



## U.S. Department of Energy

Hanford Field Office  
P.O. Box 550  
Richland, Washington 99352

November 26, 2024

24-ECD-0177

Ms. Stephanie Schleif  
Program Manager  
Nuclear Waste Program  
Washington State Department of Ecology  
3100 Port of Benton Boulevard  
Richland, Washington 99354

Dear Ms. Schleif:

**SUBMITTAL OF REDLINE DOCUMENTS TO SUPPORT THE CLASS 2 PERMIT MODIFICATION REQUEST TO THE HANFORD FACILITY RESOURCE CONSERVATION AND RECOVERY ACT PERMIT FOR THE LOW-ACTIVITY WASTE PRETREATMENT SYSTEM, OPERATING UNIT GROUP 1**

This letter transmits redline documents to support the class 2 Permit Modification Request, PCN-LAWPS-2024-02 submitted under U.S. Department of Energy, Hanford Field Office letter 24-ECD-0155, for the Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion, Permit Number WA7890008967 (Revision 8C) for the Low-Activity Waste Pretreatment System, Operating Unit Group 1.

A sixty-day public comment period, started on October 7, 2024, for the permit modification request as required by WAC 173-303-830(4)(b)(iv). The notice of the start of public comment required by the permittees in WAC 173-303-830(4)(b)(v) was included in the appropriate Hanford Federal Facility Agreement and Consent Order publication or list server, as described in the Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion for the Treatment, Storage, and Disposal of Dangerous Waste, Revision 8C, Permit Condition I.C.3. The public meeting was held on October 30, 2024, per WAC 173-303-830(4)(b)(iv).

If you have any questions, please contact me, or you may contact Corey A. Low, Acting Assistant Manager for Safety and Environment, at (509) 376-4820.

Sincerely,

Brian T.  
Vance

Digitally signed by Brian  
T. Vance  
Date: 2024.11.26  
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Brian T. Vance  
Manager

ECD:DBC

Attachments:

1. LAWPS Addendum C,  
Process Information (Redlines)
2. LAWPS Addendum F,  
Preparedness and Prevention (Redlines)
3. LAWPS Part III OUG-1,  
Permit Conditions

cc w/attachs:

A. Buck, Wanapum  
L.C. Buelow, EPA  
C. E. Cameron, EPA  
L. Contreras, YN  
S. L. Dahl-Crumpler, Ecology  
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M. Murphy, CTUIR  
A. Smith, NPT  
M. Woods, Oregon DOE  
^Operating Record (HMIS)  
Administrative Record (TSD: TS-2-8)  
Ecology NWP Library  
Environmental Portal  
WRPS Correspondence

Attachment 1  
24-ECD-0177

Low-Activity Pretreatment System  
Addendum C Process Information  
(Redlines)

(40 pages including cover sheet)

**LOW-ACTIVITY WASTE PRETREATMENT SYSTEM  
ADDENDUM C  
PROCESS INFORMATION  
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. The log will serve as an up to date record of modifications and version history of the unit.

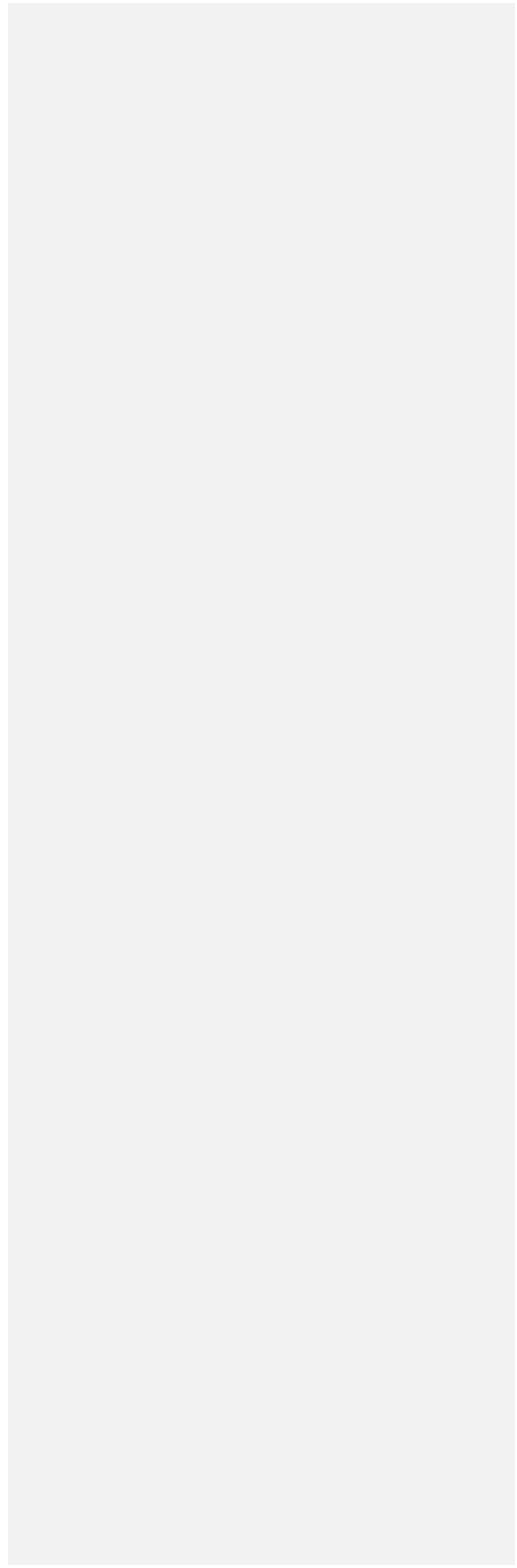
Modification History Table

<b>Modification Date</b>	<b>Modification Number</b>
06/13/2024	PCN-LAWPS-2024-01 (8C.2024.Q2)
02/28/2023	PCN-LAWPS-2022-02 (8C.2023.Q1)
09/17/2021	8C.2021.8F
01/29/2021	8C.2020.12F

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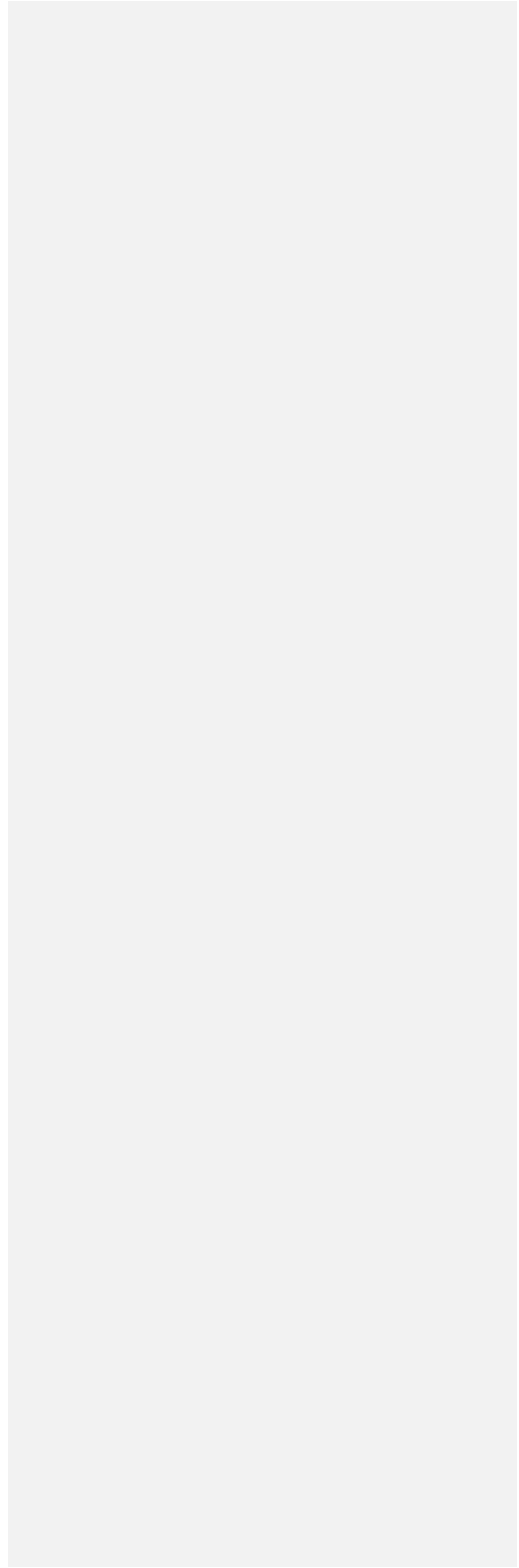
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**LOW-ACTIVITY WASTE PRETREATMENT SYSTEM  
ADDENDUM C  
PROCESS INFORMATION**



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**ADDENDUM C  
 PROCESS INFORMATION**

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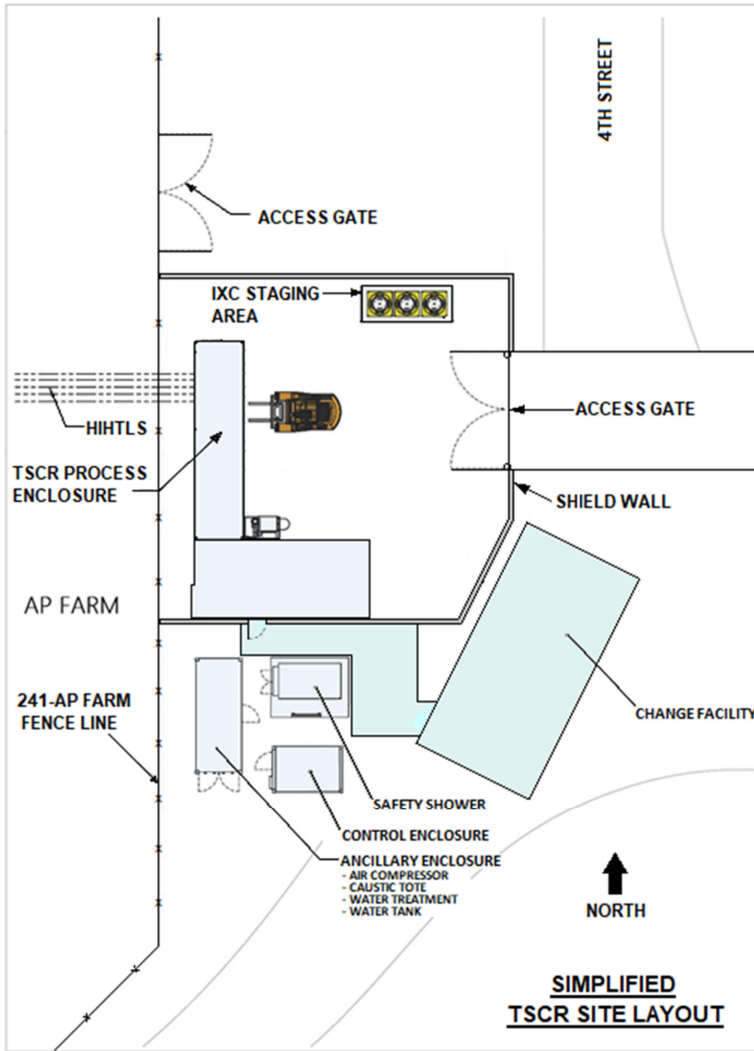
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**1 C PROCESS INFORMATION**

2 The Low-Activity Waste Pretreatment System (LAWPS) project encompasses two phases to provide the  
3 necessary throughput to support full operation of the Waste Treatment and Immobilization Plant (WTP)  
4 Low-Activity Waste (LAW) Facility. Phase One of the project will employ use of a single Tank Side  
5 Cesium Removal (TSCR) unit that will operate for approximately five years. Phase Two will follow at a  
6 later date and either use a permanent cesium removal capability or additional TSCR unit(s) to support  
7 sustained, long term WTP LAW operations.

8 This Addendum provides a detailed discussion of the LAWPS Operating Unit Group (OUG). The  
9 Addendum provides technical details to describe the design and construction of the TSCR system  
10 processes and equipment. The TSCR comprises a low-activity liquid mixed-waste tank storage and  
11 treatment system located in the 200 East Area of the Hanford site. The LAWPS OUG also includes two  
12 storage areas for Spent Ion Exchange Columns (IXC) that are generated during the treatment process. All  
13 LAWPS facilities are located immediately adjacent to the southeast corner of the 241-AP Tank Farm. The  
14 layout of the TSCR process area is shown on a simplified site plan in Figure C-1.

15 The supernatant waste treated in TSCR consists of aqueous phase liquids transferred from the  
16 241-AP Tank Farm for treatment prior to transfer to the WTP LAW facility for vitrification. The TSCR  
17 waste processing is controlled in a Control Room in 274AW (TSCR Control Enclosure remains available  
18 as backup, located immediately south of the TSCR Process Enclosure), which is staffed continuously  
19 during processing operations. The location of the Control Room in 274AW is shown in Figure C-2.  
20 Section C.2.8 describes the Monitoring and Control System (MCS) that is located within the Control  
21 Room in 274AW. The MCS controls and monitors the performance of TSCR process operations. When  
22 TSCR processing operations are not occurring, the Control Room in 274AW is not required to be staffed  
23 continuously.



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**Figure C-1 Tank Side Cesium Removal Process Area Site Plan**

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**C.1 Tank Side Cesium Removal Process Description**

The TSCR process flow diagram is provided in Figure C-3. Tank waste supernatant is transferred from Double-Shell Tank (DST) 241-AP-107 to the Process Enclosure where an approximately five-gallon

1 per minute feed portion is diverted through the TSCR process system via a flow control valve. The feed  
2 stream is then filtered through a vertically mounted filter before passing through IXC for cesium removal.  
3 Following cesium removal, the stream passes through a media trap designed to capture IX media in the  
4 unlikely event of an upstream screen failure in one of the IXC. The treated waste then proceeds through a  
5 delay tank, which is sized to provide adequate holdup allowing the metastable barium (<sup>137</sup>Ba-m) to decay  
6 so that gamma measurements can be made to ensure processing goals for cesium removal have been  
7 reached. After exiting the delay tank, the treated waste is then passed through two in-line gamma  
8 monitors to verify cesium removal before being routed to DST 241-AP-106 for storage and subsequent  
9 transfer to the WTP LAW facility for vitrification. Should the gamma monitors detect elevated cesium  
10 levels, the TSCR feed flow control valve is closed or may be diverted to DST 241-AP-108 prior to  
11 stopping waste processing. The balance of the feed stream not processed through TSCR is continuously  
12 recycled back to DST 241-AP-107.

13 The following is a summary of the LAWPS component operations contained in this section.

- 14 • 241-AP-107 Waste Feed and Recirculation Return (Section C.2): Feed is transferred from  
15 DST 241-AP-107 through a hose-in-hose transfer line (HIHTL) to the TSCR Process Enclosure.  
16 A separate HIHTL from the Process Enclosure returns the unused portion of the feed stream back  
17 to DST 241-AP-107.
- 18 • Filtration (Section C.2.1): Initial treatment of the feed stream occurs by vertically mounted filters.  
19 Filtration removes solids to protect the downstream IXC media bed from becoming fouled. Two  
20 filters are used, with one being off-line. When the online filter differential pressure exceeds a  
21 setpoint or an in-process time limit has been reached, the offline filter is placed into service and  
22 the online filter is taken offline for back-pulsing with compressed air and a caustic wash. The  
23 back-pulsed process waste stream is sent to DST 241-AP-108 via HIHTL. en back-pulsing and/or  
24 caustic washing are no longer effective, each filter can be replaced.

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**Deleted:** The on-line filter is taken out of service for back-pulsing with air as determined by differential pressure.

**Deleted:** During back-pulsing, the offline filter assumes the online function. Wh

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**Deleted:** Figure C-1 Tank Side Cesium Removal Process Area Site Plan

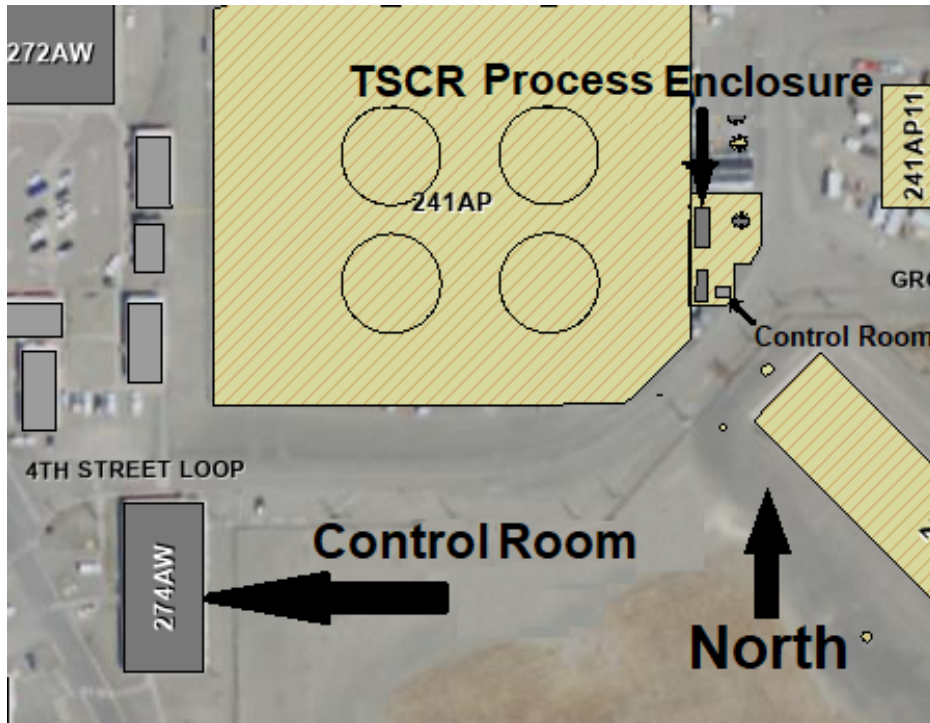


Figure C-2 Location of Control Room in 274AW

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- **Ion Exchange (Section C.2.2):** The filtered feed is passed through three IXC (lead, lag, and polish positions). The lead and lag columns remove the bulk of the cesium by adsorbing it onto crystalline silicotitanate (CST) IX media designed to preferentially remove cesium from high pH and sodium solutions. High pH of the waste is the result of carbon steel corrosion protection requirements in the DST system. Cesium removal continues until it is determined that the IX media becomes saturated to a point that cesium removal efficiency declines and cesium concentration passing through the columns rises above a pre-determined limit. The process will then be shut down, and the lead and lag IXC will be removed from service and replaced with fresh columns. The polish column then becomes lead for the next loading cycle.
  - **Gamma Monitoring and Treated LAW Transfer (Section C.2.3):** After exiting the lag/polish columns, the waste is routed through a media trap. This feature prevents escape of IX media from the columns in the unlikely event of IXC screen failure. Loss of media downstream would potentially render treated waste off specification for cesium. After passing through the media trap, the waste is then routed through a Delay Tank. The Delay Tank includes a baffled chamber and is sized to provide sufficient retention time to allowing the metastable barium ( $^{137}\text{Ba-m}$ ) to decay so that accurate gamma measurements can be made to ensure processing goals for cesium removal have been reached. Gamma monitoring is performed just downstream of the delay tank outlet. The treated supernatant is then transferred via HIHTL to DST 241-AP-106 for accumulation and subsequent transfer to the WTP LAW facility for vitrification.

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- 1 • IXC Change-Out (Section C.2.4): Following system shutdown, IXC change out is initiated by  
 2 displacing remaining LAW in all process components with dilute sodium hydroxide (NaOH),  
 3 which is followed by a water flush. This serves to de-inventory the TSCR Process Enclosure  
 4 establishing conditions necessary for personnel entry. Caustic and water flush solutions are  
 5 returned to DST 241-AP-108 via a HIHTL. After waste displacement and flushing, the columns  
 6 are bulk dewatered using compressed air. This effluent is also returned to DST 241-AP-108. The  
 7 columns are then dried for between one and four days using compressed air, which is vented to  
 8 DST 241-AP-108.
- 9 • Reagent, Water, and Service Air (Section C.2.5): The reagents necessary to support TSCR  
 10 operations are dilute NaOH and process water. NaOH is supplied by a tote and process water is  
 11 made up in the Ancillary Enclosure from potable water delivered by truck. Both are introduced  
 12 into the TSCR Process Enclosure via pumps. A compressor is used to supply service air for  
 13 remote valve actuation, filter back-pulse, sweep air, bulk water displacement from the columns,  
 14 and column drying. All three systems are in the Ancillary Enclosure which is south of the Process  
 15 Enclosure. The NaOH, process water, and compressed air systems are protected with a misroute  
 16 prevention system that ensures neither system can become cross contaminated by process waste  
 17 systems.
- 18 • Spent IXC Transfer and Storage (Section C.2.6): Once air dried, the columns are disconnected  
 19 and removed from the Process Enclosure with a forklift. During normal operations, the columns  
 20 are transported directly to the IXC storage pad where they are affixed to a mounting plate on the  
 21 pad. The mounting plate ensures the columns remain upright in a seismic event. Should a column  
 22 become externally radiologically contaminated during process operations and require  
 23 decontamination, or other corrective actions, it can be temporarily placed in the IXC staging area.  
 24 The IXC staging area can hold three columns that are affixed to mounting plates on the balance of  
 25 facility pad to ensure the columns remain upright in a seismic event. Once decontaminated, or  
 26 other corrective actions completed, a column or columns are removed from the IXC staging area  
 27 and transferred to the IXC storage pad via a dedicated concrete travel path.
- 28 • Process and Enclosure Ventilation (Section C.2.7): The TSCR Process Enclosure includes a  
 29 process ventilation system and a process drain system. Both discharge to DST 241-AP-108 via  
 30 separate dedicated HIHTLs. The process ventilation system remains closed during operations and  
 31 is only opened during column change-out after LAW displacement and flushing are completed.  
 32 The TSCR Process Enclosure also is equipped with a separate ventilation system that only  
 33 provides ventilation within the process area during manned entries into the enclosure. This  
 34 ventilation system is not operated during waste processing. Heating and cooling is provided for  
 35 process temperature control, and for manned entries into the enclosure.
- 36 • Process Control and Monitoring (Section C.2.8): The Control Enclosure and the Control Room in  
 37 274AW provide process controls through a MCS for TSCR and is manned at all times during  
 38 waste processing. The Control Enclosure remains available as backup and is located immediately  
 39 south of the Process Enclosure and is connected to the tank farms Control Room in 274AW. This  
 40 allows the Control Enclosure and Control Room in 274AW to receive leak detection signals from  
 41 the 241-AP Farm allowing process shutdown upon indication of a leak within the farm  
 42 connections to the TSCR Process Enclosure.

**C.2 241-AP-107 Waste Feed and Recirculation Return**

44 The TSCR Process Enclosure receives qualified feed from DST 241-AP-107. Feed qualification and  
 45 waste acceptance are discussed in detail in Addendum B, "Waste Analysis Plan." Supernatant will be  
 46 transferred to the Process Enclosure through a dedicated HIHTL at a flow rate of approximately  
 47 60 gallons per minute. Of the 60 gallon per minute feed stream, approximately five-gallons per minute  
 48 portion is diverted into the TSCR process system via a flow control valve with the remainder returned to

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1 DST 241-AP-107 via a dedicated return HIHTL. The feed stream is then filtered through a vertically  
2 mounted filter before passing through the IXC for cesium removal.

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3 The HIHTL feed and return lines represent one of the three process interfaces between the TSCR Process  
4 Enclosure and the 241-AP Tank Farm. The other two being the vent and drain HIHTLs between the  
5 Process Enclosure and DST 241-AP-108, and the treated LAW transfer HIHTL between the Process  
6 Enclosure and DST 241-AP-106. HIHTL layouts between TSCR and the 241-AP Tank Farm are shown  
7 on Figure C-7.

### 8 C.2.1 Filtration

9 Two filters are used, with one being in service and the other off-line. The on-line filter is taken out of  
10 service for back-pulsing with air approximately once per day, or if it reaches a high differential pressure  
11 beforehand. During back-pulsing, the off-line filter assumes the online function. When filter recovery is  
12 diminished as indicated by a more frequent high differential pressure readings over repeated backwash  
13 cycles, each filter can undergo a caustic wash or be replaced. The filters operate in up-flow with feed  
14 entering at the bottom and flowing up through the filter elements where solids are retained. Filtrate  
15 continues up through the filter element core into the top head where it exits out the filtrate nozzle and  
16 proceeds to the lead IXC.

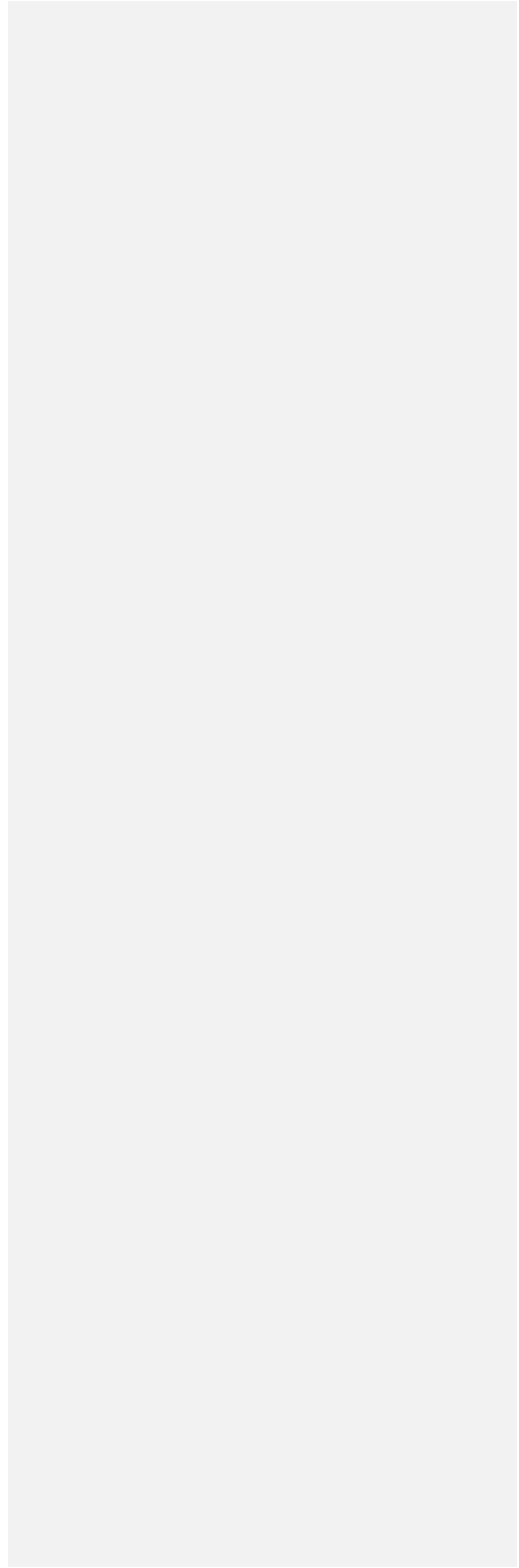
17 The MCS automatically and remotely aligns valves to bring the second filter online. Two filters are now  
18 operating in parallel for a short period while valves are then aligned to remove the first filter from service.  
19 The drain outlet valve is opened on the filter to be back-pulsed, which allows a small amount of liquid to  
20 drain from the filter. Most of the liquid is retained, particularly within the filter element interior core up  
21 through the top head because retained solids create a thin cake on the outside of the filters that inhibits  
22 liquid drainage. Then the air receiver outlet isolation valve is opened, discharging 20 gallons of air at  
23 70-80 pounds per square inch gauge (psig) into the filter top head.

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24 Expansion of air from the receiver forces liquid out of the top head, down through the filter elements and  
25 out the bottom head of the filter. Air, filtrate, and solids dislodged from the outside of the filter elements  
26 exit through the backwash outlet. Air, liquid, and backwash solids will continue into the drain manifold  
27 and are discharged through the HIHTL to DST 241-AP-108. The air receiver air capacity is sufficient to  
28 empty the contents of the filter and the HIHTL routed to DST 241-AP-108. After a backwash, the filter is  
29 virtually emptied of liquid. The filter is then filled with 0.1M NaOH and performs a soak to loosen any  
30 hard to remove particulates from the filter. After a period of time, the filter undergoes a second blowdown  
31 to remove the soak fluid and is again filled with 0.1M NaOH and placed in standby, awaiting to be  
32 brought online. Figure C-4 depicts a filter assembly.

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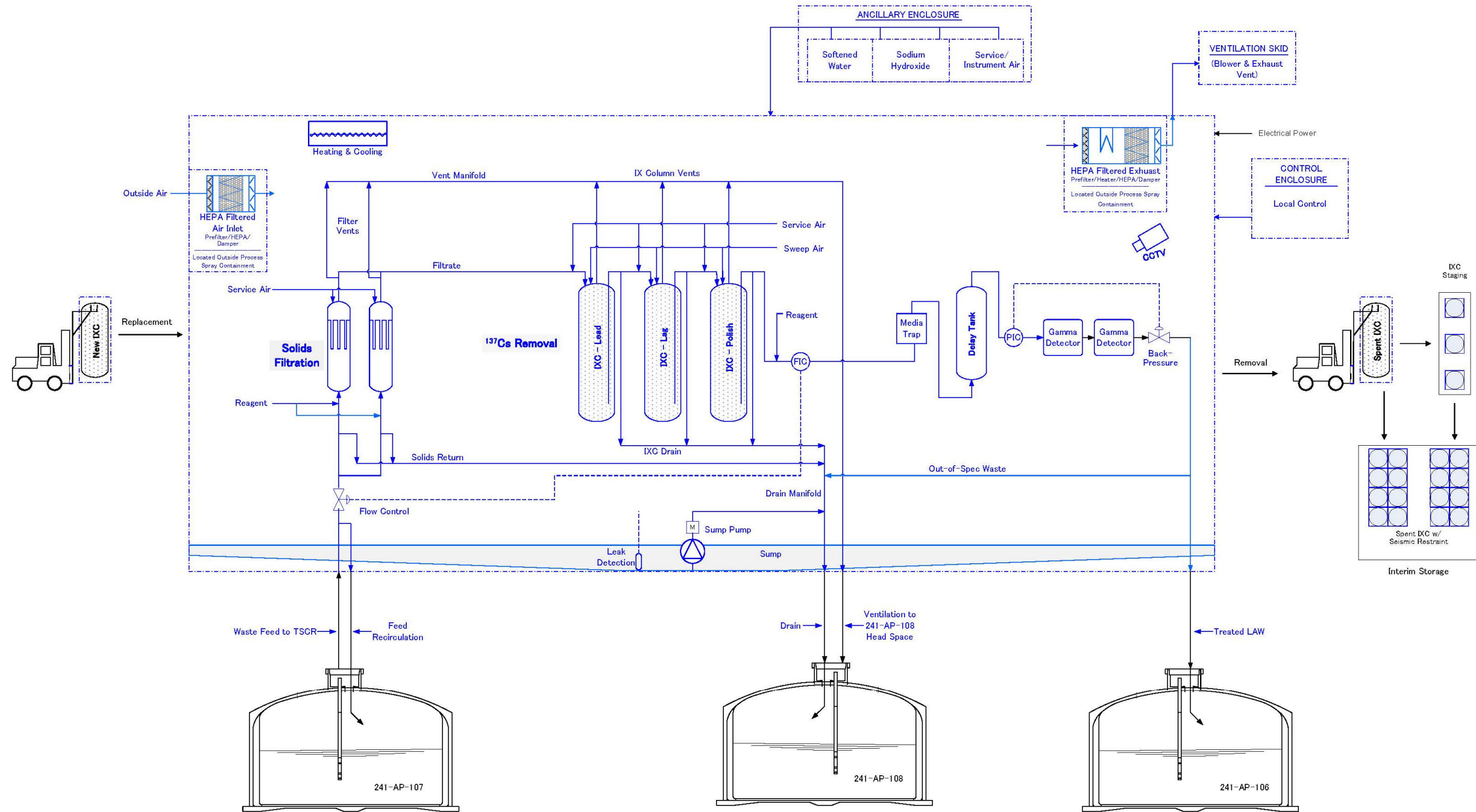


Figure C-3 Tank Side Cesium Removal Process Flow Diagram

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Figure C-4 Filter Assembly

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3 The filters have a five-year design life and include a shield assembly to facilitate filter replacement with  
4 minimal dose to workers. An outline of the replacement sequence is as follows:

5 **Backwash** – Backwash the filter (as previously described) and leave it completely empty of liquids.

6 **Vent** – The filter vent is opened eliminating pressure on the housing.

7 **Filter Disconnect** – A radiological survey is completed prior to any mechanical disconnects.  
8 Contamination control measures are performed after each hose disconnect to help prevent the spread of  
9 contamination.

10 Disconnect the mechanical joint on the filtrate nozzle of the selected filter. Disconnect mechanical joint  
11 on the inlet/drain nozzle of the selected filter.

12 Close the filter vent valve. The filter will be flushed, isolated, and removed per a work plan.

13 **Filter Removal and Installation** – The bay containing the filter to be removed is located on the inside of  
14 the enclosure, which requires the outer enclosure access door to be opened. The filter is then removed  
15 using a lifting yoke attached to a forklift. A new filter is then installed into the Process Enclosure  
16 followed by making inlet and outlet connections. After being filled, vented, and leak tested, the new filter  
17 will be ready for use.

### 18 C.2.2 Ion Exchange

19 The IXC removes Cs-137 from filtered waste using non-elutable CST IX media housed within three  
20 columns. The filtered feed is passed through three IXC (lead, lag, and polish positions). The lead and lag  
21 columns remove the bulk of the cesium by adsorbing it onto the CST IX media designed to preferentially  
22 remove cesium from high pH and sodium waste. Cesium removal continues until it is determined that the  
23 lead and lag IXCs become saturated to a point that cesium removal efficiency declines and the effluent

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1 cesium concentration rises above a pre-determined limit. The polish IXC will be brought online, and  
 2 waste processing will continue until the effluent waste cesium concentration rises to a pre-determined  
 3 limit. The process will then be shut down, and the lead and lag IXC will be removed from service and  
 4 replaced with fresh columns. The polish column then becomes lead for the next loading cycle.

5 The IXC lead/lag/polish cesium loading cycle is expected to take approximately 30 days depending on the  
 6 LAW feed characteristics and degree of media exhaustion in the lead (formerly polish position) IXC  
 7 when the loading cycle commences. IXC change-out will require approximately ten days of downtime; of  
 8 which, up to four days will be used for drying the spent IXC. However, should an increase in operational  
 9 efficiency be required to meet processing goals, drying can be completed in one day reducing the  
 10 downtime associated with column change-out.

11 When the treated effluent approaches the treated waste set-point, the lead and lag IXC are deemed  
 12 exhausted/loaded and are removed from service. Primary steps associated with IXC replacement are:

- 13 • Displacement of LAW with 0.1 M NaOH.
- 14 • Water rinsing of lead and lag columns to remove NaOH.
- 15 • Bulk dewatering with compressed air.
- 16 • Drying of lead and lag columns.
- 17 • Removal of lead and lag columns from system.

### 18 C.2.3 Gamma Monitoring and Treated Low-Activity Waste Transfer

19 After exiting the polish column, the treated waste is routed through a media trap. This feature prevents  
 20 escape of IX media from the columns in the unlikely event of IXC retention screen failure. Loss of media  
 21 downstream would potentially render treated waste off specification for cesium. After passing through the  
 22 media trap, the treated waste is then routed through a Delay Tank. The Delay Tank includes a baffled  
 23 chamber and is sized to provide adequate holdup time allowing the metastable barium (<sup>137</sup>Ba-m) to decay  
 24 so that gamma measurements can be made to ensure processing goals for cesium removal have been  
 25 reached.

26 TSCR is equipped with gamma monitoring instrumentation to ensure treated waste being transferred to  
 27 the downstream DST 241-AP-106 meets the WTP LAW acceptance criteria for cesium. There are two  
 28 gamma monitors in series designed and shielded to enable detection down to less than 1.8E-05 Ci/L,  
 29 which is approximately ten times below the WTP LAW acceptance criteria for cesium. The gamma  
 30 monitors are capable of measuring over a six-decade range and the in-series configuration improves  
 31 measurement reliability.

32 Treated LAW leaving the IXCs will have the lowest cesium concentration at the beginning of a loading  
 33 cycle and then trend up as loading continues. When the treated LAW approaches the gamma high set-  
 34 point, operators will initiate a system shutdown. The set-point is variable based on the feed tank sodium  
 35 concentration. Set-points for each campaign will be recorded and entered into the LAWPS OUG  
 36 Operating Record. If the gamma high-high set-point is reached, the TSCR system will automatically shut  
 37 down and divert the waste to DST 241-AP-108. Using knowledge of CST performance data, operations  
 38 personnel will be able to forecast the approximate time of lead/lag IXC exhaustion and have fresh IXC  
 39 ready to install in the lag and polish positions (previous polish position becomes the lead position). All  
 40 treated supernatant with acceptable gamma levels is automatically transferred to DST 241-AP-106 via the  
 41 system pressure provided by the 241-AP-107 feed pump.

### 42 C.2.4 Ion Exchange Columns Change-Out

43 The following steps are performed to remove waste inventory, place Process Enclosure in a safe standby,  
 44 and remove spent columns.

Deleted: polish column

1 **Waste Displacement** – After operations are stopped, 0.1 M NaOH is pumped through the same path that  
2 waste had previously been flowing to displace waste in the filters and IXCs, and effluent components  
3 (media trap and delay). The displacement solution (waste and 0.1 M NaOH) will exit from the delay tank  
4 into the drain manifold and discharge to DST 241-AP-108.

5 **Lead/Lag Column Rinse** – The two columns are rinsed with softened water that is discharged to DST  
6 241-AP-108 via the drain manifold and drain HIHTL.

7 **Column Blowdown/Sweep-Air** – The filters, IXCs, media trap, and delay tank are bulk dewatered with  
8 service air to the drain manifold.

Deleted: All three columns

9 **Air Drying of Lead/Lag IXC** – Drying air (service air) is started at > 30 standard cubic feet per minute  
10 (SCFM) per IXC, or > 60 SCFM total. Drying air will continuously flow through each ion exchange  
11 column for up to four days. As noted previously, drying can be accomplished in one day should  
12 operational needs require.

13 After drying, drying air is secured, IXC vents are opened, and IXC drain outlets are closed (the path  
14 drying air flowed to drain manifold is closed).

15 **Disconnect IXC and Establish Ventilation-Flow** – The following steps are completed to disconnect the  
16 IXC from the piping rack and establish confinement ventilation flow.

17 A radiological survey is completed to identify any changes in dose rates that may have taken place  
18 during IXC drying. After verifying the vent manifold pressure is below atmospheric, the outlet hose is  
19 disconnected and controlled to prevent spread of contamination. A “plug” is installed on the IXC outlet  
20 nozzle in preparation for removal and storage.

21 The next step involves removing the IXC inlet hose, controlled to prevent the spread of contamination,  
22 and installing a vent intake assembly on the inlet nozzle of the selected column that includes a filter. After  
23 isolating sweep air, the IXC vent hose and sweep air hose are disconnected and controlled to prevent  
24 contamination. A vent exhaust assembly that includes a filter is then installed on the vent nozzle of the  
25 IXC being removed and a gas sample port assembly is installed on the sweep air nozzle. The difference in  
26 vent height, air moisture content, and temperature between the intake and outlet filters will cause  
27 sufficient convective air flow through the IXC headspace to maintain the H<sub>2</sub> concentration below the  
28 Lower Flammability Limit (LFL). The IXC is now ready to be removed from the Process Enclosure.

29 **Move IXC from Process Enclosure to Storage Pad or Staging Area** – The following steps are  
30 completed to remove an IXC from the Process Enclosure for relocation to either the IXC staging area or  
31 IXC storage pad.

32 Radiological surveys are completed to ensure surfaces are sufficiently clean to allow outdoor IXC  
33 storage. If contamination above radiological limits is identified, then decontaminate the IXC and/or wrap  
34 it in an approved material to allow movement of the column to the IXC staging area for decontamination.

35 The Process Enclosure exterior door is opened in preparation for IXC removal. If contamination above  
36 radiological limits is identified, then decontaminate the IXC and/or wrap it in an approved material to  
37 allow movement to the IXC staging area where additional decontamination can be performed.

38 Using a forklift fitted with the IXC lifting yoke, the IXC is removed from the Process Enclosure as  
39 depicted in Figure C-5, and transferred directly to the nearby IXC storage pad where it is secured to a  
40 mounting plate.

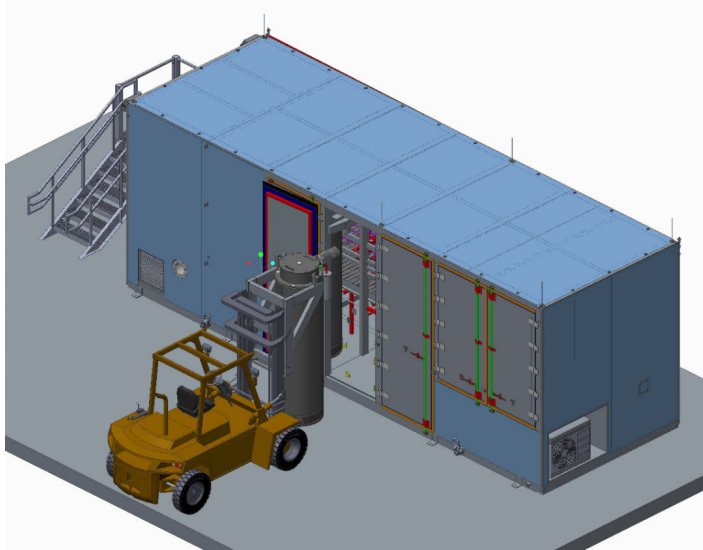


Figure C-5 Ion Exchange Columns Removal

Following IXC removal, the forklift installs a fresh column in the empty position. Hose connections for the inlet, outlet, vent and sweep-air from the valve rack to the IXC are then reconnected.

This process is the same for lead, and lag, (or in rare instances polish) column replacement. Once the new columns are in place and all connections are made, they are charged with process water and leak tested prior to resumption of waste processing.

### C.2.5 Reagent, Water, and Service Air

The reagents necessary to support TSCR operations are NaOH and process water. NaOH is supplied by a container and will be replenished by delivery. Process water is made up in the Ancillary Enclosure from potable water delivered by truck. The NaOH is combined in-line with the process water to produce dilute caustic, which is then introduced into the TSCR Process Enclosure via pumps. Prior to use, potable water is treated by a softener system. A compressor is used to supply service air for remote valve actuation, filter back-pulse, bulk water displacement from the columns, and IX media drying as part of change-out. All three systems are located south of the Process Enclosure in the Ancillary Enclosure. The NaOH, service air, and process water systems are protected with a misroute prevention system that ensures neither system can become cross contaminated by process waste systems.

### C.2.6 Spent Ion Exchange Columns Transfer and Storage

Under normal conditions, the forklift fitted with the IXC lifting yoke transfers a spent IXC from the Process Enclosure via a concrete travel path directly to the adjacent IXC storage pad where it is secured to a mounting plate. The IXC storage pad is sized to store 150 columns, which accommodates the expected generation rate of two columns per month for the projected five-year duration of TSCR (LAWPS Phase 1) operations with some added contingency space. Upon arrival on the storage pad, the IXC are affixed in place to a mounting plate that is secured to concrete slab embed plates. The IXC storage pad is fenced and locked except when staffed for operational activities. Refer to Figure C-6 for the IXC storage pad layout.

**Deleted:** ,  
**Deleted:** New IXCs are installed in reverse order of the connection sequence discussed above.

**Deleted:** dilute

**Deleted:** Both are

**Deleted:** transporting a column into place for storage

1 If contamination above radiological limits is identified during preparations for removal of a spent IXC  
2 from the Process Enclosure, the IXC can be wrapped and transferred to the IXC staging area where  
3 additional decontamination can be performed. The IXC staging area provides temporary storage and any  
4 spent IXC placed in this location will be moved to the IXC storage pad once any necessary corrective  
5 measures have been completed. The IXC staging area can accommodate three columns and is located  
6 within the Process Enclosure fenced area. Reference Figures C-1 and C-6 for the storage area layouts.  
7 Additional information regarding both container storage areas is provided in Section C.5.

### 8 **C.2.7 Process and Enclosure Ventilation**

9 There are two independent ventilation systems supporting TSCR operations; the Process Ventilation  
10 system, and the Process Enclosure ventilation system. Both are discussed separately in the following.

11 The Process Ventilation system consists of a vent collection header that connects the filters and IXCs.  
12 The vent header is routed through valves out of the Process Enclosure to the headspace of DST  
13 241-AP-108 via a dedicated HIHTL. The Process Ventilation system remains closed, ~~during~~ waste  
14 processing, ~~waste displacement and IXC rinse, bulk dewatering, and IXC drying activities. The eProcess~~  
15 ~~Ventilation System~~ opens upon process shutdown to support column or filter change-out and equipment  
16 maintenance. Air is used to maintain a flow from the process components to the DST headspace. In  
17 addition, the slight negative pressure is maintained by an eductor located upstream of the HIHTL  
18 connection. The eductor uses compressed air controlled by a manual flow control valve as the motive  
19 force and the vent line as the suction. The discharge is routed back to the vent line and DST 241-AP-108.

20 The TSCR Process Enclosure ventilation unit is used to provide fresh air prior to personnel entry for  
21 column and filter change-out or maintenance activities. The ventilation system is also operated during  
22 routine process operations ~~to provide heating~~ and cooling for the enclosure, to support process temperature  
23 requirements, and personnel comfort as necessary during manned entries. High efficiency particulate air  
24 filters on the fresh air intake and exhaust vent are only provided for equipment cleanliness within the  
25 enclosure. These filters are not credited for providing confinement ventilation.

**Deleted:** at all times while

**Deleted:** occurs and only

**Deleted:** (bulk dewatering and IX media drying)

**Deleted:** only

**Deleted:** typically

**Deleted:** immediately before and during personnel entries into the enclosure to provide fresh air to workers at a rate of a minimum of two air changes per hour. During

**Deleted:** the vent will not be operated. Heating

**Deleted:** will be provided by the internal recirculating heating, ventilation, and air conditioning units

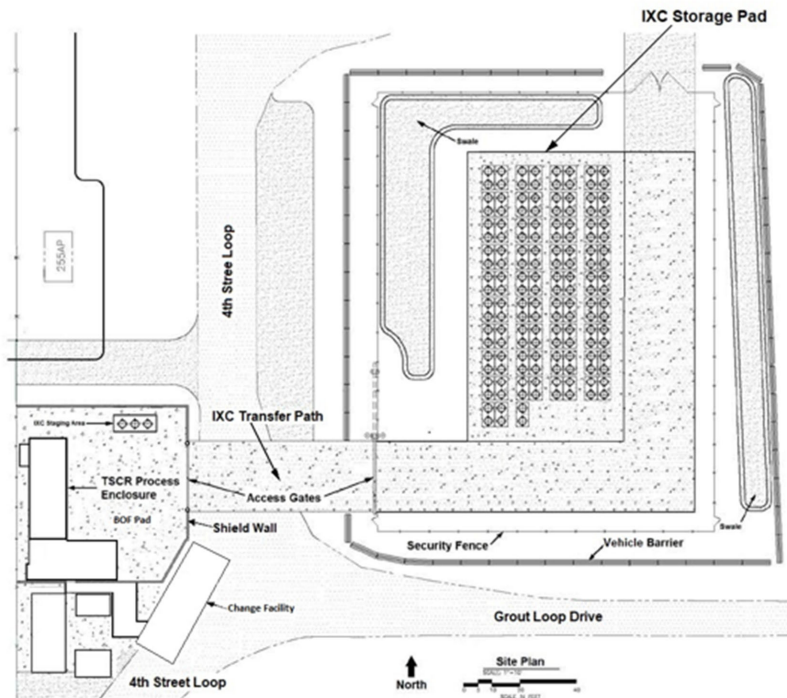


Figure C-6 Ion Exchange Columns Storage Pad Layout

**C.2.8 Process Control and Monitoring**

The Control Enclosure is a climate controlled, prefabricated office structure that serves as the backup TSCR control room. Primary process operations control, automated/remote maintenance evolutions (e.g., filter backwash, system flush, IXC blow-down, etc.), and ventilation system functions are controlled from the Control Room in 274AW. Capabilities include alarm monitoring and video monitoring of the process equipment that is facilitated via Human Machine Interface (HMI) and Programmable Logic Controller that controls all TSCR operations. The Control Enclosure (as the backup TSCR control room) also is interfaced with the Control Room in 274AW and receives leak detection signals from the 241-AP Farm, which allows shutdown on indication of a HIHTL leak detected by 241-AP Farm instrumentation.

Startup commences with start of 241-AP-107 feed pump AP07F-WT-P-001. Flow continues through a short recirculation-piping loop within the Process Enclosure then back to 241-AP-107. This recirculation loop contains flow control valve WP-FCV-306 that opens to a set point of five gallons per minute allowing waste to enter the process system components initiating waste treatment.

- Leak detection indication, whether from the Process Enclosure secondary containment or from AP Farm, activates an interlock or alarms allowing shutdown of process operations. The following pumps are stopped upon activation of a Process Enclosure leak detector: 241-AP-107 Feed Pump.

**Deleted:** shutdown sequence, in response to leak detection within the TSCR Process Enclosure sump, is as follows

**Deleted:** Pumps Stop.

- 1       • Caustic Pump (RA-P-130).  
2       • Potable Water Pump (RA-P-139).
- 3 A leak detection signal from the 241-AP Farm HIHTL ends activate an alarm in the Control Room in  
4 274AW (with TSCR Control Enclosure as a backup) and an interlock closes flow control valve  
5 WP-FCV-306, which stops processing.
- 6 The MCS provides for process monitoring, modulating control, and process interlocks, and sequencing.  
7 TSCR controls are integrated into the Tank Farm Local Area Network (TFLAN), and the primary  
8 operator interface is located at the Control Room in 274AW. A high level of automation is utilized to  
9 minimize direct operator interaction with TSCR and 241-AP Farm process operations. Instruments,  
10 including those for leak detection, differential pressure, temperature and flow are listed in Addendum I,  
11 "Inspection Plan." A detailed description of all warnings, alarms, set-points, and interlocks are provided  
12 in RPP-RPT-61220, *Control Logic Narrative* (as amended) included in Appendix 2.13.
- 13 The Control Enclosure is located south of, and outside, the TSCR Process Enclosure fenced area.  
14 Reference Figure C-1.

### 15 **C.2.9 Operation and Maintenance Procedures**

- 16 Procedures are used to perform work, maintain design integrity, protect the health and safety of people  
17 and the environment, and convey instructions to individual workers. Procedures include two types;  
18 administrative and technical.
- 19 Administrative procedures are not directly used to operate or maintain tank farm facilities or equipment.  
20 Collectively, administrative procedures describe a comprehensive set of controls, interactions, business  
21 practices, and communications deemed essential by management for the safe and efficient operation of  
22 the contractor, as well as to meet contractual and legal obligations.
- 23 Technical procedures are written to provide the appropriate instructions to ensure the facility is operated  
24 within its design basis and are used to support safe operation of the facility. They provide specific  
25 direction for operating or maintaining systems and equipment. They describe the process for production,  
26 operation, manipulation of equipment and facilities, or maintenance activities.
- 27 Technical procedures are developed for all anticipated operations, evolutions, tests, and abnormal or  
28 emergency situations. They are written from applicable source documents, such as specification  
29 requirements and vendor information. They are based on design controls (specification, drawings),  
30 operational controls (documented safety analysis reports, technical specifications), management controls  
31 (industrial safety, training), and experience (lessons learned programs). They are developed with  
32 emphasis on the human-factors aspect of their intended use.
- 33 Technical procedures focus primarily on accomplishing facility and activity level activities. They provide  
34 direction and information on how to accomplish the technical tasks associated with the full life cycle of  
35 performing work.
- 36 Technical procedures are defined as specific types, including but not limited to:
- 37       • Operating.
  - 38       • Emergency Response.
  - 39       • Abnormal Operating.
  - 40       • Alarm Response.
  - 41       • Functional Test.
  - 42       • Operator Rounds.
  - 43       • Operations Radiological Inspections.

- 1 • Industrial Hygiene Technician Procedures.
- 2 • Laboratory Technology/Analytical.
- 3 • Maintenance.

4 TSCR operations includes use of approximately thirty technical procedures to ensure waste processing  
5 and spent IXC storage are conducted in a manner that is protective of human health and the environment.  
6 Any problems or deficiencies noted are prioritized and tracked using the Rounds Action Tracking List  
7 (RATL). Additional detail on inspection schedules and remedies are provided in Addendum I,  
8 “Inspection Plan.”

9 Operations and maintenance procedures ensure appropriate controls and practices are in place to ensure  
10 the LAWPS Dangerous Waste Management Units will be operated in a safe and reliable manner that will  
11 not result in damage to regulated systems and components. These include the TSCR Process Enclosure,  
12 IXC Staging and Storage Areas, HIHTLs, and hard piped transfer lines.

### 13 C.3 Waste Transfer Lines

14 Waste transfer lines supporting the projected five-year duration of TSCR operations (LAWPS Phase 1)  
15 are of HIHTL type. Waste transfer lines conveying pretreated feed from the 241-AP Farm to the WTP  
16 interface point and WTP effluent returns back to the 241-AP Farm are of hard line pipe-in-pipe type. The  
17 following sections describe both waste transfer line types. For the purposes of this permit application, the  
18 two pipe-in-pipe transfer lines (241-AP-106 pretreated feed to WTP LAW and WTP Effluent  
19 Management Facility [EMF] condensate returns to DST 241-AP-102) are included to allow for design and  
20 installation of tie-in segments. Relevant design documents for the new portions of these two transfer lines  
21 are included in the design media Appendices 2.4 through 2.11. Relevant design documents for the  
22 existing portions of these two lines have been provided as supplemental information to this application.

#### 23 C.3.1 Hose-in-Hose Transfer Lines

24 Five HIHTLs support TSCR operations and include the following:

- 25 1. TSCR Process Enclosure to 241-AP-106 pretreated LAW transfer line.
- 26 2. TSCR Process Enclosure to 241-AP-107 feed recirculation line.
- 27 3. 241-AP-107 to TSCR Process Enclosure feed line.
- 28 4. TSCR Process Enclosure to 241-AP-108 drain line.
- 29 5. TSCR Process Enclosure to 241-AP-108 vent line.

30 Refer to Figure C-7 for a simplified HIHTL layout. HIHTL primary hoses have a nominal inside diameter  
31 of two inches with the secondary hoses having a nominal inside diameter of four inches. Hoses  
32 accommodate the end fittings for primary and secondary hoses on both the DST 241-AP Farm attachment  
33 points and TSCR Process Enclosure attachment points. HIHTLs have a three-year service life, after  
34 three years the lines will be replaced with another set of HIHTL. Anything beyond the approximately  
35 five-year duration of LAWPS Phase One will utilize hard walled piping. ~~Installed~~ HIHTL assemblies will  
36 be certified by an independent, qualified installation inspector or an Independent Qualified Registered  
37 Professional Engineer (IQRPE) prior to first receipt of waste. When HIHTLs are removed from service  
38 they will be correctly managed under the generator regulations in Washington Administrative Code  
39 (WAC) 173-303-170 through -230 and associated records will be filed in the LAWPS OUG Operating  
40 Record.

Deleted: Installation

1 Both primary and secondary hose tube material are constructed of ethylene propylene diene monomer  
 2 (EPDM) which meets the chemical compatibility requirements for use with Hanford tank waste. Braiding  
 3 reinforcement is provided to meet the pressure and tensile strength requirements identified for the hoses  
 4 with reinforcement material being fully encapsulated. Primary hose ends are fitted with a ChemJoint™<sup>1</sup>  
 5 coupling. Refer to Figure C-8 for a typical HIHTL configuration. The TSCR enclosure represents the  
 6 high point for the HIHTL and therefore, leak detection for all five HIHTLs occurs at the 241-AP Farm,  
 7 which is the low point of the lines. All efforts have been made to minimize low points which could hold  
 8 up waste between the TSCR enclosure and the AP tank farm. The leak detection has been designed to  
 9 detect a leak within 24 hours, minimum detectable leak rates are provided in Table C-6. The HIHTL will  
 10 be tightness tested in accordance with the required standards in Table C-3. Refer to Section C.6.3.2 for  
 11 additional detail regarding HIHTL secondary containment and leak detection. The following table  
 12 provides additional HIHTL attributes.

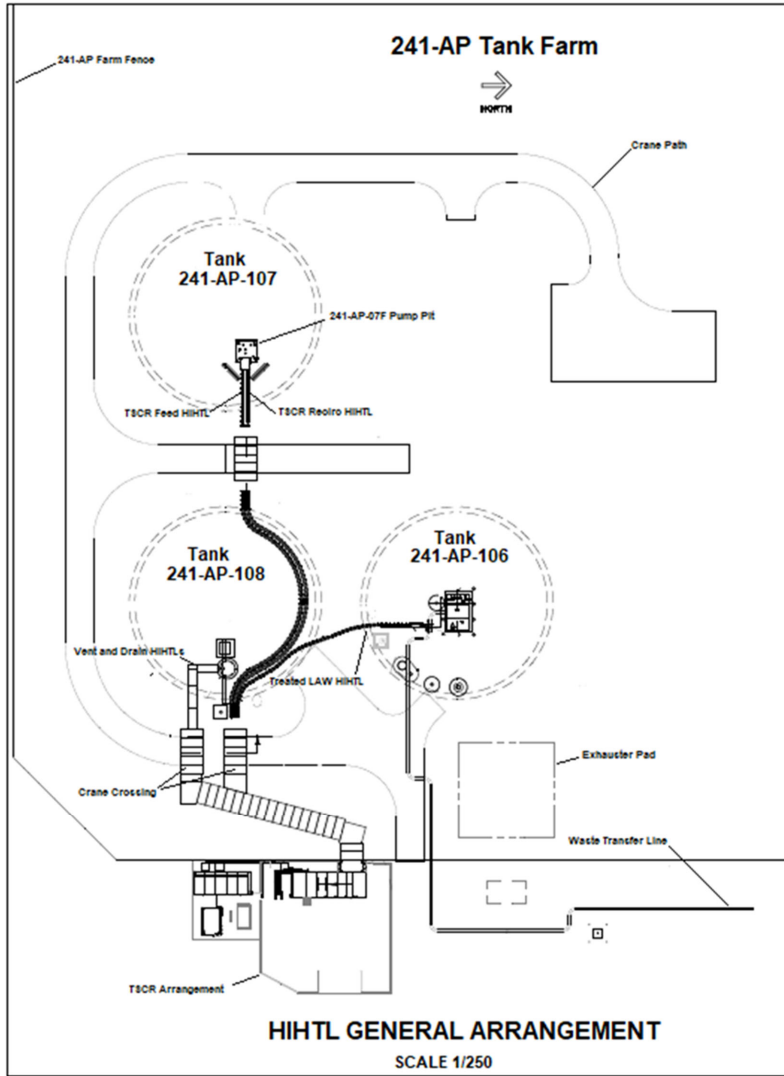
13 **Table C-1 Hose-in-Hose Transfer Lines Attributes**

HIHTL#	Line Number	Origination/ Connection	Destination/Connection	Length (ft.)*
1	HIHTL-AP106-SN-101	TSCR	241-AP-10P-106 Drop Leg, Riser 002	225
2	HIHTL-AP107-SN-102	TSCR	AP-07F Pump Pit, Drop Leg	315
3	HIHTL-AP107-SN-103	AP-07F Pump Pit	TSCR	315
4	HIHTL-AP108-SN-104	TSCR	241-AP-108 Drop Leg, Riser 015	165
5	HIHTL-AP108-SN-105	TSCR	241-AP-108 Drop Leg, Riser 015	170

\*Nominal length.

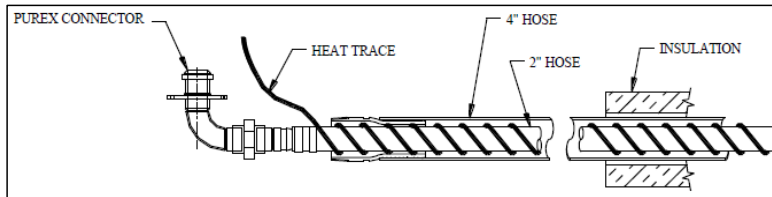
14

<sup>1</sup>ChemJoint is a trademark of Campbell Fittings, Inc., Boyertown, Pennsylvania.



1

Figure C-7 Simplified Hose-in-Hose Transfer Lines Layout



1 **Figure C-8 Typical Hose-in-Hose Transfer Lines Configuration**

2 **C.3.2 241-AP Farm to Waste Treatment Plant Interface Point Transfer Lines**

3  
4 As part of Project W-211, *Initial Tank Retrieval Systems*, three pipe-in-pipe waste transfer lines were  
5 previously installed between Tank Farms and WTP. These transfer lines were designed and originally  
6 intended to transfer full feed to the WTP Pretreatment Facility. A portion of two of the three transfer lines  
7 have been selected for use in the Direct-Feed Low-Activity Waste (DFLAW) program. One waste  
8 transfer line will convey pretreated waste feed from DST 241-AP-106 to the WTP LAW facility for  
9 vitrification. The second waste transfer line will convey secondary process effluent from the WTP EMF  
10 facility back to DST 241-AP-102. For the purposes of this permit application, the Tank Farms portion of  
11 both transfer lines ends at the WTP interface point (reference Figure C-9).

12 Both transfer lines utilize a significant portion of the existing WTP “full-feed” lines installed from the  
13 241-AP Farm to the WTP Pretreatment Facility as part of Project W-211. Figure C-9 provides a graphic  
14 representation of the approximate length of the utilized portion of the W-211 transfer lines.

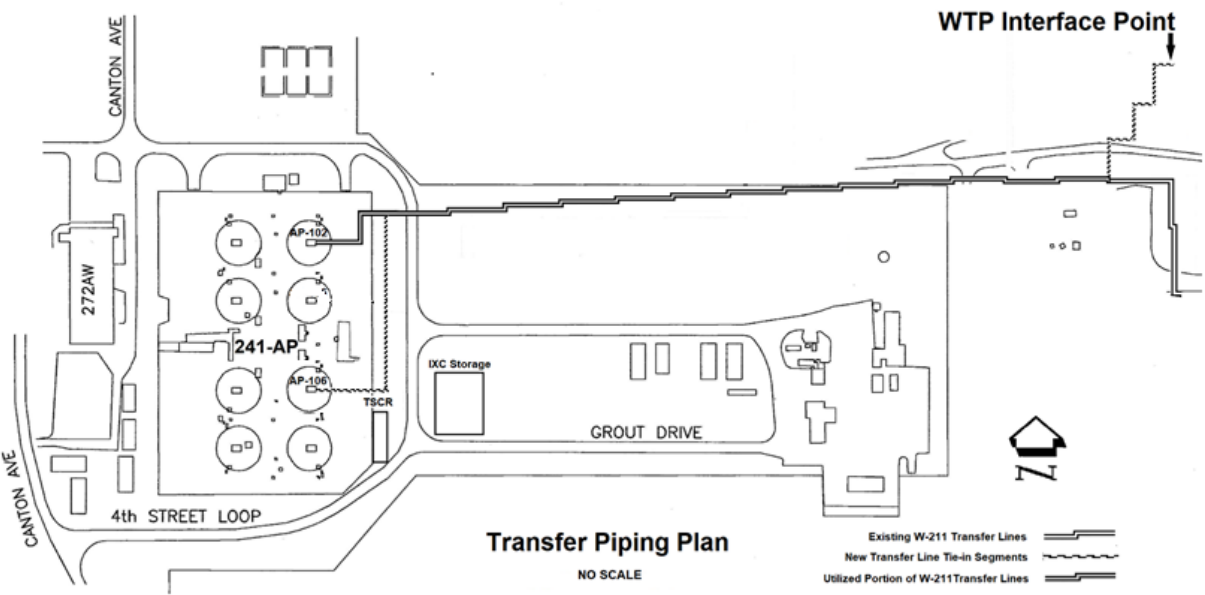
15 The three Project W-211 installed lines include SN-637, SN-700, and SN-701, with SN-637 selected for  
16 waste feed delivery to WTP, and SN-700 selected for EMF returns. A new segment from DST  
17 241-AP-106 was installed to the tie-in point at SN-637. This also required installation of a new segment  
18 from the SN-637 take-off point to the WTP Interface Point. The reverse was performed for EMF returns  
19 to DST 241-AP-102. A new segment was installed from the WTP Interface Point to the SN-700 tie-in  
20 point with the remainder of SN-700 being used to the AP-02D valve pit. Transfer line SN-701 will remain  
21 unused in the DFLAW configuration. The routing of the two modified transfer lines is shown on  
22 Figure C-9.

23 **C.4 Fire Suppression and Fire Alarm**

24 TSCR is not connected to the 200 East Area fire water supply system. However, the Process Enclosure is  
25 equipped with a fire suppression system supplied by a nitrogen driven water mist skid located within the  
26 Ancillary Enclosure. The system is activated by smoke detectors or manual pull stations. Upon activation,  
27 pressurized nitrogen drives water through the system. Inspection of fire system components is found in  
28 Addendum I, “Inspection Plan,” Table I-1. Nearby hydrants supplement fire suppression and also serve  
29 the IXC staging and storage areas. The Hanford Fire Department is equipped with fire engines for control  
30 of fires requiring high water volume and pressure.

31 LAWPS OUG facilities, including the spent IXC storage pad, rely primarily on the Hanford Fire  
32 Department to respond to fires and other emergencies as described in Hanford Facility Permit  
33 Attachment 4, *Hanford Emergency Management Plan*, (DOE/RL-94-02). The Hanford Fire Department  
34 provides all the necessary equipment and personnel to respond to emergencies. Operators will respond to  
35 emergencies in accordance with the LAWPS Contingency Plan (Addendum J) and are trained in the use  
36 of emergency systems, response to fires, and use of communications equipment.

Deleted: :



1 **Figure C-9 241-AP Farm to Waste Treatment Plant Transfer Piping Plan**

1 **C.5 Container Storage**

2 LAWPS OUG includes two container storage areas used to manage spent IXC. The first is the  
3 IXC Storage Pad located immediately east of the LAWPS facilities. The IXC storage pad is sized to store  
4 150 columns, which accommodates the expected generation rate of two columns per month for the  
5 approximate five-year duration of TSCR (LAWPS Phase 1) operations with some added contingency  
6 space. The storage pad could also accommodate media traps, should that waste form be generated during  
7 waste processing. The media trap is a contingency feature located just upstream of the delay tank and is  
8 designed to capture IX media in the unlikely event of a screen failure within an IXC that could result in  
9 IX media being released into the process stream. A media trap is a small component approximately  
10 17 inches by 3 inches that resembles a small cartridge filter.

11 Storage pad dimensions account for row and aisle spacing requirements in accordance with  
12 WAC 173-303-630(5)(c). The IXC storage pad is approximately 110 feet long by 75 feet wide, orientated  
13 in a north-south configuration. The reinforced slab is 12 inches thick with 30-inch turndowns to provide  
14 adequate load carrying capacity to meet seismic and loading requirements. The storage pad is connected  
15 to the Balance of Facilities (BOF) concrete pad (where the TSCR Process Enclosure resides), by a  
16 concrete travel path (reference Figure C-6).

17 The IXC staging area is located immediately adjacent to the TSCR Process Enclosure. This container  
18 storage area can accommodate three columns and is intended as a contingency location for columns that  
19 may require decontamination, or other corrective actions, prior to placement onto the IXC Storage Pad.  
20 The IXC staging area concrete slab is integral to the BOF slab and will be demarcated with striping and  
21 stanchions as appropriate. Refer to Section C.2.6 and Figures C-1 and C-6 for additional information on  
22 both container storage areas. Columns will remain in the IXC staging area for no longer than one year and  
23 may remain on the IXC storage pad for up to 50 years.

24 Both container storage areas are located within fenced and gated boundaries with access controls.  
25 Because the IXC will not contain free liquids and do not hold waste types listed in WAC 173-303-  
26 630(7)(c), secondary containment is not provided for either storage area. Both areas are sloped to remove  
27 liquids resulting from precipitation in accordance with WAC 173-303-630(7)(c)(i). The specifications and  
28 requirements for the design of both storage areas are found in RPP-SPEC-62054, *TSCR IXC Concrete*  
29 *Storage Pad System: Tank Farm System Infrastructure Upgrades Specification* and RPP-CALC-62547,  
30 *Structural Analysis of TSCR IXC Storage Pad* (both as amended).

31 Other secondary solid waste that results from the balance of process operations is considered newly  
32 generated waste that requires packaging for shipment, treatment if necessary, and disposal. Some waste  
33 may require treatment to address Land Disposal Restrictions prior to disposal.

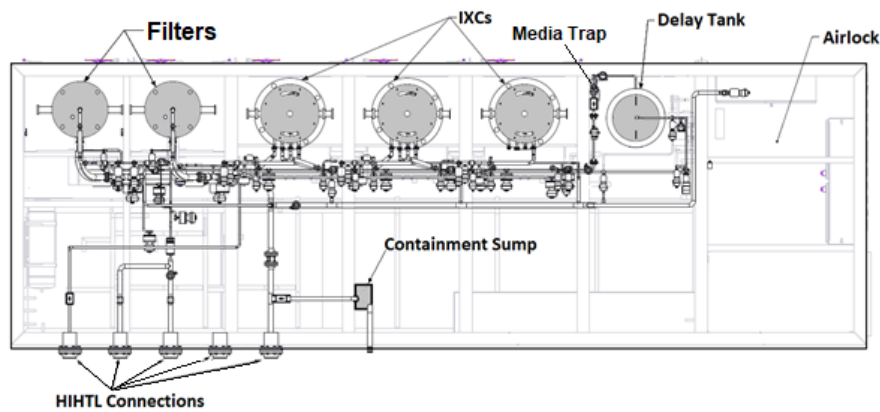
34 Secondary waste will be managed in accordance with the applicable sections WAC 173-303-200,  
35 accumulation standards and WAC 173-303-630, *Use and management of containers*. Secondary solid  
36 waste generated from LAWPS operations will not result in any unique waste forms requiring specialized  
37 packaging, transportation, treatment, and disposal considerations. Waste stream types generated from  
38 LAWPS operations may include, but are not limited to the following examples:

- 39
- 40 • Personal protective equipment/step-off pad waste.
  - 41 • Decontamination materials.
  - 42 • Spill cleanup materials.
  - 43 • Maintenance debris waste (e.g., tank waste contacted filters, valves and instruments).

44 In addition, satellite accumulation areas may be used as necessary for routinely generated dangerous  
waste in accordance with WAC 173-303-174.

**C.6 Tank Systems**

This section provides specific information on the TSCR tank system and includes discussion on the type of waste to be managed in the system, tank system design information, integrity assessments, and additional information on the TSCR tank system components that treat and store mixed waste. Modifications to the 241-AP Tank Farm beyond those described in this Addendum are not associated with the LAWPS OUG and are not included in this application. The TSCR Process Enclosure tank system components are discussed in Sections C.1 and C.2 and the locations of the tank system process components are presented in Figure C-10.



**Figure C-10 Tank Side Cesium Removal Process Enclosure Layout (Simplified Plan View)**

The primary TSCR tank system components are shown in Table C-2.

**Table C-2 Primary Tank Side Cesium Removal Tank System Components**

Component	ID Number	Function	Volume
Feed Filters (2)	WP-FLT-325A WP-FLT-325B	Solids Filtration	49.5 gallons
IXC (3)	WP-IX-400A WP-IX-400B WP-IX-400C	Cesium Removal	162.6 gallons
Media Trap	WP-RT-500	IX Media Confinement	0.25 gallons
Delay Tank	WP-TK-550	Barium Decay	300 gallons

## 1 C.6.1 Design Requirements

2 The following sections provide an overview of the design specifications for the TSCR tank system  
3 components. In accordance with the new tank system requirements of WAC 173-303-640(3), the  
4 following tank components and specifications were assessed:

- 5 • Dimensions, capacities, wall thicknesses, and pipe connections.
- 6 • Materials of construction and compatibility of materials with the waste being processed.
- 7 • Materials of construction of foundations and structural supports.
- 8 • Review of design codes and standards used in fabrication and construction.
- 9 • Review of structural design calculations, including seismic design basis.
- 10 • Waste characteristics and the effects of waste on corrosion.

11 A design assessment to establish compliance with WAC 173-303-640(3) has been performed and certified  
12 by an IQRPE. The design assessment reports found the tank system design in compliance with  
13 WAC 173-303-640(3).

14 The specifications and requirements for the design and fabrication of the TSCR tank system and ancillary  
15 equipment are documented in the following:

- 16 • TSCR specifications for design and fabrication are documented in RPP-SPEC-61910,  
17 *Specification for the Tank Side Cesium Removal Demonstration Project* (as amended).
- 18 • DST Project specifications for supporting infrastructure are documented in RPP-SPEC-60547,  
19 *Low Activity Waste Pretreatment System: Tank Farm System Infrastructure Upgrades*  
20 *Specification* (as amended).
- 21 • HIHTL specifications for design and fabrication are documented in RPP-14859, *Specification for*  
22 *Hose-in-Hose Transfer Line and Hose Jumpers* (as amended).
- 23 • Project W-211 transfer line specifications for the design and fabrication of the pipe-in-pipe  
24 transfer line components are documented in HNF-SD-W211-FDC-001, *Functional Design*  
25 *Criteria, Project W-211, Initial Tank Retrieval Systems* (as amended) and W-211-TP-P1,  
26 *Procurement Specification Double Containment Piping TFC/WTP Waste Transfer Piping*  
27 (as amended).
- 28 • DST Project specifications for the design and fabrication of the transfer line tie-in segments to the  
29 W-211 transfer lines are documented in RPP-SPEC-62029, *Waste Feed Delivery: Tank Farm*  
30 *System Infrastructure Upgrades Specification* (as amended).

31 ~~All the primary dangerous waste tank system treatment components in the TSCR Process Enclosure are~~  
32 ~~constructed of stainless steel. According to the design basis, it was determined stainless steel provides~~  
33 ~~adequate corrosion protection for these process components with a five-year design life.~~

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### 34 C.6.1.1 Codes and Standards for Tank System Design and Construction

35 Specific standards for the manufacture of TSCR process systems are briefly discussed in the following  
36 sections. In addition to these codes and industrial standards, a seismic analysis for each process system is  
37 required [WAC 173-303-806(4)(a)(xi)]. The seismic analysis was performed in accordance with  
38 Department of Energy (DOE) Order 420.1C.

39 Codes and standards applicable to the design, construction, and testing of the tanks, ancillary piping  
40 systems, and hose systems are established in Table C-3.

**Table C-3 Codes and Standards for Tanks and Ancillary Systems**

Code/Standard	Title
American Society of Mechanical Engineers (ASME) – B31.1 (latest edition)	<i>Power Piping</i>
ASME – B31.3 (latest edition)	<i>Process Piping</i>
ASME – Boiler and Pressure Vessel Code (latest edition)	<i>Rules for Construction of Pressure Vessels</i>
ASME – NQA-1A (Addendum A, latest edition)	<i>Quality Assurance Requirements for Nuclear Facility Applications</i>
American Welding Society (AWS) – D1.1/D1.1M (latest edition)	<i>Structural Welding Code – Steel</i>
AWS – D1.6/D1.6M (latest edition)	<i>Structural Welding Code – Stainless Steel</i>
National Association of Hose and Accessories Distributors (NAHAD) 500 (latest edition)	<i>Industrial Hose Assembly Specification Guidelines</i>
NAHAD 600 (latest edition)	<i>Composite Hose Assembly Specification Guidelines</i>
RMA IP-2 (latest edition)	<i>Hose Handbook</i>

1  
2 The application of these standards to the fabrication and installation of the TSCR tank system, transfer  
3 piping, and hoses, combined with independent verification of completed systems ensures that the tank and  
4 tank supports have sufficient structural strength and that seams and connections are adequate to ensure  
5 tank integrity. In addition, each tank system component will meet strict quality assurance requirements.  
6 Any tank system component constructed off-site will be tested for integrity and leak tightness before  
7 shipment to the Hanford Facility. Following installation, the systems will be inspected for damage to  
8 ensure against leakage and to verify proper operation. If a tank system component was damaged during  
9 shipment or installation, repairs will be made and leak tightness testing will be repeated onsite.

#### 10 **C.6.1.2 Design Information for Tank Side Cesium Removal and Transfer Lines**

11 The TSCR Process Enclosure and transfer lines (both hard pipe and HIHTL) will be constructed to meet a  
12 series of design standards, as discussed in the following sections. Table C-3 above presents the applicable  
13 design standards and codes for tank systems, and Tables C-4 and C-5 provide additional information on  
14 key ancillary equipment and materials of construction associated with the TSCR and waste transfer  
15 systems. All piping systems are designed to withstand the effects of internal pressure, weight, thermal  
16 expansion and contraction, and any dynamic flow. The design of these units have been evaluated in an  
17 engineering design assessment certified by an IQRPE. The certified design assessments are documented  
18 in three reports included in the LAWPS OUG Appendix 2.11. Follow-on integrity assessments, including  
19 frequency, will be established following completion of the design assessment.

20

**Table C-4 Materials of Construction and Design**

System	Number	Material	Design
Filters (2)	WP-FLT-325A WP-FLT-325B	316/316L Stainless Steel	Appendix 2.11
IXC 1	WP-IX-400A	316/316L Stainless Steel	Appendix 2.11
IXC 1	WP-IX-400B	316/316L Stainless Steel	Appendix 2.11
IXC 1	WP-IX-400C	316/316L Stainless Steel	Appendix 2.11

**Table C-4 Materials of Construction and Design**

System	Number	Material	Design
Media Trap	WP-RT-500	316/316L Stainless Steel Hastelloy® C-276 (screen)	Appendix 2.11
Delay Tank	WP-TK-550	316/316L Stainless Steel	Appendix. 2.11
TSCR Piping & Valves	Various	304/304L and 316/316L Stainless Steel	Appendix 2.11
TSCR Process Enclosure Secondary Containment (includes sump and pump)	N/A	Epoxy Coated Carbon Steel	Appendix 2.11
Misroute Prevention Secondary Containment	N/A	304/304L Stainless Steel	Appendix 2.11
HIHTLs (5)	HIHTL-AP106-SN-101 HIHTL-AP107-SN-102 HIHTL-AP107-SN-103 HIHTL-AP108-SN-104 HIHTL-AP108-SN-105	EPDM	Appendix 2.11
Pipe-in-Pipe Transfer Lines (primary) <sup>1</sup>	SN-637 SN-700	316/316L Stainless Steel (new) 304L (existing)	Appendix 2.8 Appendix 2.5

<sup>1</sup>Includes utilized portions of existing W-211 transfer lines and new tie-in segments.  
 Hastelloy® is a registered trademark of Haynes International.

1  
 2 **C.6.1.3 Integrity Assessments**

3 The initial design assessment for TSCR attests to the adequacy of design and integrity of the tank system  
 4 to ensure that the tanks and ancillary equipment will not collapse, rupture, or fail over the intended life  
 5 considering intended uses. Specifically, the assessment documents the following considerations:

- 6
- 7 • Standards used during design of the tank system.
  - 8 • Characteristics of the waste feed.
  - 9 • Adequacy of the materials of construction to provide corrosion protection from the solution in waste feed.

10 The results of the assessment demonstrate that the tank system and ancillary equipment have sufficient  
 11 structural integrity and are acceptable for storing and treating dangerous and/or mixed waste. The  
 12 assessment concludes that the tank system and ancillary components are designed to withstand a  
 13 design-basis earthquake.

14 If TSCR were to be operated longer than five years (current design life), a tank integrity assessment  
 15 program and schedule, to include a corrosion inspection program, if necessary, will be developed and will  
 16 include periodic follow-on integrity assessments. The frequency of follow-on integrity assessments will  
 17 be determined by the initial assessment and include considerations for age of the tank system, materials of  
 18 construction, characteristics of the waste, operating experience, and recommendations of the initial design  
 19 assessment. It is common for each of these tank types to be assessed on a frequency adequate to  
 20 determine if corrosion or other indications of deterioration is occurring. The tank integrity assessment  
 21 program and schedule will be developed and entered into the LAWPS OUG Operating Record prior to the  
 22 first receipt of waste.

1 **C.6.2 Additional Requirements for New Tanks**

2 Procedures for proper installation of tanks, tank supports, piping, concrete, etc., are included in  
3 construction specifications. During and following installation, an independent qualified installation  
4 inspector or an IQRPE will inspect the tanks and secondary containment in accordance with  
5 WAC 173-303-640(3)(c). Deficiencies identified are to be documented and a determination will be made  
6 as to repair/rework or use-as-is. All deficiencies requiring corrective action will be repaired to the  
7 satisfaction of the engineer. The tanks and ancillary equipment will be leak tested as part of acceptance of  
8 the system from the fabrication contractor. Information on the inspections and leak tests are to be  
9 included in the construction/installation certification, which will be entered into the LAWPS OUG  
10 Operating Record.

11 **C.6.3 Secondary Containment and Leak Detection**

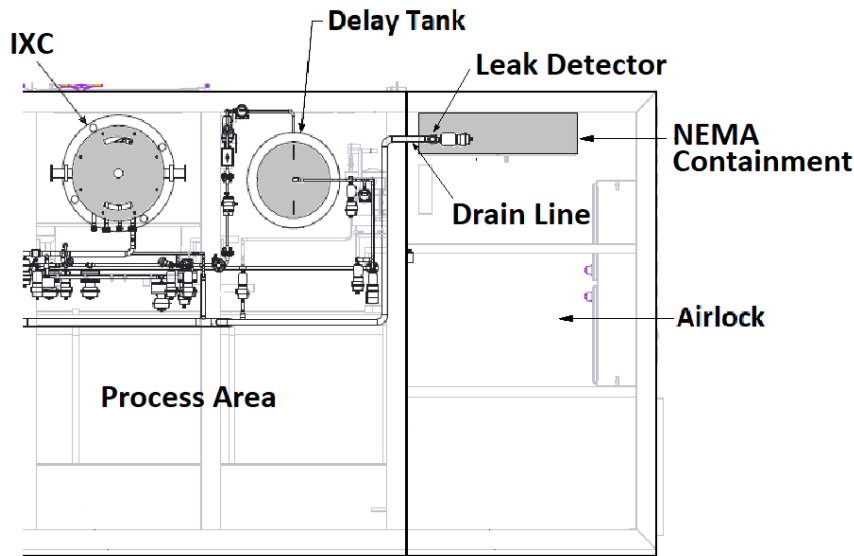
12 This section describes the design and operation of secondary containment and leak detection systems for  
13 the TSCR Process Enclosure and transfer lines (HIHTL and pipe-in-pipe).

14 **C.6.3.1 Secondary Containment for the Tank Side Cesium Removal Process Enclosure**

15 The TSCR Process Enclosure utilizes two secondary containment features; one that provides containment  
16 for all process area tank system components, and second system providing containment for the misroute  
17 prevention interface within the Process Enclosure airlock. The basis for sizing the secondary containment  
18 system in the TSCR Process Enclosure process area is documented in calculation RPP-CALC-62500,  
19 *Process Enclosure Secondary Containment Sizing* (as amended). Supporting design and construction  
20 specifications ensures the foundation is capable of supporting the tank and secondary containment  
21 systems and that uneven settling and failures from pressure gradients should not occur.

22 The TSCR Process Enclosure secondary containment system is integral to the process unit and underlies  
23 all tank system components within the structure. The system is designed to contain a leak from any  
24 process component within the Process Enclosure and is constructed of epoxy coated carbon steel. The  
25 underlying concrete foundation is designed with reinforcing steel. The concrete slab and footing  
26 dimensions preclude failure caused by load pressures and climatic conditions (e.g., frost heave).  
27 Established principles and techniques for structural analysis, soil mechanics, and concrete and structural  
28 steel design were used in the design calculations for the foundation and Process Enclosure structure. In  
29 each of the analyses, the major design criteria are established from the documents listed in Table C-5.

30 The second containment system is comprised of a National Electrical Manufacturers Association  
31 (NEMA) 4X rated liquid tight cabinet. The cabinet is constructed of stainless steel and houses reagent  
32 feeds (e.g., water, caustic, and service air) into the Process Enclosure process area. The cabinet provides  
33 containment in the unlikely event of waste misroute into any of the reagent feed lines. The cabinet is  
34 equipped with a drain line with a leak detector installed within the drain line above a closed valve.  
35 If the leak detector is activated, the valve automatically opens and drains any leaked liquids into the  
36 Process Enclosure drain manifold, which routes the leaked material directly to 241-AP-108.  
37 Reference Figure C-11 for the NEMA cabinet location.



1 **Figure C-11 National Electrical Manufacturers Association Containment Cabinet**

2 **Table C-5 Codes and Standards for Structural Systems**

Document	Title
DOE Order 420.1C (latest edition)	Facility Safety
International Building Code (IBC) 2015	International Building Code
American Concrete Institute (ACI) 301 (latest edition)	Standard Specification for Structural Concrete
ACI 318 (latest edition)	Building Code Requirements for Structural Concrete
ACI 349 (latest edition)	Code Requirements for Nuclear Safety-Related Concrete Structures and Commentary

3  
 4 The TSCR Process Enclosure secondary containment system is designed to contain 100 percent of the  
 5 volume of the largest tank within its boundary in accordance with WAC 173-303-640 (4)(e)(i)(A). The  
 6 300-gallon Delay Tank bound the necessary volume. RPP-CALC-62500, *Process Enclosure Secondary*  
 7 *Containment Sizing Calculation* documents the basis for this secondary containment sizing.

8 The total volume of the Process Enclosure secondary containment system is 432 gallons. The containment  
 9 system is sloped to a single low-point sump equipped with a leak detector and pump allowing for  
 10 detection and removal of any leaked waste. Leaked waste would be pumped from the secondary  
 11 containment sump through the drain manifold to 241-AP-108. Leak detection alarms are monitored in  
 12 accordance with Addendum I, "Inspection Plan."

13 TSCR has no outside dangerous waste storage or treatment tanks that require consideration of the  
 14 additional volume from a 25-year, 24-hour storm event [WAC 173-303-640(4)(e)(i)(B)].

1 **C.6.3.2 Secondary Containment and Operation of Transfer Lines**

2 All five HIHTLs are provided secondary containment by the outer encasement hose. The TSCR Process  
 3 Enclosure HIHTL connection represent the high point for all five lines, therefore, leak detection is  
 4 provided by low point instruments located at the 241-AP Farm connections. All the lines have been  
 5 designed to minimize low points between the TSCR enclosure and the AP Tank farm. However, due to  
 6 structures, required equipment travel routes in the farms or the need to shield the lines, there are some  
 7 localized low points. The following table identifies the location of low-point leak detection for each  
 8 HIHTL. A seven-gallon per hour leak can be detected in any of the five hoses within 24 hours.  
 9

**Table C-6 Secondary Containment for Hose-in-Hose Transfer Lines  
 and Hard Piped Transfer Lines**

# Transfer Line	Line Number	Destination/Connection	Leak Detector Location and Minimum Leak Rate to Detect in 24 Hours
1	HIHTL-AP106-SN-101	241-AP-106, Riser 002	Within Drop Leg, 4 g/hr
2	HIHTL-AP107-SN-102	AP-07F Pump Pit	Within Drop Leg, 7 g/hr
3	HIHTL-AP107-SN-103	AP-07F Pump Pit	Within Pump Pit, 7 g/hr
4	HIHTL-AP108-SN-104	241-AP-108, Riser 015	Within Drop Leg, 4 g/hr <sup>1</sup>
5	HIHTL-AP108-SN-105	241-AP-108, Riser 015	Within Drop Leg, 4 g/hr <sup>1</sup>
N/A	SN-637 (high point)	WTP ICD-30 interface point	EMF low-point drain, 0.5 g/hr
N/A	SN-637 (high point)	241-AP-106, AP-06A Pit	Within Pump Pit, 3 g/hr
WTP to AP Farm	SN-700	241-AP-102	EMF-low-point drain, 0.5 g/hr

<sup>1</sup>Leak rates are HIHTL-AP108-SN-104 and HIHTL-AP108-SN-105 are bounded by the 4 g/hr leak rate calculated for HIHTL-AP106-SN-101 as they are continuously sloped.

10  
 11 241-AP Farm leak detection signals are shared with the TSCR Process Enclosure allowing for shutdown  
 12 of process operations upon indication of a leak with any of the five HIHTLs (reference Section C.2.8).  
 13 The HIHTL primary hose can be flushed and air blown from the TSCR Process Enclosure back to the  
 14 tank the HIHTL is connected to. In the event any leaked waste from a primary hose to the secondary, that  
 15 material will be removed by compressed air and/or water flushing from the TSCR Process Enclosure end  
 16 back to the tank the HIHTL is connected to. This would require both primary and secondary hoses to be  
 17 disconnected from the Process Enclosure. Any compromised HIHTL would be removed from service and  
 18 replaced with a new one. Valves isolating the vent and drain manifolds remain closed when either  
 19 HIHTL-AP108-SN-104 or HIHTL-AP108-SN-105 is not in use. An educator using compressed air  
 20 maintains a negative on the vent manifold prior to removing IXC connections, which prevents vapors  
 21 from 241-AP-108 entering the TSCR Process Enclosure.

22 Secondary containment for hard-piped transfer lines are provided by the outer encasement pipe. Both the  
 23 241-AP Farm to WTP feed line and WTP EMF return line are sloped from the 241-AP Farm to the WTP  
 24 EMF facility, which is equipped with a low-point leak detector that provides indication of a leak. WTP  
 25 EMF leak detection signals will be provided to the DST Central Control room allowing for shutdown of  
 26 waste transfers upon indication of a leak within either transfer line.

1 A dedicated pipeline is used to transfer the DFLAW conditioned liquid effluent generated by TSCR to the  
 2 EMF. The feed line runs through EMF (for access to the low-point drain) to the LAW Concentrate  
 3 Receipt Vessel. The feed has undergone previous qualification to ensure it meets WTP acceptance. Upon  
 4 WTP approval of the Tank Operations Contractor's (TOC) request to transfer effluent, each facility verifies  
 5 ready to transfer/receive status, and TOC provides notification of start of transfer. During the transfer, the  
 6 TOC performs inline process monitoring and will stop the process in a fail-safe condition in the event of  
 7 an abnormal condition such as detection of a leak, removal of a permissive signal, or interlock. ~~The Leak~~  
 8 Detector for in the AP06A Pump Pit (AP06A-WT-WTL-SN-637) is monitored by the TOC during WTP  
 9 feed transfers through SN-637.

**Deleted:** by WTP

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**Deleted:** The 241-AP-106 feed tank leak detection instrumentation (Leak Detector AP-106-WT-LDE-006A) information for the transfer line is included in Addendum I, "Inspection Plan."

10 The TOC initiates shutdown of the 241-AP-106 transfer pump when the target transfer volume is reached  
 11 or a transfer/receipt permissive is removed. Following completion of the transfer, the TOC and WTP will  
 12 evaluate the anticipated schedule for the next effluent batch transfer. If no transfer is scheduled within the  
 13 next 14 calendar days, WTP will flush the transfer line to 241-AP-106 with an appropriate flushing media  
 14 (e.g., EMF process condensate, deionized water, raw water). Residual flush media will be permitted to  
 15 drain into the EMF Low Point Drain Vessel, after which the TOC and TOC transfer/receipt systems are  
 16 subsequently isolated until the next transfer. If the next transfer will be performed with 14 days, transfer  
 17 line flushing is not required. The same flushing process is used for the EMF to 241-AP-102 process  
 18 condensate return transfer line.

#### 19 C.6.4 Tank Management Practices

20 Tank management practices addressing rupture, leakage, and corrosion prevention are discussed as  
 21 follows.

22 Because TSCR treats DST system aqueous supernatant with a low solids content, this feed waste stream  
 23 can be managed such that erosion and corrosion is not a significant concern. Additionally, the materials of  
 24 construction used in the TSCR Process Enclosure, HIHTLs, and hard-piped transfer lines make it unlikely  
 25 that an aqueous waste would corrode a tank, hose, or piping materials.

26 Aqueous waste being processed through TSCR observed on, around or coming from mechanical  
 27 connections (e.g., Swagelok, ChemJoint, etc.) during batch processing within the process enclosure that  
 28 are insufficient in volume or rate to activate leak detection alarms within the TSCR process enclosure will  
 29 be visually monitored for volume change, documented on an inspection checklist, summarized in the  
 30 quarterly report required by Permit Condition III.1.J.7. During the next maintenance outage (normally  
 31 during an ion exchange column changeout), any waste deposited outside the processing system will be  
 32 cleaned up, properly disposed of in accordance with operating procedures and the system will be repaired  
 33 before restart of operation. Until properly cleaned up, a daily visual inspection will be conducted in  
 34 accordance with Addendum I, Table I-1, to verify the discovered waste would not lead to a leak in a tank  
 35 system component.

36 Should a leak in any tank system component activate the leak detection system, the leak is immediately  
 37 stopped by isolating the leaking component and removing the tank system component from service.  
 38 Following isolation, the requirements of WAC 173-303-640(7), incorporated by reference, are followed.  
 39 These requirements include repair or closure of the tank/tank system component preceded by removal of  
 40 any waste. Any major repairs require certification. If repairs are not practical or successful, the tank  
 41 system would undergo closure in accordance with Addendum H, "Closure Plan."

**Deleted:** be discovered,

42 External corrosion protection (i.e., cathodic protection) is not required for the TSCR Process Enclosure  
 43 tank system components as they are contained within an above ground structure and are not in contact  
 44 with soil or moisture. HIHTLs are protected from contact with soil or moisture with an exterior insulating  
 45 system. Hard-piped transfer lines are protected from external corrosion by a protective coating system.

##### 46 C.6.4.1 Overfilling Prevention

1 Because TSCR Process Enclosure tanks system components are designed and operated as a once-through,  
2 closed pressure vessel system, tank overfill controls and features are not applicable. The Control Room in  
3 274AW MCS monitors all processing parameters and is equipped with alarms that annunciate on any  
4 indication of system malfunction that includes alarms and interlocks to shut the system down.

#### 5 **C.6.5 Labels or Signs**

6 Each tank or primary process unit component (i.e., filters, IXC, etc.) in the TSCR Process Enclosure are  
7 identified by an attached nameplate that includes the equipment number. Additionally, the Process  
8 Enclosure will bear a legend that identifies the systems and waste in a manner that adequately warns  
9 employees, emergency personnel, and the public of the major risk(s) associated with the waste being  
10 stored or treated in the tank system.

11 Access to the fenced and gated TSCR Process Enclosure area, including the IXC staging area, is posted  
12 with black and white signs bearing the words "Danger–Unauthorized Personnel Keep Out." Signs are  
13 posted at each entrance gate to the facility. The same posting is affixed to the IXC storage pad gate and  
14 entrances. Individual IXC will bear labels in accordance with WAC 173-303-630(3). Refer to  
15 Addendum E, "Security," for additional information on signs and postings.

#### 16 **C.6.6 Management of Ignitable or Reactive Wastes in Tanks Systems**

17 TSCR treats aqueous waste that does not meet the definition of an ignitable or reactive waste in  
18 accordance with WAC 173-303-090(5). Therefore, design requirements, controls, and inspections  
19 associated with the management of ignitable or reactive waste are not applicable to TSCR. Additional  
20 information regarding qualification of TSCR feed waste acceptance criteria is found in Addendum B,  
21 "Waste Analysis Plan."

#### 22 **C.6.7 Management of Incompatible Wastes in Tanks Systems**

23 TSCR treats dilute solutions of aqueous waste that is mixed and sampled prior to receipt that pose no  
24 compatibility issues. TSCR Process Enclosure returns to the 241-AP Farm tanks will meet the  
25 DST System Waste Acceptance Criteria.

#### 26 **C.7 Organic Air Emissions Control**

27 This section addresses organic air emission standards per 40 Code of Federal Regulations (CFR) 264,  
28 Subpart AA (WAC 173-303-690) and Subpart BB (WAC 173-303-691). The requirements of  
29 WAC 173-303-690 (Subpart AA) are not applicable because TSCR does not perform distillation,  
30 fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations  
31 [WAC 173-303-690(1)(b)]. The requirements of WAC 173-303-691 (Subpart BB) are not applicable  
32 because aqueous waste with 10 percent or greater organic concentration is not accepted for treatment at  
33 TSCR.

#### 34 **C.7.1 Applicability of Subpart CC Standards**

35 The air emission standards of WAC 173-303-692 (40 CFR 264, Subpart CC) apply to tank, surface  
36 impoundment, and container storage units that manage wastes with average volatile organic  
37 concentrations equal to or exceeding 500 parts per million (0.05%) by weight, based on the hazardous  
38 waste composition at the point of origination. However, waste management units that are used solely for  
39 management of radioactive mixed waste are exempt [WAC 173-303-692(1)(b)(vi)]. Since only  
40 radioactive mixed waste is managed at the TSCR, these requirements are not applicable to TSCR  
41 operations.

#### 42 **C.8 Engineering Design Media**

43 Tabular listings and copies of Professional Engineer-stamped TSCR Process Enclosure, HIHTL,  
44 hard-piped transfer lines, and IXC storage areas design drawings, calculations and other documentation

1 reflecting the design submitted with this application package are provided in the LAWPS Appendices 2.4  
2 through 2.11.

x

Attachment 2  
24-ECD-0177

Low-Activity Pretreatment System,  
Addendum F Preparedness and Prevention  
(Redlines)

(11 pages including cover sheet)

**LOW-ACTIVITY WASTE PRETREATMENT SYSTEM  
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.

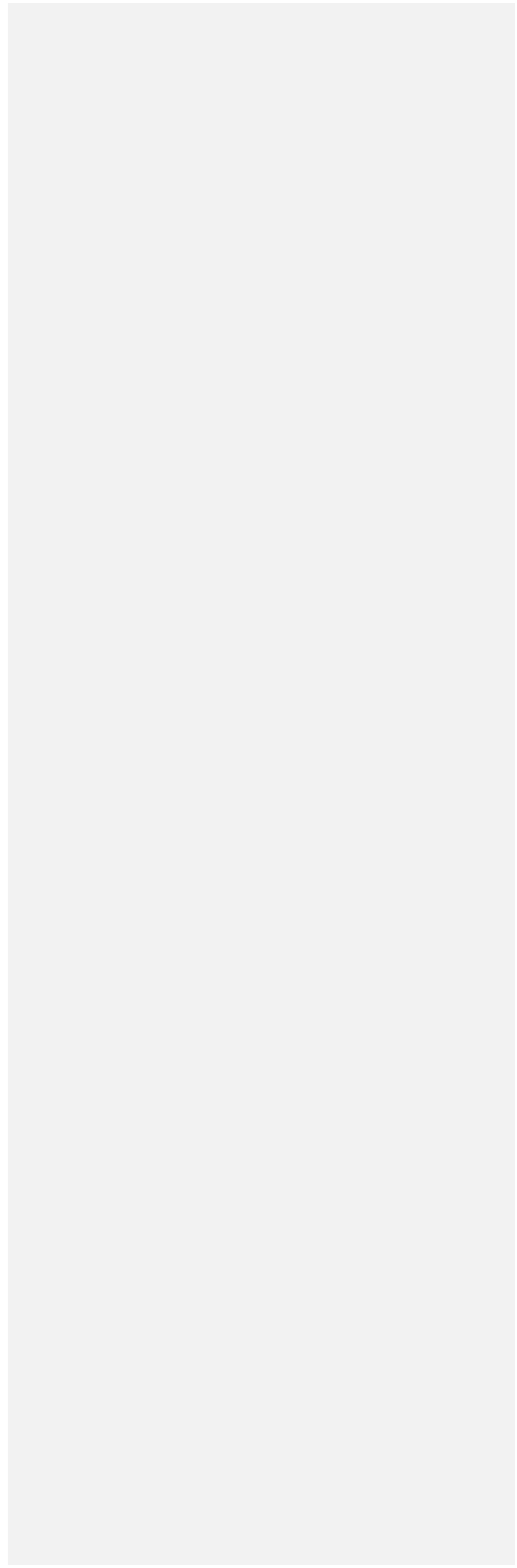
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01/29/2021	8C.2020.12F

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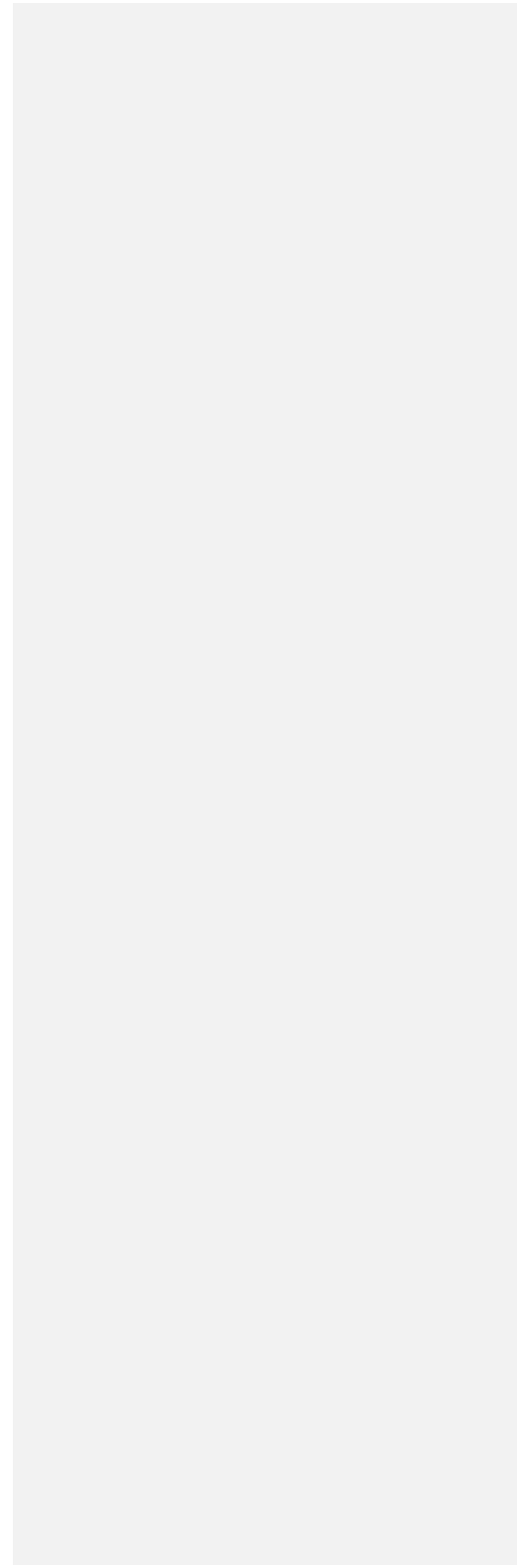
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**LOW-ACTIVITY WASTE PRETREATMENT SYSTEM  
ADDENDUM F  
PREPAREDNESS AND PREVENTION**



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**ADDENDUM F  
PREPAREDNESS AND PREVENTION**

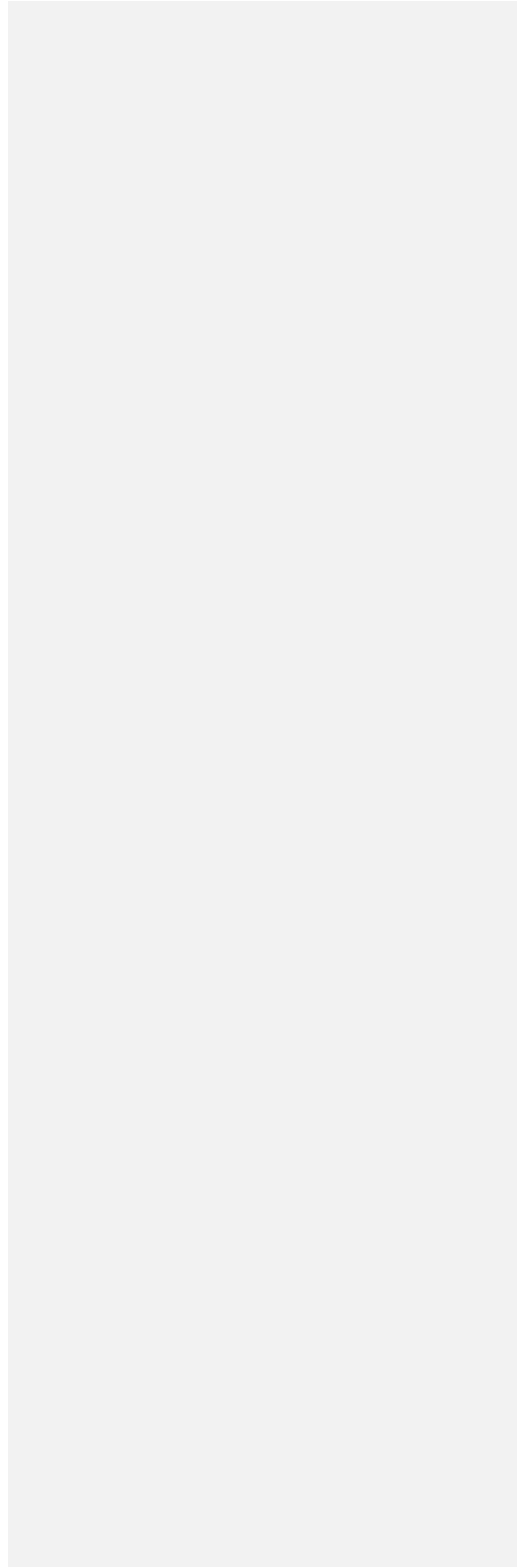
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1 **F PREPAREDNESS AND PREVENTION**

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

3 The following sections document the preparedness and prevention measures taken at the Low-Activity  
4 Waste Pretreatment System (LAWPS) Operating Unit Group (OUG), which includes the Tank Side  
5 Cesium Removal (TSCR) Process Enclosure, waste transfer lines, Ion Exchange Column (IXC) staging  
6 area, and IXC storage pad.

7 **F.1.1 Equipment Requirements**

8 The following sections describe the internal and external communications systems and the emergency  
9 equipment that could be activated by the Tank Farm Operations Building Emergency Director(s) (BEDs)  
10 or other responsible personnel as necessary. Personnel have immediate access to communications systems  
11 and emergency equipment during waste processing operations.

12 **F.1.1.1 Internal Communications**

13 Communication systems are used to provide immediate emergency instruction to personnel involved with  
14 waste treatment operations at the TSCR and IXC staging and storage areas. Communication systems  
15 include both personal equipment, such as two-way radios and cell phones, and facility alarms.

16 When operators are present at TSCR or either IXC storage area, they carry two-way radios to maintain  
17 contact with personnel. The operators are informed of emergencies (e.g., building and/or area  
18 evacuations, take-cover events, high airborne contamination, fire, and/or explosion), and are provided  
19 with emergency instructions by mobile two-way radios and telephones.

20 TSCR alarms provide immediate notice of emergency conditions to facility personnel and include alarms  
21 for fire, leak detection, and process abnormal conditions (e.g. automatic shutdown). Fire alarms are  
22 located on the TSCR Process Enclosure and Control Enclosure. Alarms associated with process  
23 operations annunciate in the Control Room in 274AW (TSCR Control Enclosure remains available as  
24 backup). Certain alarm activation results in notification to the Building Emergency Director. Additional  
25 detail regarding emergency response can be found in Addendum J, "Contingency Plan."

26 **F.1.1.2 External Communications**

27 Operations personnel are equipped with devices for summoning emergency assistance from the Hanford  
28 Fire Department, the Hazardous Materials Response Team, and/or Hanford Patrol, as necessary. External  
29 communication to summon emergency assistance is made by cellular telephones or two-way radios. The  
30 Process Enclosure and Control Enclosure are equipped with fire alarm pull boxes and personnel utilize  
31 cellular telephones for external communication, which would be necessary for an emergency at either  
32 IXC storage area.

33 **F.1.1.3 Emergency Equipment**

34 LAWPS facilities, including TSCR and the IXC storage areas, rely primarily on the Hanford Fire  
35 Department to respond to fires and other emergencies as described in Hanford Facility Permit  
36 Attachment 4, *Hanford Emergency Management Plan*, (DOE/RL-94-02). The Hanford Fire Department  
37 provides all the necessary equipment and personnel to respond to emergencies. Operators are familiar  
38 with the LAWPS Contingency Plan (Addendum J) and are trained in the use of emergency systems,  
39 response to fires, and use of communications equipment.

40 Spill control equipment, and decontamination equipment are available at locations identified in the  
41 LAWPS Contingency Plan. Addendum J provides additional detail on specific emergency equipment  
42 types and capabilities. The type of dangerous waste managed in the TSCR Process Enclosure and IXC  
43 storage areas do not require use of specialized extinguishing equipment.

1 Hazardous material protective gear and special work procedure clothing for operations personnel are kept  
2 in change rooms. A safety shower is located near the TSCR Process Enclosure, and emergency eyewashes  
3 are available for use. Water for these devices are replenished from the delivery of sanitary water.

#### 4 **F.1.1.4 Water for Fire Control**

5 TSCR is not connected to the 200 East Area fire water supply system, but will be equipped with a skid  
6 mounted fire suppression system that will provide a nitrogen driven water mist to the Process Enclosure  
7 in the event of a fire. In addition, the Hanford Fire Department is equipped with fire engines for control of  
8 fires requiring high water volume and pressure.

#### 9 **F.1.2 Aisle Space Requirement**

10 The IXC storage pad is subject to aisle spacing requirements of Washington Administrative Code  
11 (WAC) 173-303-630(5)(c). It is designed to be readily accessible to emergency response personnel and  
12 vehicles [WAC 173-303-340(3)]. This allows access by emergency responders by several means of  
13 approach. The IXC staging area is limited to three columns; therefore, aisle spacing is not applicable. This  
14 location is readily accessible to emergency response personnel as well.

15 Layout of LAWPS facilities also establishes equipment spacing that is sufficient to allow the movement  
16 of personnel and fire protection equipment in and around all portions of the facility. The facility general  
17 arrangement and layout also meets the requirements of the National Fire Protection Association for the  
18 protection of personnel.

### 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 Below-grade and above-grade portions of hose-in-hose transfer lines (HIHTLs) that convey tank waste to  
23 and from the TSCR Process Enclosure include secondary containment. If a leak is detected in a HIHTL,  
24 process operations will be stopped and the cause of the leak investigated and remediated. A more  
25 complete discussion of secondary containment is found in Addendum C, "Process Information."

26 The TSCR systems are monitored continuously during processing operations and filling and/or processing  
27 is stopped immediately if leak detection alarms or other upsets occurs.

28 Care is taken to ensure that even minor leaks in the process enclosure are cleaned up immediately upon  
29 entry and disposed of in accordance with operating procedures. Any clean-up material that is determined  
30 to be a dangerous waste will be managed according to the requirements of WAC 173-303.

31 Traffic and personnel access controls are employed during IXC change-out and transfer to the storage  
32 pad. The travel path is secured during transfers to ensure unimpeded and safe transfer of the spent  
33 columns from the Process Enclosure to placement on the storage pad. The IXC staging area is located  
34 within the fenced TSCR Process Enclosure area and does not require traffic control to place columns in  
35 this location.

#### 36 **F.2.2 Run-on**

37 As a tank storage and treatment system equipped with secondary containment and leak detection systems,  
38 the TSCR Process Enclosure is designed and operated to prevent run-on from infiltration of precipitation  
39 into the secondary containment systems in accordance with WAC 173-303-640(4)(e)(ii). Because the  
40 LAWPS IXC storage areas (both staging and storage areas) do not store waste with free liquids,  
41 prevention of run-on in accordance with WAC 173-303-630(7)(b) is not required. The spent IXC staging  
42 area and storage pad are sloped to remove accumulation of precipitation in accordance with  
43 WAC 173-303-630(7)(c)(i).

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1 **F.2.3 Water Supplies**

2 The TSCR design, operating practices, structures, and equipment prevent the contamination of natural  
3 water supplies (i.e., groundwater and surface water). The TSCR Process Enclosure is monitored  
4 continuously during liquid waste transfers and processing to detect abnormal conditions (e.g., leaks). In  
5 addition, inspections are performed according to Addendum I, "Inspection Plan," to detect equipment and  
6 structural deteriorations that could allow possible water supply contamination. Addendum J,  
7 "Contingency Plan," provides information on procedures that are implemented if a release is detected.

8 There are no drinking water wells near the TSCR Process Enclosure and IXC storage areas, and waste  
9 transfer lines. Therefore, a release would not immediately contaminate drinking water supplies. The  
10 LAWPS OUG uses operating practices, structures, and equipment to prevent the contamination of natural  
11 water supplies (i.e., groundwater and surface water).

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

13 The storage function of the TSCR tank system and IXC are not affected by the loss of power and a loss of  
14 power would not pose a threat to the environment. Loss of electrical power would not cause the storage of  
15 the waste in either the Process Enclosure or IXC storage areas to be compromised. During loss of power,  
16 the affected pumps and subsystems will be shut down, including TSCR process operations.

17 If power at TSCR is lost, the Process Enclosure valves assume a fail-safe open position allowing waste to  
18 drain back to the 241-AP Tank Farm. This ensures the Process Enclosure remains in a safe shutdown  
19 mode until restoration of power. This action allows the operators to investigate and confirm that there are  
20 no safety related issues as a result of shut down.

21 A combination of reliability, redundancy, maintenance, and repair features are used in the TSCR  
22 equipment and systems to minimize random failure of equipment. Spare parts are maintained for essential  
23 production operations and safety equipment.

24 **F.2.5 Personnel Exposure**

25 Operating practices, structures, and equipment are used to prevent undue exposure of operations  
26 personnel to dangerous and/or mixed waste. All operations are conducted so that exposure to dangerous  
27 and/or mixed waste and hazardous materials are maintained As Low as Reasonably Achievable.

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

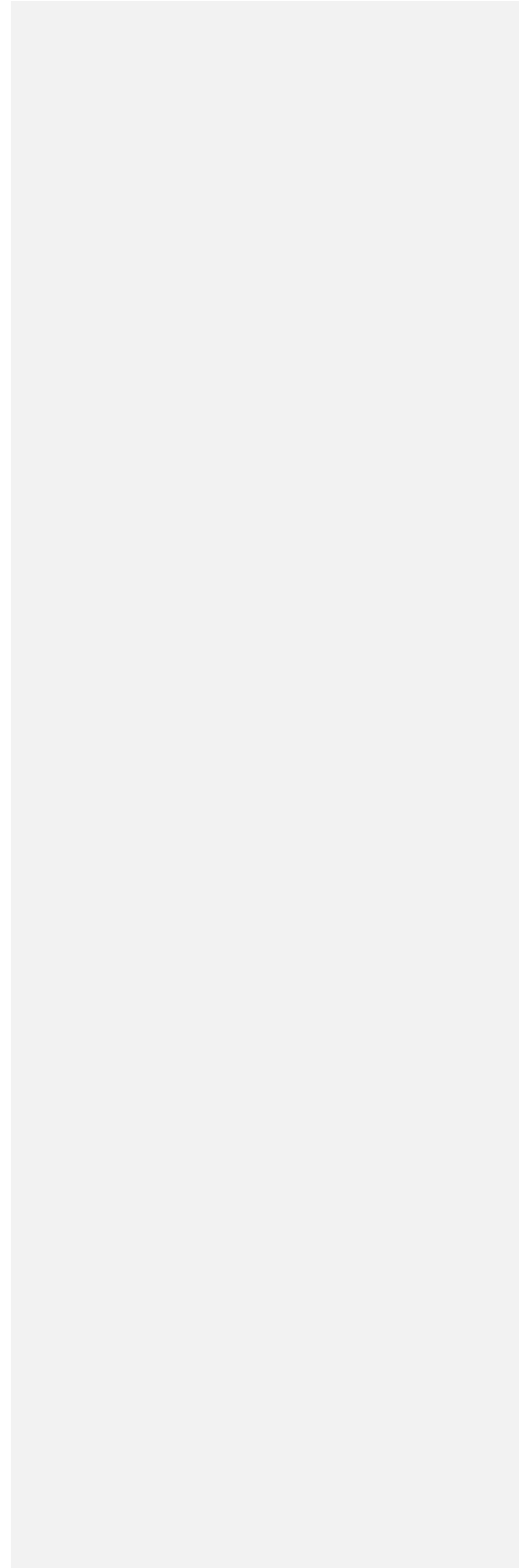
33 Whenever possible, exposures to hazards are controlled by accepted engineering and/or administrative  
34 controls. Protective gear is used where effective engineering or administrative controls are not feasible.

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

36 LAWPS OUG does not accept or manage ignitable, reactive, or incompatible waste. Therefore, the  
37 requirements of WAC 173-303-806(4)(c)(x), WAC 173-303-640(9) and (10), and WAC 173-303-395(1)  
38 do not apply.

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Attachment 3  
24-ECD-0177

Low-Activity Pretreatment System  
Part III, OUG 1, Permit Conditions

(29 pages including cover sheet)

**LOW-ACTIVITY WASTE PRETREATMENT SYSTEM  
PART III, OPERATING UNIT GROUP 1  
UNIT-SPECIFIC PERMIT CONDITIONS  
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.

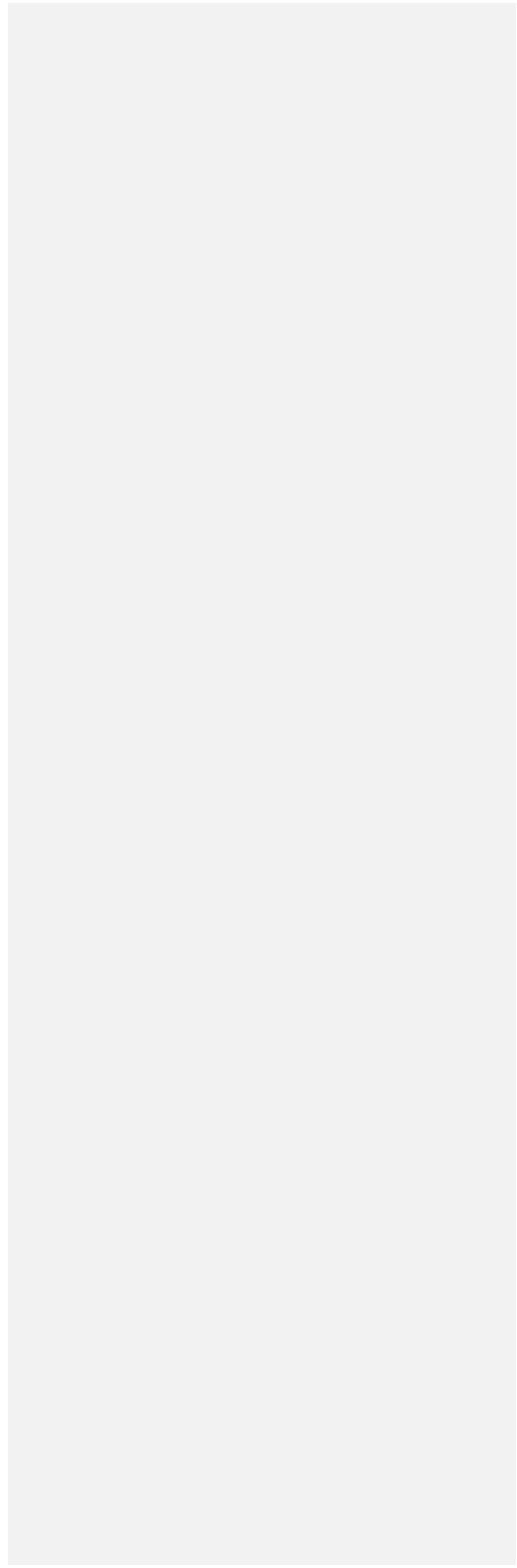
Modification History Table

<b>Modification Date</b>	<b>Modification Number</b>
02/28/2023	PCN-LAWPS-2022-02 (8C.2023.Q1)
09/17/2021	8C.2021.8F
01/29/2021	8C.2020.12F

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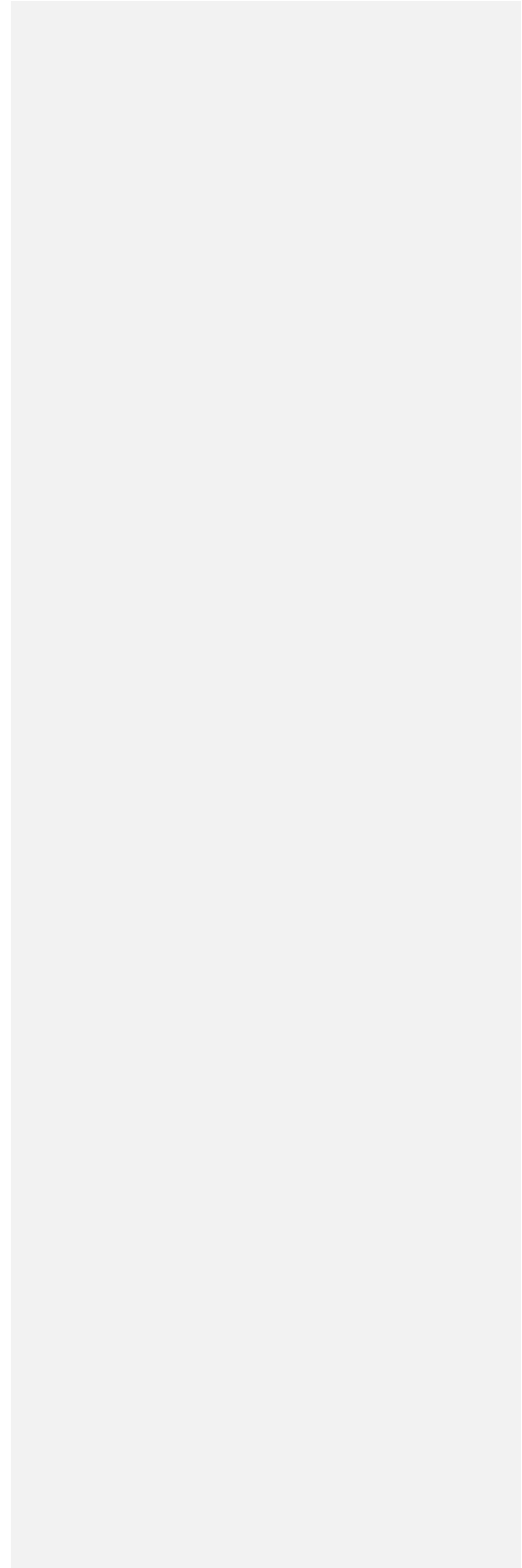
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**LOW-ACTIVITY WASTE PRETREATMENT SYSTEM  
PART III, OPERATING UNIT GROUP 1  
UNIT-SPECIFIC PERMIT CONDITIONS**



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1  
2 **PART III, OPERATING UNIT GROUP 1, UNIT-SPECIFIC PERMIT CONDITIONS**  
3 **LOW-ACTIVITY WASTE PRETREATMENT SYSTEM**  
4  
5

6 **UNIT DESCRIPTION**

7 The first phase of the Low-Activity Waste Pretreatment System (LAWPS) consists of the Tank Side  
8 Cesium Removal (TSCR) System. The TSCR comprises a Low-Activity Liquid Mixed-Waste Tank  
9 Storage and Treatment System. The facility also includes two storage areas for Spent Ion Exchange  
10 Columns (IXCs) that are generated during the treatment process.

11 TSCR is designed and operated to treat Double Shell Tank (DST) supernatant waste. The waste pretreated  
12 through TSCR is accumulated in DST 241-AP-106 for subsequent transfer to the Waste Treatment and  
13 Immobilization Plant (WTP) Low-Activity Waste (LAW) Facility for vitrification. TSCR is located  
14 immediately adjacent to the east side of the 241-AP Tank Farm in the 200 East Area of the Hanford site.

15 Construction of TSCR will begin in 2020 with waste management operations anticipated to begin in 2021.

16 This chapter provides unit-specific permit conditions applicable to the dangerous waste management units  
17 (DWMUs) for Phase 1 of LAWPS.

18 **LIST OF ADDENDA SPECIFIC TO OPERATING UNIT GROUP 1**

19 Addendum A Part A Form

20 Addendum B Waste Analysis Plan

21 Addendum C Process Information

22 Addendum D Reserved

23 Addendum E Security

24 Addendum F Preparedness and Prevention

25 Addendum G Personnel Training

26 Addendum H Closure Plan

27 Addendum I Inspection Plan

28 Addendum J Contingency Plan

- 1 **III.1.A COMPLIANCE WITH UNIT-SPECIFIC PERMIT CONDITIONS**
- 2 **III.1.A.1** The Permittees will comply with all permit conditions in this chapter with respect to  
3 dangerous waste management and DWMUs associated with the LAWPS, in addition to  
4 requirements in Permit Part I-Standard Conditions and Part II-General Facility  
5 Conditions of the Permit.
- 6 In the event that the Part III, Unit-Specific Permit Conditions for Operating Unit Group  
7 (OUG) 1, LAWPS conflict with the Part I and/or Part II Conditions of the Permit, the  
8 Unit-Specific Permit Conditions for OUG 1, LAWPS prevail.
- 9 **III.1.B GENERAL WASTE MANAGEMENT**
- 10 **III.1.B.1** Treatment or storage of dangerous and/or mixed waste in any new or modified portion of  
11 the facility may commence when the Permittees have submitted to Department of  
12 Ecology (Ecology), by certified mail, or hand delivery, a letter signed by the Permittees  
13 and signed and stamped by a registered professional engineer stating that the facility has  
14 been constructed or modified in compliance with the Permit in accordance with  
15 Washington Administrative Code (WAC) 173-303-810(14)(a); and
- 16 **III.1.B.1.a** The Permittee has received a permit modification approval pursuant to Permit Condition  
17 III.1.B.11, and
- 18 **III.1.B.1.b** Ecology has inspected the modified or newly constructed facility and finds it is in  
19 compliance with the conditions the Permit, or
- 20 **III.1.B.1.b.i** Within fifteen (15) days of the date of receipt of the Permittees' letter, Ecology has  
21 not notified the Permittees of intent to inspect.
- 22 **III.1.B.2** The Permittees are authorized to accept dangerous and/or mixed waste at the DWMUs in  
23 LAWPS that satisfy the waste acceptance requirements described in Addendum B,  
24 "Waste Analysis Plan." [WAC 173-303-300]
- 25 **III.1.B.3** The Permittees are authorized to treat and store dangerous and/or mixed wastes  
26 physically located in the DWMUs at LAWPS TSCR Process Enclosure, and IXC Storage  
27 and Staging Pads as of the effective date of this Permit, and wastes accepted for treatment  
28 and storage within the LAWPS according to the requirements of Permit Condition  
29 III.1.B.2.
- 30 **III.1.B.4** All dangerous and/or mixed waste must be managed only in areas authorized for  
31 dangerous and/or mixed waste management under the permit conditions, except as  
32 allowed under WAC 173-303-170 through -230. The authorized dangerous and/or mixed  
33 waste management areas of the LAWPS OUG are specified in Conditions III.1.B,  
34 III.1.M, III.1.N and III.1.O.
- 35 **III.1.B.5** Dangerous and/or mixed waste may be transferred from DWMUs within the LAWPS  
36 OUG to an on-site DWMU or an off-site permitted Treatment, Storage, or Disposal  
37 Facility using the manifest/tracking system required by Permit Condition II.P.
- 38 **III.1.B.6** The Permittees are authorized to treat and store dangerous and/or mixed waste in the  
39 DWMUs in LAWPS according to the following requirements:

- 1 **III.1.B.6.a** The Permittees are not authorized to store dangerous and/or mixed waste identified in  
2 LAWPS OUG 1 until Compliance Schedule Items LAWPS-1 and LAWPS-2 are  
3 completed in full, as detailed below.
- 4 • Permittees will submit a complete operating permit modification request for the  
5 LAWPS OUG, which will also include related AP Farm tank 241-AP-106,  
6 241-AP-107 and 241-AP-108 operational requirements to support the LAWPS  
7 operations. **[Complete 04/27/2021]**
  - 8 • Tri-Party Agreement Milestones will be in place for the long term treatment and  
9 disposal pathway of the IXCs and waste media. **[Complete 06/08/2021]**
- 10 **III.1.B.6.b** The Permittees are authorized to treat, and store as necessary, dangerous and/or mixed  
11 waste in the TSCR tank system as identified in LAWPS OUG 1, Addendum C,  
12 Sections C.1, C.2, and Section C.3.
- 13 **III.1.B.6.c** The Permittees are authorized to store dangerous and/or mixed waste identified in  
14 LAWPS OUG 1, Addendum C, Section C.5, in containers according to the requirements  
15 of this Addendum. All container management activities pursuant to this permit condition  
16 will take place within the container storage areas identified in LAWPS OUG 1,  
17 Addendum C, Figures C-1 and C-5.
- 18 **III.1.B.7** The Permittees must complete Compliance Schedule interim requirements as specified in  
19 OUG 1, Appendix 1.0. If an interim requirement is not completed as specified, the  
20 Permittees will, within 14 days, notify Ecology in writing of its non-compliance. The  
21 notification will include the following: LAWPS-1 **[Complete 04/27/2021]** and LAWPS-2  
22 **[Complete 06/08/2021]**.
- 23 **III.1.B.7.a** A description of any portion of the interim requirement completed;
- 24 **III.1.B.7.b** Summaries of any problems affecting timely completion of the interim requirement;
- 25 **III.1.B.7.c** A description of the plans for completing the remaining portion of the interim  
26 requirement, including any alternatives;
- 27 **III.1.B.7.d** Projected interim requirement completion date.
- 28 **III.1.B.8** A modified closure plan must be submitted as a permit modification request with a  
29 detailed description of the methods to be used during partial closures and final closure,  
30 including, but not limited to, methods for removing, transporting, treating, storing, or  
31 disposing of all dangerous wastes, and identification of the type(s) of DWMUs to be  
32 used, in accordance with Permit Condition III.1.K.2. **[WAC 173-303-610(3)(a)]**
- 33 **III.1.B.9** The Permittees will maintain the physical structure of the LAWPS as documented in the  
34 applicable section of LAWPS OUG 1, Addendum C, Section C.2. **[WAC 173-303-630(7),**  
35 **-640(3) and (4)]**
- 36 **III.1.B.10** The Permittees will maintain and operate systems for LAWPS documented in LAWPS  
37 OUG 1, Addendum C, as necessary for proper operation of LAWPS, compliance with the  
38 conditions of this Permit, and protection of human health and the environment. For  
39 purposes of this permit condition, the process control and monitoring system documented  
40 in Addendum C, Section C.2.8, is considered to include indicators, sensors, transducers,  
41 actuators and other control devices listed in Addendum I, Table I-1, that are connected to,  
42 but remote from, the Monitor and Control System (MCS) computer.

- 1 **III.1.B.11** Permit modifications pursuant to this Permit for dangerous and/or mixed waste at the  
 2 request of the Permittees must be done according to the three-tiered modification system  
 3 specified in WAC 173-303-830(4) and Permit Condition I.C.3. The permit modification  
 4 request must include page changes to the Permit, attachments, and permit application  
 5 supporting documentation necessary to incorporate the proposed permit modification.
- 6 **III.1.B.12** Treatment methods for secondary waste streams projected to be generated by the LAWPS  
 7 that are slated for disposal at the Hanford Site will be engineered to ensure that treated  
 8 secondary wastes will comply with the on-site disposal facility WAC and applicable Land  
 9 Disposal Restrictions (LDRs) prior to generation. Prior to treatment, secondary wastes  
 10 must be evaluated to ensure that selected treatment methods are still appropriate and  
 11 continue to comply with the on-site disposal facility WAC and applicable LDRs;
- 12 **III.1.B.12.a** The Permittees must assign LDR treatment standards for disposal of final waste forms for  
 13 appropriate waste codes, underlying hazardous constituents, and other information based  
 14 on the waste's original point of generation according to the applicable provisions of  
 15 40 Code of Federal Regulations (CFR) Part 268, incorporated by reference by  
 16 WAC 173-303-140. All waste forms subject to LDR standards must be demonstrated to  
 17 meet all applicable treatment standards and requirements (40 CFR 268, incorporated by  
 18 reference by WAC 173-303-140) prior to land disposal. For waste that has treatment  
 19 standards that are not concentration based, the generator and/or treatment facility must  
 20 demonstrate that the waste meets the applicable treatment standards using process  
 21 knowledge and/or by waste designation, as required by this Permit and the applicable  
 22 sections of WAC 173-303-140/40 CFR 268.
- 23 **III.1.B.12.a.i** Ecology has determined that the High-Level Waste Vitrification (HLVIT) treatment  
 24 standard is attached to this IX media waste in addition to the applicable  
 25 40 CFR 268.40 treatment standards for the dangerous waste codes other than D002  
 26 and D004-011 identified in association with the original point of generation of the  
 27 tank waste.
- 28 **III.1.B.12.a.ii** Treated waste IX media from IX columns must be disposed of in a deep geologic  
 29 repository.
- 30 **III.1.B.12.a.iii** The Permittees shall complete LDR certification paperwork in accordance with  
 31 40 CFR 268.7, incorporated by reference in WAC 173-303-140.
- 32 **III.1.C WASTE ANALYSIS**
- 33 **III.1.C.1** The Permittees will comply with all requirements of Addendum B, "Waste Analysis  
 34 Plan," for sampling and waste analysis of all dangerous and/or mixed waste within the  
 35 LAWPS DWMUs. [WAC 173-303-300(5)]
- 36 **III.1.C.2** The Permittees will have an accurate and complete waste profile as described in  
 37 Addendum B, "Waste Analysis Plan," for every feed qualification tank accepted for  
 38 treatment, and waste stream accepted for storage at the LAWPS DWMUs.  
 39 [WAC 173-303-300(2)]
- 40 **III.1.C.3** The Permittees will place a copy of each waste profile required by Permit Condition  
 41 III.1.C.2 in the Hanford Facility Operating Record, LAWPS OUG 1 file required by  
 42 Permit Condition II.I.1. [WAC 173-303-380(1)(a) and (b)]
- 43 **III.1.C.4** The Permittees will make a copy of the feed qualification characterization records  
 44 required by Permit Condition III.1.C.2 available upon request. [WAC 173-303-380(1)(a)  
 45 and (b)]

- 1 **III.1.C.5** Records and results of waste analysis required by Addendum B, "Waste Analysis Plan,"  
2 will be maintained in the Hanford Facility Operating Record, LAWPS OUG 1 file  
3 required by Permit Condition III.1.1. [WAC 173-303-380(1)(c)]
- 4 **III.1.C.6** Although generator information is used for all parts of the waste stream analysis required  
5 by WAC 173-303-300(2), the Permittee is responsible for the quality of the information.  
6 Inaccurate or inadequate information from the generator is not a defense for  
7 noncompliant management of waste stream at LAWPS DWMUs. [WAC 173-303-300(1)]
- 8 **III.1.D RECORDKEEPING AND REPORTING**
- 9 **III.1.D.1** The unit-specific portion of the Hanford Facility Operating Record will include the  
10 documentation specified in Permit Attachment 6, Permit Condition III.I, (applicable to the  
11 LAWPS OUG), and other documentation specified in OUG 1. Permit Attachment 6  
12 provides a list of required records, and the methods of submittal for the facility and each  
13 unit group. Records related to operations of 241-AP-106, 241-AP-107 and 241-AP-108,  
14 as they relate to LAWPS operations will be included in the LAWPS Operating Record.  
15 These specific records will be determined in the development of the LAWPS Operating  
16 Permit.
- 17 **III.1.D.1.a** Records required by WAC 173-303-380(1)(k), and -(o) incorporated by reference.
- 18 **III.1.D.1.b** Records and results of sampling or waste analysis and waste feed qualifications required  
19 by WAC 173-303-300, and Addendum B. [WAC 173-303-380(1)(c)]
- 20 **III.1.D.1.c** An inspection log summarizing inspections conducted pursuant to Permit Condition  
21 III.1.H.1. [WAC 173-303-380(1)(e)]
- 22 **III.1.E SECURITY**
- 23 **III.1.E.1** The Permittees will comply with the security requirements specific to LAWPS OUG 1, in  
24 Addendum E and Permit Attachment 3 as required by Permit Condition II.M.  
25 [WAC 173-303-310(2)]
- 26 **III.1.E.2** The Permittees will post warning signs at all entrances to the LAWPS OUG 1 DWMUs.  
27 [WAC 173-303-310(2)(a)]
- 28 **III.1.F PREPAREDNESS AND PREVENTION**
- 29 **III.1.F.1** The Permittees will implement the practices specific to the LAWPS OUG 1 as described  
30 in Addendum F, "Preparedness and Prevention." [WAC 173-303-340]
- 31 **III.1.F.1.a** The LAWPS fire protection system will consist of an Underwriters Laboratories-listed  
32 water mist system capable of being activated by a smoke detection system.
- 33 **III.1.F.1.b** The Permittees will equip the LAWPS with the equipment specified in LAWPS OUG 1,  
34 Addendum F, Section F.1.1.3.
- 35 **III.1.F.1.c** The Permittees will test and maintain the equipment specified in LAWPS OUG 1,  
36 Addendum F, Section F.1.1.3 as necessary to assure proper operation in the event of  
37 emergency.
- 38 **III.1.F.2** The Permittees will inspect the LAWPS to prevent malfunctions and deterioration,  
39 operator errors, and discharges that may cause or lead to the release of dangerous waste  
40 constituents to the environment, or a threat to human health. Inspections must be  
41 conducted in accordance with the LAWPS OUG 1, Addendum I, "Inspection Plan."
- 42 **III.1.F.3** The Permittees will maintain access to communications or alarms as provided in the  
43 LAWPS OUG 1, Addendum J, "Contingency Plan."

- 1 **III.1.G CONTINGENCY PLAN**
- 2 **III.1.G.1** The Permittees will comply with LAWPS OUG 1, Addendum J, “Contingency Plan,” in  
3 addition to the requirements of Permit Condition II.A when applicable. [WAC 173-303-  
4 350]
- 5 **III.1.G.1.a** The Permittees will immediately carry out applicable provisions of Permit Condition  
6 II.A.1 and the LAWPS OUG 1, Addendum J, “Contingency Plan,” whenever there is a  
7 release of dangerous and/or mixed waste or dangerous waste constituents, or other  
8 emergency circumstance, any of which threatens human health or the environment.
- 9 **III.1.G.1.b** After initial receipt of dangerous and/or mixed waste at the LAWPS, the Permittees will  
10 review and amend, if necessary, the applicable portions of LAWPS OUG 1, Addendum J,  
11 “Contingency Plan,” in accordance with the provision of WAC 173-303-350(5).  
12 Addendum J will be amended if necessary, as a permit modification pursuant to Permit  
13 Condition III.1.B.11. Only the portions of RPP-27869 *Building Emergency Plan for Tank*  
14 *Farms* (latest revision) applicable to the LAWPS OUG 1 are enforceable and subject to  
15 the provisions on WA7890008967 Hanford Site Dangerous Waste Permit.
- 16 **III.1.H INSPECTIONS**
- 17 **III.1.H.1** The Permittees will comply with LAWPS OUG 1, Addendum I, “Inspection Plan,”  
18 inspection schedule for tanks and containers in addition to the requirements of Permit  
19 Condition II.X. [WAC 173-303-320]
- 20 **III.1.H.2** When adverse conditions result in access restrictions to the active portions of LAWPS  
21 (Process Enclosure, IXC Storage Pad, and Staging Area), inspections will be performed  
22 immediately, within 24 hours, upon return to normal conditions. Any delayed or missed  
23 inspection will be recorded and entered into the LAWPS OUG 1 Operating Record.
- 24 **III.1.H.3** The Permittees will record and maintain inspection records in the LAWPS OUG 1  
25 Operating Record, compiled under the conditions of this Permit, in accordance with  
26 Permit Condition III.1.D.
- 27 **III.1.I PERSONNEL TRAINING**
- 28 **III.1.I.1** Prior to the initial receipt of dangerous and/or mixed waste in the LAWPS DWMUs, the  
29 Permittees will develop a training plan consistent with WAC 173-303-330, incorporated  
30 by reference, and place a copy in the Hanford Facility Operating Record LAWPS OUG 1  
31 file.
- 32 **III.1.I.2** The Permittees will ensure that the LAWPS systems are operated and maintained, at all  
33 times, by persons who are trained and qualified to properly operate LAWPS systems.
- 34 **III.1.I.3** The Permittees will conduct personnel training in accordance with the LAWPS OUG 1,  
35 Addendum G, “Personnel Training,” pursuant to WAC 173-303-330. The Permittees will  
36 maintain documents in accordance with Permit Condition II.C.1 and WAC 173-303-  
37 330(2) and (3).
- 38 **III.1.J GENERAL REQUIREMENTS**
- 39 **III.1.J.1** The LAWPS OUG is prohibited from managing ignitable, reactive, or incompatible  
40 wastes. Therefore, the requirements of WAC 173-303-395(1) do not apply.

- 1 **III.1.J.2** The Permittees will conduct all construction subject to this Permit in accordance with the  
2 approved designs, plans, and specifications that are required by this Permit, except as  
3 specified in Condition III.1.J.3. For purposes of Permit Condition III.1.J.3, the Ecology  
4 representative will be an Ecology construction inspector, project manager, or other  
5 designated representative of Ecology.
- 6 **III.1.J.3** The Permittees will submit a Nonconformance Report (NCR) or Construction Deficiency  
7 Report (CDR) to the Ecology representative(s), as applicable, within seven (7) calendar  
8 days of the Permittees becoming aware of incorporation of minor nonconformance or  
9 construction deficiency from the approved designs, plans, and specifications into the  
10 construction of the LAWPS OUG. Such minor nonconformance or construction  
11 deficiency will be defined, for the purposes of this permit condition, as nonconformance  
12 or construction deficiency that is necessary to accommodate proper construction and the  
13 substitution or the use of equivalent or superior materials or equipment that do not  
14 substantially alter the permit conditions or reduce the capacity of the facility to protect  
15 human health or the environment. Such minor nonconformance or construction  
16 deficiency will not be considered a modification of this Permit. If Ecology determines  
17 that the nonconformance or construction deficiency is not minor, it will notify the  
18 Permittees in writing that a permit modification is required for the deviation and whether  
19 prior approval is required from Ecology before work proceeds which affect the  
20 nonconforming or construction deficiency item.
- 21 **III.1.J.4** The Permittees will formally document changes to approved designs, plans, and  
22 specifications with design change documentation (e.g., Design Change Notice [DCN],  
23 Field Change Request [FCR], Field Change Notice [FCN], Specification Change Notice  
24 [SCN], and Supplier Deviation Disposition Request [SDDR]). All design change  
25 documentation will be maintained in the LAWPS OUG Record and will be made  
26 available to Ecology upon request or during the course of an inspection. For any design  
27 change documentation affecting any critical systems, the Permittees will provide copies  
28 to Ecology within seven (7) calendar days. If Ecology determines that the design change  
29 is not minor, it will notify the Permittees in writing that a permit modification is required  
30 for the design change and whether prior approval is required from Ecology before work  
31 affected by the design change may proceed.
- 32 **III.1.J.5** Equivalent Materials
- 33 **III.1.J.5.a** If certain equipment, materials, and administrative information (such as names, phone  
34 numbers, addresses, formatting) are specified in this Permit, the Permittees may use  
35 equivalent or superior substitutes. Use of such equivalent or superior items within the  
36 limits (e.g., ranges, tolerances, and alternatives) already clearly specified in sufficient  
37 detail in LAWPS OUG 1, are not considered a permit modification. However, the  
38 Permittees must place documentation of the substitution, accompanied by a narrative  
39 explanation and the date the substitution became effective in the LAWPS OUG Record  
40 within seven (7) days of putting the substitution into effect, and submit documentation of  
41 the substitution to Ecology, for approval. Upon review of the documentation of the  
42 substitution, if deemed necessary, Ecology may require the Permittees to submit a permit  
43 modification in accordance with Permit Condition III.1.B.11.

- 1 **III.1.J.5.b** If Ecology determines that a substitution was not equivalent to the original, they will  
2 notify the Permittees that the Permittees' claim of equivalency has been denied, of the  
3 reasons for the denial, and that the original material or equipment must be used. If the  
4 product substitution is denied, the Permittees will comply with the original approved  
5 product specification, find an acceptable substitution, or apply for a permit modification  
6 in accordance with Permit Condition III.1.B.11.
- 7 **III.1.J.6** Upon completion of the LAWPS construction subject to this Permit, the Permittees will  
8 produce as-built drawings of the project which incorporate the design and construction  
9 modifications resulting from all change documentation as well as modifications made  
10 pursuant to Permit Condition III.1.B.11. The Permittees will place the as-built drawings  
11 into the LAWPS OUG Record within twelve (12) months of completing construction.
- 12 **III.1.J.7** Permittees will provide Ecology operating and monitoring data, with quarterly reports  
13 and summaries. For quarters with operational issues or incidents encountered, the  
14 quarterly report shall include, but not limited to:
- 15 **III.1.J.7.a** Description of the issue or incident and how the problem was resolved.
- 16 **III.1.J.7.b** Description and disposition of any generated mixed and/or dangerous waste (waste type,  
17 volume, treatment, and disposal locations, as applicable).
- 18 **III.1.J.8** The Permittees will provide Ecology escorted access to the LAWPS site during  
19 construction to support Ecology's construction oversight requirements.
- 20 **III.1.K CLOSURE**
- 21 **III.1.K.1** The Permittees must close DWMUs in the LAWPS OUG in accordance with LAWPS  
22 OUG 1, Addendum H, "Closure Plan," and Permit Condition II.J. Modifications to  
23 Addendum H will be made according to provisions of Permit Condition I.C.3.  
24 [WAC 173-303-610(3)(a)]
- 25 **III.1.K.2** One hundred eighty (180) days prior to commencing final closure of OUG 1, the  
26 Permittees must submit to Ecology, for review and approval, a revised closure plan,  
27 including all documentation required by Permit Condition II.J, as a permit modification  
28 pursuant to Permit Condition III.1.B.11.
- 29 **III.1.K.3** To achieve clean closure, the Permittees will remove dangerous waste, dangerous waste  
30 constituents, and dangerous waste residues throughout the closing unit and throughout  
31 any areas affected by releases from the closing unit to concentrations that do not exceed  
32 numeric cleanup levels determined using residential exposure assumptions according to  
33 the Model Toxics Control Act (MTCA) Regulations, Chapter 173-340 WAC and all  
34 structures, equipment, bases, liners, and other materials containing or contaminated with  
35 dangerous waste, constituents, or residues have met specific waste removal and  
36 decontamination standards approved by Ecology, in accordance with WAC 173-303-  
37 610(2)(b)(i)(ii).
- 38 **III.1.K.4** Documentation supporting the Independent Qualified Registered Professional Engineer's  
39 (IQRPE) certification of closure must be submitted to Ecology with the closure  
40 certification required by WAC 173-303-610(6). In addition to the items in LAWPS  
41 OUG 1, Sampling and Analysis Plan, (Addendum H, Section H.4) the documentation  
42 must include the following and other information Ecology may request.
- 43 **III.1.K.4.a** Sampling procedures that were followed;
- 44 **III.1.K.4.b** Soil and concrete locations that were sampled;

- 1 **III.1.K.4.c** Sample labeling and handling procedures that were followed, including chain-of-custody  
2 procedures;
- 3 **III.1.K.4.d** Description of procedures that were followed to decontaminate concrete or metal to meet  
4 the clean closure standards approved by Ecology, in accordance with the closure  
5 performance standards of WAC 173-303-610(2)(a)(ii) and in a manner that minimizes or  
6 eliminates post-closure escape of dangerous waste constituents, or to achieve a “clean  
7 debris surface” as specified in 40 CFR 268.45, Table 1, concrete surfaces, as incorporated  
8 by reference in WAC 173-303-140. [WAC 173-303-610(2)(b)(ii)]
- 9 **III.1.K.4.e** Laboratory and field data, including supporting quality assurance/quality control  
10 summary;
- 11 **III.1.K.4.f** Report that summarizes closure activities;
- 12 **III.1.K.4.g** Copy of all field notes taken by the IQRPE; and
- 13 **III.1.K.4.h** Copy of all contamination survey results.
- 14 **III.1.L** **POST CLOSURE – RESERVED**
- 15 **III.1.M** **CONTAINERS**
- 16 **III.1.M.1** Container Storage Unit Standards
- 17 **III.1.M.1.a** Storage of containers is limited to IXC and media traps containing spent crystalline  
18 silicotitanate media that are generated during LAWPS operations.
- 19 **III.1.M.1.b** Container management of waste streams other than those allowed under Permit Condition  
20 III.1.M.1.a are subject to large quantity generator requirements in accordance with  
21 WAC 173-303-170 through -230.
- 22 **III.1.M.1.b.i** Storage of containers is limited to the IXC staging area and IXC storage pad in  
23 accordance with LAWPS OUG 1, Addendum C, Section C.2.6 and C.5.
- 24 **III.1.M.1.b.ii** Permittees will place documentation of any damage to and subsequent repairs of  
25 containers in container storage areas in the Hanford Facility Operating Record,  
26 LAWPS OUG 1 file required by Permit Conditions II.I.1. [WAC 173-303-630(7)]
- 27 **III.1.M.1.c** As part of or in addition to the requirements of Permit Conditions III.1.M.1.a and  
28 III.1.M.1.b, the Permittees will ensure the integrity of container storage area pads  
29 described in Addendum C, Section C.2.6 and C.5 as necessary to ensure containers are  
30 maintained in a safe and stable condition.
- 31 **III.1.M.2** Container Management Standards
- 32 **III.1.M.2.a** The Permittees will maintain and manage containers in accordance with the requirements  
33 of Addendum C, Section C.2.6 and C.5. [WAC 173-303-630(2)]
- 34 **III.1.M.2.b** The Permittees will comply with the requirements for managing wastes in containers.  
35 [WAC 173-303-630(5)]
- 36 **III.1.M.2.c** The Permittees will ensure wastes are compatible with containers and with other wastes  
37 stored in containers according to the requirements of Addendum C, Section C.2.6 and  
38 C.5. [WAC 173-303-630(4), WAC 173-303-630(9)]
- 39 **III.1.M.2.d** The Permittees will ensure design and construction of the container storage areas are  
40 adequately sloped to remove precipitation and prevent containers from coming into  
41 contact with precipitation according to the requirements of Addendum C, Section C.5.  
42 [WAC 173-303-630(7)(c)]

- 1 **III.1.M.2.e** The Permittees will ensure all containers placed into storage are labeled in accordance  
2 with WAC 173-303-630(3) and Addendum C, Section C.5 and Section C.6.5.
- 3 **III.1.M.2.f** The Permittees will post entrances and access points to IXC staging area and IXC storage  
4 pad with signs meeting the requirements of WAC 173-303-310(2)(a).
- 5 **III.1.M.2.g** The Permittees will submit to Ecology a copy of the final TSCR Factory Acceptance  
6 Testing (FAT) report demonstrating removal of IXC media from an ion exchange column.  
7 The report shall document proof of concept results showing that IX media, simulated  
8 using glass beads instead of IX media for this test, can be physically removed from a  
9 column prior to LAWPS Unit Group becoming operational. **[Complete 04/27/2021]**
- 10 **III.1.M.2.h** The LAWPS OUG is prohibited from storing ignitable, reactive, or incompatible waste.  
11 [WAC 173-330-630(8), WAC 173-303-630(9)]  
12

**Table III.1.M Low-Activity Waste Pretreatment System Operating Unit Group  
Container Storage Areas**

Container Storage Area	Capacity per Container (solid gallons) <sup>a</sup>	Maximum Number of Containers
IXC staging area	158 per IXC	3
IXC storage pad	158 per IXC 2.5 per media trap	150 3

<sup>a</sup>Capacity is for crystalline silicotitanate ion exchange media and represents the nominal media charge in each column.

- 13
- 14 **III.1.N TANK SYSTEMS**
- 15 **III.1.N.1 Tank System Requirements**
- 16 **III.1.N.1.a** The Permittees may store and treat in the TSCR tank system all dangerous and/or mixed  
17 waste listed in the LAWPS OUG 1, Addendum A, "Part A Form," of this Permit and in  
18 accordance with the LAWPS OUG 1, Addendum B, "Waste Analysis Plan," pursuant to  
19 Permit Condition III.1.C of this Permit. Total tank system dangerous and/or mixed waste  
20 storage and treatment at the facility will not exceed the volume(s) specified in  
21 Addendum A, "Part A Form," of this Permit.
- 22 **III.1.N.1.b** Prior to initial receipt of dangerous and/or mixed waste in the LAWPS, the Permittees  
23 will obtain, and keep on file in the LAWPS OUG Operating Record, written statements  
24 by those persons required to certify the design of the tank system and supervise the  
25 installation of the tank system in accordance with the requirements of WAC 173-303-  
26 640(3)(b), (c), (d), (e), (f), and (g), attesting that each tank system and corresponding  
27 containment system were properly designed and installed. [WAC 173-303-640(3)(a),  
28 WAC 173-303-640(3)(h)]
- 29 **III.1.N.1.b.i** The Permittees will develop a schedule for conducting Integrity Assessments (IA).  
30 The schedule will meet the requirements of Addendum C, Section C.6.1.2, and  
31 consideration of the factors in WAC 173-303-640(2)(e) or WAC 173-303-640(3)(b)  
32 as applicable. Results of the integrity assessments will be included in the LAWPS  
33 OUG Operating Record until ten (10) years after closure, or corrective action is  
34 complete and certified, whichever is later.
- 35 **III.1.N.1.b.ii** The Permittees will maintain a copy of the schedule required by Permit Condition  
36 III.1.N.1.b.i, in the Hanford Facility Operating Record, LAWPS OUG file, and

- 1                   conduct integrity assessments according to the schedule. The Permittees will  
2                   document results of integrity assessments conducted according to the IA in the  
3                   Hanford Facility Operating Record, LAWPS OUG file.
- 4   **III.1.N.1.b.iii**   The Permittees will address problems if any detected during tank integrity  
5                   assessments specified in Permit Condition III.1.N.1.b.i following the integrity  
6                   assessment program Addendum C.
- 7   **III.1.N.1.b.iv**   If the tank system is found to be leaking, or is unfit for use, as defined in  
8                   WAC 173-303-040, the Permittees must follow the requirements of WAC 173-303-  
9                   640(7), incorporated by reference. [WAC 173-303-640(3)(b)]
- 10 **III.1.N.1.b.v**    The Permittees will ensure all certification required by specialists (e.g., IQRPE;  
11                   independent corrosion expert; independent qualified installation inspector; etc.) use  
12                   the following statement or equivalent pursuant to WAC 173-303-810(13):  
13                   “I, (Insert Name) have (choose one or more of the following: overseen, supervised,  
14                   reviewed, and/or certified) a portion of the design or installation of a new tank system  
15                   or component located at (address), and owned/operated by (name[s]). My duties  
16                   were: (e.g., installation inspector, testing for tightness, etc.), for the following tank  
17                   system components (e.g., the tank, venting piping, etc.), as required by the Dangerous  
18                   Waste Regulations, namely, WAC 173-303-640(3) (applicable paragraphs (i.e., [a]  
19                   through [g])).  
20                   “I certify under penalty of law that I have personally examined and am familiar with  
21                   the information submitted in this document and all attachments and that, based on my  
22                   inquiry of those individuals immediately responsible for obtaining the information, I  
23                   believe that the information is true, accurate, and complete. I am aware that there are  
24                   significant penalties for submitting false information, including the possibility of fine  
25                   and imprisonment.”
- 26 **III.1.N.1.c**     The Permittees will construct the TSCR unit tank systems as approved/modified pursuant  
27                   to the LAWPS OUG 1 Permit. Modifications to approved design, plans, and  
28                   specifications in LAWPS OUG 1 of this Permit for the TSCR unit tank systems will be  
29                   allowed only in accordance with Permit Condition III.1.B.11.
- 30 **III.1.N.1.d**     The Permittees must ensure that proper handling procedures are adhered to in order to  
31                   prevent damage to the system during installation. Prior to covering, enclosing, or placing  
32                   a new tank system or component in use, an independent qualified installation inspector or  
33                   an IQRPE, either of whom is trained and experienced in the proper installation of tank  
34                   systems or components, must inspect the system for the presence of any of the following  
35                   items:
- 36 **III.1.N.1.d.i**     Weld breaks;
- 37 **III.1.N.1.d.ii**    Punctures;
- 38 **III.1.N.1.d.iii**   Scrapes of protective coatings;
- 39 **III.1.N.1.d.iv**    Cracks;
- 40 **III.1.N.1.d.v**     Corrosion;
- 41 **III.1.N.1.d.vi**    Other structural damage or inadequate construction/installation.
- 42                   All discrepancies must be remedied before the tank system is covered, enclosed, or  
43                   placed in use. [WAC 173-303-640(3)(c)]

- 1 **III.1.N.1.e** The Permittees must test for tightness all new tanks and ancillary equipment prior to  
2 those components being covered, enclosed, or placed into use. If a tank system is found  
3 not to be tight, all repairs necessary to remedy the leak(s) in the system must be  
4 performed prior to the tank system being covered, enclosed, or placed in use.  
5 [WAC 173-303-640(3)(e)]
- 6 **III.1.N.1.f** The Permittees must ensure ancillary equipment is supported and protected against  
7 physical damage and excessive stress due to settlement, vibration, expansion, or  
8 contraction. [WAC 173-303-640(3)(f)]
- 9 **III.1.N.1.g** The Permittees must provide the type and degree of corrosion protection recommended  
10 by an independent corrosion expert, based on the information provided in and pursuant to  
11 the LAWPS OUG 1 Permit or other corrosion protection if Ecology believes other  
12 corrosion protection is necessary to ensure the integrity of the tank system during use of  
13 the tank system. The installation of a corrosion protection system that is field fabricated  
14 must be supervised by an independent corrosion expert to ensure proper installation.  
15 [WAC 173-303-640(3)(g)]
- 16 **III.1.N.1.h** The independent tank system installation inspection and subsequent written statements  
17 will be certified in accordance with WAC 173-303-810(13)(a) and comply with all  
18 requirements of WAC 173-303-640(3)(h) and will consider, but not be limited to, the  
19 following tank system installation documentation:
- 20 **III.1.N.1.h.i** Field installation report with date of installation;
- 21 **III.1.N.1.h.ii** Approved welding procedures;
- 22 **III.1.N.1.h.iii** Welder qualifications and certification;
- 23 **III.1.N.1.h.iv** Hydro-test reports, as applicable, in accordance with the American Society of  
24 Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section VIII,  
25 Division 1, American Petroleum Institute (API) Standard 620, or Standard 650 as  
26 applicable;
- 27 **III.1.N.1.h.v** Tester credentials;
- 28 **III.1.N.1.h.vi** Field inspector credentials;
- 29 **III.1.N.1.h.vii** Field inspector reports;
- 30 **III.1.N.1.h.viii** Field waiver reports; and
- 31 **III.1.N.1.h.ix** Non-compliance reports and corrective action (including field waiver reports) and  
32 repair reports.
- 33 **III.1.N.1.i** Replacement of any component of the tank system, e.g., IXC, are subject to the permit  
34 conditions as detailed in III.1.N.1, and require:
- 35 A. A leak test for replacement of any component of the tank system, and  
36 B. Submission for review and approval any changes to the TSCR column design.
- 37 **III.1.N.2** Tank System Operating Requirements
- 38 **III.1.N.2.a** The Permittees will operate the TSCR tank system to prevent spills and overflows using  
39 the description of controls and practices as required under WAC 173-303-640(5)(b)  
40 described in Addendum C. [WAC 173-303-640(5)(b), WAC 173-303-806(4)(c)(ix)]
- 41 **III.1.N.2.b** The Permittees will comply with the requirements of Addendum C, Section C.6.4 and  
42 C.6.4.1. [WAC 173-303-640(5)(b)]

- 1 **III.1.N.2.c** The Permittees will comply with the requirements of Addendum C, Section C.6.5.  
2 [WAC 173-303-640(5)(d)]
- 3 **III.1.N.2.d** The Permittees will comply with the requirements of WAC 173-303-640(7), incorporated  
4 by reference, in response to spills or leaks from the TSCR tank system that are detected  
5 by the leak detection system required by III.1.N.2.h. [WAC 173-303-640(5)(c)]
- 6 **III.1.N.2.e** TSCR is prohibited from receiving ignitable or reactive waste. [WAC 173-303-640(9)]
- 7 **III.1.N.2.f** TSCR is prohibited from receiving incompatible waste. WAC 173-303-640(10),  
8 incorporated by reference.
- 9 **III.1.N.2.g** No dangerous and/or mixed waste will be managed in the TSCR unit tank system unless  
10 the operating conditions, specified under Permit Condition III.1.N.2 are complied with.
- 11 **III.1.N.2.h** The Permittees will install and test all process and leak detection system  
12 monitoring/instrumentation, as specified in Permit Tables III.1.N.A, in accordance with  
13 LAWPS OUG 1 Permit Appendices 2.2 and 2.6.
- 14 **III.1.N.2.i** The Permittees will not place dangerous and/or mixed waste, treatment reagents, or other  
15 materials in the TSCR Unit tank system if these substances could cause the tank system  
16 to rupture, leak, corrode, or otherwise fail. [WAC 173-303-640(5)(a)]
- 17 **III.1.N.2.j** The Permittees will ensure that the secondary containment systems for the TSCR Unit  
18 tank systems are free of cracks or gaps to prevent any migration of dangerous and/or  
19 mixed waste or accumulated liquid out of the system to the soil, groundwater, or surface  
20 water at any time that waste is in the tank system. Any indication that a crack or gap may  
21 exist in the containment systems will be investigated and repaired. [WAC 173-303-320,  
22 WAC 173-303-640(4)(b)(i), WAC 173-303-2 640(4)(e)(i)(C), WAC 173-303-640(6), and  
23 WAC 173-303-806(4)(c)(vii)]
- 24 **III.1.N.2.k** The Permittees will inspect all secondary containment systems for TSCR Unit tank  
25 systems in accordance with LAWPS OUG 1, Addendum I, "Inspection Plan," and take  
26 the following actions if a leak or spill of dangerous and/or mixed waste is detected by the  
27 leak detection system required by III.1.N.2.h in these containment systems [WAC 173-  
28 303-320, WAC 173-303-640(5)(c), WAC 173-303-30 640(6), WAC 173-303-640(7),  
29 WAC 173-303-806(4)(a)(v)]:
- 30 **III.1.N.2.k.i** Immediately and safely stop the flow of dangerous and/or mixed waste into the tank  
31 system or secondary containment system, in accordance with procedures based on all  
32 applicable safety analysis documentation;
- 33 **III.1.N.2.k.ii** Determine the source of the dangerous and/or mixed waste;
- 34 **III.1.N.2.k.iii** Remove the waste from the secondary containment area pursuant to WAC 173-303-  
35 640(7)(b). The waste removed from containment areas of TSCR unit tank systems  
36 will be managed as dangerous and/or mixed waste;

- 1 **III.1.N.2.k.iv** If the cause of the release was a spill that has not damaged the integrity of the tank  
2 system, the Permittees may return the tank system to service pursuant to  
3 WAC 173-303-640(7)(e)(ii). In such a case, the Permittees will take action to remedy  
4 the problem(s) that caused liquid to enter the secondary containment systems [WAC  
5 173-303-320(3)];
- 6 **III.1.N.2.k.v** If the source of the dangerous and/or mixed waste is determined to be a leak from a  
7 primary TSCR Unit tank system, or the system is unfit for use as determined through  
8 an integrity assessment or other inspection, the Permittees must comply with the  
9 requirements of WAC 173-303-640(7) and take the following actions [WAC 173-303-  
10 640(5)(c)];
- 11 A. Close the tank system according to procedures in WAC 173-303-640(7)(e)(i),  
12 and LAWPS OUG 1, Addendum H, "Closure Plan," as approved pursuant to  
13 III.1.K; or
- 14 B. Repair and re-certify [in accordance with WAC 173-303-810(13)(a)] the tank  
15 system before the tank system is placed back into service [WAC 173-303-  
16 640(7)(e) and (f), and WAC 173-303-806(4)(c)(vii)];
- 17 **III.1.N.2.k.vi** The Permittees will document in the operating record actions/procedures taken to  
18 comply with III.1.N.2.k.i through v above in accordance with WAC 173-303-  
19 640(6)(d);
- 20 **III.1.N.2.k.vii** The Permittees will notify and report releases to the environment to Ecology in  
21 accordance with WAC 173-303-640(7)(d).
- 22 **III.1.N.2.l** The Permittees will submit to Ecology, prior to initial receipt of dangerous and/or mixed  
23 waste at the LAWPS, descriptions of operational procedures demonstrating appropriate  
24 controls and practices are in place to ensure the LAWPS DWMUs will be operated in a  
25 safe and reliable manner that will not result in damage to regulated tank systems.  
26 **[Complete 04/27/2021]**
- 27 **III.1.N.2.m** If accumulated liquids (e.g., dangerous and/or mixed waste leaks and spills, precipitation,  
28 fire water liquids from damaged or broken pipes) detected by the leak detection system  
29 required by III.1.N.2.h cannot be removed from the secondary containment system within  
30 twenty-four (24) hours, Ecology will be verbally notified within twenty-four (24) hours  
31 of discovery. The notification will provide the information in A, B, and C listed below.  
32 The Permittees will provide Ecology with a written demonstration within seven (7)  
33 business days, identifying at a minimum [WAC 173-303-640(4)(c)(iv), WAC 173-303-  
34 640(7)(b)(ii), WAC 173-303-806(4)(c)(vii)]:
- 35 A. Reasons for delayed removal;
- 36 B. Measures implemented to ensure continued protection of human health and the  
37 environment;
- 38 C. Current actions being taken to remove liquids from secondary containment.
- 39 **III.1.N.2.n** The Permittees will operate the LAWPS tank system in accordance with LAWPS OUG 1,  
40 Addendum C, "Process Information."
- 41 **III.1.N.2.n.i** The Permittees will operate the LAWPS tank system in order to maintain the systems  
42 and process parameters, as approved/modified pursuant to Permit Condition  
43 III.1.N.2.p, within the operating trips and operating ranges specified in Permit Table  
44 III.1.N.A, and consistent with assumptions and basis which are reflected in LAWPS  
45 OUG 1, Addendum F, "Preparedness and Prevention." [WAC 173-303-815(2)(b)(ii)  
46 and WAC 173-303-640(5)(b)]

**Deleted:** ensure the incident

**Deleted:** of these tank systems will not reoccur

- 1 **III.1.N.2.n.ii** The Permittees will calibrate/function test the instruments listed in Permit Table  
2 III.1.N.A in accordance with LAWPS OUG 1 Appendices of this Permit, as approved  
3 pursuant to Permit Condition III.1.N.2.n.i.
- 4 **III.1.N.2.o** Prior to initial receipt of dangerous and/or mixed waste in the LAWPS, the Permittees  
5 will submit to Ecology the following as specified below for incorporation into the  
6 LAWPS OUG 1 Appendices. All information provided under this permit condition must  
7 be consistent with information submitted for this Permit and approved by Ecology.
- 8 **III.1.N.2.o.i** Integrity assessment program and schedule for LAWPS tank systems will conduct  
9 periodic integrity assessments on the TSCR tank systems over the life of the tank, if  
10 the life expectancy of the TSCR facility exceeds the approximate 5-year lifespan, in  
11 accordance with WAC 173-303-640(3)(b), and descriptions of procedure for  
12 addressing problems detected during integrity assessments. The schedule must be  
13 based on the age of the tank system, materials of construction, characteristics of the  
14 waste, and any other relevant factors [WAC 173-303-640(3)(b), WAC 173-303-  
15 806(4)(c)(vi)];
- 16 **III.1.N.2.o.ii** Detailed plans and descriptions, demonstrating the leak detection system is operated  
17 so that it will detect the failure of either the primary or secondary containment  
18 structure or the presence of any release of dangerous and/or mixed waste, or  
19 accumulated liquid in the secondary containment system within twenty-four (24)  
20 hours. [WAC 173-303-640(4)(c)(iii)]
- 21 **III.1.N.2.o.iii** Detailed operational plans and descriptions, demonstrating that spilled or leaked  
22 waste and accumulated liquids detected by the leak detection system required by  
23 III.1.N.2.h can be removed from the secondary containment system within twenty-  
24 four (24) hours [WAC 173-303-806(4)(c)(vii)];
- 25 **III.1.N.2.o.iv** Descriptions of operational procedures demonstrating appropriate controls and  
26 practices are in place to prevent spills and overflows from tanks or containment  
27 systems in compliance with WAC 173-303-640(5)(b)(i) through (iii) [WAC 173-303-  
28 640(5)(b), WAC 173-303-806(4)(c)(ix)];
- 29 **III.1.N.2.o.v** A description of the system used to record dangerous and/or mixed waste through the  
30 TSCR Unit tank system, pursuant to WAC 173-303-380;
- 31 **III.1.N.2.o.vi** Permit Table III.1.N.A will be completed for TSCR Unit tank system process and  
32 leak detection system monitors and instruments (to include instruments and monitors  
33 measuring and/or controlling flow, pressure, differential pressure, and temperature).  
34 Process monitors and instruments for non-waste management operations  
35 (e.g., utilities, raw chemical storage, non-contact cooling waters, etc.) are excluded  
36 from this permit condition.
- 37 **III.1.N.2.o.vii** Supporting documentation for operating trips and expected operating range as  
38 specified in Permit Table III.1.N.A for the TSCR Unit tank systems are to include but  
39 not be limited to the following:
- 40 A. Procurement specifications;
- 41 B. Data sheets;
- 42 C. Range, precision, and accuracy as appropriate to specific instrumentation;
- 43 D. Detailed descriptions of calibration/functionality test procedures  
44 (e.g., method number [American Society for Testing and Materials]) or  
45 provide a copy of the manufacturer's recommended calibration procedures.

- 1 E. Calibration/functionality test, inspection, and routine maintenance schedules  
2 and checklists, including justification for calibration, inspection, and  
3 maintenance frequencies, and corrective action to be taken for instruments  
4 found to be significantly out of calibration.
- 5 **III.1.N.3** Sample Port
- 6 **III.1.N.3.a** The Permittees will install a sample port on the Tank AP-108 drop-leg assembly in order  
7 to sample and analyze the air return from the TSCR Process Enclosure to Tank 241-AP-  
8 108.
- 9 **III.1.N.3.a.i** The Permittees will sample this air return to determine the total organic emission rate  
10 of the air stream.
- 11 **III.1.N.3.a.ii** The ports will be sampled at an agreed to frequency. This frequency will be  
12 determined prior to the start of operations.
- 13 **III.1.N.3.a.iii** The samples will be analyzed for total organics. A report estimating emissions of total  
14 organics will be submitted annually to Ecology.

**Table III.1.N.A Tank Side Cesium Removal Tank System Process and Leak Detection System Instruments and Parameters**

Equipment Identification Number	Type and Location	Monitored Parameter	Expected Operating Range	Accuracy	Set Points <sup>1</sup>	Control Function
AP106-WT-LDE-006A	Leak detector, 241-AP-106, Riser 002 drop-leg.	Presence of liquid	60 – 105 °F	N/A	Presence of liquid.	LDAH-001 alarm, Interlock 22 activated.
AP107F-WT-LDE-007A	Leak detector, 241-AP-107, AP07F pump pit.	Presence of liquid	60 – 105 °F	N/A	Presence of liquid.	LDAH-001 alarm, Interlock 23 activated.
AP108-WT-LDE-008A	Leak detector, 241-AP-108, Riser 015 drop-leg.	Presence of liquid	60 – 105 °F	N/A	Presence of liquid.	LDAH-001 alarm, Interlock 24 activated.
POR655-WP-LDE-618	Leak detector, Process Enclosure low-point.	Presence of liquid	60 – 105 °F	N/A	Presence of liquid.	LDA-618 alarm, airlock indicator LDK-618, Interlock 18 activated.
POR655-WP-LD-610	Leak detector, Airlock, misroute prevention cabinet.	Presence of liquid	60 – 105 °F	N/A	Presence of liquid.	LAHH-610 alarm, Interlock 20 activated.
POR655-WP-TT-300	Temperature transmitter - Process Enclosure processing area - northwest corner under grating on 1-12" LAW Feed Line.	LAW feed temperature	68 – 105 °F	+/- 0.45 °F	≥ 100 °F	TAHH-300 alarm, Interlock 5 activated.
POR655-WP-TT-500	Temperature transmitter - Process Enclosure Processing Area - east side of enclosure, north of Delay Tank.	Treated LAW temperature	68 – 105 °F	+/- 0.21 °F	≥ 104 °F	TAHH-500 alarm, Interlock 14 activated.
POR655-WP-PIT-310	Pressure Indicating Transmitter - Process Enclosure Processing Area - east side of walkway in front of Filter B.	Filter differential pressure (both POR655-WP-FLT-325A and POR655-WP-FLT-325B)	0 – 115 psig <sup>3</sup>	+/- 0.15% of span	[PDI <sub>(0)</sub> – PDI <sub>(10)] ≥ 5 PSID<sup>3</sup></sub>	PDAHH-325 alarm, Interlock 6 activated.
POR655-WP-PIT-313 Note: POR655-WP-PIT-313 provides the upstream pressure indication for all three IXC's.	Pressure Indicating Transmitter - Process Enclosure Processing Area - east side of walkway in front of Filter B.	Filter differential pressure (both POR655-WP-FLT-325A and POR655-WP-FLT-325B)	0 – 115 psig	+/- 0.15% of span	[PDI <sub>(0)</sub> – PDI <sub>(10)] ≥ 5 PSID</sub>	PDAHH-325 alarm, Interlock 6 activated.

**Table III.1.N.A Tank Side Cesium Removal Tank System Process and Leak Detection System Instruments and Parameters**

Equipment Identification Number	Type and Location	Monitored Parameter	Expected Operating Range	Accuracy	Set Points <sup>1</sup>	Control Function
POR655-WP-PIT-419A	Pressure indicating transmitter - Process Enclosure Processing Area - east side of walkway, south side of IXC-A.	IXC-A differential pressure (POR655-WP-IX-400A)	0 – 115 psig	+/- 0.15% of span	≥ 25 PSID	PDAHH-400A alarm, Interlock 10 activated.
POR655-WP-PIT-419B	Process Enclosure Processing Area - east side of walkway, south side of IXC-B.	IXC-B differential pressure (POR655-WP-IX-400B)	0 – 115 psig	+/- 0.15% of span	≥ 25 PSID	PDAHH-400B alarm, Interlock 11 activated.
POR655-WP-PIT-419C	Pressure indicating transmitter - Process Enclosure Processing Area - east side of walkway, south side of IXC-C.	IXC-C differential pressure (POR655-WP-IX-400C)	0 – 115 psig	+/- 0.15% of span	≥ 25 PSID	PDAHH-400C alarm, Interlock 12 activated.
POR655-WP-PIT-505 Note 1: POR655-WTP-PIT-419A/B/C provides upstream pressure indication for the media trap. Note: POR655-WP-PIT-505 provides the upstream pressure indication for Delay Tank as well.	Pressure Indicating Transmitter - Process Enclosure Processing Area - east side of Enclosure, north of Delay Tank.	Media Trap differential pressure (POR655-WP-RT-500)	0 – 115 psig	+/- 0.15% of span	≥ 20 PSID	PDAHH-500 alarm, Interlock 13 activated.
POR655-WP-PIT-558	Pressure indicating transmitter - Process Enclosure Processing Area - east side of enclosure, south of Delay Tank.	Delay Tank differential pressure (POR655-WP-TK-550)	0 – 115 psig	+/- 0.15% of span	≥ 5 PSID	PDAHH-550 alarm, Interlock 13 activated.
POR655-WP-FIT-309	Flow indicating transmitter - Process Enclosure Processing Area - east side of enclosure, north of Delay Tank.	Treated LAW flow	5 – 10 gpm	+/- 0.95 % of span	N/A	N/A

**Table III.1.N.A Tank Side Cesium Removal Tank System Process and Leak Detection System Instruments and Parameters**

Equipment Identification Number	Type and Location	Monitored Parameter	Expected Operating Range	Accuracy	Set Points <sup>1</sup>	Control Function
POR655-WP-RIT-559A <sup>2</sup>	Gamma radiation detector - Process Enclosure Processing Area - Airlock Wall. East Airlock Door, Upper Detector.	Treated LAW gamma detector	68 – 105 °F	15% of reading	Varies, target = <3.18 x 10 <sup>-5</sup> Ci 137Cs/mol Na	RAHH-559 alarm, Interlock 16 is activated.
POR655-WP-RIT-559B <sup>2</sup>	Gamma radiation detector - Process Enclosure Processing Area - Airlock Wall. East Airlock Door, Lower Detector.	Treated LAW gamma detector	68 – 105 °F	15% of reading	Varies, target = <3.18 x 10 <sup>-5</sup> Ci 137Cs/mol Na	RAHH-559 alarm, Interlock 16 is activated.
Control Function	Description					
Interlock 5	If TSCR waste feed temperature (WP-TT-300) reads ≥100 °F, alarm TAHH-300 is activated, and WP-FCV-306 closes.					
Interlock 6	If Filter DP (as indicated by WP-PDI-325 using [PDI(t) – PDI(10)]) reads ≥ 5 PSID, alarm PDAH-325 is activated, and WP-FCV-306 closes. <sup>3</sup>					
Interlock 10	If any IXC DP reads ≥ 25 PSID, alarm PDAH-400A/B/C is activated, and WP-FCV-306 closes to stop flow through the system.					
Interlock 11	If any IXC DP reads ≥ 25 PSID, alarm PDAH-400A/B/C is activated, and WP-FCV-306 closes to stop flow through the system.					
Interlock 12	If any IXC DP reads ≥ 25 PSID, alarm PDAH-400A/B/C is activated, and WP-FCV-306 closes to stop flow through the system.					
Interlock 13	If Media Trap DP reads ≥ 20 PSID, alarm PDAH-500 is activated, and WP-FCV-306 closes to stop flow through the system.					
Interlock 14	If Effluent temperature reaches ≥ 104 °F, alarm TAHH-500 is activated, and WP-FCV-306 closes to stop flow through the system.					
Interlock 18	If Sump Leak Detector (WP-LDE-618) senses liquid, alarm LDA-618 is activated, and the AP-107 feed pump stops, the Caustic pump (RA-P-130) stops, and the Reagent Water pump (RA-P-139) stops.					
Interlock 20	If Leak Detector (WP-LD-610) senses liquid, alarm LAHH-610 is activated, the AP-107 feed pump stops, the Caustic pump (RA-P-130) stops, the Reagent Water pump (RA-P-139) stops and WP-AOV-610 opens.					
Interlock 22	If AP-106-WT-LDE-006 detects a leak, alarm LDA-006B is activated and WP-FCV-306 closes.					
Interlock 23	If AP07F-WT-LDE-007 detects a leak, alarm LDA-007B is activated and WP-FCV-306 closes.					
Interlock 24	If AP-108-WT-LDE-008 detects a leak, alarm LDA-008B is activated and WP-FCV-306 closes.					

**Table III.1.N.A Tank Side Cesium Removal Tank System Process and Leak Detection System Instruments and Parameters**

<b>Equipment Identification Number</b>	<b>Type and Location</b>	<b>Monitored Parameter</b>	<b>Expected Operating Range</b>	<b>Accuracy</b>	<b>Set Points<sup>1</sup></b>	<b>Control Function</b>
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<sup>1</sup>Set points and associated alarms and interlock activation may require adjustment during initial operations in order to optimize waste processing. Adjustment of set points can be made during the first campaign of waste processing without being considered a modification to the permit. Following completion of the first campaign, any changes to the set points in this table will be submitted as a Class 1 permit modification.

<sup>2</sup>Gamma detectors are included for information only and are not subject to regulation under the *Resource Conservation and Recovery Act of 1976*. The gamma detectors are not included in Addendum I, "Inspection Plan" and inspection schedule.

<sup>3</sup>psig = Pounds per square inch gauge; PDI = Pressure differential indicator; PSID = Pounds per square inch differential; DP = Differential pressure.

- 1 **III.1.O WASTE TRANSFER LINES**
- 2 **III.1.O.1** Hose-in-Hose Waste Transfer Line Requirements
- 3 **III.1.O.1.a** Hose-in-Hose Transfer Lines (HIHTLs) will comply with the requirements of Addendum C,  
4 Sections C.3.1 and C.6.3.2. [WAC 173-303-640(4)]
- 5 **III.1.O.1.b** Use of individual HIHTLs are limited to a maximum of three years of service following  
6 first exposure to waste, after which they must be replaced with new HIHTLs.
- 7 **III.1.O.1.c** When a HIHTL connection is broken and remade, leak testing will be required. The leak  
8 testing will be reviewed to verify the new hose is properly installed.
- 9 **III.1.O.1.d** If the TSCR unit exceeds the approximate 5-year duration for Phase 1, the Permittees will  
10 replace HIHTL waste transfer lines with hard-walled pipe transfer lines.
- 11 **III.1.O.1.e** When HIHTLs are removed from service they will be correctly managed under the  
12 generator regulations in the WAC 173-303-170 through -230. Within 6 months after  
13 reaching the end of their service life, HIHTLs must be flushed and drained to remove  
14 residual contamination, surveyed to estimate the radionuclide inventory, packaged in a  
15 suitable waste container, and moved to a 90-day storage accumulation area for mixed  
16 waste.
- 17 **III.1.O.1.f** The Permittees will submit to Ecology, prior to initial receipt of dangerous and/or mixed  
18 waste in the TSCR Unit, descriptions of operational procedures demonstrating  
19 appropriate controls and practices are in place to ensure the TSCR HIHTLs will be  
20 operated in a safe and reliable manner that will not result in damage to regulated  
21 HIHTLs. **[Complete 04/27/2021]**
- 22 **III.1.O.1.g** The following information will be kept in the operating record for the LAWPS OUG.
- 23 A. HIHTL assembly serial number.
- 24 B. Location – Originating point (from) and destination point (to) of the HIHTL.
- 25 C. Hose assembly drawing number.
- 26 D. Date of manufacture of the HIHTL.
- 27 E. HIHTL in-service date.
- 28 F. Service life expiration date – For HIHTLs that have not been exposed to mixed  
29 waste, the expiration date is 7 years from the date of manufacture (shelf life). For  
30 HIHTLs that have been put in service, the expiration date is 3 years from the  
31 initial date of mixed waste use (service life).
- 32 G. HIHTL length.
- 33 H. Shelf life expired HIHTLs that have not been used – Shelf life expired hoses that  
34 have not been used and are expired will be identified to prevent mixed waste use.
- 35 I. Disposal package identification number (PIN) – The PIN for the container that  
36 the HIHTL was placed in for shipping.
- 37 **III.1.O.1.h** The Permittee must ensure that proper handling procedures are adhered to in order to prevent  
38 damage to the TSCR HIHTL transfer system during installation. Prior to covering,  
39 enclosing, placing the system in use, or replacing a HIHTL, an independent, qualified  
40 installation inspector or an IQRPE, either of whom is trained and experienced in the  
41 proper installation of tank systems or components, must inspect the system. The  
42 Permittee shall provide to Ecology a copy of the installation assessment prior to the start  
43 of operations. [WAC 173-303-640(3)(c)]

- 1 **III.1.O.1.i** The Permittee must test the TSCR HIHTL transfer system for leak tightness prior to  
2 being covered, enclosed, or placed in use. If the system is found not to be tight, all repairs  
3 necessary to remedy the leak(s) in the system must be performed prior to the system  
4 being covered, enclosed, or placed into use. The Permittee shall provide to Ecology a  
5 copy of the tightness testing procedure and results prior to the start of operations.  
6 [WAC 173-303-640(3)(e)]
- 7 **III.1.O.1.j** The Permittee will provide detailed plans and a description of how the secondary  
8 containment and leak detection system for the TSCR HIHTL transfer system will be  
9 installed, operated, and maintained. [WAC 173-303-806(4)(c)(vii)]
- 10 A. Based on the Permittees' design and calculations, the TSCR HIHTL leak  
11 detection systems are capable of detecting a leak equal to or less than 7 gallons  
12 per hour (gph) within 24 hours. When these lines are transitioned to hard walled  
13 lines the Permittees will follow Permit Condition III.1.O.2.f. [WAC 173-303-  
14 640(4)(c)(iii)]
- 15 B. The secondary containment for the TSCR HIHTL transfer system must be sloped  
16 or operated to drain and remove liquids resulting from leaks. Leaked waste must  
17 be removed from the secondary containment system within 24 hours, or in as  
18 timely a manner as is possible to prevent harm to human health and the  
19 environment, if the Permittee can demonstrate to Ecology that removal of the  
20 released waste or accumulated precipitation cannot be accomplished within  
21 24 hours. [WAC 173-303-640(4)(c)(iv)]
- 22 C. Until such time as the secondary containment for the TSCR HIHTL transfer  
23 system meets the requirements of -640(4), a functional leak test, as approved by  
24 Ecology, must be conducted on the system annually. [WAC 173-303-  
25 640(4)(i)(iii)]
- 26 **III.1.O.1.k** Since TSCR HIHTLs are installed with low points which do not readily drain, the TSCR  
27 HIHTL transfer system shall employ an integrated system of administrative and  
28 engineered leak detection systems. The leak detection system shall include in-pit leak  
29 detection, and inspection of radiological conditions along HIHTL transfer routes, once  
30 during column change-out.
- 31 **III.1.O.2** Hard Walled Waste Transfer Lines Requirements
- 32 **III.1.O.2.a** Hard Walled Pipe Transfer lines will comply with the requirements of Addendum C,  
33 Section C.3.2. [WAC 173-303-640(4)(b)]
- 34 **III.1.O.2.b** The Permittees will construct the TSCR unit hard walled waste transfer lines as  
35 approved/modified pursuant to the LAWPS OUG 1 Permit. Modifications to approved  
36 design, plans, and specifications in LAWPS OUG 1 of this Permit will be allowed only in  
37 accordance with Permit Condition III.1.B.11.
- 38 **III.1.O.2.c** Prior to initial receipt of dangerous and/or mixed waste in the LAWPS, the Permittees  
39 will obtain, and keep on file in the LAWPS OUG Operating Record, written statements  
40 by those persons required to certify the design and supervise the installation of the hard  
41 walled waste transfer lines, attesting that the waste transfer lines were properly designed  
42 and installed.
- 43 **III.1.O.2.d** The Permittees will ensure all certification required by specialists (e.g., IQRPE;  
44 independent corrosion expert; independent qualified installation inspector; etc.) use the  
45 statement or equivalent, as provided in Permit Condition III.1.N.1.b.v. [WAC 173-303-  
46 810(13)]

- 1 **III.1.O.2.e** The Permittees must ensure hard walled waste transfer lines are supported and protected  
2 against physical damage and excessive stress due to settlement, vibration, expansion, or  
3 contraction. [WAC 173-303-640(3)(f)]
- 4 **III.1.O.2.f** The Permittees will install and test all process and leak detection system  
5 monitoring/instrumentation, as specified in Permit Tables III.1.N.A, in accordance with  
6 LAWPS OUG 1 Permit Appendices 2.2 and 2.6.
- 7     A. The leak detection system for the waste transfer lines must be designed and  
8 operated so that it will detect a leak of 0.1 gph within 24 hours, or at the earliest  
9 practicable time if the Permittee can demonstrate to Ecology that existing leak  
10 detection technologies or site conditions will not allow detection of a release of  
11 0.1 gph within 24 hours. The demonstration shall quantify that the sensitivity of  
12 the waste transfer line leak detection systems is capable of detecting a leak equal  
13 to or less than 3 gph within 24 hours. [WAC 173-303-640(4)(c)(iii)]
- 14     B. The secondary containment for the waste transfer lines must be sloped or  
15 operated to drain and remove liquids resulting from leaks. Leaked waste must be  
16 removed from the secondary containment system within 24 hours, or in as timely  
17 a manner as is possible to prevent harm to human health and the environment, if  
18 the Permittee can demonstrate to Ecology that removal of the released waste or  
19 accumulated precipitation cannot be accomplished within 24 hours.  
20 [WAC 173-303-640(4)(c)(iv)]
- 21     C. A functional leak test or other integrity assessment as approved by Ecology must  
22 be conducted on the system annually. [WAC 173-303-640(4)(i)(iii)]
- 23     D. Prior to operation of the hard-piped transfer lines, they will be added to their  
24 respective operating permit (DST or WTP), or the LAWPS Permit will add a  
25 detailed description of how the transfer lines are controlled and what operating  
26 parameters manage the transfer of liquid from the TSCR Process Enclosure to the  
27 AP Farm and from the AP Farm to the WTP Facility. **[Complete 02/28/2023]**
- 28 **III.1.O.2.g** The Permittees will notify and report releases to the environment to Ecology in  
29 accordance with WAC 173-303-640(7)(d).
- 30 **III.1.O.2.h** The independent installation inspection and subsequent written statements will be  
31 certified in accordance with WAC 173-303-810(13)(a) and comply with all requirements  
32 of WAC 173-303-640(3)(h) and will consider, but not be limited to, the following  
33 documentation:
- 34 **III.1.O.2.h.i** Field installation report with date of installation;
- 35 **III.1.O.2.h.ii** Approved welding procedures;
- 36 **III.1.O.2.h.iii** Welder qualifications and certification;
- 37 **III.1.O.2.h.iv** Hydro-test reports, as applicable, in accordance with the ASME 31.3 Process Piping  
38 code as applicable;
- 39 **III.1.O.2.h.v** Tester credentials;
- 40 **III.1.O.2.h.vi** Field inspector credentials;
- 41 **III.1.O.2.h.vii** Field inspector reports;
- 42 **III.1.O.2.h.viii** Field waiver reports; and
- 43 **III.1.O.2.h.ix** Non-compliance reports and corrective action (including field waiver reports) and  
44 repair reports.

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