



DEPARTMENT OF  
**ECOLOGY**  
State of Washington

**STATEMENT OF BASIS**

**Proposed Permit Modification to Part III of the *Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion, Revision 8C, for the Treatment, Storage, and Disposal of Dangerous Waste, WA7890008967, Operating Unit Group 10, Waste Treatment and Immobilization Plant***

February 2020

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## STATEMENT OF BASIS

### **Proposed Permit Modification to Part III of the *Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion, Revision 8C, for the Treatment, Storage, and Disposal of Dangerous Waste, WA7890008967, Operating Unit Group 10, Waste Treatment and Immobilization Plant***

#### **PERMITTEES**

United States Department of Energy  
Office of River Protection  
(Owner/Operator)  
P.O. Box 450, MSIN H6-60  
Richland, Washington 99352

Bechtel National, Inc.  
2435 Stevens Center Place  
Richland, Washington 99354

The Washington State Department of Ecology (Ecology) developed this Statement of Basis in accordance with the requirements of Washington Administrative Code (WAC) 173-303-840(2)(f). Its purpose is to discuss the proposed draft permit modification to Part III of the *Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion, Revision 8C, for the Treatment, Storage, and Disposal of Dangerous Waste* (hereafter called the Hanford Site-wide Permit).

This proposed draft permit modification will add the following to Operating Unit Group 10, Waste Treatment and Immobilization Plant (WTP) to Part III of the Hanford Site-wide Permit: operating permit conditions to support the Direct Feed Low-Activity Waste process, including specific permit conditions for the Low-Activity Waste Facility (LAW) and the Effluent Management Facility (EMF), updated chapters, updated Interim Compliance Schedules for the LAW and EMF and engineering drawings to support the LAW and EMF.

This Statement of Basis is divided into six sections:

- 1.0 Hanford Facility Dangerous Waste Permit (Site-Wide Permit) Background
- 2.0 WTP Permitting Process
- 3.0 WTP Operating Unit Group Description
- 4.0 Class 3 Permit Modification Process for the WTP Operating Unit Group
- 5.0 State Environmental Policy Act
- 6.0 Procedures for Reaching a Final Decision on the Draft Permit Modification

#### **1.0 Hanford Facility Dangerous Waste Permit (Site-wide Permit) Background**

Ecology's Nuclear Waste Program (NWP) manages dangerous waste within the State by writing permits to regulate its treatment, storage, and disposal.

Ecology has the authority to regulate dangerous waste and the dangerous waste components of mixed (radioactive and dangerous) waste, under 70.105 RCW and WAC 173-303. The Hanford Site-wide Permit has requirements for the treatment, storage, and disposal of dangerous and mixed waste at Hanford. Ecology does not regulate waste that is solely radioactive. USDOE has the exclusive authority to regulate radioactive materials and radioactive waste at Hanford.

Ecology first issued the Hanford Site-wide Permit in 1994. Since 1994, the permit has been modified many times to incorporate changes or updates and to incorporate and closeout several Dangerous Waste Management Units (DWMUs).

The Hanford Site-wide Permit provides standard and general facility conditions, as well as unit group conditions for the operation, closure, and post-closure care of mixed and dangerous waste Treatment,

Storage and Disposal (TSD) Units at Hanford. These TSDs are administratively grouped into operating, closure, or post-closure unit groups in the Hanford Site-wide Permit. Each unit group may contain one or more DWMU.

The Hanford Site-wide Permit is organized as follows:

- Part I Standard Conditions.
- Part II General Facility Conditions.
- Part III Operating Units.
- Part IV Corrective Action for Past Practice Units.
- Part V Closure Units.
- Part VI Post-Closure Units.

Upon approval and issuance of this permit modification the WTP will be authorized to begin the next phase of operations and prepare for cold commissioning for the Direct Feed Low Activity Configuration at the WTP Facility.

## **2.0 WTP PERMITTING PROCESS**

We are using a phased (or stepped) approach to permit the WTP TSD Unit. The first phase was completed on September 25, 2002, with issuance of a final Dangerous Waste Permit allowing construction of the LAW Facility, Pretreatment Facility (PTF), High-Level Waste Facility (HLW), LAB Facility, and Balance of Facilities (BOF) to start.

To prepare for the Direct Feed Low-Activity Waste (DFLAW) operations, Ecology has been actively incorporating permit documents and design into the WTP Permit. This phase requires the Permittees to submit design and other information for Ecology approval as written in the Interim Compliance Schedules. The WTP Interim Compliance Schedules require that the Permittees provide Ecology additional detailed information and design documents to support construction and operations of regulated portions of the WTP Dangerous Waste Management Units.

In 2016, Ecology agreed through Consent Decree milestones, to operate a portion of the WTP Facility under the Direct Feed Low-Activity Waste configuration, allowing operations of only the LAW, LAB and BOF to operate, while the Baseline Configuration would remain in the construction phase. To reflect this new path forward, Ecology proposed language in the WTP Permit to reflect an operating and construction permit. Portions of the permit conditions are applicable to both configurations (III.10.A through III.10.G), while III.10.H and III.10.I are focused on operations of the LAW Facility. III.10.M focuses on operations of the EMF. The remaining conditions are written for PTF and HLW and apply to their construction and eventual operations. In addition, the existing chapters have been further separated into individual chapters that are specific to each facility to reflect the portions of the Part B Application that are under construction (PTF and HLW) or those that are preparing for operations (LAW, LAB, and EMF).

The third phase of permitting is implementation of the Interim Compliance Schedule. This requires updating portions of the Dangerous Waste Permit Application to include operational language in permit conditions and chapters. This permit modification incorporates that draft information and Ecology is providing the draft permit for review and comment prior to commencement of cold commissioning.

With this permit modification, several of the Interim Compliance Schedule items will be completed. In addition, Ecology added language to an existing Interim Compliance Schedule item to address additional permit conditions that may be considered following cold commissioning and prior to the receipt of waste.

In the Baseline Configuration, the PTF and the HLW Facility will also be used to support the treatment of high-level waste from the double-shell tanks. In the future, the Permittees will provide Ecology with

updated information in support of Baseline Configuration, Ecology will begin reviews of permit documents and design for public review and eventual incorporation into the WTP Permit. The current Consent Decree Milestone to start operations at PTF and HLW are 2033.

When the three phases of permitting are completed, the WTP TSD Unit will comply with all the applicable requirements of [WAC 173-303](#). Then, after receiving written permission from Ecology, the Permittees can begin treatment and storage of dangerous and mixed waste at the WTP under both the DFLAW and Baseline configurations.

### **3.0 WTP OPERATING UNIT GROUP DESCRIPTION**

The WTP includes multiple facilities: Analytical Laboratory (Lab), Low-Activity Waste (LAW) Facility, High-Level Waste (HLW) Facility, Pretreatment Facility (PTF), Effluent Management Facility (EMF) and Balance of Facilities (BOF).

The WTP will be operated in two processing configurations. For near-term operations, WTP will be operated in the DFLAW configuration requiring the Lab, LAW, and EMF to become operational first to process the low-activity waste from tank farms.

In the DFLAW configuration, the waste is pretreated to remove cesium and solids before the waste is sent to the LAW facility. In this configuration, the pretreated waste will bypass the PTF and be fed directly from the tank farms to the LAW facility. The LAW facility is where the low-activity fraction of the waste will be solidified by vitrification.

The liquid effluents generated in the LAW facility and the Lab are transferred and treated at EMF, which will reduce the effluent volume by evaporation. WTP will later be operated in the baseline configuration when the PTF and the HLW Facility become operational.

The final step in the WTP phased permitting approach is the development of the operational permits for each facility. The Lab completed this step in 2017 and has an operating permit. This current permit modification provides the operational details for LAW and EMF.

#### **Type and Quantity of Waste**

Currently, six major facilities are being designed and constructed; the LAW Facility, the HLW Facility, the PT Facility, the Lab Facility, the Balance of Facilities (BOF), and the EMF. During dangerous waste management operations, the WTP will chemically separate, treat, and immobilize radioactive and dangerous (mixed) waste through vitrification.

During mixed waste treatment operations, WTP will utilize two separate configurations. The first configuration, known as the Direct Feed LAW configuration, will allow mixed waste to be transferred directly from the Low-Activity Waste Pretreatment System (LAWPS) to the LAW Facility, bypassing the PT Facility. The low-activity waste will then be treated in the LAW Facility using the vitrification process. Effluents generated during the process will be treated in the EMF. In the second configuration, known as the Baseline configuration, tank waste will be sent directly from the Tank Farms to the PT Facility. The mixed waste will then be pretreated and sent to either the HLW Facility or the LAW Facility, depending on the waste characterization. In both configurations, waste will be characterized prior to receipt at the WTP. The waste will only be transferred to WTP if it meets WTP's waste acceptance criteria.

The type and quantity of waste processed at the WTP is provided in detail in the Part A of the WTP Permit.

#### **4.0 CLASS 3 PERMIT MODIFICATION PROCESS FOR THE WTP OPERATING UNIT GROUP**

The U.S. Department of Energy initiated a Class 3 permit modification on July 1 through August 31, 2019 for the review of the DFLAW Operating portions of the WTP Permit. Ecology responded on September 16, 2019 that the permit modification was complete. On December 9, 2019, Ecology completed the technical review and detailed the deficiencies in a formal letter to the Permittees. The Permittees provided the documents and information to Ecology for the second portion of the permit modification.

##### **Proposed Modification to Part III of the Hanford Site-wide Permit**

This permit modification will add a description of operations to the WTP Dangerous Waste Permit for LAW and EMF. The modification describes operations, provides clarification between the baseline and DFLAW configurations, and adds details to ensure the operating permit is compliant with all dangerous waste regulations. The modification proposes changes to the following:

- Unit-Specific Permit Conditions.
- Part A Form.
- Chapter 3, Waste Analysis Plan.
- Chapter 3A, Waste Analysis Plan for the Baseline Configuration.
- Chapter 3B, Quality Assurance Project Plan.
- Chapter 3C, Waste Analysis Plan for the DFLAW Configuration.
- Chapter 4, Process Information.
- Chapter 4E, Low-Activity Waste Facility.
- Chapter 4G, Direct Feed Low-Activity Waste (Effluent Management Facility).
- Chapter 4I, Balance of Facilities.
- Chapter 6, Procedures to Prevent Hazards.
- Chapter 6A, Inspection Plan.
- Chapter 7, Building Emergency Plan.
- Chapter 8, Personnel Training.

Each of the chapters were updated with details to support operations for DFLAW, specifically to the LAW and EMF Facilities. Permit requirements for the construction of the LAW and EMF were deleted and replaced with operating permit language in each of the chapters.

##### **Interim Compliance Schedule**

In addition, revisions to the Interim Compliance Schedules are being proposed showing the completion of LAW and EMF items with this permit modification. Ecology is proposing a modification to Interim Compliance Schedule Item LAW-1. The Interim Compliance Schedule Item proposes to add the following information to the existing item: Submit additional documentation not available for any additional proposed permit conditions, at the time of permit issuance to Ecology. Ecology will make a determination if additional permit conditions should be added.

Ecology believes the following Interim Compliance Schedule Items will be closed with this permit modification:

LAW-3: Update and submit Waste Analysis Plan and associated Quality Assurance Project Plan (Chapter 3A and 3B) to Ecology for review and approval.

LAW-4: Update and submit Procedures to Prevent Hazards and Inspection Schedule (Chapter 6 and Chapter 6A) to Ecology for review and approval.

LAW-5: Update and submit the Contingency Plan (Chapter 7) to Ecology for review and approval.

LAW-6: Update and submit Training Program (Chapter 8) to Ecology for review and approval.

LAW-7: Submit under separate cover the actual WTP Dangerous Waste Training Plan for incorporation into Administrative Record.

LAW-11: Update and submit descriptions of container management practices (Chapter 4E) to Ecology for review and approval.

LAW-46: Submit the updated BOF-001 permit package associated with the Failed Melter Storage Building (Building 32).

LAW-14: Update and submit engineering information for each tank system ancillary equipment (Chapter 4E) to Ecology for review and approval.

LAW-15: Update and submit descriptions of tank management practices (Chapter 4E) to Ecology for review and approval.

LAW-17: Update and submit descriptions of containment building management practices (Chapter 4E) to Ecology for review and approval.

LAW-25: Submit descriptions of management practices for the LAW Vitrification Miscellaneous Treatment System (Chapter 4E) to Ecology for review and approval.

LAW-26: Submit LAW Vitrification Environmental Performance Demonstration Test Plan for Ecology review and approval.

LAW-45: Update and submit Process Information (Chapter 4) to Ecology for review and approval.

EMF-3: Update and submit for approval Waste Analysis Plan and associated Quality Assurance Project Plan (Chapter 3A and 3B) to Ecology for review and approval.

EMF-4: Update and submit for approval Procedures to Prevent Hazards and Inspection Schedule (Chapter 6 and Appendix 6A) to Ecology for review and approval.

EMF-5: Update and submit the Contingency Plan (Chapter 7) to Ecology for review and approval.

EMF-6: Update and submit Training Program (Chapter 8) to Ecology for review and approval.

EMF-7: Submit under separate cover the actual WTP Dangerous Waste Training Plan for incorporation into Administrative Record.

EMF-11: Update and submit descriptions of container management practices (Appendix 4G) to Ecology for review and approval.

EMF-45: Update and submit descriptions of tank management practices (Appendix 4G) to Ecology for review and approval.

### **Draft Permit Conditions**

Ecology met with the Permittees in workshops to discuss operating permit conditions in support of the Direct Feed Low-Activity Waste Facility. The result is proposed permit conditions that address the operating portion of the WTP Facility, specifically III.10.C (General Waste Management,) III.10.I (Low-Activity Waste Facility Operations) and III.10.M (Effluent Management Facility Operations.) In addition, there were revisions throughout the permit conditions that addressed both the Baseline and the DFLAW Configurations. Permit conditions that have been reserved from the WTP Permit include

requirements for constructing the WTP Facility. Ecology is proposing a permit condition III.10.C.17 to address the timeframe in which the Permittees may request technical assistance from Ecology while they are starting Operations.

### Engineering Drawings

Engineering documents that were updated or added include:

- General Arrangement drawings for LAW,
- Independent Qualified Registered Professional Engineering Report for LAW Miscellaneous Containment Units,
- Systems Logic Description for the LAW Stack Discharge System,
- Piping and Instrumentation Diagrams for the Autosampling System for LAW.

### Supporting Information

Dangerous Waste Training Plan – This document will be placed in the operating record and will not be included as part of the Dangerous Waste Permit as required by Washington Administrative Code requirements WAC 173-303-330(2).

Chapter 12, Reporting and Recordkeeping – This chapter is proposed to be removed from the Dangerous Waste Permit as the information is duplicated in Permit Conditions II.I, Facility Operating Record, and throughout the WTP Permit.

## **5.0 STATE ENVIRONMENTAL POLICY ACT**

Ecology made a SEPA determination # 201700820 for EMF on Feb 15, 2017. Additional SEPA review is not required for the current permit modification to support the operations of the LAW and EMF.

## **6.0 PROCEDURES FOR REACHING A FINAL DECISION ON THE DRAFT PERMIT MODIFICATION**

The Washington State Dangerous Waste Regulations in WAC 173-303-830 describe the types of changes or modifications that may be made to a Dangerous Waste Permit issued by Ecology.

Ecology addressed public comments received during the Permittees' 60-day comment period for the Class 3 permit modification in a response to comments document. This response to comments document accompanies the draft permit modification, and is available online at <https://ecology.wa.gov/Waste-Toxics/Nuclear-waste/Public-comment-periods>

This draft permit modification was prepared according to the procedures in WAC 173-303-840(2). As required by WAC 173-303-840(3)(d), draft permits issued by Ecology will have at least a 45-day public comment period. The public comment period for this draft permit will be February 10 through March 26, 2020.

Comments must be post-marked, received by e-mail, or hand-delivered no later than close of business (5:00 p.m. PST) March 26, 2020.

Direct all comments to (electronic preferred):

Daina McFadden

Washington State Department of Ecology  
3100 Port of Benton Boulevard  
Richland, Washington 99354

eComments link: <http://nw.ecology.commentinput.com/?id=h8CRV>



Ecology will consider and respond to all written comments on this draft permit modification that are submitted by the March 26, 2020, deadline. At the completion of the 45-day public comment period Ecology will make a final permitting decision. If the final decision is to issue the permit, Ecology will issue a final permit for Part III of the Hanford Site-wide Permit, Operating Unit Group 10, Waste Treatment and Immobilization Plant, to the Permittees, that will become effective 30 days after the issuance date. If the final decision includes substantial changes to the draft permit modification because of public comment, Ecology will consider initiating a new public comment period.

A public hearing is not scheduled, but if there is enough interest, we will consider holding one.

To request a hearing or for more information contact:

Daina McFadden  
Washington State Department of Ecology  
(509) 372-7950

E-mail address: [hanford@ecy.wa.gov](mailto:hanford@ecy.wa.gov)

Ecology will also issue a Response to Comments document to the Permittees and the public upon issuance of the final permit. The final permit modification may be appealed within 30 days after issuance. If there is no appeal, the permit will be effective 30 days following issuance.

Copies of the following documents for Part III, Operating Unit Group 10, WTP are available for review at the Hanford Public Information Repositories locations listed below.

For additional information call (509) 372-7950 or e-mail [hanford@ecy.wa.gov](mailto:hanford@ecy.wa.gov).

### **Hanford Public Information Repositories and Administrative Records**

#### **Richland, Washington**

Ecology Nuclear Waste Program Resource Center  
3100 Port of Benton Blvd. Richland, WA 99354  
509-372-7950

U.S. Department of Energy Administrative Record  
2440 Stevens Drive, Room 1101 Richland, WA  
99354  
509-376-2530

Washington State University Tri-Cities  
Department of Energy Reading Room  
2770 Crimson Way, Room 101L Richland, WA  
99354  
509-375-7443

#### **Other Locations:**

##### **Portland**

Portland State University  
Branford Price Millar Library  
1875 Southwest Park Avenue  
Portland, Oregon 97201  
(503) 725-4542

##### **Spokane**

Gonzaga University  
Foley Center  
502 East Boone Avenue  
Spokane, Washington 99258  
(509) 313-6110

##### **Seattle**

University of Washington Suzzallo Library  
P.O. Box 352900  
4000 15<sup>th</sup> Avenue Northeast  
Seattle, Washington 98195  
(206) 543-5597

Information on the proposed permit modification is also available online at <http://www.ecy.wa.gov/programs/nwp/commentperiods.htm>. If special accommodations are needed for public comment, contact Ecology's Nuclear Waste Program at (509) 372-7950.