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2 **Chapter 6.0**

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4 **Procedures to Prevent Hazards**

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CHAPTER 6.0
PROCEDURES TO PREVENT HAZARDS

Contents

5	6.0	Procedures To Prevent Hazards [F].....	51-6-1
6	6.1	Security [F-1].....	51-6-1
7	6.1.1	Security Procedures and Equipment [F-1a]	51-6-1
8	6.1.2	Waiver [F-1b].....	51-6-2
9	6.2	Inspection Plan [F-2].....	51-6-2
10	6.2.1	General Inspection Requirements [F-2a]	51-6-2
11	6.2.2	Inspection Log [F-2b].....	51-6-4
12	6.2.3	Schedule for Remedial Action for Problems Revealed [F-2c].....	51-6-4
13	6.2.4	Specific Process or Waste Type Inspection Requirements [F-2d].....	51-6-5
14	6.3	Preparedness and Prevention Requirements [F-3].....	51-6-8
15	6.3.1	Equipment Requirements [F-3a]	51-6-8
16	6.3.2	Aisle Space Requirement [F-3b]	51-6-10
17	6.4	Preventive Procedures, Structures, and Equipment [F-4].....	51-6-10
18	6.4.1	Unloading/Loading Operations [F-4a]	51-6-10
19	6.4.2	Runoff [F-4b]	51-6-10
20	6.4.3	Contamination of Water Supplies [F-4c]	51-6-11
21	6.4.4	Equipment and Power Failures [F-4d]	51-6-11
22	6.4.5	Personal Protection Equipment [F-4e]	51-6-12
23	6.4.6	Prevent Releases to the Atmosphere [WAC 173-303-806(4)(a)(viii)(F)]	51-6-12
24	6.5	Prevention of Reaction of Ignitable, Reactive, and/or Incompatible	
25		Waste [F-5]	51-6-13

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6.0 PROCEDURES TO PREVENT HAZARDS [F]

This chapter addresses hazard prevention at the River Protection Project - Waste Treatment Plant (WTP). It covers the following topics: security; preparedness and prevention requirements; preventive procedures, structures, and equipment; and prevention of reaction of the ignitable, reactive, and incompatible waste at the WTP.

Information is presented in two formats: narrative and table. See Appendix 6A for inspection tables.

6.1 SECURITY [F-1]

This section describes WTP security procedures and equipment. Hanford Site security measures are discussed in the *Hanford Facility Dangerous Waste Permit Application, General Information Portion* (DOE-RL 1998).

6.1.1 Security Procedures and Equipment [F-1a]

The following sections describe the barrier and warning signs that support security and control access to the WTP.

6.1.1.1 24-Hour Surveillance System

The entire Hanford Site is a controlled-access area. For surveillance information, refer to the *Hanford Facility Dangerous Waste Permit Application, General Information Portion* (DOE-RL 1998).

6.1.1.2 Barrier and Means to Control Entry

The WTP will use two fences, one around the facility's perimeter, and a second inner fence that controls access to dangerous waste management areas. The inner fence will be of sufficient height and construction to prevent people, livestock, and wildlife accidental access to the WTP. Vehicle access to the WTP administration building will be through a normally open gate in the perimeter fence. Visitors must check in at the administration building and will be escorted as required.

WTP personnel entry to the process areas will be through a controlled pedestrian gate. Service vehicles delivering supplies will enter process areas through a controlled gate. See the topographic map in Chapter 2.0 of this Dangerous Waste Permit Application (DWPA), for further information regarding barriers and vehicular access.

6.1.1.3 Warning Signs [F-1a(2)]

Warning signs, written in English, stating, "DANGER - UNAUTHORIZED PERSONNEL KEEP OUT" (or an equivalent legend), legible from a distance of at least 25 feet, and visible from any angle of approach to the WTP. These warning signs will be posted in locations such as:

- 1 • Around the perimeter of the WTP fenced areas
 - 2 • On each entrance, gate, and other access points to portions of the WTP facility actively
 - 3 managing dangerous waste
 - 4 • On entrances to other enclosed areas within the plant that contain dangerous or mixed waste
 - 5
- 6 Points of access into waste handling and storage areas will have clearly marked warnings for
7 radiation exposure and corrosivity, the major health risks associated with the waste. Access
8 points into these areas will be strictly controlled. In addition, signs will be posted at the main
9 site access entrance, instructing visitors to report to the WTP administration building to gain
10 access to the WTP (WAC 173-303-310 (2) (a)).

11

12 **6.1.2 Waiver [F-1b]**

13 No waivers of the security procedures and equipment requirements for the WTP are requested.

14

15 **6.2 INSPECTION PLAN [F-2]**

16 The following sections describe the WTP dangerous waste inspection plan. The WTP will use a
17 graded approach to preventing and detecting malfunctions, deterioration, operator errors, and
18 discharges that will range from daily inspections to integrity assessments. This graded approach
19 is comprised of activities that, at a minimum, will meet the inspection requirements and will
20 include more precautions for equipment at higher risk of failure. Monitoring via instrumentation
21 will be used to perform remote inspections in areas of high radioactivity, including the
22 pretreatment areas, the LAW vitrification area, and the HLW vitrification area. Due to the
23 radioactive nature of the waste and consistent with ALARA principles, monitoring by
24 instrumentation will be the primary means of fulfilling the inspection requirements in these
25 areas. The WTP also will use cameras, windows, process control, function checks, and
26 preventive maintenance to comply with inspection requirements.

27

28 Example inspection schedules, which are part of the inspection plan, are presented as tables in
29 Appendix 6A. Each table addresses a particular dangerous waste management unit, or group of
30 units, such as tanks. Within each management unit table, the inspections are presented by
31 system, and are further broken down by individual component in each system.

32

33 **6.2.1 General Inspection Requirements [F-2a]**

34 This section describes general, WTP-wide inspection requirements used to help prevent, detect,
35 or respond to environmental or human health hazards related to dangerous waste handling,
36 treatment, and storage at the WTP. The inspection schedules are provided in Table 6A-1.

37

38 Instruments, such as those used for overflow detection; will be connected to the Process Control
39 System (PCS). The PCS will be the computer system that continuously monitors the
40 instruments' data. Should the PCS detect an abnormal reading, control personnel will be alerted
41 (in real time) by alarm in the control room. The monitoring system will provide trending of
42 selected monitoring data, graphics, and equipment summary displays. The WTP will use a
43 maintenance management system to plan and track preventive maintenance activities and

1 function testing at the WTP. Other methods of performing inspections at the WTP will be visual
2 where safe and effective to do so.

3 4 **6.2.1.1 Items to be Inspected [F2a(1)]**

5 The WTP inspection plan will include specific inspection schedules that meet the requirements.
6 In Appendix 6A are example inspection schedules of the types of items to be inspected. The
7 following are listed in the inspection schedule tables:

- 8
- 9 • General inspections for safety and emergency equipment, security, and preparedness and
10 prevention
- 11 • Tank systems
- 12 • Containers
- 13 • Container storage areas
- 14 • Miscellaneous treatment units
- 15 • Containment building areas

16 17 **6.2.1.2 Types of Problems to Look for During Inspections [F-2a(2)]**

18 The example inspection tables in Appendix 6A include a column titled “inspections”. This
19 column specifies the type of inspection activities to be performed (such as verifying the
20 operability of equipment and problems to look for) for each inspected item.

21 22 **6.2.1.3 Frequency of Inspections [F-2a(3)]**

23 In the example inspection tables in Appendix 6A, the column titled “frequency” provides the
24 frequency of inspection for each item. Inspection frequencies were developed using a graded
25 approach that will be finalized prior to the start of operations, and are based on the following:

- 26
- 27 • Regulatory requirements where specified
- 28 • Rate of possible deterioration of equipment
- 29 • Probability of a release to the environment
- 30 • Potential to cause harm to human health and the environment
- 31 • Manufacturer’s specifications
- 32 • Integrity assessments of tank systems
- 33 • Operating experience and knowledge

34 35 **6.2.1.4 Schedule Location [F-2a(4)]**

36 Controlled copies of the inspection plan will be kept at the WTP facility. The project document
37 control manager, or equivalent, will be responsible for ensuring that controlled copies of the
38 inspection plan are kept current when revisions to the inspection plan are made.

1 **6.2.1.5 Employee Positions Responsible for Conducting Inspections [F-2a(5)]**

2 Personnel performing dangerous waste inspections will have the appropriate facility-specific
3 training, as defined in the *River Protection Project - Waste Treatment Plant Dangerous Waste*
4 *Training Plan* (Chapter 8.0). The training program will identify the individuals qualified to
5 perform dangerous waste-related inspections. There will not be specific job positions where all
6 individuals holding that position qualify to perform dangerous waste inspections.

7 8 **6.2.2 Inspection Log [F-2b]**

9 Hand written records of inspections (the inspection log) will include the date and time of
10 inspection; the legible, printed name and hand written signature of the inspector; a notation of the
11 observations made; and an account of spills or discharges. Most of the daily inspections will be
12 recorded as part of the process control data recording system and will therefore be fully
13 retrievable and auditable. Repairs, and remedial or corrective actions needed, will become part
14 of the WTP's corrective action system and the date and nature of repairs or remedial actions
15 taken will be recorded in the inspection log. The inspection log will be stored in the WTP
16 operating record for at least 5 years from the date of inspection.

17
18 Electronic media, rather than hard copies, will be used for recording inspections in the WTP,
19 where it is sensible, cost-effective, and/or consistent with ALARA practices. Electronic
20 inspection records normally will be readily retrievable. Whenever possible, dangerous waste
21 inspection requirements will be incorporated into the procedures and operating documentation
22 records for normal operations. The procedures and operating requirements that satisfy
23 compliance with WAC 173-303 (including inspection requirements) will be identified so that
24 they are distinguishable within the larger universe of facility operational requirements.

25 26 **6.2.3 Schedule for Remedial Action for Problems Revealed [F-2c]**

27 Remedial action will be taken as soon as practicable by facility management to implement the
28 *River Protection Project-Waste Treatment Plant Emergency Response Plan* (ERP) (Chapter 7.0),
29 if an inspection identifies an imminent hazard to human health or the environment.

30
31 An investigation will begin within 24 hours, upon detection of unplanned release in the plant.
32 Depending upon the volume of the release and the characterization of the released contents, the
33 cleanup may be completed within 24 hours, or as soon as practicable, after completion of the
34 initial investigation period. However, the time required to cleanup the release will depend on
35 factors such as analytical turnaround time, radioactivity, and volume.

36
37 When inspections reveal problems that do not present an immediate threat to human health or the
38 environment, nor result in a release of hazardous material (cracks in secondary containment
39 coatings, nonfunctioning instrumentation, and labeling errors or omissions), such inspection
40 findings will be logged and response actions scheduled and tracked within 24 hours as corrective
41 actions. The following steps are used, in general, to resolve corrective actions:

- 42
43 • Problem identification and documentation

- 1 • Classification
- 2 • Cause analysis
- 3 • Corrective action
- 4 • Follow-up investigation

5

6 Non-emergency corrective actions will be completed within 24 hours if possible; however,
7 additional response time may be required because of the radioactive component of the waste
8 being managed at the WTP.

9

10 The precise title of the personnel that will be responsible for authorizing such corrective actions
11 has not been decided; however, the position will be one equivalent to a shift operations manager.

12

13 **6.2.4 Specific Process or Waste Type Inspection Requirements [F-2d]**

14 The following sections describe specific process inspection requirements.

15

16 **6.2.4.1 Container Inspections [F-2d(1)]**

17 The WTP will store immobilized low-activity waste (ILAW), immobilized high-level waste
18 (IHLW), and secondary dangerous and mixed waste in containers. Secondary waste refers to
19 newly generated waste (or a waste by-product from treating the Hanford tank waste) that
20 designates as dangerous waste or mixed waste. Secondary waste also will be generated by the
21 laboratory activities, from maintenance waste, and failed contaminated equipment. The location
22 and design description of the containers and their storage areas are included in Chapter 4.
23 Inspections of container storage areas will be performed weekly when waste is in the storage
24 areas. Table 6A-2 provides examples of container and container storage area inspection
25 schedules for ILAW, IHLW, and secondary waste.

26

27 Immobilized Low-Activity and High-Level Waste Containers

28 Filled ILAW and IHLW containers will be radioactive and thus, inspections must be performed
29 remotely. Therefore, in lieu of conventional container inspections while the containers are in
30 storage, each container will be inspected before and after filling, and when it is moved into and
31 out of the ILAW and IHLW container storage areas. The canisters will not contain free liquids,
32 will be chemically and physically stable (not ignitable or reactive), and will be welded closed.
33 The IHLW containers will be placed in special racks inside the storage areas that will prevent
34 them from toppling. The immobilized waste containers and storage areas are described in
35 Chapter 4.

36

37 The WTP will inspect the ILAW and IHLW container storage areas, when they are in use,
38 weekly by remote means. These remotely managed storage areas do not include thirty-inch aisle
39 spacing. The example inspection schedules (Appendix 6A) specify the problems for which to
40 look and how inspections are performed.

41

42 The dangerous waste container labeling requirements will be met by using a unique
43 alphanumeric identifier that will be welded to each container. Deterioration of the identifier is

1 not expected due to the permanent nature of these markings and provisions for subsequent
2 handling that will safeguard against damage to the containers and the identifying marks.

3 Using the identification on each container, a tracking system will record key movements of each
4 immobilized waste container through the facility. Information about the waste canister tracking
5 system is in Chapter 4. For each container of ILAW and IHLW produced, the system will track
6 the following:

- 7
- 8 • The location of each container in process and storage areas
- 9 • The date that waste was first placed in the container
- 10 • The date the container was shipped from the facility, and its destination
- 11 • The nature of waste in the container, including dangerous waste designation codes, and land
12 disposal restriction requirements

14 Secondary and Miscellaneous Waste in Containers

15 Example inspection schedules for secondary dangerous waste and mixed waste container storage
16 areas are given in Table 6A-2.

18 **6.2.4.2 Tank Systems Inspections and Corrective Actions [F-2d(2)(a)]**

19 A description of the tank systems, and their safety and interlock controls, at the WTP can be
20 found in Chapter 4. Examples of tank system inspections, inspection frequencies, and problems
21 to look for are given in Table 6A-3. Following is a brief discussion of the tank system
22 inspections.

24 Inspection procedures and the complete inspection schedule will be available at the WTP prior to
25 starting operation. Each tank, or grouping of identical tanks, is shown as a line item in the
26 inspection schedule tables. Each inspection item includes a description of problems to look for,
27 and the frequency of inspection.

29 Cathodic Protection

30 Cathodic protection systems will be used to prevent or mitigate metal corrosion on underground
31 dangerous waste transfer lines where the outermost pipes are in contact with the soil. The
32 cathodic protection systems are described in Chapter 4. Example inspection schedules for
33 cathodic protection systems and sources of impressed current are in Table 6A-4.

35 Tank Integrity Assessments

36 A periodic integrity assessment approach will be developed for the WTP waste tanks to ensure
37 that the tanks' systems remain fit-for-use. The schedule for performing periodic integrity
38 assessments will be developed during the new tank design assessment discussed in Appendix 4B
39 of this application.

41 **6.2.4.3 Tank Systems – Corrective Actions [F-2d(2)(b)]**

42 Operating procedures describing corrective actions will be developed prior to operations.

6.2.4.4 Storage of Ignitable or Reactive Wastes [F-2d(3)]

Dangerous waste codes assigned to the waste in the *Double-Shell Tank System Dangerous Waste Part A Permit Application* (DOE-RL 1996) apply to the waste feed the WTP will receive. The waste feed will include the waste codes for ignitability (D001) and reactivity (D003), but the waste is not expected to exhibit the characteristics listed in WAC 173-303-090 for these two waste codes. Based on past process knowledge that includes the age, temperature, history, and chemical composition of the waste feed stored in the DST system, the waste codes D001 and D003 will be removed by the WTP. See the Waste Analysis Plan (Appendix 3A of this application) for specific information on the waste codes and their removal.

Consequently, only the waste feed receipt tanks will be inspected for tanks storing ignitable and reactive waste. The remainder of the process tanks will not contain ignitable or reactive waste. Ignitable or reactive secondary waste may be stored in tanks or containers at the WTP. Annual inspections of all areas managing D001 and D003 waste will be conducted by personnel familiar with the Uniform Fire Code, or in the presence of the local, state, or federal fire marshal. Inspections will be entered into the WTP operating record and maintained at the WTP for 5 years (see Table 6A-5 for the inspection schedule for ignitable or reactive wastes).

6.2.4.5 Air Emissions Control and Detection - Inspections, Monitoring, and Corrective Actions (F-2d[4] and [4][a])

Air Emissions from Process Vents (Subpart AA) [F-2d(4)(a)]

The WTP does not use any of the regulated devices or processes listed; therefore, the WTP will not be subject to regulation under Subpart AA (40 CFR 264).

Air Emission Standards for Equipment Leaks (Subpart BB) [F-2d(4)(b)]

WAC 173-303-691 and Subpart BB (40 CFR 264) applies to equipment that contains or contacts hazardous wastes with organic concentrations of at least 10 percent by weight. This provision will not apply to the facility because the WTP will not accept or treat wastes with organic concentrations at or above 10 percent by weight. Compliance with this provision will be documented through analyses of verification samples, as described in the Waste Analysis Plan.

Air Emission Standards for Tanks, Impoundments, and Containers (Subpart CC) [F-2d(4)(c)]

The regulations specified under WAC 173-303-692 and 40 CFR Part 264 Subpart CC, incorporated by reference, do not apply to the WTP mixed waste tank systems and containers. These tanks and containers qualify as waste management units that are “used solely for the management of radioactive dangerous waste in accordance with all applicable regulations under the authority of the Atomic Energy Act and the Nuclear Waste Policy Act” and are excluded under WAC 173-303(1)(b)(vi). Containers or tanks bearing nonradioactive, dangerous waste, such as maintenance and laboratory waste, that are not excluded under WAC 173-303-692(1)(b)(ii) or 40 CFR 264.1082(c), will comply with the container and tank standards specified under 40 CFR part 264 Subpart CC.

1 **6.2.4.6 Miscellaneous Unit Inspections**

2 The WTP melter units are miscellaneous units under WAC 173-303-680. Remote inspections and
3 monitoring will be performed by instrumentation that will be supplemented by camera(s) and
4 viewing through shielded windows because of the high levels of radiation in process areas.
5 Inspections will verify the integrity of melter equipment and detect malfunctions, deterioration,
6 leaks, or operator errors that have the potential to release dangerous waste into the facility or the
7 environment. The miscellaneous unit inspection schedule is provided in Table 6A-6.

8 9 **6.2.4.7 Containment Building Inspection**

10 Containment buildings will be inspected for items listed in Table 6A-7. The WTP containment
11 building example inspection schedules include the requirements from 40 CFR 264 Subpart DD.
12 Example inspection schedules for tank systems and miscellaneous units located within
13 containment buildings are in Tables 6A-3 and Table 6A-7.

14 15 **6.2.4.8 Waste Pile Inspection [F-2d(5)]**

16 Operation of the WTP does not involve the placement of mixed waste in piles. Therefore, this
17 section is not applicable to the WTP.

18 19 **6.2.4.9 Surface Impoundment Inspection [F-2d(6)]**

20 Operation of the WTP does not involve the placement of mixed waste in a surface impoundment.
21 Therefore, this section is not applicable to the WTP.

22 23 **6.2.4.10 Incinerator Inspection [F-2d(7)]**

24 Operation of the WTP does not involve using a waste incinerator. Therefore, this section is not
25 applicable to the WTP.

26 27 **6.2.4.11 Landfill Inspection [F-2d(8)]**

28 Operation of the WTP does not involve the placement of mixed waste in a landfill. Therefore,
29 this section is not applicable to the WTP.

30 31 **6.2.4.12 Land Treatment Facility Inspection [F-2d(9)]**

32 Operation of the WTP does not involve the land treatment of mixed waste. Therefore, this
33 section is not applicable to the WTP.

34 35 **6.3 PREPAREDNESS AND PREVENTION REQUIREMENTS [F-3]**

36 The following sections document the preparedness and prevention measures to be taken at the
37 WTP.

38 39 **6.3.1 Equipment Requirements [F-3a]**

40 The following sections describe internal and external communications, and emergency
41 equipment required and located at WTP.

1

2 6.3.1.1 Internal Communications [F-3a(1)]

3 The onsite communication system at the WTP provides immediate emergency information to
4 facility personnel, and includes public address and alarm systems. The public address system
5 provides for verbal instruction and communication to WTP personnel. The internal
6 communication system also notifies personnel of the following local or plant-wide
7 alarm-activated emergency situations: building evacuations, fire or explosion, radioactive
8 discharges, and high airborne contamination. The ERP provides additional information on the
9 response activities.

10

11 6.3.1.2 External Communications [F-3a(2)]

12 The WTP is equipped with devices for summoning emergency assistance from the Hanford Fire
13 Department, the Hanford Hazardous Materials Response Team, or local emergency response
14 teams, as necessary. External communication will be via a telephone communication system.
15 Telephones will be available for staff use at numerous locations throughout the facility. Under
16 no circumstances will only one staff member be at the WTP site. In addition, the current
17 Hanford communication system will be utilized as described in the *Hanford*
18 *Emergency Management Plan* (DOE/RL-94-02), Section 5.2.

19

20 6.3.1.3 Emergency Equipment [F-3a(3)]

21 Portable fire extinguishers, fire control equipment, spill control equipment, and decontamination
22 equipment are available to personnel at the WTP. A list of emergency and decontamination
23 equipment is provided in the ERP.

24

25 6.3.1.4 Water for Fire Control [F-3a(4)]

26 The primary water supply for fire protection will be provided from the 200 East Area raw water
27 distribution system. The fire water supply system comprises two water storage tanks designed to
28 National Fire Protection Association (NFPA) 22, *Standard for Water Tanks for Private Fire*
29 *Protection* (NFPA 1998); and Factory Mutual (FM) Data Sheet 3-2, *Water Tanks for Fire*
30 *Protection* (FM 2001a). Each water storage tank will be capable of supplying fire-water for a
31 minimum of two hours at the maximum anticipated demand.

32

33 The pumping system is being designed to NFPA 20, *Standard for the Installation of Stationary*
34 *Pumps for Fire Protection* (NFPA 1999a), and Factory Mutual Data Sheet 3-7N, *Stationary*
35 *Pumps for Fire Protection* (FM 2001b). A fire pump will be installed and connected to each
36 water storage tank. Each pump will be capable of providing the maximum system demand and
37 will be connected to the underground distribution system in a manner that will prevent single
38 failure from disabling both water supplies.

39

40 The underground distribution piping and valving will be designed and installed according to
41 NFPA 24, *Standard for Installation of Private Fire Service Mains and Their Appurtenances*
42 (NFPA 1995); and Factory Mutual Data Sheet 3-10, *Installation and Maintenance of Private*
43 *Fire Service Mains and Their Appurtenances* (FM 2000).

1 The distribution system in the various buildings and structures are being designed following the
2 various appropriate codes and standards that apply to their specific occupancy. The standards
3 include NFPA 13, *Standard for the Installation of Sprinkler Systems* (NFPA 1999b); NFPA 14,
4 *Standard for the Installation of Standpipe, private Hydrant, and Hose Systems* (NFPA 2000);
5 NFPA 15, *Standard for Water Spray Fixed Systems for Fire Protection* (NFPA 1996); and the
6 appropriate Factory Mutual standards, as required.

7 8 **6.3.2 Aisle Space Requirement [F-3b]**

9 Sufficient aisle space will be maintained throughout the facility buildings to allow access of
10 personnel and equipment responding to fires, spills, or other emergencies.

11
12 Alternate aisle space for IHLW and ILAW container storage area is explained in Chapter 4.
13 Secondary wastes stored in container storage areas will meet the 30-inch minimum aisle space
14 requirement.

15 16 **6.4 PREVENTIVE PROCEDURES, STRUCTURES, AND EQUIPMENT [F-4]**

17 The following sections describe preventive procedures, structures, and equipment. Refer to
18 Chapter 4 for additional information on feed transfer piping and tank overflow protection
19 structures, equipment, and instrumentation.

20 21 **6.4.1 Unloading/Loading Operations [F-4a]**

22 Waste feed to be treated at the WTP will be received from the DST system staging tank through
23 a pipeline with secondary containment; leak detection; and cathodic protection, where transfer
24 lines are in contact with the soil. The WTP will not receive waste for treatment in containers.

25
26 The filled ILAW and IHLW containers and canisters will be loaded for transport using special
27 shielding and heavy lifting equipment. The immobilized waste will present no hazards from
28 spills, leaks, run-off, or chemical exposures to personnel from the dangerous waste constituents
29 because the waste will be solid (contain no free liquids) and the containers will be permanently
30 sealed.

31
32 Containers of secondary waste bound for transport to another TSD will be packaged according to
33 the federal, state, and local regulations in place at the time. (Because the WTP will not begin
34 generating secondary waste for several years, information such as the procedures, structures, and
35 equipment is not yet available.)

36 37 **6.4.2 Runoff [F-4b]**

38 Waste stored and treated inside the plants can not contact precipitation and therefore, can not
39 contaminate runoff from WTP structures, nor can precipitation enter secondary containment for
40 the process and storage areas within the plants. Additionally, the process condensate vessels
41 located outside the Pretreatment Plant will be surrounded by a concrete berm lined with a
42 protective coating for secondary containment. The secondary containment will collect and hold

1 leaks and precipitation until the liquid can be removed. There will be no contaminated runoff
2 from the outside tanks.

3 4 **6.4.3 Contamination of Water Supplies [F-4c]**

5 The active portions of the facility are being designed with robust structural features such as thick,
6 reinforced concrete floors and walls; secondary containment (lined with stainless steel or other
7 protective coating); and off-gas treatment systems. The structural features alone are designed to
8 prevent waste feed from contacting the environment. Operation of the WTP is also intended to
9 prevent a release of waste to the environment. The WTP design, construction, and operation will
10 prevent waste feed and secondary waste from contaminating groundwater and drinking water
11 supplies (see Chapter 4 for structural design information).

12
13 Raw and potable water will be supplied to the WTP via separate underground lines from the
14 200 East Area water treatment and distribution system. Backflow preventers or interconnection
15 breaks ensure that in the event water is contaminated at the WTP, the water cannot flow back
16 into the water systems' sources. There will be no connections between potable water and raw
17 water systems, or between the potable water system and piping that will contain mixed waste.

18 19 **6.4.4 Equipment and Power Failures [F-4d]**

20 Should there be a partial or total loss of electrical power to the WTP, automatic measures ensure
21 the plant is in a safe operational configuration. (Safe operational configuration is defined as a
22 shutdown to minimal operations that will prevent releases and prevent unnecessary damage to
23 the equipment.)

24
25 The emergency power system will consist of three 4.16kV medium voltage, automatically
26 controlled emergency diesel generators connected to three separate 4.16kV emergency
27 switchgears. Upon loss of power the emergency power system generators will automatically
28 start. The emergency diesel generators are capable of starting, accelerating, and being loaded
29 with the design load in a specified time limit (under 10 seconds per National Electrical Code
30 (NEC) article 700 [Sec 3.2.2 (7)][NFPA 1999c]). The emergency power system will be
31 connected to essential loads in order to ensure only a short-term power interruption for those
32 loads designated as essential.

33
34 Standby power will be provided by three 13.8kV medium voltage, standby diesel generators.
35 The standby diesel generators are started manually or automatically in the event of a prolonged
36 loss of offsite power. This source is primarily associated with the LAW and HLW melters.
37 Critical indications and controls are backed up by uninterruptible power supplies and batteries.
38 The plant will remain in a safe condition during loss of electrical power.

39
40 Egress lighting will consist of self-contained fixtures with battery packs and charging systems.
41 These lighting systems will be located in stairways, exit routes and fire alarm stations and will
42 come on automatically upon loss of normal power to the fixture. A selected part of the normal
43 lighting will operate as essential lighting, and will provide a minimum level of illumination
44 throughout the plant to aid in restoring the plant to normal operation. Essential lighting will be

1 powered by the emergency power system and will be available after an offsite power loss,
2 following a delay required to start the emergency power supply diesel generators and for the
3 generators to pick up the essential loads.
4

5 Selected instrumentation and controls will be unaffected by a loss of offsite power, since many
6 of these instruments and controls will be powered by uninterruptible power supply systems. The
7 uninterruptible power supply systems will be battery backed, and the battery chargers will be
8 connected to the emergency power supply. Emergency lighting, such as in the central control
9 room, will be connected to an uninterruptible power supply system. Radiation monitoring using
10 continuous air monitors and area radiation monitors are also powered by these systems and
11 continue operating during power failure.
12

13 **6.4.5 Personal Protection Equipment [F-4e]**

14 Facility design, operating practices, and administrative controls are the primary means of
15 preventing personnel exposure to dangerous and mixed waste. The following practices,
16 structures, and equipment are intended to minimize personnel exposure to chemicals, radioactive
17 contamination, and radiation exposure:
18

- 19 • Remote operation and viewing
- 20 • Active ventilation that moves air from uncontaminated zones to progressively more
21 contaminated zones
- 22 • Waste cutoff systems that automatically keep operations in a safe condition
- 23 • Secondary containment for liquids
- 24 • Offices, control rooms, change rooms, and lunchrooms that are situated to minimize casual
25 exposure of personnel

26
27 Before the start of an operation that might expose employees to the risk of injury or illness, a
28 review of the operation will be performed to ensure the appropriate protective gear is selected.
29 Personnel will be instructed to wear personal protective equipment in accordance with training,
30 posting, and instructions. The inspection schedule for personal protective equipment is found in
31 Table 6A-1; however, the specific items listed as personal protective equipment will be in the
32 ERP (Chapter 7.0) and not duplicated here.
33

34 **6.4.6 Prevent Releases to the Atmosphere [WAC 173-303-806(4)(a)(viii)(F)]**

35 The WTP off-gas treatment systems are the primary means of preventing contaminated releases
36 to the atmosphere. The procedures, structures, and equipment used in these systems will be
37 described in Chapter 4.
38

1 **6.5 PREVENTION OF REACTION OF IGNITABLE, REACTIVE, AND/OR**
2 **INCOMPATIBLE WASTE [F-5]**

3 The WTP will receive waste feed that is designated as ignitable or reactive; the WTP may store,
4 in containers, secondary waste that is designated as ignitable, reactive, or incompatible (see
5 Chapter 3 and Waste Analysis Plan, Appendix 3A of this application).

6

7 Process knowledge, administrative controls, and the active ventilation system prevent the
8 formation or release of ignitable vapors that could harm human health or the environment.

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