

INTEGRATED DISPOSAL FACILITY CHANGE CONTROL LOG

Change Control Logs ensure that changes to this unit are performed in a methodical, controlled, coordinated, and transparent manner. Each unit addendum will have a “**Last Modification Date**” which represents the last date the portion of the unit has been modified. The “**Modification Number**” represents Ecology’s method for tracking the different versions of the permit. This log will serve as an up to date record of modifications and version history of the unit.

Last modification to Integrated Disposal Facility **August 26, 2021**

<u>ChaptersAddenda</u>	Last Modification Date	Modification Number
Unit-Specific Permit Conditions	02/01/2021	PCN-IDF-2020-06 (8C.2021.Q1)
1.0 <u>A.</u> Part A Form	02/01/2021	PCN-IDF-2020-06 (8C.2021.Q1)
2.0 Topographic Map Description	09/30/2014	
3.0 <u>B.</u> Waste Analysis Plan	06/30/2013	
<u>Appendix BA Quality Assurance Project Plan for IDF Waste Analysis</u>		
<u>Appendix BB Waste Stream Descriptions</u>		
4.0 <u>C.</u> Process Information	09/08/2020	PCN-IDF-2020-04 (8C.2020.Q3)
4A1 <u>Appendix C1</u> Phase I Critical Systems Design Report	09/08/2020	PCN-IDF-2020-04 (8C.2020.Q3)
4A2 <u>Appendix C2</u> Critical Systems Tables & Data Sheets	03/31/2008	
4A3 <u>Appendix C3</u> Critical Systems Design Drawings	08/26/2021	PCN-IDF-2021-01 (8C.2021.Q3)
4B <u>Appendix C4</u> Detailed Design Cell 1 Construction Quality Assurance Plans	04/09/2006	
4C <u>Appendix C5</u> Facility Response Action Plan	04/09/2006	
4D <u>Appendix C6</u> Construction Specifications (C-1), RPP-18489, Rev. 1	09/08/2020	PCN-IDF-2020-04 (8C.2020.Q3)
<u>Appendix C7 RESERVED</u>		
<u>Appendix C8 RESERVED</u>		
<u>Appendix C9 Integrated Disposal Facility (IDF) Infrastructure Construction Specification (CHPRC-03953, Rev. 0)</u>	09/08/2020	PCN-IDF-2020-04 (8C.2020.Q3)
5.0 <u>D.</u> Groundwater Monitoring Plan	06/30/2010	
<u>Appendix DA Quality Assurance Project Plan</u>		

<u>ChaptersAddenda</u>	Last Modification Date	Modification Number
<u>Appendix DB Sampling Protocol</u>		
<u>Appendix DC Well As Built Diagrams and Proposed Well Locations</u>		
<u>E. Security</u>		
<u>F. Preparedness and Prevention</u>		
6.0 Procedures to Prevent Hazards	11/23/2020	PCN-IDF-2020-05 (8C.2020.Q4)
7.0 Reserved		
8.0 <u>G. Personnel Training</u>	09/30/2014	
9.0 <u>Reserved</u>		
10.0 <u>Reserved</u>		
11.0 <u>H. Closure Plan</u>	09/30/2014	
<u>Appendix HA Sampling and Analysis Plan</u>		
<u>Appendix HA.a Visual Sample Plan Report Documentation</u>		
<u>I. Inspection Plan</u>		
<u>J. Contingency Plan</u>		
<u>K. Post-Closure Plan</u>		
12.0 <u>Reserved</u>		
13.0 Other Federal and State Laws	04/09/2006	
<u>Addenda</u>	Last Modification Date	Modification Number
Addendum J.1 Pre-Active Life Contingency Plan	11/23/2020	PCN-IDF-2020-05 (8C.2020.Q4)
Addendum J.2 Active Life Contingency Plan	05/23/2016	8C.2016.Q1

**INTEGRATED DISPOSAL FACILITY
PART III, OPERATING UNIT GROUP 11
UNIT-SPECIFIC PERMIT CONDITIONS**

CHANGE CONTROL LOG

Change Control Logs ensure that changes to this unit are performed in a methodical, controlled, coordinated, and transparent manner. Each unit addendum will have its own change control log with a modification history table. The “**Modification Number**” represents Ecology’s method for tracking the different versions of the permit. This log will serve as an up to date record of modifications and version history of the unit.

Modification History Table

Modification Date	Modification Number
02/01/2021	PCN-IDF-2020-06 (8C.2021.Q1)
11/23/2020	PCN-IDF-2020-05 (8C.2020.Q4)
09/08/2020	PCN-IDF-2020-04 (8C.2020.Q3)
06/11/2020	PCN-IDF-2020-03 (8C.2020.Q2)
08/21/2018	PCN-IDF-2018-01 (8C.2018.Q3)
08/25/2016	8C.2016.Q2

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**INTEGRATED DISPOSAL FACILITY
PART III, OPERATING UNIT GROUP 11
UNIT-SPECIFIC PERMIT CONDITIONS**

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1
2 **PART III, OPERATING UNIT GROUP 11, UNIT-SPECIFIC PERMIT CONDITIONS**
3 **INTEGRATED DISPOSAL FACILITY**
4

5 **UNIT DESCRIPTION**

6 The Integrated Disposal Facility (IDF) Operating Unit Group is used for disposal of immobilized
7 low-activity waste (ILAW) from the Waste Treatment Plant (WTP) and mixed low-level waste (MLLW)
8 from Hanford Site operations.

9 The IDF is located on 82 hectares (202 acres) of land within the southcentral portion of the 200 East Area
10 of the Hanford Site. The IDF consists of four dangerous waste management units (DWMUs), including: a
11 storage pad, a treatment pad, and two landfill cells.

12 The IDF storage pad provides a permitted area for container storage; and the treatment pad provides
13 permitted areas for both storage and waste treatment prior to final disposition in the IDF landfill cells.
14 Treatments which can be performed on the treatment pad consists of microencapsulation,
15 macroencapsulation, and sealing of mixed waste (MW) debris. The two IDF landfill cells provide for
16 disposal of MLLW waste from Hanford Site generators. Wastes which will be disposed in the landfill
17 cells will meet the requirements of Washington Administrative Code (WAC) 173-303-140, *Land disposal*
18 *regulations*, incorporated by reference, which includes by reference 40 Code of Federal Regulations
19 (CFR) 268, *Land Disposal Restrictions*, prior to disposal. (Additionally, the landfill cells may be used for
20 disposal of nondangerous radioactive low-level waste [LLW], which is outside of the scope of this permit.
21 [*Atomic Energy Act of 1954*])

22 This document sets forth the operating conditions for the ~~Integrated Disposal Facility~~ (IDF).

23 **III.11.A COMPLIANCE WITH APPROVED PERMIT**

24 The Permittees ~~shall~~will comply with all requirements, with respect to dangerous waste management and
25 DWMUs, set forth in the *Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous*
26 *Waste Portion for the Treatment, Storage, and Disposal of Dangerous Waste, 8C, Parts I and II Permit*
27 *Conditions and Part III, Operating Unit Group 11 IDF Permit Conditions, the ~~Chapters Addenda~~, and*
28 *Appendices specified in Permit Condition III.11.A and the Amendments specified in Permit Conditions*
29 *III.11.B through III.11.I. In the event that an IDF Unit-Specific Condition conflicts with Parts I and II*
30 *Permit Conditions, the Unit-Specific Conditions will prevail.* All subsections, figures, and tables included
31 in these portions are enforceable unless stated otherwise: in the IDF Permit.

32 **LIST OF ADDENDA SPECIFIC TO OPERATING UNIT GROUP 11**

33 ~~Chapter 1.0 — Part A Form, dated February 1, 2021~~

34 ~~Chapter 2.0 — Topographic Map Description, dated September 30, 2014~~

35 ~~Chapter 3.0 — Waste Analysis Plan, dated June 30, 2013~~

36 ~~Chapter 4.0 — Process Information, dated September 08, 2020~~

37 ~~Appendix 4A — Design Report (as applicable to critical systems), dated September 08, 2020~~

38 ~~Appendix 4B — Construction Quality Assurance Plan, dated April 9, 2006~~

39 ~~Appendix 4C — Facility Response Action Plan, dated April 9, 2006~~

40 ~~Appendix 4D — Construction Specifications (RPP 18489, Rev. 1), dated September 08, 2020~~

41 ~~Appendix C9 — Infrastructure Construction Specification (CHPRC 03953, Rev. 0), dated~~
42 ~~September 08, 2020~~

43 ~~Chapter 5.0 — Groundwater Monitoring, dated June 30, 2010~~

- 1 [Chapter 6.0 — Procedure to Prevent Hazards, dated November 23, 2020](#)
- 2 [Addendum J.1 — Pre Active Life Contingency Plan, dated November 23, 2020](#)
- 3 [Addendum J.2 — Active Life Contingency Plan, dated March 31, 2016](#)
- 4 [Chapter 8.0 — Personnel Training, dated September 30, 2014](#)
- 5 [Chapter 11.0 — Closure, dated September 30, 2014](#)
- 6 [Chapter 13.0 — Other Federal and State Laws, dated April 9, 2006](#)
- 7 [Addendum A, Part A Form](#)
- 8 [Addendum B, Waste Analysis Plan](#)
- 9 [Appendix BA, Quality Assurance Project Plan for IDF Waste Analysis](#)
- 10 [Appendix BB, Waste Stream Descriptions](#)
- 11 [Addendum C, Process Information](#)
- 12 [Appendix C1, Phase I Critical Systems Design Report](#)
- 13 [Appendix C2, Critical Systems Table](#)
- 14 [Appendix C3, Design Drawings](#)
- 15 [Appendix C4, Construction Quality Assurance Plans](#)
- 16 [Appendix C5, Facility Response Action Plan](#)
- 17 [Appendix C6, Construction Specifications, RPP-18489, Rev. 1](#)
- 18 [Appendix C7, RESERVED](#)
- 19 [Appendix C8, RESERVED](#)
- 20 [Appendix C9, Integrated Disposal Facility \(IDF\) Infrastructure Construction Specification](#)
- 21 [\(CHPRC-03953, Rev. 0\)](#)
- 22 [Addendum D, Groundwater Monitoring Plan](#)
- 23 [Appendix DA, Quality Assurance Project Plan](#)
- 24 [Appendix DB, Sampling Protocol](#)
- 25 [Appendix DC, ~~Well As Built Diagrams and Proposed Well Locations~~](#)
- 26 [Addendum E, Security](#)
- 27 [Addendum F, Preparedness and Prevention](#)
- 28 [Addendum G, Personnel Training](#)
- 29 [Addendum H, Closure Plan](#)
- 30 [Appendix HA, Sampling and Analysis Plan](#)
- 31 [Appendix HA.a, Visual Sample Plan Report Documentation](#)
- 32 [Addendum I, Inspection Plan](#)
- 33 [Addendum J, Contingency Plan](#)
- 34 [Addendum K, Post-Closure Plan](#)

1 General and Standard Hanford Facility Resource Conservation and Recovery Act (RCRA) Permit,
2 WA7890008967 (Permit) conditions (Part I and Part II Conditions) applicable to the IDF are identified in
3 Permit Attachment 9, *Permit Applicability Matrix*.

4 **DEFINITIONS**

5 The following definitions are specific to the IDF.

6 **Action leakage rate (ALR):** The maximum design flow rate that the leak detection system (LDS) can
7 remove without the fluid head on the bottom liner exceeding 1 foot.

8 **Composite drainage net (CDN):** Geocomposite drainage layers associated with the lining of waste
9 disposal facility. The CDN will consist of a layer of geotextile thermally bonded to each side of a geonet.

10 **Critical System:** Specific portions of a Treatment, Storage, and Disposal unit's structure, or equipment,
11 whose failure could lead to the release of dangerous waste into the environment, and/or systems which
12 include processes which treat, transfer, store, or dispose of regulated wastes. A list identifying the critical
13 systems for the IDF is included in Permit Condition III.11.C.1.a.

14 **Geosynthetic clay liner:** Geotextiles, geocomposites, geosynthetic clay liner, or geomembranes.

15 **High-density polyethylene (HDPE):** The geonet will be high-density polyethylene, manufactured by
16 extruding two crossing strands to form a bi-planar drainage net structure.

17 **Immobilized low-activity waste:** Waste which have been incinerated to form glass in order to
18 immobilize the radionuclide concentrations.

19 **Low-activity waste:** Radioactive wastes which contain very small concentrations of radionuclides.

20 **Leachate collection and removal system (LCRS):** Leachate is liquid from precipitation and the
21 application of water or nonhazardous liquids for dust suppression generated from rainfall and the natural
22 decomposition of waste that is filtered that filters through the landfill to the LCRS leachate collection and
23 removal system. The LCRS leachate collection and removal system provides a flow path to convey
24 leachate to the LCRS leachate collection and removal system sump. The LCRS leachate collection and
25 removal system will continue to be operated in a manner that ensures that the leachate depth over the liner
26 does not exceed 30.5 cm (12 in.) in accordance with WAC 173-303-665(2)(h)(ii)'s job is to direct the
27 leachate to collection sumps so it can be properly removed from the landfill.

28 **Leak detection system:** The LDS is structurally similar to and located under the LCRS for collecting and
29 conveying leachate from the LCRS into the LDS sump for detection, and serves as a secondary LCRS for
30 each IDF disposal cell. Leachate collected in the LDS sump will be measured to determine any leakage
31 through the primary liner-A method in which the existence of a leak within a system is determined. The
32 techniques are utilized across a wide range of systems where a container must seal in some material. The
33 variety of detection methods can be classified as internal or external, depending on where the LDS is
34 located.

35 **Microencapsulation:** The process of enclosing chemical substances in microcapsules. Stabilization of the
36 debris with the following reagents (or waste reagents) such that the leachability of the hazardous
37 contaminants is reduced: (1) Portland cement; or (2) lime/pozzolans (e.g., fly ash and cement kiln dust).
38 Other Rreagents (e.g., iron salts, silicates, and clays) may be added to enhance the set/cure time and/or
39 compressive strength, or to reduce the leachability of the hazardous constituents.

40 **Macroencapsulation:** The application of surface coating materials such as polymeric organics
41 (e.g., resins and plastics) or use of a jacket of inert inorganic materials to substantially reduce surface
42 exposure to potential leaching media.

1 **Response action plan (RAP):** A site-specific plan that establishes actions to be taken if leakage through
2 the upper (primary) lining system of a landfill exceeds a certain rate-detailed report that includes the steps
3 to remediate waste materials, soil, surface water, ground water. The RAP includes the intended level of
4 cleanup to support closure.

5 **Sealing:** The application of an appropriate material which adheres tightly to the debris surface to avoid
6 exposure of the surface to potential leaching media. When necessary to effectively seal the surface,
7 sealing entails pretreatment of the debris surface to remove foreign material and to clean and roughen the
8 surface. Sealing materials include epoxy, silicone, and urethane compounds, but paint may not be used as
9 a sealant.

10 **Secondary leak detection system (SLDS):** A system which performs the same function as the primary
11 LDS, but is not required by RCRA regulations.

12 **Secondary solid waste:** Treatment residues and materials derived from the treatment of mixed waste
13 which continue to designate as a dangerous, extremely hazardous, or acutely hazardous waste and
14 contains a radioactive component.

15 **Supplemental ILAW Treatment:** Additional treatment processes that would be used specifically to
16 supplement the WTP's treatment of Low-Activity Waste (LAW). Because the WTP as currently designed
17 does not have the capacity to treat the entire volume of LAW in a reasonable timeframe, additional LAW
18 treatment capacity is needed. Supplemental ILAW is neither identified nor permitted for disposal at the
19 IDF.

20 **ACRONYMS**

21 The following acronyms are specific to the IDF unit:

22 **AEA** Atomic Energy Act of 1954

23 **ALR** Action leakage rate

24 **ASTM** American Society for Testing and Materials

25 **CDN** Composite drainage net

26 **CQA** Construction Quality Assurance

27 **ECN** Engineering Change Notice

28 **GCL** Geosynthetic clay liner

29 **HFFACO** Hanford Federal Facility Agreement and Consent Order

30 **HDPE** High-density polyethylene

31 **HEIS** Hanford Environmental Information System

32 **HELP** Hydrologic evaluation of landfill performance

33 **IDF** Integrated Disposal Facility

34 **ILAW** Immobilized low-activity waste

35 **IWTRD** ILAW Waste Form Technical Requirements Document

36 **IQPRE** Independent Qualified Registered Professional Engineer

37 **LAW** Low-activity waste

38 **LCRS** Leachate collection and removal system

39 **LDS** Leak detection system

1	<u>LS</u>	<u>Liner System</u>
2	MEMO	Monitoring efficiency model
3	<u>NCR</u>	<u>Non-Conformance Report</u>
4	<u>PE</u>	<u>Polyethylene</u>
5	<u>PVC</u>	<u>Polyvinyl chloride</u>
6	<u>RAP</u>	<u>Response action plan</u>
7	<u>SLDS</u>	<u>Secondary leak detection system</u>
8	<u>SLMOP</u>	<u>Sub-Surface Liquid Monitoring Operations Plan</u>
9	<u>SSW</u>	<u>Secondary solid waste</u>
10	<u>SW</u>	<u>Secondary waste</u>
11	<u>SWTRD</u>	<u>Secondary Waste Form Technical Requirements</u>

12 **III.11.B AMENDMENTS TO THE APPROVED PERMIT**

13 **III.11.B.1** ~~Portions of Permit Attachment 4, *Hanford Emergency Management Plan* that are not~~
14 ~~made enforceable by inclusion in the applicability matrix for that document, are not made~~
15 ~~enforceable by reference in this document. Changes to this Permit will be subject to the~~
16 ~~permit modification procedures under WAC 173-303-830 and Part 1 Permit Condition~~
17 ~~I.C.3.~~

18 ~~**III.11.B.2** Permittees must comply with all applicable portions of the Permit. The facility and unit-~~
19 ~~specific recordkeeping requirements are distinguished in the General Information Portion~~
20 ~~of the Permit, and are tied to the Permit conditions.~~

21 ~~**III.11.B.3** The scope of this Permit is restricted to the landfill construction and operation as~~
22 ~~necessary to dispose of: (1) Immobilized Low Activity Waste (ILAW) from the Waste~~
23 ~~Treatment Plant (WTP), and (2) the Demonstration Bulk Vitrification System (DBVS)~~
24 ~~and IDF operational waste as identified in Chapter 4.0. Future expansion of the RCRA~~
25 ~~trench, or disposal of other wastes not specified in this Permit, is prohibited unless~~
26 ~~authorized via modification of this Permit.~~

27 ~~**III.11.B.4**~~ **III.11.B.2** In accordance with ~~Washington Administrative Code (WAC) 173-303-~~
28 ~~806(11)(d), this Permit shall will be reviewed every five (5) years after the effective date~~
29 ~~and modified, as necessary, in accordance with WAC 173-303-830(3).~~

30 **III.11.C Design Requirements**

31 **III.11.C.1** ~~The IDF is designed in accordance with WAC 173-303-665 and WAC 173-303-640 and~~
32 ~~-665, and as described in Chapter 4.0 Addendum C, "Process Information." Design~~
33 ~~changes impacting the IDF critical systems shall will be performed in accordance with~~
34 ~~Permit Conditions III.11.D.7.b.i-1.d.i and III.11.D.7.b.ii-1.d.ii.~~

35 **III.11.C.1.a** ~~The IDF Critical Systems include the following: the Leachate Collection and Removal~~
36 ~~System (LCRS), Leachate Collection Tank (LCT), Leak Detection System (LDS), Liner~~
37 ~~System (LS), and closure cap. H-2 Drawings for the LCRS, LCT, LDS, and LS are~~
38 ~~identified in Appendix 4A, Section 3 of this Permit C3, "Design Drawings." Drawings for~~
39 ~~the Landfill closure cap will be provided pursuant to Permit Condition III.11.L.6.bC.1.e.~~

40 **III.11.C.1.b** ~~Critical systems, as defined in the definitions section of the Site-wide RCRA Permit, are~~
41 ~~identified in Appendix 4A C2, Section 1 of this Permit "Critical Systems Table."~~

1 III.11.C.2 Design Reports

2 III.11.C.2.a New Tank Design Assessment Report

3 The Permittees shall will generate a written report in accordance with WAC 173-303-
4 640(3)(a), providing the results of the LCT system design assessment. The report
5 shall will be reviewed and certified by an Independent Qualified Registered Professional
6 Engineer (IQRPE)¹ in accordance with WAC 173-303-810(13)(a).

7 III.11.C.2.b Compliance Schedule

8 The Permittees shall will submit the LCT design assessment report to the Department of
9 Ecology (Ecology) along with the IQRPE certification, prior to construction of any part
10 of the tank system including ancillary equipment.

11 III.11.D CONSTRUCTION REQUIREMENTS

12 III.11.D.1 The Permittees shall will construct and operate the IDF in accordance with all
13 specifications contained in Appendix C6, "Construction Specifications (RPP-18489,
14 Rev 01)."

15 III.11.B.5.d III.11.D.2 Rainwater Management

16 III.11.B.5.e III.11.D.2.a Prior to the start of the Active Life of the IDF, the Permittees will manage the
17 discharge of such water in accordance with the pollution prevention and best
18 management practices required by State Waste Discharge Permit Number ST-4511.

19 III.11.B.5.e.v III.11.D.2.b The Permittees will inspect the disposal cells for liquids after significant
20 rainfall events.

21 III.11.G III.11.D.3 CONSTRUCTION WATER MANAGEMENT

22 III.11.G.1 III.11.D.3.a During construction, it is anticipated that liquids will accumulate on top of all
23 liners and sumps. The Permittees shall will manage the construction wastewater in
24 accordance with State Waste Discharge Permit ST-4511.

25 III.11.G.2 III.11.D.3.b Liquid accumulation within the LCRS, LDS, and Secondary LDS (SLDS) prior
26 to initial waste placement will be considered construction wastewater (i.e., not leachate).

27 III.11.D.2 III.11.D.4 The Permittees shall will not reduce the minimum frequency of destructive testing
28 less than one test per 500 feet of seam, without prior approval in writing from Ecology.

29 ~~III.11.B.5 Inspection Requirements - Pre-Active Life Period and Active Life Period~~

30 ~~III.11.B.5.a The Permittees will conduct inspections of the IDF according to the following~~
31 ~~requirements:~~

32 ~~III.11.B.5.a.i Prior to the start of the Active Life of the IDF as defined in WAC 173-303-040,~~
33 ~~according to Chapter 6.0, Table 6-2.~~

34 ~~III.11.B.5.a.ii Following the start of the Active Life of the IDF as defined in WAC 173-303-040,~~
35 ~~according to Chapter 6.0, Table 6-2A.~~

¹"Independent Qualified Registered Professional Engineer," as used here and elsewhere with respect to Operating Unit Group 11, means a person who is licensed by the state of Washington, or a state which has reciprocity with the state of Washington as defined in Revised Code of Washington (RCW) 18.43.100, and who is not an employee of the owner or operator of the facility for which construction or modification certification is required. A qualified professional engineer is an engineer with expertise in the specific area for which a certification is given.

1 ~~III.11.B.5.b~~ The Permittees will remedy any problems revealed by inspections conducted pursuant to
2 ~~Permit Condition III.11.B.5.a on a schedule, which prevents hazards to the public health~~
3 ~~and the environment and as agreed to in writing, by the Department of Ecology~~
4 ~~(Ecology). Where a hazard is imminent or has already occurred, remedial action must be~~
5 ~~taken immediately.~~

6 ~~III.11.B.5.c~~ Reserved

7 ~~III.11.B.5.d~~ Rainwater Management

8 ~~III.11.B.5.e~~ Prior to the start of the Active Life of the IDF, the Permittees will manage the discharge
9 ~~of such water in accordance with the pollution prevention and best management practices~~
10 ~~required by State Waste Discharge Permit Number ST-4511.~~

11 ~~III.11.B.5.e.i~~ Management of Liquids Collected in the Leachate Collection and Removal System
12 ~~(LCRS), Leak Detection System (LDS), and Secondary Leak Detection System (SLDS)~~
13 ~~prior to the start of the Active Life of the IDF.~~

14 ~~III.11.B.5.e.ii~~ Permittees shall manage the liquid in the LCRS in a manner that does not allow the fluid
15 ~~head to exceed 30.5 cm above the flat 50 foot by 50 foot LCRS sump High Density~~
16 ~~Polyethylene (HDPE) bottom liner, and the LCRS sump trough, except for storms that~~
17 ~~exceed the 25-year, 24-hour storm event [WAC 173-303-665(2)(h)(ii)]. Liquid with a~~
18 ~~depth greater than 30.5 cm above the LCRS liner will be removed at the earliest~~
19 ~~practicable time after detection (not to exceed 5 working days).~~

20 ~~III.11.B.5.e.iii~~ Accumulated liquid of pumpable quantities in the LDS and SLDS will be managed in a
21 ~~manner that does not allow the fluid head to exceed 30.5 cm above the LDS liner or~~
22 ~~SLDS liner [WAC 173-303-665(2)(h)(ii) and (iii)]. Liquid with a depth greater than 30.5~~
23 ~~cm above a liner will be removed at the earliest practicable time after detection~~
24 ~~(not to exceed 5 working days).~~

25 ~~III.11.B.5.e.iv~~ The Permittees will use a flow meter to check if the amount of actual liquid pumped
26 ~~corresponds to the amount accumulated in the Leachate Collection Tank (LCT) to verify~~
27 ~~the proper function of the leachate collection and removal sump pumps with each use.~~
28 ~~The Permittees will document in the IDF portion of the facility operating record~~
29 ~~appropriate quality assurance/quality control requirements for selection and operation of~~
30 ~~the flow meter based on the required verification. In addition, the Permittees will~~
31 ~~evaluate the leachate transfer lines for freeze and thaw damage when ambient conditions~~
32 ~~may cause such damage to occur. The Permittees will document the methods and criteria~~
33 ~~used for purposes of this evaluation, along with an appropriate justification.~~

34 ~~III.11.B.5.e.v~~ The Permittee will inspect for liquids after significant rainfall events.

35 ~~III.11.B.5.e.vi~~ The Permittee will annually verify monitoring gauges and instruments are in current
36 ~~calibration; calibration will be performed annually or more frequently at intervals~~
37 ~~suggested by the manufacturer (refer to Chapter 4.0, Section 4.3.7.4).~~

38 ~~III.11.B.5.f~~ The Permittees will monitor liquids in the LCRS and LDS to ensure the action leakage
39 ~~rate (Chapter 4.0, Appendix 4A) is not exceeded.~~

40 ~~III.11.B.5.g~~ Soil Stabilization

41 ~~Prior to the first placement of waste in the IDF, the Permittee will apply soil stabilization~~
42 ~~materials as needed to prevent soil erosion in and around the landfill.~~

1 ~~III.11.C — Design Requirements~~

2 ~~III.11.C.1 — IDF is designed in accordance with WAC 173-303-665 and WAC 173-303-640 as~~
3 ~~described in Chapter 4.0. Design changes impacting IDF critical systems shall be~~
4 ~~performed in accordance with Permit Conditions III.11.D.1.d.i and III.11.D.1.d.ii.~~

5 ~~III.11.C.1.a — IDF Critical Systems include the following: the LCRS, LCT, LDS, Liner System (LS),~~
6 ~~and closure cap. H-2 Drawings for the LCRS, LCT, LDS, and LS are identified in~~
7 ~~Appendix 4A, Section 3 of this Permit. Drawings for the closure cap will be provided~~
8 ~~pursuant to Permit Condition III.11.C.1.e.~~

9 ~~The Permittees shall construct and operate the IDF in accordance with all specifications~~
10 ~~contained in RPP-18489, Rev 0. Critical systems, as defined in the definitions section of~~
11 ~~the Site-wide RCRA Permit, are identified in Appendix 4A, Section 1 of this Permit.~~

12 ~~III.11.C.1.b — Landfill Cap~~

13 ~~At final closure of the landfill, the Permittees shall cover the landfill with a final cover~~
14 ~~(closure cap) designed and constructed [WAC 173-303-665(6), WAC 173-303-806(4)(h)]~~
15 ~~to: provide long-term minimization of migration of liquids through the closed landfill;~~
16 ~~function with minimum maintenance; promote drainage and minimize erosion or abrasion~~
17 ~~of the cover; accommodate settling and subsidence so that the cover's integrity is~~
18 ~~maintained; and have a permeability less than or equal to the permeability of any bottom~~
19 ~~liner system or natural subsoils present.~~

20 ~~III.11.C.1.c — Compliance Schedule~~

21 ~~Proposed conceptualized final cover design is presented in Chapter 11, Closure~~
22 ~~Requirements. Six months prior to start of construction of IDF landfill final cover~~
23 ~~(but no later than 6 months prior to acceptance of the last shipment of waste at the IDF),~~
24 ~~the Permittees shall submit IDF landfill final cover design, specifications and~~
25 ~~Construction Quality Assurance (CQA) Plan to Ecology for review and approval. No~~
26 ~~construction of the final cover may proceed until Ecology approval of the final design is~~
27 ~~given, through a permit modification.~~

28 ~~III.11.C.1.d — The Permittees shall notify Ecology at least sixty (60) calendar days prior to the date it~~
29 ~~expects to begin closure of the IDF landfill in accordance with WAC 173-303-610(e).~~

30 ~~III.11.C.2 — Design Reports~~

31 ~~III.11.C.2.a — New Tank Design Assessment Report~~

32 ~~Permittees shall generate a written report in accordance with WAC 173-303-640(3)(a),~~
33 ~~providing the results of the LCT system design assessment. The report shall be reviewed~~
34 ~~and certified by an Independent Qualified Registered Professional Engineer (IQRPE)* in~~
35 ~~accordance with WAC 173-303-810(13)(a).~~

36 ~~III.11.C.2.b — Compliance Schedule~~

37 ~~Permittees shall submit the LCT design assessment report to Ecology along with the~~
38 ~~IQRPE certification, prior to construction of any part of the tank system including~~
39 ~~ancillary equipment.~~

40 ~~III.11.D — CONSTRUCTION REQUIREMENTS~~

1 ~~III.11.D.1~~III.11.D.5 Construction Quality Assurance

2 ~~III.11.D.1.a~~III.11.D.5.a Ecology shall will provide field oversight during construction of critical
3 systems. In cases where an Engineering Change Notice (ECN) and/or Non-Conformance
4 Report (NCR) are required, Ecology and the Permittees shall will follow steps for
5 processing changes to the approved design per Permit Conditions III.11.D.~~7.1.d.i and~~
6 ~~III.11.D.1.d.ii.~~

7 ~~III.11.D.1.b~~III.11.D.5.b The Permittees shall will implement the CQA plan (~~Appendix C4,~~
8 “Construction Quality Assurance Plans,”~~4B of the Permit,~~ during construction of the
9 IDF disposal cells.

10 ~~III.11.D.1.b.i~~III.11.D.5.b.i The Permittees will not receive waste in the IDF until the owner or operator
11 has submitted to Ecology by certified mail or hand delivery a certification signed by the
12 Construction Quality Assurance (CQA) officer that the approved CQA plan has been
13 successfully carried out and that the unit meets the requirements of WAC 173-303-
14 665(2)(h) or (j); and the procedure in WAC 173-303-810(14)(a) has been completed.
15 Documentation supporting the CQA officer’s certification shall will be furnished to
16 Ecology upon request.

17 ~~III.11.D.1.c~~III.11.D.6 Construction Inspection Reports

18 The Permittees shall will submit a report documenting the results of the leachate tank
19 installation inspection. This report must be prepared by an independent, qualified
20 installation inspector or an professional IQRPE either of whom is trained and experienced
21 in the proper installation of tank systems or components. The Permittees will remedy all
22 discrepancies before the tank system is placed in use. This report shall will be submitted
23 to Ecology at least ninety (90) days prior to the IDF operation and be included in the
24 Hanford Facility~~IDF~~ Operating Record, IDF portion. [WAC 173-303-640(3)(h)]

25 ~~III.11.D.1.d~~III.11.D.7 Engineering Change Notice ECN/Non-Conformance Report NCR Process for
26 Critical Systems

27 Portions of the following conditions for processing ECNs and non-conformance
28 reporting NCRs were extracted from and supersede Site-wide General Permit
29 Condition II.L.2.

30 ~~III.11.D.1.d.i~~III.11.D.7.a Engineering Change Notice ECN for Critical Systems

31 During construction of the IDF, the Permittees shall will formally document changes to
32 the approved designs, plans, and specifications, identified in Appendices 4A, 4B, 4C,
33 4DC1, “Phase 1 Critical Systems Design Report,” C4, C5, “Facility Response Action
34 Plan,” C6, and C9, “Integrated Disposal Facility (IDF) Infrastructure Construction
35 Specification (CHPRC-03953, Rev. 0).” of this Permit, with an ECN.

36 The Permittees shall will maintain all ECNs in the Hanford~~IDF~~ unit specific Facility
37 Operating Record, IDF portion, and shall will make them available to Ecology upon
38 request or during the course of an inspection. The Permittees shall will provide to
39 Ecology copies of proposed ECNs affecting any critical system within five (5) working
40 days of initiating the ECN. Identification of critical systems is included in Permit
41 Condition III.11.C.1.a and Appendix C14A of this Permit. Within five (5) working days,
42 Ecology will review a proposed ECN modifying a critical system and inform the
43 Permittees whether the proposed ECN, when issued, will require a Class 1, 2, or 3 Permit
44 modification.

1 **III.11.D.1.d.ii****III.11.D.7.b** Non-Conformance Reporting for Critical Systems

2 **III.11.D.1.d.ii.a****III.11.D.7.b.i** During construction of the IDF, the Permittees ~~shall~~will formally
3 document with an NCR, any work completed which does not meet or exceed the
4 standards of the approved design, plans and specifications, identified in Appendices ~~4A,~~
5 ~~4B,~~ ~~4C,~~ ~~4DC1,~~ ~~C4,~~ ~~C5,~~ ~~C6,~~ and C9 of this Permit. The Permittees ~~shall~~will maintain all
6 NCRs in the ~~IDF unit specific~~Hanford Facility Operating Record, IDF portion, and ~~shall~~
7 ~~will~~ make them available to Ecology upon request, or during the course of an inspection.

8 **III.11.D.1.d.ii.b****III.11.D.7.b.ii** The Permittees ~~shall~~will provide copies of NCRs affecting any critical
9 ~~or regulated~~ system to Ecology within five (5) working days after identification of the
10 non-conformance. Identification of critical systems is included in Permit Condition
11 III.11.C.1.a and Appendix C14A of this Permit. Ecology will review a NCR affecting a
12 critical system and notify the Permittees within five (5) working days, in writing, whether
13 a Permit modification is required for any non-conformance, and whether prior approval is
14 required from Ecology before work proceeds, which affects the nonconforming item.

15 **III.11.D.1.d.ii.c****III.11.D.7.c** As-Built Drawings

16 Upon completing construction of the IDF, the Permittees ~~shall~~will produce as-built
17 drawings of the project, which incorporate the design and construction modifications
18 resulting from all project ECNs and NCRs, as well as modifications made pursuant to
19 WAC 173-303-830. The Permittees ~~shall~~will place the drawings into the Hanford
20 Facility Operating Record, IDF portion, within twelve (12) months of completing
21 construction.

22 ~~**III.11.D.2** The Permittees shall not reduce the minimum frequency of destructive testing less than~~
23 ~~one test per 500 feet of seam, without prior approval in writing from Ecology.~~

24 **III.11. III.11.E WASTE STREAM ACCEPTANCE CRITERIA**

25 ~~The IDF may accept LLW and MW. The only acceptable waste~~MW forms approved for
26 disposal at the RCRA cell of IDF landfill cells include~~are IDF operational waste, ILAW~~
27 in glass form from the WTP Low Activity Waste (LAW) Vitrification Facility and ILAW
28 from the Bulk Vitrification Research Demonstration and Development Facility (up to 50
29 boxes). Specifics about waste acceptance criteria for each of these wastes are
30 detailed~~other waste streams as specified~~ below.

- 31 • Used WTP LAW melter systems.
- 32 • Secondary solid waste (SSW) from WTP.
- 33 • Solidified SSW from the Effluent Treatment Facility.
- 34 • Fast Flux Test Facility non-liquid waste and demolition waste resulting from
35 decommissioning.
- 36 • Secondary waste (SW) (LLW and MLLW) from operations at the Tank Farms
37 and Solid Waste Operations Complex.
- 38 • Non-Comprehensive Environmental Response, Compensation, and Liability Act
39 of 1980, non-tank LLW and MLLW from various on-site generators.
- 40 • MW generated by IDF operations.

41 No other waste forms may be disposed at the RCRA cell of IDF unless authorized via a
42 final permit modification decision. Requests for Permit modifications must be
43 accompanied by an analysis adequate for Ecology to comply with State Environmental
44 Policy Act (SEPA), as well as by a risk assessment and groundwater modeling ~~to~~
45 show that demonstrates the environmental impact according to the process defined in ~~§~~

1 Permit Condition III.11.E.10.5 outlines the process by which waste sources in the IDF
2 are modeled in an ongoing risk budget and a groundwater impact analysis.

3 III.11.I.4.d III.11.E.1 The Permittees ~~shall~~will not dispose of any waste forms that ~~do~~does not comply
4 with all appropriate and applicable treatment standards, including all applicable land
5 disposal restrictions (LDR).

6 III.11.I.6 III.11.E.2 The Permittees ~~shall~~will not dispose of any waste that is not in compliance with
7 state and federal requirements as identified in Chapter 13.0 throughout this Permit.

8 III.11.I.2 III.11.E.3 Immobilized Low-Activity Waste ILAW Waste Acceptance Criteria

9 The only ILAW forms acceptable for disposal at IDF are: (1) approved glass
10 canisters that are produced in accordance with the terms, conditions, and requirements of
11 the WTP portion of the Permit, as well as, melters, glass shards, and other approved
12 ILAW forms that are acceptable and (2) the 50 bulk vitrification test boxes as specified in
13 the DBVS test plans.

14 To assure protection of human health and the environment, it is necessary that the
15 appropriate quality of glass be disposed at IDF. The Land Disposal Restrictions (LDR)
16 Treatment Standard for eight metals (arsenic, barium, cadmium, chromium, lead,
17 mercury, selenium and silver), when associated with High-Level Waste (HLW), is High
18 Level VIT (HLVIT) (40 CFR 268). Because these metals are constituents in the Hanford
19 Tanks Waste, the LDR standard for ILAW disposed to IDF is HLVIT.

20 III.11.E.4 Immobilized Low-Activity Waste Form Technical Requirements Document

21 For any ILAW glass form(s) that the United States Department of Energy
22 (DOE) Permittees intends to dispose of in the IDF, DOE the Permittees will provide to
23 Ecology for review, an ILAW Waste Form Technical Requirements Document
24 (IWTRD). The IWTRD will contain:

25 III.11.I.2.a.i III.11.E.4.a A description of each specific glass formulation that ~~DOE~~the Permittees
26 intends to use. This description will include~~ing~~a basis for why each specific formulation
27 is proposed for use, which specific tank wastes the glass formulation is proposed for use
28 with, and the characteristics of the glass that are key to satisfactory performance
29 (e.g., Vapor Hydration Test [VHT], Product Consistency Test [PCT], and Toxicity
30 Characteristic Leaching Procedure [TCLP], and/or other approved performance testing
31 methodologies that the parties agree are appropriate and necessary); will be used to
32 demonstrate the performance characteristics of the glass.

33 The description will also include the range in key characteristics anticipated if the
34 specific glass formulation is produced on a production basis with tank waste, and the
35 factors that ~~DOE~~the Permittees must protect against in producing the glass to ensure the
36 intended glass characteristics will exist in the actual ILAW.

37 III.11.I.2.a.ii III.11.E.4.b A performance assessment (PA) that provides a reasonable basis for assurance
38 that each glass formulation will, once disposed of in the IDF in combination with the
39 other waste volumes and waste forms planned for disposal at the entire IDF, be
40 adequately protective of human health and the environment; and will not violate or be
41 projected to violate any or all applicable state and federal laws, regulations and
42 environmental standards.

43 Within sixty (60) days of a request by Ecology, the Permittees shall will provide a
44 separate model run using Ecology's assumptions and model input.

1 III.11.I.2.a.iii **III.11.E.4.c** A description of production processes including management controls and
2 quality assurance/quality control (QA/QC) requirements that assure that glass produced
3 for each formulation will perform in a reasonably similar manner to the waste form
4 assumed in the performance assessment PA for that formulation.

5 The initial IWTRD contained glass formulation data as required by Permit Condition
6 III.11.E.4.a.I.2.a.i, and was submitted on December 18, 2006 (AR Accession #
7 0906020182). The Permittees submitted an updated IWTRD to Ecology on June 29, 2015
8 (DOE-ORP-2015-01). The performance assessment PA required by Permit Condition
9 III.11.E.4.b.I.2.a.ii, was submitted on May 26, 2020; expectations for future PA revisions
10 are ongoing. ~~and t~~ The quality assurance/quality control QA/QC requirements process
11 required by Permit Condition III.11.E.4.c.I.2.a.iii shall which was to be submitted for
12 Ecology review as soon as possible after issuance of the Final Tank Closure and Waste
13 Management Environment Impact Statement (EIS) and receipt of underlying codes and
14 data packages, and was submitted to Ecology at least one hundred and eighty (180) days
15 prior to the date DOE the Permittees expects to receive waste at the IDF. The PA was
16 submitted to Ecology for review in July 2020. At a minimum, the Permittees ~~shall~~ will
17 submit updates to the IWTRD to Ecology every five (5) years or more frequently with the
18 next one due June 30, 2015, if any of the following conditions exist:

- 19 • The Permittees submits a permit modification request allowing additional waste
20 forms to be disposed of at IDF. New waste forms could include ILAW glass not
21 previously described and , additional SSW, supplemental ILAW treatment, and
22 other waste from the Hanford Site.
- 23 • The WTP or other vitrification facility change their glass formulations from those
24 previously included in the IWTRD.
- 25 • An unanticipated event or condition occurs that Ecology determines would
26 warrant an update to the IWTRD.

27 The Permittees ~~shall~~ will update the IWTRD consistent with the above requirements for
28 review by Ecology consistent with their respective roles and authority as provided under
29 the Tri-Party Agreement (TPA). Ecology comments shall will be dispositioned through
30 the Review Comment Record (RCR) process and will be reflected in further modeling to
31 modify the IDF ILAW-Chapter 3.0, "Waste Analysis Plan" waste acceptance
32 requirements in Addendum B, "Waste Analysis Plan," as appropriate.

33 III.11.I.2.a.iv **III.11.E.4.d** The Permittees ~~shall~~ will not dispose of any WTP ILAW ~~or other waste~~
34 streams not described and evaluated in the IWTRD.

35 **III.11.E.5 Secondary Waste Form Technical Requirements Document**

36 **III.11.E.5.a** Secondary Waste (SW) includes, but is not limited to, 1) WTP waste – equipment, carbon
37 beds, high-efficiency particulate air filters, encapsulated other debris, silver mordenite
38 media, melters; and 2) Effluent Management Facility (EMF) - grouted ETF brines from
39 WTP EMF overheads. For any SSW forms, produced in conjunction with producing
40 ILAW glass, that the Permittees intend to dispose in the IDF, the Permittees will provide
41 to Ecology for review, a Secondary Waste Form Technical Requirements Document
42 (SWTRD). The SWTRD will contain:

1 III.11.E.5.a.i A description of each SW form and the mechanisms of immobilization that the Permittees
2 intend to use on these forms. In addition, this description will include SW waste form
3 formulations for each waste form and the characteristics of key parameters (such as
4 coefficient of diffusion) necessary to establish satisfactory performance after disposal that
5 will protect human health and the environment. The description must include information
6 which will demonstrate the cumulative impact from the disposed waste forms will not
7 exceed 75% of state and federal performance standards for drinking water.

8 III.11.E.5.a.ii A PA that provides a reasonable basis for assurance that each SW formulation will, once
9 disposed in the IDF in combination with the other waste volumes and waste forms
10 planned for disposal at the IDF, be adequately protective of human health and the
11 environment; and will not violate or be projected to violate, any or all applicable state and
12 federal laws, regulations, and environmental standards. Cumulative impact will not
13 exceed 75% of the performance standard.

14 III.11.E.5.a.iii A description of production processes including management controls and QA/QC
15 requirements which demonstrate that SW produced for each formulation will perform in a
16 reasonably similar manner to the SW formulation assumed in the PA.

17 III.11.E.5.b For SW forms which demonstrate acceptable performance in the PA and in the
18 modeling-risk budget tool, the waste must be treated and confirmed to be treated to meet
19 a range of 10^{-9} cm²/sec – 10^{-13} cm²/sec diffusion coefficient (EPA1315). The Permittees
20 will provide to Ecology a report every five years to demonstrate confirmation.

21 III.11.E.5.c For SW forms which demonstrate unacceptable performance in the PA and in the
22 modeling-risk budget tool, the Permittees must meet with Ecology to discuss a path
23 forward on these waste streams to be protective of the groundwater beneath the IDF prior
24 to the disposal of the questionable waste form. If needed, the waste forms final treatment
25 may need to be modified or an alternative disposal pathway may be identified.

26 ~~III.11.E.5.d — The uncertainty analysis must be included in all future performance assessments and~~
27 ~~modeling, and will contain the effects of variability in the grout mix formulation and the~~
28 ~~uncertainty in the paste and mortar formulations. Measurement error, variability from~~
29 ~~sample to sample for a given mix, and variability across different mixes will be included.~~
30 ~~American Society for Testing and Materials Coefficient of Diffusion methodology and~~
31 ~~U.S. Environmental Protection Agency (EPA) Leaching Procedures uncertainty in the~~
32 ~~diffusion coefficients will also be included.~~

33 III.11.E.5.de At a minimum, the Permittees will submit updates to the SWTRD to Ecology every five
34 (5) years or more frequently if any of the following conditions exist:

- 35 • The Permittees submits a permit modification request allowing additional SW
36 forms to be disposed of at IDF. New waste forms could include additional
37 secondary solid waste and other waste from the Hanford Site.
- 38 — ~~An unanticipated event or condition occurs that Ecology determines would~~
39 ~~warrant an update to the SWTRD.~~

40 III.11.E.5.ef The Permittees will not dispose of any SW or other waste streams not described and
41 evaluated in the SWTRD.

42 ~~III.11.I.6.a~~III.11.E.6 In accordance with the U.S. Department of Energy's (DOE) authority under the
43 Atomic Energy Act of 1954, as amended and other applicable law, prior to disposing of
44 any mixed ILAW in the IDF, DOE will certify to the State of Washington that it has
45 determined that such ILAW is not HLW~~High Level Waste~~ and meets the criteria and
46 requirements outlined in DOE's consultation with the U.S. Nuclear Regulatory

1 Commission (USNRC) beginning in 1993 (Letter from R.M. Bernero, USNRC to
2 J. Lytle, DOE, dated March 2, 1993; Letter from J. Kinzer, DOE, to C. J. Paperiello,
3 USNRC, “Classification of Hanford Low-Activity Tank Waste Fraction,” dated March 7,
4 1996; and Letter from C.J. Paperiello, USNRC, to J. Kinzer, DOE, “Classification of
5 Hanford Low-Activity Tank Waste Fraction,” dated June 9, 1997). While the requirement
6 to provide such certification is an enforceable obligation of this Permit, the provision of
7 such certification does not convey, or purport to convey, authority to Ecology to regulate
8 the radioactive hazards of the waste under this permit.

9 **III.11.E.7** In accordance with DOE’s authority under the *Atomic Energy Act of 1954*, as amended
10 and other applicable law, prior to disposing of any mixed SSW from WTP in the IDF,
11 DOE will certify to the State of Washington that it has determined that such SSW is not
12 HLW and meets the criteria and requirements outlined in DOE’s consultation with the
13 USNRC beginning in 1993 (Letter from R.M. Bernero, USNRC to J. Lytle, DOE, dated
14 March 2, 1993; Letter from J. Kinzer, DOE, to C. J. Paperiello, USNRC, “Classification
15 of Hanford Low-Activity Tank Waste Fraction,” dated March 7, 1996; and Letter from
16 C.J. Paperiello, USNRC, to J. Kinzer, DOE, “Classification of Hanford Low-Activity
17 Tank Waste Fraction,” dated June 9, 1997). While the requirement to provide such
18 certification is an enforceable obligation of this Permit, the provision of such certification
19 does not convey, or purport to convey, authority to Ecology to regulate the radioactive
20 hazards of the waste under this permit.

21 **III.11.E.8** No WTP SSW may be disposed in the IDF until certification, as described in Permit
22 Condition III.11.E.7, is provided by the Permittees via letter. Once certification is
23 received by Ecology, disposal of the WTP SSW can become authorized via a Final
24 Permit modification decision. Requests for Permit modifications must be accompanied by
25 an analysis adequate for Ecology to comply with SEPA, as well as by a risk assessment
26 and groundwater modeling to show the environmental impact. Permit Condition
27 III.11.E.10 outlines the process by which waste sources in the IDF are modeled in an
28 ongoing risk budget and a groundwater impact analysis.

29 **III.11.I.3 III.11.E.9** ~~Immobilized Low-Activity~~ ILAW Waste Acceptance Criteria Verification

30 **III.11.I.3.a** Six (6) months prior to disposing of ILAW in the IDF, the Permittees will submit an
31 ILAW verification plan to Ecology for review and approval. This plan will be
32 coordinated with WTP, Ecology, and the IDF Permittees personnel. This plan will outline
33 the specifics of verifying ILAW waste acceptance through WTP operating parameters,
34 and/or glass sampling. The plan will include physical sampling requirements for batches,
35 glass formulations, and/or feed envelopes.

36 **III.11.I.5 III.11.E.10** Modeling–Risk Budget Tool

37 **III.11.I.5.a III.11.E.10.a** The Permittees ~~will~~ must create and maintain a modeling–risk budget tool
38 (RBT) (RPP-CALC-631764494), which models the future impacts of the planned IDF
39 waste forms, (including input from analyses performed as specified in Permit Conditions
40 III.11.E.4.a.i.2.a through III.11.E.4.b.i.2.a.ii) and their impact to underlying vadose zone
41 and groundwater. This software tool will be submitted for Ecology review as soon as
42 possible after issuance of Final Tank Closure and Waste Management EIS and receipt of
43 underlying codes and data packages, and at least 180 days prior to the date DOE expects
44 to receive waste at IDF. The risk budget tool ~~will~~ shall be updated at least every
45 5 years. The model will be updated more frequently if needed, to support permit
46 modifications or SEPA Threshold Determinations whenever a new waste stream or
47 significant expansion is being proposed for the IDF. ~~Whenever the model is updated with~~
48 additional information, the Permittees will perform an updated modeling run and submit

1 ~~the information to Ecology. This risk budget tool RBT shall~~ will be conducted in manner
2 that is consistent with state and federal requirements, and represents a risk analysis of all
3 waste previously disposed of in the entire IDF (both cell 1 and cell 2) all IDF landfill
4 cells and those wastes expected to be disposed of in the future for the entire IDF to
5 determine cumulative impacts. The groundwater impact ~~should~~ will be modeled ~~to~~
6 evaluate fate and transport in the groundwater aquifer(s) in a concentration basis and
7 should be compared against various performance standards including but not limited to
8 drinking water standards (40 CFR 141 and 40 CFR 143). Ecology will review PA
9 modeling assumptions, input parameters, and results and will provide comments to the
10 Permittees. Ecology comments shall will be dispositioned through the RCR process and
11 comments will be reflected in further modeling to modify the IDF ILAW waste
12 acceptance criteria requirements as appropriate. The Permittees will provide responses to
13 Ecology on comments and inform Ecology how the comments will be reflected in further
14 modeling within one hundred and twenty (120) days of receipt of comments.

15 III.11.I.5.a.i. III.11.E.10.a.i The modeling risk budget tool RBT will include a sensitivity analysis
16 reflecting parameters, ~~their uncertainties,~~ and changes to parameters as requested by
17 Ecology.

18 III.11.I.5.a.ii III.11.E.10.a.ii If these modeling efforts indicate results within 75% of a performance
19 standard (including but not limited to federal drinking water standards [40 CFR 141 and
20 40 CFR 143]), Ecology and the Permittees will meet to discuss mitigation measures or
21 modified waste acceptance criteria for specific waste forms.

22 III.11.I.5.a.iii III.11.E.10.a.iii When considering all the waste forms to be disposed of in the IDF, the
23 Permittees shall will not dispose of any waste that will result (through forward-looking
24 modeling or in real groundwater concentrations data) in a violation of any state or federal
25 regulatory limit, specifically including but not limited to drinking water standards for any
26 constituent as defined in 40 CFR 141 and 40 CFR 143.

27 III.11.E.10.a.iv The Permittees will provide access to PA modeling for the RBT reports to Ecology
28 with the input provided by Ecology.

29 III.11.I.7 III.11.E.11 IDF Operational Waste Acceptance Criteria

30 III.11.I.7.a IDF operational activities (including decontamination, cleanup, and maintenance) will
31 generate a small amount of waste. Waste that can meet IDF waste acceptance without
32 treatment will be disposed of at the IDF. All other IDF operational waste will be managed
33 pursuant to WAC 173-303-200.

34 III.11.F GENERAL WASTE MANAGEMENT

35 III.11.F.1 The Permittees will comply with the process information requirements specific to
36 Addendum C, in accordance with WAC 173-303-630, 640, and 665, incorporated by
37 reference.

38 III.11.F.2 The Permittees will maintain the physical structure of the IDF as documented in the
39 as-built drawings in the Hanford Facility Operating Record, IDF portion, as required by
40 Permit Condition III.11.D.7.c.

41 III.11.F.3 The Permittees will not dispose of any MW that is not in compliance with state and
42 federal requirements as required in Addendum B, "Waste Analysis Plan," and
43 WAC 173-303-140.

1 III.11.F.4 During the active life of the IDF, ~~the~~ Permittees will maintain and update all design
2 drawings contained in Appendix C3. The Permittees will submit to Ecology a permit
3 modification request for changes in design drawings (Appendix C3) that are beyond
4 in-kind replacement/repair. ~~operate the IDF in accordance with all specifications~~
5 contained in Appendix C6.

6 III.11.F.5 Containers

7 ~~III.11.I.1.a~~ III.11.F.5.a All containers/packages ~~shall~~ will meet void space requirements pursuant to
8 WAC 173-303-665(12).

9 III.11.F.5.b Only outer containers in good condition, with no visible cracks, holes, dents, bulges, pit
10 or scale corrosion, or other damage that could compromise container integrity will be
11 accepted for disposal at the IDF.

12 III.11.F.5.c Waste packages will be placed in the landfill in a manner that ensures disposal of
13 LDR-compliant waste that meets all IDF waste acceptance requirements in accordance
14 with Addendum B, and the disposal requirements in Addendum C ~~limits interactions~~
15 ~~between waste packages to ensure reduction of chemical deterioration of waste packages~~
16 ~~and waste inside containers.~~

17 III.11.F.5.d Grouted waste forms should not be disposed above vitrified waste ~~forms~~ unless the
18 Permittees can demonstrate in the ~~Risk Budget Tool~~ that commingling of waste types will
19 not impact underlying vadose or groundwater as outlined in Permit Condition III.11.E.10.

20 III.11.F.6 Waste Treatment

21 Treatment performed at the IDF will be confined to the Treatment Pad as described in
22 Addendum C and depicted on the Part A map.

23 III.11.F.7 Reserved

24 III.11.F.8 Reserved

25 III.11.F.9 Landfills

26 ~~III.11.H~~ III.11.F.9.a Landfill Liner Integrity Management & Landfill Operations

27 ~~III.11.H.1~~ III.11.F.9.a.i The Permittees ~~shall~~ will design, construct, and operate the landfill in a manner to
28 protect the liners from becoming damaged. The Permittees will conduct all IDF
29 operations in a manner to protect the landfill liner from damage according to the
30 following requirements:

31 III.11.F.9.a.ii Primary Liner Temperature Limit: ~~w~~Waste including ILAW containers, placed on the
32 initial operations layer of the IDF landfill must be equal to or less than 312 F. (The waste
33 temperature limits were determined by heat transfer calculation and experimental
34 verification to be protective of HDPE primary liner with a four (4) feet of soil, including
35 gravel, above the liner.) ~~packages with elevated temperatures shall be evaluated and~~
36 ~~managed in a manner to maintain the primary (upper) liner below the design basis~~
37 ~~temperature for the liner (e.g., 160°F).~~

38 III.11.F.9.a.iii Primary Liner Specific Load Limit: The Permittees will ensure that procedures to operate
39 equipment within the landfill includes assurance that the combined load of the operating
40 layer, ~~Weight: waste, fill material,~~ any equipment operated within the lined portion of the
41 IDF Landfill Cells, and the final ~~closure~~ cover shall be placed in a manner that does not
42 exceed the allowable ~~specific load bearing capacity of~~ limit for the primary liner (~~weight~~
43 ~~per area~~ of 13,000 lb/ft²) at any time.

1 ~~III.11.F.9.a.iv Primary Liner Integrity: The Permittees will ensure that procedures for waste placement~~
2 ~~in the IDF, and the selection and operation of any equipment used within the lined~~
3 ~~portion of the IDF does not pose a risk of puncture or other damage to the primary liner,~~
4 ~~or damage berms. Only equipment that can be adequately supported by the operations~~
5 ~~layer, considering the geotechnical properties of the operating layer soils and the design~~
6 ~~and configuration of such equipment, will be used within the lined portion of the IDF.~~

7 III.11.F.9.a.vi The Permittees will conduct waste management operations according to procedures for
8 waste placement in the IDF and the selection and operation of any equipment used within
9 the lined portion of the IDF to ensure such activities do not pose a risk of puncture or
10 other damage to the primary liner or damage berms. These procedures will ensure that
11 only equipment that can be adequately supported by the operations layer will be used.
12 The Permittees will maintain a current copy of these procedures in the Hanford Facility
13 Operating Record, IDF portion, and submit permit modifications for Addendum C
14 appendices as necessary.

15 ~~III.11.H.2~~III.11.F.9.a.vi The Permittees ~~shall~~will construct berms and ditches to prevent run-on and
16 runoff in accordance with the requirements of Addendum C Chapter 4, Section 4.3.8 of
17 ~~the IDF portion of this Permit. Before the first placement of waste in the IDF, the~~
18 ~~Permittees shall~~will submit to Ecology a final grading and topographical map on a scale
19 sufficient to identify berms and ditches used to control run-on and runoff. Upon approval,
20 Ecology will incorporate these maps into the permit as a ~~Class 1~~Class 1 permit
21 modification.

22 III.11.F.9.a.vii The Permittees will maintain the stability of the side slopes of the IDF to prevent erosion,
23 intrusion, settling, and damage to the liner.

24 III.11.F.9.b Landfill Operations

25 III.11.H.3 The Permittees ~~shall~~will operate the RCRA-IDF landfill C cells (Cell 1) in accordance
26 with WAC 173-303-665(2) and the operating practices described in Addendum
27 C Chapters 3.0, 4.0, 6.0, 8.0, Addendum J.1, Addendum J.2, and Appendix 4A, Section 1,
28 subsection 7, except as otherwise specified in this Permit.

29 III.11.B.5.g III.11.F.9.c Soil Stabilization

30 Prior to the first placement of waste in the IDF, the Permittees will apply soil stabilization
31 materials as needed to prevent soil erosion in and around the landfill.

32 III.11.F.9.d Rainwater Management

33 The Permittees will inspect the ~~various liquid~~ collection sumps for liquids after
34 significant rainfall events, as defined in Addendum I, "Inspection Plan."

35 III.11.B.5.e.ii Permittees ~~shall~~will manage the liquid rainwater in the LCRS in a manner that does not
36 allow the fluid head to exceed 30.5 cm above the flat 50-foot ~~by 50-foot~~ LCRS sump
37 High Density Polyethylene (HDPE) bottom liner except for rare storm events, as
38 discussed in Addendum C, and the LCRS sump trough, except for storms that exceed the
39 25-year, 24-hour storm event [WAC 173-303-665(2)(h)(ii)]. Liquid with a depth greater
40 than 30.5 cm above the LCRS sump bottom liner will be removed at the earliest
41 practicable time after detection (not to exceed five (5) working days).

1 ~~III.11.E GROUNDWATER AND GROUNDWATER MONITORING~~

2 ~~Groundwater shall be monitored in accordance with and the provisions contained in the~~
3 ~~Ecology approved facility "Groundwater Monitoring" (Chapter 5.0). All wells used to~~
4 ~~monitor the groundwater beneath the unit shall be constructed in accordance with the~~
5 ~~provisions of WAC 173-160.~~

6 ~~III.11.E.1 Groundwater Monitoring Program~~

7 ~~III.11.E.1.a Prior to initial waste placement in the IDF landfill, the Permittees shall sample all~~
8 ~~groundwater monitoring wells in the IDF network twice quarterly for one first year to~~
9 ~~determine baseline conditions. For the first sampling event (and only the first), samples~~
10 ~~for each well will include all constituents in 40 Code of Federal Regulations (CFR) 264~~
11 ~~Appendix IX. Thereafter, sampling will include only those constituents as specified in~~
12 ~~Chapter 5.0, Table 5-2: Chromium (filtered and unfiltered the first year to compare~~
13 ~~results), Specific conductance, Total organic carbon, Total organic halide, and pH. Other~~
14 ~~constituents to be monitored but not statistically compared include alkalinity, anions,~~
15 ~~Inductively Coupled Plasma metals, and turbidity. These will provide important~~
16 ~~information on hydrogeologic characteristics of the aquifer and may provide indications~~
17 ~~of encroaching contaminants from other facilities not associated with IDF.~~

18 ~~III.11.E.1.b After the baseline monitoring is completed, and data is analyzed, the Permittees and~~
19 ~~Ecology shall assess revisions to Chapter 5.0, Table 5-2. Subsequent samples will be~~
20 ~~collected annually and will include constituents listed in Table 5-2 as approved by~~
21 ~~Ecology. All data analysis will employ Ecology approved statistical methods pursuant to~~
22 ~~WAC 173-303-645. Changes to Chapter 5.0 will be subject to the permit modification~~
23 ~~procedures under WAC 173-303-830.~~

24 ~~III.11.E.1.c All constituents used as tracers to assess performance of the facility through computer~~
25 ~~modeling should be sampled at least annually to validate modeling results. Groundwater~~
26 ~~monitoring data and analytes to be monitored will be reviewed periodically as defined in~~
27 ~~Chapter 5.0 of this Permit.~~

28 ~~III.11.E.1.d Upon Ecology approval of the leachate monitoring plan, leachate monitoring and~~
29 ~~groundwater monitoring activities should be coordinated as approved by Ecology to form~~
30 ~~an effective and efficient means of monitoring the performance of the IDF facility.~~

31 ~~III.11.E.1.e Groundwater monitoring data shall be reported to Ecology annually by July 31. The~~
32 ~~annual report shall include monitoring results for the 12-month period from January 1~~
33 ~~through December 31.~~

34 ~~III.11.F~~ III.11.F.9.e Leachate Collection Component Management

35 III.11.F.9.e.i The Permittees ~~shall~~ will design, construct, and operate all leachate collection systems to
36 minimize clogging during the Active Life and post-closure period.

37 ~~III.11.F.1 Leachate Collection and Removal System~~

38 III.11.F.1.a III.11.F.9.e.ii At least one hundred and twenty (120) days prior to initial waste placement
39 in the IDF, the Permittees ~~shall~~ will submit a leachate monitoring plan to Ecology for
40 review, approval, and incorporation into the permit. Upon approval by Ecology, this plan
41 will be incorporated into the Permit as a Class ¹1 modification. The Permittees ~~shall~~ will
42 not accept waste into the IDF until the requirements of the leachate monitoring plan have
43 been incorporated into this Permit.

1 III.11.F.9.e.iii At least one hundred and twenty (120) days prior to initial waste placement in the IDF,
2 the Permittees will submit to Ecology for review, approval, and incorporation into the
3 permit information on the Leachate Collection System, including adding the systems
4 DWMUs as Miscellaneous Units. Upon approval by Ecology, this information will be
5 incorporated into the Permit as a Class 3 modification. ~~The Permittees will not accept~~
6 ~~waste into the IDF until the leachate collection system DWMUs have been incorporated~~
7 ~~into this Permit.~~

8 III.11.F.1III.11.F.9.f Leachate Collection and Removal System

9 III.11.F.1.bIII.11.F.9.f.i Leachate in the LCRS (primary sump) ~~shall~~will be sampled and analyzed
10 monthly for the first year of operation of the facility and quarterly thereafter (pursuant to
11 WAC 173-303-200). Additionally, leachate ~~shall~~will be sampled and analyzed to meet
12 waste acceptance criteria at the receiving Treatment Storage and Disposal Facility.

13 III.11.F.1.cIII.11.F.9.f.ii The Permittees ~~shall~~will manage the leachate in the LCRS in a manner that
14 does not allow the fluid head to exceed 30.5 cm above the flat 50-foot by 50-foot LCRS
15 sump HDPE bottom liner except for rare storm events, as discussed in ~~Chapter 4.0;~~
16 ~~Section 4.3.6.1~~Addendum C, and the LCRS sump trough [WAC 173-303-665(2)(h)(ii)].
17 Liquid with a depth greater than 30.5 cm above the SLDS liner will be removed at the
18 earliest practicable time after detection (~~not to exceed five (5) working days~~).

19 III.11.B.5.eivIII.11.F.9.f.iii The Permittees will use a flow meter to check if the amount of actual
20 liquid pumped corresponds to the amount accumulated in the ~~Leachate Collection Tank~~
21 ~~(LCT)~~ to verify the proper function of the ~~leachate collection and removal~~LCRS sump
22 pumps with each use. The Permittees will document in the Hanford Facility Operating
23 Record, IDF portion, of the facility operating record appropriate quality assurance/quality
24 control~~QA/QC~~ requirements for selection and operation of the flow meter based on the
25 required verification. In addition, the Permittees will evaluate the leachate transfer lines
26 for freeze and thaw damage when ambient conditions may cause such damage to occur.
27 The Permittees will document the methods and criteria used for purposes of this
28 evaluation, along with an appropriate justification.

29 III.11.B.5.eviIII.11.F.9.f.iv The Permittees will annually verify monitoring gauges and instruments
30 are in current calibration; calibration will be performed annually or more frequently at
31 intervals suggested by the manufacturer (refer to Addendum C~~Chapter 4.0, Section~~
32 ~~4.3.7.4~~).

33 III.11.B.5.fIII.11.F.9.f.v The Permittees will monitor liquids in the LCRS and LDS to ensure the
34 ~~action leakage rate~~ALR in Appendix C5~~(Chapter 4.0, Appendix 4A)~~ is not exceeded. The
35 LCRS will be inspected per Permit Condition III.11.M.

36 III.11.F.1.dIII.11.F.9.f.vi After initial waste placement, the Permittees ~~shall~~will manage all
37 leachate from the permitted cells s as dangerous waste (designated with Dangerous Waste
38 Number F039) in accordance with WAC 173-303.

39 III.11.F.2III.11.F.9.g Monitoring and Management of Leak Detection System~~LDS (LDS/Secondary~~
40 ~~Sump)~~

41 III.11.F.2.aIII.11.F.9.g.i The Permittees ~~shall~~will manage the leachate in the LDS in a manner that
42 does not allow the fluid head to exceed 30.5 cm above the LDS liner [WAC 173-303-
43 665(2)(h)(ii)].

1 **III.11.F.2.b****III.11.F.9.g.ii** The Permittees ~~shall~~ will monitor and record leachate removal for
2 comparison to the ~~Action Leakage Rate (ALR)~~ as described in Appendix ~~4C, Response~~
3 ~~Action Plan~~C5. If the leachate flow rate in the LDS exceeds the ALR, the Permittees
4 ~~shall~~ will implement the Ecology approved Response Action Plan (Appendix ~~4C~~C5).

5 **III.11.F.2.c****III.11.F.9.g.iii** Leachate from the LDS (secondary sump) ~~shall~~ will be sampled
6 semi-annually if a pumpable quantity of leachate is available for sampling.

7 **III.11.F.2.d****III.11.F.9.g.iv** Accumulated liquid of pumpable quantities in the LDS will be managed
8 in a manner that does not allow the fluid head to exceed 30.5 cm above the LDS liner
9 [WAC 173-303-665(2)(h)(ii) and (iii)]. Liquid with a depth greater than 30.5 cm above
10 the LDS liner will be removed at the earliest practicable time after detection (~~[~~not to
11 exceed five (5) working days]).

12 **III.11.F.3****III.11.F.9.h** Monitoring and Management of the ~~Secondary leak detection system~~SLDS

13 **III.11.F.3.a****III.11.F.9.h.i** At least one hundred and eighty (180) days prior to initial waste
14 placement, the Permittees ~~shall~~ will submit to Ecology for approval a Sub-Surface
15 Liquids Monitoring and Operations Plan (SLMOP) for the SLDS to include the
16 following: monitoring frequency, pressure transducer configuration, liquid collection and
17 storage processes, sampling and analysis and response actions. The SLMOP ~~shall~~ will be
18 approved by Ecology prior to placement of waste in the IDF, and incorporated into the
19 Permit ~~as a Class 1~~ through a permit modification.

20 **III.11.F.3.b****III.11.F.9.h.ii** The Permittees ~~shall~~ will monitor and manage the SLDS (tertiary sump)
21 pursuant to the approved SLMOP.

22 **III.11.F.3.c****III.11.F.9.h.iii** Accumulated liquid of pumpable quantities in the SLDS will be managed
23 in a manner that does not allow the fluid head to exceed 30.5 cm above the SLDS liner
24 [WAC 173-303-665(2)(h)(ii) and (iii)]. Liquid with a depth greater than 30.5 cm above
25 the SLDS liner will be removed at the earliest practicable time after detection (~~[~~not to
26 exceed five (5) working days]).

27 **III.11.G WASTE ANALYSIS**

28 **III.11.G.1** The Permittees will comply with the waste analysis plan requirements specific to
29 Addendum B and Permit Condition II.D, in accordance with WAC 173-303-300,
30 incorporated by reference.

31 **III.11.G.2** The Permittees are authorized to accept ~~dangerous~~ MW that satisfies the waste
32 acceptance requirements listed in Addendum B. The only acceptable MW forms
33 approved for disposal at the IDF Landfill Cells include ILAW in glass form from the
34 WTP LAW Vitrification Facility and other waste streams as specified in Permit
35 Condition III.11.E.

36 **III.11.G.3** The Permittees will have accurate and complete waste profiles(s) as described in
37 Addendum B for every waste stream accepted for treatment, storage, and/or disposal at
38 the IDF DWMUs. [WAC 173-303-300(2)]

39 **III.11.G.4** The Permittees will follow the requirements in Addendum B for all sampling and
40 analysis required pursuant to this addendum.

41 **III.11.H GROUNDWATER AND GROUNDWATER MONITORING**

42 **III.11.H.1** The Permittees will comply with the groundwater monitoring requirements specific to
43 Addendum D, "Groundwater Monitoring Plan," and its associated appendices, and Permit
44 Condition II.F, in accordance with WAC 173-303-645, incorporated by reference.

1 III.11.H.2 The Permittees will comply with the groundwater monitoring well inspection and training
2 requirements specific to Permit Condition II.F.1 and Permit Attachment 8, *Inspection and*
3 *Training Plan for Groundwater Monitoring Wells.*

4 III.11.H.3 The Permittees will comply with the purgewater management requirements specific to
5 Permit Condition II.F.2 and Permit Attachment 10, *Strategy for Handling and Disposing*
6 *of Purgewater at the Hanford Site (July 1990).*

7 III.11.H.4 The Permittees will evaluate the IDF resource protection wells subject to this Permit
8 according to the requirements of Permit Condition II.F.3 and Permit Attachments 7,
9 *Policy on Remediation of Existing Wells and Acceptance Criteria for RCRA and*
10 *CERCLA.*

11 III.11.H.5 ~~Groundwater shall be monitored in accordance with + and the provisions contained in the~~
12 ~~Ecology approved facility “Groundwater Monitoring” (Chapter 5.0). All wells used to~~
13 ~~monitor the groundwater beneath the unit IDF shall will be constructed in accordance with~~
14 ~~the provisions of WAC 173-160, Minimum Standards for Construction and Maintenance~~
15 ~~of Wells, incorporated by reference, and Permit Condition II.F.4.~~

16 III.11.H.6 For wells subject to this Permit, the Permittees will comply with WAC 173-160 and
17 Chapter 18.104 RCW by replacing non-compliant wells subject to the permit with new
18 wells under the schedule in Hanford Federal Facility Agreement and Consent Order
19 (HFFACO) Milestone M-24, as amended, incorporated by reference into this Permit.

20 III.11.H.6.a ~~The Permittees will submit a permit modification request to Ecology to decommission~~
21 ~~wells as necessary to ensure compliance with WAC 173 303 645. This permit~~
22 ~~modification request will include a schedule of compliance, which may incorporate by~~
23 ~~reference applicable schedule(s) in HFFACO Milestone M 24. For wells to be~~
24 ~~decommissioned, this permit modification must also include a request for installation of~~
25 ~~replacement wells, if necessary, to ensure compliance with WAC 173 303 645~~
26 ~~requirements.~~

27 III.11.E.1.dIII.11.H.7 Upon Ecology approval of the leachate monitoring plan, leachate monitoring and
28 groundwater monitoring activities should be coordinated as approved by Ecology to form
29 an effective and efficient means of monitoring the performance of the IDF facility.

30 III.11.H.8 The Permittees will annually determine the groundwater flow rate and direction beneath
31 the IDF and qualify any uncertainties to comply with WAC 173-303-645(9)(e).

32 III.11.E.1.eIII.11.H.9 Groundwater monitoring data shall will be reported to Ecology annually by July
33 31 in the Hanford Site Groundwater Monitoring Report. The annual report shall will
34 include monitoring results for the 12-month period from January 1 through December 31.

35 III.11.I **SECURITY**

36 The Permittees will comply with the security requirements specific to Addendum E,
37 “Security,” and Permit Condition II.M, in accordance with WAC 173-303-310,
38 incorporated by reference.

39 III.11.J **PREPAREDNESS AND PREVENTION**

40 The Permittees will comply with the preparedness and prevention requirements specific
41 to Addendum F, “Preparedness and Prevention,” and Permit Condition II.B, in
42 accordance with WAC 173-303-340, incorporated by reference.

1 **III.11.K PERSONNEL TRAINING**

2 The Permittees will comply with the training requirements specific to Addendum G,
3 “Personnel Training,” and Permit Condition, II.C, in accordance with WAC 173-303-
4 330, incorporated by reference.

5 **III.11.L CLOSURE**

6 **III.11.L.1** The Permittees will comply with the closure requirements specific to Addendum H,
7 “Closure Plan,” and Permit Condition II.J, in accordance with WAC 173-303-610,
8 incorporated by reference.

9 **III.11.L.2** The Permittees will amend the Closure Plan in Addendum H in accordance with Permit
10 Condition II.J.3.

11 ~~**III.11.C.1.d**~~**III.11.L.3** The Permittees ~~shall~~will notify Ecology at least sixty (60) calendar days prior to
12 the date it expects to begin closure of the IDF landfill in accordance with WAC 173-303-
13 610(3)(c).

14 **III.11.L.4** The Permittees will provide Ecology with a Notice of Closure according to
15 WAC 173-303-610(3)(c). The notice of closure may apply to a subset of DWMUs in the
16 IDF if they are to be closed in advance of the remaining DWMUs in Operating Group 11.

17 **III.11.L.5** Proposed closure performance standards are presented in ~~Addendum Appendix HA~~. No
18 later than six (6) months prior to acceptance of the last shipment of waste at the IDF, the
19 Permittees will update the IDF “Closure Plan,” Permit Addendum H, with the most
20 current Closure Performance Standards agreed to by the Permittees and Ecology,
21 identified in Ecology Letter 20-NWP-132 (or updated version of Closure Performance
22 Standards) and submit to Ecology for review, approval, and incorporation into the Permit.

23 ~~**III.11.C.1.b**~~**III.11.L.6 Landfill Closure Cap**

24 **III.11.L.6.a** At final closure of the landfill, the Permittees ~~shall~~will cover the landfill with a final
25 cover (closure cap) designed and constructed ~~[WAC 173-303-665(6);~~
26 ~~WAC 173-303-806(4)(h)]~~to: provide long-term minimization of migration of liquids
27 through the closed landfill; function with minimum maintenance; promote drainage and
28 minimize erosion or abrasion of the cover; accommodate settling and subsidence so that
29 the cover’s integrity is maintained; and have a permeability less than or equal to the
30 permeability of any bottom ~~liner system~~LS or natural subsoils present and not exceed the
31 load limit specified in Permit Condition III.11.F.9.a.iii, in accordance with
32 WAC 173-303-665(6).

33 ~~**III.11.C.1.c**~~**III.11.L.6.b Compliance Schedule**

34 Proposed conceptualized final cover design is presented in ~~Addendum H~~Chapter 11,
35 Closure Requirements. Six months prior to start of construction of IDF landfill final
36 cover (but no later than 6 months prior to acceptance of the last shipment of waste at the
37 IDF), the Permittees ~~will~~shall submit the IDF landfill final cover design, specifications,
38 and Construction Quality Assurance (CQA) Plan to Ecology for review and approval. No
39 construction of the final cover may proceed until Ecology approval of the final design is
40 given, through a permit modification.

41 **III.11.M INSPECTION PLAN**

42 **III.11.M.1** The Permittees will comply with the inspection requirements specific to Addendum I,
43 “Inspection Plan,” and Permit Condition II.O, in accordance with WAC 173-303-320,
44 ~~-395, -630, -640~~and; ~~-665, and -680~~, incorporated by reference.

1 ~~III.11.B.5.b~~ III.11.M.2 The Permittees will remedy any problems revealed by inspections conducted
2 pursuant to ~~Permit Condition III.11.B.5.a~~ in accordance with Addendum I, Tables I-1 and
3 I-2, on a schedule, which prevents hazards to the public health and the environment and
4 as agreed to in writing, by the Department of Ecology (Ecology). Where a hazard is
5 imminent or has already occurred, remedial action must be taken immediately.

6 ~~III.11.B.5~~ III.11.M.3 ~~Inspection Requirements—Pre-Active Life Period and Active Life Period~~

7 ~~III.11.B.5.a~~ III.11.M.3.a The Permittees will conduct inspections of the IDF according to the
8 following requirements:

9 ~~III.11.B.5.a.i~~ Prior to the start of the Active Life of the IDF as defined in WAC 173-303-040,
10 according to ~~Chapter 6.0, Table 6-2~~ Addendum I, Tables I-1 and I-2.

11 III.11.M.4 Active Life Period

12 ~~III.11.B.5.a.ii~~ III.11.M.4.a The Permittees will conduct inspections following the start of the Active
13 Life of the IDF as defined in WAC 173-303-040, according to ~~Chapter 6.0, Table 6-2A~~
14 Addendum I, Tables I-1 and I-2.

15 III.11.N CONTINGENCY PLAN

16 The Permittees will comply with the contingency requirements specific to Addendum J,
17 “Contingency Plan,” and Permit Condition II.A, in accordance with WAC 173-303-350,
18 incorporated by reference.

19 III.11.O POST-CLOSURE

20 III.11.O.1 The Permittees will comply with the post-closure requirements specific to Addendum K,
21 “Post-Closure Plan,” and in accordance with WAC 173-303-610.

22 III.11.O.2 The Permittees will maintain institutional controls during post-closure to prevent damage
23 from intrusion and ensure the cover functions as designed and approved in accordance
24 with Addendum K. These controls may include, but are not limited to active maintenance
25 and repair of vegetative cover to ensure evapotranspiration.

26 III.11.P RECORDKEEPING AND REPORTING

27 III.11.P.1 The Permittees will comply with the recordkeeping and reporting requirements applicable
28 to all Operating Unit Group 11 DWMUs and waste management activities and the
29 requirements of Permit Condition II.I.

30 III.11.P.2 The Permittees will include the following information in the Hanford Facility Operating
31 Record, IDF portion, according to the requirements of WAC 173-303-380, incorporated
32 by reference:

33 III.11.P.2.a A description of and quantity of each ~~dangerous~~/MW accepted for disposal by the IDF,
34 and documentation of its disposal. [WAC 173-303-380(1)(a)]

35 III.11.P.2.b The three-dimensional location of and quantity of waste in each waste container or
36 canister disposed on in the IDF. The location of each waste container or canister may be
37 recorded on a map or diagram of the IDF Landfill Cells, or recorded as geographical
38 coordinates (including specification of the coordinate system and/or coordinate reference
39 points) that can be used to relate to specific locations within an IDF cell. This information
40 must include cross-references to specific manifests or alternate tracking system
41 documentation accompanying wastes accepted at the IDF from other on-site DWMUs or
42 any off-site facility. [WAC 173-303-380(1)(b)] [WAC 173-303-665(5)(a) and (b)]

1 III.11.P.2.c A copy of each waste profile required by Permit Condition II.I.1.j and Permit Condition
2 III.11.G.3. [WAC 173-303-380(1)(a) and (b)]

3 III.11.P.2.d Records and results of any sampling or analysis of wastes accepted for disposal at the
4 IDF, and from any other sampling and analysis required by Addendum B.
5 [WAC 173-303-380(1)(c)]

6 **III.11.P.3 Recordkeeping for Land Disposal Restriction Requirements**

7 III.11.P.3.a For an off-site land disposal facility, a copy of the notice, and the certification and
8 demonstration if applicable, required by a generator or the owner or operator of a
9 treatment facility from which waste is accepted for disposal at the IDF under
10 40 CFR 268.7, incorporated by reference by WAC 173-303-140. [WAC 173-303-
11 380(1)(l)]

12 III.11.P.3.b For an on-site land disposal facility, the information contained in the notice required by
13 the generator or owner or operator of a treatment facility under 40 CFR 268.7,
14 incorporated by reference by WAC 173-303-140. [WAC 173-303-380(1)(m)]

15 ~~III.11.F.3.d~~ After initial waste placement, Permittees shall manage all leachate from the permitted
16 ~~cell as dangerous waste in accordance with WAC 173-303.~~

17 ~~III.11.G CONSTRUCTION WATER MANAGEMENT~~

18 ~~III.11.G.1~~ During construction, it is anticipated that liquids will accumulate on top of all liners and
19 ~~sumps. Permittees shall manage the construction wastewater in accordance with State~~
20 ~~Waste Discharge Permit ST 4511.~~

21 ~~III.11.G.2~~ Liquid accumulation within the LCRS, LDS, and SLDS prior to initial waste placement
22 ~~will be considered construction wastewater (i.e., not leachate).~~

23 ~~III.11.H LANDFILL LINER INTEGRITY MANAGEMENT & LANDFILL OPERATIONS~~

24 ~~III.11.H.1~~ Permittees shall design, construct, and operate the landfill in a manner to protect the
25 ~~liners from becoming damaged. Temperature: waste packages with elevated~~
26 ~~temperatures shall be evaluated and managed in a manner to maintain the primary (upper)~~
27 ~~liner below the design basis temperature for the liner (e.g., 160°F). Weight: waste, fill~~
28 ~~material and closure cover shall be placed in a manner that does not exceed the allowable~~
29 ~~load bearing capacity of the liner (weight per area 13,000 lb/ft²). Puncture: at least 3 feet~~
30 ~~of clean backfill material shall be placed as an operations layer over the leachate~~
31 ~~collection and removal system to protect the system from puncture damage.~~

32 ~~III.11.H.1.a~~ All equipment used for construction and operations inside of the IDF shall meet the
33 ~~weight limitation as specified in Permit Condition III.11.H.1. Only equipment that can~~
34 ~~be adequately supported by the operations layer as specified in Permit Condition~~
35 ~~III.11.H.1 (e.g., will not have the potential to puncture the liner) shall be used inside of~~
36 ~~the IDF. All equipment used for construction and operations outside of the IDF shall not~~
37 ~~damage the berms. Changes to any equipment will follow the process established by~~
38 ~~Condition II.R of the Site-wide Permit. Within 120 days from the effective date for the~~
39 ~~permit, a process for demonstrating compliance with this condition shall be submitted for~~
40 ~~review by Ecology. This process will be incorporated into appropriate IDF operating~~
41 ~~procedures prior to IDF operations.~~

1 ~~III.11.H.2~~ The Permittees shall construct berms and ditches to prevent run-on and runoff in
2 accordance with the requirements of Chapter 4, Section 4.3.8 of the IDF portion of this
3 Permit. Before the first placement of waste in the IDF, the Permittees shall submit to
4 Ecology a final grading and topographical map on a scale sufficient to identify berms and
5 ditches used to control run-on and runoff. Upon approval, Ecology will incorporate these
6 maps into the permit as a Class #1 modification.

7 ~~III.11.H.3~~ The Permittees shall operate the RCRA IDF Cell (Cell 1) in accordance with
8 WAC 173-303-665(2) and the operating practices described in Chapters 3.0, 4.0, 6.0, 8.0,
9 Addendum J.1, Addendum J.2, and Appendix 4A, Section 1, subsection 7, except as
10 otherwise specified in this Permit.

11 ~~III.11.H.4~~ The Permittees shall maintain a permanent and accurate record of the three-dimensional
12 location of each waste type, based on grid coordinates, within the RCRA IDF Cell (Cell
13 1) in accordance with WAC 173-303-665(5).

14 ~~III.11.I~~ **WASTE ACCEPTANCE CRITERIA**

15 The only acceptable waste form approved for disposal at the RCRA cell of IDF are IDF
16 operational waste, ILAW in glass form from the WTP Low Activity Waste (LAW)
17 Vitrification Facility and ILAW from the Bulk Vitrification Research Demonstration and
18 Development Facility (up to 50 boxes). Specifics about waste acceptance criteria for
19 each of these wastes are detailed below.

20 No other waste forms may be disposed at the RCRA cell of IDF unless authorized via a
21 final permit modification decision. Requests for Permit modifications must be
22 accompanied by an analysis adequate for Ecology to comply with State Environmental
23 Policy Act (SEPA), as well as by a risk assessment and groundwater modeling to show
24 the environmental impact. Permit Condition III.11.I.5 outlines the process by which
25 waste sources in the IDF are modeled in an ongoing risk budget and a groundwater
26 impact analysis.

27 ~~III.11.I.1~~ Six months prior to IDF operations Permittees shall submit to Ecology for review,
28 approval, and incorporation into the permit, all waste acceptance criteria to address, at a
29 minimum, the following: physical/chemical criteria, liquids and liquid containing waste,
30 land disposal restriction treatment standards and prohibitions, compatibility of waste with
31 liner, gas generation, packaging, handling of packages, minimization of subsidence.

32 ~~III.11.I.1.a~~ All containers/packages shall meet void space requirements pursuant to
33 WAC 173-303-665(12).

34 ~~III.11.I.1.b~~ Compliance Schedule

35 ~~III.11.I.1.b.i~~ Six months prior to IDF operations, the Permittees shall submit to Ecology for review,
36 approval, and incorporation into the Permit any necessary modifications to the IDF
37 "Waste Analysis Plan" (Chapters 3.0 of the IDF portion of this Permit).

38 ~~III.11.I.2~~ ILAW Waste Acceptance Criteria

39 The only ILAW forms acceptable for disposal at IDF are: (1) approved glass canisters
40 that are produced in accordance with the terms, conditions, and requirements of the WTP
41 portion of the Permit, and (2) the 50 bulk vitrification test boxes as specified in the
42 DBVS test plans.

~~To assure protection of human health and the environment, it is necessary that the appropriate quality of glass be disposed at IDF. The Land Disposal Restrictions (LDR) Treatment Standard for eight metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium and silver), when associated with High Level Waste, is High Level VIT (HLVIT) (40 CFR 268). Because these metals are constituents in the Hanford Tanks Waste, the LDR standard for ILAW disposed to IDF is HLVIT.~~

~~For any ILAW glass form(s) that the United States Department of Energy (DOE) intends to dispose of in IDF, DOE will provide to Ecology for review, an ILAW Waste Form Technical Requirements Document (IWTRD). The IWTRD will contain:~~

~~III.11.1.2.a — WTP ILAW Waste Acceptance Criteria~~

~~III.11.1.2.a.i — A description of each specific glass formulation that DOE intends to use including a basis for why each specific formulation is proposed for use, which specific tank wastes the glass formulation is proposed for use with, the characteristics of the glass that are key to satisfactory performance (e.g., Vapor Hydration Test [VHT], Product Consistency Test [PCT], and Toxicity Characteristic Leaching Procedure [TCLP] and/or other approved performance testing methodologies that the parties agree are appropriate and necessary); the range in key characteristics anticipated if the specific glass formulation is produced on a production basis with tank waste, and the factors that DOE must protect against in producing the glass to ensure the intended glass characteristics will exist in the actual ILAW.~~

~~III.11.1.2.a.ii — A performance assessment that provides a reasonable basis for assurance that each glass formulation will, once disposed of in IDF in combination with the other waste volumes and waste forms planned for disposal at the entire IDF, be adequately protective of human health and the environment; and will not violate or be projected to violate all applicable state and federal laws, regulations and environmental standards.~~

~~Within 60 days of a request by Ecology, the Permittees shall provide a separate model run using Ecology's assumptions and model input.~~

~~III.11.1.2.a.iii — A description of production processes including management controls and quality assurance/quality control requirements that assure that glass produced for each formulation will perform in a reasonably similar manner to the waste form assumed in the performance assessment for that formulation.~~

~~The Permittees shall update the IWTRD consistent with the above requirements for review by Ecology consistent with their respective roles and authority as provided under the Tri Party Agreement (TPA). Ecology comments shall be dispositioned through the Review Comment Record (RCR) process and will be reflected in further modeling to modify the IDF ILAW Chapter 3.0, "Waste Analysis Plan" as appropriate.~~

~~The initial IWTRD contained glass formulation data as required by Permit Condition III.11.1.2.a.i, and was submitted on December 18, 2006 (AR Accession # 0906020182). The performance assessment required by Permit Condition III.11.1.2.a.ii, and the quality assurance/quality control requirements process required by Permit Condition III.11.1.2.a.iii shall be submitted for Ecology review as soon as possible after issuance of the Final Tank Closure and Waste Management Environment Impact Statement (EIS) and receipt of underlying codes and data packages, and at least 180 days prior to the date DOE expects to receive waste at IDF. At a minimum, the Permittees shall submit updates to the IWTRD to Ecology every five years or more frequently with the next one due June 30, 2015, if any of the following conditions exist:~~

~~The Permittees submits a permit modification request allowing additional waste forms to be disposed of at IDF.~~

~~The WTP or other vitrification facility change their glass formulations from those previously included in the IWTRD.~~

~~An unanticipated event or condition occurs that Ecology determines would warrant an update to the IWTRD.~~

~~III.11.1.2.a.iv The Permittees shall not dispose of any WTP ILAW not described and evaluated in the IWTRD.~~

~~III.11.1.3 ILAW Waste Acceptance Criteria Verification~~

~~III.11.1.3.a Six months prior to disposing of ILAW in the IDF, the Permittees will submit an ILAW verification plan to Ecology for review and approval. This plan will be coordinated with WTP, Ecology, and the Permittees personnel. This plan will outline the specifics of verifying ILAW waste acceptance through WTP operating parameters, and/or glass sampling. The plan will include physical sampling requirements for batches, glass formulations, and/or feed envelopes.~~

~~III.11.1.4 DBVS Bulk Vitrification Waste Acceptance Criteria~~

~~III.11.1.4.a Bulk Vitrification waste forms that are acceptable to be disposed of at IDF are up to 50 boxes of vitrified glass produced pursuant to the DBVS Research, Development, and Demonstration (RD&D) Permit from processing Hanford Tank S-109 tank waste.~~

~~III.11.1.4.b If Bulk Vitrification is selected as a technology to supplement the WTP, the IDF portion of the Permit will need to be modified to accept Bulk Vitrification Full Scale production waste forms. This modification will need to be accompanied by appropriate TPA changes (per M-062 requirements) and adequate risk assessment information sufficient for Ecology to meet its SEPA obligations.~~

~~III.11.1.4.c DBVS Waste Acceptance Verification will occur on 100% of the waste packages. Pursuant to the DBVS RD&D Permit, a detailed campaign test report will be produced and submitted to Ecology detailing results of all testing performed on each waste package that is produced. IDF personnel shall review these reports to verify that the waste packages meet IDF Waste Acceptance Criteria.~~

~~III.11.1.4.d The Permittees shall not dispose of any waste forms that do not comply with all appropriate and applicable treatment standards, including all applicable LDR.~~

~~III.11.1.5 Modeling Risk Budget Tool~~

~~III.11.1.5.a The Permittees must create and maintain a modeling risk budget tool, which models the future impacts of the planned IDF waste forms (including input from analyses performed as specified in Permit Conditions III.11.1.2.a through III.11.1.2.a.ii) and their impact to underlying vadose and groundwater. This software tool will be submitted for Ecology review as soon as possible after issuance of Final Tank Closure and Waste Management EIS and receipt of underlying codes and data packages, and at least 180 days prior to the date DOE expects to receive waste at IDF. The risk budget tool shall be updated at least every 5 years. The model will be updated more frequently if needed, to support permit modifications or SEPA Threshold Determinations whenever a new waste stream or significant expansion is being proposed for the IDF. This risk budget tool shall be conducted in manner that is consistent with state and federal requirements, and represents a risk analysis of all waste previously disposed of in the entire IDF (both cell 1 and cell 2) and those wastes expected to be disposed of in the future for the entire IDF to determine~~

1 ~~cumulative impacts. The groundwater impact should be modeled to evaluate fate and~~
2 ~~transport in the groundwater aquifer(s) and should be compared against various~~
3 ~~performance standards including but not limited to drinking water standards (40 CFR 141~~
4 ~~and 40 CFR 143). Ecology will review modeling assumptions, input parameters, and~~
5 ~~results and will provide comments to the Permittees. Ecology comments shall be~~
6 ~~dispositioned through the RCR process and will be reflected in further modeling to~~
7 ~~modify the IDF ILAW waste acceptance criteria as appropriate.~~

8 ~~**III.11.I.5.a.i** The modeling risk budget tool will include a sensitivity analysis reflecting parameters~~
9 ~~and changes to parameters as requested by Ecology.~~

10 ~~**III.11.I.5.a.ii** If these modeling efforts indicate results within 75% of a performance standard~~
11 ~~(including but not limited to federal drinking water standards [40 CFR 141 and~~
12 ~~40 CFR 143]), Ecology and the Permittees will meet to discuss mitigation measures or~~
13 ~~modified waste acceptance criteria for specific waste forms.~~

14 ~~**III.11.I.5.a.iii** When considering all the waste forms to be disposed of in IDF, the Permittees shall not~~
15 ~~dispose of any waste that will result (through forward-looking modeling or in real~~
16 ~~groundwater concentrations data) in a violation of any state or federal regulatory limit,~~
17 ~~specifically including but not limited to drinking water standards for any constituent as~~
18 ~~defined in 40 CFR 141 and 40 CFR 143.~~

19 ~~**III.11.I.6** The Permittees shall not dispose of any waste that is not in compliance with state and~~
20 ~~federal requirements as identified in Chapter 13.0.~~

21 ~~**III.11.I.6.a** In accordance with DOE's authority under the *Atomic Energy Act of 1954*, as amended~~
22 ~~and other applicable law, prior to disposing of any mixed ILAW in the IDF, DOE will~~
23 ~~certify to the State of Washington that it has determined that such ILAW is not High-~~
24 ~~Level Waste and meets the criteria and requirements outlined in DOE's consultation with~~
25 ~~the U.S. Nuclear Regulatory Commission (USNRC) beginning in 1993 (Letter from R.M.~~
26 ~~Bernero, USNRC to J. Lytle, DOE, dated March 2, 1993; Letter from J. Kinzer, DOE, to~~
27 ~~C. J. Paperiello, USNRC, Classification of Hanford Low Activity Tank Waste Fraction,~~
28 ~~dated March 7, 1996; and Letter from C.J. Paperiello, USNRC, to J. Kinzer, DOE,~~
29 ~~Classification of Hanford Low Activity Tank Waste Fraction, dated June 9, 1997).~~
30 ~~While the requirement to provide such certification is an enforceable obligation of this~~
31 ~~Permit, the provision of such certification does not convey, or purport to convey,~~
32 ~~authority to Ecology to regulate the radioactive hazards of the waste under this permit.~~

33 ~~**III.11.I.7** IDF Operational Waste Acceptance Criteria~~

34 ~~**III.11.I.7.a** IDF operational activities (including decontamination, cleanup, and maintenance) will~~
35 ~~generate a small amount of waste. Waste that can meet IDF waste acceptance without~~
36 ~~treatment will be disposed of at the IDF. All other IDF operational waste will be~~
37 ~~managed pursuant to WAC 173-303-200.~~