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**ADDENDUM E
PROCEDURES TO PREVENT HAZARDS**

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ADDENDUM E
PROCEDURES TO PREVENT HAZARDS

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1 INTRODUCTION

2 This addendum addresses hazard prevention at the Waste Treatment Plant (WTP). It covers the following
3 topics: security; preparedness and prevention requirements; preventive procedures, structures, and
4 equipment; and prevention of reaction of the ignitable, reactive, and incompatible waste at the WTP.

5 Information is presented in two formats: narrative and table. See Addendum E1 for example inspection
6 tables.

7 1.0 SECURITY

8 This section describes WTP security procedures and equipment. Hanford Site security measures are
9 discussed in the *Hanford Facility Dangerous Waste Permit (Ecology 2010)* (Site-wide Permit).

10 1.1 Security Procedures and Equipment

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

13 1.1.1 24-Hour Surveillance System

14 The entire Hanford Site is a controlled-access area. For surveillance information, refer to the Site-wide
15 Permit.

16 1.1.2 Barrier and Means to Control Entry

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

22 WTP personnel entry to the process areas will be through a controlled pedestrian gate. Service vehicles
23 delivering supplies will enter process areas through a controlled gate. See the topographic map in
24 Addendum A for further information regarding barriers and vehicular access.

25 1.1.3 Warning Signs

26 Warning signs written in English stating "DANGER - UNAUTHORIZED PERSONNEL KEEP OUT"
27 (or an equivalent legend) are provided in sufficient numbers to be seen from areas that contain dangerous
28 or mixed waste. These signs are legible from a distance of at least 25 feet and visible from any angle of
29 approach to the WTP. These warning signs will be posted in locations such as:

- 30 • Around the perimeter of the WTP fenced areas
- 31 • On each entrance, gate, and other access points to portions of the WTP facility actively managing
32 dangerous waste
- 33 • On entrances to other enclosed areas within the plant that contain dangerous or mixed waste

34 Points of access into waste handling and storage areas will have clearly marked warnings for radiation
35 exposure and the major health risks associated with the waste. Access points into these areas will be
36 strictly controlled. In addition, signs will be posted at the main site access entrance, instructing visitors to
37 report to the WTP administration building to gain access to the WTP (WAC 173-303-310 (2) (a)).

38 1.2 Waiver

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

1 **2.0 INSPECTION PLAN**

2 The following sections describe the WTP dangerous waste inspection plan. The WTP will use a graded
3 approach to preventing and detecting malfunctions, deterioration, operator errors, and discharges that will
4 range from daily inspections to integrity assessments. This graded approach is comprised of activities
5 that, at a minimum, will meet the inspection requirements and will include more precautions for
6 equipment at higher risk of failure. Monitoring via instrumentation will be used to perform remote
7 inspections in areas of high radioactivity, including, but not limited to, the Pretreatment areas, the LAW
8 vitrification area, and the HLW vitrification area. Due to the radioactive nature of the waste and
9 consistent with ALARA principles, monitoring by instrumentation will be the primary means of fulfilling
10 the inspection requirements in these areas. The WTP will also use cameras, windows, process control,
11 function checks, and preventive maintenance to comply with inspection requirements.

12 Example inspection schedules, which are part of the inspection plan, are presented as tables in Addendum
13 E1. Each table addresses a particular dangerous waste management unit, or group of units, such as tanks.
14 Within each management unit table, the inspections are presented by system, and are further broken down
15 by individual component in each system.

16 **2.1 General Inspection Requirements**

17 This section describes general, WTP-wide inspection requirements used to help prevent, detect, or
18 respond to environmental or human health hazards related to dangerous waste handling, treatment, and
19 storage at the WTP. The inspection schedules are provided in Table E1-1.

20 Instruments, such as those used for overflow detection; will be connected to the Process Control System
21 (PCJ). The PCJ will be the computer system that continuously monitors the instruments' data. Should
22 the PCJ detect a reading outside the range of acceptable operation, control personnel will be alerted (in
23 real time) by alarm in the control room. The monitoring system will provide trending of selected
24 monitoring data, graphics, and equipment summary displays. The WTP will use a maintenance
25 management system to plan and track preventive maintenance activities and function testing at the WTP.
26 Other methods of performing inspections at the WTP will be visual where safe and effective to do so.

27 **2.1.1 Items to be Inspected**

28 The WTP inspection plan will include specific inspection schedules that meet the requirements. In
29 Addendum E1 are example inspection schedules of the types of items to be inspected. The following
30 items are listed in the inspection schedule tables:

- 31 • General inspections for safety and emergency equipment, security, and preparedness and prevention
- 32 • Tank systems
- 33 • Containers
- 34 • Container storage areas
- 35 • Miscellaneous units
- 36 • Containment building areas

37 **2.1.2 Types of Problems to Look for During Inspections**

38 The example inspection tables in Addendum E1 include a column titled "inspections". This column
39 specifies the type of inspection activities to be performed (such as verifying the operability of equipment
40 and problems to look for) for each inspected item.

2.1.3 Frequency of Inspections

In the example inspection tables in Addendum E1, the column titled “frequency” provides the frequency of inspection for each item. Inspection frequencies were developed using a graded approach that will be finalized prior to the start of operations, and are based on the following:

- Regulatory requirements where specified
- Rate of possible deterioration of equipment
- Probability of a release to the environment
- Potential to cause harm to human health and the environment
- Manufacturer’s specifications
- Integrity assessments of tank systems
- Operating experience and knowledge

2.1.4 Schedule Location

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

2.1.5 Employee Positions Responsible for Conducting Inspections

Personnel performing dangerous waste inspections will have the appropriate facility-specific training as required by the *Personnel Training Plan* (Addendum G) and as defined in the *Waste Treatment Plant Dangerous Waste Training Plan* (24590-WTP-PL-ENV-01-002). The training program will identify the individuals qualified to perform dangerous waste-related inspections.

2.2 Inspection Log

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

Electronic media and hard copy media may be used for recording inspections at the WTP, Electronic media will be used where it is sensible, cost-effective, and/or consistent with ALARA practices. Inspection records will be readily retrievable. Dangerous waste inspection requirements will be incorporated into the operating procedures and documentation. The procedures and operating requirements that satisfy compliance with WAC 173-303 (including inspection requirements) will be identified so that they are distinguishable within the larger universe of facility operational requirements.

2.3 Schedule for Remedial Action for Problems Revealed

Remedial action will be taken as soon as practicable by facility management to implement the *Waste Treatment Plant Emergency Response Plan* (ERP) (Addendum F1) if an inspection identifies an unplanned spill, release, fire, or explosion, unplanned spill or release involving a dangerous waste, or an imminent hazard to human health or the environment.

An investigation will begin within 24 hours upon detection of unplanned release in the plant. Depending upon the scope of the hazard, volume of the release, or the characterization of the release, cleanup may be completed within 24 hours, or as soon as practicable, after completion of the initial investigation period.

1 However, the time required to cleanup the release will depend on factors such as analytical turnaround
2 time, radioactivity, and volume.

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

- 8 • Problem identification and documentation
- 9 • Classification
- 10 • Cause analysis
- 11 • Corrective action
- 12 • Follow-up investigation

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

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

18 **2.4 Specific Process or Waste Type Inspection Requirements**

19 The following sections describe specific process inspection requirements.

20 **2.4.1 Container Inspections**

21 The WTP will store immobilized low-activity waste (ILAW) in containers, immobilized high-level waste
22 (IHLW) in canisters, and secondary dangerous and mixed waste in containers. For purposes of IHLW,
23 the term canisters is used to specifically address the unique disposal requirements of the filled containers.
24 Throughout this section, general references to containers apply to the IHLW canisters. Secondary waste
25 refers to newly generated waste (or a waste by-product from treating the Hanford tank waste) that is
26 designated as dangerous waste or mixed waste. Secondary waste also will be generated by laboratory
27 activities, from maintenance waste, and failed contaminated equipment. The location and design
28 description of the containers and their associated storage areas are included in Addendum C. Inspections
29 of container storage areas will be performed weekly when waste is in the storage areas. Table E1-2
30 provides examples of container and container storage area inspection schedules for ILAW, IHLW, and
31 secondary waste.

32 Immobilized Low-Activity Containers and High-Level Waste Canisters

33 Filled ILAW containers and IHLW canisters will be radioactive and thus, inspections must be performed
34 remotely. Therefore, in lieu of conventional container inspections while the containers are in storage,
35 each container will be inspected before and after filling, and when it is moved into and out of the ILAW
36 and IHLW containment buildings or container storage areas. The containers will not contain free liquids,
37 will be chemically and physically stable (not ignitable or reactive), and will have either a welded closure
38 (IHLW) or pressed fitted closure seal (ILAW). The IHLW canisters will be placed in special racks inside
39 the storage areas that will prevent them from toppling. The immobilized waste containers and storage
40 areas are described in Addendum C.

41 The WTP will inspect the ILAW and IHLW container storage or containment building areas, when they
42 are in use, weekly by remote means. These remotely managed process storage areas do not include thirty-
43 inch aisle spacing. The example inspection schedules (Addendum E1) specify the problems for which to
44 look and how inspections are performed.

1 The dangerous waste container labeling requirements will be met by using a unique alphanumeric
2 identifier that will be welded to each container. Deterioration of the identifier is not expected due to the
3 permanent nature of these markings and provisions for subsequent handling that will safeguard against
4 damage to the containers and the identifying marks.

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

- 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 disposal
12 restriction requirements

13 Secondary and Miscellaneous Waste in Containers

14 Example inspection schedules for secondary dangerous waste and mixed waste container storage areas are
15 given in Table E1-2.

16 **2.4.2 Tank Systems Inspections and Corrective Actions**

17 A description of the tank systems, and their safety and interlock controls, at the WTP can be found in
18 Addendum C. Examples of tank system inspections, inspection frequencies, and problems to look for are
19 given in Table E1-3. Following is a brief discussion of the tank system inspections.

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

24 Cathodic Protection

25 Cathodic protection systems will be used to prevent or mitigate metal corrosion on underground
26 dangerous waste transfer lines where the outermost pipes are in contact with the soil. The cathodic
27 protection systems are described in Addendum C. Example inspection schedules for cathodic protection
28 systems and sources of impressed current are in Table E1-4.

29 Tank Integrity Assessments

30 A periodic integrity assessment approach will be developed for the WTP waste tanks to ensure that the
31 tanks' systems remain fit-for-use. The schedule for performing periodic integrity assessments will be
32 developed during the new tank design assessment discussed in Appendix 4B and placed in Appendix
33 7.15.

34 **2.4.3 Tank Systems – Corrective Actions**

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

36 **2.4.4 Storage of Ignitable or Reactive Wastes**

37 Dangerous waste codes assigned to the waste in the *Double-Shell Tank System Dangerous Waste Part A*
38 (Site-wide Permit Operating Unit Group 12) apply to the waste feed the WTP will receive. The waste
39 feed will include the waste codes for ignitability (D001) and reactivity (D003), but the waste is not
40 expected to exhibit the characteristics listed in WAC 173-303-090 for these two waste codes. Based on
41 past process knowledge that includes the age, temperature, history, and chemical composition of the
42 waste feed stored in the DST system, the waste codes D001 and D003 will be removed by the WTP. See
43 the Waste Analysis Plan (Addendum B1) for specific information on the waste codes and their removal.

1 Consequently, only the waste feed receipt tanks will be inspected for tanks storing ignitable and reactive
2 waste. The remainder of the process tanks will not contain ignitable or reactive waste. Ignitable or
3 reactive secondary waste may be stored in tanks or containers at the WTP. Annual inspections of all
4 areas managing D001 and D003 waste will be conducted by personnel familiar with the Uniform Fire
5 Code, or in the presence of the local, state, or federal fire marshal. Inspections will be entered into the
6 WTP operating record and maintained at the WTP for 5 years (see Table E1-5 for the inspection schedule
7 for ignitable or reactive wastes).

8 **2.4.5 Air Emissions Control and Detection - Inspections, Monitoring, and Corrective** 9 **Actions**

10 Air Emissions from Process Vents (Subpart AA)

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

13 Air Emission Standards for Equipment Leaks (Subpart BB)

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

19 Air Emission Standards for Tanks, Impoundments, and Containers (Subpart CC)

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

28 **2.4.6 Miscellaneous Unit Inspections**

29 The WTP melters are miscellaneous units under WAC 173-303-680. Remote inspections and monitoring
30 will be performed by instrumentation that will be supplemented by camera(s) and viewing through
31 shielded windows because of the high levels of radiation in process areas. Other miscellaneous units will
32 be visually or remotely inspected based on accessibility. Inspections will verify the integrity of melter
33 equipment and detect malfunctions, deterioration, leaks, or operator errors that have the potential to
34 release dangerous waste into the facility or the environment. An example miscellaneous unit inspection
35 schedule is provided in Table E1-6.

36 **2.4.7 Containment Building Inspection**

37 Containment Buildings (Subpart DD)

38 Containment buildings will be inspected for items listed in Table E1-7. The WTP containment building
39 example inspection schedules include the requirements from 40 CFR 264 Subpart DD. Example
40 inspection schedules for tank systems and miscellaneous units located within containment buildings are in
41 Tables E1-3 and Table E1-7.

42 **2.4.8 Waste Pile Inspection**

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

1 **2.4.9 Surface Impoundment Inspection**

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

4 **2.4.10 Incinerator Inspection**

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

7 **2.4.11 Landfill Inspection**

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

10 **2.4.12 Land Treatment Facility Inspection**

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

13 **3.0 PREPAREDNESS AND PREVENTION REQUIREMENTS**

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

15 **3.1 Equipment Requirements**

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

18 **3.1.1 Internal Communications**

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

25 **3.1.2 External Communications**

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

32 **3.1.3 Emergency Equipment**

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

36 **3.1.4 Water for Fire Control**

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

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

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

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

17 **3.2 Aisle Space Requirement**

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

20 Alternate aisle space for IHLW and ILAW container storage area is explained in Addendum C.
21 Secondary wastes stored in container storage areas will meet the 30-inch minimum aisle space
22 requirement.

23 **4.0 PREVENTIVE PROCEDURES, STRUCTURES, AND EQUIPMENT**

24 The following sections describe preventive procedures, structures, and equipment. Refer to Addendum C
25 for additional information on feed transfer piping and tank overflow protection structures, equipment, and
26 instrumentation.

27 **4.1 Unloading/Loading Operations**

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

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

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

39 **4.2 Runoff**

40 Waste stored and treated inside the plants cannot contact precipitation and therefore, cannot contaminate
41 runoff from WTP structures, nor can precipitation enter secondary containment for the process and
42 storage areas within the plants. Additionally, the process condensate vessels located outside the
43 Pretreatment Plant will be surrounded by a concrete berm lined with a protective coating for secondary
44 containment. The secondary containment will collect and hold leaks and precipitation until the liquid can
45 be removed. There will be no contaminated runoff from the outside tanks.

1 **4.3 Contamination of Water Supplies**

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

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

14 **4.4 Equipment and Power Failures**

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

18 The emergency power system will consist of two diesel turbine- automatically controlled emergency
19 diesel generators and one diesel engine standby generator. The automatic and standby generators are
20 connected to three separate 4.16kV emergency switchgears. Upon loss of power the emergency diesel
21 turbine generators will automatically start. The emergency diesel turbine generators are capable of
22 starting, accelerating, and being loaded with the design load in a specified time limit. The standby diesel
23 generator is started manually or automatically in the event of a prolonged loss of offsite power. The
24 emergency power system will be connected to essential loads in order to ensure only a short-term power
25 interruption for those loads designated as essential. Critical indications and controls are backed up by
26 uninterruptible power supplies and batteries. The plant will remain in a safe condition during loss of
27 electrical power.

28 Egress lighting will consist of self-contained fixtures with battery packs and charging systems. These
29 lighting systems will be located in stairways, exit routes and fire alarm stations and will come on
30 automatically upon loss of normal power to the fixture. A selected part of the normal lighting will
31 operate as essential lighting, and will provide a minimum level of illumination throughout the plant to aid
32 in restoring the plant to normal operation. Essential lighting will be powered by the emergency power
33 system and will be available after an offsite power loss, following a delay required to start the emergency
34 power supply diesel generators and for the generators to pick up the essential loads.

35 Selected instrumentation and controls will be unaffected by a loss of offsite power, since many of these
36 instruments and controls will be powered by uninterruptible power supply systems. The uninterruptible
37 power supply systems will be battery backed, and the battery chargers will be connected to the emergency
38 power supply. Emergency lighting, such as in the central control room, will be connected to an
39 uninterruptible power supply system. Radiation monitoring using continuous air monitors and area
40 radiation monitors are also powered by these systems and continue operating during power failure.

41 **4.5 Personal Protection Equipment**

42 Facility design, operating practices, and administrative controls are the primary means of preventing
43 personnel exposure to dangerous and mixed waste. The following practices, structures, and equipment
44 are intended to minimize personnel exposure to chemicals, radioactive contamination, and radiation
45 exposure:

- 46 • Remote operation and viewing

- 1 • Active ventilation that moves air from uncontaminated zones to progressively more contaminated
- 2 zones
- 3 • Waste cutoff systems that automatically keep operations in a safe condition
- 4 • Secondary containment for liquids
- 5 • Offices, control rooms, change rooms, and lunchrooms that are situated to minimize casual exposure
- 6 of personnel

7 Before the start of an operation that might expose employees to the risk of injury or illness, a review of
8 the operation will be performed to ensure the appropriate protective gear is selected. Personnel will be
9 instructed to wear personal protective equipment in accordance with training, posting, and instructions.
10 The inspection schedule for personal protective equipment is found in Table E1-1; however, the specific
11 items listed as personal protective equipment will be in the ERP (Addendum F1) and not duplicated here.

12 **4.6 Prevent Releases to the Atmosphere [WAC 173-303-806(4)(a)(viii)(F)]**

13 The WTP off-gas treatment systems are the primary means of preventing contaminated releases to the
14 atmosphere. The procedures, structures, and equipment used in these systems will be described in
15 Addendum C.

16 **5.0 PREVENTION OF REACTION OF IGNITABLE, REACTIVE, AND/OR INCOMPATIBLE** 17 **WASTE**

18 The WTP will receive waste feed that is designated as ignitable or reactive; the WTP may store, in
19 containers, secondary waste that is designated as ignitable, reactive, or incompatible (see Addendum B
20 and Waste Treatment Plant Waste Analysis Plan, Addendum B1).

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

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