Hanford Challenge (Liz Mattson)

Thank you for the opportunity to submit comments. Our comments are attached.

October 9, 2026

Comments submitted electronically at: https://ecology.commentinput.com/?id=aSpjMtBFH
Washington State Department of Ecology
3100 Port of Benton Boulevard
Richland, WA 99354

RE: Waste Treatment Plant Class 3 Permit Modification Request to the Hanford Facility RCRA Permit for the WTP, Operating Unit Group 10 AR-41146

To Whom it May Concern:

Thank you for the opportunity to submit comments on USDOE's **Waste Treatment Plant Class 3 Permit Modification Request** to the Hanford Facility RCRA Permit for the WTP, Operating Unit Group 10 AR-41146 comment period.

Hanford Challenge is a non-profit, public interest, environmental, and worker advocacy organization headquartered in Seattle, WA. We are an independent 501(c)(3) organization incorporated in the State of Washington since 2008 and registered in Oregon. Our mission is to create a future for the Hanford Nuclear Site that secures human health and safety, advances accountability, and promotes a sustainable environmental legacy.

Hanford Challenge has members who work at the Hanford Site. Other members of Hanford Challenge work and/or recreate near Hanford, where they may also be affected by hazardous materials emitted into the environment by Hanford. All members have a strong interest in ensuring the safe and effective cleanup of the nation's most toxic nuclear site for current and future generations, and who are therefore affected by conditions that endanger human health and the environment.

We appreciate the Washington State Department of Ecology (Ecology) for enforcing the Tri-Party Agreement and Consent Decree and strongly pushing back on U.S. Department of Energy's (USDOE) proposed Dual Path Approach. Ecology's oversight protects workers, communities, Tribal Nations, future generations, and the Columbia River. We commend Ecology for keeping the focus on the Low-Activity Waste (LAW) Facility and vitrifying tank waste from 200 East.

Premature Change of Course from Existing Legally Binding Commitments

Over the course of four years, the Tri-Party Agreement (TPA) agencies negotiated new deadlines and work scope for removal, treatment, and disposal of Hanford's tank waste. In January 2025, the TPA agencies finalized the Holistic Settlement Agreement that set this new plan in motion.

The Dual Path Approach that USDOE is proposing was not part of the Holistic Settlement Agreement.

Hanford Challenge is deeply concerned with USDOE's desire to suddenly change course for 200 East tank waste treatment. USDOE's Dual Path Approach proposes rerouting 1.2 million gallons of pretreated liquid tank waste offsite for grouting and disposal per year, instead of vitrifying the waste at the LAW Facility. Hanford Challenge is asking Ecology to deny the permit modifications requested by USDOE that are part of the required steps to set the Dual Path Approach in motion, and instead stick to the plan of vitrifying the liquid pretreated tank waste from 200 East at the LAW Facility.

We are encouraged by the news that the LAW Facility may be close to a solution of adjusting the negative pressure that may enable both melters to operate simultaneously. This could be a huge step towards optimizing the throughput and should be the focus of USDOE and its contractor's time and energy, not side projects to grout and send waste offsite when there is an operating glass-making facility on site which creates a superior waste form for 200 East pretreated liquid tank waste and is the legally designated path.

Additionally, the LAW facility has until October 2028 to reach full operating capacity per the TPA Consent Decree milestone A-22. Work is underway to meet that milestone. USDOE has confirmed that there are promising LAW Facility optimization actions in progress to bring both melters into operation at the same time.

We do not think USDOE has demonstrated a convincing need to reroute pretreated liquid tank waste away from the LAW Facility. When asked during the Dual Path Approach public meeting what USDOE would do if the permit modification requests do not go through, Mat Irwin responded, "We would continue to do what we are today, which is ramp up the low-activity waste vitrification rate. We would limit TSCR operation because we wouldn't have a place to send it, and it would extend the lifecycle costs, and we would end up suspending A-103 retrieval when we run out of double-shell tank space to retrieve it to." To be clear, after tank A-103 is retrieved, the current plan is for USDOE to pause tank retrievals in 200 East and shift their attention to preparing 200 West for tank retrievals. According to the Holistic Settlement Agreement, USDOE must empty 22 tanks in the 200 West Area by 2040. Therefore, barring factors unknown to the public, USDOE is fabricating an urgency in 200 East that does not exist. Require USDOE to stay the course of the Holistic Settlement Agreement by vitrifying the tank waste in 200 East and do not allow the waste to be hastily rerouted off-site.

Limited Hard Data and Misleading Communications

Only 2,003 gallons of actual Hanford tank waste have been mixed with grout at the time of these comments. Three gallons in Phase One of the Test Bed Initiative (TBI) and 2,000 gallons in Phase Two of TBI. Of those 2,000 gallons, 1,000 gallons went to Waste Control Specialists in Texas and the other half went to Energy*Solutions* in Utah. Confoundingly, Phase Two of TBI did *not* gather

data on the expansion factor (ratio of waste to grout). According to the Supplement Analysis, "The final volume was not measured quantitatively by the vendor." (SA, p. C-6)

In August and September 2026, Hanford Challenge learned and shared new information about a waste stream that is produced by the LAW Facility which is being grouted for disposal offsite. Effluent Management Facility (EMF) bottoms are a concentrated secondary waste produced from tank waste in the LAW melters that evaporates, is captured in the offgas system, and then condensed and concentrated at EMF. EMF bottoms are being grouted at Perma-Fix Northwest and sent to Energy*Solutions* for disposal at their commercial low-level waste landfill in Clive, Utah. The first shipment left the Hanford Site in July 2026. The permit currently allows 87,705 gallons of EMF bottoms to be grouted and shipped offsite for disposal per year.

We learned in August 2026 that the grouted waste form for the TBI waste and EMF bottoms takes the form of a crumbly, soil-like material, as opposed to the solid, concrete-like grout monolith form that had been used to describe grouted tank waste by USDOE for years. Hanford Challenge is concerned about the leachability, dispersability, and longevity of this crumbly, clay-like kind of grout and the misleading communications about potential grouted waste forms. We are unaware of any transportation or disposal-related studies that support or evaluate Hanford tank waste mixed with this soil-like waste form. If this waste form has been evaluated in formal studies and analyses, these reports should be shared publicly. If not, these analyses should be required by Ecology.

It is not hard for someone to imagine a shipping container of excavated soil. If USDOE knew that grouted tank waste could look like crumbly soil since the first phase of TBI, USDOE should have presented this information from the beginning. To the best of our knowledge and belief, USDOE chose not to share what the grout form actually looks like for nearly ten years during a targeted campaign to build public and Congressional support for grouting Hanford's tank waste. What else needs to be shared more openly about USDOE's tank waste grouting plans? This lack of transparency needs to be addressed.

Total Offsite Waste Transportation Needs Not Adequately Addressed

The proposals and decisions to grout Hanford's tank waste and secondary waste keep multiplying. The West Area Tank Treatment (WATT) Project, which was agreed upon by the Tri-Party Agencies in the Holistic Settlement Agreement (M-062-64, M-062-65, and M-062-66), is expected to send a total of 32-39 million gallons of tank waste from 200 West Area offsite for grouting and disposal starting in 2029 per USDOE's Hanford 5-Year Plan 2024-2029.

In the Dual Path Approach, USDOE is proposing to send an additional 1,200,000 gallons per year of tank waste from 200 East offsite for grouting and disposal. The Final Waste Incidental to Reprocessing Evaluation estimates 78.8 million gallons of pretreated and grouted waste going offsite for disposal. Using the 1.5 expansion factor referenced in the document, this works out to 52.5 million gallons of liquid pretreated tank waste from 200 East. We have yet to find a timeline related to this quantity of waste USDOE is imagining sending offsite.

In addition to the tank waste from 200 West and potentially 200 East, and the EMF bottoms, USDOE is also planning to send transuranic mixed waste shipments to the Waste Isolation Pilot Plant in New Mexico.

USDOE needs to conduct a comprehensive transportation analysis and updated environmental impact analyses to track and communicate the number of potential waste shipments that will be on the road, which transportation routes are under consideration, and how environmental impacts are being evaluated and mitigated. This information is critical to evaluate USDOE's Dual Path Approach proposal. Hanford Challenge recommends that Ecology require USDOE conduct a comprehensive transportation analysis and updated environmental impact analyses prior to considering the Dual Path Approach proposal. In the meantime, Ecology should reject the Dual Path Approach.

Disposal Space Considerations Not Adequately Addressed

USDOE has not shared a comprehensive analysis of the storage capacity for the disposal sites in Texas and Utah that considers different expansion factors and different grouted waste forms. Will Waste Control Specialists and Energy*Solutions* have enough space to receive and permanently dispose of the proposed quantities of Hanford's tank waste, in addition to waste coming from other sites in the U.S. and Canada? Having an accurate range of expansion factors for different kinds of grouted wastes and updating the Supplement Analyses to reflect possible disposal volume needs is crucial.

Inadequate and Outdated Cost Analyses

USDOE has not conducted nor shared a complete cost analysis that factors in onsite waste treatment and testing, offsite waste disposal cost per unit of waste, offsite waste monitoring, and a range of costs linked to different expansion factors and grouted waste forms. USDOE's current cost estimates are meaningless without this information. USDOE has only grouted 2,003 gallons of pretreated tank waste in two highly controlled tests and has not shared essential data from the commercial entities that grouted the waste, like the expansion factor of the grouted waste. According to the Supplement Analysis, "The final volume was not measured quantitatively by the vendor." Declaring that grout will save billions of dollars doesn't mean anything without providing updated, transparent, and defensible cost estimates, calculations, and assumptions that at a minimum share grouted tank waste cost estimates broken out into specific, time-bound grouted tank waste proposals and break out costs into the following buckets:

- onsite retrievals,
- onsite pretreatment,
- onsite waste characterization and testing,
- onsite waste transportation,
- offsite transportation to the commercial entity,
- offsite treatment,
- offsite waste characterization and testing,
- transportation of waste for disposal,

- per unit cost range for the commercial waste site to accept and dispose of the grouted tank waste,
- testing required prior to disposal, and
- disposal monitoring costs after the waste has been placed.

Ecology should reject the Dual Path Approach permit modification requests and require that USDOE provide updated, transparent, and defensible cost estimates, calculations, and assumptions related to the Dual Path Approach, prior to resubmitting the permit modification requests.

Technical Issues with Grout

Successfully immobilizing the worst of Hanford's waste is too important for hastily-made decisions that do not adequately and publicly resolve past performance issues with grout. The "Why Grout Failed at Hanford" timeline Hanford Challenge prepared in 2021 documents past failures to immobilize Hanford tank waste in grout. We have yet to see compelling evidence that shows how cost, schedule, and technical issues that derailed grouting Hanford tank waste in the past will be overcome in the present. Grout is not as robust of a waste form as glass. We are concerned that grout may harm the environment and future generations by creating a waste form that is not protective or long-lasting. Hanford Challenge is concerned about:

- The **lack of transparency regarding the possible range of expansion factors** when grout is added to liquid tank waste.
- **How different grouted waste forms impact the expansion factor** and final volume of waste needing disposal.
- **Increased total waste volumes when mixing tank waste with grout.** Vitrifying tank waste reduces the total volume needing disposal.
- **Leachability of long-lived radionuclides such as Technetium-99 and Iodine-137 in** grouted tank waste. Once mobile, these radionuclides could more easily travel in the environment. Glass is better at keeping these radionuclides immobilized.
- **Organics and nitrates/nitrites not being destroyed by grouting** tank waste. Vitrification destroys them.
- **Lack of transparency about grouted waste formula ingredients**, some of which may produce a waste form that does not adequately hold liquids when compressed, such as polymers like aquasorb, which is also incompatible with caustic materials.
- The **varied and complex chemistry of Hanford's tank waste,** which may require a different grout formula for each batch of waste. This could impact cost, schedule, and technical practicability. Due to the highly complex chemistry of Hanford tank waste, a chemical engineer with expertise in Hanford waste chemistry should be involved in reviewing any and all grout proposals.

We continue to support the long-standing litmus test of "as-good-as-glass" for any alternative tank waste immobilization technology and have yet to see grout pass this test. As we see it, USDOE has grossly oversold the promise of grout as a faster, cheaper solution for Hanford's tank waste to Congress, the Federally Funded Research and Development Center, the National Academy of Sciences, the Government Accountability Office, and others, which has created an

unsettling amount of pressure for grout to work. When there are such high expectations of success, it can be hard to pull the brakes on grout and change course even when information and data contradict those promises.

Please reject the following Dual Path Approach Permit modification requests proposed by USDOE: the **Tank Farms** Class 2 Permit Modification Request to the Hanford Facility RCRA Permit for the LAW Pretreatment System, Operating Unit Group 1 AR-41147 and the **Waste Treatment Plant** Class 3 Permit Modification Request to the Hanford Facility RCRA Permit for the WTP, Operating Unit Group 10 AR-41146.

Instead require that USDOE:

- **Focus on safe and effective tank waste vitrification:** Prioritize the vitrification of low-activity waste through Direct-Feed-Low-Activity Waste optimization, not the Dual Path Approach. Make glass safely.
    - Do not allow USDOE to send pretreated low-activity waste, with an existing treatment path at the LAW Facility, offsite for grouting and disposal.
    - Continue ramping up the LAW facility for optimal throughput, solving problems, finding ways to add less water to the system, safely adjusting negative pressure, and gathering lessons learned to be ready for high-level waste vitrification.
    - Require USDOE to invest time and money into optimizing the LAW Facility's offgas system.
    - Support efforts being made to adjust the negative pressure to address LAW melter in leakage. Focus on improvements to ensure dual-melter operations can occur safely and effectively. Do not allow USDOE to give up on dual melter operations and send a large portion of the waste offsite for grouting and disposal. Improving LAW Facility operations and conducting dual melter operations should remain the priority for time, funding, and capacity, not adding new work scope that redirects time, funding, and capacity to an offsite disposal path for pretreated tank waste from AP-106.
    - Require that USDOE follow the existing permit that outlines vitrification as the only treatment pathway for pretreated tank waste from AP-106. Remove references to grouting and offsite disposal of pretreated tank waste in the Class 2 and Class 3 permit modifications.
    - Grout does not meet the “as-good-as-glass” criteria. Long-lived radioactive isotopes like Technetium-99 and Iodine-129 leak out of grout over time, which could hurt people in the future by spreading in our water, wildlife, and shared resources. Glass keeps these radionuclides immobilized longer. Once they leach out, they are hard to contain.

- **Publish transparent updated analyses of transportation, environmental impacts, storage capacity, and costs related to grouting Hanford tank waste:** Require USDOE to submit this information prior to requesting any permit modifications for grouting Hanford tank waste.

- **Transportation Analysis:** Plans for how the 200 East tank waste will be moved are not mentioned in the draft permit modifications. Please require a transportation analysis that includes:
  - The method of transport (rail vs. truck).
  - Waste form(s) that may be transported.
  - Quantity of waste and number of estimated shipments.
  - Analysis of how the number of shipments change depending on different expansion factors.
  - A detailed plan of transportation routes under consideration.
  - A public involvement plan to meaningfully engage communities along potential transportation corridors.
  - An updated analysis of all cumulative impacts for planned and potential waste shipments from Hanford to offsite locations, including: transuranic mixed waste shipments, EMF bottoms, waste that may be shipped from 200 East as part of the Dual Path Approach, and waste that may be shipped as part of the West Area Tank Treatment (WATT)/West Area Risk Management (WARM) Projects.
- **Environmental Impacts Analyses:** Updated transportation and disposal environmental impact analyses of different forms and classifications of grouted Hanford tank waste need to be conducted and shared publicly.
- **Storage capacity for offsite disposal facilities**. Conduct an analysis of the storage capacity, both volume and curie content, for the potential offsite waste disposal facilities. Analyze whether Waste Control Specialists and Energy*Solutions* have enough disposal space for the proposed quantities of Hanford's tank waste, in addition to waste coming from other sites in the U.S. and Canada. Include an analysis of how the storage capacity changes depending on different expansion factors.

- **Cost Analysis for the Dual-Path Approach**. It is critical that the Dual Path Approach address the cost range for this project. Funding needs for a compliant Hanford cleanup have not historically matched funding appropriated by Congress. Include an analysis of how the costs change depending on different expansion factors, including transportation costs. Please address cost estimates and assumptions underpinning the cost estimates.

- **<u>Address Systemic Issues that lead to delays and cost overruns</u>:** The tank waste project has been plagued by mismanagement that consistently leads to cost increases and delays. Until these systemic issues are addressed, delays and cost overruns are inevitable—regardless of the technical ability to immobilize Hanford tank waste. Stated another way, no solution is faster and cheaper at Hanford without big tradeoffs. Specific systemic issues we are concerned with include: suppression of safety and technical concerns, especially when profits and careers are on the line; overly controlled information sharing with the public and regulators; and fraud including ongoing, repeated schemes that are cleverly concealed through manipulation of data, misdirection, or exploitation of systemic

loopholes to avoid detection. All of these issues have historically resulted in preventable delays, cost overruns, and have put workers in harm's way. What has changed to prevent those same issues from derailing grout?

Specific changes to address in the Class 3 WTP permit:

Hanford Challenge recommends that Ecology wholly reject USDOE's Dual Path Approach Class 2 and Class 3 permit modification requests. In our review, we flagged the following issues for your attention in the **Waste Treatment Plant** Class 3 Permit Modification Request to the Hanford Facility RCRA Permit for the WTP, Operating Unit Group 10 AR-41146:

- On page 341 of the pdf, "III.10.M.3.e.ii.C The Permittees will only transfer pretreated LAW from AP-106 in a manner that does not result in an inventory of pretreated LAW stored onsite awaiting shipment for offsite treatment and disposal in excess of one year, consistent with 40 C.F.R. §268.50(b) (incorporated by reference in WAC 173-303-140(2)(a))."
    - How long can the waste from AP-106 be stored in the EMF low-point drain vessel? How can it be stored in the low-point drain vessel for up to one year if that vessel has other functions, like receiving effluents? Can it be stored for an extended period of time in DOT-approved containers awaiting shipment offsite? What prevents a permitted year's worth (1,200,000 gallons of liquid waste) to be stored onsite either in the low-point drain vessel or in Department of Transportation-approved containers awaiting shipment? What happens if pretreated LAW is stored in the EMF low-point drain vessel and suddenly they need that vessel to store effluents from EMF?
    - Update this permit condition to stipulate how long the low-activity waste can be stored in the low-point drain vessel and the total volume of waste that is allowed to be stored in the low-point drain vessel at one time. Low-activity waste should not be stored in the low-point drain vessel for long periods of time. Add a permit condition similar to the "just in time" provision used for the 200 West Area Tank Treatment Project, but related to low-activity waste stored in the low-point drain vessel. Also include a permit condition that does not allow low-activity waste to be stored in DOT-approved containers onsite awaiting shipment. Containers must be filled and transported offsite the same day.
- On page 341 of the pdf, "III.10.M.3.e.ii.D Disposal at an off-site licensed and permitted commercial TSD Facility must be, and remain, available to Permittees in order to use the alternative treatment and disposal path. Permittees shall notify Ecology within [5] calendar days after the Permittee receives information that transport to or disposal at an off-site licensed and permitted commercial TSD Facility becomes unavailable at any time. In the event disposal off-site becomes unavailable, transfer of the pretreated LAW from AP-106 directly to EMF must be paused until off-site licensed and permitted commercial TSD Facility availability is restored."
    - Change the permit to read, "Permittees shall notify Ecology within **[1] calendar day** after the Permittee receives information that transport to or disposal at an

off-site licensed and permitted commercial TSD Facility becomes unavailable at any time."

- On page 597 of the pdf, "When in use, daily inspections are performed to ensure the overall integrity of the load/unload area."
    - Change the permit to read, "When the truck bay is in use, daily inspections are performed to ensure overall integrity of the load/unload area."
    - Include more detailed information about the daily inspections, is it a walk through? Do the inspections occur before, during, and after a waste transfer? How are workers protected during inspections? Ensure that workers are required to wear PPE.
- On page 599 of the pdf, "The low-point drain sump (DEP-SUMP-00001) is used in off-normal conditions to capture overflow effluent from the low-point drain vessel (DEP-VSL-00001)."
    - What are off-normal conditions? Provide more detail.
- On pages 599-600 of the pdf, "During planned AP-106 transfers to DEP-VSL-00001 any overflow to DEP-SUMP-00001 will be contained and managed to prevent discharge to DEP-VSL-00002."
    - How will overflow be contained? How will overflow be managed to prevent discharge? Provide more detail.
- On page 644 of the pdf, " During the transfer, evaporator concentrates tank levels or Low Point Drain Vessel (DEP-VSL-00001) and tanker truck or other DOT-approved container levels will be monitored via flowmeter to prevent overfill."
    - This sentence does not make sense. Please change it so it is clear.
- On page 711 of the pdf there is the Mechanical Data Sheet for the Low-Point Drain Vessel:

BECHTEL

Mechanical Data Sheet: VESSEL

Plant Item No: 24590-BOF-MV-DEP-VSL-00001

River Protection Project
Waste Treatment and Immobilization Plant

Data Sheet No: 24590-BOF-MVD-DEP-00002 | Rev: 2

Project:	RPP-WTP	P&ID:	24590-BOF-M6-DEP-00001001/-00001002, Rev 1 (Ref. 1)
Project No:	24590	Process Data:	24590-BOF-MVC-DEP-00011, Rev B (Ref. 2)
Project Site:	Hanford	Vessel Drawing:	24590-BOF-MV-DEP-00001001, Rev. 1 (Ref. 15)

Description: Low Point Drain Vessel

Reference Data

Charge Vessels (Tag Numbers)	None
Nozzle (Tag Numbers)	24590-BOF-MN-DEP-NOZ-00001, -00011 (Ref. 1) (Note 24)
Pulsejet Mixers/Agitators (Tag Numbers)	24590-BOF-MF-DEP-AGT-00001 (Ref. 7)
RFDs/Pumps (Tag Numbers)	24590-BOF-MP-DEP-PMP-00001A, -00001B (Ref. 12)

Design Data

Quality Level		CM	**Fabrication Specs**	24590-BOF-3PS-MVSC-T0002 (Ref. 4)		
Seismic Category		SC-IV	**Design Code**	ASME VIII Div 1		
Service/Contents		Drain Collection	**Code Stamp**	Yes		
Specific Gravity of fluid (Min/Max)		0.99/1.10 (Ref. 2)	**NB Registration**	Yes		
Maximum Operating Volume	gal	13800 (Ref. 3)	**Weights (lbs)**	**Empty**	**Operating**	**Test**
Batch Volume	gal	8000 (Ref. 3)	**Actual**	*	*	*
Total Volume	gal	18000 (Ref. 3)	**Not to exceed wet weight (lbs)**	193,000		
Area Classification		R5/R3/C5 (Ref. 8) (Note 9)	**Not to exceed size (Notes 1 and 2)**	16' Diameter x 26' High		

General Data

Inside Diameter	feet	14 (Ref. 15)	**Wind Design**	None
Tangent-to-Tangent (TL - TL)	feet	12.75 (Ref. 15)	**Snow Design**	None

1.35 (Ref 21) (Note 29)

HOLD 1

THIS PECN

- The Service/Contents section under Design Data needs to be changed if this vessel starts accepting low-activity tank waste. It will no longer just be used for Drain Collection. How is Ecology ensuring that this tank has the design specifications to receive pretreated, low-activity tank waste? Its original purpose is to collect effluents from tank waste that has already been treated through the high heat melters of the LAW Facility which destroys organics, nitrates, nitrites, and embeds the majority of the waste in glass. It is a radical change to suddenly use the low-point drain vessel for storage of waste that has not previously been treated in the LAW Facility. Require an Independent Qualified Registered Professional Engineer Design Assessment Report for the low-point drain vessel and piping to AP-106 before using it to store pretreated, low-activity tank waste.

Thank you for considering our comments,



Nikolas F. Peterson, Executive Director