

**LIQUID EFFLUENT RETENTION FACILITY & 200 AREA EFFLUENT TREATMENT FACILITY  
ADDENDUM F  
PREPAREDNESS AND PREVENTION  
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

<b>Modification Date</b>	<b>Modification Number</b>
06/28/2021	8C.2021.7F
03/10/2021	8C.2020.8F
05/19/2020	8C.2020.6F
01/23/2018	PCN-LERF/ETF-2017-02 (8C.2018.Q1)
08/25/2016	8C.2016.Q2

This page intentionally left blank.

1  
2  
3  
4  
5

**ADDENDUM F  
PREPAREDNESS AND PREVENTION**

1  
2  
3  
4  
5

This page intentionally left blank.

**ADDENDUM F**  
**PREPAREDNESS AND PREVENTION**

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19

**TABLE OF CONTENTS**

F PREPAREDNESS AND PREVENTION..... 5

F.1 Preparedness and Prevention Requirements ..... 5

F.1.1 Equipment Requirements ..... 5

F.1.2 Aisle Space Requirement ..... 6

F.2 Preventive Procedures, Structures, and Equipment ..... 6

F.2.1 Unloading Operations, Spill Prevention, and Control ..... 6

F.2.2 Runoff ..... 6

F.2.3 Water Supplies ..... 7

F.2.4 Equipment and Power Failure..... 7

F.2.5 Personnel Exposure..... 8

F.3 Prevention of Reaction of Ignitable, Reactive, and Incompatible Waste ..... 8

1  
2  
3  
4  
5

This page intentionally left blank.

1 **F PREPAREDNESS AND PREVENTION**

2 **F.1 Preparedness and Prevention Requirements**

3 The following sections document the preparedness and prevention measures taken at the Liquid Effluent  
4 Retention Facility (LERF) and 200 Area Effluent Treatment Facility (ETF).

5 **F.1.1 Equipment Requirements**

6 The following sections describe the internal and external communications systems and the emergency  
7 equipment required that could be activated by the LERF and 200 Area ETF Building Emergency Director  
8 (BED).

9 **F.1.1.1 Internal Communications**

10 When operators are present at the LERF, the operators carry two-way radios to maintain contact with  
11 200 Area ETF personnel. The operators at LERF are informed of emergencies (e.g., building and/or area  
12 evacuations, take-cover events, high airborne contamination, fire, and/or explosion), and are provided  
13 with emergency instructions by several systems. These systems include the mobile two-way radios, and  
14 the telephone in the LERF instrument building.

15 The 200 Area ETF is equipped with an internal communication system to provide immediate emergency  
16 instruction to personnel. The on-site communication system at the 200 Area ETF includes telephones,  
17 mobile two-way radios, a public address system, and alarm systems. The telephone and radio systems  
18 provide for internal and external communication. Alarm systems exist to allow personnel to respond  
19 appropriately to various emergencies, including building evacuations, take cover events, and fire and/or  
20 explosion. Addendum J provides additional information on the response activities.

21 **F.1.1.2 External Communications**

22 The LERF and its operators are equipped with devices for summoning emergency assistance from the  
23 Hanford Fire Department, the Hazardous Materials Response Team, and/or Hanford Patrol, as necessary.  
24 External communication to summon emergency assistance is made by a normal telephone system or  
25 mobile two-way radios. The LERF telephone is available in the instrumentation building. The 200 Area  
26 ETF uses fire alarm pull boxes and telephones for external communication and are located at numerous  
27 locations throughout the 200 Area ETF.

28 **F.1.1.3 Emergency Equipment**

29 The LERF and 200 Area ETF rely primarily on the Hanford Fire Department to respond to fires and other  
30 emergencies as described in Permit Attachment 4, *Hanford Emergency Management Plan*,  
31 (DOE/RL-94-02). All LERF and 200 Area ETF operators are familiar with the LERF and 200 Area ETF  
32 contingency plans (Addendum J) and are trained in the use of emergency pumping of LERF and 200 Area  
33 ETF systems, fire, and communications equipment.

34 Portable fire extinguishers, fire control equipment, spill control equipment, and decontamination  
35 equipment is available at various locations in the 200 Area ETF.

36 The 200 Area ETF has fire extinguishers, automatic fire suppression systems (200 Area ETF Control  
37 Room and electrical room), fire alarm pull boxes, and a water spray system (200 Area ETF operating and  
38 administrative portions).

39 Respirators, hazardous material protective gear, and special work procedure clothing for 200 Area ETF  
40 personnel are kept in the change room at the 200 Area ETF. Safety showers are located in convenient  
41 locations in the 200 Area ETF, and emergency eyewashes are available for use. Water for these devices  
42 is supplied from the 200 Area ETF sanitary water system.

1 **F.1.1.4 Water for Fire Control**

2 A water main is not provided to the LERF. The Hanford Fire Department is equipped with fire engines  
3 for fire control for fires requiring high water volume and pressure. The 200 Area ETF is serviced by two  
4 12-inch raw water lines that are tied into the 200 East Area raw water distribution grids. These lines  
5 provide a looped configuration that supplies two independent sources of raw water for fire protection and  
6 raw water uses. Connections from the 200 Area ETF raw water system supply fire hydrants and the wet  
7 pipe sprinkler system. In the event that water pressure is lost, the Hanford Fire Department is equipped  
8 with fire engines to provide needed water.

9 **F.1.2 Aisle Space Requirement**

10 The operation of the LERF does not involve aisle space. Nevertheless, the LERF and the individual  
11 basins are easily accessible to emergency response personnel and vehicles. A 20-foot-wide service road  
12 runs along the base of the basin area on the east, south, and west sides within the operational security  
13 fence.

14 Aisle spacing at 200 Area ETF is sufficient to allow the movement of personnel and fire protection  
15 equipment in and around the containers. This storage arrangement also meets the requirements of the  
16 National Fire Protection Association (NFPA 1996) for the protection of personnel and the environment.  
17 A minimum 30-inch aisle space is maintained between rows of containers as required by Washington  
18 Administrative Code (WAC) 173-303-630(5)(c).

19 **F.2 Preventive Procedures, Structures, and Equipment**

20 The following sections describe preventive procedures, structures, and equipment.

21 **F.2.1 Unloading Operations, Spill Prevention, and Control**

22 Underground pipelines that transfer aqueous waste to and from the LERF are encased in a secondary pipe.  
23 If a leak is detected in a pipeline, flow in the pipeline will be stopped and the cause of the leak  
24 investigated and remediated.

25 If it is required to transfer aqueous waste from one LERF basin to another, existing transfer pumps are  
26 used as described in Addendum C.

27 The 2025ED Load-in Station and 2025EG Backup Load-In Station are monitored continuously during  
28 tank and container-filling operations. If a leak or spill occurs, filling is stopped immediately, and the  
29 spilled or leaked waste is removed from the secondary containment system and disposed of in accordance  
30 with approved management procedures. Any leak/spill that is determined to be a dangerous waste will be  
31 managed according to the requirements of WAC 173-303-170.

32 **F.2.2 Runoff**

33 The LERF is constructed and operated to ensure that all aqueous waste is contained within the basins.  
34 The basins are designed and operated to prevent overtopping. Furthermore, the basins are provided with  
35 floating covers to prevent the introduction of precipitation into the basins. The basins also are graded to  
36 ensure that all precipitation outside the basins is directed away from the surface impoundments.

37 The dikes are designed with a 3:1 (3 units horizontal to 1 unit vertical) slope on the basin side, and 2.25:1  
38 on the exterior side. The top of the dikes are approximately 26.4 feet higher than the low-point of the  
39 bottom of the basin, and 10 feet above grade. Run-on of precipitation to the basins from the surrounding  
40 area is not possible because the surrounding area slopes away from the LERF.

41 Dangerous waste and hazardous chemical handling areas at the 200 Area ETF are designed to contain  
42 spills, leaks, and wash water, thereby preventing runoff and subsequent releases. All dangerous and/or  
43 mixed waste loading and unloading areas are provided with secondary containment structures as  
44 described in Addendum C, "Process Information."

1 **F.2.3 Water Supplies**

2 The LERF uses operating practices, structures, and equipment to prevent the contamination of natural  
3 water supplies (i.e., groundwater and surface water). The LERF is monitored continuously in the  
4 200 Area ETF Control Room during liquid waste transfers and at least daily when waste transfers are not  
5 occurring to detect abnormal conditions (e.g., leaks), and regularly inspected to detect equipment and  
6 structural deteriorations that could allow possible water supply contamination. The basins are provided  
7 with a leachate collection system that is designed to contain any leachate generated. These systems, in  
8 conjunction with the double-composite liner system and underlying low permeable clay liner, ensure that  
9 should a release occur, the release will be fully contained within the basin configuration and, therefore,  
10 water supplies will be protected. Addendum J, "Contingency Plan," provides information on procedures  
11 that are implemented if a release is detected at the LERF.

12 There are no drinking water wells near the 200 Area ETF. Therefore, a release would not immediately  
13 contaminate drinking water supplies. The 200 Area ETF uses operating practices, structures, and  
14 equipment to prevent the contamination of natural water supplies (i.e., groundwater and surface water).  
15 The 200 Area ETF is monitored and inspected in accordance with Addendum I, "Inspection  
16 Requirements" to detect equipment and structural deteriorations that could allow spills to the  
17 environment. Areas in contact with dangerous and/or mixed waste are monitored continuously in the  
18 200 Area ETF Control Room during Load-in Station and/or 200 Area ETF processing operations through  
19 a series of level and pressure indicators, leak detection alarms, equipment failure alarms, and control  
20 panel readouts. In addition, the 200 Area ETF is inspected regularly for the presence of leaks or other off  
21 normal conditions wherever possible (in all areas that can be safely entered).

22 In addition to detailed operating practices, structures and equipment are used at the 200 Area ETF to  
23 prevent contamination of water supplies. The structures and equipment designed to prevent  
24 contamination of water supplies are the same as the structures and equipment used to prevent runoff from  
25 dangerous and/or mixed waste handling areas.

26 **F.2.4 Equipment and Power Failure**

27 The storage function of the LERF is not affected by loss of power and a temporary loss of power would  
28 not pose a threat to the environment. Loss of electrical power would not cause the storage of the waste to  
29 be jeopardized. For process condensate transferred from the 242-A Evaporator, appropriate valving  
30 procedures are followed to ensure a smooth restart of the flow to the LERF in the event of a power failure  
31 at the 242-A Evaporator. For secondary liquid waste streams transferred from the Waste Treatment and  
32 Immobilization Plant (WTP), appropriate valving procedures are followed to ensure a smooth restart of  
33 the flow to the LERF in the event of a power failure at the WTP.

34 The 200 Area ETF does not have a standby power source. Power to selected lighting, computers, and  
35 process controls are configured with an uninterruptible power supply. During partial loss of normal  
36 power, the affected pumps and subsystems will be shut down. Complete loss of power to the 200 Area  
37 ETF shuts down the entire 200 Area ETF except for the instruments, connected to the uninterruptible  
38 power supply at 200 Area ETF. The uninterruptible power supply provides temporary power to some  
39 systems to assist in an orderly shutdown of the process in the event power cannot be restored quickly.  
40 Redundant pumps allow the process to continue to operate when only one component is out of service.

41 When power at the 200 Area ETF is lost, the valves assume a fail-safe position to allow the process to  
42 remain in a safe shutdown mode until restoration of power. This action allows the operators to perform  
43 equipment surveys during shutdown and to confirm that there are no safety issues because the 200 Area  
44 ETF is shut down. Because a power failure would also shut off flow into the 200 Area ETF, there will  
45 not be any increase in volume in any of the holdup basins, tanks, or other systems.

1 A combination of reliability, redundancy, maintenance, and repair features are used in the 200 Area ETF  
2 equipment and systems to minimize random failure of equipment. For crucial systems such as ventilation  
3 filters, redundant trains are provided to mitigate equipment and system failure. Spare parts are  
4 maintained for essential production and safety equipment.

### 5 **F.2.5 Personnel Exposure**

6 At the LERF and 200 Area ETF, operating practices, structures, and equipment are used to prevent undue  
7 exposure of personnel to dangerous and/or mixed waste. All personnel handling waste use protective  
8 clothing and equipment. All operations are conducted so that exposure to dangerous and/or mixed waste  
9 and hazardous materials are maintained as low as reasonably achievable (ALARA).

10 Protective clothing and equipment are prescribed for personnel handling chemicals or dangerous waste.  
11 Before the start of any operation that could expose personnel to the risk of injury or illness, a review of  
12 the operation is performed to ensure that the nature of hazards that might be encountered is considered  
13 and appropriate protective gear is selected. Personnel are instructed to wear personal protective  
14 equipment in accordance with training, posting, and instructions.

15 A change trailer at LERF is located between Basins 42 and 43. Exits within the change trailer are clearly  
16 marked. A storage building is located within the perimeter fence, northwest of the basins. The LERF  
17 storage building also is provided with separate storage areas for clean and contaminated equipment. A  
18 decontamination shower is located at the 272AW Building, approximately 1 mile from the LERF or at the  
19 200 Area ETF.

20 The 200 Area ETF has eyewash stations and safety showers in convenient locations for use by personnel.  
21 The following structures and equipment were incorporated into the 200 Area ETF design to minimize  
22 personnel exposure.

- 23 • Offices, 200 Area ETF Control Room, clean- and soiled-clothes storage areas, change rooms, and  
24 the lunchroom are situated to minimize casual exposure of personnel.
- 25 • Building exit pathways are located to provide rapid egress in emergency evacuations.
- 26 • Emergency lighting devices are located strategically throughout the 200 Area ETF.
- 27 • Audio and/or visual alarms are provided for all room air samplers, area alarms, and liquid  
28 monitors. Visual readouts for these alarm systems are located in less contaminated areas to  
29 minimize exposure to personnel.
- 30 • Areas for decontaminating and maintaining equipment are provided in contaminated areas to limit  
31 the spread of contamination to uncontaminated areas such as the 200 Area ETF Control Room.
- 32 • Instrument interlock systems automatically return process operations to a safe condition if an  
33 unsafe condition should occur.
- 34 • The 200 Area ETF ventilation systems are designed to provide airflow from uncontaminated  
35 zones to progressively more contaminated zones.

36 Whenever possible, exposures to hazards are controlled by accepted engineering and/or administrative  
37 controls. Protective gear is used where effective engineering or administrative controls are not feasible.

### 38 **F.3 Prevention of Reaction of Ignitable, Reactive, and Incompatible Waste**

39 Aqueous waste managed at the LERF may display the characteristics of reactivity or ignitability. Any  
40 aqueous waste streams accepted at 200 Area ETF exhibiting these characteristics are immediately sent for  
41 blending or mixing at LERF to a concentration where the waste no longer exhibits characteristics of  
42 reactivity or ignitability. Aqueous waste streams exhibiting characteristics of ignitability or reactivity are  
43 not stored or treated at 200 Area ETF, or in the 2025ED Load-In Station and 2025EG Backup Load-In  
44 Station.