



DEPARTMENT OF
ECOLOGY
State of Washington

Statement of Basis

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

July 2015

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Statement of Basis

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

Permittees

United States Department of Energy
Office of River Protection
PO Box 450
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 to fulfill the requirements of Washington Administrative Code (WAC) 173-303-840(2)(f)(iv).

The Statement of Basis provides information on Ecology's decision to modify the *Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion, Revision 8C, for the Treatment, Storage, and Disposal of Dangerous Waste*, Part III, Operating Unit Group 10, Waste Treatment and Immobilization Plant (WTP), hereafter called the "WTP Permit."

This modification includes supporting technical information and engineering drawings for construction on the regulated portions of the WTP:

- Pretreatment Facility (PTF)
- Low-Activity Waste (LAW) Facility
- High-Level Waste (HLW) Facility
- Laboratory (LAB) Facility
- Balance of Facilities (BOF)

This modification also incorporates format changes to the WTP Permit appendices and changes to supporting information. Ecology chose to prepare a Statement of Basis as described in WAC 173-303-840(2)(f)(iv), rather than a Fact Sheet.

We prepared a Statement of Basis for previous major WTP Permit modifications. This process will be followed for all permit modifications that incorporate similar design package information and other changes to the WTP Permit Conditions.

This Statement of Basis is divided into four sections:

- 1.0 Hanford Facility Resource Conservation and Recovery Act Permit (Site-Wide Permit)
- 2.0 The WTP Permitting Process
- 3.0 Procedures for Reaching a Final Decision on the Draft WTP Permit Modification
- 4.0 Proposed Modifications to the WTP Permit

Also included at the end of the Statement of Basis is a table, listing the new and revised documents submitted for incorporation into the WTP Permit.

1.0 Hanford Facility Resource Conservation and Recovery Act Permit (Site-wide Permit)

Ecology first issued the Site-wide Permit in 1994. The Site-wide Permit provides standard and general facility conditions, as well as unit-specific conditions for the operation, closure, and post-closure care of mixed and dangerous waste treatment, storage, and disposal (TSD) units at Hanford.

Approximately 40 TSD units are operating or closing under Resource Conservation and Recovery Act final status standards.

Conditions of the Site-wide Permit are presented in six parts:

Part I	Standard Conditions
Part II	General Facility Conditions
Part III	Unit-Specific Conditions for Final Status Operating Units
Part IV	Corrective Action for Past Practice Units
Part V	Unit-Specific Conditions for Units Undergoing Closure
Part VI	Unit-Specific Conditions for Units in Post-Closure

The WTP TSD Unit was added to Part III of the Site-wide Permit on September 25, 2002. The WTP Permit portion was effective on October 25, 2002. The WTP TSD Unit is currently being constructed under final permit status standards.

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.

The WTP Permit is modified as needed, typically one or more times a year, to incorporate Class 1, ¹1, 2, and 3 modifications; Agency-Initiated modifications; and minor changes in grammar, consistency, and presentation.

2.0 The 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, PTF, HLW, LAB, and BOF facilities to start.

A WTP Interim Compliance Schedule for the United States Department of Energy provides Ecology additional detailed information addressing the submittal of design documents necessary to support construction of the rest of the WTP TSD Unit, and its eventual operation.

This second phase of permitting is included in the compliance schedule, and requires the Permittees to submit design and other information for Ecology approval before regulated portions of the WTP TSD Unit are constructed.

The third phase of permitting is implementation of the last portion of the compliance schedule. This requires updating portions of the Dangerous Waste Permit Application and then modifying the WTP Permit prior to facility start-up operations. These portions (for example, Contingency Plan, Closure Plan, and Training Plan) of the WTP Permit are operational in nature and cannot be completed before the design is nearly complete.

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.

The design submittals (second permitting phase) were structured to allow the Permittees to provide design information in roughly the same order as the WTP facilities are constructed.

The design packages start at the lowest level of the facilities (below-grade levels) and are submitted for regulated areas of each level before construction begins. This process was adjusted for some design packages. When the facility process systems are installed on more than one level, the design packages will address the associated components for each level. This prevents confusion caused by one process system description being segmented into multiple design packages.

The WTP Permit organizes design packages into three general groups by the type of regulated equipment:

1. Primary containment (for example, tanks, miscellaneous units [evaporators and melters], and containment buildings)
2. Secondary containment
3. Other associated regulated equipment (for example, ancillary equipment, equipment associated with miscellaneous units, and instrumentation)

Using tank systems as an example, secondary containment packages include details of the design of secondary containment that must be in place in regulated areas when the floors and walls are built for that level of each facility (for example, the floor slope, and sump locations).

The installation of tanks and other large equipment usually follows construction of the floors and walls. Therefore, a tank package on that level will be included in the WTP Permit before installation. The tank package would contain, for example, structural details for those tanks or miscellaneous units showing nozzle locations, unit volumes, and tank shell thickness.

The last equipment usually installed on a level for a tank system is the ancillary equipment (for example, piping, pumps, process instrumentation, and electrical equipment). Therefore, the ancillary equipment package provides details for the equipment on that level that will be included in the WTP Permit before installation. Information in the package would include, for example, materials of construction, and pump types and their operating limits.

Because each WTP facility consists of multiple levels, many design packages are required. Of the estimated 180 design packages, approximately 30 remain to be incorporated in the WTP Permit.

The primary containment, secondary containment, and the other associated regulated equipment design packages for different levels require repetitive information submittals in each package. Using tank systems as an example, most tanks will use the same construction specifications.

The WTP Permit allows the Permittees to reference the previously submitted design information, so some design packages consist mostly of references to information already provided.

3.0 Procedures for Reaching a Final Decision on the Draft WTP Permit Modification

The Washington State Hazardous Waste Management Act (Chapter 70.105, Revised Code of Washington) and the rules declared in WAC Chapter 173-303 regulate the management of dangerous waste in Washington State. WAC 173-303-800 requires facilities that treat, store, and/or dispose of dangerous waste to obtain a permit for these activities.

Regulatory requirements for public notice and involvement on permit modifications are described in WAC 173-303-840(3) and (4). As required by WAC 173-303-840(3)(d), draft modifications to the WTP Permit will have at least a 45-day public comment period. The public comment period for this proposed permit modification begins on July 20, 2015, and ends on September 4, 2015.

Comments must be post-marked, received by e-mail, or hand-delivered no later than close of business (5:00 p.m. PST) September 4, 2015. Direct all written comments to:

Dieter Borhmann
Washington State Department of Ecology
3100 Port of Benton Blvd.
Richland, Washington 99354
E-mail address: hanford@ecy.wa.gov

In accordance with WAC 173-303-840(10)(c), when a permit is modified, only the conditions subject to modification are open for comment. All other aspects of the existing Permit remain in effect for the duration of the modification.

Ecology will consider and respond to all written comments on this permit modification submitted by the deadline. Ecology will then make a final permit decision, which will become effective 30 days after Ecology provides notice of the decision to the Permittees and to all who commented. If the final decision includes substantial changes to the WTP Permit because of public comment, we will initiate a new public comment period.

Ecology will provide a Response to Comments document and a notification of the final permit decision to the Permittees and all others who commented. The final permit decision may be appealed within 30 days after issuance of that decision.

Copies of the WTP Permit, including the proposed permit modifications, are available for review at the Hanford Public Information Repositories. For additional information, call the Hanford Cleanup Hotline toll-free at 800-321-2008 or email hanford@ecy.wa.gov.

Hanford Public Information Repositories

Richland

United States Department of Ecology
Nuclear Waste Program Resource Center
3100 Port of Benton Boulevard
Richland, Washington 99354
Contact: Valarie Peery (509) 372-7950

United States Department of Energy
Administrative Record
2440 Stevens Drive
Richland, Washington 99354
Contact: Heather Childers (509) 376-2530

United States Department of Energy
Reading Room
2770 Crimson Way
Richland, Washington 99354
Contact: Janice Parthree (509) 375-3308

Portland

Portland State University
Branford Price Millar Library
1875 Southwest Park Avenue
Portland, Oregon 97207
Contact: Claudia Weston (503) 725-4542

Seattle

University of Washington Suzzallo Library
PO Box 352900
Seattle, Washington 98195
Contact: Hilary Reinert (206) 543-5597

Spokane

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

This Statement of Basis and Public Notice for 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 Dieter Bohrmann, Ecology, at 800-321-2008.

4.0 Proposed Modifications to the WTP Permit

This proposed permit modification contains the following new or revised documents listed below.

Final Risk Assessment Work Plan (24590-WTP-RPT-ENV-14-002, Rev 0)

The Risk Assessment Work Plan that is currently in the WTP Permit has been rewritten and revised to update the following issues:

- The document was renumbered and revised to incorporate changes that address previous Ecology comments.
- The American Indian scenarios were modified to incorporate the U.S. Department of Energy scenario in the document and to discuss the scenarios of Confederated Tribes of the Umatilla Indian Reservation and the Yakama Nation in the uncertainty section of the document.
- The process to identify the Constituents of Potential Concern, 24590-WTP-RPT-ENV-10-001, *Constituents of Potential Concern for the WTP Air and Dangerous Waste Permits*, was added as Supplement 1.
- Supplement 2 includes 24590-WTP-RPT-PO-03-008, *Integrated Emissions Baseline Report for the Hanford Tank Waste Treatment and Immobilization Plant*. Supplement 2 will be updated in accordance with DWP Condition III.10.C.11.b.
- Supplement 3 includes 24590-WTP-HAC-50-00001, *Estimated Organic Emissions from Process Cells*. Supplement 3 will be updated in accordance with DWP Condition III.10.C.11.b.
- The physical property and toxicity data were moved to Supplement 4, 24590-WTP-RPT-ENS-07-002, *Chemical Parameters and Toxicological Inputs for the Environmental Risk Assessment for the Hanford Tank Waste Treatment and Immobilization Plant*. Supplement 4 will be updated in accordance with DWP Condition III.10.C.11.b.
- Supplement 5 includes 24590-WTP-RPT-ENV-08-001, *Hanford Tank Waste Treatment and Immobilization Plant Risk Assessment Air Quality Modeling Protocol*.

It is expected that these documents will be revised again prior to initiation of operations at the WTP Facility. The public will be notified of any subsequent revisions to the Final Risk Assessment Work Plan.

4.1 Incorporation of Class 1 and Class ¹1 Permit Modifications (PCNs) and Permit Equivalency Notices (PENs)

This proposed permit modification incorporates the Class 1 and Class ¹1 PCNs, and PENs listed below. These were previously approved by Ecology in accordance with WAC 173-303-830(4)(a) and are listed here as a courtesy.

- **24590-LAW-PCN-ENV-13-004, Class 1 Modification** provides updated General Arrangement drawings for the Low Activity Waste Facility at plan elevations (-)21'0", 3'0", 22'0", and 28'0" in Appendix 9.4.
- **24590-LAW-PCN-ENV-13-005, Class ¹1 Modification** provides the updated *IQRPE Structural Integrity Assessment Report for LAW LVP Caustic Collection Tank (LVP-TK-00001)* in Appendix 9.11; and the updated Mechanical Data Sheet for the LAW Caustic Collection Tank, and replaces the Equipment Assembly Drawing for LVP-TK-00001 with vendor drawings provided in 24590-LAW-VDCN-M-13-00001 in Appendix 9.6.

- **24590-LAW-PEN-ENV-14-0001, Permit Equivalency Notice** provides the revised *IQRPE Structural Integrity Assessment Report for LAW LVP HEPA Filter Housings (LVP-HEPA-00001A/2A/3A and 00001B/2B)*, in Appendix 9.11.
- **24590-LAW-PCN-ENV-14-0003, Class 1¹ Modification** provides the updated piping and instrumentation diagrams (P&IDs) for the Low Activity Waste Radioactive Liquid Waste Disposal System Process and Effluent Cell Sumps, in Appendix 9.2.
- **24590-HLW-PCN-ENV-13-001, Class 1¹ Modification** provides the updated piping and instrumentation diagrams (P&IDs) for the High Level Waste Melter Process System, in Appendix 10.2.
- **24590-WTP-PCN-ENV-14-0003, Class 1 Modification** provides updated editorial corrections to various permit conditions, Appendix 1.0 (Compliance Schedule), and Appendix 12.2 (Balance of Facilities Piping and Instrumentation Diagrams).
- **24590-WTP-PCN-ENV-14-0004, Class 1 Modification** provides updated Piping and Instrumentation diagram (P&ID) 24590-WTP-M6-50-00002, Revision 5, *Symbols and Legends* (Sheet 2 of 8), in Appendix 7.2.
- **24590-WTP-PCN-ENV-14-0005, Class 1¹ Modification** provides the updated *Engineering Specification for Alterations and Repair of On-Site Stamped ASME Code Vessels and Boilers for Subcontract* (24590-WTP-3PS-MVB2-T0002), in Appendix 7.7.
- **24590-LAW-PCN-ENV-14-0006, Class 1¹ Modification** provides the updated *WTP Interim Compliance Schedule, item 23, "Submit engineering information for LAW Vitrification Miscellaneous Treatment Unit sub-system,"* in Appendix 1.0

4.2 Supplemental Design Information

This Agency-Initiated Modification has no associated Supplemental Design Information. At issuance of the final WTP Permit, Ecology will specify where each new document associated with the Final Risk Assessment Work Plan resides in the WTP Permit.

Paper copies of the page changes to the WTP Permit that result from this modification will be placed in the Administrative Record.

The letter issuing the final WTP Permit decision to the Permittees and Hanford contractors will include the current WTP Permit, with the modifications, on a DVD.

4.3 Identifying Changes in this Proposed Permit Modification

As the WTP TSD Unit is constructed, Ecology will modify the WTP Permit for many reasons, including to clarify text, add new conditions, delete existing conditions, correct errors, or add information. To communicate the changes, proposed permit modifications will include page changes showing all significant proposed changes to the WTP Permit. The text to be deleted will be struck-out with a single line, and the new text will be double-underlined. Only the text being changed in the current modification will be indicated by double-underlines and strikeouts.

Newly added documents and drawings are provided for review in this proposed permit modification. New document and drawing numbers and titles are shown in bold text in the affected appendix drawing lists.

When a WTP Permit modification is issued, “clean” pages incorporating permit modifications will be issued to the Permittees and placed in the Administrative Record. All double-underlines and strikeouts will be removed. Documents and drawings listed in the appendices will not be bolded and will be incorporated by reference only.

Ecology publication number 07-05-006, *Responsiveness Summary* (September 27, 2007), explains the reason for replacing permit version documents with source documents to which the WTP is constructed. Source documents are in a state of constant revision as design details are finalized and additional information is added to provide clarity and to correct typographical errors.

The Permittees use Document Change Notices to track changes not yet incorporated into source documents. In some cases, Document Change Notices are issued at the time of Ecology’s review. These are not provided for public comment, but will appear in the next revision of the WTP Permit for review. Source documents have been replacing permit version documents since September 2007.

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Table 1 – Documents Provided for Incorporation into the Permit
Final Risk Assessment Work Plan and Supplemental Documentation
For Incorporation into the WTP Permit

Table of Contents

Document Title	Document Number	Revision	Permit Conditions	Included	Remarks
Environmental Risk Assessment Work Plan for the Hanford Tank Waste Treatment and Immobilization Plant	24590-WTP-RPT-ENV-14-002	0	III.10.C.11.a	Y	Incorporate Rev. 0 into Appendix 6.2
Supplement 1 – Constituents of Potential Concern for the WTP Air and Dangerous Waste Permits	24590-WTP-RPT-ENV-10-001	0	III.10.C.11.a.iii	Y	Incorporate Rev. 0 into Appendix 6.2.1
Supplement 2 – Integrated Emissions Baseline Report for the Hanford Tank Waste Treatment and Immobilization Plant	24590-WTP-RPT-PO-03-008	2	III.10.C.11.a.vii	Y	Incorporate Rev. 2 into Appendix 6.2.2
Supplement 3 – Estimated Organic Emissions from Process Cells	24590-WTP-HAC-50-00001	C	III.10.C.11.a.vii	Y	Incorporate Rev. C into Appendix 6.2.3
Supplement 4 – Chemical Parameters and Toxicological Inputs for the Environmental Risk Assessment for the Hanford Tank Waste Treatment and Immobilization Plant	24590-WTP-RPT-ENS-07-002	0	III.10.C.11.a.ii III.10.C.11.a.v	Y	Incorporate Rev. 0 into Appendix 6.2.4
Supplement 5 - Hanford Tank Waste Treatment and Immobilization Plant Risk Assessment Air Quality Modeling Protocol.	24590-WTP-RPT-ENV-08-001	2	III.10.C.11.a.iv	Y	Incorporate Rev. 2 into Appendix 6.2.5