

**325 HAZARDOUS WASTE TREATMENT UNITS
ADDENDUM H
CLOSURE PLAN
CHANGE CONTROL LOG**

Change Control Logs ensure that changes to this unit are performed in a methodical, controlled, coordinated, and transparent manner. Each unit addendum will have its own change control log with a modification history table. The “**Modification Number**” represents Ecology’s method for tracking the different versions of the permit. This log will serve as an up to date record of modifications and version history of the unit.

Modification History Table

Modification Date	Modification Number
05/23/2016	8C.2016.Q1

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**ADDENDUM H
CLOSURE PLAN**

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**ADDENDUM H
CLOSURE PLAN**

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1 H. CLOSURE PLAN

2 The 325 Hazardous Waste Treatment Units (HWTUs) will be clean closed in accordance with the
3 requirements of WAC 173-303-610. No post closure activities currently are applicable or required
4 because the 325 HWTUs will be clean closed.

5 Individual Dangerous Waste Management Units (DWMUs) making up the 325 HWTUs Operating Unit
6 Group will be closed pursuant to this Closure Plan individually, or multiple units may be closed
7 simultaneously. [WAC 173-303-610(1)(d)]

8 To clean close the 325 HWTUs, it will be demonstrated that dangerous waste has not been left onsite at
9 levels above the closure performance standard for removal and decontamination. Regulations and laws
10 will be reviewed periodically and the closure plan modified as necessary. If it is determined that clean
11 closure is not possible or is environmentally impractical, the closure plan will be modified to address
12 required post-closure activities.

13 H.1 Closure Plan

14 H.1.1 Closure Performance Standard

15 The 325 HWTUs will be closed in a manner that:

- 16 • Minimizes the need for further maintenance.
- 17 • Controls, minimizes, or eliminates to the extent necessary to protect human health and the
18 environment, post closure escape of dangerous waste, dangerous waste constituents, leachate,
19 contaminated runoff, or dangerous waste decomposition products to the ground, surface water,
20 ground water, or the atmosphere.
- 21 • Returns the land to the appearance and use of surrounding land areas to the degree possible, given
22 the nature of the previous waste management activities. [WAC 173-303-610(2)(a)]

23 The 325 HWTUs operating record will be reviewed at the time of closure to determine whether there have
24 been releases from the dangerous waste management unit(s) being closed to the soil, groundwater, surface
25 water, or air. A physical walkdown of the unit(s) being closed will also be performed. If there is any
26 evidence of spills or leaks from the unit(s) into the environment, removal of contamination will be
27 integrated with the final disposition of the 325 Building and underlying soil contamination, as described
28 in the 300-FF-2 final Record of Decision and the approved Remedial Action Work Plan.
29 [WAC 173-303-610(1)(e), WAC 173-303-610(3)(a)(ix)].

30 Clean closure decontamination standards for structures, equipment, bases, liners, etc., are those specified
31 for hazardous debris in 40 CFR 268.45, Table 1 per Ecology clean closure guidance (Ecology 1994).
32 [WAC 173-303-610(2)(b)(ii)] The 'clean debris surface' is the performance standard for metal and
33 concrete surfaces.

34 Attainment of a 'clean debris surface' will be verified by a visual inspection in accordance with the
35 standard that states:

36 *A clean debris surface means the surface, when viewed without magnification, shall be free of*
37 *all visible contaminated soil and hazardous waste except residual staining from soil and waste*
38 *consisting of light shadows, slight streaks, or minor discolorations and soil and waste in cracks,*
39 *crevices, and pits may be present provided that such staining and waste and soil in cracks,*
40 *crevices and pits shall be limited to no more than 5 percent of each square inch of surface area.*
41 *(40 CFR 268.45, Table 1)*

42 H.1.2 Closure Activities

43 Closure activities will remove dangerous waste from each unit being closed, and relocate for continued
44 use, decontaminate, or dispose associated structures and equipment. [WAC 173-303-610(3)(a)(i)]

1 Closure of the DWMUs may occur on an individual basis, or multiple DWMUs may be closed
2 simultaneously. Except for the timing of the closure activities, partial closure activities would be
3 conducted in the same way as those described in this closure plan for closure of the entire 325 HWTUs
4 Operable Unit Group (OUG), i.e. final closure. [WAC 173-303-610(3)(a)(ii)]

5 The Shielded Analytical Laboratory (SAL) hot cells are connected to the SAL tank by means of the drains
6 in the trough in the front of the hot cells. The only way to introduce waste into the SAL tank is via the
7 hot cell drains. Similarly, the only way to retrieve waste from the SAL tank is to pump it into containers
8 in Cell 6 (northernmost cell in the hot cell gallery) for storage and/or treatment. Decontamination in
9 conjunction with closure is expected to introduce liquid waste into the SAL tank from the hot cells, and
10 rinsate from the SAL tank closure will need to be treated and containerized in the hot cell. As a result, the
11 SAL tank cannot begin closure until storage and treatment in the hot cells is concluded. Similarly, the hot
12 cells cannot begin closure until the SAL tank is ready to close. Due to this mutual dependency, storage
13 and treatment in the hot cells and in the SAL tank will begin closure only when the last of these two units
14 begin closure. [WAC 173-303-610(3)(a)(i); WAC 173-303-610(4)(a)(i); WAC 173-303-610(4)(b)(i)]

15 **H.1.3 Maximum Extent of Operation**

16 The physical boundaries of the 325 HWTUs' individual units are shown in Addendum A.

17 **H.2 Closure of Container Storage and Treatment Areas (Non-Hot Cell)**

18 **H.2.1 Removing Dangerous Waste**

19 Closure activities at DWMUs being closed will be initiated by removal of the dangerous waste inventory
20 present at the time of closure. Inventory removal procedures from the container storage/treatment unit(s)
21 being closed will include:

- 22 • Packaging of listed and characteristic waste to meet U.S. Department of Transportation (DOT)
23 requirements [WAC 173-303-190(1)]
- 24 • Packaging of state-only dangerous waste (non-DOT hazardous material) in a nonleaking,
25 nonsieveable container or a package equivalent to DOT containers [WAC 173-303-190(5)(a)]
 - 26 ○ Packaging may include preparation of labpacks containing smaller containers of stored
27 waste. [WAC 173-303-161]
 - 28 ○ Waste may also be "bulked" (combined) into appropriate containers. Containers emptied
29 through bulking of their contents may be disposed of as solid (nondangerous) waste if
30 they meet the definition of "empty" given in WAC 173-303-160(2).
31 [WAC 173-303-160(3)]
- 32 • Labeling of waste containers with appropriate DOT labels [WAC 173-303-190(2)]
- 33 • Marking of waste containers with appropriate DOT markings and the "Hazardous Waste" label
34 [WAC 173-303-190(3)]

35 All containers of dangerous waste will be transferred to custody of a dangerous waste transporter having a
36 proper dangerous waste identification number if transportation is required. During closure, wastes will be
37 relocated to other, unclosed DWMUs in the 325 HWTUs (in the case of partial closure) or transferred to
38 other Hanford Permit operating units for subsequent management. Offsite treatment and/or storage
39 facilities may be used if appropriate.

40 **H.2.2 Decontaminating Structures, Equipment, and Soil**

41 At the time of closure of the DWMU(s) being closed, equipment and structures in the unit(s) being closed
42 will either be removed and disposed of, or be decontaminated. Decontamination activities will address
43 equipment and structures known to have contacted dangerous waste. Equipment and structures that
44 exhibit a 'clean debris surface' before starting closure activities will be considered decontaminated and
45 receive no further decontamination.

1 Decontamination methods for equipment and structures will be selected from appropriate technologies
2 (40 CFR 268.45, Table 1) such as water washing and spraying, high-pressure water jet scarifiers, abrasive
3 blasting, aquablasting, or mechanical concrete scrubbers and scarifiers. Such technologies will be used
4 until a clean debris surface is obtained or the effort to decontaminate is abandoned (i.e. the equipment or
5 structure is removed for disposal.)

6 All equipment used for decontamination will be decontaminated or disposed of before closure is
7 complete. All cleaning and decontamination waste will be collected and analyzed as described in Section
8 H.2.4. Any disposable equipment will be placed in a container and properly disposed.

9 Waste-handling equipment will be decontaminated by washing with water or a solvent to a 'clean debris
10 surface' as defined in Section H.1.1. If additional decontamination is necessary, a decontamination
11 technique will be selected from appropriate technologies (40 CFR 268.45, Table 1) such as high-pressure
12 water wash. If adequate cleaning is not possible, the equipment will be disposed of as dangerous waste.
13 The decision to dispose or decontaminate equipment will be made at the time of closure. The option that
14 is the most environmentally and economically feasible will be chosen. Adequate decontamination will be
15 determined by a visual inspection for a 'clean debris surface' as described in Section H.1.1. All
16 wastewater generated by decontamination activities will be collected in sumps or portable containers,
17 pumped to chemically compatible, closed-top containers, and transported and managed as described in
18 Section H.2.4.

19 The time required for decontamination of waste-handling equipment and the amount of wastewater
20 generated by these methods will depend on the amount of equipment that needs to be decontaminated, but
21 minimal time and effort are anticipated. The wastewater to be generated through decontamination is not
22 anticipated to exceed approximately 378 liters. The volume of solid waste generated will depend on the
23 extent of decontamination necessary.

24 If a 'clean debris surface' is present at the time that closure activities are started, the area will be
25 considered clean closed. In this case, housekeeping measures may be undertaken and could include
26 sweeping, dusting, vacuuming, and wiping with soap and water. Brushing or sweeping will be used to
27 clean up coarse debris. Vacuuming will be performed using a commercial or industrial vacuum equipped
28 with a high-efficiency particulate air (HEPA) filter. The vacuum cleaner bag containing captured
29 particulates will be disposed appropriately. Dust wiping will be done with a damp cloth or wipe (soaked
30 with water) to remove dust from surfaces that cannot be decontaminated with a vacuum. The cloth or
31 wipe also will be disposed appropriately. HEPA filters from installed equipment and vacuum cleaners
32 will be designated and managed as described in Section H.2.4. The volume of solid waste (e.g., personal
33 protective clothing/equipment, wipes, HEPA filters, vacuum bags) generated will depend on the extent of
34 decontamination necessary.

35 Minimal time will be required for setup of the decontamination equipment. Labor requirements for the
36 process should be moderate. Minimal time also will be required for packaging debris, dismantling, and
37 removing cleaning equipment. Small quantities of wastewater (only the contents of buckets used in the
38 decontamination procedure) will be generated. However, if a clean debris surface is not present, more
39 sophisticated decontamination methods will be implemented. The surfaces that do not have a 'clean
40 debris surface' will be treated using an appropriate decontamination technology such as water washing
41 and spraying (40 CFR 268.45, Table 1) until a clean debris surface is obtained. The contaminated
42 surfaces will be decontaminated to remove all residues from the surfaces. The contaminated waste
43 generated by this activity will be contained by the designed spill controls already in place for the unit or
44 by disposable absorbent pads that might be placed around the area to be water washed. Pumps or
45 vacuums will be used to empty the wastewater from the containment area into chemically compatible,
46 closed-top containers. Containers of wastewater will be managed as described in Section H.2.4.

47 Although this method will require more time than the dusting, vacuuming, and wiping procedures
48 outlined previously, time requirements are still considered minimal for the water washing approach.
49 Wastewater generated by this method is not anticipated to exceed 500 liters.

1 If necessary, further decontamination methods such as sandblasting or other appropriate technologies
2 could be used effectively to clean contaminated structure surfaces. All residues from the decontamination
3 effort will be collected for sampling and proper subsequent disposal as described in Section H.2.5.4.
4 Following completion of decontamination, additional visual inspections will be performed to determine
5 that the 'clean debris surface' standard has been achieved. In the unlikely event that structures cannot be
6 cleaned using the methods described, these structures might be demolished, removed, and managed as
7 dangerous waste.

8 The collection sumps and secondary containment system will be decontaminated by water washing.
9 Wastewater collected from the cleaning process in each sump and containment system will be pumped
10 into chemically compatible, closed-top containers and analyzed as described in Section H.2.4 to
11 determine if the wastewater is a dangerous waste under WAC 173-303-070. If the wastewater is
12 determined to be a dangerous waste, the wastewater will be managed and disposed at an appropriate
13 permitted unit. If the wastewater is not a dangerous waste, the wastewater will be discharged to the sewer
14 system or otherwise appropriately managed. The water washing of all sumps should take minimal time
15 and should generate less than 500 liters of wastewater. Additional decontamination techniques such as
16 grit blasting, scabbling, or chipping might be used if necessary. The volume of solid waste generated will
17 depend on the extent of decontamination necessary.

18 If review of the operating record determines that releases to the firewater containment tank have not
19 occurred during the operating life of the 325 HWTUs, the internal surface of the firewater containment
20 tank will be visually inspected. If a 'clean debris surface' is present at the beginning of the closure
21 process, the firewater containment tank will be considered clean closed. If the surface of the liner does
22 not meet the 'clean debris surface' standard, the tank liner will be removed and disposed. If the
23 underlying tank surface does not meet the clean debris surface standard, it will be decontaminated in
24 accordance with this section or disposed.

25 **H.2.3 Management of Decontamination Waste from Closing Container Units (Non-Hot 26 Cell)**

27 Decontamination waste from closing container DWMUs will be placed in containers and sampled to
28 determine disposal requirements. Samples from each container will be analyzed as set forth in Table H.1
29 for the following:

- 30 • Corrosivity using the methods described in EPA SW-846 (Methods 9040/9045)
- 31 • Ignitability using methods described in EPA SW-846 (Methods 1010/1020)
- 32 • Toxicity characteristic using the Toxicity Characteristic Leaching Procedure (TCLP) described in
33 EPA SW-846 (Method 1311) [including analysis for metals; volatile organics; and semivolatile
34 organics, which includes chlorinated pesticides.]

35 Other analyses might be performed based on process knowledge to confirm the presence of a listed waste.
36 The results of sample analyses along with appropriate process knowledge will be used to determine how
37 to dispose of decontamination waste. (Background levels will be determined by analysis of the tap water
38 used for makeup of the decontamination solutions.) The results of the ignitability, corrosivity, and
39 toxicity characteristic analyses will be used to determine if the waste is characteristic dangerous waste
40 (WAC 173-303-090) as set forth in Table H.1. Decontamination waste will be managed at a permitted
41 Treatment, Storage, and Disposal (TSD) unit or treated and disposed onsite.

42 **H.2.4 Inspection to Identify Extent of Decontamination/Removal and to Verify 43 Achievement of Closure Standard**

44 *Attainment of a 'clean debris surface' will be verified by a visual inspection in accordance with the*
45 *standard that states: A clean debris surface means the surface, when viewed without magnification,*
46 *shall be free of all visible contaminated soil and hazardous waste except residual staining from soil*
47 *and waste consisting of light shadows, slight streaks, or minor discolorations and soil and waste in*

1 *cracks, crevices, and pits may be present provided that such staining and waste and soil in cracks,*
2 *crevices and pits shall be limited to no more than 5 percent of each square inch of surface area.*
3 *(40 CFR 268.45, Table 1).*

4 Areas of degraded surface material, such as significant concrete cracking or heavily gouged steel, will be
5 evaluated by non-destructive or destructive means to determine depth of significant surface defects,
6 amount of contamination present in the defects, and to determine if environmental contamination has
7 resulted from the material defect.

8 **H.3 Closure of the Shielded Analytical Laboratory (SAL) Hot Cells and Tank**

9 The activities required for the closure of the SAL hot cells and tank system are described in the following
10 sections. As noted in Section H.1.2, these units will be closed at the same time as their operations are
11 mutually interdependent.

12 **H.3.1 Removing Dangerous Waste**

13 Closure or partial closure activities will be initiated by removal of the dangerous waste inventory present
14 in the hot cells and tank at the time of closure or partial closure. Inventory removal procedures for
15 containers in the hot cell will be performed in accordance with the waste handling, treating, packaging,
16 and manifesting requirements of Section H.2.1.

17 The contents of the SAL tank will be transferred to Cell 6 and placed in containers. The contents of the
18 SAL tank will be loaded into containers and managed in accordance with Section H.2.1. Any other
19 suitable Resource Conservation and Recovery Act (RCRA)-permitted units that might exist when the
20 SAL tank is closed could be used as a storage alternative.

21 During closure, wastes will be relocated to other, unclosed DWMUs in the 325 HWTUs (in the case of
22 partial closure) or transferred to other Hanford Permit operating units for subsequent management.
23 Offsite treatment and/or storage facilities may be used if appropriate.

24 **H.3.2 Decontaminating Equipment, Structures, and Soils**

25 At the time of hot cell tank closure, all equipment and structures in dangerous waste storage and treatment
26 areas will be either removed and disposed of, or decontaminated in accordance with this section.
27 Decontamination activities will address piping, equipment and structures known to have contacted
28 dangerous waste. Equipment and structures that exhibit a 'clean debris surface' before starting closure
29 activities will be considered decontaminated and receive no further decontamination.

30 Decontamination methods for equipment and structures will be selected from appropriate technologies
31 found in 40 CFR 268.45, Table 1, such as water washing and spraying, high-pressure water jet scarifiers,
32 abrasive blasting, aquablasting, or mechanical concrete scrubbers and scarifiers. Other methods not
33 included in 40 CFR 268.45, Table 1 may be utilized to address non-RCRA contaminants, but cannot be
34 used alone to achieve a clean debris surface. These methods will be used until a clean debris surface is
35 obtained, or the effort to decontaminate is abandoned (i.e. the equipment or structure is removed for
36 disposal.)

37 All equipment used for decontamination will be decontaminated or disposed of before closure is
38 complete. All cleaning and decontamination waste will be collected and managed as described in
39 Section H.3.5. Any disposable equipment will be containerized and disposed of based on the status of the
40 waste as dangerous, nondangerous, or mixed waste.

41 Initial gross decontamination of the hot cells will be necessary before entry of personnel into the hot cells
42 for the visual inspection of the cell liners. As low as reasonably achievable (ALARA) concerns in the
43 cells will preclude personnel entry into the cells, and configuration of the cells precludes thorough visual
44 inspection of the interior surfaces of the cells. This decontamination will be accomplished using high-
45 pressure water sprays or other appropriate decontamination techniques operated by means of the
46 manipulators.

1 If a 'clean debris surface' is present at the time that closure activities are started, decontamination
2 procedures will consist of sweeping, dusting, vacuuming, and wiping with soap and water. Brushing or
3 sweeping will be used to clean up coarse debris. Vacuuming will be performed using a commercial or
4 industrial vacuum equipped with a HEPA filter. The vacuum cleaner bag containing captured particulates
5 will be appropriately disposed. Dust wiping will be done with a damp cloth or wipe (soaked with water)
6 to remove dust from surfaces that cannot be decontaminated with a vacuum. The cloth or wipe also will
7 be appropriately disposed. The volume of solid waste generated will depend on the extent of
8 decontamination necessary.

9 Moderate time will be required for setup of the decontamination equipment. However, labor
10 requirements for the process will be extensive for areas with ALARA concerns, and will, at least initially,
11 require remote operations. Moderate time also will be required for packaging debris, dismantling, and
12 removing cleaning equipment. Moderate quantities of wastewater will be generated by this procedure.
13 However, if a 'clean debris surface' is not present, more sophisticated decontamination methods will be
14 implemented. The hot cells will be treated extensively using an appropriate decontamination technique
15 (40 CFR 268.45, Table 1). The ceiling, walls, and floor will be treated by applying the decontamination
16 technique to remove all residues from the surfaces. The contaminated waste generated by this activity
17 will be collected in the SAL and will be managed as described in Section H.3.6. The volume of waste
18 generated by this procedure is anticipated to be on the order of 2,000 liters.

19 If necessary, more aggressive decontamination methods, such as sandblasting or other appropriate
20 technologies, could be used effectively to clean contaminated structure surfaces. All residues from the
21 decontamination effort will be collected for sampling and proper subsequent disposal as described in
22 Section H.3.6. Following completion of decontamination, additional visual inspections will be performed
23 to determine that the 'clean debris surface' standard has been achieved. In the unlikely event that
24 structures cannot be cleaned using the methods described, these structures might be demolished, removed,
25 and managed as dangerous waste.

26 The hot cells in the SAL also include two other areas that might require decontamination. These are the
27 storage rooms 200, 202 and 203 in the backside of SAL and the front face (Room 201). It is expected that
28 the level of contamination will be minimal based on the operations performed. Accordingly, the level of
29 the decontamination effort also is expected to be minimal. For example, decontamination efforts in the
30 operating gallery might be limited to decontamination and removal of the fume hood. If a 'clean debris
31 surface' is present at the time that closure activities are started, decontamination procedures will consist of
32 sweeping, dusting, vacuuming, and wiping with soap and water.

33 All dangerous waste storage and treatment operations at the 325 HWTUs will be conducted indoors,
34 which will minimize potential contamination of the soil and groundwater. Unit design and administrative
35 controls minimize the possibility of loss of waste to the soil and contamination of the groundwater. The
36 potential for degradation of surface water quality also is very low due to the building design and
37 administrative controls employed.

38 If contaminated soil is found and if practical, it may be excavated, removed, and disposed as dangerous
39 waste. Extensive soil contamination will be integrated with the closure of the 325 Building and the
40 Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Record of
41 Decision for the 300 FF 2 operable unit.

42 No contaminated soil is expected to be removed in conjunction with the closure of the hot cells and SAL
43 tank units at the 325 HWTUs OUG due to the construction of the building and the scope of operations. If
44 it is necessary to remove soil, the closure plan will be amended via permit modification to include
45 necessary details such as soil removal, sampling to verify adequacy of removal, and subsequent
46 management of the removed soil.

1 **H.3.3 Decontamination of Hot Cell Trough**

2 The collection trough in the interconnected SAL hot cells will be decontaminated using an appropriate
3 decontamination technique (40 CFR 268.45, Table 1) until a clean debris surface is obtained. Any
4 wastewater collected in each sump from the cleaning process will be collected in the SAL waste tank
5 system and managed as dangerous waste. The decontamination of the hot cell collection trough should
6 take moderate time and should generate less than 500 liters of waste. Additional decontamination
7 techniques, such as grit blasting or chemical cleaning, could be used if necessary. The volume of solid
8 waste generated will depend on the extent of decontamination necessary.

9 **H.3.4 Decontamination of the Shielded Analytical Laboratory (SAL) Tank System**

10 At closure, the SAL tank and ancillary equipment, tank secondary containment pan, and associated tank
11 piping will be decontaminated using water washing and spraying (40 CFR 268.45, Table 1). This may be
12 followed by other appropriate techniques if necessary to obtain a clean debris surface. Run-off of
13 decontamination solutions and wastewater will be prevented either by performing cleaning activities
14 within existing containment structures or within portable containment pans or by surrounding the
15 decontamination area with plastic and absorbent pads.

16 If water flushing is unsuccessful at removing dangerous waste and dangerous waste constituents, other
17 decontamination processes will be selected from 40 CFR 268.45, Table 1, such as aquablasting,
18 sandblasting, and high-pressure water jet scarifiers. The actual equipment used will be selected based on
19 practicality and effectiveness to remove residual materials. Following the decontamination process, a
20 visual inspection for a 'clean debris surface' will be conducted to monitor the effectiveness of the
21 decontamination work.

22 Management of decontamination residues is provided in Section H.3.5. The time requirements for
23 decontamination of the SAL tank system are expected to be moderate, and wastewater generated by this
24 procedure is not expected to exceed 1,200 liters. The volume of solid waste generated will depend on the
25 extent of decontamination necessary.

26 On completion of decontamination activities, the SAL tank either will remain in place for other uses
27 within the 325 Building, will be moved for other uses on the Hanford Facility, or will be demolished and
28 disposed (if its usefulness is determined to be complete).

29 **H.3.5 Management of Decontamination Waste from SAL**

30 Decontamination liquid from the SAL hot cells will be accumulated in cell or in the tank and sent to a
31 permitted facility. All nonliquid waste generated during decontamination operations and the equipment
32 used (e.g., sandblast grit, personnel protective equipment and clothing, disposable equipment) will be
33 collected in containers and stored onsite. Samples of the waste could be collected and analyzed as
34 described in Section H.2.3.

35 **H.3.6 Inspection to Identify Extent of Decontamination/Removal and to Verify** 36 **Achievement of Closure Standard**

37 Attainment of a 'clean debris surface' will be verified by a visual inspection in accordance with the
38 standard that states: A clean debris surface means the surface, when viewed without magnification, shall
39 be free of all visible contaminated soil and hazardous waste except residual staining from soil and waste
40 consisting of light shadows, slight streaks, or minor discolorations and soil and waste in cracks, crevices,
41 and pits may be present provided that such staining and waste and soil in cracks, crevices and pits shall be
42 limited to no more than 5 percent of each square inch of surface area. (40 CFR 268.45, Table 1).

43 Areas of degraded surface material, such as significant concrete cracking or heavily gouged steel, will be
44 evaluated by non-destructive or destructive means to determine depth of significant surface defects,
45 amount of contamination present in the defects, and to determine if environmental contamination has
46 resulted from the material defect.

1 The SAL tank and ancillary waste piping will be evaluated for meeting the clean debris standard by use of
2 fiber-optic cameras or other nondestructive examination techniques.

3 **H.4 Maximum Waste Inventory**

4 The 325 HWTUs are used to store and treat a variety of different research-and-operations-related
5 dangerous waste. The maximum inventory of waste that could be present at any one time in the
6 325 HWTUs Dangerous Waste Management Units (DWMU) is given in the following table.

Activity	HWTU	SAL Containers	SAL Tank	Cask Handling Area	Truck Lock	3714 Pad
Storage (liters)	9000	3000	1218	10370	10370	17620
Treatment (liters/day)	946	568	1218	10370	10370	17620

7 **H.5 Schedule for Closure**

8 At least forty-five days prior to the date on which closure of one or more DWMUs is expected to begin,
9 the owner/operator of the 325 HWTUs will notify Ecology in writing. [WAC 173-303-610(3)(c)(i)]
10 Completion of closure activities for DWMUs at the 325 HWTUs OUG is expected to take up to two years
11 from the date of receipt of the final volume of waste at the units. This extended time for closure is
12 necessary due to ALARA concerns present in the facility, particularly the six interconnected hot cells.
13 Closure activities are summarized in Table H.2, and a detailed schedule of closure activities is provided in
14 Table H.3.

15 **H.6 Extension for Closure Time**

16 **H.6.1 Extension for Inventory Removal**

17 An extension of the time for removal of the inventory of dangerous waste from container
18 treatment/storage unit(s) being closed designated for closure is requested for the 325 HWTUs. Acquiring
19 disposal approvals and arranging shipping to receiving facilities for mixed waste requires longer than the
20 90 days anticipated under WAC 173-303-610(4)(a). The expected time needed to remove all waste from
21 container treatment/storage units being closed is 180 days. For waste in the tank and hot cells, the
22 expected time to complete inventory removal is two years.

23 The extended period for removal of the inventory of dangerous waste is needed to accomplish the
24 procedures that are needed to safely work with the ALARA concerns that are present. All activities
25 required to remove the inventory of dangerous waste will be conducted in accordance with applicable
26 Permit conditions and all safety systems will continue to be operated. The removal of the inventory of
27 dangerous waste will be conducted following procedures that are designed to be protective of the workers
28 and the environment.

29 **H.6.2 Extension for Closure Period**

30 An extension of the closure time is requested for the 325 HWTUs units being closed. The ALARA
31 concerns that are present necessitate this extension. The expected time needed to close the units is two
32 years.

33 The extended closure period exceeding the 180 days given in WAC 173-303-610(4)(b) is needed to
34 accomplish the procedures that are needed to safely work with ALARA concerns that are present in the
35 SAL. Decontamination of hot cells is a slow and labor-intensive operation, complicated by the fact that
36 most of the work must be done remotely using manipulators. Even after ALARA concerns have been
37 reduced enough to allow personnel entry, work is hampered by the extensive personal protective
38 equipment staff are required to wear, and the strict procedures that are enforced to protect both workers
39 and the environment from contamination.

- 1 Most equipment located in the hot cells must be packaged in shielded containers. This may require
- 2 extensive, remotely-operated size reduction of the equipment. Removal of hot cell equipment usually
- 3 takes many months to complete.
- 4 All closure activities will be conducted in accordance with applicable Permit conditions and all safety
- 5 systems will continue to be operated. Closure activities will be conducted following procedures that are
- 6 designed to be protective of the workers and the environment. [WAC 173-303-610(4)(b)(i)]

7 **H.7 Closure Cost Estimate**

- 8 An annual report outlining updated projections of anticipated closure costs for the Hanford Facility
- 9 TSD units having final status is not required per Permit Condition II.H.

1 **Table H.1. Analysis Parameters for Closure of the 325 Hazardous Waste Treatment Units**

Parameter and EPA SW-846 ^a Analytical Method	Equipment and Structures Wipe Samples	Decontaminati on Waste Water Samples	Soil Samples (if determined to be contaminated)
pH for corrosivity (Method 9040 or 9045)		X	
Ignitability (Method 1010 or 1020)		X	
TCLP (Extraction Method 1311) • Metals (Method 6000 and/or 7000 series) • Volatile organics (Method 8240) • Semivolatile organics (Method 8270) • Chlorinated pesticides (Method 8080)		X	
Total metals: antimony, arsenic, beryllium, boron, cadmium, chromium, lead, mercury, nickel, selenium, silver, and thallium (Method 6000 and/or 7000 series)	X		X
Volatile organics (Method 8240)	X		X
Semivolatile organics (Method 8270)	X		X

^a SW-846 = EPA Test Methods for Evaluating Solid Wastes (Third Edition, latest update, 1986).

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3 **Table H.2. Summary of Closure Activities for the 325 Hazardous Waste Treatment Units**

Closure Activity Description	Expected Duration (a)	
	Container Unit(s)	SAL Hot Cells/Tank
Receive final volume of dangerous waste	N/A	N/A
Notify Ecology that closure activities will commence (at least 45 days before final closure activities begin)	N/A	N/A
Remove waste inventory and package, manifest, and transport all dangerous waste for treatment, storage, and/or disposal	180 days	780 days
Initial decontamination	120 days	120 days
Remove equipment	270 days	270 days
Records review and visual inspection of structural surfaces, equipment, troughs, and tanks to identify areas of contamination and to determine levels and methods of decontamination required	30 days	30 days
Decontaminate structural surfaces, equipment, troughs, and tanks using methods determined after records review and visual inspection	180 days	180 days
Decontaminate front face and rear face of hot cells	N/A	120 days
Reinspect surfaces to verify clean debris standard is met	2 days	2 days
Evaluate best methods for treatment and disposal of waste resulting from decontamination	25 days	25 days
Dispose of waste resulting from decontamination	80 days	80 days
Submit certification of closure to Ecology (within 60 days of completion of final closure activities)	N/A	N/A
(a) Some activities are performed concurrently.		

1 **Table H.3. Closure Schedule for the 325 Hazardous Waste Treatment Units**

Action	Schedule	
	Container Units	Hot Cells and Tank
Date of receipt of last volume of waste	Day 0	Day 0
Completion of waste inventory removal	Day 180	Day 780
Equipment decontamination or disposal and visual inspection of structural surfaces to identify areas of contamination and to determine level of decontamination needed	Day 530	Day 1210
Structural decontamination	Day 635	Day 1315
HWTU sump and fire water containment tank and SAL hot cells trough and tank decontamination	Day 650	Day 1330
Visual inspection to determine effectiveness of decontamination	Day 690	Day 1370
Further decontamination and visual inspection, if necessary, and disposal of all decontamination waste based on results of waste analyses	Day 720	Day 1400
Clean closure certification	Day 780	Day 1460

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