DETERMINATION OF SIGNIFICANCE
AND NOTICE OF ADOPTION OF
EXISTING ENVIRONMENTAL DOCUMENTS

Description of Current Proposal:
The U.S. Department of Energy – Office of River Protection (USDOE-ORP) proposes to construct a new Effluent Management Facility (EMF) at the Waste Treatment Plant (WTP) on the Hanford Site. USDOE-ORP proposes to conduct direct feed (DF) of mixed radioactive/chemical waste to the Low Activity Waste (LAW) facility for an interim period (2023 – 2035). This interim strategy supports completing the partially constructed Pretreatment (PT) and High Level Waste (HLW) facilities, commissioning them, and operating them. USDOE-ORP must construct and operate an EMF to replace some pretreatment functions until the PT facility operates. An EMF evaporator will treat secondary liquid waste streams from the LAW melter off-gas system. The EMF will also process small quantities of effluent from the radioactive liquid waste disposal system vessels in LAW and the Laboratory facilities and underground waste transfer line flushing effluent.

USDOE-ORP has requested a Temporary Authorization (TA) to begin constructing a portion of the EMF. The secondary containment systems for the EMF are designed to manage liquids from the permitted tanks and vessels, miscellaneous units, and the ancillary equipment within the facility. There will be five permitted secondary containment systems in the EMF located at the -39 foot and 0 foot elevations. The secondary containment systems are provided with liners that are sloped to direct liquids to secondary containment sumps, should waste leak from any of the dangerous waste management equipment. The liners and sumps are designed to be compliant with waste removal regulatory requirements (Washington Administrative Code [WAC] 173-303-640(4)).

The Department of Ecology (Ecology) Ecology has determined this proposal is likely to have a significant adverse impact on the environment. To ensure that preliminary construction of the EMF secondary containment systems will not result in a significant adverse impact, Ecology is issuing a TA. In the TA, Ecology will establish requirements that will protect human health and the environment. The TA requirements will apply for up to 180 days, plus a possible extension of an additional 180 days (maximum of 360 days total). Ecology will follow the permit modification process, including allowing opportunity for public comment, to evaluate USDOE's pending request to add the EMF to the Hanford Facility Resource Conservation and Recovery Act Permit.

Proponent:
U.S. Department of Energy, Office of River Protection, Richland, Washington

Location of Current Proposal:
U.S. Department of Energy, Hanford Site, Benton County, Washington

Title of Document Being Adopted:
Final Tank Closure & Waste Management (TC-WM) Environmental Impact Statement (EIS) (DOE/EIS-0391).

Agency that Prepared Document Adopted:
U.S. Department of Energy

Date adopted document was prepared:
December 5, 2012

Description of document (or portions) being adopted:
The *Final* TC-WM EIS is a Federal National Environmental Policy Act (NEPA) document. State Environmental Policy Act rules allow Ecology to adopt a NEPA EIS "in whole or in part." Revised Code of Washington (RCW) 43.21C.034; WAC 197-11-610. Ecology is adopting certain parts of the TC-WM EIS that address the environmental considerations implicated by Ecology's near-term permitting decisions.

The TC-WM EIS evaluates the environmental impacts of three primary actions:

- Tank Closure: storing, retrieving, treating, and disposing about 207 million liters (54.6 million gallons) of mixed radioactive and chemically hazardous waste, stored in 177 large and associated smaller underground storage tanks.
- Fast Flux Test Facility (FFTF) Decommissioning: proposed activities to decommission the FFTF, a nuclear test reactor, and its associated auxiliary facilities.
- Waste Management: ongoing dangerous waste management operations at Hanford, as well as the proposed disposal of Hanford low-level radioactive waste (LLW) and mixed low-level radioactive waste (MLLW) and a limited volume of LLW and MLLW from other USDOE sites in an Integrated Disposal Facility (IDF) located at Hanford.

The TC-WM EIS describes multiple alternatives for each of the three primary actions. In turn, each of the alternatives has several elements. For example, each alternative for Tank Closure includes the five distinct elements of Storage, Retrieval, Treatment, Disposal, and Closure.

Ecology is hereby adopting the portion(s) of the environmental analysis in the TC-WM EIS that relate(s) to particular elements of Alternative 2 for Tank Closure (Implement the *Tank Waste Remediation System EIS* Record of Decision with Modifications). Alternative 2 for Tank Closure consists of two sub-alternatives:

- 2A: Existing WTP Vitrification; No Closure
- 2B: Expanded WTP Vitrification; Landfill Closure

Each of these sub-alternatives addresses the distinct elements of Storage, Retrieval, Treatment, Disposal, and Closure. Table 1 identifies the particular elements of sub-alternatives 2A and 2B for which Ecology is adopting the TC-WM EIS' environmental analysis.

Ecology is also hereby adopting the portion(s) of the sensitivity analyses in the TC-WM EIS that relate(s) to disposal of secondary waste generated under Tank Closure Alternative 2B. Ecology stated the following in its forward to the TC-WM EIS: "Ecology agrees with DOE that secondary waste from the WTP and from supplemental treatment operations will need additional mitigation before disposal. This assumption is not reflected in (and, in fact, is contradicted by) the current DOE baseline, which does not identify additional mitigation. … DOE has not determined what the secondary-waste treatment would be, but DOE and its contractor are evaluating various treatment options. These treatment options should meet at least the performance standard (1 x 10-12 square centimeters per second) identified in this final EIS."[1] Accordingly, Ecology will add conditions to the appropriate permits to require the necessary

[1] EIS Ecology Forward @ 12

treatment of secondary waste, in order to meet the performance standard identified in the TC-WM EIS.

Ecology is not currently adopting any portion of the TC-WM EIS related to the element of Closure, because Ecology is not permitting tank closure at this time. In addition, Ecology is not currently adopting any portion of the TC-WM EIS related to (1) Tank Closure Alternatives 1, 3, 4, 5, or 6; (2) any of the Alternatives for FFTF Decommissioning; or (3) any of the Alternatives for Waste Management. Although, Ecology is not adopting the entire TC-WM EIS at this time, the lead agency may consider adopting the analysis for additional alternatives and/or elements of those alternatives, if and when such adoption would support Ecology permitting decisions.

If the document being adopted has been challenged (WAC 197-11-630), please describe:
N/A

The document being adopted is available:
on-line at http://www.hanford.gov/page.cfm/FinalTCWMEIS

EIS Required:
Ecology has determined this proposal is likely to have a significant adverse impact on the environment. To meet the requirements of RCW 43.21C.030(2)(c), Ecology is adopting the portions of the document described above. Under WAC 197-11-360, there will be no scoping process for this EIS.

Ecology identified and adopted the portions of this document identified in Table 1 below as being appropriate for this proposal after independent review. These portions of the document meet environmental review needs for the current proposal and will accompany the proposal to the decision maker.

Name of agency adopting document:
State of Washington Department of Ecology, Nuclear Waste Program

Contact person (if other than responsible official):
Suzanne Dahl
Section Manager, Tank Waste Treatment Section
(509) 372-7892

Responsible Official:
John B. Price
Section Manager, Tri-Party Agreement Section
3100 Port of Benton Boulevard
Richland, Washington 99354
(509) 372-7921

Date: February 16, 2017

Signature: John B. Price

Table 1: Adopted Elements of the Final Tank Closure-Waste Management Environmental Impact Statement

Explanation	Portion of Analysis Adopted
Primary Action: Tank Closure	
Element: Storage	
Not Applicable.	None.
Element: Retrieval	
Ecology adopts the analysis for sub-alternatives 2A and 2B for Retrieval (which are identical) because retrieval of saltcake from A/AX Farm and S/SX Farm will be considered to obtain waste feed for DFLAW.	**2A & 2B**: "Using currently available liquid-based waste retrieval and leak detection systems, waste would be retrieved to the TPA goal, i.e., residual waste would not exceed 10.2 cubic meters (360 cubic feet) for 100-series tanks or 0.85 cubic meters (30 cubic feet) for the smaller 200-series tanks, corresponding to 99 percent retrieval."[2]
Element: Treatment	
Ecology adopts the analysis for sub-alternative 2A for Treatment because it reflects the existing LAW configuration (two LAW melters), although technetium-99 removal would not occur. Therefore, Ecology also adopts the analysis for sub-alternative 2B because it includes technetium-99 removal from the LAW stream. The USDOE-ORP conceptual design for DFLAW includes pre-treatment at a Low Activity Waste Pretreatment System (LAWPS) located adjacent to a tank farm. No supplemental LAW treatment, HLW treatment, TRU treatment, or Pretreatment other than LAWPS is proposed at this time. EMF is a necessary part of the DFLAW system. DFLAW system is needed to meet the obligation to begin the Low Activity Waste Vitrification by 2023. The EMF evaporation system provides a similar capability to a system in the WTP Pretreatment facility, Additionally, both Alternative 2A and 2B have replacement of the 242 Evaporator analyzed. Ecology will modify USDOE-ORP's proposal by issuing permit conditions for the treatment	Under **both** sub-alternatives, "No supplemental or TRU waste treatment is proposed. The cesium and strontium capsules would be retrieved from the WESF, de-encapsulated, and treated in the WTP."[3] **2A**: "The existing WTP configuration (two HLW melters and two LAW melters) would operate at a theoretical maximum capacity (TMC) of 6 metric tons of glass IHLW per day and 30 metric tons of glass ILAW per day. Treatment would start in 2018, and both HLW and LAW treatment would end in 2093. All the waste streams routed to the WTP would be pretreated, although technetium-99 removal would not occur. For analysis purposes, it was assumed that the WTP would need to be replaced after 60 years."[4] **2B**: "The existing WTP configuration (two HLW melters and two LAW melters) would be supplemented with expanded LAW vitrification capacity (an addition of four LAW melters) to provide a vitrification TMC of 6 metric tons of glass IHLW per day and 90 metric tons of glass ILAW per day. Treatment would start in 2018 and end in approximately 2040 (for HLW) and 2043 (for LAW). All the waste streams routed to the

[2] EIS @ 1-30
[3] EIS @ 1-30 – 1-31
[4] EIS @ 1-30

Explanation	Portion of Analysis Adopted
of secondary waste, including waste performance after disposal. The treated wastes must meet the permit conditions before disposal in IDF.	WTP would be pretreated, including technetium-99 removal from the LAW stream. No facilities would need to be replaced."[5]
Element: Disposal	
Ecology adopts sub-alternatives 2A and 2B for Disposal (which are identical) because construction of the EMF is an essential element of operating DFLAW. Operating DFLAW to meet the current Consent Decree milestone would generate LAW canisters in 2023, which will be disposed of in the IDF.	**2A & 2B**: "LAW immobilized via the WTP would be disposed of on site in an IDF. IHLW would be stored on site until disposition decisions are made and implemented."[6]
Long-Term Mitigation Strategies	
Sensitivity Analyses	
Additional sensitivity analyses were performed in the final TC-WM EIS "to help identify additional long-term mitigation actions that may have the potential to reduce long-term groundwater impacts."[7] Ecology adopts the portions of these additional sensitivity analyses that evaluate the potential impacts of improving secondary- and supplemental-waste-form performance. The results of these analyses will aid USDOE-ORP and Ecology in formulating appropriate performance requirements for secondary waste forms. Ecology will modify USDOE-ORP's proposal by issuing permit conditions for secondary waste performance requirements that must be met prior to the disposal of secondary waste in the IDF. Additionally, Ecology will add conditions to the IDF permit that will establish the secondary waste performance standards.	TC&WM EIS **Section 7.5.2.8—Sensitivity Analysis: Waste Form Performance** Ecology adopts the portion of Section 7.5.2.8 that relates to the performance of various forms of secondary waste, as described in the sub-section titled, "Grouted Waste Performance."[8] **Appendix M, Section M.5.7.5—Grout Performance** Ecology adopts the portion of Section M.5.7.5 that relates to disposal of secondary waste generated under Tank Closure Alternative 2B, as described in the sub-section titled "Waste Management Alternative 2, Disposal Group 1, Subgroup 1-A, Addresses the Waste from Tank Closure Alternative 2B."[9]

[5] EIS @ 1-31
[6] EIS @ 1-31
[7] EIS @ 7-68
[8] EIS @ 7-96 – 7-97
[9] EIS @ M-173 – M-174