OFFICE OF RIVER PROTECTION
P.O. Box 450, MSIN H6-60
Richland, Washington 99352

SEP 3 0 2015

15-ECD-0042

Ms. Jane A. Hedges, Program Manager
Nuclear Waste Program
Washington State
Department of Ecology
3100 Port of Benton Blvd.
Richland, Washington 99354

Ms. Hedges:

SUBMITTAL OF THE TIER 1 CLOSURE PLAN FOR THE SINGLE-SHELL TANK SYSTEM

This letter submits the Tier 1 Closure Plan Single-Shell Tank (SST) System, RPP-RPT-58858, Revision 1 (Attachment 1) for your review, approval, and incorporation into the Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion, Rev. 8C Permit Number WA7890008967. The Tier 1 closure plan is being submitted pursuant to Hanford Federal Facility Agreement and Consent Order Milestone M-045-82, "Submit complete permit modification requests for Tiers 1, 2, & 3 (see Appendix I) of the SST System, to support final closure requirements for WMA C." Section 9.2.2 and Figure 9-2 of the Hanford Federal Facility Agreement and Consent Order Action Plan provides a process for review of closure plans. Attachment 2 provides a certification statement for the Tier 1 Closure Plan SST System.

As provided in Hanford Federal Facility Agreement and Consent Order Change Control Form M-45-15-03, a modified schedule was proposed for the Tier 2 and Tier 3 closure plans due to the availability of required information from the performance assessment and characterization information from some Waste Management Area C components. This change package has been disapproved by Ecology (15-NWP-128), and is currently in dispute of (15-TF-0069). The change package did not include a proposal to revise the due date for the Tier 1 closure plan; therefore, the attached closure plan is due to be submitted to Ecology by September 30, 2015.

The U.S. Department of Energy submitted a closure plan in December 2002 for the SST System. Following the notice of deficiency process, this closure plan was determined by Ecology to be a complete application in September 2004. The Tier 1 closure plan currently being submitted is based on our understanding from extensive discussions with Ecology staff. The Tier 1 is formatted to reflect these cooperative discussions with Ecology that occurred in 2013 and 2014 on the level of detail and type of information that should be in the Tier 1, Tier 2, and Tier 3 closure plans. This unique closure plan structure is specific to SSTs and is a different closure plan structure than other permitted units in the Hanford Facility Resource Conservation and Recovery Act Permit.

If you have any questions, please contact Mary Beth Burandt, Environmental Compliance Division, (509) 372-8828.

L. David Olson FOR
President and Project Manager
Washington River Protection Solutions LLC

Kevin W. Smith, Manager FOR
Office of River Protection

ECD:MEB

Attachments: (2)

cc w/attachs:
S.L. Dahl, Ecology
J.J. Lyon, Ecology
M. Walmsley, Ecology
C.W. Whalen, Ecology
L.E. Borneman, WRPS
N.R. Davis, WRPS
S.J. Eberlein, WRPS
J.A. Joyner, WRPS
J.J. Luke, WRPS
L.D. Olson, WRPS
D.L. Parker, WRPS
P.L. Rutland, WRPS
S.A. Thompson, WRPS
R.S. Wiegman, WRPS
Administrative Record (S-2-4)
Environmental Portal, LMSI
WRPS Correspondence

cc w/o attachs:
A.N. Carlson, Ecology
C.E. Clark, RL
E.D. MacAlister, RL

Attachment 1
15-ECD-0042
(43 Pages)

Tier 1 Closure Plan Single-Shell Tank System
(RPP-RPT-58858, Revision 0)

Mary Beth Burandt

Mary Beth Burandt

DOCUMENT RELEASE AND CHANGE FORM

Prepared For the U.S. Department of Energy,
Assistant Secretary for Environmental Management
By Washington River Protection Solutions, LLC., PO Box 850, Richland, WA 99352
Contractor For U.S. Department of Energy, Office of River Protection, under Contract DE-AC27-08RV14800

1a. **Doc No:** RPP-RPT-58858 **Rev.** 01

1b. **Project Number:** ☒ N/A

Release Stamp

DATE: Sep 03, 2015 HANFORD RELEASE

2. **Document Title**
Tier 1 Closure Plan - Single-Shell Tank System

3. **Design Verification Required**
☐ Yes ☒ No Per R. Wiegman, CGH 9/3/15

4. **USQ Number** ☒ N/A

5. **PrHA Number** ☒ N/A
Rev.

6. **USQ Screening:**

a. Does the change introduce any new failure modes to the equipment? ☐ **Yes** ☒ **No**
Basis is required for Yes:_____

b. Does the change increase the probability of existing failure modes? ☐ **Yes** ☒ **No**
Basis is required for Yes:

c. For Safety Significant equipment, does the change require a modification to Chapter 4 of the DSA and/or FRED? ☐ **Yes** ☐ **No** ☒ **N/A**
Basis is required for Yes:

7. **Description of Change and Justification** (Use Continuation pages as needed)

Deleted reference to previously submitted closure plan. Added references to security, training and inspection requirements.

8. **Approvals**

Title	Name	Signature	Date
Clearance Review	BRATTON, GAYLA E	BRATTON, GAYLA E	09/03/2015
Document Control Approval	HONEYCUTT, COLLEEN	HONEYCUTT, COLLEEN	09/03/2015
Originator	WIEGMAN, REBECCA S	WIEGMAN, REBECCA S	09/02/2015
Responsible Manager	RUTLAND, PAUL L	RUTLAND, PAUL L	09/02/2015

9. **Clearance Review:**

Restriction Type:

☒ Public
☐ Undefined
☐ Unclassified Controlled Nuclear Information (UCNI)
☐ Export Control Information (ECI)
☐ Official Use Only Exemption 2-Circumvention of Statute (OUO-2)
☐ Official Use Only Exemption 3-Statutory Exemption (OUO-3)
☐ Official Use Only Exemption 4-Commercial/Proprietary (OUO-4)
☐ Official Use Only Exemption 5-Privileged Information (OUO-5)
☐ Official Use Only Exemption 6-Personal Privacy (OUO-6)
☐ Official Use Only Exemption 7-Law Enforcement (OUO-7)

DOCUMENT RELEASE AND CHANGE FORM	Doc No: RPP-RPT-58858 Rev. 01

10. **Distribution:**

Name	Organization
BORNEMAN, LUCINDA E	PROD OPS ENV COMPLIANCE
HOPKINS, ANDREA M	ENV PROG REPRTG & TECH SUPPORT
JOYNER, JESSICA A	ENVIRONMENTAL PROTECTION
LUKE, JEFFREY J	ENVIRONMENTAL PROTECTION
PARKER, DAN	CLOSURE & CORRECTIVE MEASURES
RUTLAND, PAUL L	ONE SYSTEM/CTO
WIEGMAN, REBECCA S	RETRVL & CLOSURE/PROJ ENV CMPL

11. **TBDs or Holds** ☒ N/A

12. **Impacted Documents – Engineering** ☒ N/A

Document Number	Rev.	Title

13. **Other Related Documents** ☒ N/A

Document Number	Rev.	Title

14. **Related Systems, Structures, and Components:**

14a. **Related Building/Facilities** ☒ N/A	14b. **Related Systems** ☒ N/A	14c. **Related Equipment ID Nos. (EIN)** ☒ N/A

DOCUMENT RELEASE AND CHANGE FORM CONTINUATION SHEET	**Document No:** RPP-RPT-58858 **Rev.** 01

N/A

N/A

Tier 1 Closure Plan
Single-Shell Tank System

Author Name:
R. S. Wiegman
Washington River Protection Solutions, LLC
Richland, WA 99352
U.S. Department of Energy Contract DE-AC27-08RV14800

EDT/ECN: DRCF UC:
Cost Center: Charge Code:
B&R Code: Total Pages: 43

Key Words: Appendix I, Closure, Single-Shell Tank System, Single-Shell Tank System Closure Plan, SST closure performance standards, Tier 1, Waste Management Area

Abstract: This document is the first tier of a three-tiered hierarchy of closure plans for the Single-Shell Tank System as defined in the Hanford Federal Facility Agreement and Consent Order Action Plan, Appendix I. This Tier 1 Closure Plan documents requirements pertaining to the Single-Shell Tank System overall.

APPROVED
By GE Bratton at 10:12 am, Sep 03, 2015
Release Approval Date

DATE:
Sep 03, 2015
HANFORD RELEASE
Release Stamp

Approved For Public Release

Tank Operations Contractor (TOC) RECORD OF REVISION	(1) Document Number: RPP-RPT-58858	Page 1

(2) Title:

Tier 1 Closure Plan Single-Shell Tank System

Change Control Record

(3) Revision	(4) Description of Change – Replace, Add, and Delete Pages	Authorized for Release	
		(5) Author. (print/sign/date)	(6) Resp. Mgr. (print/sign/date)
1	Deleted reference to previously submitted closure plan. Added references to security, training and inspection requirements.	R. S. Wiegman 9/1/15	P. L. Rutland 9/2/15

RPP-RPT-58858
Revision 1

Tier 1 Closure Plan Single-Shell Tank System

R. S. Wiegman
Washington River Protection Solutions, LLC

Date Published
September 2015

Prepared for the U.S. Department of Energy
Office of River Protection

Contract No. DE-AC27-08RV14800

This page intentionally left blank

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TERMS

Abbreviations, Initialisms, and Acronyms

AEA	Atomic Energy Act of 1954
BBI	Best Basis Inventory
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CFR	Code of Federal Regulations
DOE	U.S. Department of Energy
Ecology	Washington State Department of Ecology
EIS	environmental impact statement
EPA	U.S. Environmental Protection Agency
ENW	Energy Northwest
ERDF	Environmental Restoration Disposal Facility
HAMMER	Volpentest HAMMER Federal Training Center
LIGO	Laser Interferometer Gravitational Wave Observatory
HFFACO	Hanford Federal Facility Agreement and Consent Order
HWMA	Hazardous Waste Management Act of 1976
NEPA	National Environmental Policy Act of 1969
PA	performance assessment
RCRA	Resource Conservation and Recovery Act of 1976
RCW	Revised Code of Washington
RFI/CMS	RCRA Field Investigation/Corrective Measures Study
ROD	Record of Decision
SST	single-shell tank
TC&WM EIS	Tank Closure and Waste Management Environmental Impact Statement
TSD	Treatment, Storage, and Disposal
WAC	Washington Administrative Code
WMA	waste management area

1.0 INTRODUCTION

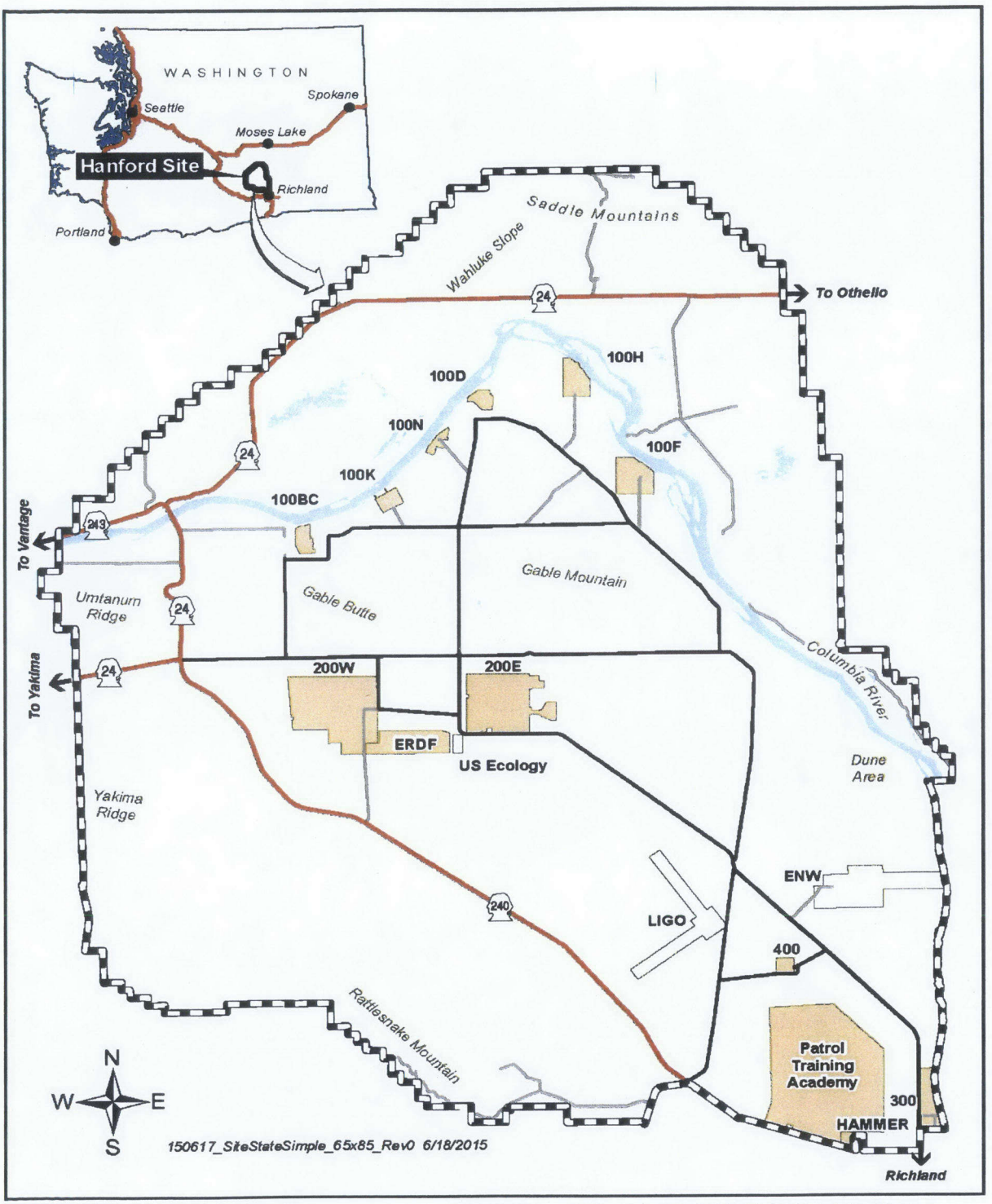
Beginning in 1944, the Hanford Site produced defense materials, primarily from uranium fuels. The process of extracting defense materials from irradiated fuels generated radioactive and dangerous wastes. Between 1943 and 1964, 149 single-shell tanks (SSTs) were constructed in the 200 East and 200 West Areas to store waste underground. Figure 1-1 shows the location of the 200 Areas. Single-shell tanks were constructed as 12 tank farms. These 12 tank farms have been geographically grouped into seven waste management areas (WMAs), shown in Figure 1-2, for meeting the closure requirements under the Washington State Department of Ecology (Ecology) Hazardous Waste Management Act of 1976 (HWMA) (Revised Code of Washington [RCW] 70.105 , "Hazardous Waste Management"), and Washington Administrative Code (WAC) 173-303, "Dangerous Waste Regulations."

From 1944, the U.S. Department of Energy (DOE) and its predecessors routed wastes from spent fuel reprocessing and other operations in the Hanford Site to underground tanks for storage. The maximum quantity of waste in the SSTs was approximately 293,400,000 L (77,500,000 gal) in 1966. The maximum process design capacity for tank storage is identified in the SST Part A Form ("Hanford Facility Dangerous Waste Part A Permit Application, Form 3, Revision 12, for the Single-Shell Tank System" [WRPS 2010]). Waste additions to the SSTs ceased in 1980. A few years later, liquid waste removal from the SSTs into the double-shell tanks began to the extent technically and economically feasible. The waste inventory in the SSTs has decreased ever since. Retrieval of waste from SSTs, now including the solids, continues and will continue into the future for many years under the Hanford Federal Facility Agreement and Consent Order (Ecology et al. 1989, hereinafter referred to as HFFACO) and the consent decree milestones. As of September 30, 2014, approximately 28,800,000 gal of waste remained in the SSTs (HNF-EP-0182, "Waste Tank Summary Report for Month Ending May 31, 2015").

Over time, some waste has leaked from the SST system or has been discharged in an unplanned manner immediately adjacent to or within the SST farms. The maximum estimated volume of leaked waste from the SSTs is approximately 3,800,000 L (1,000,000 gal).

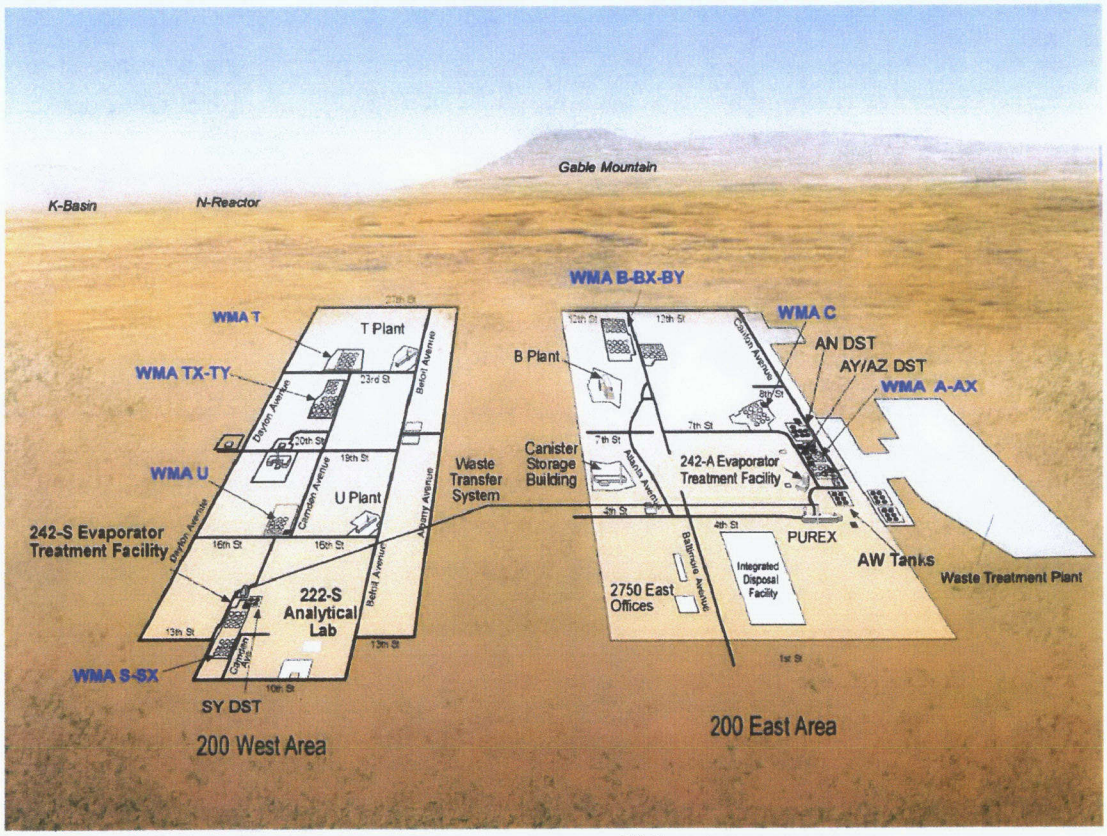
In 1989, Ecology, the U.S. Environmental Protection Agency (EPA), and DOE entered into an agreement and consent order, the HFFACO, as provided for under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Resource Conservation and Recovery Act of 1976 (RCRA), to clean up the Hanford Site. The HFFACO, an enforceable agreement, includes provisions for closing the SST system in accordance with applicable WAC 173-303 requirements. Over the years, the HFFACO was amended to include Appendix H, "Single Shell Tank Waste Retrieval Criteria Procedure," and Appendix I, "Single-Shell Tank System Waste Retrieval and Closure Process." Milestone series have also been created to address retrieval of waste and other related closure actions for the SSTs (e.g., M-05, M-23, M-41, M-45).

Figure 1. Location of 200 Areas.



ENW = Energy Northwest
ERDF = Environmental Restoration Disposal Facility
HAMMER = Volpentest HAMMER Federal Training Center
LIGO = Laser Interferometer Gravitational Wave Observatory

Figure 2. Single-Shell Tank Waste Management Areas and Adjacent Facilities in the 200 East Area and 200 West Area of the Hanford Site.



DST = double-shell tank WMA = waste management area

As described in HFFACO Action Plan, Appendix I, Section 2.2.1, proposed closure actions are to be submitted through a hierarchy of closure plans for regulatory approval and modification of WA7 89000 8967, "Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion Revision 8C for the Treatment, Storage, and Disposal of Dangerous Waste" (hereafter referred to as the Hanford Facility RCRA Permit). This highest-level plan (Tier 1) contains closure requirements pertaining to the SST system overall. The next-level plans (Tier 2) contain requirements pertaining to each SST WMA and are called WMA closure action plans. The lowest-level plans (Tier 3) are called component closure activity plans, and contain requirements pertaining to the closure of SSTs and groups of components whose closure actions are not already addressed by the Tier 2 plan.

1.1 PURPOSE AND SCOPE

The SST system closure plans will be prepared based on milestones established though the HFFACO or other court-ordered requirements. They will be incorporated into Part V of the Hanford Facility RCRA Permit as a separate chapter, and will serve both as a skeletal structure for locating WMA and individual component conditions, and as the overall final closure document for the SST system.

The SST system closure plan ultimately will describe closure actions and compliance with closure performance standards for the entire SST system. When an individual WMA is scheduled for closure, a Tier 2 WMA closure action plan will be developed for that WMA and will be incorporated into the overall plan. When a component or group of components within that WMA are scheduled for closure, closure activities will be developed in a Tier 3 component closure activity plan specific to the component(s). Closure action plans and component closure activity plans will be approved by Ecology through a modification to Part V of the Hanford Facility RCRA Permit.

In addition to the information provided in this closure plan, security, training, and inspections are addressed in the following manner.

- The SST System is operated to minimize exposure of the general public and operating personnel to dangerous waste. Further information regarding security can be found in the Hanford Facility RCRA Permit, Permit Attachment 3, Security.

- Training requirements for the SST System can be found in the latest revision of TFC-PLN-07, "Dangerous Waste Training Plan."

- Inspection requirements for the SST System can be found in the latest revision of RPP-9937, "Single-Shell Tank System Leak Detection and Monitoring Functions and Requirements Document."

DOE will not take component closure actions that hinder, interfere with, or in effect preclude final and/or adjacent component closure actions. Final closure of the system will be

accomplished on a WMA basis. No individual component closures will be deemed final until closure of the associated WMA.

1.1.1 Process for Incorporating Changes into the Single-Shell Tank System Closure Plan

The SST system closure plan will require modification through time as closure actions and corrective actions are developed for the various WMAs. Physical structures and contaminated media will be addressed to complete system closure actions. New information pertinent to making closure decisions will be provided as necessary in accordance with the WAC 173-303-830, "Permit Changes" permit modification process. This section describes the process for modifying the Hanford Facility RCRA Permit to either incorporate the Tier 2 WMA closure action plans and the Tier 3 component closure activity plans, or to modify the Tier 1 plan.

When the documentation is submitted by the DOE, Ecology and DOE will follow the process outlined in HFFACO Action Plan Section 9.2.2. This process will result in Ecology developing an agency-initiated permit modification in accordance with Hanford Facility RCRA Permit Condition I.C.3, "Modifications," and WAC 173-303-830, subsection (3), "Modification or revocation and reissuance of permits." When the permit modification becomes effective, the specific SST system closure plan will be considered "approved." The HFFACO provides the authority to Ecology and DOE project managers to alter the schedule in Figure 9-2 of HFFACO Action Plan Section 9.2.2, as necessary.

1.2 OVERVIEW OF SINGLE-SHELL TANK FARMS

1.2.1 Waste Management Area Description

The concept of WMAs was originally based upon the grouping of the 12 SST farms into seven WMAs for purposes of interim status groundwater requirements under Title 40, Code of Federal Regulations (CFR), Part 265, "Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities" (40 CFR 265) incorporated by reference in WAC 173-303-400, "Interim Status Facility Standards," subsection (3), "Standards." This program was established in response to agreements between Ecology and DOE for establishing a groundwater monitoring program at the Hanford Site which preceded the HFFACO. The boundary of each of the seven WMAs for the purposes of defining the point of compliance for groundwater protection is considered to be the fence line. For closure purposes, details specific to each WMA will be identified in the corresponding WMA closure action plan (Tier 2).

The seven SST WMAs are identified as follows:

1. WMA A-AX
2. WMA B-BX-BY
3. WMA C
4. WMA S-SX
5. WMA T
6. WMA TX-TY
7. WMA U.

While most of the SST system is located within these WMAs, other components of the system, such as transfer lines and support facilities, are located outside WMA boundaries.

1.2.2 Single-Shell Tank System Components

The SST Part A defines the interim-status operating SST system for which closure actions will be developed within this SST system closure plan. Components listed in SST Part A Revision 13 ("Hanford Facility Dangerous Waste Part A Permit Application, Form 3, Revision 13, for the Single-Shell Tank System" [WRPS 2011]) are categorized either as "Treatment, Storage, and Disposal (TSD)" or as "past practice" in accordance with HFFACO Action Plan Section 3.0. Agreement to list past practice components in the SST Part A for the sole purpose of consistent closure was agreed to in Revision 12 of the SST Part A (Letter 10-ESQ-131, "Submittal of Proposed Revision to the Single-Shell Tank (SST) System Dangerous Waste Permit (DWP) Application Part A Form"). The SST Part A also contains a listing of the applicable waste codes, tank dimensions and diagrams, and photos of each SST tank farm. It is expected that the SST Part A will be updated as closure planning progresses.

The SST system includes 12 SST farms that contain a total of 149 mixed-waste storage tanks, ancillary equipment, miscellaneous underground storage tanks, and miscellaneous facilities.

The SST system contains:

- 133 100-series SSTs (2 to 3.8 million L [530,000 to 1 million gal] capacity)
- 16 200-series SSTs (200,000 L [55,000 gal] capacity)
- Waste transfer vaults and associated tanks
- Tank pits, valve pits, and flush pits
- Pumps and valves
- Diversion boxes
- Numerous pipelines
- Above ground buildings and structures
- Other mechanical equipment.

1.2.3 Composition of Single-Shell Tank System Waste Residuals

Prior to implementation of closure actions in each WMA, waste will be retrieved from the tanks to meet the criteria established in HFFACO Appendix H. Waste residue remaining in the

100-series and 200-series SSTs is mixed waste as defined in WAC 173-303-040, meaning that it contains both radioactive and dangerous waste. Refer to the SST Part A for the listing of waste codes assigned to the SST waste.

The bulk of the tank waste constituents are sodium hydroxide; sodium salts of nitrate, nitrite, carbonate, aluminate, oxalate, and phosphate; and hydrous oxides of aluminum, iron, and manganese. Radioactive isotopes constitute a small fraction of the overall waste volume. There is a wide tank-to-tank variation in the waste type, volume, and inventory. Waste constituents of principal interest to closure planning are those contaminants that are persistent and mobile in the environment and therefore have the potential to impact groundwater over the long-term, or pose a threat to a receptor who inadvertently intrudes into the waste site. A complete and periodically updated inventory of waste constituents can be found in the Best Basis Inventory (BBI). Following retrieval, residual tank waste is sampled and analyzed. Results of this analysis are used to update the BBI.

1.3 INTEGRATED CENTRAL PLATEAU AND SINGLE-SHELL TANK SYSTEM CLOSURE

Closure of the SST system requires closing the WMAs and conducting closure activities for individual system components within the WMAs. DOE will develop WMA closure action plans (Tier 2) and component closure activity plans (Tier 3), or alternate decision processes such as corrective measures studies or CERCLA remedial investigation/feasibility studies, to describe how the components or groups of components will be closed.

SST system closure actions may or may not take place within the same time frame as other planned Central Plateau closure actions. These other closure actions involve facilities and operable units currently regulated under both RCRA and CERCLA. Certain facilities and operable units listed for closure are geographically adjacent to parts of the SST system. Closure of these CERCLA facilities and units may require activities substantively similar to SST closure actions.

The existence of proximate facilities scheduled for closure in the same general time frame as the SST system and involving similar closure activities creates a potential to accelerate cleanup, increase efficiency, and avoid both duplicative effort and regulatory conflicts by integrating closure actions, where feasible.

Closure elements identified as candidates for integration on the basis of characteristics such as geographic proximity and commonality of constituent wastes would be evaluated against planning and strategy documents and regulatory process requirements. Decision documents would be used to define integrated activities and address the full range of applicable requirements. DOE would then take specific steps designed on an integrated basis to complete closure and post-closure activities and fulfill all requirements.

Any closure action on SST system components or portions of WMAs that exist outside of the WMA boundary/fence line must comply with all requirements/approvals set forth in this closure plan, addendums/attachments to this plan, and as specified in the Hanford Facility RCRA Permit.

Pursuant to HFFACO milestone M-45-80, RPP-46459, "Single-Shell Tank Waste Management Area C RCRA/CERCLA Integration White Paper," was prepared to describe how the dangerous waste management unit closure process for a tank system will be carried out for the SST system.

1.4 REGULATORY BACKGROUND

The regulatory framework for SST system closure is complex, including requirements regarding planning and protection of human health and the environment. The National Environmental Policy Act of 1969 (NEPA) provides a decision-making structure for Federal agencies. HFFACO describes closure activities which are driven by requirements of the Atomic Energy Act of 1954 (AEA), as amended, and RCRA/HWMA as implemented through WAC 173-303. The radioactive portion of mixed waste is regulated under the AEA; the nonradioactive, dangerous portion of mixed waste is regulated under WAC 173-303.

Where information regarding treatment, management, and disposal of the radioactive source, byproduct material, special nuclear material (as defined by the AEA) and/or the radionuclide component of mixed waste has been incorporated into this permit, it is not incorporated for the purpose of regulating the radiation hazards of such components under the authority of this closure plan or RCW 70.105.

1.4.1 National Environmental Policy Act of 1969

In December 2012, DOE published a NEPA environmental impact statement (EIS) for the closure of Hanford Site tanks: DOE/EIS-0391, Final Tank Closure and Waste Management Environmental Impact Statement for the Hanford Site, Richland, Washington (TC&WM EIS). The TC&WM EIS in part analyzes SST system closure alternatives, including clean, landfill, and hybrid clean/landfill closure. The summary to the TC&WM EIS states:

> *For closure of the SSTs, DOE prefers landfill closure... which may require soil removal or treatment of the vadose zone. Decisions on the extent of soil removal or treatment, if needed, will be made on the tank farm– or waste management area–basis through the RCRA closure permitting process.*

The DOE issued the TC&WM EIS Record of Decision (ROD) in December 2013 (78 FR 75913, "Record of Decision: Final Tank Closure and Waste Management Environmental Impact Statement for the Hanford Site, Richland, Washington"). The ROD stated "The tanks will be grouted and contaminated soils may be removed. The SSTs will be landfill-closed, which means they will be stabilized, and an engineered modified RCRA Subtitle C barrier put in place followed by post-closure care." The Basis for the Decision states, "DOE has determined landfill closure of the SST system, which could include corrective/mitigation actions that may require

soil removal or treatment of the vadose zone, is a more appropriate approach for SST system closure than clean closure."

1.4.2 Resource Conservation and Recovery Act of 1976/Hazardous Waste Management Act of 1976 Applicability

The HFFACO designates Ecology as the lead regulatory agency for SST closure. Ecology regulates the SSTs as dangerous waste storage and treatment units under the HWMA and WAC 173-303, which implement RCRA.

The HFFACO Action Plan, Section 5.3, requires that TSD units close under final status closure requirements (WAC 173-303-610, "Closure and Post-Closure") irrespective of permit status. Thus, while the SST system does not have a final status Part B permit, the SSTs will be closed under final status standards. WAC 173-303-610 sets forth State requirements for closure and post-closure of dangerous waste management units such as the SST system. WAC 173-303-640, "Tank Systems" sets forth requirements for closure and post-closure care of tank systems. WAC 173-303-665, "Landfills" sets forth requirements for closure and post-closure of landfills. Section 3.0 of this plan presents relevant excerpts of those requirements, as well as other key Federal and State requirements, and detailed information on the steps DOE will take to meet the requirements and ultimately to accomplish closure of the system.

The decision under the ROD for the TC &WM EIS is that the SST system will be landfill closed under the WAC regulations. Following the ROD, DOE submitted DOE/ORP-2014-02, Clean Closure Practicability Demonstration for Single-Shell Tanks to Ecology via Letter 14-ECD-0030, "Transmittal of Clean Closure Practicability Demonstration for the Single-Shell Tanks DOE/ORP-2014-02," which demonstrated that clean closure of any portion of the SST system is impracticable. Consequently, in accordance with WAC 173-303-640 subsection (8) "Closure and post-closure care," item (b), closure action plans for WMAs and component closure activity plans will be submitted as landfill closure plans. DOE will therefore close the WMAs and perform closure and post-closure care in accordance with applicable landfill closure and post-closure requirements set forth in WAC 173-303-665 subsection (6) "Closure and post-closure care" and WAC 173-303-610.

As a land disposal unit, closure plans will be required that address the design and placement of a barrier system, as well as post-closure plans that address maintenance activities, groundwater monitoring requirements, and any final corrective actions.

A matrix identifying each applicable regulation and the Tier of the SST system closure plan in which it is addressed can be found in Appendix A.

1.4.3 Hanford Federal Facility Agreement and Consent Order Applicability

The HFFACO, signed by DOE, Ecology, and EPA on May 15, 1989, is an enforceable agreement that requires DOE to clean up and dispose of radioactive and hazardous waste at the Hanford Site and close facilities that have been used to treat, store, or dispose of such waste.

The HFFACO establishes work requirements (milestones), methods for resolving problems, and an action plan for cleanup that addresses priority activities.

The HFFACO also recognizes the applicability of RCRA and its amendments to the Hanford Site. The HFFACO incorporates a regulatory strategy that specifically places SST activities, including waste retrieval, facility cleanup, remediation, waste disposal, and closure under the HWMA. Ecology serves as lead regulatory agency for all provisions of SST closure.

In its work requirements, specifically in the text of Milestone M-45-00 and Appendix I, the HFFACO links tank waste retrieval and closure. In addition, groundwater contaminated by releases from the SSTs is considered part of the SST TSD unit for closure purposes. SST system closure requires addressing groundwater contaminated by releases from the SSTs.

The current planning for SST system closure is based on developing closure plans and closing the tank farms pursuant to WAC 173-303-610 and WAC 173-303-665(6). As such, processes for completing closure activities typically will be defined in accordance with these regulations or an alternative requirement will be proposed as allowed under WAC 173-303-610 subsection (3) "Closure plan; amendment of plan," item (a)(ix). Approval of WMA closure action plans and component closure activity plans will be accomplished through modification of the Hanford Facility RCRA Permit. Potentially, implementation of certain conditions could require modifications to the HFFACO.

Section 6.3 of the HFFACO action plan provides in part:

> *The TSD units containing mixed waste will normally be closed with consideration of all hazardous substances, which includes radioactive constituents.*

The SST system closure plan will address all waste constituents that could potentially affect human health and/or the environment.

Section 6.3.2 of the HFFACO action plan provides in part:

> *The process to close any unit as a land disposal unit will be carried out in accordance with all applicable requirements described at 173-303 WAC. In order to avoid duplication under CERCLA for mixed waste, the radionuclide component of the waste will be addressed as part of the closure action.*

Article I of the HFFACO provides in part:

> *As stated in Section 1006 of RCRA, nothing in this Agreement shall be construed to require DOE to take any action pursuant to RCRA which is inconsistent with the requirements of the Atomic Energy Act of 1954, as amended.*

2.0 SOIL AND GROUNDWATER

Contaminated soil and groundwater associated with the SST system must be addressed as part of the overall closure strategy. However, closure decisions for soil will be made within the RCRA Field Investigation/Corrective Measures Study (RFI/CMS) process and closure decisions for groundwater will be made in CERCLA remedial investigation/feasibility studies specific to each operable unit. The TC&WM EIS and HFFACO provide guidance and the regulatory agreements under which soils and groundwater will be addressed.

2.1 SOIL

The HFFACO Action Plan, Appendix I states that closure decisions for SST system soils will be made through the RCRA corrective action process pursuant to Agreement Milestones M-45-55 through M-45-62 and its established process for the development of interim measures where appropriate.

Soil contamination within tank farms will be evaluated by the RFI/CMS process. Actions approved under resulting Corrective Measures Implementation Plans will be coordinated with tank closure actions as necessary for each WMA.

2.2 GROUNDWATER

DOE currently monitors groundwater at the Hanford Site to fulfill a variety of State and Federal regulations, including the AEA, RCRA, CERCLA, and WAC regulations. Although tank systems do not require groundwater monitoring under WAC 173-303, Ecology and DOE have agreed to establish and maintain a groundwater monitoring network for each WMA.

During the time that WMA component closure activities are underway and until WMA closure actions are achieved, groundwater monitoring will be conducted according to current approved groundwater monitoring plans. Groundwater monitoring plans exist for each WMA and are currently written to meet the interim status requirements under 40 CFR 265 Subpart F—Groundwater Monitoring, incorporated by reference in WAC 173-303-400(3)(a), as allowed through Hanford Facility RCRA Permit Condition I.A. The Hanford Site groundwater monitoring program gathers data to support numerous environmental and regulatory data needs. Groundwater monitoring will be coordinated with AEA activities, CERCLA remediation, and other site-wide activities as feasible. Adjustments to the WMA groundwater monitoring networks will be addressed in the individual groundwater monitoring plans.

As WMA closures are completed, a post-closure groundwater monitoring plan will be developed for approval by Ecology and incorporation by reference into the Hanford Facility RCRA Permit. Each WMA post-closure groundwater monitoring plan will integrate with the groundwater monitoring approach developed pursuant to the groundwater operable units under the HFFACO associated with the WMA. The groundwater operable unit groundwater monitoring and WMA

post-closure groundwater monitoring could be transitioned into the long-term stewardship program.

While groundwater will be monitored as part of the tank closure effort, final closure decisions regarding groundwater will be made in CERCLA remedial investigation/feasibility studies specific to each operable unit.

3.0 SINGLE-SHELL TANK CLOSURE PERFORMANCE STANDARDS

WAC 173-303-610 sets forth primary State requirements for closure and post-closure of dangerous waste management units such as WMAs within the SST system, referencing additional standards in WAC 173-303-640(8) specific to closure of tank systems and specific standards in WAC 173-303-665(6) specific to closure of a landfill. DOE will close the SST system in compliance with applicable performance standards set out or referenced in WAC 173-303-610 subsection (2) "Closure performance standard," item (a). This section of the closure plan discusses how DOE will meet these standards.

WAC 173-303-610(2)(a) contains generalized standards to ensure the functionality of closure systems, the protection of human health and the environment, and the promotion of restoration of land. Subsections 3.1 through 3.3 discuss how DOE will meet these requirements. The three general closure performance standards are paraphrased as follows:

1. Minimize the need for further maintenance (Section 3.1)

2. Control, minimize, or eliminate to the extent necessary to protect human health and the environment, post-closure escape of dangerous waste, dangerous constituents, leachate, contaminated run-off, or dangerous waste decomposition products to the ground, surface water, groundwater, or the atmosphere (Section 3.2)

3. Return the land to the appearance and use of surrounding land areas to the degree possible given the nature of the previous dangerous waste activity (Section 3.3).

3.1 MINIMIZE NEED FOR FURTHER MAINTENANCE

WAC 173-303-610 provides in part:

> *(2) Closure performance standard. The owner or operator must close the facility in a manner that:*
> *(a)(i) Minimizes the need for further maintenance;*

Closure activities planned for the SST tank farms will be designed to minimize the maintenance required after closure of individual WMAs and the SST system. DOE will focus primarily on the following to meet this general performance standard:

- Waste removal to reduce consequences of any maintenance issues,

- Low-maintenance approaches to directly enhance containment of any residual wastes, and

- Other low-maintenance protective measures to reduce the potential for infiltration or intrusion.

DOE will remove waste from SSTs in accordance with retrieval goals established in the HFFACO or other court-ordered requirements. DOE will enhance containment of any remaining wastes, and isolate structures and equipment to the extent practicable to meet requirements.

Since the SST system will undergo landfill closure, DOE will implement protective low-maintenance measures to minimize the potential for inadvertent intrusion into remaining contaminants. DOE will isolate and stabilize tanks and similar below-grade structures to reduce the potential for water infiltration and contaminant mobility, fill void spaces, provide barrier stability, and protect against inadvertent intrusion. DOE will isolate and stabilize the remaining below-grade ancillary components and structures. Goals for stabilization of these components include minimizing the potential for long-term subsidence and settlement of the tank farm surface. DOE will install an engineered barrier which will meet the RCRA requirements as specified in WAC 173-303-665(6)(a). The timing of when engineered barriers are installed at each WMA will be negotiated and agreed upon between Ecology and DOE.

Effectiveness of measures to minimize the need for further facility maintenance can be assessed by monitoring of the barrier and by groundwater and vadose zone monitoring. Final closure activities will be described in WMA closure action plan (Tier 2) and/or component closure activity plans (Tier 3) submittals.

3.2 PROTECT HUMAN HEALTH AND THE ENVIRONMENT

WAC 173-303-610 provides in part:

> *(2) Closure performance standard. The owner or operator must close the facility in a manner that:*
> *(a)...*
> *(ii) Controls, minimizes or eliminates to the extent necessary to protect human health and the environment, post-closure escape of dangerous waste, dangerous constituents, leachate, contaminated runoff, or dangerous waste decomposition products to the ground, surface water, groundwater, or the atmosphere; and...*

Many of the measures described above in Section 3.1 to achieve compliance with WAC 173-303-610(2)(a)(i) will also have the consequence of ensuring compliance with WAC 173-303-610(2)(a)(ii). These previously-described measures, together with additional measures discussed below, will minimize or eliminate, to the extent necessary to protect human health and the environment, any post-closure escape of dangerous waste, dangerous constituents, leachate, contaminated run-off, or dangerous waste decomposition products to the ground, surface water, groundwater, or the atmosphere.

Specific measures DOE will take to reduce or eliminate the potential for post-closure escape of any residual wastes after closure of individual WMAs and the SST system will include:

- Employment of risk analyses to evaluate risk to human health and the environment from any residual contaminants

- Application of the following measures to ancillary equipment and structures, singly or in combination, depending on effectiveness and practicability:
    - Removal or decontamination of ancillary equipment and structures
    - Sealing in place
    - Disposal of debris in an environmentally protective manner
- Isolation and stabilization of SSTs and other remaining below-grade equipment and enhanced containment of residual wastes in those tanks and other equipment
- Removal/decontamination, treatment, or containment of contaminated soil as needed to achieve protection of human health and the environment, depending on effectiveness and practicability
- Installation of engineered barriers that meet WAC 173-303-665(6)(a) criteria
- Installation of groundwater monitoring equipment, as required, to meet post-closure monitoring goals
- Monitoring and maintenance procedures to ensure the effectiveness of these protective measures.

Most actions will be taken on a component-by-component basis and described in WMA closure action plans (Tier 2) and component closure activity plans (Tier 3). Barriers will be installed as appropriate after WMA field closure actions and any WMA soil remediation are completed, in a manner that does not preclude possible future groundwater remediation activities, and does not preclude operations in areas adjacent to the WMA.

3.3 RETURN LAND TO APPEARANCE OF SURROUNDING LAND AREAS TO THE DEGREE POSSIBLE

WAC 173-303-610 provides in part:

> *(2) Closure performance standard. The owner or operator must close the facility in a manner that:*
> *(a)...*
> *(iii) Returns the land to the appearance and use of surrounding land areas to the degree possible given the nature of the previous dangerous waste activity.*

After closure of the SST system, appearance and use of the land will be consistent with future uses in the 200 Areas. Future uses are expected to be determined in accordance with existing decisions, commitments, and recommendations, and the continuing need for waste management.

The future designation of the 200 Areas Central Plateau geographic area in the vicinity of the SSTs is assumed to be industrial-exclusive[1]. This is consistent with the ROD for DOE/EIS-0222-F, Final Hanford Comprehensive Land-Use Plan Environmental Impact Statement. Industrial-exclusive land use is defined as an area suitable and desirable for TSD of hazardous, dangerous, radioactive and nonradioactive wastes, and related activities. This land use was determined in the ROD to last for a period of 50 years from the time of the EIS through the duration of DOE's mission at Hanford.

An industrial-exclusive land-use designation will allow for continued waste management operations within the Central Plateau geographic area consistent with existing RODs, and commitments or requirements established through RCRA or CERCLA decision processes. Designating the 200 Areas Central Plateau as industrial-exclusive is also consistent with the 1992 Future Site Uses Working Group recommendations ("The Future for Hanford: Uses and Cleanup, The Final Report of the Hanford Future Site Uses Working Group" [HFSUWG 1992]) and current DOE management practice.

As part of its obligation under WAC 173-303-610(2)(a)(iii) to return the land to the appearance and use of surrounding areas, the DOE will evaluate administrative, engineering, and legal measures that are necessary to protect public health and the environment in the future. Institutional controls that are robust and layered and that rely heavily on passive measures will reduce the potential for future adverse impacts on the environment and diminish public exposure to SST waste contaminants through the air, the soil, and the groundwater. The parties to the HFFACO may evaluate the Comprehensive Land-Use Plan future land use industrial-exclusive designation during the establishment of the appropriate institutional controls.

Returning the land to the appearance of surrounding areas will be handled on a larger, long-term scale. DOE will plan and implement habitat and topographical restoration actions consistent with Central Plateau land use and its duty to maintain ongoing protective and remedial measures and institutional controls, in the context of past activities involving the SST system.

Actions and considerations associated with restoration activities include the following:

- Design and implement practicable restoration measures consistent with restoration goals and estimates of future land use,
- Preserve achieved closure states of SST components,
- Avoid impairing the functionality of ongoing monitoring and remediation and of engineered and natural barriers, and
- Monitor restoration activities and restored areas.

[1] "Industrial-exclusive" means that uses of the land would be restricted to industrial purposes. Other uses (e.g., residential, commercial, or recreational) would be prohibited.

Restoration activities will occur as part of closure and post-closure implementation, after final decisions are made on installing barriers.

This page intentionally left blank

4.0 SINGLE-SHELL TANK SYSTEM RISK EVALUATION

4.1 RISK/PERFORMANCE ASSESSMENT

As stated in Appendix I, Section 2.5, an individual performance assessment (PA) will be developed for each WMA. The scope of each WMA PA includes all the information and analyses necessary to develop credible estimates of impacts to human health and the environment related to planned closure and post-closure conditions for that WMA.

These PAs will be incorporated by reference into the Hanford Facility RCRA Permit through individual WMA closure action plans (Tier 2). In accordance with Appendix I, final WMA closure decisions will be made after all components are retrieved and/or characterized, all other component closure activities have been completed, and resulting information is incorporated into the PA.

This page intentionally left blank

5.0 PLANNING AND SCHEDULING SINGLE-SHELL TANK CLOSURE ACTION

The HFFACO establishes a high-level schedule for overall SST system closure activities. The milestones that have been negotiated in the HFFACO provide a structure for developing detailed plans that specify activities and requirements for SST system closure. HFFACO M-45-00 milestones associated with closure can be found in Appendix D of the HFFACO Action Plan; however, these are currently under negotiation.

This page intentionally left blank

6.0 CERTIFICATION OF CLOSURE, SURVEY PLAT, AND NOTICE IN DEED

After DOE completes closure activities at each WMA included in the SST system closure, DOE will submit to Ecology, by registered mail, a certification that the WMA has been closed according to the specifications in the approved WMA closure action plan (Tier 2). The certification will be signed by DOE and an independent qualified registered Professional Engineer pursuant to WAC 173-303-610 subsection (6) "Certification of closure." Certifications obtained for components under component closure activity plans (Tier 3) will not be submitted to Ecology, but will be maintained until closure of each WMA to support the WMA closure certification.

Not later than the date of submission of the certification of closure of the WMA, DOE will provide a survey plat to Benton County indicating the location and dimensions of the closed dangerous waste units with respect to permanently surveyed benchmarks. The survey plat will be prepared and certified by a Professional Land Surveyor in accordance with WAC 173-303-610 subsection (9) "Notice to local land authority." After final closure, the survey plat of the WMA will be submitted to Benton County and Ecology in accordance with WAC 173-303-610 subsection (10) "Notice in deed to property."

This page intentionally left blank

7.0 POST-CLOSURE PLAN

Post-closure care will be required for the SSTs after closure because waste will be left in place. Following completion of waste retrieval, completion of necessary tank system and ancillary equipment stabilization activities, and construction of a surface barrier, each WMA will enter a post-closure care period during which surface barrier maintenance and performance monitoring, and groundwater monitoring will be implemented. These activities may be integrated with the Hanford Site long-term stewardship program and Central Plateau closure strategies.

Post-closure actions will be performed on a WMA-by-WMA basis. Each post-closure plan will be incorporated into the Hanford Facility RCRA Permit through a permit modification described in Section 1.1.1. DOE will submit a post-closure plan for each WMA to take effect after final system closure actions are complete to comply with the post-closure requirements in WAC 173-303-610 subsection (7) "Post-closure care and use of property," WAC 173-303-610 subsection (8) "Post-closure plan; amendment of plan," WAC 173-303-610(9), WAC 173-303-610(10), and WAC 173-303-665(6)(b).

Appropriate measures will be implemented upon closure of each component within a WMA to protect both the integrity of the component closure prior to installation of the engineered surface barrier, and to protect human health and the environment from exposure.

7.1 INSTITUTIONAL CONTROLS

Following completion of final closure activities and construction of a surface barrier, DOE will place each WMA in a period of administrative control during which monitoring and maintenance activities will take place.

Landfill closure standards require that institutional controls be in place to protect human health and the environment. Institutional controls generally include all non-engineered restrictions on activities, access, or exposure to land, groundwater, surface water, waste, and waste disposal areas or media. Institutional controls may be temporary or permanent restrictions or requirements. The main institutional control types include 1) access controls, 2) land and groundwater controls, 3) performance assessment and reporting of controls, and 4) permanent markers and distributed records that pass on information regarding the nature and location of hazards to future generations.

DOE will develop specific institutional controls as a part of each post-closure plan and integrate these controls with similar institutional controls for the Hanford Site and other 200 Area waste sites. Specific information regarding marking, signs, and/or monuments has not been developed to date for SST WMAs. DOE has authorized programs to develop a site-wide institutional controls plan to provide for the implementation and maintenance of institutional controls including the placing of marking, signs, and/or monuments at the Hanford Site to protect human health and the environment. DOE will specifically integrate the planning, development, and implementation of institutional controls for SST system closure with appropriate elements of the site-wide institutional controls plan.

7.2 GROUNDWATER MONITORING

See Section 2.0 for commitments to establish post-closure groundwater monitoring which will meet the requirements of WAC 173-303-610(8)(b)(i) when post-closure begins.

7.3 PLANNED MAINTENANCE ACTIVITIES

The requirements of WAC 173-303-610(8)(b)(ii) address the planned maintenance activities to comply with WAC 173-303-645, "Releases from Regulated Units" (Groundwater monitoring) and WAC 173-303-665 (Landfills). Requirements for addressing the planned maintenance activities will be developed for post-closure of each closed component prior to final closure of each WMA and then for each WMA after their respective final closures. Activities will ensure the integrity of the cap and final cover or other containment structures [WAC 173-303-610(8)(b)(ii)(A)] and the function of the monitoring equipment [WAC 173-303-610(8)(b)(ii)(B)].

7.4 CERTIFICATION OF POST-CLOSURE PERFORMANCE

No later than 60 days after completion of the established post-closure care period for each WMA, DOE will submit by registered mail a certification that the post-closure care for the WMA was performed according to the specifications in the approved post-closure plan. The certification will be signed by DOE and an independent qualified Registered Professional Engineer in accordance with WAC 173-303-610 subsection (11) "Certification of completion of post-closure care."

8.0 REFERENCES

10-ESQ-131, 2010, "Submittal of Proposed Revision to the Single-Shell Tank (SST) System Dangerous Waste Permit (DWP) Application Part A Form" (letter from S. J. Olinger [ORP] and C. G. Spencer [WRPS] to J. A. Hedges, Ecology, April 29), U.S. Department of Energy, Office of River Protection and Washington River Protection Solutions LLC, Richland, Washington.

14-ECD-0030, 2014, "Transmittal of Clean Closure Practicability Demonstration for the Single-Shell Tanks DOE/ORP-2014-02" (letter from K. W. Smith to J. A. Hedges, Nuclear Waste Program, Washington State Department of Ecology, July 23), U.S. Department of Energy, Office of River Protection, Richland, Washington.

40 CFR 265, "Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities," Code of Federal Regulations, as amended.

40 CFR 265, "Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities," Subpart F—Ground-Water Monitoring, Code of Federal Regulations, as amended.

78 FR 75913, 2013, "Record of Decision: Final Tank Closure and Waste Management Environmental Impact Statement for the Hanford Site, Richland, Washington," Federal Register, Vol. 78, pp. 75913–75919 (December 13).

Atomic Energy Act of 1954, 42 USC 2011, et seq., as amended.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 USC 9622, et seq.

DOE/EIS-0222-F, 1999, Final Hanford Comprehensive Land-Use Plan Environmental Impact Statement, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/EIS-0391, 2012, Final Tank Closure and Waste Management Environmental Impact Statement for the Hanford Site, Richland, Washington, U.S. Department of Energy, Washington, D.C.

DOE/ORP-2014-02, 2014, Clean Closure Practicability Demonstration for Single-Shell Tanks, Rev. 1, U.S. Department of Energy, Office of River Protection, Richland, Washington.

Ecology, EPA, and DOE, 1989, Hanford Federal Facility Agreement and Consent Order – Tri-Party Agreement, 2 vols., as amended, State of Washington Department of Ecology, U.S. Environmental Protection Agency, and U.S. Department of Energy, Olympia, Washington.

HFSUWG, 1992, "The Future for Hanford: Uses and Cleanup, The Final Report of the Hanford Future Site Uses Working Group," Richland, Washington.

HNF-EP-0182, 2015, "Waste Tank Summary Report for Month Ending May 31, 2015," Rev. 329, Washington River Protection Solutions, LLC, Richland, Washington.

National Environmental Policy Act of 1969, 42 USC 4321-4347, et seq.

RCW 70.105, "Hazardous Waste Management," Revised Code of Washington, as amended.

Resource Conservation and Recovery Act of 1976, 42 USC 6901, et seq.

RPP-9937, 2014, "Single-Shell Tank System Leak Detection and Monitoring Functions and Requirements Document," as amended, Washington River Protection Solutions, LLC, Richland, Washington.

RPP-13774, 2004, "Single-Shell Tank System Closure Plan," Rev. 2, CH2M HILL Hanford Group, Inc., Richland, Washington.

RPP-46459, 2011, "Single-Shell Tank Waste Management Area C RCRA/CERCLA Integration White Paper," Rev. 3, Washington River Protection Solutions, LLC, Richland, Washington.

TFC-PLN-07, "Dangerous Waste Training Plan," Washington River Protection Solutions LLC Tank Farms, Richland, Washington.

WA7 89000 8967, 2007, "Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion Revision 8C for the Treatment, Storage, and Disposal of Dangerous Waste," State of Washington Department of Ecology, Richland, Washington.

WAC 173-303, "Dangerous Waste Regulations," Washington Administrative Code, as amended.

WAC 173-303-400, "Interim Status Facility Standards," Washington Administrative Code, as amended.

WAC 173-303-610, "Closure and Post-Closure," Washington Administrative Code, as amended.

WAC 173-303-640, "Tank Systems," Washington Administrative Code, as amended.

WAC 173-303-645, "Releases from Regulated Units," Washington Administrative Code, as amended.

WAC 173-303-665, "Landfills," Washington Administrative Code, as amended.

WAC 173-303-830, "Permit Changes," Washington Administrative Code, as amended.

WRPS, 2011, "Hanford Facility Dangerous Waste Part A Permit Application, Form 3, Revision 13, for the Single-Shell Tank System," Washington River Protection Solutions, LLC, Richland, Washington.

WRPS, 2010, "Hanford Facility Dangerous Waste Part A Permit Application, Form 3, Revision 12, for the Single-Shell Tank System," Washington River Protection Solutions, LLC, Richland, Washington.

APPENDIX A

REGULATORY REQUIREMENT SUMMARY MATRIX

This page intentionally left blank

Regulatory Requirement Summary (from WAC 173-303 unless otherwise specified)	Tier 1 Closure Plan Section	Tier 2 Closure Plan*	Tier 3 Closure Plan*
-610(2)(a)(i) General closure performance standards: Minimize need for further maintenance	Section 3	✓	
-610(2)(a)(ii) General closure performance standards: Control, minimize, or eliminate to the extent necessary to protect human health and the environment	Section 3	✓	
-610(2)(a)(iii) General closure performance standards: Return land to appearance of surrounding land areas	Section 3	✓	
-610(2)(b) Clean closure levels	This requirement is addressed in the clean closure practicability demonstration plan.		
-610(3)(a)(i) Closure plan contents: How each WMA will be closed in accordance with -610(2)		✓	
-610(3)(a)(ii) Closure plan contents: How final closure of the SST System [facility] will be conducted in accordance with -610(2)	Section 3		
-610(3)(a)(ii) Closure plan contents: Maximum extent of operation which will be unclosed during the active life of the SST System [facility]	Section 1		
-610(3)(a)(iii) Closure plan contents: An estimate of the maximum inventory of waste ever on-site over the active life of the SST System [facility]	Section 1		
-610(3)(a)(iv) Closure plan contents: Detailed description of methods to be used during closure, including methods to manage DW and types of off-site DW management units to be used		✓	✓
-610(3)(a)(v) Closure plan contents: Detailed description of procedures for cleaning equipment and removing contaminated soil		✓	
-610(3)(a)(v) Closure plan contents: Detailed description of methods for sampling and testing surrounding soils	Addressed in the Corrective Measures Implementation Plan	✓	
-610(3)(a)(v) Closure plan contents: Detailed description of criteria for determining the extent of decontamination required to satisfy the closure performance standard in -610(2)(a).	Not applicable		

Regulatory Requirement Summary (from WAC 173-303 unless otherwise specified)	Tier 1 Closure Plan Section	Tier 2 Closure Plan*	Tier 3 Closure Plan*
-610(3)(a)(vi) Closure plan contents: Detailed description of other activities - Groundwater monitoring	Section 2	✓	
-610(3)(a)(vi) Closure plan contents: Detailed description of other activities - Leachate collection	Not applicable to SST System		
-610(3)(a)(vi) Closure plan contents: Detailed description of other activities - Run-on and runoff control		✓	
-610(3)(a)(vii) Closure plan contents: Schedule for closure of WMAs and SST System	Section 5	✓	
-610(3)(a)(ix) Closure plan contents: Use of alternative requirements under -610(1)(e)	The need for alternative requirements are not yet identified		
-610(3)(b) Amendment of Plan	Section 1		
-610(3)(c)(i) Notification of partial closure and final closure	These timeframes do not apply based on agreements documented through the TPA.		
-610(4)(a) Time allowed for closure: Schedule extension for removal of waste within 90-days	This requirement does not apply based on agreements documented through the TPA.		
-610(4)(b) Time allowed for closure: Schedule extension for closure of WMA within 180-days	This requirement does not apply based on agreements documented through the TPA.		
-610(5) Management of waste generated during closure			✓
-610(6) Certification of closure	Section 6	✓	✓
-610(7)(a)(i) Post-closure care and use of property: Groundwater monitoring	Section 7	✓	
-610(7) (a)(ii) Post-closure care and use of property: Maintenance and monitoring of waste containment systems	Section 7	✓	

Regulatory Requirement Summary (from WAC 173-303 unless otherwise specified)	Tier 1 Closure Plan Section	Tier 2 Closure Plan*	Tier 3 Closure Plan*
-610(7)(c) Post-closure care and use of property: Security	Section 7	✓	
-610(7)(d) Post-closure care and use of property: Post-closure use of property	Section 7	✓	
-610(8)(a) Post-closure plan: Submit post-closure plan	Section 7	✓	
-610(8)(b)(i) Post-closure: Post-closure groundwater monitoring	Section 7	✓	
-610(8)(b)(ii) Post-closure plan: Post-closure maintenance	Section 7	✓	
-610(8)(b)(iii) Post-closure plan: Point of contact	Section 7		
-610(8)(b)(iv) Post-closure plan: Alternative requirements	No alternative requirements are currently proposed.		
-610(8)(d) Amendment of post-closure plan	Section 7	✓	
-610(9) Notice to local land authority for disposed waste	Section 6	✓	
-610(10) Notice in deed to property for disposed waste, including certification that the notation has been recorded	Section 6	✓	
-640(8)(a) Closure and post-closure care: Clean closure approach for tank system	This requirement is addressed in the clean closure practicability demonstration plan.		
-640(8)(b) Closure and post-closure care: Practicability demonstration	This requirement is addressed in the clean closure practicability demonstration plan.		
-640(8)(b) Closure and post-closure care: Close in accordance with landfills in -665(6)	Section 1		

Regulatory Requirement Summary (from WAC 173-303 unless otherwise specified)	Tier 1 Closure Plan Section	Tier 2 Closure Plan*	Tier 3 Closure Plan*
-665(6)(a)(i)-(v) Closure and post-closure care: Provide landfill cover designed and constructed to provide long-term minimization of migration of liquids through the closed landfill; function with minimum maintenance; promote drainage and minimize erosion or abrasion of cover; accommodate settling and subsidence; meet permeability requirements	Section 3 & 7	✓	
-665(6)(b)(i) Post-closure care: Maintain integrity and effectiveness of final cover	Section 3 & 7	✓	
-665(6)(b)(iv) Post-closure care: Maintain and monitor groundwater monitoring system	Section 2, 3 & 7	✓	
-665(6)(b)(v) Post-closure care: Prevent run-on and runoff from damaging cover	Section 7	✓	
-665(6)(b)(vi) Post-closure care: Protect and maintain surveyed benchmarks	Section 7	✓	
-645 Releases from regulated unit (groundwater monitoring program)	Section 2	✓	

*A check mark (✓) indicates the identified regulation is planned to be addressed in that closure plan. As closure plans are developed it is possible for the location of information to change. This table is considered a tool for the Tier 1 Closure Plan and will not be updated.

DW = dangerous waste
SST = single-shell tank
TPA = Tri-Party Agreement (Hanford Federal Facility Agreement and Consent Order)
WMA = waste management area

Attachment 2
15-ECD-0042
(1 Page)

Certification for the Tier 1 Closure Plan Single-Shell Tank System
(RPP-RPT-58858, Revision 1)

U.S. Department of Energy, Office of River Protection and
Washington River Protection Solutions Certification

The following certification statement is provided for the submittal of the Tier 1 Closure Plan Single-Shell Tank System, Revision 1 (RPP-RPT-58858).

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.

L. David Olson

L. David Olson
President and Project Manager
Washington River Protection Solutions, LLC

9/15/15
Date

Kevin W. Smith
U.S. Department of Energy
Office of River Protection

9/30/15
Date