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PART III, OPERATING UNITS
OPERATING UNIT 15 UNIT-SPECIFIC CONDITIONS
331-C Storage Unit

The 331-C Storage Unit is a dangerous waste storage unit located in the 300 Area. The unit is used for the collection, consolidation, packaging, storage, and preparation for transport and disposal of dangerous waste. The waste stored at the 331-C Storage Unit consist of listed waste, waste from nonspecific sources, characteristic waste, and state-only waste derived from research activities and facility operations. This document sets forth the operating conditions for the 331-C Storage Unit.

III.15.A COMPLIANCE WITH PERMIT CONDITIONS

The Permittees shall comply with all requirements set forth in the Hanford Facility Dangerous Waste Permit including all approved modifications. All chapters, subsections, figures, tables, and appendices included in the following unit-specific Permit Conditions are enforceable in their entirety. In the event that the Part III-Unit-Specific Conditions for Operating Unit 15, 331-C Storage Unit conflict with the Part I-Standard Conditions and/or Part II-General Facility Conditions of the Permit, the unit-specific conditions for Operating Unit 15, 331-C Storage Unit prevail.

OPERATING UNIT 15:

- Chapter 1.0 Part A, Dangerous Waste Permit, Revision, dated December 15, 2006
- Chapter 2.0 Unit Description, dated January 2007
- Chapter 3.0 Waste Analysis Plan, dated January 2007
- Chapter 4.0 Process Information, dated January 2007
- Chapter 5.0 Groundwater Monitoring (not applicable)
- Chapter 6.0 Procedures to Prevent Hazards (also refer to Permit Attachment 33, §6.1)
- Chapter 7.0 Contingency Plan, dated January 2007
- Chapter 8.0 Training Plan, dated January 2007
- Chapter 11.0 Closure and Postclosure Requirements, dated January 2007
- Chapter 12.0 Reporting and Recordkeeping (refer to Permit Attachment 33, Table 12.1)

III.15.B UNIT-SPECIFIC CONDITIONS 331-C STORAGE UNIT

III.15.B.1 Portions of Permit Attachment 4 (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.

January 2007

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1	Chapter 1.0	Part A
2	1.0 PART A DANGEROUS WASTE PERMIT.....	1.1

1 **1.0 PART A DANGEROUS WASTE PERMIT**

2 The following is a chronology of the regulatory history of the 331-C Storage Unit.

- 3 • December 15, 2005, submitted original Part A Form to the Washington State Department of
4 Ecology (Ecology) with Part B information and temporary authorization request.
- 5 • A temporary authorization was granted by Ecology on March 16, 2006.



WASHINGTON STATE
 DEPARTMENT OF
 ECOLOGY

**Dangerous Waste Permit Application
 Part A Form**

Date Received	Reviewed by: <i>J. Wallace</i>	Date: 06/15/2006
Month Day Year	Approved by: <i>J.P. Davis</i>	Date: 06/26/2006
12/15/2005	Please refer to instructions for completing this form.	

I. This form is submitted to: (place an "X" in the appropriate box)

- Request modification to a final status permit (commonly called a "Part B" permit)
 - Request a change under interim status
 - Apply for a final status permit. This includes the application for the initial final status permit for a site or for a permit renewal (i.e., a new permit to replace an expiring permit).
 - Establish interim status because of the wastes newly regulated on: _____ (Date)
- List waste codes: _____

II. EPA/State ID Number

WA 7890008967

III. Name of Facility

US Department of Energy – Hanford Facility

IV. Facility Location (Physical address not P.O. Box or Route Number)

A. Street

825 Jadwin

City or Town	State	ZIP Code
Richland	WA	99352
County Code (if known)	County Name	
005	Benton	

B. Land Type	C. Geographic Location		D. Facility Existence Date		
	Latitude (degrees, mins, secs)	Longitude (degrees, mins, secs)	Month	Day	Year
F	S E E T O P O	M A P	03	22	1943

V. Facility Mailing Address

Street or P.O. Box

P.O. Box 550

City or Town	State	ZIP Code
Richland	WA	99352

VI. Facility contact (Person to be contacted regarding waste activities at facility)											
Name (last)						(first)					
Klein						Keith					
Job Title						Phone Number (area code and number)					
Manager						(509) 376-7395*					
Contact Address											
Street or P.O. Box											
P.O. Box 550											
City or Town						State			ZIP Code		
Richland						WA			99352		
VII. Facility Operator Information											
A. Name						Phone Number (area code and number)					
Department of Energy* Owner/Operator Pacific Northwest National Laboratory** Co-Operator for 331-C Storage Unit						(509) 376-7395* (509) 376-1187**					
Street or P.O. Box											
P.O. Box 550* P.O. Box 999**											
City or Town						State			ZIP Code		
Richland						WA			99352		
B. Operator Type		F									
C. Does the name in VII.A reflect a proposed change in operator?						<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					
If yes, provide the scheduled date for the change:						Month		Day		Year	
D. Is the name listed in VII.A. also the owner? If yes, skip to Section VIII.C.								<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
VIII. Facility Owner Information											
A. Name						Phone Number (area code and number)					
Keith A. Klein, Operator/Facility-Property Owner						(509) 376-7395*					
Street or P.O. Box											
P.O. Box 550											
City or Town						State			ZIP Code		
Richland						WA			99352		
B. Operator Type		F									
C. Does the name in VII.A reflect a proposed change in operator?						<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					
If yes, provide the scheduled date for the change:						Month		Day		Year	
IX. NAICS Codes (5/6 digit codes)											
A. First						B. Second					
5	4	1	7	1	0	9	9	9	9	9	9
Research & Development in the Physical, Engineering, & Life Sciences						Unclassified Establishments					
C. Third						D. Fourth					

X. Other Environmental Permits (see instructions)														
A. Permit Type		B. Permit Number											C. Description	
E		A	I	R	0	2	-	1	2	0	2			WAC 246-247, Non radioactive Air, 40 CFR 61, Subpart H, NESHAPS
E		D	E	9	8	N	W	P	-	0	0	3		WAC 173-400, General Regulations for Air Pollution Sources WAC 173-460, Controls for New Sources of Toxic Air Pollutants

XI. Nature of Business (provide a brief description that includes both dangerous waste and non-dangerous waste areas and activities)

Pacific Northwest National Laboratory (PNNL) is one of nine Department of Energy (DOE) multiprogram national laboratories and is managed by DOE's Office of Science (SC). PNNL program areas include fundamental science, environmental technology, computational and information sciences, national security, and energy science and technology along with the programs of the Environmental Molecular Sciences Laboratory.

The 331-C Storage Unit is a dangerous waste storage unit owned and operated by DOE's Richland Operations Office (RL) and co-operated by PNNL. The unit is used for the collection, consolidation, packaging, storage, and preparation for transport and disposal of dangerous waste. It is an integral part of PNNL's waste management system.

Dangerous waste is managed in segregated cells, cabinets, and other areas as described in the Part B permit application. The waste stored at the 331-C Storage Unit consists of listed waste, waste from nonspecific sources, characteristic waste, and state-only waste derived from research activities and facility operations.

EXAMPLE FOR COMPLETING ITEMS XII and XIII (shown in lines numbered X-1, X-2, and X-3 below): A facility has two storage tanks that hold 1200 gallons and 400 gallons respectively. There is also treatment in tanks at 20 gallons/hr. Finally, a one-quarter acre area that is two meters deep will undergo *in situ* vitrification.

Section XII. Process Codes and Design Capacities							Section XIII. Other Process Codes							
Line Number	A. Process Codes (enter code)			B. Process Design Capacity		C. Process Total Number of Units	Line Number	A. Process Codes (enter code)			B. Process Design Capacity		C. Process Total Number of Units	D. Process Description
				1. Amount	2. Unit of Measure (enter code)						1. Amount	2. Unit of Measure (enter code)		
X 1	S	0	2	1,600	G	002	X 1	T	0	4	700	C	001	In situ vitrification
X 2	T	0	3	20	E	001								
X 3	T	0	4	700	C	001								
1	S	0	1	20,000	G	001	1							
2							2							
3							3							
4							4							
5							5							
6							6							
7							7							
8							8							
9							9							
1 0							1 0							
1 1							1 1							
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1 6							1 6							
1 7							1 7							
1 8							1 8							
1 9							1 9							
2 0							2 0							
2 1							2 1							
2 2							2 2							
2 3							2 3							
2 4							2 4							
2 5							2 5							

EPA/State ID Number	W	A	7	8	9	0	0	0	8	9	6	7
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Continuation of Section XIV. Description of Dangerous Waste

Line Number	A. Dangerous Waste No. (enter code)			B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	D. Process								
						(1) Process Codes (enter)				(2) Process Description [If a code is not entered in D (1)]				
1	9	6	U 0 2 4	200	K	S	0	1						Includes Debris
1	9	7	U 0 2 5	200	K	S	0	1						Includes Debris
1	9	8	U 0 2 6	200	K	S	0	1						Includes Debris
1	9	9	U 0 2 7	200	K	S	0	1						Includes Debris
2	0	0	U 0 2 8	200	K	S	0	1						Includes Debris
2	0	1	U 0 2 9	200	K	S	0	1						Includes Debris
2	0	2	U 0 3 0	200	K	S	0	1						Includes Debris
2	0	3	U 0 3 1	200	K	S	0	1						Includes Debris
2	0	4	U 0 3 2	200	K	S	0	1						Includes Debris
2	0	5	U 0 3 3	200	K	S	0	1						Includes Debris
2	0	6	U 0 3 4	200	K	S	0	1						Includes Debris
2	0	7	U 0 3 5	200	K	S	0	1						Includes Debris
2	0	8	U 0 3 6	200	K	S	0	1						Includes Debris
2	0	9	U 0 3 7	200	K	S	0	1						Includes Debris
2	1	0	U 0 3 8	200	K	S	0	1						Includes Debris
2	1	1	U 0 3 9	200	K	S	0	1						Includes Debris
2	1	2	U 0 4 1	200	K	S	0	1						Includes Debris
2	1	3	U 0 4 2	200	K	S	0	1						Includes Debris
2	1	4	U 0 4 3	200	K	S	0	1						Includes Debris
2	1	5	U 0 4 4	200	K	S	0	1						Includes Debris
2	1	6	U 0 4 5	200	K	S	0	1						Includes Debris
2	1	7	U 0 4 6	200	K	S	0	1						Includes Debris
2	1	8	U 0 4 7	200	K	S	0	1						Includes Debris
2	1	9	U 0 4 8	200	K	S	0	1						Includes Debris
2	2	0	U 0 4 9	200	K	S	0	1						Includes Debris
2	2	1	U 0 5 0	200	K	S	0	1						Includes Debris
2	2	2	U 0 5 1	200	K	S	0	1						Includes Debris
2	2	3	U 0 5 2	200	K	S	0	1						Includes Debris
2	2	4	U 0 5 3	200	K	S	0	1						Includes Debris
2	2	5	U 0 5 5	200	K	S	0	1						Includes Debris
2	2	6	U 0 5 6	200	K	S	0	1						Includes Debris
2	2	7	U 0 5 7	200	K	S	0	1						Includes Debris
2	2	8	U 0 5 8	200	K	S	0	1						Includes Debris
2	2	9	U 0 5 9	200	K	S	0	1						Includes Debris

EPA/State ID Number	W	A	7	8	9	0	0	0	8	9	6	7
---------------------	---	---	---	---	---	---	---	---	---	---	---	---

Continuation of Section XIV. Description of Dangerous Waste

Line Number	A. Dangerous Waste No. (enter code)						B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	D. Process														
									(1) Process Codes (enter)					(2) Process Description [If a code is not entered in D (1)]									
2	6	4	U	0	9	6	200	K	S	0	1												Storage-Container
2	6	5	U	0	9	7	200	K	S	0	1												Includes Debris
2	6	6	U	0	9	8	200	K	S	0	1												Includes Debris
2	6	7	U	0	9	9	200	K	S	0	1												Includes Debris
2	6	8	U	1	0	1	200	K	S	0	1												Includes Debris
2	6	9	U	1	0	2	200	K	S	0	1												Includes Debris
2	7	0	U	1	0	3	200	K	S	0	1												Includes Debris
2	7	1	U	1	0	5	200	K	S	0	1												Includes Debris
2	7	2	U	1	0	6	200	K	S	0	1												Includes Debris
2	7	3	U	1	0	7	200	K	S	0	1												Includes Debris
2	7	4	U	1	0	8	200	K	S	0	1												Includes Debris
2	7	5	U	1	0	9	200	K	S	0	1												Includes Debris
2	7	6	U	1	1	0	200	K	S	0	1												Includes Debris
2	7	7	U	1	1	1	200	K	S	0	1												Includes Debris
2	7	8	U	1	1	2	200	K	S	0	1												Includes Debris
2	7	9	U	1	1	3	200	K	S	0	1												Includes Debris
2	8	0	U	1	1	4	200	K	S	0	1												Includes Debris
2	8	1	U	1	1	5	200	K	S	0	1												Includes Debris
2	8	2	U	1	1	6	200	K	S	0	1												Includes Debris
2	8	3	U	1	1	7	200	K	S	0	1												Includes Debris
2	8	4	U	1	1	8	200	K	S	0	1												Includes Debris
2	8	5	U	1	1	9	200	K	S	0	1												Includes Debris
2	8	6	U	1	2	0	200	K	S	0	1												Includes Debris
2	8	7	U	1	2	1	200	K	S	0	1												Includes Debris
2	8	8	U	1	2	2	200	K	S	0	1												Includes Debris
2	8	9	U	1	2	3	200	K	S	0	1												Includes Debris
2	9	0	U	1	2	4	200	K	S	0	1												Includes Debris
2	9	1	U	1	2	5	200	K	S	0	1												Includes Debris
2	9	2	U	1	2	6	200	K	S	0	1												Includes Debris
2	9	3	U	1	2	7	200	K	S	0	1												Includes Debris
2	9	4	U	1	2	8	200	K	S	0	1												Includes Debris
2	9	5	U	1	2	9	200	K	S	0	1												Includes Debris
2	9	6	U	1	3	0	200	K	S	0	1												Includes Debris
2	9	7	U	1	3	1	200	K	S	0	1												Includes Debris

XV. Map

Attach to this application a topographic map of the area extending to at least one (1) mile beyond property boundaries. The map must show the outline of the facility; the location of each of its existing and proposed intake and discharge structures; each of its dangerous waste treatment, storage, recycling, or disposal units; and each well where fluids are injected underground. Include all springs, rivers, and other surface water bodies in this map area, plus drinking water wells listed in public records or otherwise known to the applicant within ¼ mile of the facility property boundary. The instructions provide additional information on meeting these requirements.

XVI. Facility Drawing

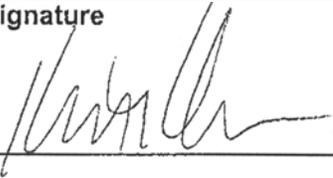
All existing facilities must include a scale drawing of the facility (refer to Instructions for more detail).

XVII. Photographs

All existing facilities must include photographs (aerial or ground-level) that clearly delineate all existing structures; existing storage, treatment, recycling, and disposal areas; and sites of future storage, treatment, recycling, or disposal areas (refer to Instructions for more detail).

XVIII. Certifications

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.

<p>Operator* Name and Official Title (type or print) Keith A. Klein, Manager U.S. Department of Energy Richland Operations Office</p>	<p>Signature </p>	<p>Date Signed 12/15/05</p>
<p>Co-Operator** Name and Official Title (type or print) Roby D. Enge, Director Environment, Safety, Health and Quality Pacific Northwest National Laboratory</p>	<p>Signature </p>	<p>Date Signed 11/30/05</p>
<p>Co-Operator** – Address and Telephone Number 3350 George Washington Way P.O. Box 999 Richland, WA 99352 (509) 376-1187</p>		
<p>Facility-Property Owner* Name and Official Title (type or print) Keith A. Klein, Manager U.S. Department of Energy Richland Operations Office</p>	<p>Signature </p>	<p>Date Signed 12/15/05</p>

Comments

331-C Storage Unit



331-C Front

Photo Taken 2005



331-C East Side

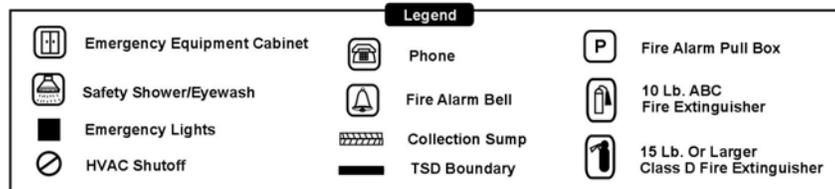
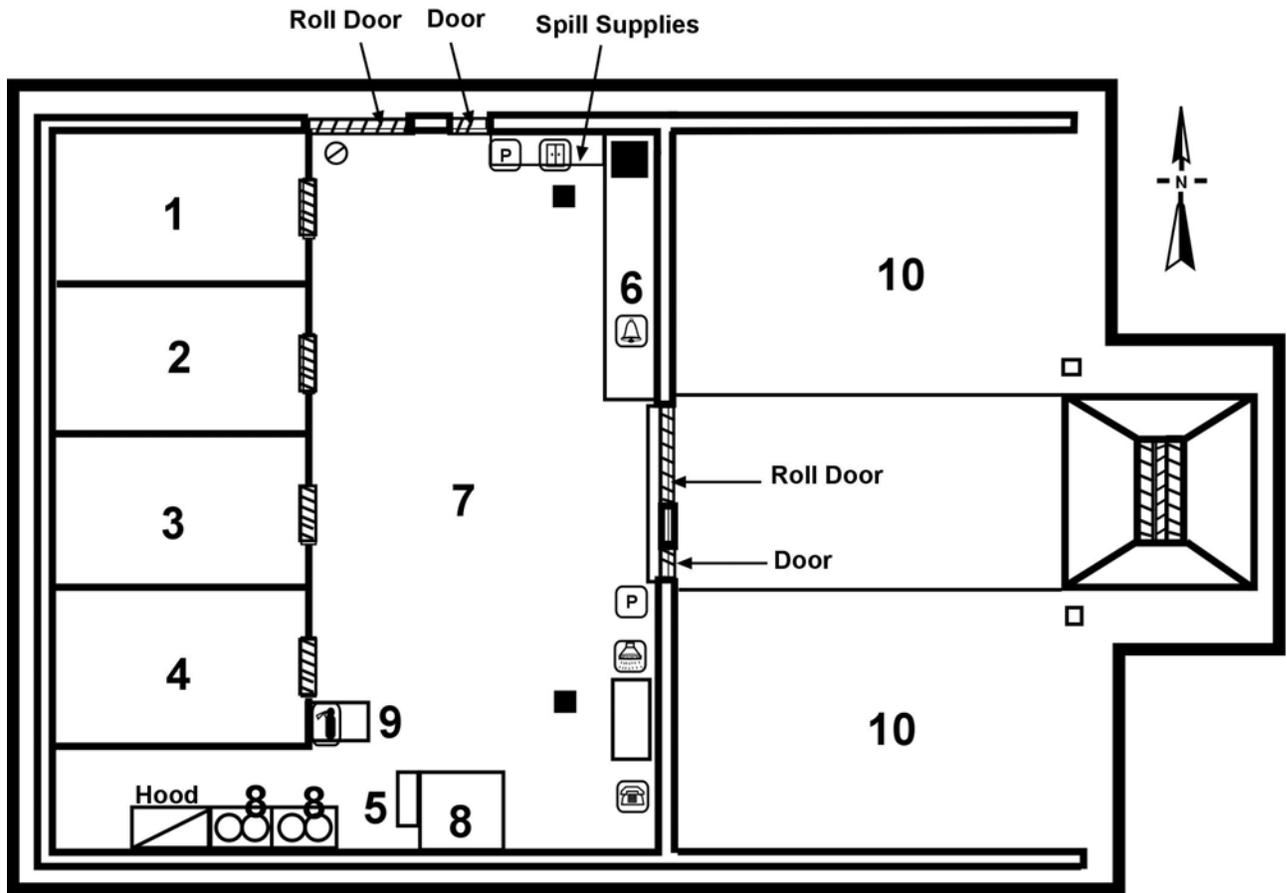
Photo Taken 2005



331-C Inside

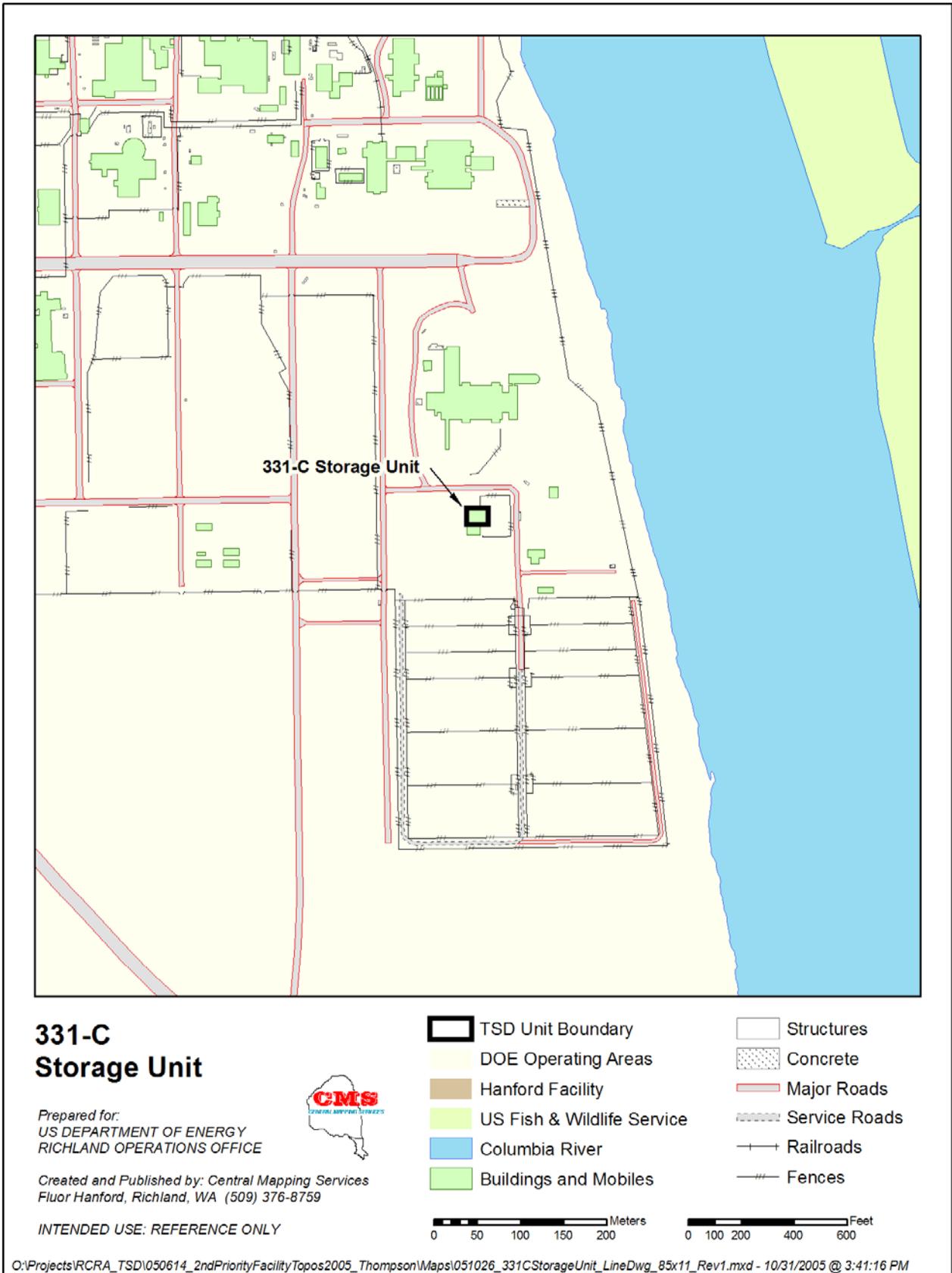
Photo Taken 2005

331-C Storage Unit



Legend

1. Acids, Oxidizers
2. Poisons, Class 9
3. Alkaline, WSDW, Organic Peroxides
4. Organics Flammable and Compressed Aerosols
5. Compressed gases
6. Universal/Recycling Storage Area
7. Class 9, WSDW, Non-flammable and Compatible Waste
8. Flammable Storage
9. Explosive Magazine
10. Outdoor Non-regulated Drum Storage



1	Chapter 2.0	Unit Description and General Provisions	
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10	2.3.2	Measures to Prevent Degradation of Air Quality by Open Burning or Other Activities	2.2
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23	2.4	BUFFER MONITORING ZONES.....	2.5
24	2.4.1	Ignitable or Reactive Waste Buffer Zone	2.5
25	2.4.2	Reactive Waste Buffer Zone.....	2.5
26			

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1 **2.3 PERFORMANCE STANDARD**

2 The 331-C Storage Unit was designed to minimize the exposure of personnel to dangerous wastes and
3 hazardous substances and to prevent dangerous wastes and hazardous substances from reaching the
4 environment.

5 In addition, measures are taken to confirm that 331-C Storage Unit is maintained and operated, to
6 the maximum extent practicable given the limits of technology, in a manner that prevents:

- 7 • Degradation of groundwater quality
- 8 • Degradation of air quality by open burning or other activities
- 9 • Degradation of surface water quality
- 10 • Destruction or impairment of flora or fauna outside of the unit
- 11 • Excessive noise
- 12 • Negative aesthetic impacts
- 13 • Unstable hillsides or soils
- 14 • Use of processes that do not treat, detoxify, recycle, reclaim, and recover waste material to
15 the extent economically feasible
- 16 • Endangerment to the health of employees or the public near the unit.

17 The measures taken to prevent each of the above negative effects from occurring are described in the
18 following sections.

19 **2.3.1 Measures to Prevent Degradation of Groundwater Quality**

20 Degradation of groundwater quality is prevented by storing waste containers within an enclosed building
21 with a sealed concrete floor. All drains and sumps in areas where wastes are stored are blocked to prevent
22 release of spilled material to the environment. The 331-C Storage Unit accepts only those packages
23 meeting applicable DOT requirements. Opening of containers is done only in areas with spill
24 containment. Design and administrative controls significantly reduce the possibility of release of
25 dangerous waste to the environment through soil or groundwater contamination.

26 **2.3.2 Measures to Prevent Degradation of Air Quality by Open Burning or Other Activities**

27 No open burning occurs at the 331-C Storage Unit. There is no vegetation around the 331-C Storage
28 Unit, and the area around the unit is paved or graveled, thereby reducing the risk of fire or wind erosion.
29 Combustible and flammable waste is packaged in a manner that reduces the potential for fire and stored in
30 fireproof cabinets unless staged for shipment.

31 **2.3.3 Measures to Prevent Degradation of Surface Water Quality**

32 The potential for degradation of surface water quality is extremely low, due to the manner in which the
33 Unit is designed and operated. All waste handling activities (i.e., loading/unloading, container opening,
34 waste transfer) presenting the opportunity for spills are conducted inside the unit. All exits from storage
35 areas of the 331-C Storage Unit are equipped with spill collection sumps to prevent spilled material from
36 escaping. The Unit is 500 feet from, and has no pipes to the Columbia River.

1 2.3.4 Measures to Prevent Destruction of Impairment of Flora or Fauna Outside of the Unit

2 The 331-C Storage Unit is located in the southern portion the 300 Area. The 300 Area is highly
3 developed, and areas not occupied by buildings are generally paved or graveled. As a result, flora or
4 fauna are generally absent within the 300 Area except for several grassed areas. Measures to prevent
5 destruction or impairment of flora or fauna outside the 300 Area are the same as those to prevent releases
6 from the unit (i.e., all waste handling is performed within an enclosed area having spill collection sumps).

7 2.3.5 Measures to Prevent Excessive Noise

8 During normal operations at the 331-C Storage Unit, excessive noise is not generated. The major sources
9 of noise are waste transport and handling equipment (e.g., forklifts, light vehicles). The noise generated
10 at the 331-C Storage Unit is compatible with the types of activities generated at neighboring facilities in
11 the 300 Area.

12 2.3.6 Measures to Prevent Negative Aesthetic Impacts

13 The 331-C Storage Unit does not injure or destroy the surrounding flora and fauna. The Unit stores waste
14 in approved containers within the confines of the structure. The building's appearance is similar to
15 neighboring facilities. For these reasons, the unit presents no negative aesthetic impacts.

16 2.3.7 Measures to Prevent Unstable Hillsides or Soils

17 There are no naturally unstable hillsides near the 331-C Storage Unit. The soil beneath and around the
18 unit was compacted prior to construction.

**19 2.3.8 Measures to Prevent the Use of Processes That Do Not Treat, Detoxify, Recycle, Reclaim,
20 and Recover Waste Material to the Extent Economically Feasible**

21 The 331-C Storage Unit was established, in part, to enhance DOE's and PNNL's efforts to eliminate or
22 minimize dangerous waste generation, and to treat, detoxify, recycle, reclaim, and recover waste
23 materials.

24 Offsite waste management options for dangerous wastes being shipped from the 331-C Storage Unit are
25 evaluated according to the following order of preference:

- 26 1. Recycling, including solvent reprocessing, oil recycling, metals recovery, burning for energy
27 recovery, etc.
- 28 2. Treatment, including incineration, volume and/or toxicity reduction, chemical destruction, etc.
- 29 3. Land disposal is viewed as the least favored option and is generally only used for treatment residues,
30 spill cleanup residues, or when treatment is not feasible.

31 When permitted by law and/or contractual obligations, the 331-C Storage Unit staff tries to use this
32 hierarchy without regard to minor variations in cost, e.g., if recycling is available but slightly more
33 expensive than land disposal, recycling is utilized.

34 2.3.9 Measures to Prevent Endangerment to the Health of Employees or the Public Near the Unit

35 The 331-C Storage Unit is within the southern portion of the 300 Area, which is located approximately
36 1 mile north of the corporate limits of the City of Richland. Public entry to the 300 Area is not allowed;
37 members of the public, therefore, cannot enter the 331-C Storage Unit. Exposure of members of the

1 public or employees to dangerous and mixed waste constituents is prevented through administrative
2 controls over the designation, packaging, loading, transporting, and storing of the wastes received at the
3 331-C Storage Unit. In addition, physical controls exist (e.g., spill collection sumps) to prevent release of
4 wastes or waste constituents in the event of a spill.

5 Employees are trained to handle and store waste packages (Chapter 8.0). The training includes dangerous
6 waste awareness, emergency response, and workplace safety. Protective equipment, safety data, and
7 hazardous materials information are supplied by operations management and are readily available for
8 employee use.

9 A contingency plan, including emergency response procedures, is in place and is implemented for spill
10 prevention, containment, and countermeasures to reduce safety and health hazards to employees, the
11 environment, and the public. The contingency plan is described in Chapter 7.0.

12 **2.3.10 Seismic Considerations**

13 The 331-C Storage Unit was constructed according to the Uniform Building Code, 1976 edition. Zone
14 2B was used for the Seismic Design and the load determinations. Currently the governing Code is the
15 2003 International Building Code. Section 3403 addresses Additions, Alterations or Repairs and section
16 3403.2 addresses the structural implications of an alteration, which is what was used during the building
17 modification process. The International Building Code requires that alterations shall not increase the
18 force on any element of an existing structure by more than 5% and if so, the element must be in
19 compliance with Code (2003 IBC). Also, the strength of any element of the existing structure shall not be
20 decreased unless it is shown to be in compliance with Code (2003 IBC). During the 331-C Storage Unit
21 modification process that was completed in February of 2006, the shear bracing was revised from the
22 center bay area, and both adjacent bays. This additional bracing nearly doubles the shear capacity of the
23 wall. No additional mass or external load was added to the building, so there was no negative affect to
24 the structure with respect to any condition, seismic included. Since there was no affected change to the
25 loading conditions or reduced structural capacity of the building, compliance with the 1976 Uniform
26 Building Code is considered compliant with the 2003 Uniform Building Code.

27 **2.3.11 Traffic Information**

28 The DOE-controlled Hanford Site is traversed by numerous primary and secondary roads. The DOE
29 roadways inside the site, except for Routes 4S and 10 south of the Wye Barricade, are restricted to
30 authorized personnel and cannot be accessed by the general public. The majority of the site traffic
31 consists of light duty vehicles. The primary routes are constructed of bituminous asphalt with an
32 underlying aggregate base in accordance with the U.S. Department of Transportation requirements. The
33 secondary routes are constructed of layers of an oil and rock mixture with an underlying aggregate base.
34 Currently, no load bearing capacities of these roads are available; however, loads are large as 140 pounds
35 per square inch have been transported without observed damage to road surfaces.

36 Wastes generated at other onsite facilities outside the 300 area are transported over Government
37 maintained roads. These roads are accessible to the general public only south of the Wye Barricade. In
38 addition, waste shipments from the 331-C storage Unit to offsite treatment, disposal or recycling facilities
39 are shipped over public accessible roads enroute to the consignee.

40 The loading/unloading areas at the 331-C Storage Unit are constructed of 8" thick reinforced 3000 psi
41 concrete with #4 rebar set 12" on center each way. Heavy duty steel grating was installed over the
42 containment sump with a uniform safe loading of 4,744 psf.

1 **2.4 BUFFER MONITORING ZONES**

2 Buffer and monitoring zones around the 331-C Storage Unit are described in the following sections.

3 **2.4.1 Ignitable or Reactive Waste Buffer Zone**

4 Ignitable and reactive wastes are stored in the 331-C Storage Unit in compliance with the requirements of
5 the 1988 Uniform Fire Code, Article 79, Division II (International Conference of Building
6 Officials 1991). Quantity limits for storage are established to comply with requirements for Class B
7 occupancy. Structures surrounding the 331-C Storage Unit are laboratory and office buildings, which are
8 occupied during normal working hours. The nearest adjacent facility is the 331 Building, which is
9 approximately 350 ft north of the 331-C Storage Unit. The closest 300 Area boundary is to the east fence,
10 which is approximately 450 ft east of the 331-C Storage Unit.

11 **2.4.2 Reactive Waste Buffer Zone**

12 Storage of certain reactive wastes listed in WAC 173-303-630(8)(a) occurs at the 331-C Storage Unit.
13 These wastes have special storage requirements more stringent than those shown in Section 2.4.1. They
14 are stored in accordance with this section and with the Uniform Building Code's Table 77.201, latest
15 edition. The 1988 edition requires buffer zones in Class B occupancies of 44 inches for storage of such
16 wastes, and the storage locations in the 331-C Storage Unit reflecting appropriate buffer zones are noted
17 in Chapter 4.0. These wastes are only occasionally stored at the unit, depending on generation by
18 individual research projects.

19 The occupancy storage limitations imposed by UBC for Class B occupancy are as follows:

- 20 • Explosives: 1 lb
- 21 • Organic Peroxide, unclassified, detonatable: 1 lb
- 22 • Pyrophoric: 4 lbs
- 23 • Unstable (reactive), Class 4: 1 lb.

24 These limits are allowed to be doubled when stored in flammable storage cabinets, as is done at the
25 331-C Storage Unit; hence, the practical storage limits at the 331-C Storage Unit are double those shown
26 here.

27

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- 1 Drums are never carried on the forks or "speared" by slipping the forks under the chime. When waste
2 handling operations are conducted, at least two persons are present in the unit.
- 3 Lab Packing. One of the major functions of the 331-C Storage Unit is the preparation of lab packs for
4 offsite recycling, treatment and/or disposal of small quantity lab waste generated by DOE-RL/PNNL
5 activities.
- 6 Lab packs are prepared in compliance with WAC 173-303-161, 49 CFR 173.12, other applicable
7 regulations, and requirements of the planned receiving facility (recycler, treatment facility, or disposal
8 facility). Requirements affecting preparation of lab packs might include types of absorbent materials to
9 be used (e.g., no vermiculite).
- 10 Lab packs are prepared in the bay area or in the storage cell containing the hazard class(es) to be placed in
11 the lab pack.
- 12 Partial and completed lab packs are closed, labeled, and the contents list documented. Lab packs are
13 stored in the cell from which the containers inside were drawn, or in the bay area if appropriate.
- 14 Unit personnel wear appropriate protective clothing while handling containers being placed in lab packs.
15 At a minimum this includes lab coats or long sleeved shirt, long pants, safety glasses or other protective
16 eyewear, and chemical resistant gloves. More stringent requirements, including use of respiratory
17 protection, may be imposed if appropriate.
- 18 Bulking. In order to promote greater recycling or treatment of waste and reduce land disposal, some
19 liquid wastes are "bulked" into larger containers, typically 30- or 55-gallon closed head drums. Bulking
20 is the commingling of small containers of compatible waste into one container. Appropriate respiratory
21 protection will be used when the bulking of flammable liquids or toxics is performed. Bulking of
22 nonvolatile, low hazard waste such as saline solutions or ethylene glycol may be done within the
23 containment areas of the appropriate storage cell or bay area.
- 24 Compatibility of waste to be bulked is determined using the information from generating unit designation
25 information, process knowledge, laboratory analyses, and/or by compatibility determinations.
- 26 Glass containers emptied (as defined by WAC 173-303-160(2)) as a result of bulking activities are
27 usually crushed onsite by an electric glass crusher, which mounts on a 55-gallon drum or managed as
28 solid waste in accordance with WAC 173-303-160(3). If an emptied glass container held acutely
29 hazardous waste, as defined by WAC 173-303-040(2), the container is rinsed at least three times with an
30 appropriate cleaner or solvent before being destroyed. The rinsates are managed as dangerous waste.
- 31 Once bulking is complete, the bulk container is closed, labeled, and the contents list documented.
32 Containers of bulked waste are stored in the cell from which the containers inside were drawn, or in Cell
33 7 if appropriate. If incompatible wastes are stored in Cell 7, they are kept in individual secondary
34 containment systems if in bulk drum form.
- 35 Unit personnel wear appropriate protective clothing while bulking containerized liquid waste. At a
36 minimum, this includes coveralls, or long sleeved shirt, long pants, disposable splash-resistant apron, eye
37 protection, and chemical resistant gloves. More stringent requirements, including use of respiratory
38 protection, may be imposed if appropriate.

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1 **4.1.3 Container Labeling**

2 As required by WAC 173-303-630, all containers of dangerous waste are marked and/or labeled to
3 describe the contents of the container and the major hazards of the waste. Containers are also marked
4 with a unique identifying number assigned by the unit's computerized waste tracking system.

5 **4.1.4 Containment Requirements for Storing Containers**

6 **4.1.4.1 Secondary Containment System Design**

7 Several design features have been engineered into the construction of the 331-C Storage Unit as added
8 safeguards for containment of dangerous waste spills or leaks. The following subsections comment
9 briefly on each of the design features.

10 **4.1.4.1.1 System Design**

11 The facility is covered by a roof that is maintained to prevent intrusion of rainwater into areas where
12 hazardous waste is stored.

13 The base of the facility consists of a 6-inch reinforced, poured concrete slab. All exposed surfaces were
14 finished with a smooth troweled surface and painted with a chemical resistant epoxy based coating. All
15 edges and corners were sealed with a bead of sealant.

16 The concrete floors in each bay storage cell are sealed and bermed using angle iron and have containment
17 trenches at the entrances to these cells. These trenches are isolated from each other to prevent interaction,
18 reactions, or offsite migration of spilled materials. This provides protection even during simultaneous
19 spills.

20 The condition of the floor coating is inspected weekly per Chapter 6.0, and repairs are made as needed.
21 Immediate repairs are indicated whenever the coating is observed to have been chipped, bubbled up,
22 scraped, or otherwise damaged in a manner that would significantly impact the capability of the coating to
23 contain spilled materials. Minor nicks and small chips resulting from normal operations will be repaired
24 on a periodic basis.

25 The floors in Cell 7 are sealed and bermed using angle iron and have containment trenches at every exit to
26 the area to prevent offsite migration of spilled material. Drums stored in this area are also stored on
27 pallets to prevent contact with spilled material in the event of a release.

28 **4.1.4.1.2 Structural Integrity of Base**

29 The concrete was mixed in accordance with ASTM C94/C94M, and is capable of bearing the loads
30 associated with normal container storage and movement.

31 **4.1.4.1.3 Containment System Capacity**

32 Secondary containment is provided for all dangerous waste stored at the 331-C Storage Unit. Storage
33 limits for all chemicals are listed in Table 4.1 (1988 Uniform Building Code). All floors in the bay area
34 have sumps that have no drains and are covered with grating to prevent safety hazards. The capacity of
35 the two sumps at the entrances to the building is 168 gallons per trench, and the sumps to the individual
36 storage cells have a capacity of 98 gallons per sump. In addition, all floors in the bay area are coated
37 with an epoxy based coating as described in Section 4.1.4.1.1. Inspection of the containment system to

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1 maintain integrity is described in Chapter 6.0. Individual secondary containment systems are configured
2 as follows:

3 **a. Acids and Oxidizers Cell.** The acids and oxidizers cell (Cell 1) is located at the northwest corner of
4 the 331-C Storage Unit bay area. The concrete floor in this storage cell is sealed and bermed using angle
5 iron and has a containment trench at the entrance. This trench is isolated from the other trenches in order
6 to prevent interaction, reactions, or offsite migration of spilled materials. This provides protection even
7 during simultaneous spills. Six cabinets, open shelving, and a large-container storage area are provided
8 within the cell to allow storage of various sizes of containers. The containment volume of the sump
9 entering the cell is 98 gallons. A diagram of the cell is provided in Figure 4.1.

10 **b. Poisons and Class 9 Cell.** The poisons and Class 9 cell (Cell 2) is located just south of the acids and
11 oxidizers cell along the west wall of the bay area. The concrete floor in this storage cell is sealed and
12 bermed using angle iron and has a containment trench at the entrance. This trench is isolated from the
13 other trenches in order to prevent interaction, reactions, or offsite migration of spilled materials. This
14 provides protection even during simultaneous spills. The northeast corner of the cell is used for PCB
15 storage for disposal complying with 40 CFR 761.65(b). The containment volume of the sump entering
16 the cell is 98 gallons. A diagram of this cell is provided in Figure 4.2.

17 **c. Alkaline, Washington State Criteria Waste, Organic Peroxides, and Non-Regulated Waste Cell.**
18 The alkaline, Washington State Criteria waste, and non-regulated waste cell (Cell 3) is located south of
19 the poisons and Class 9 cell on the west wall of the bay area. The concrete floor in this storage cell is
20 sealed and bermed using angle iron and has a containment trench at the entrance. This trench is isolated
21 from the other trenches in order to prevent interaction, reactions, or offsite migration of spilled materials.
22 This provides protection even during simultaneous spills. Four storage cabinets, three sets of open
23 shelving, and one explosion proof refrigerator, are positioned in the cell to allow storage of various sizes
24 of containers. The containment volume of the sump entering the cell is 98 gallons. A diagram of this cell
25 is provided in Figure 4.3.

26 **d. Flammable, Organic and Compressed Aerosols Cell.** The flammable cell (Cell 4) is located south
27 of the alkaline, Washington State Criteria waste, and non-regulated waste cell. The concrete floor in this
28 storage cell is sealed and bermed using angle iron and has a containment trench at the entrance. This
29 trench is isolated from the other trenches in order to prevent interaction, reactions, or offsite migration of
30 spilled materials. This provides protection even during simultaneous spills. The containment volume of
31 the sump entering the cell is 98 gallons. A diagram of this cell is provided in Figure 4.4.

32 Ignitable organic waste materials are stored in this cell that also exhibits the characteristics of corrosivity
33 and toxicity as well as reactivity. Eight Factory Mutual-approved flammable liquid storage cabinets are
34 utilized for storage of various classes of flammable liquids as defined by the Uniform Fire Code. The
35 capacities of the various cabinets are shown in Table 4.1. The following cabinets also are used for storage
36 in this cell: one for combustibles, one for aerosols, two for flammable solids, and one for overflow from
37 one of the other cabinets.

38 Total ignitable Waste Storage capacity of the 331-C Storage Unit bay, including the organics cell,
39 Ignitable drum storage area, and bay storage area is limited by the following UBC restrictions for Class B
40 occupancy:

- 41 • Class 1A flammable liquids: 120 gallons
- 42 • Class 1B flammable liquids: 240 gallons
- 43 • Class 1C flammable liquids: 360 gallons
- 44 • Maximum Class 1A, 1B, and 1C at any one time: 480 gallons

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- 1 • Maximum Class 1A, 1B and 1C stored in Cell 8 self contained storage module for flammable liquids
2 is 240 gallons
- 3 • Class 2 combustible liquids: 480 gallons
- 4 • Class 3A combustible liquids: 1320 gallons
- 5 • Combustible fibers, loose: 100 cubic feet
- 6 • Combustible fibers, baled: 1000 cubic feet
- 7 • Flammable gases in any one cylinder: 3000 cubic feet
- 8 • Liquefied flammable gases: 60 gallons

9 **e. Flammable Liquids Storage Module.** The flammable liquid storage module is a self-contained
10 storage module (Cell 8) that allows additional storage space for flammable waste. The flammable liquid
11 storage module is located along the south wall and is connected to the buildings fire suppression system.
12 The flammable liquid storage module has a 2-hour fire rated containment system so that according to the
13 Uniform Fire Code, an unlimited capacity is allowed. However, the flammable waste storage capacity of
14 the flammable liquid storage module is limited by the 240-gallon capacity of the module's secondary
15 containment system. No more than 240 gallons of any combination of flammable liquid classes will be
16 stored in the module. This flammable waste storage capacity is in addition to the flammable storage
17 limits for the bay area. A diagram showing the module location in the bay area is included in Figure 4.5.

18 **f. Ignitable Waste Drum Storage Area.** An additional section of the bay area (Cell 8) has been
19 dedicated with two flammable drum storage cabinets used to store drum quantities of ignitable waste
20 before offsite shipment. The bay area is bordered on all sides by angle iron (3½ in. x 6 in.) bolted to the
21 floor and sealed to provide secondary containment. To further enhance containment and to allow greater
22 storage capacity, the drums stored in this area are stored in flammable liquid drum storage cabinets.

23 Maximum storage in these two cabinets is approximately four 55-gallon drums and twelve five-gallon
24 drums. A diagram showing the two flammable storage cabinets in the bay area is included in Figure 4.5.
25 Additional ignitable waste storage is provided for in Cell 4, the organics cell, and in the flammable liquids
26 storage module. All of this ignitable waste storage is provided for utilizing flammable liquid storage
27 cabinets for added safety.

28 **g. Universal and Recycling Waste Storage Area.** A section of the bay (Cell 6) has been dedicated to
29 storage of drum quantities of universal and recycling waste before shipment. The area is approximately
30 20 ft. x 5 ft. in size dependent on the amounts in storage. All material in this area is stored in DOT
31 approved containers and is stored on pallets to prevent contact with spilled waste in the event of an
32 incident. A diagram of this area is included in Figure 4.5.

33 **h. Bay Storage Area.** The bay storage area is itself a secondary containment area for loading,
34 unloading, and the storage of dangerous waste. All floors in the bay area are bordered on all sides by
35 angle iron (3½ in. x 6 in.) bolted to the floor and sealed with an epoxy based coating to provide secondary
36 containment. Sump locations are indicated in Figure 4.5.

37 Due to space limitations in the individual cells, and for ease of mechanical handling, the bay floor is
38 typically used for storage of chemicals in drums.

39 The bay floor is also used to store lab packs and bulked waste containers before offsite shipment to
40 permitted treatment, disposal, or recycling facilities. Generally, only corrosives, oxidizers, toxic organic
41 solvent mixtures (typically halogenated solvents), antifreeze mixtures, contaminated water which is toxic
42 dangerous waste, nonliquid waste, Class 9, or state-only dangerous waste materials are stored in the bay
43 storage area.

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1 If incompatible wastes are stored in the bay area, they are kept in individual secondary containment
2 systems (spill pallets, portable booms or other commercially available drum containment systems) if in
3 bulk drum form. If the waste is in labpack form, it will meet WAC 173-303-161, *Overpacked containers*
4 (*labpacks*), requirements before being stored in the bay area. The DOT approved outer container serves
5 as the secondary containment system for segregation in case of simultaneous accidental spillage.

6 The bay storage is governed by the building occupancy limits of Table 4.2, which includes the inventory
7 of the individual storage cells previously described. In order to provide additional separation from spilled
8 liquids and for ease of handling, all drums stored on the bay floor are stored on pallets. A diagram of the
9 bay area is provided in Figure 4.5.

10 **i. Explosives Storage Area.** Due to Uniform Building Code restrictions, waste classified as explosive
11 by DOT regulations are stored in a 3 ft. x 3 ft. x 3 ft. explosives magazine, with an 8 cubic foot interior,
12 outside Cell 4. The magazine is constructed of steel and certified to have been fabricated per Institute of
13 Makers of Explosives (IME) SLP22, type 2-day box requirements. No more than 1 pound of explosives
14 is stored in the magazine at one time. The location of the magazine is indicated in Figure 4.5.

15 **4.1.4.1.4 Control of Run-On**

16 The 331-C Storage Unit was designed to eliminate the likelihood of on-site, or for that matter, off-site
17 migration via run-on and run-off. The building and the covered area adjacent to the building have been
18 constructed upon a foundation and the surrounding soil sloped away so that precipitation cannot cause
19 either run-on or run-off problems.

20 **4.1.4.2 Removal of Liquids from Containment System**

21 Upon discovery of liquid accumulation in the containment resulting from a spill or other release, the
22 Building Emergency Director (BED) must be contacted in accordance with the 331-C Storage Unit
23 Building Emergency Procedure (BEP) Chapter 7.0. The BED may determine that the contingency plan
24 should be implemented. If the incident is minor, and the BED approves, removal of the liquids will
25 commence immediately following a safety evaluation. Appropriate protective clothing and respiratory
26 protection will be worn during removal activities; a PNNL industrial hygienist may be contacted to
27 determine appropriate personnel protection requirements and any other safety requirements that may be
28 required, such as chemical testing or air monitoring. In addition, ventilation of the spill-impacted area
29 may be performed if determined to be safe and if appropriate monitoring of the air discharge(s) is
30 performed.

31 Spills are normally contained either within the storage cabinet, within the cell, or within a secondary
32 containment trench or berm as described in Section 4.1.4.1.1. In any case, spilled material will be
33 recovered to the extent possible by pumping recovered liquids with a pump made of non-reactive
34 materials (either steel or PVC) to intact containers selected in accordance with the container criteria in
35 WAC 173-303-190. Non-recoverable liquids will be absorbed with an appropriate absorbent (after
36 appropriate chemical reaction to neutralize reactivity in the case of reactive waste, or neutralization in the
37 case of corrosive materials); refer to Table 6.2 for a list of available materials for this purpose. The
38 absorbent material will then be recovered and placed in a container selected in accordance with
39 Section 4.1.1.1, using non-sparking shovels in the case of ignitable waste. The floor, cabinets and any
40 other impacted containers may be cleaned with dry rags, soap and water, or a compatible solvent if
41 necessary to remove external contamination. Contaminated rags and other cleanup material will be
42 disposed of in an appropriate manner.

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1 **4.1.5 Demonstration that Containment Is Not Required Because Containers Do Not Contain Free**
2 **Liquids, Wastes That Exhibit Ignitability or Reactivity, or Wastes Designated F020-F023,**
3 **F026, or F027**

4 This section is not applicable to the 331-C Storage Unit because the storage area is used to store
5 containers both with and without free liquids. The 331-C Storage Unit does not meet the conditions for
6 reduced requirements for storing only containers without free liquid; therefore, the facility is subject to
7 the full requirements for containment.

8 **4.1.6 Prevention of Reaction of Ignitable, Reactive, and Incompatible Waste in Containers**

9 The following sections provide information on the management of ignitable, reactive, and incompatible
10 waste in containers. Additional information on this subject can be found in Chapter 6.0, Section 6.5.

11 **4.1.6.1 Management of Certain Reactive Wastes in Containers**

12 Wastes described in WAC 173-303-070(7)(vi), (vii), and/or (viii) (explosive type wastes) will be stored in
13 the explosives magazine described in Section 4.1.4.1.3 above. This magazine meets the Uniform Fire
14 Code requirements for storage of such materials.

15 **4.1.6.2 Management of Ignitable or Reactive Waste in Containers**

16 Ignitable and reactive wastes are stored in compliance with Uniform Fire Code Division II regulations for
17 Container and Portable Tank Storage Inside Buildings (International Conference of Building
18 Officials 1988). Containers of ignitable and reactive waste are stored in individual flammable storage
19 cabinets within the storage cells.

20 **4.1.6.3 Design of Areas to Manage Incompatible Wastes**

21 Chapter 6.0, Section 6.5.2 describes guidelines used at the 331-C Storage Unit to determine the
22 compatibility of dangerous waste so that incompatible wastes are not stored together. Chemical waste
23 stored in the 331-C Storage Unit are separated by compatibility, chemical makeup, and hazard class and
24 stored in areas having appropriate secondary containment, as described in Section 4.1.1.6.

25 As shown in Figures 4.1 through 4.5, each storage area has individual storage configurations; secondary
26 containment structures are provided to verify that incompatible materials will not commingle if spilled.
27 Further segregation is provided by chemical storage cabinets located throughout the facility in various
28 areas as shown in Figures 4.1 through 4.5. Cabinet types are noted in those figures and capacities are
29 described in Table 4.1. Incompatible wastes are never placed in the same container, or in unwashed
30 containers that previously held incompatible waste.

31 Compliance with WAC 173-303-395(1)(b) is assured utilizing the reactivity groupings given in *A Method*
32 *for Determining the Compatibility of Hazardous Waste* (EPA 1980). Using this system and following the
33 guidelines for handling ignitable or reactive waste and mixing of incompatible waste, as described in
34 Section 6.5.2, fulfills the requirements of WAC 173-303-395(1)(c).

35 **4.2 TANK SYSTEMS**

36 This section is not applicable to the 331-C Storage Unit because waste is not managed in tanks.

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1 **4.3 WASTE PILES**

2 This section is not applicable to the 331-C Storage Unit because waste is not managed in waste piles.

3 **4.4 SURFACE IMPOUNDMENTS**

4 This section is not applicable to the 331-C Storage Unit because waste is not placed in surface
5 impoundments.

6 **4.5 INCINERATORS**

7 This section is not applicable to the 331-C Storage Unit because waste is not incinerated.

8 **4.6 LANDFILLS**

9 This section is not applicable to the 331-C Storage Unit because waste is not placed in landfills.

10 **4.7 LAND TREATMENT**

11 This section is not applicable to the 331-C Storage Unit because waste is not treated in land treatment
12 units.

13 **4.8 AIR EMISSIONS CONTROL**

14 **4.8.1 Process Vents**

15 This section is not applicable to the 331-C Storage Unit, as no equipment subject to WAC 173-303-690
16 (Subpart AA requirements) is located or utilized at the unit.

17 **4.8.2 Equipment Leaks**

18 This section is not applicable to the 331-C Storage Unit, as no equipment subject to WAC 173-303-691
19 (Subpart BB requirements) is located or utilized at the unit. Note that pumps or other equipment may
20 contact hazardous waste with an organic concentration of at least ten percent by weight for less than 300
21 hours per calendar year. If so, the equipment will be identified as required by WAC 173-303-691(1)(f).

22 **4.8.3 Tanks and Containers**

23 **4.8.3.1 Applicability of Subpart CC Standards**

24 The requirements of WAC 173-303-692 (Subpart CC standards) apply to dangerous waste stored at the
25 331-C Storage Unit unless one or more of the exceptions given at WAC 173-303-692(1)(b) apply.

26 **4.8.3.2 Tank Systems and Container Areas – Demonstrating Compliance**

27 Compliance with the Subpart CC standards is maintained at the 331-C Storage Unit by utilizing DOT-
28 specification containers for storage, when the container has a design capacity greater than 0.1 m³
29 (26.4 gallons). Containers greater than 0.46 m³ (121 gallons) are not typically utilized at 331-C, and if
30 they are, they would be used only for materials with low vapor pressures. Hence Level 1 container
31 standards are the only standards that must be met.

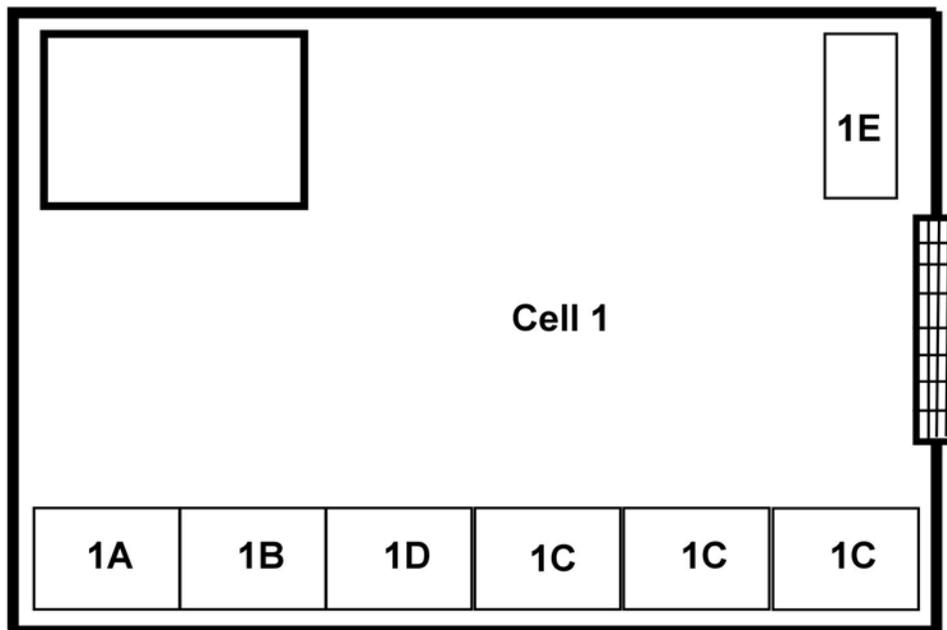
32 To meet the Level 1 standards, the following standards are observed:

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- 1 • Opening hazardous waste containers only occurs when adding or removing waste, or for necessary
2 inspection or sampling, after which the container is promptly re-closed.
- 3 • Inspection of the closure of hazardous waste containers is checked prior to loading for shipment to
4 331-C as part of the waste acceptance process (Section 3.2.2).
- 5 • Any waste container greater than 0.1 m³ capacity stored longer than one year is re-inspected at least
6 once every 12 months to check the container for deterioration or damage. Any deterioration or
7 damage is documented and promptly repaired in accordance with 40 CFR 264.1086(c)(4)(iii).
- 8 Determination that containers with capacity greater than 0.46 m³ (121 gallons) are not in "light material
9 service" is provided through the acceptance criteria in the 331-C waste analysis plan (Section 3.2).

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Figure 4.1. Acids and Oxidizers Cell

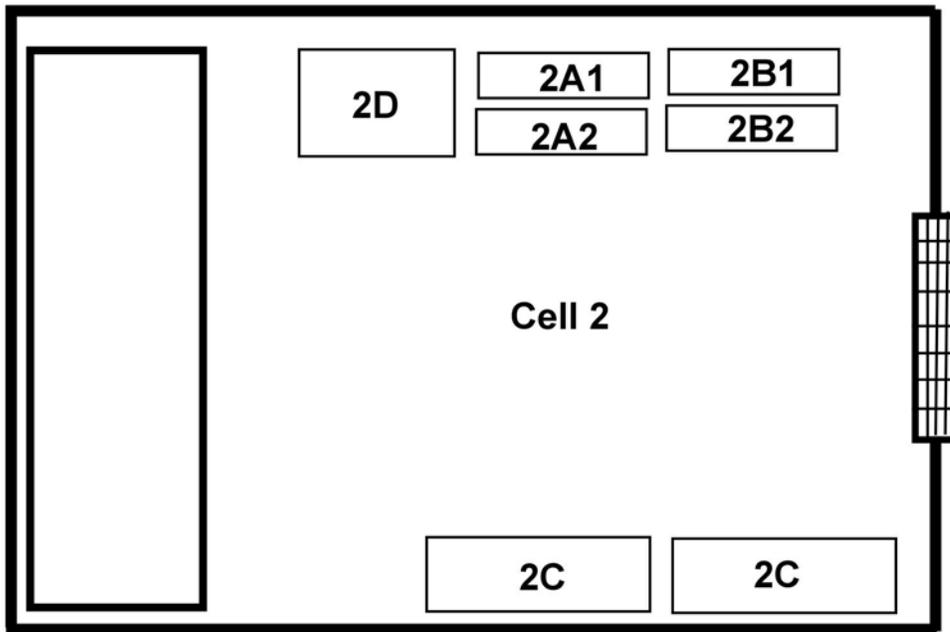


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Legend

- 7 1A Liquid Oxidizers (Medium Cabinet)
- 8 1B Solid Oxidizers (Small Cabinet)
- 9 1C Inorganic Acids (Medium Cabinet)
- 10 1D Organic Acids (corrosive) (Small Cabinet)
- 11 1E Mercury/Corrosive Solids (Small Shelf)
- 12  Epoxy coated angle iron
- 13  Collection Sump
- 14  Drum and Carboy Storage Area

Figure 4.2. Poisons and Class 9 Cell

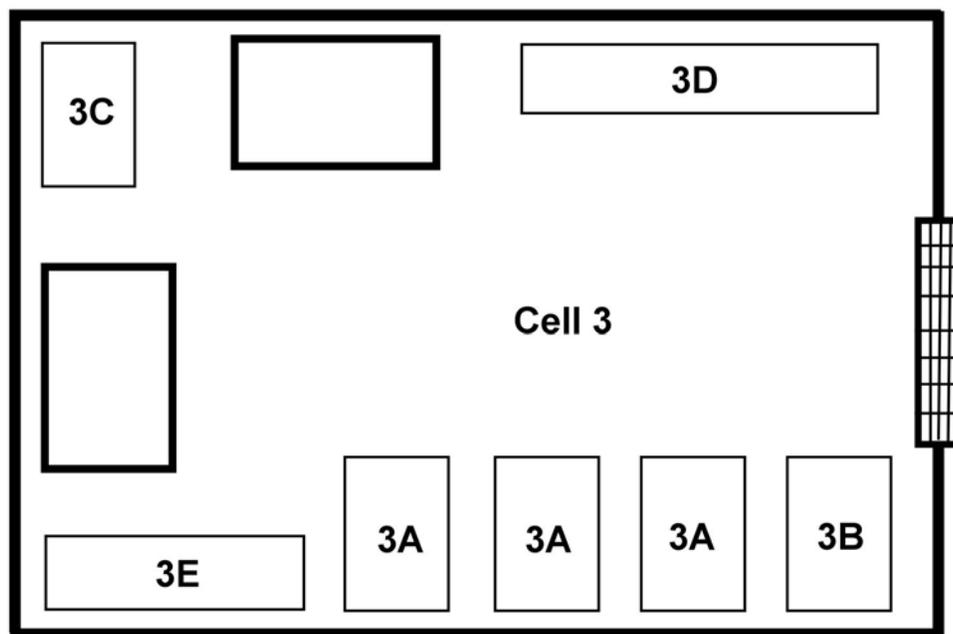


Legend

- 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)
- Epoxy coated angle iron
- ▤ Collection Sump
- Drum and Carboy Storage Area

1 **Figure 4.3. Alkaline, Washington State Criteria Waste, Organic Peroxides, and Non-Regulated**
2 **Waste Cell**

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6 **Legend**

7 3A Alkaline (liquids and solids) (Medium Cabinet)

8 3B Alkaline/Oxidizers (Medium Cabinet)

9 3C Organic Peroxides and temperature sensitive (refrigerator)

10 3D Washington State Criteria Waste (Large Shelve)

11 3E Non-Regulated Liquids/Solids (Small Shelf)

12  Epoxy coated angle iron

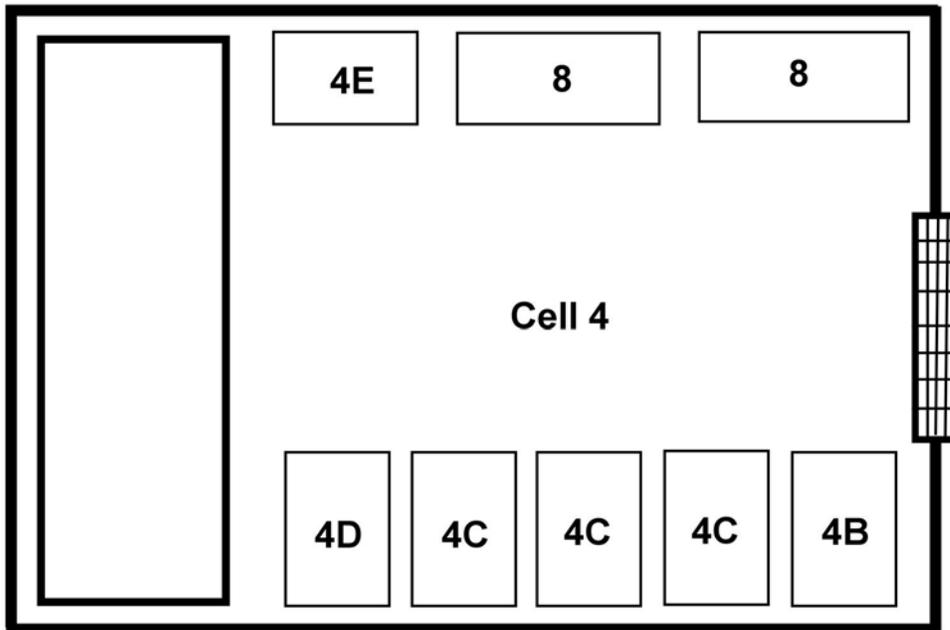
13  Collection Sump

14  Drum and Carboy Storage Area

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Figure 4.4. Flammable, Organic and Compressed Aerosols Cell



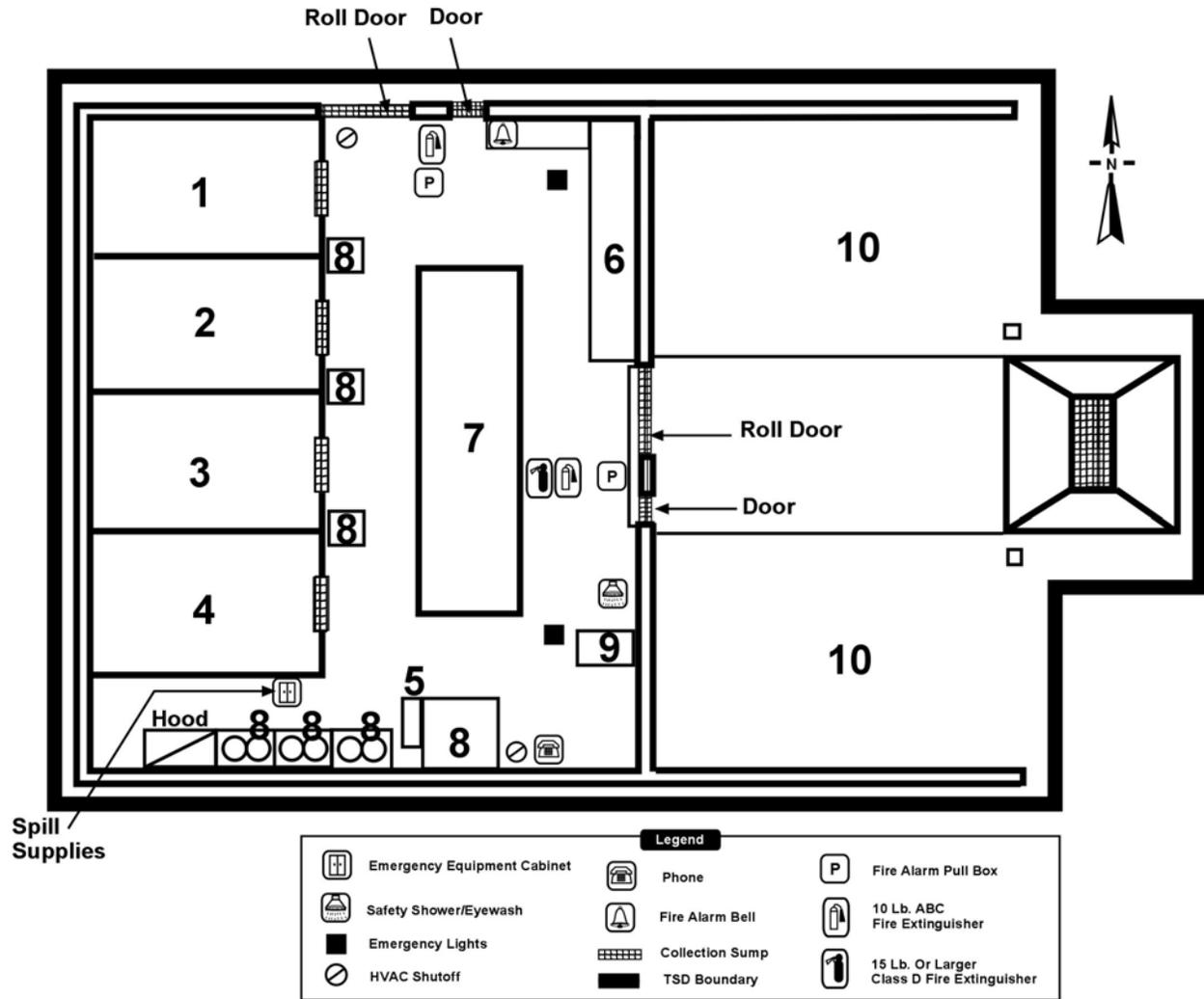
3
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Legend

- 6 4B Aerosols (Large Cabinet)
- 7 4C Flammable Liquids (Large Cabinet)
- 8 4D Flammable Solids (Dangerous When Wet) (Large Cabinet)
- 9 4E Flammable Solids (with water Spontaneously Combustible) (Large Cabinet)
- 10 4F Floating Cabinet (Large Cabinet)
- 11 8 Flammable Liquids (Large Cabinets)
- 12  Epoxy coated angle iron
- 13  Collection Sump
- 14  Drum and Carboy Storage Area

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2

Figure 4.5. Bay Storage Area



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Legend

1. Acids, Oxidizers
2. Poisons, Class 9
3. Alkaline, WSDW, Organic Peroxides
4. Organics Flammable and Compressed Aerosols
5. Compressed gases
6. Universal/Recycling Storage Area
7. Class 9, WSDW, Non-flammable and compatible waste
8. Flammable Storage
9. Explosive Magazine
10. Outdoor Storage

1

Table 4.1. Storage Devices Used at the 331-C Storage Unit

Storage Device	Typical Use	Approximate External Dimensions (in.)	Approximate Capacity (gal/ft3.)
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.

1

Table 4.2. Building Occupancy limits.

TABLE NO.9-A—EXEMPT AMOUNTS OF HAZARDOUS MATERIALS, LIQUIDS
AND CHEMICALS REPRESENTING A PSYICAL HAZARD
BASIC QUANTITIES PER CONTROL AREA¹

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}	—	—	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	—	10 ⁴	(10) ⁴	—
	III	125 ^{4 5}	(125) ^{4 5}	—	125 ⁴	(125) ⁴	—	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}	(1,000) ^{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 ^{5 8}	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	—

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N.L. = Not Limited

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 liters.

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 NO.9-B—EXEMPT AMOUNTS OF HAZARDOUS MATERIALS, LIQUIDS
AND CHEMICALS REPRESENTING A HEALTH HAZARD
MAXIMUM QUALITIES PER CONTROL AREA ^{1 2}

When two units are given, values within parentheses are in pounds (Lbs)

MATERIAL	STORAGE ³			USE ³ —CLOSED SYSTEMS			USE ³ —OPEN SYSTEMS		
	Solid Lbs. (Cu.Ft.) ^{5 6}	Liquid Gallons ^{5 6} (Lbs.)	Gas (Cu.Ft.) ⁵	Solid (Lbs.) ⁵	Liquid Gallons ⁵ (Lbs.)	Gas (Cu.Ft.)	Solid (Lbs.) ⁵	Liquid Gallons ⁵ (Lbs.)	Gas (Cu.Ft.) ()
1. Corrosives	5,000	500	650 ⁶	5,000	500	650 ⁵	1,000	100	—
2. Highly Toxics ¹	1	(1)	20 ⁷	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 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 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 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 may be applied.

⁷ Permitted only when stored in approved exhaust gas cabinets, exhausted enclosures or fume hoods.

⁸ For special provisions, see the Fire Code.

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1 **Chapter 8.0** **Personnel Training**

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1 8.0 PERSONNEL TRAINING

2 This chapter discusses personnel training requirements based on WAC 173-303 and the Hanford Facility
3 RCRA Permit, WA7890008967 (Permit). In accordance with WAC 173-303-806(4)(a)(xii), the *Hanford*
4 *Facility Dangerous Waste Part B Permit Application* must contain two items: (1) "an outline of both the
5 introductory and continuing training programs by owners or operators to prepare persons to operate or
6 maintain the TSD facility in a safe manner as required to demonstrate compliance with
7 WAC 173-303-330" and (2) "a brief description of how training will be designed to meet actual job tasks
8 in accordance with the requirements in WAC 173-303-330(1)(d)." Permit Condition II.C (Personnel
9 Training) contains training requirements applicable to Hanford Facility personnel and non-Facility
10 personnel.

11 Compliance with these requirements at the 331-C Storage Unit is demonstrated by information contained
12 in DOE/RL-91-28, Chapter 8.0 and this chapter.

13 8.1 OUTLINE OF INTRODUCTORY AND CONTINUING TRAINING PROGRAMS

14 The introductory and continuing training programs are designed to prepare personnel to manage and
15 maintain the TSD unit in a safe, effective, and environmentally sound manner. In addition to preparing
16 personnel to manage and maintain TSD units under normal conditions, the training programs verify that
17 personnel are prepared to respond in a prompt and effective manner should abnormal or emergency
18 conditions occur. Emergency response training is consistent with the description of actions contained in
19 Chapter 7.0, Building Emergency Procedure. The introductory and continuing training programs contain
20 the following objectives:

- 21 • Teach Hanford Facility personnel to perform their duties in a way that ensures the Hanford Facility's
22 compliance with WAC 173-303
- 23 • Teach Hanford Facility personnel dangerous waste management procedures (including
24 implementation of the contingency plan) relevant to the job titles/positions in which they are
25 employed, and
- 26 • Verify that Hanford Facility personnel can respond effectively to emergencies.

27 8.1.1 Introductory Training

28 Introductory training includes general Hanford Facility training and TSD unit-specific training. General
29 Hanford Facility training is described in DOE/RL-91-28, Chapter 8.0, and is provided in accordance with
30 the Permit Condition II.C.2. TSD unit-specific training is provided to Hanford Facility personnel
31 allowing those personnel to work unescorted, and in some cases is required for escorted access. Hanford
32 Facility personnel cannot perform a task for which they are not properly trained, except to gain required
33 experience while under the direct supervision of a supervisor or coworker who is properly trained.
34 Hanford Facility personnel must be trained within 6 months after their employment at or assignment to
35 the Hanford Facility, or to a new job title/position at the Hanford Facility, whichever is later.

36 General Hanford Facility training: Refer to description in DOE/RL-91-28, Chapter 8.0.

37 Contingency Plan training: Hanford Facility personnel receive training on applicable portions of the
38 *Hanford Emergency Management Plan* (DOE/RL-94-02) in general Hanford Facility training. In
39 addition, Hanford Facility personnel receive training on the content of the description of actions contained
40 in contingency plan documentation in Chapter 7.0 to be able to effectively respond to emergencies.

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1 Emergency Coordinator training: Hanford Facility personnel who perform emergency coordinator duties
2 in WAC 173-303-360 (e.g., Building Emergency Director) in the Hanford Incident Command System
3 receive training on implementation of the contingency plan and fulfilling the position within the Hanford
4 Incident Command System. These Hanford Facility personnel must also become thoroughly familiar
5 with applicable contingency plan documentation, operations, activities, location, and properties of all
6 waste handled, location of all records, and the unit/building layout.

7 Operations training: Dangerous waste management operations training (e.g., waste designation training,
8 shippers training) will be determined on a unit-by-unit basis and shall consider the type of waste
9 management unit (e.g., container management unit) and the type of activities performed at the waste
10 management unit (e.g., sampling). For example, training provided for management of dangerous waste in
11 containers will be different than the training provided for management of dangerous waste in a tank
12 system. Common training required for compliance within similar waste management units can be
13 provided in general training and supplemented at the TSD unit. Training provided for TSD unit-specific
14 operations will be identified in the training plan documentation based on (1) whether a general training
15 course exists, (2) the training needs to verify waste management unit compliance with WAC 173-303, and
16 (3) training commitments agreed to with Ecology.

17 **8.1.2 Continuing Training**

18 Continuing training meets the requirements for WAC 173-303-330(1)(b) and includes general Hanford
19 Facility training and TSD unit-specific training.

20 General Hanford Facility training: Annual refresher training is provided for general Hanford Facility
21 training. Refer to description in DOE/RL-91-28, Chapter 8.0.

22 Contingency plan training: Annual refresher training is provided for contingency plan training. Refer to
23 description above in Section 8.1.1.

24 Emergency coordinator training: Annual refresher training is provided for emergency coordinator
25 training. Refer to description above in Section 8.1.1.

26 Operations training: Refresher training occurs on many frequencies (i.e., annual, every other year, and
27 every 3 years) for operations training. When justified, some training will not contain a refresher course
28 and will be identified as a one-time only training course. The TSD unit-specific training plan
29 documentation will specify the frequency for each training course. Refer to description above in Section
30 8.1.1.

31 **8.2 DESCRIPTION OF TRAINING DESIGN**

32 Proper design of a training program verifies that personnel who perform duties on the Hanford Facility
33 related to WAC 173-303-330(1)(d) are trained to perform their duties in compliance with WAC 173-303.
34 Actual job tasks, referred to as duties, are used to determine training requirements. The first step taken to
35 verify that Hanford Facility personnel have received the proper training is to determine and document the
36 waste management duties by job title/position. The second step compares waste management duties to
37 the general waste management unit training curriculum. If the general waste management unit training
38 curriculum does not address the waste management duties, the training curriculum is supplemented and/or
39 on-the-job training is provided. The third step summarizes the content of a training course necessary to
40 verify that the training provided to each job title/position addresses associated waste management duties.
41 The last step is to assign training curriculum to Hanford Facility personnel based on the previous
42 evaluation. The training plan documentation contains this process.

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1 Waste management duties include those specified in Section 8.1 as well as those contained in
2 WAC 173-303-330(1)(d). Training elements of WAC 173-303-330(1)(d) applicable to the 331-C Storage
3 Unit operations include the following:

- 4 • Procedures for using, inspecting, repairing, and replacing emergency and monitoring equipment
- 5 • Communications or alarm systems
- 6 • Response to fires or explosions
- 7 • Shutdown of operations.

8 Hanford Facility personnel who perform these duties receive training pertaining to their duties. The
9 training plan documentation described in Section 8.3 contains specific information regarding the types of
10 training Hanford Facility personnel receive based on the outline in Section 8.1.

11 **8.3 DESCRIPTION OF TRAINING PLAN**

12 In accordance with Permit Condition II.C.3, the unit-specific portion of the *Hanford Facility Dangerous*
13 *Waste Permit Application* must contain a description of the training plan. Training plan documentation is
14 maintained outside of the *Hanford Facility Dangerous Waste Part B Permit Application* and the Permit.
15 Therefore, changes made to the training plan documentation are not subject to the Permit modification
16 process. However, the training plan documentation is prepared to comply with WAC 173-303-330(2).

17 Documentation prepared to meet the training plan consists of hard copy and/or electronic media as
18 provided by Permit Condition II.C.1. The training plan documentation consists of one or more
19 documents and/or a training database with all the components identified in the core document.

20 A description of how training plan documentation meets the three items in WAC 173-303-330(2) is as
21 follows:

- 22 1. -330(2)(a): "The job title, job description, and name of the employee filling each job. The job
23 description must include requisite skills, education, other qualifications, and duties for each position."

24 Description: The specific Hanford Facility personnel job title/position is correlated to the waste
25 management duties. Waste management duties relating to WAC 173-303 are correlated to training
26 courses to verify that training is properly assigned.

27 Only names of Hanford Facility personnel who carry out job duties relating to TSD unit waste
28 management operations at the 331-C Storage Unit are maintained. Names are maintained within the
29 training plan documentation. A list of Hanford Facility personnel assigned to the 331-C Storage Unit
30 is available upon request.

31 Information on requisite skills, education, and other qualifications for job title/positions are addressed
32 by providing a reference where this information is maintained (e.g., human resources). Specific
33 information concerning job title, requisite skills, education, and other qualifications for personnel can
34 be provided upon request.

- 35 2. -330(2)(b): "A written description of the type and amount of both introductory and continuing
36 training required for each position."

37 Description: In addition to the outline provided in Section 8.1, training courses developed to comply
38 with the introductory and continuing training programs are identified and described in the training
39 plan documentation. The type and amount of training is specified in the training plan documentation
40 as shown in Table 8.1.

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- 1 3. -330(2)(c): "Records documenting that personnel have received and completed the training required
2 by this section. The Department may require, on a case-by-case basis, that training records include
3 employee initials or signature to verify that training was received."

4 Description: Training records are maintained consistent with DOE/RL-91-28, Chapter 8.0.

5 **Table 8.1. 331-C Storage Unit Training Matrix**

	Training Category ^(a)				
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	
331-C Storage Unit	Orientation Program	Building Emergency Plan	Building Emergency Director Training	Advanced Waste Management Training	Container Management
Staff Position					
Technical Group Lead	X	X	X ¹	X	X
Hazardous Waste Operations Staff	X	X	X ^(b)	X	X

- 6 ¹ Required for any staff that has been assigned the duties of Building Emergency Director or alternate.
7 (a) Refer to the Environmental Management Services Department Training Plan for a complete description of
8 coursework in each training category.
9 (b) Required for any staff that has been assigned the duties of Building Emergency Director or alternate.

1 **Chapter 11.0** **Closure and Financial Assurance**

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3
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1 11.0 CLOSURE AND FINANCIAL ASSURANCE

2 This chapter is submitted in accordance with the requirements of WAC 173-303-806(4)(a)(xiii) to
3 demonstrate that DOE-RL has developed a plan to ensure safe closure of the 331-C Storage Unit. In
4 accordance with WAC 173-303-610, copies of the closure plan and all revisions will be maintained at
5 331-C Storage Unit until certification of closure completeness has been submitted and accepted by
6 Ecology. A post-closure plan is not required because 331-C Storage Unit is not a land-based unit and all
7 dangerous waste and dangerous waste residues will be removed at the time of closure.

8 **11.1 CLOSURE PLAN/FINANCIAL ASSURANCE FOR CLOSURE**

9 This plan presents the activities required for final closure of the 331-C Storage Unit at its maximum
10 extent of operation. This closure plan is expected to be updated at closure to reflect integration with the
11 River Corridor cleanup project. Partial closure will not be conducted. Closure activities are presented in
12 sufficient detail such that the closure process is understandable and a closure schedule can be developed.

13 **11.1.1 Closure Performance Standard**

14 The following sections identify performance standards for clean closure of the 331-C Storage Unit.

15 **11.1.1.1 Performance Standards for Soil/Environmental Media**

16 Closure of the 331-C Storage Unit will be conducted in a manner that meets the clean closure
17 performance standards of WAC 173-303-610(2)(a). The performance standards will be met by removing
18 all dangerous waste inventory and by removing or decontaminating all structures and soil to clean closure
19 removal or decontamination standards.

20 Due to the scope of operations of the 331-C Storage Unit and the preventive measures utilized during
21 operations, releases from the unit that result in soil contamination are not expected. Should such releases
22 result in soil contamination during the operating life of the 331-C Storage Unit, remediation of the
23 contaminants of concern to the numeric cleanup levels prescribed by WAC 173-303-610(2)(b)(i) will be
24 addressed in conjunction with operable unit remediation requirements under the 300-FF-2 Record of
25 Decision and associated CERCLA documentation.

26 **11.1.1.2 Structure Removal or Decontamination Standards**

27 The clean closure removal and decontamination standards for structures, equipment, bases, liners, etc.
28 have been established in accordance with WAC 173-303-610(2)(b)(ii).

29 The clean closure standard for structures is a visually verifiable standard established in accordance with
30 WAC 173-303-610(2)(b)(ii). The standard is the absence of obvious stains or residues that would
31 indicate potential dangerous waste contamination. Surfaces must be free of indications of potential
32 dangerous waste, except for residual waste stains consisting of light shadows, slight streaks, or minor
33 discoloration. The standard will be achieved through decontamination of all indoor and outdoor storage
34 and loading area floor and pad surfaces. The standard will be verified by visual inspections performed
35 and documented as described in Section 11.1.2.3.2. Only storage and loading area floor surfaces and some
36 miscellaneous components that will remain after closure are expected to have the potential to have been
37 contaminated by storage operations and these areas will be required to meet this standard.

38 **11.1.2 Closure Activities**

39 This plan identifies the steps necessary to perform final closure of the unit in order to meet the closure
40 performance standards. Closure activities to achieve and verify clean closure of structures and soil (i.e.,
41 storage and loading area pads, floors, trenches, and sumps) are as follows.

- 42 • Remove all dangerous waste inventory
- 43 • Remove potentially contaminated storage building equipment and components for reuse

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- 1 • Decontaminate storage building components and storage building and loading area floors, trenches,
2 and sumps
- 3 • Visually inspect the decontaminated surfaces for achievement of the clean closure standard
- 4 • Sample any contaminated soil and compare results to clean closure standards for soil (not currently
5 expected to be necessary)
- 6 • Certify that closure activities were completed in accordance with the approved closure plan.

7 **11.1.2.1 Maximum Extent of Operations**

8 The 331-C Storage Unit is used to store a variety of different research-related waste and is expected to be
9 fully operational until closure (i.e. no partial closures of storage areas are expected). The maximum
10 inventory of waste in storage at any time will be constrained by three factors:

- 11 • The total amount of dangerous waste in storage at 331-C Storage Unit at any time will not exceed the
12 design capacity of 20,000 gallons (it is typically 2,000 to 5,000 gallons during normal operations)
- 13 • The total amount of any particular dangerous waste in storage during any given year will not exceed
14 the amounts given in the Part A Form for 331-C Storage Unit (Chapter 1.0)
- 15 • The total amount of dangerous waste by hazard class in storage at any one time will not exceed
16 Uniform Building Code Class B Hazardous Material Quantity Restrictions (Table 4.1).

17 Evidence of spills or leaks will be obtained through (a) review of spill reports and operating log books;
18 (b) visual inspection of unit structures accessible to the environment (e.g., floors) and through inspection
19 of all visible barriers designed to prevent migration to the environment, and (c) sampling, as necessary to
20 characterize waste/debris that is found while performing visual inspection. If this inspection program
21 indicates that contamination is present, the potential for migration of contamination to the environment
22 will be evaluated. If potential migration appears likely, samples will be taken. In addition, if the
23 inspections identify any potential contaminant migration routes (e.g., cracks in sumps), samples will be
24 collected to determine whether migration has occurred. Waste site specific information discovered during
25 facility closure will be updated in WIDS.

26 **11.1.2.2 Removing Dangerous Wastes**

27 Closure activities will be initiated by removal of the dangerous waste inventory present at 331-C Storage
28 Unit at the time of closure. Inventory removal procedures will be identical to the waste handling,
29 packaging, and manifesting activities associated with normal operation of the unit. All dangerous waste
30 present will be placed into proper containers according to waste handling procedures described in Chapter
31 4 of this document. To the extent possible, chemicals will be labpacked or bulked into larger containers.
32 If wastes are bulked, containers will be emptied in compliance with WAC 173-303-160 so that they are
33 not dangerous waste. Labpack containers will be packaged in compliance with the requirements of WAC
34 173-303-161. All containers of dangerous waste will be manifested, and custody transferred to a
35 dangerous waste transporter having a proper dangerous waste identification number. Waste will be
36 transported to a permitted dangerous waste facility for treatment or disposal.

37 **11.1.2.3 Decontaminating Structures, Equipment and Soil**

38 The following sections describe decontamination and inspection activities for structures and
39 miscellaneous building components that will remain after closure.

40 **11.1.2.3.1 Waste Handling Equipment**

41 No equipment will remain after closure that would require decontamination to meet clean closure levels.
42 All portable waste handling equipment used for handling containers (e.g., barrel tongs, forklift truck,
43 shelving, cabinets) will be decontaminated in the same manner as described in Section 11.1.2.3.3 below,
44 removed and redeployed to other Hanford or PNNL operations.

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1 **11.1.2.3.2 Examination of Structure Surfaces**

2 After waste inventory removal, but prior to beginning decontamination procedures, the unit surfaces will
3 be inspected to identify any cracks or other openings through which dangerous waste or decontamination
4 fluids might migrate. The inspections will determine which of the materials that will remain after closure
5 already meet the clean closure standard of a “clean debris surface” and which materials require
6 decontamination to meet the standard. A *"clean debris surface means the surface, that when viewed
7 without magnification, shall be free of all visible contaminated soil and hazardous waste, except that
8 residual staining from soil and waste consisting of light shadows, slight streaks, or minor discoloration,
9 and soils and waste in cracks, crevices and pits shall be limited to no more than 5% of each square inch
10 of surface area."* (40 CFR 268.45)

11 Any cracks or openings in unit surfaces will be documented in the 331-C operating record and
12 investigated to determine if releases of dangerous waste or dangerous waste constituents have occurred.
13 If the potential exists for releases to have occurred, sampling will be required, in which case this closure
14 plan will be amended to provide for the sampling and analysis process (Section 11.1.2.4). If no potential
15 for releases is found, the cracks or openings will be repaired to prevent release of decontamination fluids
16 and decontamination will proceed as described below.

17 **11.1.2.3.3 Decontamination of Structures**

18 Storage cell floors, sumps, trenches, and outdoor loading areas requiring decontamination will be cleaned
19 using one or more of the removal technologies described in 40 CFR 268.45, as necessary to meet the
20 “clean debris surface” criteria. Cleaning will be conducted so as to minimize the quantity of rinsates
21 generated. Rinsates (if any) will be collected in trenches or sumps, pumped from the sumps into
22 appropriate containers, and the pump triple rinsed. Rinsate collection locations will be cleaned and
23 inspected last. Decontamination will be documented on a decontamination and inspection checklist (see
24 next paragraph). All decontamination waste will be designated in accordance with WAC 173-303 and , if
25 hazardous, managed in compliance with WAC 173-303-610(5). Decontamination waste requiring
26 management as dangerous waste will be managed in a 90-day accumulation area established for the
27 purpose and/or transported to a permitted TSD unit for storage pending disposal.

28 Inspection of materials for a “clean debris surface” will be documented on a checklist that will identify
29 the area inspected, whether decontamination/treatment methods were implemented and the standard used
30 to perform the inspection. If contamination above the clean surface debris criteria is found, the affected
31 areas will be cleaned. Any contaminated material generated by this activity will be managed as described
32 above.

33 Following completion of decontamination, another visual inspection will be performed to verify that
34 decontamination is complete. The cleaned surfaces will be visually inspected for achievement of the
35 clean closure standard described in Section 11.1.1.2 of no obvious stains or residues indicating potential
36 dangerous waste contamination. The visual inspection will be documented on the checklist used to
37 document the decontamination. When the visual standard is met, the structure will be considered clean.
38 Copies of the completed visual inspection checklist(s) will be placed in the 331-C Storage Unit Operating
39 Record.

40 **11.1.2.3.4 Decontamination and Inspection of Miscellaneous Building Components**

41 Grating over trenches of the indoor areas and the outdoor loading pads will be cleaned by high-
42 pressure/low-volume steam or water spray, or will be cleaned by hand using rags, brushes, water, and an
43 appropriate cleaner, if necessary. Rinsate and decontamination materials will be collected, designated, and
44 managed accordingly. Decontamination will be documented on a decontamination and inspection
45 checklist. The grating will be inspected for achievement of the clean closure standard and the inspection
46 documented on the checklist used to document the decontamination.

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1 **11.1.2.4 Sampling and Analysis to Identify Extent of Decontamination/Removal and to Verify**
2 **Achievement of Closure Standard**

3 No sampling and analysis of environmental samples (soil or other materials) is expected to be required
4 due to the preventive measures in place during the operating life of the 331-C Storage Unit. If
5 environmental media are contaminated during operation of the 331-C Storage Unit, this plan will be
6 revised to identify methods for sampling and analysis of such media. Decontamination of hazardous
7 debris will be conducted in accordance with the procedures given in Section 11.1.2.3. The results of this
8 examination will be documented on a decontamination and inspection checklist. Any necessary sampling
9 and analysis will be conducted in accordance with a sampling and analysis plan to be developed
10 according to Ecology's Clean Closure Guidance (Publication 94-111, current version).

11 **11.1.2.5 Other Activities**

12 Within 60 days of completion of the final closure activities described in this plan, a certification of
13 closure will be submitted to Ecology. This certification will indicate that the 331-C Storage Unit has been
14 closed as described in this plan and that the closure performance standard given in Section 11.1 has been
15 met. The certification will be submitted by registered mail and will be signed by the Permittees and an
16 independent Professional Engineer registered in the State of Washington as described below.

17 The Permittees will certify with the following document or a document similar to it:

18 *I, (name), an authorized representative of the U.S. Department of Energy-Richland Operations*
19 *Office located at the Federal Building, 825 Jadwin Avenue, Richland, Washington, hereby state*
20 *and certify that the 331-C Storage Unit at the 300 Area, to the best of my knowledge and belief,*
21 *has been closed in accordance with the attached approved closure plan, and that the closure*
22 *was completed on (date).*

23 (Signature and date)

24 The Permittees will engage an independent Professional Engineer registered in the State of Washington to
25 inspect closure activities, to verify that closure activities are being conducted according to this plan, and
26 to certify that closure has been performed in accordance with this plan.

27 The engineer will inspect the 331-C Storage Unit at least weekly while closure activities are being
28 performed. During these inspections the engineer will observe closure activities to determine whether
29 they are being performed according to this plan. Inspections will include, but not be limited to:

- 30 • Inspection of dangerous waste containment structures and systems to determine whether releases of
31 waste to the environment have occurred
- 32 • Verification that the dangerous waste inventory has been removed within 90 days of receipt of the last
33 waste shipment
- 34 • Inspection of manifests and Operating Record to verify that these waste were disposed of in
35 compliance with WAC 173-303
- 36 • Inspection of decontamination operations to verify that they are being performed using the procedures
37 described in this plan
- 38 • Inspections of the Operating Record to verify that samples of liquid decontamination waste were
39 collected and analyzed using the procedures described in this plan
- 40 • Inspection of the Operating Record to verify that decontamination waste were properly managed in
41 accordance with the requirements of WAC 173-303-610(5).

42 Inspections by the engineer will be documented in a bound notebook. Notations will include the date and
43 time of the inspection, the areas inspected, the activities inspected, applicable closure plan requirements
44 inspected, status of observed activities with respect to plan requirements, corrective actions required

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1 status of past corrective actions, and name and signature of inspector. This inspection notebook will be
2 made available to Ecology upon request.

3 Upon completion of closure according to the plan, the Permittees will require the engineer to sign the
4 following document or a document similar to it:

5 *I, (name), a registered Professional Engineer, hereby certify, to the best of my knowledge and*
6 *belief, that I have made visual inspection(s) of the 331-C Storage Unit at the 300 Area and that*
7 *closure of the aforementioned unit has been performed in accordance with the attached*
8 *approved closure plan.*

9 (Signature, date, state Professional Engineer license number, business address, and phone number.)

10 No other activities are expected to be necessary for clean closure.

11 **11.1.3 Maximum Waste Inventory**

12 The maximum waste inventory for the 331-C Storage Unit will not exceed 20,000 gallons, as described in
13 Chapter 1.0. The inventory will consist of the waste types described in Chapter 1.0.

14 **11.1.4 Closure of Waste Piles, Surface Impoundments, Incinerators, Land Treatment Facilities,** 15 **and Miscellaneous Units**

16 This section is not applicable to the 331-C Storage Unit because wastes are not managed in these types of
17 units.

18 **11.1.5 Closure of Landfill Units**

19 This section is not applicable to the 331-C Storage Unit because it does not contain any landfill units and
20 will not be closed as a dangerous waste landfill unit.

21 **11.1.6 Schedule for Closure**

22 When closure begins, the inventory of dangerous waste will be removed within 90 days from receipt of
23 the final volume of waste. All closure activities will be completed within 180 days of receipt of the final
24 volume of waste. Ecology will be notified by DOE-RL at least 45 days before the final closure activities
25 are begun. Closure activities are summarized in Table 11.1. A detailed schedule of closure activities is
26 provided in Table 11.2.

27 **11.1.7 Extension for Closure Time**

28 The inventory of dangerous waste will be removed from the 331-C Storage Unit within 90 days of receipt
29 of the last volume of waste. The closure activities described in this plan will be completed within
30 180 days of receipt of the final volume of waste. No extension to the time frame for initiation and
31 completion of closure is currently expected to be necessary. Extensions to the time frames for closure
32 would only be necessary if unexpected conditions were encountered during closure of the unit. If it
33 becomes apparent that all waste cannot be removed within 90 days, Ecology will be so notified at least
34 30 days prior to expiration of the 90-day period. This notification will demonstrate why more than
35 90 days is required for removal of the waste and will demonstrate that steps have been taken to prevent
36 threats to human health and the environment and that the unit is in compliance with applicable permit
37 standards. If it becomes apparent that closure cannot be completed within 180 days after approval of this
38 plan, Ecology will be so notified at least 30 days prior to expiration of the 180-day period. This
39 notification will demonstrate why more than 180 days is required for closure and will demonstrate that
40 steps have been taken to prevent threats to human health and the environment and that the unit is in
41 compliance with applicable permit standards.

42 **11.1.8 Closure Cost Estimate**

43 The Hanford Facility is not required to comply with the financial assurance requirements in
44 WAC 173-303-620 based upon Permit Condition II.H.

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1 **11.1.9 Financial Assurance Mechanism for Closure**

2 The Hanford Facility is not required to comply with the financial assurance requirements in
3 WAC 173-303-620 based upon Permit Condition II.H.

4 **11.2 NOTICE IN DEED**

5 This section is not applicable because the 331-C Storage Unit is not expected to be closed as a dangerous
6 waste disposal unit.

7 **11.3 POSTCLOSURE PLAN**

8 This section and subsequent subsections are not applicable because the 331-C Storage Unit is expected to
9 be clean closed, not as a land-based unit.

10 **11.4 LIABILITY REQUIREMENTS**

11 The Hanford Facility is not required to comply with the financial assurance requirements in
12 WAC 173-303-620 based upon Permit Condition II.H.3.

13 **Table 11.1. Summary of Closure Activities**

Closure Activity Description	Expected Duration
Receipt of final volume of dangerous waste	N/A
Notify EPA and Ecology that closure will begin	30 days
Remove waste inventory – package all dangerous waste, manifest, and transfer to permitted facility for further storage, treatment and/or disposal	45 days
Decontaminate structural surfaces and equipment.	55 days
Analyze decontamination waste to determine proper methods of treatment/disposal	25 days
Dispose of decontamination waste based on results of waste analysis	20 days

14 **Table 11.2. Detailed Schedule of Closure**

Action	Schedule
Pre-Closure Activities	
Date of receipt of last volume of waste	Day 0
Notify EPA and Ecology	Day 30
Closure Activities	
Removal of Waste Inventory	Day 75
Removal of equipment and components	Day 95
Decontamination of Unit	Day 130
Management of Decontamination Waste	
Waste Analysis	Day 155
Waste Disposal	Day 175
Other Activities	
Certification of Closure to Ecology	Day 215

15