March 30, 2026

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

Dear Department of Ecology:

Comments below are in response to the 60-day public comment period on a proposed Class 2 permit modification to the Hanford Dangerous Waste Permit. Specifically, the modification is intended to "continue momentum" in Hanford Waste Treatment operations by transferring EMF concentrate "a short distance[1]" off-site for solidification at a licensed facility.

The modified permit (25-ECD-0025, Reissue February 24, 2026) would allow up to 87,705 gallons per year of EMF Bottoms/Concentrate to be shipped off the Hanford Site.

1. Ecology's email announcing this public review specifically limits the transfer of the EMF concentrate to a "short distance." However, the proposed modified permit doesn't seem to have this limitation. "Short distance" is also not defined. As a result, the proposed permit is contrary to the statement made to the public. Reviewers should be made aware of this before the comment period is over, because many have a concern about off-site shipping distances for any Hanford liquid mixed wastes.

2. Ecology's email limiting the shipment of EMF liquid concentrate to a "short distance" off-site seems to establish a "sole source" treatment decision on the part of DOE to process this waste at Perma-Fix Northwest in Richland. Has DOE made a justification for a sole source contract, thus ensuring the "short distance"? What are the procurement arrangements? Was there competitive bidding? Was an on-site grouting package pursued?

[1] February 25, 2026, Email, Washington Department of Ecology waecy@public.govdelivery.com Subject: Date: 60-day public comment period begins to treat Hanford concentrate and ship it out of Washington.

3. Has DOE revised the commitment made to the Nuclear Regulatory Commission in the document DOE/ORP-2021-002, "Department of Energy Responses to the Nuclear Regulatory Commission Request for Additional Information on the Draft Waste Incidental to Reprocessing Evaluation for Vitrification of Low Activity Waste", Rev 1, July 2021? DOE committed to the NRC (page 20) that:

"...the DFLAW flowsheet has matured and the EMF design (used only during DFLAW) has been finalized. In the current flowsheet configuration (RPP-RPT-57991), all 99Tc and 129I in the liquid concentrate resulting from the off-gas system (from the SBS and WESP) will be recycled internally *back to the concentrate receipt vessels of the LAW Vitrification Facility. By recycling the liquid concentrate internally, it is estimated that 98.4% of the 99Tc and 96.2% of the 129I that is sent to the LAW Vitrification Facility as feed will be incorporated into the VLAW during DFLAW (RPP-CALC-63643; see also Table 1-2-1 of the response to RAI 1-2).* ***No 99Tc or 129I will be returned to the tank farm to be disposed of as HLW, or purged via the EMF evaporator concentrate."***

DOE's reply to NRC's questions indicates there is to be no purge of EMF Concentrate. How has this reversal been addressed? What is the impact to public safety? How has NRC been informed and consulted? What were the NRC comments?

4. EMF Bottoms, even when solidified, are NRC Class C Waste. According to § 61.55 "Waste Classification," Class C Waste must meet more rigorous requirements for stability and requires additional protective measures for disposal than for less concentrated low-level waste. The concentration when solidified exceeds IDF disposal criteria so even the *solidified* concentrate could not be disposed at Hanford. Why then transport the even more concentrated liquid (perhaps twice the concentration of grout and much more mobile) to PFNW just 10 feet above the Richland Water Table? The EMF Concentrate Tc-99 average source term is 1.5E-03 Curies Per Liter and the average ammonia concentration is 840 mg/Liter (840 ppm) per the EMF purge study[2]. 1.5E-03 Curies per liter is **1.5E+09 picocuries per liter.** EPA's maximum contaminant level for Tc-99 is 900 picocuries per liter (in the absence of other beta emitting isotopes). The waste concentration is therefore 1.5E+09/900 = 1.67E+06 = 1.67 Million Times the maximum contaminant level,

[2] See RPP-RPT-58971 Rev.01, "Effluent Management Facility Evaporator Concentrate-Purge Alternatives Evaluation," February 19, 2020.

ensuring that a spill at Perma-Fix could easily contaminate large volumes of Richland groundwater to more than risky levels. 1.67 million times the MCL could be expected to cause doses on the order of *thousands* of REM. So, DOE can ship the concentrate to Perma-Fix Northwest, but why do that? It only transfers the risk from the tank waste, concentrated in the EMF bottoms, to the Richland public. And the EMF concentrate contains many more isotopes besides Tc-99.

5. The 840 mg/L (~840 ppm) concentration of ammonia in the EMF concentrate exceeds regulatory levels. (In some air permits, the Benton Clean Air Agency (BCAA) limits ammonia *emissions* to 10 ppm_v averaged over 24 consecutive hours.) In the proposed permit 15 mg/L ammonia is the reportable aqueous quantity for DOE before shipping, but no information is given on the receiving-end PFNW off-gas treatment conditions. Corrective actions by DOE to "eliminate incompatible conditions" are required in the draft permit for waste feed above 0.04 mol/liter ammonia, which translates to 681 ppm. It appears *every batch* of EMF concentrate requires corrective actions on the way to PFNW. What will be done once it arrives?

   Ammonia will be evolved from the EMF concentrate waste at PFNW (due to evaporation, mixing, and grout heat of hydration) and enter the off-gas ventilation stream. The concentrations evolved could exceed limits for exposure.

6. Please help explain the consequences of this decision for local Richland residents. Transferring "a short distance" does not quantify the amount of risk transferred. Analysis on a complete flow sheet basis is needed. Preference should be established and implemented for on-site mixed waste treatment. Hanford has a history of employee vapor exposures, including measurements greater than 60 ppm ammonia. See the report at https://www.energy.gov/documents/follow-assessment-progress-actions-taken-address-tank-vapor-concerns-hanford-sitepdf. This report shows employees in the vicinity were provided monitoring for chemicals and ammonia. Will DOE do the same for Richland residents? Should we anticipate that if we smell ammonia, there's also Tc-99 and other isotopes from the EMF in the mix?

Thank you for considering these comments.