

INTEGRATED DISPOSAL FACILITY
CHAPTER 3.0-ADDENDUM B
WASTE ANALYSIS PLAN
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
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INTEGRATED DISPOSAL FACILITY
CHAPTER 3.0 ADDENDUM B
WASTE ANALYSIS PLAN

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CHAPTER 3.0 Addendum B
WASTE ANALYSIS PLAN

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1 **WASTE ANALYSIS [C]**

2 This chapter provides information on the chemical, biological, and physical characteristics of the waste
3 treated for disposal. The information includes descriptions required by WAC 173-303-300(5) contained
4 in the *Waste Analysis Plan for the Integrated Disposal Facility*.

5 **CHEMICAL, BIOLOGICAL, AND PHYSICAL ANALYSIS [C-1]**

6 The primary mission of the IDF will be to dispose of vitrified waste generated on the Hanford Site. This
7 includes vitrified LAW from the RPP WTP and DBVS, and low-level radioactive waste. Additionally,
8 waste generated through IDF operations will be disposed of in IDF. Waste to be disposed of in IDF is
9 assigned dangerous waste numbers found in Chapter 1.0.

10 **WASTE ANALYSIS PLAN [C-2]**

11 The *Waste Analysis Plan for the Integrated Disposal Facility* summarizes waste acceptance processes and
12 contains the following information: unit description, confirmation process, selection of waste analysis
13 parameters, selection of sampling procedures, selection of a laboratory, laboratory testing, and analytical
14 methods, selection of waste re-evaluation frequencies, special procedural requirements, and
15 recordkeeping requirements.

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GLOSSARY

1		
2		
3	AEA	Atomic Energy Act of 1954
4	BVW	bulk vitrification waste
5	CAP	corrective action plan
6	CFR	Code of Federal Regulations
7	COLIWASA	composite liquid waste sampler
8	°C	degree Celsius
9		
10	DOE ORP	U.S. Department of Energy, Office of River Protection
11	DOE RL	U.S. Department of Energy, Richland Operations Office
12	DBVS	Demonstration Bulk Vitrification System
13	DST	double-shell tank
14		
15	Ecology	Washington State Department of Ecology
16		
17	IDF	Integrated Disposal Facility
18	ILAW	immobilized low activity waste
19	LDR	land disposal restriction
20		
21	NDE	nondestructive examination
22		
23	PPE	personal protective equipment
24		
25	QA	quality assurance
26	QC	quality control
27		
28	RCRA	<i>Resource Conservation and Recovery Act of 1976</i>
29	RCW	Revised Code of Washington
30	RPP WTP	River Protection Project Waste Treatment Plant
31		
32	SWITS	Solid Waste Information Tracking System
33		
34	TRU	transuranic
35	TSCA	<i>Toxic Substances Control Act of 1976</i>
36	TSD	treatment, storage, and/or disposal
37		
38	WAC	Washington Administrative Code
39	WAP	waste analysis plan
40		

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METRIC CONVERSION CHART

Into-metric units			Out of metric units		
If you know	Multiply by	To get	If you know	Multiply by	To get
Length			Length		
inches	25.40	millimeters	millimeters	0.03937	inches
inches	2.54	centimeters	centimeters	0.393701	inches
feet	0.3048	meters	meters	3.28084	feet
yards	0.9144	meters	meters	1.0936	yards
miles (statute)	1.60934	kilometers	kilometers	0.62137	miles (statute)
Area			Area		
square inches	6.4516	square centimeters	square centimeters	0.155	square inches
square feet	0.09290304	square meters	square meters	10.7639	square feet
square yards	0.8361274	square meters	square meters	1.19599	square yards
square miles	2.59	square kilometers	square kilometers	0.386102	square miles
aeres	0.404687	hectares	hectares	2.47104	aeres
Mass (weight)			Mass (weight)		
ounces (avoir)	28.34952	grams	grams	0.035274	ounces (avoir)
pounds	0.45359237	kilograms	kilograms	2.204623	pounds (avoir)
tons (short)	0.9071847	tons (metric)	Tons (metric)	1.1023	tons (short)
Volume			Volume		
ounces (U.S., liquid)	29.57353	milliliters	milliliters	0.033814	ounces (U.S., liquid)
quarts (U.S., liquid)	0.9463529	liters	liters	1.0567	quarts (U.S., liquid)
gallons (U.S., liquid)	3.7854	liters	liters	0.26417	gallons (U.S., liquid)
cubic feet	0.02831685	cubic meters	cubic meters	35.3147	cubic feet
cubic yards	0.7645549	cubic meters	cubic meters	1.308	cubic yards
Temperature			Temperature		
Fahrenheit	subtract 32 then multiply by 5/9ths	Celsius	Celsius	multiply by 9/5ths, then add 32	Fahrenheit
Energy			Energy		
kilowatt hour	3,412	British thermal unit	British thermal unit	0.000293	kilowatt hour
kilowatt	0.94782	British thermal unit per second	British thermal unit per second	1.055	kilowatt
Force/Pressure			Force/Pressure		
pounds (force) per square inch	6.894757	kilopascals	kilopascals	0.14504	pounds per square inch

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Source: *Engineering Unit Conversions*, M. R. Lindeburg, PE., Third Ed., 1993, Professional Publications, Inc., Belmont, California.

3.0 — INTEGRATED DISPOSAL FACILITY WASTE ANALYSIS PLAN

Pursuant to WAC 173-303-300(5) this waste analysis plan (WAP) documents the waste acceptance process, sampling methodologies, analytical techniques, and overall processes that will be undertaken for mixed waste accepted for disposal at the Integrated Disposal Facility (IDF). Mixed waste disposed at the IDF will be limited to vitrified low activity waste (LAW) from the RPP WTP and DBVS and mixed waste generated by IDF operations. (see Chapter 1, Part A Form). Vitrified LAW generated by RPP WTP is known as Immobilized Low Activity Waste (ILAW) and generated by DBVS is known as Bulk Vitrified Waste (BVW). The IDF will be located in the 200 East Area of the Hanford Facility.

The IDF also will receive low level waste for disposal. Mixed waste will not be placed in the low level waste portion of the IDF. The requirements of this WAP are applicable to mixed waste and are not applicable to the low level radioactive waste. The term 'treatment, storage, and/or disposal (TSD) unit' is used throughout this WAP to refer to the IDF. Activities will be performed by the IDF operating organization, waste acceptance organization, or its delegated representative.

Although the treatment and disposal of radioactive waste (i.e., source, special nuclear, and by product materials as defined by the *Atomic Energy Act of 1954*) are not within the scope of *Resource Conservation and Recovery Act (RCRA) of 1976* or WAC 173-303, information is provided for general knowledge.

3.1 — Description of Unit Processes and Activities

The IDF will be a single, expandable disposal facility constructed to RCRA Subtitle C standards, half of which is for disposal of mixed waste the other half will be for disposal of low level waste. Initial capacity for mixed waste disposal is 82,000 cubic meters of waste with an ultimate capacity of up to 450,000 cubic meters of waste. Disposal capacity beyond the initial 82,000 cubic meters will require a modification to the Part B Permit. The mixed waste types to be disposed in the IDF include vitrified LAW from the RPP WTP and DBVS. Additionally, mixed waste generated by IDF operations will be disposed of in IDF.

The mission of the RCRA portion of the IDF is to provide an approved disposal facility for the permanent, environmentally safe disposition of mixed waste and RCRA waste.

For ILAW, and BVW the container packaging and handling will be designed to maintain containment of each waste type, limit intrusion, and limit human exposure at the IDF. ILAW containers will be transported from the RPP WTP to the IDF using a tractor trailer system. BVW will be transported from the DBVS staging area to IDF using a similar system. Transport of the ILAW and BVW to the landfill will occur along a pre-determined route.

The lined landfill will have a leachate collection and removal system. The leachate collection tanks will be operated in accordance with the generator provisions of WAC 173-303-200 and are not subject to this WAP.

Additional information is located in Chapter 1.0 (IDF Part A) and Chapter 4.0 (Process Information).

3.2 — Identification and Classification of Waste

The ILAW, BVW, and newly generated mixed waste will be accepted for disposal. The mixed waste disposed of at the IDF is received from waste generated within IDF, and two other Hanford Facility TSD units (RPP WTP and DBVS). The following waste will not be accepted for disposal at this TSD unit:

- Waste is not accepted for disposal when the waste contains free standing liquid unless all free standing liquid:
 - Has been removed by decanting or other methods.
 - Has been mixed with sorbent or stabilized (solidified) so that free standing liquid is no longer observed.

- ~~○ Otherwise has been eliminated.~~
- ~~○ Container is very small, such as an ampoule.~~
- ~~○ Container is a labpack and is disposed in accordance with WAC 173-303-161 or 40 CFR 264.316.~~
- ~~○ Container is designed to hold free liquids for use other than storage, such as a battery or capacitor.~~

~~There could be cases in which small amounts of residual liquids are present in mixed waste containers because condensate has formed following packaging or free liquids remain in debris items (e.g., pumps, tubing) even after draining. When it is not practical to remove this residual liquid, the free liquid must be eliminated to the extent possible by adding a quantity of sorbent sufficient to sorb all residual liquids.~~

~~Free liquid is determined by SW-846, *Test Methods for Evaluating Solid Waste: Physical/Chemical Method*, Method 9095 (Paint Filter Liquids Test) [WAC 173-303-140(4)(b) and 40 CFR 264.314(d)] only for waste that has the potential for free liquid formation.~~

- ~~● Gaseous waste not accepted for disposal if the is waste packaged at a pressure in excess of 1.5 atmospheres at 20°C.~~
- ~~● Pyrophoric waste is not accepted for disposal. Waste containing less than 1 weight percent pyrophoric material partially or completely dispersed in each package is not considered pyrophoric for the purposes of this requirement.~~
- ~~● Solid acid waste is not accepted for disposal [WAC 173-303-140(4)(c)].~~
- ~~● Extremely hazardous waste that does not meet WAC 173-303-140(4)(d) is not accepted for disposal. Extremely hazardous waste that has been treated could be disposed in accordance with Revised Code of Washington (RCW) 70.105.050(2), "Hazardous Waste Management."~~
- ~~● Organic/carbonaceous waste that does not meet WAC 173-303-140(4)(d) is not accepted for disposal.~~
- ~~● Waste not meeting the LDR treatment standards is not accepted for disposal [40 CFR 268 and WAC 173-303-140(4)].~~
- ~~● Waste streams will be evaluated during pre-shipment review to ensure that the waste streams do not contain constituents incompatible with the liner system in concentration sufficient to degrade the liner. Table 1 provides a list of chemicals shown to be incompatible with the liner material at 100% concentrations (WHC SD-WM-TI-714). In general, mixed waste that meets federal and state treatment standards would be compatible with the TSD unit liner system. Waste accepted at the IDF will be compatible with the liner. Constituents in Table 1 will not be accepted for disposal (refer to Section 3.4.9 for waste stream compatibility).~~

3.3—Management of Waste

~~The ILAW, BVW, and newly generated wastes (see Section 3.3.1) generated during normal operations of this TSD unit are accepted at this TSD unit for disposal. The two onsite TSD units (RPP-WTP and DBVS) transferring/shipping waste to this TSD unit hereafter are referred to as the 'generator' unless otherwise denoted in this WAP. The waste acceptance process for transfers from the generator is identified in Figure 1.~~

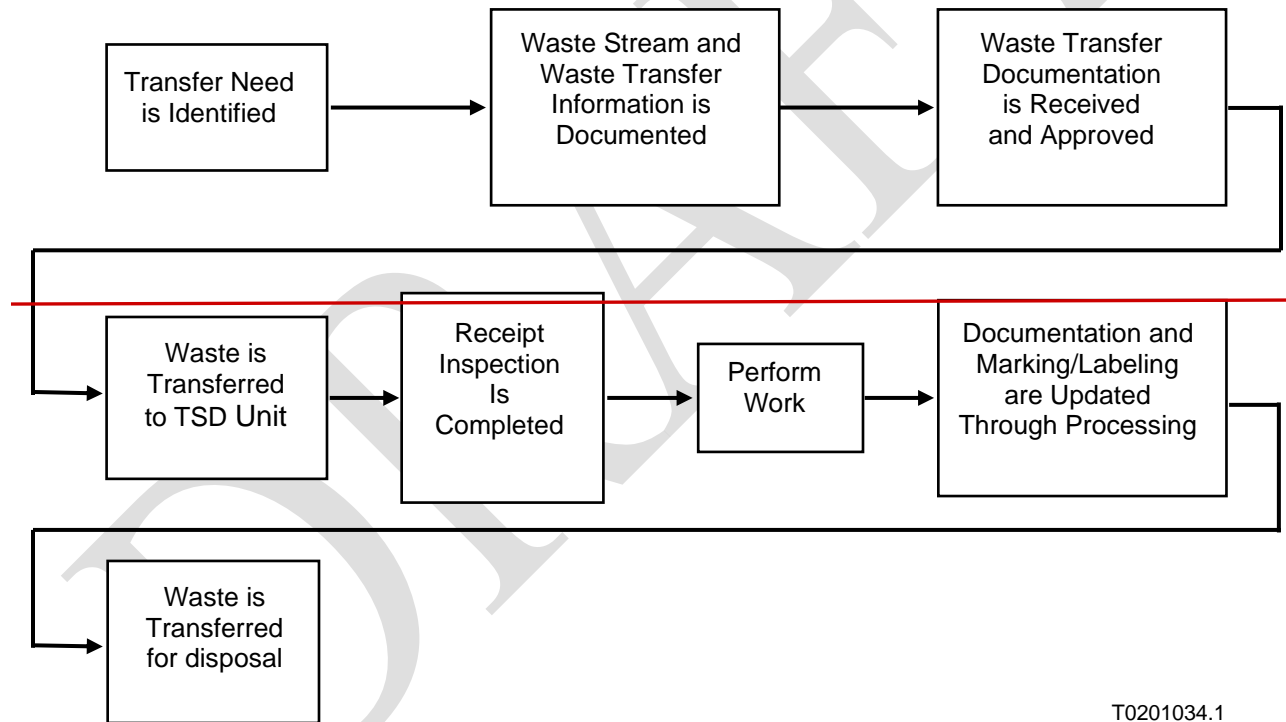
~~Written waste tracking procedure(s) are implemented to ensure waste received at the TSD unit matches the manifest or transfer papers, to ensure that the waste is tracked through the TSD unit to final disposition, and to maintain the information required in WAC 173-303-380. The waste tracking process provides a mechanism to track waste through a uniquely identified container. The unique identifier is a barcode (or equivalent) that is recorded in the Solid Waste Information Tracking System (SWITS). This mechanism encompasses the waste acceptance process, the movement of waste, the processing of waste, and management of the waste.~~

1 The container identification number provides traceability between the TSD unit and the hard copy of
2 records that are maintained as part of the operating record to ensure information relative to the location,
3 quantity, and physical and chemical characteristics of the waste are available.

4 The following sections describe the process for waste acceptance and the different types of information
5 and knowledge reviewed/required during the acceptance process. The process for management of waste
6 is described in Section 3.4.

7 3.3.1—Newly Generated Waste within the IDF

8 This TSD unit generates mixed waste as a result of operational (e.g., chemical, radiological) activities.
9 These activities include, transfer functions along with inspection, decontamination, cleanup, maintenance
10 tasks and leachate collection. The IDF generated operational waste will be maintained in accordance with
11 generator provisions of WAC 173 303 200 and WAC 173 303 600(3)(d). Any newly generated waste
12 (except leachate) not meeting IDF waste acceptance criteria will be designated and sent to another
13 permitted TSD or to a 90 day accumulation area. IDF leachate will be managed in accordance with
14 WAC 173 303 200 and transferred to the Liquid Effluent Retention Facility/Effluent Treatment Facility
15 (LERF/ETF) (or other permitted TSD) for treatment. Solids or residuals resulting from IDF leachate
16 treatment may be designated/packaged and sent back to the IDF for burial or to another permitted TSD



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40 **Figure 1.—Waste Transfers and Analysis Plan Onsite TSD Units Flow Diagram.**

Table 1. Chemicals Incompatible with the High Density Polyethylene Liner (in concentrated form)*

Chemical	CAS Number
Amyl chloride	543-59-9
Aqua regia	8007-56-5
Bromic acid	15541-45-4
Bromobenzene	108-86-1
Bromoform	75-25-2
Calcium bisulfite	13780-03-5
Calcium sulfide	20548-54-3
Diethyl benzene	25340-17-4
Diethyl ether	60-29-7
Bromine	7726-95-6
Chlorine	7782-50-5
Fluorine	7782-41-4
Ethyl chloride	75-00-3
Ethylene trichloride	79-01-6
Nitrobenzene	98-95-3
Perchlorobenzene	118-74-1
Propylene dichloride	78-87-5
Sulfur trioxide	7446-11-9
Sulfuric acid (fuming)	8014-95-7
Thionyl chloride	7719-09-7
Vinylidene chloride	75-35-4

CAS = Chemical Abstract Service.
 * WHC-SD-WM-TI-714

3.4 Confirmation Process

WAC 173-303-300(1) requires confirmation on mixed waste before acceptance of waste into a waste management unit. The confirmation process consists of two parts, pre-shipment review, and verification. Confirmation activities are performed in accordance with TSD unit specific governing documentation. The confirmation process is detailed in Figure 2 for ILAW and BVW.

3.4.1 Pre-shipment Review

Pre-shipment review takes place before waste can be scheduled for transfer or shipment to this TSD unit. The review focuses on whether the waste stream is defined accurately and meets the TSD unit waste acceptance criteria and whether the LDR status is determined correctly. Only waste determined to be acceptable for storage (see Section 3.4.1.2.2) and/or disposal is scheduled. This determination is based on the information provided by the generator. The pre-shipment review consists of waste stream approval and the waste shipment approval process. The following sections discuss the pre-shipment review process. The information obtained during the pre-shipment review, at a minimum, includes all information necessary to safely dispose of the waste. The pre-shipment review ensures the waste is characterized and the data provided qualify as 'acceptable knowledge' (Section 3.4.1.4).

3.4.1.1 Pre-shipment Review of Wastes

Pre-shipment review for ILAW and BVW waste containers will take place at RPP-WTP and the DBVS staging area respectively before either type of containers can be scheduled for transfer to the IDF. The review will focus on whether the waste stream is defined accurately, meets the waste acceptance criteria, and the land disposal restrictions (LDR) status was determined correctly. Only waste determined to be acceptable for storage (see Section 3.4.1.2.2) and/or disposal will be scheduled. This determination will

1 be based on the information provided by the generator. The pre-transfer review will consist of the waste
2 profile documentation and waste transfer approval process. The following sections discuss the
3 pre-transfer review process. ILAW and BVW containers received for land disposal will be at least 90%
4 full. The information obtained from the generator, at a minimum, will contain five elements:

- 5 (1) Documentation to ensure waste can be managed pursuant to the Part A, Form 3.
- 6 (2) Documentation to ensure the waste is not a prohibited waste in accordance with Section 3.2,
- 7 (3) A determination if the waste is an ignitable, reactive, or incompatible waste as defined in
8 WAC 173-303-040.
- 9 (4) Documentation that waste meets LDR requirements of 40 CFR 268 and WAC 173-303-140.
- 10 (5) Operational restrictions on acceptance of waste.

11 During the waste profile documentation process for ILAW and BVW containers, the generator will have
12 the responsibility to provide relevant information pertaining to the proper management of the waste.
13 Characterization information pertaining to the treatment of ILAW and BVW will be obtained during the
14 waste profile documentation process.

15 **3.4.1.2—Waste Stream Approval Process for Wastes**

16 The waste stream approval process consists of reviewing stream information supplied on a waste stream
17 profile and supporting documentation to allow receipt of the waste into the IDF. Waste stream
18 compatibility (i.e., compatibility between individual waste streams and compatibility between waste
19 streams and landfill design and construction parameters) will be assessed on a case-by-case basis.
20 Criteria for assessing and determining compatibility will be identified in either the facility Waste
21 Acceptance Criteria, Waste Analysis Plan, or other protocol or procedure as appropriate.

22 **3.4.1.2.1—Waste Stream Approval for ILAW and BVW**

23 During the waste profile documentation process, the IDF waste acceptance organization will obtain the
24 following information:

- 25 ● Description of waste generating process
- 26 ● Characterization data
- 27 ● Dangerous waste numbers
- 28 ● LDR data (as specified in Section 3.4.10)
- 29 ● Composition of ILAW and BVW including regulated constituents of concern (refer to Chapter
30 1.0 of the permit application Part A Form)

31 The waste profile documentation process will be as follows.

- 32 1. Appropriate generator fills out waste profile documentation.
- 33 2. The IDF designated waste acceptance organization reviews the waste profile information against
34 the waste acceptance criteria for each ILAW or BVW transfer.
- 35 3. If discrepancies are noted, the IDF designated waste acceptance organization requests additional
36 information from the generator to address discrepancies for either: (1) inconsistent information
37 and (2) information not constituting acceptable knowledge (refer to Section 3.4.1.4.1).

38 Information (waste profile documentation) is resubmitted by the generator addressing concerns in
39 Item 3.

- 40 ● If concerns are addressed, waste profile documentation is approved.
- 41 ● If concerns are not addressed and met, waste profile documentation is not approved until concerns
42 are corrected.

~~3.4.1.2.2 Waste Stream Approval for Newly Generated Mixed Waste~~

~~The waste stream approval process for wastes generated during IDF operations (except for leachate) consists of reviewing stream information supplied on a waste stream profile and supporting documentation. The waste stream profile requires the following supporting documentation:~~

- ~~• Generator information (e.g., name, address, point of contact, telephone number)~~
- ~~• Waste stream name~~
- ~~• Waste generating process description~~
- ~~• Waste numbers~~
- ~~• Chemical characterization information (e.g., characterization method(s), chemicals present, concentration ranges)~~
- ~~• Designation information~~
- ~~• LDR information including identification of underlying hazardous constituents if applicable~~
- ~~• Waste type information (e.g., physical state, adsorbents used, inert materials, stabilizing agents used)~~
- ~~• Packaging information (e.g., container type, maximum weight, size).~~

~~Attachments could consist of container drawings, process flow information, analytical data, etc.~~

~~In some cases, such as variable waste streams, the waste stream profile information could be general in nature. In these cases, more detailed information is gathered during the waste shipment approval process on a per shipment basis. This information is reviewed against the TSD unit waste acceptance criteria to ensure the waste is acceptable for receipt. If conformance issues are found during this review, additional information is requested that could include analytical data or a sample to be analyzed.~~

~~If the waste cannot be received, the TSD unit pursues acceptance of the waste at an alternate TSD unit. Once the waste meets the waste acceptance criteria, the TSD unit assigns the profile to a waste specification record and establishes a waste verification frequency based on the requirements found in Section 3.4.2. Profile information is re-evaluated as discussed in Section 3.4.7.~~

~~3.4.1.3 Waste Transfer/Shipment Approval Process~~

~~After the appropriate generator has received the waste profile documentation approval from IDF (refer to Section 3.4.1.2.1), the generator waste transfer will be subjected to the waste transfer approval process. Only those ILAW and BVW containers approved under the waste profile documentation as part of the waste transfer approval process will be transferred to the IDF. During the waste transfer approval process, the IDF designated waste acceptance organization will obtain the following information.~~

~~For each ILAW or BVW container transfer that is a candidate for disposal in the TSD unit, the generator will provide the following information:~~

- ~~• Container identification number~~
- ~~• Profile number~~
- ~~• Waste description~~
- ~~• Generator information (e.g., name, address, point of contact, telephone number)~~
- ~~• Container information (e.g., type, size, weight)~~
- ~~• Waste numbers~~
- ~~• LDR certification~~
- ~~• Packaging materials and quantities~~

1 The ILAW and BVW container transfer approval process will be as follows.

- 2 1. The generator obtains information from existing database, operating record, or generator records
- 3 on each ILAW container to be transferred under the approved waste profile documentation.
- 4 2. Information is submitted to the TSD unit designated waste acceptance organization by the
- 5 generator and is reviewed for the following:
- 6
 - 7 ● Consistency with approved waste profile documentation.
 - 8 ● Consistency with waste acceptance criteria within the IDF.
- 9 3. If discrepancies are identified, the TSD unit designated waste acceptance organization will
- 10 request additional information from the generator to address any discrepancies.
- 11 4. Information (waste package documentation) is resubmitted by the generator addressing concerns
- 12 in Item 3.
- 13 5. If discrepancies are addressed, this information is forwarded to the TSD waste acceptance
- 14 organization.
- 15 6. If discrepancies are not addressed, transfer is not approved until discrepancies are corrected.

15 **3.4.1.4 — Acceptable Knowledge Requirements**

16 The TSD unit ensures that all information used to make waste management decisions is based on
17 adequate characterization data as described in the following sections. The TSD unit evaluates the data to
18 ensure that the data are adequate acceptable knowledge for management of the waste.

19 **3.4.1.4.1 — General Acceptable Knowledge Requirements**

20 One or more of the following types of information could be considered, provided that the information is
21 of sufficient quality to demonstrate compliance with applicable waste acceptance criteria:

- 22 ● Mass balance from a controlled process that has a specified output for a specified input.
- 23 ● Material safety data sheet on chemical products.
- 24 ● Test data from a surrogate sample.
- 25 ● Analytical data on the waste or a waste from a similar process.

26 In addition, acceptable knowledge requirements can be met using a combination of analytical data or
27 screening results and one and/or more of the following information:

- 28 ● Interview information
- 29 ● Logbooks
- 30 ● Procurement records
- 31 ● Qualified analytical data
- 32 ● Radiation work package
- 33 ● Procedures and/or methods
- 34 ● Process flow charts
- 35 ● Inventory sheets
- 36 ● Vendor information
- 37 ● Mass balance from an uncontrolled process (e.g., spill cleanup)
- 38 ● Mass balance from a process with variable inputs and outputs (e.g., washing/cleaning methods)

39 If the information is sufficient to quantify the constituents of regulatory concern and to determine waste
40 characteristics as required by the regulations and TSD unit waste acceptance criteria, the information is
41 considered acceptable. Adequate acceptable knowledge includes (1) general waste knowledge
42 requirements and/or (2) LDR waste knowledge requirements.

1 ~~(1) General waste knowledge requirements.~~ At a minimum, the generator supplies enough information
2 for the waste to be managed at this TSD unit (refer to Section 3.4.1.1). The minimum level of
3 acceptable knowledge consists of designation data where the constituents causing a waste number to
4 be assigned are quantified and that data address any TSD unit operational parameters necessary for
5 proper management of the waste.

6 ~~When process knowledge indicates that constituents, which if present in the waste might cause the~~
7 ~~waste to be regulated, are input to a process, but not expected to be in the waste, sampling and~~
8 ~~analysis must be performed to ensure the constituents do not appear in the waste above applicable~~
9 ~~regulatory levels. This requirement can be met through chemical screening. This sampling and~~
10 ~~analysis are required only for initial characterization of the waste stream.~~

11 ~~When the available information does not qualify as acceptable knowledge or is not sufficient to~~
12 ~~characterize a waste for management, the sampling and testing methods outlined in~~
13 ~~WAC 173 303 110 are used to determine whether a waste designates as ignitable, corrosive, reactive,~~
14 ~~and/or toxic and whether the waste contains free liquids as applicable. If the analysis is performed to~~
15 ~~complete characterization after acceptance of the waste by the TSD unit, this WAP governs the~~
16 ~~sampling and testing requirements.~~

17 ~~(2) LDR waste knowledge.~~ The TSD unit operating record contains all information required to
18 document that the appropriate treatment standards have been met or will be met after the waste is
19 treated unless otherwise excepted in this section.

- 20 ~~• Both ILAW and BVW will be LDR compliant waste streams prior to acceptance at the IDF.~~
21 ~~Vitrification at the WTP and DBVS will facilitate LDR compliance for the majority of the~~
22 ~~mixed waste disposed of at IDF. IDF operational waste will be treated as needed to meet~~
23 ~~LDR at another TSD other than WTP or the DBVS~~
- 24 ~~• This TSD unit may use analytical data as necessary to ensure that the applicable requirements~~
25 ~~found in 40 CFR 268.7 and WAC 173 303 140(4) are met.~~

26 **3.4.1.4.2 Methodology to Ensure Compliance with LDR Requirements**

27 The generators are subject to LDR requirements and are required to submit all information notifications
28 and certifications described in WAC 173 303 380(1), (j), (k), (n), and (o). Mixed waste not meeting the
29 treatment standards cannot be disposed at this TSD unit.

30 The following are general requirements for certification or information notification.

- 31 ~~• The waste is subject to LDR and the waste has been treated. The generator supplies the~~
32 ~~appropriate LDR certification information (40 CFR 268).~~
- 33 ~~• The waste is subject to LDR and the generator has determined that the waste meets the LDR as~~
34 ~~generated. The generator develops the certification based on process knowledge and/or analytical~~
35 ~~data and supplies the appropriate LDR certification information necessary to demonstrate~~
36 ~~compliance with the LDR treatment standards of 40 CFR 268 and WAC 173 303 140. State only~~
37 ~~LDRs do not require this type of certification.~~

38 ~~When demonstrating that a concentration based LDR treatment standard has been met, a representative~~
39 ~~sample of the waste must be submitted for analysis. This sample could be taken by the treatment facility~~
40 ~~or the generator and is required to comply with the LDR treatment standards contained in 40 CFR 268.40~~
41 ~~and 268.48 for underlining hazardous constituents.~~

42 **3.4.2 Verification**

43 Verification is an assessment performed by this TSD unit to substantiate that the waste received is the
44 same as represented by the analysis supplied by the generator for the pre shipment review. Verification
45 for ILAW and BVW containers will contain one element, a 100% container receipt inspection.
46 Physical/chemical screening will not be performed on the ILAW or BVW containers. Waste is not

1 ~~accepted by the TSD unit for disposal until the required elements of verification have been completed,~~
2 ~~including evaluation of any data obtained from verification activities. All conformance issues identified~~
3 ~~during the verification process are resolved in accordance with Section 3.4.3. Verification activity results~~
4 ~~will be documented by the IDF designated waste acceptance organization.~~

5 ~~Sampling and analysis for non-vitrification mixed waste (e.g., treatment residues from treatment of IDF~~
6 ~~leachate that are returned to IDF for disposal) will not occur at the IDF but will occur at another permitted~~
7 ~~TSD.~~

8 **3.4.2.1—Container Receipt Inspection**

9 ~~Container receipt inspection is a mandatory element of the confirmation process.~~

10 **3.4.2.1.1—Container Receipt Inspection for ILAW and BVW**

11 ~~The ILAW and BVW container receipt inspection will be performed by IDF designated waste acceptance~~
12 ~~organization. The following criteria will be evaluated during container receipt inspection:~~

- 13 ~~● Number of containers~~
- 14 ~~● Size of containers~~
- 15 ~~● Labels~~
- 16 ~~● Container integrity~~

17 ~~Discrepancies identified during the container receipt inspection will be communicated to generator.~~
18 ~~Discrepancies will be resolved before the containers are unloaded. Once the discrepancies are resolved,~~
19 ~~the ILAW containers will be unloaded and disposed. Should discrepancies remain unresolved after~~
20 ~~30 days, Ecology will be notified and daily walk around inspections conducted.~~

21 **3.4.2.2—Physical Screening Process**

22 ~~The ILAW and BVW containers are not required to be physically screened because the generator verifies~~
23 ~~the waste meet the waste acceptance criteria for IDF.~~

24 **3.4.2.3—Chemical Screening Process**

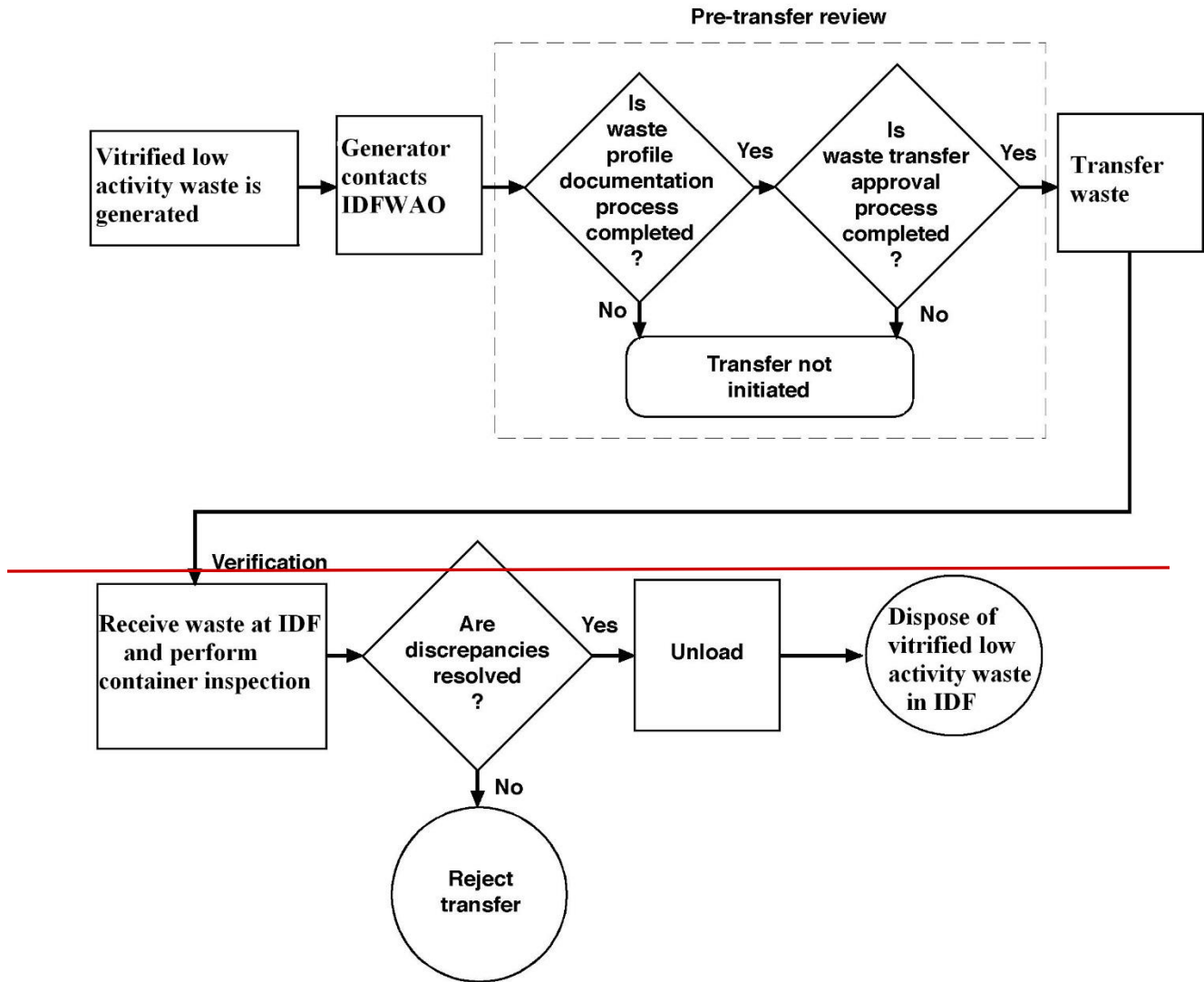
25 ~~Chemical screening is a verification element for containerized mixed waste. The ILAW and BVW~~
26 ~~containers are not required to be chemically screened because the generator verifies the waste meet the~~
27 ~~waste acceptance criteria for IDF.~~

28 **3.4.3—Waste Acceptance**

29 ~~Initial acceptance of waste occurs only after the confirmation process described in Section 3.4 is~~
30 ~~complete. Conformance issues identified during the confirmation process are documented and managed~~
31 ~~in accordance with Section 3.4.1.2.2. Conformance issues that must be corrected before waste acceptance~~
32 ~~include the following:~~

- 33 ~~● Waste that is not identified in the Part A, Form 3 (Chapter 1.0).~~
- 34 ~~● Waste does not match approved profile documentation.~~
- 35 ~~● Designation, physical, and/or chemical characterization discrepancy.~~
- 36 ~~● Incorrect LDR paperwork.~~
- 37 ~~● Packaging discrepancy.~~
- 38 ~~● Manifest discrepancies as described in WAC 173-303-370(4).~~

39 ~~For waste shipments with unresolved conformance issue(s) that exceed 90 days, this TSD will notify~~
40 ~~Ecology at least once per calendar quarter.~~



IDF = Integrated Disposal Facility
IDFWAO = IDF Waste Acceptance Organization

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Figure 2. Vitrification or Alternative Method Transfer and Waste Analysis Plan Process Flow Diagram

3.4.4 — Selecting Waste Analysis Parameters

The ILAW and BVW containers will be managed without the need to perform sampling and analysis at the TSD. No parameters will be required to be identified.

Table 2. — Parameters and Rationale for Physical Screening

Parameter	Method*	Rationale for selection
Nondestructive examination	Field method	Confirm consistency between waste and shipping documentation.
<p>*Procedures based on manufacturer’s recommended methodology unless otherwise noted. When regulations require a specific method, the method is followed. SW 846, <i>Test Methods for Evaluating Solid Waste</i>, latest edition, U.S. Environmental Protection Agency, Washington, D.C. WAC 173-303, "Dangerous Waste Regulations"</p>		

3.4.5 — Selecting Sampling Procedures

Any required sampling and analysis of the ILAW and BVW containers will be performed at the generator before the containers are closed. Sampling and analysis for IDF operational mixed waste will not occur at the IDF but at another Hanford TSD.

3.4.6 — Selecting A Laboratory, Laboratory Testing, and Analytical Methods

Any required sampling and analysis of the ILAW and BVW containers will be performed before the containers are closed at the RPP WTP and DBVS respectively. No Laboratory, laboratory testing or analytical methods will be required to be identified.

3.4.7 — Selecting Waste Re-Evaluation Frequencies

The re-evaluation (repeat and review) frequency for ILAW to review a waste generating process and associated waste profile documentation is every two years, or more often if conditions in WAC 173-303-300(4)(a) arise. Since BVW will be generated over a shorter time period, frequency for review will be every six months.

When a waste generating process and associated waste profile documentation is re-evaluated, IDF personnel or designated waste acceptance organization could request the generator to do one or more of the following:

- Verify the current waste profile documentation is accurate.
- Supply new waste profile documentation.

When a waste profile is re-evaluated, the TSD unit could request the organization generating the waste to do one of the following:

- Verify the current waste profile is accurate.
- Supply a new waste profile.
- Submit a sample for parameter analysis.

3.4.8 — Special Waste Analysis Procedural Requirements

Special procedural requirements for the IDF will include procedures for ignitable, reactive, and incompatible waste, and provisions for complying with federal and state LDR requirements. This section discusses any special process requirements for receiving mixed waste at this TSD unit.

1 **3.4.9—Procedures for Ignitable, Reactive, and Incompatible Waste**

2 Waste stream compatibility (i.e., compatibility between individual waste streams and compatibility
3 between waste streams and landfill design and construction parameters) and waste stream ignitability will
4 be assessed on a case by case basis. Criteria for assessing and determining compatibility and ignitability
5 will be identified in either the facility Waste Acceptance Criteria, Waste Analysis Plan, or other protocol
6 or procedure as appropriate. Should these wastes be accepted, appropriate administrative and engineering
7 controls will be implemented as necessary.

8 This TSD unit does not accept reactive waste (refer to Section 3.2 and Section 3.4.1.1). The TSD unit
9 ensures that reactive waste is not accepted at this TSD unit in the following manner:

- 10 ● Pre shipment review will identify whether the waste is reactive based on the definition contained
11 in WAC 173-303-040.
- 12 ● If analysis of the characterization information leads to a conclusion that the waste is a reactive
13 waste, the containers, or waste will not be accepted.

14 The types of prohibited waste not accepted at this TSD unit as listed in Section 3.2.

15 **3.4.10—Provisions for Complying With Federal and State Land Disposal Restriction**
16 **Requirements**

17 State only and federal LDR requirements restrict the land disposal of certain types of waste subject to
18 RCRA and RCW 70.105, "Hazardous Waste Management", as amended. Waste managed on the Hanford
19 Facility falls within the purview of these LDRs per 40 CFR 268 and WAC 173-303-140. The treatment
20 standards for mixed waste disposed at IDF are based on the dangerous waste numbers accepted as
21 documented on the IDF Part A as well as additional information necessary for identifying treatability
22 groups etc.

23 The IDF will not perform sampling and analysis to determine compliance with treatment standards
24 contained in 40 CFR 268. Any sampling and analysis results required to demonstrate compliance with
25 concentration based treatment standards contained in 40 CFR 268.40 will be obtained by IDF waste
26 acceptance organization from the generator, during the waste profile documentation process to meet the
27 requirements of 40 CFR 268.7(e)(2). Sampling and analysis results will be placed into the unit specific
28 portion of the Hanford Facility operating record. Other LDR records are identified in
29 WAC 173-303-380(1)(m) and will be obtained from the generator, by IDF personnel as part of either the
30 waste profile documentation process or the waste transfer approval process. The treated waste must meet
31 all applicable LDRs to be accepted for disposal at the IDF. IDF will obtain the LDR certification from
32 the treatment unit.

33 Mixed waste constituents that are subject to LDRs are identified in 40 CFR 268.40 by reference in
34 WAC 173-303-140(2), the extremely hazardous waste disposal requirements for DOE facilities contained
35 in RCW 70.105.050(2), and the state only LDRs contained in WAC 173-303-140(4)(b) (d). The mixed
36 waste must meet certain treatment standards, as specified in 40 CFR 268.40, RCW 70.105.050(2), and
37 WAC 173-303-140(4)(b) (d), if the waste is to be land disposed. Any waste requiring LDR treatment
38 must be treated prior to acceptance into the IDF.

39 State only LDRs for mixed waste will be met in the following manner:

- 40 ● Extremely hazardous waste disposal requirements in RCW 70.105.050(2) concerning "all
41 reasonable methods" will be met by the treatment performed to meet 40 CFR 268,
42 WAC 173-303-140(4)(b) (d), and DOE requirements for disposal. If no treatment is required to
43 meet 40 CFR 268, WAC 173-303-140(4)(b) (d), or DOE requirements, no treatment is required
44 to dispose of extremely hazardous waste at the IDF.

- ~~Special requirements for bulk and containerized liquids in WAC 173-303-140(4)(b) are identical to the landfill requirements contained in 40 CFR 264.314. For mixed waste, including the provisions when to perform the paint filter test, these requirements are described in Section 3.2 of the WAP.~~
- ~~Solid acid waste requirements in WAC 173-303-140(4)(c) can be met through knowledge of the treatment process. Sampling and analysis following treatment is not required to meet this state-only LDR. Disposal of treated solid acid waste still displaying the WSC2 characteristic can occur only when the waste is treated to reduce the harmful properties or characteristics of the waste.~~
- ~~Organic/Carbonaceous waste prohibition requirements in WAC 173-303-140(4)(d) do not apply to the Hanford Facility because the Hanford Facility is operating under WAC 173-303-140(4)(d)(iii), in accordance with a sitewide 1,609 kilometers (1,000-mile) inapplicability certification. Sampling and analysis is not required to determine the organic/carbonaceous content of a mixed waste.~~
- ~~Ecology allows treatment of Organic/Carbonaceous waste in lieu of meeting the inapplicability certification requirements WAC 173-303-140(4)(d)(iii) through macro-encapsulation for hazardous debris only.~~

3.4.11 Off-Specification Waste

~~Off Specification ILAW or BVW is waste not meeting the waste acceptance criteria as described in Section 3.4, Confirmation Process. ILAW or BVW streams determined to be off specification may be temporarily stored in the RCRA lined portion of the IDF pending resolution of discrepancy or return to generating TSD as long as these wastes meet LDR. ILAW and BVW may be temporarily stored in the RCRA lined portion of the IDF, provided the temperature administrative control limit is not exceeded, until sufficiently cool for disposal.~~

3.5 Waste Tracking

~~The IDF will monitor and record the placement of waste packages. At the time of final placement of each package, the position and serial number of the package will be logged.~~

3.6 Recordkeeping

~~Recordkeeping requirements that will be applicable to this WAP are as follows:~~

- ~~Confirmation records described in Section 3.4 will be maintained in accordance with Condition II.I.1.b of the Hanford Facility RCRA Permit, Dangerous Waste Portion (Ecology 2001).~~
- ~~Waste profile documentation described in Section 3.4.1.2.1 will be maintained in accordance with Condition II.I.1.j of the Hanford Facility RCRA Permit, Dangerous Waste Portion.~~
- ~~LDR records described in Section 3.4.10 will be maintained in accordance with WAC 173-303-380(1)(m) in the IDF unit specific portion of the Hanford Facility operating record.~~

3.7 References

~~Ecology, 2001, "Hanford Facility RCRA Permit, Dangerous Waste Portion", Washington State Department of Ecology, Olympia, Washington as amended.~~

~~SW-846, *Test Methods for Evaluating Solid Waste: Physical/Chemical Method*, latest edition, Office of Solid Waste, U.S. Environmental Protection Agency, Washington, D.C.~~

~~WHC SD-WM TI 714, *High Density Polyethylene Liner Chemical Compatibility for Radioactive Mixed Waste Trenches*, 1995, Westinghouse Hanford Company, Richland, Washington.~~

ACRONYMS

<u>COLIWASA</u>	<u>Composite Liquid Waste Sampler</u>
<u>DOE</u>	<u>U.S. Department of Energy</u>
<u>DWMU</u>	<u>Dangerous Waste Management Unit</u>
<u>IDF</u>	<u>Integrated Disposal Facility</u>
<u>ILAW</u>	<u>Immobilized Low-activity Waste</u>
<u>LAW</u>	<u>Low-Activity Waste</u>
<u>LDR</u>	<u>Land Disposal Restrictions</u>
<u>LLW</u>	<u>Low-level Waste</u>
<u>MACRO</u>	<u>Macroencapsulation (as defined in 40 CFR 268.42)</u>
<u>MLLW</u>	<u>Mixed Low-level Waste</u>
<u>MSDS</u>	<u>Material Safety Data Sheet</u>
<u>O&M</u>	<u>Operations and Maintenance</u>
<u>QA</u>	<u>Quality Assurance</u>
<u>QC</u>	<u>Quality Control</u>
<u>RCRA</u>	<u>Resource Conservation and Recovery Act of 1976</u>
<u>SDS</u>	<u>Safety Data Sheet</u>
<u>SSW</u>	<u>Secondary Solid Waste</u>
<u>WAP</u>	<u>Waste Analysis Plan</u>
<u>WTP</u>	<u>Waste Treatment and Immobilization Plant</u>

GLOSSARY

<u>Characterization</u>	Information provided for a waste stream that includes the use of “knowledge” and/or the methods of laboratory analysis approved in <u>Washington Administrative Code (WAC) 173-303-110</u> .
<u>Knowledge</u>	Sufficient information about a waste to reliably substitute for direct testing of the waste. To be sufficient and reliable, the “knowledge” used must provide information necessary to manage the waste in accordance with the requirements of WAC 173-303-300. Note: “knowledge” may be used by itself, or in combination with testing to designate a waste, pursuant to WAC 173-303-070(3)(e), or to obtain a detailed chemical, physical, and/or biological analysis of a waste as required in WAC 173-303-300(2).
<u>Labpack</u>	A packaging method where a number of inner containers of waste are packaged into an outer drum as specified in 49 <u>Code of Federal Regulations (CFR) 173.12(b)</u> , Transportation, Shippers—General Requirements for Shipments and Packagings, <i>Exceptions for shipment of waste materials</i> . For this document, the term also could be used for U.S. Department of Transportation Class 7 material packaged in the same manner.
<u>On-site transfer</u>	A waste movement subject to the requirements of Hanford Facility <u>Resource Conservation and Recovery Act (RCRA) Permit Condition II.Q</u> which originates from the Hanford Site and arrives at <u>Integrated Disposal Facility (IDF)</u> .
<u>Nonconformance</u>	A significant discrepancy difference in quantity or type of waste. A waste shipment may be classified as nonconforming if it is different in chemical or physical properties from the information on the waste profile. A variation in shipment piece count from the manifest as defined by WAC 173-303-370(5) is nonconforming.
<u>Profile</u>	A detailed and comprehensive physical, chemical, and regulatory description of a waste stream to assist in determining whether a waste can be safely managed in compliance with the Part B permit. The permittees are responsible for ensuring an accurate profile exists for the waste streams accepted.
<u>Testing</u>	Performance of a procedure that yields a quantitative or qualitative evaluation of the type and/or quantity of materials present. Sometimes referred to as <i>analysis</i> or <i>laboratory analysis</i> .
<u>Testing for Total Metals</u>	Includes sample preparation followed by, at a minimum, analysis for arsenic (D004), barium (D005), cadmium (D006), chromium (D007), lead (D008), mercury (D009), selenium (D010), and silver (D011).

<u>Testing for Total Organics</u>	<u>Includes sample preparation followed by analysis for applicable constituents: endrin (D012), lindane (D013), methoxychlor (D014), toxaphene (D015), 2,4-dichlorophenoxyacetic acid (D016), 2,4,5-trichlorophenoxypropionic acid (D017), benzene (D018), carbon tetrachloride (D019), chlordane (D020), chlorobenzene (D021), chloroform (D022), o-cresol (D023), m-cresol (D024), p-cresol (D025), cresol (D026), 1,4 dichlorobenzene (D027), 1,2-dichloroethane (D028), 1,1-dichloroethylene (D029), 2,4-dinitrotoluene (D030), heptachlor and heptachlor epoxide (D031), hexachlorobenzene (D032), hexachlorobutadiene (D033), hexachloroethane (D034), methyl ethyl ketone (D035), nitrobenzene (D036), pentachlorophenol (D037), pyridine (D038), tetrachloroethylene (D039), trichloroethylene (D040), 2,4,5-trichlorophenol (D041), 2,4,6-trichlorophenol (D042), and vinyl chloride (D043).</u>
<u>Treatment</u>	<u>Physical, chemical, or biological processing of dangerous waste to make such wastes nondangerous or less dangerous, safer for transport, amenable for energy or material resource recovery, amenable for storage and disposal, or reduced in volume, with the exception of compacting, repackaging, and sorting as allowed under WAC 173-303-400(2) and WAC 173-303-600(3).</u>
<u>Waste Shipment</u>	<u>Waste received at IDF from a waste generator.</u>
<u>Waste Stream</u>	<u>Waste or a group of wastes from a single process or generating location with similar physical, chemical, or radiological properties.</u>

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DRAFT

B.1 INTRODUCTION

This addendum details the Waste Analysis Plan (WAP) at the IDF dangerous waste management units (DWMUs) that comprise Operating Unit Group 11 of WA7890008967, Hanford Facility Resource Conservation and Recovery Act Permit. This WAP documents the waste pre-acceptance and acceptance processes, sampling methodologies, analytical techniques, quality standards, and compliance with land disposal restriction (LDR) treatment standards that are undertaken for waste accepted for storage, treatment, and disposal at the IDF DWMUs.

This WAP describes how the IDF will comply with the requirements of WAC 173-303-300, Dangerous Waste Regulations, *General waste analysis*, Sections (1) through (5), and applicable federal and state requirements of WAC 173-303-140, *Land disposal restrictions*, and 40 CFR 268, *Land Disposal Restrictions*. Additional information on IDF waste storage and treatment processes is detailed in Addendum C, "Process Information."

B.1.1 Unit Description

IDF provides treatment, storage, and disposal of Hanford Site mixed waste, as defined by WAC 173-303-040, *Definitions*, and Hanford Site low-level waste (LLW). IDF is located on 82 hectares (202 acres) of land within the southcentral portion of the 200 East Area of the Hanford Site (refer to Addendum A, "Part A Form"). Initial construction began in September 2004 and was completed in 2006. The IDF consists of the following four DWMUs:

- A storage pad (process code: S01, container storage) used for staging and storing incoming waste containers pending treatment or disposal. This ground level concrete pad is located west of the disposal cells.
- A treatment pad (process codes: S01, container storage, and T04, other: immobilization) used for treating waste to meet disposal requirements. Treatment capabilities include debris immobilization technologies (sealing, microencapsulation, and macroencapsulation) from 40 CFR 268.45, *Treatment Standards for Hazardous Debris*. Radioactive lead solids will be macroencapsulated (MACRO) per 40 CFR 268.42, *Treatment Standards Expressed as Specified Technologies*. The treatment pad is also used for staging and storing incoming waste containers pending treatment or disposal. This ground level concrete pad is also located west of the disposal cells.
- Disposal cells 1 and 2 (process code: D80, landfill disposal) are two large excavations designed for the unloading and disposal of LDR-compliant waste. The IDF disposal cells are equipped with primary and secondary geomembrane liners and are constructed to RCRA Subtitle C standards. Leachate from the disposal cells is collected and managed by a leachate collection and removal system.

Additional IDF drawings and pictures are provided in Addendum A. Further IDF design, construction, and operation information is provided in Addendum C. Soil, geologic, and hydrogeologic information is discussed in Addendum C and Addendum D, "Groundwater Monitoring Plan."

B.1.2 Waste Management Activities

Waste management within IDF includes the following activities:

- Receiving.
- Storing.
- Treating.
- Disposing.
- Certifying (e.g., LDRs).

- 1 • Transferring waste to and from other onsite treatment, storage and disposal locations.
- 2 • Receiving treated Hanford Site waste from offsite treatment facilities.

3 **B.1.3 Waste Streams**

4 Mixed low-level waste (MLLW) from Hanford Site operations is disposed at both IDF cells. IDF also
5 manages nondangerous LLW from Hanford Site operations in accordance with the *Atomic Energy Act*
6 *of 1954*. Management of radioactive waste is not within the scope of RCRA or WAC 173-303. Any
7 information provided in this document for radioactive waste is for informational purposes only. Waste
8 disposed at IDF consists primarily of immobilized low-activity waste (ILAW) glass containers from the
9 Hanford Site Waste Treatment and Immobilization Plant (WTP). Additional waste streams from various
10 generators to be disposed include:

- 11 • Used WTP low-activity waste (LAW) melter systems.
- 12 • Secondary solid waste (SSW) from WTP.
- 13 • Solidified SSW from the Effluent Treatment Facility.
- 14 • Fast Flux Test Facility non-liquid waste and demolition waste resulting from decommissioning.
- 15 • Secondary waste (LLW and MLLW) from operations at the Tank Farms and Solid Waste
16 Operations Complex.
- 17 • Non-Comprehensive *Environmental Response, Compensation, and Liability Act of 1980*,
18 non-tank LLW and MLLW from various on-site generators.
- 19 • Mixed waste generated by IDF operations.

20 Further information on waste streams disposed at IDF is provided in Appendix BB, “Waste Stream
21 Descriptions.” Refer to the “Part A Form” (Addendum A) for the estimated annual quantity of waste
22 managed at IDF in the DWMUs and the associated dangerous waste numbers.

23 Waste is transported to IDF from various Hanford Site locations using a flatbed truck or tractor-trailer
24 system. Waste received at IDF may be held on the storage pad or treated on the treatment pad before
25 disposal. The primary purpose of the storage pad is for receiving ILAW glass containers generated at
26 WTP and holding the containers until they are thermally cool enough to place in the disposal cells without
27 concern of damaging the cells’ liner. The storage pad is also used to store incoming LLW and MLLW
28 containers pending treatment or disposal.

29 The treatment pad is used to treat waste to meet LDR requirements prior to disposal at IDF. Treatment
30 methods include the immobilization technologies of 40 CFR 268.45, Table 1, “Alternative Treatment
31 Standards for Hazardous Debris.” MACRO can also be performed to meet the technology-based standard
32 of 40 CFR 268.42, Table 1, “Technology Codes and Description of Technology-Based Standards.”
33 Additional information on the treatment methods is provided in Section C.3 of Addendum C. Waste
34 requiring treatment beyond the technologies performed at IDF will be sent to an off-site RCRA-permitted
35 treatment, storage, and disposal facility for treatment and returned to IDF for disposal. The treatment pad
36 may also be used to store LLW and MLLW containers temporarily before placement in IDF disposal
37 cells.

38 **B.1.4 Prohibited Wastes**

39 The following waste types are prohibited from shipment to IDF:

- 40 • Dangerous waste only.
- 41 • MLLW having dangerous waste codes not listed on the “Part A Form” (Addendum A).
- 42 • Ignitable or reactive waste (WAC 173-303-090, *Dangerous waste characteristics*).
- 43 • Incompatible waste (WAC 173-303-040 and WAC 173-303-665, *Landfills*).

- 1 • Waste containing free-standing liquids unless free-standing liquids:
- 2 • Have been removed by decanting or other methods.
- 3 • Have been mixed with sorbent or stabilized (solidified) so that free-standing liquid is no
- 4 longer observed.
- 5 • Container is very small, such as an ampule.
- 6 • Container is a lab pack and is disposed in accordance with WAC 173-303-161, *Overpacked*
- 7 *containers (labpacks).*
- 8 • Container is designed to hold free liquids for use other than storage (e.g., battery or
- 9 capacitor).
- 10 • Have been approved by the Department of Ecology (Ecology) through the non-dangerous
- 11 liquid provision of WAC 173-303-140(4)(b)(v) prior to placement (i.e., cooling water within
- 12 the LAW melters). Additional information about the cooling water is provided in
- 13 Addendum C.
- 14 • There could be cases in which small amounts of residual liquids are present in mixed waste
- 15 containers because condensate has formed following packaging or free liquids remain in
- 16 debris items (e.g., pumps, tubing) even after draining. When it is not practical to remove this
- 17 residual liquid, the free liquid must be eliminated to the extent possible by adding a quantity
- 18 of sorbent sufficient to absorb residual liquids.
- 19 • Solid acid waste [WAC 173-303-140(4)(c)].
- 20 • Extremely hazardous as defined by WAC 173-303-040 unless allowed by Revised Code of
- 21 Washington (RCW) 70A.300.070(2), Hazardous Waste Management, *Disposal at other than*
- 22 *approved site prohibited—disposal of radioactive wastes.*
- 23 • Non-debris waste that requires treatment prior to disposal, except radioactive lead solids (D008).
- 24 • Class IV oxidizer waste.
- 25 • Comprehensive Environmental Response, Compensation, and Liability Act of 1980 waste.
- 26 • Toxic Substances Control Act of 1976 regulated polychlorinated biphenyl waste is prohibited
- 27 except as specifically authorized under 40 CFR 761, *Polychlorinated Biphenyls (PCBs)*
- 28 *Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions*, or an U.S.
- 29 Environmental Protection Agency (EPA)-issued Risk Based Disposal Authorization.

30 **B.2 IDENTIFICATION AND CLASSIFICATION OF WASTE**

31 Data regarding the identification and classification of mixed waste must be evaluated to ensure that the
32 quality and quantity are adequate for use in the decision-making process. The qualitative and quantitative
33 information is evaluated in accordance with the quality assurance (QA) and quality control (QC)
34 standards identified in Appendix BA, “Quality Assurance Project Plan for IDF Waste Analysis,” to this
35 WAP.

36 Identification and classification of waste, including characterization and designation, are the
37 responsibility of the generator. Waste is designated by the generator using manufacturer information,
38 safety data sheets (SDSs), laboratory analysis, knowledge of the waste generating process (Section B.2.1),
39 and reference materials such as the National Institute for Occupational Safety and Health (NIOSH)
40 *Registry of Toxic Effects of Chemical Substances*, EPA’s ECOTOX Database, or the U.S. National
41 Library of Medicine, TOXNET: Toxicology Data Network, Hazardous Substances Data Bank website.
42 The following sections describe the methodologies used to characterize and designate mixed waste.

B.2.1 Use of Knowledge

Characterization of mixed waste using knowledge (i.e., not directly sampled and analyzed) requires sufficient information about the waste generation process to provide a reliable substitute for direct testing of the waste (WAC 173-303-040). Knowledge can be used to document a detailed description of a waste stream, commonly referred to as a “waste profile.” Waste profiles, using knowledge as defined in WAC 173-303-040, must include the supporting data and records, including a description of the methodology employed to obtain the data. The waste profile review and approval process (Section B.3) includes an evaluation of generator knowledge. Knowledge of the waste-generating process may be used in combination with testing results to designate waste in accordance with WAC 173-303-300(2). Knowledge can also be used to designate waste, quantify constituents, and delineate waste streams.

Knowledge consists of detailed information from existing waste analysis documentation or information on processes like those that generated the waste. A number of sources may be used to compile and apply waste knowledge. Examples of detailed information that a generator may use to obtain knowledge includes, but is not limited to, the following:

- Mass balance from a controlled process that has a specified input for a specified output.
- Material safety data sheets (MSDSs)/SDSs on unused chemical products.
- Analytical data on the waste or a waste from a similar process.
- Interview information.
- Logbooks.
- Procurement records.
- Qualified analytical data.
- Processes and/or methods.
- Process flow charts.
- Inventory sheets.
- Vendor information.
- Mass balance from an uncontrolled process (e.g., spill cleanup).
- Mass balance from a controlled process with variable inputs and outputs (e.g., washing/cleaning methods).

Information that meets the definition of knowledge is applied to describe the waste characteristics sufficiently to designate waste (Section B.2), establish the storage/disposal location for the waste (Section B.4.1.3), and verify the identity of non-IDF-generated waste (Section B.3.2).

The following quality criteria may be used to evaluate knowledge sources as an acceptable substitute for laboratory analysis:

- Published data (e.g., MSDS, SDS) is current.
- Material balances, if used, address applicable specific details such as:
 - Raw ingredient descriptions.
 - Physical and chemical properties.
 - Physical and chemical processes involved prior to and during generation.
 - Intermediate products.
 - Materials added and/or removed during the process.
- Published testing adequately illustrates the properties related to dangerous waste characteristics.
- Original knowledge has been subject to review.

- Potential for changes in waste due to environmental factors or spontaneous changes are evaluated.
- Analytical results of published studies are based on current sample and test methods.
- Differences between published studies and the site’s generation processes or wastes are identified.
- Personnel in charge of documenting and/or providing information are qualified and familiar with processes.

Concerns regarding the adequacy of a knowledge source are managed as described in Section B.3.1.

B.2.2 Data Quality Assessment of Knowledge

Generator knowledge is compiled for non-IDF-generated waste and provided to IDF for evaluation against the knowledge quality criteria as part of the waste acceptance process. The knowledge of LLW and MLLW generated or treated at IDF is also evaluated. IDF evaluates this qualitative and quantitative information in accordance with the QA/QC standards identified in Section B.2.1 of this addendum.

B.2.3 Sampling for Characterization Analysis

Sufficient and reliable data regarding the chemical, physical, and/or biological analysis of waste samples is obtained to support treatment, storage, and disposal at IDF, as needed.

If available knowledge, as described in Section B.2.1, is not sufficient to characterize IDF-generated waste, then sampling and analysis is performed for characterization of a waste stream, as allowed by the waste stream characteristics.

B.2.3.1 Characterization Analysis of Integrated Disposal Facility-Generated Waste

IDF-generated waste is characterized by IDF to ensure the proper disposition path of treatment, storage, and/or disposal. Sampling processes at IDF adhere to the representative sample method in accordance with WAC 173-303-110 , *Sampling, testing methods, and analyses*, Section (2) and Appendix BA. Sample collection and laboratory analysis for the waste is performed as described in Section B.2.3.2.

Waste generated at IDF from processing and treatment operations, performing repair and maintenance activities, spill cleanup materials, or other sources within IDF is managed to ensure proper handling and disposition. There are two categories of waste generated at IDF: on-site-generated waste treated at IDF to meet disposal criteria, and waste generated from operations and maintenance (O&M) activities.

B.2.3.1.1 Waste Resulting from Treatment at Integrated Disposal Facility

Treatment may be performed at the IDF treatment pad to make the waste LDR-compliant. Methods for confirming the effectiveness of treatment and the frequency are specified in Table B-1.

Table B-1 Post-Treatment Waste Analysis Confirmation

<u>Treatment Type</u>	<u>Description</u>	<u>Frequency</u>	<u>Confirmation</u>		
			<u>Debris</u>	<u>Liquids</u>	<u>Homogeneous Solids</u>
<u>Immobilization technologies^a</u>	<u>Stabilization of the debris such that the leachability of the hazardous contaminants is reduced. Includes sealing, macroencapsulation, and microencapsulation.</u>	<u>Every container treated</u>	<u>Visual inspection</u>	<u>N/A</u>	<u>N/A</u>

Table B-1 Post-Treatment Waste Analysis Confirmation

<u>Treatment Type</u>	<u>Description</u>	<u>Frequency</u>	<u>Confirmation</u>		
			<u>Debris</u>	<u>Liquids</u>	<u>Homogeneous Solids</u>
<u>MACRO^b</u>	<u>Macroencapsulation of radioactive lead solids (D008).</u>	<u>Every container treated</u>	<u>Visual inspection</u>	<u>N/A</u>	<u>Visual inspection</u>

^aConfirmation for immobilization of waste debris is performance-based when meeting the requirements of the treatments listed in 40 CFR 268.45, *Land Disposal Restrictions, Treatment Standards for Hazardous Debris*.

^bConfirmation of MACRO is performance-based when meeting the technology-based treatment listed in 40 CFR 268.42, *Land Disposal Restrictions, Treatment Standards Expressed as Specified Technologies*.

N/A = Not applicable

1
2 **B.2.3.1.2 Waste Generated from Operation & Maintenance Activities**

3 Process knowledge for IDF-generated waste from O&M activities is collected and provided to the waste
4 management organization for review. Following this review, the organization identifies whether
5 laboratory analysis is necessary. Requirements for managing IDF-generated waste are placed in
6 facility-specific documents for field execution.

7 The following IDF-generated O&M wastes do not require sampling and analysis for characterization:

- 8 • Commercial chemical products (e.g., off-specification, outdated, or unused products).
- 9 • Articles removed from service (e.g., ballasts and batteries).
- 10 • Waste containing asbestos.
- 11 • Waste, environmental media, and/or debris from the cleanup of a spill or release of a single
12 substance, commercial product, or otherwise known material.
- 13 • Waste, environmental media, and/or debris from the cleanup of a spill or release from a container
14 previously accepted at IDF.
- 15 • Hazardous debris as defined in WAC 173-303-040.
- 16 • Liquids discovered in IDF that are known to be precipitation.
- 17 • Waste adequately characterized using knowledge per Section B.2.1.

18 Waste that does not meet the preceding exceptions is sampled using the applicable parameters in
19 Section B.2.3.2 and designated according to the regulatory requirements of WAC 173-303-070,
20 Designation of dangerous waste.

21 A systematic planning process will be used to ensure sample analysis data used for decision-making
22 purposes is adequate (as detailed in Section BA.4 of Appendix BA). QA and QC standards are maintained
23 in accordance with the analytical methods of the most recent revision of EPA test methods (SW-846, Test
24 Methods for Evaluating Solid Waste: Physical/Chemical Methods, Third Edition; Final Update VI, as
25 amended) and the corresponding QA/QC standards of Appendix BA.

26 **B.2.3.2 Sampling Processes for Integrated Disposal Facility-Generated Waste**

27 Sampling processes and techniques are dependent on both the nature of the waste and the type of
28 packaging. Samples are collected and submitted to a laboratory for analysis as described in this section,
29 and in accordance with Appendix BA. Representative waste samples are handled and preserved as
30 necessary to protect the sample. Preservation techniques and holding times follow the processes and
31 techniques recommended in SW-846. Sampling is performed to ensure that the samples obtained are of

1 the sufficient type, quality, and quantity for their intended use. Samples are always accompanied by a
 2 chain-of-custody form, ensuring accountability of the sample and associated records (chain-of-custody
 3 information is provided in Appendix BA).

4 Sampling methods are appropriate to the waste type to be sampled and are in accordance with
 5 WAC 173-303-110(2). The basic sampling sequence includes the following steps.

- 6 • Obtain a unique sample number and complete the sample label before sampling.
- 7 • Obtain a clean sampler and sample bottles.
- 8 • Attach sample label to sample bottles.
- 9 • For sampling liquids, use a sampler or pipet to sample for two phase liquids. Pour homogenous
 10 liquids in small containers into a sample bottle.
- 11 • For sampling homogeneous solids, use a scoop, trier, or hand auger to obtain a sample of the
 12 waste. For large containers of waste, composite several augers/scoops to ensure samples are
 13 representative.
- 14 • Fill sample containers in the following sequence: volatile organics, pH (corrosivity), ignitability,
 15 semivolatile organics, metals.
- 16 • Place samples in an appropriate receptacle for transfer to the laboratory.
- 17 • Complete the chain-of-custody records.
- 18 • Seal and mark the receptacle.
- 19 • Transfer receptacle to the analytical laboratory, as appropriate to meet sample holding times.
- 20 • Properly clean and decontaminate non-disposable sampling equipment.

21 Sampling equipment is appropriate to the waste type to be sampled and in accordance with
 22 WAC 173-303-110. Table B-2 contains the sample equipment used for the corresponding types of waste
 23 streams. Sample collection equipment and bottles will be free of contamination prior to use.

24 **Table B-2 Sampling Equipment**

<u>Waste Stream</u>	<u>Waste Forms</u>	<u>Equipment</u>
<u>Liquids</u>	<u>Free-flowing liquids and slurries</u>	<u>COLIWASA, glass thief, pipet, dip, tank bomb, and bailer/tube samplers</u>
<u>Homogeneous Solids</u>	<u>Sludges</u>	<u>Trier, scoops and shovels, tube-type samplers and augers, and spoons (for small containers)</u>
	<u>Sand or packed powders and granules</u>	
	<u>Large-grained solids</u>	
	<u>Moist powders or granules</u>	
	<u>Dry powders or granules</u>	

COLIWASA = Composite liquid waste sampler

25
 26 The processes described in this section are used to perform sampling for characterization purposes.
 27 Table B-3 details the characterization analyses to be performed as well as the analysis frequencies and
 28 rationale for the selection of analyses. The analyses performed on a waste stream are selected by the
 29 waste management organization on a case-by-case basis. Characterization analysis methods are performed
 30 in accordance with the most recent revision of SW-846.

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Table B-3 Characterization Analysis of Integrated Disposal Facility-Generated Waste

<u>Waste Matrix</u>	<u>Parameter^a</u>	<u>Analytical Method</u>	<u>Frequency of Analysis</u>	<u>Sampling Method</u>	<u>Rationale for Selection</u>
<u>Liquids</u>	<u>pH Liquids</u>	<u>9040</u>	<u>Each container of liquids</u>	<u>Grab</u>	<u>Determines the characteristic of corrosivity (D002) and state-only designation requirements (WSC2)</u>
	<u>Flashpoint^b</u>	<u>1010 or 1020</u>			<u>Determines the characteristic of ignitability (D001)</u>
	<u>Cyanide^c</u>	<u>9012 or 9014</u>			<u>Determines the characteristic of reactivity (D003)</u>
	<u>Sulfide^c</u>	<u>9034</u>			<u>Determines the presence of volatile/semivolatile organic compounds</u>
	<u>Total Organics^d</u>	<u>8081, 8151, 8260, and 8270</u>			<u>Determines the presence of metals for designation (D004 – D011)</u>
	<u>Total Metals^e</u>	<u>6010, 6020, and 7470</u>			<u>Determines LDR status as a wastewater/nonwastewater</u>
	<u>Total Organic Carbon</u>	<u>9060</u>			
<u>Homogeneous Solids</u>	<u>Presence of Free Liquids</u>	<u>9095</u>	<u>Each container of homogeneous solids</u>	<u>Grab</u>	<u>Determines the presence of free liquids in a waste stream for land disposal</u>
	<u>pH Solids</u>	<u>9045</u>			<u>Determines the characteristic of corrosivity (D002) and state-only designation requirements (WSC2)</u>
	<u>Flashpoint^b</u>	<u>1010 or 1020</u>			<u>Determines the characteristic of ignitability (D001)</u>
	<u>Cyanide^c</u>	<u>9012 or 9014</u>			<u>Determines the characteristic of reactivity (D003)</u>
	<u>Sulfide^c</u>	<u>9034</u>			<u>Determines the presence of volatile/semivolatile organic compounds</u>
	<u>Total Organics^d</u>	<u>8081, 8151, 8260, and 8270</u>			<u>Determines the presence of metals for designation (D004 – D011)</u>
	<u>Total Metals^e</u>	<u>6010, 6020, and 7471</u>			

Table B-3 Characterization Analysis of Integrated Disposal Facility-Generated Waste

<u>Waste Matrix</u>	<u>Parameter^a</u>	<u>Analytical Method</u>	<u>Frequency of Analysis</u>	<u>Sampling Method</u>	<u>Rationale for Selection</u>
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Reference: SW-846, *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods*, Third Edition; Final Update VI, as amended.

Note: Toxicity characteristic leaching procedure can be used to prepare extract for analysis of constituents with dangerous waste numbers D004-D043 (WAC 173-303-090(8)(c), "Dangerous Waste Characteristics").

^aParameters are selected for analysis on a case-by-case basis. EPA SW-846 methods are used unless otherwise noted. Analytical results for solids are reported on a dry weight basis.

^bIn cases where flashpoint cannot be used for radioactive samples, process knowledge and conservative assumptions will be used to determine application of flammability code.

^cParameters are tested to determine the presence and/or concentration of cyanide and sulfide for characterization purposes. In addition to the use of knowledge, the identified methods are used to determine whether a waste exhibits the characteristic of reactivity (D003).

^dTotal organics includes sample preparation followed by analysis for applicable constituents: endrin (D012), lindane (D013), methoxychlor (D014), toxaphene (D015), 2,4-dichlorophenoxyacetic acid (D016), 2,4,5-trichlorophenoxypropionic acid (D017), benzene (D018), carbon tetrachloride (D019), chlordane (D020), chlorobenzene (D021), chloroform (D022), o-cresol (D023), m-cresol (D024), p-cresol (D025), cresol (D026), 1,4-dichlorobenzene (D027), 1,2-dichloroethane (D028), 1,1-dichloroethylene (D029), 2,4-dinitrotoluene (D030), heptachlor and heptachlor epoxide (D031), hexachlorobenzene (D032), hexachlorobutadiene (D033), hexachloroethane (D034), methyl ethyl ketone (D035), nitrobenzene (D036), pentachlorophenol (D037), pyridine (D038), tetrachloroethylene (D039), trichloroethylene (D040), 2,4,5-trichlorophenol (D041), 2,4,6-trichlorophenol (D042), and vinyl chloride (D043).

^eTotal metals includes sample preparation followed by, at a minimum, analysis for: arsenic (D004), barium (D005), cadmium (D006), chromium (D007), lead (D008), mercury (D009), selenium (D010), and silver (D011).

IDF = Integrated Disposal Facility WSC = Washington State Code

B.3 WASTE PRE-ACCEPTANCE PROCESS

The waste pre-acceptance process includes profile review, approval, and verification activities. These pre-acceptance steps are used to evaluate non-IDF-generated waste proposed for acceptance at IDF, as described in the following sections. IDF-generated waste and Hanford Site waste proposed for acceptance at IDF from an off-site treatment facility is also subject to the profile process. Additional information on IDF-generated waste is provided in Section B.2.3.1.2.

B.3.1 Waste Profile Review and Approval Process

The waste profile provides a detailed physical, chemical, and/or biological analysis [WAC 173-303-300(2)] of each LLW or MLLW to be accepted at IDF. The waste profile must provide a detailed description of the waste stream's physical and chemical characteristics, regulatory classification, and packaging methods. Relevant background information, documents, and analytical data must be referenced or attached. The waste profile includes the following information:

- Generator information (e.g., name, address, point-of-contact, telephone number).
- Waste-generating process description.
- Waste category (e.g., LLW or MLLW).
- Estimated volume of the waste.
- Estimated number of waste packages to be shipped.
- Knowledge used for characterization of the waste stream.
- Sampling and analysis performed to characterize the waste stream.
- Applicability of LDR treatment standards and regulatory requirements of the waste stream (e.g., presence of underlying hazardous constituents) in accordance with WAC 173-303-140, which includes by reference, 40 CFR 268.
- Waste characteristics (e.g., flash point and pH), physical state (e.g., sludge and debris), liquid content information, and the waste composition.
- Description of the packaging to be used, including compatibility with the waste.
- Provisions for handling (e.g., maximum size and weight, and special handling requirements).
- Conditions of approval, when applicable (e.g., profile approval may be contingent upon additional detail and/or documentation requested of the generator).
- Certification by the generator that the waste sent to the IDF meets the IDF waste acceptance requirements.

This portion of the pre-acceptance process consists of review and approval of waste profile requests and review of standing waste profiles. The IDF waste services personnel coordinate the documentation for waste profile reviews and ensures that the waste profile information complies with IDF waste acceptance requirements. If the waste profile contains the required information, supporting documentation, and meets IDF waste acceptance requirements, then the IDF waste services personnel approve the waste profile. Approval is documented by the responsible IDF waste services personnel and an approval notice is sent to the generator. Approved waste profiles are maintained in the Hanford Facility Operating Record (IDF portion).

B.3.1.1 New Waste Profile Review and Approval

Generators (including IDF) shall submit a request for waste profile approval and supporting documentation for each new waste stream intended for IDF. Each waste profile is assigned a unique number for tracking purposes. Once the waste profile request is received, the IDF waste services personnel perform a review of profile information. During the review, the IDF waste service personnel compare the data on the waste profile request to the supporting documentation provided with the waste

1 profile request. The IDF waste services personnel evaluate the data for consistency between the identified
2 information and subsequent determinations. This review is the process by which IDF obtains and
3 evaluates knowledge about each waste stream against the quality criteria described in Section B.2.2 and
4 Appendix BA. These data are required to ensure that a waste stream can be managed in compliance with
5 IDF waste acceptance requirements. This review also determines if knowledge provided in lieu of
6 analysis methods (Section B.2.1) is adequate to quantify waste constituents and determine waste
7 characteristics.

8 Errors or omissions discovered during the waste profile review process must be reconciled by the
9 generator, and the profile information must be updated accordingly. Upon successful review and approval
10 of the waste profile, the IDF sends an approval notice to the generator.

11 **B.3.1.2 Standing Waste Profile Review**

12 A standing waste profile is used to receive multiple shipments from the same generator for the same
13 waste stream. Standing waste profiles are subject to review and must be recertified at least annually or
14 revised (if applicable) when notified by the generator of waste stream or generating process changes.
15 In addition, standing waste profiles are subject to review and revision if the IDF waste services personnel
16 have reason to suspect a change in the waste, based on inconsistencies in packaging, labeling, or visual
17 verification of the waste. A generator may also request that a standing waste profile be revised and
18 approved for additional waste generated that consists of the same types of waste. The IDF waste services
19 personnel will coordinate the waste profile revisions and recertification.

20 When waste profiles are revised, depending on the significance of the revision, authorization for
21 continued shipping under the current approved waste profile may be suspended until the changes have
22 been reviewed and accepted.

23 **B.3.2 Waste Verification**

24 Verification confirms that waste is properly identified (Section B.2), ensuring that the waste to be shipped
25 to IDF matches the description in the approved waste profile. This involves a variety of activities
26 implemented by IDF to ensure each generator's waste management processes meet the criteria of IDF
27 waste acceptance described in this WAP. Due to the unique properties of certain waste streams planned
28 for disposal at IDF, verification processes are distinguished according to the descriptions in the following
29 subsections.

30 **B.3.2.1 Verification of Immobilized Low-Activity Waste – Reserved**

31 **B.3.2.2 Verification of Non-Immobilized Low-Activity Waste**

32 Non-ILAW is verified to confirm the generator's processes for characterization and designation of waste
33 by application of knowledge, sample collection and analysis, or a combination thereof. IDF does not
34 accept waste from new generators until it is verified that their waste management program and generating
35 processes meet the requirements of this WAP. Generators proposing to send their waste for storage,
36 treatment, or disposal at IDF are subject to a verification audit of their waste generation and management
37 program.

38 Review of the generator's waste management program consists of an initial verification audit assessing
39 the overall waste management program and waste stream-specific generating processes that are proposed
40 for acceptance at IDF. Following the initial audit, annual follow-up verification audits will be performed.
41 In addition, whenever a new waste stream is proposed for acceptance, and whenever there is a known or
42 suspected change in an existing waste stream, representatives from the responsible organizations
43 communicate such changes to verify continued compliance with IDF waste acceptance requirements.
44 Waste generators are notified of IDF's intent to conduct verification audits. The level of review
45 performed during a verification audit is congruent with the reason for the audit (e.g., initial, annual
46 follow-up). Initial verification audits consist of a multifaceted waste management program assessment

1 while subsequent audits can consist of a focused subset of information. Generator determinations and
2 responsibilities assessed during an initial verification audit will include, but are not limited to, the
3 following:

- 4 • Physical and chemical waste characterization practices. Subsequent designation determinations
5 must be consistent with WAC 173-303-090, *Dangerous waste characteristics* and -100,
6 *Dangerous waste criteria.*
- 7 • Container and packaging material selection processes. Selections must be compatible with the
8 waste stream to be packaged, and consistent with IDF waste acceptance requirements.
- 9 • Compatibility determinations between chemicals within a waste matrix, multiple containers
10 within a lab pack, and between a waste container and the waste it contains. Compatibility
11 determinations must be consistent with the approach documented in EPA-600/2-80-076,
12 *A Method for Determining the Compatibility of Hazardous Waste.*
- 13 • Documentation must identify waste contents in a manner to support determinations that
14 prohibited waste is not present in a given waste stream.
- 15 • Waste management documentation must be consistent with practices observed in the field.
16 Generator site visits, observation of process monitoring, and/or waste packaging activities are
17 subject to assessment, as allowed by the generator and as low as reasonably achievable concerns.
- 18 • Sample collection, data, and other information must meet the requirements of WAC 173-303-300,
19 as allowed by the generator and as low as reasonably achievable concerns.

20 If there are concerns in any of the areas listed above, IDF will halt the acceptance process until resolution
21 is achieved. The outcome of an audit can result in an increased frequency of follow-up assessment
22 activities from the annual minimum up to a quarterly basis. If IDF identifies inconsistencies or
23 inaccuracies between audit results and any associated approved waste profile(s), then waste will not be
24 accepted until resolution and associated corrective actions (e.g., revision and resubmittal of the waste
25 profile) are complete.

26 IDF-generated waste streams are exempt from waste verification activities as the waste is generated by
27 known processes within the perimeter of IDF, characterized in accordance with Section B.2, and profiled
28 in accordance with Section B.3.1.

29 **B.4 WASTE ACCEPTANCE PROCESS**

30 The IDF waste acceptance process includes confirmation of waste against the previously reviewed and
31 approved waste profile information and receipt of the waste into IDF for treatment, storage, and/or
32 disposal. This process includes evaluating whether applicable LDR treatment requirements are properly
33 documented and if the proposed waste stream meets the acceptance requirements for IDF DWMUs.
34 Furthermore, the acceptance process ensures the waste has been appropriately evaluated for compatible
35 storage within the receiving IDF DWMU, and that the information is of the appropriate quality for this
36 purpose. LLW and MLLW is accepted into IDF in accordance with the specifications described in
37 Addendum C (i.e., container management). Waste packaging and handling requirements are also
38 described in Addendum C.

39 The waste acceptance process is contingent upon completion of the following pre-acceptance activities:

- 40 • Waste profile review and approval (Section B.3.1).
- 41 • Waste verification (Section B.3.2).

42 Upon completion of these pre-acceptance activities, a generator may request to ship the approved waste to
43 IDF. At this point, the waste acceptance process begins. This process also applies to Hanford waste that
44 was treated at an offsite facility and is being shipped back to the Hanford Site for disposal at IDF.

B.4.1 Confirmation of Waste

Prior to shipping to IDF, WAC 173-303-300(1) requires confirmation of waste before treatment, storage, or disposal. Confirmation of waste is a two-part process consisting of a verification check and pre-shipment review.

B.4.1.1 Verification Check

The verification check confirms that the verification audit process is complete and no discrepancies remain (Section B.3.2) prior to initiating the shipment process.

B.4.1.2 Pre-Shipment Review

Prior to shipping waste to IDF, the IDF waste services personnel conduct a pre-shipment review of documentation, including the approved waste profile, supporting documentation, LDR notification and certification, and shipment details. This review ensures that previously submitted and approved generator information is current, complete, and meets the standards of waste identification and classification in accordance with Section B.2. The generator must provide the following documentation for review:

- Characterization information and waste code designations.
- LDR certification/notification (required for waste subject to the requirements of WAC 173-303-140 which includes by reference 40 CFR 268).
- List of waste packages, each with a unique identification number.
- Waste inventory information:
 - Name and location of the waste-generating facility.
 - Specific contents of each waste package.
 - Approximate weight or volume of waste.

In addition to being reviewed for accuracy and completeness, the documentation undergoes a compatibility review to ensure compatible storage of mixed waste (Section B.4.1.3). If the IDF waste services personnel discover an error during the pre-shipment review, the generator must reconcile the error and provide updated information, as applicable.

B.4.1.3 Ensuring Waste Compatibility

IDF accepts LLW and MLLW with a variety of hazards that must be evaluated for safe storage, treatment, and disposal. Compatibility is evaluated throughout pre-acceptance and acceptance activities by implementing the waste profile process, generator process reviews, ensuring compatible container segregation for storage and treatment, and ensuring compatibility with the disposal cell liner. These evaluations are further described in the following subsections.

B.4.1.3.1 Container Compatibility

To ensure acceptance of safe and compatible waste, compatibility is evaluated at different steps throughout waste pre-acceptance and acceptance. During pre-acceptance, each generator's process for compatibility determinations is assessed as a component of waste verification (Section B.3.2).

During these assessments, IDF reviews the generator's process for ensuring compatibility between a waste, container, and any packaging materials. Reviews include indicators of incompatible waste as defined by WAC 173-303-040, which states that a waste is generally incompatible if it exhibits any of the following:

- Corrodes or decays containment materials when placed in a particular device or facility.
- Produces heat or pressure, fire or explosion, violent reaction, toxic dusts, fumes, mists, or gases, or flammable fumes or gases when commingled with another waste or material.

1 Information provided in 40 CFR Part 264, Appendix V, *Examples of Potentially Incompatible Waste* is
2 also used as a reference for such determinations.

3 During the pre-shipment review portion of the acceptance process, generator documentation is checked
4 for any outstanding compatibility concerns. This serves as an administrative checkpoint to plan and
5 prepare for receipt of compatible containers. As previously described in Section B.1.4, ignitable, reactive,
6 and incompatible wastes are prohibited from shipment to IDF. Once waste is approved for acceptance, the
7 storage, treatment, or disposal location is assigned by the IDF waste management officer.

8 **B.4.1.3.2 Landfill Liner Compatibility**

9 Compatibility is also evaluated between the waste and the IDF liner system. The IDF waste acceptance
10 team will assess each waste stream to confirm compatibility between the waste and the liner. This is
11 completed by reviewing waste stream documentation for the presence of known incompatible
12 constituents. In cases where a waste contains constituents that have not been evaluated previously for
13 liner compatibility, SW-846 Method 9090 can be used to assess new waste constituents for liner
14 compatibility.

15 Additional information on landfill liner materials and existing compatibility data is provided in Section
16 C.4.3.3 of Addendum C.

17 **B.4.1.4 Ensuring Disposal Acceptability**

18 Waste shall be in a form that minimizes settling and subsidence of the IDF (WAC 173-303-665). For
19 packages where IDF personnel will perform void filling, the generator shall provide packages configured
20 with access (e.g., void filling ports) approved by the IDF waste acceptance team. Void filling is
21 performed to ensure containers are at least ninety percent full when placed in the landfill, in accordance
22 with WAC 173-303-665(12)(a). Although void filling is not required for the melters, similar techniques
23 (e.g., grouting) may be performed to ensure stability of the disposed waste.

24 When vents are required, a certificate of conformance shall be provided stating the vent model number
25 that has been installed on the waste container and that the waste packaging meets the requirements of this
26 section. When MLLW is packaged, vents or other measures shall be provided if the potential exists for
27 pressurizing or generating flammable or explosive concentrations of gases within the waste container.
28 Unless otherwise specified by IDF, a minimum 5-year time value shall be used to demonstrate
29 compliance when performing gas generation calculations for waste going directly to disposal.

30 MLLW must comply with the LDR requirements of WAC 173-303-140, which includes by reference
31 40 CFR 268, prior to disposal. Treatment via the immobilization technologies of 40 CFR 268.45 or
32 MACRO (40 CFR 268.42) can be performed on the treatment pad to render containerized waste
33 LDR-compliant. After the waste is rendered LDR-compliant, the containers can be relocated from the
34 treatment pad to the IDF cells for disposal.

35 **B.4.2 Receipt of Waste**

36 All waste received at IDF must match the identity of the waste specified on the accompanying waste
37 shipment or on-site waste transfer paperwork. The waste receipt process includes receipt inspection and
38 addresses waste receipt discrepancies, as described in the following sections.

39 Arriving shipments are assigned a specific delivery location within IDF prior to arrival. Waste received at
40 IDF is accompanied by the following documentation (as applicable):

- 41 • Receipt report and list of waste for each approved shipment.
- 42 • Records for LDR certification/notification for waste designated in accordance with 40 CFR 261
43 and subject to LDR requirements of WAC 173-303-140 (which includes by reference
44 40 CFR 268), which are maintained in accordance with WAC 173-303-380, *Facility*
45 *recordkeeping*, Section (1)(j), (k), (m), and (o).

B.4.2.1 Receipt Inspection

An inspection of documentation is conducted for each shipment to confirm that waste received is as listed on the receipt report. In addition to the inspection of documentation, 100% of waste received will undergo physical inspection for the following items:

- Damage to the shipment.
- Evidence of leaking.
- Presence of accurate labeling.
- Tamperproof seal integrity (if a seal was applied at the generator location).

Containers arriving at IDF with a compromised tamperproof seal are evaluated. Receipt inspections will be documented on a receipt checklist and retained in the IDF portion of the Hanford Facility Operating Record. Following completion of the receipt process and absent receipt discrepancies (Section B.4.2.2), the waste is considered accepted at IDF. A copy of the manifest or shipping paperwork is retained in the IDF portion of the Hanford Facility Operating Record for at least 3 years.

ILAW glass containers are received in transport pallets that prevent physical inspection. The pallets will be inspected upon receipt to verify that labeling on the pallet signs matches the shipping documents. Discrepancies are reported to WTP and resolved as described in Section B.4.2.2.

IDF-generated waste packaged by IDF operators is considered to have met the container receipt requirements.

B.4.2.2 Receipt Discrepancies

If discrepancies, such as improper labeling, improper packaging, or manifest inconsistencies are discovered during the waste receipt inspection, discrepant waste packages or shipments are not accepted for disposal into IDF until the discrepancies have been resolved using one or more of the following alternatives.

- Incorrect or incomplete entries on the shipping paperwork can be corrected upon receipt at IDF with concurrence from the generator. Corrections are made by drawing a single line through the incorrect manifest entry. Corrected entries are initialed and dated by the individual making the correction.
- The waste package(s) can be held at IDF and segregated from other stored waste, in which case, the generator must provide written instructions for correcting the discrepancies.
- The waste package(s) may be returned to the generator.

A generator may be contacted to provide additional information or requested to provide corrective actions. If the waste package or shipment is damaged to such an extent, or the waste is in such a condition that it presents a hazard to public health or the environment in the process of further transportation, then actions must be taken in accordance with Addendum J, "Contingency Plan."

Waste receipt discrepancies resulting in a significant difference in the quantity or type of waste received from the quantity or type of waste approved for shipment are classified as nonconformance issues. Nonconformance issues are evaluated by the IDF waste services personnel for resolution, including:

- Shipment of unmanifested waste.
- Shipment of waste that has not been approved for shipment.
- Shipment of leaking or severely damaged waste packages.
- Other conformance issues identified after receipt of waste that cannot be resolved within 1 week of discovery.

1 The IDF waste services personnel review the nature, frequency, and severity of the waste acceptance
2 nonconformance issues. Based on the results of the review, the IDF waste services personnel may request
3 that the generator act to correct nonconformance issues. The IDF waste services personnel will review the
4 status of corrective actions on a routine basis. In addition, the IDF waste services personnel may take the
5 following actions:

- 6 • Increase the level of reviews for future shipments of waste streams that have been previously
7 received and deemed nonconforming. Increases to reviews are established as part of the
8 verification audit process (Section B.3.2).
- 9 • Evaluate the generator's other waste streams to determine whether all waste streams or a subset
10 of waste streams might be subject to the same type of nonconformance issue.
- 11 • Reject waste from acceptance into IDF if conformance issues cannot be resolved.

12 **B.5 QUALITY ASSURANCE/QUALITY CONTROL**

13 QA and QC programs in effect at IDF ensure that sampling and analysis of waste, generator performance,
14 and waste receipt documentation provide data confirming that waste is sufficiently identified and
15 classified (Section B.2) to be managed at IDF.

16 Hanford Site and non-Hanford Site laboratories providing analytical support to IDF must be accredited by
17 a U.S. Department of Energy (DOE) evaluation organization. In addition to the QA and QC standards
18 specified in Appendix BA, the standards specified in the QA plan for the contract analytical laboratory
19 must be implemented. The contract analytical laboratory QA plan must address the following items, at a
20 minimum:

- 21 • Sample custody and management practices.
- 22 • Sample preservation protocols.
- 23 • Sample preparation and analytical method requirements.
- 24 • Instrument maintenance and calibration requirements.
- 25 • Internal QC measures (e.g., method blanks, spikes, and duplicates).
- 26 • Corrective action process.

27 Periodic audits performed by a DOE evaluation organization ensure compliant operations by accredited
28 laboratories.

29 **B.6 RECORDKEEPING**

30 Documentation is placed into the Hanford Facility Operating Record (IDF portion), as required by
31 Hanford Facility RCRA Permit Condition II.I (WAC 173-303-380). Records include approved waste
32 profile documentation (Hanford Facility RCRA Permit Condition II.I.1.j) and confirmation records
33 (Hanford Facility RCRA Permit Condition II.I.1.b). LDR records referred to in Section B.4.1.2 are
34 maintained in the Hanford Facility Operating Record (IDF portion) in accordance with
35 WAC 173-303-380(1)(j), (k), (m), and (o).

36 Annual reporting requirements identified in Hanford Facility RCRA Permit Condition I.E.22 are also
37 satisfied in accordance with WAC 173-303-390, *Facility reporting*, Section (2). A description of and the
38 quantity of each dangerous waste received or managed onsite, and the method(s) and date(s) of its
39 treatment, storage, or disposal at IDF, are maintained in the Hanford Facility Operating Record
40 (IDF portion) in accordance with WAC 173-303-380(1)(a).

41 **B.7 TRAINING**

42 For training requirements related to duties described in this IDF WAP, including identification of
43 positions, refer to Addendum G, "Personnel Training."

1 **B.8 REFERENCES**

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