



**U.S. Department of Energy
Hanford Site**

March 18, 2021

21-ESQ-000851

Mr. David Bowen, Program Manager
Nuclear Waste Program
Washington State Department of Ecology
3100 Port of Benton Boulevard
Richland, Washington 99354

Dear Mr. Bowen:

**RESPONSE TO THE NOTICE OF DEFICIENCY AND THE UPDATED CLOSURE PLAN
FOR TANK TK-P4 AND TANK TK-40 IN SUPPORT OF THE HANFORD FACILITY
DANGEROUS WASTE CLASS 3 PERMIT MODIFICATION REQUEST SUBMITTED
JULY 11, 2016**

- References:
1. Ecology letter from S. N. Schleif to B. T. Vance, RL, and T. B. Blackford, CHPRC, "Letter of Incompleteness and Notice of Deficiency (NOD) for the Class 3 Permit Modification Request, Closure Plan for PUREX Tanks TK-P4 and TK-40," 19-NWP-160, dated October 10, 2019.
 2. RL letter from S. L. Charboneau to A .K. Smith, Ecology, "Submittal of Permit Modification Request for Closure of the Plutonium Uranium Extraction (PUREX) Plant Tanks TK-P4 and TK-40 Tank Treatment, Storage, and Disposal Units; Closure Plan for PUREX Tanks TK-P4 and TK-40, DOE/RL-2015-72, Revision 0; and State Environmental Policy Act Environmental Checklist for the Hanford Facility Tanks TK-P4 and TK-40," 16-ESQ-0096, dated July 11, 2016.

Regarding Reference 1., the U.S. Department of Energy, Richland Operations Office (RL) is transmitting the response to the Notice of Deficiency (NOD) and the updated Closure Plan for Tanks TK-P4 and TK-40 in accordance with Washington Administrative Code (WAC) 173-303-840(1)(b).

This transmittal includes the following attachments:

- Attachment 1: Certification for Permit Application Material Supporting Class 3 Permit Modification Request for the Closure Plan for the PUREX Tanks TK-P4 and TK-40 DOE/RL-2015-72, Revision 1
- Attachment 2: Closure Plan for Tanks TK-P4 and TK-40, DOE/RL-2015-72, Revision 1.
- Attachment 3: Response to the NOD Review Comment Record for Review of Tanks TK-P4 and TK-40 Closure Plan.

Mr. David Bowen
21-ESQ-000851

-2-

March 18, 2021

A 60-day public comment period was held starting July 18, 2016, and a public meeting was held on August 31, 2016, as required by WAC 173-303-830(4)(c)(iv).

If you have any questions, please contact me, or your staff may contact Glyn D. Trenchard, Acting Assistant Manager for Safety and Environment, RL, on (509) 373-4016.

Sincerely,

Brian T. Vance Digitally signed by Brian T. Vance
Date: 2021.03.22 11:11:19 -07'00'

Brian T. Vance
Manager

ESQ:DBC

Attachments: (3)

cc w/attachs:

D. B. Bartus, EPA

J. Bell, NPT

R. Buck, Wanapum

L. C. Buelow, EPA

C. E. Cameron, EPA

L. Contreras, YN

S. L. Dahl-Crumpler, Ecology

D. R. Einan, EPA

M. Murphy, CTUIR

S. N. Schleif, Ecology

J. Temple, Ecology

B. L. Weese, Ecology

M. Woods, ODOE

Administrative Record (TSD: TS-2-6)

Ecology NWP Library

Environmental Portal

HF Operating Record (J. K. Perry, HMIS)

Attachment 1
21-ESQ-000851

Certification for Permit Application Material Supporting
Class 3 Permit Modification Request for the Closure Plan for the
PUREX Tanks TK-P4 and TK-40 DOE/RL-2015-72, Revision 1

3 pages including cover sheet

Certification
for
Permit Application Material Supporting Class 3 Permit Modification Request for the Closure Plan
for the PUREX Tanks TK-P4 and TK-40
DOE/RL-2015-72, Revision 1

“I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.”

Brian T. Vance

Digitally signed by Brian T. Vance
Date: 2021.03.22 11:12:05 -07'00'

Brian T. Vance, Manager
Owner/Operator
U.S. Department of Energy

Date

Certification
for
Permit Application Material Supporting Class 3 Permit Modification Request for the Closure
Plan for the PUREX Tanks TK-P4 and TK-40
DOE/RL-2015-72, Revision 1

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."



Scott M. Sax
President and Project Manager
Central Plateau Cleanup Company
Richland, Washington

3/2/21
Date

Attachment 2
21-ESQ-000851

Closure Plan for Tanks TK-P4 and TK-40
DOE/RL-2015-72, Revision 1

55 pages including cover sheet

ADMINISTRATIVE DOCUMENT PROCESSING AND APPROVAL

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Document Number: DOE/RL-2015-72		Revision/Change Number: 1	
Document Type: <i>(check one)</i>	<input checked="" type="checkbox"/> Plan	<input type="checkbox"/> Report	<input type="checkbox"/> Study
	<input type="checkbox"/> Description Document	<input type="checkbox"/> Other	
Document Action: <i>(check one)</i>	<input type="checkbox"/> New	<input checked="" type="checkbox"/> Revision	<input type="checkbox"/> Cancellation
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Manager: D.G. Singleton		373-7689	
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Reviewers:			
Name <i>(print first and last)</i>		Organization	
Craig Arola		Environmental Integration MGR	
Ben Zelen		Legal Counsel	
J.R. Jamerson		Security	
Author:		RELEASE/ISSUE	
<u>Bob Cathel</u> <small>Print First and Last Name</small>	<u>Cathel, Robert L</u> <small>Signature / Date</small>	 <p style="font-size: 2em; margin: 0;">Released</p> <p style="font-size: 2em; margin: 0;">Date:</p> <p style="font-size: 1.5em; margin: 0;">2021.02.09</p> <p style="font-size: 1.5em; margin: 0;">15:26:37[®]</p> <p style="font-size: 1.5em; margin: 0;">-08'00'</p>	
<small>Digitally signed by Cathel, Robert L</small> <small>Date: 2021.02.03 07:21:31 -08'00'</small>	<small>Digitally signed by DEBORAH SINGLETON (Affiliate)</small> <small>Date: 2021.02.03 07:31:06 -08'00'</small>		
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Other: Enter Title/Position			
<u>NA</u> <small>Print First and Last Name</small>	<small>Signature / Date</small>	<small>Digitally signed by JANIS AARDAL (Affiliate)</small> <small>Date: 2021.02.09 15:27:48 -08'00'</small>	


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Closure Plan for Tanks TK-P4 and TK-40

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management



P.O. Box 550
Richland, Washington 99352

Closure Plan for Tanks TK-P4 and TK-40

Date Published
February 2021

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

 U.S. DEPARTMENT OF
ENERGY | Richland Operations
Office
P.O. Box 550
Richland, Washington 99352

APPROVED
By Janis Aardal at 3:38 pm, Feb 09, 2021

Release Approval

Date

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1

Terms

CERCLA	<i>Comprehensive Environmental Response, Compensation, and Liability Act of 1980</i>
D&D	decontamination and decommissioning
DOE	U.S. Department of Energy
DOE-RL	U.S. Department of Energy, Richland Operations Office
DWMU	dangerous waste management unit
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
ERDF	Environmental Restoration Disposal Facility
FWS	Field Work Supervisor
GPS	global positioning system
HASQARD	<i>Hanford Analytical Services Quality Assurance Requirements Document</i>
HEIS	Hanford Environmental Information System
IQRPE	Independent, qualified, registered, professional engineer
LDR	land disposal restriction
MTCA	Model Toxics Control Act
NTCRA	non-time-critical removal action
OU	operable unit
ppm	parts per million
PUREX	Plutonium-Uranium Extraction (Plant)
QA	quality assurance
QC	quality control
RAWP	removal action work plan
RCRA	<i>Resource Conservation and Recovery Act of 1976</i>
S&M	surveillance and maintenance
SAP	sampling and analysis plan
TSD	treatment, storage, and disposal

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1 Introduction

2 The purpose of this plan is to describe the *Resource Conservation and Recovery Act of 1976* (RCRA)
3 closure process for tank TK-P4 and tank TK-40 dangerous waste management units (DWMUs).

4 Tanks TK-P4 and TK-40 will be clean closed in coordination with a *Comprehensive Environmental*
5 *Response, Compensation, and Liability Act of 1980* (CERCLA) non-time-critical removal action
6 (NTCRA) for the remaining tanks, piping, and ancillary structures in the Plutonium-Uranium Extraction
7 (PUREX) Complex's 203A and 211A storage areas. The removal action is needed to facilitate access to
8 the PUREX canyon building in support of future remedial and site closure actions.

9 Closure will be performed in accordance with the schedule provided in Section 8 of this document. This
10 closure plan complies with WAC 173-303-610(2) through (6), "Dangerous Waste Regulations," "Closure
11 and Post-Closure," and represents the baseline for closure and the enforceable compliance requirements
12 for conducting closure. Amendments to this plan will be submitted as a permit modification in accordance
13 with WAC 173-303-610(3)(b).

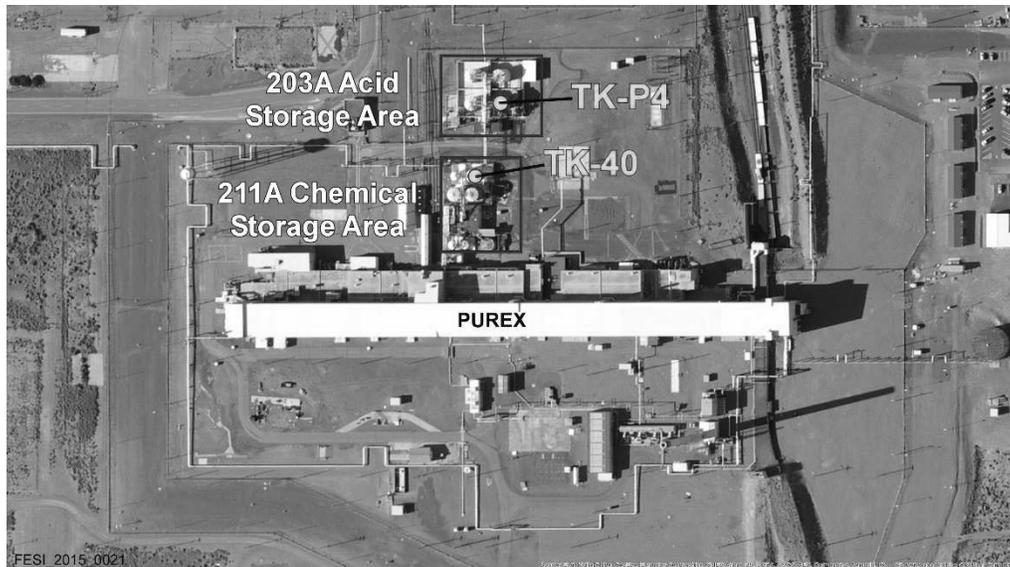
14 1.1 Physical Description

15 The PUREX Plant is located in the 200 East Area of the U.S. Department of Energy's (DOE)
16 Hanford Site in south-central Washington State. The PUREX facility is comprised of the PUREX canyon
17 building, two storage tunnels, several support structures including chemical storage areas, cribs, and
18 retention basins. Two of the PUREX support areas, the 203A acid storage area and the 211A chemical
19 storage area, housed systems of chemical storage tanks (including tanks TK-P4 and TK-40) and
20 associated ancillary equipment.

21 The 203A acid storage area and the 211A chemical storage area are located north of the PUREX canyon
22 building. Tank TK-P4 is located in the southeastern corner of the 203A acid storage area, and tank TK-40
23 is located in the northeast corner of the 211A chemical storage area. Tanks TK-P4 and TK-40, which
24 stored process chemicals during PUREX facility operations, were drained, flushed, and deactivated to
25 meet RCRA clean closure requirements. Figure 1 shows the locations of the tanks in the PUREX
26 Complex. Each tank is described in greater detail in the following sections.

27 1.1.1 Tank TK-P4

28 Tank TK-P4 is a 402,930 L (106,442 gal) stainless-steel storage tank located in the southeast quadrant of
29 the 203A acid storage area (Figure 1). The tank is mounted in a 1.8 m (6 ft) high, compartmentalized,
30 reinforced-concrete, diked secondary containment. The diked area of the 203A acid storage area measures
31 approximately 78.4 m² (844 ft²) and was built in 1954. Other facilities and equipment in the 203A acid
32 storage area consist of a pump house building, nine non-DWMU acid storage tanks, and ancillary piping
33 (Figure 2).



1
2 **Figure 1. Location of Tanks TK-P4 and TK-40 at the PUREX Complex**

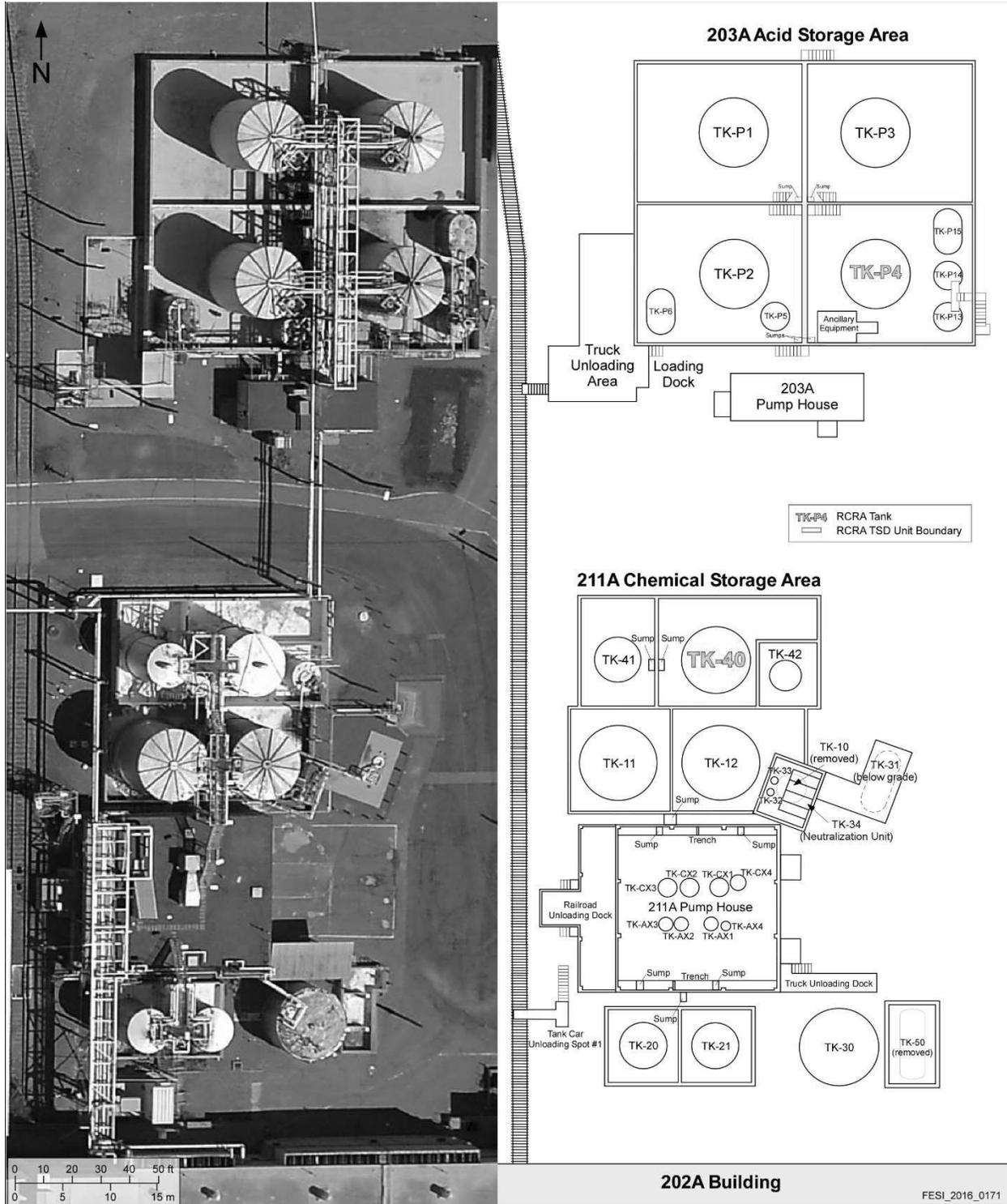
3 During deactivation, all of the tanks in the 203A acid storage area, including tank TK-P4, were flushed
4 and emptied to a minimum heel and their associated piping was drained, as stated in 17530-96-028,
5 “Completion of the PUREX Deactivation End Points Associated with Flushing/Draining of the
6 203A Vessels.” Since that time, the 203A acid storage area has been part of an ongoing surveillance and
7 maintenance (S&M) program for the PUREX facility and, therefore, isolated from utilities and
8 other structures.

9 **1.1.2 Tank TK-40**

10 Tank TK-40 is a 247,360 L (65,345 gal) carbon-steel storage tank located in the northeast quadrant of
11 211A chemical storage area (Figure 2). Tank TK-40 was used for diluent storage during PUREX fuel
12 reprocessing operations (RHO-MA-116, *PUREX Technical Manual*). The 211A chemical storage area
13 consists of two separate, reinforced-concrete, diked secondary containment structures. These two areas
14 contain chemical storage tanks, a pump house building, and ancillary piping. Tank TK-40 is mounted in
15 a reinforced-concrete, diked structure, measuring approximately 52.4 m² (564 ft²). In 1996, the tank was
16 flushed and emptied to a minimum heel.

17 **1.2 Process Information**

18 The PUREX Plant and its support facilities were designed to recover plutonium, uranium, and neptunium
19 from irradiated fuel elements received from the Hanford Site N Reactor and the single-pass reactors
20 during the Cold War Era. Construction of the PUREX Plant began in 1952, and full-scale operation began
21 in 1956. Operations were downgraded to wet standby in September 1972. In 1978, the plant progressed
22 from wet standby through cold startup tests and resumed operations to recover plutonium from irradiated
23 N Reactor fuel in November 1983. The PUREX Plant was operational until 1988, when it was shut down
24 again. The plant began transitioning into cold standby in October 1990 and was placed in cold standby in
25 September 1992. In December 1992, planning was initiated to change the status of PUREX from cold
26 standby to deactivation (or transition to shutdown).



1
 2

Figure 2. Tanks TK-P4 and TK-40

1 During the PUREX transition phase in the mid-1990s, the 203A and 211A storage areas that housed
2 tanks TK-P4 and TK-40, respectively, stored dangerous waste solutions. These support areas were used to
3 store flushing solutions until the solutions could be treated and transferred to the double-shell
4 tank system.

5 Tank TK-P4, located in the 203A acid storage area, was used to store recovered uranyl nitrate
6 hexahydrate resulting from PUREX fuel reprocessing operations. Acid solutions were denitrated to
7 reduce the volume of waste transferred to the double-shell tanks. Following the acid disposal activities,
8 the 203A acid storage area tanks, ancillary piping, and equipment were flushed until the tank heels no
9 longer exhibited dangerous waste characteristics. The tanks were flushed using adequate amounts of
10 water and caustic solutions, which consisted of sodium hydroxide and potassium hydroxide. Caustic
11 solution amounts ranging from 208.2 to 2,271.2 L (55 to 600 gal) were added, depending on the acidity
12 of the remaining tank heel, as determined by sample analysis.

13 Information from PUREX deactivation documents indicated that all tanks in the 203A acid storage area
14 were emptied or flushed, with only a minimum heel remaining at the completion of the deactivation.
15 The sample results provided in the deactivation documents describe the tanks and headers in the
16 203A acid storage area as flushed and/or emptied. Tank TK-P4 is described as having a volume of
17 402,930 L (106,442 gal), a heel of 1,136 L (300 gal), and an endpoint that no longer exhibits
18 characteristics of dangerous waste. Screening sample results for the tank heel indicated a pH of 11.73,
19 with total concentrations of 0.0023 parts per million (ppm) cadmium and 0.58 ppm chromium
20 (17530-96-028, "Completion of the PUREX Deactivation End Points Associated with Flushing/Draining
21 of the 203A Vessels"). It is not known whether the heel in tank TK-P4 is in solution or solid form at
22 this time.

23 The 211A chemical storage area stored bulk liquid chemicals used in PUREX Plant operations.
24 Tank TK-40 in the 211A north tank area was used to store radiologically contaminated tributyl phosphate
25 organic solvent. During the transition phase at PUREX, tank TK-40 was drained, flushed with diesel
26 (tetradecane) to remove any remaining tributyl phosphate, and then pumped to a minimum heel. PUREX
27 deactivation documents estimated a tank capacity of 247,360L (65,345 gal) and a residual heel of
28 537.5 kg (1,185 lb) for tank TK-40 (HNF-SD-CP-HIE-004, *PUREX Deactivated End-State Hazard*
29 *Analysis*). Tank TK-40 was isolated from utilities and other structures at the end of deactivation.
30 Deactivation was completed in 1998, and the plant has been under S&M management since that time.
31 There are currently no operating processes in the PUREX Complex. The S&M activities are described in
32 DOE/RL-98-35, *Surveillance and Maintenance Plan for the Plutonium-Uranium Extraction*
33 *(PUREX) Facility*.

34 **1.3 Waste Inventory and Characteristics**

35 The PUREX Plant tank systems were used to treat liquid waste generated during the PUREX process for
36 acceptance to the double-shell tank system. DOE/RL-95-78, *PUREX Facility Preclosure Work Plan*, lists
37 uranyl nitrate hexahydrate and nitric acid as the main constituents in tank TK-P4, which resulted from
38 processes related to the uranium storage tanks at the 203A acid storage area. Tributyl phosphate was
39 identified as a constituent of concern in tank TK-40, which resulted from processes related to the
40 chemical tanks in the 211A chemical storage area.

41 Tanks TK-P4 and TK-40 have process codes "T01" and "S02," and capacities of 402,930 L (106,442 gal)
42 and 247,360 L (65,345 gal), respectively. Process codes "T01" and "S02" indicate that both tanks were
43 used for treatment (T01) and storage (S02).

1 The waste codes for TK-P4 and TK-40 are listed in Table 1. lists a total of 15 waste codes for PUREX
 2 Plant tanks including the following: WP01 and WP02 (persistent dangerous wastes, halogenated organic
 3 compounds), WT01 and WT02 (toxic dangerous waste), D001 (ignitable), D002 (corrosive),
 4 D003 (reactive), and D004 through D011 (toxicity characteristic for the metals arsenic, barium, cadmium,
 5 chromium, lead, mercury, selenium, and silver). These waste codes were assigned to all the tanks
 6 identified as having stored and/or treated dangerous waste solutions during the transition phase.

7 Tanks TK-P4 and TK-40 have been drained and flushed and are currently awaiting final disposition.
 8 The constituents associated with the waste codes are considered herein to support the development of the
 9 soil sampling plan presented in Section 6 of this closure plan, as required for clean closure verification.

Table 1. TK-P4 and TK-40 Waste Codes

Waste Code	Target Analyte	Chemical Abstracts Service Number
TK-P4		
D001	Ignitability	--
D002	Corrosivity	--
D004	Arsenic	7440-38-2
D005	Barium	7440-39-3
D006	Cadmium	7440-43-9
D007	Chromium	7440-47-3
D008	Lead	7439-92-1
D009	Mercury	7439-97-6
D010	Selenium	7782-49-2
D011	Silver	7440-22-4
TK-40		
WT02	Tributyl phosphate	126-73-8

10

11 **1.4 Security Information**

12 The entire Hanford Site is a controlled-access area, and the PUREX facility is located in the southeastern
 13 part of the 200 East Area. Attachment 3, "Security," in WA7890008967, *Hanford Facility Resource*
 14 *Conservation and Recovery Act Permit* (hereinafter referred to as the Permit) describes the multi-tiered
 15 sitewide security system and how it applies to the requirements for signs ([WAC 173-303-310\(2\)\(a\)](#)), 24-hour
 16 surveillance ([WAC 173-303-310\(2\)\(b\)](#)), and artificial or natural barriers
 17 ([WAC 173-303-310\(2\)\(c\)](#)).

18 Changes to site access are expected to occur during the course of 200 East Area deactivation and
 19 decommissioning activities. Security measures that limit entry to authorized personnel and preclude
 20 unknowing access by unauthorized individuals will remain in place until closure of the DWMUs.

1 The PUREX Plant and chemical storage areas are located in the 200 East Area; therefore, security
2 information pertaining to the 200 Areas applies to these DWMUs.

3 **1.4.1 PUREX Security**

4 This section describes the signs (WAC 173-303-310(2)(a)), 24-hour surveillance
5 (WAC 173-303-310(2)(b)), and additional artificial and natural barriers (WAC 173-303-310(2)(c))
6 that are specific to the PUREX facility including the 203A acid storage area and the 211A chemical
7 storage area. These signs and barriers prevent unknowing entry and minimize the possibility for
8 unauthorized entry onto the active portions of the PUREX facility.

9 **1.4.1.1 Signs**

10 All signs are written in English and state the following:

- 11 • “DANGER - UNAUTHORIZED PERSONNEL KEEP OUT”

12 The signs are legible from a distance of at least 7.6 m (25 ft).

13 Signs are placed along the perimeter fence around the PUREX facility. Some signs along the fence line
14 are located at perimeter fence gates described in Section 1.4.1.3. The signs are placed no more than
15 76.2 m (250 ft) apart along the fence line.

16 **1.4.1.2 24-hour Surveillance System**

17 The PUREX facility is located in the 200 East Area and does not maintain a separate 24-hour surveillance
18 system. The entire Hanford Site is a controlled-access area. 24-hour surveillance information for the
19 Hanford Site is described in Permit Attachment 3, “Security” (WA7890008967).

20 The 24-hour surveillance system supplies security at the PUREX facility while the gates described in
21 Section 1.4.1.3 are open.

22 **1.4.1.3 Barriers**

23 The PUREX facility is located inside the 200 East Area fence.

24 In addition, the PUREX facility is surrounded by two separate perimeter fences on the north, west, and
25 south side. A section on the east side of the PUREX facility has a single perimeter fence. The fences are
26 chain link and at least 2.4 m (8 ft) (nominal) in height. There is barbed wire at the top of the fences, and
27 some sections have razor wire as well. In sections with two separate fences, the fences are separated by
28 an isolation zone that is 14 to 50 m (40 to 167 ft) wide.

29 The PUREX facility fences have the following six gates:

- 30 • North Gate (Main Gate), north side of 202A Building (gate for vehicle traffic)
- 31 • South Gate (Gate 4), south side of 202A Building (gate for vehicle traffic)
- 32 • Gate 3, East side of 202A Building
- 33 • Gate 1, Railroad Gate
- 34 • Gate 2, Railroad Gate
- 35 • Decontamination and Decommissioning (D&D) Gate, north side of 202A Building (gate for vehicle
36 traffic)

1 Gates 1 and 2 (the railroad gates) and Gate 3 are closed and locked when not in use. The North Gate, the
2 South Gates and the D&D Gate are open during hours when work is performed at the PUREX facility,
3 and these gates are closed and locked at all other hours. Only authorized personnel are issued keys to the
4 locked gates.

5 **1.4.2 203A Tank Farm**

6 This facility has an abovegrade tank farm with concrete secondary containment basins. Only one tank is a
7 DWMU (TK-P4). The tank farm is located north of the 202A Building and north of the 211A Tank Farm.

8 **1.4.2.1 Signs**

9 Signs are posted at the following locations around the 203A Tank Farm:

- 10 • Five signs along the perimeter chain around the 203A Tank Farm and 203A Building:
 - 11 – Two signs on the south side near the 203A Building
 - 12 – One sign on the west side
 - 13 – One sign on the north side near the northeast corner
 - 14 – One sign at the southeast corner

15 **1.4.2.2 Barriers**

16 The 203A Tank Farm is located inside the PUREX perimeter fences. Metal posts with a single-chain
17 strand surrounds the perimeter of the tank farm except at the 203A Building.

18 **1.4.3 211A Tank Farm**

19 This facility has an abovegrade tank farm with concrete secondary containment basins. Only one tank
20 is a DWMU (TK-40). The tank farm is located north of the 202A Building and south of the
21 203A Tank Farm.

22 **1.4.3.1 Signs**

23 Signs are posted at the following locations around the 211A Tank Farm:

- 24 • Four signs along the perimeter concrete walls of the secondary containment basins around the four
25 northernmost tanks in the 211A Tank Farm:
 - 26 – One sign on the north side
 - 27 – One sign on the west side
 - 28 – One sign on the south side near the southeast corner
 - 29 – One sign on the east side

30 **1.4.3.2 Barriers**

31 The 211A Tank Farm is located inside the perimeter fences.

32 **1.5 Inspection Information**

33 Tanks TK-P4 and TK-40 will be inspected as described in Table 2 until they are removed.

Table 2. TK-P4 and TK-40 Inspection Requirements

Inspection Item	Frequency*	Types of Problems and Acceptable Conditions
PUREX Facility		
203A Tank Farms		
Signage	Annually	<u>Problem:</u> “DANGER- UNAUTHORIZED PERSONNEL KEEP OUT” signs, or equivalent signs, are not present or not in satisfactory conditions at locations described in Section 1.4.2.1. <u>Acceptable condition:</u> Signs are present, not damaged, unobstructed and readable from a distance of 25 ft, or more.
Tank conditions	Annually	<u>Problem:</u> Major deterioration of the exterior of TK-P4 that could threaten the integrity of the tank. <u>Acceptable conditions:</u> The exterior of TK-P4 has only minor areas of corrosion or other types of deterioration that will not threaten the integrity of the tank.
Tank conditions	Annually	<u>Problem:</u> Major deterioration of TK-P4 as observed by evidence of leaks from the tank. <u>Acceptable conditions:</u> No evidence of leaks from the tank.
211A Tank Farms		
Signage	Annually	<u>Problem:</u> “DANGER- UNAUTHORIZED PERSONNEL KEEP OUT” signs, or equivalent signs, are not present or not in satisfactory conditions at locations described in Section 1.4.3.1. <u>Acceptable condition:</u> Signs are present, not damaged, unobstructed and readable from a distance of 25 ft, or more.
Tank conditions	Annually	<u>Problem:</u> Major deterioration of the exterior of TK-40 that could threaten the integrity of the tank. <u>Acceptable conditions:</u> The exterior of TK-40 has only minor areas of corrosion or other types of deterioration that will not threaten the integrity of the tank.
Tank conditions	Annually	<u>Problem:</u> Major deterioration of TK-40 as observed by evidence of leaks from the tank. <u>Acceptable conditions:</u> No evidence of leaks from the tank.

*Unless otherwise noted, inspection frequencies are defined by the following periodicities: Annually means at least once per 12-month period ±30 days.

1

2

2 Groundwater Monitoring

3

Tanks TK-40 and TK-P4 will be closed by removal or decontamination, and are not subject to any groundwater monitoring requirements.

4

3 Closure Performance Standards

The standards for closure of PUREX tanks TK-P4 and TK-40 will be in accordance with the requirements of WAC 173-303-610 and WAC 173-303-640, “Tank Systems.” The closure performance standards of WAC 173-303-610(2)(a)(i) through (iii) require the owner or operator to close the facility in a manner that will accomplish the following objectives:

- Minimize the need for further maintenance.
- Control, minimize, or eliminate post-closure escape of dangerous waste, dangerous waste constituents, leachate, contaminated runoff, or dangerous waste decomposition products to the ground, surface water, groundwater, or the atmosphere to the extent necessary to protect human health and the environment.
- Return the land to the appearance and use of surrounding land areas.

Tanks TK-P4 and TK-40 will be clean closed by removal of the tanks and secondary containment structures, and sampling the soil beneath the containment structures. The soil will be sampled and must meet clean-closure levels. In accordance with WAC 173-303-610(2)(b)(i), clean-closure levels for soil are the numeric cleanup levels calculated using unrestricted use exposure assumptions according to WAC 173-340, “Model Toxics Control Act – Cleanup” (hereinafter called MTCA), cleanup regulations (WAC 173-340-700, “Overview of Cleanup Standards,” through WAC 173-340-760, “Sediment Cleanup Standards,” excluding WAC 173-340-745, “Soil Cleanup Standards for Industrial Properties”). These numeric cleanup levels have been calculated according to the requirements of WAC 173-303-610(2)(b)(i) as of the effective date of the permit modification. These cleanup levels consider carcinogens, noncarcinogens, groundwater protection, and ecological indicator values. The closure performance standards are provided in Table 3. Soil sampling and analysis will be conducted in accordance with the approved sampling and analysis plan (SAP) located in Section 6 of this plan.

Clean closure will eliminate the need for future post-closure inspections, monitoring, and maintenance resulting from contamination from DWMU constituents. After clean closure, appearance of the land will be consistent with future land-use determinations for adjacent portions of the 200 Areas as an industrial-exclusive portion of the Hanford Site. This land use is consistent with the formal determination made for this portion of the 200 Areas, as described in 64 FR 61615, “Record of Decision: Hanford Comprehensive Land-Use Plan Environmental Impact Statement (HCP EIS).”

Table 3. Performance Standards for Target Analytes

Analyte	Chemical Abstracts Service Number	Closure Performance Standard ^a	
		Value (mg/kg)	Basis
Inorganics			
Ignitability ^b	--	Not applicable	--
Corrosivity ^b	--	Not applicable	--
Arsenic	7440-38-2	2.00E+01	Hanford Site Background ^{c, d}
Barium	7440-39-3	1.32E+02	Hanford Site Background ^d
Cadmium	7440-43-9	6.90E-01	GW Protection

Table 3. Performance Standards for Target Analytes

Analyte	Chemical Abstracts Service Number	Closure Performance Standard ^a	
		Value (mg/kg)	Basis
Chromium	7440-47-3	1.85E+01	Hanford Site Background ^d
Lead	7439-92-1	5.00E+01	Ecological – Plants
Mercury	7439-97-6	2.00E-01	PQL
Selenium	7782-49-2	1.00E+01	PQL
Silver	7440-22-4	2.00E+00	Ecological – Plants
Tributyl Phosphate	126-73-8	1.11E+02	Method B - Noncarcinogen

a. Screening levels were drawn from the following viable exposure pathways:

- MTCA Cleanup Levels and Risk Calculation (CLARC) II Tables, February 1996. MTCA (WAC 173-340-740, “Model Toxics Control Act—Cleanup,” “Unrestricted Land Use Soil Cleanup Standards”) Method B values represent both carcinogen and noncarcinogen human health risk values from direct soil contact. The most conservative value of the two Method B published values was used. Method A values were substituted when MTCA Method B values were not provided in the CLARC tables.
- MTCA (WAC 173-340-750, “Cleanup Standards to Protect Air Quality”) Method B. Values listed are for carcinogen and noncarcinogen levels that represent human health risk due to inhalation of vapors and dust.
- MTCA (WAC 173-340-747, “Deriving Soil Concentrations for Groundwater Protection”). WAC 173-340-747(4) describes the fixed parameter three-phase partitioning model. Where applicable, these values were used. Values selected were from the 13°C vadose zone. If values were not listed for 13°C, then values from 25°C vadose zone were used.
- MTCA (WAC 173-340-7493, “Site-Specific Terrestrial Ecological Evaluation Procedures”). Values used were taken from Table 749-3 including plants, biota, and wildlife.

Of the viable exposure pathways, the most conservative closure performance standard value was selected. If the selected closure performance standard value fell below than the Hanford Site background level or the laboratory PQL, then the higher of these two values (i.e., Hanford Site background level vs. PQL) was selected.

b. The soil does not exhibit the characteristic of ignitability or corrosivity.

c. The Hanford Site closure performance standard for arsenic is 20 mg/kg based on Ecology, 2013, “Issues Associated with Establishing Soil Cleanup Levels for Arsenic,” indicating that the MTCA Method A soil performance standard of 20 mg/kg can be used to define natural background levels when developing Method B soil closure performance standards for the Hanford Site.

d. Hanford Site background values are based upon ECF-HANFORD-11-0038, *Soil Background for Interim Use at the Hanford Site*, and DOE/RL-92-24, *Hanford Site Background: Soil Background for Nonradioactive Analytes*.

CLARC = Cleanup Levels and Risk Calculation MTCA = Model Toxics Control Act
 GW = groundwater PQL = practical quantitation limit

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4 Closure Strategy

The proposed clean closure strategy is based primarily on review of the operational history, operational records, waste management records, and visual inspections of PUREX tanks TK-P4 and TK-40. Waste was removed from both tanks in 1996, and deactivation was completed in 1998. Since that time, routine S&M inspections have been performed. Windblown debris is removed on a periodic basis from the secondary containment structures surrounding each tank.

Based on the historical process review, tanks TK-P4 and TK-40 are candidates for clean closure under WAC 173-303, and verification sampling will be performed. Sampling and analysis activities were

1 developed using the results of record reviews (EPA/240/R-02/005, *Guidance on Choosing a Sampling*
2 *Design for Environmental Data Collection* [EPA QA/G-SS]; Ecology Publication 94-111, *Guidance for*
3 *Clean Closure of Dangerous Waste Units and Facilities*) and will be conducted via a SAP (Section 6.1).
4 The objective of the sampling described in this closure plan is to determine if MTCA unrestricted use
5 standards for soil will be met for the target analytes identified in Table 3 after removal of the two tanks,
6 demonstrating clean closure of the soil underneath the secondary containment structures.

7 **4.1 Preclosure Activities**

8 Preclosure activities are documented in DOE/RL-95-78, *PUREX Facility Preclosure Work Plan*. PUREX
9 tanks TK-P4 and TK-40 were flushed and emptied to a minimum heel in 1996, as described in
10 Section 1.2. The flushed solutions meet the definition of nondangerous waste. For additional information
11 on the flushing solutions used in tanks TK-P4 and TK-40, see Section 1.2.

12 **4.2 Clean Closure Strategy**

13 Tanks TK-P4 and TK-40 are abovegrade and will be clean closed by removing the storage tanks and the
14 concrete secondary containment structures which will meet the requirements of
15 WAC 173-303-610(2)(b)(ii). In accordance with WAC 173-303-610(2)(b)(i), the clean closure levels for
16 soil will be the numeric cleanup levels calculated using unrestricted use exposure assumptions in
17 accordance with MTCA.

18 Once the tanks have been removed, a visual inspection will be performed of the secondary containment to
19 identify potential additional focused sampling locations. After removal of the secondary containment
20 structures, a visual inspection will be performed to identify stains on the remaining soil. Sampling and
21 analysis will be performed to verify clean closure for the soil underlying tanks TK-P4 and TK-40 (see
22 Section 6 in this closure plan). A focused sampling approach is proposed to collect soil samples at
23 locations where contamination is more likely to be present. Focused sampling involves the selective
24 sampling of areas where potential or suspected soil contamination would be expected if a release of a
25 hazardous substance had occurred. Focused sampling is distinguished from probability-based sampling in
26 that inferences are based on professional judgment, not statistical scientific theory. Therefore, conclusions
27 about the target population are limited and depend entirely on the validity and accuracy of professional
28 judgment.

29 The use of statistical evaluation for focused data is not possible. Any focused data must be reviewed
30 directly against the closure performance standards as to whether they are above or below the standards.

31 Locations proposed for focused sampling include soil beneath containment structure sumps, beneath each
32 tank, and at the perimeter of the respective containment structures for tanks TK-P4 and TK-40. Focused
33 samples also may be collected where there is evidence of cracks in the concrete, concrete joints, or
34 degradation of coating within the secondary containment. If sampling and analysis of the soil underlying
35 tanks TK-P4 and TK-40 show that the closure performance standards cannot be achieved, a permit
36 modification will be prepared in accordance with WAC 173-303-610(3)(b) and WAC 173-303-830,
37 "Permit Changes." to modify the closure plan so that RCRA closure is coordinated with the 200-CP-1
38 Operable Unit (OU). The waste site will be added to the list of 200-CP-1 waste sites. The remedial
39 decision will decide if additional closure actions will be performed and may include clean closure by
40 removal of soil, or development of a post-closure plan for closure as a landfill.

5 Closure Activities

Clean closure of PUREX tanks TK-P4 and TK-40 will include the following activities:

- Review operating and inspection records.
- Perform visual inspection of secondary containment structures to identify additional focused sampling locations.
- Removal and demolition of tanks TK-P4 and TK-40 and associated structures (i.e., piping, secondary containment).
- Perform visual inspection of soil beneath secondary containment to identify additional focused sampling locations (i.e., staining).
- Perform focused sampling of the soil to confirm that clean-closure standards are met.
- Transmit closure certification to the Washington State Department of Ecology (Ecology).

Verification sampling will be performed to confirm that concentrations of dangerous waste are below cleanup performance standards. If sampling and analysis of the soil underlying tanks TK-P4 and TK-40 show that the closure performance standards cannot be achieved, a permit modification will be prepared in accordance with [WAC 173-303-610\(3\)\(b\)](#) and [WAC 173-303-830](#) to modify the closure plan so that RCRA closure is coordinated with the 200-CP-1 OU.

5.1 Facility Demolition and Disposal

Demolition of tanks TK-P4 and TK-40 will include removal of the abovegrade tanks, the piping to the closest influent and effluent valves, and the secondary containment structures for each individual tank. Field activities regarding the removal of the two tanks, the demolition of the secondary containment structures, and the sampling of the underlying soil will be coordinated with the CERCLA removal action that will address the entirety of the 203A acid storage area and the 211A chemical storage area. The tanks, their contents, and any waste generated from stabilization and demolition activities during closure will be disposed in accordance with [WAC 173-303-610\(5\)](#) and applicable regulations.

Water may be used to control dust generated from demolition activities. The amount of water used will be minimized to prevent ponding and runoff. While unlikely, other controls such as portable ventilation filter units, high-efficiency particulate air-filtered vacuum cleaners, greenhouses, and/or fogging agents may be used. Additional stormwater run-on and runoff controls may be implemented, as needed. Based on historical records, microencapsulation is the only treatment that may be required for the dangerous waste generated from this closure activity. Treatment may be deemed necessary to provide safe transportation, or to meet disposal facility waste acceptance criteria. The waste will be treated to meet all applicable requirements in [WAC 173-303-140](#), “Land Disposal Restrictions” (LDR) and, by reference, 40 CFR 268, “Land Disposal Restrictions,” prior to disposal at the Hanford Site Environmental Restoration Disposal Facility (ERDF) (discussed in Section 5.2) or an approved RCRA treatment, storage, and disposal (TSD) unit. Waste generated from this closure activity will be disposed at ERDF or an approved RCRA TSD unit in accordance with DOE/RL-2010-102, *Action Memorandum for Decontamination, Deactivation, Decommissioning, and Demolition (D4) Activities for 200 East Tier 2 Buildings/Structures* and TPA-CN-722, DOE/RL-2010-102, Rev 0., *Action Memorandum for Decontamination, Deactivation, Decommissioning, and Demolition (D4) Activities for 200 East Tier 2 Buildings/Structures*.

1 5.1.1 Mobilization and Site Preparation

2 Demolition mobilization and site preparation include the activities necessary for field setup and closure
3 action implementation. This includes obtaining field crew resources, equipment, and materials; and
4 performing field job site activities (e.g., providing worker support infrastructure, waste management
5 areas, and other site preparation as required). Global positioning system (GPS) coordinates of the
6 specified sample locations identified in Figures 4 and 5 will be determined prior to removal of the
7 secondary containment. The GPS locations will be taken using the NAD83, *North American Datum of*
8 *1983*, State Plane Washington South coordinate system and will ensure that after removal of the
9 secondary containment structures, the verification sampling may be laid out (Section 6). Other prework
10 tasks may include installing barriers and postings, performing site walk downs, completing predemolition
11 reviews, and testing equipment.

12 5.1.2 Tank Removal

13 Tanks TK-P4 and TK-40 will be dismantled and demolished using standard industry or conventional
14 demolition practices with heavy equipment. Demolition of tanks TK-P4 and TK-40 will include removing
15 the tank and associated piping to the closest influent and effluent valves using an excavator with a shear
16 attachment. The tanks will be disconnected from the influent and effluent lines, and an absorbent material
17 will be added to ensure that free liquids no longer remain. Due to the size of each of the tanks, the tanks
18 will be cut into pieces using an excavator with a shear attachment, placed into roll-on/roll-off containers,
19 and transported to ERDF for disposal. Demolition and removal of the tanks will be coordinated with the
20 demolition and removal of all collocated abovegrade CERCLA-regulated tanks and structures in the 203A
21 acid storage area and 211A chemical storage area. Field adjustments may be made, if necessary, and will
22 be documented in the closure report. Waste generated from tank removal will be managed as described
23 below.

24 A visual inspection will be performed of each tank to determine if there is a heel. In the event that a heel
25 is present, it will be sampled. If the heel does not designate as dangerous waste, the heel and the tank
26 debris will be managed as LLW and sent to ERDF for disposal. If the heel designates as dangerous waste,
27 DOE will determine the treatment options and methods to characterize the tank debris.

28 There are the following four options to treat the heel if it designates as dangerous waste:

- 29 • Option 1: Remove the liquid heel before cutting the tank into pieces. The heel will be treated at
30 PUREX and/or ERDF or another approved RCRA TSD facility; or
- 31 • Option 2: Treat the liquid heel inside the tank. The heel will be removed before cutting the tank into
32 pieces; or
- 33 • Option 3: Remove a large solid heel before or during cutting the tank into pieces. The heel will be
34 treated at PUREX and/or ERDF or another approved RCRA TSD facility; or
- 35 • Option 4: A small solid heel will be left in place when the tank is cut into pieces. The heel will be
36 managed together with the tank debris as described below.

37 There are three methods to characterize the tank debris. The methods, in the following order of
38 preference, include:

- 39 • Method 1: Visually inspect and photograph tank interior wall to determine if it meets the “clean debris
40 standards” in 40 CFR 268.45, “Treatment Standards for Hazardous Debris,” Table 1, footnote 3.

- 1 • Method 2: Conduct physical sampling (e.g., coupon cutting, accumulation scraping, etc.). The ability
2 to sample is contingent on the feasibility of cutting coupons due to metal thickness and accessibility
3 to areas of accumulation.
- 4 • Method 3: Visually inspect and photograph tank wall to allow the project to correlate the estimated
5 amount of accumulation on the tank wall with the analytical results of the heel to perform a
6 hazardous/mixed waste evaluation.

7 If Method 1 shows that the tank debris meets the “clean debris standards,” or if analytical results
8 (Method 2) or a hazardous/mixed waste evaluation (Method 3) show that the tank debris does not
9 designate as dangerous waste, then it can be sent ERDF as low-level waste.

10 If Method 1 shows that the tank debris does not meet the “clean debris standards,” or if analytical results
11 (Method 2) or a hazardous/mixed waste evaluation (Method 3) show that the tank debris does designate as
12 dangerous waste, then the project will determine treatment options:

- 13 • Rinse tank debris and treat rinsate on or offsite, as appropriate. Send rinsed tank debris to ERDF and
14 send the treated rinsate to an appropriate and approved disposal facility. The rinsed tank debris will be
15 evaluated according to Method 1.
- 16 • Send tank debris as hazardous/mixed waste to ERDF for treatment.

17 **5.1.3 Secondary Containment Demolition**

18 Secondary containment demolition will be coordinated with CERCLA NTCRA activities for the
19 203A acid storage area and 211A chemical storage area in accordance with the specifications discussed in
20 the following sections.

21 Demolition of the secondary containment structures will require the use of heavy equipment
22 (e.g., excavator with various attachments). Other standard industry or conventional demolition practices
23 may also be used (e.g., hydraulic shears with steel shear jaws, concrete pulverizer jaws, or breaker jaws).
24 Selection of demolition methods will be based on the structural elements to be demolished, remaining
25 contamination, location, and integrity of the structure. Field adjustments may be made, if necessary, and
26 will be documented in the closure report.

27 The following steps will be taken to determine how secondary containment demolition waste will be
28 managed:

- 29 • Take a least one core sample in areas with the highest likelihood of chemical depositions such as
30 sumps and drains. Additional samples may be taken in areas where staining is observed.
- 31 • Core completely through the selected sample points to acquire representative samples of the slab.
- 32 • If results of a sample point show that the concrete sample designates as dangerous waste, then:
 - 33 – Perform additional sampling to better identify and isolate the area of contamination.
 - 34 – Project will determine the feasibility to remove isolated areas of contamination. Physical
35 impediments or hazards may prevent targeted removal.

- 1 – Remove area of contamination, if possible, or evaluate area of contamination in relation to the
2 entire secondary containment structure to complete a hazardous/mixed waste evaluation for
3 disposal.
- 4 – Send hazardous/mixed waste to ERDF for treatment.
- 5 • If sample results show that the concrete samples do not designate as dangerous waste, then send to
6 ERDF and dispose as low-level waste.

7 **5.1.3.1 Tank TK-P4 Secondary Containment**

8 The secondary containment structure for tank TK-P4 is a reinforced-concrete, 1.8 m (6 ft) high storage
9 basin measuring 18.3 by 15.2 m (60 by 50 ft) (278.7 m² [3,000 ft²]). It is located in the southeast quadrant
10 of the 203A acid storage area. Three additional abovegrade storage tanks and other equipment are located
11 within this quadrant of the concrete storage basin and will be removed, treated (if required), and disposed
12 prior to demolition of the secondary containment. The secondary containment structure for tank TK-P4
13 will be removed after all of the abovegrade RCRA DWMU and CERCLA NTCRA tanks have been
14 removed. Heavy equipment (e.g., excavator with various attachments) will be used to demolish the
15 containment structure.

16 The secondary containment walls and floor will be demolished. Debris will be loaded into roll-on/roll-off
17 containers for treatment, if required, and disposal at ERDF.

18 **5.1.3.2 Tank TK-40 Secondary Containment**

19 The secondary containment structure for tank TK-40 is a reinforced-concrete, diked area measuring
20 approximately 1,533 m² (1,650 ft²), and it occupies the northeast quadrant of the 211A chemical storage
21 area secondary containment area. Removal of the TK-40 secondary containment will be coordinated with
22 the CERCLA removal action for the 211A chemical storage area. Heavy equipment (e.g., excavator with
23 various attachments) will be used to demolish the containment structure.

24 The walls and floor of the secondary containment structure will be demolished and loaded into
25 roll-on/roll-off containers for treatment, if required, and disposal at ERDF.

26 **5.1.4 Decontamination**

27 Decontamination of tanks TK-P4 and TK-40 is described in Section 5.1.2. Decontamination of the
28 secondary containment structures containment structures is not planned. Both of the storage tanks and
29 their secondary containments will be demolished and placed in roll-on/roll-off disposal containers for
30 transport to ERDF. If equipment is contaminated, it will be decontaminated using dry methods
31 (e.g., brushing, wiping, and using HEPA-filtered vacuum cleaners) to the extent possible. When the use of
32 wet methods (e.g., water wash and pressure washers) is required to achieve decontamination objectives,
33 the associated water or cleaning solutions will be collected and work will be conducted by trained site
34 workers in accordance with best management practices.

35 **5.1.5 Stabilization**

36 Because the closure activities at tanks TK-P4 and TK-40 will be coordinated with the NTCRA for the
37 203A acid storage area and the 211A chemical storage area, site stabilization after RCRA closure
38 activities will be conducted under the removal action work plan for the NTCRA.

39 After sampling activities have been conducted, the sites will be leveled to mitigate potential industrial
40 safety hazards and not unduly hinder any future remediation in the immediate vicinity. The areas will be
41 used as a staging area for nearby removal activities. Equipment will not be staged permanently. Thus, if
42 additional sampling will be necessary, the equipment can be removed.

1 **5.1.6 Completion Criteria**

2 The demolition will be considered complete after all waste has been removed, all waste generated during
3 demolition is dispositioned, the soil beneath the secondary containment structures has been sampled, and
4 sampling results have been documented. If sampling and analysis of the soil underlying tanks TK-P4 and
5 TK-40 show that the closure performance standards cannot be achieved, a permit modification will be
6 prepared in accordance with WAC 173-303-610(3)(b) and WAC 173-303-830 to modify the closure plan
7 so that RCRA closure is coordinated with the 200-CP-1 OU.

8 **5.2 Waste Management**

9 A variety of waste streams may be generated under this closure action and will be in solid and liquid
10 form. Nondangerous demolition and decontamination waste will also be generated, as described in
11 Sections 5.1.2 through 5.1.4. The generator and storage requirements of WAC 173-303-610,
12 “Accumulating Dangerous Waste On-Site,” will be followed for management of any dangerous or mixed
13 waste that cannot be transported promptly to ERDF.

14 Waste generated through implementation of this closure action will be treated, if required, and disposed at
15 ERDF or an approved RCRA TSD unit. ERDF is the preferred waste disposal facility. Waste is expected
16 to meet the waste acceptance criteria of ERDF-00011, *Environmental Restoration Disposal Facility*
17 *Waste Acceptance Criteria*. Waste volume-reduction practices (e.g., minimizing cross-contamination
18 during the remedial action or segregation of clean materials from contaminated materials) will be
19 implemented where feasible. Waste management activities include waste characterization, designation,
20 staging, packaging, handling, marking, labeling, segregation, storage, transportation, treatment, and
21 disposal. These waste management activities are briefly described in the following sections.

22 **5.2.1 Projected Waste Streams**

23 One or all of the following waste streams are anticipated to be generated during the closure action and
24 may fall into any combination of these categories (mixed, hazardous, and dangerous):

- 25 • Stainless-steel and carbon-steel tanks and heel contents
- 26 • Piping and metal support structures
- 27 • Concrete and associated debris
- 28 • Soil (likely waste stream due to the use of large equipment to remove the concrete)
- 29 • Miscellaneous waste (e.g., rubber, glass, paper, personal protective equipment, cloth, plastic,
30 and metal)
- 31 • Equipment and construction materials

32 **5.2.2 Waste Management and Characterization**

33 Dangerous and mixed wastes will be packaged, stored, and transported to prevent dispersion and public
34 exposure. Waste specific storage and packaging requirements will comply with WAC 173-303, as
35 applicable. Waste that designates as dangerous waste will be treated prior to disposal. Nondangerous
36 demolition and decontamination waste will also be generated, as described in Sections 5.1.2
37 through 5.1.4.

38 Waste generated through implementation of this closure action will be characterized in accordance with
39 the waste acceptance criteria of the receiving facility. Characterization is performed using a variety of

1 information that includes, but is not limited to, process knowledge, historical analytical data, sampling
2 and analysis, and radiological and chemical screening.

3 **5.2.3 Waste Handling, Storage, and Packaging**

4 Marking, labeling, segregating, and staging of waste containers will be performed or directed by a waste
5 specialist. If containers of dangerous waste cannot be shipped directly to the disposal site, the containers
6 may be stored at Hanford Site TSD units that are permitted to operate as container storage areas until the
7 waste can be disposed. Dangerous or mixed waste may also be accumulated in accordance with the
8 generator requirements of WAC 173-303-170, “Requirements for Generators of Dangerous Waste.”

9 **5.2.3.1 Management of Bulk Waste**

10 All demolition waste from these closure activities is expected to be in bulk form. Bulk waste will be
11 placed in ERDF cans for eventual disposal at ERDF or other approved RCRA TSD units. The bulk
12 containers will be accumulated in a suitable area adjacent to the 203A or 211A storage areas or may be
13 accumulated for up to 90 days in another suitable Hanford Site location. Bulk containers will be covered
14 when waste is not being added or removed. Lightweight material (e.g., plastic and paper) will be bagged,
15 if appropriate, prior to placement in the bulk container to eliminate the potential for materials blowing out
16 of the bulk container or truck. Applicable packaging and pretransportation requirements for dangerous or
17 mixed waste generated by the closure action will be identified and implemented before the waste is
18 moved. A fixative will be applied to the demolition site and any loose soil as necessary to help control
19 dust and radiological and nonradiological contaminants.

20 **5.2.3.2 Management of Waste Containers**

21 While not expected, nonbulk waste may be generated and placed in a container (usually a 208.2 L
22 [55 gal]) drum. Nonbulk containers or packages of waste requiring tracking (e.g., hazardous and mixed)
23 will be assigned a unique tracking number by a waste specialist. If a container is not in good condition,
24 the contents will be transferred to a container in good condition. Waste containers are inspected before
25 use to ensure container integrity. The containers will be stored/staged in a suitable area adjacent to the
26 203A and 211A storage areas or may be staged for up to 90 days in another suitable Hanford Site
27 location. Containers awaiting analytical results will be marked and labeled, as appropriate. Weekly
28 inspections of the containers will be performed to document the integrity, container marking/labeling,
29 physical container placement, storage area boundaries/identification/warning signs, and evidence of any
30 potential leakage. Containers showing signs of deterioration will be identified during container inspection
31 and overpacked or repackaged, as necessary. Once the waste containers are staged, the containers
32 will remain closed, except when adding or removing wastes (e.g., during packaging and waste
33 inspection activities).

34 **5.2.3.3 Waste Profile**

35 Waste profiling for establishing values for the waste-tracking form may take place concurrently with
36 closure action activities. Field-screening measurements may be used to obtain data to adjust the
37 waste-tracking form. The waste profile may be adjusted (as necessary) through a combination of
38 in-process field-screening methods and analytical laboratory analysis.

39

1 **5.2.3.4 Final Waste Disposal**

2 Waste that designates as dangerous waste will be treated prior to disposal. Nondangerous demolition and
3 decontamination waste will also be generated, as described in Sections 5.1.2 through 5.1.4.. ERDF is the
4 preferred disposal location for waste meeting the facility’s waste acceptance criteria, as it is engineered to
5 meet appropriate RCRA technological requirements for landfills as described in EPA et al., 1995, *Record*
6 *of Decision, U.S. DOE Hanford Environmental Restoration Disposal Facility, Hanford Site, Benton*
7 *County, Washington.*

8 **5.2.3.5 Waste Disposal Records**

9 Original onsite waste-tracking forms will be sent to ERDF with each container shipped. Original
10 sample reports and a copy of the original onsite waste tracking form for each ERDF container will be
11 retained and forwarded to the assigned waste specialist for inclusion in the project file following final
12 waste disposition.

13 **5.2.4 Waste Treatment**

14 Waste from this closure activity will treated as potential dangerous/mixed waste. Waste that is not
15 dangerous/mixed waste will be managed as low-level waste. Based on available information,
16 dangerous/mixed waste will be treated using microencapsulation to meet LDR standards. If additional
17 treatment is required to verify compliance with applicable LDR treatment standards or disposal unit waste
18 acceptance criteria, such treatment may be conducted at the generating site. Residuals from treatment of
19 waste originating from activities addressed in this closure plan will be disposed at ERDF if the treatment
20 residuals meet the facility’s waste acceptance criteria.

21 **5.2.5 Waste Minimization and Recycling**

22 Waste minimization practices will be followed to the extent technically and economically feasible during
23 waste management. Introduction of clean materials into a contamination area, as well as contamination of
24 clean materials, will be minimized to the extent practicable. Emphasis will be placed on source reduction
25 to eliminate or minimize the volume of waste generated. Materials released offsite for disposal/recycle
26 must be certified.

27 **5.3 Air Emissions**

28 There is no expectation that substantial emissions of criteria and toxic air pollutants will result from
29 demolition activities. Airborne emissions associated with closure activities will be minimized by the use
30 of appropriate work controls. Potential radiological air emissions will be evaluated and licensed as
31 a separate action from RCRA closure requirements under the *Clean Air Act of 1977* by following the
32 requirements in WAC 246-247, “Radiation Protection–Air Emissions.” Airborne releases of contaminants
33 during closure activities will be controlled in accordance with DOE radiation control and substantive air
34 pollution control standards in order to maintain emissions of air pollutants at the Hanford Site to as low as
35 reasonably achievable levels. Minimal operations are expected with deactivation methods (e.g., welding
36 or laser cutting) reaching temperatures greater than 100°C (212°F).

37 Prior to demolition, tank contents will be inspected to determine whether residual heel material is in
38 liquid or solid form. Absorbent material will be added to stabilize liquid heels, and fixatives may be
39 applied to tank sidewalls and floor to prevent airborne release of particulates during demolition.

40 Reasonable precautions will be taken to minimize visible dust emissions from active structural
41 demolition with standard emission control techniques. Active excavations shall use water or crusting

1 agents (e.g., Soil-Sement[®]) for dust control. Water usage for dust control will be minimized to protect
2 against contaminant migration. Crusting agents or fixatives will be applied to any disturbed portion of the
3 contamination area that will be inactive for more than 24 hours. Material to be treated (if required) and
4 disposed of at ERDF will also comply with the moisture content and other applicable requirements of the
5 ERDF waste acceptance criteria (ERDF-00011). Crusting agents or fixatives are applied to the demolition
6 and excavation site when potential concerns arise about health issues or the spread of contamination.

7 The applicability of WAC 173-400-110, “General Regulations for Air Pollution Sources,” “New Source
8 Review (NSR) for Sources and Portable Sources”; and WAC 173-460, “Controls for New Sources of
9 Toxic Air Pollutants,” was evaluated. The scope of the proposed activity does not meet the definitions of
10 a new source per WAC 173-400-030, “Definitions”; or a modification per WAC 173-400-030(44); or a
11 new toxic air pollutant source per WAC 173-460. A review of the tank constituents was conducted, and
12 none of the toxic air pollutants regulated under WAC 173-460-150, “Table of ASIL, SQER and de
13 minimis Emission Values,” were potentially present above de minimis concentrations.

14 **5.4 Health and Safety Requirements**

15 Closure will be performed in a manner that ensures the safety of human health and the environment.
16 Qualified personnel will perform any necessary closure activities in compliance with established safety
17 and environmental procedures. Personnel will be equipped with appropriate personal protective
18 equipment. Qualified personnel will be trained in applicable safety and environmental procedures and will
19 have received appropriate training and experience in sampling activities (Table 4). Field operations will
20 be performed in accordance with applicable health and safety requirements. If an emergency would occur,
21 the on-call building emergency director will be notified, and the requirements associated with
22 DOE/RL-94-02, *Hanford Emergency Management Plan*, will be implemented.

23 Required training for field, environmental, and emergency personnel is provided in Table 4. Soil and
24 groundwater samplers will be trained in accordance with Permit Attachment 8, “Inspection and Training
25 Plan for Groundwater Monitoring Wells” (WA7890008967).

26 Training records are maintained for each employee in an electronic training record database.
27 The permittee training organization maintains the training records system. Training records will be kept
28 until Ecology approves certification of closure for tanks TK-P4 and TK-40.

29 **5.5 State Environmental Policy Act**

30 RCW 43.21C, “State Environmental Policy” (also known as the State Environmental Policy Act),
31 requires the environmental effects of a proposal to be described and evaluated before decisions are made
32 by Ecology. A State Environmental Policy Act checklist was prepared for this proposed action.
33 The purpose of this checklist is to provide information to help identify impacts for the action (i.e., closure
34 of tanks TK-P4 and TK-40 and their secondary containments) and to reduce or avoid impacts from
35 this action.

[®] Soil-Sement is a registered trademark of Midwest Industrial Supply, Inc., Canton, Ohio.

Table 4. Personnel Training

Course Number	Course Title/Description	Frequency	Training Type ^a	Job Title/Position							
				Maintenance Craft	Waste Shipper	FWS	WMR	NCO	ECO	BED	D&D Workers
General Training											
000001/ 000019	Hanford General Employee Training (CBT) ➤ <i>General safety, security, radiological protection, and emergency preparedness requirements.</i>	Annual	GHFT, CPT	X	X	X	X	X	X	X	X
Facility Health & Safety											
290200 ^b	Project Orientation and FEHIC (CBT) ➤ <i>Hazard recognition, communication/information, waste management, and emergency response</i>	Annual	GHFT, CPT	X	X	X	X	X	X	X	X
Building Emergency											
02028B	BED Initial Training (Classroom) ➤ <i>Prepare, respond, and recover from emergency events and responsibilities as outlined in DOE/RL-94-02</i>	Initial	ECT							X	
037515	BED Refresher Training (CBT) ➤ <i>Refresher for BED performance expectations and responsibilities as outlined in DOE/RL-94-02</i>	Annual	ECT							X	
304451	Project BED Qualification Card Checklist (OJT) ➤ <i>Emergency response actions and responsibilities of the BED specific to project facilities</i>	Initial	ECT							X	
ECO Training											
600100	ECO Core (OJT) ➤ <i>Knowledge of environmental regulations, permits, regulator inspections and notifications, recordkeeping, and pollution prevention practices</i>	Initial	OT							X	

Table 4. Personnel Training

Course Number	Course Title/Description	Frequency	Training Type ^a	Job Title/Position								
				Maintenance Craft	Waste Shipper	FWS	WMR	NCO	ECO	BED	D&D Workers	
Waste Operations												
02006G	Waste Management Awareness (Classroom) ➤ <i>Waste minimization, waste generation duties and responsibilities, notification, and recordkeeping</i>	Initial	OT	X ^c		X ^c						X
020078	Advanced Mixed Waste Shipper Certification Training (Classroom) ➤ <i>Shipping techniques on hazardous waste labels, containers, packing, and manifesting</i>	Every 3 years	OT		X							
020159	Advanced Hazardous Waste Shipper Certification Training (Classroom) ➤ <i>Shipping techniques on hazardous waste labels, containers, packing, and manifesting</i>	Every 3 years	OT		X							
035010	Waste Designation (Classroom) ➤ <i>Dangerous waste designation and land disposal restrictions according to WAC 173-303</i>	Initial	OT				X					
035012	Waste Designation Qualification (Classroom) ➤ <i>Waste designation and land disposal restrictions according to WAC 173-303</i>	Annual	OT				X					
035100	Container Management Initial (Classroom) ➤ <i>Waste minimization and pollution prevention, waste designation categories, recordkeeping, and container inspection and management</i>	Initial	OT	X ^c		X ^c	X		X			

Table 4. Personnel Training

Course Number	Course Title/Description	Frequency	Training Type ^a	Job Title/Position								
				Maintenance Craft	Waste Shipper	FWS	WMR	NCO	ECO	BED	D&D Workers	
035110	Container Waste Management Refresher (CBT) ➤ <i>Waste minimization and pollution prevention, waste designation categories, recordkeeping, and container inspection and management</i>	Annual	OT	X		X	X	X				
153020	Waste Fundamentals Qualification Card (OJT) ➤ <i>Waste designation, waste management, land disposal restrictions, and recordkeeping</i>	Initial	OT				X					
153021	WMR Qualification Card (OJT) ➤ <i>Work control activities, waste planning and packaging documentation, and transportation requirements</i>	Initial	OT				X					
290004	Project NCO Waste Handler Qualification ➤ <i>Waste handling, packaging, and storage</i>	Every 2 years	OT						X			

a. Training types are provided in Attachment 5 of WA7890008967, Hanford Facility Resource Conservation and Recovery Act Permit.

b. Escorted personnel do not require training in course 290200.

c. Maintenance Craft and FWS supervising Maintenance Craft and D&D workers may take course 02006G or 035100. FWS supervising NCOs must take courses 035100 and 035110.

BED = Building Emergency Director
 CBT = computer-based training
 CPT = Contingency Plan training
 D&D = decontamination and decommissioning
 ECO = Environmental Compliance Officer
 ECT = Emergency Coordinator training
 FEHIC = Facility Emergency and Hazard Identification Checklist
 FWS = Field Work Supervisor
 GHFT = General Hanford Facility training
 NCO = Nuclear Chemical Operator
 OJT = on-the-job training
 OT = Operations training
 WMR = Waste Management Representative

5.6 Confirmation of Clean Closure

Tanks TK-P4 and TK-40 will be clean closed through sampling and analysis of the soil beneath the secondary containment structures. Soil sample results from the contract analytical laboratory will be reviewed to confirm that target analytes have met closure performance standards (Section 3 of this plan). Once clean closure has been confirmed, closure certification will be prepared in accordance with Section 9.

If sampling and analysis of the soil underlying tanks TK-P4 and TK-40 show that the closure performance standards cannot be achieved, a permit modification will be prepared in accordance with WAC 173-303-610(3)(b) and WAC 173-303-830 to modify the closure plan so that RCRA closure is coordinated with the 200-CP-1 OU.

6 Soil Verification Sampling and Analysis

Sampling and analysis of soil will be conducted to confirm that clean closure levels in the soil have been achieved. The SAP summarizes the sampling design used and the associated assumptions based on historical knowledge of tanks TK-P4 and TK-40. The sampling design includes input parameters used to determine the number and location of samples. Sampling for both tanks will be coordinated with the CERCLA removal action work plan (DOE/RL-2016-47, *Removal Action Work Plan for the PUREX Complex Tier 2 Buildings/Structures*). The data quality objectives are included within this closure plan and follow the systematic process outlined in EPA/240/B-06/001, *Guidance on Systematic Planning Using the Data Quality Objectives Process* (EPA QA/G-4).

6.1 Closure Sampling and Analysis Plan

All sampling and analysis will be performed in accordance with the sampling and quality standards established in the closure SAP. Sampling and analysis activities will meet applicable requirements of the most current versions of SW-846, *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, Third Edition; Final Update V*; ASTM International (formerly the American Society for Testing and Materials) standards; U.S. Environmental Protection Agency (EPA)-approved methods; and DOE/RL-96-68, *Hanford Analytical Services Quality Assurance Requirements Document* (HASQARD). This SAP also was developed using the guidance provided in Section 7.0 of Ecology Publication 94-111 and EPA/240/R-02/005 (EPA QA/G-5S).

The data obtained by SAP activities will be in compliance with the requirements of WAC 173-303 and 40 CFR 265, “Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities,” to ensure proper closure of tanks TK-P4 and TK-40. The rationale and methodology for sample collection for the purposes of confirming compliance with WAC 173-303-610(2)(a)(ii) and waste characterization designations will be provided.

6.1.1 Target Analytes

The waste codes associated with TK-P4 are metals showing toxicity characteristic (D004-D011), ignitability (D001), and corrosivity (D002). TK-40 has state only dangerous waste criteria (WT02) due to the presence of tributyl phosphate. These waste codes were the basis for the list of target analytes for analysis in this SAP. Table 1 identifies the waste codes listed for tanks TK-P4 and TK-40, as well as the target analyte associated with that waste code.

1 **6.1.2 Verification Sampling Schedule**

2 Verification closure sampling and analysis will be performed in accordance with the closure plan
3 schedule provided in Section 8 of this plan.

4 **6.1.3 Project Management**

5 The permittee is responsible for planning, coordinating, sampling, preparing, packaging, and shipping
6 samples to the laboratory. The project has the following key positions.

7 **Regulatory Representative.** Ecology will assign an Ecology employee as program manager responsible
8 for oversight of the TK-P4 and TK-40 closure.

9 **Project Manager and Technical Lead.** The contractor Project Manager provides oversight of closure
10 activities and coordinates with the U.S. Department of Energy, Richland Operations Office (DOE-RL),
11 Ecology, and contract management. In addition, support is provided to the project technical lead to ensure
12 that work is performed safely and cost effectively.

13 The Project Manager (or designee) for the TK-P4 and TK-40 closure sampling is responsible for direct
14 management of sampling documents and requirements, field activities, and subcontracted tasks. The
15 Project Manager is responsible for ensuring that project personnel are working to the approved version of
16 the TK-P4 and TK-40 closure plan in the permit and for updating field personnel on changes.

17 The Project Manager works closely with Quality Assurance (QA), Health and Safety, and the Field Work
18 Supervisor (FWS) to integrate these and other lead disciplines in planning and implementing the work
19 scope. The Project Manager also coordinates with DOE-RL and the primary contractor management on
20 all sampling activities. The Project Manager supports DOE-RL in coordinating sampling activities with
21 the Regulatory Representative.

22 **Environmental Compliance Officer.** The Environmental Compliance Officer provides technical
23 oversight, direction, and acceptance of project and subcontracted environmental work, and develops
24 appropriate mitigation measures with a goal of minimizing adverse environmental impacts.

25 **Health and Safety.** The Health and Safety organization is responsible for coordinating industrial safety
26 and health support within the project, as carried out through health and safety plans, job hazard analyses,
27 and other pertinent safety documents required by federal regulation or internal primary contractor work
28 requirements.

29 **Waste Management Lead.** The Waste Management Lead communicates policies and protocols, and
30 ensures project compliance for storage, transportation, disposal, and waste tracking.

31 **Field Work Supervisor.** The FWS is responsible for planning and coordinating field sampling resources.
32 The FWS ensures that samplers are appropriately trained and available. Additional related responsibilities
33 include ensuring that the sampling design is achievable, understood, and can be performed as specified.

34 The FWS must document all deviations from procedures or other problems pertaining to sample
35 collection, chain-of-custody protocols, analytes, sample analysis, or sample transport. As appropriate,
36 such deviations or problems will be documented in the field logbook or in nonconformance report forms
37 in accordance with internal corrective action procedures. The FWS is responsible for communicating field
38 corrective actions to the Project Manager and for ensuring that immediate corrective actions are applied to
39 field activities.

40 **Sample Management and Reporting.** The Permittee's sampling organization coordinates field sampling
41 as well as laboratory analytical work, ensuring that laboratories conform to the specifications of SW-846

1 analytical methodology at the time of closure. The sampling organization receives the analytical data
2 from the laboratories, performs the data entry into the Hanford Environmental Information System
3 (HEIS) database, and arranges for data validation. The sampling organization is responsible for informing
4 the Project Manager of any issues reported by the contract analytical laboratory.

5 **Contract Laboratories.** The contract laboratories analyze samples in accordance with established
6 procedures and provide necessary sample reports and explanation of results in support of data validation.

7 The roles described above make up the project organization structure (regarding sampling and analysis)
8 and interact in a manner shown graphically in Figure 3.

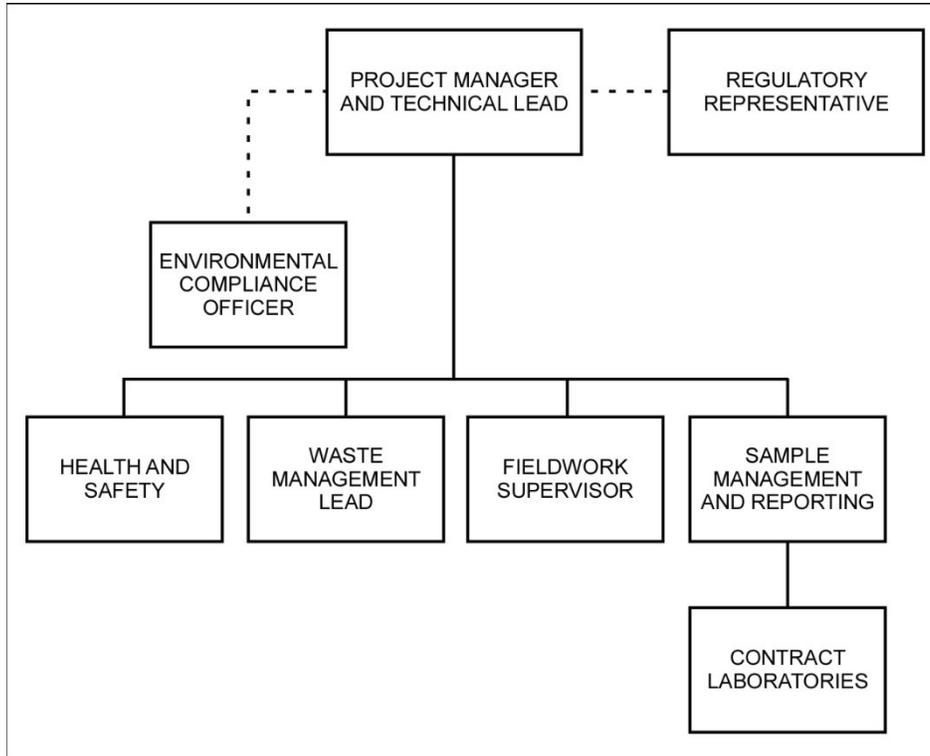


Figure 3. Sampling and Analysis Plan Project Organization

9 6.2 Sampling Design

10 The objective of sampling the soil underneath the secondary containment structures of both tanks TK-P4
11 and TK-40 is to obtain analytical data to confirm that the underlying soil does not contain contaminants
12 exceeding the clean closure performance standards for the target analytes. Focused sample results will be
13 directly compared to the closure performance standards identified in Table 3.

14 This SAP used the guidance provided in Section 7.0 of Ecology Publication 94-111 to determine the type
15 of sampling design to be used to demonstrate clean closure. When designing the sampling plan, both
16 focused and area-wide (grid) sampling methods were considered. Section 7.2.1 of Ecology
17 Publication 94-111 identifies area-wide sampling as appropriate when the spatial distribution of
18 contamination at or from the closure unit is uncertain.

19 Based on the design of the secondary containment structures, focused sampling has been determined
20 appropriate for tanks TK-P4 and TK-40. The secondary containment structures are designed with a slight

1 slope toward the floor collection sumps in the event of a spill; therefore, sample locations will be
2 concentrated beneath the floor collection sumps. The perimeter of the secondary containment structures
3 and beneath the edges of each tank will also be sampled. Supplementary sampling may be needed beneath
4 the other tanks within the secondary containment.

5 Focused sampling involves selective sampling of areas where contamination is expected or releases have
6 been documented. Focused sampling is typically recommended where there is evidence of leaks or spills
7 or potential for a dangerous waste constituent to migrate. Focused sampling could involve linear sampling
8 along a drainage way, boundary, or other linear dimension.

9 Twenty samples will be collected from soil underlying the secondary containment structure of both
10 tanks TK-P4 and TK-40. For both tank areas, two soil samples will be collected on either side of the
11 sump, four samples will be collected beneath the edges of the tank, and the remaining samples will be
12 collected at the perimeter of the secondary containment, concentrating on the area along the lower slope.

13 A visual inspection will be performed by the Independent, Qualified, Registered, Professional Engineer
14 (IQRPE) or ECO to identify any cracking or staining of concrete before demolition to determine if
15 additional focused sampling is warranted. The additional tanks within each secondary containment will
16 also be examined by the IQRPE or ECO for evidence of leakage or staining to determine if soil sample
17 collection is needed beneath each tank. GPS coordinates will be taken to determine the locations of these
18 sample locations. After the concrete pads are removed, these locations will be sampled in conjunction
19 with the sample locations. Proposed focused sampling locations are shown in Figures 4 and 5,
20 respectively, for tank TK-P4 and tank TK-40.

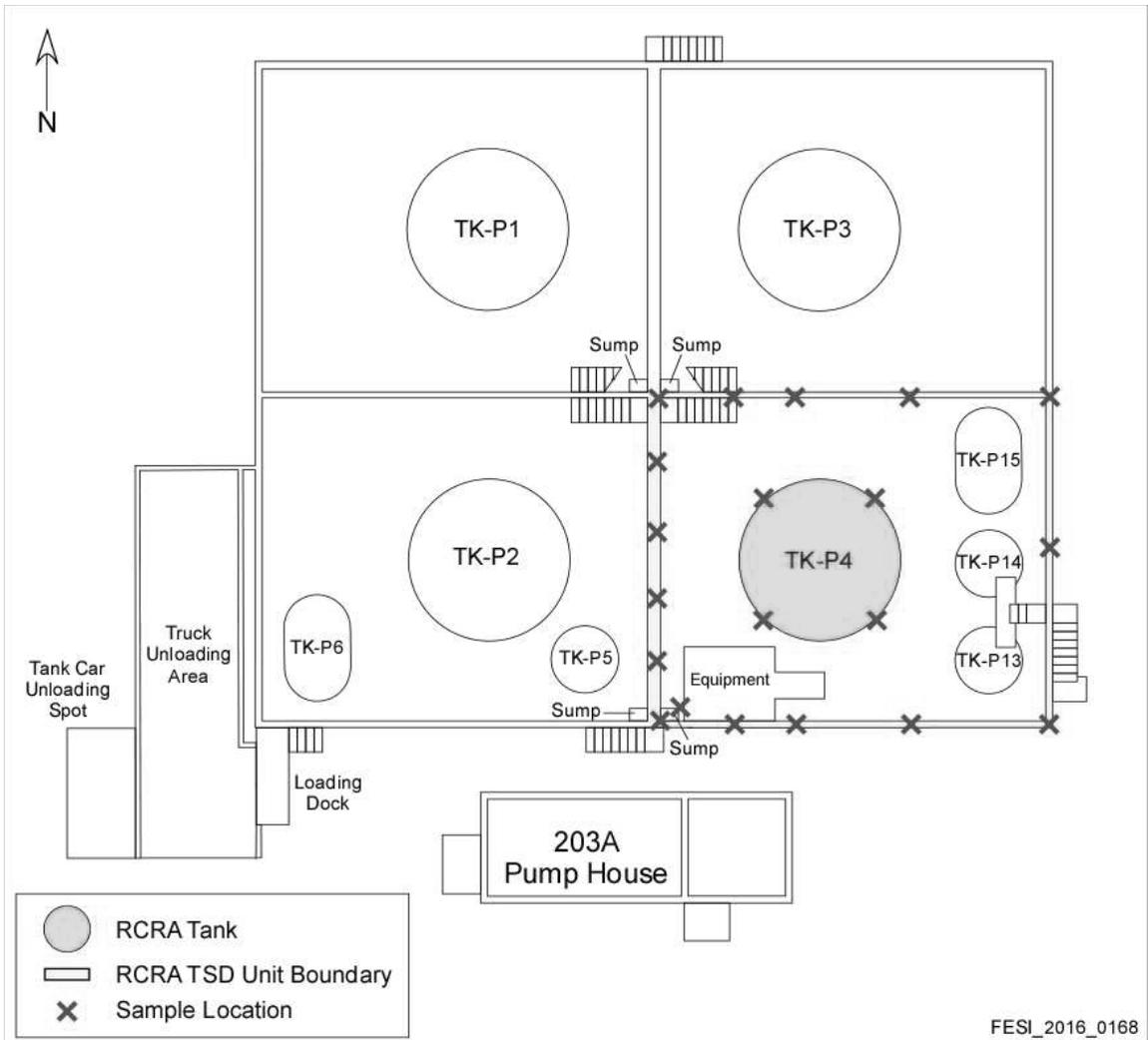
21 **6.2.1 Sampling Methods and Handling**

22 The grab sample matrix will consist of soil collected in precleaned sample containers, with samples taken
23 at a depth of 0 to 15.24 cm (0 to 6 in.) below ground surface at the focused sampling locations described
24 above. For the purpose of this SAP, ground surface is defined as the exposed surface layer after the
25 secondary containment has been removed. Collection of soil samples will be accomplished with tools
26 such as shovels, trowels, pick-axes, and scoops.

27 After the soil is sampled, the sampled media will be screened to remove material larger than
28 approximately 2 mm (0.08 in.) in diameter, which will allow for a larger surface area to volume ratio
29 and would be more likely to identify any potential contamination in the sample in accordance with
30 WAC 173-340-740(7)(a). Grab samples will be collected and placed into containers at the chosen node
31 sample locations. To ensure sample and data usability, sampling will be performed in accordance with
32 established sampling practices, procedures, and requirements pertaining to sample collection, collection
33 equipment, and sample handling.

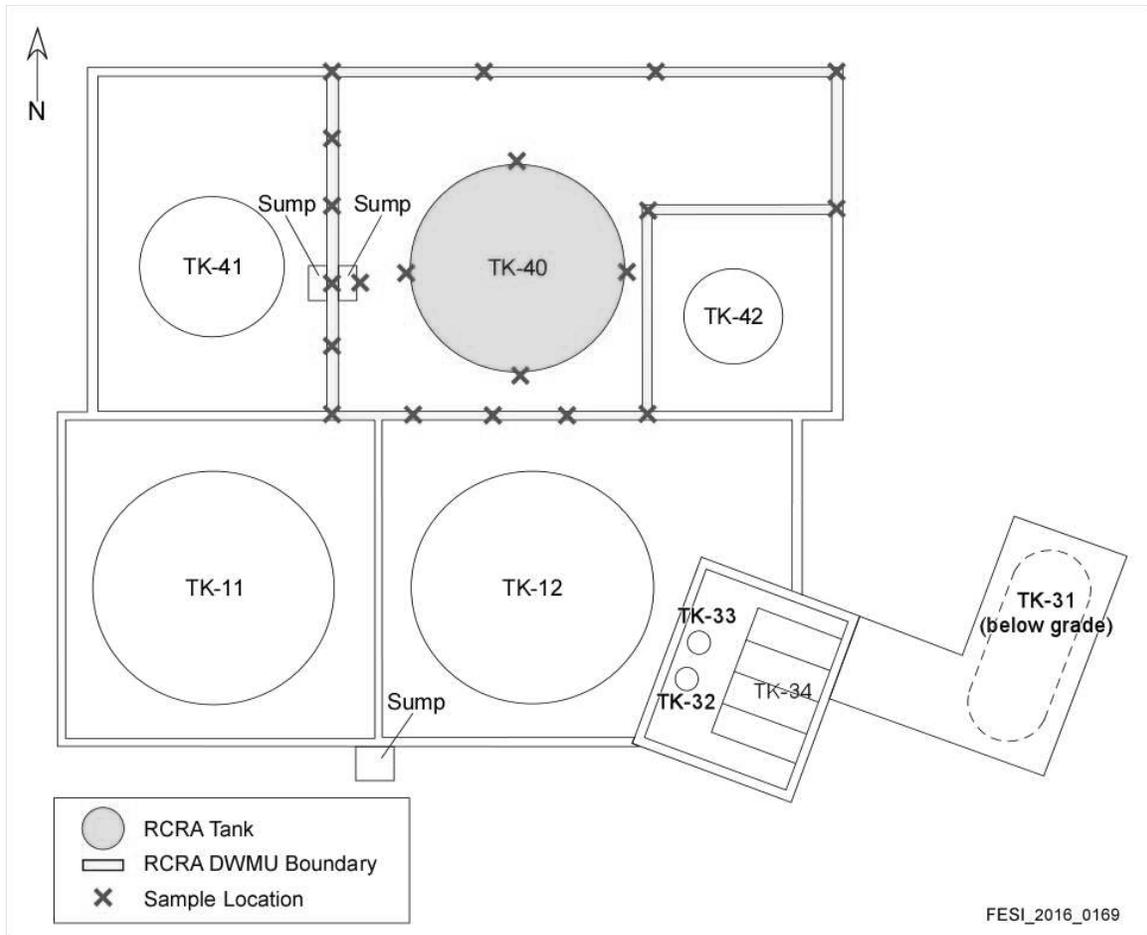
34 Sample container, preservation, and holding-time requirements are specified in Table 5 for soil samples.
35 These requirements are in accordance with the specified analytical methods. The final container type and
36 volumes will be identified on the sampling authorization form and the chain-of-custody form.

37



1
2

Figure 4. Proposed Focused Sampling Locations for Tank TK-P4



1
 2
 3

Figure 5. Proposed Focused Sampling Locations for Tank TK-40

Table 5. Sample Preservation, Container, and Holding Time for Soil Samples

Method	Analyte	Preservation Requirement	Holding Time	Bottle Type	Minimum Sample Size
EPA 6010	Metals	Cool $\leq 6^{\circ}\text{C}$	6 months	Glass/plastic	2 g
EPA 6020	Metals	Cool $\leq 6^{\circ}\text{C}$	6 months	Glass/plastic	2 g
EPA 7470	Mercury	None	28 days	Glass/plastic	2 g
EPA 8270	Tributyl Phosphate	Cool $\leq 6^{\circ}\text{C}$	14 days before extraction; 40 days after extraction	Amber Glass	50 g

Note: For the four-digit EPA methods, see SW-846, *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, Third Edition; Final Update V.*

EPA = U.S. Environmental Protection Agency

4
 5

1 To prevent potential contamination of the samples, care will be taken to use decontaminated equipment
2 for each sampling activity. EPA Level 1 precleaned sample containers will be used for samples
3 collected for chemical analysis. Container sizes may vary depending upon laboratory specific
4 volumes/requirements for meeting analytical detection limits.

5 The sample location, depth, and corresponding record numbers from the HEIS database will be
6 documented in the sampler's field logbook. A custody seal (e.g., evidence tape) will be affixed to each
7 sample container and/or sample collection package to provide evidence of potential tampering.

8 Each sample container will be labeled with the following information on firmly affixed,
9 water-resistant labels:

- 10 • Sampling authorization form and form number
- 11 • HEIS number
- 12 • Sample collection date and time
- 13 • Sampler identification
- 14 • Analysis required
- 15 • Preservation method (if applicable)

16 Sample records must include the following information:

- 17 • Analysis required
- 18 • Sample location
- 19 • Matrix (e.g., water or soil)

20 Sample custody will be maintained in accordance with existing Hanford Site protocols to ensure that
21 sample integrity is maintained throughout the analytical process. Chain-of-custody protocols will be
22 followed throughout sample collection, transfer, analysis, and disposal to ensure that sample integrity
23 is maintained.

24 All waste (including unexpected waste) generated by sampling activities will be containerized, labeled,
25 characterized, designated as a dangerous or nondangerous waste, stored, and treated (if necessary) to meet
26 land disposal restrictions of 40 CFR 268 (incorporated into WAC 173-303-140(2)(a), by reference), and
27 then ultimately disposed in an approved waste disposal facility.

28 **6.2.2 Analytical Methods**

29 All analyses and testing will be performed consistent with this closure plan, laboratory analytical
30 procedures, and HASQARD (DOE/RL-96-68). The approved laboratory must achieve the lowest practical
31 quantitation limit consistent with the selected analytical method for each constituent to confirm clean
32 closure levels. If a target analyte is detected at or above clean closure level but less than the PQL of the
33 analytical method, Ecology will be notified, and alternatives will be discussed to demonstrate clean
34 closure level. If a target analyte is detected above the clean closure levels and the PQL, additional actions
35 will be taken, as discussed in Section 7 of this plan. Analytical methods and performance requirements
36 associated with the target analytes are outlined in Table 7.

1 **6.2.3 Quality Control**

2 Quality control (QC) procedures must be followed in the field and laboratory to ensure that decisions
3 made using the data are within an acceptable degree of uncertainty. Field QC samples will be collected to
4 evaluate the potential for cross-contamination and provide information pertinent to field sampling
5 variability. Field QC will include the following samples:

- 6 • Full trip blanks
- 7 • Field transfer blanks
- 8 • Equipment rinsate blanks
- 9 • Field duplicates
- 10 • Field split samples

11 Laboratory QC samples estimate the precision and bias of the analytical data. Field and laboratory
12 QC samples are summarized in Table 8. Data verification and data validation will include both the
13 primary samples and the QC samples. A data quality assessment will be performed utilizing the guidance
14 in EPA/240/B-06/002, *Data Quality Assessment: A Reviewer's Guide* (EPA QA/G-9R), and
15 implementing the specific requirements in Section 6.2.5.

16 The QA objective of this plan is to ensure the generation of analytical data of known and appropriate
17 quality is acceptable and useful in order to meet the evaluation requirements stated in the sampling plan.
18 Data descriptors known as data quality indicators help determine the acceptability and usefulness of data
19 to the user. The principal data quality indicators (precision, accuracy, representativeness, comparability,
20 completeness, bias, and sensitivity) are defined for the purposes of this document in Table 6.

21 **6.2.4 Data Verification**

22 Analytical results will be received from the laboratory, loaded into a database (e.g., HEIS), and verified.
23 Verification includes, but is not limited to, the following items:

- 24 • Amount of data requested matches the amount of data received (number of samples for requested
25 methods of analytes).
- 26 • Procedures and methods are used.
- 27 • Documentation/deliverables are complete.
- 28 • Hard copy and electronic versions of the data are identical.
- 29 • Data appear to be reasonable based on analytical methodologies.
- 30 • Sample results are evaluated against QA/QC parameters.

31

Table 6. Data Quality Indicators

Data Quality Indicator (QC Element)^a	Definition	Determination Methodologies	Corrective Actions
Precision (field duplicates, laboratory sample duplicates, and matrix spike duplicates)	Precision measures the agreement among a set of replicate measurements. Field precision is assessed through the collection and analysis of field duplicates. Analytical precision is estimated by duplicate/replicate analyses, usually on laboratory control samples, spiked samples, and/or field samples. The most commonly used estimates of precision are the relative standard deviation and, when only two samples are available, the relative percent difference.	Use the same analytical instrument to make repeated analyses on the same sample. Use the same method to make repeated measurements of the same sample within a single laboratory. Acquire replicate field samples for information on sample acquisition, handling, shipping, storage, preparation, and analytical processes and measurements.	If duplicate data do not meet objective: <ul style="list-style-type: none"> • Evaluate apparent cause (e.g., sample heterogeneity). • Request reanalysis or remeasurement. • Qualify the data before use.
Accuracy (laboratory control samples, matrix spikes, and surrogates)	Accuracy is the closeness of a measured result to an accepted reference value. Accuracy is usually measured as a percent recovery. QC analyses used to measure accuracy include laboratory control samples, spiked samples, and surrogates.	Analyze a reference material or reanalyze a sample to which a material of known concentration or amount of pollutant has been added (a spiked sample).	If recovery does not meet objective: <ul style="list-style-type: none"> • Qualify the data before use. • Request reanalysis or remeasurement.
Representativeness (field duplicates)	Sample representativeness expresses the degree to which data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition. It is dependent on the proper design of the sampling program and will be satisfied by ensuring that the approved plans were followed during sampling and analysis.	Evaluate whether measurements are made and physical samples collected in such a manner that the resulting data appropriately reflect the environment or condition being measured or studied.	If results are not representative of the system sampled: <ul style="list-style-type: none"> • Identify the reason for results not being representative. • Flag for further review. • Review data for usability. • If data are usable, qualify the data for limited use and define the portion of the system that the data represent. • If data are not usable, flag as appropriate. • Redefine sampling and measurement requirements and protocols. • Resample and reanalyze, as appropriate.

Table 6. Data Quality Indicators

Data Quality Indicator (QC Element)^a	Definition	Determination Methodologies	Corrective Actions
Comparability (field duplicate, field splits, laboratory control samples, matrix spikes, and matrix spike duplicates)	Comparability expresses the degree of confidence with which one data set can be compared to another. It is dependent upon the proper design of the sampling program and will be satisfied by ensuring that the approved plans are followed and that proper sampling and analysis techniques are applied.	Use identical or similar sample collection and handling methods, sample preparation and analytical methods, holding times, and QA protocols.	If data are not comparable to other data sets: <ul style="list-style-type: none"> • Identify appropriate changes to data collection and/or analysis methods. • Identify quantifiable bias, if applicable. • Qualify the data as appropriate. • Resample and/or reanalyze if needed. • Revise sampling/analysis protocols to ensure future comparability.
Completeness (no QC element; addressed in data usability assessment)	Completeness is a measure of the amount of valid data collected compared to the amount planned. Measurements are considered to be valid if they are unqualified or qualified as estimated data during validation. Field completeness is a measure of the number of samples collected versus the number of samples planned. Laboratory completeness is a measure of the number of valid measurements compared to the total number of measurements planned.	Compare the number of valid measurements completed (samples collected or samples analyzed) with those established by the project's quality criteria (data quality objectives or performance/acceptance criteria).	If data sets do not meet the completeness objective: <ul style="list-style-type: none"> • Identify appropriate changes to data collection and/or analysis methods. • Identify quantifiable bias, if applicable. • Resample and/or reanalyze if needed. • Revise sampling/analysis protocols to ensure future completeness.

Table 6. Data Quality Indicators

Data Quality Indicator (QC Element)^a	Definition	Determination Methodologies	Corrective Actions
<p>Bias (equipment blanks, field transfer blanks, full trip blanks, laboratory control samples, matrix spikes, and method blanks)</p>	<p>Bias is the systematic or persistent distortion of a measurement process that causes error in one direction (e.g., the sample measurement is consistently lower than the sample's true value). Bias can be introduced during sampling, analysis, and data evaluation.</p> <p>Analytical bias refers to deviation in one direction (i.e., high, low, or unknown) of the measured value from a known spiked amount.</p>	<p>Sampling bias may be revealed by analysis of replicate samples.</p> <p>Analytical bias may be assessed by comparing a measured value in a sample of known concentration to an accepted reference value or by determining the recovery of a known amount of contaminant spiked into a sample (matrix spike).</p>	<p>For sampling bias:</p> <ul style="list-style-type: none"> • Properly select and use sampling tools. • Institute correct sampling and subsampling practices to limit preferential selection or loss of sample media. • Use sample handling practices, including proper sample preservation, that limit the loss or gain of constituents to the sample media. • Analytical data that are known to be affected by either sampling or analytical bias are flagged to indicate possible bias. • Laboratories that are known to generate biased data for a specific analyte are asked to correct their methods to remove the bias as best as practicable. Otherwise, samples are sent to other laboratories for analysis.
<p>Sensitivity (method detection limit, practical quantitation limit, and relative percent difference)</p>	<p>Sensitivity is an instrument's or method's minimum concentration that can be reliably measured (i.e., instrument detection limit or limit of quantitation).</p>	<p>Determine the minimum concentration or attribute to be measured by an instrument (instrument detection limit) or by a laboratory (limit of quantitation).</p> <p>The lower limit of quantitation^b is the lowest level that can be routinely quantified and reported by a laboratory.</p>	<p>If detection limits do not meet objective:</p> <ul style="list-style-type: none"> • Request reanalysis or remeasurement using methods or analytical conditions that will meet required detection or limit of quantitation. • Qualify/reject the data before use.

Based on SW-846 Compendium (July 2014). Available at: <https://www.epa.gov/hw-sw846/sw-846-compendium>.

a. Acceptance criteria for QC elements are provided in Table 7.

b. For purposes of this sampling plan, the lower limit of quantitation is interchangeable with the practical quantitation limit.

QA = quality assurance

QC = quality control

Table 7. Soil Analytical Performance Requirements

CAS Number	Analyte	Analytical Method	Closure Performance Standard ^a (mg/kg)	Practical Quantitation Limit ^b (mg/kg)	Accuracy Requirement (Percent Recovery) ^c	Precision Requirement (RPD) ^c
Performance Requirements for Laboratory Measurements (Nonradiological)						
7440-38-2	Arsenic	SW-846 Method 6010/6020	2.00E+1	0.2	±30	≤30
7440-39-3	Barium	SW-846 Method 6010/6020	1.32E+02	2.0	±30	≤30
7440-43-9	Cadmium	SW-846 Method 6010/6020	6.90E-01	0.5	±30	≤30
7440-47-3	Chromium (total)	SW-846 Method 6010/6020	1.85E+01	1.0	±30	≤30
7439-92-1	Lead	SW-846 Method 6010/6020	5.00E+01	5.0	±30	≤30
7439-97-6	Mercury	SW-846 Method 7470	2.00E-01	0.2	±30	≤30
7782-49-2	Selenium	SW-846 Method 6010/6020	1.00E+01	10	±30	≤30
7440-22-4	Silver	SW-846 Method 6010/6020	2.00E+00	1.0	±30	≤30
126-73-8	Tributyl phosphate	SW-846 Method 8270	1.11E+02	0.333	Statistically derived	≤30

Source: SW-846, *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, Third Edition; Final Update V.*

a. Closure performance standards are the numeric cleanup levels calculated according to WAC 173-340, "Model Toxics Control Act-Cleanup." Method B (unrestricted use standards). Where both carcinogen and a noncarcinogen performance standards are available, the lowest value will be used as the performance standard.

b. For these analytical performance requirements, the required detection limit and the practical quantification limit are identical.

c. Accuracy criteria for associated batch matrix spike percent recoveries. Evaluation based on statistical control of laboratory control samples is also performed. Precision criteria for batch laboratory replicate matrix spike analyses or replicate sample analyses.

CAS = Chemical Abstracts Service

RPD = relative percent difference

Table 8. Project Quality Control Sampling Summary

QC Sample Type	Frequency	Characteristics Evaluated
Field QC		
Full trip blank	One per 20 samples per media sampled.	Contamination from containers or transportation
Equipment rinsate blank	As needed. If only disposable equipment is used, then an equipment blank is not required. Otherwise, one per 20 samples, per media ^a .	Adequacy of sampling equipment decontamination and contamination from nondedicated equipment
Field duplicate	One per batch, ^b 20 samples maximum of each media sampled (soil samples). ^c	Precision, including sampling and analytical variability
Field split sample	As needed. When needed, the minimum is one per analytical method, per media sampled, for analyses performed where detection limit and precision and accuracy criteria have been defined in Table 7.	Precision, including sampling, analytical, and interlaboratory
Laboratory QC^b		
Method blanks	One per batch ^b	Laboratory contamination
Laboratory duplicates	One per batch ^b	Laboratory reproducibility and precision
Matrix spikes	One per batch ^b	Matrix effect/laboratory accuracy
Matrix spike duplicates	One per batch ^b	Laboratory reproducibility, accuracy, and precision
Surrogates	One per batch ^b	Recovery/yield
Tracers	One per batch ^b	Recovery/yield
Laboratory control samples	One per batch ^b	Evaluate laboratory accuracy
Performance evaluation parameters	Annual	Evaluate laboratory accuracy
Double-blind standards	Quarterly ^d	Evaluate laboratory accuracy
Audit/assessment	Annually ^e or every 3 years ^f	Evaluate overall laboratory performance and operations

a. Whenever a new type or nondedicated equipment is used, an equipment blank shall be collected every time sampling occurs until it can be shown that less frequent collection of equipment blanks is adequate to monitor the decontamination procedure or the nondedicated equipment.

b. Batching across projects is allowing for similar matrices.

c. Soil grab samples are exempted from duplicate sampling.

d. Soil matrix double-blind standards are submitted by request.

e. The U.S. Department of Energy quality system for analytical services requires annual audit or commercial laboratories.

f. DOE/RL-96-68, *Hanford Analytical Services Quality Assurance Requirements Document*, does not define a frequency for assessment or onsite laboratories. Three-year evaluated supplier list requirement is typically applied.

QC = quality control

1 **6.2.5 Data Validation and Assessment**

2 Data validation is performed by a third party. The laboratory will use program-equivalent analytical data
3 packages that are intended to support data validation by the third party. The laboratory submits data
4 packages that are supported by QC test results and raw data.

5 Controls are in place to preserve the data sent for validation in order to allow only additions to be made
6 and not allowing changes to the raw data.

7 The format and requirements for data validation activities are based upon the most current version of
8 OSWER Directive 9355.0-132, *National Functional Guidelines for Superfund Organic Methods Data*
9 *Review*, and OSWER Directive 9355.0-131, *National Functional Guidelines for Inorganic Superfund*
10 *Data Review*. Five percent of the results will undergo Level C validation, as defined by the
11 validation guidelines.

12 A data quality assessment will be performed using the guidance in EPA/240/B-06/002, and implementing
13 the specific requirements discussed in Sections 6.2.1 through 6.2.5.

14 **6.2.6 Documents and Records**

15 The Project Manager is responsible for ensuring that the current version of the SAP is being used and for
16 providing any updates to field personnel. Version control is maintained by the administrative document
17 control process. Changes to the SAP affecting data needs will be submitted as a RCRA Permit
18 modification in accordance with WAC 173-303-610(3)(b) to DOE and the lead regulatory
19 agency (Ecology).

20 Logbooks are required for field activities. A logbook must be identified with a unique project name and
21 number. The individual(s) responsible for logbooks will be identified in the front of the logbook, and only
22 authorized persons may make entries into the logbooks. Logbooks will be signed by the field manager,
23 supervisor, cognizant scientist/engineer, or other responsible individual. Logbooks will be permanently
24 bound, waterproof, and ruled with sequentially numbered pages. Pages will not be removed from
25 logbooks for any reason. Entries will be made in indelible ink. Corrections will be made by marking
26 through the erroneous data with a single line, entering the correct data, and initialing and dating
27 the changes.

28 The Project Manager is responsible for ensuring that a project file is properly maintained. The project file
29 will contain the records or references to their storage locations. The following items will be included in
30 the project file, as appropriate:

- 31 • Field logbooks or operational records
- 32 • Data forms
- 33 • GPS data
- 34 • Chain-of-custody forms
- 35 • Sample receipt records
- 36 • Inspection or assessment reports and corrective action reports
- 37 • Interim progress reports
- 38 • Final reports
- 39 • Laboratory data packages
- 40 • Verification and validation reports

1 The laboratory is responsible for maintaining, and having available upon request, the following items:

- 2 • Analytical logbook
- 3 • Raw data and QC sample records
- 4 • Standard reference material and/or proficiency test sample data
- 5 • Instrument calibration information

6 Records may be stored in either electronic or hardcopy format. Documentation and records, regardless of
7 medium or format, are controlled in accordance with internal work requirements and processes to ensure
8 the accuracy and retrievability of stored records. Records will be kept for 5 years after Ecology approves
9 clean closure confirmation.

10 **6.2.7 Revisions to the Sampling and Analysis Plan and Constituents to Be Analyzed**

11 If changes to the SAP are necessary due to unexpected events during closure that will affect sampling,
12 a revision to this SAP will be submitted no later than 30 days after the unexpected event as a RCRA
13 permit modification as required in WAC 173-303-610(3)(b)(iii) and WAC 173-303-830. An unanticipated
14 event would be an event outside the scope of the SAP or a condition that inhibits implementation of the
15 sampling as written.

16 **7 Contingent Closure Plan**

17 A contingent closure plan is not required at this time since the expected outcome is clean closure. If
18 sampling and analysis of the soil underlying tanks TK-P4 and TK-40 show that the closure performance
19 standards cannot be achieved, a permit modification will be prepared in accordance with
20 WAC 173-303-610(3)(b) and WAC 173-303-830 to modify the closure plan so that RCRA closure is
21 coordinated with the 200-CP-1 OU.

22 **8 Schedule for Closure**

23 Figure 6 depicts the closure activities and the expected durations. Tank removal will be completed within
24 180 days after approval of the Permit modification incorporating this closure plan. Should unexpected
25 circumstances arise and an extension to the 180-day closure activity expiration date be deemed necessary,
26 a Class 1 prime Permit modification request will be submitted to Ecology for approval at least 30 days
27 prior to the 180-day expiration date in accordance with WAC 173-303-610(4)(c) and WAC 173-303-830,
28 Appendix I, “Modifications.” The extension request would also demonstrate that all steps to prevent
29 threats to human health and the environment, including compliance with all applicable Permit
30 requirements and criteria in WAC 173-303-610(4)(b)(i) or (ii), have and will be taken.

31 **9 Closure Certification**

32 Within 60 days of completion of closure activities for tanks TK-P4 and TK-40 DWMUs, and in
33 accordance with WAC 173-303-610(6), certification that the DWMUs have been closed in accordance
34 with the specifications in this closure plan will be submitted to Ecology by registered mail. The certification
35 will be signed by the Permittees and by an Independent Qualified Registered Professional Engineer
36 (IQRPE).

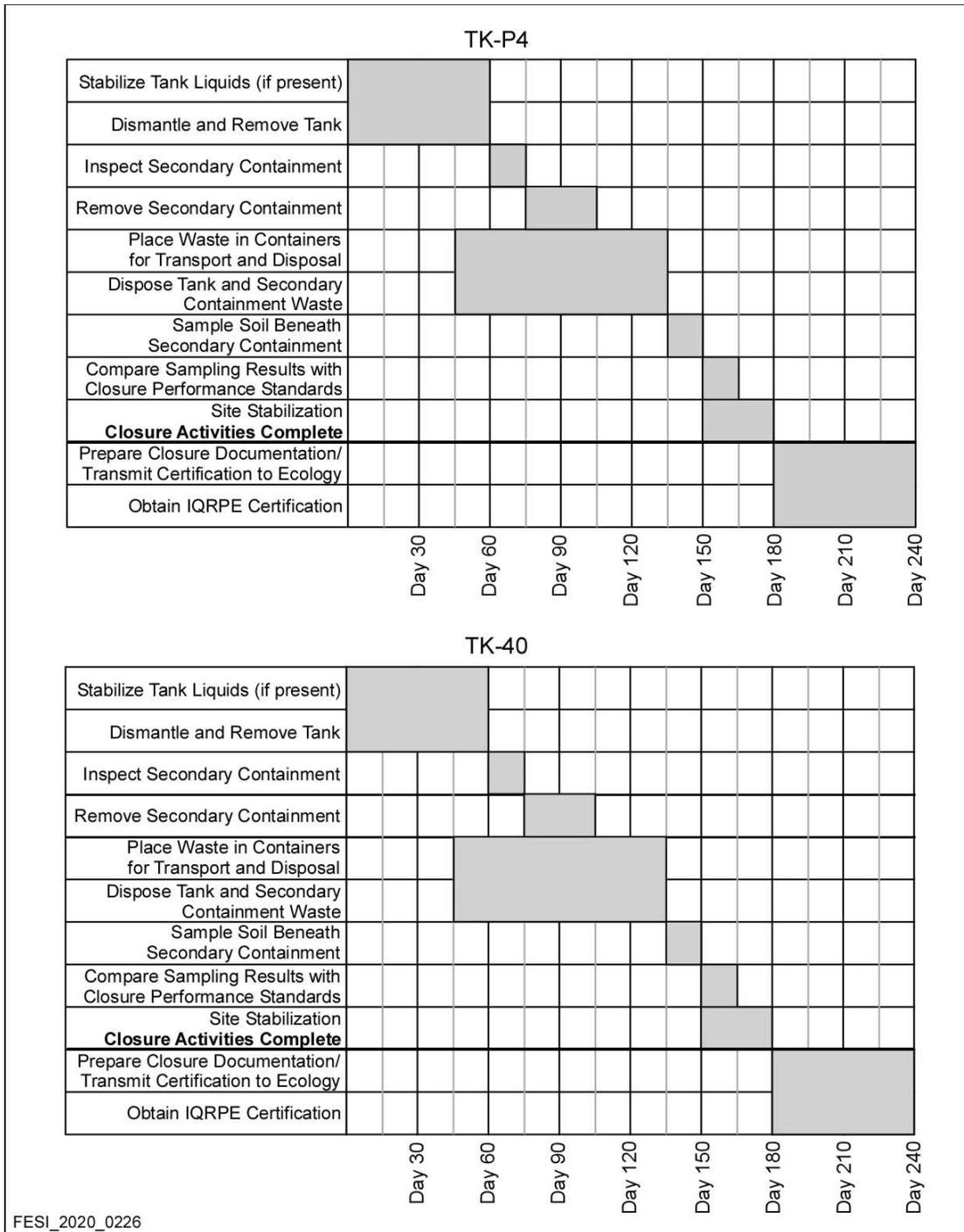


Figure 6. TK-P4 and TK-40 Closure Schedule

1
 2
 3

1 Documentation supporting completion of activities required in the dangerous waste closure plan will be
2 compiled and retained in the operating record. Documentation will include the following:

- 3 • Field notes and photographs related to closure activities
- 4 • Description of any minor deviations from the approved closure plan including justification for
5 such changes
- 6 • Documentation of the removal and final disposition of any unanticipated contaminated
7 environmental media
- 8 • Laboratory or field data, including sampling procedures, sampling locations, QA/QC samples, and
9 chain-of-custody procedures for all samples and measurements, including samples and measurements
10 taken to determine background conditions or determine or confirm clean closure
- 11 • Description of the Storage and Treatment Facility DWMU appearance at completion of closure

12 **10 IQRPE Certification**

13 The IQRPE will record observations and reviews in a written report that will be retained in the operating
14 record, and submitted with the Closure Certification. Documentation supporting the IQRPE's certification
15 must be furnished to the department upon request.

16 **11 Post-Closure Plan**

17 The closure strategy is to attain clean closure of PUREX tanks TK-P4 and TK-40. If the conditions for
18 verification sampling described in Section 6 meet the closure performance standards, then a post-closure
19 plan will not be necessary. If sampling and analysis of the soil underlying tanks TK-P4 and TK-40 show
20 that the closure performance standards cannot be achieved, a permit modification will be prepared in
21 accordance with WAC 173-303-610(3)(b) and WAC 173-303-830 to modify the closure plan so that
22 RCRA closure is coordinated with the 200-CP-1 OU.

23 **12 Amendment of Closure Plan**

24 As required by WAC 173-303-610(3)(b), the closure plan will be amended if changes to closure activities
25 require modification of the approved plan.

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- 21 303-200, “Accumulating Dangerous Waste On-Site.”
- 22 303-310, “Security.”
- 23 303-610, “Closure and Post-Closure.”
- 24 303-640, “Tank Systems.”
- 25 303-830, “Permit Changes.”
- 26 WAC 173-340, “Model Toxics Control Act—Cleanup,” *Washington Administrative Code*, Olympia,
27 Washington. Available at: <http://apps.leg.wa.gov/WAC/default.aspx?cite=173-340>.
- 28 340-700, “Overview and Cleanup Standards.”
- 29 340-740, “Unrestricted Land Use Soil Cleanup Standards.”
- 30 340-747, “Deriving Soil Concentrations for Groundwater Protection.”
- 31 340-750, “Cleanup Standards to Protect Air Quality.”
- 32 340-760, “Sediment Cleanup Standards.”
- 33 340-7493, “Site-Specific Terrestrial Ecological Evaluation Procedures.”
- 34 WAC 173-400, “General Regulations for Air Pollution Sources,” *Washington Administrative Code*,
35 Olympia, Washington. Available at: <http://apps.leg.wa.gov/WAC/default.aspx?cite=173-400>.
- 36 400-030, “Definitions.”

- 1 400-110, “New Source Review (NSR) for Sources and Portable Source.”
- 2 WAC 173-460, “Controls for New Sources of Toxic Air Pollutants,” *Washington Administrative Code*,
3 Olympia, Washington. Available at: <http://apps.leg.wa.gov/wac/default.aspx?cite=173-460>.
- 4 460-150, “Table of ASIL, SQER and de minimis Emission Values.”
- 5 WAC 246-247, “Radiation Protection–Air Emissions,” *Washington Administrative Code*, Olympia,
6 Washington. Available at: <http://apps.leg.wa.gov/WAC/default.aspx?cite=246-247>.
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Attachment 3
21-ESQ-000851

Response to the Notice of Deficiency Review Comment Record for
Review of Tanks TK-P4 and TK-40 Closure Plan

26 pages including cover sheet

Review Comment Record

Washington State Department of Ecology Nuclear Waste Program

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Document Title(s)/Number(s): PUREX TK-P4 and TK-40 Class 3 Permit Modification

Document Manager	Telephone Number	Project Manager	Telephone Number	Facility Site ID	Cleanup Site ID
Brigitte Weese	(509) 372-7936	John Temple	(509) 372-7940	CUG-33 WA7890008967	

Item No.	Pg. # Sec. # Para./Sent.	Comment or Question	Modification Needed	Basis/Justification	Permittee Response	Ecology Response	Open/Close	Reviewer Initials
1.	Pg. 6 & 7, Sec. 3	Section 3 does not identify the closure performance standards for Tanks TK-P4 and TK-40's, and their associated secondary containment structures. The specific closure performance standards needs to be included in the closure plan. <i>(Incomplete)</i>	Include the closure performance standards for the Tanks TK-40 and TK-P4, and their associated secondary containment structure.	WAC 173-303-610(2)(b)(ii)	<p>Accept, the closure performance standards for the soil samples have been identified in Section 3.</p> <p>6/22/2020:</p> <ol style="list-style-type: none"> Accept, the requested language has been added. Reject. The closure plan does not need to have the requested amount of detail on exposure pathways. Table 3 lists the basis for the performance standards and the table footnotes explain the exposure pathways. Accept, the requested language has been added Reject. The tables perform different functions although some information can be found in both tables. Table 3 shows the performance standards for closure. Table 6 is part of the SAP and lists the analytical performance standards. 	<p>1. Closure performance standards for the tanks and secondary containment were not addressed. The 276-BA Closure Plan included this language: "Clean closure of the ISO East container and secondary containment structure will be achieved by removal." DOE needs to include a statement such as "For Tanks TK-P4 and TK-40, clean closure will be accomplished through the removal of the tanks and secondary containment structures, and sampling the soil beneath the containment structures.</p> <p>2. The Closure Plan needs to include more detail of the exposure pathways being considered for these DWMUs. See 277-T OSA Section H2.E3.1 "Standards for focused soil samples"</p> <p>3. Also on Pg. 9, line 33, DOE needs to include "Soil sampling and analysis will be conducted in accordance with the approved closure plan SAP located in Section 6".</p> <p>4. Table 6 should be combined with Table 3.</p> <p>8/17/20:</p> <ol style="list-style-type: none"> Comment Closed Comment Closed Comment Closed Comment Closed 	Close	

2.	Pg. 8, Sec. 5.1 Lines 28 & 29	“Selection of demolition methods will be based off structural elements to be demolished, remaining contamination, location, and integrity of the structure” is not specific. <i>(Incomplete)</i>	A detailed description of the methods to be used for removing, transporting, treating, storing, and disposing of all dangerous wastes needs to be provided.	-WAC 173-303-610(3)(a)(iv) -Ecology Guidance 94-111, Section 8.2.	<p>Accept, demolition methods have been described in more detail in Sections 5.1.2 and 5.1.3.</p> <p><u>6/22/2020:</u> Section 5.1.2 describes that the tanks will be cut to pieces using a shear attachment.</p> <p>The description that water will be used is already in Section 5.1 and applies to all demolition activities described in Chapter 5. Therefore, it does not need to be added to 5.1.3.</p> <p>9/1/2020: “using an excavator with a shear attachment” will be repeated so that the following sentence reads: Due to the size of each of the tanks, the tanks will be cut into pieces using an excavator with a shear attachment, placed into roll-on/roll-off containers, and transported to ERDF for disposal.</p> <p>The tanks will be cut into pieces to allow transportation and disposal.</p> <p>The exact sequence of events cannot be decided until the actual situation has been evaluated. That is why the closure plan says the following: Field adjustments may be made, if necessary, and will be documented in the closure report.</p> <p>This section will be expanded separating information to include a third and fourth option for treatment and disposition of the heel, if a tank has a heel.</p>	<p>DOE needs to describe how TK-P4 and TK-40 will be cut up into pieces.</p> <p>Please add the following to the end of Section 5.1.3: “Water may be used to control dust generated from demolition activities. The amount of water used will be minimized to prevent ponding and runoff. While unlikely, other controls such as portable ventilation filter units, high-efficiency particulate air filter vacuum cleaners, greenhouses, and/or fogging agents may be used. Additional storm water runoff/runoff controls may be implemented, as needed. The demolition activities presume that the waste will be treated, if applicable, to meet all applicable requirements of WAC 173 303 140, “Land Disposal Restrictions,” and (by reference) 40 CFR 268, “Land Disposal Restrictions,” prior to disposal in the Hanford Site Environmental Restoration Disposal Facility (ERDF), as discussed in Section 5.2 of this closure plan. If for some reason the waste is not disposed at ERDF, then the waste will be disposed at a permitted RCRA TSD unit authorized for disposal.”</p> <p><u>8/17/20:</u> Section 5.1.2 states “Demolition of tanks TK P4 and TK 40 will include removing the tank and associated piping to the closest influent and effluent valves using an excavator with a shear attachment.” This section does not state the tanks will be cut to pieces using a shear attachment. DOE needs to provide further clarification in this section.</p> <p>DOE also needs to clarify what is the sequence of events if they find a heel in the tank(s). The Closure plan needs to explain what will happen to the tank after DOE treats the heel in</p>	Close
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						the tank. (i.e. Will it still be cut into pieces?) Ecology agrees that the description that water will be used is already contained in Section 5.1. 9/23/20: Comment Closed		
3.	Pg. 10, Sec. 5.2	A description of removal or decontamination of all dangerous waste residues is not included in this section. <i>(Incomplete)</i>	A description of how removal and/or decontamination of all dangerous waste residues will be performed needs to be provided.	-WAC 173-303-610(3)(a)(v) -Ecology Guidance 94-111, Section 8.2.	Tank removal is described in Section 5.1.2 and secondary containment removal is described in Section 5.1.3. Section 5.1.4, "Decontamination," states that decontamination is not planned and the tanks and secondary containment will be removed.	Accept	Close	
4.	Pg. 13 & 14, Sec. 5.4	Training requirements for specific personnel are not identified. <i>(Incomplete)</i>	Include a training matrix within closure plan consisting of the training requirements for all personnel responsible for closure plan implementation.	WAC 173-303-330	Accept, a training matrix has been added.	Accept	Close	

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5.	Pg. 15, Sec. 6.1	Without a DQO analysis documented in the closure plan, Ecology is unable to determine what decision criteria should be used to determine if laboratory data are acceptable for decision making under this closure plan. <i>(Incomplete)</i>	Include decision criteria through a DQO analysis or appropriate systemic planning process. See WAC requirement and TPA section 6.5 on the need for a DQO for RCRA Closure Plans.	WAC 173-303-610(3)(a)(v)	<p>Accept, a crosswalk has been provided that identifies components of the EPA 7 step DQO process in the closure plan.</p> <p>6/22/2020:</p> <ol style="list-style-type: none"> 1. Accept, a statement has been added. 2. Section 6, Closure Sampling and Analysis is written as a combined QAPjP and Field Sampling Plan, therefore it is not structured the same way as a standalone SAP. However, Section 6 contains the elements of a QAPjP: <ol style="list-style-type: none"> a. Project management 6.1.3 b. Quality objectives and criteria (Table has been added); c. Documents and records; 6.2.6 d. Analytical Methods requirements: Table 6 e. Quality controls: 6.2.3 f. Field Quality controls: 6.2.3 and Table 7. g. Lab Quality controls: 6.2.3 and Table 7 h. Documents and Records: 6.2.6 i. Data verification: 6.2.4 j. Data validation: 6.2.5 <p>Footnote "d" was removed and replaced with "one per batch," which is consistent with the HSTF closure plan SAP.</p>	<ol style="list-style-type: none"> 1. Include a statement in the Closure Plan that the Data Quality Objective is included within the Closure Plan and the systematic process followed per "Guidance on Systematic Planning Using the Data Quality Objectives Process, EPA QA/G-4." 2. Include in the Closure Plan a reference to the Quality Assurance Project Plan, the use of HASQARD does not replace the need for a QAPP, HASQARD gives guidelines for creating a QAPP. Table 7, superscript "d" states, "As defined in the laboratory contract or quality assurance plan and/or analysis procedures." The criteria for quality control must be included in the Closure Plan. <p>08/17/20: Comment Closed</p>	Close	

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6.	Pg. 24, Sec. 8	Section 8 and Table 5 show that closure will be completed within 180 days, but WAC 173-303-610(3)(a)(vii) requires that the schedule also allows for tracking intervening closure activities (those between the start of closure and the completion date) to allow tracking the progress of closure. A closure schedule that only shows that closure will be completed within 180 days without any intervening progress measure does not reflect compliance with WAC 173-303-610(3)(a)(vii). <i>(Incomplete)</i>	This section needs to be revised to include specific closure milestones that show progress throughout the 180 day closure period.	-WAC 173-303-610(3)(a)(vii) -WAC 173-303-806(4)(a)(xiii)	Accept, more detailed closure activities have been provided in Figure 6. 6/22/2020: Accept, Figure 6 has been updated with interim steps. 9/1/2020: Inspection of secondary containment will be added to Figure 6. Transportation of waste including the secondary containment will be performed in the time window shown in Figure 6. "dispose waste " will be expanded to say " dispose tank and secondary containment waste".	Why was table 5 deleted? A similar table is contained in the 276-BA Closure Plan. Figure 6 is lacking key components and details. Please refer to Figure H.4 in the 276-BA Organic Storage Area Closure Plan. 8/17/20: Figure 6 should state when DOE will inspect the secondary containment and when the secondary containment will be transported for disposal. 9/23/20: Comment Closed	Close	
7.	General	USDOE-RL has presented to Ecology the plan to perform closure of PUREX Tanks TK-40 and TK-P4 in a tiered approach. Please provide to Ecology justification for this tiered approach and revise the closure plan accordingly. <i>(General)</i>	See Comment		The closure activities will be coordinated with the removal activity of 203A/211A. The two-tiered approach is no longer necessary.	Accept	Close	

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8.	General	The bulleted items under Section 5 do not demonstrate what is required to achieve and verify clean-closure for Tanks TK-P4 and TK-40. The list of closure activities needs to be revised to show in detail the steps needed to achieve clean closure.	<p>The following should be included under closure activities:</p> <ul style="list-style-type: none"> Review operating and inspection records Perform visual inspection of secondary containment structure to identify additional focused sampling locations. Removal and demolition of the structures associated with Tanks TK-P4 and TK-40 (including secondary containment structures and 1 meter of soil). Perform visual inspection of soil beneath secondary containment (after 1 meter of soil removed) to identify additional focused sampling locations (i.e., staining) Perform focus sampling of the soil to confirm that clean-closure standards are met. If detected during initial sampling efforts, remove any contaminated environmental media present. Resample as necessary, to confirm that MTCA (WAC 173-340) Method B clean-closure levels have been met. <p>Transmit closure certification to the Washington State Department of Ecology.</p>		<p>Text has been revised as shown below:</p> <ul style="list-style-type: none"> Review operating and inspection records Perform visual inspection of secondary containment structure to identify additional focused sampling locations. Removal and demolition of Tanks TK-P4 and TK-40 and associated structures (i.e., piping, secondary containment). Perform visual inspection of soil beneath secondary containment to identify additional focused sampling locations (i.e., staining) Perform focus sampling of the soil to confirm that clean-closure standards are met. Transmit closure certification to the Washington State Department of Ecology. <p>6/22/2020: Removal of 1 m of soil is a remnant from CERCLA documents and is not required for closure. Some soil will be incidentally removed when the secondary containment structure is removed. 2. Agree, text has been updated.</p>	<p>1. DOE needs to provide an explanation for the changes to Ecology's proposed language.</p> <p>2. The following bullet does not match the closure plan:</p> <ul style="list-style-type: none"> Removal and demolition of Tanks TK-P4 and TK-40 and associated structures (i.e., piping, secondary containment). <p>08/17/20: Comment Closed</p>	Close	
9.	Pg. 1, Sec. 1 Lines 2-4	The language "PUREX TSD unit" is incorrect. PUREX is a unit group, an administrative collection of multiple dangerous waste management units. Closure applies only to individual dangerous waste management units, not "the PUREX TSD unit." <i>(All of the following comments are Technical)</i>	Remove language that refers to "PUREX TSD unit" here and throughout the closure plan.		Accept, text has been revised throughout the document.	Accept	Close	

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10	Pg. 1, Sec. 1 Lines 6 &7	The Part A form references CUG 4, Single-Shell Tank System. This reference should be the PUREX Part A form.	Please provide clarification of the correct Part A form.		Accept. The single-shell tank system Part A has been removed. However, the Rev. 9 PUREX Part A form cannot be referenced since it is a draft. No part A form will be referenced, similar to the 276BA closure plan.	Accept	Close	
11	Pg. 1, Sec. 1 Lines 13-16	This paragraph should be edited to state the following: "Closure will be performed in accordance with the schedule provided in Section 8. This closure plan complies with Washington Administrative Code (WAC) 173-303-610(2) through WAC 173-303-610(6), "Dangerous Waste Regulations," "Closure and Post-Closure," and represents the baseline for closure and the enforceable compliance requirements for conducting closure. Amendments to this closure plan will be submitted as a permit modification in accordance with WAC 173-303-610(3)(b)."	See comment.		Accept, paragraph has been edited as requested.	Accept	Close	
12	Pg. 1, Sec. 1.1.1, Line 34	The design capacity for PUREX Tank TK-P4 does not match the design capacity listed in the Rev. 9 PUREX Part A Form.	Revise the closure plan for consistency		Accept, the closure plan has been updated for consistency with the Part A.	Accept	Close	
13	Pg. 2, Section 1.1.1	The photograph for TK-P4 is not clearly distinguishable.	Provide labeling of TK-P4 in the photograph. Ecology suggests that DOE replace the photograph of TK-P4 with the photograph provided in the locked down PUREX Rev 9 Part A form that Ecology and DOE agreed to in 2019.		Figures 2 and 3 have been replaced with a new figure that shows a photo and schematic of TK-P4 and TK-40 within the 203A and 211A areas.	Accept	Close	
14	Pg. 2, Section 1.1.1	The diagram for TK-P4 should include a scale and a compass rose.	See comment.		A scale and a north arrow have been added to Figure 2.	Accept	Close	
15	Pg. 3, Sec. 1.1.1 Lines 1-2	The PUREX Pre-Closure Work Plan should be referenced here where the Closure Plan talks about emptying tank TK-P4 to a minimum heel and the draining of the associated piping.	See comment.		The Pre-Closure Work Plan doesn't say that TK-P4 has been emptied to a minimum heel. Internal Memo 17530-96-028 will be referenced instead. 6/22/2020: Accept, closure plan has been revised to state 300 gallons instead of pounds, as stated in 17530-96-028.	The cited internal memo says that there is a minimum heel of about 300 gallons. This is a discrepancy within the closure plan (See Section 1.2 Process Information). DOE needs to clarify this discrepancy in the Closure Plan if they plan to reference this document. This document should also be contained in "References" as the end of the Closure Plan. 8/17/20: Comment Closed	Close	

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Item No.	Pg. # Sec. # Para./Sent.	Comment or Question	Modification Needed	Basis/Justification	Permittee Response	Ecology Response	Open/Close	Reviewer Initials
16	Pg. 3, Sec. 1.1.2	The photograph for TK-40 is not clearly distinguishable.	Provide labeling of TK-40 in the photograph. Ecology suggests that DOE replace the photograph of TK-40 with the photograph provided in the locked down PUREX Rev 9 Part A form that Ecology and DOE agreed to in 2019.		Figures 2 and 3 have been replaced with a new figure that shows a photo and schematic of TK-P4 and TK-40 within the 203A and 211A areas.	Accept	Close	
17	Pg. 3, Sec. 1.1.2	The diagram for TK-40 should include a scale and a compass rose.	See comment.		A scale and a north arrow have been added to Figure 2.	Accept	Close	
18	Pg. 3, Sec. 1.1.2 Line 6	The design capacity for PUREX Tank TK-40 does not match the design capacity listed in the Rev. 9 PUREX Part A Form.	Revise the closure plan for consistency		Accept, the closure plan has been updated for consistency with the Part A.	Accept	Close	
19	Pg. 3, Sec 1.1.2 Lines 11-12	The PUREX Pre-Closure Work Plan should be referenced here where the Closure Plan talks about emptying of tank TK-40 to a minimum heel. Was there draining of the associated piping like TK-P4?	See comment.		The pre-closure workplan doesn't state that the tank was flushed and drained to a minimum heel, therefore Pre-Closure Work Plan should not be referenced. However, Memo 97-03-26 states that the tank was emptied to a minimum heel. 6/22/2020: Agree, there is a discrepancy. HNF-SD-CP-HIE-004 says there is a 1185 lb heel, but 97-03-26 says that it is empty with no flushable liquid. The most conservative value will be assumed. The text has been revised to cite the HNF document and not Memo 97-03-26. The HNF document has been added to the references.	Memo 97-03-26 states that the tank is empty. There is a discrepancy with what is contained in the Closure Plan (Process Information 1.2). DOE needs to explain this discrepancy when they cite this document. This document should also be included in the "References" section at the end of the Closure Plan. 8/17/20: Comment Closed	Close	
20	Pg. 4, Sec. 1.2, Line 34	What does "slightly contaminated" mean?	Remove "slightly" from the text.		Text has been changed from "slightly contaminated" to "radiologically contaminated."	Accept	Close	

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21	Pg. 4, Sec. 1.2 Lines 23-43	These two paragraphs should reference the PUREX Pre-Closure Work Plan. In regards to Tank TK-40, the Pre-Closure Work Plan states that TK-40 has a bottom drain, which left no heel. Based on this information, clarify the meaning of "pumped to a minimum heel" on line 36. Please also provide clarification on line 38 "... a residual heel of 537.5 kg...".	See comment		<p>Drawings indicate that both TK-40 and TK-P4 may have bottom drains. However, the deactivation documents state that the tanks were emptied and residual heels remain, as described in the closure plan. Observation of the interior of the tanks prior to demolition will confirm this information. The closure plan makes the conservative assumption that there are heels in both tanks that will need to be managed.</p> <p>6/22/2020: Accept, the closure plan has been revised to make it more clear that an assumption is being made that both tanks have heels. The closure plan has also been revised to assure consistency.</p>	<p>The Closure Plan is still not clear that DOE is making the assumption that there are heels in both tanks that need to be managed. The Closure Plan contradicts this statement in multiple places throughout the Closure Plan. DOE needs to be clear on this issue throughout the Closure Plan.</p> <p>8/17/20: Comment Closed.</p>	Close	
22	Pg. 5, Sec. 1	An Inspection Schedule is not included. After closure activities have been completed, TK-P4 and TK-40 will still need to be inspected annually until Ecology approves the site closure certification.	Include a table that shows the annual inspection requirements that will be performed.		Accept, an inspection table has been added.	Accept	Close	

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23	Pg. 5, Sec 1.4 Lines 22-27	Please update the information included in the Security Information Section.	This information should match what is contained in the PUREX Security Addendum for Rev 9 which was recently agreed to and locked down in August 2019.		Accept, information was added from the PUREX Rev. 9 Security addendum. 6/22/2020: The language in the closure plan matches what is in the locked down Rev. 9 Addendum E. The only thing missing is the exact sign locations, which are not necessary in the closure plan. 9/2/2020: The language from the Rev 9 addendum will be included in the closure plan.	The information does not match what is in the PUREX Rev. 9 Security addendum. This section of the Closure Plan should match as closely as possible to the locked down Rev 9 Addendum E. 8/17/20: The language does not match what is locked down for PUREX in Rev 9, addendum E (submitted late 2019). Ecology will provide the locked down addendum to DOE. If needed, Ecology will set up a meeting with DOE to discuss needed changes. This closure plan needs to be Rev 9 compliant. 10/01/20: Ecology will provide the T Plant Closure Plan as a reference for the Security Section. Please edit Section 1.4 to also include language included in the T Plant Closure Plan, Section H.1.4.2. 02/25/21: DOE provided an updated Closure Plan via email on 01/11/21. The update included language in Section 1.4 that has been agreed to between DOE and Ecology.	Close	
24	Pg. 5-6 Sec. 2	Tank systems are required to close by removal or decontamination, and are not subject to groundwater monitoring requirements. Only if it is not practicable to remove or decontaminate soils, is the tank system required to close with waste in place and be subject to GW monitoring. The closure plan does not suggest that PUREX tanks will close other than by removal or decontamination, so there is no regulatory basis to include a discussion of GW monitoring.	Replace this section with "Tanks TK-40 and TK-P4 will be closed by removal or decontamination, and is not subject to any groundwater monitoring requirements."		Accept, section has been revised as requested.	Accept	Close	

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25	P.6, Sec. 3	The closure plan does not consider all of the exposure pathways (e.g., groundwater, ecological) associated with the target analytes. If a pathway is not relevant, then that can be described in the closure plan.	<p>Analyze the exposure pathways associated with the following regulations:</p> <ul style="list-style-type: none"> WAC 173-340-740(3), "Model Toxics Control Act—Cleanup" (MTCA), "Unrestricted Land Use Soil Cleanup Standards" Method B (cancer and noncancer), that considers human health based on direct soil contact WAC 173-340-740, Table 740-1, "Method A Soil Cleanup Levels for Unrestricted Land Uses," which includes closure performance standards for human health based on unrestricted land use. MTCA Method A is only used if MTCA Method B is not available in the Cleanup Levels and Risk Calculation tables WAC 173-340-747, "Deriving Soil Concentrations for Groundwater Protection" that notes soil concentrations protective of groundwater WAC 173-340-7493, "Site-Specific Terrestrial Ecological Evaluation Procedures" that considers ecological indicators (plants, biota, wildlife) found in Table 749-3, "Ecological Indicator Soil Concentrations (mg/kg) for Protection of Terrestrial Plants and Animals" WAC 173-340-750, "Cleanup Standards to Protect Air Quality" that describes human health risks due to fugitive vapors and dust 		Closure performance standards and exposure pathways have been identified in Chapter 3.	Accept	Close	
26	Pg. 6, Sec. 3 Lines 25 & 26	The Tri-Party Agreement has been cited as the source of closure requirements when WAC 173-303-610 should be cited instead.	Remove TPA reference as the source for closure standards and replace this with WAC 173-303-610 and WAC 173-303-640 (closure of tanks).	WAC 173-303-610 WAC 173-303-640(8)	Accept, TPA reference has been removed.	Accept	Close	

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27.	Pg. 7, Sec. 4 Lines 13 & 14	It is stated in this section "closure strategy is based primarily on review of the operational history, operational records, waste management records, and visual inspections of PUREX tanks TK-P4 and TK-40." There is no documentation (e.g., Operating Records Review Summary Table) to support the above statement.	<p>Include these records, such as an "Operating Records Review Summary Table." (See FS-1 closure plan Table HA-2 for an example.)</p> <p>Include a statement regarding the visual inspection. Identify the date and purpose of the inspection (i.e., to identify any dangerous waste related staining or cracks on the secondary containment structure surface.)</p> <p>Two visual inspections are warranted:</p> <ul style="list-style-type: none"> The secondary containment structure surface, once the tanks have been removed. The soil beneath the secondary containment structure after 1 meter of soil has been removed. 		<p>It is not required to have an operating records summary. These tank farms operated for 40 years mostly before RCRA went into effect. The containment structures were not built to be secondary containment structures and it can be assumed that containment structures contained liquid waste or product on many occasions. That is why the closure plan assumes that all the containment debris will be disposed as mixed waste debris. No change.</p> <p>Agree that two visual inspections are warranted (once tanks have been removed and once secondary containment has been removed, however, soil will be inspected without removal of 1 m of soil). Language was added to Sections 4.2 and 5.</p> <p>6/22/2020: TSD inspections are performed annually. Signs, hazard labels and the conditions of the tanks are inspected. The conditions of the tanks are only evaluated from outside the containment structure as it is a radiation zone with access restrictions. TSD inspections of the tanks are not required per change number M-80-94-01.</p> <p>It is not known if rainfall and snowmelt accumulate and evaporate naturally because the secondary containment structures are not inspected as described above.</p>	<p>More information is needed in this section. How often has DOE performed routine S&M inspections? What does the inspection summary look like? Does rainfall and snowmelt accumulate on the floor of the containment structure and evaporate naturally like 276-BA?</p> <p>8/17/20: Comment Closed.</p>	Close	
28.	Pg. 7, Sec. 4.1 Lines 27-30	Rename Section 4.1 from "Previous Closure Activities" to "Pre-Closure Activities. The PUREX Pre-Closure Work Plan also needs to be referenced in Section 4.1.	See Comment.		Accept, section has been renamed as requested.	Accept	Close	

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29.	Pg. 7, Sec. 4.2 Lines 38-39	A statement regarding focus sampling is needed after the sentence "A focused sampling approach is proposed...where contamination is more likely to be present."	The following statement needs to be included: "Focused sampling is distinguished from probability-based sampling in that inferences are based on professional judgement, not statistical scientific theory. Therefore, conclusions about the target population are limited and depend entirely on the validity and accuracy of professional judgment.		Accept, language has been added as requested.	Accept	Close	
30.	Pg. 7, Sec. 4.2, Line 41	"Focused samples also may be collected..." is not enforceable.	Change the text to read "Focused samples will be collected where there is evidence of cracks..."		Reject, not all cracks will require focused samples. The decision to sample will be made after a visual inspection by the IQRPE or ECO. 6/22/2020: The IQRPE will decide if additional sampling will be needed. An additional sample was added by the IQRPE at the 276BA for a very minor break in the sealant surface. Ecology can perform an inspection during closure, and additional samples locations can be decided in consultation with the permittees and the IQRPE.	DOE needs to describe what type of cracks will require focused sampling. Through cracks? Hairline cracks? Etc. DOE needs to provide a more thorough explanation. Ecology also plans to include a permit conditions that states once the tanks are removed, DOE will notify Ecology and Ecology will come out to inspect the secondary containment and decide if additional focus sampling is needed. 8/17/20: Comment Closed	Close	
31.	Pg. 7, Sec. 4.2 Lines 41-42	"Focused samples also may be collected where there is evidence of cracks in the concrete or degradation of coating within the secondary containment". The plan does not identify whether any cracks have been identified. Are there any concrete joints?	Include in the closure plan information pertaining to cracking identified during visual inspections. Provide information about any cracks in the concrete that warrant sampling. Clarify the presence of concrete joints.		As described in comment #27, visual inspections will be performed when the tanks have been removed. The tanks in the basins are placed on a slightly elevated concrete footing. Thus, no observation of the concrete surface can be done under the tanks at this time. The secondary containment structures also contain other equipment that makes observation difficult prior to tank removal. There are joints along the basin walls. 6/22/2020: Accept. The closure plan has been revised to discuss concrete joints.	Concrete joints should be mentioned when talking about visual inspections for evidence of cracks in the concrete/degradation of coating within secondary containment. 8/17/20: Comment Closed.	Close	

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32.	Pg. 8, Sec. 4.2, Line 2	“Additional soil will be removed...” This language is not sufficient. The depth to which soil will be removed needs to be included.	Include language that up to 15 ft. of soil will be removed. Contaminated soil will be removed using equipment capable of removing the quantity of material required to complete removal and close the DWMUs. If contamination exists in the soil deeper than 15 ft., the Permittees shall collaborate with Ecology for a path forward on closure.		<p>If contamination is above cleanup standards, no soil removal will be performed. Closure will be coordinated with the 200-CP-1 OU. The text has been revised to state this.</p> <p>6/22/2020:</p> <ol style="list-style-type: none"> Accept. The sentence has been changed as requested throughout the closure plan. Coordination with 200-CP-1 means that the site will be added to the 200-CP-1 list of waste sites and a permit modification will be performed to update the closure plan for coordinated closure. The remedial decision for the site will decide whether additional soil will be removed or if the site will be a landfill. <p>9/2/2020: Additional sentences will be added to the end of Section 4.2. It will read: The waste site will be added to the list of 200-CP-1 waste sites. The remedial decision will decide if additional closure actions will be performed and may include clean closure by removal of soil, or development of a post-closure plan for closure as a landfill.</p>	<p>Change the sentence throughout the document to say “RCRA Closure will be coordinated...”</p> <p>DOE needs to explain the closure options that may be performed if coordinated with 200-CP-1 (this may include clean closure by removal of the soil, or developing a post-closure plan for closure as a landfill).</p> <p>8/17/20:</p> <ol style="list-style-type: none"> Agree While Ecology agrees with the information provided, this information should be included in the closure plan. <p>9/23/20: Comment Closed</p>	Close	
33.	Pg. 8, Sec. 4.2 Lines 2 & 3	The text stating “additional soil will be removed and the unit will be resampled” is not clear. It should be noted that additional soil removal is deeper than the initial removal of up to 1m (3ft) of soil.	Revise to clarify.		<p>If contamination is above cleanup standards, no soil removal will be performed. Closure will be coordinated with the 200-CP-1 OU. The text has been revised to state this.</p>	Accept	Close	

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34.	Pg. 8, Sec. 4.2 Line 3	The text regarding to "post-closure plan" needs to be revised. According to WAC 173-303-640(8), the unit must close by removal or decontamination. If the permittees are able to successfully demonstrate that not all contaminated soils can be practicably removed or decontaminated, then the tank will close with waste in place and be subject to a post-closure care.	Revise text.	WAC 173-303-640(8)	If closure performance standards cannot be met, the closure plan will be modified to describe a coordinate closure approach with the 200-CP-1 OU. Text has been revised to state this.	Accept	Close	
35.	Pg. 8, Sec. 4.2 Lines 37-42	Section 4.2 Clean Closure Strategy needs to provide more detail, including an expansion on focused sampling similar to what is contained in the 276-BA Closure Plan (Section 4.2 Clean Closure Strategy).	See comment.		Accept	Accept	Close	
36.	Pg. 8, Sec. 5	According to the closure plan, ERDF is identified as the primary disposal facility for waste generated as a result of closure activities. However, the regulatory pathway that provides authorization to place RCRA waste into a CERCLA landfill is not documented.	Include reference to the Action Memorandum that provides a disposition pathway for placing RCRA waste into ERDF.		Accept	Accept	Close	
37.	Pg. 8, Sec. 5	Applicable requirements for management and/or treatment of the waste generated are not specifically identified.	Identify applicable requirements for management and/or treatment of waste generated.	WAC 173-303-610(3)(a)(iv)-(v) -630(10) -640(8)(a) -650(6)(a)(i) -680(2) -695 (incorporating 40 CFR 264.1102(a))- 806(4)(a)(xiii) -806(4)(d)(vii) -806(4)(i)(i)(B)	Contaminated soil will not be removed. Waste management will be in accordance with Section 5.2 of the closure plan. No change. 6/22/2020: Accept, a statement has been added to Section 5 about coordination with CP-1. It is impossible to not remove some soil when excavation equipment is used to remove containment structures. Thus, this is not a soil waste stream, but a concrete waste stream containing some soil. 9/2/2020: An explanation was added to the soil projected waste stream.	DOE needs to include an explanation in Section 5 (page 12) that closure will be included with 200-CP-1 if there is contaminated soil. Please explain why soil is a possible waste stream in Section 5.2.1 if contaminated soil will not be removed. 8/17/20: Ecology agrees with the statement added to Section 5 about coordination with 200-CP-1. While Ecology understands that some soil will be removed with the removal of containment structures, this explanation should be included in the Closure Plan. 9/23/20: Comment Closed	Close	

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38.	Pg. 8, Sec. 5.1	It is not clear as to how the LDRs are to be met and which debris standards are applicable.	Include details on where and how treatment of LDR's will be performed and storage locations prior to disposal.	WAC 173-303-140 WAC 173-303-610(5)	<p>All waste generated from closure activities will be treated and disposed as dangerous/mixed waste debris. Text has been revised to state this.</p> <p>6/22/2020: Sections 5.1.2 and 5.1.3 have been updated to discuss how waste will be managed.</p> <p>9/2/2020</p> <ol style="list-style-type: none"> The treatment will be at PUREX and/or ERDF or another approved RCRA TSD facility. Reject. The language will remain as written. This section describes how to determine if the secondary containment structure designates, and the project will make the determination if additional samples are necessary. 	<p>Although the text that states in 5.2.4 that waste from this closure activity will be dangerous/mixed waste debris, it should also be included in this section when talking about LDRs.</p> <p>The Closure Plan needs to be edited to say that DOE will sample and characterize all waste to determine whether the waste can be considered dangerous/mixed waste debris. By treating all waste generated from closure activities as dangerous/mixed waste, potentially uncontaminated debris could be disposed at ERDF or another approved RCRA TSD unit.</p> <p>8/17/20:</p> <ol style="list-style-type: none"> Section 5.1.2 states "Option 1: Remove heel and treat on/offsite; or" Is onsite considered PUREX? Will DOE treat the waste inside the tank "onsite". Section 5.1.3, page 15, line 4, change "may" to "will" in the following statement: "Additional samples may be taken in areas where staining is observed." <p>9/23/20: Comment Closed</p>	Close	
39.	Pg. 8, Sec. 5.1	This section does not describe how equipment being used for demolition of secondary containment structures will be decontaminated.	Include how equipment being used for demolition of secondary containment structures will be decontaminated.	WAC 173-303-610(3)(a)(v)	Accept, equipment decontamination language has been added to Section 5.1.4.	Accept	Close	
40.	Pg. 9, Sec. 5.1.1 Lines 5-7	"Global positioning system (GPS) coordinates will be taken to ensure that after the removal of the secondary containment structures..." GPS coordinates of concrete seams and any cracking need to be determined before removal of the secondary containment.	Revise the sentence to state that GPS coordinates or the specified sample locations as identified in Figures 4 & 5 will be determined prior to removal of the secondary containment.		Accept, sentence has been revised as requested.	Accept	Close	
41.	Pg. 9, Sec. 5.1.1, Line 6	"Grid for the verification sampling may be laid out". Only focus sampling is being conducted. There is no grid associated with sampling activities.	Remove "grid" from the text.		Accept, language has been modified as requested.	Accept	Close	

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42.	Pg. 9, Sec 5.1.1	The coordinate system that will be used for reporting/recording needs to be specified.	Provide this information.		Accept, NAD83 has been specified in the text.	Accept	Close	
43.	Pg. 9, Sec. 5.1.2 Lines 10 & 11	It is stated that Tanks TK-P4 and TK-40 will be dismantled and demolished using standard industry or conventional demolition practices with heavy equipment.	Include more detail or examples of the demolition practices that would be taking place. Also include the types of heavy equipment that will be used.		Accept, additional language has been added describing that an excavator with a shear attachment will be used. Text has also been added that states that field adjustments may be made and will be documented in the closure report. 6/22/2020: Sections 5.1.2 has been updated to discuss how waste will be managed. 9/2/2020 See RCR #2.	How will the tanks be cut into pieces? How will DOE manage the waste in the tank while cutting up the tank? What equipment will be used to cut the tank? How will DOE ensure protection of workers from dust and other hazards? Will fixatives be used to reduce airborne contamination? 8/17/20: See RCR #2 9/23/20: Comment Closed	Close	
44.	Pg. 9, Sec. 5.1.3 Lines 19-21	The specific method of demolition is not described in detail.	Specific demolition method selected needs to be included in the closure plan.	WAC 173-303-610(3)(a)(v)	Accept, additional language has been added.	Accept	Close	
45.	Pg. 9, Sec. 5.1.3.1, Line 26	"May be removed" The two tanks will need to be removed prior to removing the secondary containment structure.	Change "may be" to "will be".		Accept, language has been changed as requested.	Accept	Close	
46.	Pg. 9-10, Sec. 5.1.3.1 & 5.1.3.2	A detailed description of the method for removal of contaminated soils is not provided in either of these sections.	Include a detailed description of the method for removal of contaminated soils.	WAC 173-303-610(3)(a)(v)	No soil removal will be performed if samples do not meet closure performance standards. Text in sections 5.1.3.2 and 5.1.3.2 will be revised to delete the statement that soil will be removed. A statement has been added to Section 5.1.6 that says that a permit modification with a coordinated closure approach will be submitted to Ecology for approval if closure performance standards aren't met.	Accept	Close	

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47.	Pg. 9-10, Sec. 5.1.3.1 (Line 34) & 5.1.3.2 (Line 4)	The following sentence is not defensible in both of these sections "Additional soil removal may be performed if deemed necessary to meet clean closure standards."	Replace text with the following, "If contaminated soil is identified as a result of clean closure verification sampling activities (i.e., samples indicate contamination above clean closure standards), the nature and extent of contamination will be evaluated. Contaminated soil will be removed using equipment capable of removing the quantity of material required to complete removal and clean close the DWMU. Following removal of contaminated soil, additional confirmatory sampling efforts will be conducted in accordance with the approved closure plan SAP to demonstrate clean closure levels."	WAC 173-303-610	No soil removal will be performed. If contamination is above cleanup standards, closure will be coordinated with the 200-CP-1 OU. The sentence has been deleted.	Accept	Close	
48.	Pg. 10, Sec. 5.1.5 Lines 13-15	What is meant by "the site will be stabilized in a manner that will mitigate potential industrial safety hazards" The closure plan must document the specifics of those activities that will be used to ensure compliance with closure plan requirements of WAC 173-303-610(2)(a)(i)-(ii).	Please clarify	WAC 173-303-610(2)(a)(i)-(ii)	<p>The language has been modified to be consistent with the 276BA closure plan.</p> <p>6/22/2020: After clean closure, the site will be backfilled and may be used for equipment staging. If the site is not able to be clean closed, it may be used as a staging area and will be addressed at final closure.</p> <p>9/2/2020: Equipment will not be staged permanently. Thus, if additional sampling will be necessary, the equipment can be removed. No change to the document.</p>	<p>DOE added text that says "The areas will be used as a staging area for nearby removal activities." Please provide Ecology more information on this statement. Will it be used as a staging area after it is cleaned closed and out of the permit? What if the area is not able to be clean closed? Will it still be used as a staging area?</p> <p>8/17/20: Ecology is concerned that the use of the site as a staging area for equipment could impact additional sampling if it is found to be needed for the remedial action. Please provide an explanation on how DOE plans to address this issue.</p> <p>9/23/20: Include the provided language on equipment staging in the permit.</p> <p>02/25/20: DOE submitted an updated Closure Plan on 01/11/21 that included the following language to Section 5.1.5: "Equipment will not be staged permanently. Thus, if additional sampling will be necessary, the equipment can be removed." Comment closed.</p>	Close	

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49.	Pg. 10, Sec. 5.1.6 Lines 20-22	The text in this section explains that the area will be backfilled (as needed). The methods and what will be done is not clear.	Please provide more details on how the area will be 'backfilled'. What methods will be used to return the land to the appearance of the surrounding areas?	WAC 173-303-610(2)(a)(iii)	The backfill language has been removed and Section 5.1.5 has been updated to state that the area will be leveled. 6/22/2020: Accept, the requested language has been added.	It should be stated here that the area will be leveled after sampling activities have been conducted. 8/17/20: Comment Closed	Close	
50.	Pg. 11, Sec. 5.2.1.2 & 5.2.2, Lines 13 & 21	"Field screening will be used to segregate radioactive waste from nonradioactive waste." This statement is contradictory to the earlier statement in Section 5.2 that "All of the waste will be treated as dangerous/mixed waste."	Please clarify. Also, if all of the waste will be treated as dangerous/mixed waste, does Section 5.2.1.2 "Solid Waste Management" apply?		Section 5.2.1.2 has been removed as all waste will be dangerous/mixed waste. All waste will be managed per Section 5.2.1.1 (which will be part of 5.2.1 since there are no other level 4 headers).	Accept	Close	
51.	Pg. 11, Sec. 5.2.3.1 Lines 36 & 37	This sentence needs to be revised.	Please revise sentence to read "The bulk containers will be accumulated in a suitable area adjacent to the 203A or 211A storage areas or may be accumulated for up to 90 days in another suitable Hanford Site location." These revisions better reflect requirements of the dangerous waste regulations.		Accept, the sentence has been revised.	Accept	Close	
52.	Pg. 12, Sec. 5.2.4 Line 37	The language "If treatment is deemed necessary" is subjective and unenforceable.	Revise text to read "If treatment is required to verify compliance with applicable LDR treatment standards or disposal unit waste acceptance criteria..."		Accept, the language has been revised.	Accept	Close	

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53.	Pg. 12, Sec. 5.2.4	There is no discussion in this section of the criteria for determining whether or not soil and concrete require treatment.	Include criteria for determining soil treatment and concrete treatment.	WAC 173-303-610(3)(a)	<p>Soil removal will not be performed as part of closure. Text has been revised to state this. Concrete will be treated and disposed as dangerous waste debris.</p> <p>6/22/2020: The text in Section 5.2 has been revised to state that waste that designates as dangerous waste will be treated.</p> <p>Soil is a possible waste stream as part of removal of the containment structures. It is not the intention to purposefully remove contaminated soil. No update is needed to Section 5.2.1. However, additional language has been added to Section 5.2.4: "Waste from this closure activity will be treated as potential dangerous/mixed waste. Waste that isn't dangerous/mixed waste will be managed as low-level waste."</p>	<p>DOE needs to state here that the potential waste that will be treated will be concrete.</p> <p>Please explain why soil is a possible waste stream in Section 5.2.1 if contaminated soil will not be removed. See RCR #37.</p> <p>8/17/20: Comment Closed</p>	Close	
54.	Pg.13, Sec. 5	The closure plan does not include "identifying and Managing Contaminated Environmental Media" How will the initial removal of 3 feet of soil be managed?	See 276-BA Closure Plan Section H.5.2.6. Management of the first 3 feet of soil needs to be included.		No soil removal will be performed, therefore the section "Identifying and Managing Contaminated Environmental Media" is not necessary.	Close	Close	
55.	Pg. 13 &14, Sec. 5.4	The closure plan must document the specific health and safety requirements that will apply, not broad statements that requirements will be applied "as applicable," or "typically."	Revise broad statements such as "as applicable", or "typically." Include the specific health and safety requirements needed for closure in the closure plan.		Accept, a training matrix will be added that provides specific health and safety requirements	Accept	Close	
56.	Pg. 14, Sec. 5.4	This section does not specify the length of time that training records need to be kept.	A sentence needs to be included specifying that training records to personnel will be kept until Ecology approves certification of closure for tanks TK-P4 and TK-40.	WAC 173-303-330(3)	Accept, a sentence has been added as requested.	Accept	Close	
57.	Pg. 15, Sec. 6.1 Lines 9 & 10	"This closure SAP provides details on the sampling and analysis procedures in accordance with..." This is a misleading statement and lacks detail.	Please remove this statement.		Accept, this sentence has been removed.	Accept	Close	

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58.	Pg. 15, Sec. 6.1	Revise closure plan to cite the most current version/revision of SW-846, ASTM and HASQARD.	Please revise.		Accept, statement has been revised to say "most current versions of..."	Accept	Close	
59.	Pg. 15, Sec. 6.1.3	The Project Management section does not include enough detail.	See the 277-T OSA Closure Plan Section H2.E4.3 "Project Management" which was submitted to Ecology with Letter 19-AMRP-0021		Accept, additional information has been added.	Accept	Close	
60.	Pg. 16, Sec. 6.1.3	Include the target analyte Tributyl Phosphate (WT02) to Table 1.	This waste code should be updated throughout the closure plan.		Accept, tributyl phosphate has been added as a target analyte throughout the closure plan.	Accept	Close	
61.	Pg. 16, Sec. 6.1.3	According to the Rev 9 PUREX Part A form that was locked down this year (2019), waste codes are the following: •203A (TK-P4): Metals showing toxicity characteristic (D004-D011), ignitability (D001), and corrosivity (D002). •211A (TK-40): State only dangerous waste criteria waste (WT02) due to the presence of tributyl phosphate and normal paraffin hydrocarbon (Toxic Category C in WAC 173-303-100(5)).	The information contained in the Rev 9 PUREX Part A form does not match what is contained in the Closure Plan for PUREX Tanks TK-P4 and TK-40. This information must match. Please revise the closure plan.		Accept, the waste codes in the Rev. 9 Part A have been added, except for NPH, which is being removed from the Part A because it is not a state-only toxic. 6/22/2020: NPH was incorrectly incorporated based on toxicology data for kerosene. There is no toxicology data for NPH in the ECOTOX and HSDB data basis, thus Hanford does not designate NPH as dangerous waste.	Provide Ecology documentation of the agreement to remove NPH from the Part A. 8/17/20: Comment Closed	Close	
62.	Pg. 17, Sec. 6.2 Lines 1-3	"Cracking or staining of concrete will be <i>examined</i> before demolition to determine if additional focused sampling is warranted. The additional tanks within each secondary containment will also be <i>examined</i> for evidence..."	Include details on how the concrete and tanks within secondary containment are being examined, and who is examining them.		Text has been revised to state that the IQRPE or the ECO will perform a visual inspection of the secondary containment and additional tanks.	Accept	Close	
63.	P.16, Sec. 6.2, Lines 11-12	Include a statement that focused sample results will be directly compared to the clean closure levels.	See comment.		Accept, a statement has been added as requested.	Accept	Close	
64.	Pg. 18, Sec. 6.2.1 Lines 3 & 4	"After the soil is sampled, the sample media will be screened to remove material larger than approximately 2 mm (0.08) in diameter..."	Provide a justification to allow for screening of sample material to less than 2mm in size. This needs to include reference to any regulatory citations.	WAC 173-303-740(7)(a)	Accept, justification has been provided. WAC 173-340-740(7)(a) has been cited.	Accept	Close	
65.	Pg. 19, Table 2	Preservation temperatures need to be updated.	Change "4°C to "≤6°C"		Accept, temperatures have been changed.	Accept	Close	

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66.	Pg. 20	Include a section detailing the steps to be taken if sample results indicate contamination.	<p>Include section titled "Resolving Contamination Identified During Soil Sampling"</p> <p>Also, include the following text "If focused soil results based on direct comparison indicate contamination above closure performance standards, then sample location(s) will be remediated to remove contaminated soil. Following remediation, confirmatory sampling will be performed. Analytical results of confirmatory sample(s) collected at focused sample location(s) will be directly compared to the closure performance standards to confirm remediation efforts were effective and the area is clean. If after remediation of the soil does not meet closure performance standards, then the Permittees will meet with Ecology to determine a path forward for closure."</p>		No soil removal will be performed. If contamination is above cleanup standards, closure will be coordinated with the 200-CP-1 OU. Language has been changed throughout closure plan to address this.	Accept	Close	
67.	Pg. 20, Sec. 6.2.3	The text in this section does not contain documentation of what equipment is to be used, particularly with regard to sampling equipment.	<p>Provide reference to Field Sampling Standard Operation Procedure (SOP).</p> <p>The text reading "to ensure that reliable data are obtained" should be revised to say "to ensure that decisions made using the data are within an acceptable degree of uncertainty."</p>		<p>In lieu of a reference to the SOP, text has been added to Section 6.2.1 that states: "Collection of soil samples will be accomplished with shovels, trowels, pick-axes, and scoops."</p> <p>Accept, text has been revised as requested.</p> <p>6/22/2020: Accept</p>	<p>Add the following sentence to 6.2.3: "A data quality assessment will be performed utilizing the guidance in EPA/240/B-06/002, Data Quality Assessment: A Reviewer's Guide, and implementing the specific requirements in Section 6.2.5."</p> <p>8/17/20: Comment Closed.</p>	Close	
68.	Pg. 20, Sec. 6.2.4	In addition to the data verification items listed, verification must also include an evaluation of sample results against the QA/QC parameters in the closure plan, including data acceptance criteria (what data are of acceptable quality for their intended decision making use).	Evaluation of sample results against the QA/QC parameters in the closure plan, including data acceptance criteria, needs to be provided.		Accept, language has been added to Section 6.2.4.	Accept	Close	
69.	Pg. 21, Table 3	Table 3 "Soil Analytical Performance Requirements" will need to be revised. Refer to Letters 17-AMRP-0217 and 19-AMRP-0021 for constituent cleanup levels. The exposure pathway associated with the driving cleanup level for each COC must be identified.	See the 277-T OSA Closure Plan Table H2.E-4 "Closure Performance Standards for Soil" which was submitted to Ecology with Letter 19-AMRP-0021 and Letter 17-AMRP-0217.		Accept, a table has been added to Section 3 which shows the closure performance standards and the associated exposure pathway/basis.	Accept	Close	

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70.	Pg. 24	Include section titled "Confirmation of Clean Closure" Include the following text: "TK-P4 and TK-40 will be clean closed through sampling and analysis of the soil beneath the secondary containment structures. Soil sample results from the contract analytical laboratory will be reviewed to confirm that target analytes have met closure performance standards (Sec. 3). Once clean closure has been confirmed, closure certification will be prepared in accordance with Section 9."	See comment.		Accept, a section has been added as Section 5.6 (a subsection to Chapter 5, Closure Activities). The Rev. 9 template has this section as a subsection to Closure Activities.	Accept	Close	
71.	Pg. 24, Sec. 6.2.6 Lines 3 & 4	"Records required by the Tri-Party Agreement will be managed in accordance with the requirements therein." Records for closure need to be kept in accordance with the WAC not the TPA. Also Field notebooks and photographs should be kept for a minimum of five years after. Ecology approves a clean closure certification to help reconstruct sampling procedures and to aid, if necessary, in legal testimony.	The reference to TPA needs to be removed, and included should be the statement stating that records will be kept for 5 years after Ecology approves clean closure certification.	Ecology guidance 94-111 Section 7.10.1	Accept, the requested change has been made.	Accept	Close	
72.	Pg. 24, Sec. 6.2.7	Identify what an unanticipated event would be.	Include the following "An unanticipated event would be an event outside the scope of the SAP or a condition that inhibits implementation of the sampling as written."		Accept, the requested language has been added.	Accept	Close	
73.	Pg. 24, Sec. 7 Lines 11-15	Edit the paragraph to state the following: "A contingent closure plan is not required at this time since the expected outcome is clean closure. If analytical data indicate that soil contamination is above clean closure standards, the nature and extent of contamination will be evaluated. If further closure actions are needed but cannot be performed under this closure plan, a contingent post-closure plan will be developed and submitted to Ecology for inclusion in the permit."	See Comment		Accept text change until "If further...". If clean closure is not achieved, a coordinated closure plan will be prepared. Text has been revised to state this.	Accept	Close	
74.	Pg. 24, Sec 8 Lines 19-22	"...a Class 1 permit modification request will be submitted to Ecology for approval at least 30 days prior to the 180-day expiration date in accordance with AC 173-303-610(4)(c) and WAC 173-303-830 Appendix I." According to WAC 173-303-830 Appendix I this changes will be a class 1 prime, not a class 1.	Revise the class 1 permit modification to a class 1 prime permit modification.	WAC 173-303-830 Appendix I	Accept, text has been changed as requested.	Accept	Close	

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75.	Pg. 24, Sec. 9 Lines 26 & 27	“Within 60 days of completion of field activities for closure, Ecology will be notified that all closure plan activities required for PUREX tanks TK-P4 and TK-40 have been met. In accordance with WAC 173-303-610(6), DOE will submit a certification of closure to the lead regulatory agency (Ecology).” These statements do not meet the requirements of WAC 173-303-610(6).	These statements need to be revised to state that within 60 days of completion of closure of Tanks TK-P4 and TK-40, the permittee must submit to the department by registered mail, a certification that the TK-P4 and TK-40 tanks have been closed in accordance with the specifications in the approved closure plan.	WAC 173-303-610(6)	<p>Accept, text has been changed as requested.</p> <p>6/22/2020: The practice of professional engineering in the state of Washington is governed by Chapter 18.43 RCW, Chapter 18.235 RCW and Title 196 WAC. The language in the closure plan has been updated to reflect this.</p> <p>Table 5 is the closure schedule which is now in Figure 6. Page 40 lines 3-7 have been undeleted.</p> <p>9/2/2020:</p> <ol style="list-style-type: none"> The word “will” was replaced by “may” to ensure that the closure field activities performed by the IQRPE are independent of the reflections of DOE and Ecology. The word “will” was replaced by “may” to ensure that the results/report prepared by the IQRPE is independent of the reflections of DOE and Ecology. <p>2/25/2021</p> <ol style="list-style-type: none"> DOE concurs with the use of “will” instead of “may.” The current closure plans show this wording. 	<p>Ecology does not agree with the deletion of the text contained in the redline document on page 38 (lines 41-42), page 39 (lines 1-5 and table 5), page 40 (line 3-10), and page 41 (lines 1-9). DOE should replace the text or provide to Ecology reasoning for deleting the text.</p> <p>8/17/20:</p> <ol style="list-style-type: none"> Page 43, lines 41 and 42 was edited to include “may” in the sentence. “Field activities and documents reviewed may include the following:” The word “may” should not be included in this sentence and the language in this section should be retained. This is consistent with permit modifications that are currently up for public comment or that have been approved. Page 46, line 5, DOE replaced the language, but deleted “will” and replaced it with “may”. Ecology does not agree with this change The 276-BA closure plan included the word “will”, not “may”. <p>10/01/20: Ecology’s position is that the original language should remain in the permit. The language should match past and current permit language. Please let Ecology know if we need to set up a workshop to discuss this issue</p> <p>02/25/21: This comment remains open. .</p>	Open	

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76.	P. 26, Sec. 10 Lines 8 & 9	“If clean closure is not achieved, then a post-closure plan will be provided, with a revised closure plan, within 180 days after the permittee and Ecology agree that the plan is needed.” This language is not consistent with regulations applicable to closure of dangerous waste tank systems. For tanks, closure by removal or decontamination (clean closure) is required unless the facility owner/operator demonstrate that it is not practicable to remove or decontaminate contaminated soils, then closure as a landfill is required.	The text “and Ecology agree that the plan is needed” must be revised to say “has demonstrated that not all contaminated soils can be practicably removed or separated”.	WAC 173-303-640(8)(b)	If clean closure is not achieved, a coordinated closure plan will be prepared. Text has been revised to state this.	Accept	Close	