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

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2 **PART III, OPERATING UNIT 11 UNIT-SPECIFIC CONDITIONS**
3 **INTEGRATED DISPOSAL FACILITY**
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6 This document sets forth the operating conditions for the Integrated Disposal Facility (IDF).

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

8 The Permittees shall comply with all requirements set forth in the Integrated Disposal Facility (IDF)
9 Permit conditions, the Chapters and Appendices specified in Permit Condition III.11.A and the
10 Amendments specified in Permit Conditions III.11.B through III.11.I. All subsections, figures, and tables
11 included in these portions are enforceable unless stated otherwise:

12 OPERATING UNIT 11:

13	Chapter 1.0	Part A Form, dated October 1, 2008
14	Chapter 2.0	Topographic Map Description, dated September 30, 2014
15	Chapter 3.0	Waste Analysis Plan, dated June 30, 2013
16	Chapter 4.0	Process Information, dated December 31, 2008
17	Appendix 4A	Design Report (as applicable to critical systems), dated June 30, 2016
18	Appendix 4B	Construction Quality Assurance Plan, dated April 9, 2006
19	Appendix 4C	Response Action Plan, dated April 9, 2006
20	Appendix 4D	Construction Specifications (RPP-18489, Rev. 1), dated December 31, 2006
21	Chapter 5.0	Ground Water Monitoring, dated June 30, 2010
22	Chapter 6.0	Procedure to Prevent Hazards, dated June 20, 2013
23	Addendum J.1	Contingency Plan – Pre-Active Life, dated March 31, 2016
24	Addendum J.2	Contingency Plan – Active Life, dated March 31, 2016
25	Chapter 8.0	Personnel Training, dated September 30, 2014
26	Chapter 11.0	Closure, dated September 30, 2014
27	Chapter 13.0	Other Federal and State Laws, dated April 9, 2006

28 General and Standard Hanford Facility RCRA Permit, WA7 89000 8967 (Permit) conditions (Part I and
29 Part II Conditions) applicable to the IDF are identified in Permit Attachment 9 (Permit Applicability
30 Matrix).

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

32 **III.11.B.1** Portions of Permit Attachment 4, *Hanford Emergency Management Plan* that are not
33 made enforceable by inclusion in the applicability matrix for that document, are not made
34 enforceable by reference in this document.

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

38 **III.11.B.3** The scope of this Permit is restricted to the landfill construction and operation as
39 necessary to dispose of: 1) immobilized low activity waste from the WTP, and 2) the
40 Demonstration Bulk Vitrification System and IDF operational waste as identified in
41 Chapter 4.0. Future expansion of the RCRA trench, or disposal of other wastes not
42 specified in this Permit, is prohibited unless authorized via modification of this Permit.

- 1 **III.11.B.4** In accordance with [WAC 173-303-806](#)(11)(d), this Permit shall be reviewed every five
2 (5) years after the effective date and modified, as necessary, in accordance with
3 [WAC 173-303-830](#)(3).
- 4 **III.11.B.5** Inspection Requirements – Pre-Active Life Period and Active Life Period
- 5 **III.11.B.5.a** The Permittees will conduct inspections of the IDF according to the following
6 requirements:
- 7 **III.11.B.5.a.i** Prior to the start of the active life of the IDF as defined in [WAC 173-303-040](#), according
8 to Chapter 6.0, Table 6.2.
- 9 **III.11.B.5.a.ii** Following the start of the active life of the IDF as defined in [WAC 173-303-040](#),
10 according to Chapter 6.0, Table 6.2A.
- 11 **III.11.B.5.b** The Permittees will remedy any problems revealed by inspections conducted pursuant to
12 permit condition [III.11.B.5.a](#) on a schedule, which prevents hazards to the public health
13 and the environment and as agreed to in writing, by Ecology. Where a hazard is
14 imminent or has already occurred, remedial action must be taken immediately.
- 15 **III.11.B.5.c** Reserved
- 16 **III.11.B.5.d** Rainwater Management
- 17 **III.11.B.5.e** Prior to the start of the active life of the IDF, the Permittees will manage the discharge of
18 such water in accordance with the pollution prevention and best management practices
19 required by State Waste Discharge Permit Number ST 4511.
- 20 **III.11.B.5.e.i** Management of Liquids Collected in the Leachate Collection and Removal System
21 (LCRS), Leak Detection System (LDS), and Secondary Leak Detection System (SLDS)
22 prior to the start of the active life of the IDF.
- 23 **III.11.B.5.e.ii** Permittees shall manage the liquid in the LCRS system in a manner that does not allow
24 the fluid head to exceed 30.5 cm above the flat 50-foot by 50-foot LCRS sump High
25 Density Polyethylene (HDPE) bottom liner, and the LCRS sump trough, except for
26 storms that exceed the 25-year, 24-hour storm event [([WAC 173-303-665](#)(2)(h)(ii)(B)).
27 Liquid with a depth greater than 30.5 cm above the LCRS liner will be removed at the
28 earliest practicable time after detection (not to exceed 5 working days).
- 29 **III.11.B.5.e.iii** Accumulated liquid of pumpable quantities in the LDS and SLDS will be managed in a
30 manner that does not allow the fluid head to exceed 30.5 cm above the LDS liner or
31 SLDS liner [[WAC 173-303-665](#)(2)(h)(i)(C)(iii)]. Liquid with a depth greater than 30.5
32 cm above a liner will be removed at the earliest practicable time after detection (not to
33 exceed 5 working days).
- 34 **III.11.B.5.e.iv** The Permittees will use a flow meter to check if the amount of actual liquid pumped
35 corresponds to the amount accumulated in the leachate collection tank to verify the
36 proper function of the leachate collection and removal sump pumps with each use. The
37 Permittees will document in the IDF portion of the facility operating record appropriate
38 quality assurance/quality control requirements for selection and operation of the flow
39 meter based on the required verification. In addition, the Permittees will evaluate the
40 leachate transfer lines for freeze and thaw damage when ambient conditions may cause
41 such damage to occur. The Permittees will document the methods and criteria used for
42 purposes of this evaluation, along with an appropriate justification.
- 43 **III.11.B.5.e.v** The Permittee will inspect for liquids after significant rainfall events.
- 44 **III.11.B.5.e.vi** The Permittee will annually verify monitoring gauges and instruments are in current
45 calibration; calibration will be performed annually or more frequently at intervals
46 suggested by the manufacturer (refer to Chapter 4.0, §4.3.7.4)

- 1 **III.11.B.5.f** The Permittees will monitor liquids in the Leachate Collection and Removal System and
2 Leak Detection System to ensure the action leakage rate (Chapter 4.0, Appendix 4A) is
3 not exceeded.
- 4 **III.11.B.5.g** Soil Stabilization
- 5 Prior to the first placement of waste in the IDF, the Permittee will apply soil stabilization
6 materials as needed to prevent soil erosion in and around the landfill.
- 7 **III.11.C Design Requirements**
- 8 **III.11.C.1** IDF is designed in accordance with [WAC 173-303-665](#) and [WAC 173-303-640](#) as
9 described in Chapter 4.0. Design changes impacting IDF critical systems shall be
10 performed in accordance with Permit Conditions [III.11.D.1.d.i](#) and [III.11.D.1.d.ii](#).
- 11 **III.11.C.1.a** IDF Critical Systems include the following: The leachate collection and removal system
12 (LCRS), leachate collection tank (LCT), leak detection system (LDS), liner system (LS),
13 and closure cap. H-2 Drawings for the LCRS, LCT, LDS, and LS are identified in
14 Appendix 4A, Section 3 of this Permit. Drawings for the closure cap will be provided
15 pursuant to Permit Condition [III.11.C.1.c](#).
- 16 The Permittees shall construct and operate the IDF in accordance with all specifications
17 contained in RPP-18489 Rev 0. Critical systems, as defined in the definitions section of
18 the Site-Wide RCRA Permit, are identified in Appendix 4A, Section 1 of this Permit.
- 19 **III.11.C.1.b** Landfill Cap
- 20 At final closure of the landfill, the Permittees shall cover the landfill with a final cover
21 (closure cap) designed and constructed [[WAC 173-303-665](#)(6), [WAC 173-303-806](#)(4)(h)]
22 to: Provide long-term minimization of migration of liquids through the closed landfill;
23 Function with minimum maintenance; Promote drainage and minimize erosion or
24 abrasion of the cover; Accommodate settling and subsidence so that the cover's integrity
25 is maintained; and have a permeability less than or equal to the permeability of any
26 bottom liner system or natural sub soils present.
- 27 **III.11.C.1.c** Compliance Schedule
- 28 Proposed conceptualized final cover design is presented in Chapter 11, Closure
29 Requirements. Six months prior to start of construction of IDF landfill final cover (but
30 no later than 6 months prior to acceptance of the last shipment of waste at the IDF), the
31 Permittees shall submit IDF landfill final cover design, specifications and Construction
32 Quality Assurance (CQA) plan to Ecology for review and approval. No construction of
33 the final cover may proceed until Ecology approval of the final design is given, through a
34 permit modification.
- 35 **III.11.C.1.d** The Permittees shall notify Ecology at least sixty (60) calendar days prior to the date it
36 expects to begin closure of the IDF landfill in accordance with [WAC 173-303-610](#)(c).
- 37 **III.11.C.2** Design Reports
- 38 **III.11.C.2.a** New Tank Design Assessment Report
- 39 Permittees shall generate a written report in accordance with [WAC 173-303-640](#)(3)(a),
40 providing the results of the leachate collection tank system design assessment. The report
41 shall be reviewed and certified by an Independent Qualified Registered Professional
42 Engineer (IQRPE)¹ in accordance with [WAC-173-303-810](#)(13)(a).

¹ "Independent qualified registered professional engineer," as used here and elsewhere with respect to Operating Unit 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

- 1 **III.11.C.2.b** Compliance Schedule
- 2 Permittees shall submit the leachate collection tank design assessment report to Ecology
3 along with the IQRPE certification, prior to construction of any part of the tank system
4 including ancillary equipment.
- 5 **III.11.D CONSTRUCTION REQUIREMENTS**
- 6 **III.11.D.1** Construction Quality Assurance
- 7 **III.11.D.1.a** Ecology shall provide field oversight during construction of critical systems. In cases
8 where an Engineering Change Notice (ECN) and/or Non Conformance Report (NCR) are
9 required, Ecology and the Permittees shall follow steps for processing changes to the
10 approved design per Permit Conditions [III.11.D.1.d.i](#) and [III.11.D.1.d.ii](#).
- 11 **III.11.D.1.b** Permittees shall implement the CQA plan (Appendix 4B of the permit) during
12 construction of IDF.
- 13 **III.11.D.1.b.i** The Permittees will not receive waste in the IDF until the owner or operator has
14 submitted to Ecology by certified mail or hand delivery a certification signed by the CQA
15 officer that the approved CQA plan has been successfully carried out and that the unit
16 meets the requirements of [WAC 173-303-665](#)(2)(h) or (j); and the procedure in
17 [WAC 173-303-810](#)(14)(a) has been completed. Documentation supporting the CQA
18 officer's certification shall be furnished to Ecology upon request.
- 19 **III.11.D.1.c** Construction inspection reports
- 20 Permittees shall submit a report documenting the results of the leachate tank installation
21 inspection. This report must be prepared by an independent, qualified installation
22 inspector or a professional independent, qualified, registered, professional engineer either
23 of whom is trained and experienced in the proper installation of tank systems or
24 components. The Permittees will remedy all discrepancies before the tank system is
25 placed in use. This report shall be submitted to Ecology 90 days prior to IDF operation
26 and be included in the IDF Operating Record. [[WAC 173-303-640](#)(3)(h)].
- 27 **III.11.D.1.d** ECN/NCR Process for Critical Systems
- 28 Portions of the following conditions for processing engineering change notices and
29 non-conformance reporting were extracted from and supersede Site Wide General Permit
30 Condition II.L.
- 31 **III.11.D.1.d.i** Engineering Change Notice for Critical Systems
- 32 During construction of the IDF, the Permittees shall formally document changes to the
33 approved designs, plans, and specifications, identified in Appendices 4A, 4B, 4C, and 4D
34 of this permit, with an Engineering Change Notice (ECN).
- 35 The Permittees shall maintain all ECNs in the IDF unit-specific Operating Record and
36 shall make them available to Ecology upon request or during the course of an inspection.
37 The Permittees shall provide to Ecology copies of proposed ECNs affecting any critical
38 system within five (5) working days of initiating the ECN. Identification of critical
39 systems is included in Permit Condition [III.11.C.1](#) and Appendix 4A of this permit.
40 Within five (5) working days, Ecology will review a proposed ECN modifying a critical
41 system and inform the Permittees whether the proposed ECN, when issued, will require a
42 Class 1, 2, or 3 Permit modification.

[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.D.1.d.ii** Non-conformance Reporting for Critical Systems
- 2 **III.11.D.1.d.ii.a** During construction of the IDF, the Permittees shall formally document with a
3 Nonconformance Report (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 and 4D of this Permit. The Permittees shall maintain all NCRs in the IDF unit-
6 specific Operating Record and shall make them available to Ecology upon request, or
7 during the course of an inspection.
- 8 **III.11.D.1.d.ii.b** The Permittees shall provide copies of NCRs affecting any critical or regulated
9 system to Ecology within five (5) working days after identification of the
10 nonconformance. Identification of critical systems is included in Permit Condition
11 [III.11.C.1](#) and Appendix 4A 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 nonconformance, 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** As-Built Drawings
- 16 Upon completing construction of IDF, the Permittees shall produce as-built drawings of
17 the project, which incorporate the design and construction modifications resulting from
18 all project ECNs and NCRs, as well as modifications made pursuant to
19 [WAC 173-303-830](#). The Permittees shall place the drawings into the Operating Record
20 within twelve (12) months of completing construction.
- 21 **III.11.D.2** The Permittees shall not reduce the minimum frequency of destructive testing less than
22 one test per 500 feet of seam, without prior approval in writing from Ecology
- 23 **III.11.E** **GROUND WATER AND GROUND WATER MONITORING**
- 24 Ground water shall be monitored in accordance with [WAC 173-303](#) and the provisions
25 contained in the Ecology-approved facility ground water monitoring plan (Chapter 5.0).
26 All wells used to monitor the ground water beneath the unit shall be constructed in
27 accordance with the provisions of [WAC 173-160](#).
- 28 **III.11.E.1** Ground Water Monitoring Program
- 29 **III.11.E.1.a** Prior to initial waste placement in the IDF landfill, the Permittees shall sample all ground
30 water monitoring wells in the IDF network twice quarterly for one first year to determine
31 baseline conditions. For the first sampling event (and only the first), samples for each
32 well will include all constituents in [40 CFR 264](#) Appendix IX. Thereafter, sampling will
33 include only those constituents as specified in Chapter 5.0, Table 5-2: chromium (filtered
34 and unfiltered the first year to compare results), specific conductance, TOC, TOX, and
35 pH. Other constituents to be monitored but not statistically compared include alkalinity,
36 anions, ICP metals, and turbidity. These will provide important information on
37 hydrogeologic characteristics of the aquifer and may provide indications of encroaching
38 contaminants from other facilities not associated with IDF.
- 39 **III.11.E.1.b** After the baseline monitoring is completed, and data is analyzed, the Permittees and
40 Ecology shall assess revisions to Chapter 5.0, Table 5-2. Subsequent samples will be
41 collected annually and will include constituents listed in Table 5-2 as approved by
42 Ecology. All data analysis will employ Ecology approved statistical methods pursuant to
43 [WAC 173-303-645](#). Changes to Chapter 5.0 will be subject to the permit modification
44 procedures under [WAC 173-303-830](#).
- 45 **III.11.E.1.c** All constituents used as tracers to assess performance of the facility through computer
46 modeling should be sampled at least annually to validate modeling results.

- 1 Groundwater monitoring data and analytes to be monitored will be reviewed periodically
2 as defined in Chapter 5.0 of this Permit.
- 3 **III.11.E.1.d** Upon Ecology approval of the leachate monitoring plan, leachate monitoring and
4 groundwater monitoring activities should be coordinated as approved by Ecology to form
5 an effective and efficient means of monitoring the performance of the IDF facility.
- 6 **III.11.E.1.e** Groundwater monitoring data shall be reported to Ecology annually by July 31. The
7 annual report shall include monitoring results for the 12-month period from January 1
8 through December 31.
- 9 **III.11.F LEACHATE COLLECTION COMPONENT MANAGEMENT**
- 10 Permittees shall design, construct, and operate all leachate collection systems to minimize
11 clogging during the active life and post closure period
- 12 **III.11.F.1 Leachate Collection and Removal System (LCRS)**
- 13 **III.11.F.1.a** At least 120 days prior to initial waste placement in the IDF, the Permittees shall submit a
14 Leachate monitoring plan to Ecology for review, approval, and incorporation into the
15 permit. Upon approval by Ecology, this plan will be incorporated into the Permit as a
16 class ¹1 modification. The Permittees shall not accept waste into the IDF until the
17 requirements of the leachate monitoring plan have been incorporated into this permit.
- 18 **III.11.F.1.b** Leachate in the LCRS (primary sump) shall be sampled and analyzed monthly for the
19 first year of operation of the facility and quarterly thereafter (pursuant to
20 [WAC 173-303-200](#)). Additionally, leachate shall be sampled and analyzed to meet waste
21 acceptance criteria at the receiving treatment storage and disposal facility.
- 22 **III.11.F.1.c** Permittees shall manage the leachate in the LCRS system in a manner that does not allow
23 the fluid head to exceed 30.5 cm above the flat 50-foot by 50-foot LCRS sump HDPE
24 bottom liner except for rare storm events as discussed in Chapter 4.0, §4.3.6.1 and the
25 LCRS sump trough ([WAC 173-303-665\(2\)\(h\)\(ii\)\(B\)](#)). Liquid with a depth greater than
26 30.5 cm above the SLDS liner will be removed at the earliest practicable time after
27 detection (not to exceed 5 working days).
- 28 **III.11.F.1.d** After initial waste placement, Permittees shall manage all leachate from the permitted
29 cell as dangerous waste (designated with Dangerous Waste Number F039) in accordance
30 with [WAC 173-303](#).
- 31 **III.11.F.2 Monitoring and Management of Leak Detection System (LDS/secondary sump)**
- 32 **III.11.F.2.a** Permittees shall manage the leachate in the LDS system in a manner that does not allow
33 the fluid head to exceed 30.5 cm above the LDS liner ([WAC 173-303-665\(2\)\(h\)\(ii\)\(B\)](#)).
- 34 **III.11.F.2.b** Permittees shall monitor and record leachate removal for comparison to the Action
35 Leakage Rate (ALR) as described in Appendix 4C, Response Action Plan. If the leachate
36 flow rate in the LDS exceeds the ALR, the Permittees shall implement the Ecology
37 approved response action plan (Appendix 4C).
- 38 **III.11.F.2.c** Leachate from the LDS (secondary sump) shall be sampled semi-annually if a pumpable
39 quantity of leachate is available for sampling.
- 40 **III.11.F.2.d** Accumulated liquid of pumpable quantities in the LDS will be managed in a manner that
41 does not allow the fluid head to exceed 30.5 cm above the LDS liner
42 [[WAC 173-303-665\(2\)\(h\)\(i\)\(C\)\(iii\)](#)].

1 Liquid with a depth greater than 30.5 cm above the LDS liner will be removed at the
2 earliest practicable time after detection (not to exceed 5 working days).

3 **III.11.F.3** Monitoring and Management of the Secondary Leak Detection System (SLDS)

4 **III.11.F.3.a** At least 180 days prior to initial waste placement, the, the Permittees shall submit to
5 Ecology for approval a sub-surface liquids monitoring and operations plan (SLMOP) for
6 the SLDS to include the following: monitoring frequency, pressure transducer
7 configuration, liquid collection and storage processes, sampling and analysis and
8 response actions. The SLMOP shall be approved by Ecology prior to placement of waste
9 in the IDF, and incorporated into the Permit as a Class ¹ modification.

10 **III.11.F.3.b** Permittees shall monitor and manage the SLDS (tertiary sump) pursuant to the approved
11 sub-surface liquids monitoring and operations plan.

12 **III.11.F.3.c** Accumulated liquid of pumpable quantities in the SLDS will be managed in a manner
13 that does not allow the fluid head to exceed 30.5 cm above the SLDS liner
14 [[WAC 173-303-665\(2\)\(h\)\(i\)\(C\)\(iii\)](#)]. Liquid with a depth greater than 30.5 cm above the
15 SLDS liner will be removed at the earliest practicable time after detection (not to exceed
16 5 working days).

17 **III.11.F.3.d** After initial waste placement, Permittees shall manage all leachate from the permitted
18 cell as dangerous waste in accordance with [WAC 173-303](#).

19 **III.11.G CONSTRUCTION WATER MANAGEMENT**

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

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

25 **III.11.H LANDFILL LINER INTEGRITY MANAGEMENT & LANDFILL OPERATIONS**

26 **III.11.H.1** Permittees shall design, construct, and operate the landfill in a manner to protect the
27 liners from becoming damaged. Temperature: Waste packages with elevated
28 temperatures shall be evaluated and managed in a manner to maintain the primary (upper)
29 liner below the design basis temperature for the liner (e.g., 160 F). Weight: Waste, fill
30 material and closure cover shall be placed in a manner that does not exceed the allowable
31 load bearing capacity of the liner (weight per area 13,000 lb/ft²). Puncture: At least
32 3 feet of clean backfill material shall be placed as an operations layer over the leachate
33 collection and removal system to protect the system from puncture damage.

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

44 **III.11.H.2** The Permittees shall construct berms and ditches to prevent run-on and run-off in
45 accordance with the requirements of Chapter 4, Section 4.3.8 of the IDF portion of this
46 permit. Before the first placement of waste in the IDF, the Permittees shall submit to
47 Ecology a final grading and topographical map on a scale sufficient to identify berms and

ditches used to control run-on and run-off. Upon approval, Ecology will incorporate these maps into the permit as a Class ¹ modification.

III.11.H.3 The Permittees shall operate the Resource Conservation and Recovery Act (RCRA) IDF Cell (Cell1) in accordance with [WAC 173-303-665](#)(2) and the operating practices described in Chapters 3.0, 4.0, 6.0, 8.0, Addendum J.1, Addendum J.2, and Appendix 4A, §1, subsection 7, except as otherwise specified in this Permit.

III.11.H.4 The Permittees shall maintain a permanent and accurate record of the three-dimensional location of each waste type, based on grid coordinates, within the RCRA IDF Cell (Cell1) in accordance with [WAC 173-303-665](#)(5).

III.11.I WASTE ACCEPTANCE CRITERIA

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

No other waste forms may be disposed at the RCRA cell of IDF unless authorized via a Final Permit modification decision. Requests for Permit modifications must be accompanied by an analysis adequate for Ecology to comply with SEPA, as well as by a risk assessment and groundwater modeling to show the environmental impact. Permit Condition [III.11.I.5](#) outlines the process by which waste sources in the IDF are modeled in an ongoing risk budget and a ground water impact analysis.

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

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

III.11.I.1.b Compliance Schedule

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

III.11.I.2 ILAW Waste Acceptance Criteria

The only ILAW forms acceptable for disposal at IDF are: (1) approved glass canisters that are produced in accordance with the terms, conditions, and requirements of the WTP portion of the Permit, and (2) the 50 bulk vitrification test boxes as specified in the Demonstration Bulk Vitrification System (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 ([40 CFR 268](#)). Because these metals are constituents in the Hanford Tanks Waste, the LDR standard for ILAW disposed to IDF is HLVIT.

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

4 **III.11.1.2.a** WTP ILAW Waste Acceptance Criteria

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

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

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

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

27 The Permittees shall 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 TPA. Ecology comments shall be dispositioned through the Review Comment
30 Record (RCR) process and will be reflected in further modeling to modify the IDF ILAW
31 Chapter 3.0, Waste Analysis Plan as appropriate.

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

- 42 • The Permittees submits a permit modification request allowing additional waste
43 forms to be disposed of at IDF.
- 44 • The WTP or other vitrification facility change their glass formulations from those
45 previously included in the IWTRD.
- 46 • An unanticipated event or condition occurs that Ecology determines would warrant
47 an update to the IWTRD.

- 1 **III.11.I.2.a.iv** The Permittees shall not dispose of any WTP ILAW not described and evaluated in the
2 IWTRD.
- 3 **III.11.I.3** ILAW Waste Acceptance Criteria Verification
- 4 **III.11.I.3.a** Six months prior to disposing of ILAW in the IDF, the Permittees will submit an ILAW
5 verification plan to Ecology for review and approval. This plan will be coordinated with
6 WTP, Ecology, and the Permittees personnel. This plan will outline the specifics of
7 verifying ILAW waste acceptance through WTP operating parameters, and/or glass
8 sampling. The Plan will include physical sampling requirements for batches, glass
9 formulations, and/or feed envelopes.
- 10 **III.11.I.4** Demonstration Bulk Vitrification System (DBVS) Bulk Vitrification Waste Acceptance
11 Criteria
- 12 **III.11.I.4.a** Bulk Vitrification waste forms that are acceptable to be disposed of at IDF are up to
13 50 boxes of vitrified glass produced pursuant to the DBVS Research, Development, and
14 Demonstration (RD&D) Permit from processing Hanford Tank S-109 tank waste.
- 15 **III.11.I.4.b** If Bulk Vitrification is selected as a technology to supplement the Waste Treatment Plant,
16 the IDF portion of the Permit will need to be modified to accept Bulk Vitrification Full
17 Scale production waste forms. This modification will need to be accompanied by
18 appropriate Tri-Party Agreement (TPA) changes (per M-062 requirements) and adequate
19 risk assessment information sufficient for the Department of Ecology to meet its State
20 Environmental Policy Act (SEPA) obligations.
- 21 **III.11.I.4.c** DBVS Waste Acceptance Verification will occur on 100% of the waste packages.
22 Pursuant to the DBVS RD&D Permit, a detailed campaign test report will be produced
23 and submitted to Ecology detailing results of all testing performed on each waste package
24 that is produced. IDF personnel shall review these reports to verify that the waste
25 packages meet IDF Waste Acceptance Criteria.
- 26 **III.11.I.4.d** The Permittees shall not dispose of any waste forms that do not comply with all
27 appropriate and applicable treatment standards, including all applicable LDR.
- 28 **III.11.I.5** Modeling – Risk Budget Tool
- 29 **III.11.I.5.a** The Permittees must create and maintain a modeling - risk budget tool, which models the
30 future impacts of the planned IDF waste forms (including input from analyses performed
31 as specified in Permit Conditions [III.11.I.2.a](#) through [III.11.I.2.a.ii](#)) and their impact to
32 underlying vadose and ground water. This software tool will be submitted for Ecology
33 review as soon as possible after issuance of Final Tank Closure and Waste Management
34 EIS and receipt of underlying codes and data packages, and at least 180 days prior to the
35 date DOE expects to receive waste at IDF. The risk budget tool shall be updated at least
36 every 5 years. The model will be updated more frequently if needed, to support permit
37 modifications or SEPA Threshold Determinations whenever a new waste stream or
38 significant expansion is being proposed for the IDF. This risk budget tool shall be
39 conducted in manner that is consistent with state and federal requirements, and represents
40 a risk analysis of all waste previously disposed of in the entire IDF (both cell 1 and cell 2)
41 and those wastes expected to be disposed of in the future for the entire IDF to determine
42 cumulative impacts. The groundwater impact should be modeled to evaluate fate and
43 transport in the groundwater aquifer(s) and should be compared against various
44 performance standards including but not limited to drinking water standards ([40 CFR 141](#)
45 and [40 CFR 143](#)). Ecology will review modeling assumptions, input parameters, and
46 results and will provide comments to the Permittees. Ecology comments shall be

1 dispositioned through the Review Comment Record (RCR) process and will be reflected
2 in further modeling to modify the IDF ILAW waste acceptance criteria as appropriate.

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

5 **III.11.I.5.a.ii** If these modeling efforts indicate results within 75% of a performance standard
6 [including but not limited to federal drinking water standards ([40 CFR 141](#) and
7 [40 CFR 143](#))], Ecology and the Permittees will meet to discuss mitigation measures or
8 modified waste acceptance criteria for specific waste forms.

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

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

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

29 **III.11.I.7** 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
33 managed pursuant to [WAC 173-303-200](#).

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