of ammonia (WHC-SD-W105-SAR-001).

9.1.2 Land Use

The Hanford Site is federally owned and covers approximately 1,450 square kilometers (refer to Chapter 2.0, Figure 2-1). Figure 9-1 depicts the current land uses in and adjacent to the Hanford Site. As discussed later in this section, changes in Hanford Site land use and custodianship will need to be factored into future evaluations of exposure information.

Currently, the Hanford Site primarily is dedicated to U.S. Department of Energy-controlled operations, with limited exceptions. However, the future use of the Hanford Site currently is being evaluated (DOE/EIS-0222). In particular, the lands north and east of the Columbia River are under consideration for non-U.S. Department of Energy use and for ownership transfer. The portion of the Hanford Site that is located on the north and east sides of the Columbia River currently is used for wildlife refuge or wildlife recreation land. The stretch of the Columbia River within the Hanford Site boundary has been granted National Monument Status. The southwest portion of the Hanford Site is the Fitzner/Eberhardt Arid Lands Ecology Reserve. The portion of the Hanford Site south and west of the Columbia River is where reactor, fuel reprocessing, TSD units, and the Hazardous Material Management and Emergency Response Training Center are located. Additional information on this central area, which is most relevant to the discussions contained in this chapter, can be found in Chapter 2.0. This central area (i.e., the 200 Areas) contains the LLBG and LERF.

Also located within the boundaries of the Hanford Site are Energy Northwest reactor and generating complex, the US Ecology, Inc. waste disposal facility, located southwest of the 200 East Area, and the National Science Foundation Laser Interferometer Gravitational Wave Observatory, located northwest of the 400 Area. Seimens Nuclear Power is located just north of Richland, Washington, adjacent to the Hanford Site boundary. The eastern boundary of the nearest military installation, the Yakima Firing Center, is 22 kilometers west-northwest of the Hanford Site.

Outside the Hanford Site are privately owned farms and the urban and suburban areas of Richland and West Richland, Washington.

On December 21, 1994, the Secretary of Energy issued a new land- and facility-use policy for the U.S. Department of Energy, which makes the following statement:

> *"It is Department of Energy policy to manage all of its land and facilities as valuable national resources. Our stewardship will be based on the principles of ecosystem management and sustainable development. We will integrate mission, economic, ecologic, social, and cultural factors in a comprehensive plan for each site that will guide land and facility use decisions. Each comprehensive plan will consider the site's larger regional context and be developed with stakeholder participation. This policy will result in land and facility uses which support the Department's critical missions, stimulate the economy, and protect the environment."*

The DOE-RL has initiated a comprehensive land use planning process to evaluate specific and potential use of the different areas of the Hanford Site. To support this process, the DOE-RL is developing a comprehensive land use plan, which was released to the public during the summer of 1996 for review and comment as part of the draft Hanford Remedial Action Environmental Impact Statement and Comprehensive Land Use Plan (DOE/EIS-0222). This action satisfies Public Law 104-201 that requires the development of a draft future land use for the Hanford Site.

9.1.3 Aerial Photographs

A composite aerial photograph of the Hanford Facility is included in Appendix 2A. Large-scale maps and aerial photographs of the LLBG and LERF are included in the Unit-Specific Portion of this permit application.

9.1.4 Summary of Waste Analysis Data

The HF Part A provides waste characteristics information for TSD units (refer to Chapter 1.0). Process knowledge documentation and results of analyses have been, and will be, maintained with other TSD unit records (refer to Chapter 12.0, Section 12.1.16) and will be provided to Ecology and the EPA as required by applicable regulations. Waste analysis data for the LLBG and LERF are discussed in the Unit-Specific Portion of this permit application.

9.1.5 Amount of Waste

Currently, over 2,000 waste management units have been identified on the Hanford Site, the majority of which are identified as SWMUs in accordance with RCRA (DOE/RL-88-30) (refer to Appendix 2D, Section 1.2). Chapter 2.0, Section 2.5 and Appendix 2D, contain information on these waste management units. The Waste Information Data System (WIDS) is an electronic database that identifies known and reported SWMUs and other waste management units located on the Hanford Site (refer to Appendix 2D, Section 1.1). The WIDS includes the type and location of the unit, when the unit was operated, general dimensions and description of the unit, and general descriptions of waste placed in the unit (including estimated quantities of radionuclides and chemicals contained in some units). The WIDS database is accessible to regulatory agency personnel. Information specific to LLBG and LERF is contained in the WIDS and in the Unit-Specific Portion of this permit application.

9.1.6 Records Produced by Environmental or Health Agencies

A summary of Notice of Compliance Violations and the associated responses is maintained in the Hanford Facility Operating Record, General Information File (refer to Chapter 12.0, Section 12.1). This summary can be accessed by contacting the following:

Hanford Sitewide RCRA Permit
Facility Operating Record
Fluor Daniel, Inc.
P.O. Box 1000, Mail Stop G1-27
Richland, Washington 99352
(509) 376-9876.

The EPA inspected the Hanford Facility in 1986, 1987, and 1988. Copies of the inspection reports for 1987 and 1988 have been provided to Ecology.

A 1986 *Consent Agreement and Compliance Order* (Ecology DE-86-133) between the DOE-RL and Ecology provided that a RCRA groundwater monitoring system would be installed around portions of the LLBG that are used for mixed waste. One requirement of the order was that 35 wells would be installed around the LLBG to provide a detection-level groundwater monitoring network. These 35 wells have been installed. An additional 46 wells have been drilled to complete the groundwater monitoring network

for a total of 81 wells as of 1994. At the present time, 66 of the 81 wells are monitored routinely. Eleven wells used to monitor the 218-W-6 Burial Ground are not being used because no waste has been received; three wells at the 218-E-12B Burial Ground have gone dry; and a well in the 218-W-4C Burial Ground also has gone dry (refer to DOE/RL-88-20, Chapter 5.0).

At this time, no records have been produced by environmental or health agencies for the LERF.

9.2 PATHWAY-SPECIFIC INFORMATION

This section provides information on potential contaminant release pathways. Potential pathways discussed include the following:

- Groundwater pathway
- Surface water pathway
- Air pathway
- Subsurface gas pathway
- Contaminated soil pathway
- Transportation information.

Information also is provided on transportation and management practices.

9.2.1 Groundwater Pathway

General information concerning the hydrogeology of the Hanford Site, and the groundwater monitoring program at the Hanford Facility, is provided in Chapter 5.0. Information concerning the RCRA groundwater monitoring program specific to the LLBG and LERF is contained in the Unit-Specific Portion of this permit application and in Chapter 5 of this document.

The aquifers beneath the Hanford Site include the unconfined aquifer in sediments of the Hanford and Ringold Formations and a series of confined aquifers in interbed layers of the Columbia River Basalt Group. Generally, the suprabasalt aquifer is hydraulically separated from the interbed aquifers by basalt flows. North of the 200 East Area, the uppermost basalt layer has been eroded away, allowing a connection between the suprabasalt aquifer and the interbed aquifers. Other areas of interconnection by erosion have been hypothesized, but have not been confirmed.

Over 3,400 wells are located on the Hanford Site for vadose zone characterization, groundwater monitoring, drinking water supply, and groundwater cleanup (pump and treat). Over 200 of the groundwater monitoring wells are located near or within the 200 Areas. Three wells, located in the 200 East Area, provide backup process water supply. These wells are not used to provide drinking water. The locations of these wells are discussed in Appendix 2A. Most water used at the 200 Areas is obtained from the Columbia River.

Several drinking water supply wells are located on the Hanford Facility. None of these wells are within 4.8 kilometers of the 200 Areas. The nearest water supply wells are the Yakima Barricade well, located about 5.2 kilometers west of the 200 West Area; the Rattlesnake Spring well, located about 6.4 kilometers southwest of the 200 West Area; and the Hanford Patrol Training Academy well, located about 24 kilometers southwest of the 200 Areas. The Rattlesnake Spring well is no longer in service because of lack of demand. Three wells, located at the Fast Flux Test Facility, supply drinking water to the 400 Area (refer to Chapter 2.0, Section 2.5.2.1) and are located approximately 19.3 kilometers downgradient from the 200 Areas.

No agricultural irrigation or commercial food preparation occurs on the Hanford Facility.

9.2.1.1 Known Release Information

The following sections provide a brief discussion of known release information for the Hanford Facility and for the LLBG and LERF.

9.2.1.1.1 Hanford Facility

Known release information for the Hanford Facility is maintained by the WIDS (refer to Section 9.1.5 and Appendix 2D, Section 1.1). In addition, groundwater monitoring results and contaminant plume maps are provided annually in such documents as the Environmental Report (e.g., PNNL-12088) and annual groundwater monitoring reports (e.g., DOE/RL-91-03).

9.2.1.1.2 Surface Impoundment and/or Landfill TSD Units

Following the installation of a RCRA groundwater monitoring network in 1987, no known release of waste via the groundwater pathway has been reported for the LLBG.

The possibility of groundwater contamination is mitigated by the environmentally protective design and construction of the LERF, which is engineered to minimize the potential for release of contaminants, and by the site stratigraphy. Because the basins are constructed with double liners and leak detection systems, failure of the containment system would be detected before a release could migrate through the unsaturated zone to the aquifer. Following the installation of a RCRA groundwater monitoring network in 1991, no known release of waste via the groundwater pathway has been reported for the LERF.

9.2.1.2 Potential for Human Exposure via the Groundwater Pathway

The following sections provide a brief discussion of the potential for human exposure via the groundwater pathway for the Hanford Facility and for the LLBG and LERF.

9.2.1.2.1 Hanford Facility

Groundwater maps in annual groundwater monitoring reports show the distribution of radiological (e.g., tritium) and hazardous chemical (e.g., carbon tetrachloride) contaminant plumes. Studies of these data, such as the risk-based cleanup strategy (PNL-10651), have shown that the potential exposures to these levels of groundwater contamination are below acceptable thresholds. The existing levels of groundwater contamination are anticipated to be lower in the future. However, this risk-based cleanup strategy did conclude that the route of primary concern from long-term exposure is the groundwater pathway. With regard to hazardous chemicals, carbon tetrachloride was found to be the single largest contributor of carcinogenic risk in the groundwater from the chemical constituents that were analyzed, and nitrates were found to be the single largest contributor of noncarcinogenic risk. Hanford Site groundwater remediation efforts will focus on mitigating the impact of these contaminants on the Columbia River (DOE/RL-94-95).

Given the low usage of the several drinking water wells on the Hanford Site (refer to Section 9.2.1), and the size of population these serve, the potential for human exposure is low. All drinking water wells are considered public water supply wells and are handled, monitored, sampled, and tracked for performance in accordance with WAC 246-290. Samples are submitted to Washington State certified laboratories for analysis. In September 1995, a draft Hanford Site wellhead protection plan was prepared and submitted to Ecology for review. This plan continues to be reviewed annually by the Washington State Department of Health.

Information available for the Hanford Facility is used to provide a general evaluation of the potential for exposure via:

- Release of waste from the 200 Areas

- Migration through the vadose zone
- Groundwater transport to the Columbia River without detection
- Human exposure via the Columbia River.

Release of Waste from the 200 Areas. Most of the Hanford Facility TSD units are located within the 200 Areas. For human exposure via the groundwater pathway to occur, waste must first move beyond these TSD units. Systems in place, or planned, for 'operating' TSD units are designed to prevent movement of waste from the TSD unit. The disposal of unpermitted liquid effluents in land-based TSD units has ceased. Therefore, it is unlikely that 'operating' TSD units, or TSD units 'undergoing closure', would contribute to a release of waste to, or from, the 200 Areas that is not already attributable to earlier waste disposal practices.

Migration Through the Vadose Zone. The low precipitation amounts and high evapotranspiration rates on the Hanford Site reduce the possibility that chemical constituents from the waste could reach the water table (refer to Chapter 5.0, Sections 5.3.1 and 5.3.2). For chemical constituents from the waste to reach the groundwater, these constituents must be transported through the vadose zone sediments. This column of sediments is approximately 56.4- to 86.9-meters thick beneath the 200 Areas.

Groundwater Transport to the Columbia River Without Detection. Assuming that waste had breached a containment system and migrated through the soil to the water table, the contamination would have to move beyond the source areas without first being detected by operations personnel or the existing RCRA groundwater monitoring well systems. An extensive groundwater monitoring network is in place at the Hanford Facility and should be able to detect any changes of significance.

Human Exposure via the Columbia River. Several factors reduce the possibility for human exposure via the Columbia River and include (1) containment systems, (2) warning systems, (3) low infiltration rates from the various TSD units, and (4) generally thick sequences of vadose zone sediments. If contaminants from the waste do reach the groundwater, the groundwater monitoring systems should detect the release, and a compliance and/or corrective action program would be initiated. The distance between the 200 Areas and public drinking water supply wells provides additional protection as described in the draft Hanford Site wellhead protection plan. Finally, if contamination should reach the Columbia River, dilution would reduce concentrations by at least several orders of magnitude compared to groundwater concentrations.

In summary, it is unlikely that managing dangerous or mixed waste at TSD units within the 200 Areas would result in unacceptable exposure to humans via the groundwater pathway. For human exposure to occur, contaminants from the waste must first breach containment systems without detection, migrate to the water table, and migrate to the Columbia River. Unit-specific information that supports this conclusion is discussed in the next section.

9.2.1.2.2 Surface Impoundment and/or Landfill TSD Units

The LERF, because of its design, is an unlikely contaminant source. However, mixed waste has been disposed of in unlined trenches in the LLBG. Therefore, the discussion in the remainder of this section will focus on the potential for human exposure via the groundwater pathway from the LLBG.

As noted in Section 9.2.1.2.1, given the low usage of drinking water wells on the Hanford Site, and the applied wellhead protection standards required by WAC 246-290, the potential for human exposure from LLBG contaminants is low. The potential for human exposure via the groundwater pathway to the Columbia River is more significant, and will be the focus of the following analysis for the LLBG. Discussion of the groundwater pathway will be subdivided into the following:

- Release of waste from containment
- Migration through the vadose zone

- Groundwater transport to the Columbia River without detection
- Human exposure via the Columbia River.

Release of Waste from Containment. The containment system for the two newly constructed lined trenches in the LLBG (refer to Chapter 4.0, Section 4.5.3) is described in the Unit-Specific Portion of this permit application. The design for these trenches consists of a leachate liner system that will prevent migration of mixed waste out of the landfill. Leachate from this system will be collected, treated, and disposed.

Lack of records and well-defined disposal procedures make it difficult to predict the potential for release into the soil of chemicals from waste disposed of in the past. It is certain that dangerous waste disposed of in the past was not contained as well as is planned for future waste disposal. However, as discussed in Section 9.2.1.1.2, no known release of contaminants has been reported for the LLBG since 1987, the year groundwater monitoring was initiated. Assessment actions have shown that groundwater contamination is attributable to nearby, inactive liquid waste disposal sites.

Migration Through the Vadose Zone. The low precipitation and high evapotranspiration on the Hanford Facility reduce the possibility that chemicals from the waste could reach the water table. Between 56.4 to 86.9 meters of unsaturated sediments separate the water table from the ground surface in the LLBG. For chemicals from the waste to reach groundwater, the chemicals must be transported through this column of sediments. Several scenarios for vadose zone migration are considered; all of the scenarios require that waste has escaped from the containment system.

The first scenario is that enough liquid waste is released to exceed the specific retention through a depth of sediments greater than 54.9 meters. Specific retention is the saturation value below which no flow is possible. Although specific retention depends to some extent on characteristics of the liquid, specific retention depends primarily on the pore size of the sediments. Given the low recharge rate, the specific retention for water in soil near the LLBG is assumed to be the lowest moisture content measured in nearby soil samples. Data indicate that the lowest moisture content in borings performed for the detection-level monitoring network was about 1.0 to 2.0 percent.

Using some conservative assumptions, it is possible to examine the feasibility of a liquid release reaching the water table. For example, assume a release of 100 liters of liquid waste and a specific retention of 0.005. Given these assumptions, the liquid only could penetrate a volume of 21.5 cubic meters before the flow stopped. The layered sediments in the Hanford formation (refer to Chapter 5.0, Section 5.3) likely would cause significant horizontal migration. Assuming the liquid spreads into a cylinder with a diameter of 3 meters, the liquid would only reach a depth of 2.7 meters. This analysis suggests that it is unlikely that the waste would reach the water table via this mechanism.

The second scenario is that infiltrating precipitation comes into contact with the waste and transports chemical constituents to the water table. The closure and postclosure plans call for a vegetated cover over the LLBG that is designed to minimize infiltration, erosion, and differential settling. In regions with vegetated, fine-grained soils, recharge has been observed to be less than 0.1 centimeter per year (refer to Chapter 5.0, Section 5.3). It is likely that a soil cover designed and maintained to minimize infiltration would perform equally well. It is conceivable that cracks or settling could disrupt the integrity of the cover and allow some infiltration to reach the waste. Although frequent inspections would minimize the impact of such an event, it is difficult to predict how much infiltration would reach the waste in the event of a failed cover. At a recharge rate of 0.1 centimeter per year, the estimated contaminant travel time to the groundwater beneath the 200 Areas is greater than several thousand years (Gee et al. 1992) (refer to Chapter 5.0, Section 5.3.7.1 for additional information on contaminant travel times).

A third scenario is that artificial recharge migrates horizontally to the waste buried in the LLBG, becomes contaminated, and flows vertically to the water table. Although several waste water disposal units are

located near the LLBG (Appendix 2A), the practice of discharging process waste water to the soil column has been discontinued on the Hanford Site.

The final scenario is that volatile organic constituents reach the water table by vapor diffusion through the soil. Very little research has been performed on this phenomena. Numerical solutions of a hypothetical site (Silka 1988) suggest that vapor diffusion could be a significant vadose zone transport mechanism. However, the distance to the water table is greater than 56.4 meters, and the distance to the surface is less than 15.2 meters. Vapor diffusion would occur radially and would be expected to reach the surface before the vapor reached the water table. When the vapor plume reaches the surface, concentration gradients would favor upward movement over downward movement. Because of the expected preferential upward movement and the small quantity of waste to disperse, the quantity of dangerous waste that could reach the water table would unlikely be sufficient to raise the contaminant concentrations above the regulatory standards.

Groundwater Transport to the Columbia River Without Detection. Assuming that chemicals from the waste had breached the containment system and migrated to the water table, the contamination would have to move beyond the LLBG before being detected in a groundwater monitoring well. The groundwater monitoring system has been designed to detect any plumes before the plumes migrate more than 152.4 meters beyond the LLBG. Given the variability of velocity and direction of groundwater beneath the 200 East Area, it would be important to quickly implement a remediation scheme once a release is detected. The shortest distance between the LLBG and the Columbia River is 8 kilometers. The total distance is controlled by the DOE-RL and is not inhabited; thus, a buffer zone surrounds the LLBG. The contaminant travel time to the Columbia River from the LLBG in the 200 West Area is estimated at more than 80 years. From the LLBG in the 200 East Area, contaminant travel time is estimated to be more than 10 to 20 years.

Human Exposure via the Columbia River. If chemicals from the LLBG were to reach the Columbia River, these chemicals would be diluted by several orders of magnitude because of the large flow rate. Assuming that the Columbia River is at its lowest recorded flow of 123 cubic meters per second (DOE/EIS-0113), the cross-section of the groundwater plume is 298.7 meters by 49.7 meters, and the Darcy flux into the Columbia River is 2 meters per day, the dilution factor in the Columbia River would be 0.0015. The Darcy flux of 1.0 meter per day is actually greater than would be expected near the Columbia River. Based on published data (RHO-BWI-ST-5, Plate III-4), the hydraulic gradient is typically 0.001 or greater. Under a gradient of 0.001, a Darcy flux of 1.0 meter per day would require a hydraulic conductivity of 1,005.8 meters per day. Hydraulic conductivities in the vicinity of the river (RHO-BWI-ST-5, Plate III-5) range from about 6.1 to 152.5 meters per day. A lower conductivity would result in a lower Darcy flux; thus the flux value of 1.0 meter per day conservatively overestimates the discharge to the river and underestimates the amount of dilution occurring. This dilution factor means that the concentration in the Columbia River would be almost three orders of magnitude less than the concentration in groundwater. Because the average flow in the Columbia River is 3,600 cubic meters per second, this estimate is conservative. The dilution factor of the Columbia River would result in much lower exposures to anyone using the water downstream than the assumed value of 0.0015.

In summary, it is unlikely that future disposal of mixed waste at the LLBG will result in unacceptable exposure for humans via the groundwater pathway. For human exposure to occur, chemicals from the waste must first breach the containment system without detection and migrate to the water table. Several factors reduce the possibility of this occurring, including (1) the containment system, (2) the vegetated cover design, (3) the low infiltration rate at the LLBG, and (4) the thick sequence of vadose zone sediments. If chemicals from the waste do reach the groundwater, the detection-level groundwater monitoring system should detect the release and a remediation program would be initiated. Finally, if contamination should reach the Columbia River, dilution would reduce concentrations by at least several orders of magnitude compared to groundwater concentrations. A detection-level groundwater monitoring

system has been installed and sampling is ongoing. The results of this sampling program should determine if waste from the LLBG has reached the water table and is migrating beyond the LLBG. After 8 years of monitoring, no contamination attributed to the LLBG has been detected.

9.2.2 Surface Water Pathway

This section provides a brief discussion of surface water pathways for the Hanford Facility and for the LLBG and LERF.

The only natural surface water bodies on the Hanford Site are the Columbia and Yakima Rivers, Cold Creek drainage, and West Lake. The locations of these water bodies are shown in Chapter 2.0, Figures 2-9, and 2-10, and discussed in Appendix 2A. The Cold Creek drainage is an ephemeral and discontinuous stream (refer to Chapter 2.0, Section 2.2.1.4). The only permanent surface water body within 4.8 kilometers of the 200 Areas is West Lake. This lake is not used by humans for any commercial, agricultural, or recreational activity. The lake is, however, frequented by birds and other wildlife. A prominent surface water body in the past, the 216-B-3 Main Pond (refer to Appendix 2A), has been stabilized and no longer is in service. In addition, the adjacent 216-B-3 Expansion Ponds (refer to Appendix 2A) have been clean closed.

The 100-year floodplain for the Yakima and Columbia Rivers does not extend to the 200 Areas (refer to Chapter 2.0, Section 2.2.1.4). During periods of heavy precipitation, flooding could occur in the Cold Creek Valley, located along the west side of the Hanford Site. As shown in Chapter 2.0, the probable maximum flood in the Cold Creek watershed would reach only the western edge of the 200 West Area. The 100-year flood would be less than the probable maximum flood.

9.2.2.1 Known Release Information

The following sections provide a brief discussion of known release information for the Hanford Facility and for the LLBG and LERF.

9.2.2.1.1 Hanford Facility

Known release information for the Hanford Facility is maintained in the WIDS. In addition, monitoring data for areas within the vicinity of the surface water bodies discussed in Section 9.2.2 are contained in the Environmental Report (PNNL-11139). These data indicate that releases from these surface water bodies are below concentrations of concern. These data also indicate that there was no indication during 1994 of any deterioration in the water quality along the Hanford Reach of the Columbia River resulting from Hanford Site operations. Potential sources of pollutants not associated with Hanford Site operations include irrigation return and direct runoff from agricultural activities located along the north and east sides of the Columbia River.

9.2.2.1.2 Surface Impoundment and/or Landfill TSD Units

No known release of mixed waste via the surface water pathway has been reported at the LLBG since 1984 (the year back to which data were reviewed for this chapter).

No know release of mixed waste via the surface water pathway has been reported from the LERF since this TSD unit became operational in 1994.

9.2.2.2 Potential for Human Exposure via the Surface Water Pathway

The following sections provide a brief discussion of the potential for human exposure via the surface water pathway for the Hanford Facility and for the LLBG and LERF.

9.2.2.2.1 Hanford Facility

Because of its location near the center of the Hanford Site, there is very limited potential for humans to be exposed to contaminants originating from the 200 Areas via the surface water pathway. For there to be even a possibility of this occurring, a large scale release of dangerous waste would need to occur simultaneously with a major precipitation or flooding event.

Two principal scenarios have been considered in assessing the potential for human exposure via surface water pathways. The first is surface run-off of precipitation that is contaminated with waste. The second is flooding of a surface water body into a TSD unit(s).

The first scenario requires a large enough precipitation event to result in significant overland flow. Large precipitation events are infrequent in the Pasco Basin (refer to Chapter 5.0, Sections 5.3.1 and 5.3.2). Days with greater than 1.3 centimeters of precipitation occur less than 1 percent of the year, and rainfall intensity of 2.5 centimeters in 1 hour are estimated to have a recurrence interval of 500 years (DOE/EIS-0113). Furthermore, given the flat topography and gravelly/sandy soils at the Hanford Site, significant overland flow rarely occurs (refer to Chapter 2.0, Section 2.2.1.4).

The second scenario involves flooding of a surface body of water into a TSD unit(s). The TSD units located in the 200 Areas are above the maximum flood levels of either the Columbia or Yakima Rivers and the Cold Creek drainage (refer to Chapter 2.0, Section 2.2.1.4). Thus, this scenario is considered unlikely.

Given the elevated, but flat, topography of the 200 Areas, the low precipitation, and the lack of nearby surface water bodies, the potential for human exposure to surface water that has been contaminated with dangerous and/or mixed waste is low.

9.2.2.2.2 Surface Impoundment and/or Landfill TSD Units

For the LLBG and LERF, the two major scenarios to be considered when assessing the potential for human exposure via surface water pathways, involve surface run-off of precipitation that is contaminated with waste, and flooding of a surface water body into either of these TSD units. Because of the factors mentioned for the Hanford Facility (refer to Section 9.2.2.2.1), it is unlikely that such conditions would exist within the 200 Areas where the LLBG and LERF are located.

9.2.3 Air Pathway

The 200 Areas of the Hanford Facility are located approximately 32 kilometers from Richland, Washington, the nearest population center. Protection of the general public is afforded by limited access to the 200 Areas.

Climatological data have been collected since 1945 at the Hanford Meteorological Station, located between the 200 Areas (refer to Chapter 2.0, Section 2.2.1.3; Chapter 5.0, Sections 5.3.1 and 5.3.2). Prevailing wind directions in the 200 Areas are from the northwest in all months of the year; secondary maxima occur for southwesterly winds. High winds that cause dust storms are usually from the southwest. High winds also are associated with afternoon drainage winds from the northwest, frequently reaching velocities of 50 kilometers per hour. Wind roses for several locations within the Hanford Site are shown in Chapter 2.0, Figure 2-7.

High winds from the northwest are associated with thunderstorms. The average occurrence of thunderstorms is 10 per year, typically occurring in the summer months, although thunderstorms have occurred in all months.

DOE/EIS-0113 lists no violent tornadoes for the region surrounding the Hanford Site. Predictions cited in this environmental impact statement (PNL-6415) estimate the probability of a tornado striking a point on the Hanford Site as 9.6×10^{-6} per year.

9.2.3.1 Known Release Information

The following sections provide a brief discussion of known release information for the Hanford Facility and for the LLBG and the LERF.

9.2.3.1.1 Hanford Facility

Data from the airborne monitoring program (DOE/RL-91-50; PNNL-12088) for the Hanford Facility indicate that releases via the air pathway are below concentrations of concern. A map showing population centers in the vicinity of the Hanford Facility is provided as Figure 9-2. No member of the public resides within 11 kilometers of the 200 Areas.

9.2.3.1.2 Surface Impoundment and/or Landfill TSD Unit

No known release of waste via the air pathway has been reported for the LLBG since 1984 (the year back to which data were reviewed for this chapter).

No known accidental release of waste via the air pathway has been reported for the LERF since this TSD unit began operation in 1994.

9.2.3.2 Potential for Human Exposure via the Air Pathway

The following sections provide a brief discussion of the potential for human exposure via the air pathway for the Hanford Facility and for the LLBG and LERF.

9.2.3.2.1 Hanford Facility

An important factor that reduces the risk of human exposure via the air pathway is the large uninhabited buffer zone that separates the 200 Areas from surrounding areas. The nearest major population center is Richland, Washington, located approximately 32 kilometers southeast of the 200 Areas (Figure 9-2). Because of the remote location and the management practices implemented within the 200 Areas, the potential for human exposure via the air pathway is considered low.

Atmospheric releases of radioactive materials from the Hanford Site have been monitored for decades both onsite and offsite. The reader is referred to the Annual Environmental Report (e.g., PNNL-12088) for information on the Hanford Site wide strategy employed to monitor air quality. All measured air concentrations remain well below applicable maximum concentration standards for air contaminants (PNNL-12088).

As a point of information, the site perimeter measurement of all radiological constituents remained at extremely low concentrations. Generally speaking, these concentrations were found to be less than 0.001 percent of the derived concentration guidelines (a calculated concentration that would result in an annual dose of 100 mrem) (Appendix 2B) for all radionuclides except uranium. For uranium isotopes, the measured concentrations were calculated to be 0.06 percent of derived concentration guidelines.

9.2.3.2.2 Surface Impoundment and/or Landfill TSD Units

For human exposure via the air pathway to occur at the LLBG, the waste would have to be released to the environment during transport or loading/unloading, or after burial. Varied methods are used to prevent wind dispersal of dangerous waste, depending on the waste form. Methods to prevent wind dispersal include containerization, stabilization, grouting, spray fixitants, and backfill. Sometimes the natural form

of the waste precludes the need for wind dispersal protection (i.e., scrap piping and other solid debris). In other instances, practices include implementation of a wind speed restriction and immediately backfilling the waste to prevent wind dispersal.

An important factor that reduces the risk of human exposure via the air pathway is the large uninhabited buffer zone that surrounds the LLBG. The shortest distance between the LLBG and the Hanford Site boundaries is about 11 kilometers. As shown in Figure 9-2, the nearest major population center is Richland, located approximately 32 kilometers southeast of the 200 Areas. For this reason, the potential for human exposure via the air pathway is low.

At the LERF basins, the potential for exposure to humans and the surrounding environment, is limited to evaporation, emissions from basin overfill, or from spills.

The LERF basins are designed with floating geomembrane covers (DOE/RL-97-03, Chapter 4.0) stretched over each basin above the primary and secondary liners. The covers are equipped with tensioning systems to prevent winds from blowing the covers off the basins. The covers are made of materials resistant to atmospheric degradation and are equipped with activated charcoal filtered breathers for ventilation of the basins. These vents allow the escape of gases while filtering out the organic components from the gases. The covers are anchored in concrete footings at the perimeter of the impoundments and are held in place with tension cables to prevent wind damage.

Various means of accidental release of ammonia from the 242-A Evaporator and the LERF have been evaluated in the past as part of the facility safety analysis documentation. Three credible confinement breaches (a spill, a spray leak from the LERF, and loss of the LERF basin cover) were examined. The maximum exposure to an individual from the accidental release of ammonia through a spill was calculated to be 1.3 E-03 milligrams per cubic meter to an offsite individual and 4.3 milligrams per cubic meter to an onsite individual located 100 meters from the point of release. The maximum exposure to an individual from the accidental release of ammonia via spray was calculated to be <0.136 milligrams per cubic meter to an onsite individual. The maximum exposure to an offsite individual resulting from a torn basin cover was calculated to be 0.12 milligram per cubic meter. All of the calculated exposures are unmitigated. Onsite and offsite radiological and toxicological consequences are well below the limiting risk/acceptance values. Accordingly, no significant onsite or offsite toxicological consequences were found to exist from the release of ammonia.

9.2.4 Subsurface Gas Pathway

Gas generation from the decomposition of municipal waste is a major concern in subsurface gas pathway assessment. No municipal waste disposal is carried out within the 200 Areas; therefore, no gas generation from biologic degradation is anticipated. Minor amounts of gas potentially could result from the vaporization of volatile constituents or from chemical reaction. However, the design of 200 Areas TSD units allows for the venting of such gases.

9.2.4.1 Known Release Information

The following sections provide a brief discussion of known release information for the Hanford Facility and for the LLBG and the LERF.

9.2.4.1.1 Hanford Facility

No specific data are available to determine if releases have occurred from the Hanford Facility via the subsurface gas pathways. However, because of knowledge of disposal practices on the Hanford Site, the generation of such gas is considered to be remote.

9.2.4.1.2 Surface Impoundment and/or Landfill TSD Unit

No known release of waste via the subsurface gas pathway has been reported for the LLBG since 1984 (the year back to which data were reviewed for this chapter).

No known release of waste via the subsurface gas pathway has been reported for the LERF since this TSD unit began operation in 1994.

9.2.4.2 Potential for Human Exposure via the Subsurface Gas Pathway

The following sections provide a brief discussion of the potential for human exposure via the subsurface gas pathway for the Hanford Facility and for the LLBG and LERF.

9.2.4.2.1 Hanford Facility

As previously discussed, a major concern in subsurface gas pathway assessment is gaseous decomposition products resulting from municipal waste. As no municipal waste is disposed of within the 200 Areas, it is unlikely that significant amounts of gas would be produced. Thus, the design of Hanford Facility TSD units, and the absence of municipal waste, minimize the potential for human exposure from the subsurface gas pathway.

9.2.4.2.2 Surface Impoundment and/or Landfill TSD Units

As no municipal waste is disposed of at the LLBG, it is unlikely that significant amounts of gas would be produced. Small amounts of gas potentially could result from evaporation of volatile constituents, or chemical reaction, or decomposition of animal carcasses. The few carcasses that are disposed in the LLBG are widely distributed and are treated with slaked lime for disposal. Preliminary testing for radiolytic gas generation indicated that gas generation was not of concern.

Another transport mechanism could be gas migration along buried pipelines. Of the identified burial grounds, three burial grounds are within 30.5 meters of a buried pipeline. Given the porous nature of the native material in the area, and the common practice of backfilling pipe trenches with native material, the potential for gas migration along pipelines is judged to be minimal. The contrast between the surrounding soil porosity and the backfill porosity is thought not to be sufficient to concentrate the gas flow. Furthermore, the increased porosity of the backfill would tend to disperse gas to the surface rather than concentrate the gas along the pipeline.

The LERF containment system is designed to limit significant releases of gas to the environment if gas production did occur. Although a number of buildings and pipelines are located in the 200 East Area, west and north of the LERF, this situation should not be a problem considering the low potential for the accidental release of ammonia.

9.2.5 Contaminated Soil Pathway

One transport mechanism of contaminants is the slow diffusion and advection through the soil column by soil water in the vadose zone. Beneath the 200 Areas this is expected to be a slow process, unless the transport process is aided by introducing a liquid that locally saturates the soil column. While a contaminant resides in the soil column, the vectors that influence exposure are: dermal, ingestion of soil, inhalation of soil, and consumption of crops. For the Hanford Site, this pathway and associated vectors are considered to be of secondary importance. No food chain crops are grown on the Hanford Site and game, that could concentrate contaminants through grazing, is controlled.

9.2.5.1 Known Release Information

The following sections provide a brief discussion of known release information for the Hanford Facility and for the LLBG and the LERF.

9.2.5.1.1 Hanford Facility

Data from the airborne monitoring program for the Hanford Site (DOE/RL-91-50; PNNL-11139) indicate that releases via the contaminated soil pathway are below concentrations of concern.

9.2.5.1.2 Surface Impoundment and/or Landfill TSD Unit

No known release of waste via the contaminated soil pathway has been reported for the LLBG via the soil pathway since 1984 (the year back to which data were reviewed for this chapter).

No known release of waste via the contaminated soil pathway has been reported for the LERF since this TSD unit began operation in 1994.

9.2.5.2 Potential for Human Exposure via the Contaminated Soil Pathway

The following sections provide a brief discussion of the potential for human exposure via the contaminated soil pathway for the Hanford Facility and for the LLBG and LERF.

9.2.5.2.1 Hanford Facility

Factors that reduce the risk of human exposure via the soil pathway are the limited public access to the Hanford Facility and the lack of nearby residential or agricultural areas. No food-chain crops currently are raised on the Hanford Site. Administrative control of the Hanford Site by the DOE will preclude contact through food chain crops as long as that control is maintained. Therefore, the risk for human exposure via the soil pathway is low.

9.2.5.2.2 Surface Impoundment and/or Landfill TSD Units

The potential for human exposure from chemical and gas releases to the soil at the LLBG is minimized by operational controls. All mixed waste destined for LLBG must meet LDR requirements. The mixed waste can be either in containers or in bulk. If in bulk, the use of dust suppression or fixatives will be employed to minimize dust generation. In addition, at the end of an operating day, bulk waste will be covered with a fixative agent or other approved covers. If a release were to occur from the LLBG, the Hanford Facility has adequate resources for emergency response and dangerous waste cleanup (refer to Chapter 7.0 and Appendix 7A). The LLBG protocols for emergency response, evacuation, and cleanup activities are outlined in the Unit-Specific Portion of this permit application (DOE/RL-88-20, Chapter 7.0 and Appendix 7A).

The LERF is designed, in accordance with WAC 173-303-650, to minimize the potential for releases of dangerous chemicals to the soil. Double liners, with a leachate detection, collection, and removal system, are used in each of the surface impoundments. Therefore, the potential for contaminant migration via the soil pathway is low.

9.2.6 Transportation Information

Packaging, inspection, and transportation of dangerous and mixed waste on the Hanford Facility are conducted in accordance with applicable regulations and follow strict procedures. Special attention is given to notifying personnel, when appropriate, of waste transfers requiring special precautions. For example, onsite transportation routes could be isolated through the use of barriers. In addition, the

transporting of all extremely dangerous or hazardous material does not occur when the wind speed is greater than 16 kilometers per hour.

Transportation routes and traffic information for the Hanford Facility are discussed in Chapter 2.0, Section 2.4. Further information on manifesting and waste tracking for waste transported offsite and onsite is discussed in Chapter 3.0, Sections 3.3 and 3.4. Procedures for cleanup of spills or leaks occurring during transport or loading/unloading activities on the Hanford Facility are discussed in Chapter 7.0, Appendix 7A. Specific transportation information for the LERF is contained in the Unit-Specific Portion of this permit application.

9.2.6.1 Known Release Information

The following sections provide a brief discussion of known release information for the Hanford Facility and for the LLBG and the LERF.

9.2.6.1.1 Hanford Facility

No significant releases of dangerous or mixed waste due to transportation incidents have been reported for the Hanford Facility.

9.2.6.1.2 Surface Impoundment and/or Landfill TSD Unit

No known significant releases of waste due to transportation incidents have been reported for the LLBG since 1984 (the year back to which data were reviewed for this chapter).

No known releases of waste due to transportation incidents have been reported for the LERF since this TSD unit began operation in 1994.

9.2.6.2 Potential for Human Exposure from Transportation-Related Releases

The following sections provide a brief discussion of the potential for human exposure via transportation incidents for the Hanford Facility and for the LLBG and LERF.

9.2.6.2.1 Hanford Facility

Because transportation is conducted on the Hanford Facility under strict controls, the likelihood of human exposure due to a transportation incident is considered to be low. All offsite transportation of dangerous waste is performed by certified shippers in accordance with U.S. Department of Transportation requirements.

9.2.6.2.2 Surface Impoundment and/or Landfill TSD Units

Most of the waste for the LLBG originates onsite. Trucks are used to transport waste to the LLBG. Particularly dangerous shipments could be limited to speeds of 24.1 kilometers per hour, and roads could be barricaded if the risk of radiation and/or chemical exposure warrants it (refer to Chapter 2.0, Section 2.4, Chapter 3.0, Sections 3.3 and 3.4). Waste shipments received from offsite are inspected before being transported to the LLBG.

Given that most waste is generated and transported onsite, and given the low population density surrounding the Hanford Site and the precautions taken with dangerous and/or mixed waste, the risk of human exposure during transport is considered to be low.

Onsite transportation of the effluent to the LERF is facilitated by an underground piping system from the 242-A Evaporator directly to the LERF (refer to Chapter 4.0, Sections 4.1.2.3 and 4.1.2.4. The other transport of waste to the LERF adheres to strict transportation methods.

9.2.7 Management Practices Information

Management practices such as inspections, monitors, alarms, double-containment systems, and operating procedures are designed to limit the effects on human health and the environment from Hanford Facility operations. Measures to minimize exposure (refer to Chapter 6.0, General Information and Unit-Specific Portions) and contingency plans (refer to Chapter 7.0, General Information and Unit-Specific Portions) are designed to ensure that exposure to both workers and offsite individuals is minimized.

9.3 CONCLUSIONS ON EXPOSURE POTENTIAL

This section contains a brief discussion of the conclusions on exposure potential for the Hanford Facility and for the LLBG and LERF.

9.3.1 Hanford Facility

A risk-based cleanup strategy prepared for the Hanford Site (PNL-10651) concluded that existing land use and access restrictions protect public health and safety. The current airborne, groundwater, and surface water exposures to the general public that result from the normal operation of surface impoundments and landfills are a small fraction of normal background and well within acceptable limits. Furthermore, all exposures are anticipated to be lower in the future. The study determined that the route of primary concern from long-term (post remediation phase) exposure is the groundwater pathway. With regard to hazardous chemicals, carbon tetrachloride was found to be the single largest contributor of carcinogenic risk in the groundwater from the chemical constituents that were analyzed, and nitrates were found to be the single largest contributor of noncarcinogenic risk. Hanford Site groundwater remediation efforts will focus on mitigating the impact of these contaminants on the Columbia River (DOE/RL-94-95).

9.3.2 Surface Impoundment and/or Landfill TSD Units

The potential for exposure to dangerous and/or mixed waste is minimized by (1) the relative isolation of the LLBG and the LERF from population centers; (2) the large distance through the soil column that a contaminant would have to travel to the groundwater should a release occur and; (3) the highly unlikely event of overland flow. Therefore, potential exposure via the air pathways, soil, and surface water, is low. Present and proposed management practices appear to be effective and are not a cause for concern.

Releases from the groundwater pathway appears to be the most likely pathway for human exposure should a release from a TSD unit occur. For human exposure to waste to occur from the groundwater, waste has to first breach containment systems and be of sufficient volume to overcome soil depth and retention factors to reach the groundwater. On reaching the groundwater, the contaminants must then migrate to the Columbia River. In addition, the contaminants would have to overcome the dilution factor of the Columbia River. Therefore, the potential for human exposure from LLBG and LERF operations, via the groundwater pathway, is low.

Strict transportation methods limit the risk of human exposure associated with the transportation of waste to the LLBG, offsite and onsite. Because no waste is transported offsite from the LERF, the risk is considered extremely low.

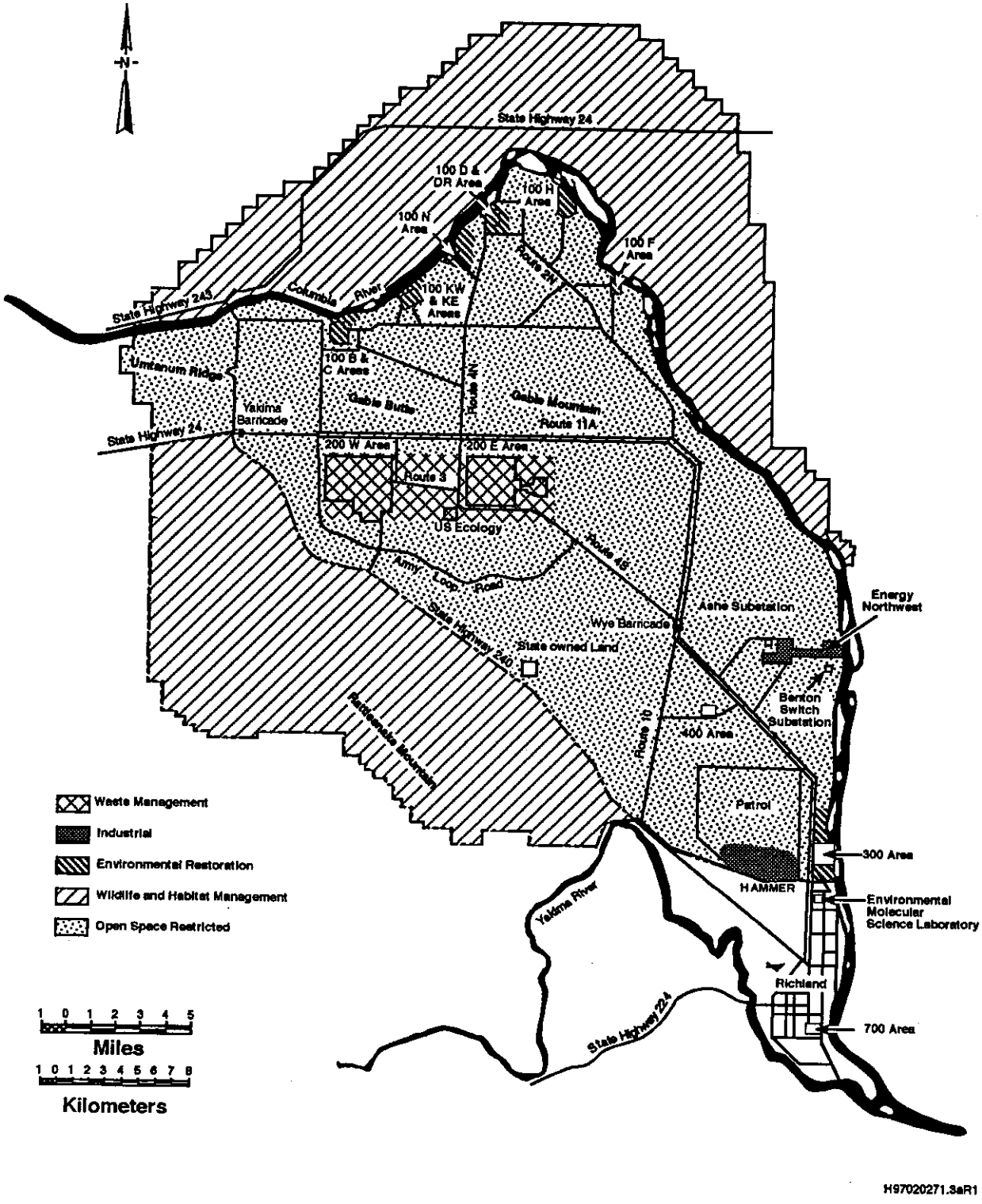

Figure 9-1. Land Uses at the Hanford Site (adapted from DOE/EIS-0222).

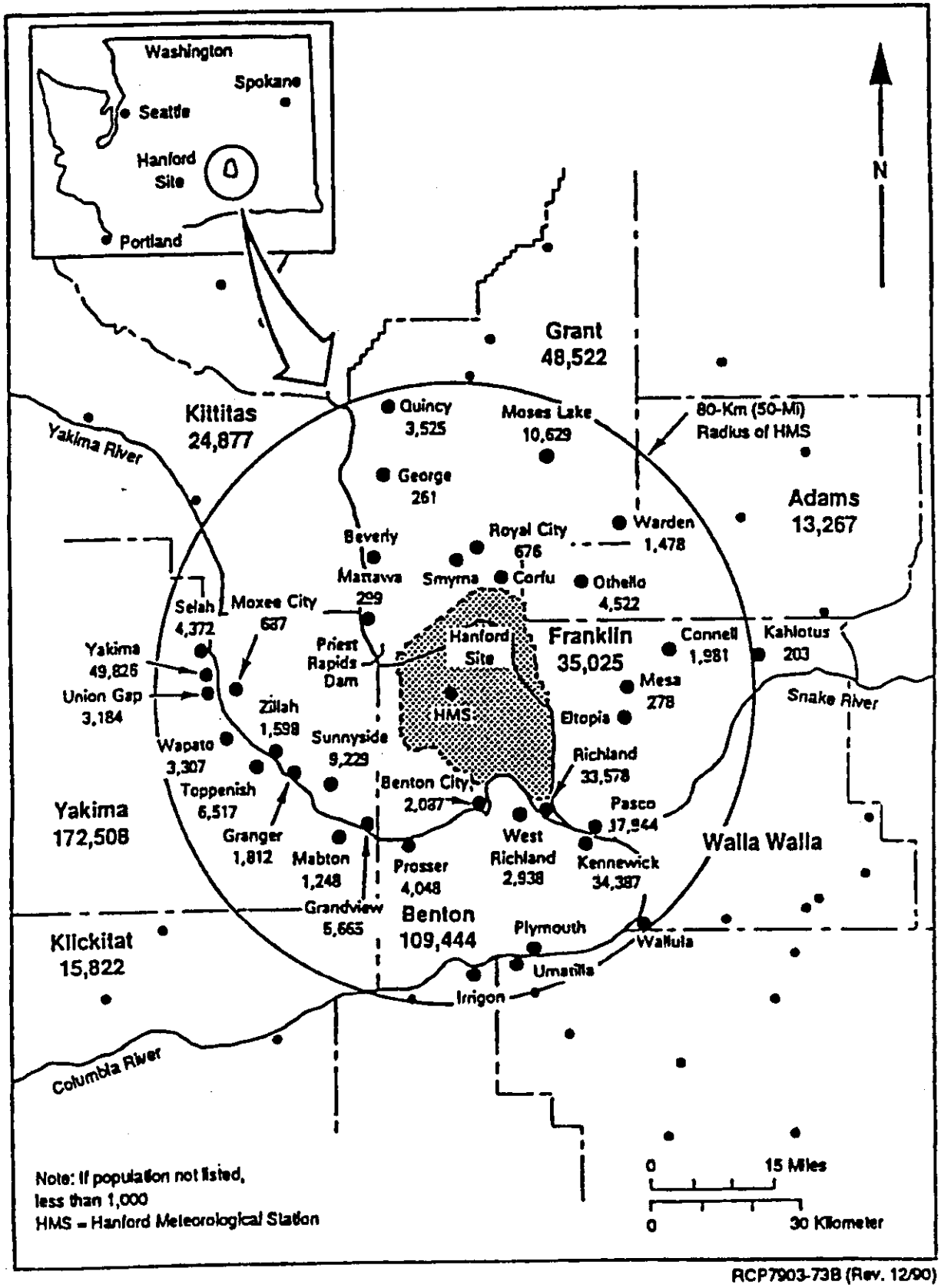

Figure 9-2. Population in the Vicinity of the Hanford Site.

Table 9-1. Information Requirements Checklist.

Reg. cited	Description	Location in permit application[a]	Other/ comments
1. General Information			
270.14(b) (1)	General description of facility	2.0	
270.14(b) (2) and (3)	Chemical and physical analyses of wastes	3.0	
270.14(b)(4)	Access control and security description of active portion	6.0	
270.14(b)(5), 270.17(d), and 270.21(d)	General inspection schedule and procedures	6.0	
270.14(b)(6)	Preparedness and prevention documentation	6.0	
270.14(b)(7)	Contingency plan	7.0 Appendix 7A	
270.14(b)(8)	Preventive procedures	Appendix 7A	
270.14(b)(11)(i) and (ii)	Facility location information	2.0	
270.14(b)(13)	Closure plan	11.0	
270.14(b)(13)	Postclosure care plan	11.0	
270.14(b)(17)	Documentation of insurance	N/A[b]	
270.14(b)(19)	Topographic map (site plotted on U.S. Geological Survey quadrangle maps)	Appendix 2A	
270.21(a) and 270.17(a)	List of waste placed or to be placed in each unit	1.0	
	Existing risk assessment reports and information, including liability insurance analyses, claims, and settlements	9.0	
	Land use and zoning map(s) for an area of four miles around the unit	9.0	
	Existing aerial photographs of the facility	Appendix 2A	
	Identify and summarize any waste analysis data not already submitted; provide additional data as discussed in text	3.0	
	Current estimate of annual amount of waste received and description of any pretreatment process used	1.0 3.0 4.0	
	Identification of any federal, state, or local inspection or compliance records related to environmental and health programs, include descriptions of any major violations	9.0 12.0	

Reg. cited	Description	Location in permit application[a]	Other/ comments
2. Groundwater Pathway			
270.14(c)(1)	Interim status groundwater monitoring results	5.0	
270.14.(c)(2)	Identification of uppermost aquifer, including flow rate and direction	5.0	
270.14(c)(3) and 270.14(b)(19)	Topographic maps related to groundwater protection (well location, water table elevation contours, etc.)	5.0 Appendix 2A	
270.14(c)(4) (i) and (ii)	Description of existing contamination	5.0	
270.14(c)(5)	Detailed plans for groundwater monitoring program	5.0	
270.14(c)(6)	Description of detection monitoring program (if applicable)	5.0	
270.14(c)(7) and (c)(7)(ii)	Description of compliance monitoring program and characterization of contaminated groundwater (if applicable)		N/A
270.14(c)(7)(iv)	Alternate concentration limits demonstration (if any)		N/A
270.14(c)(8)	Corrective action program (if applicable)		N/A
270.17(b)(1) 270.21(b)(1)	Description of liner and leachate collection systems (if applicable)	4.0	
Additional Information			
	Existing map showing location of all known wells within 3 miles; number and location of drinking water wells	Appendix 2A	
	Discussion of groundwater uses within 3 miles of unit	5.0 9.0	
	Regional map showing areas of groundwater recharge and discharge	5.0	
	Net precipitation using net seasonal rainfall or other available data	2.0 5.0 9.0	
	Unless otherwise reported to EPA, available well data indicating a release, and information on any affected public or private water supplies, including populations served		None
	Any known food chain contamination resulting from prior release from the unit to groundwater		None

Reg. cited	Description	Location in permit application[a]	Other/ comments
3. Surface Water Pathway			
270.14(b)(11) (iii) through (v)	Location information related to 100-year floodplain including variance demonstrations	2.0	
270.21(b)(2)	System for control of run-on from each peak discharge of 25-year storm	2.0 4.0	
270.21(b)(3)	System for control of run-off from 24-hour, 25-year storm	2.0 4.0	
270.17(b)(2)	Procedures/equipment to prevent overtopping	2.0 4.0	
270.17(b)(3)	Structural integrity of dikes	2.0 4.0	
Additional Information			
	Discussion of surface-water uses within 3 miles of the unit, including a map showing the location of all surface-water bodies and downstream drinking water intakes	5.0 9.0 Appendix 2A	
	Velocities of streams and rivers passing through and adjacent to the property		None
	Description of any system used to monitor surface-water quality, and a summary of the data	9.0	
	Description of known releases to surface water; the extent of contamination; remedial action, if any; and if known, severity of impact	9.0	
	Any known food chain contamination resulting from prior release from the unit to surface water		None
4. Air Pathway			
270.14(b)(9), 270.21(f) and (g), 270.21(h) and (i)	Documentation of procedures to prevent accidental ignition or reaction	4.0 6.0 7.0	
270.21(b)(5)	Plans to control wind dispersal of particulate matter at landfills	4.0 11.0	
270.14(b)(19)(v)	A wind rose showing prevailing wind speed and direction	2.0 9.0	
Additional Information			
	Summary of air monitoring data and a description of current monitoring system if any	9.0	
	Population within a 4-mile radius of the unit	9.0	
	Describe any known release to air; the extent of contamination; remedial action, if any; and severity of impact, if known	9.0	

Reg. cited	Description	Location in permit application[a]	Other/ comments
5. Subsurface Gas Pathway			
	None in addition to General Information Requirements	9.0	
Additional Information			
	Any past disposal of municipal-type wastes in the unit; approximate quantities and dates of disposal, if known		None
	Map location of any underground conduits within the site and known underground conduits within 1,000 feet of property boundary	Appendix 2A	
	Descriptions of any monitoring or control mechanisms for subsurface gas release; summarize resulting data		None
	Description of any known releases; extent of contamination; remedial action taken, if any; and the severity of impact, if known		None
6. Contaminated Soil Pathway			
	None in addition to General Information Requirements	9.0	
Additional Information			
	If soil sampling has been done, a map showing areas of soil contamination, and a summary of analytical results		None
	Description of the types of major releases that resulted in soil contamination, and any cleanup action		None
	Any known food chain contamination resulting from the use of contaminated soils for raising crops		None

Reg. cited	Description	Location in permit application[a]	Other/ comments
7. Transportation Information			
270.14(b)(10)	Traffic pattern, volume, and controls; access road characteristics	2.0	
Additional Information			
	Description of the types and capacities of vehicles used to transport waste	2.0	
	Identification of normal transport routes for hazardous waste into the site and within 1 mile of the facility entries	2.0	
	Description of procedures for cleanup of transportation-related spills or leaks	7.0 Appendix 7A	
	Descriptions of any transportation accidents releasing hazardous wastes onsite, or in the immediate vicinity		None
8. Management Practices Information			
270.14(b)(12) 264.16	Outline of programs to train employees to safely operate and maintain facility, including emergency response activities	8.0	

[a] Location in Hanford Facility Dangerous Waste Permit Application (i.e., DOE/RL-91-28, and/or DOE/RL-88-20, and/or DOE/RL-93-03).

[b] N/A--Not Applicable.

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10.0 WASTE MINIMIZATION [D-9]

This chapter addresses the provisions identified in Section D-9 of Ecology's permit application guidance (Ecology 1987 and 1996). This chapter also addresses Condition II.F. (Waste Minimization) of the HF RCRA Permit (HSWA Portion). To fulfill the requirements of 40 CFR 264.73(b)(9), and Condition II.F. of the HF RCRA Permit (HSWA Portion), onsite generating units complete a waste minimization/pollution prevention certification annually certifying that a waste minimization/pollution prevention program is in place. A copy is maintained in the Hanford Facility Operating Record, Unit-Specific file (refer to Chapter 12.0, Section 12.1.43).

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Figure 11-1. General Closure Flow Chart. F11-10

11.0 CLOSURE AND FINANCIAL ASSURANCE [I]

This chapter addresses the provisions contained in Section I of Ecology's permit application guidance (Ecology 1987 and 1996) and in Conditions II.J. (Facility Closure) and II.K. (Soil/Groundwater Closure Performance Standards) of the HF RCRA Permit (DW Portion). Although the content of this chapter focuses on 'operating units', most of the information also is applicable to TSD units 'undergoing closure'. Detailed information on closure activities associated with TSD units 'undergoing closure' is addressed in unit-specific preclosure work plans, closure work plans, closure plans, closure/postclosure plans, or postclosure permit application documentation. Additional information applicable to TSD units 'undergoing closure', particularly information that pertains to RCRA/CERCLA integration, is contained in Chapter 2.0, Section 2.5. Cross-reference is made to Chapter 2.0, Section 2.5, where portions of this section also could be applicable to 'operating' TSD units.

When a TSD unit is no longer used to treat, store, and/or dispose of dangerous or mixed waste, this TSD unit will be closed. Closure will be accomplished in a manner that is protective of human health and the environment, and will be conducted in accordance with current regulations. The term 'RCRA closure', as used in this chapter, refers to consideration of both federal and state regulations as applicable.

11.1 CLOSURE PLAN/FINANCIAL ASSURANCE FOR CLOSURE [I-1]

As specified in Condition II.K. of the HF RCRA Permit (DW Portion), there are three RCRA closure options: clean closure, modified closure, and landfill closure. Specific closure activities and objectives for any one TSD unit will be included in the Unit-Specific Portion of this permit application or in preclosure work plan, closure work plan, closure plan, closure/postclosure plan, or postclosure permit application documentation. Figure 11-1 shows a general closure flow chart addressing the three RCRA closure options.

11.1.1 Closure Performance Standard [I-1a]

The following sections address the three closure options cited in Condition II.K. of the HF RCRA Permit (DW Portion): clean closure, modified closure, and landfill closure. Modified closure and landfill closure options also can be used to accommodate RCRA/CERCLA integration needs. As noted in Chapter 2.0, Section 2.5, nearly all TSD units are located within a RCRA or CERCLA operable unit.

11.1.1.1 Clean Closure

Clean closure is accomplished when cleanup levels as prescribed in WAC 173-303-610(2)(b) have been achieved. Conditions II.K.1. and II.K.2. of the HF RCRA Permit (DW Portion) specifically address clean closure. Clean closure is accomplished by verifying that the potentially dangerous constituents treated, stored, and/or disposed at the TSD unit being closed are not present above cleanup levels for those potential contaminants.

As required by WAC 173-303-610(2)(b), cleanup levels will be based on equations and exposure assumptions presented in WAC 173-340, MTCA for residential exposure (Method B). For noncarcinogens, the principal variable relating human health to cleanup levels will be the oral reference dose (Appendix 2B). For carcinogens, the cancer slope factor will be the basis for determining human health effects and is a measurement of risk per unit dose. The oral reference dose and cancer slope factor are chemical specific and are obtained from the *Integrated Risk Information System* (IRIS) database (EPA 1989a). Cleanup levels will be based on values that are current at the time of approval of closure documentation.

Protection of human health and the environment will be accomplished by removing or treating all dangerous waste constituents at a TSD unit to concentration levels that are not a threat to human health and the environment. However, remediation will not be below background levels, as approved by Ecology, if these background levels are above MTCA Method B levels.

11.1.1.2 Modified Closure

If dangerous waste constituents present at the TSD unit are above MTCA Method B levels, but below MTCA Method C levels (industrial-based scenario), then a 'modified' closure option could be used (refer to Chapter 2.0, Section 2.5). Requirements for a modified closure are specified in Condition II.K.3 of the HF RCRA Permit (DW Portion). These requirements include the following:

- Provision of institutional controls in accordance with WAC 173-340-440 for a minimum of 5 years
- Conduct of periodic assessments of the TSD unit to determine the effectiveness of the closure
- Development of a postclosure permit application, including final status postclosure groundwater monitoring
- Selection of a clean-up option with consideration of the potential future site use for that TSD unit/area.

11.1.1.3 Landfill Closure

A landfill closure occurs when dangerous waste constituents are left at the TSD unit in concentrations that are above MTCA Method C levels (refer to Chapter 2.0, Section 2.5). When waste or contamination is left in place, the submittal of postclosure documentation is required. This documentation would contain a RCRA-compliant landfill cover design and a postclosure monitoring plan. The postclosure monitoring plan would describe how the covered TSD unit would be monitored and maintained to ensure protection of human health and the environment. Regulations require monitoring and maintenance for at least 30 years unless a shorter time is approved by Ecology (the shorter time must be shown to be sufficient to protect human health and the environment). Requirements for a landfill closure are contained in WAC 173-303-610 and Condition II.K.4. of the HF RCRA Permit (DW Portion).

Condition II.K.6. of the HF RCRA Permit (DW Portion) allows deviations from a TSD unit closure plan required by unforeseen circumstances encountered during closure activities that do not impact the overall closure strategy. These deviations must provide equivalent results and are to be documented in the Hanford Facility Operating Record, Unit-Specific File.

Condition II.K.7. of the HF RCRA Permit (DW Portion) allows, when agreed to by Ecology, integration of other statutorily or regulatory mandated cleanups. The results from other cleanup investigation activities could be used whenever possible to supplement and/or replace TSD unit closure investigation activities. All, or appropriate parts of, multipurpose cleanup and closure documents could be incorporated into the HF RCRA Permit (DW Portion) through the permit modification process. Cleanup and closures conducted under any statutory authority with oversight by either Ecology or EPA, which meets the equivalent of the technical requirements of Condition II.K. of the HF RCRA Permit (DW Portion), could be considered as satisfying the requirements of the HF RCRA Permit (DW Portion). Thus, Condition II.K.7. of the HF RCRA Permit (DW Portion) is particularly key in promoting RCRA/CERCLA integration on the Hanford Facility, as discussed in Chapter 2.0, Section 2.5.

11.1.1.4 Standards

The following sections address closure performance standards and waste removal and decontamination standards.

All plans will be developed to close TSD units in a manner that meets the closure performance standards of WAC 173-303-610(2):

> *"(a)(I) Minimizes the need for further maintenance;*
>
> *(ii) Controls, minimizes or eliminates to the extent necessary to protect human health and the environment, postclosure escape of dangerous waste, dangerous constituents, leachate, contaminated run-off, or dangerous waste decomposition products to the ground, surface water, ground water, or the atmosphere; and*
>
> *(iii) Returns the land to the appearance and use of surrounding land areas to the degree possible given the nature of the previous dangerous waste activity."*

11.1.1.4.1 Minimizing the Need for Future Maintenance

Minimizing the need for future maintenance will be accomplished by clean closing (at or below health-based standards) TSD units whenever possible. Clean closure will eliminate the need for future maintenance. In areas where clean closure cannot be achieved, future maintenance needs will be addressed in unit-specific postclosure documentation.

11.1.1.4.2 Protection of Human Health and the Environment

Protection of human health and the environment will be accomplished by removing or treating all dangerous waste constituents at a TSD unit to concentration levels that are not a threat to human health and the environment. If dangerous waste constituents cannot be removed or treated to levels that are protective of human health and the environment and must be left in place, a RCRA-compliant landfill cover will be installed. Regulations require monitoring and maintenance for at least 30 years unless a shorter time is approved by Ecology (the shorter time must be shown to be sufficient to protect human health and the environment).

Cleanup levels will be established using guidance such as WAC 173-340, the IRIS database (EPA 1989a), *Risk Assessment Guidance for Superfund: Human Health Evaluation Manual* (EPA 1989b), the *Hanford Site Baseline Risk Assessment Methodology* (DOE/RL-91-45), and other appropriate information.

11.1.1.4.3 Return Land to the Appearance and Use of Surrounding Land

Closure plans will include, to the extent practicable, consideration of returning the TSD units to an appearance compatible with surrounding structures and/or the semi-desert terrain of the area.

11.1.2 Closure Activities [I-1b]

The activities undertaken or planned to perform closure for a TSD unit are identified in the Unit-Specific Portion of this permit application or in preclosure work plan, closure work plan, closure plan, closure/postclosure plan, or postclosure permit application documentation. General closure activity information is discussed in the following sections. Of particular relevance in the definition of closure activities is the use of the DQO process (refer to Chapter 3.0, Section 3.2).

11.1.2.1 Maximum Extent of Operation [I-1b(1)]

During the waste investigations to determine the maximum extent of operations, the TSD unit-specific closure plans will ensure that the waste is characterized properly in terms of presence, location, concentration, and volume of each contaminant. Research of process records, drawings, and photographs will shape the initial sampling strategy. As field information and laboratory results become available, the sampling strategy could specify more sampling until the waste contaminants can be reliably located and

quantified. Information specific to any one TSD unit is included in the Unit-Specific Portion of this permit application or in preclosure work plan, closure work plan, closure plan, closure/postclosure plan, or postclosure permit application documentation.

11.1.2.2 Removing Dangerous Waste [I-1b(2)]

Before a non-land-based TSD unit can be closed, the dangerous waste will be removed and sent to a permitted TSD unit. Removal of the dangerous waste will be completed within 90 days after the last waste receipt at the unit unless a longer period is specified in the closure plan.

11.1.2.3 Decontamination of Structures, Equipment, and Soil [I-1b(3)]

The remediation process for a TSD unit will be agreed upon with the appropriate regulatory agency(s) using one of the three closure options discussed in Sections 11.1.1.1, 11.1.1.2, and 11.1.1.3. Decontamination of structures and equipment will be evaluated on a unit-by-unit basis. The agreed upon closure option for soil remediation will include sampling to determine if clean closure is achievable unless landfill closure is selected. If some soil remediation is undertaken, the sampling results will be used to determine when the remediation effort has been completed. Information specific to any one TSD unit is included in the Unit-Specific Portion of this permit application or in preclosure work plan, closure work plan, closure plan, closure/postclosure plan, or postclosure permit application documentation.

11.1.2.4 Sampling and Analysis to Identify Extent of Decontamination/Removal and to Verify Achievement of Closure Standard [I-1b(4)]

Most sampling will be accomplished according to information contained in established environmental regulations and guidelines using the DQO process. This information has been used in developing protocols set forth in contractor procedures and in EPA SW-846. These protocols will be followed in obtaining and handling all samples. Field duplicate, equipment blank, and trip blank samples (Appendix 2B) will be taken as appropriate and analyzed as a check on field sampling procedures, cross-contamination of samples, contamination from sample handling, and laboratory contamination. Samples usually will be taken on intervals down to 0.91 meter for non-land disposal units. Sampling and analysis information is provided in the SAP for a particular TSD unit. Discussion of the manner by which a SAP supports closure plan or closure/postclosure plan activities is contained in Chapter 3.0, Section 3.5.1.

The analytical data obtained from the sampling of each TSD unit will be validated to a level agreed upon in the DQO process. The resulting concentration levels of the identified constituents will be compared with the corresponding MTCA Method B levels as agreed to by Ecology. If this comparison supports the conclusion that the area does not contain greater concentrations than cleanup levels for each constituent, the area will be cleaned closed. If sample results from a particular TSD unit do not meet the closure criteria, the particular waste constituents that exceed the cleanup levels will be identified, and further evaluations of the potential success of additional decontamination/removal efforts will be limited to these constituents. This information is documented in a data evaluation report. Discussion of the manner by which a data evaluation report supports closure plan or closure/postclosure plan activities is contained in Chapter 3.0, Section 3.5.2.

Sampling and analysis of materials that are not covered by EPA SW-846 will be achieved using protocols, procedures, and methods approved by the appropriate regulatory agency(s) before conducting the sampling or analytical work. A description of procedures currently used to support closure activities, as well as the specific sampling plan, are included in the Unit-Specific Portion of this permit application or in preclosure work plan, closure work plan, closure plan, closure/postclosure plan, or postclosure permit application documentation.

11.1.3 Maximum Waste Inventory [I-1c]

An estimate of the maximum inventory of dangerous and/or mixed waste ever in storage and in treatment at any time during the active life of the TSD unit will be provided in the Unit-Specific Portion of this permit application or in preclosure work plan, closure work plan, closure plan, closure/postclosure plan, or postclosure permit application documentation.

11.1.4 Closure of Waste Piles, Surface Impoundments, Incinerators, Land Treatment, and Miscellaneous Units [I-1d]

Each unit-specific closure plan is uniquely designed for closure of that unit. Any additional closure criteria that are necessary because of the type of TSD unit, i.e., containment building, surface impoundment, land treatment, or miscellaneous unit, will be incorporated into the closure plan. The closure plan will be implemented when approval is received from Ecology and the EPA, and after the final waste receipt by the TSD unit.

The closure plan will contain information on closure performance standards, decontamination, waste inventory removal, sampling and analysis, schedule, and closure certification. Where possible, the closure plan will be prepared using clean closure as the basis for closing the TSD unit.

11.1.5 Closure of Landfill Units [I-1e]

Landfill units generally will be closed with waste left in-place, which precludes clean closure. Besides the closure information specified in Section 11.1.4, additional information will be provided in the following areas:

- Disposal Impoundments [I-e(1)]
- Elimination of Liquids [I-e(1)(a)]
- Waste Stabilization [I-e(1)(b)]
- Cover Design [I-1e(2)]
- Minimization of Liquid Migration [I-1e(3)]
- Maintenance Needs [I-1e(4)]
- Drainage and Erosion [I-1e(5)]
- Settlement and Subsidence [I-1e(6)]
- Cover Permeability [I-1e(7)]
- Freeze/Thaw Effects [I-1e(8)].

A barrier or cover usually is installed over a landfill to protect human health and the environment from the waste left in-place.

11.1.6 Closure Schedule [I-1f]

In accordance with regulations, closure activities will commence following the final receipt of waste. The TSD unit-specific schedule for closure will be provided in the closure plan. The activities to complete closure will be scheduled within 180 days unless a modified schedule is presented and agreed upon in the closure plan.

11.1.7 Extension for Closure Time [I-1g]

If closure activities will exceed the approved closure plan schedule, closure time extensions will be requested. All extension requests will include the justification for the extension and details for the remaining activities to achieve closure.

11.1.8 Closure Cost Estimate [I-1h]

Condition II.H.3. of the HF RCRA Permit (DW Portion) specifies that the "Permittees are exempt from the requirements of WAC 173-303-620." However, the Permittees have agreed to provide, annually, projections of anticipated costs for closure and postclosure for TSD units incorporated into Parts III or V of the HF RCRA Permit (DW Portion) (refer to Chapter 12.0, Section 12.1.22). Submittal of this annual report will take place on October 31 of each year, as described in Condition II.H.1. of the HF RCRA Permit (DW Portion).

11.1.9 Financial Assurance Mechanism of Closure [I-1i]

Federal facilities, and government contractors at such facilities, are not required to comply with WAC 173-303-620 as stated in the regulation and as described in Condition II.H.3. of the HF RCRA Permit (DW Portion).

11.1.10 Amendments to Closure Plan

Should changes be required to the approved closure plan, an amended plan will be prepared and submitted to the proper regulatory agency(s) for approval in accordance with 40 CFR 264.112(c) and WAC 173-303-610(3)(b).

11.1.11 Certification of Closure

Within 60 days of final closure of any TSD unit, the DOE-RL will submit a certification of closure to the proper regulatory agency(s) in accordance with 40 CFR 264.115 and WAC 173-303-610(6). This certification will be signed by both the Permittees and by an independent professional engineer, and will state that the TSD unit has been closed in accordance with the approved closure plan. The certification will be submitted by registered mail or an equivalent delivery service. Documentation supporting the closure certification will be retained and will be furnished upon request to the proper regulatory agency(s). This documentation will be maintained by the DOE-RL contact (or the successor) identified in Section 11.6; a record also will be maintained in the Hanford Facility Operating Record (refer to Chapter 12.0, Section 12.1.32). According to condition II.J. of the HF RCRA Permit, final closure of the Hanford Facility will be achieved when closure activities for all TSD units have been completed, as specified in Parts III, IV, or V of this Permit. Completion of these activities will be documented using either certifications of closure, in accordance with WAC 173-303-610(6), or certifications of completion of postclosure care, in accordance with WAC 173-303-610(11).

11.1.12 Survey Plat

On submission of the closure certification for a land disposal unit, a survey plat indicating the location and dimensions of the unit will be submitted to the following:

- Benton County Land Planning Department
- The EPA and Ecology.

The survey plat will be prepared and certified by a professional land surveyor. The plat will contain a note that states the DOE-RL's obligation to restrict disturbance of the TSD unit. This submission will satisfy the requirements of 40 CFR 264.119(a) and WAC 173-303-610(9).

11.1.13 Notice to Local Land Authorities

To the extent that residual dangerous waste contamination (waste left-in-place) exceeds limits for protection of human health and the environment, the local land authority (county-specific land zoning board and engineer; refer to Chapter 12.0, Section 12.1.29) will be provided a certified legal description of the contaminant location and contaminant inventory.

11.2 NOTICE IN DEED OF ALREADY CLOSED DISPOSAL UNITS [I-2]

For those TSD units that cannot be clean closed, the following action will be taken in accordance with 40 CFR 264.119 and WAC 173-303-610(1)(b). Within 60 days of the certification of closure, the DOE-RL will sign, notarize, and file for recording the following notice. The notice will be sent to the Auditor of Benton County, P.O. Box 470, Prosser, Washington, with instructions to record this notice in the deed book.

TO WHOM IT MAY CONCERN

The United States Department of Energy, Richland Operations Office, an operations office of the United States Department of Energy, which is a department of the United States government, the undersigned, whose local address is the Federal Building, 825 Jadwin Avenue, Richland, Washington, hereby gives the following notice as required by 40 CFR 264.119 and WAC 173-303-610(10) (whichever is applicable):

(a) The United States of America is, and since April 1943, has been in possession in fee simple of the following described lands: (legal description of the TSD unit).

(b) The United States Department of Energy, Richland Operations Office, by operation of the (name of TSD unit), has disposed of hazardous and/or dangerous waste under the terms of regulations promulgated by the United States Environmental Protection Agency and the Washington State Department of Ecology (whichever is applicable) at the above described land.

(c) The future use of the above described land is restricted under terms of 40 CFR 264.117(c) and WAC 173-303-610(7)(d) (whichever is applicable).

(d) Any and all future purchasers of this land should inform themselves of the requirements of the regulations and ascertain the amount and nature of wastes disposed on the above described property.

(e) The United States Department of Energy, Richland Operations Office, has filed a survey plat with the Benton County Planning Department and with the United States Environmental Protection Agency, Region 10, and the Washington State Department of Ecology (whichever are applicable) showing the location and dimensions of the (name of the TSD unit) and a record of the type, location, and quantity of waste treated.

11.3 POSTCLOSURE PLAN [I-3]

A postclosure plan will be submitted with the closure plan for land disposal TSD units (i.e., closure with dangerous waste constituents left in place above MTCA Level B cleanup levels). As discussed in Chapter 2.0, Section 2.5, documentation for these TSD units will be developed in accordance with Sections 5.5 and 6.3 of the Tri-Party Agreement Action Plan. These Tri-Party Agreement Action Plan sections require the submittal of a postclosure permit application. This postclosure permit application will contain much of the same information as supplied in the postclosure plan, the contents of which are to be discussed in the remainder of Section 11.3. Conditions resulting from the submittal of postclosure permit application documentation are to be incorporated into Part VI of the HF RCRA Permit (DW Portion) (refer to Chapter 2.0, Section 2.1.1.3.3).

11.3.1 Inspection Plan [I-3a]

The inspection plan will describe inspections to be conducted during the postclosure period, the frequency of inspections, the inspection procedures, and the logs to be kept. The inspection plan will contain information on the following items, as applicable: security control devices; erosion damage; cover settlement, subsidence, and displacement; vegetative cover condition; integrity of run-on and run-off control measures; cover drainage system; gas venting system; well condition; and benchmark integrity.

11.3.2 Monitoring Plan [I-3b]

The monitoring plan will describe activities associated with groundwater monitoring during the postclosure period. The groundwater monitoring plan will contain the following information, as applicable: interim status period groundwater monitoring data, aquifer identification, contaminant plume description, detection monitoring program, compliance monitoring program, and corrective action program.

11.3.3 Maintenance Plan [I-3c]

The maintenance plan will describe the preventative and corrective maintenance procedures, equipment, and material needs. The plan will contain the following information, as applicable: repair of security control devices; erosion damage repair; correction of settlement, subsidence, and displacement; mowing, fertilization, and other vegetative cover maintenance; repair of run-on and run-off control structures; and well replacement.

11.3.4 Land Treatment [I-3d]

Land treatment information is concerned with the operations, inspections, and maintenance programs to be used at a TSD unit after closure. Of particular relevance at the Hanford Facility, will be programs and procedures implemented to maintain a vegetative cover and keep out deep-rooted plants and burrowing animals; minimize the damage due to wind erosion; and run-on and run-off management systems.

11.3.5 Postclosure Cost Estimate [I-3e]

Condition II.H.3. of the HF RCRA Permit (DW Portion) specifies that the "Permittees are exempt from the requirements of WAC 173-303-620." However, the Permittees have agreed to provide, annually, projections of anticipated costs for closure and postclosure and postclosure monitoring and maintenance for TSD units incorporated into Parts III, V, and VI of the HF RCRA Permit (DW Portion) (refer to Chapter 12.0, Section 12.1.22). Submittal of this annual report will take place on October 31 of each year, as described in Condition II.H.1. of the HF RCRA Permit (DW Portion).

11.3.6 Financial Assurance Mechanism for Postclosure Care [I-3f]

Federal facilities, and government contractors at such facilities, are not required to comply with WAC 173-303-620 as stated in the regulation and as described in Condition II.H.3. of the HF RCRA Permit (DW Portion).

11.3.7 Provisions to Amend Postclosure Plan

Should changes be required to approved postclosure plan documentation, amended documentation will be prepared and submitted to the proper regulatory agency(s) for approval in accordance with 40 CFR 264.112□ and WAC 173-303-610(3)(b).

11.3.8 Certification of Completion of Postclosure Care

Within 60 days after completion of the established postclosure care period for each land disposal unit, the DOE-RL will submit to Ecology, by registered mail, a certification that the postclosure care period for the unit was completed in accordance with the approved postclosure plan. This certification will be signed by a representative of the DOE-RL and by an independent registered professional engineer. A record of this certification will be maintained in the Hanford Facility Operating Record (refer to Chapter 12.0, Section 12.1.32).

11.4 LIABILITY REQUIREMENTS [I-4]

Federal facilities, and government contractors at such facilities, are not required to comply with WAC 173-303-620 as stated in the regulation and as described in Condition II.H.3. of the HF RCRA Permit (DW Portion).

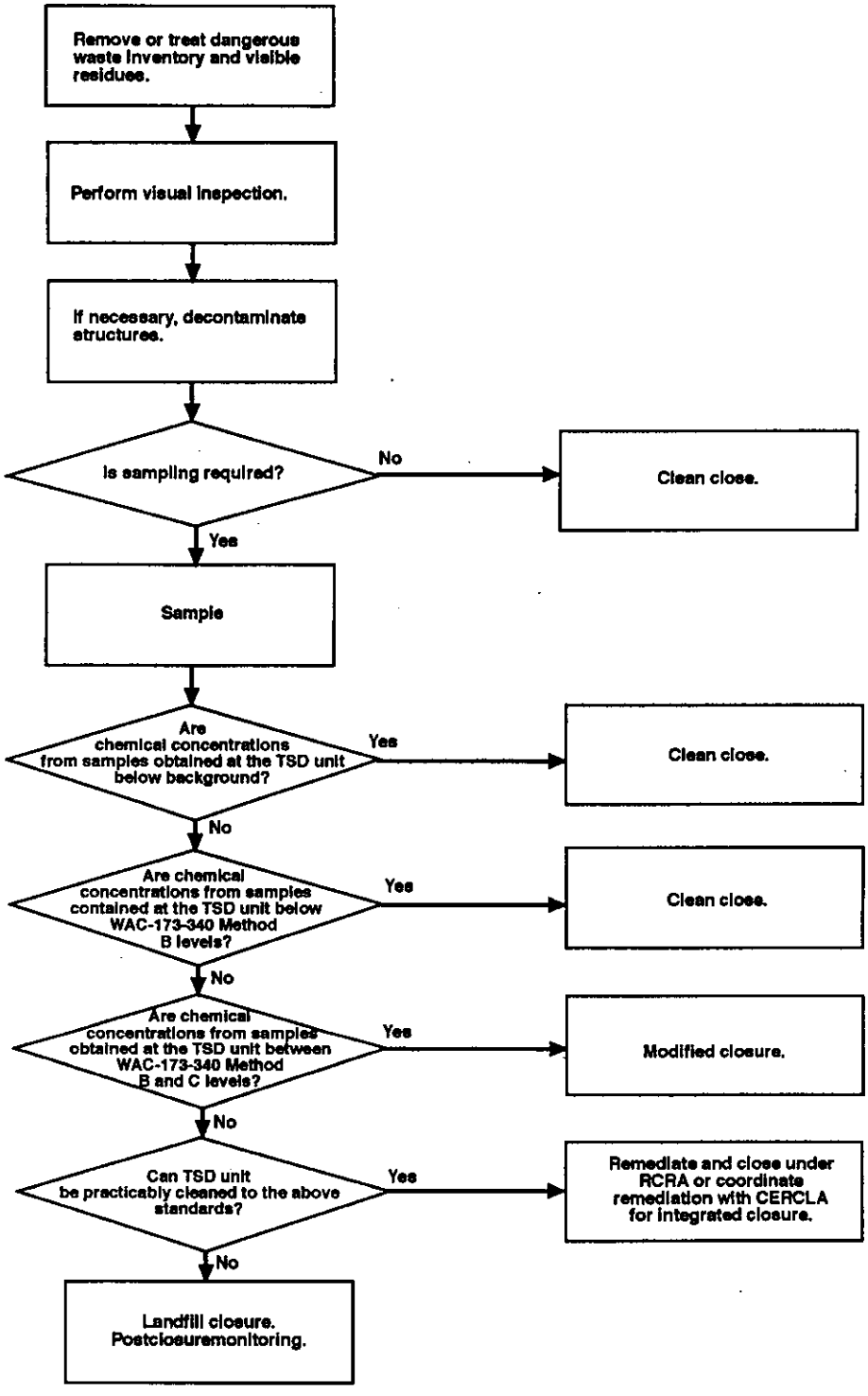
11.5 CLOSURE OF THE HANFORD FACILITY

Final closure of the Hanford Facility will be achieved when closure activities for all TSD units have been completed, as specified in either closure plan, closure/postclosure plan, or postclosure permit application documentation. Completion of these activities will be documented using either certifications of closure, in accordance with WAC 173-303-610(6), or certifications of completion of postclosure care, in accordance with WAC 173-303-610(11) as described in Condition II.J.1. of the Hanford RCRA Facility Permit (DW Portion). A discussion of the disposition of the Part A, Form 3 for a specific TSD unit that undergoes clean closure is included in Chapter 1.0.

11.6 CLOSURE CONTACTS

The following office (or its successor) is the official closure contact:

-Office of Site Services
U.S. Department of Energy,
Richland Operations Office
P.O. Box 550
Richland, Washington 99352
(509) 376-5441.



CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act of 1980
RCRA = Resource Conservation and Recovery Act of 1976
TSD = treatment, storage, and/or disposal

H00040096.10R

Figure 11-1. General Closure Flow Chart

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12.0 REPORTING AND RECORDKEEPING

This chapter discusses reporting and recordkeeping requirements as detailed in Condition II.I. (Facility Operating Record) (DW Portion), Condition I.L. (Monitoring and Records) (HSWA Portion), and other conditions of the HF RCRA Permit. Much of this discussion focuses on the organization and content of the Hanford Facility Operating Record and describes how records are managed and maintained. Certification and immediate reporting requirements also are discussed.

For purposes of maintaining records designated for the "Hanford Facility", the 700 Area and north to, and including, the Hanford Site is considered to meet the intent of WAC 173-303, even though the 700 Area is not located within the Hanford Facility boundary (Attachment 33, Chapter 2.0, Figure 2-1). Because of the limitation of space, records could be archived, as appropriate, at the Federal Records Center, 6125 Sand Point Way, Seattle, Washington, 98115, or other federal government archive centers in Washington State. Records located on the Hanford Facility, and stored at government archive centers, can be accessed by contacting the Environmental Data Management Center (509) 376-1418. The current approach is to retain records until 10 years after postclosure or corrective action is complete and certified for the Hanford Facility, whichever is later (Condition I.E.10.b. and I.E.10.c of the HF RCRA Permit [DW Portion]). As specified in the HF RCRA Permit (DW Portion), records can be kept in an electronic format (Conditions I.E.10.b., I.E.10.c., II.C.1., and II.I.1.).

12.1 DESCRIPTION OF RECORDS AND REPORTS

Records and reports required by the HF RCRA Permit and associated WAC 173-303 and Title 40, Code of Federal Regulations are summarized briefly in this section. These summaries are keyed to Table 12-1, which lists Permit conditions and the associated records and/or reports, where located, and the mechanisms by which these records and/or reports are submitted to the regulators. For implementation of any of the record and/or report conditions summarized in this section, the actual wording of the Permit should be referred to, rather than the summaries.

Table 12-1 is a comprehensive listing of records and reports that could be applicable to the Hanford Facility; the Unit-Specific Portion of this permit application only need list those applicable to a particular TSD unit. The information contained in this chapter need not be duplicated in the Unit-Specific Portion or in preclosure work plan, closure work plan, closure plan, closure/postclosure plan, or postclosure permit application documentation, but could be cross-referenced, as appropriate.

Condition II.I. of the HF RCRA Permit (DW Portion) contains a specific discussion of the contents of the Facility Operating Record, including direction for the inclusion of all other reports, as required by the Permit (Condition II.I.1.t.). The Hanford Facility Operating Record consists of two files, a General Information file and a Unit-Specific file. The 'Records Contacts' for both the General Information and Unit-Specific files can be accessed by calling (509) 373-6958 or (509) 373-9327. Unit-Specific file records are maintained by the individual TSD units and also can be accessed by contacting the TSD unit 'Records Contact'. Unit-Specific file records could be maintained at locations other than the TSD unit. Table 12-1 designates which records and/or reports are contained in the General Information and/or Unit-Specific files.

12.1.1 Quarterly Notification of Class 1 Modifications

Notifications of modifications not otherwise addressed in the HF RCRA Permit (DW Portion) are submitted in accordance with Condition I.C.3. of the Permit, which allows for Class 1 (minor) modifications to be entered into the Hanford Facility Operating Record and submitted to Ecology quarterly (refer to Attachment 33, Chapter 2.0, Section 2.1.1.3.3). Any Class 1 modifications made

during a quarter are consolidated and submitted in a report within 10 days after the end of that quarter. Quarters end on December 31, March 31, June 30, and September 30.

12.1.2 Monitoring and Records

Records of monitoring information are to be kept for TSD units in accordance with Condition I.E.10.b. of the HF RCRA Permit (DW Portion). The monitoring information includes calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of reports and records required by the Permit, and records of data used to complete the application for the Permit.

Condition I.E.10.c. of the HF RCRA Permit (DW Portion) pertains to the keeping of records not associated with a particular TSD unit. These records include monitoring and maintenance information, copies of reports and records required by the Permit, and records of data used to complete the application for the Permit.

Monitoring records also are addressed by Condition II.I.1.n. of the HF RCRA Permit (DW Portion).

Records specific to groundwater monitoring are discussed in Section 12.1.26.

12.1.3 Reporting Planned Changes

In accordance with Condition I.E.11. of the HF RCRA Permit (DW Portion), Ecology is to be notified as soon as possible of any planned physical alterations or additions to the Hanford Facility that have an impact on TSD units or non-TSD unit areas subject to the Permit.

12.1.4 Certification of Construction or Modifications

In accordance with Condition I.E.12. of the HF RCRA Permit (DW Portion), notification is to be made that construction or modification of a TSD unit has been accomplished in compliance with the conditions of the Permit. This notification is to be made by a letter signed by the Permittees and a registered professional engineer.

12.1.5 Anticipated Noncompliance

In accordance with Condition I.E.13. of the HF RCRA Permit (DW Portion), notification is to be supplied at least 30 days in advance of any planned changes or activities that could result in a noncompliance with the Permit. If the 30-day advance notice is not possible, the Permittees are to supply notice immediately after becoming aware of the anticipated noncompliance.

12.1.6 Transfer of Permits

Before transferring ownership or operation of the Hanford Facility during its operating life, the Permittees are to notify the new owner or operator in writing of the requirements of WAC 173-303-600, WAC 173-303-806, and the HF RCRA Permit (DW Portion). This notification is to be conducted in accordance with Condition I.E.14. of the Permit. The Permit may be transferred to a new co-operator in accordance with the provisions of WAC 173-303-830(2).

12.1.7 Immediate Reporting

Upon awareness of the circumstances, the Permittees are to immediately report to Ecology any release of dangerous waste or hazardous substances, or any noncompliance with the HF RCRA Permit (DW Portion) that could endanger human health or the environment. This report is to be made in accordance with Condition I.E.15.a. of the Permit.

Upon awareness of the circumstances, the Permittees are to immediately report any information on the release or unpermitted discharge of dangerous waste or hazardous substances that could cause an endangerment to drinking water supplies or ground or surface waters, or of a release or discharge of dangerous waste or hazardous substances, or of a fire or explosion at the Facility that could threaten human health or the environment. This report is to be made in accordance with Condition I.E.15.c. of the HF RCRA Permit (DW Portion).

12.1.8 Release or Noncompliance Not Requiring Immediate Reporting

For any release or noncompliance not required to be reported immediately, a brief account must be entered within 2 days into the Facility Operating Record for TSD units, or into the Facility Operating Record, inspection log or separate spill log, for non-TSD units. This action is to be taken in accordance with Condition I.E.15.d. of the HF RCRA Permit (DW Portion).

12.1.9 Written Reporting

Within 15 days of awareness of the circumstances of any noncompliance with the HF RCRA Permit (DW Portion) that could endanger human health or the environment, the Permittees are to provide a written report in accordance with Condition I.E.16. of the Permit.

12.1.10 Manifest Discrepancy Report

Condition I.E.17.a. of the HF RCRA Permit (DW Portion) addresses reporting associated with discovery of a significant discrepancy (Appendix 2B) in a manifest for dangerous waste received from outside the Hanford Facility. If not reconciled within 15 days of discovery, the Permittees are to submit a letter report to Ecology in accordance with WAC 173-303-370(4), including a copy of the applicable manifest or shipping paper.

12.1.11 Waste Tracking Form Discrepancy Report

Condition I.E.17.b. of the HF RCRA Permit (DW Portion) addresses reporting associated with discovery of a significant discrepancy (Appendix 2B) in waste tracking forms for dangerous waste transported within the Hanford Facility. If not reconciled within 15 days of discovery, the Permittees are to note the discrepancy in the receiving TSD unit's operating record.

12.1.12 Other Information

Condition I.E.20. of the HF RCRA Permit (DW Portion) addresses situations where the Permittees become aware that they have failed to submit any relevant facts in a permit application, closure plan, or postclosure plan, or submitted incorrect information in a permit application, closure plan, or postclosure plan, or in any report to Ecology. In accordance with this condition, the Permittees are to promptly submit such facts or corrected information.

12.1.13 Permit-Related Documentation

Records of HF RCRA Permit-related documentation are to be kept and maintained for 10 years after postclosure care or corrective action of the Hanford Site has been certified as complete, whichever is later. The following documents, and amendments, revisions, and modifications to these documents, are to be retained: the HF RCRA Permit and all attachments; all dangerous waste Part B permit applications, postclosure permit applications, and closure plans; and the Facility Operating Record. Retention of this documentation fulfills Condition I.H. of the Permit.

12.1.14 Notification of Permit-Related Information

Condition II.E.4. of the HF RCRA Permit (DW Portion) pertains to the provision of a notification of availability to Ecology of data obtained pursuant to the Permit within 30 days of receipt by the Permittees, or after completion of quality assurance/quality control activities, if applicable. If data are obtained routinely, the Permittees only need to provide notification of data availability within 30 days of first availability along with a statement as to expected frequency of future data. If routine data are not acquired at the stated expected frequency, the Permittees are to notify Ecology within 30 days with an explanation and revision, if applicable.

12.1.15 Waste Location

Systems to identify and map the locations of SWMUs are documented and maintained within the Hanford Facility Operating Record, in accordance with Condition II.I.1.a. of the HF RCRA Permit (DW Portion) Applicability Matrix (Attachment 3). These systems include the Hanford Geographic Information System (HGIS) database and the WIDS database. A list identifying active 90-day waste storage areas and dangerous waste satellite accumulation areas and their locations on the Hanford Facility also is maintained by each co-operator. In addition, records required by WAC 173-303-380(1) and (2) regarding waste location and methods of waste management are maintained in the Hanford Facility Operating Record, Unit-Specific file for dangerous waste managed in the TSD unit.

12.1.16 Waste Analysis

Waste analysis and other waste designation records for each TSD unit are generated in accordance with Condition II.D. (refer to Chapter 3.0, Section 3.2), and maintained in accordance with Condition II.I.1.b. of the HF RCRA Permit (DW Portion). These records include waste analysis and/or other waste designation for waste resulting from an unidentifiable spill or leak, or waste generated at a TSD unit during decontamination or maintenance activities if required.

12.1.17 Occurrence Reports

The system to generate occurrence reports is described in operating practices documentation maintained by the Permittees. The Occurrence Notification Center (ONC) is staffed 24 hours a day. This arrangement conforms to the requirements of Condition II.I.1.c. of the HF RCRA Permit (DW Portion).

12.1.18 Unmanifested Waste Reports

The Hanford Facility uses waste manifests for tracking offsite waste shipments. The completed waste manifests are the source of two possible reports, the manifest discrepancy report and the unmanifested waste report as cited in Condition I.E.18 of the HF RCRA Permit (DW Portion). Records documenting unmanifested waste shipments are retained by the receiving TSD unit in accordance with Condition II.I.1.d. of the Permit.

12.1.19 Contingency Plan and Incident Records

Records documenting the details of any incidents requiring the implementation of the contingency plan are maintained in the Hanford Facility Operating Record as required by Conditions II.A. and II.I.1.e. of the HF RCRA Permit (DW Portion). Records documenting the details of incidents on the Hanford Facility between TSD unit boundaries (i.e., transportation incidents) are maintained in the Hanford Facility Operating Record, General Information File. Records documenting the details of incidents on the Hanford Facility within TSD unit boundaries are maintained in the Hanford Facility Operating Record, Unit-Specific File. Occurrence reports also are generated to document incidents judged too minor to require the implementation of the contingency plan (e.g., incidents identified as offnormal occurrences, or unusual occurrences).

12.1.20 Personnel Training Records

Training records are kept by the individual TSD units, as required by Conditions II.C. and II.I.1.f. of the HF RCRA Permit (DW Portion). Typically, each contractor maintains official training records in a centralized location. These records could be maintained in a hard copy form or by using electronic data storage. At a minimum, training records will consist of course attendance rosters correlating the training received with personnel who were in attendance (refer to Attachment 33, Chapter 8.0, Section 8.3). Training records are maintained in accordance with the requirements of the *Privacy Act*. The training records of personnel are available for inspection purposes through 59 FR 17091, which gives federal, state, and local government officers 'routine use' access to training records where a regulatory program being implemented is applicable to the DOE-RL or contractor program.

12.1.21 Preparedness and Prevention Arrangements

The Hanford Facility Operating Record, General Information file, in accordance with Condition II.B.4. of the HF RCRA Permit (DW Portion), contains Attachment 4 of the HF RCRA Permit (DW Portion); specifically Table 3-1, "Memorandum of Understanding", which details the preparedness and prevention arrangements made with other agencies and governing entities. In accordance with Condition II.I.1.g. of the Permit, these descriptions of arrangements, as amended, are considered a part of the Hanford Facility Operating Record, General Information file.

12.1.22 Projections of Anticipated Costs for Closure and Postclosure and Postclosure Monitoring and Maintenance

An annual report of projections of anticipated costs for closure for TSD units included in Parts III and V of the HF RCRA Permit (DW Portion) is made in accordance with Conditions II.H.1. and II.I.1.i. (refer to Chapter 11.0, Section 11.1.8). An annual report of projections of anticipated costs for postclosure monitoring and maintenance for TSD units incorporated into Parts III, V, and VI of the HF RCRA Permit (DW Portion) is made in accordance with Conditions II.H.2. and II.I.1.i. (refer to Chapter 11.0, Section 11.3.5). Annual reports of these cost projections are submitted to Ecology on October 31 of each year, with information updated as of September 30.

12.1.23 Onsite Transportation Documentation

Condition II.Q. of the HF RCRA Permit (DW Portion) requires documentation to accompany any onsite dangerous waste that is transported to or from any TSD unit subject to the Permit through or within the 600 Area unless the roadway is closed to general public access at the time of shipment (refer to Attachment 33, Chapter 2.0, Sections 2.1.1.1 and 2.4; Figure 2-1). Waste transported by rail or by pipeline is exempt from this condition. To meet the provisions of Condition II.I.1.j. of the Permit, this documentation is maintained in the receiving TSD unit's Hanford Facility Operating Record, Unit-Specific file.

12.1.24 Cross-Reference of Waste Location to Waste Manifest Numbers

In accordance with Condition II.I.1.k. of the HF RCRA Permit (DW Portion), a solid waste information and tracking system contains information concerning containerized waste, including the waste location, quantity, and other manifest data. A description of this system is maintained in the Hanford Facility Operating Record, General Information file.

12.1.25 Required Annual Reports

In accordance with Conditions I.E.19. and I.E.22. of the HF RCRA Permit (DW Portion), annual reports are generated and submitted to Ecology. In accordance with Condition II.I.1.m. of the Permit, annual report information is maintained in the Hanford Facility Operating Record, General Information file. The

individual TSD units maintain their respective annual report information within the Unit-Specific file. Reports include the following:

- Annual noncompliance report
- Annual dangerous waste report
- Annual Hanford Site environmental permitting report
- Annual report on Hanford Site LDR for mixed waste [Condition II.S. (DW Portion); Condition II.G (HSWA Portion)]
- Annual report of projections of anticipated costs for closure and postclosure and postclosure monitoring and maintenance.

The annual report of projections of anticipated costs for closure and postclosure and postclosure monitoring and maintenance is discussed in Section 12.1.22.

The annual noncompliance report is a compilation of all instances of noncompliance not otherwise required to be reported elsewhere, and is submitted at the time the annual dangerous waste report is submitted, in accordance with Condition I.E.19. of the HF RCRA Permit (DW Portion). Currently, the submittal date is March 1 of each year.

Washington State, pursuant to WAC 173-303-390, requires an overall annual report for each facility that holds an active EPA/State identification number. This WAC 173-303 requirement is consistent with provisions of Condition I.E.22. of the HF RCRA Permit (DW Portion), and fulfills the EPA's requirement for a HSWA Biennial Report under 40 CFR 264.75, in accordance with a September 29, 1995, letter received from EPA Region 10 by DOE-RL. The report is due to Ecology on March 1 of each year and is referred to as the 'annual dangerous waste report'. The contents of the Hanford Facility annual dangerous waste report include the following:

- The EPA/State identification number
- Name and address of the Hanford Facility
- Calendar year covered by the report
- Description and quantity of waste managed
- TSD methods
- Certification statement signed by an authorized representative.

The Washington State report forms in the "Dangerous Waste Annual Report, Book 1, Forms and Instructions for Treatment, Storage, Disposal, and Recycling Facilities" are completed for this report.

The *Annual Hanford Site Environmental Permitting Status Report* (DOE/RL-96-63) contains the status of all required environmental permits and notices of construction approvals (refer to Attachment 33, Chapter 13.0). This status report is placed in the Hanford Facility Operating Record, General Information file by October 1 of each year.

A discussion of the annual LDR report is contained in Attachment 33, Chapter 3.0, Section 3.1.1.

12.1.26 Groundwater Monitoring Records

Groundwater monitoring records, addressed by Condition II.F. of the HF RCRA Permit (DW Portion), are specified for TSD units in Parts III, V, and VI of the Permit. Further discussion of these records is contained in Attachment 33, Chapter 5.0, Section 5.2.2.1.

In accordance with Condition II.F.2.a. of the HF RCRA Permit (DW Portion), inspections of active resource protection wells subject to the Permit are to be conducted at least once every 5 years in accordance with WAC 173-160-030. The inspections are to be recorded in the Hanford Facility Operating Record, Unit-Specific file.

In accordance with Condition II.F.2.c. of the HF RCRA Permit (DW Portion), written notice is to be furnished to Ecology at least 72 hours in advance of remediation (excluding maintenance activities) or abandonment of any well subject to the Permit.

As discussed in Sections 12.1.2, other monitoring records could be maintained in the Hanford Facility Operating Record, in accordance with Conditions I.E.10.b. and I.E.10.c. of the Permit.

12.1.27 Groundwater Corrective Action

Part IV of the HF RCRA Permit (DW Portion) and Part III of the HF RCRA Permit (HSWA Portion) address corrective action for past-practice units (refer to Attachment 33, Chapter 2.0, Sections 2.1.1.3.3 and 2.5). In accordance with Condition II.I.1.p. of the HF RCRA Permit (DW Portion), summaries of all records of groundwater corrective action required by WAC 173-303-645 are included in the Hanford Facility Operating Record, General Information file.

12.1.28 Permit Condition Compliance Evaluation System

In accordance with Condition II.I.1.q. of the HF RCRA Permit (DW Portion), an automated database system currently is one of several tools used to track compliance with the Standard and General Facility conditions of the HF RCRA Permit. Each TSD unit incorporated into Parts III, V, or VI of the Permit is responsible for compliance and describing the compliance evaluation system used.

12.1.29 Deed Notifications

For those TSD units that cannot be clean closed, a notice in deed must be filed with the county auditor (refer to Chapter 11.0, Section 11.2) in accordance with Condition II.I.1.r. of the HF RCRA Permit (DW Portion). The DOE-RL will certify to Ecology that the information has been duly recorded and will provide Ecology with a copy of the document in which the record was placed.

12.1.30 Inspection Records

In accordance with Condition II.O. of the HF RCRA Permit (DW Portion), general facility inspections are conducted according to the provisions in WAC 173-303-320(2) and as described in Attachment 33, Chapter 6.0, Section 6.2.1. Notification is made to Ecology at least 7 days prior to conducting these inspections. A copy of each annual inspection report is maintained in the Hanford Facility Operating Record, General Information file.

Records of TSD unit-specific inspections, required by Condition II.I.1.s. of the Permit, are maintained for a period of at least 5 years from the inspection date as part of the Hanford Facility Operating Record, Unit-Specific file.

12.1.31 Descriptions of Systems/Reports

In accordance with Condition II.I.2. of the HF RCRA Permit (DW Portion), descriptions of systems and/or reports are maintained in the Hanford Facility Operating Record, General Information file. The descriptions required involve the following:

- Condition II.I.1.a. of the Permit (DW Portion): waste location (refer to Section 12.1.15)
- Condition II.I.1.c. of the Permit (DW Portion): occurrence reports (refer to Section 12.1.17)
- Condition II.I.1.f. of the Permit (DW Portion): personnel training records (refer to Section 12.1.20)
- Condition II.I.1.i. of the Permit (DW Portion): projections of anticipated costs for closure and postclosure and postclosure monitoring and maintenance (refer to Section 12.1.22)
- Condition II.I.1.k. of the Permit (DW Portion): cross-reference of waste location to waste manifest numbers (refer to Section 12.1.24)
- Condition II.I.1.n. of the Permit (DW Portion): monitoring and records (refer to Sections 12.1.2 and 12.1.26)
- Condition II.I.1.q. of the Permit (DW Portion): Permit condition compliance evaluation system (refer to Section 12.1.28).

12.1.32 Closure Certification

Final closure of the Hanford Facility will be achieved when documentation indicates completion of closure activities for all TSD units. Documentation of closure of TSD units is to be accomplished by providing either certifications of closure or certifications of completion of postclosure care, in accordance with Condition II.J.1. of the HF RCRA Permit (DW Portion).

12.1.33 Notification of, or Request for, a Permit Modification

Written notification of, or request for, a permit modification is to be submitted whenever there is a change in operating plans, facility design, or the approved closure plan. A copy of the amended closure plan is to accompany the notification request. This action is to be taken in accordance with Condition II.J.3. of the HF RCRA Permit (DW Portion).

12.1.34 Closure Plan Deviation

Deviations from a TSD unit closure plan required by unforeseen circumstances encountered during closure activities are to be documented in the Facility Operating Record, Unit-Specific file and made available to Ecology upon request or during the course of an inspection. These deviations are limited to those that do not impact the overall closure strategy but provide equivalent results. Such action is in accordance with Condition II.K.6. of the HF RCRA Permit (DW Portion).

12.1.35 Engineering Change Notices and Nonconformance Reports

The ECNs or NCRs that could affect specifically designated critical systems are submitted in accordance with Conditions II.L.2.b. and II.L.2.c. of the HF RCRA Permit (DW Portion) (refer to Attachment 33, Chapter 4.0, Sections 4.13.1 and 4.13.4, and to Appendix 2B). All other ECNs or NCRs will be available for inspection.

12.1.36 As-Built Drawings

As-built drawings incorporating design and construction modifications for a construction project subject to the HF RCRA Permit (DW Portion) is to be placed into the Facility Operating Record, Unit-Specific File within 12 months of construction completion, or within an alternate approved time period. This action is to be taken in accordance with Condition II.L.2.d. of the Permit.

12.1.37 Receipt of Wastes Generated Offsite

Notification of receipt of waste generated outside the United States is to be supplied annually and in writing at least 4 weeks in advance of the first shipment. A copy of this written notice is to be a part of the Facility Operating Record, Unit-Specific file, in accordance with Condition II.N.2. of the HF RCRA Permit (DW Portion).

The Permittees are to notify the generator of offsite-generated waste in writing (except where the owner or operator is also the generator) that they have the appropriate permits for, and will accept, the waste received from offsite sources. A copy of this written notice is to be a part of the Facility Operating Record, Unit-Specific file, in accordance with Condition II.N.3 of the HF RCRA Permit (DW Portion).

12.1.38 Equivalent Materials

Condition II.R. of the HF RCRA Permit (DW Portion) establishes general requirements for the substitution of an equivalent or superior product for any equipment or materials specified in Parts III and V (refer to Attachment 33, Chapter 4.0, Section 4.13.3). This condition also requires substitution documentation to be placed in the Hanford Facility Operating Record, Unit-Specific file.

12.1.39 Land Disposal Restrictions Records

Condition II.S. (DW Portion) and II.G (HSWA Portion) of the HF RCRA Permit addresses LDR. Onsite waste tracking documents the transfer of waste subject to LDR (refer to Attachment 33, Chapter 3.0, Section 3.1.1). Other applicable LDR recordkeeping requirements are identified in WAC 173-303-380 and 40 CFR 268.

12.1.40 Mapping Methodology Report and Underground Pipeline Maps

In accordance with Condition II.U. of the HF RCRA Permit (DW Portion), and with the mapping methodology report submitted in fulfillment of Condition II.U.1., the methodology report and underground pipeline maps will be located in the Hanford Facility Operating Record, General Information file (refer to Attachment 33, Chapter 4.0, Section 4.13.5).

12.1.41 Other Permit Compliance Documentation

Condition II.W.1. of the HF RCRA Permit (DW Portion) requires copies of all documents relating to actions taken, pursuant to obtaining all other applicable federal, state, and local permits authorizing the development and operation of the Hanford Facility, to be kept in the Facility Operating Record.

12.1.42 Schedule Extensions

Written notification of any deviations or expected deviations from Permit-related schedules is to be supplied to Ecology as soon as possible in accordance with Condition X.1. of the HF RCRA Permit (DW Portion). The notification is to include all supporting information that 'best efforts' have been made to meet the required schedules. Copies of all correspondence regarding schedule extensions are to be kept in the Facility Operating Record.

12.1.43 Waste Minimization/Pollution Prevention

In accordance with Conditions II.F. of the HF RCRA Permit (HSWA Portion), onsite generating units complete a waste minimization/pollution prevention certification annually certifying that a waste minimization/pollution prevention program is in place (refer to Chapter 10.0). A copy of the certification is maintained in the Hanford Facility Operating Record, Unit-Specific file.

12.2 TYPE OF SUBMITTAL

Table 12-1 denotes the protocol for submitting reports. Three options exist: immediate verbal reporting; information submitted via transmittal letters signed by Permittee representatives; and packages certified by the Permittees in accordance with WAC 173-303-810(12) and (13) and/or by a registered professional engineer [e.g., in accordance with WAC 173-303-810(14)(a)(i) (refer to Attachment 33, Chapter 4.0, Section 4.13.4)]. The protocol for submitting reports also is based on a teleconference held with Ecology on March 3, 1995.

Table 12-1. Reports and Records.

HF RCRA Permit condition[1]	Records and/or Reports (Chapter 12.0 section containing description)		Hanford Facility Operating Record		Type of submittal		
			General information file[2]	Unit-specific file[3]	Verbal[4]	Transmittal letter[5]	Certified package
I.C.3.	Quarterly Notification of Class 1 Modification notification (12.1.1)	Unit		✓			
		Facility	✓			✓	
I.E.10.b. I.E.10.c. II.I.1.n.	Monitoring and records (12.1.2)	Unit		✓			
		Facility	✓				
I.E.11.	Reporting planned changes [7] (12.1.3)	Unit		✓			
		Facility	✓		✓		
I.E.12.i.	Certification of construction or modifications[7] (12.1.4)	Unit		✓			✓[8]
I.E.13.	Anticipated noncompliance[7] (12.1.5)	Unit		✓			
		Facility	✓		✓	✓	
I.E.14.	Transfer of permits[7] (12.1.6)	Facility	✓			✓	
I.E.15.a. I.E.15.c.	Immediate reporting (12.1.7)	Unit		✓			
		Facility	✓		✓		
I.E.15.d.	Release or noncompliance not requiring immediate reporting (12.1.8)	Unit		✓			
		Facility	✓				
I.E.16.	Written reporting (12.1.9)	Unit		✓			
		Facility	✓			✓	
I.E.17.a.	Manifest discrepancy report (12.1.10)	Unit		✓			
		Facility	✓			✓	
I.E.17.b.	Waste tracking form discrepancy report (12.1.11)	Unit		✓			
I.E.20.	Other information (12.1.12)	Unit		✓			
		Facility	✓		✓	✓	
I.H.	Permit-related documentation: HF RCRA Permit and all attachments and modifications (12.1.13)	Facility	✓				
	Permit-related documentation: Part B permit application, closure plan, closure/postclosure plan, postclosure permit application documentation (12.1.13)	Unit		✓			
II.E.4.	Notification of Permit-related information (12.1.14)	Unit		✓			
		Facility	✓			✓	
II.I.1.a.	Waste location (12.1.15, 12.1.31)	Unit		✓			
		Facility	✓				
II.I.1.b. II.D.	Waste analysis (12.1.16)	Unit		✓			
		Facility	✓				

Table 12-1. Reports and Records.

HF RCRA Permit condition[1]	Records and/or Reports (Chapter 12.0 section containing description)		Hanford Facility Operating Record		Type of submittal		
			General information file[2]	Unit-specific file[3]	Verbal[4]	Transmittal letter[5]	Certified package
II.I.1.c.	Occurrence reports (12.1.17, 12.1.19, 12.1.31)	Unit		✓			
		Facility	✓				
II.I.1.d. I.E.18.	Unmanifested waste reports (12.1.18)	Unit		✓		✓[9]	
		Facility	✓				
II.I.1.e. II.A. (all)	Hanford Emergency Management Plan and incident records (12.1.19)	Unit		✓	✓	✓	✓[6] (II.A.1. only)
		Facility	✓				
II.I.1.f. II.C.	Personnel training records (12.1.20, 12.1.31)	Unit		✓			
		Facility	✓				
II.I.1.g. II.B.4.	Preparedness and prevention arrangements (12.1.21)	Facility	✓				
II.I.1.i. II.H.	Projections of anticipated costs for closure and postclosure and postclosure monitoring and maintenance (12.1.22, 12.1.25, and 12.1.31)	Unit		✓			
		Facility	✓			✓	
II.I.1.j.	Onsite transportation documentation (12.1.23)	Unit		✓			
II.I.1.k.	Cross-reference of waste location to waste manifest numbers (12.1.24, 12.1.31)	Unit		✓			
		Facility	✓				
II.I.1.m.	Annual reports (12.1.25)	Facility	✓				
I.E.19.	Annual Noncompliance Report					✓	
I.E.22.	Annual Dangerous Waste Report						✓[6]
	Annual Hanford Site Environmental Permitting Status Report						
II.S. II.G. (HSWA Portion)	Annual Land Disposal Restrictions Report					✓	
II.F.2.a. II.F.2.c.	Groundwater monitoring records (12.1.26, 12.1.31)	Unit		✓		✓	
		Facility	✓				
II.I.1.p.	Groundwater corrective action (12.1.27)	Facility	✓				
II.I.1.q.	Permit condition compliance evaluation system (12.1.28, 12.1.31)	Unit		✓			
		Facility	✓				
II.I.1.r.	Deed notification (reference only)[7] (12.1.29)	Unit		✓			✓[6]
II.I.1.s. II.O.	Inspection records (12.1.30)	Unit		✓			
		Facility	✓			✓	
II.I.2.	Description of systems/reports (12.1.31)	Facility	✓				
II.J.1.	Closure certification[7] (12.1.32)	Unit		✓			✓[10]
II.J.3.	Notification of, or request for, a permit	Unit		✓		✓	✓[6]

Table 12-1. Reports and Records.

HF RCRA Permit condition[1]	Records and/or Reports (Chapter 12.0 section containing description)		Hanford Facility Operating Record		Type of submittal		
			General information file[2]	Unit-specific file[3]	Verbal[4]	Transmittal letter[5]	Certified package
	modification[7] (12.1.33)	Facility	✓				
II.K.6.	Closure plan deviation[7] (12.1.34)	Unit		✓			
II.I.1.t. II.L.2.b. II.L.2.c.	Engineering change notices and nonconformance reports (12.1.35)	Unit		✓			✓[8]
II.L.2.d.	As-built drawings[7] (12.1.36)	Unit		✓			
II.N.2. II.N.3.	Receipt of wastes generated offsite[7] (12.1.37)	Unit		✓		✓	
II.R.	Equivalent materials[7] (12.1.38)	Unit		✓			
II.S. II.G (HSWA Portion)	Land disposal restrictions records (12.1.39)	Unit		✓		✓	
II.U.	Mapping methodology report and underground pipeline maps (12.1.40)	Facility	✓			✓	
II.W.1.	Other permit compliance documentation[7] (12.1.41)	Unit		✓			
		Facility	✓				
II.X.1.	Schedule extensions[7] (12.1.42)	Unit		✓		✓	
		Facility	✓				
II.F (HSWA Portion)	Waste minimization/pollution prevention (12.1.43)	Unit		✓			

1 HF RCRA Permit (DW Portion) Condition, unless otherwise noted.
2 Hanford Facility Operating Record, General Information file.
3 Hanford Facility Operating Record, Unit-Specific file.
4 Verbal reporting in accordance with timeframes noted in the specified conditions.
5 Not certified; submittal by transmittal letter.
6 Certified by Permittees in accordance with WAC 173-303-810(12).
7 Miscellaneous support records and reports.
8 Certified by a registered professional engineer [e.g., in accordance with WAC 173-303-810(14)(a)(i) (refer to Attachment 33, Chapter 4.0, Section 4.13.4)].
9 Specific language preprinted on Washington State Department of Ecology's TSD Facility Unmanifested Dangerous Waste Report, Form 6, provides certification in accordance with WAC 173-303-390(1) and WAC 173-303-390(1)(f).
10 Certified by a registered professional engineer [e.g., in accordance with WAC 173-303-610(6) or WAC 173-303-610(11).

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13.0 OTHER FEDERAL AND STATE LAWS [J]

This chapter discusses environmental permits and approvals required for the Hanford Facility as specified by other federal and state laws and local requirements. This chapter addresses the provisions of Section J of Ecology's permit application guidance (Ecology 1987 and 1996). Much of the information requested in Section J is included in the *Annual Hanford Site Environmental Permitting Status Report* (Annual Status Report) (DOE/RL-96-63), issued on October 1. This report contains a listing and status of all required environmental permits and approvals and construction approvals. A copy of the current Annual Status Report will be maintained in the Hanford Facility Operating Record, General Information file (refer to Attachment 33, Chapter 12.0, Section 12.1.25).

The information contained in, and/or referenced in, this chapter also addresses the *State Environmental Policy Act* (SEPA) *of 1971* and Condition II.W. (Other Permits and/or Approvals) of the HF RCRA Permit (DW Portion). Condition II.W of the Permit specifies that the Permittees will be responsible for obtaining all other applicable federal, state, and local permits authorizing the development and operation of the Hanford Facility. Condition II.W. of the Permit further specifies that the Permittees are to use their best efforts to obtain such permits. For the purposes of this chapter, 'best efforts' mean submittal of documentation and/or approval(s) in accordance with schedules specified in applicable regulations, or as determined through negotiations with the applicable regulatory agencies.

The remainder of this chapter contains a brief description of federal and state laws and local requirements that could be applicable to the Hanford Facility; the Unit-Specific Portion of this permit application only need list those applicable to a particular TSD unit. The information contained in this chapter need not be duplicated in the Unit-Specific Portion or in preclosure work plan, closure work plan, closure plan, closure/postclosure plan, or postclosure permit application documentation, but can be cross-referenced, as appropriate.

13.1 ENVIRONMENTAL PERMITS AND APPROVALS

This section contains a brief description of the federal and state laws and local requirements that could be applicable to the Hanford Facility. The appropriate regulatory agency(s) administering these laws and requirements also is noted. Permits and approvals prepared in response to these laws and requirements are identified in the Annual Status Report.

13.1.1 Federal Laws

This section contains a brief description of federal laws that could be applicable to the Hanford Facility.

13.1.1.1 Atomic Energy Act of 1954

The *Atomic Energy Act* provides that the U.S. Atomic Energy Commission (succeeded by the U.S. Department of Energy for conducting nuclear defense, waste management, environmental restoration and remediation, and RD&D activities on the Hanford Site) is authorized to develop and implement regulations to govern activities related to the design, location, and operation of U.S. Department of Energy sites, to protect health, and to minimize danger to life or property. The radioactive component of mixed waste is interpreted by the U.S. Department of Energy to be regulated under the *Atomic Energy Act*; the nonradioactive dangerous component of mixed waste is interpreted to be regulated under the RCRA and WAC 173-303 (refer to Attachment 33, Chapter 2.0, Section 2.1.1.3.1).

The U.S. Department of Energy has adopted regulations to govern the activities of its sites and to manage the health protection aspects of mixed waste. These regulations and orders provide for a consistent approach to managing radioactive materials that result from U.S. Department of Energy activities. The

regulations and orders set radiation exposure limits and concentration guidelines to minimize exposure to radiation. All Hanford Facility operations are conducted in accordance with these regulations and orders.

13.1.1.2 Federal Facility Compliance Act of 1992

The *Federal Facility Compliance Act* provides for the express waiver of immunity otherwise applicable to the United States with respect to substantive and procedural requirements of the RCRA.

13.1.1.3 Clean Air Act of 1977

The *Clean Air Act* establishes a federal and state cooperative scheme to control the airborne emissions of pollutants to enhance air quality and prevent further deterioration. This control is accomplished by achieving and setting standards for abating air pollution, and by maintaining the federally-mandated National Ambient Air Quality Standards (42 USC 7401 et seq.). Air standards are implemented and enforced primarily by state and local air quality authorities. Amendments to the *Clean Air Act* in 1990 significantly expanded the scope of regulation particularly in the area of hazardous air pollutants. These amendments require EPA to promulgate dozens of regulations under state authority to meet the schedule of the federal amendments. The *State of Washington Clean Air Act* regulations (refer to Section 13.1.2.1) address control of nearly 700 air pollutants, including air toxins, hazardous air pollutants (including radioactive airborne emissions), ozone-depleting substances, and pollutants suspected of causing global warming. Compliance with these regulations requires specific actions before construction, startup, and normal operations of facilities (e.g., notices of construction, source registration, annual reporting, air operating permit applications, etc.). The regulations require prior approval by one or more air quality authority(ies) before any construction or modification can begin that could supply any significant increase in air emissions.

The Hanford Site is located within an airshed that meets all federal and state ambient air quality standards, and thus has been declared an "attainment area". Therefore, for the Hanford Site, the Prevention of Significant Deterioration *Clean Air Act* requirements apply to emissions of pollutants traditionally released from fossil fueled power plants or other large industrial sources; i.e., pollutants such as carbon monoxide, nitrogen oxides, sulfur oxides, particulate matter, ozone, lead, asbestos, mercury, etc., commonly referred to as the "criteria pollutants" (Appendix 2B). The Prevention of Significant Deterioration regulations are intended to protect the regional air quality while allowing a margin for future industrial growth. As such, the regulations require prior construction approval, and best available control technology for any large new source of air emissions or any source modifications involving significant increases in criteria pollutant emissions. The Hanford Site is considered a major Prevention of Significant Deterioration source because of pollutant emissions from various coal and oil fired steam generating plants onsite (i.e., nitrogen oxides). In addition, air toxics are regulated under the National Emission Standards for Hazardous Air Pollutants. This program applies without regard to attainment status. Applicable federal requirements to control and abate air pollution include the following:

- *New Source Performance Standards* (40 CFR 60)
- *National Emission Standards for Hazardous Air Pollutants* (40 CFR 61)
- *National Emission Standard for Radionuclide Emissions* from U.S. Department of Energy Facilities (40 CFR 61, Subpart H).

13.1.1.4 Clean Water Act of 1977

The *Clean Water Act* establishes national ambient water quality standards and sets standards for abating water pollution and preventing further deterioration of the water quality. This Act also provides for the protection of wet lands. The *Clean Water Act* requires permits for discharges of liquid effluents to surface waters and for dredge and fill activities in "waters of the United States". These standards are

implemented and enforced primarily by state and local authorities (refer to Section 13.1.2.2). However, the EPA has authority for National Pollution Discharge Elimination System (NPDES) permitting at federal facilities. Potentially applicable or relevant regulations relating to water pollution and water quality include the following:

- U.S. Army Corps of Engineers Permit Regulations for Structures (33 CFR 322)
- U.S. Army Corps of Engineers National Permit Program Regulations (33 CFR 330)
- National Pollutant Discharge Elimination System (40 CFR 121 to 125).

Portions of the *Clean Water Act* regulations are administered on the Hanford Site by the EPA, the U.S. Coast Guard, or the U.S. Army Corps of Engineers.

13.1.1.5 Safe Drinking Water Act of 1974

The *Safe Drinking Water Act* provides for protection of human health by setting standards for water supplied for public consumption and by protecting public drinking water sources. This Act sets drinking water standards, protects groundwater, and regulates underground injection wells. Drinking water systems at the Hanford Facility are in compliance with these standards. *Safe Drinking Water Act* regulations are administered by the Washington State Department of Health and Ecology (refer to Section 13.1.2.2).

13.1.1.6 Comprehensive Environmental Response, Compensation, and Liability Act of 1980

The CERCLA, as amended in 1986 by the *Superfund Amendments and Reauthorization Act*, establishes a process for undertaking remedial action at inactive waste sites that contain hazardous substances, and establishes reporting requirements for releases of hazardous substances. The CERCLA remedial process has been initiated on the Hanford Site in response to identification on the National Priorities List. The Tri-Party Agreement addresses how RCRA corrective actions and CERCLA remedial actions are to be integrated on the Hanford Facility. The CERCLA regulations are administered by the EPA.

13.1.1.7 Emergency Planning and Community Right-to-Know Act of 1986

The *Emergency Planning and Community Right-to-Know Act* is a freestanding provision of the *Superfund Amendments and Reauthorization Act*. This Act establishes the framework for state and local emergency planning and provides a mechanism for community awareness of hazardous chemicals present in a locality. Release notification, community right-to-know reporting, and toxic chemical release and inventory reporting are made in response to this Act. The *Emergency Planning and Community Right-to-Know Act* regulations are administered by the EPA.

13.1.1.8 Toxic Substances Control Act of 1976

The *Toxic Substances Control Act* provides for protection of human health and the environment from exposure to certain hazardous and toxic chemical substances and mixtures (e.g., PCBs and newly manufactured chemicals). The Hanford Facility has in place a program for the cleanup, treatment, and disposal of materials regulated by the *Toxic Substances Control Act*. The regulations derived from the act are administered by the EPA.

13.1.1.9 Wild and Scenic Rivers Act of 1968

The Hanford Facility does not affect any rivers presently designated under the *Wild and Scenic Rivers Act*. However, this act could apply, depending on the outcome of a study conducted in response to Public Law 100-605 (refer to Section 13.1.1.10).

13.1.1.10 Hanford Reach Study Act of 1988

The *Hanford Reach Study Act* (Public Law 100-605), directs the Secretary of the Interior to prepare a study on the Hanford Reach of the Columbia River to consider the addition of the Hanford Reach to the National Wild and Scenic Rivers System. During the 8-year study period ending in 1996, activities undertaken from river miles 396 to 345 and within a quarter-mile of the Columbia River mean high-level mark must be conducted in consultation and coordination with the U.S. Department of Interior-National Park Service, acting for the Secretary of the Interior. Public Law 104-333 extended the requirements in the Act indefinitely. Hanford Site activities undertaken within the Hanford Reach are conducted in compliance with the *Hanford Reach Study Act.*

13.1.1.11 Rivers and Harbors Act of 1899

The *Rivers and Harbors Act*, sometimes referred to as the *Refuse Act*, is an 1899 statute that was designed to protect navigation, and had provisions to permit the discharge of refuse into the navigable waters of the United States. The refuse portion of the act was superseded in 1972 by the *Federal Water Pollution Control Act*, which has become known as the *Clean Water Act*. The U.S. Army Corps of Engineers administers the portion of the *Rivers and Harbors Act* related to construction of obstructions in U.S. navigable waters and requires permits before construction of such obstructions.

13.1.1.12 National Historic Preservation Act of 1966

The *National Historic Preservation Act* establishes national policy to preserve historic places, which include sites, structures, and objects significant in American history, archeology, or culture. The Hanford Facility has in place requirements for the preservation of historical sites and cultural resources. During any future construction activity for a TSD unit, the site will be monitored for the presence of archaeological resources in accordance with regulations issued pursuant to, or other requirements of, the *American Antiquities Preservation Act of 1906*; the *Historic Sites, Buildings and Antiquities Act of 1935*; the *Archaeological and Historic Preservation Act of 1960*; the *Archeological Resources Protection Act of 1979*; and the *American Indian Religious Freedom Act of 1978*. Regulations derived from these acts are administered by the U.S. Department of Interior's Advisory Council on Historic Preservation and the Fish and Wildlife Services.

13.1.1.13 Endangered Species Act of 1973

The *Endangered Species Act* establishes a program for conserving endangered species and their ecosystems. Most activities on the Hanford Facility take place in areas that have been extensively developed during past construction. It is not expected that any listed or proposed endangered or threatened species or their habitats will be affected by Hanford Facility TSD unit activities. However, activities outside extensively developed areas will be reviewed for applicability and compliance. In the event that such species or habitats must be disturbed as a part of Hanford Facility operating or restoration and remediation activities, mitigative measures will be taken in accordance with applicable requirements. The *Endangered Species Act* regulations are administered by the U.S. Department of Interior-Fish and Wildlife Service.

13.1.1.14 Fish and Wildlife Coordination Act of 1934

The *Fish and Wildlife Coordination Act* authorizes the U.S. Secretary of the Interior to assist and cooperate with public and private organizations to protect fish and wildlife. Activities at the Hanford Facility impacted by the *Fish and Wildlife Coordination Act*, such as the building or demolition of an outfall, will be handled in accordance with an agreement between the U.S. Department of Energy and the Washington State Department of Fisheries. Other Acts with regulations relevant to wildlife that could impact activities on the Hanford Facility include the *Migratory Bird and Treaty Act of 1918* and the *Bald*

and Golden Eagle Protection Act of 1940. Regulations derived from both Acts are administered by the U.S. Department of Interior-Fish and Wildlife Service.

13.1.1.15 Federal Insecticide, Fungicide, and Rodenticide Act of 1975

The *Federal Insecticide, Fungicide, and Rodenticide Act* establishes a program to regulate the manufacture, sale, and use of pesticides and disposal of pesticides and containers. The use of all pesticides on the Hanford Facility is done in compliance with the *Federal Insecticide, Fungicide, and Rodenticide Act*. Regulations derived from this Act are administered by the EPA.

13.1.1.16 Hazardous Materials Transportation Act of 1975

The *Hazardous Materials Transportation Act* regulates the transport of hazardous materials and hazardous waste to and from the Hanford Site. Regulations promulgated pursuant to this Act are administered by the U.S. Department of Transportation and are set forth in 49 CFR Parts 100 to 177.

13.1.1.17 Dam Safety Act of 1986

The *Dam Safety Act* applies to the inspection of dams to ensure the integrity of structures. Dam safety at the Hanford Site is administered in accordance with the Washington State dam safety regulations (refer to Section 13.1.2.11).

13.1.1.18 National Environmental Policy Act of 1969

The *National Environmental Policy Act* (NEPA) establishes a broad national policy for protection of environmental quality and provides the means for implementing that policy early on in the decision-making process. Activities at the Hanford Site are subject to review for compliance with NEPA requirements. The U.S. Department of Energy is responsible for implementing NEPA requirements pursuant to its regulations (10 CFR 1021), which are based on the Council of Environmental Quality regulations (40 CFR 1500). For cleanup and closure activities, the requirements of NEPA (including cumulative impacts and environmental justice) will be integrated with the CERCLA response action and RCRA corrective action processes.

13.1.2 State Laws

This section contains a brief description of state laws that could be applicable to the Hanford Facility. Where appropriate, these descriptions cross-reference information presented in the previous section on federal laws. Permits and approvals prepared in response to these laws are identified in the Annual Status Report.

13.1.2.1 Washington Clean Air Act of 1967

The *Washington Clean Air Act* implements, at the state level, provisions of the federal *Clean Air Act* (refer to Section 13.1.1.3). Under the authority of this Act, Ecology establishes standards and rules in WAC 173-400 that generally are applicable to the control and/or prevention of air pollution from air contaminant sources. Under the provisions of Chapter 70.98 RCW, the Washington State Department of Health has sole responsibility for implementing the radiation protection provisions of the WAC 246-247. The Washington State Department of Health regulates sources that emit radionuclides to the air. In addition, the Washington State Department of Health and Ecology have established a memorandum of understanding that defines the roles and responsibilities of each department regarding administration of radiation control in the Washington State and on the Hanford Site in particular. Regulations relating to the *Washington Clean Air Act* include the following:

- General Regulations for Air Pollution Sources (WAC 173-400)
- Open Burning (WAC 173-425)

- Air Operating Permit Regulation (WAC 173-401)
- Controls for New Sources of Toxic Air Pollutants (WAC 173-460)
- Ambient Air Quality Standards and Emission Limits for Radionuclides (WAC 173-480)
- Emission Standards and Controls for Sources Emitting Gasoline Vapors (WAC 173-491)
- Radiation Protection - Air Emissions (WAC 246-247).

13.1.2.2 Washington Water Pollution Control Act of 1945

The *Washington Water Pollution Control Act* applies to surface and groundwaters of the State and implements, at the state level, provisions of the federal *Clean Water Act* (refer to Section 13.1.1.4). This Act requires the development of State Waste Discharge Permits and Onsite Sewage Disposal System Approvals and is administered by Ecology and the Washington State Department of Health. Regulations relating to water pollution and water quality include the following:

- *Washington State Waste Discharge Permitting Program* (WAC 173-216)
- *Underground Injection Control Program* (WAC 173-218)
- *Water Quality Standards for Ground Waters of the State of Washington* (WAC 173-200)
- *Water Quality Standards for Surface Waters of the State of Washington* (WAC 173-201)
- *On-Site Sewage System* (WAC 246-272).

13.1.2.3 Solid Waste Management Act of 1969

The *Solid Waste Management Act* serves to protect public health, to prevent land, air, and water pollution, and to conserve the state's natural, economic, and energy resources through the requirements set forth in WAC 173-304. The regulations in WAC 173-304 established the minimum standards that municipalities, regional agencies, state, and local governments must follow to provide a state-wide consistency and expectation as to the level at which solid waste must be managed. The *Solid Waste Management Act* provisions are administered by Ecology.

13.1.2.4 Washington Pesticide Control Act of 1971

The *Washington Pesticide Control Act* requires registration of pesticide applicators. This Act implements, at the state level, the *Federal Insecticide, Fungicide, and Rodenticide Act* (refer to Section 13.1.1.15). Regulations derived from this act are administered by the Washington State Department of Agriculture.

13.1.2.5 Washington Underground Storage Tank Law of 1989

The *Washington Underground Storage Tank Law* and the *Washington Underground Petroleum Storage Tank Law* regulate underground storage tanks, and set performance standards, operational and maintenance requirements, and tank closure requirements. The provisions of this law are administered by Ecology in accordance with the requirements set forth in WAC 173-360. This law implements, at the state level, Subchapter IX of RCRA, 42 USC 6991 et. seq.

13.1.2.6 Aquatic Lands Leases

Aquatic land activities that interfere with the general public's use of state-owned tidelands, shorelands, and beds of navigable waters, require authorization before construction from the Washington State Department of Natural Resources by way of agreement, lease, permit, or other instrument(s).

13.1.2.7 Hydraulic Projects Permits

Any construction or other work that will change the natural flow of a river, including the addition of treated effluent waste water that will increase the natural flow, is required to obtain a hydraulic project approval from the Washington State Department of Fisheries.

13.1.2.8 New Source Construction Permits

Before a new or modified source of regulated air emissions is constructed, installed, or established, Ecology (for nonradioactive emissions) or the Washington State Department of Health (for radioactive emissions) must review plans, specifications, associated information, and Notice of Construction (NOC) related to the new or modified source. A NOC is a written application to permit construction of a new source or modification of an existing source. The application describes the proposed design, assesses potential impacts to the public and environment, and provides an assessment of best available control technology. A NOC for air emissions could be required because of requirements of the following regulations: WAC 173-400 (including 40 CFR 60 and 61), WAC 173-460, and WAC 246-247.

13.1.2.9 Septic System Approvals/Permits

Plans and specifications for construction of a new sanitary sewer system or modification of an existing system are submitted and approved by the Washington State Department of Health before construction or entering into a contract for construction. Septic systems with design capacities greater than 54,888 liters per day are governed by State Waste Discharge Permits (WAC 173-216) and the engineering report, plan, and specification approval process described in WAC 173-240.

13.1.2.10 Dam Safety Regulations

The Dam Safety regulations contained in WAC 173-175 are administrated by Ecology. The regulations are applicable to dams that can impound a volume of 1.23 hectare-meters or more of water as measured at the dam crest elevation. For the Hanford Site, the regulations potentially could apply to disposal basins, retention basins, lined lagoons, etc., if DOE constructs dams and fails to develop a dam safety program for periodic inspection of completed projects. The 1.23 hectare-meters threshold applies to dams that can impound water on either an intermittent or permanent basis.

13.1.2.11 Model Toxics Control Act

Regulations are promulgated in WAC 173-303-340, as amended.

13.1.3 Local Requirements

This section contains a brief description of local requirements (e.g., those administered by Benton County or the city of Richland) that could be applicable to the Hanford Facility. Permits and approvals prepared in response to these requirements are identified in the Annual Status Report.

13.1.3.1 Building Permit

Local building permits are not required for construction on the Hanford Site. New construction on the Hanford Site is designed and constructed in accordance with the requirements set forth in U.S. Department of Energy Order 6430.1A.

13.1.3.2 Grading Permit

Local grading permits are not required on the Hanford Site. Excavation permits are issued internally in accordance with the requirements set forth in U.S. Department of Energy Order 5400.1.

13.1.3.3 Waste Water Pretreatment Discharge Authorization

A permit application could be required before discharging sewage, industrial waste, or other waste to the city of Richland's sewage treatment plant. The need for a permit application depends on whether the activity is considered a Significant Industrial Discharge by the city or fits a national pretreatment

category. Permits applications are not required for discharges that fall within one of the national pretreatment categories.

13.1.3.4 Washington Shoreline Management Act of 1971

The *Washington Shoreline Management Act* regulates development or construction affecting the shorelines of the State. A permit for developing the shoreline is required before construction for shorelines not federally owned, but under lease, easement, license, or other similar federal property rights short of fee ownership. The *Washington Shoreline Management Act* provisions are administered by the Benton County Planning Commission.

13.1.3.5 Benton Clean Air Authority Regulation 1

Regulation 1 of the Benton Clean Air Authority is divided into various sections termed articles that address odors, dust, open burning, and asbestos regulations. Ecology has delegated authority to the Benton Clean Air Authority to enforce the state regulations governing open burning and asbestos.

13.2 STATE ENVIRONMENTAL POLICY ACT

A SEPA determination is used by Washington State regulatory agencies to decide whether a proposed action is likely to have significant or nonsignificant adverse environmental impact. A SEPA Environmental Checklist for the *Hanford Facility Dangerous Waste Permit Application, General Information Portion* (this document) was prepared in accordance with WAC 197-11-960 and submitted with the application in October 1991. On January 21, 1992, Ecology issued a letter documenting that a determination of nonsignificance was made for the issuance of a dangerous waste management permit for the Hanford Facility. Therefore, the SEPA Environmental Checklist requirements noted in Section J of Ecology's permit application requirements have been fulfilled for the General Information Portion of the permit application. The SEPA Environmental Checklists for individual TSD units either are contained, or referenced, in the Unit-Specific Portion of this permit application or in closure plan, closure/postclosure plan, or postclosure permit application documentation.

Table 13-1. Summary of Other Federal and State Laws and Local Requirements that could be Applicable to the Hanford Facility

Chapter section	Law/requirement	Agency	Regulated media, activity
13.1.1.1	*Atomic Energy Act of 1954*	U.S. Department of Energy	Radioactive waste disposal.
13.1.1.2	*Federal Facility Compliance Act of 1992*	U.S. Environmental Protection Agency	Waives sovereign immunity from RCRA for federal facilities.
13.1.1.3	*Clean Air Act of 1977* (CAA)	U.S. Environmental Protection Agency.	Air emissions, ambient air quality, and asbestos; requires permits for air pollution sources.
13.1.1.4	*Clean Water Act of 1977* (CWA)	U.S. Environmental Protection Agency	Water quality of surface waters; requires permits for discharge of liquid effluents to surface waters and for dredge or fill activities in "waters of the United States"; provides for protection of wet lands.
13.1.1.4	*Clean Water Act of 1977*	U.S. Army Corps of Engineers	Dredge and fill permits; wet lands protection.
13.1.1.5	*Safe Drinking Water Act of 1974* (SDWA)	U.S. Environmental Protection Agency	Sets drinking water standards and protects groundwater; regulates underground injection wells.
13.1.1.6	*Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA)	U.S. Environmental Protection Agency	Requires reporting of spills, releases; requires cleanup of historic disposal of hazardous wastes or substances.
13.1.1.6	CERCLA	U.S. Department of Interior	Establish criteria for the natural resource damage assessment process.
13.1.1.6	*Superfund Amendments and Reauthorization Act of 1986*	U.S. Environmental Protection Agency	Updates and amends CERCLA.
13.1.1.7	*Emergency Planning and Community Right-to-Know Act of 1986* (EPCRA)	U.S. Environmental Protection Agency	Requires emergency planning, emergency release notification, community right-to-know reporting, and toxic chemical release and inventory reporting.
13.1.1.8	*Toxic Substances Control Act of 1976*	EPA	Polychlorinated biphenyls (PCBs) and newly manufactured chemicals.
13.1.1.9	*Wild and Scenic Rivers Act of 1968*	U.S. Department of Interior	Activity impact to Wild and Scenic Rivers.
13.1.1.10	Hanford Reach Study Act of 1988	U.S. Department of Interior-National Park Service	Hanford Reach of the Columbia River.
13.1.1.11	*Rivers and Harbors Act of 1899*	U.S. Army Corps of Engineers	Construction of river obstructions.
13.1.1.12	*National Historic Preservation Act of 1966*	U.S. Department of Interior-Advisory Council on Historic Preservation	Historical sites, buildings, and areas.
13.1.1.12	*National Historic Preservation Act of 1966*	Washington Department of Community Development	Consultation of federal agency projects/activities that may impact historic buildings, etc.
13.1.1.12	*American Antiquities Act of 1906*	U.S. Department of Interior-Advisory Council on Historic Preservation	Historical antiquities.

Chapter section	Law/requirement	Agency	Regulated media, activity
13.1.1.12	*Historic Sites, Buildings and Antiquities Act of 1935*	U.S. Department of Interior-Advisory Council on Historic Preservation	Historical sites, buildings, and antiquities.
13.1.1.12	*Archaeological and Historic Preservation Act of 1960*	U.S. Department of Interior-Advisory Council on Historic Preservation	Archaeological resources.
13.1.1.12	*Archeological Resources Protection Act of 1979*	U.S. Department of Interior-Advisory Council on Historic Preservation	Archeological resources.
13.1.1.12	*American Indian Religious Freedom Act of 1978*	U.S. Department of Interior-Advisory Council on Historic Preservation	American Indian religious activities and areas.
13.1.1.13	*Endangered Species Act of 1973*	U.S. Department of Interior-Advisory Council on Historic Preservation	All species of plants and animals listed as endangered and their habitats.
13.1.1.14	*Fish and Wildlife Coordination Act of 1934*	U.S. Department of Interior-Fish and Wildlife Service	Fish and wildlife resources and habitats.
13.1.1.14	*Migratory Bird and Treaty Act of 1918*	U.S. Department of Interior-Fish and Wildlife Service	All migratory birds and habitats.
13.1.1.14	*Bald and Golden Eagle Protection Act of 1940*	U.S. Department of Interior-Fish and Wildlife Service	Bald and golden eagles and habitats.
13.1.1.15	*Federal Insecticide, Fungicide and Rodenticide Act of 1975*	U.S. Environmental Protection Agency	Regulates the manufacture, sale, and use of pesticides and disposal of pesticides and containers.
13.1.1.16	*Hazardous Materials Transportation Act of 1975*	U.S. Department of Transportation	All hazardous materials being transported.
13.1.1.17	*Dam Safety Act of 1986*	Washington State Department of Ecology	Integrity of dam structures.
13.1.1.18	*National Environmental Policy Act of 1969*	Council on Environmental Quality	Requires federal agencies to consider potential environmental impacts of actions early on in the decision making process and to prepare appropriate documentation identifying those impacts.
13.1.2.1	*Washington Clean Air Act of 1967*	Washington State Department of Ecology	Controls air pollution in Washington; requires notifications of construction for new or modified sources and facility air operating permits.
13.1.2.1	*Washington Clean Air Act of 1967*	Washington State Department of Health	Radioactive air emissions; requires permits for air pollution sources that emit radioactive air pollutants.
13.1.2.2	*Washington Water Pollution Control Act of 1945*	Washington State Department of Ecology	Surface and groundwaters in the State; requires State waste discharge permits, onsite sewage disposal system approvals.
13.1.2.3	*Solid Waste Management Act of 1969*	Washington State Department of Ecology	Addresses requirements of disposal of nonhazardous solid wastes.
13.1.2.4	*Washington Pesticide Control Act of 1971*	Washington State Department of Agriculture	Requires registration of pesticide applicators.

Chapter section	Law/requirement	Agency	Regulated media, activity
13.1.2.5	Washington Underground Storage Tank Law and Washington Underground Petroleum Storage Tank Law of 1989	Washington State Department of Ecology	Regulates underground storage tanks; sets performance standards, operational and maintenance requirements, and tank closure requirements.
13.1.2.6	Aquatic Land Leases	Washington State Department of Natural Resources	Impacts activities that interfere with state-owned tidelands, shorelands, and beds of navigable waters.
13.1.2.7	Hydraulic Projects Permits	Washington State Department of Fisheries	Impacts construction or activities that will change natural flow of a river.
13.1.2.8	New Source Construction Permits	Washington State Department of Ecology (nonradioactive emissions) and Washington State Department of Health (radioactive emissions)	Impacts new and modified sources of regulated air emissions.
13.1.2.9	Septic System Approvals/Permits	Washington State Department of Health (less than or equal to 54,888 liters per day) Washington State Department of Ecology (greater than 54,888 liters per day)	Requires submittal and approval for plans and specifications for construction and/or modification of sewage systems.
13.1.2.10	Dam Safety Regulations	Washington State Department of Ecology	Could affect Hanford if U.S. Department of Energy constructs dams and fails to develop a dam safety program.
13.1.2.11	Model Toxics Control Act	Washington State Department of Ecology	All media: WAC 173-340 will be used to set cleanup standards for closure of TSD units as specified in WAC 173-303-610.
13.1.3.1	Building Permit	U.S. Department of Energy	Requires Hanford construction in accordance with U.S. Department of Energy requirements.
13.1.3.2	Grading Permit	U.S. Department of Energy	Requires excavation activities at Hanford to comply with U.S. Department of Energy requirements.
13.1.3.3	Waste Water Pretreatment Discharge Authorization	Washington State Department of Ecology	Requires certain conditions be met for waste water discharges to publicly owned treatment works.
13.1.3.4	*Washington Shoreline Management Act of 1971*	Benton County Planning Commission	Regulates development or construction affecting the shorelines of the State.
13.1.3.5	Benton Clean Air Authority Regulation 1	Benton Clean Air Authority	Imposes restrictions on odors, dust, open burning, and asbestos management.
	Many federal and state laws require consultation with other agencies on a variety of issues and requirements which result in additional regulatory requirements.	Other federal and state agencies	Examples include consultations with state and other federal agencies on CERCLA actions to determine applicable, relevant, and appropriate regulatory requirements for cleanup activities and the CERCLA requirement that DOE notify and coordinate with other natural resource trustees on potential damages.

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CONTENTS

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14.0 CERTIFICATION [K]

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.

8/30/00

Owner/Operator
Keith A. Klein, Manager
U.S. Department of Energy
Richland Operations Office

Date

Ron D Hanson

8/28/00

Co-operator*
Ronald D. Hanson,
President and Chief Executive Officer
Fluor Hanford

Date

* Fluor Hanford has responsibilities for the following treatment, storage, and/or disposal units on the Hanford Facility and is signing for the purpose of these units only: 242-A Evaporator, 222-S Laboratory Complex, 200 Area Effluent Treatment Facility, Liquid Effluent Retention Facility, Central Waste Complex, Waste Receiving and Processing Facility, Low-Level Burial Grounds, 224-T Transuranic Waste Storage and Assay Facility, T Plant Complex, 616 Nonradioactive Dangerous Waste Storage Facility, PUREX Storage Tunnels, 207-A South Retention Basin, 300 Area Waste Acid Treatment System, 303-M Oxide Facility, 303-K Storage Unit, 241-Z Treatment and Storage Tanks, B Plant Complex, 1706-KE Waste Treatment System, 437 Maintenance and Storage Facility, Sodium Storage Facility and Sodium Reaction Facility, and Waste Encapsulation and Storage Facility, Plutonium Finishing Plant Treatment and Storage Unit.

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14.0 CERTIFICATION [K]

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/Operator
Keith A. Klein, Manager
U.S. Department of Energy
Richland Operations Office

Date 8/26/00

Co-operator*
Lura J. Powell, Director
Pacific Northwest National Laboratory

Date 8/27/00

* Pacific Northwest National Laboratory has responsibilities for the following treatment, storage, and/or disposal units on the Hanford Facility and is signing for the purpose of these units only: 325 Hazardous Waste Treatment Units, 305-B Storage Unit, and the groundwater monitoring plans as required by the groundwater sections of the Low-Level Burial Grounds and Liquid Effluent Retention Facility.

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DOE/RL-91-28, Rev. 5
08/2000

14.0 CERTIFICATION [K]

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.

8/30/00

Date

Owner/Operator
Keith A. Klein, Manager
U.S. Department of Energy
Richland Operations Office

8/28/00

Date

Co-operator*
Michael C. Hughes, President
Bechtel Hanford, Inc.

* Bechtel Hanford, Inc. has responsibilities for the following treatment, storage, and/or disposal units on the Hanford Facility and is signing for the purpose of these units only: Hexone Storage and Treatment Facility, 241-CX Tank System, 183-H Solar Evaporation Basins, 105-DR Large Sodium Fire Facility, 1324-N Surface Impoundment, 1301-N Liquid Waste Disposal Facility, 1325-N Liquid Waste Disposal Facility, 1324-NA Percolation Pond, 216-S-10 Pond and Ditch, 216-A-29 Ditch, 216-B-3 Main Pond, 216-A-10 Crib, 216-U-12 Crib, 216-A-36B Crib, 216-A-37-1 Crib, 216-B-63 Trench, 300 Area Process Trenches, 600 Area Purgewater Storage and Treatment Facility, PUREX Plant, B-Plant Complex, and the Nonradioactive Dangerous Waste Landfill.

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14.0 CERTIFICATION [K]

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.

8/30/00

Date

Owner/Operator
Keith A. Klein, Manager
U.S. Department of Energy
Richland Operations Office

28 Aug 2000

Date

Co-operator*
M. P. DeLozier
President and RPP General Manager
CH2M HILL Hanford Group, Inc.

* CH2M HILL Hanford Group, Inc. is a co-operator under Department of Energy Office of River Protection Contract #DE-AC06-99RL14047 and is signing for the purpose of the following treatment, storage, and/or disposal units on the Hanford Facility only: Double-Shell Tank System, 204-AR Waste Unloading Station, Single-Shell Tank System, and the Grout Treatment Facility.

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15.0 REFERENCES 15-3

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15.0 REFERENCES

AASHTO, 1983, *Standard Specification for Highway Bridges*, AASHTO-HS 20-44, American Association of Highway and Transportation Officials, Washington, D.C.

ASTM, PS64-96, *Provisional Standard Guide for Developing Appropriate Statistical Approaches for Ground-Water Detection Monitoring Programs*, American Society for Testing and Materials, West Conshohocken, PA.

COE, 1969, *Columbia River Basin: Lower Columbia River Standard Project Flood and Probable Maximum Flood*, Memorandum Report, U.S. Army Corps of Engineers, North Pacific Division, Portland, Oregon.

DOE/EIS-0113, *Final Environmental Impact Statement, Disposal of Hanford Defense High-Level, Transuranic and Tank Wastes*, U.S. Department of Energy, Washington, D.C.

DOE/EIS-0222, *Draft Hanford Remedial Action Environmental Impact Statement and Comprehensive Land Use Plan*, U.S. Department of Energy, Washington, D.C.

DOE Order 5400.1, *General Environmental Protection Program.*

DOE Order 5820.2A, *Radioactive Waste Management.*

DOE Order 6430.1A, *General Design Criteria.*

DOE/RL-88-20, *Hanford Facility Dangerous Waste Permit Application, Low-Level Burial Grounds* U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-88-21, *Hanford Facility Dangerous Waste Part A Permit Application*, Vol. 1-3, U.S. Department of Energy, Richland Operations Office, Richland, Washington, updated periodically.

DOE/RL-88-27, *Grout Treatment Facility Dangerous Waste Permit Application*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-88-30, *Hanford Site Waste Management Units Report*, Vols. 1-2, U.S. Department of Energy, Richland Operations Office, Richland, Washington, updated annually.

DOE/RL-89-02, *Hanford Waste Vitrification Plant Dangerous Waste Permit Application*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-89-03, *616 Nonradioactive Dangerous Waste Storage Facility Dangerous Waste Permit Application*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-89-12, *Hanford Site Ground Water Protection Management Plan*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-89-16, *Single-Shell Tank Closure Work Plan*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-90-01, *305-B Storage Unit Dangerous Waste Permit Application*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-90-24, *Hanford Facility Dangerous Waste Permit Application, PUREX Storage Tunnels*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-90-39, *Double-Shell Tanks Dangerous Waste Permit Application*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-90-41, *Hanford Land Disposal Restriction Plan for Mixed Waste*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-90-42, *242-A Evaporator Dangerous Waste Permit Application*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-91-03, *Annual Report for RCRA Groundwater Monitoring Projects at Hanford Site Facilities for 1990*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-91-16, *Hanford Facility Dangerous Waste Permit Application, Waste Receiving and Processing* Facility, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-91-17, *Hanford Facility Dangerous Waste Permit Application, Central Waste Complex*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-91-27, *222-S Laboratory Complex Dangerous Waste Permit Application*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-91-45, *Hanford Site Baseline Risk Assessment Methodology*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-91-50, *Hanford Site Environmental Monitoring Plan*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-91-51, *241-T Transuranic Waste Storage and Assay Facility Dangerous Waste Permit Application*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-92-23, *Hanford Site Groundwater Background*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-92-24, *Hanford Site Soil Background*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-92-35, *Hanford Facility Dangerous Waste Permit Application, 325 Hazardous Waste Treatment Units*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-93-102, *Hanford Mission Plan*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-94-02, *Hanford Emergency Response Plan*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-94-95, *Hanford Sitewide Groundwater Remediation Strategy*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-95-15, *1995 Report on Hanford Site Land Disposal Restrictions for Mixed Waste*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-95-36, *Hanford Facility Dangerous Waste Permit Application, T Plant Complex*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-95-78, *PUREX Facility Preclosure Work Plan*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-96-50, *Hanford Facility RCRA Permit Condition II.U.1 Report for Mapping and Marking of Dangerous Waste Underground Pipelines*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-96-61, *Hanford Site Background: Part 3, Groundwater Background*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-96-63, *Annual Hanford Site Environmental Permitting Status Report*, Rev. 1, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-96-82, *Hanford Facility Dangerous Waste Closure Plan, 241-Z Treatment and Storage Tanks*, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-96-92, *Hanford Strategic Plan*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-97-03, *Hanford Facility Dangerous Waste Permit Application, Liquid Effluent Retention Facility and 200 Area Effluent Treatment Facility*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE-RL, WHC, PNL, 1994, *Hanford Site Comments on the Second Draft of the Resource Conservation and Recovery Act for the Treatment, Storage, and Disposal of Dangerous Waste for the Hanford Facility*, letter number 94-RPS-185, to U.S. Environmental Protection Agency, Region 10, and Washington State Department of Ecology dated April 6, 1994.

DOE/RW-0164, *Site Characterization Plan, Reference Repository Location, Hanford Site, Washington, Consultation Draft*, Vol. 1-9, Office of Civilian Radioactive Waste Management, U.S. Department of Energy, Washington, D.C.

Ecology No. DE 86-133, *Consent Agreement and Compliance Order*, PCHB No. 86-44, Washington State Department of Ecology, Olympia, Washington.

Ecology, 1987, *State of Washington Part B Permit Application Requirements*, Washington State Department of Ecology, Olympia, Washington.

Ecology, 1996, *Dangerous Waste Permit Application Requirements*, Publication Number #95-402, Washington State Department of Ecology, Olympia, Washington.

Ecology, EPA, and DOE-RL, 1994, *Cost and Management Efficiency Initiative*, Washington State Department of Ecology, U.S. Environmental Protection Agency, U.S. Department of Energy, Richland Operations Office, Olympia, Washington.

Ecology, EPA, and DOE-RL, 1996, *Hanford Federal Facility Agreement and Consent Order*, Washington State Department of Ecology, U.S. Environmental Protection Agency, U.S. Department of Energy, Richland Operations Office, Olympia, Washington, amended periodically.

EPA, 1986a, *Permit Applicants' Guidance Manual for Exposure Information Requirements under RCRA Section 3019*, Office of Solid Waste, U.S. Environmental Protection Agency, Washington, D.C.

EPA, 1986b, *RCRA Ground Water Monitoring Technical Enforcement Guidance Document (TEGD)*, National Water Well Association, Dublin, Ohio.

EPA, 1989a, *Integrated Risk Information System Database*, Dialcom, U.S. Environmental Protection Agency, Silver Springs, Maryland, updated quarterly.

EPA, 1989b, *Risk Assessment Guidance for Superfund: Human Health Evaluation Manual, Part A, Interim Final*, U.S. Environmental Protection Agency, Washington, D.C.

EPA, 1992, *Draft Addendum to Interim Final Guidance*, U.S. Environmental Protection Agency, Washington, D.C.

EPA/230/02-89-042, *Methods for Evaluating the Attainment of Cleanup Standards*, Vol. 1: Soils & Solid Media, 230/02-89-042, U.S. Environmental Protection Agency, Office of Policy, Planning and Evaluation, Washington, D.C.

EPA/530-SW-89-026, *Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Final Guidance*, U.S. Environmental Protection Agency, Washington, D.C.

EPA540-R-93-0071, *Data Quality Objectives Process for Superfund Interim Final Guidance*, U.S. Environmental Protection Agency, Washington, D.C.

EPA 600/2-85-104, *Practical Guide for Ground-Water Sampling*, Robert S. Kerr Environmental Research Laboratory, Ada, Oklahoma.

EPA/600/R-96/055, *Guidance for the Data Quality Objectives Process*, U.S. Environmental Protection Agency, Washington, D.C.

EPA PB94-963-603, *Waste Analysis at Facilities that Generate, Treat, Store, and Dispose of Hazardous Wastes: A Guidance Manual*, U.S. Environmental Protection Agency, Washington, D.C.

EPA SW-846, *Test Methods for the Evaluation of Solid Waste: Physical/Chemical Methods*, latest edition, U.S. Environmental Protection Agency, Washington, D.C.

EPA and Ecology, 1990, "Policy on Remediation of Existing Wells and Acceptance Criteria for RCRA and CERCLA", Letter dated 7/16/90, from T.L. Nord (Ecology) and P.T. Day (EPA) to S.H. Wisness (DOE-RL).

FEMA, 1980, *Flood Insurance Study: Benton County Washington*, Federal Emergency Management Agency, Federal Insurance Administration, Washington, D.C.

Freeze, R.A. and J.A. Cherry, 1979, *Groundwater*, Prentice-Hall, Inc., Englewood Cliffs, New Jersey.

Gee, et al., 1992, "Variations in Recharge at the Hanford Site", *Northwest Science*, Vol. 66.

ICBO, 1991, "Earthquake Regulations," *Uniform Building Code*, UBC Section 2312, International Conference of Building Officials, Whittier, California.

ICF KH ENG-W-95-2160, *RCRA Mapping and Marking on the Hanford Site Value Engineering Report*, Rev. 0, ICF Kaiser Hanford Company, Richland, Washington.

Lyman, W.J., W.F. Reehl, and D.H. Rosenblatt, 1982, *Handbook of Chemical Property Estimation Methods*, McGraw-Hill Book Company, New York, New York.

NUREG-0892, *Safety Evaluation Report (Related to the Operation of WPPSS Nuclear Project No. 2)*, Supplement No. 1, U.S. Nuclear Regulatory Commission, Washington, D.C.

PNL-4219, *Flood Risk Analysis of Cold Creek Near the Hanford Site*, Pacific Northwest Laboratory, Richland, Washington.

PNL-4622, *Climatological Summary for the Hanford Area*, Pacific Northwest Laboratory, Richland, Washington.

PNL-6328, *Estimation of Ground-Water Travel Time at the Hanford Site: Description, Past Work, and Future Needs*, Pacific Northwest Laboratory, Richland, Washington.

PNL-6415, *Hanford Site National Environmental Policy Act (NEPA) Characterization*, Pacific Northwest Laboratory, Richland, Washington.

PNL-8869, *Preliminary Potentiometric Map and Dynamic Characteristics of the Upper-Basalt Confined Aquifer System,* Pacific Northwest Laboratory, Richland, Washington.

PNL -10158, *Summary and Evaluation of Hydraulic Property Data Available for the Hanford Site Upper- Basalt Confined Aquifer System,* Pacific Northwest Laboratory, Richland, Washington.

PNL-10651, *Development of a Risk Based Approach to Hanford Site Cleanup*, Pacific Northwest Laboratory, Richland, Washington.

PNL-10817, *Hydrochemistry and Hydrogeologic Conditions within the Hanford Site Upper-Basalt Confined Aquifer System,* Pacific Northwest Laboratory, Richland, Washington.

PNL-11139, *Hanford Site Environmental Report for Calendar Year 1995*, Pacific Northwest National Laboratory, Richland, Washington.

PNL, 1992, *Estimation of the Release and Transport of Lead through Soils and Groundwater at the Hanford Site 218-E-12B Burial Ground*, Pacific Northwest Laboratory, Richland, Washington.

PNL, 1994, *Estimation of the Release and Transport of Nickel through Soils and Groundwater at the Hanford Site 218-E-12B Burial Ground*, Pacific Northwest Laboratory, Richland, Washington.

PNNL-0285, *Estimated Recharge Rates at the Hanford Site*, Pacific Northwest National Laboratory, Richland, Washington.

PNNL-12086, *Hanford Site Groundwater Monitoring for Fiscal Year 1998,* Pacific Northwest National Laboratory, Richland, Washington.

PNNL-13116, *Hanford Site Groundwater Monitoring for Fiscal Year 1999*, Pacific Northwest National Laboratory, Richland, Washington.

RHO-BWI-ST-5, *Hydrologic Studies Within the Columbia Plateau, Washington: An Integration of Current Knowledge*, Rockwell Hanford Operations, Richland, Washington.

RHO-BWI-ST-14, *Wanapum and Saddle Mountains Basalts of the Cold Creek Syncline Area (pages 3-1 to 3-45),* in *Subsurface Geology of the Cold Creek Syncline,* Rockwell Hanford Operations, Richland, Washington.

RHO-RE-SR-87-24, *Results of the Separations Area Ground-Water Monitoring Network for 1986*, Rockwell Hanford Operations, Richland, Washington.

RHO-RE-ST-12P, *An Assessment of Aquifer Intercommunication in the B Pond-Gable Mountain Pond Area of the Hanford Site*, Rockwell Hanford Operations, Richland, Washington.

RHO-ST-23, *Geology of the Separations Areas, Hanford Site, South-Central Washington*, Rockwell Hanford Operations, Richland, Washington.

RHO-ST-42, *Hydrology of the Separations Area*, Rockwell Hanford Operations, Richland, Washington.

RLO-76-4, *Evaluation of Impact of Potential Flooding Criteria on the Hanford Project*, U.S. Energy Research and Development Administration-Richland Operations Office, Richland, Washington.

Silka, L.R., 1988, "Simulation of Vapor Transport through the Unsaturated Zone-Interpretation of Soil-Gas Surveys", *Ground Water Monitoring Review*, Vol. VIII, No. 2, pp. 115-123.

USN, 1995, *Extrapolation of Migration Modeling for Large Metal Components Containing Lead and Nickel Alloys at the 218-E-12B Burial Ground*, U.S. Department of the Navy, Puget Sound Naval Shipyard, Bremerton, Washington.

USN, 1996, *Environmental Impact Statement on the Disposal of Decommissioned, Defueled Cruiser, Ohio Class, and Los Angeles Class Naval Reactor Plants*, U.S. Department of the Navy, Puget Sound Naval Shipyard, Bremerton, Washington.

WHC-EP-0260, *Operational Groundwater Monitoring at the Hanford Site – 1988*, Westinghouse Hanford Company, Richland, Washington.

WHC-EP-0394, *Ground Water Maps of the Hanford Site, December 1990*, Westinghouse Hanford Company, Richland, Washington.

WHC-S-014, *Generic Specification Groundwater Monitoring Wells*, Westinghouse Hanford Company, Richland, Washington.

WHC-SA-1124-FP, *Statistical Approach on RCRA Groundwater Monitoring Projects at the Hanford Site*, Westinghouse Hanford Company, Richland, Washington.

WHC-SA-1157-FP, *Efficiency-Based Groundwater Monitoring Network Design for Hazardous-Waste Sites,* Westinghouse Hanford Company, Richland, Washington.

WHC-SD-AP-024, *Interim Status Ground-Water Monitoring Plan for the 200 East Area Liquid Effluent Retention Facility*, Westinghouse Hanford Company, Richland, Washington.

WHC-SD-EN-AP-015, *Revised Ground-Water Monitoring Plan for the 200 Areas Low-Level Burial Grounds,* Westinghouse Hanford Company, Richland, Washington.

WHC-SD-EN-AP-021, *Interim-Status Ground-Water Quality Assessment Program Plan for Waste Management Area 1 of the 200 Areas Low-Level Burial Grounds*, Westinghouse Hanford Company, Richland, Washington.

WHC-SD-EN-AP-022, *Interim-Status Ground-Water Quality Assessment Program Plan for Waste Management Area 3 of the 200 Areas Low-Level Burial Grounds*, Westinghouse Hanford Company, Richland, Washington.

WHC-SD-EN-EE-004, *Revised Stratigraphy for the Ringold Formation, Hanford Site, South Central Washington*, Westinghouse Hanford Company, Richland, Washington.

WHC-SD-ER-TI-0003, *Geology and Hydrology of the Hanford Site: A Standardized Text for Use in Westinghouse Hanford Company Documents and Reports*, Westinghouse Hanford Company, Richland, Washington, updated periodically.

WHC-SD-W105-SAR-001, *Final Safety Analysis Report 242-A Evaporator Liquid Effluent Retention Facility*, Westinghouse Hanford Company, Richland, Washington.

WHC-SD-WM-ISB-002, WHC, 1995, *Solid Burial Ground Interim Safety Basis*, Westinghouse Hanford Company, Richland, Washington.

WHC-SD-WM-PE-056, *242-A Campaign 95-1 Post Run Document*, Westinghouse Hanford Company, Richland, Washington.

59 FR 17091, "Establishment of New Routine Use for an Existing System of Records".

59 FR 55322, "Washington: Final Authorization of State Hazardous Waste Management Program Revisions".

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APPENDIX 2A

LOCATION MAP

APPENDIX 2A

CONTENTS

H-6-958 General Overview of Hanford Site.

APPENDIX 2B

GLOSSARY

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GLOSSARY

CERCLA	*Comprehensive Environmental Response, Compensation, and Liability Act of 1980*
CFR	Code of Federal Regulations
CMS	corrective measures study
CWC	Central Waste Complex
D&D	decontamination and decommissioning
DOE-RL	U.S. Department of Energy, Richland Operations Office
DQO	data quality objective
DST System	Double-Shell Tank System
DW	dangerous waste
°C	degree Celsius
°F	degree Fahrenheit
ECN	engineering change notice
Ecology	Washington State Department of Ecology
EMSL	Environmental and Molecular Sciences Laboratory
EPA	U.S. Environmental Protection Agency
FFTF	Fast Flux Test Facility
GTF	Grout Treatment Facility
HAMMER	Hazardous Materials Management and Emergency Response
HEIS	Hanford Environmental Information System
HEPA	high-efficiency particulate air
HF RCRA Permit	Hanford Facility Resource Conservation and Recovery Act Permit
HGIS	Hanford Geological Information System
HSWA	Hazardous and Solid Waste Amendments
HWVP	Hanford Waste Vitrification Plant
IRIS	Integrated Risk Information System
LDR	land disposal restriction
LERF	Liquid Effluent Retention Facility
LIGO	Laser Interferometer Gravitational Wave Observatory
LLBG	Low-Level Burial Grounds
M	Milestone
MEMO	monitoring efficiency model
MTCA	Model Toxics Control Act
ONC	Occurrence Notification Center
Part A	Dangerous Waste Part A Permit Application
Part B	Dangerous Waste Part B Permit Application
pH	negative logarithm of the hydrogen-ion concentration
PUREX	plutonium-uranium extraction
Purgewater Facility	600 Area Purgewater Storage and Treatment Facility

QAPjP	quality assurance project plan
RCRA	*Resource Conservation and Recovery Act of 1976*
RD&D	research, development, and demonstration
RFI	RCRA facility investigation
RPP	River Protection Project
SST	single-shell tank
SWMU	solid waste management unit
Tri-Party Agreement	*Hanford Federal Facility Agreement and Consent Order*
TSD	treatment, storage, and/or disposal
UO_3	Uranium Oxide Plant
WAC	Washington Administrative Code
WIDS	Waste Information Data System
WRAP 1	Waste Receiving and Processing 1
200 Area ETF	200 Area Effluent Treatment Facility
204-AR	204-AR Waste Unloading Station
224-T TRUSAF	224-T Transuranic Waste Storage and Assay Facility
241-Z	241-Z Treatment and Storage Tanks
305-B	305-B Storage Facility
325 HWTUs	325 Hazardous Waste Treatment Units
616 NRDWSF	616 Nonradioactive Dangerous Waste Storage Facility

Accuracy – Relates to the quality of the result, and is distinguished from precision that relates to the quality of the operation by which the result is obtained.

Advection – Transport of water or an aqueous property solely by mass motion.

Aging Waste Tank – A tank that stores neutralized current acid waste generated from the PUREX Plant.

Analyte – The element, ion, or compound of interest.

ANOVA (analysis of variance) – Name given to a variety of statistics procedures. All of these procedures compare the means of different groups of observations to determine whether there are any significant differences among the groups.

Anticlinal – Pertaining to an anticline.

Anticline – A fold, generally convex upward, whose core contains the stratigraphically older rocks.

Aquifer – A geologic formation, group of formations, or part of a formation capable of yielding a significant amount of ground water to wells or springs.

Aquitard – A confining bed that retards but does not prevent the flow of water to or from an adjacent aquifer.

Assessment-level monitoring – A program of monitoring groundwater under interim status requirements. After a release of contaminants to groundwater has been determined, the rate of migration, extent of contamination, and dangerous constituent concentration gradients of the contamination must be identified.

Background – The composition of a medium that has not been affected by activities at a waste management unit.

Bar – A mass of sand, gravel, or alluvium deposited on the bed of a stream, sea, or lake or at the mouth of a stream forming an obstruction to water navigation.

Basalt – A dark- to medium-dark-colored mafic (iron-magnesium rich) extrusive igneous rock with small grains composed primarily of feldspar (calcic plagioclase), pyroxene, with or without olivine, and varying proportions of glass.

Borehole Compilation Data Package Report – A document that summarizes all activities at a wellsite during a calendar year, based on a compilation of validated records. This document also includes an interpretation of hydrologic data used to support characterization and permitting activities for the RCRA TSD units.

Bottom zones – Refers to the base of basalt flows where aquifers can be found.

By-product material – A material that is not one of the primary products of a production process and is not solely or separately produced by the production process. Examples are process residues such as slags or distillation column bottoms. The term does not include a co-product that is produced for the general public's use and is ordinarily used in the form it is produced by the process (WAC 173-303-040).

"(a) For purposes of this part, the term "byproduct material" means any radioactive material (except special nuclear material) yielded in or made radioactive by exposure to the radiation incident to the process of producing or utilizing special nuclear material.

(b) for purposes of determining the applicability of the Resource Conservation and Recovery Act (42 U.S.C. 6901 et seq.) to any radioactive waste substance owned or produced by the Department of Energy pursuant to the exercise of its atomic energy research, development, testing and production responsibilities under the Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.), the words "any radioactive material," as used in paragraph (a) of this section, refer only to the actual radionuclides dispersed or suspended in the waste substance. The nonradioactive hazardous component of the waste substance will be subject to regulation under the Resource Conservation and Recovery Act."
(10 CFR 962.3)

Carbonate – A compound containing the radical carbonate.

Cataclysmic– Any geologic event that produces sudden and extensive changes in the Earth's surface.

CERCLA past-practice unit – A process by which a past-practice unit containing hazardous substances is addressed for remedial action (as opposed to RCRA past-practice).

CERCLA remedial investigation – The CERCLA process of determining the extent of hazardous waste contamination; analogous to the RCRA facility investigation.

Channelways – Ancient or recent streams or river beds including flood zones.

Cobble – rock fragment that ranges from 64 to 256 millimeters in diameter.

Compliance – Not exceeding regulations.

Confined aquifer–Groundwater bounded above and below by impermeable layers.

Conglomerate – Rounded water worn fragments of rock or pebbles, cemented together by another mineral substance.

Conservative tracer – A tracer that does not chemically interact or degrade the aquifer system (i.e., the total quantity of the material in the solution remains constant).

Contaminant mobility – The capability of any physical, chemical, or biological substance having an adverse effect on air, water, or soil and that can be transported readily by wind or water.

Control chart – Area graphical presentations of analytical data to determine if results are within desired limits.

Corrective measures study – The step in the RCRA past-practice process in which alternatives for a corrective action system are investigated and screened; comparable to the feasibility study phase of the CERCLA process.

Criteria pollutants – (40 CFR, Part 58, Appendix G) means the pollutant or pollutant combination (TSP x SO_2) with the highest subindex during the reporting period.

Critical systems – Those specific portions of a TSD unit's structure or equipment whose failure could lead to the release of dangerous waste into the environment and/or systems, which include processes that treat, transfer, store or dispose of regulated waste. A list identifying the critical systems of a specific TSD unit may be developed and included in Part III or Part V of the HF RCRA Permit. In developing a critical system list, or in the absence of a critical system list, WAC 173-303-830 modifications will be considered.

Cross-section – A profile or portraying of an interpretation of a vertical section of the Earth explored by geophysical and or geological methods.

Dangerous wastes – As defined in the HF RCRA Permit, means those solid wastes designated under WAC 173-303 as dangerous or extremely hazardous waste. As used in the Permit, the words "dangerous waste" will refer to the full universe of wastes regulated by Chapter 70.105 RCW and WAC 173-303 (including dangerous waste, hazardous waste, extremely hazardous waste, mixed waste, and acutely hazardous waste).

Derived concentration guidelines – A calculated concentration that would result in an annual dose of 100 millirem.

Detection – The lowest concentration by which an analyte can be detected on a field or laboratory instrument. Often recorded in parts per million or parts per billion.

Detrital – Pertaining to or formed by detritus material.

Detritus – A collective term used for loose rock and mineral material that is worn away by mechanical means, as by disintegration or abrasion (e.g., sand, silt, and clay).

Diffusion – The actual transport of mass, in the form of discrete atoms, through the lattice of a crystalline solid.

Discharge – The rate of flow at any given moment, expressed in volume per unit time (e.g., cubic meters/second).

"Dangerous waste discharge" means the accidental or intentional release of hazardous substances, dangerous waste, or dangerous waste constituents such that the substance, waste, or a waste constituent may enter or be emitted into the environment (WAC 173-303-040).

Dispersivity – Ability of a contaminant to disperse within the groundwater by molecular diffusion and chemical mixing.

Distribution coefficient – The ratio of the concentration of a solute sorbed by ion exchange substances such as Earth materials, particularly clays, to the concentration of the solute remaining in solution. A large distribution coefficient implies that the substance is readily sorbed and is redissolved slowly. The concentration of material in the solid phase (i.e., rock or sediment) (moles per gram) divided by the concentration of material in the aqueous phase (moles per liter).

Domenico-Robbins – A two dimensional analytical transport model developed by Domenico and Robbins (1985).

Drinking Water Standard – Contaminant concentration specified in the *Safe Drinking Water Act*.

Drive-barrel – Heavy-walled pipe used in impact drilling. Soil and rock are driven into a pipe connected to a cable as it is dropped rapidly on to the ground. The soil or rock is extracted by striking the pipe.

Driving force – The hydraulic head that causes water to flow in one direction or another.

Duplicate blank – A sample retrieved from a single sampling location using the same equipment and sampling technique but analyzed independently.

Effective porosity – The ratio of the volume of the void spaces of a soil mass that can be drained by gravity to the total volume of the mass of the soil.

Eolian – (a) Pertaining to the wind; especially said of such deposits as loess and dune sand, of sedimentary structures such as wind-formed ripple marks, or of erosion and deposition accomplished by the wind. (b) Said of the active phase of a dune cycle, marked by diminished vegetal control and increased dune growth.

Epiclastic – A term applied to mechanically deposited sediments (e.g., mud, gravel, sand) consisting of weathered products of older rocks. A rock formed at the Earth's surface by consolidation of fragments of pre-existing rocks.

Epoch – A division of geologic time that identifies an abrupt change in the environment.

Equipment blanks – Prepared before sampling by running deionized water over sampling equipment and collecting the water in a clean sample container. If the equipment blank is found to be contaminated, the source of contamination is assumed to be the equipment used during the sampling event.

Erosional windows – Portions of the land surface that have been eroded away exposing landforms that represent the past.

Evapotranspiration – The sum total of that portion of precipitation that is returned to the atmosphere through evaporation and the transpiration of plants.

Extremely hazardous waste – Those dangerous and mixed wastes designated in WAC 173-303-100 as extremely hazardous.

Facies – Part of a rock body as differentiated from other parts by appearance or composition and that reflects the environment in which it was formed.

Facility – As defined in WAC 173-303-040 means all contiguous land, and structures, other appurtenances, and improvements on the land used for recycling, reusing, reclaiming, transferring, storing, treating, or disposing of dangerous waste. A facility may consist of several treatment, storage, or disposal operational units (e.g., one or more landfills, surface impoundments, or combination of them). Unless otherwise specified, the terms "facility," "treatment, storage, and/or disposal facility," "TSD facility," "dangerous waste facility" or "waste management facility" are used interchangeably. For the purposes of implementing corrective action imposed pursuant to WAC 173-303-646 (2) or (3), the term facility has the following meaning: All contiguous property under the control of an owner or operator seeking or required to have a permit under the provisions of Chapter 70.105 RCW or WAC 173-303, including the definition of facility at RCW 70.105D.020(3).

As defined in the HF RCRA Permit, means all contiguous land, and structures, other appurtenances, and improvements on the land used for recycling, reusing, reclaiming, transferring, storing, treating, or disposing of dangerous waste.

Depending on context, 'facility' could refer to:

- The Hanford Facility
- Building nomenclature commonly used on the Hanford Facility. In this context, the term 'facility' remains as part of the title for various TSD units (e.g., 616 Nonradioactive Dangerous Waste Storage Facility)
- For purposes of complying with the RCRA corrective action provisions, all contiguous property under the control of the owner or operator seeking a permit under Subtitle C of RCRA.

Fanglomerate – A fanglomerate is composed of heterogenous material that was originally deposited in an alluvial fan or delta as loose unconsolidated detrital material and has since become cemented into rock.

Feasibility study – The step in the CERCLA process in which alternatives for a remedial action system are investigated and screened.

Field duplicates – Independent samples that are taken from the same location at the same time and are used to measure the representativeness of the sampling event. This is a measure that describes both the variability of waste composition and variability of the sampling technique.

Fixed limits – A constant compliance limit or a fixed standard such as maximum concentration limit or assessment level monitoring.

Flow tops – Pertaining to the highest portion of individual basalt flows.

Fluvial-lacustrine – Said of those deposits formed by the streams flowing from lakes.

Formation(s) – Something naturally formed, commonly differing from adjacent rocks or soils. Most formations possess certain distinctive or repetitive combinations of distinctive rock types.

Geophysical – Pertaining to that science that deals with the exploration or prospecting of the Earth using instruments and applying the methods of physics and engineering by observation of magnetic, seismic, electrical, and thermal distribution.

Glaciofluvial – Pertaining to streams flowing from glaciers or to the deposits made from these streams. In the Hanford Site area, this pertains to the deposited sands and gravels that were deposited because of the Lake Missoula flood.

Grab sample – A single sample that is collected at a time and place most representative of total discharge.

Granule – A rock fragment larger than a very coarse sand grain and smaller than a pebble. The fragment ranges in size from 2 to 4 millimeters.

Gravels – An accumulation of water worn pebbles. Consists of rock grains or fragments that range in size from 4.76 to 76 millimeters.

Groundwater mounds – A mound shaped elevation in a water table that builds up as a result of the downward percolation of water through the zone of aeration.

Hard-tool – Drill bit used in cable tool drilling to crush rock. The slurry created by the bit is retrieved and examined.

Hazardous waste – Those solid waste designated by 40 CFR 261, and regulated as hazardous and/or mixed waste by the EPA.

Henry's Law – The weight of a gas dissolved by a liquid is proportional to the pressure of the gas.

High energy – Refers to the environment of sediment deposition where the stream or river flow or wave action is of sufficient quantity to carry significant amounts of suspended soil and rock particles.

High-activity waste – High- and low-activity is reflective of the relative concentration of radionuclides in mixed waste.

High-level waste – Highly radioactive waste material that results from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid waste derived from the liquid that contains a combination of transuranic waste and fission products in concentrations requiring permanent isolation.

Holocene – Recent. That period in time (epoch) since the last ice age in North America; also those sediments deposited during that epoch.

Hydraulic head – The height of the free surface of a body of water above a given subsurface point.

Hydraulic conductivity – The ratio of the groundwater flow velocity to the driving force for fluid flow through porous medium under saturated conditions.

Hydraulic gradient – As applied to an aquifer, the rate of change of the hydraulic head per unit of distance at a given point and direction.

Hydrogeology – A term used interchangeably with geohydrology referring to the hydrologic or flow characteristics of groundwater.

Hydrologic properties – Properties of a rock related to the capacity to transmit, hold, and deliver water.

Immiscible – Cannot be mixed (fluids).

Indicator – A geologic or other feature that suggests the presence of a geochemical anomaly inherent to the local geologic setting.

Indurated – The consolidation of a rock or soil hardened by heat, pressure, or cementation.

Infiltration – The flow of fluid (water) into a solid substance through pores or small openings.

Intercalated – Said of a relatively thin layer of soil or rock material that alternates with thicker layers of some other kind of soil or rock.

Intermittent – Periodic. Stopping and starting again in intervals.

Interval – The vertical difference between soil or rock bodies of differing origin or composition.

Limit of Quantitation – The level above which quantitative analysis can be obtained with a specific degree of confidence (generally the mean background signal plus 10 standard deviations).

Loess – A homogeneous, nonstratified (nonlayered) unindurated soil consisting predominantly of silt of eolian (windblown) deposition. Often referred to as 'Palouse soil' located in the far central southeastern portion of Washington state.

Low-activity waste – Refer to high-activity waste.

Low-level waste – Waste that contains radioactivity and is not classified as high-level waste, transuranic waste, or spent nuclear fuel or 11e(2) by-product material as defined in U.S. Department of Energy Order 5820.2A. Test specimens of fissionable material irradiated for research and development only, and not for the production of power or plutonium, may be classified as low-level waste, provided the concentration of transuranic is less than 100 nanocuries per gram.

Maximum concentration limit – Contaminant concentration specified in the *Safe Drinking Water Act.*

Miocene – The fourth of the five epochs of which the Tertiary period is divided. The Miocene lasted from between 24 million years ago to 1.8 million years ago. Also those sediments that were deposited during that epoch.

Miscellaneous TSD unit – As defined in WAC 173-303-040, means a dangerous waste management unit where dangerous waste is treated, stored, or disposed of and that is not a container, tank, surface impoundment, pile, land treatment unit, landfill, incinerator, boiler, industrial furnace, containment building, corrective action management unit, temporary unit, underground injection well with appropriate technical standards under 40 CFR Part 146, or unit eligible for a research, development, and demonstration permit under WAC 173-303-809.

Miscellaneous waste management unit – One-time spills to the environment and sanitary waste disposal facilities.

Mixed waste – As defined in WAC 173-303-040, means a dangerous, extremely hazardous, or acutely hazardous waste that contains both a nonradioactive hazardous component and, as defined by 10 CFR 20.1003, source, special nuclear, or by-product material subject to the *Atomic Energy Act.*

Model – A working hypothesis or precise simulation, by means of description, statistical data, or analogy of a phenomenon or process that cannot be observed directly or that is difficult to observe directly.

Monocline – A steplike bend (flexure) in otherwise flatlying layers or beds of rock.

Operable unit – A group of contiguous past-practice waste sites related by site characteristics or operations so as to be considered collectively for purposes of environmental restoration under the CERCLA process.

Operating unit – A TSD unit that has been, or is anticipated to be, included in Part III of the HF RCRA Permit.

Oral reference dose – Defined as the level of daily human exposure at or below which no adverse effect is expected to occur during a lifetime.

Overbank deposits – Sediments (usually silt and clay) deposited beyond the natural levee of a stream or river during a flooding event.

Paleosols – A buried soil of the ancient past.

Palouse soil – Refer to loess.

Parameter – In statistics, a numerical quantity (such as the mean) that characterizes the distribution of a random variable or a population.

Permeability – The property or capacity of a porous rock, sediment, or soil for transmitting a fluid (e.g., groundwater).

Permeameter – An instrument for measuring permeability.

Perennial – Streams that flow throughout the year from source to mouth.

Physiography – The study of the genesis and evolution of land forms.

Pleistocene – The earliest of the two epochs comprising the Quaternary period. The Pleistocene lasted from between 1.8 million years ago to 10,000 years ago. Also, those sediments that were deposited during that epoch.

Porosity – The percentage of the bulk volume of a rock or soil that is occupied by interstices or voids.

Potentiometric – Surface to which water in an aquifer would rise by hydrostatic pressure or head.

Practical quantification limits – The lowest level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions.

Pre-Missoula – As pertaining to before the time of the flooding caused by the breaching of ice dams that contained Lake Missoula in northwest Montana.

Precision – The degree of agreement or uniformity of repeated measurements of a quantity; the degree of refinement. Refer to accuracy.

Prediction interval – In a regression analysis, a value or set of values for which one can assert with given probability that the value will contain a future observation.

Privatization – Refers to vendors, under contract with the U.S. Department of Energy, using private funding to design, permit, construct, operate, and deactivate their own equipment and facilities to treat tank waste.

Purgewater – Water being excavated from wells or from wells that are undergoing aquifer testing.

Quartzose – Containing quartz as the principal constituent.

RCRA facility investigation – The RCRA process of determining the extent of hazardous waste contamination; analogous to the CERCLA remedial investigation.

Recharging – The quantity of water that is added to the zone of saturation or the aquifer. Intake.

Recovery phase – The time an aquifer requires to reach equilibrium after pumping, such as in a slug test.

Sand – Detrital material varying in diameter from very fine grained (0.0625 to 0.125 millimeter) to very coarse grained (2 millimeter).

Sandy – A rock or soil in which one of the constituents is sand. Refer to sand.

Sediment – (a) (geological) Solid fragmental material that originates from weathering of rocks and is transported by air, water, or ice, or that accumulates by other natural agents, such as chemical precipitation from solution or secretion by organisms; and that forms in layers on the Earth's surfaces at ordinary temperatures in a loose unconsolidated form; e.g., sand, gravel, silt, mud, till, loess, alluvium. (b) Strictly solid material that has settled from a state of suspension in a liquid, e.g., material at the bottom of an open body of water, such as a pond or an estuary. In the singular, the term usually is applied to material held in suspension in water or recently deposited from suspension. In the plural, the term is applied to all kinds of deposits, and refers to essentially unconsolidated materials.

Seismic – Pertaining to an earthquake or earth vibration.

Semi-confined aquifer – A partially isolated aquifer. Refer to definition of aquifer.

Significant discrepancy – In regard to a manifest or shipping paper means a discrepancy between the quantity or type of dangerous waste designated on the manifest or shipping paper and the quantity or type of dangerous waste a TSD unit actually receives. A significant discrepancy in quantity is a variation greater than 10 percent in weight for bulk quantities (e.g., tanker trucks, railroad tank cars, etc.), or any variation in piece count for nonbulk quantities (i.e., any missing container or package would be a significant discrepancy). A significant discrepancy in type is an obvious physical or chemical difference that can be discovered by inspection or waste analysis (e.g., waste solvent substituted for waste acid).

Silt – A soil particle that ranges in size from 0.0039 to 0.0625 millimeter in diameter.

Silty – A rock or soil in which one of the constituents is silt. Refer to silt.

Slope wash – Soil and rock material that is being or has been moved down slope predominantly by the action of gravity assisted by running water that is not concentrated into channels.

Slope – The inclined surface of hill, mountain, plateau, plain, or any other part of the Earth's surface.

Slug testing – A single well test to determine the insitu hydraulic conductivity of an aquifer by the instantaneous addition or removal of a known quantity (slug) of water into or from a well, and the subsequent measurement of the resulting well recovery time.

Solid waste management unit – Any discernible location at a facility, defined for the purposes of corrective action, where solid waste has been placed at any time, irrespective of whether the location was intended for the management of solid or dangerous waste. Such locations include any area at a facility at which solid waste, including spills, routinely and systematically have been released. Such units include regulated units as defined by WAC 173-303.

Source material – "(1) uranium, thorium, or any other material which is determined by the Commission pursuant to the provisions of Section 61 [42 U.S.C. 2091] to be source material; or (2) ores containing one or more of the foregoing materials, in such concentration as the Commission may by regulation determine from time to time." (*Atomic Energy Act*)

Special nuclear material – "(1) plutonium, uranium enriched in the isotope 233 or in the isotope 235, and any other material which the Commission, pursuant to the provisions of Section 51 [42 U.S.C. 2071], determines to be special nuclear material, but does not include source material; or (2) any material artificially enriched by any of the foregoing, but does not include source material." (*Atomic Energy Act*)

Specific conductance – A measure of the electrical conductivity of a liquid.

Split-spoon sampler – A device used to sample below the surface through the vadose zone. Samples are obtained using a split barrel that is lined with ring or tube liners.

Stratigraphic – Said of a stratum by which an arbitrary but systematic arrangement, zonation, or partitioning of a sequence of rock layers, of the Earth's crust, into units with reference to any or all of the attributes, properties, or characteristics that strata possess.

Structural – Pertaining to, part of, or consequent upon geologic structures.

Structures (tectonic) – Of, pertaining to, or designating rock structure and deformations as a result of forces caused by land movement and earthquakes.

Suprabasalt – Those sediments that are found above basalt flows.

Syncline – A fold, generally upward concaving, whose core contains the stratigraphically youngest rock.

Temperature – Degree of hotness or coldness of a body or environment.

Tolerance – A permissible deviation from a specified value, expressed in actual values or more often as a percentage of the nominal value.

Topography – The general configuration of a land surface or any part of the Earth's surface, including its relief and its natural and man made features.

Transmissive zone – Pertaining to transmissivity. The zone where intercommunication is possible between differing aquifers.

Transmissivity – The rate (flow) at which water is transmitted through a unit width of aquifer.

Transuranic waste – Without regard to source or form, waste that is contaminated with alpha-emitting transuranium radionuclides with half-lives greater than 20 years and concentrations greater than 100 nanocuries per gram at the time of assay. At the Hanford Site, transuranic waste also includes uranium-233 and radium sources.

Travel time – The period of time necessary for a dangerous waste constituent released to the soil to enter any onsite or offsite aquifer or water supply system.

Trip blanks – Sample containers that are prepared with deionized water and are carried into and out of the field but are not opened at any time during the sampling event. If the trip blank is found to be contaminated, the source of the contamination is assumed to be the container itself, the environment in which the trip blank was prepared, or another source outside the sample area.

Tuff – A general term for all consolidated volcanic fragments.

Turbidity – The state, condition, or quality of opaqueness or reduced clarity of a fluid, due to the presence of suspended matter.

Unit dispositioned through other options – A TSD unit that is not categorized as either an 'operating unit' or a 'unit undergoing closure'.

Unit undergoing closure – A TSD unit that has been, or is anticipated to be, included in Part V of the HF RCRA Permit.

Vadose zone – Zone of aeration. A subsurface zone containing water under pressure less than that of the atmosphere, including water held by capillarity; and containing air or gases generally under atmospheric pressure. This zone is limited above by the land surface and below by the surface of the 'zone of saturation', i.e., the water table.

Vapor pressure – The pressure at which a liquid and its vapor are at equilibrium at a given temperature.

Velocity – The rate of motion in a given direction (meter/second).

Veneer – A thin but extensive layer of sediments covering an older geologic layer or stratum.

Volcanic – Of, pertaining to, like, or characterized by or composed of material originating from volcanoes or fissures.

Volcaniclastic – Pertaining to clastic or fragmental rock material containing volcanic material in whatever proportion, and without regard to its origin or environment.

Waste management unit – Means an individual location on the Hanford Site where waste has or may have been placed, either planned or unplanned, as identified in the Tri-Party Agreement. Includes: (1) RCRA disposal units, (2) CERCLA disposal units, (3) unplanned releases, (4) inactive contaminated structures, (5) RCRA TSD units, and (6) other storage areas. Because of the comprehensive nature of the Units Report (DOE/RL-88-30), the list of units is more extensive than required by Section 3004(u) of HSWA.

Water table – The upper surface of a saturation zone except where that surface is formed by an impermeable layer.

Yakima Fold Belt – Characterized by long, narrow anticlines and broad synclines extending generally eastward from the Cascade Range to the approximate center of the Columbia Plateau.

Key Sources (in addition to cited regulations):

Bates, R.L., 1990, "Glossary of Geology", J.A. Jackson, ed., American Geological Institute, Falls Church, Virginia.

Basalt Waste Isolation Project Glossary, SD-BWI-PMP-005, Rockwell Hanford Operations, Richland, Washington.

Dictionary of Geological Terms, Anchor Books Edition: 1976, Anchor Press/Doubleday, Garden City, New York.

A Dictionary of Mining, Mineral and Related Terms, 1968, U.S. Department of the Interior, U.S. Printing Office, Washington D.C.

Ecology, EPA, and DOE, 1996, *Hanford Federal Facility Agreement and Consent Order*, as amended, Washington State Department of Ecology, U.S. Environmental Protection Agency, U.S. Department of Energy, Olympia, Washington.

The Environmental Dictionary, compiled by J. J. King, Executive Enterprises Publications Co., Inc., New York, New York, 1993.

EPA, 1989, *Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Final Guidance*, PB89-15047, U.S. Environmental Protection Agency, Washington, D.C.

Freeze, R.A. and J.A. Cherry, 1979, *Groundwater*, Prentice-Hill Inc., Englewood Cliffs, New Jersey.

King, J.J., 1989, *The Environmental Dictionary*, Executive Enterprises, New York, New York.

Lee, C.C., 1989, *Environmental Engineering Dictionary*, Government Institutes Inc., Rockville, Maryland.

RCRA Groundwater Monitoring Technical Enforcement Guidance Document, 1986, National Water Well Association, Dublin, Ohio.

Myers, C.W./S.M. Price, and J.A. Caggiano, M.P. Cochran, W.J. Czimer, N.J. Davidson, R.C. Edwards, K.R. Fecht, G.E. Holmes, M.G. Jones, J.R. Kunk, R.D. Landon, R.K. Ledgerwood, J.T. Lillie, P.E. Long, T.H. Mitchell, E.H. Price, S.P. Reidel, and A.M. Tallman, 1979, *Geologic Studies of the Columbia Plateau, A Status Report*, RHO-BWI-ST-4, Rockwell Hanford Operations, Richland, Washington.

Webster's New Riverside University Dictionary, 1984, Houghton Mifflin Company, Boston, MA.

1 **METRIC CONVERSION CHART**

Into metric units

If you know	Multiply by	To get
Length		
inches	25.40	millimeters
inches	2.54	centimeters
feet	0.3048	meters
yards	0.914	meters
miles	1.609	kilometers
Area		
square inches	6.4516	square centimeters
square feet	0.092	square meters
square yards	0.836	square meters
square miles	2.59	square kilometers
acres	0.404	hectares
Mass (weight)		
ounces	28.35	grams
pounds	0.453	kilograms
short ton	0.907	metric ton
Volume		
fluid ounces	29.57	milliliters
quarts	0.95	liters
gallons	3.79	liters
cubic feet	0.03	cubic meters
cubic yards	0.76456	cubic meters
Temperature		
Fahrenheit	subtract 32 then multiply by 5/9ths	Celsius
Energy		
kilowatt hour	3,412	British thermal unit
kilowatt	0.948	British thermal unit per second
Force/Pressure		
pounds per square inch	6.895	kilopascals

Out of metric units

If you know	Multiply by	To get
Length		
millimeters	0.0393	inches
centimeters	0.393	inches
meters	3.2808	feet
meters	1.09	yards
kilometers	0.62	miles
Area		
square centimeters	0.155	square inches
square meters	10.7639	square feet
square meters	1.20	square yards
square kilometers	0.39	square miles
hectares	2.471	acres
Mass (weight)		
grams	0.0352	ounces
kilograms	2.2046	pounds
metric ton	1.10	short ton
Volume		
milliliters	0.03	fluid ounces
liters	1.057	quarts
liters	0.26	gallons
cubic meters	35.3147	cubic feet
cubic meters	1.308	cubic yards
Temperature		
Celsius	multiply by 9/5ths, then add 32	Fahrenheit
Energy		
British thermal unit	0.000293	kilowatt hour
British thermal unit per second	1.055	kilowatt
Force/Pressure		
kilopascals	0.14504	pounds per square inch

2 Source: *Engineering Unit Conversions*, M. R. Lindeburg, PE., Second Ed., 1990, Professional
3 Publications, Inc., Belmont, California.

APPENDIX 2C

HANFORD FACILITY LEGAL DESCRIPTION

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The following legal description describes the overall facility boundaries of the DOE-RL controlled Hanford Site. Individual TSD units use only a very small portion of the Hanford Site. Additional descriptive information on the individual TSD units is contained in the Unit-Specific Portion of this permit application:

The Hanford Site being a tract of land located in Benton County, WA, the aforesaid tract being more particularly described as follows:

Commencing at the point of intersection of the E.-W. centerline of sec. 14, T.10N., R.28E. Willamette Meridian, with the western navigation line of the Columbia River;

Thence northerly 200 feet along said line of navigation to the TRUE POINT OF BEGINNING;

Thence W. to a point on the W. right-of-way line of George Washington Way, which line is the boundary of the city of Richland;

Thence southerly 100 feet or less, along said right-of-way line of George Washington Way to a point on the N. right-of-way line of Horn Rapids Road, an unplatted road;

Thence W. along the N. right-of-way line of Horn Rapids Road approximately □ mile to the E. right-of-way line of Stevens Drive, an unplatted road;

Thence continuing westerly and northwesterly along the N. right-of-way line of Horn Rapids Road 28,600 feet more or less to the line's intersection with the N. right-of-way line of State Highway 240, in the N.E. 1/4 of sec. 11, T.10N., R.27E.W.M.;

Thence northwesterly along said N. right-of-way line of the highway, 75 feet N. of and parallel with the centerline of said highway to a point in sec. 3, T.10N., R.27E.W.M., which point is on the eastward extension of the N. right-of-way line of a county road from Horn Rapids to Benton City;

Thence along the northerly and westerly right-of-way line of said road, 75 feet northerly and westerly of, and parallel with, the center line of said road to a point on the E. line of sec. 8, T.10N., R.27E.W.M.;

Thence N. to the E. quarter corner of said section;

Thence W. to the S.W. corner of the E. □ of the N.E. 1/4 of sec. 12, T.10N., R.26E.W.M.;

Thence N. to the N. line of said sec. 12;

Thence W. to the N.E. corner of the N.W. 1/4 of the N.W. 1/4 of the N.W. 1/4 of sec. 11, T.10N., R.26E.W.M.;

Thence S. 660 feet;

Thence W. 660 feet to the E. line of sec. 10, T.10N., R.26E.W.M.;

Thence S. to the S.E. quarter corner of said sec. 10;

Thence W. along the E.-W. centerline of sec. 10 to the W. line of said section;

Thence N. along the W. section line to the S.E. corner of sec. 4, T.10N., R.26E.W.M.;

Thence W. along the S. line of sec. 4 and sec. 5 to the S.W. corner of the S.E. 1/4 of the S.E. 1/4 of sec. 5;

Thence N. to the S.E. corner of the N.W. 1/4 of the S.E. 1/4 of sec. 5;

Thence W. along the S. line of the N.W. 1/4 of the S.E. 1/4 to the S.W. corner of the N.W. 1/4 of the S.E. 1/4;

Thence N. to the S.E. corner of the N. □ of the N.W. 1/4;

Thence W. along the S. line of the N. □ of the N.W. 1/4 to the W. line of sec. 5;

Thence N. to the S.E. corner of sec. 31, T.11N., R.26E.W.M.;

Thence W. along the S. line of the E. □ of the S.E. 1/4 of sec. 31 to the E. line of said E. □ of the S.E. 1/4 of sec. 31;

Thence N. along the W. line of the E. □ of the S.E. 1/4 to the S.E. corner of the S.W. 1/4 of the N.E. 1/4 of sec. 31;

Thence W. along the S. line of the S.W. 1/4 of the N.E. 1/4 to the S.W. corner of the S.W. 1/4 of the N.E. 1/4;

Thence N. along the W. line of the S.W. 1/4 of the N.E. 1/4 to the S.E. corner of the N. □ of the N.W. 1/4 of said sec. 31;

Thence W. along the S. line of the N. ▯ of the N.W. 1/4 to the W. line of said sec. 31;
Thence N. along the W. line of sec. 31 to the S.E. corner of sec. 25, T.11N., R.25E.W.M.;
Thence W. along the S. line of sec. 25 to the S.W. corner of the S.E. 1/4 of the S.E. 1/4 of said sec. 25;
Thence N. along the W. line of the S.E. 1/4 of the S.E. 1/4 to the S.E. corner of the N.W. 1/4 of the S.E. 1/4;
Thence W. along the S. line of the N.W. 1/4 of the S.E. 1/4 to the S.W. corner of the N.W. 1/4 of the S.E. 1/4;
Thence N. along the W. line of the N.W. 1/4 of the S.E. 1/4 to the S.E. corner of the N.W. 1/4 of sec. 25;
Thence W. along the S. line of the N.W. 1/4 of sec. 25 to the W. line of sec 25;
Thence N. along the W. line of sec. 25 and the W. line of sec. 24 to the N. line of the S. ▯ of the S. ▯ of sec. 23;
Thence W. along the N. line of the S. ▯ of the S. ▯ of sec. 23 and the N. line of the S. ▯ of the S. ▯ of sec. 22 and the N. line of the S. ▯ of the S. ▯ of sec. 21 to the E. line of sec. 20;
Thence S. to the S.E. corner of sec. 20;
Thence W. along the S. line of sec. 20 and the S. line of sec. 19 to the S.E. corner of the S.W. 1/4 of the S.W. 1/4 of sec. 19;
Thence N. to the N.E. corner of the S.W. 1/4 of the S.W. 1/4 of sec. 19;
Thence W. to the W. line of sec. 19, all being in T.11N., R.25E.W.M.;
Thence continuing W. to the S.W. corner of the N.E. 1/4 of the S.E. 1/4 of sec. 24, T.11N., R.24E.W.M.;
Thence N. to the N.W. corner of said N.E. 1/4 of the S.E. 1/4 of sec. 24;
Thence W. to the S.W. corner of the S.E. 1/4 of the N.W. 1/4 of sec. 24;
Thence N. to the N.W. corner of said S.E. 1/4 of the N.W. 1/4 of sec. 24;
Thence W. to the W. line of sec. 24;
Thence N. to the N.W. corner of sec. 24;
Thence W. to the S.E. quarter corner of sec. 14;
Thence N. to the N.W. quarter corner of sec. 14;
Thence W. along the N. line of sec. 14 to the N.W. corner of sec. 14;
Thence N. along the W. line of sec. 11 and sec. 2 to the N.W. corner of sec. 2, all being in T.11N., R.24E.W.M., and continuing N. along the W. lines of secs., 35, 26, 23, 14, 11, and 2, all being in T.12N., R.24E.W.M.;
Thence continuing N. along the W. lines of secs. 35 and 26 in T.13N., R.24E.W.M., to the N.W. corner of sec. 26;
Thence W. along the S. line of sec. 22 to the S.E. quarter corner of sec. 22;
Thence N. along the N.-S. centerline of sec. 22 to the N.E. quarter corner of sec. 22;
Thence W. along the S. line of sec. 15 to the S.W. corner of sec. 15;
Thence N. along the W. line of sec. 15 to the S.W. corner of the N. ▯ of the N.W. 1/4 of sec. 15;
Thence E. along the S. line of the N. ▯ of the N.W. 1/4 of sec. 15 to the S.W. corner of the N.W. 1/4 of the N.E. 1/4 of sec. 15;
Thence N. along the W. line of the S.W. 1/4 of the N.E. 1/4 of sec. 15 and continuing N. along the centerline of sec. 10 to the W. navigation line of the Columbia River, following said navigation line easterly, northerly, and southerly to a point directly W. of the S. line of Tract 4 of Ringold Tracts according to the plat filed in the records of Franklin County.
Thence southerly along the said W. line of navigation to the TRUE POINT OF BEGINNING.
Also included is a parcel of land (for Environmental and Molecular Sciences Laboratory) situated in the S.W. 1/4 of sec. 14, T.10N., R.28E.W.M., Benton County, Washington, described as follows: beginning at the S.E. corner of said S.W. 1/4; thence N 01°45'22" W along the E line of said S.W. 1/4 a distance of 2640.77 feet to the N.E. corner of said S.W. 1/4; thence S 89°31'50" W along the N line of said S.W. 1/4 a distance of 961.53 feet; thence S 00°55'00" E a distance of 47.10 feet to the S margin of

Horn Rapids Road and being the True Point of Beginning; thence continuing S 00°55'00" E a distance of 1502.25 feet; thence S 89°04'36" W a distance of 430.57 feet; thence S 00°53'37" E a distance of 123.72 feet; thence S 89°43'26" W a distance of 410.23 feet; thence N 00°55'00" W a distance of 1625.69 feet to the S right of way margin of Horn Rapids Road; thence N 89°22'24" E along said S margin a distance of 840.83 feet to the True Point of Beginning.

EXCEPTING FROM THE ABOVE-DESCRIBED LAND THE FOLLOWING PARCELS, EXCLUDING that portion of the Hanford Railroad and any Hanford Site access roads which may traverse these parcels.:

PARCEL A) The N. ▯ of the N.W. 1/4, and that portion of the N.W. 1/4 of the N.E. 1/4 in sec. 14, T.13N., R.24E.W.M. in the ownership and jurisdiction of the BONNEVILLE POWER ADMINISTRATION.

PARCEL B) Sec. 1, T.11N., R.26E.W.M. in the ownership under quitclaim deed, of the STATE OF WASHINGTON.

PARCEL C) A tract of land leased to the STATE OF WASHINGTON lying in sections 7, 8, and 9, T.12N., R.26E.W.M., containing 1,000 acres more or less, more particularly described as follows: That part of the S. ▯ of said sec. 7 bounded on the W. and N. by the following described line: BEGINNING at a point on the S. line of said sec. 7, which point is S. 88° 44' 47" W. 4,515.30 feet from the S.E. corner of the sec., and at coordinates N. 438,868.46 and E. 2,222,800.00 on the Washington State Grid System, South Zone; thence N. 1,781.54 feet; thence E. 2,200.00 feet; thence N. 907.19 feet more or less to the N. line of said S. ▯ of the sec.; thence N. 88° 38' 43" E. along said line 2,275.48 feet more or less to the E. quarter corner of said sec. 7. The S. ▯ of sec. 8. The S. ▯, and the S. ▯ of the N. ▯ of sec. 9, EXCEPT that portion lying easterly of the following described line: BEGINNING at a point on the E. line of said sec. 9, which point is N. 0° 53' 09" W. 3,071.71 feet from the S.E. corner of the sec., and at coordinates N. 442,268.92 and E. 2,237,790.19 on the Washington State Grid System, South Zone; thence northwesterly along a 1,055.37 foot radius curve to the right an arc distance of 1,064.64 feet (the chord of said arc bears N. 30° 21' 08" W. 1,020.05 feet) to a point on the N. line of the S. ▯ of the N. ▯ of said sec. 9, said point being at coordinates N. 443,149.16 and E. 2,237,274.74 on the Washington State Grid System, South Zone.

Three tracts of land leased to the WASHINGTON PUBLIC POWER SUPPLY SYSTEM more particularly described as follows:

PARCEL D) a tract of land (for the Hanford Generating Plant), commencing at the S.E. corner of sec. 28, T.14N., R.26E.W.M., said point having Washington State Coordinates, South Zone, of N. 486,994.01, and E. 2,236,672.11; thence N. 72° 02' 15" W. 3,483.15 feet, thence N. 67° 11' 41" W. 1,810 feet more or less to a point on the line of ordinary high water on the right bank of the Columbia River, which point is the TRUE POINT OF BEGINNING: thence S. 67° 11' 41" E. 1,810 feet more or less to a point, having Washington State Coordinates, South Zone, of N. 488,068.19 and E. 2,233,358.73, thence N. 22° 48' 19" E. a distance of 1,595 feet to a point, having Washington State Coordinates, South Zone, of N. 489,538.48 and E. 2,233,976.96, thence N. 67° 11' 41" W. 1,108 feet more or less to a point on the line of ordinary high water on the right bank of the Columbia River, thence southwesterly along the said line of ordinary high water to the TRUE POINT OF BEGINNING, containing 53.42 acres more or less; THIS PARCEL AMENDED BY DELETING THE FOLLOWING: Beginning at the S.E. corner of the leased parcel, which point is at coordinates N. 488,068.19 and E. 2,233,358.73 on the Washington State Coordinate, South Zone; thence N. 22° 48' 19" E. 1,060 feet; thence N. 67° 11' 41" W. 200 feet; thence S. 22° 48' 19" W. 1,060 feet; thence S. 67° 11' 41" E. 200 feet to the point of beginning; containing 4.85 acres, more or less;

PARCEL E) a tract of land (for WNP Site 2), beginning at the S.W. corner of sec. 11, T.11N., R.28E.W.M., said corner having Washington State coordinates, South Zone, of N. 408,335.30 and E. 2,307,653.50, thence N. 0° 41' 08" E. 8,065.28 feet to the TRUE POINT OF BEGINNING; thence W. 11,153.57 feet; thence S. 01° 01' 23" E. 3,000.48 feet; thence S. 88° 53' 54" W. 5,200.96 feet; thence N. 0° 31' 41" W. 3,690.15 feet; thence E. 1,430.00 feet; thence N. 1,865.69 feet; thence N. 87° 46' 08" E. 3,703.83 feet; thence S. 01° 01' 23" E. 1,600.25 feet; thence E. 11,189.29 feet; thence N. 01° 01' 23" E.

1,800.29 feet; thence N. 89° 07' 55" E. 3,300.38 feet to the line of Navigation of the W. bank of the Columbia River, thence southerly along said line of Navigation to a point that bears N. 89° 15' 21" E. from the TRUE POINT OF BEGINNING; thence S. 89° 15' 21" W. 3,850.32 feet more or less to the TRUE POINT OF BEGINNING.

PARCEL F) A tract of land (for WNP Sites 1 and 4) lying in Section 4 of Township 11 North, Range 28 East, Willamette Meridian, described as follows:

Beginning at the Southwest corner of Section 11, Township 11 North, Range 28 East, W.M., (said corner being located by reference to the Washington State Coordinate System South Zone at coordinates North 408,335.30 and East 2,307,653.50) thence North 65°-17'-03" West 12113.14 feet to the TRUE POINT OF BEGINNING (said point being located by reference to the Washington State Coordinate System South Zone at coordinates North 413,400.00 and East 2,296,650.00); thence North 01°-01'-23" West 3000.48 feet to a point; thence East 5280.00 feet to a point; thence South 01°-01'-23" East 3000.48 feet to a point; thence West 5280.00 feet more or less to the TRUE POINT OF BEGINNING, containing 363.69 acres more or less; and

A parcel of land lying in Sections 3 and 4 of Township 11 North, Range 28 East, and Sections 33 and 34 of Township 12 North, Range 28 East, Willamette Meridian, described as follows:

Beginning at the Southwest corner of Section 11, Township 11 North, Range 28 East, W.M., (said corner being located by reference to the Washington State Coordinate System South Zone at coordinates North 408,335.30 and East 2,307,653.50) thence North 50°-42'-00" West 14,311.63 feet to the TRUE POINT OF BEGINNING (said point being located by reference to the Washington State Coordinate System South Zone at coordinates North 417,400.00 and East 2,296,578.57); thence North 01°-01'-23" West 3000.48 feet to a point; thence East 5,280.00 feet to a point; thence South 01°-01'-23" East 1200.19 feet to a point; thence East 5,973.57 feet to a point; thence South 1°-01'-23" West 1800.29 feet to a point; thence West 11,189.29 feet more or less to the TRUE POINT OF BEGINNING, containing 609.15 acres more or less.

PARCEL G) The parcels on the Hanford Site used but not owned by the Bonneville Power Administration including the Ashe Substation, the Hanford Substation, the Benton Switch Substation, and the White Bluffs Substation.

ASHE SUBSTATION. A parcel of land in the W. ▯ S.E. 1/4, the S.E. ▯ N.W. 1/4 and the S.W. 1/4 of Section 32, Township 12 North, Range 28 East, Willamette Meridian, Benton County, Washington, more particularly described as follows:

Commencing at a Bonneville Power Administration monument set at the intersection of the north-south and east-west base lines for the Ashe Substation Site in the S.E. 1/4 S.W. 1/4 of Section 32, Township 12 North, Range 28 East, Willamette Meridian. This monument is located N.26°49'15"E., 1503.1 feet from a 2-inch brass disc on the south line of Section 32, said disc being set by WPPSS survey of August 11, 1971. Thence N.52°10'10"E., 1200.0 feet to the true point of beginning. Thence S.37°49'50"E., 400.0 feet; thence S.52°10'10"W., 1100.0 feet; thence S.37°49'50"E., 1287.7 feet to a point on the south line of Section 32; thence S.87°46'12"W., along said south line of Section 32, a distance of 984.0 feet; thence N.37°49'50"W., 2014.8 feet; thence N.52°10'10"E., 1900.0 feet; thence S.37°49"50"E., 900.0 feet to the true point of beginning; containing 75.09 acres, more or less.

ASHE SS SOUTH CORRIDOR, PARCEL 1. A portion of Government Lot 3 of Section 5, Township 11 North, Range 28 East, Willamette Meridian, Benton County, Washington, more particularly described as follows:

Commencing at a point in Bay 3 in the Ashe Substation Site in the N.E. 1/4 S.W. 1/4 of Section 32, Township 12 North, Range 28 East, Willamette Meridian, said point being N.25°56'16"E., 1716.1 feet from a 2-inch brass disc on the south line of Section 32, said disc being set by WPPSS survey of August 11, 1971. Thence S.31°24'10"E., 553.5 feet; thence S.1°50'00"E., 1029.6 feet to a point on the north line of Section 5, Township 11 North, Range 28 East, Willamette Meridian, the true point of beginning for this description. Thence N.87°46'12"E., along said north line of Section 5, a distance of 75 feet; thence S.1°50'00"E., 1299.7 feet; thence S.88°10'00"W., 281.5 feet; thence N.1°50'00"W., 1297.6

feet to a point on said north line; thence N.87°46'12"E., along said north line, a distance of 206.5 feet to the true point of beginning.

ASHE SS SOUTH CORRIDOR, PARCEL 2. All that portion of the S.E. 1/4 S.W. 1/4 of Section 32, Township 12 North, Range 28 East, Willamette Meridian, Benton County, Washington, that lies southerly and easterly of the Ashe Substation Site and westerly of a line 75 feet easterly from and parallel with the survey line for the Bonneville Poser Administration WPPSS No. 2 Powerhouse-Ashe 500 kV line No. 2. The survey line is described, with reference to the Washington Coordinate System - South Zone, as follows:

Beginning at a point in Bay 3 in the Ashe Substation Site in the N.E. 1/4 S.W. 1/4 of Section 32, Township 12 North, Range 28 East, Willamette Meridian, at a survey Station 97+84.0, said point being N.25°56'16"E., 1716.1 feet from a 2-inch brass disc on the south line of Section 32, said disc being set by WPPSS survey of August 11, 1971. Thence S.31°24'10"E., 553.5 feet to station 92+30.5; thence S.1°50'00"E., 1029.6 feet to a point on the south line of Section 32, said point being N.87°46'12"E., 1072.1 feet from said brass disc.

ASHE-SS-AR-1. A portion of Lot 3 S.▯ N.W. 1/4, and N.W. 1/4 S.W. 1/4 of Section 5, the E. ▯ S.E. 1/4 and S.W. 1/4 S.E. 1/4 of Section 6, the N.W. 1/4 N.E. 1/4 and E. ▯ N.W. 1/4 of Section 7, Township 11 North, Range 28 East, Willamette Meridian, Benton County. Washington.

HANFORD SUBSTATION SITE. Lot 1 of Block 8, Lots 13 and 14 of Block 9, and Lot 8 of Block 10 of Hanford, according to the recorded plat thereof, and that part of Thirteenth Street lying between the northeasterly line of Tract A of Hanford, according to the recorded plat thereof and the Columbia River, and that part of Dunham Street lying southeasterly of a line connecting the northwesterly lines of Lot 8 of Block 10 and Lot 13 of Block 9 of Hanford, according to the recorded plat thereof, all in Section 25, Township 13 North, Range 27 East, Willamette Meridian Benton County, Washington, containing 2.7 acres, more or less. Subject to easement to Pacific Power & Light Company for power line and access purposes.

BENTON SWITCH SUBSTATION. A parcel of land in the N.W. 1/4 of Section 11, Township 11 North, Range 28 East, Willamette Meridian, Benton County, Washington, described with reference to the Washington Coordinate System - South Zone, as follows:

Beginning at the northwest corner of said parcel, being S.54°50'E., 1804.0 feet more or less from the northwest corner of said Section 11; thence N.49°13'45"E., 550.0 feet to the northeast corner, evidenced by a brass cap; thence S.40°46'15"E., 500.0 feet to the southeast corner, evidenced by a brass cap; thence S.49°13'45"W., 550.0 feet to the southwest corner, evidenced by a brass cap; thence N.40°46'15"W., 500.0 feet to the point of beginning. The described parcel contains 6.31 acres, of which 2.75 acres lie within the boundaries of the existing Benton Switching Station.

WHITE BLUFFS SUBSTATION. A parcel of land in Government Lots 3 and 4 and the E. ▯ S.W. 1/4 of Section 7, Township 10 North, Range 28 East, Willamette Meridian, Benton County, Washington, more particularly described as follows:

Commencing at a Bonneville Power Administration monument in said Government Lot 4 at the intersection of the east-west and north-south base lines for the White Bluffs Substation Site, said monument being N.36°45'35"E., 1623.7 feet from the southwest corner of Section 7. This corner is evidenced by a rock mound. Thence N.72°55'20"W., along the east-west base line, a distance of 500 feet to the true point of beginning. Thence N.17°04'40"E., 400 feet; thence S.72°55'20"E., 900 feet; thence S.17°04'40"W., 1060 feet, more or less, to a point 40 feet north of the centerline of Horn Rapids Road; thence N.72°55'20"W., 900 feet., thence N.17°04'40"E., 660 feet, more or less, to the true point of beginning, containing 21.90 acres, more or less.

For purposes of application of Part IV Corrective Action of the Hanford Facility Permit only, the Hanford Facility also includes PARCELS C, D, E, F, and G of the lands identified as Excepted from the ABOVE-DESCRIBED LAND, in the foregoing legal description.

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APPENDIX 2D

SOLID WASTE MANAGEMENT UNITS

APPENDIX 2D

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SOLID WASTE MANAGEMENT UNITS

The requirement to address SWMUs at a RCRA Facility was enacted as part of the HSWA to RCRA [under Section 3004(u), "Continuing Releases At Permitted Facilities"]. Section 3004(u) states:

> *"Standards promulgated under this section shall require, and a permit issued after the date of enactment of the Hazardous and Solid Waste Amendments of 1984 by the administrator or a State shall require, corrective action for all releases of hazardous waste or constituents from any solid waste management unit at a treatment, storage, or disposal facility seeking a permit under this subtitle, regardless of the time at which waste was placed in such unit. Permits...."*

Because this requirement is part of the HSWA, the EPA regulations for implementing Section 3004(u) currently are proposed under 40 CFR 264, Subpart S (264.501 through 264.560). The definition of a corrective action management unit and temporary unit were finalized on February 16, 1993. These definitions are promulgated at 40 CFR Part 264.552 and Part 264.553, respectively of 40 CFR Part 264, Subpart S.

1.0 SOLID WASTE MANAGEMENT UNITS AND KNOWN AND SUSPECTED RELEASES

Currently, over 2,000 waste management units have been identified within the Hanford Site, the majority of which are identified as SWMUs in accordance with the RCRA. These waste management units are tabulated and described in the Units Report (DOE/RL-88-30). As surveys and scoping studies are performed in support of the ongoing onsite cleanup program, additional SWMUs likely will be identified. The amount of information that currently exists for individual SWMUs varies significantly. It is intended that SWMUs be investigated in accordance with the past-practice process of the Tri-Party Agreement (refer to Chapter 2.0, Section 2.5). In support of the issuance of a Hanford Facility RCRA permit, the EPA conducted an initial RCRA Facility Assessment. If necessary, follow-on assessments, scoping studies, and investigations will be conducted in accordance with the Tri-Party Agreement to obtain additional information on currently identified SWMUs and newly identified SWMUs.

Conditions pertaining to SWMUs are contained in the HF RCRA Permit as follows: Condition II.I.1.a. of Part II (DW Portion), Part III (DW Portion), and Part IV (HSWA Portion) (refer to Chapter 2.0, Section 2.1.1.3). In support of Condition II.I.1.a. of the HF RCRA Permit (DW Portion), all known SWMUs must be identified and mapped, including any releases of dangerous waste (or constituents) from these units. Because of the number and complexity of SWMUs on the Hanford Site, the proposed approach to satisfy the requirements for identifying and updating SWMUs and releases from SWMUs uses a combination of the following:

- Hanford Waste Information Data System (WIDS)
- Units Report
- Set of SWMU topographical maps.

1.1 WASTE INFORMATION DATA SYSTEM

The WIDS is an electronic database that identifies known and reported SWMUs located within the DOE-RL controlled area (i.e., area on the Hanford Site over which DOE-RL has responsibility). The WIDS also includes other waste management units (i.e., non-SWMUs) in support of the overall cleanup mission of the Hanford Site. These non-SWMUs include one-time spills, domestic sewage sites, and structures awaiting decontamination and decommissioning. The SWMUs are clearly designated from the non-SWMUs within the WIDS. The WIDS includes the type and location of the unit, when the unit was operated, general dimensions and description, and general descriptions of waste placed in the unit to include estimated quantities of radionuclides and chemicals contained in some units. As additional

information on the SWMUs is made available, this information is entered into the WIDS. The WIDS will be used as the official listing of SWMUs for the DOE-RL controlled area. The EPA and Ecology have been provided with electronic access to the database.

As additional SWMUs are identified as a result of investigations and scoping studies conducted within the DOE-RL controlled area, the SWMUs will be entered into the WIDS, along with required information concerning the unit. A special electronic file will be maintained within the WIDS system that identifies all SWMUs that have been entered into the system within the last 30 days. This will satisfy the requirement established by Condition III.F of the HF RCRA Permit (HSWA Portion) for notification of newly identified SWMUs. A second electronic file will be maintained to show all previously entered SWMUs whose descriptive data have been modified within the last 30 days. This file will be accessible upon request. Modifications will include newly discovered information concerning releases of hazardous materials from the SWMUs.

1.2 HANFORD SITE WASTE MANAGEMENT UNITS REPORT

The Units Report (DOE/RL-88-30) provides summary information on each waste management unit contained within the WIDS. In accordance with Section 3.5 of the Tri-Party Agreement Action Plan, the Units Report is reissued in January of each year, if determined necessary by representatives of the three parties (i.e., DOE-RL, EPA, and Ecology). Each update reflects waste management units added to the database since the preceding report, along with updated information on all units.

1.3 SET OF SOLID WASTE MANAGEMENT UNITS TOPOGRAPHICAL MAP

Information on obtaining SWMU maps is contained in Appendix C of the Units Report. A topographic map of the Hanford Site is provided in Appendix 2A.

2.0 CORRECTIVE ACTIONS IMPLEMENTED

Schedules to implement any corrective actions for the DOE-RL controlled area will be developed and maintained within the Tri-Party Agreement (refer to Chapter 2.0, Section 2.5). All identified SWMUs have been assigned to operable units within the Tri-Party Agreement along with other waste management units. Newly identified SWMUs will be assigned to the appropriate operable unit via the Tri-Party Agreement change control process outlined in Chapter 12.0 of the Action Plan. Either CERCLA response action authority or RCRA corrective action authority is assigned as the prime authority for the investigation and cleanup process for each operable unit. The schedules of compliance for those assigned RCRA corrective action authority are considered as part of the HF RCRA Permit via reference to the Tri-Party Agreement. The Tri-Party Agreement change control process will be used to modify the schedules of compliance as necessary, meeting the intent of 40 CFR 270.34 (proposed). Remedy selections, either as a corrective measure or as an interim measure, will be incorporated into modifications of the HF RCRA Permit.

The schedules of compliance will include any follow-on RCRA facility assessments that might be conducted, RCRA facility investigations, corrective measure studies, and corrective measure implementations. The schedules also will include any interim measures that are identified to be conducted.

Hanford Facility RCRA Permit Modification Notification Forms
Part III, Chapter 2 and Attachment 18
305-B Storage Facility

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Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
305-B Storage Facility	Part III, Chapter 2 and Attachment 18

Description of Modification:

Hanford Facility RCRA Permit, Condition III.2.A:

III.2.A. COMPLIANCE WITH APPROVED PERMIT APPLICATION

The Permittees shall comply with all the requirements set forth in Attachment 18, including all Class 1 Modifications specified below, and the Amendments specified in Condition III.2.B. Enforceable portions of the permit application have been incorporated in Attachment 18 and are identified as follows.~~are listed below; a~~All subsections, figures, and tables included in these portions are also enforceable, unless stated otherwise:

ATTACHMENT 18:

Chapter 1.0 Part A, Form 3, Permit Application, Revision 1C, from Class 1 Modification for quarter ending September 30, 2002~~December 31, 2001~~

Chapter 2.0 Unit Description, from Class 1 modification for quarter ending September 30, 2002

~~Section 2.1.2 The 305-B Storage Unit, from Class 1 Modification for quarter ending March 31, 2001~~

~~Section 2.2.1 General Requirement, from Class 1 Mod for quarter ending March 31, 2001~~

~~Section 2.5 Performance Standard, from Class 1 Modification for quarter ending March 31, 2001~~

~~Section 2.6 Buffer Monitoring Zones, from Class 1 Modification for quarter ending March 31, 2001~~

~~Section 2.8 Manifest System, from Class 1 Modification for quarter ending March 31, 2001~~

Chapter 3.0 Waste Analysis Plan~~Characteristics~~, from Class 1 Modification for quarter ending September 30, 2002 ~~March 31, 2002~~

Chapter 4.0 Process Information, from Class 1 Modification for quarter ending September 30, 2002~~March 31, 2002~~

Chapter 6.0 Procedures to Prevent Hazards, from Class 1 Modification for quarter ending September 30, 2002~~March 31, 2002~~

Chapter 7.0 Building Emergency Procedure, from Class 1 Modification for quarter ending September 30, 2002~~June 30, 2002~~

~~Appendix 7A Building Emergency Plan for the 305-B Storage Facility, from Class 2 Modification dated June 30, 2000~~

Chapter 8.0 Personnel Training, from Class 1 Modification for quarter ending September 30, 2002~~September 30, 2001~~

Chapter 11.0 Closure and Post-Closure Requirements, from Class 1 Modification for quarter ending September 30, 2002 ~~September 30, 2000~~

Chapter 12.0 Reporting and Recordkeeping, from Class 1 Modification for quarter ending September 30, 2002~~June 30, 1999~~

Chapter 13.0 Other Relevant Laws, from Class 1 Modification for quarter ending September 30, 2002

~~Section 13.8 Toxic Substances Control Act, from Class 1 Modification for quarter ending September 30, 2000~~

~~Section 13.9 Other Requirements, from Class 1 Modification for quarter ending September 30, 2000~~

~~Appendix 2A Hanford Site and 300-Area Topographic Maps, Plates 2-2 Through 2-9, from Class 1 Modification for quarter ending September 30, 2001~~

Modification Class: [1 2 3]	Class 1	Class[1] 1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation

A. General Permit Provisions

1. Administrative and Informational changes

Submitted by Co-Operator:		Reviewed by RL Program Office:		Reviewed by Ecology:		Reviewed by Ecology:	
AK Ikenberry	9/18/02	RF Christensen	9/20/02				
A.K. Ikenberry	Date	R.F. Christensen	Date	F. Jamison	Date	L.E. Ruud	Date

[1] Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1] 1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1] 1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form	
Unit: 305-B Storage Facility	Permit Part & Chapter: Part III, Chapter 2 and Attachment 18

Description of Modification:

Chapters 2.0, 3.0, and 4.0:

In the following sections "procedure" was replaced with "activity":
Section 2.5.3.1
Section 3.2.2, paragraph 12
Section 4.1.1.2, paragraphs 1 and 2

In the following sections "procedure" was replaced with "process":
Section 3.2
Section 3.2.2

In the following sections "procedure" was replaced with "will":
Section 3.4.3, paragraph 3

In the following sections "procedure" was replaced with "methods":
Section 3.4.3, paragraph 1

In the following sections "procedure" was replaced with "manuals":
Section 4.1.1.2, paragraph 4

In the following sections "procedure" was replaced with "guidelines":
Section 4.3.2, paragraph 1 and 3

Modification Class: [1 2 3]	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation
A. General Permit Provisions
1. Administrative and Informational changes

Submitted by Co-Operator:		Reviewed by RL Program Office:		Reviewed by Ecology:		Reviewed by Ecology:	
A.K. Ikenberry	Date	R.F. Christensen	Date	F. Jamison	Date	L.E. Ruud	Date

[1] Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form	
Unit: 305-B Storage Facility	Permit Part & Chapter: Part III, Chapter 2 and Attachment 18

Description of Modification:

Chapter 2.0, Section 2.1:

2.1 THE 305-B STORAGE FACILITY

The 305-B Storage Facility is a dangerous waste and RMW storage unit owned and operated by DOE and co-operated by PNNL. The unit is used for the collection, consolidation, packaging, storage, and preparation for transport and disposal of both dangerous waste and RMW. It is an integral part of the Hanford Site's waste management system.

The 305-B Storage Facility is a one-story frame and masonry building with basement constructed in the early 1950s, with an attached two-story-high metal and concrete building constructed in January 1978, referred to in this document as the "high bay." The unit is located within the 300 Area, as shown in Figure 2-1, and was formerly used for engineering research and development. Unit upgrades were completed in 1988 to meet requirements for storage of dangerous waste and RMW. Waste storage under interim status began in March 1989.

A variety of small volume chemical wastes are generated by PNNL's research laboratory activities under contract to DOE. These wastes are brought to the 305-B Storage Facility and segregated by compatibility for storage in the unit until enough waste is accumulated to fill a labpack or bulking container, usually a 30- to 55-gallon drum. When a sufficient number of shipping containers of waste have accumulated, they are manifested for shipment, generally to permitted off-site recycling, treatment or disposal facilities.

Dangerous wastes are stored in the high bay. The high bay has been equipped with a secondary containment system to facilitate storage of containerized wastes. In addition, four storage "cells" have been constructed within the high bay area for segregated storage of incompatible waste streams. Each of the cells is approximately 14' x 14', enclosed by 4' high concrete block walls; each cell has its own separate secondary containment system. Drum-quantity storage for incompatible wastes has also been provided in separate areas of the high bay.

Radioactive mixed waste (RMW) is stored in the basement of the original wing of the building in an area approximately 18' x 32'. The RMW area is also equipped with a secondary containment berm to prevent migration of spilled wastes. Flammable RMW cannot be stored below grade (per Uniform Fire Code) and is stored in an independent area on the first floor of the original wing in individual secondary containment structures.

The 305-B Storage Facility is equipped with a heating, ventilation and air conditioning (HVAC) system to provide relatively constant temperatures during storage of dangerous wastes. The first floor of the older building and the high bay are served by a dual-compressor heat pump system for both heating and air conditioning. The basement area is served by a separate electric heating and evaporative cooling combined system. These systems are adequate to maintain interior temperatures in the range of 50-85°F during normal ambient temperatures of 10-110°F.

In addition, the unit utilizes a local exhaust system for "bulking" as described in Attachment 18, Chapter 4.0, Section 4.1.1.2. This system is located in the flammable liquid bulking module. Local exhaust ~~of 3300 CFM~~ is provided during bulking operations. Another, smaller ventilation system, referred to as the "elephant trunk ventilation system," is located in the high bay storage cell areas for occasional bulking of solids or nonflammable liquids not requiring use of the flammable liquid bulking module. ~~This system has a ventilation capacity of 1550 CFM.~~ A smaller, laboratory-style fume hood has also been installed on the south wall of the high bay for ~~compatibility~~ testing and small-volume waste work.

A simplified building layout is shown in Figure 2-2. Individual storage cells are described in Attachment 18, Chapter 4.0, Section 4.1.

Modification Class: [1 2 3]	Class 1	Class[1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation

A. General Permit Provisions

1. Administrative and Informational changes

Submitted by Co-Operator:		Reviewed by RL Program Office:		Reviewed by Ecology:		Reviewed by Ecology:	
A.K. Ikenberry	Date	R.F. Christensen	Date	F. Jamison	Date	L.E. Ruud	Date

[1] Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form	
Unit: 305-B Storage Facility	Permit Part & Chapter: Part III, Chapter 2 and Attachment 18

Description of Modification:

Chapter 2.0, Section 2.5.1:

2.5.1 Procedures for Receiving Shipments

The 305-B operations staff arranges all shipment into the 305-B Storage Facility. Once approval has been reached through the waste operations staff, transportation will be arranged or coordinated by waste operations.

If transport will be over public roadways or highways, a Uniform Hazardous Waste Manifest will be prepared. The shipment will be compared to the manifest upon arrival at the 305-B Storage Facility. If any discrepancies are noted refer to Section 2.5.2. If the shipment is accepted the manifest will be signed, drums counted, and placed into a proper storage location within the facility. The shipment will then be entered in the electronic database noting the date of receipt and storage location. If generated from a non-PNNL facility, a copy of the manifest will be returned to the generating facility within 30-days of receipt at the 305-B Storage Facility. All PNNL copies of the manifest will be kept in the operating record at the 305-B Storage Facility.

~~The following are procedures used prior to transport of wastes to the 305-B Storage Facility. First, the generator must submit a Chemical Disposal/Recycle Request form to the Waste Management Section. An example of a Chemical Disposal/Recycle Request form is shown in Figure 2-5. This request form is then reviewed and either approved or rejected. Typical causes of rejection include missing or insufficient information in any of the data fields, or lack of specific information on waste composition. Waste information required to treat, store, or dispose of the waste is noted in Figure 2-5. Upon approval, the Waste Management Section reviews the form to determine the dangerous waste designation, waste compatibility class for storage, and containerization and labeling requirements.~~

~~The waste is then inspected at the generating unit by the Waste Management Section to verify the information contained on the request form, such as number, sizes, and types of containers, location of waste, etc., and to check for proper containerization of waste. If discrepancies are noted during the inspection, the waste will not be picked up by the Waste Management Section. Typical discrepancies include waste not as described on request form or lack of supporting data to verify waste characteristics. In such cases, deficiencies will be explained to the generating unit responsible person, who will then be responsible for correcting them.~~

~~If the waste is found to be acceptable for transport, Waste Management staff will check to ensure required labels are in place, and transport (or arrange for transport of) the waste to 305-B Storage Facility. If transport will be over public roadways or highways, a Uniform Hazardous Waste Manifest will be prepared identifying PNNL as the transporter and 305-B Storage Facility as the receiving TSD unit. A copy of all such manifests is returned to the generating unit within 30 days of receipt at 305-B Storage Facility. A copy of the manifest is also retained at 305-B Storage Facility.~~

	Class 1	Class[1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation

B. General Permit Provisions

1. Administrative and Informational changes

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:	Reviewed by Ecology:
A.K. Ikenberry Date	R.F. Christensen Date	F. Jamison Date	L.E. Ruud Date

[1] Class 1 modifications requiring prior Agency approval.

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[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form	
Unit: 305-B Storage Facility	Permit Part & Chapter: Part III, Chapter 2 and Attachment 18

Description of Modification:

Chapter 3.0, Section 3.1:

3.1 CHEMICAL, BIOLOGICAL, AND PHYSICAL ANALYSIS [C-1]

The dangerous waste and RMW stored at 305-B Storage Facility can be categorized as originating from five basic sources:

- Listed Waste from specific and nonspecific sources
- Discarded commercial chemical products
- Waste from research activities using radioactive isotopes
- Waste from chemicals synthesized or created in research laboratories
- Discarded commercial products exhibiting dangerous waste characteristics and/or criteria.

Each of these waste categories is discussed below, including waste descriptions, hazard characteristics, and bases for hazard designations. This information includes that which must be known to treat, store, or dispose of the waste, as required under WAC 173-303-806(4)(a)(ii).

Listed Waste from Specific and Nonspecific Sources. Waste from specific and nonspecific sources consist of those listed waste identified in WAC 173-303-9904. Attachment 18, Chapter 1.0, Part A, Form 3, identifies the waste from this category with their estimated annual management quantities.

Halogenated and nonhalogenated solvents are in the form of spent solvents. Degreasing solvents (F001), as well as spent halogenated solvents (F002), are used primarily in research although some commercial applications do exist (e.g., printing, duplicating). Spent non-halogenated solvents (F003, F004, and F005) also come primarily from research laboratories, although some is generated through maintenance applications. Manufacturing activities are not performed at Hanford; therefore, dangerous waste from specific sources (WAC 173-303-9904 "K" Waste) typically are not generated at PNNL. However, small quantities of K-listed waste have been generated from treatability studies and sample characterization activities at PNNL from time to time and could be stored at 305-B Storage Facility. W001 state source waste (PCB electrical equipment waste) has been generated in limited amounts in the past and could be stored at 305-B Storage Facility if other generation activities occur.

F-listed waste is designated on the basis of process knowledge (i.e., information from container labels or material safety data sheets), or by sampling. Sampling is performed if the generating unit does not have sufficient information to document the composition and characteristics of the waste. The waste generator is responsible for specifying the characteristics of the waste on the basis of knowledge of the chemical products used (i.e., information supplied by the manufacturer) and the process generating the waste. These listed waste are all designated as dangerous waste (DW) or extremely hazardous waste (EHW) based on the criteria given in WAC 173-303-100. ~~Waste F027 is designated as an LDR waste under 40 CFR 268.31 (dioxin-containing waste).~~

~~Waste code W001 is assigned to wastes meeting the criteria given in WAC 173-303-9904 and not exempted by WAC 173-303-071(3)(k).~~

Modification Class: [1 2 3]	Class 1	Class[1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation

C. General Permit Provisions

1. Administrative and Informational changes

Submitted by Co-Operator:		Reviewed by RL Program Office:		Reviewed by Ecology:		Reviewed by Ecology:	
[signature]	9-17-02	RF Christensen	9/20/02				
A.K. Ikenberry	Date	R.F. Christensen	Date	F. Jamison	Date	L.E. Ruud	Date

[1] Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form	
Unit: 305-B Storage Facility	Permit Part & Chapter: Part III, Chapter 2 and Attachment 18

Description of Modification:

Chapter 3.0, Section 3.1:

Discarded Chemical Products Exhibiting Dangerous Waste Characteristics and/or Criteria. Many discarded chemical products handled in 305-B Storage Facility are not listed in WAC 173-303-9903 and are still considered dangerous waste since they exhibit at least one dangerous waste characteristic and/or criterion (WAC 173-303-090 and WAC 173-303-100). These wastes are included with those listed in the Attachment 18, Chapter 1.0, Part A, Form 3, under waste codes D001 through D043, WT01, WT02, WP01, WP02, and WP03. ~~These containers typically consist of glass and polyethylene jars or bottles and metal cans that have a maximum volume of 4 liters.~~

Modification Class: [1 2 3]	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation

A. General Permit Provisions

1. Administrative and Informational changes

Submitted by Co-Operator:		Reviewed by RL Program Office:		Reviewed by Ecology:		Reviewed by Ecology:	
A.K. Ikenberry	Date	R.F. Christensen	Date	F. Jamison	Date	L.E. Ruud	Date

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Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
305-B Storage Facility	Part III, Chapter 2 and Attachment 18

Description of Modification:

Chapter 3.0, Section 3.2.2:

Notification for Storing of Waste: The waste analysis process begins when the waste management organization is notified of the presence of a chemical or mixed waste. This notification is accomplished by the generating unit completing and transmitting a electronic Disposal Request. The form describes the volume and chemical composition of waste in each waste container for disposal. Hazard and compatibility information are obtained for each item on the disposal request form to ensure the safety of the waste management organization staff that collect and transport the waste and to ensure safe and appropriate storage in 305-B Storage Facility.

The compatibility and hazard class are determined using reference material that may include, Condensed Chemical Dictionary, Merck Index, 49 CFR, NIOSH, Sigma-Aldrich or any other reference material that is applicable. The priority of hazard designation for those substances with multiple hazards or for mixtures is the same used by the DOT in 49 CFR 173.2. ~~(DOT 2000) as shown below:~~

~~1) Radioactive material~~
~~2) Poison A~~
~~3) Flammable gas~~
~~4) Nonflammable gas~~
~~5) Flammable liquid~~
~~6) Oxidizer~~
~~7) Flammable solid~~
~~8) Corrosive material (liquid)~~
~~9) Poison B~~
~~10) Corrosive material (solid)~~
~~11) Irritating materials~~
~~12) Combustible liquid (exceeding 110 gal)~~
~~13) Other Regulated Material (ORM) B~~
~~14) ORM-A~~
~~15) Combustible liquid (less than 110 gal)~~
~~16) ORM-E.~~

Disposal Requests and other information used for determining waste designations and compatibility must meet four distinct needs of the dangerous waste manager and sample collector. They must enable each to:

- Identify those waste which are designated dangerous in accordance with WAC 173-303 and whether those waste are DW or EHW
- Determine whether the waste is restricted from land disposal under 40 CFR 268 or WAC 173-303-140 and, as whether it, complies with applicable treatment standards under 40 CFR 268 or WAC 173-303-140
- Identify and verify specific morphological characteristics of waste in solid or solution form

Outline how to safely handle, transport, analyze, store, and dispose of the waste product or sample.

Modification Class: [1 2 3]	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation

A. General Permit Provisions
1. Administrative and Informational changes

Submitted by Co-Operator:		Reviewed by RL Program Office:		Reviewed by Ecology:		Reviewed by Ecology:	
A.K. Ikenberry	Date	R.F. Christensen	Date	F. Jamison	Date	L.E. Ruud	Date

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Hanford Facility RCRA Permit Modification Notification Form	
Unit: 305-B Storage Facility	Permit Part & Chapter: Part III, Chapter 2 and Attachment 18

Description of Modification:

Chapter 3.0, Section 3.2.2:

Labeling and Marking. After inspection of the waste at the generating unit, the approved waste are assigned a unique computer identification number and hazard classification. ~~The waste containers are then marked and labeled in compliance with WAC 173-303-190 (DOT marking and labeling), and Washington "Hazardous Waste" markings.~~ Waste meeting Washington dangerous waste criteria under WAC 173-303-090 or 173-303-100 are marked "Toxic" (for waste designated WT01 or WT02), and/or "Persistent" (for waste designated WP01, WP02, or WP03), in accordance with WAC 173-303-630(3). In addition, each waste container is labeled with a list of constituents and major risk(s)~~/or an appropriate hazard description~~. The containers are also labeled indicating ~~compatibility group and~~ cell location, and with a unique computer-generated identification number created by the tracking system described below. This computerized information helps the waste handlers ensure safe handling, storage, retrieval and transportation of dangerous waste.

Transportation. The labeled containers are transported to 305-B Storage Facility by PNNL staff trained in applicable DOT requirements and emergency response. Waste is transported using a truck or light utility vehicle. For transport on roads accessible to the public, the vehicles are placarded in compliance with DOT regulations and documented in compliance with WAC 173-303-180, Hanford Facility Permit Conditions II.P. and/or II.Q as applicable.

Waste Handling, Storage, and Tracking at 305-B Storage Facility. Waste received at 305-B Storage Facility is put into 14 separate hazard classifications based on building and fire code restrictions for that type of facility:

1. Non-flammable RMW
2. Oxidizers
3. Acids, (organic and inorganic)
4. Poison
5. Caustics
6. Flamable Solids
7. Non-Regulated
8. Miscellaneous
9. Washington State only waste (e.g., sodium chloride, sodium bicarbonate)
10. Flammable and combustible liquids
11. Flammable and combustible RMW
12. Compressed gases and aerosols
13. Special Case waste (organic peroxides, explosives, etc.)
14. Recycle

Modification Class: [1 2 3]	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation

A. General Permit Provisions

1. Administrative and Informational changes

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:	Reviewed by Ecology:
A.K. Ikenberry Date	R.F. Christensen Date	F. Jamison Date	L.E. Ruud Date

[1] Class 1 modifications requiring prior Agency approval.

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Hanford Facility RCRA Permit Modification Notification Form	
Unit: 305-B Storage Facility	Permit Part & Chapter: Part III, Chapter 2 and Attachment 18

Description of Modification:

Chapter 3.0, Section 3.2.2:

Recordkeeping and Inventory Control. A computer tracking system has been developed to ensure that complete records of current inventory, packaging, and shipping data are maintained. Records of the initial waste disposal request ~~form~~, waste analysis results if required, waste designation, and shipping manifest are maintained. As waste are received for disposal, the containers are labeled with the information described in the Labeling and Marking section above, including a unique computer identification number. ~~This number is also written on the disposal request form. The label information is then entered into the computerized database, along with the storage location within 305-B Storage Facility~~.

The endpoint of the process for most waste is proper packaging and transport of the waste to an approved recycler or treatment/disposal facility. Some commercial chemical products, however, are redistributed to other Hanford Site contractors, as described in Section 10.4. Final computer verification of the history and ultimate disposal of each waste container is entered when the material is shipped from the 305-B Storage Facility.

Current waste quantities in inventory are periodically verified and reported to the Unit Operations Supervisor. The inventory is checked by hazard class and provides a measure of current inventory versus established limits.

If it is determined that 305-B Storage Facility inventory is within 5 percent of the limit for a given hazard classification, additional waste of that hazard class is not accepted into 305-B Storage Facility until the inventory has been reduced. Exceptions must be approved by the unit operating supervisor.

Modification Class: [1 2 3]	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation

A. General Permit Provisions

1. Administrative and Informational changes

Submitted by Co-Operator:		Reviewed by RL Program Office:		Reviewed by Ecology:		Reviewed by Ecology:	
[signature]	9-18-02	RF Christensen	9/20/02				
A.K. Ikenberry	Date	R.F. Christensen	Date	F. Jamison	Date	L.E. Ruud	Date

[1] Class 1 modifications requiring prior Agency approval.

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Hanford Facility RCRA Permit Modification Notification Form	
Unit: 305-B Storage Facility	Permit Part & Chapter: Part III, Chapter 2 and Attachment 18

Description of Modification:

Chapter 3.0, Section 3.3.1:

If the sample data observed meets the parameters specified in its documentation, confirmation of designation is complete and the waste may be accepted. If not, the waste is rejected and returned to the generating unit for additional characterization. The waste will be required to be resubmitted with a revised Disposal Request following the additional characterization activity.

When mathematically possible, the Permittees shall perform confirmation on an equal number of Category I and Category II containers.

Category II. If a representative sample is not easily obtained (for example, discarded machinery or shop rags), or if the waste is a labpack or discarded laboratory reagent container, the following steps will be performed:

a. Visually verify the waste. Examine each selected container to ensure that it matches the data provided on the Disposal Request form(s) provided to document the waste. Labpacks and combination packages that are accepted from non-PNNL generators must be removed from the outer container. If the waste matches the description specified in its documentation, confirmation of designation is complete and the waste may be accepted. If not, the waste is rejected and returned to the generating unit, and the generating unit revises and resubmits the documentation to reflect the actual contents. If necessary, the waste shall be re-designated utilizing the designation methods identified in WAC 173-303-070 through 173-303-100."

Wastes must be analyzed using the Toxicity Characteristic Leaching Procedure (TCLP) in accordance with Appendix II of 40 CFR 261, as amended, in order to provide sufficient information for proper management and for decisions regarding LDR pursuant to 40 CFR 268.

Modification Class: [1 2 3]	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

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   1. Administrative and Informational changes

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[signature]	9-17-02	RF Christensen	9/20/02				
A.K. Ikenberry	Date	R.F. Christensen	Date	F. Jamison	Date	L.E. Ruud	Date

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Hanford Facility RCRA Permit Modification Notification Form	
Unit: 305-B Storage Facility	Permit Part & Chapter: Part III, Chapter 2 and Attachment 18

Description of Modification:

Chapter 3.0, Section 3.3.1:

Category I. If a waste, which easily yields a representative sample is received, a representative sample will be taken from the waste containers selected. If more than one phase is present, each phase must be tested individually. The following field tests will be performed as appropriate for the waste stream:

- Reactivity - ~~HAZCAT™~~-oxidizer, cyanide, and sulfide tests. These tests will not be performed on materials known to be organic peroxides, ethers, and/or water reactive compounds.
- Flashpoint/explosivity - by ~~HAZCAT™~~ flammability procedure, explosive atmosphere meter[1], or a closed cup flashpoint measurement instrument[1].
- pH - by pH meter[1] or pH paper (SW-846-9041)[2]. This test will not be performed on non- aqueous materials.
- Halogenated organic compounds~~ by Chlor-D-Tect™ kits~~.

Volatile organic compounds - by photo or flame ionization tester[1], by gas chromatography with or without mass spectrometry, or by melting point and/or boiling point determination.

Modification Class: [1 2 3]	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation

A. General Permit Provisions

1. Administrative and Informational changes

Submitted by Co-Operator:		Reviewed by RL Program Office:		Reviewed by Ecology:		Reviewed by Ecology:	
A.K. Ikenberry	Date	R.F. Christensen	Date	F. Jamison	Date	L.E. Ruud	Date

[1] These instruments are field calibrated or checked for accuracy daily when in use.

[2] The pH paper must have a distinct color change every 0.5 pH units and each batch of paper must be calibrated against certified pH buffers, or by comparison with a pH meter calibrated with certified pH buffers.

[1] Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

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Hanford Facility RCRA Permit Modification Notification Form	
Unit: 305-B Storage Facility	Permit Part & Chapter: Part III, Chapter 2 and Attachment 18

Description of Modification:

Chapter 3.0, Section 3.3.2:

3.3.2. Criteria and Rational for Parameter Selection

Waste-testing methods, parameters and the rationale for these parameters are summarized in Table 3-1. Waste testing methods and references to these methods are as specified in WAC 173-303-110(3) or approved by Ecology in accordance with WAC 173-303-110(5). These methods are summarized in Table 3-1. All methods are specified in *Chemical Testing Methods*, WDOE 83-13 (Ecology 1983) and/or *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, EPA SW-846 (EPA 1986).

Testing parameters for each type of waste were selected to obtain data sufficient to designate the waste properly under WAC 173-303-070, meet requirements for Land Disposal Restrictions, and to manage the waste properly. If information on the source of the waste is available, then all parameters might not be required, e.g., exclusion of testing for pesticides from a metal-machining operation.

Some of the parameters that are considered for waste received at the 305-B Storage Facility are as follows.

- Physical description – used to determine the general characteristics of the waste. This facilitates subjective comparison of the sampled waste with previous waste descriptions or samples. Also, a physical description is used to verify the observational presence or absence of free liquids.
- pH – used to identify the pH and corrosive nature of an aqueous or solid waste, to aid in establishing compatibility strategies, and to indicate if the waste is acceptable for treatment and/or storage in the 325 HWTUs.
- Cyanide – used to indicate whether the waste produces hydrogen cyanide upon acidification below pH 2.
- Sulfide screen – used to indicate if the waste produces hydrogen sulfide upon acidification below pH 2.
- Halogenated hydrocarbon content screen – used to indicate whether chlorinated hydrocarbons or polychlorinated biphenyls (PCBs) are present in waste and to determine if the waste needs to be managed in accordance with the regulations prescribed in the *Toxic Substance Control Act of 1976*.
- Ignitability – used to identify waste that must be managed and protected from sources of ignition or open flame.

~~HAZCAT™~~ ~~t~~Testing tests – used to determine waste characteristics and verify generator knowledge. The testing procedures for each ~~HAZCAT™~~ test are included in the ~~HAZCAT™~~ appropriate test kit.

Modification Class: [1 2 3]	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation

A. General Permit Provisions
   1. Administrative and Informational changes

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:	Reviewed by Ecology:
[signature] 9-19-02	RF Christensen 9/20/02		
A.K. Ikenberry Date	R.F. Christensen Date	F. Jamison Date	L.E. Ruud Date

[1] Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form	
Unit: 305-B Storage Facility	Permit Part & Chapter: Part III, Chapter 2 and Attachment 18

Description of Modification:

Chapter 3.0, Section 3.7.1:

3.7.1. Procedures for Receiving Waste From off-site Generators

Most of the waste stored at 305-B Storage Facility is generated on the Hanford Site and/or by PNNL research programs within the 300 Area. Additional requirements for waste generated outside the 300 Area include proper manifesting (if appropriate) to 305-B Storage Facility and proper packaging for transport over public roadways. Although PNNL waste generated outside of the 300 Area is considered to be generated offsite since it may be transported to 305-B Storage Facility on roads accessible to the public, it is under the same administrative controls as waste that are generated onsite (i.e., in the 300 Area).

The generator is responsible for identifying waste composition accurately and PNNL waste operations will arrange ~~ing~~ for the transport of the waste. The 305-B Storage Facility maintains a copy of any pertinent operating record in accordance with WAC 173-303 and the time frames described in Attachment 33, Chapter 12 of the Hanford Facility RCRA Permit, Dangerous Waste Portion, General Information Portion.) The waste-tracking methods are as follows.

Modification Class: [1 2 3]	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation

A. General Permit Provisions

1. Administrative and Informational changes

Submitted by Co-Operator:		Reviewed by RL Program Office:		Reviewed by Ecology:		Reviewed by Ecology:	
A.K. Ikenberry	Date	R.F. Christensen	Date	F. Jamison	Date	L.E. Ruud	Date

[1] Class 1 modifications requiring prior Agency approval.

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Hanford Facility RCRA Permit Modification Notification Form	
Unit: 305-B Storage Facility	Permit Part & Chapter: Part III, Chapter 2 and Attachment 18

Description of Modification:

Chapter 3.0, Table 3-1:

Cyanides	Cyanide screen ~~HAZCAT™~~	Ensure that waste matches that described on waste acceptance documentation; ensure compliance with WAC 173-303-395(1)(b)
Sulfides	Sulfide screen ~~HAZCAT™~~	Ensure that waste matches that described on waste acceptance documentation; ensure compliance with WAC 173-303-395(1)(b)

Modification Class: [1,2,3]	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation

A. General Permit Provisions

1. Administrative and Informational changes

Submitted by Co-Operator:		Reviewed by RL Program Office:		Reviewed by Ecology:		Reviewed by Ecology:	
A.K. Ikenberry	Date	R.F. Christensen	Date	F. Jamison	Date	L.E. Ruud	Date

[1] Class 1 modifications requiring prior Agency approval.

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Hanford Facility RCRA Permit Modification Notification Form	
Unit: 305-B Storage Facility	Permit Part & Chapter: Part III, Chapter 2 and Attachment 18

Description of Modification:

Chapter 4.0, Section 4.1.1.8:

4.1.1.8 Removal of Liquids from Containment System

Upon discovery of liquid accumulation in the containment resulting from a spill or other release, the BED must be contacted in accordance with the 305-B Storage Facility contingency plan (Attachment 18, Chapter 7.0). The BED may determine that the contingency plan should be implemented. If the incident is minor, and the BED approves, removal of the liquids will commence immediately following a safety evaluation. Appropriate protective clothing and respiratory protection will be worn during removal activities; a PNNL industrial hygienist may be contacted to determine appropriate personnel protection requirements and any other safety requirements that may be required, such as chemical testing or air monitoring. In addition, ventilation of the spill-impacted area may be performed if determined to be safe and if appropriate monitoring of the air discharge(s) is performed.

Spills are normally contained either within the storage cabinet, within the cell, or within a secondary containment trench or berm as described in Section 4.1.1.5. In any case, spilled material will be recovered to the extent possible by pumping recovered liquids with a pump made of nonreactive materials (either steel or PVC) to intact containers selected in accordance with the container criteria in WAC 173-303-190 ~~selection procedure in Section 4.1.1.1~~. Nonrecoverable liquids will be absorbed with an appropriate absorbent (after appropriate chemical reaction to neutralize reactivity in the case of reactive waste, or neutralization in the case of corrosive materials); refer to Table 6.2 for list of available materials for this purpose. The absorbent material will then be recovered and placed in a container selected in accordance with Section 4.1.1.1, using nonsparking shovels in the case of ignitable waste. The floor, cabinets and any other impacted containers may be cleaned with dry rags, soap and water, or a compatible solvent if necessary to remove external contamination. Contaminated rags and other cleanup material will be disposed of in an appropriate manner. Verification sampling shall be carried out in accordance with Section 11.1.4.4. (Methods for sampling and testing to demonstrate success of decontamination).

Modification Class: [1 2 3]	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation

B. General Permit Provisions

1. Administrative and Informational changes

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:	Reviewed by Ecology:
Ann Ikenberry 9-17-02	RF Christensen 9/20/02		
A.K. Ikenberry Date	R.F. Christensen Date	F. Jamison Date	L.E. Ruud Date

[1] Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

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Hanford Facility RCRA Permit Modification Notification Form	
Unit: 305-B Storage Facility	Permit Part & Chapter: Part III, Chapter 2 and Attachment 18

Description of Modification:

Chapter 6.0, Section 6.4.1:

6.4.1 Unloading Operations

Procedures have been developed at 305-B Storage Facility to prevent hazards and minimize the potential for breakage, punctures, or the accidental opening of containers during waste unloading. All waste unloading is performed inside the 305-B Storage Facility. The large bay door is opened and the appropriate transporting vehicle (usually a pickup truck) is driven inside. As described in Section 4.1.1.3, the unloading area has secondary containment. By unloading all waste inside the fully contained facility, spills during unloading operations will be contained. Procedures for unloading and transferring waste to storage areas have been designed to minimize hazards. All waste is inspected prior to shipment to 305-B Storage Facility to ensure that they are in appropriate containers and that the containers are in good condition. Inspection of containers prior to acceptance at 305-B Storage Facility minimizes the potential for spills during unloading operations. The potential for spills during waste handling is minimized through the use of appropriate container handling equipment. Large waste items such as drums of nonflammable RMW are lowered into the basement of the facility ~~for storage using an overhead crane or winch assembly~~. The containers are immediately transported, via a hand lift, into the appropriate storage location. ~~Forklifts may also be used to unload heavy waste items.~~ Small waste items can be unloaded by hand. Each small waste item is removed from the secondary containment unit in which it was transported (i.e., plastic storage tub) and placed in the appropriate storage location.

Modification Class: [1,2,3]	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation

A. General Permit Provisions
   1. Administrative and Informational changes

Submitted by Co-Operator:		Reviewed by RL Program Office:		Reviewed by Ecology:		Reviewed by Ecology:	
A.K. Ikenberry	Date	R.F. Christensen	Date	F. Jamison	Date	L.E. Ruud	Date

[1] Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification
Part III, Chapter 2 and Attachment 18
305-B Storage Facility

Replacement Chapters

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ATTACHMENT 18

305-B STORAGE FACILITY

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4

1.0 PART A, FORM 3, DANGEROUS WASTE PERMIT

The following is a chronology of the regulatory history of the 305-B Storage Facility.

- In December 1990, the Part A, Form 3, Revision 1 was submitted to the Washington State Department of Ecology (Ecology). The revision fulfilled requirements of 40 CFR 270.72 for new TCLP waste numbers D018 through D043 and WAC 173-303-805 for newly added waste numbers D012 through D017.
- On June 30, 1998, the Part A, Form 3, Revision 1A deleted dangerous waste numbers WC01 and WC02 and added dangerous waste number WSC2.
- On December 31, 2001, the Part A, Form 3, Revision 1B was revised for the following dangerous waste numbers that have been eliminated in accordance with Federal Register's (FR) 50 FR 51125, 62 FR 32977, and Washington Administrative Code 173-303: P019, P025, P032, P035, P052, P053, P055, P061, P079, P080, P083, P086, P090, P091, P100, P107, P117, U013, U040, U054, U065, U100, U104, U139, U175, U195, U198, U199, U212, U224, U229, U230, U231, U232, U233, U241, U242, U245. The following dangerous waste numbers have been added in accordance with Federal Register's (FR) 50 FR 51125, 62 FR 32977, and Washington Administrative Code 173-303: P127, P128, P185, P188, P189, P190, P191, P192, P194, P196, P197, P198, P199, P201, P202, P203, P204, P205, U271, U278, U279, U280, U364, 367, U372, U373, U387, U389, U394, U395, U404, U409, U410, U411, K013, K044.
- On September 30, 2002, the Part A, Form 3, Revision 1C was submitted as Chapter 1.0 of Attachment 18 to the Hanford Facility RCRA Permit. No changes were made to the Part A, Form 3.

FORM 3	DANGEROUS WASTE PERMIT APPLICATION	I. EPA/State I.D. No.
		W A 7 8 9 0 0 0 8 9 6 7

FOR OFFICIAL USE ONLY

Application Approved	Date Received (month/ day / year)	Comments

II. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below (mark one box only) to indicate whether this is the first application you are submitting for your facility or a revised application. If this is your first application and you already know your facility's EPA/STATE I.D. Number, or If this is a revised application, enter your facility's EPA/STATE I.D. Number in Section I above.

A. First Application (place an "X" below and provide the appropriate date)

☐ **1. Existing Facility** (See instructions for definition of "existing" facility. Complete item below.)

MO	DAY	YEAR
03	22	1943

*For existing facilities, provide the date (mo/day/yr) operation began or the date construction commenced. (use the boxes to the left)

*The date construction of the Hanford Facility commenced

☐ **2. New Facility** (Complete item below.)

MO	DAY	YEAR

For new facilities, provide the date (mo/day/yr) operation began or is expected to begin

B. Revised Application (Place an "X" below and complete Section I above)

☒ **1. Facility has an interim Status Permit**

☒ **2. Facility has a Final Permit**

III. PROCESSES – 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. Ten lines are provided for entering codes. If more lines are needed, enter the codes(s) in the space provided. If a process will be used that is not included in the list of codes below, then describe the process (including its design capacity) in the space provided on the (Section III-C).

B. Process Design Capacity – For each code entered in column A enter the capacity of the process.

1. Amount – Enter the amount.
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.

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
STORAGE:		
Container (barrel, drum, etc.)	S01	Gallons or liters
Tank	S02	Gallons or liters
Waste pile	S03	Cubic yards or cubic meters
Surface impoundment	S04	Gallons or liters
	S06	Cubic yards or cubic meters*
DISPOSAL:		
Injection well	D80	Gallons or liters
Landfill	D81	Acre-feet (the volume that would cover one acre to a Depth of one foot) or hectare-meter
Land application	D82	Acres or hectares
Ocean disposal	D83	Gallons per day or liters per day
Surface impoundment	D84	Gallons or liters
TREATMENT:		
Tank	T01	Gallons per day or liters per day
Surface impoundment	T02	Gallons per day or liters per day
Incinerator	T03	Tons per hour or metric tons per hour; gallons per hour or liters per hour
Other (use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided; Section III-C.)	T04	Gallons per day or liters per day

Unit of Measure	Unit of Measure Code	Unit of Measure	Unit of Measure Code	Unit of Measure	Unit of Measure Code
Gallons	G	Liters Per Day	V	Acre-Feet	A
Liters	L	Tons Per Hour	D	Hectare-Meter	F
Cubic Yards	Y	Metric Tons Per Hour	W	Acres	B
Cubic Meters	C	Gallons Per Hour	E	Hectares	Q
Gallons Per Day	U	Liters Per Hour	H		

*Add per request of Washington State Department of Ecology (01/2001)

III. PROCESS – CODES AND DESIGN CAPACITIES (continued)

Example for Completing Section III (shown in line numbers X-1 and X-2 below): A facility has two storage tanks; one tank can hold 200 gallons and the other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

Line No.	A. Process Code *(from list above)*			B. process Design Capacity				For Official Use Only			
				1. Amount *(Specify)*	2. Unit of Measure *(enter code)*						
X-1	*S*	*0*	*2*	*600*		*G*					
X-2	*T*	*0*	*3*	*20*		*E*					
1	S	0	1	30,000		G					
2											
3											
4											
5											
6											
7											
8											
9											
10											

C. Space for additional process codes or for describing other process (code "T04"). For each process entered here include design capacity.

S01

The 305-B Storage Facility is a waste assembly area that services Research and Development operations as a 300 Area satellite storage area. Wastes are brought in the facility for storage, repackaging, and/or waste consolidation in mostly 55-gallon drums. The storage design capacity is 30,000 gallons.

RMW is stored as received in storage cells in the basement of the facility. Other waste is stored in segregated cells in the high bay area..

IV. DESCRIPTION OF DANGEROUS WASTES

A. Dangerous Waste Number – Enter the digit number from Chapter 173-303 WAC for each listed dangerous waste you will handle. If you handle dangerous wastes, which are not listed in Chapter 173-303 WAC, enter the four-digit number(s) that describes the characteristics and/or the toxic contaminants of those dangerous wastes.

B. Estimated Annual Quantity - For each listed waste entered in column A, estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in column A, estimate the total annual quantity of all the non-listed waste(s) that will be handled which possess that characteristic or contaminant.

C. Unit of Measure - For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate odes are:

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE
Pounds	P	Kilograms	K
Tons	T	Metric Tons	M

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure taking into account the appropriate density or specific gravity of the waste.

D. Processes

1. Process Codes:

   For listed dangerous waste: For each listed dangerous waste entered in column A select the code(s) from the list of process codes contained in Section III to indicate how the waste will be stored, treated, and/or disposed of at the facility.

   For non-listed dangerous wastes: For each characteristic or toxic contaminant entered in Column A, select the code(s) from the list of process codes contained in Section III to indicate all the processes that will be used to store, treat, and/or dispose of all the non-listed dangerous wastes that possess that characteristic or toxic contaminant.

   Note: Four spaces are provided for entering process codes. If more are needed: (1) Enter the first three as described above; (2) Enter "000" in the extreme right box of item IV-D(1); and (3) Enter in the space provided on page 4, the line number and the additional code(s).

2. Process Description: If a code is not listed for a process that will be used, describe the process in the space provided on the form.

   NOTE: DANGEROUS WASTES DESCRIBED BY MORE THAN ONE DANGEROUS WASTE NUMBER - Dangerous wastes that can be described by more than one Waste Number shall be described on the form as follows:

   1. Select one of the Dangerous Waste Numbers and enter it in column A. On the same line complete columns B, C, and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.
   2. In column A of the next line enter the other Dangerous Waste Number that can be used to describe the waste. In column D(2) on that line enter "Included with above" and make no other entries on that line.
   3. Repeat step 2 for each other Dangerous Waste Number that can be used to describe the dangerous waste.

   Example for completing Section IV (shown in line numbers X-1, X-2, X-3, and X-4 below) - A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non-listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste.

Line No.	A. Dangerous Waste No. *(enter code)*				B. Estimated Annual Quantity of Waste	C. Unit of Measure *(enter code)*			D. Processes				
									1. Process Codes *(enter)*				2. Process Description *(if a code is not entered in D(1))*
X-1	*K*	*0*	*5*	*4*	*900*		*P*		*T03*	*D80*			
X-2	*D*	*0*	*0*	*2*	*400*		*P*		*T03*	*D80*			
X-3	*D*	*0*	*0*	*1*	*100*		*P*		*T03*	*D80*			
X-4	*D*	*0*	*0*	*2*					*T03*	*D80*			*Included with above*

Photocopy this page before completing if you have more than 26 wastes to list.

I.D. Number *(enter from page 1)*	
W A 7 8 9 0 0 0 8 9 6 7	

IV. DESCRIPTION OF DANGEROUS WASTES *(continued)*

Line No.	A. Dangerous Waste No. *(enter code)*				B. Estimated Annual Quantity of Waste	C. Unit of Measure *(enter code)*			D. Processes				
									1. Process Codes *(enter)*				2. Process Description *(if a code is not entered in D(1))*
1	D	0	0	1	20,000		K		S01				
2	D	0	0	2	5,000		K		S01				
3	D	0	0	3	1000		K		S01				
4	D	0	0	4	1000		K		S01				
5	D	0	0	5	1000		K		S01				
6	D	0	0	6	1000		K		S01				
7	D	0	0	7	10,000		K		S01				
8	D	0	0	8	50,000		K		S01				
9	D	0	0	9	1000		K		S01				
10	D	0	1	0	1000		K		S01				
11	D	0	1	1	1000		K		S01				
12	D	0	1	2	220		K		S01				
13	D	0	1	3	220		K		S01				
14	D	0	1	4	220		K		S01				
15	D	0	1	5	220		K		S01				
16	D	0	1	6	220		K		S01				
17	D	0	1	7	220		K		S01				
18	D	0	1	8	2,000		K		S01				
19	D	0	1	9	2,000		K		S01				
20	D	0	2	0	220		K		S01				
21	D	0	2	1	220		K		S01				
22	D	0	2	2	2,000		K		S01				
23	D	0	2	3	2,000		K		S01				
24	D	0	2	4	2,000		K		S01				
25	D	0	2	5	2,000		K		S01				
26	D	0	2	6	2,000		K		S01				
27	D	0	2	7	220		K		S01				
28	D	0	2	8	220		K		S01				
29	D	0	2	9	220		K		S01				
30	D	0	3	0	220		K		S01				
31	D	0	3	1	220		K		S01				
32	D	0	3	2	220		K		S01				
33	D	0	3	3	220		K		S01				
34	D	0	3	4	220		K		S01				
35	D	0	3	5	5,000		K		S01				
36	D	0	3	6	220		K		S01				
37	D	0	3	7	2,000		K		S01				
38	D	0	3	8	2,000		K		S01				
39	D	0	3	9	2,000		K		S01				
40	D	0	4	0	2,000		K		S01				
41	D	0	4	1	220		K		S01				
42	D	0	4	2	220		K		S01				
43	D	0	4	3	2,000		K		S01				
44	F	0	0	1	2,000		K		S01				
45	F	0	0	2	2,000		K		S01				
46	F	0	0	3	5,000		K		S01				

Photocopy this page before completing if you have more than 26 wastes to list.

I.D. Number *(enter from page 1)*	
W A 7 8 9 0 0 0 8 9 6 7	

IV. DESCRIPTION OF DANGEROUS WASTES *(continued)*

Line No.	A. Dangerous Waste No. *(enter code)*				B. Estimated Annual Quantity of Waste	C. Unit of Measure *(enter code)*			D. Processes 1. Process Codes *(enter)*				D. Processes 2. Process Description *(if a code is not entered in D(1))*
47	F	0	0	4	1,000		K		S01				
48	F	0	0	5	5,000		K		S01				
49	F	0	2	7	200		K		S01				
50	P	0	0	1	200		K		S01				
51	P	0	0	2	200		K		S01				
52	P	0	0	3	200		K		S01				
53	P	0	0	4	200		K		S01				
54	P	0	0	5	200		K		S01				
55	P	0	0	6	200		K		S01				
56	P	0	0	7	200		K		S01				
57	P	0	0	8	200		K		S01				
58	P	0	0	9	200		K		S01				
59	P	0	1	0	200		K		S01				
60	P	0	1	1	200		K		S01				
61	P	0	1	2	200		K		S01				
62	P	0	1	3	200		K		S01				
63	P	0	1	4	200		K		S01				
64	P	0	1	5	200		K		S01				
65	P	0	1	6	200		K		S01				
66	P	0	1	7	200		K		S01				
67	P	0	1	8	200		K		S01				
68	P	0	2	0	200		K		S01				
69	P	0	2	1	200		K		S01				
70	P	0	2	2	200		K		S01				
71	P	0	2	3	200		K		S01				
72	P	0	2	4	200		K		S01				
73	P	0	2	6	200		K		S01				
74	P	0	2	7	200		K		S01				
75	P	0	2	8	200		K		S01				
76	P	0	2	9	200		K		S01				
77	P	0	3	0	200		K		S01				
78	P	0	3	1	200		K		S01				
79	P	0	3	3	200		K		S01				
80	P	0	3	4	200		K		S01				
81	P	0	3	6	200		K		S01				
82	P	0	3	7	200		K		S01				
83	P	0	3	8	200		K		S01				
84	P	0	3	9	200		K		S01				
85	P	0	4	0	200		K		S01				
86	P	0	4	1	200		K		S01				
87	P	0	4	2	200		K		S01				
88	P	0	4	3	200		K		S01				
89	P	0	4	4	200		K		S01				
90	P	0	4	5	200		K		S01				
91	P	0	4	6	200		K		S01				
92	P	0	4	7	200		K		S01				

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I.D. Number *(enter from page 1)*	
W A 7 8 9 0 0 0 8 9 6 7	

IV. DESCRIPTION OF DANGEROUS WASTES *(continued)*

Line No.	A. Dangerous Waste No. *(enter code)*				B. Estimated Annual Quantity of Waste	C. Unit of Measure *(enter code)*			D. Processes 1. Process Codes *(enter)*				D. Processes 2. Process Description *(if a code is not entered in D(1))*
93	P	0	4	8	200		K		S01				
94	P	0	4	9	200		K		S01				
95	P	0	5	0	200		K		S01				
96	P	0	5	1	200		K		S01				
97	P	0	5	4	200		K		S01				
98	P	0	5	6	200		K		S01				
99	P	0	5	7	200		K		S01				
100	P	0	5	8	200		K		S01				
101	P	0	5	9	200		K		S01				
102	P	0	6	0	200		K		S01				
103	P	0	6	2	200		K		S01				
104	P	0	6	3	200		K		S01				
105	P	0	6	4	200		K		S01				
106	P	0	6	5	200		K		S01				
107	P	0	6	6	200		K		S01				
108	P	0	6	7	200		K		S01				
109	P	0	6	8	200		K		S01				
110	P	0	6	9	200		K		S01				
111	P	0	7	0	200		K		S01				
112	P	0	7	1	200		K		S01				
113	P	0	7	2	200		K		S01				
114	P	0	7	3	200		K		S01				
115	P	0	7	4	200		K		S01				
116	P	0	7	5	200		K		S01				
117	P	0	7	6	200		K		S01				
118	P	0	7	7	200		K		S01				
119	P	0	7	8	200		K		S01				
120	P	0	8	1	200		K		S01				
121	P	0	8	2	200		K		S01				
122	P	0	8	4	200		K		S01				
123	P	0	8	5	200		K		S01				
124	P	0	8	7	200		K		S01				
125	P	0	8	8	200		K		S01				
126	P	0	8	9	200		K		S01				
127	P	0	9	2	200		K		S01				
128	P	0	9	3	200		K		S01				
129	P	0	9	4	200		K		S01				
130	P	0	9	5	200		K		S01				
131	P	0	9	6	200		K		S01				
132	P	0	9	7	200		K		S01				
133	P	0	9	8	200		K		S01				
134	P	0	9	9	200		K		S01				
135	P	1	0	1	200		K		S01				
136	P	1	0	2	200		K		S01				
137	P	1	0	3	200		K		S01				
138	P	1	0	4	200		K		S01				

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I.D. Number *(enter from page 1)*	
W A 7 8 9 0 0 0 8 9 6 7	

IV. DESCRIPTION OF DANGEROUS WASTES *(continued)*

Line No.	A. Dangerous Waste No. *(enter code)*				B. Estimated Annual Quantity of Waste	C. Unit of Measure *(enter code)*			D. Processes 1. Process Codes *(enter)*				D. Processes 2. Process Description *(if a code is not entered in D(1))*
139	P	1	0	5	200		K		S01				
140	P	1	0	6	200		K		S01				
141	P	1	0	8	200		K		S01				
142	P	1	0	9	200		K		S01				
143	P	1	1	0	200		K		S01				
144	P	1	1	1	200		K		S01				
145	P	1	1	2	200		K		S01				
146	P	1	1	3	200		K		S01				
147	P	1	1	4	200		K		S01				
148	P	1	1	5	200		K		S01				
149	P	1	1	6	200		K		S01				
150	P	1	1	8	200		K		S01				
151	P	1	1	9	200		K		S01				
152	P	1	2	0	200		K		S01				
153	P	1	2	1	200		K		S01				
154	P	1	2	2	200		K		S01				
155	P	1	2	3	200		K		S01				
156	P	1	2	7	200		K		S01				
157	P	1	2	8	200		K		S01				
158	P	1	8	5	200		K		S01				
159	P	1	8	8	200		K		S01				
160	P	1	8	9	200		K		S01				
161	P	1	9	0	200		K		S01				
162	P	1	9	1	200		K		S01				
163	P	1	9	2	200		K		S01				
164	P	1	9	4	200		K		S01				
165	P	1	9	6	200		K		S01				
166	P	1	9	7	200		K		S01				
167	P	1	9	8	200		K		S01				
168	P	1	9	9	200		K		S01				
169	P	2	0	1	200		K		S01				
170	P	2	0	2	200		K		S01				
171	P	2	0	3	200		K		S01				
172	P	2	0	4	200		K		S01				
173	P	2	0	5	200		K		S01				
174	U	0	0	1	200		K		S01				
175	U	0	0	2	200		K		S01				
176	U	0	0	3	200		K		S01				
177	U	0	0	4	200		K		S01				
178	U	0	0	5	200		K		S01				
179	U	0	0	6	200		K		S01				
180	U	0	0	7	200		K		S01				
181	U	0	0	8	200		K		S01				
182	U	0	0	9	200		K		S01				
183	U	0	1	0	200		K		S01				
184	U	0	1	1	200		K		S01				

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I.D. Number *(enter from page 1)*	
W A 7 8 9 0 0 0 8 9 6 7	

IV. DESCRIPTION OF DANGEROUS WASTES *(continued)*

Line No.	A. Dangerous Waste No. *(enter code)*				B. Estimated Annual Quantity of Waste	C. Unit of Measure *(enter code)*			D. Processes 1. Process Codes *(enter)*				D. Processes 2. Process Description *(if a code is not entered in D(1))*
185	U	0	1	2	200		K		S01				
186	U	0	1	4	200		K		S01				
187	U	0	1	5	200		K		S01				
188	U	0	1	6	200		K		S01				
189	U	0	1	7	200		K		S01				
190	U	0	1	8	200		K		S01				
191	U	0	1	9	200		K		S01				
192	U	0	2	0	200		K		S01				
193	U	0	2	1	200		K		S01				
194	U	0	2	2	200		K		S01				
195	U	0	2	3	200		K		S01				
196	U	0	2	4	200		K		S01				
197	U	0	2	5	200		K		S01				
198	U	0	2	6	200		K		S01				
199	U	0	2	7	200		K		S01				
200	U	0	2	8	200		K		S01				
201	U	0	2	9	200		K		S01				
202	U	0	3	0	200		K		S01				
203	U	0	3	1	200		K		S01				
204	U	0	3	2	200		K		S01				
205	U	0	3	3	200		K		S01				
206	U	0	3	4	200		K		S01				
207	U	0	3	5	200		K		S01				
208	U	0	3	6	200		K		S01				
209	U	0	3	7	200		K		S01				
210	U	0	3	8	200		K		S01				
211	U	0	3	9	200		K		S01				
212	U	0	4	1	200		K		S01				
213	U	0	4	2	200		K		S01				
214	U	0	4	3	200		K		S01				
215	U	0	4	4	200		K		S01				
216	U	0	4	5	200		K		S01				
217	U	0	4	6	200		K		S01				
218	U	0	4	7	200		K		S01				
219	U	0	4	8	200		K		S01				
220	U	0	4	9	200		K		S01				
221	U	0	5	0	200		K		S01				
222	U	0	5	1	200		K		S01				
223	U	0	5	2	200		K		S01				
224	U	0	5	3	200		K		S01				
225	U	0	5	5	200		K		S01				
226	U	0	5	6	200		K		S01				
227	U	0	5	7	200		K		S01				
228	U	0	5	8	200		K		S01				
229	U	0	5	9	200		K		S01				
230	U	0	6	0	200		K		S01				

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I.D. Number *(enter from page 1)*	
W A 7 8 9 0 0 0 8 9 6 7	

IV. DESCRIPTION OF DANGEROUS WASTES *(continued)*

Line No.	A. Dangerous Waste No. *(enter code)*				B. Estimated Annual Quantity of Waste	C. Unit of Measure *(enter code)*			D. Processes 1. Process Codes *(enter)*				D. Processes 2. Process Description *(if a code is not entered in D(1))*
231	U	0	6	1	200		K		S01				
232	U	0	6	2	200		K		S01				
233	U	0	6	3	200		K		S01				
234	U	0	6	4	200		K		S01				
235	U	0	6	6	200		K		S01				
236	U	0	6	7	200		K		S01				
237	U	0	6	8	200		K		S01				
238	U	0	6	9	200		K		S01				
239	U	0	7	0	200		K		S01				
240	U	0	7	1	200		K		S01				
241	U	0	7	2	200		K		S01				
242	U	0	7	3	200		K		S01				
243	U	0	7	4	200		K		S01				
244	U	0	7	6	200		K		S01				
245	U	0	7	7	200		K		S01				
246	U	0	7	8	200		K		S01				
247	U	0	7	9	200		K		S01				
248	U	0	8	0	200		K		S01				
249	U	0	8	1	200		K		S01				
250	U	0	8	2	200		K		S01				
251	U	0	8	3	200		K		S01				
252	U	0	8	4	200		K		S01				
253	U	0	8	5	200		K		S01				
254	U	0	8	6	200		K		S01				
255	U	0	8	7	200		K		S01				
256	U	0	8	8	200		K		S01				
257	U	0	8	9	200		K		S01				
258	U	0	9	0	200		K		S01				
259	U	0	9	1	200		K		S01				
260	U	0	9	2	200		K		S01				
261	U	0	9	3	200		K		S01				
262	U	0	9	4	200		K		S01				
263	U	0	9	5	200		K		S01				
264	U	0	9	6	200		K		S01				
265	U	0	9	7	200		K		S01				
266	U	0	9	8	200		K		S01				
267	U	0	9	9	200		K		S01				
268	U	1	0	1	200		K		S01				
269	U	1	0	2	200		K		S01				
270	U	1	0	3	200		K		S01				
271	U	1	0	5	200		K		S01				
272	U	1	0	6	200		K		S01				
273	U	1	0	7	200		K		S01				
274	U	1	0	8	200		K		S01				
275	U	1	0	9	200		K		S01				
276	U	1	1	0	200		K		S01				

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I.D. Number *(enter from page 1)*	
W A 7 8 9 0 0 0 8 9 6 7	

IV. DESCRIPTION OF DANGEROUS WASTES *(continued)*

Line No.	A. Dangerous Waste No. *(enter code)*				B. Estimated Annual Quantity of Waste	C. Unit of Measure *(enter code)*			D. Processes 1. Process Codes *(enter)*				D. Processes 2. Process Description *(if a code is not entered in D(1))*
277	U	1	1	1	200		K		S01				
278	U	1	1	2	200		K		S01				
279	U	1	1	3	200		K		S01				
280	U	1	1	4	200		K		S01				
281	U	1	1	5	200		K		S01				
282	U	1	1	6	200		K		S01				
283	U	1	1	7	200		K		S01				
284	U	1	1	8	200		K		S01				
285	U	1	1	9	200		K		S01				
286	U	1	2	0	200		K		S01				
287	U	1	2	1	200		K		S01				
288	U	1	2	2	200		K		S01				
289	U	1	2	3	200		K		S01				
290	U	1	2	4	200		K		S01				
291	U	1	2	5	200		K		S01				
292	U	1	2	6	200		K		S01				
293	U	1	2	7	200		K		S01				
294	U	1	2	8	200		K		S01				
295	U	1	2	9	200		K		S01				
296	U	1	3	0	200		K		S01				
297	U	1	3	1	200		K		S01				
298	U	1	3	2	200		K		S01				
299	U	1	3	3	200		K		S01				
300	U	1	3	4	200		K		S01				
301	U	1	3	5	200		K		S01				
302	U	1	3	6	200		K		S01				
303	U	1	3	7	200		K		S01				
304	U	1	3	8	200		K		S01				
305	U	1	4	0	200		K		S01				
306	U	1	4	1	200		K		S01				
307	U	1	4	2	200		K		S01				
308	U	1	4	3	200		K		S01				
309	U	1	4	4	200		K		S01				
310	U	1	4	5	200		K		S01				
311	U	1	4	6	200		K		S01				
312	U	1	4	7	200		K		S01				
313	U	1	4	8	200		K		S01				
314	U	1	4	9	200		K		S01				
315	U	1	5	0	200		K		S01				
316	U	1	5	1	200		K		S01				
317	U	1	5	2	200		K		S01				
318	U	1	5	3	200		K		S01				
319	U	1	5	4	200		K		S01				
320	U	1	5	5	200		K		S01				
321	U	1	5	6	200		K		S01				
322	U	1	5	7	200		K		S01				

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I.D. Number *(enter from page 1)*	
W A 7 8 9 0 0 0 8 9 6 7	

IV. DESCRIPTION OF DANGEROUS WASTES *(continued)*

Line No.	A. Dangerous Waste No. *(enter code)*				B. Estimated Annual Quantity of Waste	C. Unit of Measure *(enter code)*			D. Processes 1. Process Codes *(enter)*				D. Processes 2. Process Description *(if a code is not entered in D(1))*
323	U	1	5	8	200		K		S01				
324	U	1	5	9	200		K		S01				
325	U	1	6	0	200		K		S01				
326	U	1	6	1	200		K		S01				
327	U	1	6	2	200		K		S01				
328	U	1	6	3	200		K		S01				
329	U	1	6	4	200		K		S01				
330	U	1	6	5	200		K		S01				
331	U	1	6	6	200		K		S01				
332	U	1	6	7	200		K		S01				
333	U	1	6	8	200		K		S01				
334	U	1	6	9	200		K		S01				
335	U	1	7	0	200		K		S01				
336	U	1	7	1	200		K		S01				
337	U	1	7	2	200		K		S01				
338	U	1	7	3	200		K		S01				
339	U	1	7	4	200		K		S01				
340	U	1	7	6	200		K		S01				
341	U	1	7	7	200		K		S01				
342	U	1	7	8	200		K		S01				
343	U	1	7	9	200		K		S01				
344	U	1	8	0	200		K		S01				
345	U	1	8	1	200		K		S01				
346	U	1	8	2	200		K		S01				
347	U	1	8	3	200		K		S01				
348	U	1	8	4	200		K		S01				
349	U	1	8	5	200		K		S01				
350	U	1	8	6	200		K		S01				
351	U	1	8	7	200		K		S01				
352	U	1	8	8	200		K		S01				
353	U	1	8	9	200		K		S01				
354	U	1	9	0	200		K		S01				
355	U	1	9	1	200		K		S01				
356	U	1	9	2	200		K		S01				
357	U	1	9	3	200		K		S01				
358	U	1	9	4	200		K		S01				
359	U	1	9	6	200		K		S01				
360	U	1	9	7	200		K		S01				
361	U	2	0	0	200		K		S01				
362	U	2	0	1	200		K		S01				
363	U	2	0	2	200		K		S01				
364	U	2	0	3	200		K		S01				
365	U	2	0	4	200		K		S01				
366	U	2	0	5	200		K		S01				
367	U	2	0	6	200		K		S01				
368	U	2	0	7	200		K		S01				

Photocopy this page before completing if you have more than 26 wastes to list.

I.D. Number *(enter from page 1)*	
W A 7 8 9 0 0 0 8 9 6 7	

IV. DESCRIPTION OF DANGEROUS WASTES *(continued)*

Line No.	A. Dangerous Waste No. *(enter code)*				B. Estimated Annual Quantity of Waste	C. Unit of Measure *(enter code)*			D. Processes				
									1. Process Codes *(enter)*				2. Process Description *(if a code is not entered in D(1))*
369	U	2	0	8	200		K		S01				
370	U	2	0	9	200		K		S01				
371	U	2	1	0	200		K		S01				
372	U	2	1	1	200		K		S01				
373	U	2	1	3	200		K		S01				
374	U	2	1	4	200		K		S01				
375	U	2	1	5	200		K		S01				
376	U	2	1	6	200		K		S01				
377	U	2	1	7	200		K		S01				
378	U	2	1	8	200		K		S01				
379	U	2	1	9	200		K		S01				
380	U	2	2	0	200		K		S01				
381	U	2	2	1	200		K		S01				
382	U	2	2	2	200		K		S01				
383	U	2	2	3	200		K		S01				
384	U	2	2	5	200		K		S01				
385	U	2	2	6	200		K		S01				
386	U	2	2	7	200		K		S01				
387	U	2	2	8	200		K		S01				
388	U	2	3	4	200		K		S01				
389	U	2	3	5	200		K		S01				
390	U	2	3	6	200		K		S01				
391	U	2	3	7	200		K		S01				
392	U	2	3	8	200		K		S01				
393	U	2	3	9	200		K		S01				
394	U	2	4	0	200		K		S01				
395	U	2	4	3	200		K		S01				
396	U	2	4	4	200		K		S01				
397	U	2	4	6	200		K		S01				
398	U	2	4	7	200		K		S01				
399	U	2	4	8	200		K		S01				
400	U	2	4	9	200		K		S01				
401	U	2	7	1	200		K		S01				
402	U	2	7	8	200		K		S01				
403	U	2	7	9	200		K		S01				
404	U	2	8	0	200		K		S01				
405	U	3	2	8	200		K		S01				
406	U	3	5	3	200		K		S01				
407	U	3	5	9	200		K		S01				
408	U	3	6	4	200		K		S01				
409	U	3	6	7	200		K		S01				
410	U	3	7	2	200		K		S01				
411	U	3	7	3	200		K		S01				
412	U	3	8	7	200		K		S01				
413	U	3	8	9	200		K		S01				
414	U	3	9	4	200		K		S01				

Photocopy this page before completing if you have more than 26 wastes to list.

I.D. Number *(enter from page 1)*	
W A 7 8 9 0 0 0 8 9 6 7	

IV. DESCRIPTION OF DANGEROUS WASTES *(continued)*

Line No.	A. Dangerous Waste No. *(enter code)*				B. Estimated Annual Quantity of Waste	C. Unit of Measure *(enter code)*			D. Processes 1. Process Codes *(enter)*				D. Processes 2. Process Description *(if a code is not entered in D(1))*
415	U	3	9	5	200		K		S01				
416	U	4	0	4	200		K		S01				
417	U	4	0	9	200		K		S01				
418	U	4	1	0	200		K		S01				
419	U	4	1	1	200		K		S01				
420	W	0	0	1	5,000		K		S01				
421	W	P	0	1	5,000		K		S01				
422	W	P	0	2	1,000		K		S01				
423	W	P	0	3	500		K		S01				
424	W	T	0	1	30,000		K		S01				
425	W	T	0	2	20,000		K		S01				
426	W	S	C	2	5,000		K		S01				
427	K	0	1	3	200		K		S01				
428	K	0	4	4	200		K		S01				
429													
430													
431													
432													
433													
434													
435													
436													
437													
438													
439													
440													
441													
442													
443													
444													
445													
446													

IV. DESCRIPTION OF DANGEROUS WASTE (continued)

E. Use this space to list additional process codes from Section D(1) on page 3.

The waste stored at the 305-B Storage Facility consists of listed waste, waste from nonspecific sources, characteristic waste, and state-only waste.

V. FACILITY DRAWING Refer to attached drawing(s).

All existing facilities must include in the space provided on page 5 a scale drawing of the facility (see instructions for more detail).

VI. PHOTOGRAPHS Refer to attached photograph(s).

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).

VII. FACILITY GEOGRAPHIC LOCATION This information is provided on the attached drawings and photos.

LATITUDE *(degrees, minutes, & seconds)*			LONGITUDE *(degrees, minutes, & seconds)*		
46	22	18	119	16	42

VIII. FACILITY OWNER

☒ A. If the facility owner is also the facility operator as listed in Section VII on Form 1, "General Information," place an "X" in the box to the left and skip to Section XI below.

B. If the facility owner is not the facility operator as listed in Section VII on Form 1, complete the following items:

1. Name of Facility's Legal Owner	2. Phone Number *(area code & no.)*

3. Street or P.O. Box	4. City or Town	5. St.	6. Zip Code

IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Name *(print or type)*	Signature	Date Signed
John D. Wagoner, Manager U.S. Department of Energy Richland Operations	Edward S. Goldberg for John D. Wagoner	Revision 1 signed 12/20/90

X. OPERATOR CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Name *(Print Or Type)*	Signature	Date Signed
See attachment		

X. OPERATOR CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

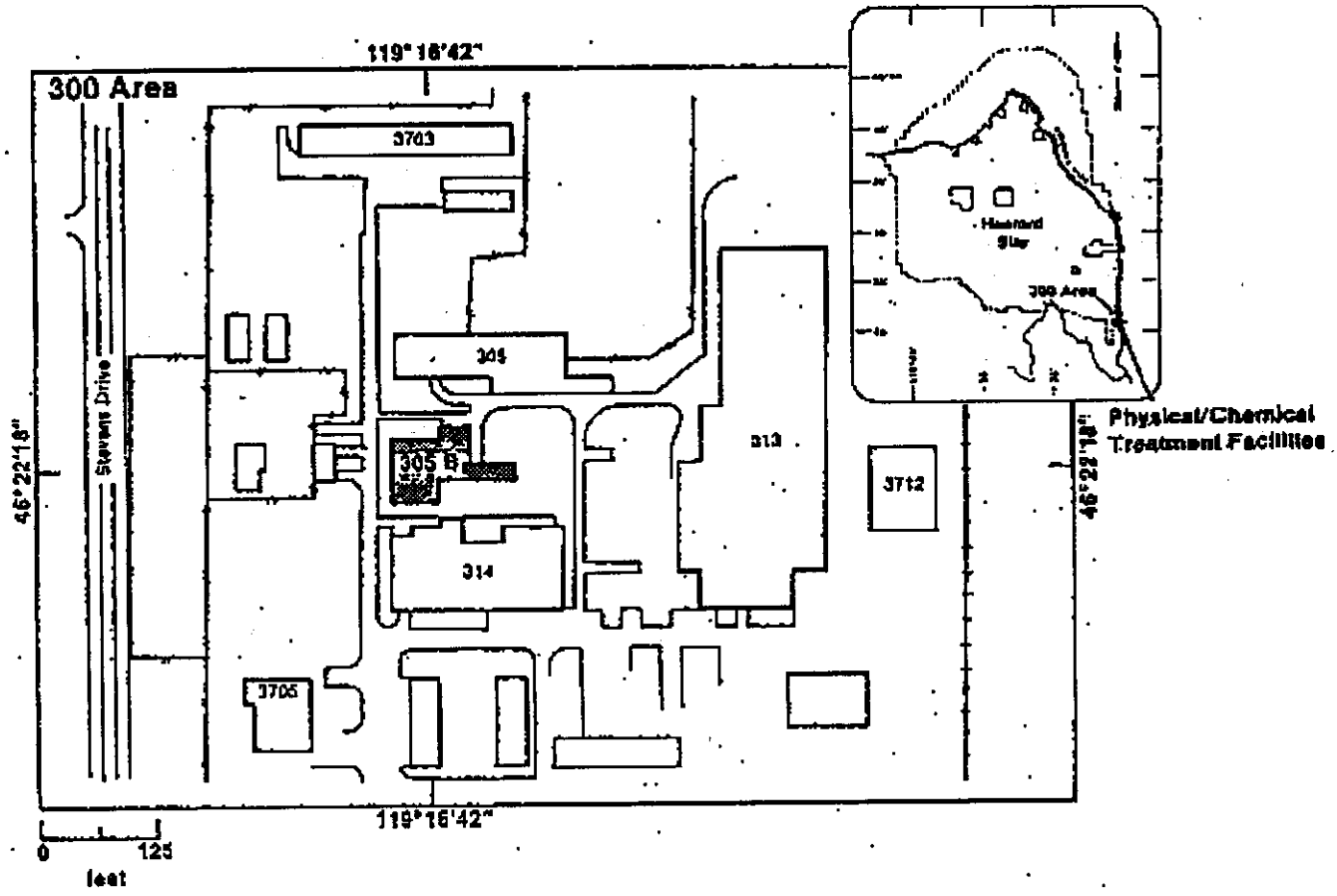
Edward S. Goldberg for John D. Wagoner
Owner/Operator
John D. Wagoner, Manager
U.S. Department of Energy
Richland Operations Office

2/25/97
Date Revision 1 Signed

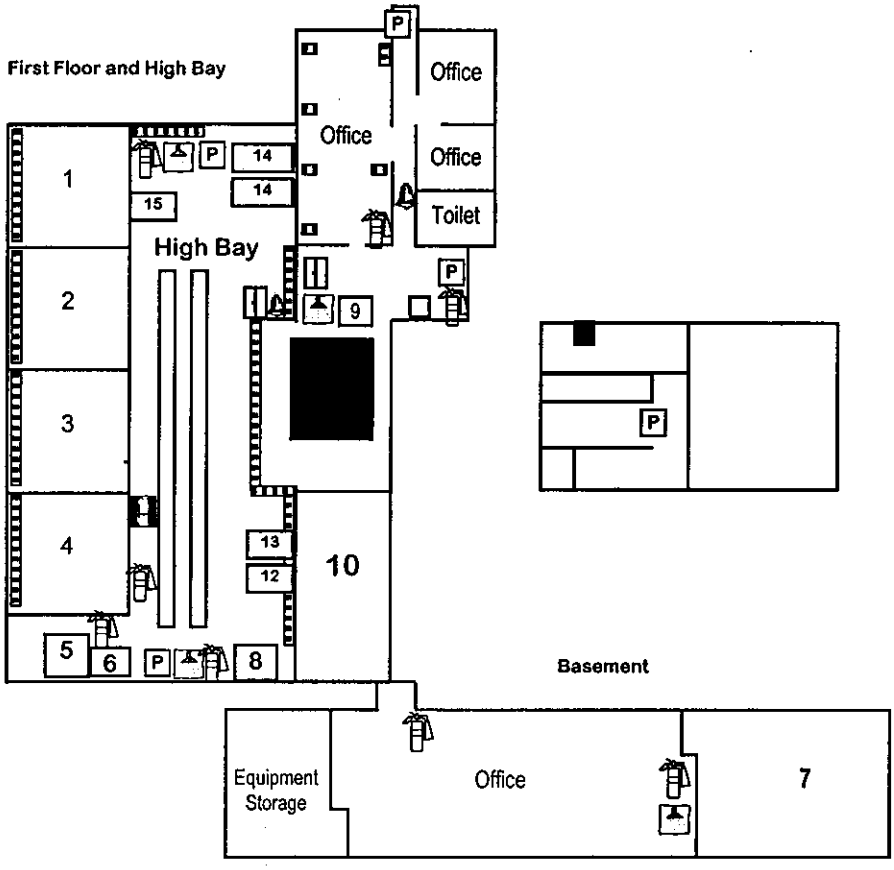
W. R. Wiley
Co-Operator
William R. Wiley, Director
Pacific Northwest Laboratory

2/7/97
Date Revision 1 Signed

305-B Storage Facility Site Plan



305-B Storage Facility Floor Plan

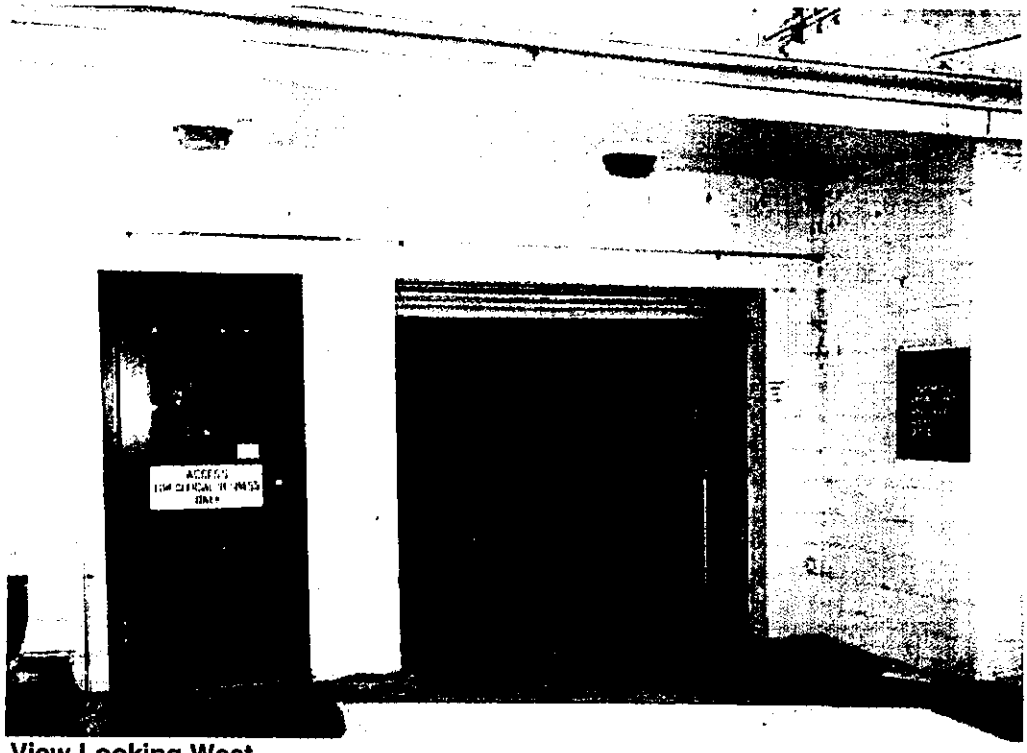


Legend

1. Acids, Oxidizers
2. Poisons, Class 9
3. Alkaline, WSDW, Organic Peroxides
4. Organics and Compressed Aerosols
5. Flammable Liquid Bulking and compressed gases
6. Asbestos Cabinet
7. RMW Storage Cell
8. Flammable Storage
9. Small Quantity Flammable RMW
10. Outdoor Non-regulated Drum Storage
11. WSDW Non-flammable Drums
12. Universal and Recycling Storage
13. Acid Drums
14. Alkaline Drums
15. Explosive Magazine

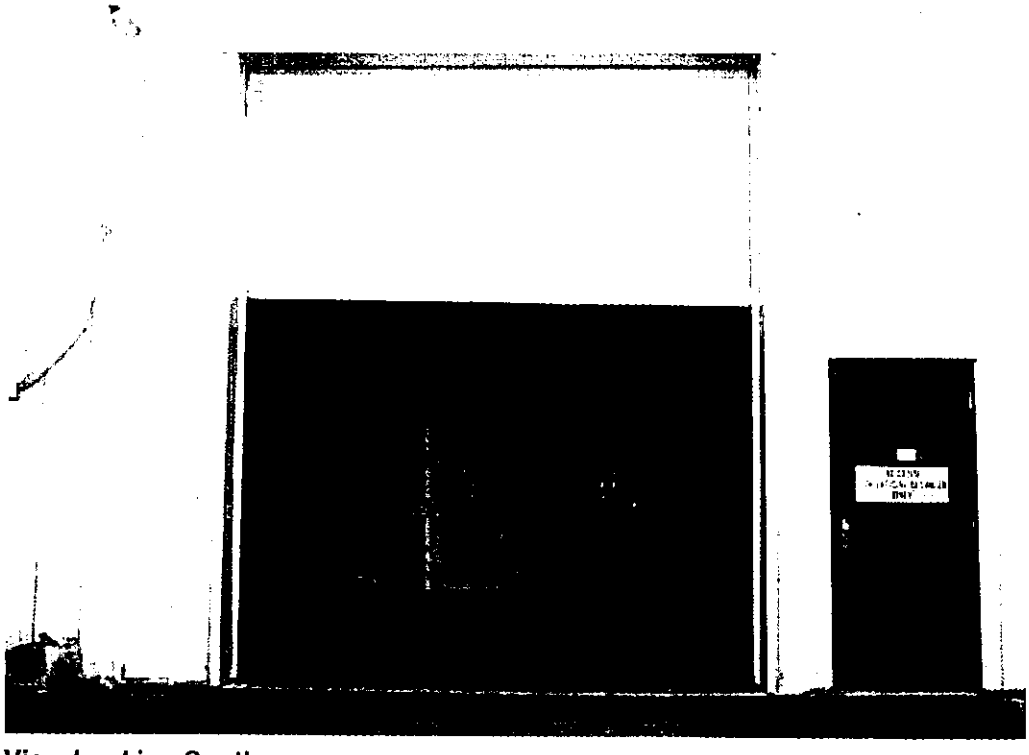
Safety Shower/Eyewash
Phone
Fire Alarm Bell
Fire Alarm Pull Box
10-Lb. ABC Fire Extinguisher
15 Lb. Or larger Class D Fire Extinguisher
Removable Access to Basement
Emergency Equipment Cabinet
Collection Sump

305-B Storage Facility



View Looking West
46°22'18"
119°16'42"

88A907-8CN
(PHOTO TAKEN 1988)



View Looking South
46°22'18"
119°16'42"

88A907-1CN
(PHOTO TAKEN 1988)

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2.0 FACILITY DESCRIPTION AND GENERAL PROVISIONS

This chapter briefly describes the Hanford Site and provides a general overview of the 305-B Storage Facility, including:

- Topography
- Location information
- Traffic information
- Performance standards
- Buffer monitoring zones
- Spills and discharges
- Manifest system.

2.1 The 305-B Storage Facility

The 305-B Storage Facility is a dangerous waste and RMW storage unit owned and operated by DOE and co-operated by PNNL. The unit is used for the collection, consolidation, packaging, storage, and preparation for transport and disposal of both dangerous waste and RMW. It is an integral part of the Hanford Site's waste management system.

The 305-B Storage Facility is a one-story frame and masonry building with basement constructed in the early 1950s, with an attached two-story-high metal and concrete building constructed in January 1978, referred to in this document as the "high bay." The unit is located within the 300 Area, as shown in Figure 2-1, and was formerly used for engineering research and development. Unit upgrades were completed in 1988 to meet requirements for storage of dangerous waste and RMW. Waste storage under interim status began in March 1989.

A variety of small volume chemical wastes are generated by PNNL's research laboratory activities under contract to DOE. These wastes are brought to the 305-B Storage Facility and segregated by compatibility for storage in the unit until enough waste is accumulated to fill a labpack or bulking container, usually a 30- to 55-gallon drum. When a sufficient number of shipping containers of waste have accumulated, they are manifested for shipment, generally to permitted off-site recycling, treatment or disposal facilities.

Dangerous wastes are stored in the high bay. The high bay has been equipped with a secondary containment system to facilitate storage of containerized wastes. In addition, four storage "cells" have been constructed within the high bay area for segregated storage of incompatible waste streams. Each of the cells is approximately 14' x 14', enclosed by 4' high concrete block walls; each cell has its own separate secondary containment system. Drum-quantity storage for incompatible wastes has also been provided in separate areas of the high bay.

Radioactive mixed waste (RMW) is stored in the basement of the original wing of the building in an area approximately 18' x 32'. The RMW area is also equipped with a secondary containment berm to prevent migration of spilled wastes. Flammable RMW cannot be stored below grade (per Uniform Fire Code) and is stored in an independent area on the first floor of the original wing in individual secondary containment structures.

The 305-B Storage Facility is equipped with a heating, ventilation and air conditioning (HVAC) system to provide relatively constant temperatures during storage of dangerous wastes. The first floor of the

older building and the high bay are served by a dual-compressor heat pump system for both heating and air conditioning. The basement area is served by a separate electric heating and evaporative cooling combined system. These systems are adequate to maintain interior temperatures in the range of 50-85°F during normal ambient temperatures of 10-110°F.

In addition, the unit utilizes a local exhaust system for "bulking" as described in Attachment 18, Chapter 4.0, Section 4.1.1.2. This system is located in the flammable liquid bulking module. Local exhaust of 3300 CFM is provided during bulking operations. Another, smaller ventilation system, referred to as the "elephant trunk ventilation system," is located in the high bay storage cell areas for occasional bulking of solids or nonflammable liquids not requiring use of the flammable liquid bulking module. This system has a ventilation capacity of 1550 CFM. A smaller, laboratory-style fume hood has also been installed on the south wall of the high bay for compatibility testing and small-volume waste work.

A simplified building layout is shown in Figure 2-2. Individual storage cells are described in Attachment 18, Chapter 4.0, Section 4.1.

2.2 TOPOGRAPHIC MAP [B-2]

Topographic maps of the Hanford Site and 300 Area are listed below.

Drawing No.	Sheet	Title
H-13-958	1 of 1	General Overview of Hanford Site
H-13-000300	1 of 1	300 Area Topographic Map
H-13-000301	1 of 1	300 Area Topographic Map
H-13-000302	1 of 1	300 Area Topographic Map
H-13-000303	1 of 1	300 Area Topographic Map
H-13-000304	1 of 1	300 Area Topographic Map
H-13-000305	1 of 1	300 Area Topographic Map
H-13-000306	1 of 1	300 Area Topographic Map
H-13-000307	1 of 1	300 Area Topographic Map
H-13-000308	1 of 1	300 Area Topographic Map

2.2.1 General Requirements [B-2a]

H-13-958 is a general overview map of the Hanford Site property and the surrounding countryside. This figure is intended as a location map and illustrates the following:

- The facility boundary of the Hanford Site
- Surrounding land use including the Saddle Mountain National Wildlife Refuge and the State Game Reserve to the north, the City of Richland to the south, Rattlesnake Mountain Arid Lands Ecology (ALE) Reserve located to the west, and farmlands or Game Reserves to the east
- Contours sufficient to show surface water flow
- Fire control facilities located on the Hanford Site
- Locations of access roads, internal roads, railroads, and perimeter gates and barricades
- Latitudes and longitudes.

Detailed representation of the Hanford 300 Area where the 305-B Storage Facility is located. These maps provide a detailed profile of the unit and a distance of 1,000 ft around it at a scale noted on the drawings. Contour intervals are shown at every foot, and provide sufficient detail of surface waters and flow, access control, buildings, structures, fire control facilities, etc., to meet the requirements of WAC 173-303-806(4)(a)(xviii) (Ecology 1989).

Figure 2-3 illustrates wind roses for various locations on the Hanford Site. Winds are predominately from the west.

2.3 PERFORMANCE STANDARD [B-5]

The 305-B Storage Facility was designed to minimize the exposure of personnel to dangerous wastes and hazardous substances and to prevent dangerous wastes and hazardous substances from reaching the environment.

In addition, measures are taken to ensure that 305-B Storage Facility is maintained and operated, to the maximum extent practicable given the limits of technology, in a manner that prevents:

- Degradation of groundwater quality
- Degradation of air quality by open burning or other activities
- Degradation of surface water quality
- Destruction or impairment of flora or fauna outside of the facility
- Excessive noise
- Negative aesthetic impacts
- Unstable hillsides or soils
- Use of processes that do not treat, detoxify, recycle, reclaim, and recover waste material to the extent economically feasible
- Endangerment to the health of employees or the public near the facility.

The measures taken to prevent each of the above negative effects from occurring are described in the following sections.

2.3.1 Measures to Prevent Degradation of Groundwater Quality

Degradation of groundwater quality is prevented by storing waste containers within an enclosed building with a sealed concrete floor. All drains and sumps in areas where wastes are stored are blocked to prevent release of spilled material to the environment. The 305-B Storage Facility accepts only those packages meeting applicable DOT requirements. Opening of containers is done only in areas with spill containment. Design and administrative controls significantly reduce the possibility of release of dangerous waste to the environment through soil or groundwater contamination.

2.3.2 Measures to Prevent Degradation of Air Quality by Open Burning or Other Activities

No open burning occurs at 305-B Storage Facility. There is no vegetation around 305-B Storage Facility and the area around the facility is paved or graveled, thereby reducing the risk of fire or wind erosion. Combustible and flammable waste is packaged in a manner that reduces the potential for fire.

2.3.3 Measures to Prevent Degradation of Surface Water Quality

The potential for degradation of surface water quality is extremely low, due to the manner in which the facility is designed and operated. All waste handling activities (i.e., loading/unloading, container opening, waste transfer) presenting the opportunity for spills are conducted inside the unit. All exits from storage areas of 305-B Storage Facility are equipped with spill collection sumps to prevent spilled material from escaping.

2.3.4 Measures to Prevent Destruction of Impairment of Flora or Fauna Outside of the Facility

305-B Storage Facility is located within the 300 Area. The 300 Area is highly developed and areas not occupied by buildings are generally paved or graveled. As a result, flora or fauna are generally absent within the 300 Area except for several grassed areas. Measures to prevent destruction or impairment of flora or fauna outside the 300 Area are the same as those to prevent releases from the unit (i.e., all waste handling is performed within an enclosed area having spill collection sumps).

2.3.5 Measures to Prevent Excessive Noise

During normal operations at 305-B Storage Facility excessive noise is not generated. The major sources of noise are waste transport and handling equipment (i.e., forklifts, light vehicles). The noise generated at 305-B Storage Facility is compatible with the types of activities generated at neighboring facilities in the 300 Area.

2.3.6 Measures to Prevent Negative Aesthetic Impacts

305-B Storage Facility does not injure or destroy the surrounding flora and fauna. The facility stores waste in approved DOT containers within the confines of the structure. The building's appearance is similar to neighboring facilities. For these reasons, the facility presents no negative aesthetic impacts.

2.3.7 Measures to Prevent Unstable Hillsides or Soils

There are no naturally unstable hillsides near 305-B Storage Facility. The soil beneath and around the facility was compacted prior to construction.

2.3.8 Measures to Prevent the Use of Processes That Do Not Treat, Detoxify, Recycle, Reclaim, and Recover Waste Material to the Extent Economically Feasible

The 305-B Storage Facility was established, in part, to enhance DOE's and PNNL's efforts to eliminate or minimize dangerous waste generation, and to treat, detoxify, recycle, reclaim and recover waste materials.

Offsite waste management options for dangerous wastes being shipped from the 305-B Storage Facility are evaluated according to the following order of preference:

1. Recycling, including solvent reprocessing, oil recycling, metals recovery, burning for energy recovery, etc.
2. Treatment, including incineration, volume and/or toxicity reduction, chemical destruction, etc.
3. Land disposal is viewed as least favored option and is generally only used for treatment residues, spill cleanup residues, or when treatment is not feasible.

When permitted by law and/or contractual obligations, 305-B Storage Facility staff tries to use this hierarchy without regard to minor variations in cost, e.g., if recycling is available but slightly more expensive than land disposal, recycling is utilized.

2.3.9 Measures to Prevent Endangerment to the Health of Employees or the Public Near the Facility

305-B Storage Facility is within the 300 Area, which is located approximately 1 mile north of the corporate limits of the City of Richland. Public entry to the 300 Area is not allowed; members of the public, therefore, cannot enter 305-B Storage Facility. Exposure of members of the public or employees to dangerous and mixed waste constituents is prevented through administrative controls over the designation, packaging, loading, transporting, and storing of the wastes received at 305-B Storage Facility. In addition, physical controls exist (i.e., spill collection sumps) to prevent release of wastes or waste constituents in the event of a spill.

Employees are trained to handle and store waste packages (Attachment 18, Chapter 8.0). The training includes dangerous waste awareness, emergency response, and workplace safety. Protective equipment, safety data, and hazardous materials information are supplied by operations management and are readily available for employee use.

A contingency plan, including emergency response procedures, is in place and is implemented for spill prevention, containment, and countermeasures to reduce safety and health hazards to employees, the environment, and the public. The contingency plan is described in Attachment 18, Chapter 7.0.

2.4 BUFFER MONITORING ZONES [B-6]

Buffer and monitoring zones around 305-B Storage Facility are described in the following sections.

2.4.1 Ignitable or Reactive Waste Buffer Zone [B-6a]\

Ignitable and reactive wastes are stored in 305-B Storage Facility in compliance with the requirements of the 1988 Uniform Fire Code, Article 79, Division II (International Conference of Building Officials 1991). Quantity limits for storage are established to comply with requirements for Class B occupancy. Structures surrounding 305-B Storage Facility are laboratory and office buildings, which are occupied during normal working hours. The nearest adjacent facility is the 314 Building, which is approximately 30 ft south of 305-B Storage Facility. The closest 300 Area boundary is the western boundary, which is approximately 250 ft west of 305-B Storage Facility.

2.4.2 Reactive Waste Buffer Zone [B-6b]

Storage of certain reactive wastes listed in WAC 173-303-630(8)(a) is done at 305-B Storage Facility. These wastes have special storage requirements more stringent than those shown in Section 2.4.1. They are stored in accordance with this section and with the Uniform Building Code's Table 77.201, latest edition. The 1988 edition requires buffer zones in Class B occupancies of 44 inches for storage of such wastes, and the storage locations in 305-B Storage Facility reflecting appropriate buffer zones are noted in Attachment 18, Chapter 4.0, Figure 4-1. These wastes are only occasionally stored at the unit depending on generation by individual research projects.

The occupancy storage limitations imposed by UBC for class B occupancy are as follows:

- Explosives: 1 lb
- Organic Peroxide, unclassified, detonatable: 1 lb
- Pyrophoric: 4 lbs
- Unstable (reactive), Class 4: 1 lb

These limits are allowed to be doubled when stored in flammable storage cabinets, as is done at 305-B Storage Facility; hence, the practical storage limits at 305-B Storage Facility are double those shown here.

2.4.3 Travel Time [B-6c]

Operation of 305-B Storage Facility does not involve the placement of waste in dangerous waste surface impoundments, piles, landfarms, or landfills. Therefore, the requirement that the travel time from the active portion of the unit to the nearest downstream well or surface water used for drinking purposes be at least three years for dangerous waste and 10 years for extremely hazardous waste does not apply.

2.4.4 Dangerous Waste Monitoring Zone [B-6d]

Operation of 305-B Storage Facility does not involve the placement of waste in dangerous waste surface impoundments, waste piles, land treatment, or landfill areas. Therefore, a dangerous waste monitoring zone is not required.

2.4.5 Extremely Hazardous Waste Monitoring Zone [B-6e]

Operation of the 305-B Storage Facility does not involve the placement of waste in dangerous waste surface impoundments, waste piles, land treatment, or landfill areas. Therefore, an extremely hazardous waste monitoring zone is not required.

2.5 MANIFEST SYSTEM [B-8]

The Hanford Site has one EPA/state identification number, as required by WAC 173-303-060, and all TSD units on the Hanford Site (such as 305-B Storage Facility) are considered to be part of one dangerous waste facility. Therefore, onsite shipments of dangerous or mixed waste are not subject to the manifesting requirements specified in WAC 173-303-370 and -180. 305-B Storage Facility has an onsite waste tracking system akin to a manifest system, which is voluntarily used for transporting waste on the Hanford Facility.

An example of a Uniform Hazardous Waste Manifest (Figure 2-4) is used for all off-site shipments of dangerous waste and RMW received at 305-B Storage Facility, as well as for all off-site shipments of dangerous waste and RMW from 305-B Storage Facility. In addition to the Uniform Hazardous Waste Manifest, wastes subject to land disposal restrictions which are shipped from 305-B Storage Facility to off-site treatment, storage, or disposal facilities are accompanied by the applicable notifications and certifications required under 40 CFR 268 (EPA 1989).

The following sections provide information on receiving shipments, response to manifest discrepancies, and provisions for nonacceptance of shipments.

2.5.1 Procedures for Receiving Shipments [B-8a]

The following are procedures used prior to transport of wastes to the 305-B Storage Facility. First, the generator must submit a Chemical Disposal/Recycle Request form to the Waste Management Section. An example of a Chemical Disposal/Recycle Request form is shown in Figure 2-5. This request form is then reviewed and either approved or rejected. Typical causes of rejection include missing or insufficient information in any of the data fields, or lack of specific information on waste composition. Waste information required to treat, store, or dispose of the waste is noted in Figure 2-5. Upon approval, the Waste Management Section reviews the form to determine the dangerous waste designation, waste compatibility class for storage, and containerization and labeling requirements.

The waste is then inspected at the generating unit by the Waste Management Section to verify the information contained on the request form, such as number, sizes, and types of containers, location of waste, etc., and to check for proper containerization of waste. If discrepancies are noted during the inspection, the waste will not be picked up by the Waste Management Section. Typical discrepancies include waste not as described on request form or lack of supporting data to verify waste characteristics. In such cases, deficiencies will be explained to the generating unit responsible person, who will then be responsible for correcting them.

If the waste is found to be acceptable for transport, Waste Management staff will check to ensure required labels are in place, and transport (or arrange for transport of) the waste to 305-B Storage Facility. If transport will be over public roadways or highways, a Uniform Hazardous Waste Manifest will be prepared identifying PNNL as the transporter and 305-B Storage Facility as the receiving TSD unit. A copy of all such manifests is returned to the generating unit within 30 days of receipt at 305-B Storage Facility. A copy of the manifest is also retained at 305-B Storage Facility.

2.5.2 Response to Significant Discrepancies [B-8b]

Waste shipments received at the 305-B Storage Facility containing manifest discrepancies are not accepted unless the discrepancy or discrepancies can be resolved with the generating unit at the time the shipment is received. Manifest discrepancies requiring such resolution include:

- Variations exceeding 10% in weight for bulk shipments such as tank trucks or tank cars (generally not applicable to 305-B Storage Facility since most shipments are in drums or other containers);
- Any inaccuracy in piece counts in containerized shipments (underages or overages);
- Type mismatches (i.e., the waste is not as described on the request form; obvious inaccuracies such as waste acid substituted for waste solvent).

Manifest information will also be considered incorrect if the written description of wastes does not agree with visual observations, or if observed weights or volumes differ by more than 10 % from those described on the manifest.

If a discrepancy is noted, the generating unit will be contacted immediately. The waste will not be accepted for storage until the discrepancy is resolved. The generating unit will be asked to identify the source of the discrepancy (e.g., error in estimating volume or weight, incorrect identification of waste, etc.) Once the cause of the discrepancy is identified, and the generating unit and the waste management organization have concurred as to resolution of the discrepancy, the manifest will be corrected. Corrections will be made by drawing a single line through the incorrect entry and entering the correct information. Corrected entries will be initialed and dated by the individual making the correction. Once the manifest has been corrected, the discrepancy will be considered resolved.

Certain manifest discrepancies may be discovered after receipt, such as analytical data indicating incorrect designation, which may result in incorrect naming of the shipment on the manifest. Such discrepancies will be managed as noted above; if, however, the discrepancy cannot be resolved within 15 days of receipt of the shipment, the 305-B Storage Facility will file the report required by WAC 173-303-370(4)(b) as described in Attachment 18, Chapter 12.0, Section 12.4.1.1.1.

2.5.3 Provisions for Nonacceptance of Shipment [B-8c]

Provisions for nonacceptance of shipments are discussed in the following sections.

2.5.3.1 Nonacceptance of Undamaged Shipment [B-8c(1)].

As described in Section 2.8.1, all wastes are inspected by staff from the waste management organization prior to shipment and are also transported to 305-B Storage Facility by waste management organization staff. This procedure is designed to prevent receipt of nonacceptable wastes. Waste management organization staff will refuse to accept or transport wastes, which are nonacceptable at 305-B Storage Facility.

2.5.3.2 Activation of BEP/Contingency Plan for Damaged Shipment [B-8c(2)].

As described in Section 2.5.1, all wastes are inspected by staff from the waste management organization prior to shipment and are also primarily transported to 305-B Storage Facility by waste management organization staff. Damaged containers will not be accepted from the generator and will not be transported. The only opportunity for receipt of damaged containers, therefore, would be if containers were damaged during transportation. If a shipment of waste is damaged during transportation and arrives in a condition as to present a hazard to public health or to the environment, the facility BEP/contingency plan will be implemented as described in Attachment 18, Chapter 7.0.

2.5.4 Unmanifested Waste

Waste generated within the Hanford Site is not transported over public highways and is not subject to manifest requirements under WAC 173-303. Such waste may be received at the 305-B Storage Facility without a manifest. However, all wastes (including unmanifested waste) must be accompanied by a completed and approved Disposal Request form (Figure 2-5).

If transport is by public roadways or highways, a manifest must be used as noted in Section 2.5. Shipments requiring a manifest and not having one will either be rejected or, at the sole discretion of the unit operator, the unit will accept the waste and file an unmanifested waste report as described in WAC 173-303-390(1) and detailed in Attachment 18, Chapter 12.0.

Figure 2-1. Location of 305-B Storage Facility

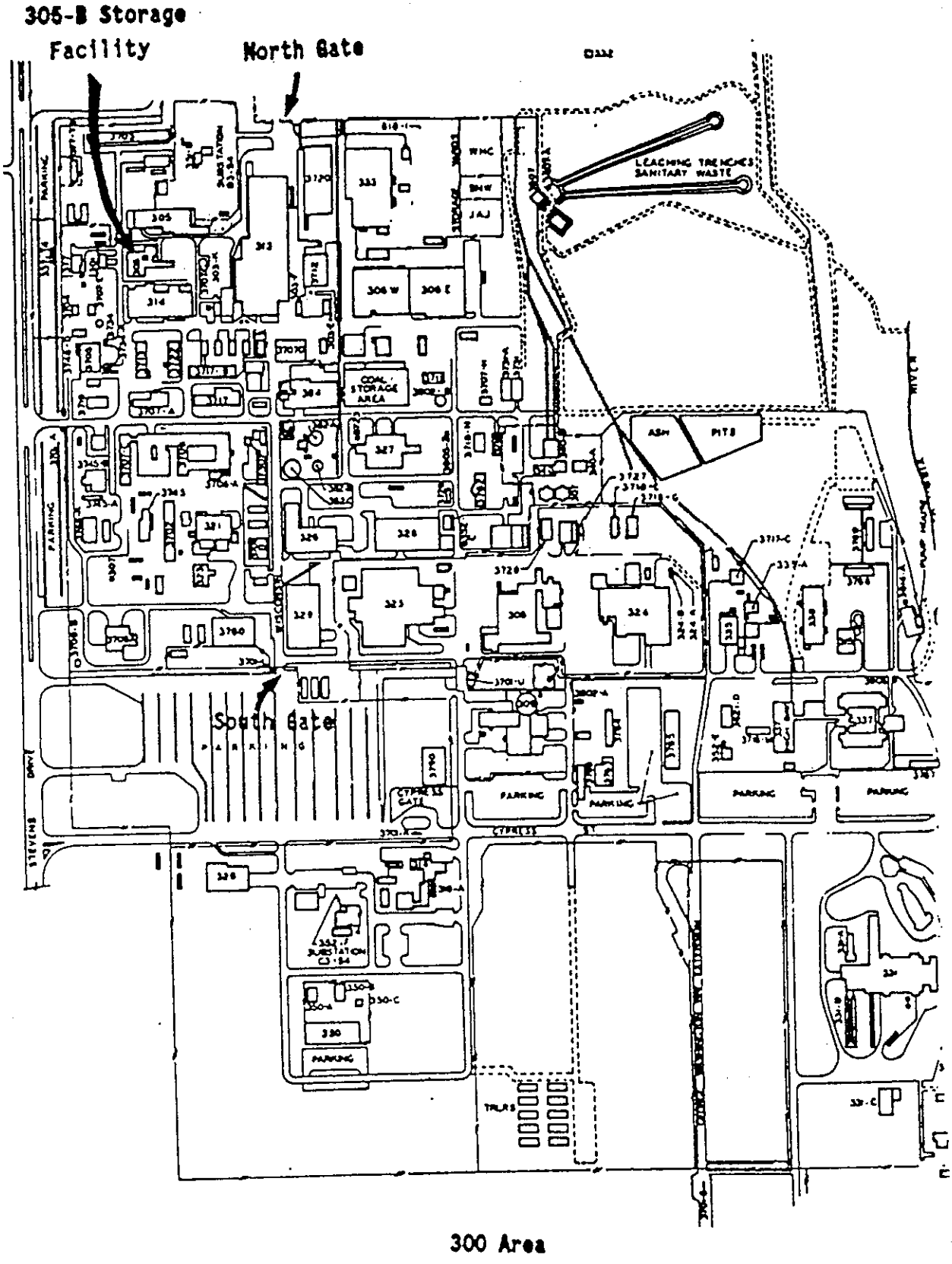
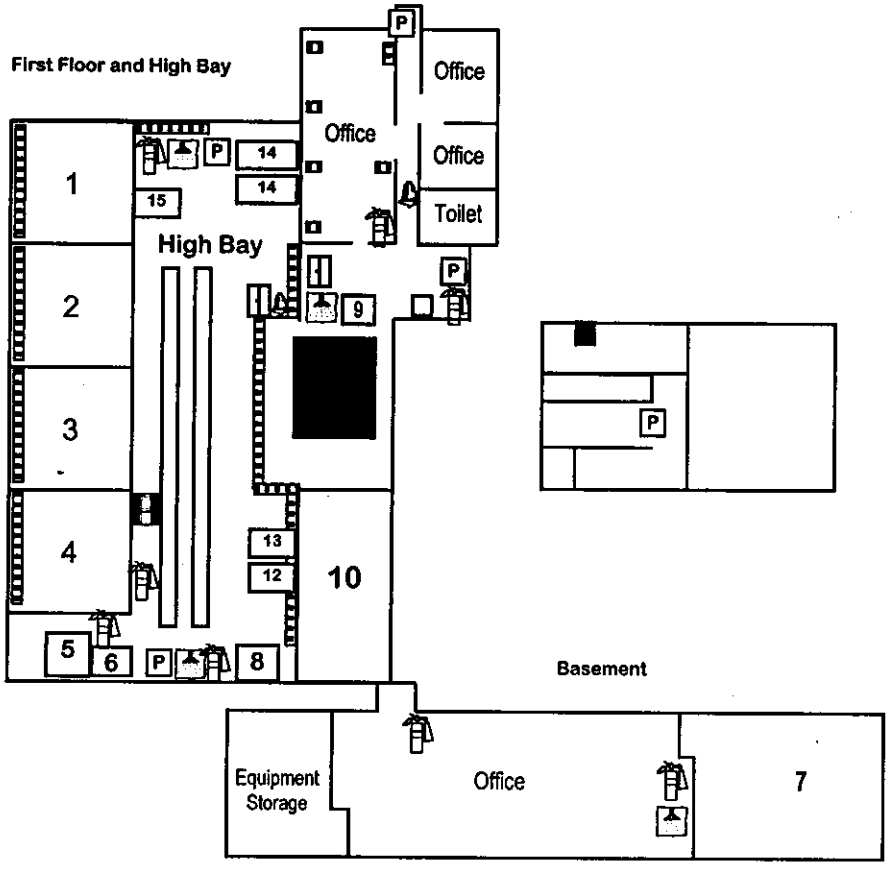


Figure 2-2. 305-B Storage Facility Floor Plan

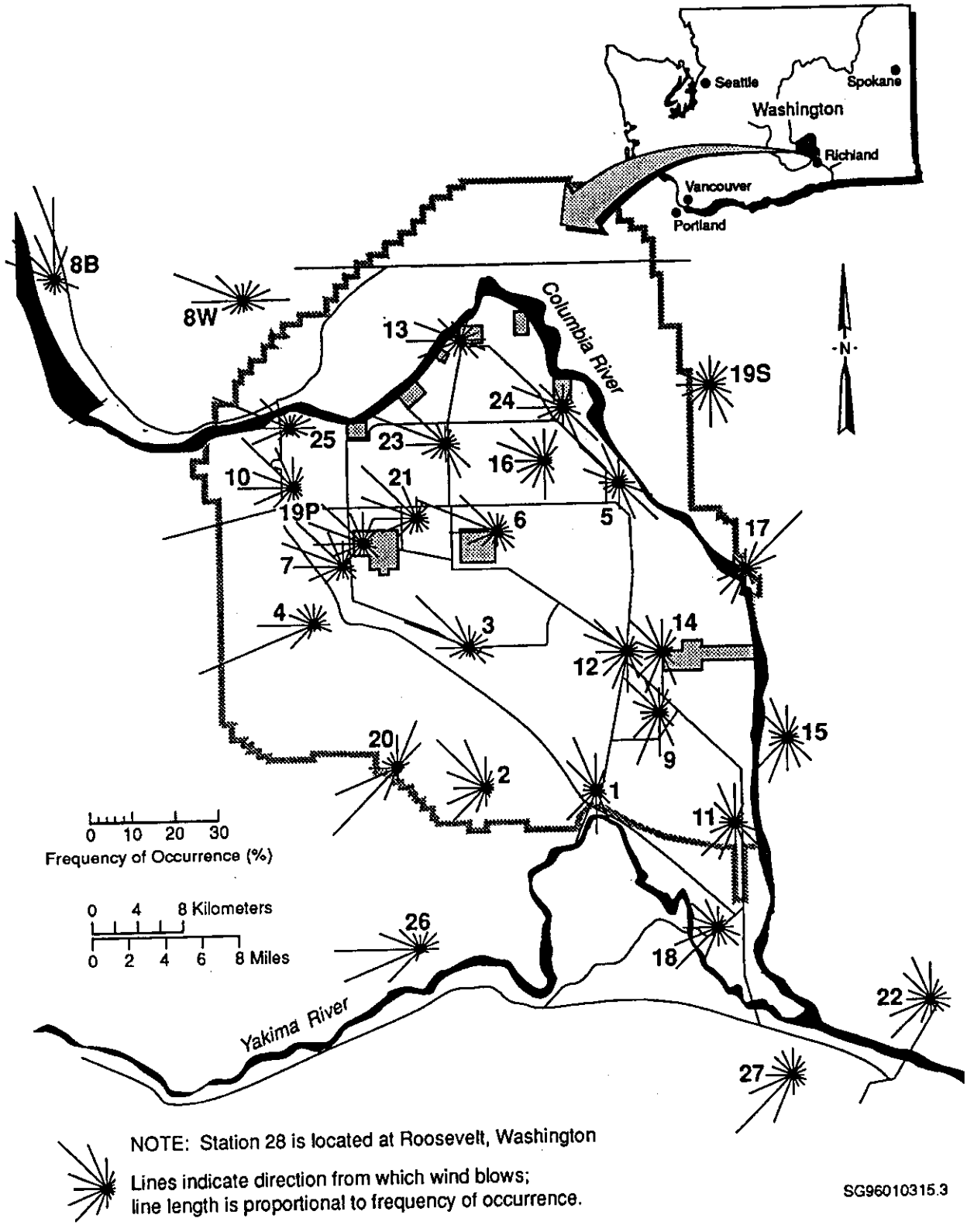


Legend

1. Acids, Oxidizers
2. Poisons, Class 9
3. Alkaline, WSDW, Organic Peroxides
4. Organics and Compressed Aerosols
5. Flammable Liquid Bulking and compressed gases
6. Asbestos Cabinet
7. RMW Storage Cell
8. Flammable Storage
9. Small Quantity Flammable RMW
10. Outdoor Non-regulated Drum Storage
11. WSDW Non-flammable Drums
12. Universal and Recycling Storage
13. Acid Drums
14. Alkaline Drums
15. Explosive Magazine

Safety Shower/Eyewash
Phone
Fire Alarm Bell
Fire Alarm Pull Box
10-Lb. ABC Fire Extinguisher
15 Lb. Or larger Class D Fire Extinguisher
Removable Access to Basement
Emergency Equipment Cabinet
Collection Sump

Figure 2-3. Wind Roses for the Hanford Site



1 Figure 2-4. Sample Uniform Hazardous Waste Manifest Form

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039.

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No.

2. Page 1 of | Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address

4. Generator's Phone ( )

A. State Manifest Document Number

B. State Generator's ID

5. Transporter 1 Company Name | 6. US EPA ID Number

C. State Transporter's ID

D. Transporter's Phone

7. Transporter 2 Company Name | 8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address | 10. US EPA ID Number

G. State Facility's ID

H. Facility's Phone

	11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.						
b.						
c.						
d.						

J. Additional Descriptions for Materials Listed Above

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name | Signature | Month Day Year

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Month Day Year

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name | Signature | Month Day Year

Style F15 Labelmaster, An American Labelmark Co., Chicago, IL 60646 (800) 621-5808

EPA Form 8700-22 (Rev. 9-88) Previous editions are obsolete

PRINTED ON RECYCLED PAPER USING SOYBEAN INK

ORIGINAL-RETURN TO GENERATOR

Figure 2-5. Example Disposal Request Form

Battelle PNNL

WASTE DISPOSAL REQUEST

Page 1

WM Req No: IRM Req No:

Date Released:

Received:

Approved:

Designated:

Entered:

Picked Up/Labeled

1830
1831
BCO

Org Code:

Generator/Phone No.
Office Room No.

Type of Accumulation

Accum. Start Date for 90 Day Waste: 30 days for PCBs

Building where waste is located:

Type of Material

Requested by:

Phone No.
Office Room No.

Mail Stop (MSIN):

Container ID/ User No/Rm.No	Container Size	Container Type	Weight	Material Description or Trade Name	Chemical Component	Phys. State	Status/ Source	DOT Loc	Designat-ion	WDOE Codes	EPA Codes

1 Figure 2-8. Example Disposal Request Form (Reverse)

Chemical Disposal/Recycle Request (CDRR) Instructions

General Instructions:

- Type or print neatly, fill out ALL blanks correctly and completely.
- Do not write in shaded areas. These are for WM&EC use only.
- A work package number needs to be included for all 1831 (private) waste and as requested for other special cases (e.g., compressed gas cylinders, lecture bottles, etc.).
- Do not fill in an accumulation date if the waste is in a satellite accumulation area.
- Do not include both satellite accumulation wastes and, 90 day wastes on the same CDRR form. Use separate forms.
- Do not include both 1830 and 1831 wastes on the same CDRR form.
- Do not include both nonradioactive chemical wastes and radioactive mixed waste on the same CDRR form.
- Do not include both 300 and 3000 Areas wastes on the same CDRR form.
- For any materials analyzed, please attach a copy of the analytical report.
- Please feel free to use several lines per item as necessary to include any important information on the material.

Specific CDRR Instructions:

(a) Provide a complete description of the material for disposal. For trade name items, attach a material safety data sheet (MSDS). For items analyzed, attach a copy of the analysis. Also include any additional information on material or process if any (e.g., CAS number, RTEC number.)

(b) Provide all known chemical components; use proper accepted names (e.g., ethyl acohol is acceptable; abbreviations or formulas are not).

(c) Enter weight percent for all known chemical components; this must add up to 100% for each item, unless the information is proprietary (as indicated on an attached MSDS). Trace amounts of metals, cyanides, sulfides, PCBs, phenolics, and other highly toxic materials must be specified.

(d) Please indicate physical state of material: S=Solid, L=Liquid, G=Gas.

(e) Please enter hazards from codes shown below; also, for corrosive material include the pH, for flammable materials include the flashpoint (FP).

Hazard Codes		
C=Corrosive	T=Toxic	E=Explosive
EP= EP Toxic	O=Oxidizer	F=Flammable
R=Reactive (with water or air)		

(f) Please enter container/material from codes shown below (state all that apply):

F= Full	MT=empty	TR= triple rinsed	O= old
N= new (unused material)		S= spill material	PF= partially full

R= recyclable condition (unopened, or opened but in excellent condition)

Requirements for Material Pickup by WM&EC:

In order to facilitate material pickup by WM&EC, please do the following:

- Complete ALL required information on the CDRR form.
- Ensure that all materials are in screw-cap glass, metal, or plastic containers that are compatible with the waste (sealed containers which the material originally came in are acceptable, (e.g., glass ampules or metal paint cans). Ground glass, rubber stoppers, or taped seals will not be accepted.
- Have a chemical waste certification filled out and signed by a PNL Radiation Protection Technologist showing that the material has been surveyed and released (1 to 2 days prior to scheduled pickup).
- Each individual container must have marking or labeling on them that clearly identify 100% of their contents and their chemical hazards (if container is too small to label with all constituents please attach a tag or other listing).
- If you have questions, please refer to PNL-MA-8, "Waste management and Environmental Compliance". For hazardous waste issues and PNL-MA-43, "Health and Safety Management," for chemical hazard labeling requirements.

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3.0 WASTE ANALYSIS [C]

The purpose of this Waste Analysis Plan (WAP) is to document the waste acceptance process, sampling methodologies, analytical techniques, and processes that are undertaken for sampling and analysis of dangerous and or mixed waste managed in the 305-B Storage Facility.

This chapter also provides information on the chemical, biological, and physical characteristics of the waste stored at the 305-B Storage Facility.

3.1 CHEMICAL, BIOLOGICAL, AND PHYSICAL ANALYSIS

The dangerous waste and RMW stored at 305-B Storage Facility can be categorized as originating from five basic sources:

- Listed Waste from specific and nonspecific sources
- Discarded commercial chemical products
- Waste from research activities using radioactive isotopes
- Waste from chemicals synthesized or created in research laboratories
- Discarded commercial products exhibiting dangerous waste characteristics and/or criteria.

Each of these waste categories is discussed below, including waste descriptions, hazard characteristics, and bases for hazard designations. This information includes that which must be known to treat, store, or dispose of the waste, as required under WAC 173-303-806(4)(a)(ii).

Listed Waste from Specific and Nonspecific Sources. Wastes from specific and nonspecific sources consist of those listed wastes identified in WAC 173-303-9904. Attachment 18, Chapter 1.0, Part A, Form 3, identifies the waste from this category with their estimated annual management quantities.

Halogenated and nonhalogenated solvents are in the form of spent solvents. Degreasing solvents (F001), as well as spent halogenated solvents (F002), are used primarily in research although some commercial applications do exist (e.g., printing, duplicating). Spent non-halogenated solvents (F003, F004, and F005) also come primarily from research laboratories, although some is generated through maintenance applications. Manufacturing activities are not performed at Hanford; therefore, dangerous waste from specific sources (WAC 173-303-9904 "K" Waste) typically is not generated at PNNL. However, small quantities of K-listed waste have been generated from treatability studies and sample characterization activities at PNNL from time to time and could be stored at 305-B Storage Facility. W001 state source waste (PCB electrical equipment waste) has been generated in limited amounts in the past and could be stored at 305-B Storage Facility if other generation activities occur.

F-listed waste is designated on the basis of process knowledge (i.e., information from container labels or material safety data sheets), or by sampling. Sampling is performed if the generating unit does not have sufficient information to document the composition and characteristics of the waste. The waste generator is responsible for specifying the characteristics of the waste on the basis of knowledge of the chemical products used (i.e., information supplied by the manufacturer) and the process generating the waste. These listed wastes are all designated as dangerous waste (DW) or extremely hazardous waste (EHW) based on the criteria given in WAC 173-303-100.

Discarded Chemical Products. Discarded chemical products consist of those products described in WAC 173-303-081. The Part A, Form 3, for 305-B Storage Facility identifies all of the discarded chemical products listed in WAC 173-303-9903 and specifies an estimated maximum annual management quantity, based on prior experience. Attachment 18, Chapter 1.0, Part A, Form 3, lists all of these waste

codes, however, because the wide variety of research activities conducted at Hanford presents the potential to generate any of these waste.

These wastes (P waste and U waste) are typically received at 305-B Storage Facility in the manufacturer's original container. These containers typically consist of glass and polyethylene jars or bottles and metal cans that have a volume equal to or less than 4 liters.

Wastes in this category are designated on the basis of the generator's knowledge. As these waste are usually in original containers, information on the container label is verified by generator knowledge (i.e., knowledge that material is in its original container) and is used to identify contents. Waste in 'as procured' containers (i.e., original container with intact label) are not sampled. These listed waste contain those designated as DW as well as those designated as EHW. These waste are also subject to LDR regulations under 40 CFR 268, including disposal prohibitions and treatment standards.

Waste from Research Activities Using Radioactive Isotopes. Dangerous wastes from research activities using radioactive isotopes are RMW. These waste are generated in laboratories performing chemical and physical research, and consist primarily of radiologically contaminated chemicals. These waste are designated on the basis of the generator's knowledge or on the basis of sampling and analysis. The generator's knowledge is used if the generator has kept accurate records of the identities and concentrations of constituents present in the waste. For example, many generating units keep log sheets for accumulation containers in satellite areas to keep a record of waste constituents. If information available from the generator is inadequate for waste designation, the wastes are sampled and the results of the analysis are used for designation. These waste include those designated as state only dangerous waste under WAC 173-303-100 and also those designated as characteristic dangerous waste under WAC 173-303-090. Attachment 18, Chapter 1.0, Part A, Form 3, includes all categories of toxic, and persistent, waste (i.e., both DW and EHW). The wide variety of research activities conducted at Hanford presents the potential that these waste could be generated and requires subsequent management at 305-B Storage Facility. Similarly, Attachment 18, Chapter 1.0, Part A, Form 3, includes the characteristic dangerous waste categories D001 through D043 (i.e., ignitable, corrosive, reactive, and TCLP toxic due to metals or organics content).

Flammables (i.e., flash point less than 100° Fahrenheit) will not be stored in the below-grade RMW cell; however, ignitables (D001 due to oxidizer content) will be stored in this cell. Flammable RMW is not stored below grade due to Fire Code restrictions. These waste are stored above the RMW cell in a flammable storage module. The flammable RMW module is equipped with secondary containment to provide greater than 100% secondary containment volume.

The waste in this category includes those designated as either DW or EHW. The waste could also be federal LDR waste regulated under 40 CFR 268 as well as state LDR waste regulated under WAC 173-303-140 (e.g., organic/carbonaceous waste).

Waste from Chemicals Synthesized or Created in Research Laboratories. Waste from chemicals synthesized or created in research laboratories typically consist of organics in quantities of 100 g or less, received in small containers.

These waste are designated on the basis of the generator's knowledge or on the basis of sampling and analysis. The generator's knowledge is used if the generating unit has kept accurate records of the identities and concentrations of constituents present in the waste (e.g., log sheets for accumulation containers). If information available from the generating unit is inadequate for waste designation, the waste is sampled and the results of the analysis are used for designation. These waste include those designated as state only dangerous waste under WAC 173-303-100 and also those designated as characteristic dangerous waste under WAC 173-303-090. The Part A, Form 3, for 305-B Storage Facility

includes all categories of toxic, and persistent waste (i.e., both DW and EHW). The wide variety of research activities conducted at Hanford presents the potential that these wastes could be generated and requires subsequent management at 305-B Storage Facility.

The waste in this category includes those designated as either DW or EHW. These wastes could also be federal LDR wastes regulated under 40 CFR 268 as well as state LDR wastes regulated under WAC 173-303-140 (e.g., organic/carbonaceous wastes).

Discarded Chemical Products Exhibiting Dangerous Waste Characteristics and/or Criteria. Many discarded chemical products handled in 305-B Storage Facility are not listed in WAC 173-303-9903 and are still considered dangerous waste since they exhibit at least one dangerous waste characteristic and/or criterion (WAC 173-303-090 and WAC 173-303-100). These wastes are included with those listed in the Attachment 18, Chapter 1.0, Part A, Form 3, under waste codes D001 through D043, WT01, WT02, WP01, WP02, and WP03.

Waste in this category is designated based on the generator's knowledge. As these wastes are usually in their original containers, information on the container label is verified by the generator's knowledge and is used to identify the contents. These wastes contain those designated as DW as well as those designated as EHW. These wastes could also be federal LDR waste regulated under 40 CFR 268 as well as state LDR waste regulated under WAC 173-303-140 (e.g., organic/carbonaceous waste).

3.1.1 Containerized Waste

The container storage areas at 305-B Storage Facility meet the containment system requirements of WAC 173-303-630(7)(c). Testing or documentation that the dangerous waste stored at 305-B Storage Facility does not contain free liquids is not required.

3.1.2 Waste in Tank Systems

This section does not apply to the 305-B Storage Facility because wastes are not stored in tanks.

3.1.3 Waste in Piles

This section does not apply to the 305-B Storage Facility because wastes are not stored in piles.

3.1.4 Landfill Waste

This section does not apply to the 305-B Storage Facility because wastes are not placed in landfills.

3.1.5 Waste Incinerated and Waste Used in Performance Tests

This section does not apply to the 305-B Storage Unit because wastes are not incinerated.

3.1.6 Waste to be Land Treated

This section does not apply to the 305-B Storage Facility because waste does not undergo land treatment.

3.2 WASTE ANALYSIS PLAN

This section describes the processes used to obtain the information necessary to manage waste in accordance with the requirements of WAC 173-303.

3.2.1 Facility Description

The 305-B Storage Facility is a dangerous waste and RMW storage unit owned and operated by the Department of Energy and co-operated by Pacific Northwest National Laboratory. The unit is used for the collection, consolidation, packaging, storage, and preparation for transport and disposal of both dangerous waste and RMW. It is an integral part of the Hanford Site's waste management system.

The 305-B Storage Facility is a one-story frame and masonry building with basement constructed in the early 1950s, with an attached two-story-high metal and concrete building constructed in January 1978, referred to in this document as the "high bay". The unit is located within the 300 Area, and was formerly used for engineering research and development. Unit upgrades were completed in 1988 to meet requirements for storage of dangerous waste and RMW. Waste storage under interim status began in March 1989.

3.2.2 Description of Facility Processes and Activities

A variety of small volume chemical wastes are generated by PNNL's research laboratory activities. These wastes are brought to the 305-B Storage Facility and segregated by compatibility for storage in the unit until enough waste is accumulated to fill a labpack or bulking container, usually a 30 - 55-gallon drum. When a sufficient number of shipping containers of waste have accumulated, they are manifested for shipment, generally to permitted off-site recycling, treatment or disposal facilities.

Dangerous wastes are stored in the high bay. The high bay has been equipped with a secondary containment system to facilitate storage of containerized waste. In addition, four storage "cells" have been constructed within the high bay area for segregated storage of incompatible waste streams. Each of the cells is approximately 14' x 14', enclosed by 4' high concrete block walls; each cell has its own separate secondary containment system. Drum-quantity storage for incompatible waste is allowed in these cells and in separated areas of the high bay.

Radioactive mixed waste (RMW) is stored in the basement of the original wing of the building in an area approximately 18' x 32'. Flammable RMW cannot be stored below grade (per Uniform Fire Code) and is stored in an independent area on the first floor of the original wing in the RMW flammable storage module.

Most of the information necessary to manage waste at 305-B Storage Facility is obtained from generating units without the need to perform detailed chemical, physical, and biological analysis. This approach is used for the following reasons:

- Wastes stored at 305-B Storage Facility are generated on the Hanford Site and/or by PNNL research programs; effective administrative control can be maintained over individual waste generating units (i.e., the same organization generates the waste and operates the storage unit)
- Wastes stored at 305-B Storage Facility may be discarded chemical products for which knowledge of waste characteristics is available without further analysis
- Most of the waste stored at 305-B Storage Facility is a result from research activities that are carefully controlled and documented; this documentation includes information on chemical constituents.

Information provided by waste generating units is verified before wastes are accepted for transport to 305-B Storage Facility (e.g., wastes are inspected to verify that they are as described in the disposal request). Generating units are not required to sample wastes unless they have inadequate process knowledge to designate waste, additional LDR information is needed, or visual verification failure occurs.

Verification sampling of waste to be shipped offsite from 305-B Storage Facility is required by the disposal contractor as needed and the contractor performs these analyses.

Because of the importance of administrative controls for the purposes of waste analysis, processes for management of wastes from the time of generation through storage at 305-B Storage Facility are described below. These processes demonstrate how sufficient knowledge is obtained from generating units to properly manage dangerous and mixed waste at 305-B Storage Facility. In the event that such knowledge is not available, sampling and analysis is required by 305-B Storage Facility prior to shipment to the storage unit.

The 305-B Storage Facility personnel shall collect from the generating unit(s) the information pursuant to 40 CFR 268.7(a) regarding LDR wastes, the appropriate treatment standards, whether the waste meets the treatment standards, and the certification that the waste meets the treatment standards, if necessary, as well as any waste analysis data that supports the generator's determinations. If this information is not supplied by the generating unit, then the 305-B Storage Facility personnel shall be responsible for completion and transmittal of all subsequent information regarding LDR wastes, pursuant to 40 CFR 268.7(b). All waste streams must be re-characterized at least annually, or when generating unit and/or 305-B Storage Facility personnel have reason to believe the waste stream has changed, to determine compliance with LDR requirements in 40 CFR 268.

Volumetric Description of Waste. A wide range of waste volumes is collected from research and support activities. The largest unit container collected is a DOT container <0.46 m^3, while the smallest is a trace amount in a small vial.

Large volume containers (greater than 4 L) (commonly contain chemicals such as those listed in WAC 173-303-9903 and -9904 and in 40 CFR 261.33), or commercial products which exhibit one or more of the dangerous waste characteristics or criteria. Greater than 99 percent of the containers generally contain chemicals for which information is easily accessible to determine dangerous designation. This information is generally obtained from the container label, for those waste in original containers, or from the material safety data sheet (MSDS) for the product.

Notification for Storing of Waste: The waste analysis process begins when the waste management organization is notified of the presence of a chemical or mixed waste. This notification is accomplished by the generating unit completing and transmitting an electronic Disposal Request. The form describes the volume and chemical composition of waste in each waste container for disposal. Hazard and compatibility information are obtained for each item on the disposal request form to ensure the safety of the waste management organization staff that collect and transport the waste and to ensure safe and appropriate storage in 305-B Storage Facility.

The compatibility and hazard class are determined using reference material that may include, Condensed Chemical Dictionary, Merck Index, 49 CFR, NIOSH, Sigma-Aldrich or any other reference material that is applicable. The priority of hazard designation for those substances with multiple hazards or for mixtures is the same used by the DOT in 49 CFR 173.2.

Disposal Requests and other information used for determining waste designations and compatibility must meet four distinct needs of the dangerous waste manager and sample collector. They must enable each to:

- Identify those wastes which are designated dangerous in accordance with WAC 173-303 and whether those wastes are DW or EHW
- Determine whether the waste is restricted from land disposal under 40 CFR 268 or WAC 173-303-140 and, as whether it, complies with applicable treatment standards under 40 CFR 268 or WAC 173-303-140

- Identify and verify specific morphological characteristics of waste in solid or solution form
- Outline how to safely handle, transport, analyze, store, and dispose of the waste product or sample.

Physical Analysis. Visual validation as a physical analysis activity strongly relied upon to confirm the nature of a waste collected or sampled, and to determine the accuracy of the disposal request information received from the generating unit. It is impractical for the waste management organization to chemically analyze each container or vial of waste accepted for storage in 305-B Storage Facility since the amount can exceed 10,000 per year. A more realistic approach to reducing risks to safety and the environment, and one implemented at 305-B Storage Facility, includes trained and experienced personnel performing a visual inspection of the waste and direct inquiry of the generating unit's personnel. The waste is inspected to verify that it matches the description on the disposal request. If the waste is a discarded product, the contents of the container are inspected to verify that they match the description of the product. For other waste, e.g., spent solvents, waste descriptions are compared with the products in use at the generating unit. Generating unit personnel are queried concerning the source of the waste and the materials used in the process generating the waste. This information is compared to the description of the waste on the disposal request. If, after visual inspection of the waste and interrogation of the generating unit personnel, any doubt remains as to the true identity of the waste, the waste is sampled and analyzed by the generating unit as described in Section 3.5.

Waste Collection at the Generating Unit. When satisfactory information has been obtained from the Disposal Request Form, waste management organization staff visits the generating unit site and make a final inspection of the waste containers to determine whether the disposal request form and contents label information match completely. If the information on the disposal request matches with the container labeling and visual inspection, the waste is approved for storage. If discrepancies are found, the generating unit is required to resubmit the disposal request with accurate information. Unknown or unidentified materials are sampled by generating unit staff for identification of constituents and remain at the generating unit until the composition has been determined.

Labeling and Marking. After inspection of the waste at the generating unit, the approved waste is assigned a unique computer identification number and hazard classification. Waste meeting Washington dangerous waste criteria under WAC 173-303-090 or 173-303-100 are marked "Toxic" (for waste designated WT01 or WT02), and/or "Persistent" (for waste designated WP01, WP02, or WP03), in accordance with WAC 173-303-630(3). In addition, each waste container is labeled with a list of constituents and major risk(s). The containers are also labeled indicating cell location, and with a unique computer-generated identification number created by the tracking system described below. This computerized information helps the waste handlers ensure safe handling, storage, retrieval and transportation of dangerous waste.

Transportation. The labeled containers are transported to 305-B Storage Facility by PNNL staff trained in applicable DOT requirements and emergency response. Waste is transported using a truck or light utility vehicle. For transport on roads accessible to the public, the vehicles are placarded in compliance with DOT regulations and documented in compliance with WAC 173-303-180, Hanford Facility Permit Conditions II.P. and/or II.Q as applicable.

Waste Handling, Storage, and Tracking at 305-B Storage Facility. Waste received at 305-B Storage Facility is put into 14 separate hazard classifications based on building and fire code restrictions for that type of facility:

1. Non-flammable RMW
2. Oxidizers
3. Acids, (organic and inorganic)
4. Poison

5. Caustics
6. Flammable Solids
7. Non-Regulated
8. Miscellaneous
9. Washington State only waste (e.g., sodium chloride, sodium bicarbonate)
10. Flammable and combustible liquids
11. Flammable and combustible RMW
12. Compressed gases and aerosols
13. Special Case waste (organic peroxides, explosives, etc.)
14. Recycle

Each hazard class has designated and clearly identified locations within 305-B Storage Facility. Containers of dangerous wastes (10 gal or less) are stored in a specific storage cabinet or shelf designed for that hazard class. The cabinets are located inside the appropriate storage cell (i.e., acid storage cabinet in acid cell). DOT-approved containers (typically 10 gal and larger but less than 0.46m3) are segregated by hazard class and can be stored in a appropriate storage cell or on the main high bay floor in 305-B Storage Facility.

Only sealed containers of nonflammable RMW are received in the below-grade RMW storage area located in the basement of 305-B Storage Facility. Containers of flammable RMW are stored above grade in a flammable storage module adjacent to the high bay area. All chemical storage is in accordance with fire protection requirements of the 1988 Uniform Fire Code (International Conference of Building Officials 1988).

Storage limits for all chemicals are listed in Table 4-1, (Uniform Building Code Table numbers 9-A and 9-B). This table is incorporated into this section by reference.

Recordkeeping and Inventory Control. A computer tracking system has been developed to ensure that complete records of current inventory, packaging, and shipping data are maintained. Records of the initial waste disposal request, waste analysis results if required, waste designation, and shipping manifests are maintained. As wastes are received for disposal, the containers are labeled with the information described in the Labeling and Marking section above, including a unique computer identification number.

The endpoint of the process for most waste is proper packaging and transport of the waste to an approved recycler or treatment/disposal facility. Some commercial chemical products, however, are redistributed to other Hanford Site contractors. Final computer verification of the history and ultimate disposal of each waste container is entered when the material is shipped from the 305-B Storage Facility.

Current waste quantities in inventory are periodically verified and reported to the Unit Operations Supervisor. The inventory is checked by hazard class and provides a measure of current inventory versus established limits.

If it is determined that 305-B Storage Facility inventory is within 5 percent of the limit for a given hazard classification, additional waste of that hazard class is not accepted into 305-B Storage Facility until the inventory has been reduced. Exceptions must be approved by the unit operating supervisor.

Unknown Waste and Waste Constituent Verification. Containers with unknown waste compositions are not accepted at 305-B Storage Facility. In the event that 305-B Storage Facility staff is required to respond to a critical need of a generating unit in the future and pick up an unknown waste, it will be sampled and analyzed as described in Sections 3.2.1 through 3.2.4.

If, for any reason, 305-B Storage Facility personnel believe that more stringent analysis of non-reagent grade chemical waste is needed (i.e., flash cans and mixtures), they will request that the generating unit have the waste analyzed by an approved analytical laboratory. Reasons for this request may be questionable appearance of the waste, periodic confirmation of waste composition, or historically unreliable information from a particular generating unit. There is no established frequency for this sampling and analysis; it is conducted on an as-needed basis. This analysis must be performed in accordance with EPA SW-846 procedures (EPA 1986). Analytical laboratories in the area with these capabilities include commercial, Hanford Site and Battelle operated laboratories. The generating unit must also provide the laboratory analysis confirming the waste composition when the waste management organization picks up the waste. This analysis will become part of the 305-B Storage Facility Operating Record.

3.2.3 Identification/EPA Classification and Quantities of Hazardous Wastes Managed Within the 305-B Storage Facility

Refer to Section 3.1 for a description of the types and quantities of wastes managed at 305-B Storage Facility.

3.2.4 Description of Hazardous Waste Management Units

The 305-B Storage Facility Waste Management Units are described in Attachment 18, Chapter 4.0.

3.3 SELECTING WASTE ANALYSIS PARAMETERS

State and federal regulations [WAC 173-303-300(2) and (5)(a); WAC 173-303-140; 40 CFR 268.7(a)] require that information be obtained, documented, and/or reported on wastes received by a TSD unit. These requirements include ensuring that only waste which meets 305-B Storage Facility unit-specific permit requirements are accepted, and reporting the information required by WAC 173-303-380. In addition to providing a general description of the waste, the focus of the information collected for regulatory purposes is to ensure that the 305-B Storage Facility is permitted to accept and store the waste.

The 305-B Storage Facility only accepts wastes that have been characterized properly. Before receipt or acceptance of waste at the 305-B Storage Facility, generators must supply adequate information to characterize and manage wastes properly.

One of the most important aspects of operating the 305-B Storage Facility in a safe manner is to ensure that incompatible wastes are not mixed together. For the purposes of this document, waste is considered compatible if, when mixed, waste does not: (1) generate extreme heat or pressure, fire, or explosion, or violent reaction; (2) produce uncontrolled toxic mists, dusts, or gases in sufficient quantities to threaten human health; (3) produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions; (4) damage the structural integrity of the device or facility containing the waste; or (5) through other like means threaten human health or the environment.

Sampling and laboratory analysis could be required to verify or establish waste characteristics for waste that is stored at the 305-B Storage Facility. The following are instances where sampling and laboratory analysis is required:

- inadequate information on PNNL-generated waste
- 5 percent waste verification for PNNL-generated waste
- 10 percent waste verification for non-PNNL-generated waste
- identification and characterization for unknown waste and spills within the unit.

3.3.1 Parameter Selection Process

The selection of analytical parameters is based on the State of Washington's "Dangerous Waste Regulations," WAC 173-303-300 and *EPA Waste Analysis at Facilities That Generate, Treat, Store, and Dispose of Hazardous Wastes, A Guidance Manual* (EPA 1994).

At least five percent of the waste containers received at 305-B during a federal fiscal year (October 1 through September 30) will undergo confirmation of designation pursuant to Sections 3.2.2 and 3.2.3. The number of containers needed to meet the five percent requirement is five percent of the average of containers for the previous three months. For example if 200 containers are received in January, 180 in February, and 220 in March, then 10 containers of received waste must undergo confirmation of designation in April. All generating units which ship more than 20 containers through 305-B Storage Facility in a fiscal year will have at least one 1 container sampled and analyzed. Containers, for which there is insufficient process knowledge, or analytical information to designate without sampling and analysis, may not be counted as part of the five percent requirement unless there is additional confirmation of designation independent of the generator designation. The generating unit's staff shall not select the waste containers to be sampled and analyzed other than identifying containers for which insufficient information is available to designate.

Containers of the following are exempt from the confirmation calculation above: Laboratory reagents or other unused products such as paint, lubricants, solvent, or cleaning products, whether received for redistribution, recycling, or as waste. To qualify for this exemption, such materials must be received at 305-B Storage Facility in their original containers.

Prior to acceptance of wastes at 305-B Storage Facility, confirmation of designation may be required (Section 3.7.3). Wastes that shall undergo confirmation of designation are identified in Condition III.2.B.f. of this Permit and may be divided into two groups; those that easily yield a representative sample (Category I), and those that do not (Category II). The steps for each type are outlined below along with a description of which wastes fall into each category:

Category I. If a waste which easily yields a representative sample is received, a representative sample will be taken from the waste containers selected. If more than one phase is present, each phase must be tested individually. The following field tests will be performed as appropriate for the waste stream:

- Reactivity - oxidizer, cyanide, and sulfide tests. These tests will not be performed on materials known to be organic peroxides, ethers, and/or water reactive compounds.
- Flashpoint/explosivity - explosive atmosphere meter[1], or a closed cup flashpoint measurement instrument[1].
- pH - by pH meter[1] or pH paper (SW-846-9041)[2]. This test will be performed on non- aqueous materials.
- Halogenated organic compounds.
- Volatile organic compounds - by photo or flame ionization tester[1], by gas chromatography with or without mass spectrometry, or by melting point and/or boiling point determination.

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[1] These instruments are field calibrated or checked for accuracy daily when in use.

[2] The pH paper must have a distinct color change every 0.5 pH units and each batch of paper must be calibrated against certified pH buffers, or by comparison with a pH meter calibrated with certified pH buffers.

If the sample data observed meets the parameters specified in its documentation, confirmation of designation is complete and the waste may be accepted. If not, the waste is rejected and returned to the generating unit for additional characterization. The waste will be required to be resubmitted with a revised Disposal Request following the additional characterization activity.

When mathematically possible, the Permittees shall perform confirmation on an equal number of Category I and Category II containers.

Category II. If a representative sample is not easily obtained (for example, discarded machinery or shop rags), or if the waste is a labpack or discarded laboratory reagent container, the following steps will be performed:

a. Visually verify the waste. Examine each selected container to ensure that it matches the data provided on the Disposal Request form(s) provided to document the waste. Labpacks and combination packages that are accepted from non-PNNL generators must be removed from the outer container. If the waste matches the description specified in its documentation, confirmation of designation is complete and the waste may be accepted. If not, the waste is rejected and returned to the generating unit, and the generating unit revises and resubmits the documentation to reflect the actual contents. If necessary, the waste shall be re-designated utilizing the designation methods identified in WAC 173-303-070 through 173-303-100."

Waste must be analyzed using the Toxicity Characteristic Leaching Procedure (TCLP) in accordance with Appendix II of 40 CFR 261, as amended, in order to provide sufficient information for proper management and for decisions regarding LDR pursuant to 40 CFR 268.

3.3.2 Criteria and Rational for Parameter Selection

Waste-testing methods, parameters and the rationale for these parameters are summarized in Table 3-1. Waste testing methods and references to these methods are as specified in WAC 173-303-110(3) or approved by Ecology in accordance with WAC 173-303-110(5). These methods are summarized in Table 3-1. All methods are specified in *Chemical Testing Methods*, WDOE 83-13 (Ecology 1983) and/or *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, EPA SW-846 (EPA 1986).

Testing parameters for each type of waste were selected to obtain data sufficient to designate the waste properly under WAC 173-303-070, meet requirements for Land Disposal Restrictions, and to manage the waste properly. If information on the source of the waste is available, then all parameters might not be required, e.g., exclusion of testing for pesticides from a metal-machining operation.

Some of the parameters that are considered for waste received at the 305-B Storage Facility are as follows.

- Physical description – used to determine the general characteristics of the waste. This facilitates subjective comparison of the sampled waste with previous waste descriptions or samples. Also, a physical description is used to verify the observational presence or absence of free liquids.
- pH – used to identify the pH and corrosive nature of an aqueous or solid waste, to aid in establishing compatibility strategies, and to indicate if the waste is acceptable for treatment and/or storage in the 325 HWTUs.
- Cyanide – used to indicate whether the waste produces hydrogen cyanide upon acidification below pH 2.

- Sulfide screen – used to indicate if the waste produces hydrogen sulfide upon acidification below pH 2.
- Halogenated hydrocarbon content screen – used to indicate whether chlorinated hydrocarbons or polychlorinated biphenyls (PCBs) are present in waste and to determine if the waste needs to be managed in accordance with the regulations prescribed in the *Toxic Substance Control Act of 1976.*
- Ignitability – used to identify waste that must be managed and protected from sources of ignition or open flame.
- Testing kits – used to determine waste characteristics and verify generator knowledge. The testing procedures for each test are included in the appropriate test kit.

3.3.3 Special Parameter Selection Requirements

The 305-B Storage Facility does not have any process vents that manage hazardous waste with organic concentrations of at least 10 part per million by weight percent, or pumps, or compressors used more than 300 hours per year that come into contact with hazardous waste with an organic concentration of at least 10 percent by weight.

A variety of small volume chemical wastes are generated by PNNL's research laboratory activities. These containers typically range in sizes from 10 ml to 20 gallon. These wastes are brought to the 305-B Storage Facility and segregated by compatibility for storage in the unit until enough waste is accumulated to fill a labpack or bulking container, usually a 30- to 55-gallon drum. All containers having a design capacity greater than 0.1 m3 to less than or equal to 0.46 m3 are equipped with a cover and complies with all applicable Department of Transportation regulations on packaging hazardous waste for transport under 49 CFR part 178.

DOT approved intermediate bulk packaging may be utilized for some solid wastes. These containers range in size from 0.1 cu yard (27 cu ft) to 1.6 cu yard (43 cu ft) and are approved for solid waste only.

3.4 SELECTING SAMPLING PROCEDURES

3.4.1 Sampling Strategies and Equipment

Sample collection methods conform to the representative sample methods referenced in WAC 173-303-110(2). The summary of test parameters, rationales and sampling methods are identified in Table 3-1.

Representative samples of liquid waste from containers (vertical 'core sections') are typically obtained using a composite liquid waste sampler (COLIWASA) or tubing, as appropriate. The sampler is long enough to reach the bottom of the container in order to provide a representative sample of all phases of the containerized liquid waste. If a liquid waste has more than one phase, each phase is separated for individual testing depending on the waste management pathways of the phases.

Other waste types that might require sampling are sludge's, powders, and granules. In general, non-viscous sludge's are sampled using a COLIWASA. Highly viscous sludge's and cohesive solids are sampled using a trier, as specified in SW-846. Dry powders and granules are sampled using a thief, also as specified in SW-846.

Samplers are constructed of material compatible with the waste. In general, aqueous liquids are sampled using polyethylene samplers, organic liquids using glass samplers, and solids using polyethylene

samplers. Disposable samplers are used whenever possible to eliminate the potential for cross-contamination. If non-disposable sampling equipment is used, it is decontaminated between samples.

Representative sampling may be requested by unit staff to ensure proper waste identification. Sampling may be performed by unit personnel or the generating unit producing the waste. The number of grab samples collected from a container depends on the amount of waste present and on the homogeneity of the waste as determined by observation. In some cases, there will be only one container of waste present. In such cases, only one vertical composite sample will be collected (e.g., COLIWASA). If more than one container is present, a random number of samples will be collected and analyzed statistically using the procedures specified in Section 9.2 of SW-846 (EPA 1986).

In all instances, sampling methods will conform to the representative sample method referenced in WAC 173-303-110(2), i.e., ASTM standards for solids and SW-846 for liquids. The specific sampling methods and equipment used varies with the chemical and physical nature of the waste material and the sampling circumstances.

3.4.2 Sampling Preservation and Storage

All sample containers, preservation techniques, and hold times follow SW-846 protocol. Many samples are analyzed at the 305-B Storage Facility utilizing prepackaged test kits and are not preserved.

3.4.3 Sampling QA/QC Procedures

Pacific Northwest National Laboratory is committed to maintaining a high standard of quality for all of its activities. A crucial element in maintaining that standard is a quality-assurance program that provides management controls for conducting activities in a planned and controlled manner and enabling the verification of those activities.

The QA/QC objective of the 305-B Storage Facility is to control and characterize errors associated with collected data, and to illustrate that waste testing has been performed according to specification in this waste analysis plan.

The 305-B Storage Facility will ensure that precision and accuracy are maintained throughout the waste analysis process. For analysis using SW-846 methods, the program will follow the QA/QC guidance set forth in SW-846 at a minimum. Good laboratory practices which encompasses sampling, sampling handling, housekeeping, and safety are followed throughout the process. There are many elements of QA/QC associated with the sampling processes at the 305-B Storage Facility. These practices ensure that all data and the decisions based on that data are technically sound, statistically valid, and properly documented.

Activities pertaining to waste analysis include, but are not limited to, the preparation, review, and control of procedures and the selection of analytical laboratories. The Laboratory's QA SBMS subject area has administrative procedures that establish requirements and provide guidance for the preparation of analytical and technical (i.e., sampling, chain-of-custody, work processes) procedures, as well as other administrative procedures. Procedures undergo a review cycle and, once issued, are controlled to ensure that only current copies are used.

The primary purpose of waste testing is to ensure that the waste is properly characterized in lieu of process-knowledge data, in compliance with RCRA requirements for general waste analysis [WAC 173-303-300(2); 40 CFR 264.13]. Waste testing also is performed to ensure the safe management of waste being stored, proper disposition of residuals from incidents that might occur, and control of the

acceptance of waste for storage. The specific objectives of the waste-sampling and analysis program at the 305-B Storage Facility are as follows:

- Identify the presence of waste that is substantially different from waste currently stored.
- Provide a detailed chemical and physical analysis of a representative sample of the waste, before the waste is accepted at or transferred from the 305-B Storage Facility to an offsite TSD facility, to ensure proper management and disposal.
- Provide an analysis that is accurate and up-to-date to ensure that waste is properly treated and disposed of.
- Ensure safe management of waste undergoing storage at the 305-B Storage Facility.
- Ensure proper disposal of residuals.
- Ensure compliance with LDR's.
- Identify and reject waste that does not meet the 305-B Storage Facility's acceptance requirements (e.g., incomplete information).
- Identify and reject waste that does not meet specifications for the 305-B Storage Facility (i.e., Part A, Form 3, listing, restricted from storage at the 305-B Storage Facility).

QA/QC Objectives

The objectives of the QA/QC program are two-fold. The first objective is to control and characterize any errors associated with the collected data. Quality-assurance activities, such as the use of standard methods for locating and collecting samples, are intended to limit the introduction of error. Quality-control activities, such as the collection of duplicate samples and the inclusion of blanks in sample sets, are intended to provide the information required to characterize any errors in the data. Other QC activities, such as planning the QC program and auditing ongoing and completed activities, ensure that the specified methods are followed and that the QA information needed for characterizing error is obtained.

The second QA/QC objective is to illustrate that waste testing has been performed according to specification in this waste-analysis plan. The QA/QC activities will include the following:

- Field inspections – performed and documented by 305-B Storage Facility staff or designee, depending on the activity. The inspections primarily are visual examinations but might include measurements of materials and equipment used, techniques employed, and the final products. The purpose of these inspections is to verify that a specific guideline, specification, or procedure for the activity is completed successfully.
- Field testing – performed onsite by 305-B Storage Facility staff (or designee) according to specified procedures.
- Laboratory analyses – performed by onsite or offsite laboratories on samples of waste. The purpose of the laboratory analyses is to determine constituents or characteristics present and the concentration or level.

Sampling Objectives

The data-quality objectives (DQO) for the waste sampling and data analyses are as follows:

- Determine if waste samples are representative of the contents of the containers at the time the samples were taken.

- Determine if waste samples are representative of long-term operations affecting the 305-B Storage Facility.
- Determine if waste accepted for storage is within the RCRA permit documentation limitations.
- Determine if waste accepted for storage meets the requirements of the 305-B Storage Facility waste-acceptance criteria.
- Determine if waste accepted for storage meets the information provided by the generator.

Data Collection/Sampling Objectives

The acquired data need to be scientifically sound, of known quality, and thoroughly documented. The DQOs for the data assessment will be used to determine compliance with national quality standards, which are as follows:

- Precision – The precision will be the agreement between the collected samples (duplicates) for the same parameters, at the same location, and from the same collection vessel.
- Representativeness – The representativeness will address the degree to which the data accurately and precisely represent a real characterization of the population, parameter variation at a sampling point, sampling conditions, and the environmental condition at the time of sampling. The issue of representativeness will be addressed for the following points:
- Based on the generating process, the waste stream, and its volume, an adequate number of sampling locations are selected

The representativeness of selected media has been defined accurately

- The sampling and analytical methodologies are appropriate.
- The environmental conditions at the time of sampling are documented.
- Completeness – The completeness will be defined as the capability of the sampling and analytical methodologies to measure the contaminants present in the waste accurately.
- Comparability – The comparability of the data generated will be defined as the data that are gathered using standardized sampling methods, standardized analyses methods, and quality-controlled data-reduction and validation methods.

Analytical Objectives

Analytical data will be communicated clearly and documented to verify that laboratory data-quality objects are achieved.

Field Quality Assurance and Quality Control

Internal QA/QC checks will be established by submitting QA and QC samples to the analytical laboratory. The number of field QA samples will be approximately 5 percent of the total number of field samples taken. The 5 percent criterion commonly is accepted for a minimum number of QA/QC samples. The types and frequency of collection for field QA samples are as follows:

- Field Blanks – A sample of analyte-free media taken from the laboratory to the sampling site and returned to the laboratory unopened. Field blanks are prepared and preserved using sample containers from the same lot as the other samples collected that day. A sample blank is used to document contamination attributable to shipping and field-handling procedures. This type of blank is useful in documenting contamination of volatile organics samples.

- Field Duplicates – defined as independent samples collected in such a manner that the samples are equally representative of the variables of interest at a given point in space and time. The laboratory will use the field duplicate as laboratory duplicate and/or matrix spikes. Thus, for the duplicate sample, there will be the normal sample analysis, the field duplicate, and the laboratory duplicate (inorganic analysis). Duplicate samples will provide an estimate of sampling precision.

Laboratory Quality Assurance and Quality Control

All analytical work, whether performed by independent laboratories, is defined and controlled by a Statement of Work, prepared in accordance with administrative procedures. The daily quality of analytical data generated in the analytical laboratories will be controlled by the implementation of an analytical laboratory QA plan. At a minimum, the plan will document the following:

- sample custody and management practices
- requirements for sample preparation and analytical procedures
- instrument maintenance and calibration requirements
- internal QA/QC measures, including the use of method blanks
- required sample preservation protocols
- analysis capabilities.

The types of internal quality-control checks are as follows:

- Method Blanks – Method blanks usually consist of laboratory reagent-grade water treated in the same manner as the sample (i.e., digested, extracted, distilled) that is analyzed and reported as a standard sample would be reported.
- Method Blank Spike – A method blank spike is a sample of laboratory reagent-grade water fortified (spiked) with the analytes of interest, which is prepared and analyzed with the associated sample batch.
- Laboratory Control Sample – A QC sample introduced into a process to monitor the performance of the system.
- Matrix Spikes – An aliquot of sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis. Matrix spikes will be performed on 5 percent of the samples (1 in 20) or one per batch of samples.
- Laboratory Duplicate Samples – Duplicate samples are obtained by splitting a field sample into two separate aliquots and performing two separate analyses on the aliquots. The analyses of laboratory duplicates monitor the precision of the analytical method for the sample matrix; however, the analyses might be affected by nonhomogeneity of the sample, in particular, by nonaqueous samples. Duplicates are performed only in association with selected protocols. Duplicates are performed only in association with selected protocols. Laboratory duplicates are performed on 5 percent of the samples (1 in 20) or one per batch of samples. If the precision value exceeds the control limit, then the sample set must be reanalyzed for the parameter in question.
- Known QC Check Sample – This is a reference QC sample as denoted by SW-846 of known concentration, obtained from the EPA, the National Institute of Standards and Technology, or an EPA-approved commercial source. This QC sample is taken to check the accuracy of an analytical procedure. The QC sample is particularly applicable when a minor revision or adjustment has been made to an analytical procedure or instrument. The results of a QC-check- standard analysis are compared with the true values, and the percent recovery of the check standard is calculated.

PNNL Analytical Chemistry Laboratory QA/QC

PNNL's analytical chemistry laboratory may need to be used to analyze samples of high-activity dangerous waste. It has a rigorous QA plan that ensures that data produced are defensible, scientifically valid, and of known precision and accuracy, and meets the requirements of its clients.

Offsite Laboratory QA/QC

When it is necessary to send samples to an independent laboratory, contracts are not awarded until a pre-award evaluation of the prospective laboratory has been performed. The pre-award evaluation process involves the submittal of its QA plan to PNNL QA staff and the unit-operating supervisor. It also may involve a site visit by QA personnel and a technical expert, or may consist of a review of the prospective laboratories' QA/QC documents and records of surveillances/inspections, audits, non-conformances, and corrective actions maintained by PNNL or other Hanford Facility contractors.

Recordkeeping

Records associated with the waste-analysis plan and waste-verification program are maintained by the waste-management organization. A copy of the Disposal Request for each waste stream accepted at the 305-B Storage Facility is maintained as part of the operating record. Generators maintain their sampling and analysis records. The waste-analysis plan will be revised whenever regulation changes affect the waste-analysis plan.

Staff of the 305-B Storage Facility has a goal of continuous improvement by ensuring that all analytical data produced is of known accuracy and precision, exceeds all industry standards and is scientifically valid. Using the above practices and following the appropriate 305-B Storage Facility operating procedures staff can monitor and ensure that progress is being made in the quality of the data produced.

3.4.4 Health and Safety Protocols

During all sampling activities, precautions will be taken to ensure that waste containers do not expel gases and/or pressurized liquids. All personnel will be properly trained in safety and handling techniques.

3.5 SELECTING A LABORATORY, AND LABORATORY TESTING AND ANALYTICAL METHODS

3.5.1 Selecting a Laboratory

Laboratory selection is limited; only a few laboratories are equipped to handle mixed waste because of special equipment and procedures that must be used to minimize personnel exposure. Preference will be given to any PNNL facility or other laboratories on the Hanford Facility that exhibit demonstrated experience and capabilities in three major areas:

- comprehensive written QA/QC program based on DOE-RL requirements specifically for that laboratory
- audited for effective implementation of QA/QC program
- participate in performance-evaluation samples to demonstrate analytical proficiency.

All laboratories (onsite or offsite) are required to have the following QA/QC documentation:

- Daily analytical data generated in the contracted analytical laboratories is controlled by the implementation of an analytical laboratory QA plan.
- Before commencement of the contract for analytical work, the laboratory will, have their QA plan available for review. At a minimum, the QA plan will document the following:
- sample custody and management practices
- requirements for sample preparation and analytical procedures
- instrument maintenance and calibration requirements
- internal QA/QC measures, including the use of method blanks
- required sample preservation protocols
- analysis capabilities.

3.5.2 Selecting Testing and Analytical Methods

PNNL waste generators may need to conduct analyses to provide information to fill out a Disposal Request form, and to determine compatibility, safety, and operating information. As needed, 305-B Storage Facility staff also will conduct analyses to determine completeness of information and if the waste meets the acceptance criteria for disposal, treatment or storage at one of the Hanford Facility-permitted treatment/storage/disposal areas or that of one of the offsite TSD facilities. Testing and analytical methods will depend on the type of analysis sought and the reason for needing the information.

Chemists and/or appropriate personnel working under approved QA guidelines perform all testing. Analytical methods will be selected from those that are described in Section 3.3.1.

3.6 SELECTING WASTE RE-EVALUATION FREQUENCIES

Some analysis will be needed to verify that waste streams received by the 305-B Storage Facility conform to the information on the Disposal Request and or the waste analysis sheet supplied by the generator. If discrepancies are found between information on the Disposal Request, hazardous-waste manifest, shipping papers, waste- analysis documentation and verification analysis, then the discrepancy will be resolved by:

- returning waste to the generator, or sample and analyze the materials in accordance with WAC 173-303-110; and/or
- reassessing and re-designating the waste; repackaging and labeling as necessary or return to the generator.

Periodic re-evaluation provides verification that the results from the initial verification are still valid. Periodic re-evaluation also checks for changes in the waste stream.

Exceptions to physical screening for verification are:

Analysis and characterization, as required by WAC 173-303-300(2), are performed on each waste before acceptance at the 305-B Storage Facility to determine waste designation and characteristics. The characterization of the waste, based on this information, is reviewed each time a waste is accepted. The information must be updated by the generator when the waste stream changes or if the following occurs.

- The 305-B Storage Facility personnel have reason to suspect a change in the waste, based on inconsistencies in packaging, labeling or visual inspection of the waste.
- The information submitted previously does not match the characteristics of the waste submitted.

Sampling and laboratory analysis could be required to verify or establish waste characteristics for waste that is stored at the 305-B Storage Facility. The following are instances where sampling and laboratory analysis are required:

- inadequate information on PNNL-generated waste
- waste streams generated onsite will be verified at 5 percent of each waste stream
- inadequate information before waste was shipped or discrepancy discovered
- waste streams received from offsite generators will be verified at 10 percent of each waste stream applied per generator, per shipment
- identification and characterization for unknown waste and spills.

3.7 SPECIAL PROCEDURAL REQUIREMENTS

3.7.1 Procedures for Receiving Waste From off-site Generators

Most of the waste stored at 305-B Storage Facility is generated on the Hanford Site and/or by PNNL research programs within the 300 Area. Additional requirements for waste generated outside the 300 Area include proper manifesting (if appropriate) to 305-B Storage Facility and proper packaging for transport over public roadways. Although PNNL waste generated outside of the 300 Area is considered to be generated offsite since it may be transported to 305-B Storage Facility on roads accessible to the public, it is under the same administrative controls as wastes that are generated onsite (i.e., in the 300 Area).

The generator is responsible for identifying waste composition accurately and PNNL waste operations will arrange for the transport of the waste. The 305-B Storage Facility maintains a copy of any pertinent operating record in accordance with WAC 173-303 and the time frames described in Attachment 33, General Information Portion, Chapter 12 (DOE/RL-91-28). The waste-tracking methods are as follows.

- **Inspection of Shipping Papers/Documentation** – The necessary shipment papers for the entire shipment are verified (i.e., signatures are dated, all waste containers included in the shipment are accounted for and correctly indicated on the shipment documentation, there is consistency throughout the different shipment documentation, and the documentation matches the labels on the containers).
- **Inspection of Waste Containers** – The condition of waste containers is checked to verify that the containers are in good condition (i.e., free of holes and punctures).
- **Inspection of Container Labeling** – Shipment documentation is used to verify that the containers are labeled with the appropriate "Hazardous/Dangerous Waste" labeling and associated markings according to the contents of the waste container.
- **Acceptance of Waste Containers** – The 305-B Storage Facility personnel sign the Shipment documents and retain a copy.

If Shipment will be received from or destined offsite, then a Uniform Hazardous Waste Manifest will be prepared identifying the 305-B Storage Facility as the receiving unit (Hanford Facility Permit, Condition II.P. The 305-B Storage Facility operations staff will sign and date the manifest to certify that the dangerous waste covered by the manifest was received. The transporter will be given at least one copy of the signed manifest. A copy of the manifest will be returned to the generator within 30 days of

receipt at the 305-B Storage Facility. A copy of the manifest also will be retained in the 305-B Storage Facility operating record.

For onsite waste transfers subject to Hanford RCRA Permit, Dangerous Waste Portion, Condition II.Q.1, documentation meeting that requirement will be prepared and accompany the shipment. The documentation will be maintained in the Operating Record.

Response to Significant Discrepancies

The primary concern during acceptance of containers for storage is improper packaging or manifest discrepancies. Containers with such discrepancies are not accepted at the 305-B Storage Facility until the discrepancy has been resolved. Depending on the nature of the condition, such discrepancies can be resolved through the use of one or more of the following alternatives.

- Incorrect or incomplete entries on the Uniform Hazardous Waste Manifest can be corrected or completed with concurrence of the onsite generator or offsite generator. Corrections are made by drawing a single line through the incorrect entry. Corrected entries are initialed and dated by the individual making the correction.
- The waste packages can be held and the onsite generator or offsite waste generator requested to provide written instructions for use in correcting the condition before the waste is accepted.
- Waste packages can be returned as unacceptable.
- If a noncompliant dangerous waste package is received from an offsite waste generator, and the waste package is non-returnable because of condition, packaging, etc., and if an agreement cannot be reached among the involved parties to resolve the noncompliant condition, then the issue will be referred to DOE-RL and Ecology for resolution. Ecology will be notified in writing if a discrepancy is not resolved within 15 days after receiving a noncompliant shipment. Pending resolution, such waste packages, although not accepted, might be placed in the 305-B Storage Facility. The package(s) will be segregated from other waste and an entry will be made into the 305-B Storage Facility logbook describing the actions that were taken to store the packages in a safe manor until a resolution has been reached.

Activation of Contingency Plan for Damaged Shipment

If waste shipments arrive at the 305-B Storage Facility in a condition that presents a hazard to public health or the environment, the Building Emergency Procedure is implemented as described in the Hanford Facility RCRA Permit, Attachment 18, Chapter 7.0 for the 305-B Storage Facility.

3.7.2 Procedures for Ignitable, Reactive, and Incompatible Wastes

Ignitable, reactive and incompatible wastes are stored in compliance with Uniform Fire Code Division II regulations for Container and Portable Tank Storage Inside Buildings (International Conference of Building Officials 1988). Containers of ignitable, reactive and incompatible wastes are stored in individual flammable material storage cabinets within the storage cells.

Section 6.5.2 describes procedures used at 305-B Storage Facility to determine the compatibility of dangerous wastes so that incompatible wastes are not stored together. Chemical wastes stored in 305-B Storage Facility are separated by chemical makeup and hazard class and stored in areas having appropriate secondary containment, as described in Section 4.1.1.6.

As shown in Figures 4-1 through 4-10, each storage area has individual storage configurations; secondary containment structures are provided to assure that incompatible materials will not commingle if spilled.

Further segregation is provided by chemical storage cabinets located throughout the facility in various areas as shown in Figures 4-1 through 4-10. Cabinet types are noted in those figures and capacities described in Table 4-2. Incompatible wastes are never placed in the same container, or in unwashed containers that previously held incompatible waste.

Compliance with WAC 173-303-395(1)(b) is assured by utilizing this system, and the procedure for handling ignitable or reactive waste and mixing of incompatible waste, as described in Section 6.5.2.

3.7.3 Procedures To Ensure Compliance With LDR Requirements

LDR Waste-Analysis Requirements

The *Hazardous and Solid Waste Amendments of 1984* prohibit the land disposal of certain types of wastes that are subject to RCRA. Most of the waste types stored at the 305-B Storage Facility falls within the purview of these land-disposal restrictions (LDRs). Information presented below describes how generators and 305-B Storage Facility personnel characterize, document, and certify waste subject to LDR requirements.

Waste Characterization

Before being received at the 305-B Storage Facility, the RCRA waste characteristics, the level of toxicity characteristics, and the presence of listed wastes are determined during the physical and chemical analyses process. This information allows waste-management personnel to make all LDR determinations accurately and complete appropriate notifications and certifications.

Sampling and Analytical Procedures

The LDR characterization and analysis is generally performed as part of the waste-characterization and analysis process. If waste is sampled and analyzed for LDR characterization, then only EPA or equivalent methods are used to provide sufficient information for proper management and for decisions regarding LDRs pursuant to 40 CFR 268.

Frequency of Analysis

Before acceptance and during the waste-characterization and analysis process, all LDR characterizations and designations are made. The characterization and analysis process is performed when a Disposal Request is submitted for waste pick-up, unless there is insufficient data or if the waste stream has changed. Instances where sampling and laboratory analysis may be required to determine accurate LDR determinations include the following:

- when waste-management personnel have reason to suspect a change in the waste based on inconsistencies on the Disposal Request, packaging, or labeling of the waste
- when the information submitted previously by a generator does not match the characteristics of the waste that was submitted
- when the offsite TSD facility rejects the waste because the fingerprint samples are inconsistent with the waste profile provided by the 305-B Storage Facility that was established using generator information.

Dangerous waste types listed in Table 3-1 are sampled as needed on an individual container or batch basis before they are collected from the point of generation or prior to shipment offsite. After the dangerous

constituents have been characterized, these waste streams will not be analyzed again until process or raw material changes occur.

Documentation and Certification

The 305-B Storage Facility has and will continue to receive and store LDR waste. Because 305-B Storage Facility personnel determine designations and characterization, including LDR determinations, all notifications and certifications, as required by 40 CFR 268, are prepared by qualified staff for PNNL-generated waste. The 305-B Storage Facility staff collects from the generator(s) the information pursuant to 40 CFR 268 regarding LDR waste. The notifications and certifications are submitted to onsite and offsite TSD units during the waste-shipment process. Additionally, any necessary LDR variances are prepared and submitted by PNNL qualified staff.

The 305-B Storage Facility staff requires applicable LDR information/notifications from non-PNNL generators.

Where an LDR waste does not meet the applicable treatment standards set forth in 40 CFR 268, Subpart D, or exceeds the prohibition levels set forth in 40 CFR 268.32 or Section 3004(d) of RCRA, the 305-B Storage Facility provides to the onsite and offsite TSD a written notice that includes the following information:

- EPA hazardous-waste number
- the corresponding treatment standards and all applicable prohibitions set forth in WAC 173-303, 40 CFR 268.32, or RCRA Section 3004(d)
- the manifest number associated with the waste
- all available waste-characterization data.
- identification of underlying hazardous constituents.

In instances where 305-B Storage Facility staff determines that a restricted waste is being managed that can be land-disposed without further treatment, 305-B Storage Facility staff submits a written notice and certification to the onsite or offsite TSD where the waste is being shipped, stating that the waste meets applicable treatment standards set forth in WAC 173-303-140 (40 CFR 268, Subpart D), and the applicable prohibition levels set forth in 40 CFR 268.32 or RCRA Section 3004(d). The notice includes the following information:

- EPA hazardous-waste number
- corresponding treatment standards and applicable prohibitions
- waste-tracking number associated with the waste
- all available waste-characterization data
- identification of underlying hazardous constituents.

The certification accompanying any of the previously described notices is signed by an authorized representative of the generator and states the following:

I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification that the waste complies with the treatment standards specified in 40 CFR Part 268 Subpart D and all applicable prohibitions set forth in 40 CFR 268.32 or RCRA Section 3004(d). I believe that the information I submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting a false certification, including the possibility of a fine and imprisonment.

Copies of all notices and certifications described are retained at the TSD unit for at least five years from the date that the waste was last sent to an onsite or offsite TSD unit. After that time, the notices and certifications are sent to Records Storage.

Table 3-1. Summary of Test Parameters, Rationales, and Methods

Parameter[a]	Method[b]	Rationale for Selection
Physical Screening		
Visual inspection	Field method - observe phases, presence of solids in waste	Ensure that waste matches that described on waste acceptance documentation; identify waste prohibited by LDR requirements related to downstream TSD unit acceptance criteria
Chemical Screening		
Water miscibility/separable organics	Water mix screen ASTM Method D5232-92	Ensure that waste matches that described on waste acceptance documentation; identify separable organics; identify waste prohibited by LDR requirements related to downstream TSD unit acceptance criteria
Water reactivity	Water mix screen ASTM Method D5232-92	Ensure that waste matches that described on waste acceptance documentation; ensure compliance with WAC 173-303-395(1)(b)
pH	pH screen SW-846 Method 9041	Ensure that waste matches that described on waste acceptance documentation; ensure compliance with WAC 173-303-395(1)(b)
Cyanides	Cyanide screen	Ensure that waste matches that described on waste acceptance documentation; ensure compliance with WAC 173-303-395(1)(b)
Sulfides	Sulfide screen	Ensure that waste matches that described on waste acceptance documentation; ensure compliance with WAC 173-303-395(1)(b)
Pre-Shipment Review		
Mercury (total)	Generator knowledge or SW-846 Method 7470/7471	Identify waste prohibited by LDR requirements related to downstream TSD unit acceptance criteria.
Toxicity characteristic organic compounds	Generator knowledge or SW-846 Methods 1311 and 8260 (volatile organic compounds) and 8270 (semivolatile organic compounds)	Identify waste not identified on the Part A, Form 3
Polycyclic aromatic hydrocarbons	Generator knowledge or SW-846 Method 8270 or 8100	Identify waste not identified on the Part A, Form 3 (for waste with >1% solids and for which WP03 could apply)

[a] Addition parameters can be used on current waste acceptance criteria of the downstream TSD unit. Operation limits transfer/shipments are based on current waste acceptance criteria.
[b] Procedures based on EPA SW-846, unless otherwise noted. When regulations require a specific method, the method shall be followed.

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4.0 PROCESS INFORMATION

4.1 CONTAINERS

The following sections describe the types of containers stored at the 305-B Storage Facility.

4.1.1 Containers With Free Liquids

Containers with free liquids are discussed below.

4.1.1.1 Description of Containers

Most waste stored at the 305-B Storage Facility is received in their original, as-procured containers. Containers of hazardous materials entering 305-B Storage Facility are inspected before being accepted for storage. Generating units are responsible for placing the materials in adequate containers. Repackaged materials must be placed in containers that are new and compatible with the materials to be stored.

Containers in poor condition or inadequate for storage are not accepted at the unit. If transport is by unit personnel, such containers are not accepted for transport. Refer to Section 6.4.1 for inspection before transport performed by unit personnel. "Container in poor condition or inadequate for storage" means a container which is not intact or undamaged and which is not securely sealed to prevent leakage during storage, transport and ultimate offsite disposal. Examples of acceptable packaging include laboratory reagent bottles, DOT containers, spray cans, sealed ampules with spetums, paint cans, leaking containers which have been overpacked, etc. Unit operations personnel have the authority to determine whether a container is in poor condition or inadequate for storage, using the criteria of WAC 173-303-190 and professional judgment whether the packaging may leak during handling, storage and/or disposal.

As with all waste, repackaged containers of dangerous waste are marked and/or labeled to describe the contents of the container and the major hazards of the waste, as required under WAC 173-303. Containers are also marked with a unique identifying number assigned by the unit's computerized waste tracking system.

All flammable liquid waste are stored in compatible DOT-specified shipping containers and/or in Underwriter's Laboratory (UL)-listed and Factory Mutual (FM)-approved flammable storage cabinets. Solid chemicals are stored on shelving in specifically designated areas based on the DOT hazard classification.

All containers utilized for offsite transport of dangerous waste at the unit are selected and shall comply with all applicable criteria found in WAC 173-303-190.

4.1.1.2 Container Management Practices

Management practices for containers of dangerous waste are in place at the 305-B Storage Facility to assure the safe receipt, handling, preparation for transport, and transportation of waste. These practices and procedures are summarized below.

<u>Inspection of Containers.</u> A system of daily, weekly, monthly, and yearly inspections is in place to ensure container integrity, check for proper storage location, prevent capacity overrun, etc. These inspection activities are detailed in Section 6.2.

<u>Container Handling.</u> All unit staff is instructed in proper container handling safeguards as part of their training (refer to Section 8.1.2 for further details). For example, employees are instructed to open all high-vapor-pressure liquids in the flammable liquid bulking module to avoid buildup of vapors in the

unit. Containers are always kept closed except when adding or removing waste, in accordance with WAC 173-303-630(5)(a).

Containers are not opened, handled or stored in a manner that would cause the container to leak or rupture. Small containers (five gallons or less capacity) are stored on shelving or in approved flammable liquid storage lockers (if appropriate). Containers over five gallons capacity are stored on the floor of the appropriate storage cell, in cabinets, or stored in the appropriate containment area on the high bay floor under Section 4.3.2. Unnecessary handling not required for redistribution or preparation for transport and disposal by either labpacking or bulking is minimized. Crane or chain hoist, or forklift moves drums manually. For manual movement, hand trucks specifically designed for drum handling are used. Crane and chain hoist operations are performed following the appropriate Hoisting and Rigging manuals. When using the forklift, a drum hoist is used or the drums are carried on pallets. Drums are never carried on the forks or "speared" by slipping the forks under the chime. When waste handling operations are conducted, a minimum of two persons is present in the unit.

Lab Packing. One of the major functions of the 305-B Storage Facility is the preparation of lab packs for offsite recycling, treatment and/or disposal of small quantity lab waste generated by DOE-RL/PNNL activities.

Lab packs are prepared in compliance with WAC 173-303-161, 49 CFR 173.12, other applicable regulations, and permit conditions of the planned receiving facility (recycler, treatment facility, or disposal facility). Permit conditions affecting preparation of lab packs might include types of absorbent materials to be used (e.g., no vermiculite).

Lab packs are prepared in the storage cell containing the hazard class(es) to be placed in the lab pack. The elephant trunk ventilator system may be used to minimize respirable dusts from the absorbent material being used (usually vermiculite. Lab packs may also be prepared in the flammable liquid bulking module if appropriate; for instance, if compatible materials from more than one storage cell are being combined in a single lab pack drum. Lab packs may be prepared in the high bay storage area if storage of the completed lab pack is permitted there per Section 4.3.2.

Partial and completed lab packs are closed, labeled, and the contents list documented. Labpacks are stored in the cell from which the containers inside were drawn, or in the high bay if appropriate.

Unit personnel wear appropriate protective clothing while handling containers being placed in lab packs. At a minimum this includes labcoats, safety glasses or other protective eyewear, and chemical resistant gloves. More stringent requirements, including use of respiratory protection, may be imposed if appropriate.

Bulking. In order to promote greater recycling or treatment of waste and reduce land disposal, some liquid waste are "bulked" into larger containers, typically 30- or 55-gallon closed head drums. Bulking operations for chemicals that are respiratory or flammability hazards are performed in the "flammable liquid bulking module" (Also referred to as cell 5.) located in the southwest corner of the unit. Bulking of nonvolatile, low hazard waste such as saline solutions or ethylene glycol may be done within the containment areas of the appropriate storage cell or high bay.

Compatibility of waste to be bulked is determined using the information from generating unit designation information, process knowledge, laboratory analyses, and/or the compatibility determinations described in Section 6.5.

Containers are transported by hand or forklift to the flammable liquid bulking module area. The receiving drum (typically 30- or 55-gallon capacity) is placed in the module and the ventilation system is activated. A large chemically-resistant funnel (either metal or plastic, depending on material to be introduced) is used to pour the material into the drum. The contents of the smaller containers are then poured, one at a

time, into the larger drum. The receiving drum is monitored by unit personnel to make sure no incompatibility is observed (e.g., fuming, bubbling, or heat generation). If such incompatibility is observed, no further material is added and the worker leaves the area, closing the module and leaving the ventilation on. The unit supervisor is notified to evaluate implementation of the contingency plan.

Glass containers, which have been emptied (as defined by WAC 173-303-160(2)), as a result of bulking activities are crushed onsite by an electric glass crusher, which mounts on a 55-gallon drum. If an emptied glass container held acutely hazardous waste, as defined by WAC 173-303-040(2), the container is rinsed at least three times with an appropriate cleaner or solvent before being destroyed. The rinsates are managed as dangerous waste. Crushed glass is managed as solid waste in accordance with WAC 173-303-160(3).

Once bulking is complete, the bulk container is closed, labeled, and the contents list documented. Containers of bulked waste are stored in the cell from which the containers inside were drawn, or in the high bay if appropriate.

Unit personnel wear appropriate protective clothing while bulking containerized liquid waste. At a minimum this includes coveralls, disposable splash-resistant apron, eye protection, and chemical resistant gloves. More stringent requirements, including use of respiratory protection, may be imposed if appropriate.

4.1.1.3 Secondary Containment System Design and Operation

Several design features have been engineered into the construction of the 305-B Storage Facility as added safeguards for containment of dangerous waste spills or leaks. Design drawings for 305-B Storage Facility are included in Appendix 4A. The following subsections comment briefly on each of the design features.

4.1.1.4 Requirement for Base or Liner to Contain Liquids

The base of the facility consists of a 6-inch reinforced, poured concrete slab with no cracks or gaps. The concrete was mixed in accordance with ASTM 094, Section 5.3, Alternate 2, and all exposed surfaces were finished with a smooth troweled surface. Expansion joint material is Sonneborn "Sonoflex F™" polyethylene filler. The bonding compound used at the expansion joints was Sonneborn "Sonobond™" two-part epoxy. All edges and corners were sealed with a continuous bead of polysulfide sealant.

A chemically resistant sealant paint was applied in February 1989 to the storage cells and high bay floor, and in October 1990 to drum storage areas noted in Sections 4.1.1.6.6, 4.1.1.6.7, and 4.1.1.6.8. The surface coating is Coronado #101-1 (101 Series) Polyamide Epoxy Coating. Estimated service life of the coating material is 14 years per manufacturer's literature.

The condition of the floor coating is inspected weekly per Attachment 18, Chapter 6.0, and repairs are made as needed. Immediate repairs are indicated whenever the coating is observed to have been chipped, bubbled up, scraped, or otherwise damaged in a manner that would significantly impact the ability of the coating to contain spilled materials. Minor nicks and small chips resulting from normal operations will be repaired on a periodic basis.

4.1.1.5 Containment System Drainage

The concrete floors in each high bay storage cell are canted toward individual secondary containment trenches within those cells. These trenches are isolated from each other in order to prevent interaction, reactions, or offsite migration of spilled materials. This provides protection even during simultaneous spills.

The floors in the high bay area are also canted toward a separate sump system, which is sealed with epoxy and blocked to prevent drainage. Drums stored in this area are also stored on pallets to prevent contact with spilled material in the event of a release. Segregated storage areas for incompatible materials have been set up in the high bay storage area to prevent commingling of spilled waste during a catastrophic (multi-drum) spill incident. Each area has its own containment trench separated from other trenches with concrete and epoxy.

The flammable liquids bulking module, along with its purpose of providing a ventilated area for bulking of compatible hydrocarbon waste, is used as an independent storage cell. The walls of the module provide secondary containment, which have been sealed at the floor joint by use of grout coated with epoxy paint.

For protection of the basement RMW storage area, curbing/diking is provided to prevent migration. Drums are stored on pallets to prevent container contact with spilled materials and drip pans are provided to segregate RMW by dangerous waste characteristic as described in Section 4.1.1.6.11. This area has no drainage.

Flammable RMW is stored within its own secondary containment devices. The description and capacity of the flammable RMW storage area is provided in Section 4.1.1.6.11.

4.1.1.6 Containment System Capacity

Secondary containment is provided for all dangerous waste stored at the 305-B Storage Facility. Storage limits for all chemicals are listed in Table 4-1 (1988 Uniform Building Code) All floors in the high bay area are sloped toward sumps which have no drains and are covered with grating to prevent safety hazards. In addition, all floors in the high bay area are coated with an epoxy based coating as described in Section 4.1.1.4. Inspection of the containment system to maintain integrity is described in Section 6.2. Individual secondary containment systems are configured as follows:

4.1.1.6.1 Acids and Oxidizers Cell. The acids and oxidizers cell (cell 1) is located at the northwest corner of the 305-B Storage Facility high bay floor. The cell is constructed of epoxy-painted concrete block walls 4 foot high and incorporates a 1 foot deep sump at the west end of the cell. Six cabinets, open shelving, and a large-container storage area are provided within the cell to allow storage of various sizes of containers. The secondary containment volume of the individual sump for this cell is 67 gallons, and the total containment volume of the cell is 774 gallons. A diagram of the cell is provided in Figures 4-1.

4.1.1.6.2 Poisons and Class 9 Cell. The poisons and Class 9 cell (cell 2) is located just south of the acids and oxidizers cell along the west wall of the high bay. This cell is also constructed of epoxy-painted concrete block walls 4 foot high and incorporates a 1 foot deep sump along its west end. Six storage cabinets and several sets of open shelving are positioned in the cell to allow storage of various sizes of containers. The northeast corner of the cell is sectioned off with a 6 inch spill retention berm to allow PCB storage for disposal complying with 40 CFR 761.65(b). The secondary containment volume of the individual sump for this cell is 117 gallons, and the total containment volume of the cell is 782 gallons. A diagram of this cell is provided in Figure 4-2.

4.1.1.6.3. Alkaline, Washington State Criteria Waste, Organic Peroxides, and Non-Regulated Waste Cell. The alkaline, Washington State Criteria waste, and non-regulated waste cell (cell 3) is located South of the poisons and Class 9 cell on the west wall of the high bay area. This cell is also constructed of epoxy-painted concrete block walls 4 ft. high and incorporates a 1 foot deep sump along its west end. Four storage cabinets, 3 sets of open shelving, and 1 explosion proof refrigerator, are positioned in the cell to allow storage of various sizes of containers. The secondary containment volume of the individual sump for this cell is 137 gallons, and total containment volume of the cell is 764 gallons. A diagram of this cell is provided in Figure 4-3.

4.1.1.6.4 Flammable Cell. The flammable-cell (cell 4) is located south of the alkaline, Washington State Criteria waste, and non-regulated waste cell. As with the other three cells described above, this cell is constructed of epoxy-painted concrete block walls 4 feet high and incorporates a 1 foot deep sump along its west end. The secondary containment volume of the individual sump for this cell is 119 gallons, and total containment volume of the cell is 687 gallons. A diagram of this cell is provided in Figure 4-4.

Ignitable organic waste materials are stored in this cell that also exhibits the characteristics of corrosivity, toxicity as well as reactivity. Eight Factory Mutual-approved flammable liquid storage cabinets are utilized for storage of various classes of flammable liquids as defined by the UFC. The capacities of the various cabinets are shown in Table 4-2. The following cabinets also are used for storage in this cell: one for combustibles, one for aerosols, two for flammable solids, and one for overflow from one of the other cabinets.

Total ignitable Waste Storage capacity of the 305-B Storage Facility highbay, including the organics cell, Cell 5, Ignitable drum storage area, and highbay storage area is limited by the following UBC restrictions for Class B occupancy:

- Class 1A flammable liquids: 120 gallons
- Class 1B flammable liquids: 240 gallons
- Class 1C flammable liquids: 360 gallons
- Maximum Class 1A, 1B, and 1C at any one time: 480 gallons
- Maximum Class 1A, 1B and 1C stored in Cell 8 self contained storage module for flammable liquids is 240 gallons
- Class 2 combustible liquids: 480 gallons
- Class 3A combustible liquids: 1320 gallons
- Combustible fibers, loose: 100 cubic feet
- Combustible fibers, baled: 1000 cubic feet
- Flammable gases in any one cylinder: 3000 cubic feet
- Liquefied flammable gases: 60 gallons

4.1.1.6.5. Flammable Liquids Bulking Module. The flammable liquids bulking module (cell 5), along with its purpose of providing a ventilated area for bulking of compatible ignitable waste, is used as an independent storage cell. The walls of the module provide secondary containment, which have been sealed at the floor joint by use of grout coated with epoxy paint. Flammable gases in cylinders, liquefied flammable gases, and oxidizing gases will be stored in the bulking module.

Nontransient storage of flammable liquids in the module is 55 gallons. A diagram of the module is provided in Figure 4-5.

4.1.1.6.5.a. Flammable Liquids Storage Module. The flammable liquid storage module is a self-contained storage module (cell 8) that allows additional storage space for flammable waste. The

flammable liquid storage module is located along the south wall, and is connected to the buildings fire suppression system. The flammable liquid storage module has a 2-hour fire rated containment system so that according to the UFC, an unlimited capacity is allowed. However, the flammable waste storage capacity of the flammable liquid storage module is limited by the 240-gallon capacity of the module's secondary containment system. No more than 240 gallons of any combination of flammable liquid classes will be stored in the module. This flammable waste storage capacity is in addition to the flammable storage limits for the highbay. A diagram showing the module location in the highbay is provided in Figure 4-7.

4.1.1.6.6 Ignitable Waste Drum Storage Area. An additional section of the high bay (cell 8) has been dedicated to storage of drum quantities of ignitable waste before offsite shipment. The area is bordered on the north and south sides by angle iron (3½ in. x 6 in.) bolted to the floor and sealed to provide secondary containment. The area is approximately 15 ft. x 7 ft. To further enhance containment and to allow greater storage capacity, the drums stored in this area are stored in flammable liquid drum storage cabinets.

Sump containment capacity of this area is approximately 224 gallons and total containment capacity is approximately 431 gallons. Maximum storage in this area is approximately six 55-gallon drums and 12 five-gallon drums. A diagram of this area is included in Figure 4-6. Additional ignitable waste storage is provided for in cell 4, organics cell, and the in the Highbay storage area. The high bay storage area has five additional flammable liquid drum storage cabinets located along the west side of the high bay (refer to Figure 4-7). All of this ignitable waste storage is provided for utilizing flammable liquid storage cabinets for added safety.

4.1.1.6.7 Universal and Recycling Waste Storage Area. A second section of the high bay (cell 12) has been dedicated to storage of drum quantities of universal and recycling waste before shipment. The area is 10 ft. x 7 ft. in size. All material in this area is stored in DOT approved containers and is stored on pallets to prevent contact with spilled waste in the event of an incident.

Sump containment capacity in this area is approximately 55 gallons and total containment capacity is approximately 255 gallons. Maximum storage in this area will be eight 55-gallon drums. A diagram of this area is included in Figure 4-6.

4.1.1.6.8 Acid Waste Drum Storage Area. A third section of the high bay (cell 13) has been designated for storage of drum quantities of acid waste before offsite shipment. The area is approximately 10 ft. x 10 ft. Waste drums stored in this area are stored on pallets to prevent contact with spilled waste in the event of an incident. Bulked drums containing acids, with oxidizers as a secondary hazard, will be placed in the cell 1 drum area, to prevent any possibility of a reaction with surrounding hazards in the high bay drum storage area. A diagram of this area is included in Figure 4-6.

4.1.1.6.9. Alkaline Waste Drum Storage Area. A fourth section of the high bay (cell 14) has been designated for storage of drum quantities of alkaline waste before offsite shipment. The area is approximately 22 ft. x 15 ft. Waste drums stored in this area are stored on pallets to prevent contact with spilled waste in the event of an incident. Sump containment capacity in this area is approximately 110 gallons and total containment capacity is approximately 380 gallons. Maximum storage in this area is thirty-two 55-gallon drums. The location of the area is shown on the High Bay Storage Area diagram Figure 4-7.

4.1.1.6.10 High Bay Storage Area. The high bay storage area, along with its partitioned areas mentioned above, is itself a secondary containment area for loading, unloading, and storage of dangerous waste. The high bay floor is 'crowned' in the center and sloped at ¼ inch per foot, with drainage to sumps on the east and west sides of the unit. Sump locations are indicated in Figure 4-7.

Due to space limitations in the individual cells, and for ease of mechanical handling, the high bay floor is typically used for storage of nonradioactive chemicals in drums (refer to Figure 4-7).

The high bay floor is also used to store labpacks and bulked waste containers before offsite shipment to licensed treatment, disposal, or recycling facilities. Generally, only corrosives, oxidizers, toxic organic solvent mixtures (typically halogenated solvents), antifreeze mixtures, contaminated water which is toxic dangerous waste, nonliquid waste, ORMs, or state-only dangerous waste materials are stored in the high bay storage area.

If waste is incompatible with the foregoing are stored in the high bay storage area, they are kept separated by at least ten feet of distance and stored in individual drip pans for segregation in case of simultaneous accidental spillage. Compatibility of the materials is determined before acceptance in accordance with Section 3.2.

The secondary containment volume of the sumps in the high bay storage area, exclusive of the sumps within individual areas described above, is 565 gallons. Maximum storage in the high bay storage area is thus approximately 5650 gallons (102 drums). The high bay storage is also governed by the building occupancy maximums of Table 4-1, which includes the inventory of the individual storage cells described above. In order to provide additional separation from spilled liquids and for ease of handling, all drums stored on the high bay floor are stored on pallets. A diagram of this cell is provided in Figure 4-7.

4.1.1.6.11 Flammable RMW Storage Area. Due to UBC restrictions, flammable radioactive mixed waste cannot be stored in the basement of 305-B Storage Facility with the other radioactive mixed waste. The flammable RMW received by 305-B Storage Facility for storage before disposal is stored in a separate area above grade in the east portion of the building in a 7 ft. x 7 ft. x 7 ft. flammable liquid storage module (cell 7). The module is Factory Mutual approved and has four-hour fire rated walls and doors. The module has a self-contained internal dry chemical fire suppressant system. The module has a 90-gallon polyethylene coated sump. The module is lag bolted to the concrete floor in the flammable RMW storage area indicated in Figure 4-8. The module has a storage capacity of four 55-gallon drums, or up to 250 gallons of total capacity of all containers stored, whichever is greater. This storage area meets the requirements of a one year PCB storage area as defined in 40 CFR 761.65, so flammable mixed waste, also regulated as PCB waste, may be stored in this location. A diagram of this cell is provided in Figure 4-8.

4.1.1.6.12 RMW Storage Area. Radioactive mixed waste that is not flammable per UFC (i.e., flash point above 100 F) is stored in a special area in the basement of 305-B Storage Facility. For additional segregation capability, there are eight small chemical storage cabinets and four 62 in. x 62 in. x 6 in. (157 cm. x 157 cm. x 15 cm.) stainless steel 'container pans', with an approximate volume of 91 gallons (346 liters). The total area within the curbing is 1246 gallons (4716 liters). The containment pans are mounted to the floor or wall of the cell to provide segregated storage for potentially incompatible mixed waste streams. A diagram of the RMW storage cell secondary containment pan installation is provided in Figure 4-10. Drums stored in this area are stored on pallets to prevent potential contact with spilled waste in containment during an emergency. A diagram of this area is provided in Figure 4-9.

In normal use, the storage capacity of this area is limited by the radionuclide limits imposed by the DOE for "low inventory facilities." These limitations are defined in DOE-STD-1027-92, Hazard Categorization and Accident Analysis Techniques for Compliance with DOE Order 5480.23, Nuclear Safety Analysis Reports, and are included in the radiation work permit for the mixed waste storage area.

4.1.1.6.13 Explosives Storage Area. Due to UBC restrictions, waste classified as explosive by DOT regulations are stored in a 3 ft. x 3 ft. x 3 ft. explosives magazine, with an 8 cubic foot interior, outside cell 1. The magazine is constructed of steel and certified to have been fabricated per Institute of Makers of Explosives (IME) SLP22, type 2-day box requirements. No more than 1 pound of explosives is stored in the magazine at one time. The location of the magazine is indicated in Figure 4-7.

4.1.1.7 Control of Run-On

The 305-B Storage Facility was designed to eliminate the likelihood of on-site, or for that matter, off-site migration via run-on and run-off. The facility is completely enclosed (i.e., complete roof and WA, 1981.)no open walls) and has been constructed upon a foundation so that precipitation cannot cause either run-on or run-off problems.

4.1.1.8 Removal of Liquids from Containment System

Upon discovery of liquid accumulation in the containment resulting from a spill or other release, the BED must be contacted in accordance with the 305-B Storage Facility contingency plan (Attachment 18, Chapter 7.0). The BED may determine that the contingency plan should be implemented. If the incident is minor, and the BED approves, removal of the liquids will commence immediately following a safety evaluation. Appropriate protective clothing and respiratory protection will be worn during removal activities; a PNNL industrial hygienist may be contacted to determine appropriate personnel protection requirements and any other safety requirements that may be required, such as chemical testing or air monitoring. In addition, ventilation of the spill-impacted area may be performed if determined to be safe and if appropriate monitoring of the air discharge(s) is performed.

Spills are normally contained either within the storage cabinet, within the cell, or within a secondary containment trench or berm as described in Section 4.1.1.5. In any case, spilled material will be recovered to the extent possible by pumping recovered liquids with a pump made of nonreactive materials (either steel or PVC) to intact containers selected in accordance with the container criteria in WAC 173-303-190. Nonrecoverable liquids will be absorbed with an appropriate absorbent (after appropriate chemical reaction to neutralize reactivity in the case of reactive waste, or neutralization in the case of corrosive materials); refer to Table 6.2 for list of available materials for this purpose. The absorbent material will then be recovered and placed in a container selected in accordance with Section 4.1.1.1, using nonsparking shovels in the case of ignitable waste. The floor, cabinets and any other impacted containers may be cleaned with dry rags, soap and water, or a compatible solvent if necessary to remove external contamination. Contaminated rags and other cleanup material will be disposed of in an appropriate manner. Verification sampling shall be carried out in accordance with Section 11.1.4.4. (Methods for sampling and testing to demonstrate success of decontamination).

4.1.2 Containers Without Free Liquid That Do Not Exhibit Ignitability or Reactivity

This section is not applicable to 305-B Storage Facility because the storage area is used to store containers both with and without free liquids. 305-B Storage Facility does not meet the conditions for reduced requirements for storing only containers without free liquid; therefore, the facility is subject to the full requirements for containment.

4.2 PROTECTION OF EXTREMELY HAZARDOUS WASTE IN CONTAINERS

All wastes are stored inside of 305-B Storage Facility, within the storage areas described in Section 4.1.1.6. These locations are completely enclosed from the weather, as described in Section 4.1.1.7, meeting the requirements of WAC 173-303-630(7)(d).

4.3 PREVENTION OF REACTION OF IGNITABLE, REACTIVE, AND INCOMPATIBLE WASTE IN CONTAINERS

The following sections provide information on the management of ignitable, reactive, and incompatible waste in containers. Additional information on this subject can be found in Section 6.5.

4.3.1 Management of Ignitable or Reactive Waste in Containers

Ignitable and reactive wastes are stored in compliance with Uniform Fire Code Division II regulations for Container and Portable Tank Storage Inside Buildings (International Conference of Building Officials 1988). Containers of ignitable and reactive waste are stored in individual flammable material storage cabinets within the storage cells.

4.3.2 Management of Incompatible Waste in Containers

Section 6.5.2 describes guidelines used at 305-B Storage Facility to determine the compatibility of dangerous waste so that incompatible wastes are not stored together. Chemical waste stored in 305-B Storage Facility are separated by compatibility, chemical makeup and hazard class and stored in areas having appropriate secondary containment, as described in Section 4.1.1.6.

As shown in Figures 4-2 through 4-11, each storage area has individual storage configurations; secondary containment structures are provided to assure that incompatible materials will not commingle if spilled. Further segregation is provided by chemical storage cabinets located throughout the facility in various areas as shown in Figures 4-1 through 4-10. Cabinet types are noted in those figures and capacities described in Table 4-2. Incompatible wastes are never placed in the same container, or in unwashed containers that previously held incompatible waste.

Compliance with WAC 173-303-395(1)(b) is assured utilizing the reactivity groupings given in *A Method for Determining the Compatibility of Hazardous Waste* (EPA 1980). Use of this system, and the guidelines for handling ignitable or reactive waste and mixing of incompatible waste, as described in Section 6.5.2. fulfills the requirements of WAC 173-303-395(1)(c)Tank System.

This section is not applicable to the 305-B Storage Facility because waste is not managed in tanks.

4.3.3 Waste Piles

This section is not applicable to the 305-B Storage Facility because waste is not managed in waste piles.

4.3.4 Surface Impoundments

This section is not applicable to the 305-B Storage Facility because waste is not placed in surface impoundments.

4.3.5 Incinerators

This section is not applicable to the 305-B Storage Facility because waste is not incinerated.

4.3.6 Landfills

This section is not applicable to the 305-B Storage Facility because waste is not placed in landfills.

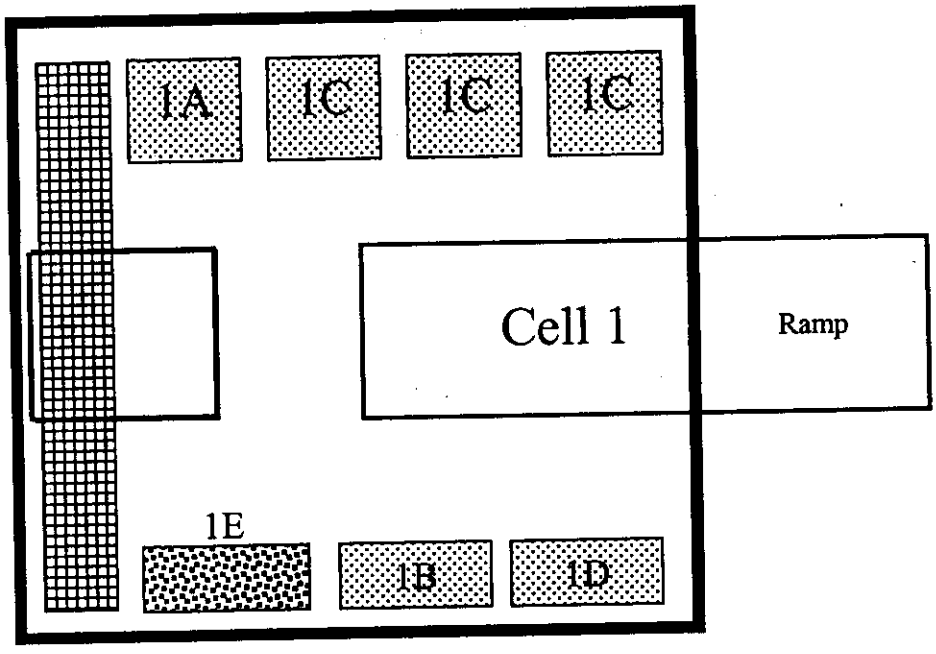
4.3.7 Land Treatment

This section is not applicable to the 305-B Storage Facility because waste is not treated in land treatment units.

Table 4-1. Storage Devices Used at the 305-B Storage Facility

Storage Device	Typical Use	Approximate External Dimensions (in.)	Approximate Capacity (gal/ft^3.)
Small Cabinet	Storage of containers (5 gallons or less capacity)	43w x 18d x 65h	50 max
Medium Cabinet	Storage of containers (18.93 liter [5 gallons] or less capacity	31w x 31d x 65h	60 max
Large Cabinet	Storage of containers (5 gallons or less capacity)	34w x 34d x 65h	80 max
Small Drum Cabinet	Storage of drums (5 to 55 gallons capacity)	34w x 34d x 65h	65 max
Large Drum Cabinet	Storage of drums (5 to 55 gallons capacity)	59w x 34d x 65h	130 max
Small Shelving	Storage of containers (5 gallons or less capacity)	47w x 18d x 62h	65 max
Large Shelving	Storage of containers (5 gallons or less capacity)	72w x 18d x 62h	100 max
Flammable Storage Module	18.93 liter [5 gallons] to 208.18 liter [55 gallons] capacity	78w x 73d x 100h	240 max
Refrigerator/ Freezer	Storage of containers of organic peroxides and other temperature sensitive waste	34w x 29d x 67h	25 Cu.Ft.
Explosives Magazine	Storage of containers containing DOT classified explosives	36w x 36d x 36h	8 Cu.Ft.

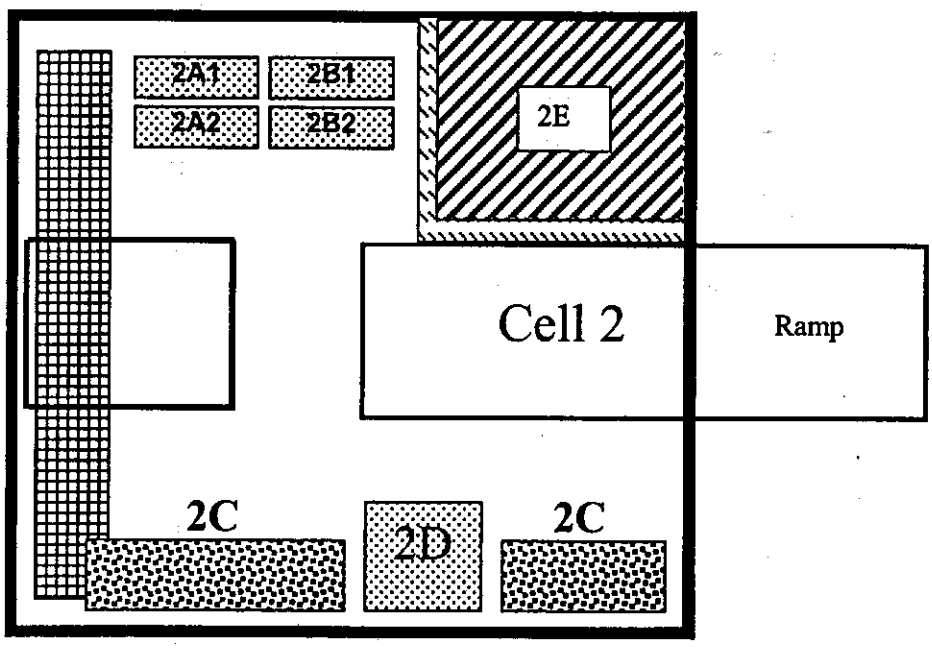
Figure 4-1. Acids and Oxidizers Cell



Legend

1A	Liquid Oxidizers (Medium Cabinet)
1B	Solid Oxidizers (Small Cabinet
1C	Inorganic Acids (Medium Cabinet)
1D	Organic Acids (corrosive) (Small Cabinet)
1E	Mercury/Corrosive Solids (Small Shelf)
▮	15.24 cm W x 127 cm H epoxy coated concrete block wall
▦	Secondary Containment Trench
□	Drum and Carboy Storage Area

Figure 4-2. Poisons and Class 9 Cell

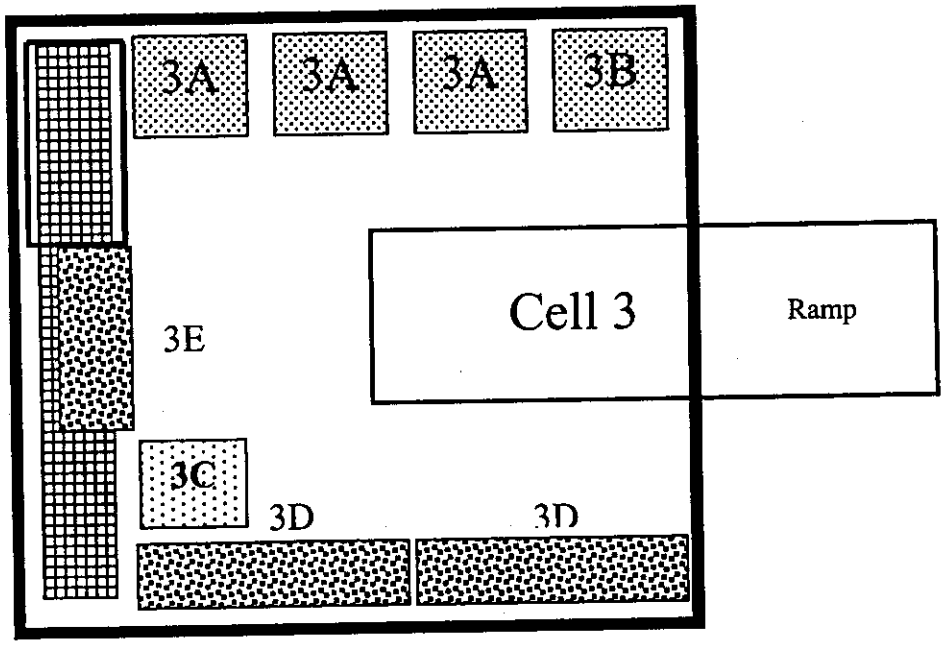


1 cm = 60 cm

Legend

2A1	Poisons, Acidic (P.G.II and P.G.III) (Small Cabinet)
2A2	Poisons, Neutral/Basic (P.G.II and P.G.III) (Small Cabinet)
2B1	Poisons, Neutral/Basic (P.G.I) (Small Cabinet)
2B2	Poisons, Acidic (P.G.I) (Small Cabinet)
2C	Class 9 (nonreactive) (Large and Small Shelf)
2D	Class 9 (reactives) (Large Cabinet)
2E	PCB's
▮	15.2 cm W x 127 cm H epoxy coated concrete block wall
▦	Secondary Containment Trench
▨	313.69 cm L x 8.89 cm W x 15.24 cm H epoxy coated angle iron, sealed to the floor
▯	Drum and Carboy Storage Area

Figure 4-3. Alkaline, Washington State Criteria Waste, Organic Peroxides, and Non-Regulated Waste Cell

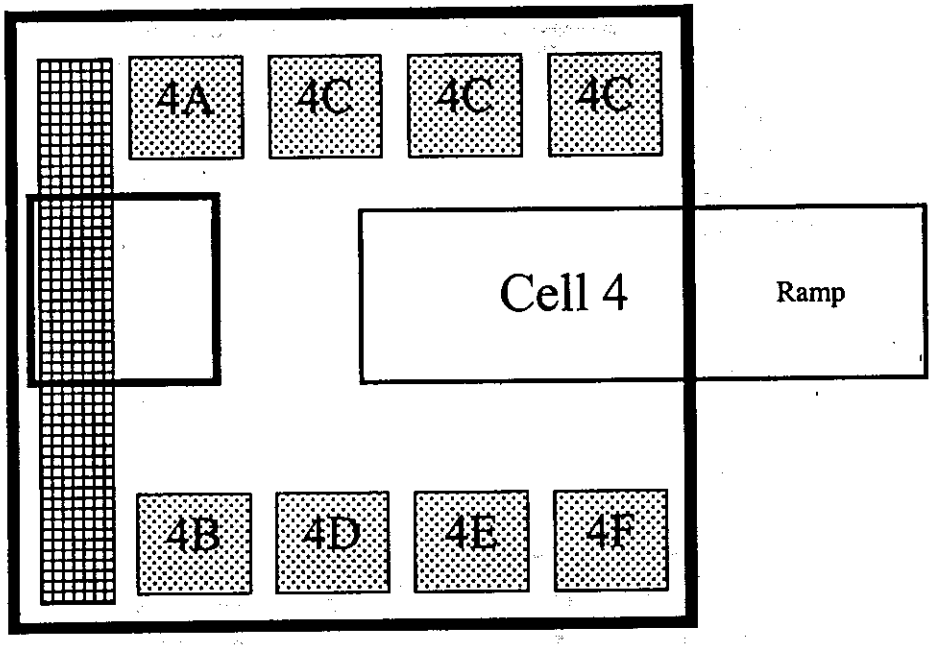


1 cm = 60 cm

Legend

3A	Alkaline (liquids and solids) (Medium Cabinet)
3B	Alkaline/Oxidizers (Medium Cabinet)
3C	Organic Peroxides and temperature sensitive (refrigerator)
3D	Washington State Criteria Waste (2 Large Shelves)
3E	Non-Regulated Liquids/Solids (Small Shelf)
▌	15.24 cm W x 127 cm H epoxy coated concrete block wall
▦	Secondary Containment Trench
▯	Drum and Carboy Storage Area

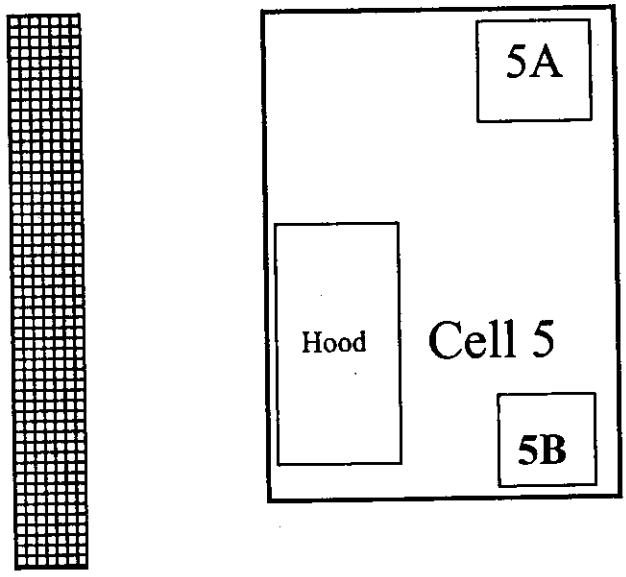
Figure 4-4. Organics Cell



Legend

4A	Combustible Liquids (Large Cabinet)
4B	Aerosols (Large Cabinet)
4C	Flammable Liquids (Large Cabinet)
4D	Flammable Solids (Dangerous When Wet) (Large Cabinet)
4E	Flammable Solids (with water Spontaneously Combustible) (Large Cabinet)
4F	Floating Cabinet (Large Cabinet)
▮	15.24 cm W x 127 H epoxy coated concrete block wall
▦	Secondary Containment Trench
□	Drum and Carboy Storage Area

Figure 4-5. Flammable Liquid Bulking Module and Compressed Gases (Cell 5)



Legend

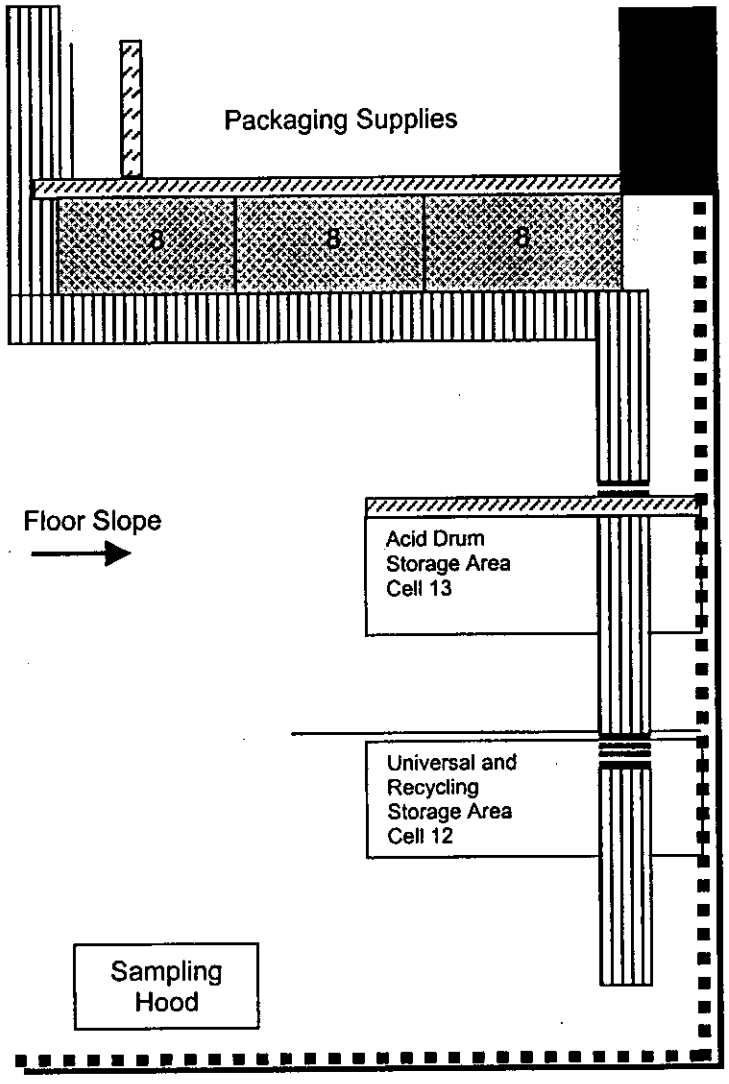
5A Compressed Gases

5B Oxidizing Gases

Hood – Walk-in flammable liquid bulking, 1 drum maximum.

Secondary Containment Trench

Figure 4-6. Segregated High Bay Drum Storage Areas



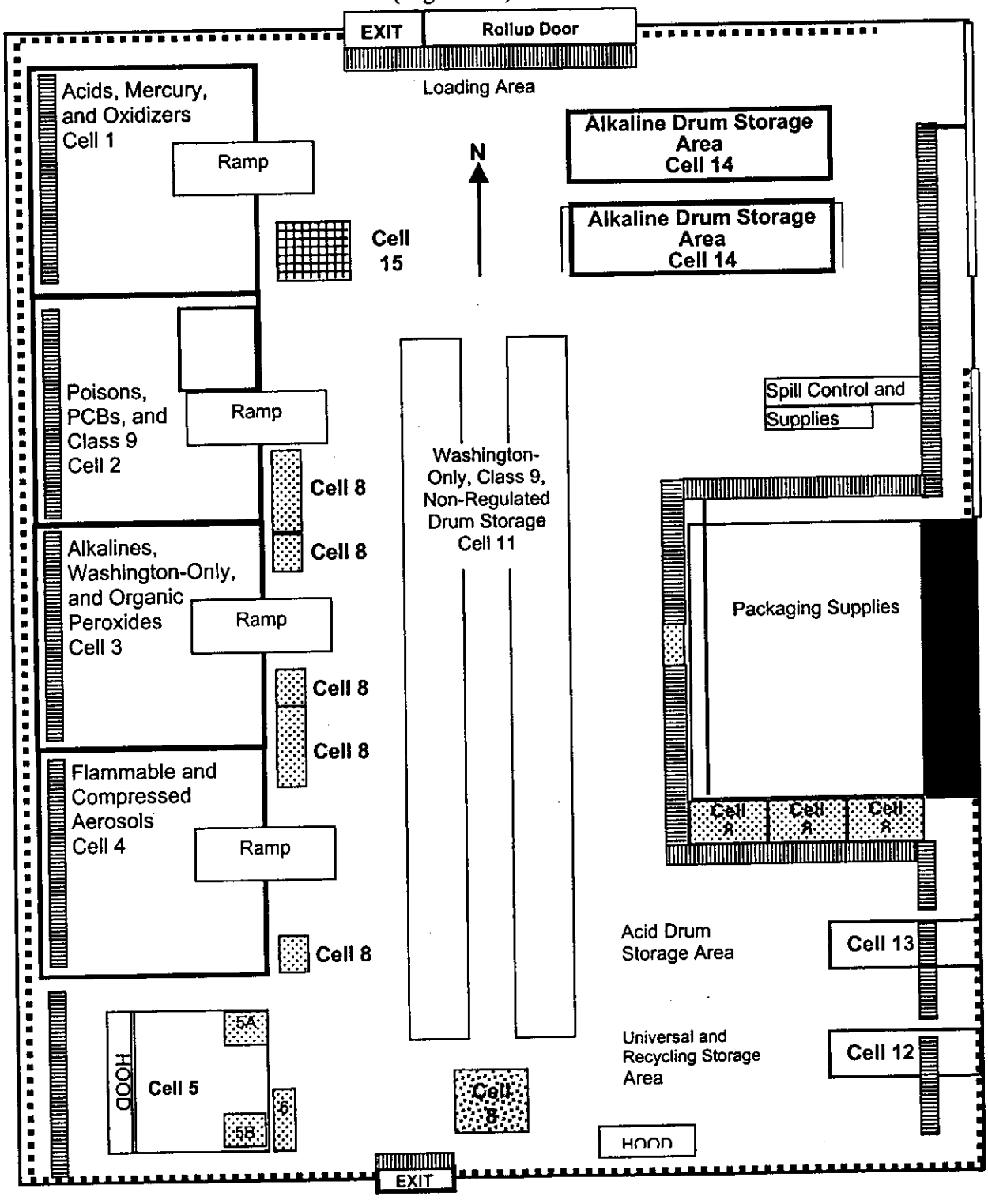
1 cm = 60 cm

Legend

- Secondary Containment Trench
- Palletized Drum Storage
- Sump Blockages (epoxy coated concrete)
- 360.68 cm l x 317.5 cm W x 121.92 cm H stainless steel splash wall
- Concrete Ledge
- Concrete Curb
- Large Drum Cabinet
- 313.69 cm l x 8.89 cm W x 15.24 cm H epoxy coated angle iron sealed to the floor

Figure 4-7. High Bay Storage Area

(Page 1 of 2)



Legend: On next page

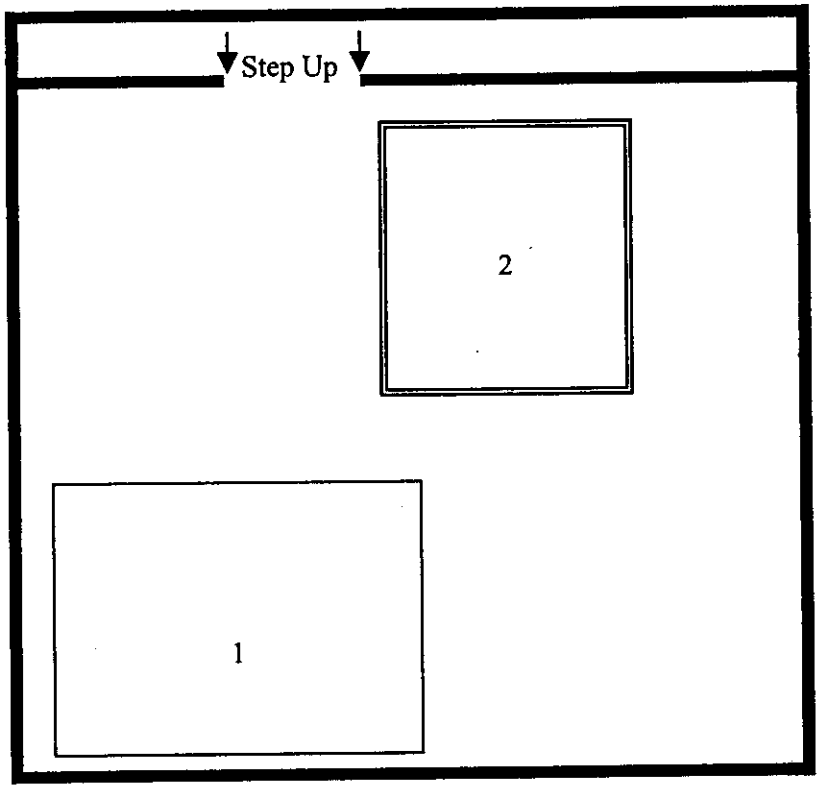
Scale: 1 cm = 120 cm

Figure 4-7. High Bay Storage Area
(Page 2 of 2)

Legend

	Secondary Containment Trench
	Palletized Drum Storage
	360.68 cm L x 3.175 W x 10.16 cm Stainless Steel Splash wall
	313.69cm L x 8.89cm W x 15.24cm H epoxy coated angle iron sealed to the follr
	Concrete Ledge
	22.86cm overhang from condrete wall
6	Asbestos Storage (Small Cabinet)
	Small Drum Cabinet (flammable waste storage)
	Large Drum Cabinet (flammable waste storage)
	Flammable Storage Module
Cell 5	Flammable Liquid Building Module and Compressed Gases
5A	Compressed Gases (Large Cabinet)
5B	Oxidizing Gases (6.985 cm w X 45.72 cm D x 88 cm H)
	Explosives Magazine

Figure 4-8. Flammable Radioactive Mixed Waste Storage Area



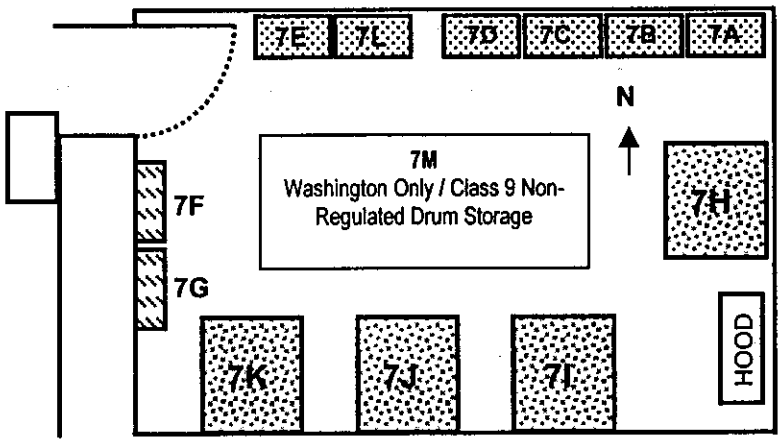
Legend

1 Flammable RMW Storage Module

2 Removable hatch cover for basement access (surrounded by railing)

All PCB waste stored in Cell 9 shall be stored in trays, or drum overpacks that meet all the requirements of 40 CFR 761.65(b).

Figure 4-9. Radioactive Mixed Waste Storage

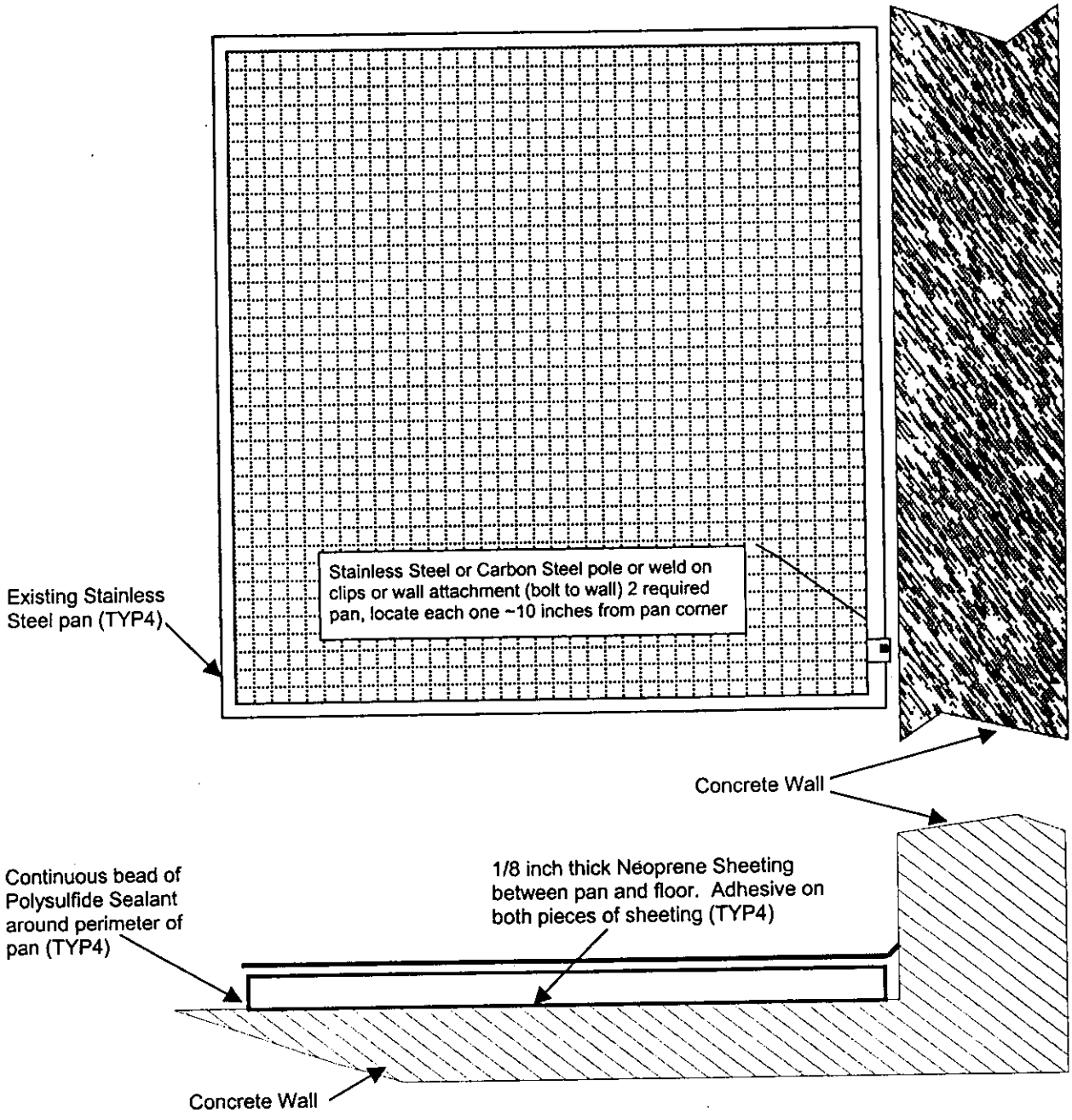


Cell 7 Legend

7A	Poisons
7B	Oxidizers
7C	Class 9/Combustible
7D	Washington Only/Combustible
7E	Flammable Solids
7F	Corrosive Base/Combustible
7G	Corrosive Acid/Combustible
7H	Corrosive/PCB's/Combustible
7I	Corrosive Acid/PCB's/Combustible
7J	PCB's/Combustible
7K	Washington Only/Class 9/PCB's/Combustible
7L	Non-Regulated/Combustible
7M	Washington State Waste/ Class 9/ Non-Regulated/Combustible/Compatibles
	HOOD 121.9 cm L x 54.2 cm D x 228.6 cm H

All PCB waste stored in Cell 7 will be segregated according to chemical compatibility, and stored in any of the four stainless steel container pans complying with 40 CFR 761.65(b)

Figure 4-10. RMW Storage Cell Containment Pan Installation



PAN TOP & SIDE VIEW

Non Flammable RMW Cell Secondary Containment Pan Installation

1 **Table 4-2. Exempt Amounts of Hazardous Materials, Liquids & Chemicals Presenting a Physical Hazard**

BASIC QUANTITIES PER CONTROL AREA[1]

When two units are given values within parentheses are in cubic feet (Cu.Ft.) or pounds (Lbs.)

CONDITION		STORAGE[2]			USE[2]–CLOSED SYSTEMS			USE[2]–OPEN SYSTEMS		
MATERIAL	CLASS	Solid Lbs. (Cu.Ft.)	Liquid Gallons (Lbs.)	Gas (Cu.Ft.)	Solid Lbs. (Cu.Ft.)	Liquid Gallons (Lbs.)	Gas (Cu.Ft.)	Solid Lbs. (Cu.Ft.)	Liquid Gallons (Lbs.)	Gas (Cu.Ft.)
1.1 Combustible liquid[3]	II	–	120[4 5]	–	–	120[4]	–	–	30[4]	–
	III-A	–	330[4 5]	–	–	330[4]	–	–	80[4]	–
	III-B	–	13,200[5 6]	–	–	13,200[6]	–	–	3,300[6]	–
1.2 Combustible dust lbs./1000 Cu.Ft.		1[7]	–	–	1[7]	–	–	1[7]	–	–
1.3 Combustible fiber			–	–		–	–		–	–
(loose)		(100)			(100)			(20)		
(baled)		(1,000)			(1,000)			(200)		
1.4 Cryogenic, flammable or oxidizing			45	–	–	45	–	–	10	–
2.1 Explosives		1[5 8 9]	(1)[5 8 9]	–	¼[8]	(¼)[8]	–	¼[8]	(¼)[8]	–
3.1 Flammable solid		125[4 5]	–	–	25[4]	–	–	25[4]	–	–
3.2 Flammable gas										–
(gaseous)		–	–	750[4 5]	–	–	750[4 5]	–	–	–
(liquefied)		–	15[4 5]	–	–		–	–	–	
3.1 Flammable liquid[3]		–	30[4 5]	–	–	30[4]	–	–	10[4]	–
		–	60[4 5]	–	–	60[4]	–	–	15[4]	–
		–	90[4 5]	–	–	90[4]	–	–	20[4]	–
Combination I-A, I-B, I-C		–	120[4 5 10]	–	–	120[4 10]	–	–	30[4 10]	–
4.1 Organic peroxide, unclassified detonable		1[5 8]	(1)[5 8]	–	¼[8]	(¼)[8]		¼[8]	(¼)[8]	–
4.2 Organic peroxide	I	5[4 5]	(5)[4 5]	–	(1)[4]	(1)[4]	–	1[4]	1[4]	–
	II	50[4 5]	(50)[4 5]	–	50[4]	(50)[4 5]	–	10[4]	(10)[4]	–
	III	125[4 5]	(125)[4 5]	–	125[4]	(125)[4 5]	–	25[4]	(25)[4]	–
	IV	500	(500)	–	500[4]	(500)	–	100	(100)	–
	V	N.L.	N.L.	–	N.L.	N.L.	–	N.L.	N.L.	–
4.3 Oxidizer	4	1[5 8]	(1)5[8]	–	¼[8]	(¼)[8]	–	¼[8]	(¼)[8]	–
	3	10[4 5]	(10)[4 5]	–	2[4]	(2)[4]	–	2[4]	(2)[4]	–
	2	[250]4 5	(250)[4 5]	–	250[4]	(250)[4]	–	50[4]	(50)[4]	–
	1	1,000[4 5]	(1,00)[4 5]	–	1,000[4]	(1,000)[4]	–	200[4]	(200)[4]	–
4.1 Oxidizer—Gas										
(gaseous)		–	–	1,500[4 5]	–	–	1,500[4 5]	–	–	–
(liquefied)		–	15[4 5]	–	–	15[4 5]	–	–	–	–
5.1 Pyrophoric		4[5 8]	(4)[5 8]	50[5 8]	1[8]	(1)[8]	10[5 8]	0	0	0
6.1 Unstable (reactive)	4	1[5 8]	(1)[5 8]	10[5 8]	¼[8]	(¼)[8]	2[4 5]	¼[8]	(¼)[8]	0
	3	5[4 5]	(5)[4 5]	50[4 5]	1[4]	(1)[4]	10[4 5]	1[4]	1[4]	0
	2	50[4 5]	(50)[4 5]	250[4 5]	50[4]	(50)[4]	250[4 5]	10[4]	(10)[4]	0
	1	125[4 5]	(125)[4 5]	750[4 5]	125[4]	(125)[4]	750[4 5]	25[4]	(25)[4]	0
7.1 Water (reactive)	3	5[4 5]	(5)[4 5]	–	5[4]	(5)[4]	–	1[4]	(1)[4]	–
	2	50[4 5]	(50)[4 5]	–	50[4]	(50)[4]	–	10[4]	(10)[4]	–
	1	125[5 6]	(125)[5 6]	–	125[6]	(125)[5 6]	–	25[6]	(25)[6]	–

[1] Control area is a space bounded by not less than a one-hour fire-resistive occupancy separation within which the exempted amounts of hazardous materials may be stored dispensed, handled or used. The number of control areas within a building used for retail and wholesale stores shall not exceed two. The number of control areas in buildings with other uses shall not exceed four.
[2] The aggregate quantity in use and storage shall not exceed the quantity listed for storage.
[3] The quantities of alcoholic beverages in retail sales uses are unlimited provided the liquids are packaged in individual containers not exceeding four liters. The quantities of medicines, foodstuffs and cosmetics containing not more than 50 percent of volume of water-miscible liquids and with the remainder of the solutions not being flammable in retail sales or storage occupancies are unlimited when packaged in individual containers not exceeding four litters.
[4] Quantities may be increased 100 percent in sprinklered buildings. When Footnote 5 also applies, the increase for both footnotes may be applied.
[5] Quantities may be increased 100 percent when stored in approved storage cabinets or safety cans as specified in the fire code. When Footnote 4 also applies, the increase for both may be applied.
[6] The quantities permitted in a sprinklered building are not limited.
[7] A dust explosion potential is considered to exist if 1 pound or more of combustible dust per 1,000 cubic feet of volume is normally in suspension or on horizontal surfaces inside buildings or equipment and which could be put into suspension by an accident, sudden force or small explosion.
[8] Permitted in sprinklered buildings only. None is allowed in unsprinklered buildings.
[9] One pound of black sporting powder and 20 pounds of smokeless powder are permitted in sprinklered or unsprinklered buildings.
[10] Containing not more than the exempt amounts of Class I-A, Class I-B, and Class I-C flammable liquids.

Table 4-2. Exempt Amounts of Hazardous Materials, Liquids & Chemicals Presenting a Physical Hazard (cont.)

MAXIMUM QUANTITIES PER CONTROL AREA [1] [2]
When two units are given, values within parentheses are in pounds (Lbs.)

MATERIAL[3]	STORAGE[4]			USE[3]–CLOSED SYSTEMS			USE[3]–OPEN SYSTEMS		
	Solid (Lbs.)[5 6]	Liquid Gallons (Lbs.)[5 6]	Gas (Cu.Ft.)[5]	Solid (Lbs.)[5]	Liquid Gallons (Lbs.)[5]	Gas (Cu.Ft.)	Solid (Lbs.)[5]	Liquid Gallons (Lbs.)[5]	Gas (Cu.Ft.)
1. Corrosives	5,000	500	650[6]	5,000	500	650[5]	1,000	100	–
2. Highly Toxics[7]	1	(1)	20[8]	1	(1)	20[7]	¼	(¼)	–
3. Irritants	5,000	500	650[6]	5,000	500	650[5]	1,000	100	–
4. Sensitizers	5,000	500	650[6]	5,000	500	650[5]	1,000	100	–
5. Other Health Hazards	5,000	500	650[6]	5,000	500	650[5]	1,000	100	–

[1] Control area is a space bounded by not less than one-hour five resistive occupancy separation within which the exempted amounts of hazardous materials may be stored. Dispensed, handled or used. The number of control areas within retail and wholesale stores shall not exceed two and the number of control areas in other uses shall not exceed four

[2] The quantities of medicines, foodstuffs and cosmetics, containing not more than 50 percent by volume of water-miscible liquids and with the remainder of the solutions not being flammable, in retail sales uses are unlimited when packaged in individual containers not exceeding 4 liters.

[3] The aggregate quantity in use and storage shall not exceed the quantity listed for storage.

[4] For carcinogenic and radioactive materials, see the Fire Code.

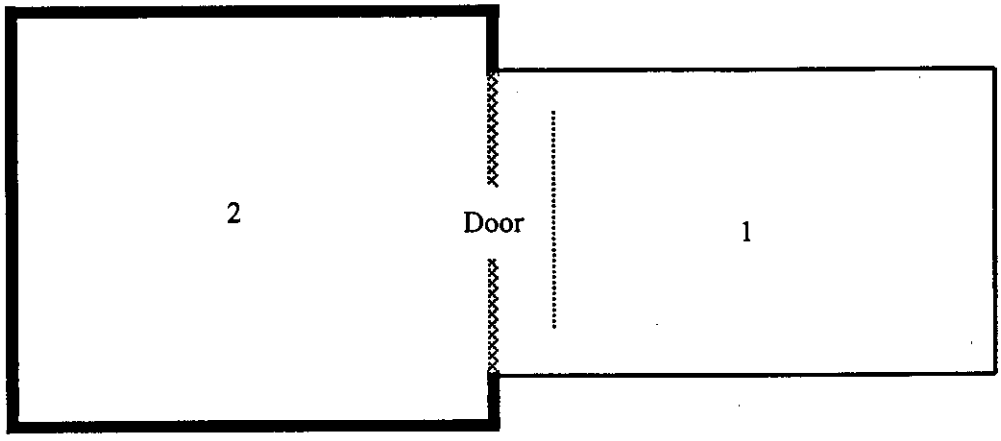
[5] Quantities may be increased 100 percent in sprinklered buildings. When Footnote 6 also applies, the increase for both footnotes may be applied.

[6] Quantities may be increased 100 percent when stored in approved storage cabinets or safety cans as specified in the fire code. When Footnote 5 also applies, the increase for both footnotes may be applied.

[7] For special provisions, see the Fire Code.

[8] Permitted only when stored in approved exhausted gas cabinets, exhausted enclosures or fume hoods.

Figure 4-11. Flammable Liquids Storage Module



Legend

1 Loading Ramp

2 Drum/Container Storage Area (Flammable liquid storage, 240 gallon max,)

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6.0 PROCEDURES TO PREVENT HAZARDS

The 305-B Storage Facility is operated to minimize exposure of the general public and operating personnel to dangerous and mixed waste.

6.1 SECURITY

Security for 305-B Storage Facility is provided by a combination of the overall security system for the 300 Area, and a specific security system for the waste storage unit. The former controls access to the 300 Area proper, while the latter controls access to 305-B Storage Facility.

The 305-B Storage Facility is located within the Hanford 300 Area. As part of the Hanford Site, the 300 Area is subject to a restricted access and personnel security system for the protection of Government property, classified information, and special nuclear materials. The 300 Area is a controlled access area with access limited to persons authorized to enter and having appropriate security clearances or escorts.

The security program for 305-B Storage Facility, in addition to 300 Area access, is designed to limit building access to those personnel within the 300 Area authorized to enter the unit. Access to 305-B Storage Facility can be gained through five walk-in doors, and two large roll up doors that facilitate loading and unloading activities. All doors to 305-B Storage Facility are kept locked at all times except when in use. All requests for keys are reviewed and approved by the unit operating supervisor and the building manager, and a record of the personnel issued keys is kept in the Operating Record at all times.

Keys to the unit are issued only to unit personnel, security personnel, and emergency response personnel. The unit-operating supervisor approves any additions to this list, and the building. Specific aspects of the security programs for both the 300 Area and 305-B Storage Facility are described in more detail below.

6.1.1 Security Procedures and Equipment

The following sections describe the 24-hour surveillance system, barrier, and warning signs used to provide security and control access to the 305-B Storage Facility.

6.1.1.1 24-Hour Surveillance System

The 305-B Storage Facility does not maintain a 24-hour surveillance system. Entrances to the building are kept locked except when the building is in use to prevent unauthorized access. Normal working hours for the unit is 8:00 A.M. to 4:30 P.M. Monday through Friday except holidays. The Hanford Patrol maintains frequent drive-by surveillance of the 300 Area buildings, including 305-B Storage Facility, on a 24-hour basis to ensure that no unauthorized access to the area has occurred.

An 8-ft chain link fence topped with three strands of barbed wire surrounds the entire 300 Area. There is no separate fence surrounding the 305-B Storage Facility. All waste management activities, however, are conducted within the unit. The facility itself, therefore, provides a barrier completely surrounding the active waste management operations.

Entry to the unit is controlled through the use of locked entrances. The 305-B Storage Facility is kept locked at all times except when in use. Physical control of keys and records of key distributions are maintained by PNNL Security. Distribution of keys to 305-B Storage Facility is subject to approval by the building manager, and the facility-operating supervisor, and a list of those personnel in possession of keys are kept in the Operating Record for 305-B Storage Facility. Personnel in possession of keys have been instructed to admit only persons having official business. 305-B Storage Facility staff must escort all untrained visitors (personnel without 24/40-hour hazwoper training) in the waste storage areas.

6.1.1.2 Warning Signs

The 305-B Storage Facility is posted with "DANGER - UNAUTHORIZED PERSONNEL KEEP OUT" and "305-B CHEMICAL WASTE STORAGE BUILDING" signs near each entrance on all sides of the unit. The signs are clearly visible from the required distance of 25 feet.

6.1.2 Waiver

Waivers of the security procedures and equipment requirements for 305-B Storage Facility are not required and will not be requested.

6.2 INSPECTION SCHEDULE

The purpose and intent of implementing inspection procedures at 305-B Storage Facility are to prevent malfunctions, deterioration, operator errors, and/or discharges that may cause or lead to the release of regulated waste to the environment or threats to human health. A system of daily, weekly, monthly, quarterly, once every four months, and annual inspections involving various PNNL departments and levels of management are implemented at 305-B Storage Facility.

6.2.1 General Inspection Requirements

The content and frequency of inspections performed at 305-B Storage Facility are described in this section. Also, described is maintenance of inspection records.

6.2.1.1 Types of Problems

Daily, weekly, monthly, quarterly, once every four months, and annual inspections are performed at 305-B Storage Facility. The types of problems addressed by each of these inspections are described below.

Daily Inspections. The 305-B Storage Facility is inspected daily whenever waste packaging, transfer, shipping, or movement operations are being carried out. Daily inspections monitor container condition and integrity, the building waste containment system, and other building areas where waste are handled. Specific inspection points include:

- Inspection of stored containers for leaks or damage
- Mislabeled or opened containers
- Improper storage (e.g., incompatible waste storage)
- Disorderliness or uncleanliness of a storage unit
- Check for accumulation of waste in containment systems.

Results of these daily inspections are recorded in the daily operating logbook that is part of the permanent 305-B Storage Facility Operating Record.

Weekly Inspections. Waste management organization personnel conduct weekly inspections of both safety and operating equipment in 305-B Storage Facility. Safety and emergency equipment are inspected for functionality and adequacy of supply. Two personnel on the last workday of each week using the inspection Logbook and the most current version of the Weekly Inspection Checklist Form that is on file at 305-B Storage Facility conduct the weekly inspection. An example of a Weekly Inspection Checklist is shown in Figure 6-2. The Inspection Checklist and Inspection Logbook become a permanent part of the 305-B Storage Facility Operating Record.

Specific problems to be looked for with each of the items inspected are identified on the Inspection Checklist Form. The use of this form enhances inspection effectiveness by providing a consistent and detailed listing of areas of potential problems and those safeguards in place to prevent them. There is

space provided on the form for the inventory summary, comments, required remedial actions (if any), as well as the date such actions are accomplished. The inspector is required to sign and date the inspection checklist after performing the inspection. In addition, a space is provided for the dated signature of the co-inspector. A copy of the completed inspection form with any assigned action items is distributed to the responsible operating personnel. All corrective actions required must be completed within one week of the inspection, which found them deficient, unless there are documentation and reason for further delay. When corrective action has been completed, the responsible personnel date and initial the form.

Monthly Inspections. The manager of the Environmental Management Services Department or their designee conducts monthly oversight inspections. This monthly inspection is conducted on or near the last workday of each month using the most current version of the Monthly Inspection Checklist Form. An example of a Monthly Inspection Form is shown in (Figure 6-3). Items targeted for monthly inspection include, but are not limited to, equipment function and condition, housekeeping, chemical inventory, weekly inspections and corresponding corrective actions, safety equipment operation, spill control and cleanup supplies, and general packaging material inventory. Specific problems to be looked for with each of the items inspected are identified on the Inspection Checklist Form. Copies of the inspection report memorandum are provided to operations personnel and maintained in the files of the waste management organization. Any corrective action noted on the management inspection checklist or deterioration or malfunctions in equipment discovered by the inspector are delegated to responsible individuals in the operations group. Corrective actions identified in the monthly management inspection must be completed before the next inspection cycle unless there are documentation and reason for further delay. Monthly management inspection reports memos and corrective action response documentation is part of the 305-B Storage Facility Operating Record.

Quarterly, Once Every Four Months, and Annual Inspections. In addition to the several layers of management inspection of 305-B Storage Facility, safety inspections are performed to assure the fire protection system, eye wash/shower unit, and walk-in hood ventilation systems are in working order. The Hanford 300 Area Fire Department performs "once every four months" an inspection of fire suppressant and notification systems (i.e., sprinkler system and pull boxes). This inspection includes flow tests of the sprinklers to assure no blockage in the system lines as well as activation of the alarm system to assure proper operation of pull boxes. On an annual basis, the Fire Department performs a full inspection of the sprinkler system, heat detectors, and pull boxes. A complete flow test is performed from the furthest valve to assure flow through the entire system. Fire extinguishers are also checked for proper pressure and function. Records of these fire inspections are kept by the Hanford Fire Department. Documentation of any required corrective actions is kept in the 305-B Storage Facility Operating Record.

PNNL facilities support staff perform additional documented inspections of the two emergency eye wash/shower units, and the walk-in hood airflow. The safety showers and airflow of the walk-in hood are inspected quarterly. The emergency eyewash/safety showers are checked for proper operation, and the walk-in hood ventilation face velocity must meet minimum requirements. Records of these safety equipment inspections and their results, as well as documentation of any required corrective actions, are maintained by the preventive maintenance staff in PNNL's Facilities Management Department and Technical Services Department.

6.2.1.2 Frequency of Inspections

Inspections are conducted on a daily, weekly, monthly, quarterly, and annual basis, as described in Section 6.2.1.1.

The frequency of inspections is based on specific regulatory requirements and on the rate of possible deterioration of equipment and probability of environmental or human health incidents.

Areas where dangerous and mixed waste are actively handled, including the high bay area, storage cells, and flammable liquid bulking module, are considered to be areas subject to spills. These areas are given daily inspections when in use, as required by WAC 173-303-320(2)(c).

The containment system (i.e., floors and sumps) is inspected daily when in use for accumulation of spilled material. The containment system itself is inspected weekly for structural integrity, (i.e., no cracks, gaps, leaks, etc. that could result in environmental release of waste in the event of a spill). This frequency is based on the need to perform timely corrective actions in the event that problems are noted.

Aisle space between containers is inspected weekly. This frequency is based on the consideration of the rate of container transfers and movement within 305-B Storage Facility. Weekly inspections will allow container spacing problems to be identified and corrected before they become major problems.

Emergency and safety equipment and personal protective equipment is inspected weekly. This frequency is based on consideration of the expected rate of use of this equipment. Use of emergency equipment should not occur more than once during any one-week period. Weekly inspections will assure that this equipment is always functional and available in adequate supply.

6.2.2 Specific Process Inspection Requirements

The following sections detail the inspections to be performed at the 305-B Storage Facility.

6.2.2.1 Container Inspection

When in use, dangerous and mixed waste storage areas, as well as containers stored at 305-B Storage Facility is inspected daily for leakage, evidence of damage or deterioration, proper and legible labeling, and proper lid and bung closure. When work is being performed, the containment system is also checked on a daily basis for accumulation of any waste that may have been spilled into them. Structural integrity of the containment systems is checked on a weekly basis.

Daily and weekly inspections are performed and documented in accordance with Section 6.2.1.1. Specific inspection items are enumerated in Section 6.2.1.1 in association with the inspection description and frequency. Response to problems, and documentation of corrective actions are as described in Section 6.2.1.1.

6.2.2.2 Tank Inspection

This section does not apply to the 305-B Storage Facility because waste are not stored or treated in tanks.

6.2.2.3 Waste Pile Inspection

This section does not apply to the 305-B Storage Facility because waste is not placed in waste piles.

6.2.2.4 Surface Impoundment Inspection

This section does not apply to the 305-B Storage Facility because waste is not placed in surface impoundments.

6.2.2.5 Incinerator Inspection

This section does not apply to the 305-B Storage Facility because waste is not incinerated.

6.2.2.6 Landfill Inspection

This section does not apply to the 305-B Storage Facility because waste is not placed in landfills.

6.2.2.7 Land Treatment Facility Inspection

This section does not apply to the 305-B Storage Facility because waste is not treated in land treatment units.

6.3 WAIVER OR DOCUMENTATION OF PREPAREDNESS AND PREVENTION REQUIREMENTS

The following documents the preparedness and prevention measures taken at the 305-B Storage Facility.

6.3.1 Equipment Requirements

The following sections describe the internal and external communications and emergency equipment in use at 305-B Storage Facility.

6.3.1.1 Internal Communications

Internal communication systems are used to provide immediate emergency instruction to personnel in 305-B Storage Facility. Internal communications address general emergencies that may occur in the 300 Area as well as specific emergencies that may occur in 305-B Storage Facility.

Because of the nature of activities that occur in the 300 Area, the potential exists for emergencies outside of 305-B Storage Facility (e.g., release of radioactive materials) that could impact operations and staff in 305-B Storage Facility. For this reason, the general emergency signals for the 300 Area are applicable to 305-B Storage Facility. These signals are summarized in Table 6-1. Fire alarm signals are located in each building throughout the 300 Area. The nearest emergency siren for "area evacuation" and "take cover" is located 300 yards southeast of 305-B Storage Facility, on top of the 326 Building, and is audible in all parts of 305-B Storage Facility. Because fissile materials are not handled in 305-B Storage Facility, there is no criticality alarm for the unit.

Internal communications to provide emergency instruction in the event of an emergency in 305-B Storage Facility are fire alarms, public address (PA) system, and telephones. The fire alarms are to be used to provide notification for immediate evacuation of 305-B Storage Facility. Fire alarm pull boxes are located at all exits of the facility such that operating personnel have immediate access to one in all portions of 305-B Storage Facility. Four-fire alarm bells are located within the 305-B Storage Facility and are audible at all locations within the building. The locations of the fire alarm bells are shown in Figure 6-4 and are as follows: (1) an office wing on the northeast hall; (2) an office wing next to the east entrance; (3) on the south wall of the basement; and (4) on the northeast wall of the high bay. The PA system is to be used for building-wide broadcasting of verbal emergency instructions to 305-B Storage Facility staff. The PA system can be accessed from any unit telephone by dialing 376-1885. The PA system speakers are located in the high bay, in the basement, and in the office wing of 305-B Storage Facility.

The telephone system is to be used to provide verbal emergency instructions to 305-B Storage Facility staff. The telephone can also be used to verbally transmit emergency data to non-305-B Storage Facility staff, and to request emergency services. A network of telephones covers both floors of the facility. Locations of telephones are shown in Figure 6-4.

Table 6-1. Emergency Signals and Responses

Signal	Meaning	Response
Gong	Fire	Evacuate building. Move upwind. Keep clear of emergency vehicles.
Siren - steady 3-5 minute blast	Area Evacuation	Proceed promptly to north parking area. Stand by to follow instructions from emergency director.
Wavering Siren	Take Cover	Close up the 305-B Building, turn off all intake ventilation and go to the 314 Building south of the facility. Contact Laboratory Safety (337 Building) with your whereabouts. If this cannot be accomplished, stay in the 305-B Building until notified that it is safe to leave
Howler (Aa-oo-gah)	Criticality	Run immediately at least 100 yards away from the signal and take cover. Personnel inside the 305-B Building should follow the "take cover" procedure and wait for further instructions.
ALL EMERGENCY SIGNALS CAN BE HEARD BY PHONING 373-2345		

6.3.1.2 External Communications

As mentioned in Section 6.3.1.1 above, both a fire alarm system and telephone network system are in place at 305-B Storage Facility. Both systems can be used to summon emergency assistance. The fire alarm system summons direct response from the Hanford Fire Department's 300 Area Station. The telephone system can be used to access Hanford's Emergency Network directly at 375-2400 or by dialing the emergency number, 911. Locations of fire alarm pull boxes and telephones are given in Figure 6-4.

6.3.1.3 Emergency Equipment

Emergency equipment available for trained 305-B Storage Facility personnel includes portable fire extinguishers, a fire suppression system, spill response equipment, and decontamination equipment. Seven portable 10-lb ABC fire extinguishers, and one 15-lb (or larger) Class D fire extinguisher for combustible metals, are available at various locations throughout 305-B Storage Facility, as shown in Figure 6-4. The 10-lb ABC extinguishers are located: (1) next to the east entrance; (2) northwest end of the basement; (3) southwest end of the high bay; (4) outside of the bulking module door; (5) north of Cell No. 4 entrance; and (6) north-west end of high bay. (7) office area. A 15-lb ABC extinguisher is located outside cell 7. The 15-lb (or larger) class D extinguisher is located on the exterior of the organics cell wall north of the entrance.

The facility is also equipped with an automatic fire suppression system consisting of galvanized steel, schedule 40 per ASTM A120 pipe and 150-lb malleable iron per ANSI B16.3 fittings. All components are UL-listed or FM-approved, and installation of the fire sprinkler system has been conducted in accordance with NFPA 13 for ordinary hazard. Spill cleanup supplies and equipment maintained are summarized in Table 6-2. Four emergency eye wash/showers are available for emergency personnel decontamination. The locations of the emergency eye wash/showers are shown in Figure 6-4. If needed, the Hanford Fire Department can provide additional emergency equipment. Emergency equipment available through the Hanford Fire Department for hazardous materials response is identified in Appendix 6A.

6.3.1.4 Water for Fire Control

The large diameter linen that services 305-B Storage Facility for potable use and fire protection supplies adequate water volume and pressure. Three fire hydrants are located in immediate proximity to serve the 305-B Storage Facility: (1) 80 ft directly north of the northwest corner of 305-B Storage Facility; (2) 40 ft

directly south of the southwest corner of 305-B Storage Facility; and (3) 60 feet directly east of the southeast corner of 305-B Storage Facility. In addition, the Hanford Fire Department's 300 Area Station is located within 0.25 mile of 305-B Storage Facility.

6.3.2 Aisle Space Requirements

Containers stored in the 305-B Storage Facility are placed to provide aisle space clearance in accordance with WAC 173-303-340(3) and applicable standards of the Uniform Building Code and Life Safety Code. The proper maintenance of aisle space is inspected weekly and noted on the weekly inspection checklist (Figure 6-2).

6.4 PREVENTIVE PROCEDURES, STRUCTURES, AND EQUIPMENT

The following sections describe preventive procedures, structures, and equipment.

6.4.1 Unloading Operations

Procedures have been developed at 305-B Storage Facility to prevent hazards and minimize the potential for breakage, punctures, or the accidental opening of containers during waste unloading. All waste unloading is performed inside the 305-B Storage Facility. The large bay door is opened and the appropriate transporting vehicle (usually a pickup truck) is driven inside. As described in Section 4.1.1.3, the unloading area has secondary containment. By unloading all waste inside the fully contained facility, spills during unloading operations will be contained. Procedures for unloading and transferring waste to storage areas have been designed to minimize hazards. All waste is inspected prior to shipment to 305-B Storage Facility to ensure that they are in appropriate containers and that the containers are in good condition. Inspection of containers prior to acceptance at 305-B Storage Facility minimizes the potential for spills during unloading operations. The potential for spills during waste handling is minimized through the use of appropriate container handling equipment. Large waste items such as drums of nonflammable RMW are lowered into the basement of the facility for storage using an overhead crane or winch assembly. The containers are immediately transported, via a hand lift, into the appropriate storage location. Forklifts may also be used to unload heavy waste items. Small waste items can be unloaded by hand. Each small waste item is removed from the secondary containment unit in which it was transported (i.e., plastic storage tub) and placed in the appropriate storage location.

6.4.2 Run-Off

The 305-B Storage Facility was designed to eliminate the likelihood of off-site migration via run-off. Because the facility is completely enclosed (i.e., complete roof and no open walls), run-off of precipitation is not a factor. In addition, floors are bermed and sloped toward sumps in the loading/unloading area and each storage cell is similarly bermed, sloped, and individually sumped to eliminate the possibility of spills interacting or migrating offsite. The main high bay area and each storage cell are fully contained by at least a 6-in. high dike or ramp. Each door from the waste handling areas to the outside has a collection trench to intercept any potential run-off. The containment system for 305-B Storage Facility is described in more detail in Section 4.1.1.3.

6.4.3 Water Supplies

305-B Storage Facility is designed and operated to safely contain waste and prevent any contamination of water supplies. The containment system described in Section 4.1.1.3 prevents infiltration of waste that could contaminate groundwater and prevents run-off of waste that could contaminate surface water. The nearest water supply is the 300 Area water intake, which is located on the Columbia River 0.5 mile from 305-B Storage Facility.

Table 6-2. Material and Equipment for Spill Containment and Cleanup

Materials/Equipment			Notes
Diatomaceous Earth	30-gallon drum	To absorb small spills of oils, solvents, aqueous materials. Not used for acids or caustics unless first neutralized.	Stored in high bay of 305-B Storage Facility.
Vermiculite	55-gallon drum	To absorb small spills of oils, solvents, aqueous materials. Not used for acids or caustics unless first neutralized.	Stored in high bay of 305-B Storage Facility.
Absorbent Pillows or Booms	Three cartons, each containing booms or 12 pillows	To be used for diking or damming and absorption of spilled materials	Each boom or pillow can absorb slightly more than 1 L of liquid.
Acid- and base-specific and solvent absorbents or neutralizers	50-lb box of each in 305-B Storage Facility, and a 32-oz bottle of each in transport vehicle.	Neutralization of known chemical spills.	J. T. Baker™ brand or equivalent.
Citric Acid	30-gallon drum	Neutralization of alkaline spills	Stored in high bay of 305-B Storage Facility.
Sodium Bicarbonate	30-gallon drum	Neutralization of acid spills.	Stored in high bay of 305-B Storage Facility.

6.4.4 Equipment and Power Failure

The 305-B Storage Facility does not have any systems that would cause release of dangerous waste or RMW during a power failure or equipment failure. Interruption of power to any of the systems utilizing electrical power (HVAC system, crane, forklift) merely causes the equipment to stop operating. The unit has an emergency lighting system that operates automatically during power failure incidents.

For actions to be taken in the event of power failure to unit systems or equipment refer to the unit BEP (Attachment 18, Chapter 7.0).

6.4.5 Personnel Protection Equipment

Protective clothing and equipment are provided to employees during normal and emergency operations. During routine operations, the maximum number of employees working in the 305-B Storage Facility is less than fifteen. For dry chemical handling activities, such as labpacking, the minimum protection requirement is eye protection (safety glasses with side shields or chemical goggles), lab coat, and chemical resistant gloves (plastic or other construction as appropriate). Protection levels for other operations, such as bulking, and emergency situations are determined in consultation with a PNNL industrial hygienist, and staffing levels are revised according to the availability of proper protective equipment as shown below. Protective clothing and equipment available in the 305-B Storage Facility includes:

- 6 sets of chemically resistant suits, aprons, boots, and gloves
- 20 pairs of extra protective eyeglasses
- 3 SCBA
- 5 pairs of chemical goggles
- 4 face shields
- 4 full-face respirators with appropriate cartridges.

This protective equipment is stored in cabinets located outside of the operating area east entrance and is well stocked at all times. The location of the storage cabinets is given in Figure 6-4. This equipment is periodically replaced as it is used. The above inventory reflects the quantities of each type of PPE that are typically present at 305-B Storage Facility. Minimum quantities required to be present are given in the weekly inspection checklist found in the Hazardous & Miscellaneous Waste Operations Procedure.

6.5 PREVENTION OF REACTION OF IGNITABLE, REACTIVE, OR INCOMPATIBLE WASTE

The following sections describe prevention of reaction of ignitable, reactive, and incompatible waste.

6.5.1 Precautions to Prevent Ignition or Reaction of Ignitable or Reactive Waste

305-B Storage Facility may be used to store a variety of ignitable waste. Precautions to prevent ignition of ignitable waste involve separation of waste from sources of ignition and use of procedures, which minimize the potential for accidental ignition. There are no routine sources of ignition or open flame in 305-B Storage Facility. Work with ignition or heat sources, if required, is limited and controlled by PNNL management and is performed in compliance with internal PNNL health and safety procedures for elimination of ignition sources. These internal procedures:

- Prohibit use of open flame equipment when working with flammable liquids
- Prohibit smoking around flammable liquids [No smoking is allowed at 305-B Storage Facility]
- Require electrical equipment used in flammable or explosive atmospheres to comply with the National Electrical Code, NFPA 70
- Require use of equipment with automatic, adjustable temperature controls and high-temperature limit switches to prevent overheating
- Prohibit placement of flammable liquids on hot surfaces
- Require all static electricity sources to be grounded in areas where ignitable vapors may be present
- Require bonding of conductive containers when transferring flammable liquids.
- Require use of non-sparking tools in flammable waste storage areas

All maintenance or modifications that require work with ignition sources must receive prior approval by a PNNL Safety Engineer. Smoking is not allowed in 305-B Storage Facility at any time and the interior and exterior of the facility are clearly posted with "No Smoking" signs. Waste storage areas are not heated by any radiant heat source. All tools used to open ignitable waste containers are constructed of nonsparking materials.

A PNNL fire safety engineer familiar with the Uniform Fire Code inspects ignitable waste storage areas annually. This inspection is documented in the Operating Record. There are also storage restrictions at 305-B Storage Facility for combustible waste as part of fire safety requirements. The storage restrictions defined in the Uniform Building Code for Class B Occupancy apply to 305-B Storage Facility (International Conference of Building Officials 1988). The weekly inspection for 305-B Storage Facility includes checking to see if the inventory of combustibles is below these limits. These inspections are documented in the Operating Record.

6.5.2 General Precautions for Handling Ignitable or Reactive Waste and Mixing of Incompatible Waste

As described in Section 6.5.1, ignitable wastes are managed in a manner that protects the waste from sources of ignition or open flame. Ignitable waste containers are maintained in good condition and inspected weekly to minimize the potential for releases that could result in fire. Containers of ignitable waste are protected from high temperature to prevent the potential for pressurization and buildup of ignitable vapors. Containers of ignitable waste are stored in flammable material storage cabinets within waste storage cells, as described in Section 4.1.1.6. Limitations on sizes of containers and amounts of storage in cabinets are found in Section 4.3.1.

Because of the wide variety of waste that may be accepted at 305-B Storage Facility, the potential exists for storage of incompatible waste. Mixing of incompatible waste is prevented through waste segregation and storage procedures. Chemical waste stored in 305-B Storage Facility are separated by compatibility and hazard class and stored in separate storage cells. Separate storage shelves and cabinets are used within the storage cells, as described in Section 4.1.1.6, to provide further waste segregation. The following general guidance is used to segregate and separate chemicals:

- Store acids on a low storage shelf or in acid storage cabinets.
- Separate acids from bases and alkaline metals such as potassium or sodium
- Separate oxidizing acids from organic acids and flammable or combustible materials
- Store bases away from acids and store solutions of inorganic hydroxides in polyethylene containers
- Store oxidizers away from flammable or combustible materials and reducing agents such as zinc, alkaline metals, and formic acid
- Store peroxide-forming chemicals in airtight containers in a dark, cool, and dry place (inside of cabinets)
- Store flammable materials in approved containers or cabinets
- Separate flammable materials from oxidizing acids and oxidizers and keep them away from sources of ignition
- Clearly mark cabinets to identify the hazards associated with their contents.
- The potential for waste ignition or reaction at 305-B Storage Facility is also minimized through storage restrictions on hazardous material quantities. The storage restrictions defined in the Uniform Building Code for Class B Occupancy apply to 305-B Storage Facility (International Conference of Building Officials 1988). The weekly inspection of 305-B Storage Facility includes checking to see if waste inventories are below these limits. These inspections are documented in the Operating Record.

Figure 6-1. Normal Site Access - Entrance at the Southern End of Wisconsin Avenue and the North End of the 300 Area Barrier and Means to Control Entry

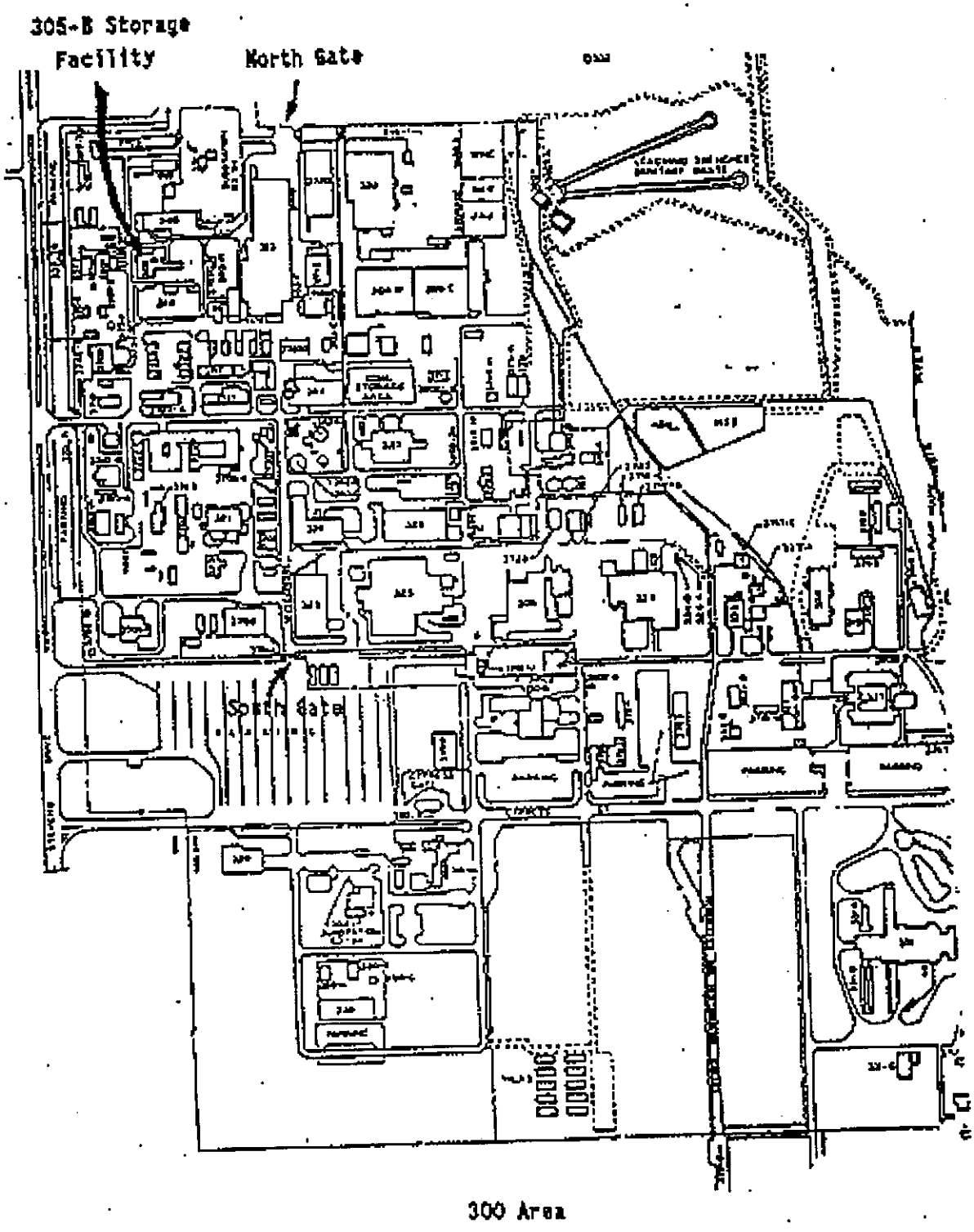


Figure 6-2. Example of Weekly Inspection Checklist Form

Weekly Inspection Form
305-B Storage Facility Chemical Waste Storage

Inspector Name (print): _____ Inspector Signature: _____ Time/Date:_____

Co-Inspector Name (print): _____ Co-Inspector Signature: _____ Time/Date:_____

Waste Containment Locations (Y=Yes, N=No)

Earliest PCB Accumulation Date in Cell 2: _____ **Earliest RMW PCB Accumulation Date:** _____

Cell:	1 Oxidizer Acids	2 Poison, PCB, Class 9	3 Caustic WSDW Non-Reg.	4 Flammable, Combustible, Aerosols	5 Flammable Bulking Cylinders	6 Asbestos	7 Non-Flammable RMW	8 Flammable Drum Storage	9 Flammable RMW	10 Non-Reg. Yard	11 WSDW, Class 9 Non-Reg. Drums	12 Oxidizer Drums	13 Acid Drums	14 Alkaline Drums	15 Explosives Magazine
Container integrity good?															
Containers properly sealed?															
Containers properly labeled?															
Containers properly segregated?															
floor free of major cracks/gaps?															
sumps empty and dry?															

Minimum aisle space present? _____ (44" leading to building exits, 36" all other aisles per NFPA 101, UBS 3315(b)1 and WAC 173-303

Inventory below 30, 000 gallon design capacity? _____ Estimated Volume = _____ gallons

Inventory below UBC Class B limits? _____ (<480 gallons 1-A, 1-B, 1-C total and/or <240 gallons 1B

daily inspections logged? _____

Figure 6-2. Example of Weekly Inspection Checklist Form (cont.)

Weekly Inspection Form
305-B Storage Facility Chemical Waste Storage

Emergency Equipment and Supplies (Y=Yes, N=No)

North eyewash safety shower: clear access?	____	Inventory as noted and in working order?	____
South eyewash safety shower: clear access?	____	4 each full face respirators with combination organic vapor/HEPA filters?	____
Portable eyewash outside of east bay door pressurized?	____	4 each full face shields?	____
Spill control station stocked for acid, base, solvent and other spills?	____	6 each Tyvek suits?	____
Fire extinguishers (8) inspected and have clear access?	____	6 each acid suits?	____
Facility phone (376-4293) operational?	____	20 pair eye protection, glasses and/or goggles?	____
Facility public address system (376-1885) operational?	____	synthetic, rubber, leather gloves stocked?	____
Formaldehyde spill kit (Cell 2) fully stocked with 11 lbs neutralizer?	____	3 each SCBA units?	____

Corrective Action and/or Clean-up Performed

Action	Date Corrected

Figure 6-3. Example of Monthly Inspection Checklist Form

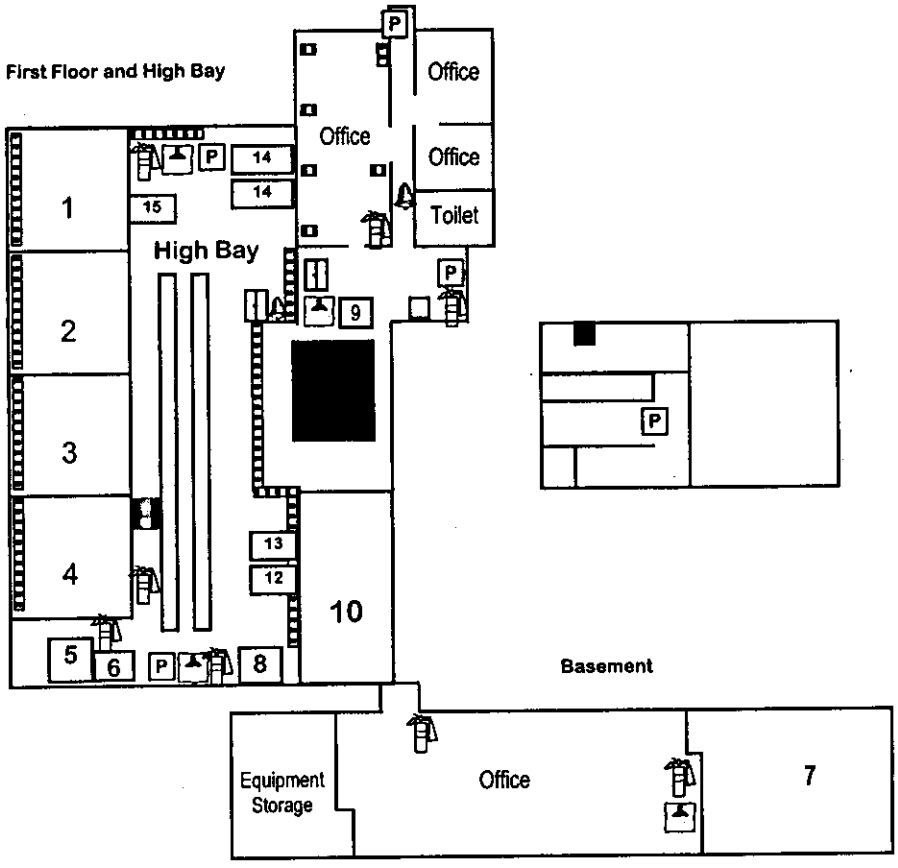
305-B Storage Facility Monthly Management Inspection Checklist

Date/Time _____ Inspector (Print/Sign) _____

	Check if Working/ Present	Comments*
Check for present and working condition:		
Lights		
Exhaust fans (2 in highbay)		
Eye wash/showers (3)		
Fire extinguishers		
Required facility postings		
Check housekeeping:		
Inside		
Outside		
Aisles/walkway clear		
Sumps dry		
Check waste storage:		
Weekly inspection conducted/filed?		
Facility crowded?		
Container condition		
Proper segregation		
Check supply and condition of safety equipment:		
Gloves - leather and disposable		
Goggles		
Face shields		
Coverall/lab coats		
Masks and cartridges		
Check spill control and cleanup supplies:		
Spill pillows – general		
Neutralizers		
Mercury		
Solvent		
Check packaging material:		
Drums - 5 gallon		
Drums - 30 gallon		
Drums - 55 gallon		
Absorbent - oil dry		
Absorbent – vermiculite		
Labels		
Marking supplies: pens/spray paint		

*Corrective actions are required within the next inspection cycle.

Figure 6-4. 305-B Storage Facility Building Plan and Location of Emergency Equipment



Legend

1. Acids, Oxidizers
2. Poisons, Class 9
3. Alkaline, WSDW, Organic Peroxides
4. Organics and Compressed Aerosols
5. Flammable Liquid Bulking and compressed gases
6. Asbestos Cabinet
7. RMW Storage Cell
8. Flammable Storage
9. Small Quantity Flammable RMW
10. Outdoor Non-regulated Drum Storage
11. WSDW Non-flammable Drums
12. Oxidizer Drums
13. Acid Drums
14. Alkaline Drums
15. Explosive Magazine

Safety Shower/Eyewash
Phone
Fire Alarm Bell
Fire Alarm Pull Box
10-Lb. ABC Fire Extinguisher
15 Lb. Or larger Class D Fire Extinguisher
Removable Access to Basement
Emergency Equipment Cabinet
Collection Sump

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7.0 BUILDING EMERGENCY PROCEDURE 305-B STORAGE FACILITY

7.1 General Information

The information contained in this chapter is the unit contingency plan, as required under WAC 173-303-806(4)(a)(vii). This chapter is also the Building Emergency Procedure (BEP) as required under the Attachment 4, *Hanford Emergency Management Plan* (DOE/RL-94-02) and PNNL Manual, PNNL-MA-110. It supersedes all previous contingency plans and building emergency procedures (BEPs).

The 305-B Storage Facility is required to maintain a BEP under the Attachment 4, *Hanford Emergency Management Plan* (DOE/RL-94-02). This Contingency Plan has been designed to meet the requirements for a BEP as well as the Ecology requirements for a contingency plan for the 305-B Storage Facility. The Attachment 4, *Hanford Emergency Management Plan* (DOE/RL-94-02) details the membership of the DOE-RL Site Management Team (SMT) mentioned in Section 7.3 and following sections, and the procedure for notifying and mobilizing the team.

PNNL shall review and immediately amend, if necessary, this procedure whenever:

- Applicable regulations or the facility permit are revised;
- The procedure fails in an emergency;
- The facility changes (in its design, construction, operation, maintenance, or other circumstances) in a way that materially increases the potential for fires, explosions, or releases of dangerous waste or dangerous waste constituents, or in any way that changes the response necessary in an emergency;
- The list of emergency equipment changes.

Amendments to the procedure, if necessary following review, will be made in accordance with Attachment 18, Chapter 1.0, Section 1.5 of the 305-B Storage Facility Permit.

7.1.1 Facility Name

305-B Storage Facility
Alaska St., 300 Area
Richland, WA 99352

7.1.2 Facility Location

305-B Storage Facility is located in the Northwest portion of the 300 Area of the Hanford Site on Alaska Street.

7.1.3 Owner/Operator

The 305-B Storage Facility is owned by the United States Department of Energy (DOE) and is co-operated by Pacific Northwest National Laboratory (PNNL).

7.1.4 Facility Description

The 305-B Storage Facility is a dangerous and radioactive mixed waste storage facility located in the 300 Area of the Hanford Site. The unit is owned and operated by DOE-RL and co-operated by PNNL. It is used for the collection, consolidation, and packaging of containerized dangerous and radioactive mixed waste. Typically, 305-B Storage Facility handles various types of small volume wastes from research laboratory activities.

7.1.5 Hanford Site Emergency Sirens/Alarms

Signal	Meaning	Response
Gong (2 gongs/sec)	Fire	Evacuate building. Move upwind. Keep clear of emergency vehicles.
Siren (steady blast)	Area Evacuation	Proceed promptly to north parking lot accountability area. Follow instructions.
Wavering Siren	Take Cover	Close all exterior doors, turn off all intake ventilation and notify EMSD of your whereabouts. Requests call back for status and monitor portable radios.
Howler (Aa-oo-gah)	Criticality	Follow "take cover" instructions above. (No criticality will take place in 305-B Storage Facility since fissile materials are not accepted for storage.)
To hear these signals and a description of actions to take, call 373-2345.		

The following is presented to define specific emergency actions for personnel assigned to 305-B Storage Facility for different types of emergencies that could be encountered during normal operations.

Area-wide Evacuation. (Signal: Steady siren of 3-5 minutes' duration) In the event of an area-wide evacuation of the 300 Area, 305-B Storage Facility personnel will shut down equipment, secure wastes (especially RMW), and secure classified documents (or carry them with them), if time permits. They will then report to the north parking lot accountability area. Notify the BED of any ongoing processes or any compromises to security. The zone warden will account for all facility personnel.

Take Cover. (Signal: Wavering siren) In the event a take cover alarm is sounded, 305-B Storage Facility personnel will stay inside the 305-B Storage Facility, close all exterior doors, and turn off all intake ventilation. They will secure all wastes and classified documents. Personnel will then contact Environmental Management Services with their whereabouts and request a call back for status.

7.1.6 Building Specific Emergency Alarms

The 305-B Storage Facility has an alarm system (2 gongs/sec) that is monitored by the Hanford Fire Department (HFD). A manual fire alarm pull box is located near each exit door.

7.1.7 Communication Equipment

Unit operations personnel may also use telephones, or the building PA system. Further description of communication equipment is located in Attachment 18, Chapter 6.0, Sections 6.3.1 of the 305-B Storage Facility Permit.

7.2 Purpose of the Building Emergency Procedure

This procedure provides for the safety of employees, other contractor personnel, visitors, and members of the general public in the event of an emergency. It also is designed to minimize hazards resulting from fires, explosions, or any other unplanned sudden or non-sudden release of dangerous waste or dangerous waste constituents to air, soil, or water. The provisions of the procedure will be carried out immediately whenever the criteria in Section 7.4 are met.

7.2.1 Coordination Agreements

Interfaces and coordination with offsite agencies are in the planning, preparedness, response and recovery elements of the Hanford emergency management program. RL has developed and maintains agreements

to formalize areas of understanding, cooperation and support with offsite agencies. These agreements are applicable to all Hanford facilities, including the 305B Storage Facility. Summaries of these memoranda of agreement (MOA) are given in Attachment 4, *Hanford Emergency Management Plan* (DOE/RL-94-02), Table 3-1. Copies of the MOAs are provided in Attachment 4, *Hanford Emergency Management Plan* (DOE/RL-94-02), Appendix B.

7.3 Building Emergency Response Organization

The 305-B Storage Facility BERO is an emergency response organization with clearly defined responsibilities. The BERO consists of pre-designated and trained individuals who have been assigned emergency response activities associated with 305-B Storage Facility.

Note: DOE-RL and other prime contractor personnel are trained to notify Hanford Emergency number (911 from onsite telephones) operated by the Hanford Patrol who then notifies the PNNL Single Point-of-Contact.

7.3.1 Building Emergency Directors and Alternates

The Building Emergency Director (BED) has the responsibility for the welfare and safety of the building personnel and for directing efforts to control, evaluate, and terminate the event if the building is the site of an event. The BED performs the duties of the Emergency Coordinator as prescribed under WAC 173-303-360 and has the authority to commit the resources needed to carry out the BEP.

The BED manages facility operations and personnel and is responsible for ensuring implementation of appropriate emergency procedures and their follow-up 24 hours a day. Activities include:

- Training of the Building Emergency Response Organization (BERO).
- Maintain the facility emergency postings boards/building emergency procedure.
- Ensure that facility personnel are aware of hazards.
- Ensuring that facility personnel are trained to respond to emergencies.
- Determine when an event has occurred or a condition exists that requires response in accordance with applicable state and/or federal regulations.
- Communicate with the Environmental Point of Contact for RCRA emergencies.
- Activating internal facility alarms or communications systems, where applicable, to notify building occupants of protective actions to be taken.
- Verifies the appropriate alarm is sounded when necessary.
- Reporting events or conditions in accordance with the applicable state and/or federal regulations.
- Identify the character, exact source, amount, and areas extent of any released materials.
- Assessing possible hazards to human health and the environment that may result from the release, fire, or explosion.
- In the event of an extended building evacuation during inclement weather, the BED will identify an Alternate Staging Area.
- Taking reasonable measures (e.g., stopping process/operations, collecting/containing released waste, removing/isolating containers) necessary to ensure that fires, explosions, and releases do not occur, recur, or spread to other dangerous waste; and monitor for leaks, pressure buildup, gas generation, or ruptures in valves, pipes, or other equipment, as appropriate.
- Implement Emergency Response and Follow-up.
- Direct configuration control over facility systems and components.
- Responsible for the duties of the Facility Operations Specialist per PNNL MA-110 or delegate to someone to act as Facility Operations Specialist if necessary.

- Activates the BERO and allocates personnel to conduct facility-specific emergency response actions (within the affected facility boundary).
- Categorization of DOE Emergencies and performing incident notification in accordance with the BED checklist (Exhibit 7.12.4).
- Directing implementation of initial preplanned area/site protective actions.
- Coordinate emergency response measures.
- Acts as a member of the ICP and provide information and assistance to the responding agencies as requested to mitigate the event.
- Arranges care for any injured persons.
- Maintenance of emergency equipment.
- Timely implementation of contingency plan in the event of an emergency.
- Be thoroughly familiar with:
  - 305-B Storage Facility Emergency Procedure
  - All operations and activities
  - Location and characteristics of waste handled
  - Location of all records
  - Physical layout of the building and area of responsibility

7.3.2 Other Members of the Building Emergency Response Organization (BERO)

7.3.2.1 Zone Wardens

Zone Wardens provide information to the BED via the Staging Area Supervisor to ensure that no one is unaccounted for, and assists as required in additional duties as determined by the BED. They determine if all personnel have left their assigned area by performing a thorough room-by-room search, if safe to do so (refer to Note below), including unoccupied spaces such as stairwells, corridors, closets, and other common areas. They determine if aid and/or rescue are required and aid those who may need help in evacuating the building. Ensure that disabled persons receive whatever assistance may be required for a safe and orderly evacuation. Report the occupancy status of the assigned zone(s) to the Staging Area Supervisor and note areas that could not be checked. The Zone Warden also assists the BED in communicating emergency messages to the building occupants.

Note: The function of the zone warden is to verify (when possible), that assigned zones have been evacuated, as a means of assisting other emergency responders, and verifying locations of building personnel. The function of zone wardens does not include search and rescue; they are not obligated to enter any area they feel presents a hazard to them. Once the evacuation alarm is sounded, zone wardens should not enter any location in the facility where there are indications that a hazard may exist. The indications include such things as: visible smoke, fire, unusual odors, local alarms, spilled chemicals, indications on the fire alarm supervisory panel, incapacitated personnel, etc. If a zone warden is not in the facility when the evacuation alarm sounds; is a significant distance from their assigned zones; or has been isolated from their zone, they should report to the Staging Area Supervisor at the Staging Area or Incident Command Post for instructions.

7.3.2.2 Staging Area Supervisor

The Staging Area Supervisor (SAS) will direct all activities at the Building Staging Area and is responsible for notifying the BED if all personnel are accounted for, or if help is needed to locate or account for missing personnel. The SAS will also support the BED, if requested.

- The SAS collects the occupancy/accountability status from the Zone Wardens at the Staging Area.
- Report status to the BED at the Staging Area or Incident Command Post.

- Assist in arranging transportation away from the staging area as necessary.
- Maintain a log of staging area activities.

7.3.2.3 Recorder

Records, in a time-line format, event related notifications and activities associated with the direction administered and information received by the ICP.

7.3.2.4 Environment, Safety & Health

Provides guidance for establishing safety requirements for mitigation and recovery actions, which include:

- Coordinating any support needed from other disciplines of the PNNL ES&H Directorate (i.e., Environmental Compliance Representatives, Radiological Control, Industrial Hygiene and Field Service Representative).
- Provide telephone notification of incident to DOE-RL contact personnel, Attachment 18, Chapter 12.0, Sections 12.4.1.5.1 and 12.4.1.6 of the 305-B Storage Facility Permit.
- The Environmental Support Contact (375-2966) will provide any necessary notifications to regulatory agencies such as the Washington State Department of Ecology and ensure that required written reports to regulatory agencies are completed within 15 days of event termination.
- Provide notification of releases to the National Response Center and to Ecology in accordance with the site-wide hazardous waste permit, 40 CFR 302.6, and WAC 173-303-145.

7.3.2.5 Individual Staff Members

- Announce or activate the appropriate alarm and notify management upon observing an emergency.
- Read and understand the Building Emergency Postings and BEP.
- Avoid exposure to harmful and life-threatening conditions.
- Aid those who need help.
- Report to the staging area and cooperate with management in accounting for all staff.
- Provide the BED with any information to assist in evaluating the emergency condition.
- Perform the following tasks *only* if time and conditions permit:
  - Follow shutdown procedures in BEP.
  - Remove contaminated clothing
  - Secure classified documents, material, and nuclear material.

7.3.2.6 Management Support Group Leader (MSG)

The Facilities Operations Manager or his delegate will respond when requested by the BED, as the MSG leader. The MSG leader is responsible for the following:

- performing the necessary steps listed in the "Emergency Checklist for Emergency Management Support Group," Exhibit 7.12.7
- having applicable notifications made to PNNL and DOE-RL management
- having the event classified per established PNNL procedures
- providing senior management assistance to the BED as necessary
- assisting in handling communications and notifications
- obtaining personnel, supplies, and equipment as necessary.

7.4 Implementation of the BEP

The overall responsibility for implementation of this Procedure lies with the Building Emergency Director (BED) or the designated alternates. The BED has the responsibilities of the Emergency Coordinator as named in WAC 173-303-360. The BED and alternates are on call 24 hours per day and have the authority to commit all necessary resources (both equipment and personnel) to respond to any facility emergency.

Response by an emergency coordinator is usually obtained through the PNNL Single Point-of-Contact at (509) 375-2400. The Single Point-of-Contact has been designated as the contact point to mobilize a response to any PNNL emergency on the Hanford Site. The Single Point-of-Contact is available at all times and has the responsibility to contact the BED or alternate to begin responses to emergencies under this procedure.

Due to the security requirements at the Hanford Site, DOE-RL does not submit names or phone numbers of personnel acting as emergency contacts as part of the permit or other public documents. All emergency notifications to the BED, building managers, etc., are made through the PNNL Single Point-of-Contact. A complete Building Emergency Response Organization listing of positions, names work and home telephone numbers for the 305-B Storage Facility is maintained in a separate, internally controlled, facility document. Copies are distributed, as a minimum, to appropriate facility locations, the Single Point-of-Contact, and with the BEP at the 305-B Storage Facility.

The decision by the BED or alternate to implement this Procedure depends on whether an incident in progress may threaten human health or the environment. Immediately after being notified of an emergency, the BED or alternate will go to the site and evaluate the situation. Based on evaluation of the event, the BED or alternate will implement this procedure to the extent necessary to protect human health or the environment.

The decision to implement the Building Emergency Procedure (contingency plan) should be made whenever unusual or emergency conditions exist that require the response of facility and/or emergency personnel and the establishment of an incident command post. For RCRA events, the BEP must be implemented and the Department of Ecology notified, if all of the following criteria are met.

1. The event involves an unplanned spill, release, fire or explosion;

AND

2a. The unplanned spill or release involves a dangerous waste, or the material involved becomes dangerous waste as a result of the event (e.g., product that is not recoverable);

OR

2b. The unplanned fire or explosion occurred at a facility or transportation activity subject to RCRA contingency planning requirements;

AND

3. Time-urgent response from an emergency services organization is required to mitigate the event or a threat to human health or the environment exists.

- Based on evaluation of the event, the BED or alternate will implement the BEP to the extent necessary to protect human health and/or the environment. The BED has the authority to commit the resources necessary to carry out the actions required by the BEP.

- The BED will direct that additional checklists identified in the BEP exhibits be initiated and completed. When the materials and quantities involved in the incident have been identified, it should be possible to evaluate the magnitude of the hazard.

During an emergency event, the BED will take all reasonable measure to ensure that fires, explosions and releases do not occur, recur or spread to other dangerous waste in the facility. Measures include stopping

processes and operations, collecting and containing released waste, and removing or isolating containers, as appropriate.

In any emergency, priority is given to protection of the health and safety of persons in the immediate area. Containment and cleanup are secondary objectives. When responding to minor spill events, onsite personnel will generally perform immediate cleanup of minor spills or releases using facility equipment. Remediation of such spills and releases would not normally constitute activation of the BEP. A spill or release of dangerous waste is considered "minor" if the criteria identified in 7.6.1.6.1 "Response to Minor Spills or Releases" is met.

Incidents discovered by unit personnel trained in emergency response may be responded to according to these procedures prior to the arrival of the BED. However, immediate notification of the BED is still required prior to implementing these procedures.

7.5 Facility Hazards

7.5.1 Hazardous Materials

The facility may contain hazardous material typically found in an industrial facility including:

- Chemical hazards such as corrosives, oxidizers, flammable solids and liquids, poisons, etc.,
- Radioactive materials,
- Hazardous wastes,
- Radioactive mixed wastes

7.5.2 Physical (Industrial) Hazards

The facility may contain industrial hazards such as high-voltage equipment, and overhead hazards.

7.5.3 Dangerous Mixed Waste

Refer to Section 7.5.1.

7.5.4 Radioactive Materials

Refer to Section 7.5.1.

7.5.5 Criticality

Not applicable.

7.6 Potential Emergency Conditions and Appropriate Response

7.6.1 Facility Operations Emergencies

For an Off-Normal Event or Emergency Condition not specifically addressed, call the PNNL Single-Point-of-Contact on 375-2400. PNNL staff who observe a facility condition that may include, but not limited to the following: smoke, heat, vibration, or unusual sounds such as hissing should leave the area immediately and make the appropriate emergency notifications. The following guidance is offered for specific listed incidents:

7.6.1.1 Loss of Utilities

In the event of power failure, all containers of waste will be checked for closure and, if the duration of the outage exceeds 30 minutes, will be returned to their storage cells if they have been removed for labpacking or bulking. Facility equipment will be shut down to allow orderly restoration of power.

In a power failure incident, the Building Manager and the BED are to be notified. The Building Manager is responsible to arrange for restoration of power service to the unit. The BED is responsible to evaluate whether the Contingency Plan should be implemented or whether an evacuation is advisable. If the Contingency Plan is not implemented immediately, site personnel may be required to monitor the unit for continuing release potential during extreme temperature periods. The BED will determine the need for, and extent of, any such monitoring, in consultation with an industrial hygienist if appropriate.

In the event of power loss to site equipment, which results in failure of the equipment, the Building Manager is to be contacted to arrange for repair of the affected equipment and/or provide restoration of power. The BED should be contacted in the event that any failure results in a release or potential release to the environment as described in Section 7.4.

7.6.1.2 Major Process Disruption/Loss of Building Control

Not applicable.

7.6.1.3 Pressure Release

Not applicable.

7.6.1.4 Fire and/or Explosion

In the event of a fire or explosion, the discoverer will pull one of the manual fire alarms and call the Single Point-of-Contact. Automatic initiation of a fire alarm (through the smoke detectors and sprinkler systems) is also possible. The personnel operating the facility are trained in the use of portable fire extinguishers. They will use their best judgment whether to extinguish a fire or evacuate. Under no circumstances will personnel remain in the facility to extinguish a fire if unusual hazards exist.

An explosive (cell 15) magazine is located in the high bay of 305-B. Any fire in the high bay may result in the involvement of the magazine with an attendant risk of explosion. Facility personnel, including the BED, should carefully consider the potential for involvement of the magazine in a fire if one occurs. This potential may determine the advisability of fighting a fire in the high bay, the need to request an evacuation of nearby facilities, and other factors.

The following actions will be taken in the event of a fire or explosion:

1. Upon actuation of the fire alarm, personnel will shut down equipment, secure wastes, and lock up classified documents (or carry them with them), ONLY if time permits.

2. The alarm automatically signals both the 300 Area HFD station and the Hanford Patrol Headquarters. Both will respond immediately.

3. Personnel shall leave 305-B Storage Facility by the nearest safe exit, and move upwind, keeping the driveway clear.

4. The Single Point-of-Contact shall be immediately notified, who shall in turn notify the BED (or alternate).

5. The BED will go directly to the scene.

6. The BED will obtain all necessary information pertaining to the incident.

7. The BED will contact the Single Point-of-Contact and advise whether to notify the PNNL Occurrence Representative, depending on the severity of the event. Inform the Single Point-of-Contact as to the extent of the emergency (including estimates of dangerous waste or RMW quantities released to the environment) and any actions necessary to protect nearby facilities.

8. Activation of the Emergency Operations Center sets into motion the notification process for DOE, other Hanford contractors, and outside agencies.

9. The Hanford Patrol/Benton County Sheriffs Office will set up roadblocks within the area to route traffic away from the emergency scene.

10. Emergency medical technicians will remove injured personnel to a safe location, apply first aid, and prepare for transport to the medical department (DOE/HEHF) or to hospitals.

11. The HFD will extinguish the fire.

12. All emergency equipment will be cleaned and restored for its intended use immediately after completion of cleanup procedures.

7.6.1.5 Hazardous Material Spill

In addition to the foregoing contingency plan provisions, the following specific actions may be taken for leaks or spills from containers at the unit:

- Container leaks will be stopped as soon as possible through tightening closures, tipping the container to stop the leak, use of plugging or patching materials, or overpacking. Appropriate protective equipment will be used.

- If it is inadvisable to approach the container, build a containment of absorbent materials and restrict access pending notification of the BED and potential activation of the contingency plan.

- Contents of leaking containers may be transferred to appropriate non-leaking containers. Transfer procedures for fire safety will be followed for ignitable or reactive wastes (e.g., use of non-sparking tools, bonding and grounding of containers, isolation of ignition sources, and use of explosion-proof electrical equipment).

- Overpacked containers will be marked and labeled in the same manner as the contents. All containers of spill debris; recovered product, etc., will be managed in the same manner as waste containers received from outside the unit. Overpacks in use at the facility will be marked with information pertaining to their contents, and noting whether the container inside the overpack, is leaking or is in good condition.

7.6.1.6 Dangerous/Mixed Waste Spill

The initial response to any emergency will be to immediately protect the health and safety of persons in the immediate area. Identification, containment, treatment, and disposal assessment will be the secondary response.

7.6.1.6.1 Response to Minor Spills or Releases

Unit personnel will generally perform immediate cleanup of minor spills or releases using unit equipment, absorbents and emergency equipment noted in Section 7.10 Personnel detecting such spills or releases shall contact the PNNL Single Point-of-Contact (375-2400) to notify of the detection of such release and arrange for notification of the BED. For spills or releases occurring within individual storage cells during routine handling and storage, refer to Attachment 18, Chapter 4.0, Section 4.1.1.8.

A spill or release of hazardous material or dangerous waste is considered "minor" if all of the following are true:

- The spill is minor in size (generally less than five gallons of liquid or 50 lbs. of solids);

- The composition of the material or waste is known or can be immediately determined from label, manifest, MSDS, or disposal request information;
- The spill does not threaten the health and safety of building occupants, i.e., an evacuation is not necessary;
- Unit personnel have received appropriate training in accordance with Attachment 18, Chapter 8.0; and
- Unit personnel have appropriate protective equipment, respiratory protection, and emergency response equipment to immediately respond and remediate the spill or release.

If any of the foregoing conditions are not met the provisions of Section 7.6.1.6.2. Major Dangerous Waste and/or RMW Spill or Material Release should be followed.

7.6.1.6.2 Response to Major Dangerous Waste and/or RMW Spill or Material Release

The following actions will be taken in the event of a major release:

Discoverer

1. If within the unit, notify unit personnel of discovery of spill or release by sounding the fire alarm.
2. Immediately notify the PNNL Single Point-of-Contact (375-2400) and provide all known information, including:
    - Name(s) of chemical(s) involved and amount(s) spilled, on fire, or otherwise involved, or threatened by, the incident.
    - Name and callback phone number of person reporting the incident.
    - Location of spill or discharge (pinpoint as closely as possible).
    - Time incident began or was discovered.
    - Where the materials involved are going or may go, such as into secondary containment, under doors, through air ducts, etc.
    - Source and cause, if known, of spill or discharge.
    - Name(s) of anyone contaminated or injured in connection with the incident.
    - Any corrective actions in progress.
    - Anyone else who the caller has contacted.
3. Take action to contain and/or stop the spill if all of the following are true:
    - The identity of the substance(s) involved is known;
    - Appropriate protective equipment and control/cleanup supplies are immediately available;
    - The employee has the proper training and can perform the action(s) contemplated without assistance, or assistance is immediately available from other trained unit employees; and
    - Time is of the essence; i.e., the spill/discharge will get worse if immediate action is not taken.

If any of the above conditions are not met, or there is doubt, the employee should evacuate the area and remain outside the unit and upwind from it pending the arrival of the BED. He/she should remain available for consultation with the BED, HFD, or other emergency Management personnel.

Single Point-of-Contact

1. The Single Point-of-Contact will notify the BED or one of his alternates if the BED cannot be immediately reached, to arrange immediate response to the incident.

2. The Single Point-of-Contact will arrange for immediate response from HFD for fire or ambulance services as needed based on the report of the discoverer.

3. The Single Point-of-Contact will notify EMSD of the spill or release incident.

4. The Single Point-of-Contact will support the BED in providing further notification and coordination of response activities if needed. Potential activities requiring Single Point-of-Contact participation are:

   - Activate the general evacuation alarm for the 300 Area, if the BED determines that evacuation is necessary.

   - Notify the Emergency Operations Center (EOC) operated for DOE by Project Hanford Management Contractor (PHMC) if evacuation of the 300 Area or adjacent areas is necessary.

   - Notify the DOE-RL Emergency Operations Center in accordance with the Attachment 4, *Hanford Emergency Management Plan* (DOE/RL-94-02) if necessary to evacuate areas lying outside the Hanford Site.

   - Any other activities found in Attachment 4, *Hanford Emergency Management Plan* (DOE/RL-94-02).

Building Emergency Director (BED) (or alternate)

1. Go directly to the unit to coordinate further activity. Take command of the scene from discovering unit employee.

2. Obtain all immediately available information pertaining to the incident. Determine need for assistance from agencies and arrange for their mobilization and response through the Single Point-of-Contact.

3. If building evacuation is necessary, sound the fire alarm.

4. Arrange for care of any injured employees, and provide for any additional help necessary to safely evacuate any disabled staff or visitors.

5. If a threat to surrounding facilities/operations exists. The BED (or alternate) will identify the hazards and any appropriate actions needed in the case of an unplanned release and activate the Emergency Operations Center if required.

6. Provide for event notification in accordance with Section 7.3.2.4.

7. Maintain access control at the site by keeping unauthorized personnel and vehicles away from the area. Security personnel may be used to assist in site control if control of the boundary is difficult, e.g., repeated incursions. In determining controlled-access areas, be sure to consider environmental factors such as wind velocity and direction.

8. Remain available to fire, police, and other authorities on scene and provide all required information. If round-the-clock work is anticipated, enlist the assistance of alternate BEDs to provide coverage. Make no comment to media unless authorized to do so. Refer media inquiries to the Media Relations office.

9. If unit personnel perform remediation, ensure use of proper protective equipment, proper remedial techniques (including ignition source control for flammable spills), and decontamination procedures by all involved personnel. Consult a PNNL industrial hygienist for assistance in determining necessary equipment or procedures.

10. If remediation is performed by outside agencies such as the Hanford Hazardous Materials Response Team or other remedial contractors, remain at the site to oversee activities and provide information.

11. Ensure proper containerization, packaging, and labeling of recovered spill materials and overpacked containers.

12. Ensure decontamination (or restocking) and restoration of emergency equipment used in the spill remediation prior to resumption of unit operations in compliance with Attachment 18, Chapter 12.0, Section 12.4.1.5.3 of the 305-B Storage Facility Permit..

13. Provide reports after the incident in accordance with Attachment 18, Chapter 12.0, Section 12.4.1.5. of the 305-B Storage Facility Permit.

7.6.1.7 Transportation and/or Packaging Incidents

1. (Signal): NONE

2. Response/Action

- When a damaged shipment of hazardous material or dangerous waste arrives at the 305-B Storage Unit, and the shipment is unacceptable for receipt under the criteria identified in Attachment 18, Chapter 2.0. Do NOT move the shipment

- Notify the BED and the generator of the damaged shipment and obtain any chemical information necessary to assist in the response

- The BED will evaluate the event and initiate appropriate actions for minor events/spills such as over packing damaged containers, re-labeling, tightening caps, etc, using facility expertise and equipment

- Treat any major release from the package as a hazardous material spill and perform response actions per Section 7.6.1.6.2 " Response to Major Dangerous Waste and/or RMW Spill or Material Release".

- Take actions to protect any uninvolved hazardous waste that may be threatened.

7.6.1.8 Unusual, Irritating, or Strong Odors

7.6.1.8.1 Inside of the Facility

If an unusual, irritating, or strong odor is detected, and the person detecting it has reason to believe that the odor may be the result of an uncontrolled release of a toxic or dangerous material, they shall:

- Immediately activate the building fire alarm system to evacuate the building, and
- Notify the Single Point-of-Contact, the building manager, and cognizant line management.

In the event that the discoverer has knowledge of the source and scope of the release and believes that the release poses no immediate threat to others, the release shall immediately be reported to the building manager and to the discoverer's manager. Measures shall be taken to contain the release and ventilate the area, if safe and advisable to do so.

In the event that an unusual odor is detected within the facility, and the source of the odor is unknown, the BED must consider whether the facility should be evacuated.

7.6.1.8.2 Outside of the Facility

If an unusual odor is detected and believed to come from outside the 305-B Building, the following actions should be taken:

- Notify 375-2400.
- Determine wind direction. The duty forecaster at 373-2716 can give the immediate wind direction in the 300 Area.
- Evacuate building to an upwind position regardless of primary designated Staging Area.
- In some cases it may be better to remain inside and shut down the HVAC System. The Building Emergency Director will determine response.

7.6.1.9 Radiological Material Release

Same as Section 7.6.1.6. Dangerous/Mixed Waste Spill.

7.6.1.10 Criticality

Not applicable.

7.6.2 Identification of Hazardous Materials in and around Facility

305-B Storage Facility is utilized for the storage of hazardous wastes that pose a potential hazard to the public, adjacent facilities, personnel, programs and the environment. 305-B Storage Facility also contains a currently inactive radioactive mixed waste storage area. References to radioactive mixed waste in this plan are presently inapplicable since the storage areas are inactive, but the areas may be utilized if permitted storage availability elsewhere in unavailable. Facilities adjacent to 305-B Storage Facility may contain hazardous material typically found in an industrial facility including: chemical hazards such as corrosives, oxidizers, flammable solids and liquids, poisons, etc., radioactive materials, hazardous wastes, and radioactive mixed wastes. They also may contain industrial hazards such as high-voltage equipment, high-temperature equipment, high-speed equipment (such as drill presses, lathes, drive belts), and overhead hazards. However, none of these facilities pose an imminent threat to 305-B Storage Facility in the event of an emergency.

7.6.3 Natural Phenomena

Natural phenomena or events including range fire, flood, high winds/tornado, volcanic eruption/ashfall, seismic events, etc may occur at any time. Follow directions given by Crash Alarm Telephone or 305-B Storage Facility Building Emergency Director.

7.6.3.1 Seismic Event

The 305-B Storage Facility is located in Benton County, Washington, and is not within one of the political jurisdictions identified in Appendix VI of Title 40 Code of Federal regulations (CFR) Part 264 (EPA 1988). Therefore, no further demonstration of compliance with the seismic standard is required.

7.6.3.2 Volcanic Eruption/Ashfall

Follow directions given by Crash Alarm Telephone or 305-B Storage Facility Building Emergency Director.

7.6.3.3 High Winds/Tornadoes

Follow directions given by Crash Alarm Telephone or 305-B Storage Facility Building Emergency Director.

7.6.3.4 Flood

The 305-B Storage Facility is located in the 300 Area, which is adjacent to the Columbia River, approximately at river mile 345. Floods of the Columbia River were, therefore, considered for determining compliance with floodplain standards. Floods of other water bodies (i.e., the Yakima River, ephemeral streams on the Hanford Site) were not considered because of their great distance when compared to the distance to the Columbia River.

One hundred-year floodplain is identified in flood insurance rate maps developed by the Federal Emergency Management Agency (FEMA). The FEMA maps for Benton County, Washington, do not include the Hanford Site. Determination of whether 305-B Storage Facility is located in a 100-year floodplain, therefore, was made by comparing the land surface elevation at 305-B Storage Facility with the nearest downstream 100-year flood base elevation identified on the FEMA maps for Benton County. The nearest 100-year floodplain identified on the Benton County FEMA maps is at Columbia Point, approximately nine miles downstream of 305-B Storage Facility at river mile 336. The FEMA map for this area (FEMA 1982) identifies a 100-year flood base elevation of 352 ft above mean sea level (AMSL). This elevation is significantly below the elevation of 305-B Storage Facility, which is 387 ft AMSL.

The potential for the 305-B Storage Facility to be inundated during a flood was also evaluated by comparison to the maximum probable flood for the Columbia River, which is greater than the 100-year flood level.

7.6.3.5 Range Fire

Follow directions given by Crash Alarm Telephone or 305-B Storage Facility Building Emergency Director.

7.6.4 Security Contingencies

7.6.4.1 Bomb Threats

- When condition is observed or bomb threat received, notify the PNNL Single Point-of-Contact 375-2400 or Building Emergency Director.
- If necessary, clear the area of personnel
- Do not move any suspicious objects
- Post warnings if applicable
- Provide Emergency Responders with Appropriate Information

If a Telephone Bomb Threat is received record the exact message and attempt to obtain the following information:

- When will it go off?
- Where is it located?
- What does it look like?
- What kind is it?

- Why was it placed?
- How do you know so much about it?
- Who put it there?
- Where are you calling from?
- What is your name and address?

Note: After receiving the information notify the PNNL Single Point-of-Contact 375-2400, give the information obtained from the caller and then notify the BED. If you receive a Written Bomb Threat, Notify the PNNL Single Point-of-Contact 375-2400 and provide the Written Bomb Threat to PNNL Security Personnel.

7.6.4.2 Hostage Situation/Armed Intruder

When condition is observed, notify the PNNL Single Point-of-Contact 375-2400 or Building Emergency Director.

- If necessary, clear the area of personnel
- Do not move any suspicious objects
- Post warnings if applicable
- Provide emergency responders with appropriate information
- Follow the instructions of the BED and/or security

7.6.4.3 Classified Material During Evacuation Events

Not applicable

7.7 Facility Take Cover – Shutdown of HVAC

If there is a potential for a hazardous plume to be drawn into the building -OR- if, the Patrol Operations Center (POC) directs securing the HVAC via the Single-Point of Contact for PNNL at 375-2400:

- The BED or Alternate BED will contact the Power Operator on duty and request that the building HVAC systems be secured for emergency protective actions.
- Notify the BED when HVAC shut down is complete.

7.7.1 Local Shutdown Using Power Operator, BED, or Alternate BED

If there is a potential for a hazardous plume to be drawn into the building -OR- if, the Patrol Operations Center (POC) directs securing the HVAC via the Single Point-of-Contact for PNNL at 375-2400:

- The BED or Alternate BED will contact the Power Operator on duty and request that the building HVAC System be secured for emergency protective actions.
- If the power operator cannot respond to the Building, the BED or Alternate will shut down the two (one for the highbay and one for the office area) HVAC systems using the main disconnects located on the north wall in the 305-B Storage Facility highbay.
- Notify the BED and the Power Operator when HVAC shut down is complete.

7.8 Utility Disconnects Locations

Utility disconnects may be necessary under extreme emergency conditions. The Building Emergency Director will determine if utility disconnects are necessary. Location of the utility disconnects or valves are described below:

7.8.1 Compressed Air

Plant air and shut off valves are located behind cell 5 in the southwest corner of the highbay area.

7.8.2 Sanitary and Process Water

Water lines and shut-off valves are located behind the bulking module in the southwest corner of the highbay area.

7.8.3 Main Electrical Power

There are three separate main electrical disconnects located in 305-B Storage Facility. One is located on the north wall of the highbay area. The second is located on the east wall of the lowbay area, and the third is located on the east wall in the original wing of the building, leading to the basement.

7.8.4 HVAC Systems

The main disconnects switches to the two HVAC systems (one for the highbay and one for the office area) are located on the north wall in the 305-B Storage Facility highbay.

7.9 Termination, Incident Recovery, and Restart

7.9.1 Termination

The Incident Commander in consultation with the 305-B Storage Facility Building Emergency Director will recommend termination of the event when conditions indicate that it is safe to do so.

7.9.2 Prevention of Recurrence or Spread of Fires, Explosions, or Releases

The BED is responsible for taking the steps necessary to ensure that a secondary release, fire, or explosion does not occur after the initial incident. Procedures that will be implemented may include:

- Inspection of containment for leaks, cracks, or other damage
- Inspection for toxic vapor generation
- Isolation of residual waste materials and debris
- Reactivation of adjacent operations in affected areas only after cleanup of residual waste materials is achieved

7.9.3 Recovery

A Recovery Team, consisting of the Incident Commander, 305-B Storage Facility Building Emergency Director, and appropriate representation of all facility interests, will develop and recommend a recovery plan. A recovery plan is needed following an event when further risk could be introduced to personnel, a facility, or the environment through recovery action and/or to maximize the preservation of evidence.

The recovery plan will be reviewed and approved by cognizant PNNL line management and EMSD staff, meeting the requirements of PNNL-MA-110, Section 9.0, Termination, Re-entry, and Recovery. Restart of operations must be performed in accordance with the approved plan. For emergencies not involving activation of the Emergency Operations Center, the BED is responsible for ensuring that conditions are restored to normal before operations are resumed

7.9.3.1 Storage and Treatment of Released Material

Restart of operations after an emergency is conducted in accordance with established procedures for recovery from off-normal events. Treatment and/or storage and disposal of released material and contaminated debris is part of the recovery process leading to restart.

Immediately after an emergency, the BED or the recovery organization will make arrangements for the cleanup phase. Procedures for treatment, storage, and/or disposal of released material and contaminated debris are implemented at this time.

Released material and contaminated debris will be managed in the same manner as wastes received from outside the unit (Attachment 18, Chapter 4.0, Section 4.3 of the 305-B Storage Facility Permit). All waste so generated will be containerized in drums or other appropriate containers and stored in an appropriate storage area pending analysis and determination of final treatment/disposal requirements. Unit operations personnel will take cleanup actions or other personnel meeting the training requirements of Attachment 18, Chapter 8.0 of the 305-B Storage Facility Permit. Actions to be taken may include, but are not limited to, any of the following.

- Neutralization of corrosive spills
- Chemical treatment of reactive materials to reduce hazard
- Overpacking or transfer of contents from leaking containers
- Using absorbents to contain and/or absorb leaking liquids for containerization and disposal
- Decontamination of solid surfaces impacted by released material, e.g., intact containers, facility equipment, floors, containment systems, etc.
- Disposal of contaminated porous materials which cannot be decontaminated, and any contaminated soil
- Containerization and sampling of recovered materials for classification and determination of proper disposal technique
- Follow up sampling of decontaminated surfaces to determine adequacy of cleanup techniques as appropriate.

Waste from cleanup activities will be analyzed and stored in the same manner as are wastes received from outside the unit, in the manner prescribed in Attachment 18, Chapter 4.0 of the 305-B Storage Facility Permit. Incompatible wastes will not be placed in the same container. Containers of waste will be placed in storage areas appropriate for their compatibility class.

If it is determined that incompatibility of waste was a factor in the incident, the BED or the recovery organization will ensure that the cause is corrected. Corrective examples would be modification of an incompatibility chart, or increased scrutiny of wastes from a generating unit (in accordance with Attachment 18, Chapter 3.0, Section 3.2 of the 305-B Storage Facility Permit) when incorrectly designated waste caused or contributed to an incident.

7.9.3.2 Post-Emergency Equipment Maintenance

All equipment used during an incident will be decontaminated (if practicable) or disposed of as spill debris. Decontaminated equipment will be checked for proper operation prior to storage for subsequent use. Consumables and disposed materials will be restocked.. Fire extinguishers will be recharged or replaced.

The BED is responsible to ensure that all equipment is cleaned and fit for its intended use prior to the resumption of operations. Depleted stocks of neutralizing and absorbing materials will be replenished, self-contained breathing apparatus (SCBAs) cleaned and refilled, protective clothing cleaned or disposed

and restocked, etc. Notification of state and local authorities will be made through DOE-RL of completion of cleanup, decontamination and emergency equipment re-supply activities pursuant to WAC 173-303-360(2)(j). Upon notification and approval of PNNL line management, normal facility operations may be resumed.

7.9.4 Required Reports

Three types of written post-incident reports, summarized below are required for incidents at the 305-B Storage Facility.

7.9.4.1 Report to Ecology/EPA

The Environmental Support Contact (375-2966) will provide any necessary notifications to regulatory agencies such as the Washington State Department of Ecology and ensure that required written reports to regulatory agencies are completed within 15 days of event termination.

Within 15 days of the incident, a written report will be submitted to Ecology concerning the incident. The report must include:

- Name, address, and telephone number of DOE-RL contact;
- Name, address, and telephone number of 305-B Storage Facility;
- Date, time, and type of incident (e.g., fire, explosion);
- Name and quantity of material(s) involved;
- The extent of any injuries;
- Assessment of any actual or potential hazards to human health or the environment caused by the incident;
- Estimated quantity and disposition of recovered material that resulted from the incident;
- Cause of the incident; and
- Description of corrective action taken to prevent recurrence of the incident.

7.9.4.2 DOE Occurrence Reporting

Under DOE Order 232.1A and HFID 232.1B an occurrence report is required for incidents occurring at the 305-B Storage Facility involving hazardous materials release, fire, etc. Specific details of this reporting system are found in the Order. To summarize, the BED is responsible to file the following occurrence reports with DOE-RL under the Order:

- Within 24 hours of discovery, file a Notification Report.
- File an updated Occurrence Report whenever significant new information relating to the incident becomes available.
- File a final Occurrence Report when cause of the incident has been analyzed, root cause and contributing causes determined, corrective actions determined and scheduled, and "lessons learned" identified.

7.9.4.3 Off-Normal Event Reporting

Under off-normal event reporting procedures, occurrences shall be promptly investigated, reported, and analyzed to ensure that effective corrective actions are taken in compliance with contractual, statutory, and corporate requirements. All incidents are recorded in the building logbook. In the DOE reporting system, four levels of incidents are described in descending order of severity: emergency, unusual occurrence, off-normal occurrences, and logbook entry only.

An "off-normal event" is a significant deviation from normal operation that requires categorization and reporting as noted above. PNNL management is required to evaluate an event to determine the depth of investigation and level of reporting required.

Reporting of emergencies, unusual occurrences, and off-normal occurrences takes place as described under Section 7.9.4.2.

The BED is responsible for investigating each event in his/her area(s) of responsibility and submitting the appropriate report.

7.10 Emergency Equipment (crash alarm phones, fire extinguishers, etc.)

Support equipment available to assist in responding to an emergency can be found by referring to Attachment 4, *Hanford Emergency Management Plan* (DOE/RL 94-02), Section 10.2, and the HFD emergency equipment listing in Attachment 4, *Hanford Emergency Management Plan* (DOE/RL-94-02) Appendix C.

Hanford Site Emergency Equipment

The Hanford Site has fire and patrol personnel trained and equipped to respond in emergency situations. These personnel are employees of the site-operating contractor. The HFD Hazardous Material Response Team is trained for mobilization and control of hazardous material emergencies. The HFD will take control of the incident scene until the incident is under control and personnel rescue is complete

The Hanford Patrol provides support to the Fire Department during an incident, including such activities as activation of area crash alarm telephone systems or area sirens (for evacuation or take cover), access control, traffic control, and emergency notifications.

If an emergency threatens other facilities and/or there is a danger of release of hazardous materials to the environment, the HFD will respond. The HFD will coordinate protective response actions and notifications, and furnish any necessary technical assistance.

7.10.1 Portable Emergency Equipment

- Portable Fire Extinguishers are located throughout the facility. These locations are identified in Exhibit 7.12.1 "305-B Storage Facility Emergency Equipment Locations"
- A Mobile Command Post Vehicle can be obtained via HFD main telephone number (373-2230). The HFD Battalion Commander will approve and dispatch vehicle.

7.10.2 Communications equipment/warning systems

- Fire Alarm Pull Boxes are located at every exit throughout the facility. All locations are shown on Exhibit 7-1 "305-B Storage Facility Emergency Equipment Locations".
- The Crash Alarm Phone is located in the low-bay conference room area of the 305-B Storage Facility.

7.10.3 Personal Protective Equipment (PPE)

The unit has a safety shower and eyewash unit at each end of the high bay. Drainage from these units flows into the containment trenches. In addition to these units, a safety shower and eyewash unit is maintained at the protective equipment storage area just outside the high bay, adjacent to the office area and outside cell 7 in the basement. These eyewash/shower units are inspected for clear and unobstructed accesses weekly in accordance with Attachment 18, Chapter 6.0, Section 6.2 of the 305-B Storage Facility Permit.

Protective clothing and respiratory protective equipment are maintained at the facility for use during both routine and emergency operations. This protective equipment includes at a minimum:

- 6 sets of chemically resistant suits, aprons, boots, and gloves
- 20 protective glasses
- 5 pair chemical goggles
- 4 face shields
- 4 full face respirators
- Respirator cartridges (variety)
- 3 self-contained breathing apparatus (30 minute type).

This protective equipment is stored in cabinets located outside of the high bay east entrance. Personnel assigned to 305-B Storage Facility are available to assist other trained personnel (e.g., firefighters) in emergency situations or possible immediately dangerous to life or health spill cleanup situations.

7.10.4 Spill Control and Containment Supplies

Supplies of absorbent pillows are located in the high bay operating area near the east entrance. These pillows absorb organic or inorganic materials and have a rated absorption capacity of approximately one-liter of waste each. They may be used for barriers to contain liquid spills as well as for absorbent purposes. The work area also has an ample supply of diatomaceous earth or vermiculite for absorption of liquid waste spills. Neutralizing absorbent is available for response to acid or caustic spills. A supply of empty drums (DOT UN1A1 closed head and DOT UN1A2 open head) and salvage drums (overpacks) is maintained in the high bay area along with brooms, shovels, and miscellaneous spill response supplies.

7.11 Evacuation of Persons with a Disability or Visitors

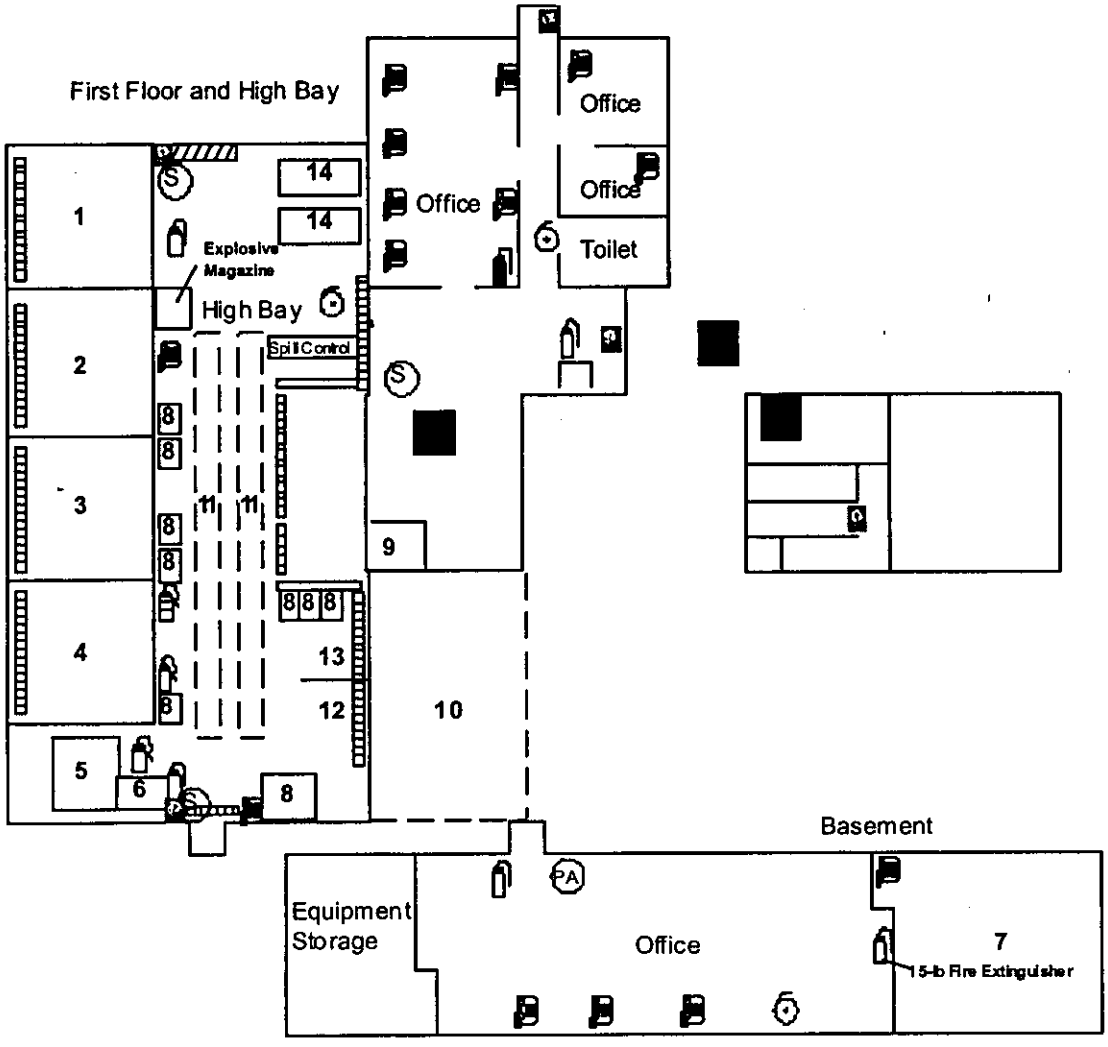
The 305-B Storage Facility has an evacuation plan, which includes emergency signal identification and staging area location. In the event an evacuation is required, 305-B Storage Facility personnel depart by one of the exit doors noted in Exhibit 7.12.2 and proceed through the north gate. Personnel are to assemble in the north parking lot Exhibit 7.12.3, Lane 2 accountability area for accounting. If the north gate is blocked by the emergency, personnel may escape through the Apple Street (west) gate opening to Stevens Drive or the south gate.

The safety of building visitors is the responsibility of the facility host, who shall ensure that visitors are provided a safe and orderly evacuation. The facility host will report the visitor status to the Staging Area Supervisor as soon, as is practical after the evacuation.

7.12 Exhibits

Exhibit 7.12.1 305-B Storage Facility Emergency Equipment Location
Exhibit 7.12.2 305-B Storage Facility Building Evacuation Exits
Exhibit 7.12.3 305-B Storage Facility Evacuation Route
Exhibit 7.12.4 Building Emergency Director Checklist for Low-Hazardous Facilities
Exhibit 7.12.5 Staging Area Occupancy/Accountability Status Sheet
Exhibit 7.12.6 Facility Operations Specialist - Checklist Duties
Exhibit 7.12.7 Emergency Checklist for Emergency Management Support Group
Exhibit 7.12.8 Emergency Telephone Numbers

7.12.1 Exhibit – 305-B Storage Facility Emergency Equipment Locations

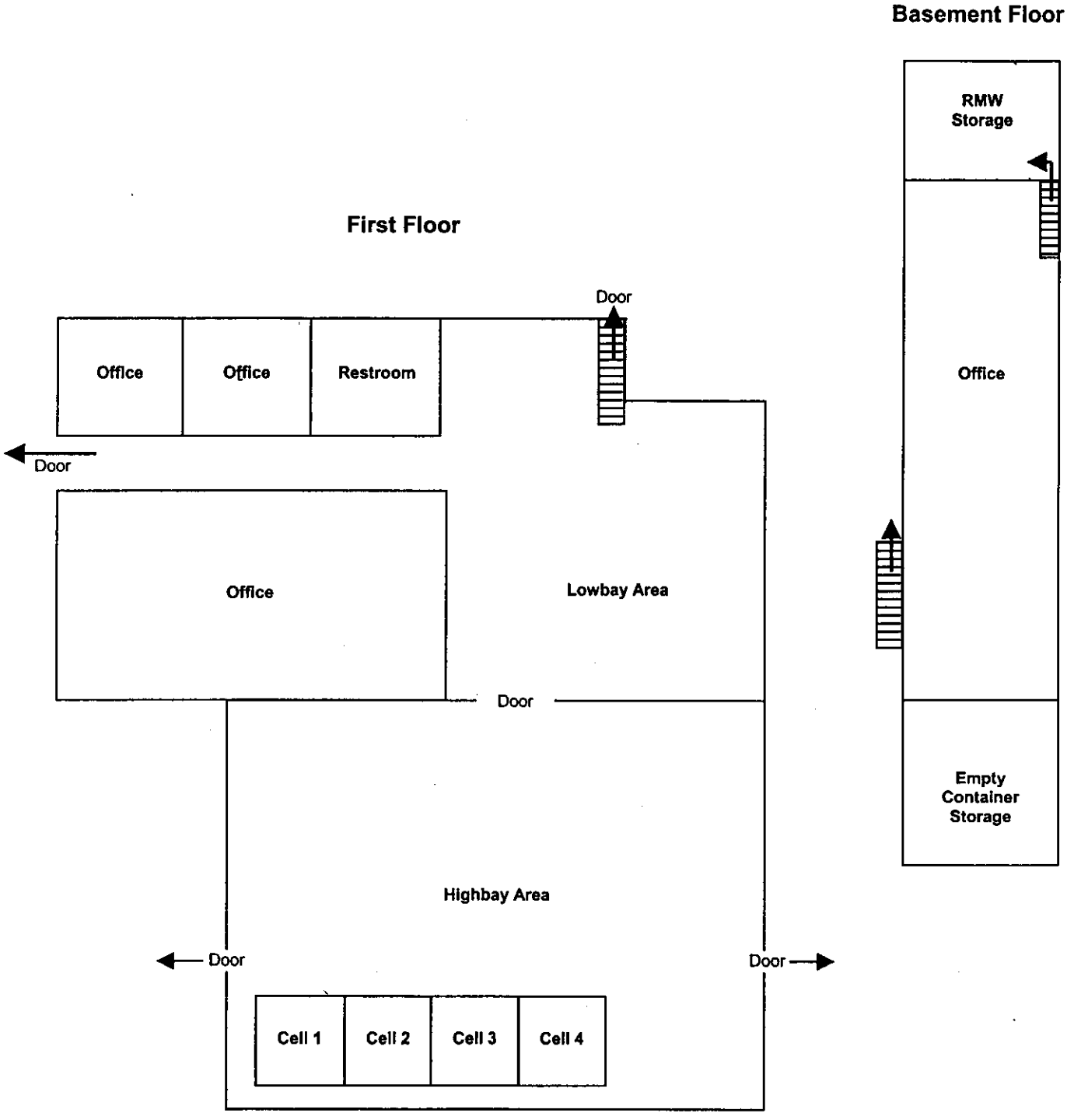


Legend

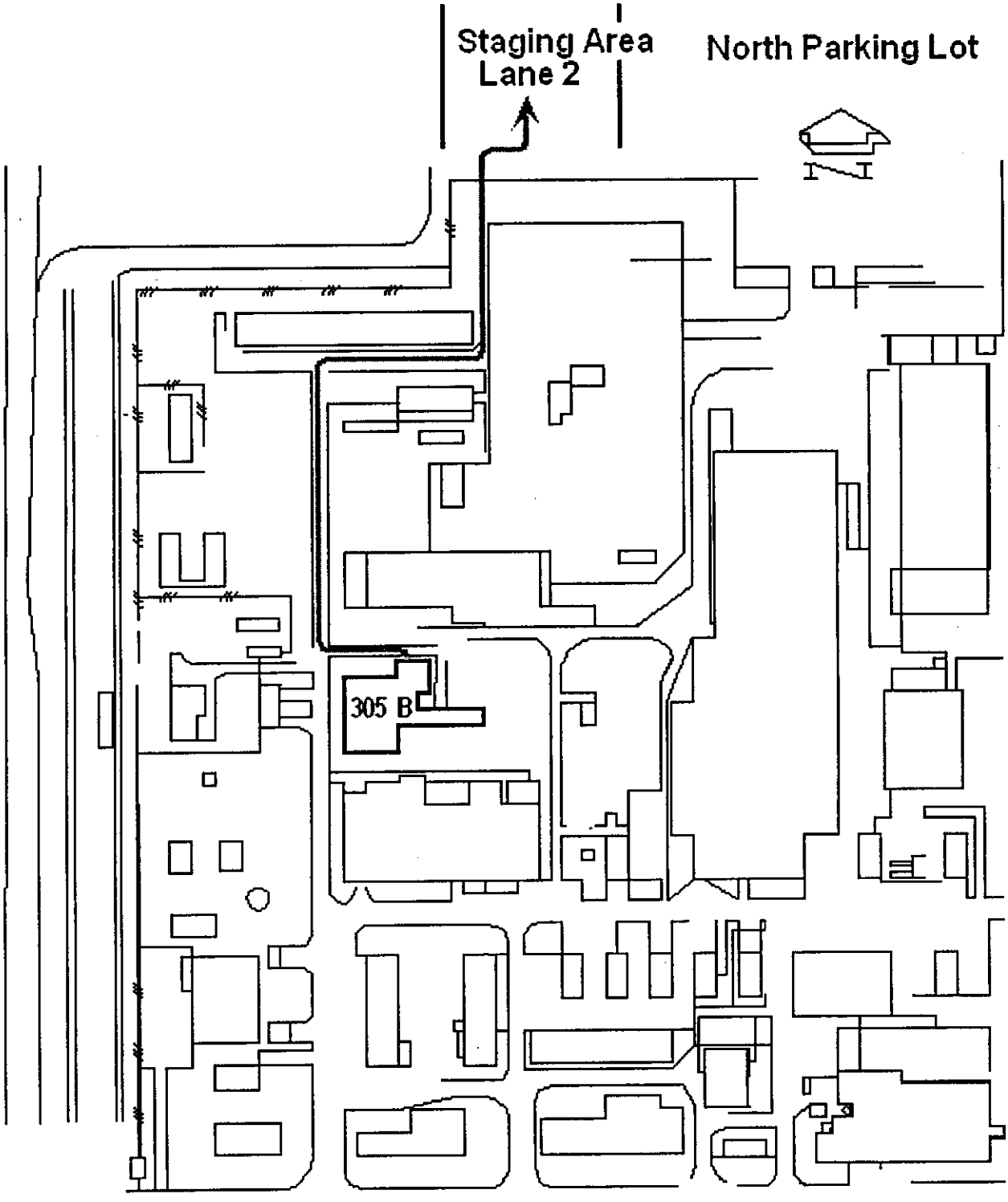
1. Acids, Oxidizers
2. Poisons, Class 9's
3. Alkalines, WSDW, Organic Peroxides
4. Organics and Compressed Aerosols
5. Flammable Liquid Bulking Module and compressed gases
6. Asbestos Cabinet
7. RMW Storage Cell
8. Flammable Storage
9. Small Quantity Flammable RMW
10. Outdoor Non-Regulated Drum Storage
11. WSDW/ORM/Non-Reg Drums
12. UW Drums
13. Acid Drums
14. Alkaline Drums

- Safety Shower/Eyewash
- Phone
- Fire Alarm Bell
- Fire Alarm Pull Box
- 14-lb Halon Fire Extinguisher
- 10-lb ABC Fire Extinguisher
- 15-lb Class D Fire Extinguisher
- Removable Access to Basement
- Emergency Equipment Cabinet
- Collection Sumps

7.12.2 Exhibit – 305-B Storage Facility Building Evacuation Exits



7.12.3 Exhibit – 305-B Storage Facility Evacuation Route



7.12.4 Exhibit – Building Emergency Director Checklist for Low-Hazardous Facilities

Maintain a log or assign a log keeper to record your activities, including the date and time information was received or time when an action was taken. This checklist is not meant to be performed step-by-step, but is to be used as a reference document, as appropriate to the incident.

Immediate Actions

1. _____ Upon initial discovery/notification, complete the following:
   - Stop non-emergency activities in the event scene hazard area.
   - Warn personnel in event scene hazard area.
   - Call and report the incident to the SPC (375-2400) and request assistance as needed.
   - Determine and initiate mitigation actions that cannot be delayed without threatening human health and/or the environment.
   - Designate someone to meet arriving emergency responders in order to provide direction to the event scene.
   - If available, direct a facility knowledgeable person(s) to meet and collocate with arriving emergency responders and perform the Facility Operations Specialist - Checklist Duties.
2. _____ Implement protective actions.
   - During an evacuation, assign staff (e.g., Zone Wardens) to monitor facility access points to prevent unauthorized reentry.
   - During a take cover assign door monitors as appropriate to inform personnel of potential hazardous conditions.
   - Evaluate the situation and determine appropriate staging area relocation outside any plume pathway, if necessary.

   Note: The BED for low-hazardous facilities (until the IC arrives) may permit coordinated personnel movement during protective actions.
3. _____ Provide initial briefing to IC and ICP personnel including the following:
   - Potentially affected personnel
   - Incident and facility conditions
   - Notifications (environmental/emergency and person or agency contacted)
   - Protective actions implemented
   - Mitigation efforts underway
   - Accountability status of facility personnel
   - Status of injured, contaminated, or exposed personnel
   - Status of assigned ICS functions.
4. _____ IF the incident involves a spill, release, fire, a threat to human health, or explosion, or exceeds environmental permits.

   THEN notify the Environmental Support Contact (EMSD) to initiate regulatory required notifications and follow your contractor specific spill/release notification process or procedure. (Contact the SPC for a Prime Contractor specific single-point-of-contact if necessary).
5. _____ Notify the PNNL SPC (375-2400) of the location of the ICP and a safe route of travel to the ICP.
6. _____ Check with the Cognizant Space Managers to determine if operations of a hazardous nature were in progress at the time of the evacuation. If so, coordinate with the Safety Advisor and determine the actions necessary for incident response.

7. _____ If necessary, establish the Management Support Group.

8. _____ In the event of a total loss of electrical power, evacuate the facility.

Note: At the completion of turnover from the BED for low-hazardous facilities to the IC, the IC shall assume responsibility.

Follow-Up Actions

9. _____ Confirm that facility personnel accountability has been conducted and evacuated personnel (if any) have been moved to a safe location.

10. See that all event-reporting requirements per the appropriate procedure are made in accordance with HFID 232.1B, Notification, Reporting, & Processing of Operations Information.

11. Coordinate establishment of operations protocols with IC based on availability of personnel.

- Discuss location of Resource Staging Area.
- Assist IC in assigning other functional components of the ICP, as necessary.
- Additional resources and event monitoring support can be obtained by requesting activation of the Event Coordination Team and the EDO.

12. _____ Notify the IC of the status of facility personnel and activities.

13. _____ If any personnel are deceased, injured, contaminated, potentially exposed, or transported by ambulance.

- Then notify the appropriate Health Advocate (line management).
  Note: Cellular telephone or radio users shall not use the name(s) or payroll number(s) of involved personnel.

14. _____ Participate in ICP briefings as required.

15. _____ When the incident is stabilized, participate in a debriefing with the IC and assume actions to return facility to normal operations.

16. _____ When incident is stabilized, refer to DOE 0223, RLEP 3.4, Event Termination, Reentry and Recovery, to coordinate termination of the emergency.

17. _____ See that all hazardous material generated is handled appropriately and that incompatible waste is handled or stored in the area until necessary cleanup has occurred.

18. _____ Treat the affected incident area as a crime scene by eliminating any unnecessary disturbance of physical evidence.

- Witnesses to the event may be able to provide critical information to emergency responders.
- Document your initial observations.

19. _____ When the incident is stabilized, participate in a debriefing with the IC and assume action to return facility to normal. (Refer to PNNL-MA-110, Emergency Preparedness Manual, Section 9, Termination, Reentry, and Recovery)

20. _____ Upon event termination, make a copy of all logs and turn it over to the Liaison Officer or IC designee.

7.12.5 Exhibit – Staging Area Occupancy/Accountability Status Sheet

Facility Staging Area Supervisor - Check listed Duties

The Facility Staging Area Supervisor is responsible for coordination of actions at the facility staging area. A facility representative staffs this position. This list below is not designed to be all encompassing, nor is it necessary to perform each of these actions in sequence. The Facility Staging Area Supervisor is responsible for implementing the following checklist duties for non-declared, RCRA, and DOE-declared emergencies, as appropriate. Maintain a log of your activities or assign a log keeper.

1. _____Upon notification of an emergency event requiring facility personnel to evacuate, proceed to the staging area.

2. _____Verify through the BED the staging area is in a safe location.

3. _____Segregate personnel in personal protective equipment (PPE) and direct RCT to survey personnel in PPE.

4. _____Conduct personnel accountability and report the results to the BED. Attempt to locate any missing personnel (DO NOT reenter the facility).

5. _____Query staff at the staging area to determine if any hazardous processes are on going in the facility and notify BED.

6. _____Determine if any personnel were injured or potentially exposed to hazardous materials. Communicate any positive responses to the BED.

7. _____Update personnel on the event status on a periodic basis.

8. _____If notified to evacuate, identify all personnel with vehicle keys in their immediate possession. Match up people with rides. Verify destination and route with each driver.

9. _____Use government vehicles to transport personnel in PPE, if required. Reserve vehicles for personnel with late shutdown duties.

10. _____Perform turnover with the fire department staging officer upon his arrival to cover all information listed above.

7.12.6 Exhibit – Facility Operations Specialist - Checklist Duties

Maintain a log or assign a log keeper to record your activities, including the date and time information was received or time when an action was taken. This checklist is not meant to be performed step-by-step, but is to be used as a reference document, as appropriate to the incident.

1. ___ Obtain briefing on operational/mitigative activities and obtain any necessary facility specific procedures, utility disconnects, etc.

2. ___ Following BED briefing, and after receiving safe routes of travel, respond to a safe location upwind of the event scene.

   - Ensure personnel who were in the immediate area are accounted for and located in a safe, upwind area
   - Ensure that first aid is administered as-soon-as possible
   - Begin segregation of any contaminated personnel.

3. ___ Meet emergency personnel responding to the event scene and provide information on event status and initial actions underway. Collocate with the HFD/Hanford Patrol Operations Section Chief upon their arrival and act as the facility point-of-contact at the incident scene hazard area.

4. ___ Assist the HFD/Hanford Patrol Operations Section Chief with development of a mitigation plan by providing facility expertise.

5. ___ Identify, contact, and supervise additional facility personnel as required to Support Operations Section activities.

6. ___ Coordinate with HFD/Hanford Patrol Operations Section Chief to ensure that all facility emergency responders are wearing appropriate PPE for assigned tasks.

7.12.7 Exhibit – Emergency Checklist for Emergency Management Support Group

The Management Support Group (MSG) will use the following checklist to support the BED in managing the administrative aspects of the event.

Emergency Checklist for Emergency Management Support Group			
Item	**Yes**	**No**	**Comment**
Has 375-2400 been notified? (Use 375-9959 if 375-2400 is unavailable)			
Have all building occupants been accounted for? PNNL staff? PNNL visitors? Other Contractor personnel? Consultants, vendors, others?			
Have any persons received injuries or been subjected to conditions requiring medical attention? If Yes, has medical attention been arranged?			
Has the BED classified the event? Alert Site General			
Has activation of the EOC been requested?			
Do any persons require medication for non-event reasons (e.g., heart medicine)?			
Has access control been initiated by the appropriate Law Enforcement Agency?			
Has the Area Operations Manager/Building Manager been notified? Has he reported to the event scene?			
Has a location for the ICP been established?			
Has a location for the Management Support Group been established and communicated to the appropriate Fire Department and Law Enforcement Agency, and the PNNL Technical Rep. in the EOC (376-7148) (if activated)?			
Has an open line between the ICP Communicator and Event Scene Liaison in the EOC been established (if activated)?			
Has the Emergency Duty Officer made contact with the BED?			
Has event log been set up?			
Are additional staff required for support? Line Management? Clerical? Technical? Other?			
Has the Incident Commander established a schedule for periodic briefings?			
Are additional RCTs required?			
Is there a need for a facility inventory? Chemical-hazardous, toxic, flammable? Radio chemical? Nuclear or fissile material? If inventory information is required, contact the following: Chemical inventory - 376-0812, 372-1043, or 375-6315 Nuclear/fissile - Safeguards & Security Duty Officer or Cognizant operations staff.			
Has Public Relations been notified?			

Emergency Checklist for Emergency Management Support Group			
Item	**Yes**	**No**	**Comment**
Has DOE Headquarters been notified?			
Has EOC contacted other facilities not immediately involved?			
Is technical or operational spokesperson needed? If so, has he/she been contacted?			
Has Program Manager been notified?			
Will relief staff be required for the Incident Command Post (Event and Support Teams)?			
Is transportation needed? Available?			
Is there a need for additional equipment or supplies (including food)?			
Has PNNL Security made arrangements with Patrol for access of special equipment (radios, cellular telephones)?			
Has the need for a facility(s) HVAC system shutdown been analyzed?			
Do subgroups need to be developed to assist with special activities that may need to occur (e.g., identifying essential personnel, accountability, termination and recovery efforts, etc.)?			
Has the impact to all work or projects in PNNL facilities been considered if the work force is reduced to only essential personnel (e.g., rad work, security/classified work, etc.)?			
Has the necessary line management been contacted to determine if research project equipment is in a safe condition?			
Are event terminations, recovery and reentry plans, checklists/procedures being developed?			
Has the necessary administrative support been acquired?			
Has the following been planned for during a Partial Evacuation (essential personnel only)? 1. Determining who is essential. 2. Identify the staging location for essential personnel. 3. Notify essential personnel to report to work (recorded message, EOC media release, direct phone call, etc.), route of access, staging location, and person to report to. 4. Communicate list of essential personnel to the POC (911 or 373-3800). 5. Controlling accountability and assignment of staged essential personnel.			
Is there adequate controls established to prevent unauthorized Building/Site access entry and/or work initiation?			
Has Line Management for Safeguards and Security been directed to report to the Control Room (SPC)?			
For mass casualties has HR been directed to the Red Cross Family and Friends Support Center?			
Has consideration for establishing shifts of emergency personnel (EOC/MSG) been made?			
Are additional radiation instruments required? What type? How many of each type?			
Is the Hazardous Materials (HazMat) team needed?			

7.12.8 Exhibit – Emergency Telephone Numbers

Not provided per Condition II.A.4 of the RCRA permit.

This is available thru 375-2400 (SPC). Distribution

Controlled copies of the BEP will be located in the following areas:

- BED Emergency response bag
- Building Manager's file
- Emergency Preparedness Program Office
- Control Room
- Hanford Emergency Operations Center.

Uncontrolled copies of the BEP may be viewed via the PNNL Facilities and Operations Website at http://facilities.pnl.gov/building/index.html.

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8.0 PERSONNEL TRAINING [H]

This chapter discusses personnel training requirements based on WAC 173-303 and the HF RCRA Permit (DW Portion). In accordance with WAC 173-303-806(4)(a)(xii), the *Hanford Facility Dangerous Waste Part B Permit Application* must contain two items: (1) "an outline of both the introductory and continuing training programs by owners or operators to prepare persons to operate or maintain the TSD facility in a safe manner as required to demonstrate compliance with WAC 173-303-330" and (2) "a brief description of how training will be designed to meet actual job tasks in accordance with the requirements in WAC 173-303-330(1)(d)." The HF RCRA Permit, (DW portion) Condition II.C (Personnel Training) contains training requirements applicable to Hanford Facility personnel and non-Facility personnel.

Compliance with these requirements at the 305-B Storage Facility is demonstrated by information contained both in Attachment 33, General Information Portion, Chapter 8.0 (DOE/RL-91-28) of the HF RCRA Permit, and this chapter. This chapter supplements Attachment 33, General Information Portion, Chapter 8.0 (DOE/RL-91-28).

8.1 OUTLINE OF INTRODUCTORY AND CONTINUING TRAINING PROGRAMS

The introductory and continuing training programs are designed to prepare personnel to manage and maintain the TSD unit in a safe, effective, and environmentally sound manner. In addition to preparing personnel to manage and maintain TSD units under normal conditions, the training programs ensure that personnel are prepared to respond in a prompt and effective manner should abnormal or emergency conditions occur. Emergency response training is consistent with the description of actions contained in Attachment 18, Chapter 7.0, Building Emergency Procedure. The introductory and continuing training programs contain the following objectives:

- Teach Hanford Facility personnel to perform their duties in a way that ensures the Hanford Facility's compliance with WAC 173-303
- Teach Hanford Facility personnel dangerous waste management procedures (including implementation of the contingency plan) relevant to the job titles/positions in which they are employed, and
- Ensure Hanford Facility personnel can respond effectively to emergencies.

8.1.1 Introductory Training

Introductory training includes general Hanford Facility training and TSD unit-specific training. General Hanford Facility training is described in Attachment 33, General Information Portion, Section 8.1 (DOE/RL-91-28) and is provided in accordance with the HF RCRA Permit (DW Portion), Condition II.C.2. TSD unit-specific training is provided to Hanford Facility personnel allowing those personnel to work unescorted, and in some cases is required for escorted access. Hanford Facility personnel cannot perform a task for which they are not properly trained, except to gain required experience while under the direct supervision of a supervisor or coworker who is properly trained. Hanford Facility personnel must be trained within 6 months after their employment at or assignment to the Hanford Facility, or to a new job title/position at the Hanford Facility, whichever is later.

General Hanford Facility training: Refer to description in Attachment 33, General Information Portion, Section 8.1 (DOE/RL-91-28).

Contingency Plan training: Hanford Facility personnel receive training on applicable portions of Attachment 4, *Hanford Emergency Management Plan* (DOE/RL-94-02) in general Hanford Facility training. In addition, Hanford Facility personnel receive training on content of the description of actions

contained in contingency plan documentation in Attachment 18, Chapter 7.0 to be able to effectively respond to emergencies.

Emergency Coordinator training: Hanford Facility personnel who perform emergency coordinator duties in WAC 173-303-360 (e.g., Building Emergency Director) in the Hanford Incident Command System receive training on implementation of the contingency plan and fulfilling the position within the Hanford Incident Command System. These Hanford Facility personnel must also become thoroughly familiar with applicable contingency plan documentation, operations, activities, location, and properties of all waste handled, location of all records, and the unit/building layout.

Operations training: Dangerous waste management operations training (e.g., waste designation training, shippers training) will be determined on a unit-by-unit basis and shall consider the type of waste management unit (e.g., container management unit) and the type of activities performed at the waste management unit (e.g., sampling). For example, training provided for management of dangerous waste in containers will be different than the training provided for management of dangerous waste in a tank system. Common training required for compliance within similar waste management units can be provided in general training and supplemented at the TSD unit. Training provided for TSD unit-specific operations will be identified in the training plan documentation based on: (1) whether a general training course exists, (2) the training needs to ensure waste management unit compliance with WAC 173-303, and (3) training commitments agreed to with Ecology.

8.1.2 Continuing Training

Continuing training meets the requirements for WAC 173-303-330(1)(b) and includes general Hanford Facility training and TSD unit-specific training.

General Hanford Facility training: Annual refresher training is provided for general Hanford Facility training. Refer to description in Attachment 33, General Information Portion, Section 8.1 (DOE/RL-91-28).

Contingency plan training: Annual refresher training is provided for contingency plan training. Refer to description above in Section 8.1.1.

Emergency coordinator training: Annual refresher training is provided for emergency coordinator training. Refer to description above in Section 8.1.1.

Operations training: Refresher training occurs on many frequencies (i.e., annual, every other year, every 3 years) for operations training. When justified, some training will not contain a refresher course and will be identified as a one-time only training course. The TSD unit-specific training plan documentation will specify the frequency for each training course. Refer to description above in Section 8.1.1.

8.2 DESCRIPTION OF TRAINING DESIGN

Proper design of a training program ensures personnel who perform duties on the Hanford Facility related to WAC 173-303-330(1)(d) are trained to perform their duties in compliance with WAC 173-303. Actual job tasks, referred to as duties, are used to determine training requirements. The first step taken to ensure Hanford Facility personnel have received the proper training is to determine and document the waste management duties by job title/position. The second step compares waste management duties to general waste management unit training curriculum. If general waste management unit training curriculum does not address the waste management duties, the training curriculum is supplemented and/or on-the-job training is provided. The third step summarizes the content of a training course necessary to ensure that the training provided to each job title/position addresses associated waste management duties. The last step is to assign training curriculum to Hanford Facility personnel based on the previous evaluation. The training plan documentation contains this process.

Waste management duties include those specified in Section 8.1 as well as those contained in WAC 173-303-330(1)(d). Training elements of WAC 173-303-330(1)(d) applicable to the 305-B Storage Facility operations include the following:

- Procedures for using, inspecting, repairing, and replacing emergency and monitoring equipment
- Communications or alarm systems
- Response to fires or explosions
- Shutdown of operations.

Hanford Facility personnel who perform these duties receive training pertaining to their duties. The training plan documentation described in Section 8.3 contains specific information regarding the types of training Hanford Facility personnel receive based on the outline in Section 8.1.

8.3 DESCRIPTION OF TRAINING PLAN

In accordance with HF RCRA Permit (DW Portion), Condition II.C.3, the unit-specific portion of the *Hanford Facility Dangerous Waste Permit Application* must contain a description of the training plan. Training plan documentation is maintained outside of the *Hanford Facility Dangerous Waste Part B Permit Application* and the HF RCRA Permit. Therefore, changes made to the training plan documentation are not subject to the HF RCRA Permit modification process. However, the training plan documentation is prepared to comply with WAC 173-303-330(2).

Documentation prepared to meet the training plan consists of hard copy and/or electronic media as provided by HF RCRA Permit (DW Portion), Condition II.C.1. The training plan documentation consists of one or more documents and/or a training database with all the components identified in the core document.

A description of how training plan documentation meets the three items in WAC 173-303-330(2) is as follows:

1. -330(2)(a): "The job title, job description, and name of the employee filling each job. The job description must include requisite skills, education, other qualifications, and duties for each position."

   Description: The specific Hanford Facility personnel job title/position is correlated to the waste management duties. Waste management duties relating to WAC 173-303 are correlated to training courses to ensure training is properly assigned.

   Only names of Hanford Facility personnel who carry out job duties relating to TSD unit waste management operations at the 305-B Storage Facility are maintained. Names are maintained within the training plan documentation. A list of Hanford Facility personnel assigned to the 305-B Storage Facility is available upon request.

   Information on requisite skills, education, and other qualifications for job title/positions are addressed by providing a reference where this information is maintained (e.g., human resources). Specific information concerning job title, requisite skills, education, and other qualifications for personnel can be provided upon request.

2. -330(2)(b): "A written description of the type and amount of both introductory and continuing training required for each position."

   Description: In addition to the outline provided in Section 8.1, training courses developed to comply with the introductory and continuing training programs are identified and described in the training plan documentation. The type and amount of training is specified in the training plan documentation as shown in Table 8-1.

3. -330(2)(c): "Records documenting that personnel have received and completed the training required by this section. The Department may require, on a case-by-case basis, that training records include employee initials or signature to verify that training was received."

Description: Training records are maintained consistent with Attachment 33, General Information Portion, Section 8.4 (DOE/RL-91-28).

Table 8-1. 305-B Storage Facility Training Matrix

	Training Category*				
Attachment 33, General Information Portion, Chapter 8.0 Training (DOE/RL-91-28) Category	General Hanford Facility Training	Contingency Plan Training	Emergency Coordinator Training	Operations Training	
305-B Storage Facility	Orientation Program	Building Emergency Plan	Building Emergency Director Training	Advanced Waste Management Training	Container Management
Staff Position					
Unit Operations Supervisor	X	X	X	X	X
Waste Management Engineers	X	X	X[1]	X	X
Waste Management Technicians and Scientist/Engineering Associates	X	X	X[1]	X	X
Waste Management Clerks	X	X		X	

[1] Required for any staff that has been assigned the duties of Building Emergency Director or alternate.

* Refer to the 305-B Storage Facility Training Plan for a complete description of coursework in each training category.

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11.0 CLOSURE AND POSTCLOSURE REQUIREMENTS

This chapter is submitted in accordance with the requirements of WAC 173-303- 806(4)(a)(xiii) to demonstrate that DOE-RL has developed a plan to ensure safe closure of the 305-B Storage Facility. In accordance with WAC 173-303-610, copies of the closure plan and all revisions will be maintained at 305-B Storage Facility until certification of closure completeness has been submitted and accepted by Ecology. A post-closure plan is not required because 305-B Storage Facility is not a disposal unit and all dangerous waste and dangerous waste residues will be removed at the time of closure.

11.1 CLOSURE PLANS

This plan presents the activities required for final closure of the 305-B Storage Facility at its maximum extent of operation. The wastes included are those regulated as dangerous waste and RMW. Partial closure will not be conducted. Closure activities are presented in sufficient detail such that the closure process is understandable and a closure schedule can be developed.

11.1.1 Closure Performance Standard

The 305-B Storage Facility will be closed in a manner that will minimize the need for further maintenance and eliminate post-closure release of dangerous/mixed waste or dangerous/mixed waste constituents that could pose a risk to human health or the environment. This standard will be met by removal of all dangerous/mixed waste and dangerous/mixed residues from the unit. Closure activities will return the 305-B Storage Facility site to the appearance and use of surrounding land areas. After closure, the 305-B Storage Facility will be in a condition suitable for use to support research and development activities. This use is consistent with the surrounding land use.

If there is any evidence of spills or leaks from the unit into the environment, samples will be taken and analyzed to determine the extent of contamination in the soil, and if necessary, in groundwater. Evidence of spills or leaks will be obtained through sampling of unit structures accessible to the environment (e.g., floors) and through inspection of all barriers designed to prevent migration to the environment (e.g., sumps). If this sampling program indicates that contamination is present, the potential for migration of contamination to the environment will be evaluated. If potential migration appears likely, additional samples will be taken. In addition, if the inspections identify any potential contaminant migration routes (e.g., cracks in sumps), additional samples will be collected to determine whether migration has occurred. Spill reports and logs shall be consulted to determine potential areas of contamination.

Any contaminated soil will be excavated, removed, and disposed as dangerous or mixed waste (determination of dangerous or mixed waste status will be based on waste radioactivity). Soil will be decontaminated to the following levels, as required under WAC 173-303-610(2)(b):

- Background environmental levels for waste which are listed under WAC 173-303-081 or WAC 173-303-082
- Background environmental levels for waste which are characteristic dangerous waste under WAC 173-303-090
- Designation limits for waste that are designated under WAC 173-303-084, or WAC 173-303-101 through WAC 173-303-103.

Equipment and structural components will be decontaminated using the procedures described in Section 11.1.4. All residues resulting from decontamination will be sampled and analyzed, as described in Section 11.1.4.3, to determine whether they are dangerous waste. All residues will be removed from the unit and transferred to a facility having the necessary permits. Residues containing listed waste,

having dangerous waste characteristics, or exceeding dangerous waste designation limits will be disposed as dangerous waste.

11.1.2 Partial and Final Closure Activities

This plan identifies the steps necessary to perform final closure of the unit in order to meet the aforementioned closure performance standard (Section 11.1). Closure activities involve removal of dangerous and mixed waste from the unit and decontamination of the unit. These activities can be implemented at any point during the active life of the unit. Partial closure of the unit will not be conducted. The entire 305-B Storage Facility will be in use at all times prior to closure. The entire unit, therefore, represents the maximum extent of the operation that will be unclosed during the unit's active life.

11.1.3 Maximum Waste Inventory

The 305-B Storage Facility is used to store a variety of different research-related waste. The maximum inventory of waste in storage at any time will be constrained by three factors:

- The total amount of dangerous/mixed waste in storage at 305-B Storage Facility at any time will not exceed the design capacity of 30,000 gal (it is typically 2,000 to 5,000 gal)
- The total amount of any particular dangerous/mixed waste in storage during any given year will not exceed the amounts given in the Part A permit application for 305-B Storage Facility (Attachment 18, Chapter 1.0, Part A, Form 3)
- The total amount of dangerous/mixed waste by hazard class in storage at any one time will not exceed Uniform Building Code Class B Hazardous Material Quantity Restrictions (Attachment 18, Chapter 4.0, Table 4-1).

Except on the relatively rare occasion when 85-gal overpacks are used, approximately 90% of all dangerous wastes shipped from the unit are contained in 55-gal drums, with the remaining 10% consisting of 30-gal and smaller containers.

11.1.4 Inventory Removal, Disposal or Decontamination of Equipment, Structures, and Soils

Steps for removing or decontaminating all dangerous/mixed waste containers, residues, and contaminated equipment are described below.

11.1.4.1 Inventory Removal

Closure activities will be initiated by removal of the dangerous/mixed waste inventory present at 305-B Storage Facility at the time of closure. Inventory removal procedures will be identical to the waste handling, packaging, and manifesting activities associated with normal operation of the unit. All dangerous waste present will be placed into proper containers according to currently accepted waste handling procedures; mixed waste will be placed into containers and meet Hanford specifications outlined in WHC-EP-0063, *Hanford Radioactive Solid Waste Packaging, Storage, and Disposal Requirements.* To the extent possible, chemicals will be bulked into larger containers. If wastes are bulked, containers will be emptied in compliance with WAC 173-303-160 so that they are not dangerous waste. Small quantity laboratory chemicals that cannot be bulked will be packaged into labpack containers in compliance with the requirements of WAC 173-303-161. All containers of dangerous/mixed waste will be manifested, and custody transferred to a dangerous waste transporter having a proper dangerous waste identification number. Waste will be transported to a permitted dangerous waste facility for treatment or disposal.

11.1.4.2 Decontamination of Building Equipment and Structures

All equipment and structures in dangerous/mixed waste handling and storage areas will be decontaminated at the time of closure. Equipment and structures to be decontaminated include:

- Floors and walls of the four dangerous waste storage cells
- Floors, walls, and ceiling of high bay and flammable liquid bulking module areas
- Floors and walls of remainder of first floor except for offices, work area, and lavatories/change rooms
- Floors, walls, and ceiling of basement except equipment storage room
- Interior surfaces of all secondary containment trenches
- Fork lift and loading hoist
- Asphalt ramp outside north high bay door.

Before decontamination, sampling and analysis will be performed to determine decontamination requirements. In most cases, minimal decontamination consisting of washing or wiping will be performed unless the sampling and analysis indicates the presence of high levels of contamination. In order to determine whether such contamination exists, a systematic sampling approach designed to identify the presence of "hot spots" will be employed. Structures (i.e., floors, walls, ceilings) to be sampled before decontamination will be sampled on a regular grid with a spacing of 5 ft. This spacing provides an 80% probability of detecting a circular area of contamination having a radius of 2.5 ft or larger (Gilbert 1987, pp. 119-125). Biased sampling of areas more likely to have been contaminated by unit operations, such as cracks or seams in the concrete floor or any visible stains, or areas of documented spills or releases, will also be performed. If any areas of contamination are detected, more thorough decontamination procedures will be used in those areas.

Structural surfaces will be sampled by collecting wipe samples at each grid point. At each sample location, two samples will be collected within adjacent 1 ft square templates. One sample will be collected using a gauze pad wetted with dilute nitric acid for extraction of inorganic contaminants. The other sample will be collected with a gauze pad wetted with hexane for extraction of organic contaminants.

Decontamination of equipment and structures will take place as described below. The magnitude of each phase of the operation and estimated time for completion is included.

11.1.4.2.1 Decontamination of Basement

Once the RMW room has been completely emptied of stored waste, any visible residues present will be scraped, vacuumed and/or swept up until visibly clean. All residues thus obtained will be placed in open top drums and disposed of as appropriate. All waste materials generated during the decontamination process of the RMW room will be surveyed by radiological control technicians (RCTs) to determine whether the waste generated from decontamination should be handled as RMW. After the above process is completed, wipe samples will be collected at various points along the floors, walls, and ceiling of the basement.

Swab samples will be collected from the RMW room to test for dangerous waste contamination resulting from storage activities. Any dangerous waste contamination found during this testing will be presumed to have come from storage activities unless otherwise documented. Random and biased sampling locations will be selected using the procedures noted in Section 11.4.4.

The swab samples will be analyzed to determine if the RMW storage area has been radioactively contaminated. Baseline smears will have been documented prior to introduction of RMW. Radioactivity has been selected as an indicator of contamination since it is present in the RMW and is easily detected. Once the results from the testing are known, a decision can be made as to the appropriate decontamination procedures. If no contamination is found on the swab samples, decontamination procedures will consist of dusting, vacuuming, and wiping with soap and water. Vacuuming is performed using a commercial or

The containerized wastewaters will be analyzed to determine if they are designated as dangerous waste under WAC 173-303-070. If designated as dangerous, the wastewaters will be handled, transported, and disposed of as dangerous waste. If not dangerous waste, the wastewater will be managed appropriately. Total decontamination of the storage cells should be completed in no more than 2 weeks. Each of the storage cells should have approximately 30 gal of wastewater generated during the cleaning and rinsing process; therefore, a total of 120 gal of wastewater will need to be analyzed and disposed.

Following completion of decontamination, sampling will be performed, as described in Section 11.1.4.4, to verify that decontamination is complete.

11.1.4.2.4 Decontamination of High Bay, Flammable Liquid Bulking Module and Other First Floor Areas

Wipe samples will be collected at various points along the floors, walls, and ceiling of the entire first floor, except for the office, supply/office area, lunch room, and rest room. The wipe samples will be analyzed to determine if these areas have been contaminated with dangerous waste constituents. Once the results from the testing are known, a decision can be made as to the appropriate decontamination procedures.

If no contamination is found on the wipe samples, decontamination procedures will consist of dusting, vacuuming, and wiping. Vacuuming is performed using a commercial or industrial vacuum equipped with a HEPA filter. The vacuum cleaner bag containing captured particulates is disposed of as appropriate.

Dusting/wiping is done with a damp cloth or wipe (soaked with water or solvent) to remove dust from surfaces not practically treatable with a vacuum. The cloth or wipe is also disposed of as appropriate. Brushing or sweeping is used to clean up coarse debris.

Minimal time will be required for setup of the equipment. Labor requirements for the process should be moderate. Minimal time will also be required for packaging debris and dismantling and removing cleaning equipment. Little wastewater (only the contents of the buckets) will be generated by this procedure.

On the other hand, if contamination is found on the wipe samples, more sophisticated decontamination procedures must be implemented. The affected areas will be extensively treated via steam cleaning. Applying steam with a hand-held wand to remove all residues from the surfaces will treat such areas. The contaminated wastewater generated by this activity will be contained by the designed spill controls already in place for the waste storage areas. Pumps will be used to empty the wastewater from the containment area into polyethylene-lined closed top drums. These containers will be transferred for proper treatment or disposal at an approved dangerous waste facility. Although this procedure will require more time than the dusting, vacuuming, and wiping procedures outlined above, time requirements are still considered to be minimal for the steam cleaning approach. Wastewaters generated by this procedure are not anticipated to exceed 200 gal.

Following completion of decontamination, sampling will be performed, as described in Section 11.1.4.4, to verify that decontamination is complete.

11.1.4.2.5 Decontamination of Sumps

All collection sumps located at 305-B, including those lining the storage cells on the west side of the unit, the sump along the east side inside wall, and those protecting the exits on the north and south ends, will be decontaminated by steam cleaning. Wastewaters collected in each sump from the implementation of the cleaning process will be pumped into polyethylene-lined, closed top drums and analyzed as to whether or not the wastewater is designated as dangerous waste under WAC 173-303-070. If designated, the wastewater will be disposed of as dangerous waste. If the wastewater is not dangerous waste, the wastewaters will be discharged to the 300 Area process sewer system. The steam cleaning of all the sumps should take minimal time and generate approximately 100 gal of wastewater.

circular "hot spot" having a radius of 2.5 ft or larger (Gilbert 1987, pp. 119-125). Biased sampling of areas more likely to have been contaminated by unit operations, such as cracks or seams in the concrete floor or any visible stains, or areas of documented spills or releases, will also be performed. If any "hot spots" are detected, additional decontamination will be performed.

Decontaminated surfaces will be sampled by collecting wipe samples at each grid point. At each sample location, two samples will be collected within adjacent 1 ft square templates. One sample will be collected using a gauze pad wetted with dilute nitric acid for extraction of inorganic contaminants. The other sample will be collected with a gauze pad wetted with hexane for extraction of organic contaminants.

11.1.4.5 Closure of Containers

At closure, all containers will be removed from the 305-B Storage Facility. All dangerous waste residues will be removed from the containment system components. Contaminated equipment, floors, walls, and loading areas will be decontaminated or removed. All decontamination equipment and rinsate will be containerized, tested, and properly disposed. Sampling and analysis will be conducted to ensure that no contamination remains around the storage area and containment system. Additional details for closure and decontamination are provided in Sections 11.1.4.1 through 11.1.4.3.

11.1.4.6 Closure of Tanks

This section is not applicable to the 305-B Storage Facility because waste are not stored or treated in tanks.

11.1.4.7 Closure of Waste Piles

This section is not applicable to the 305-B Storage Facility because wastes are not stored in waste piles.

11.1.4.8 Closure of Surface Impoundments

This section is not applicable to the 305-B Storage Facility because wastes are not placed in surface impoundments.

11.1.4.9 Closure of Incinerators

This section is not applicable to the 305-B Storage Facility because wastes are not incinerated.

11.1.4.10 Closure of Land Treatment Facilities

This section is not applicable to the 305-B Storage Facility because wastes are not treated in land treatment units.

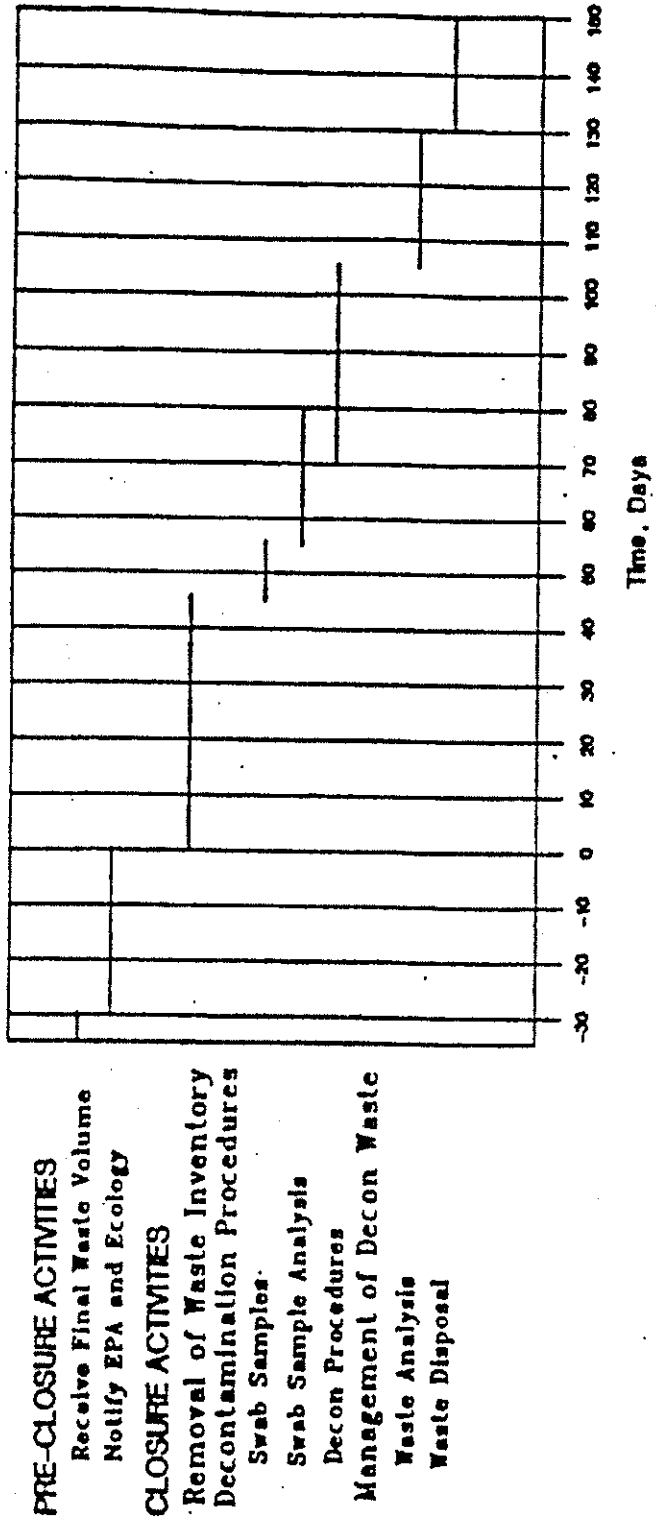
11.1.5 Closure of Disposal Facilities

This section is not applicable to the 305-B Storage Facility because it will not be closed as a dangerous waste disposal unit.

11.1.6 Closure Schedule

When closure begins, the inventory of dangerous and radioactive mixed waste will be removed within 90 days from receipt of the final volume of waste. All closure activities will be completed within 180 days of receipt of the final volume of waste. The Director of the Washington Department of Ecology will be notified by DOE-RL at least 45 days before the final closure activities are begun. Closure activities are summarized in Table 11-1. A detailed schedule of closure activities is provided in Figure 11-1.

Figure 11-1. Detailed Schedule of Closure



11.3 POSTCLOSURE PLAN

This section and subsequent subsections are not applicable because the 305-B Storage Facility is not to be closed as a dangerous waste disposal unit.

11.4 NOTICE IN DEED

This section is not applicable because the 305-B Storage Facility is not to be closed as a dangerous waste disposal unit.

11.5 CLOSURE COST ESTIMATE

It is DOE-RL's understanding that federal facilities are not required to comply with WAC 173-303-620. However, projections of anticipated costs for closure will be provided in accordance with Condition II.H.1. of the Hanford Facility Permit.

11.6 FINANCIAL ASSURANCE MECHANISM FOR CLOSURE

In accordance with 40 CFR 264.140(c) and WAC 173-303, this section is not required for federal facilities. The Hanford Site is a federally owned facility for which the federal government is an operator and this section is therefore not applicable to the 305-B Storage Facility.

11.7 POSTCLOSURE COST ESTIMATE

A postclosure cost estimate is not required for the 305-B Storage Facility because it will not be closed as a dangerous waste disposal facility.

11.8 FINANCIAL ASSURANCE MECHANISM FOR POSTCLOSURE CARE

Post-closure financial assurance is not required for the 305-B Storage Facility because it will not be closed as a dangerous waste disposal facility.

11.9 LIABILITY REQUIREMENTS

In accordance with 40 CFR 264.140(c) and WAC 173-303, this section is not required for federal facilities. The Hanford Site is a federally owned facility for which the federal government is an operator and this section is therefore not applicable to the 305-B Storage Facility.

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12.0 REPORTING AND RECORDKEEPING

This chapter summarizes the reporting and recordkeeping requirements. The reports are submitted to Ecology and/or the EPA as required by applicable regulations, and required records are maintained at the 305-B Storage Facility. A general reporting requirement applicable to all dangerous waste management facilities (e.g., notification) is described, as well as reporting and recordkeeping requirements for generators, transporters, and treatment, storage, and/or disposal facilities. Reports and records applicable to the 305-B Storage Facility are summarized in Table 12-1.

12.1 NOTIFICATION OF HAZARDOUS WASTE ACTIVITIES

Facilities generating or transporting dangerous waste and the owner and operators of treatment, storage, and/or disposal facilities must have current EPA/State Identification Numbers. The 305-B Storage Facility operates under EPA/State Identification Number WA7890008967, issued to the Hanford Facility.

12.2 GENERATOR REQUIREMENTS

The 305-B Storage Facility generates only minor amounts of waste during the cleanup of container spills or leaks and this waste is handled together with other waste generated on the Hanford Site. Hanford Site waste generation records and required reports (e.g., annual reports) are compiled and issued as single records or reports for the entire Hanford Site; information on waste generated by the 305-B Storage Facility is compiled and provided together with other Hanford Site generator records and reports.

12.2.1 Recordkeeping

Generator records maintained by the Hanford Site include the following:

- Records of waste generated onsite
- Records of waste packaged to be shipped offsite
- A copy of each annual report
- Land disposal restriction records.

Waste generation records are retained as required by WAC 173-303-210 and 40 CFR 268.7.

12.2.2 Reporting

Generator reports required by WAC 173-303-220 submitted by the Hanford Site include the annual report, exception reports, and any required additional reports.

The Hanford Site submits an annual report of waste generation activities to Ecology. The annual report is submitted on the "Generator Annual Dangerous Waste Report—Form 4." All dangerous waste generated at the 305-B Storage Facility is included in the annual report.

1 Table 12-1. Reports and Records.

Item	STORAGE	
	Retention Time	Location
Notification of dangerous waste activities	Life of facility	Facility File
GENERATOR REPORTS AND RECORDS:		
Annual report	5 years after last waste shipment	Hanford Site[1]
Exception report	5 years after last waste shipment	Hanford Site
Additional reports and records as required (i.e., inspection logs)	5 years after closure	Hanford Site
Test and Waste Analysis Results:		
Waste generated onsite	5 years after last waste shipment	Hanford Site
Waste packaged for offsite shipment	5 years after last waste shipment	Hanford Site
Waste Manifest Reports and Records:		
Manifests	5 years after last waste shipment	Hanford Site
Manifest discrepancy	5 years after last waste shipment	Hanford Site
Unmanifested waste	Not required	N/A
Land Disposal Restriction Records:		
Extension to an effective date	At least 5 years from the date of shipment	Hanford Site
Petition for a variance	At least 5 years from the date of shipment	Hanford Site
Notice and certification of treatment standards	At least 5 years from the date of shipment	Hanford Site
Demonstration and certification for a temporary extension to the effective date	At least 5 years from the date of shipment	Hanford Site
TRANSPORTER REPORTS AND RECORDS:		
None required	N/A	N/A
TREATMENT, STORAGE, AND/OR DISPOSAL REPORTS AND RECORDS:		
Permit Application Plans:		
Waste analysis plan	Life of facility	Hanford Site
Contingency plan and amendments	Life of facility	Hanford Site
Training plan	Life of facility	Hanford Site
Closure plan	Life of facility	Hanford Site
Post-closure plan	Not Required	N/A
Inspection plans	Life of facility	Hanford Site

[1] Hanford Site: Records pertaining to the 305-B Storage Unit will be retained at the unit until completion of closure. Documents requiring longer retention, as specified, will be retained in the Hanford Facility File.

Item	STORAGE	
	Retention Time	Location
Operating Reports and Records		
Waste description and quantity	Life of facility	Hanford Site
Waste location	Until closure	Hanford Site
Waste analysis data	Life of facility	Hanford Site
Inspection records	5 years after inspection	Hanford Site
Certification of waste minimization efforts	Life of facility	Hanford Site
Land Disposal Restriction Records:		
Extension to an effective date	At least 5 years from the date of shipment	Hanford Site
Petition for a variance	At least 5 years from the date of shipment	Hanford Site
Notice and certification of treatment standards	At least 5 years from the date of shipment	Hanford Site
Demonstration and certification for a temporary extension to the effective date	At least 5 years from the date of shipment	Hanford Site
Waste Manifest Reports and Records:		
Manifests	5 years after receipt of waste	Hanford Site
Manifest discrepancy	5 years after receipt of waste	Hanford Site
Unmanifested waste	Not required	N/A
Groundwater Monitoring Reports and Records:		
None required	N/A	N/A
Contingency Plan Incident Reports and Records:		
Immediate notification—Event Fact Sheet	Life of facility	Hanford Site
Assessment report	Life of facility	Hanford Site
Facility restart notification	Life of facility	Hanford Site
Spills, Discharges, and Leaks Reports and Records:		
Immediate notification	Life of facility	Hanford Site
Closure Reports and Records:		
Certification of closure	Life of facility	Hanford Site
Survey plat	Not required	N/A
Closure cost estimates	Not required	N/A
Post-Closure Reports and Records:		
None required	N/A	N/A
Miscellaneous Support Reports and Records:		
Annual report	5 years from due date	Hanford Site
Biennial report	Life of facility	Hanford Site
Training documentation	Life of facility	Hanford Site
Liability coverage documentation	Not required	N/A

If a copy of the manifest is not returned with the signature of the owner/operator of a permitted unit designated to receive nonradioactive dangerous waste offsite within 35 days, the 305-B Storage Facility staff will contact the initial transporter or facility to determine the status of the waste shipment. If a copy of the manifest with the handwritten signature of the designated facility's owner/operator is not received by 305-B Storage Facility staff within 45 days of the date the waste was offered to the initial transporter, an exception report will be submitted to Ecology. The report will include the following:

- A legible copy of the manifest for which delivery was not confirmed
- A cover letter explaining the efforts to locate the waste and the results of those efforts.

Copies of waste analysis reports or other documentation relating to the composition of dangerous waste shipped from the 305-B Storage Facility will be retained at the unit. Documents relating to land disposal restrictions are discussed in Section 12.4.2.1.7.

Any additional reports deemed necessary by Ecology or EPA are furnished by the Hanford Site upon request.

12.3 TRANSPORTER REQUIREMENTS

Transporter recordkeeping and reporting requirements are not strictly applicable to the 305-B Storage Facility since 305-B Storage Facility does not transport dangerous wastes offsite. Transporters having their own EPA/State Identification Numbers are used to transport dangerous wastes from 305-B Storage Facility to a permitted off-site treatment, storage, and/or disposal facility. Wastes are transported to 305-B Storage Facility by PNNL waste management organization staff. Wastes transported to 305-B Storage Facility on public roadways or highways are considered to be "off-site" shipments and the PNNL waste management organization complies with transporter recordkeeping and reporting requirements under WAC 173-303-260 and WAC 173-303-270 for these shipments.

12.4 TREATMENT, STORAGE, AND/OR DISPOSAL REQUIREMENTS

Storage facility reporting and recordkeeping requirements are discussed below.

12.4.1 Reports

This section discusses the reporting requirements of WAC 173-303 relating to aspects of dangerous waste. The reporting requirements include the following:

- Waste manifest reports
- Annual reports
- Groundwater monitoring reports
- Contingency plan incident reports
- Spills, discharges, and leaks reports
- Closure reports
- Post-closure reports.

Additional details of these reports are provided below. Copies of these reports are maintained by the 305-B Storage Facility or other Hanford Site organizations as appropriate.

12.4.1.1 Waste Manifest Reports

The waste manifest or lack thereof, is the source of two possible reports, the manifest discrepancy report and the unmanifested waste report.

12.4.1.1.1 Manifest Discrepancy.

Each dangerous or mixed waste transfer to the 305-B Storage Facility transported on roads accessible to the general public must have a Uniform Hazardous Waste Manifest for the transfer to be approved (refer to Section 2.8). The waste manifests received are checked to verify that they are properly filled out and the waste received is identical to the material described on the manifest. Every effort is made to resolve manifest discrepancies with the generator. If discrepancies are not resolved in 15 days, a report will be submitted to Ecology in accordance with WAC 173-303-370. This report describes the discrepancy and attempts to reconcile it. A copy of the manifest or shipping paper at issue is attached to the report.

12.4.1.1.2 Unmanifested Waste.

The 305-B Storage Facility receives wastes generated by DOE-RL- and/or PNNL-sponsored programs. As noted in Section 2.8.4, unmanifested waste which requires a manifest may either be rejected, or an unmanifested waste report will be filed with Ecology within 15 days of receipt of shipment using Ecology Form 6, Unmanifested Dangerous Waste Report.

The report shall include at least the following information:

1. The EPA/State identification number, name, and address of the facility;
2. The date the unit received the waste;
3. The EPA/State identification number, name, and address of the generator and transporter, if available;
4. A description and the quantity of each unmanifested dangerous waste the unit received;
5. The method of management for each dangerous waste;
6. The certification signed by the owner or operator of the unit or the authorized representative; and
7. A brief explanation of why the waste was unmanifested, if known.

12.4.1.2 Annual Report

The state of Washington, pursuant to WAC 173-303-390, requires an annual report for each facility which holds an active EPA/State Identification Number. The report is due to Ecology on March 1 of each year. A single report is prepared for the entire Hanford Site and covers each dangerous waste treatment, storage, and disposal unit at Hanford, including 305-B Storage Facility. The report contents for each unit include the following:

- EPA/State Identification Number
- Name and address of the unit
- Calendar year covered by the report
- Sources of the waste received by the unit
- Description and quantity of the waste received by the unit
- Treatment, storage, and/or disposal methods
- Certification statement signed by an authorized representative.

The report form and instructions in the "Treatment, Storage, or Disposal Unit Annual Dangerous Waste Report—Form 5" are used for this report. The above information applicable to the 305-B Storage Facility is compiled by the PNNL waste management organization and submitted to PHMC. PHMC is the organization responsible for preparing the Hanford Site annual report.

12.4.1.3 Biennial Report

The EPA requires, pursuant to 40 CFR 264.75, that an overall report describing each dangerous waste facility activity be submitted on March 1 of each even-numbered year. The biennial report is not required by Ecology. As with the annual report described in Section 12.4.1.2, a single report is prepared for the entire Hanford Site covering all dangerous waste treatment, storage, and disposal facilities at Hanford. The report contents for each unit include the following:

- EPA/State Identification Number
- Name and address of the unit
- Calendar year covered by the report
- Sources of the waste stored at 305-B Storage Facility
- Description and quantity of the waste received at 305-B Storage Facility
- Treatment, storage, and/or disposal methods
- Waste minimization efforts
- Certification statement signed by an authorized representative.

This information covers activities for the previous calendar year. The above information applicable to the 305-B Storage Facility is compiled by the PNNL waste management organization and is included in the Hanford Site annual report.

12.4.1.4 Groundwater Monitoring Reports.

The 305-B Storage Facility is not operated as a dangerous waste surface impoundment, waste pile, land treatment unit, or landfill as defined in WAC 173-303-645-(1)(a). Therefore, no groundwater monitoring or reporting is required for this unit.

12.4.1.5 Contingency Plan Incident Reports.

The BED and 305-B Storage Facility line management are responsible for making notifications (as detailed in Attachment 18, Chapter 7.0, Sections 7.4.1.3 and 7.8) of all emergency situations requiring contingency plan implementation as required by WAC 173-303-360.

All situations requiring contingency plan implementation are documented in accordance with Attachment 18, Chapter 7.0, Section 7.8.2, DOE Event Reporting. A copy of all such documentation for incidents at 305-B Storage Facility will be retained at the unit as part of the Operating Record.

If the unit stops operations in response to a fire, explosion, or release that may present a hazard to human health or the environment, the BED notifies DOE-RL, via line management, when the unit and emergency equipment cleanup is complete.

The DOE-RL is responsible for three types of notifications: an immediate notification; the incident assessment report; and the unit restart notification. Details of these notifications are provided below.

12.4.1.5.1 Immediate Notification.

The DOE-RL will immediately notify Ecology and the individual designated as the on-scene coordinator for the southeastern Washington area of the National Response Center, telephone number (800) 424-8802, if the unit has had a fire, explosion, or release which requires reporting under applicable regulations.

- The DOE-RL report will contain the following information:
- Name and telephone number of reporter
- Name and address of the unit
- Time and type of incident
- Name and quantity of material(s) involved to the extent known
- Extent of injuries if any
- Possible hazards to human health or the environment outside the unit.

12.4.1.5.2 Incident Assessment Report.

A written report is provided to Ecology within 15 days of any incident that requires implementation of the contingency plan. This report includes the following information:

- Name, address, and telephone number of the owner or operator
- Name, address and telephone number of the unit
- Date, time, and type of incident
- Name and quantity of material(s) involved
- Extent of injuries if any
- Assessment of actual or potential hazards to human health or the environment where this is applicable
- Estimated quantity and disposition of recovered material that resulted from the incident
- Cause of the incident
- Description of corrective action taken to prevent recurrence of the incident.

12.4.1.5.3 Unit Restart Notification.

If the 305-B Storage Facility stops operations in response to a fire, an explosion, or release that may present a hazard to human health or the environment, the DOE-RL will notify Ecology and the appropriate local authorities before normal operations are resumed in the affected area(s) of the unit. The notification will indicate that cleanup procedures are completed and that emergency equipment is cleaned and fit for its intended use.

12.4.1.6 Spills, Discharges, and Leak Reports

This section discusses the reports prepared as a result of unpermitted spills and discharges into the environment.

12.4.1.6.1 Spills and Discharges Reports.

In the event of any unplanned release of dangerous materials, the building emergency director will document the incident on an Event Fact Sheet. A copy of the Event Fact Sheet will be retained at the unit. PNNL line management will immediately notify the DOE-RL. The following information will be transmitted to the DOE-RL:

- Name and telephone number of reporter
- Name and address of the unit
- Time and type of incident
- Name and quantities of material(s) involved to the extent known
- Extent of injuries if any
- Possible hazards to human health or the environment outside the unit.

The PNNL waste management organization immediately notifies the DOE-RL of all reportable releases to the environment in accordance with DOE Orders.

The DOE-RL will immediately notify Ecology of all spills and discharges of hazardous materials (unless permitted) in accordance with WAC 173-303-145(2) and Condition I.E.15 of the Facility Wide Permit.

12.4.1.7 Closure Reports

Reports regarding the closure of the 305-B Storage Facility will be made in accordance with the requirements of WAC 173-303-610(6) and (9).

12.4.1.7.1 Certification of Closure.

Within 60 days of completion of closure of the 305-B Storage Facility, certification signed by the DOE-RL and an independent registered Professional Engineer will be submitted to Ecology. The certification will be sent by registered mail. The certification will state that the unit was closed in accordance with the approved closure plan. Documentation supporting the independent registered Professional Engineer's certification will be supplied upon request of Ecology.

12.4.1.7.2 Survey Plat.

The 305-B Storage Facility is not a disposal facility; therefore, this requirement is not applicable.

12.4.1.8 Post-Closure Reports

Post-closure reports required by WAC 173-303-610(9), (10), and (11) are not required because the 305-B Storage Facility is not a disposal facility.

12.4.2 Recordkeeping Requirements

The records kept by the 305-B Storage Facility include plans described in other portions of this permit application, operating records, miscellaneous support records, and records of reports made to Ecology and EPA. These records are described in the following sections.

12.4.2.1 Operating Record.

The Operating Record maintained at the 305-B Storage Facility includes:

- A description and the quantity of each dangerous waste received and the method(s) and date(s) of storage at the 305-B Storage Facility in accordance with WAC 173-303-380
- The location of each dangerous waste stored within the unit and the quantity at each location, including cross-reference to manifest numbers
- Waste analysis results
- Contingency plan implementation reports
- Inspection records
- Copies of notices from off-site facilities informing 305-B Storage Facility that the off-site facilities have all required permits.

12.4.2.1.1 Waste Description and Quantity.

Each dangerous waste received at the 305-B Storage Facility is described by its common name and dangerous waste number(s) from WAC 173-303-080 through 173-303-104. When a dangerous waste contains multiple dangerous waste constituents, the waste description includes all applicable dangerous waste numbers. For waste numbers that are not listed in WAC 173-303, the waste description includes the name of the process that generated the waste. The waste description includes the following information:

- physical form (i.e., liquid, solid, sludge, or gas)
- Weight, or volume and density, using one of the units of measure in WAC 173-303-380(2)(c)
- Date and management method for each waste, including handling code specified in WAC 173-303-380(2)(d).

12.4.2.1.2 Waste Location.

The location of each dangerous waste container stored within the 305-B Storage Facility is documented and maintained.

12.4.2.1.3 Waste Analysis.

As described in Section 3.2, most of the wastes received at 305-B Storage Facility do not require analysis. Only those wastes which are unknown or for which the generator does not have documentation of contents require analysis. Waste sampling and analysis is performed by the generator. Waste analysis

results are submitted to the PNNL waste management organization with the disposal request. These results are used by the PNNL waste management organization to designate the waste in accordance with WAC 173-303-070, to determine waste compatibility for proper storage, and to determine waste packaging and labeling requirements. Results of waste analyses submitted with the disposal request forms are kept at 305-B Storage Facility.

Analysis of wastes generated at 305-B Storage Facility would only be required in the case of spill or leak response when it is necessary to determine whether cleanup residuals are dangerous wastes. 305-B Storage Facility staff is responsible for sampling such wastes and having the required analyses performed by on-site or off-site laboratories. If such wastes are determined to be dangerous wastes, copies of the waste analysis results will be kept at 305-B Storage Facility and cross-referenced to manifest numbers.

12.4.2.1.4 Contingency Plan Implementation Report.

Records documenting the details of any incidents requiring the implementation of the contingency plan, as described in Attachment 18, Chapter 7.0 and Section 12.4.1.5, are maintained as part of the 305-B Storage Facility Operating Record as required by WAC 173-303-380.

12.4.2.1.5 Inspection Records.

Records of the 305-B Storage Facility general inspections are maintained at the unit for at least five years from the inspection date. The records include the following:

- The date and time of inspection
- The inspector's printed name and handwritten signature
- Notations of observations
- The date and nature of any repairs or other remedial actions.

12.4.2.1.6 Waste Minimization Certification.

Annually, a certification by DOE-RL that the 305-B Storage Facility has a program in place to reduce the volume and toxicity of hazardous waste is inserted into the 305-B Storage Facility Operating Record as required by 40 CFR 264.73(b)(9).

12.4.2.1.7 Land Disposal Restrictions Records.

Records related to storage of waste subject to land disposal prohibitions are maintained as required by 40 CFR 264.73(b)(10) and (16). Records potentially include:

- Records of waste placed in land disposal units under an extension to the effective date of any land disposal restriction granted pursuant to 40 CFR 268.5
- Records of waste placed in land disposal units under a petition granted pursuant to 40 CFR 268.6
- Records of the applicable notice and certification required by 40 CFR 268.7(a)
- Records of the demonstration and certification required by 40 CFR 268.8, if applicable, for waste subject to land disposal prohibitions or restriction.

Additional discussion of land disposal records is provided in the following sections.

12.4.2.1.7.1 Date Extension.

The 305-B Storage Facility will not apply for an extension to the effective date of a land disposal restriction. The Hanford Site generator or the permitted off-site disposal facility may apply for an extension if required. If such an extension is approved by EPA, the generator or permitted off-site

disposal facility, as appropriate, will provide a copy of the approval indicating the waste subject to the extension. Copies of these records, as well as the quantities and the date of placement (information the permitted off-site disposal facility is requested to provide to 305-B Storage Facility following disposal) for each shipment of waste subject to the date of the extension will be maintained in the 305-B Storage Facility files.

12.4.2.1.7.2 Petition.

The 305-B Storage Facility will not petition to allow land disposal of a waste subject to a land disposal restriction under 40 CFR 268, Subpart C. The permitted off-site disposal facility may petition to the regulatory authority for a variance to allow disposal of a restricted or prohibited waste if required. If such a petition is approved by EPA for waste shipped by 305-B Storage Facility, the disposal facility will be requested to provide information related to the petition so that 305-B Storage Facility may ensure that the waste shipped complies with the petition. Copies of the records of the petition, as well as the waste quantities and date of placement (information on the permitted off-site disposal facility is requested to provide to 305-B Storage Facility following disposal) for each waste shipment covered by the petition will be maintained in the 305-B Storage Facility files.

12.4.2.1.7.3 Notice and Certification.

Each waste generator is required to provide the PNNL waste management organization with adequate waste characterization data for the waste management organization to determine whether the waste is subject to land disposal restrictions. The waste management organization determines whether the waste is subject to land disposal restrictions prior to transporting the waste offsite from 305-B Storage Facility. If wastes are determined to be subject to land disposal restrictions, the required notices and certifications are included with waste shipments from 305-B Storage Facility to off-site treatment, storage, and/or disposal facilities. Such notifications are made as described below. Copies of notifications, certifications, demonstrations, and supporting documentation for each shipment of waste subject to a land disposal restriction or prohibition are maintained at 305-B Storage Facility.

Waste Does Not Meet Applicable Treatment Standards or Exceeds Applicable Prohibition Levels. If the waste does not meet the applicable treatment standards or exceeds an applicable prohibition level set forth in 40 CFR 268.32 or Section 3004(d) of RCRA, a notice is provided with each shipment of waste containing the following information:

- The EPA Hazardous Waste Number
- Corresponding treatment standards and all applicable prohibitions set forth in 40 CFR 268.32 or Section 3004(d) of RCRA
- The waste manifest number associated with the shipment of waste
- Waste analysis data where available or a statement of the basis of the determination with supporting data.

Waste Meets the Applicable Treatment Standards. If the waste meets the applicable treatment standards and can be land-disposed without further treatment, a notice and certification is provided by the 305-B Storage Facility unit with each shipment of waste. The notice contains the following information:

- The EPA Hazardous Waste Number
- Corresponding treatment standards and all applicable prohibitions set forth in 40 CFR 268.32 or Section 3004(d) of RCRA
- The manifest number associated with the waste shipment

- Waste analysis data where available or a statement of the basis of determination with supporting data.

In addition, the shipment will be accompanied by the certification required under 40 CFR 268.7(a)(2)(ii) that the waste complies with treatment standards and prohibitions.

12.4.2.1.7.4 Demonstration and Certification.

Certain wastes may be land-disposed without treatment under certain conditions which comply with 40 CFR 268. If such wastes are shipped from 305-B Storage Facility for land disposal, the initial shipment will be accompanied by the demonstration and certification required under 40 CFR 268.8(a). Each additional shipment will be accompanied only by the certification provided that the conditions covered by the original certification have not changed.

12.4.2.2 Miscellaneous Support Records.

Miscellaneous support records include the following:

- Training records
- Liability coverage documentation
- Closure and post-closure cost estimates
- Report records.

12.4.2.2.1 Training Documentation.

The training plan is maintained at 305-B Storage Facility. The name of each employee and the 305-B Storage Facility waste management position held is maintained by the unit. Training records document that employees have received the training or have work experience required for that position. The records are maintained by the unit. Training records on current employees are kept until closure of the unit. Training records on former employees are kept for three years from the date the employee last worked at the unit. Auditable copies of these records are maintained by the PNNL training organization.

12.4.2.2.2 Liability Coverage Documentation.

Financial assurance and liability coverage mechanisms are not required for federal facilities. Therefore, this requirement is not applicable to the 305-B Storage Facility.

12.4.2.2.3 Closure and Post-closure Cost Estimates.

Financial assurance mechanisms for closure and post-closure costs are not required for federal facilities. However, projections of anticipated costs for closure will be provided annually in accordance with Attachment 18, Chapter 11.0, Section 11.5.

12.4.2.3 Report Records.

The reports described in Sections 12.1, 12.2.2, and 12.4.1 are contained in records maintained either by the 305-B Storage Facility or by other Hanford Site organizations as noted in Table 12-1. Copies of the reports will be made available upon the request of Ecology or EPA.

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CONTENTS

13.0 OTHER RELEVANT LAWS ..... Att 18.13-1

13.1 Toxic Substances Control Act ..... Att 18.13-1

13.2 Other Requirements ..... Att 18.13-1

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13.0 OTHER RELEVANT LAWS

13.1 Toxic Substances Control Act

Wastes containing polychlorinated biphenyls (PCB), which are subject to regulation under the Toxic Substances Control Act (TSCA), are stored in the 305-B Storage Facility. These wastes are stored for periods less than one (1) year before shipment to a disposal facility permitted under TSCA. Storage of PCB wastes in 305-B Storage Facility for periods less than one (1) year will continue to be done in compliance with applicable TSCA regulations in 40 CFR Part 761.

13.2 Other Requirements

The application of insecticides and herbicides on or in the immediate vicinity of the 305-B Storage Facility will be conducted in compliance with the Federal Insecticide, Fungicide, and Rodenticide Act of 1975, TSCA, and the applicable provisions of the Washington State Water Quality Standards, WAC 173-201.

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Hanford Facility RCRA Permit Modification Notification Forms

Part III, Chapter 3 and Attachment 28

PUREX Storage Tunnels

Index

Page 2 of 2: Hanford Facility RCRA Permit, III.3

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
PUREX Storage Tunnels	Part III, Chapter 3 and Attachment 28

Description of Modification:

Hanford Facility RCRA Permit, III.3.:

CHAPTER 3

PUREX Storage Tunnels

The PUREX Storage Tunnels are mixed waste storage units consisting of two underground railroad tunnels: Tunnel Number 1, designated 218-E-14, and Tunnel Number 2, designated 218-E-15. This Chapter sets forth the operating Conditions for this TSD unit.

III.3.A COMPLIANCE WITH APPROVED PERMIT APPLICATION

The Permittees shall comply with all requirements set forth in Attachment 28, including all Class 1 Modifications ~~specified below~~, and the Amendments specified in Condition III.3.B, if any exist. Enforceable portions of the permit application have been incorporated in Attachment 28 and are identified as follows.~~are listed below; a~~ All subsections, figures, and tables included in these portions are also enforceable~~, unless stated otherwise:~~

ATTACHMENT 28:

Chapter 1.0	Part A, Form 3, Permit Application, Revision 5BA, from Class 1 Modification from quarter ending September 30, 20020
Chapter 2.0	Unit Description, from Class 1 Modification for quarter ending September 30, 2002
~~Section 2.1~~	~~The PUREX Storage Tunnels Description~~
~~Section 2.2~~	~~Topographic Map, including Class 1 Modifications from quarter ending June 30, 1997~~
Chapter 3.0	Waste Analysis Plan, from Class 1 Modification for quarter ending September 30, 2002
Chapter 4.0	Process Information, from Class 1 Modification for quarter ending September 30, 2002
Chapter 6.0	Procedures to Prevent Hazards, from Class 1 Modification for quarter ending September 30, 2002
Chapter 7.0	Contingency Plan, dated May 1998, from Class 1 Modification for quarter ending September 30, 2002~~March 31, 2000~~
Chapter 8.0	Personnel Training, from Class 1 Modification for quarter ending September 30, 2002
Chapter 10.0	Waste Minimization, from Class 1 Modification for quarter ending September 30, 2002
Chapter 11.0	Closure and Financial Assurance, from Class 1 Modification for quarter ending September 30, 2002
Chapter 12.0	Reporting and Recordkeeping, from Class 1 Modification for quarter ending September 30, 2002
Chapter 13.0	Other Federal and State Laws, from Class 1 Modification for quarter ending September 30, 2002
~~Appendix 2A~~	~~Topographic Map~~
~~Appendix 3A~~	~~Waste Analysis Plan for PUREX Storage Tunnels~~
~~Appendix 4A~~	~~Engineering Drawings, including Class 1 Modifications from quarter ending December 31, 1998~~
~~Appendix 7A~~	~~Unit Specific Contingency Plan for the 218-E-14 and 218-E-15 Storage Tunnels, from Class 1 Modification for quarter ending March 31, 2000~~

Modification Class: [1 2 3]	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation

A. General Permit Provisions

1. Administrative and informational changes

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:	Reviewed by Ecology:
L. J. Oguin 9/18/02	P. J. Valeich 9/26/02	R. Bond	L. E. Ruud
Date	Date	Date	Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modifications

Part III, Chapter 3 and Attachment 28

PUREX Storage Tunnels

Replacement Sections

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2.0 UNIT DESCRIPTION ..... Att 28.2.i
3.0 WASTE ANALYSIS PLAN ..... Att 28.3-i
4.0 PROCESS INFORMATION ..... Att 28.4-i
6.0 PROCEDURES TO PREVENT HAZARDS ..... Att 28.6-i
7.0 CONTINGENCY PLAN ..... Att 28.7-i
8.0 PERSONNEL TRAINING ..... Att 28.8-i
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11.0 CLOSURE AND FINANCIAL ASSURANCE ..... Att 28.10-i
12.0 REPORTING AND RECORDKEEPING ..... Att 28.12-i
13.0 OTHER FEDERAL AND STATE LAWS ..... Att 28.13-i

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CONTENTS

1.0 PART A, FORM 3, DANGEROUS WASTE PERMIT ..... Att 28.1-1

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FORM 3	DANGEROUS WASTE PERMIT APPLICATION	I. EPA/State I.D.. No.
		W A 7 8 9 0 0 0 8 9 6 7

FOR OFFICIAL USE ONLY

Application Approved	Date Received (month/ day / year)	Comments

II. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below (mark one box only) to indicate whether this is the first application you are submitting for your facility or a revised application. If this is your first application and you already know your facility's EPA/STATE I.D. Number, or If this is a revised application, enter your facility's EPA/STATE I.D. Number in Section I above.

A. First Application (place an "X" below and provide the appropriate date)

☐ **1. Existing Facility** (See instructions for definition of "existing" facility. Complete item below.)

MO	DAY	YEAR
03	22	1943

*For existing facilities, provide the date (mo/day/yr) operation began or the date construction commenced. (use the boxes to the left)

*The date construction of the Hanford Facility commenced

☐ **2. New Facility** (Complete item below.)

MO	DAY	YEAR

For new facilities, provide the date (mo/day/yr) operation began or is expected to begin

B. Revised Application (Place an "X" below and complete Section I above)

☒ **1. Facility has an interim Status Permit**

☒ **2. Facility has a Final Permit**

III. PROCESSES – CODES AND 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. Ten lines are provided for entering codes. If more lines are needed, enter the codes(s) in the space provided. If a process will be used that is not included in the list of codes below, then describe the process (including its design capacity) in the space provided on the (Section III-C).

B. Process Design Capacity – For each code entered in column A enter the capacity of the process.

1. Amount – Enter the amount.
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.

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
STORAGE:		
Container (barrel, drum, etc.)	S01	Gallons or liters
Tank	S02	Gallons or liters
Waste pile	S03	Cubic yards or cubic meters
Surface impoundment	S04	Gallons or liters
DISPOSAL:		
Injection well	D80	Gallons or liters
Landfill	D81	Acre-feet (the volume that would cover one acre to a Depth of one foot) or hectare-meter
Land application	D82	Acres or hectares
Ocean disposal	D83	Gallons per day or liters per day
Surface impoundment	D84	Gallons or liters
TREATMENT:		
Tank	T01	Gallons per day or liters per day
Surface impoundment	T02	Gallons per day or liters per day
Incinerator	T03	Tons per hour or metric tons per hour; gallons per hour or liters per hour
Other (use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided; Section III-C.)	T04	Gallons per day or liters per day

Unit of Measure	Unit of Measure Code	Unit of Measure	Unit of Measure Code	Unit of Measure	Unit of Measure Code
Gallons	G	Liters Per Day	V	Acre-Feet	A
Liters	L	Tons Per Hour	D	Hectare-Meter	F
Cubic Yards	Y	Metric Tons Per Hour	W	Acres	B
Cubic Meters	C	Gallons Per Hour	E	Hectares	Q
Gallons Per Day	U	Liters Per Hour	H		

III. PROCESS – CODES AND DESIGN CAPACITIES (continued)

Example for Completing Section III (shown in line numbers X-1 and X-2 below): A facility has two storage tanks; one tank can hold 200 gallons and the other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

Line No.	A. Process Code *(from list above)*			B. Process Design Capacity				For Official Use Only			
				1. Amount *(Specify)*	2. Unit of Measure *(enter code)*						
X-1	S	0	2	600		G					
X-2	T	0	3	20		E					
1	X	9	9	24,007		C					
2	* Process Code X99 is being used to designate the PUREX Storage Tunnels as a "Miscellaneous Unit" per WAC 173-303-680.										
3											
4											
5											
6											
7											
8											
9											
10											

C. Space for additional process codes or for describing other process (code "T04"). For each process entered here include design capacity.

X99

The PUREX Storage Tunnels, a miscellaneous unit (X99), are used for storage of mixed waste subject to the requirements of WAC 173-303-680. The two tunnels store waste from the PUREX Plant and other onsite sources. Since being placed into service, mixed waste has been stored in the tunnels on railcars. Not all material stored in the tunnels contains mixed waste.

The construction of Tunnel Number 1 was completed in 1956. The tunnel is approximately 5.8 meters (19 feet) wide by 6.7 meters (22 feet) high by 109 meters (358 feet) long and provides storage space for eight railcars. Between June 1960 and January 1965, all eight railcar positions were filled and the tunnel subsequently was sealed. The combined volume of the equipment stored on the eight railcars presently in Tunnel Number 1 is approximately 596 cubic meters (780 cubic yards). The maximum process design capacity for storage in Tunnel Number 1 is approximately 4,129 cubic meters (5,400 cubic yards).

The construction of Tunnel Number 2 was completed in 1964. Tunnel Number 2 is approximately 5.8 meters (19 feet) wide by 6.7 meters (22 feet) high by 514 meters (1,686 feet) long and provides storage space for 40 railcars. The first railcar was placed in Tunnel Number 2 in December 1967 and as of August 2000, 28 railcars have been placed in the tunnel. The combined volume of equipment stored on the 28 railcars presently in Tunnel Number 2 is approximately 2,204 cubic meters (2,883 cubic yards). The maximum process design capacity for storage in Tunnel Number 2 is approximately 19,878 cubic meters (26,000 cubic yards).

IV. DESCRIPTION OF DANGEROUS WASTES

A. Dangerous Waste Number – Enter the digit number from Chapter 173-303 WAC for each listed dangerous waste you will handle. If you handle dangerous wastes, which are not listed in Chapter 173-303 WAC, enter the four-digit number(s) that describes the characteristics and/or the toxic contaminants of those dangerous wastes.

B. Estimated Annual Quantity - For each listed waste entered in column A, estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in column A, estimate the total annual quantity of all the non-listed waste(s) that will be handled which possess that characteristic or contaminant.

C. Unit of Measure - For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate odes are:

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE
Pounds	P	Kilograms	K
Tons	T	Metric Tons	M

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure taking into account the appropriate density or specific gravity of the waste.

D. Processes

1. Process Codes:

For listed dangerous waste: For each listed dangerous waste entered in column A select the code(s) from the list of process codes contained in Section III to indicate how the waste will be stored, treated, and/or disposed of at the facility.

For non-listed dangerous wastes: For each characteristic or toxic contaminant entered in Column A, select the code(s) from the list of process codes contained in Section III to indicate all the processes that will be used to store, treat, and/or dispose of all the non-listed dangerous wastes that possess that characteristic or toxic contaminant.

Note: Four spaces are provided for entering process codes. If more are needed: (1) Enter the first three as described above; (2) Enter "000" in the extreme right box of item IV-D(1); and (3) Enter in the space provided on page 4, the line number and the additional code(s).

2. Process Description: If a code is not listed for a process that will be used, describe the process in the space provided on the form.

NOTE: DANGEROUS WASTES DESCRIBED BY MORE THAN ONE DANGEROUS WASTE NUMBER - Dangerous wastes that can be described by more than one Waste Number shall be described on the form as follows:

1. Select one of the Dangerous Waste Numbers and enter it in column A. On the same line complete columns B, C, and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.
2. In column A of the next line enter the other Dangerous Waste Number that can be used to describe the waste. In column D(2) on that line enter "Included with above" and make no other entries on that line.
3. Repeat step 2 for each other Dangerous Waste Number that can be used to describe the dangerous waste.

Example for completing Section IV (shown in line numbers X-1, X-2, X-3, and X-4 below) - A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non-listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste.

Line No.	A. Dangerous Waste No. *(enter code)*				B. Estimated Annual Quantity of Waste	C. Unit of Measure *(enter code)*			D. Processes			
									1. Process Codes *(enter)*			2. Process Description *(if a code is not entered in D(1))*
X-1	K	0	5	4	900		P		T03	D80		
X-2	D	0	0	2	400		P		T03	D80		
X-3	D	0	0	1	100		P		T03	D80		
X-4	D	0	0	2					T03	D80		*Included with above*

Photocopy this page before completing if you have more than 26 wastes to list.

I.D. Number *(enter from page 1)*	
W A 7 8 9 0 0 0 8 9 6 7	

IV. DESCRIPTION OF DANGEROUS WASTES *(continued)*

Line No.	A. Dangerous Waste No. *(enter code)*				B. Estimated Annual Quantity of Waste	C. Unit of Measure *(enter code)*			D. Processes				
									1. Process Codes *(enter)*				2. Process Description *(if a code is not entered in D(1))*
1	D	0	0	5	454*		K		X99				Storage - Miscellaneous
2	D	0	0	6	454*								
3	W	T	0	2									
4	D	0	0	7	454*								
5	D	0	0	8	8,000*								
6	D	0	0	9	45*								
7	D	0	1	0	454*								
8	D	0	1	1	680*								
9	D	0	0	1									
10	W	T	0	2	454								Included with above
11	* The estimated annual quantity of waste listed above represents the maximum quantity of waste placed in either tunnel in a given year.												
12													
13													
14													
15													
16													
17													
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45													

IV. DESCRIPTION OF DANGEROUS WASTE (continued)

E. Use this space to list additional process codes from Section D(1) on page 3.

The waste stored in the tunnels could include barium(D005), cadmium (D006), chromium (D007), lead (D008), mercury (D009), selenium (D010), silver (D011), and light mineral oil (WT02, state-only, toxic, dangerous waste) contained in oil absorption material. The silver is predominately in the form of salts and is considered ignitable (D001) because of the presence of silver nitrate ($AgNO_3$). Cadmium also could be considered state-only, toxic, dangerous waste (WT02).

V. FACILITY DRAWING Refer to attached drawing(s).

All existing facilities must include in the space provided on page 5 a scale drawing of the facility (see instructions for more detail).

VI. PHOTOGRAPHS Refer to attached photograph(s).

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).

VII. FACILITY GEOGRAPHIC LOCATION This information is provided on the attached drawings and photos.

LATITUDE *(degrees, minutes, & seconds)*	LONGITUDE *(degrees, minutes, & seconds)*

VIII. FACILITY OWNER

☒ A. If the facility owner is also the facility operator as listed in Section VII on Form 1, "General Information," place an "X" in the box to the left and skip to Section XI below.

B. If the facility owner is not the facility operator as listed in Section VII on Form 1, complete the following items:

1. Name of Facility's Legal Owner	2. Phone Number *(area code & no.)*

3. Street or P.O. Box	4. City or Town	5. St.	6. Zip Code

IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Name *(print or type)*	Signature	Date Signed
John D. Wagoner, Manager U.S. Department of Energy Richland Operations Office	John D. Wagoner	Revision 5 signed 09/26/96

X. OPERATOR CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Name *(Print Or Type)*	Signature	Date Signed
See attachment		

X. OPERATOR CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

John D. Wagoner
Owner/Operator

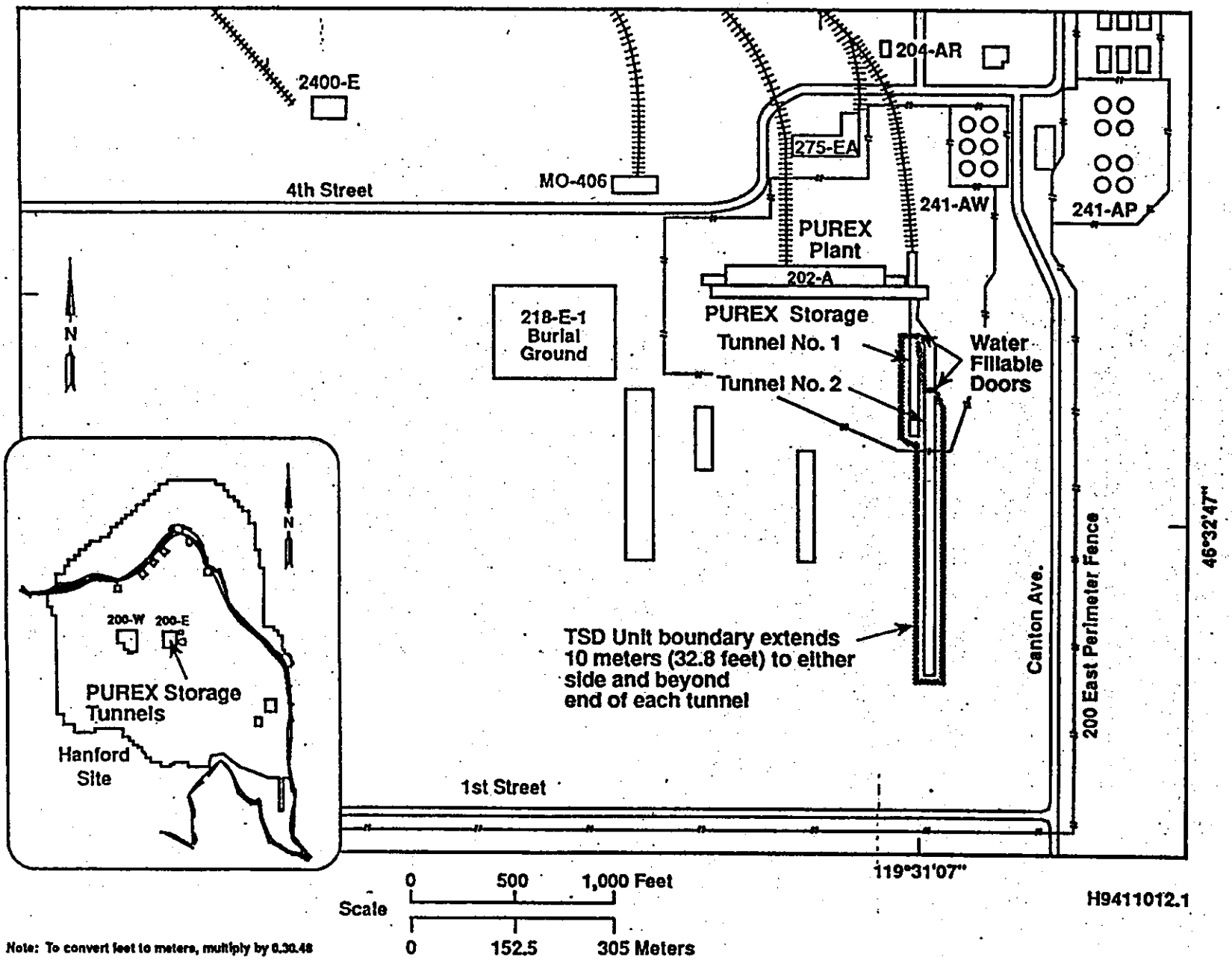
09/26/96
Date Revision 5 Signed

John D. Wagoner, Manager
U.S. Department of Energy
Richland Operations Office

H. J. Hatch
Co-Operator
H. J. Hatch,
President and Chief Executive Officer
Fluor Daniel Hanford, Inc.

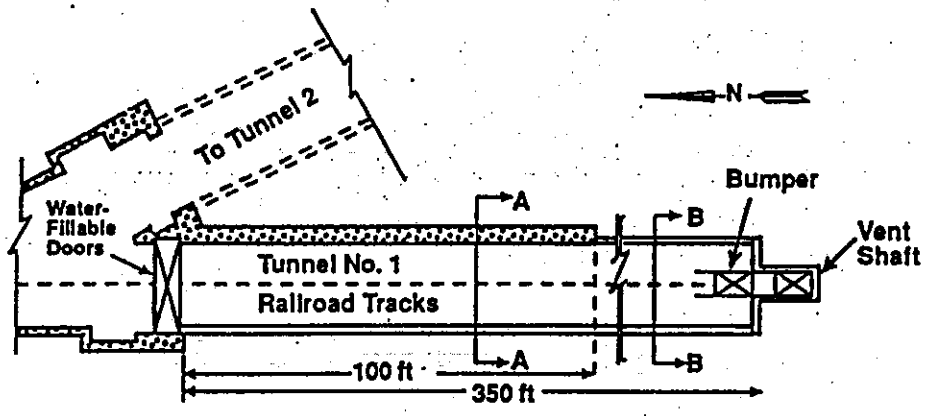
09/13/96
Date Revision 5 Signed

PUREX Storage Tunnels Site Plan

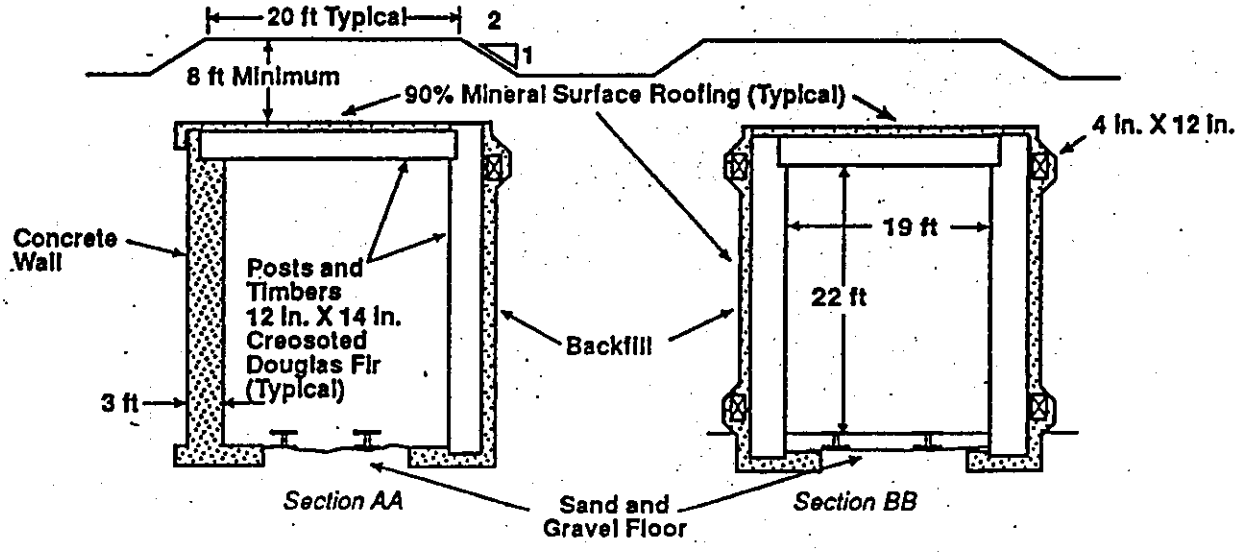


Note: To convert feet to meters, multiply by 0.30.48

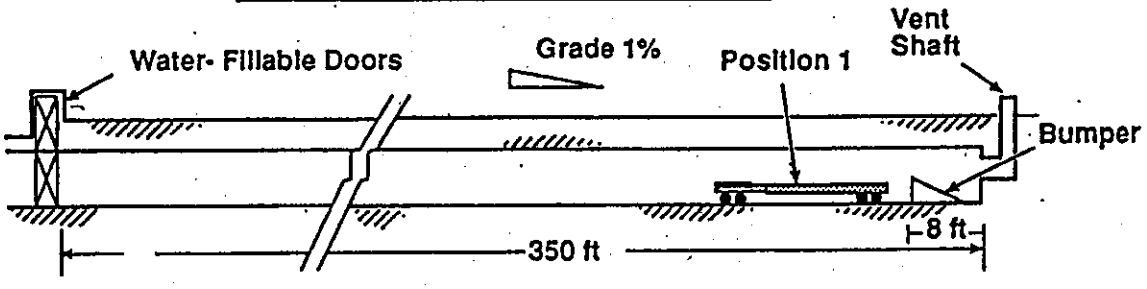
PUREX Tunnel No. 1 - Details



PUREX Tunnel No.1 - Plan View



PUREX Tunnel No.1 - Section View

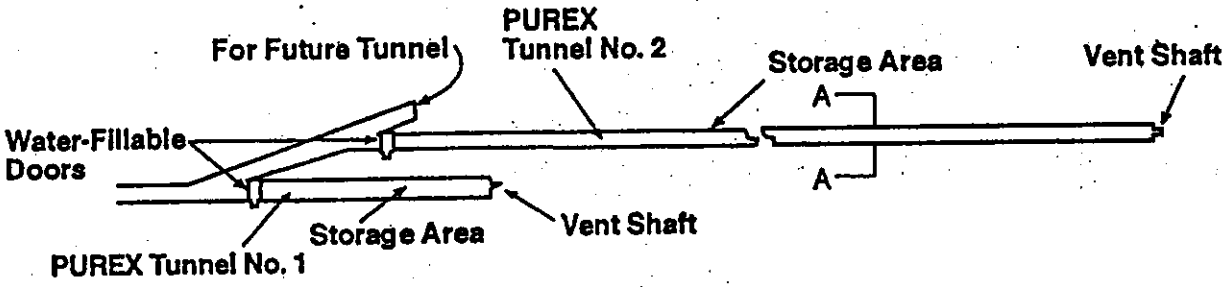


PUREX Tunnel No.1 - Elevation View

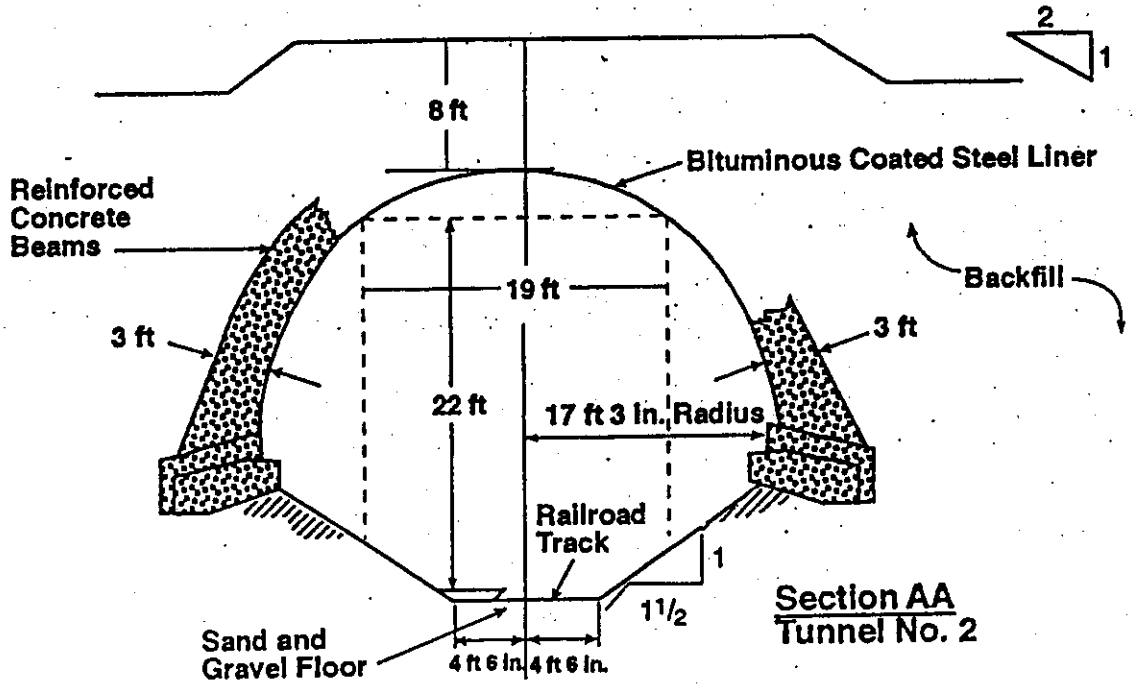
For conversion to meters, multiply feet by 0.3048.
For conversion to centimeters, multiply inches by 2.54.

H96030106.2

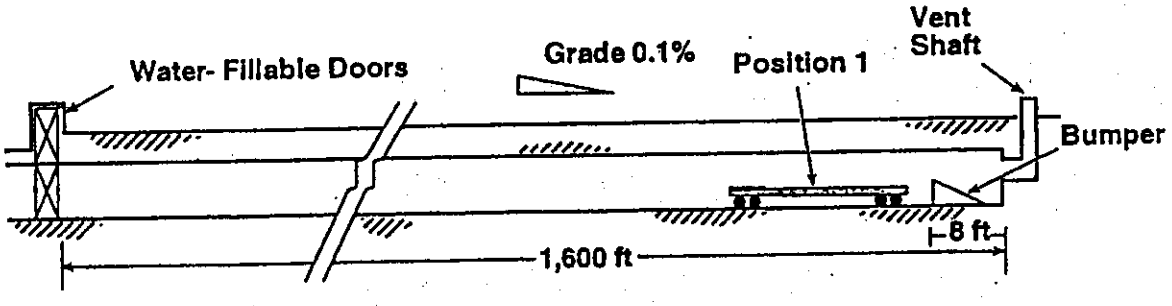
PUREX Tunnel No. 2 - Details



PUREX Tunnels - Plan View



Section AA
Tunnel No. 2

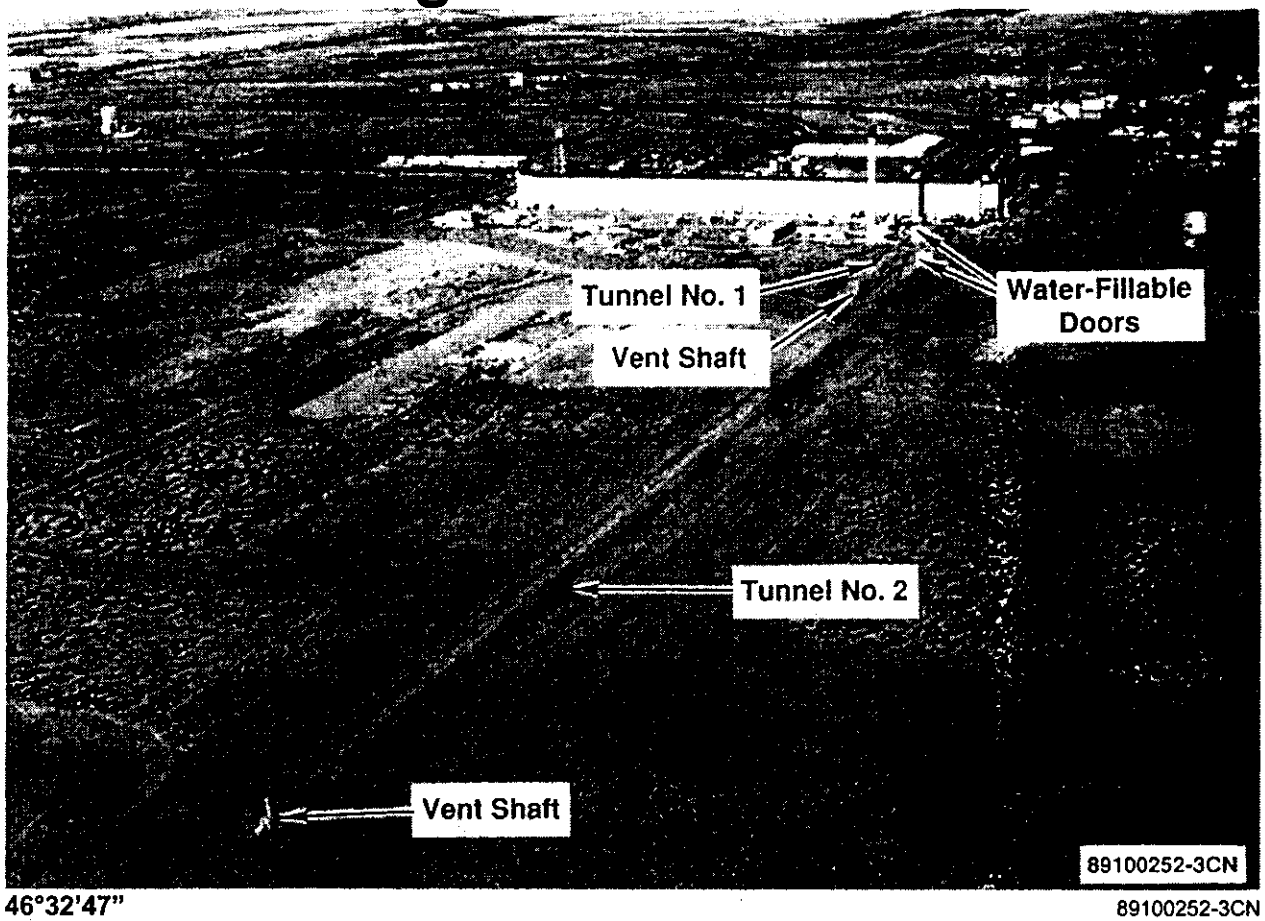


PUREX Tunnel No. 2 - Elevation View

For conversion to meters, multiply feet by 0.3048.
For conversion to centimeters, multiply inches by 2.54.

H96030106.1

PUREX Storage Tunnels



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2.0 UNIT DESCRIPTION

2.1 PUREX STORAGE TUNNELS

The PUREX Storage Tunnels branch off from the railroad tunnel and extend southward from the east end of the PUREX Plant (Figure 2-1). The tunnels are used for storage of mixed waste from the PUREX Plant and from other onsite sources. Each storage tunnel is isolated from the railroad tunnel by a water-fillable shielding door. There are no electrical utilities, water lines, drains, fire detection or suppression systems, radiation monitoring, or communication systems provided inside the PUREX Storage Tunnels.

Material selected for storage is loaded on railcars modified to serve as both transport and storage platforms. Normally, a remote-controlled, battery-powered locomotive was used to position the railcar in the storage tunnel. In the past and possibly in the future, other remote movers, e.g., standard locomotive with a string of railcar spacers, power winch, etc., have or could be used to position a railcar into the tunnel or to withdraw a car from the tunnel. The railcar storage positions are numbered sequentially, commencing with Position 1 that abuts the railstop bumper at the south end of each tunnel. Position 2 is the location of the railcar that abuts the railcar in Position 1 and so forth. The railcars and material remain in the storage tunnel until retrieval is required. Each railcar is retrievable; however, because the railcars are stored on a single, dead-end railroad track, the railcars can be removed only in reverse order (i.e., last in, first out).

Transfers into or out of the PUREX Storage Tunnels were infrequent and were not manpower-intensive operations. A more detailed description of the operation of the PUREX Storage Tunnels is provided in Attachment 28, Chapter 4.0.

2.1.1 Tunnel Number 1 (218-E-14)

Construction of Tunnel Number 1 was completed in 1956 and consists of three areas: the water-fillable door, the storage area, and the vent shaft (Figure 2-3). The water-fillable door is located at the north end of Tunnel Number 1 and separates the storage tunnel from the PUREX railroad tunnel. The door is 7.5 meters high, 6.6 meters wide, and 2.1 meters thick, and is constructed of 1.3 centimeter steel plate. The door is hollow so that the door can be filled with water to act as a radiation shield when the door is in the down (closed) position. If the door is filled with water, the water must be pumped from the door before the door can be raised.

Above the door is a reinforced concrete structure into which the door is raised to open the tunnel. Electric hoists used for opening and closing the door are located on the top of this concrete structure.

Pumps and valves used for filling and draining the door are located in a room northwest of the door closure. Operational controls are located in the PUREX Plant on the north wall at the east end of the pipe and operating gallery.

Beneath the water-fillable door is a sump with a 15.2-centimeter drain that connects to a railroad tunnel sump; water was pumped to the Double-Shell Tank System. The drain was sealed as part of deactivation activities.

The storage area is that portion of the tunnel that extends southward from the water-fillable door. Inside dimensions of Tunnel Number 1 are 109.1 meters long, 6.7 meters high, and 5.9 meters wide. Ceiling and walls are 35.6 centimeters thick and constructed of 30.5- by 35.6-centimeter creosote pressure-treated Douglas fir timbers arranged side by side. The first 30.5 meters of the east wall are constructed of

0.9-meter-thick reinforced concrete (Section AA of Figure 2-3). A 40.8-kilogram- mineral-surface roofing material was used to cover the exterior surface of the timbers before placement of 2.4 meters of earth fill. The earth cover serves as protection from the elements and as radiation shielding. The timbers that form the walls rest on reinforced concrete footings 0.9 meter wide by 0.3 meter thick. The floor consists of a railroad track laid on a gravel bed. The space between the ties is filled to top-of-tie with gravel ballast. The tracks are on a 1.0 percent downward slope to the south to ensure that the railcars remain in their storage position. A railcar bumper is located 2.4 meters from the south end of the tracks to act as a stop. The capacity of the storage area is eight, 12.8-meter-long railcars.

From 1962 through 1980, nine pipe risers were installed through the roof of Tunnel Number 1. Seven of the nine risers were used for wood sampling of the tunnel ceiling timbers. The other two risers were used to obtain air samples and temperature data of the internal environment of the tunnel. Currently, all risers are capped.

The results of the wood strength survey (conducted in 1980) concluded that the wood beams in Tunnel Number 1 were within standards for present day wood. Design calculations performed at the time also found the tunnel to be "within safe limits" (Silvan 1980). Air sampling conducted in Tunnel Number 1 did not identify the presence of any combustible gases and found oxygen levels to be at about 21 percent with carbon dioxide at about 0.3 percent. The reported temperature in Tunnel Number 1 remains consistent at 15.6 °C (Rambosek and Foster 1972).

An independent evaluation of the 1980 data collected by Silvan was conducted in 1991 to further evaluate the structural integrity of PUREX Storage Tunnel Number 1 (Hand and Stevens 1991). This study concluded that any degradation of the treated timbers because of decay or insect attack should be minimal and found that the tunnel timbers structurally should be sound. This study also confirmed the reasonableness of the values used and agreed with the findings of the Silvan study. In addition, the study concluded that the methods used by Silvan to calculate the loss of timber strength were sufficiently conservative to accurately determine the soundness of the timbers. The exposure of the timbers to the high gamma radiation field emitted by the material stored within the tunnel was factored into the evaluation.

A vent shaft is located at the south end of Tunnel Number 1. The shaft is approximately 1.5 meters by 1.5 meters in cross-section and is constructed of reinforced concrete. The vent stack extends approximately 0.3 meter above grade and was capped with a single-stage, high-efficiency particulate air (HEPA) filter, a 283-cubic-meter per minute exhaust fan, and a 6.1-meter tall exhaust stack. After filling Tunnel Number 1 to capacity, the tunnel was sealed. Sealing activities included de-energizing the ventilation system and blanking the ventilation system to prevent interaction of the tunnel air with external air. Deactivation of the vent system is described in Attachment 28, Chapter 4.0, Section 4.1.6.1. A further discussion of the tunnel ventilation system is provided in Attachment 28, Chapter 4.0.

In June 1960, the first two railcars were loaded with a single, approximately 12.5-meter-long, failed separation column and placed in Tunnel Number 1. Between June 1960 and January 1965, six more railcars were placed in Tunnel Number 1, filling the tunnel. After the last car was placed in the northern-most storage position (Position 8), the water-fillable door was closed, filled with water, and deactivated electrically. The Tunnel Number 1 door was drained as part of PUREX Facility transition activities.

2.1.2 Tunnel Number 2 (218-E-15)

Construction of Tunnel Number 2 was started and completed in 1964. Like Tunnel Number 1, Tunnel Number 2 consists of three functional areas: the water-fillable door, the storage area, and the vent shaft. Construction of Tunnel Number 2 differs from that of Tunnel Number 1 as follows.

- A combination of steel and reinforced concrete was used in the construction of the storage area for Tunnel Number 2 (Figure 2-4) rather than wood timbers, as used in Tunnel Number 1.
- Tunnel Number 2 is longer, having a storage capacity of five times that of Tunnel Number 1.
- The floor of Tunnel Number 2, outboard of the railroad ties, slopes upward to a height of approximately 1.8 meters above the railroad bed, whereas the floor in Tunnel Number 1 remains flat all the way out to the sidewalls.
- The railroad tunnel approach to Tunnel Number 2 angles eastward then angles southward to parallel Tunnel Number 1 (Figure 2-1). The approach to Tunnel Number 1 is a straight extension southward from the PUREX Plant. Center-line to center-line distance between the two tunnels is approximately 18.3 meters.

The physical structure of the water-fillable door at the north end of Tunnel Number 2 essentially is identical to the water-fillable door for Tunnel Number 1. The water-fillable door for Tunnel Number 2 is approximately 57.9 meters south and 18.3 meters east of the water-fillable door for Tunnel Number 1 (Figure 2-3).

Controls for operation of the water-fillable door are located above the tunnel on the east exterior wall of the door enclosure (Attachment 28, Chapter 4.0, Figure 4-1). Attachment 28, Chapter 4.0 provides additional operational information on the Tunnel Number 2 water-fillable door. Presently, the door is empty and there are no plans to fill it. Procedures for filling and draining the door are presented in Attachment 28, Chapter 4.0.

The storage area of Tunnel Number 2 is that portion of the tunnel extending southward from the water-fillable door. Construction of this portion of Tunnel Number 2 consists of a 10.4-meter diameter, steel (0.5 centimeter plate), semicircular-shaped roof, supported by internal I-beam wales attached to external, reinforced concrete arches. The concrete arches are 0.4-meter thick and vary in width from 0.4 to 1.8 meters. The arches are spaced on 4.8-meter centers. This semicircular structure is supported on reinforced concrete grade beams approximately 1.8 meters wide by 1.2 meters thick (one on each side) that run the full length of Tunnel Number 2. The interior and exterior surfaces of the steel roof are coated with a bituminous coating compound to inhibit corrosion. The entire storage area is covered with 2.4 meters of earth fill to serve as radiation shielding.

The nominal inside dimensions of Tunnel Number 2 are 514.5 meters long, 7.9 meters high, and 10.4 meters wide. However, because of the arch-shaped cross-section of Tunnel Number 2 and entry clearance at the water-fillable door, the usable storage area (width and height above top-of-rail) is 6.7 meters high and 5.8 meters wide, the same dimensions as for Tunnel Number 1. The floor consists of a railroad track laid on a gravel bed. The space between ties is filled to top-of-tie with gravel ballast. Commencing at the ends of the 2.4-meter-long ties, the earth floor is sloped upward on a 1 (vertical) to 1 1/2 (horizontal) grade. The tracks are on a 1/10 of 1 percent downgrade slope to the south to ensure the railcars remain in their storage position. A railcar bumper is located 2.4 meters from the south end of the tracks to act as a stop. The capacity of the storage area is 40, 12.8-meter-long railcars.

There are 17 tunnel ports located along the ridge of the tunnel roof (for details, refer to Drawing H-2-58195). The ports are on 29.3-meter centers. A 7.6-centimeter diameter bar plug is located in the center of each tunnel port and is secured in place with a length of chain and a padlock. Operations administer access control of these tunnel ports.

The vent shaft, located at the south end of Tunnel Number 2, is approximately 1.5 meters by 1.5 meters in cross-section and is constructed of reinforced concrete. The vent shaft extends approximately 0.3 meter above grade and is capped with an exhaust system consisting of a single-stage, HEPA filter, a 153-cubic meter per minute exhaust fan, and a 6.1-meter-tall exhaust stack. The ventilation system currently is

inactive (Attachment 28, Chapter 4.0, Section 4.6.1.2); however, when operating the exhaust fan normally is dampered to provide only about 100 cubic meters per minute of exhaust flow. A further discussion of the tunnel ventilation system is provided in Attachment 28, Chapter 4.0.

The first railcar was placed in storage in December 1967. Attachment 28, Chapter 3.0, Table 3-1 contains current storage inventory data.

2.2 TOPOGRAPHIC MAP

Topographic map (Drawing H-13-000264), shows the distance of at least 305 meters around the PUREX Storage Tunnels. This map is at a scale of 1-unit equals 2,000 units. The contour interval clearly shows the pattern of surface water flow in the vicinity of each storage tunnel. The map contains the following information:

- Map scale
- Date
- Prevailing wind speed and direction
- A north arrow
- Surrounding land use
- Buildings
- Access road location
- Access control
- Monitoring and sampling well locations
- TSD unit locations.

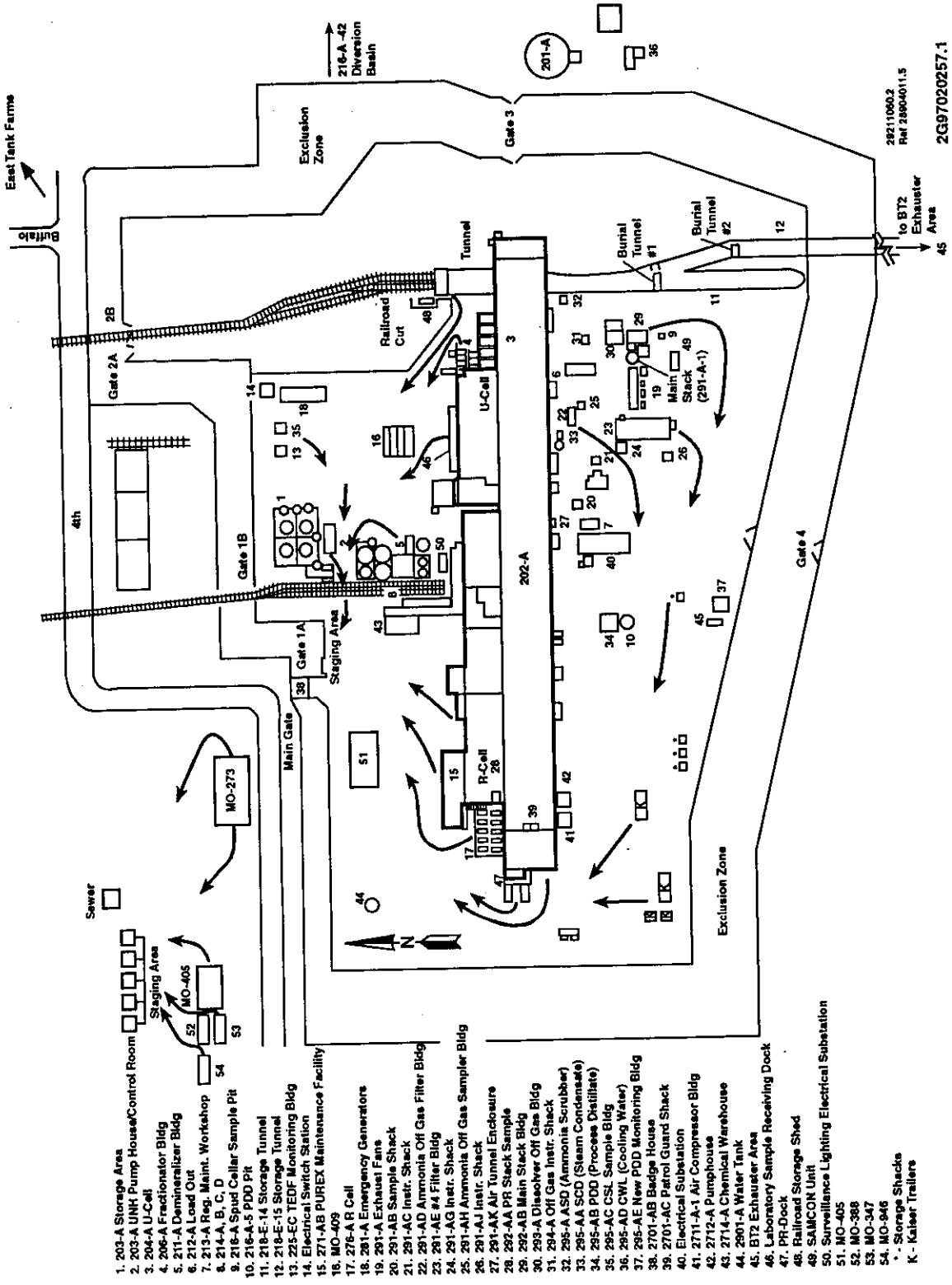

Figure 2-1. The PUREX Facility.