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204-AR Waste Unloading Station, Dangerous Waste Management Unit Interim Status Closure Plan

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Abstract: The 204-AR Waste Unloading Station Interim Status Closure Plan describes a phased approach to achieve clean closure of the 204-AR-TK-1 Dangerous Waste Management Unit as part of the Double-Shell Tank System Unit Group.

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ACRONYMS AND ABBREVIATIONS

DOE-ORP	United States Department of Energy, Office of River Protection
DQO	Data Quality Objective
DST	DST System
DWMU	dangerous waste management unit
ETF	200 Area Effluent Treatment
HFFACO	Hanford Federal Facility Agreement and Consent Order
LERF	Liquid Effluent Retention Facility
MDL	method detection limit
RCRA	Resource Conservation and Recovery Act
SAP	Sampling and Analysis Plan
WRPS	Washington River Protection Solutions

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1 **1.0 INTRODUCTION**

2 This Interim Status Closure plan was prepared based on agreement between the U.S. Department
3 of Energy Office of River Protection and the State of Washington Department of Ecology
4 (Ecology) resulting from a dangerous waste compliance inspection initiated by Ecology in
5 June 2015. The agreement is documented in letter [16-ECD-0027](#) dated June 27, 2016.

6 This Interim Status Closure Plan describes the planned activities and performance standards for a
7 phased closure of the 204-AR Waste Unloading Station dangerous waste management unit
8 (DWMU) in accordance with WAC 173-303-610. The requirements of WAC 173-303-610 are
9 used as required by the Hanford Federal Facility Agreement and Consent Order (HFFACO),
10 Action Plan, Section 5.3.

11 The 204-AR Waste Unloading Station is a DWMU in the Double-Shell Tank (DST) System
12 Operating Unit Group; therefore, this closure plan will be entered into the DST System operating
13 record, including any future revisions of the document. This Interim Status Closure plan is
14 intended to supplement the closure plan submitted under [11-ESQ-321](#), *Submittal of Supplemental*
15 *Information for Double-Shell Tank (DST) System and 242-A Evaporator*, dated December 29,
16 2011. If the Interim Status Closure Plan conflicts with the closure plan submitted under
17 [11-ESQ-321](#), the Interim Status Closure Plan will prevail.

18 **2.0 FACILITY DESCRIPTION**

19 The 204-AR Waste Unloading Station is located immediately south of the 244-AR Vault in
20 Hanford's 200 East Area (Figures 3.1 and 3.2). The 204-AR Waste Unloading Station was
21 constructed in 1979 and was used to unload liquid waste from various Hanford Site operations
22 for treatment prior storage in the DST System. Waste was loaded into rail cars and in some
23 instances, tanker trucks and shipped to the facility. During off-load, waste was transferred via
24 underground piping to select DSTs for storage via the 241-A-A Valve Pit. The 241-A-A Valve
25 Pit was determined not to be a RCRA compliant waste transfer structure and a planned upgrade
26 to achieve compliance was cancelled; therefore, the 204-AR Waste Unloading Station was
27 placed in Deferred Use status.

28 **3.0 DANGEROUS WASTE MANAGEMENT UNIT DESCRIPTION**

29 The 204-AR Waste Unloading Station contains a single DWMU, Catch Tank 204-AR-TK-1
30 system located in a belowground stainless steel lined vault that includes associated piping and
31 ancillary equipment. The 204-AR Waste Unloading Station waste management operations began
32 in February 1982; the DWMU was deactivated in 2010 by draining, flushing, and isolating Catch
33 Tank 204-AR-TK-1. Deactivation also included emptying chemical product storage tanks,
34 isolating water sources, shutting off ventilation, disabling fire systems, and removal of an
35 underground diesel storage tank. The 204-AR Waste Unloading Station unloading area was
36 operated as a less than 90-day accumulation area for containerized waste which was offloaded
37 and transferred to the DST System. Small product storage tanks in the 204-AR Building stored
38 sodium hydroxide and sodium nitrite used to adjust waste chemistry in order to meet corrosion
39 specifications of the DST System. Catch Tank 204-AR-TK-1 supported operations by collecting
40 spills and any associated decontamination water during off-loading operations.

41 Catch Tank 204-AR-TK-1 is located in an underground reinforced concrete vault with inside
42 dimensions of 6 x7 x 15 feet deep (1.8 x2.1 x4.6 meters deep). The vault is lined with 0.25-inch
43 (0.64-meter) stainless steel plate that covers the vault floor and walls up to a height of 10.5 feet

1 (3.2 meters). The 18-inch (46-centimeter) thick vault floor is sloped to a 1 x 1-foot
2 (0.3 x 0.3-meter) sump that is 8 inches (20 centimeters) deep. The top of the vault is fitted with
3 two removable sections of steel grating for access to the catch tank and vault.

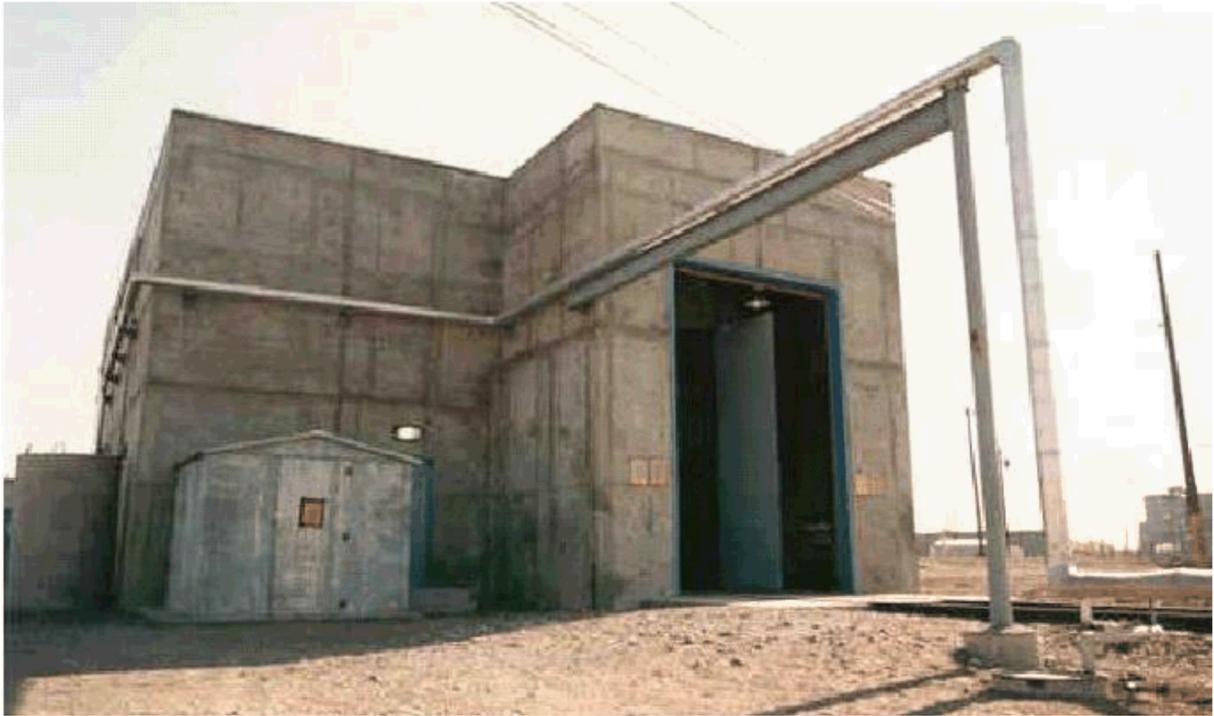
4 Catch Tank 204-AR-TK-1 is cylindrical in shape positioned with its axial centerline oriented
5 vertically and has a flat plate top and bottom. The tank bottom is sloped a few degrees relative to
6 the walls to minimize a residual heel volume below the pump-out line. The tank is fabricated
7 from 0.25-inch (0.64-meter) thick 304L stainless steel and is approximately 8.5-feet high x
8 5.5-inch diameter (2.6 x 1.7-meter). The nominal tank volume is 1,500 gallons (5,678 liters)
9 with an operating limit of 80 percent, or 1,145 gallons (4,334 liters).

10 Tank integrity examinations (both visual and ultrasonic inspection) were performed in 2000.
11 Visual examination was conducted in the tank annulus with a video camera. Still photos and
12 videotapes showed very satisfactory condition of the pit and catch tank exterior. Catch Tank
13 204-AR-TK-1 passed a 120-hour static leak testing and ultrasonic testing of tank wall thickness
14 (RPP-6829, *Engineering Report on Double-Shell Tank System Miscellaneous Tanks*). These
15 tank examinations were required by Ecology Administrative Orders 00NWPKW-1250 and
16 00NWPKW-1251.

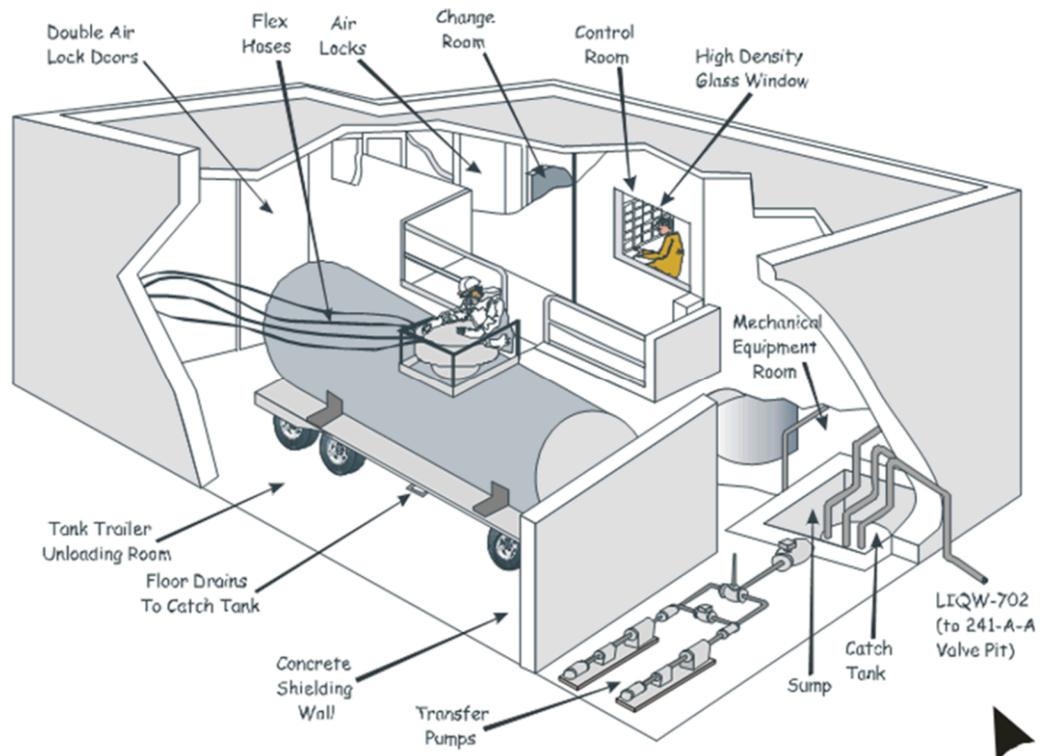
17 Three different in-floor drains within the 204-AR building are routed to Catch Tank
18 204-AR-TK-1. By design, any liquid that may have spilled from the container unloading vehicle
19 (rail tanker or tanker truck), process piping, or decontamination solutions drained to the floor
20 would be collected in the catch tank. The tank also collected floor drain liquids from the
21 unloading room, the mechanical equipment room, and the operating gallery (on the second floor
22 balcony). The catch tank itself is equipped with liquid level instrumentation, an overflow line
23 that drained to the sump, inlet connections for the drain lines and decontamination solution, and
24 a pump out line. The bottom of the catch tank is sloped toward the pump out line. Catch Tank
25 204-AR-TK-1 liquids were transferred periodically to the DST System via the LIQW-702
26 transfer line, when it was operational. The transfer line has been cut and capped.

27 The Catch Tank 204-AR-TK-1 continues to be monitored with liquid level instrumentation, and
28 a high-level alarm. The tank was emptied and rinsed and is currently storing wastewater
29 accumulated from safety shower testing and the addition of water to the floor drain seals. Other
30 catch tank system ancillary equipment subject to this closure plan have been drained and flushed.

1

Figure 3.1. 204-AR Waste Unloading Station*Photograph Taken 6/1987*

2

Figure 3.2. Rail Car Unloading Schematic

3

1

Figure 3.3. Catch Tank 204-AR-TK-1 (Below Grating)



2

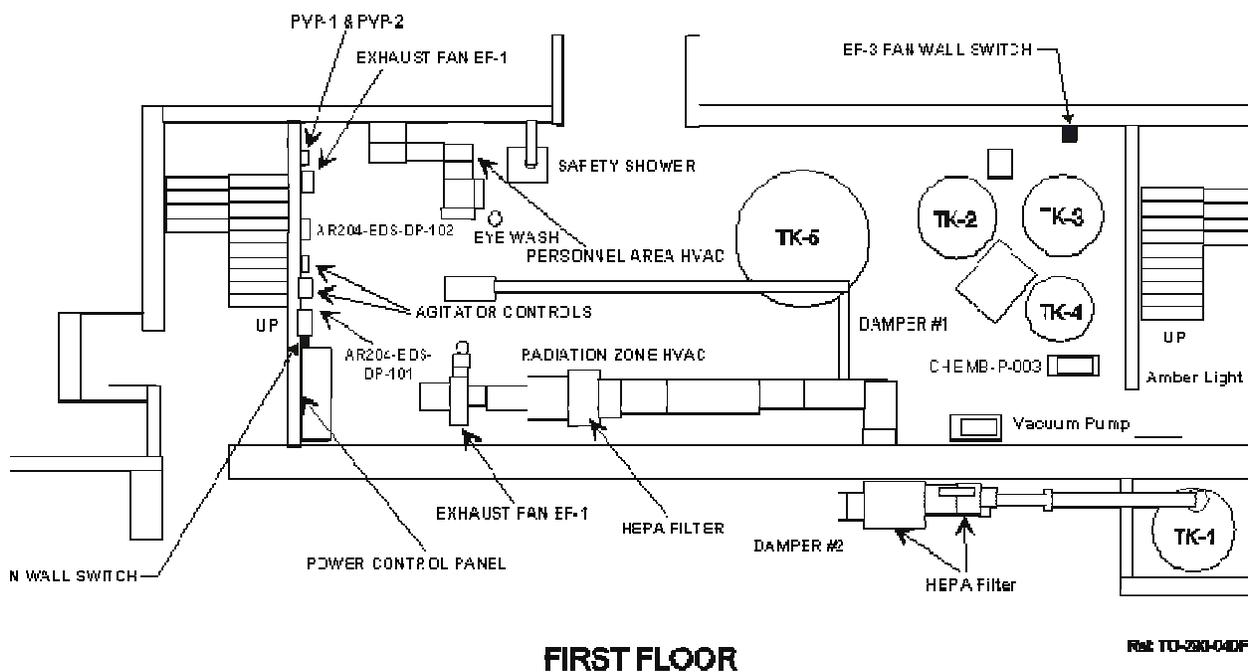
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4

Date Photograph Taken Unknown

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Figure 3.4. 204-AR Equipment Room 1st Floor

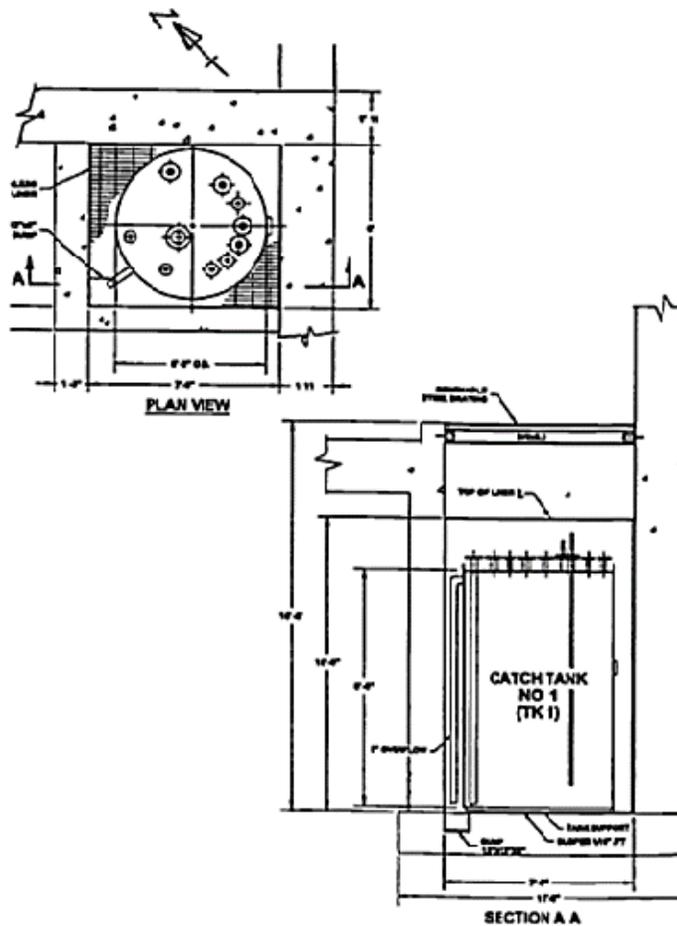


FIRST FLOOR

2

Figure 3.5. Catch tank 204-AR-TK-1 Plan and Section View

3



1 **3.1 Dangerous Waste Inventory**

2 The 204-AR Waste Unloading Station was used for the inline treatment of mixed waste and
3 storage of mixed waste in Catch Tank 204-AR-TK-1. Treatment was performed by the addition
4 of sodium hydroxide and sodium nitrite to increase the pH and nitrite concentrations of the waste
5 to meet DST System corrosion specifications. Waste was received from generators in the 100,
6 200, 300, and 400 Areas of the Hanford Site and consisted primarily of liquid mixed waste from
7 decontamination and laboratory operations.

8 The DST System Part A Form identifies the maximum process design capacity for the
9 204-AR Waste Unloading Station as 50,000 gallons (189,271 liters), of which, 10,000 gallons
10 (37,854 liters) was associated with system flushes following each off-load and transfer. The
11 DST Part A Form identifies the facility as managing mixed waste consisting of listed waste
12 (F001 through F005), characteristic waste (D001, D002, and D003), toxicity characteristic waste
13 (D004 through D011, D018, D019, D022, D028 through D030, D033 through D036, D038
14 through D041, and D043), and state-only waste WT01, WT02, WP01, and WP02). Multi-source
15 leachate F039 was added to the DST System Part A Form waste codes in 1994 in anticipation of
16 receiving leachate from the low-level burial grounds (Trench 31), however this waste stream was
17 never received at 204-AR.

18 Catch Tank 204-AR-TK-1 was deactivated and flushed in 2010, but continued to receive a small
19 amount of uncontaminated water discharged from building drain seal maintenance and safety
20 showers. The tank presently contains approximately 960 gallons (3,634 liters) of this water as
21 measured by the tank level indicator. An active leak detector in the vault sump monitors for
22 leaks.

23 **3.2 Closure Performance Standards and Closure Activities**

24 The DWMU portion of the 204-AR Waste Unloading Station will undergo a phased closure
25 resulting in clean closure of the DWMU in accordance with WAC 173-303-610. The first phase
26 of closure will entail pumping the contents of Catch Tank 204-AR-TK-1 to the maximum extent
27 possible. A visual inspection of the tank internals will be performed following pumping and the
28 drain line will be capped. This will leave the condition of the tank system protective of human
29 health and the environment until final clean closure is performed.

30 Clean closure of the 204-AR DWMU will be achieved through the removal of residual
31 dangerous waste inventory followed by decontamination and will be performed in accordance
32 with WAC 173-303-640(8) and WAC-173-303-610(2). The performance standard will be the
33 "clean debris surface" established in 40 CFR 268.45 incorporated by reference at WAC 173-303-
34 140. Ecology has indicated in the Guidance for Clean Closure of Dangerous Waste Unit and
35 Facilities, Publication #94-111, Section 5.3, that the alternative standards for debris can be used
36 for DWMU components that will remain in the facility after closure that would not be defined as
37 debris.

38 If decontamination of tank, piping, and vault components are determined to be impractical or
39 prove unsuccessful and fail to meet a "clean debris surface" following visual examination, clean
40 closure will be achieved through additional decontamination efforts or through physical removal
41 of the tank system and ancillary equipment. Visual examination will be accomplished by remote
42 camera. Additional decontamination would be accomplished through liquid flushes or other
43 innovative means to meet the closure performance standard.

1 As another option for demonstrating clean closure, Ecology has authority under
2 WAC 173-303-610(2)(b)(ii) to approve clean closure standards on a case-by-case basis in
3 accordance with the general performance standards of WAC 173-303-610(2)(a)(ii) and in a
4 manner that minimizes or eliminated post-closure escape of dangerous constituents. The
5 proposed method for setting a case-by-case clean closure standard for Catch Tank 204-AR-TK-1
6 is:

- 7 • Compiling process history showing the tank has been adequately decontaminated.
- 8 • Analytical sampling and analysis results showing the concentration of listed constituents
9 in the tank waste is below the unrestricted use exposure levels calculated under the *model*
10 *toxic control act regulations*, WAC 173-340 for groundwater.
- 11 • Concentration of other constituents does not exceed waste designation levels for
12 characteristics found in WAC 173-303-090.
- 13 • Process knowledge does not reveal the state-only criteria waste codes in
14 WAC 173-303-100 should be applied. Specifically, the groundwater clean closure
15 standards to be used for this case-by-case approval are referenced in
16 WAC 173-303-610(2)(b)(i), which cite WAC 173-303-700 through WAC 173-340-760,
17 excluding WAC 173-303-745.

18 If this option is selected, the Permittees will prepare the operating history to show that the tank
19 has been adequately flushed and rinsed such that the tank is deemed decontaminated of
20 dangerous and/or mixed waste and approach Ecology to obtain case-by-case approval of the
21 clean closure determination.

22 Clean closure of the 204-AR DWMU will be performed in conjunction with that of the overall
23 DST System. All waste generated from closure activities will be managed in accordance with
24 the generator provisions contained within WAC 173-303-200. It is anticipated the current
25 contents of Catch Tank 204-AR-TK-1 will be sent to an on-site DWMU such as the Liquid
26 Effluent Retention Facility (LERF) and 200 Area Effluent Treatment (ETF) or pumped directly
27 to a nearby DST System tank (e.g., AW, AY, or AZ).

28 In addition, clean closure activities will include an inspection of 204-AR vault and liner for any
29 visible cracks indicating the possibility of a release. If visible cracks are encountered, an
30 investigation of underlying soils will be performed and this closure plan will be revised
31 accordingly.

32 Catch Tank 204-AR-TK-1 continues to be monitored with liquid level instrumentation, and a
33 “high level” alarm. The tank was emptied and rinsed following the last transfer of waste and is
34 currently storing wastewater accumulated from safety shower testing and the addition of liquid to
35 the floor drain seals. To isolate Catch Tank 204-AR-TK-1 from the DST System, transfer line
36 LIQW-702 has been cut and capped.

37 Any sampling and analysis required to achieve clean closure will be supported by a Sampling
38 and Analysis Plan (SAP) and Data Quality Objective (DQO). This closure plan will be modified
39 to reflect any necessary sampling to support clean closure.

40 **3.3 Closure Schedule**

41 Current schedules establish the pumping of Catch Tank 204-AR-TK-1 contents and permanent
42 isolation to occur in fiscal year 2019. Final clean closure of the 204-AR Waste Unloading

1 Station DWMU will be performed in conjunction with the DST System closure. Closure of the
2 DST System is not scheduled for completion in the next 30 years [refer to [11-ESQ-321](#),
3 *Submittal of Supplemental Information for Double-Shell Tank (DST) System and*
4 *242-A Evaporator*, dated December 29, 2001]. The updated DST System Closure Plan, which
5 includes the 204-AR Waste Unloading Station was submitted to Ecology under letter
6 [11-ESQ-321](#) and states the following:

7 Closure of the DST System [including 204-AR WUS] is not anticipated to occur within the next
8 15 to 30 years. The actual date of last receipt of waste that triggers the notice of closure
9 requirements in Permit Condition II.J., will depend on the time required for current waste to be
10 processed. Other factors affecting the last receipt of waste include changes in operational
11 requirements, lifetime extension upgrades, and unforeseen factors. When a final closure date is
12 established, a revised closure plan will be submitted to Ecology.

13 During the intervening period until the catch tank contents are removed and the tank is
14 permanently isolated, daily level indicator readings and sump alarms will be monitored and
15 recorded. During the intervening period after the tank contents are removed and the tank
16 permanently isolation and before clean closure, the 204-AR Waste Unloading Station DWMU
17 will be inspected annually to ensure no adverse conditions have developed that threaten human
18 health and the environment.

19 **3.4 Certification of Clean Closure**

20 Certification of clean closure for the 204-AR DWMU will be completed in accordance with
21 WAC 173-303-610(6), and will be performed in conjunction with certification of closure for the
22 DST System. Activities performed in FY19 associated with the Catch Tank 204-AR-TK-1 will
23 be recorded in the DST System operating record to support future certification actions unless
24 Catch Tank 204-AR-TK-1 meets the clean closure performance standards. If the Catch Tank
25 204-AR-TK-1 meets the clean closure performance standards as a result of the FY19 activities,
26 IQRPE certification will obtained for Catch Tank 204-AR-TK-1 activities.

27 **4.0 REFERENCES**

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16 [37238/rpp-6829_-_rev_0c_-_%5bd6011391%5d.pdf?nodeid=125963288&vernum=-2](http://idmsweb.rl.gov/idms/livelink.exe/fetch/2000/18814/13256931/13248486/60016445/64737238/rpp-6829_-_rev_0c_-_%5bd6011391%5d.pdf?nodeid=125963288&vernum=-2)
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