



TINA KOTEK
GOVERNOR

May 22, 2025

Hanford Mission Integration Solutions
P.O. Box 450, H5-20
Richland, WA 99354

To Whom it May Concern:

I write to convey the State of Oregon's strong concerns over the proposed actions included in the U.S. Department of Energy's (DOE) Draft Supplement Analysis (SA) for the 200-West Area Tank Waste Treatment, DOE/EIS-0391-SA-05.

The very consideration of transporting 32 million gallons of Hanford tank waste by rail or truck without adequate notice, discussion, or consideration of potential and inherent risks to the citizens of the State of Oregon is unacceptable. Furthermore, as proposed there will be no opportunity for meaningful participation of the public, or consultation with Tribal governments, in the NEPA process as the federal government moves forward toward a final decision.

With this in mind, I have directed the Oregon Department of Energy to provide its technical analysis and comments which I support and have attached here. For historical context of my position on this matter, I am also attaching a packet of correspondence from 2024, which includes a letter I sent July 11, 2024.

Thank you for your attention to this matter.

Sincerely,

Governor Tina Kotek



Oregon

Tina Kotek, Governor



550 Capitol St. NE
Salem, OR 97301
Phone: 503-378-4040
Toll Free: 1-800-221-8035
FAX: 503-373-7806
www.oregon.gov/energy

May 22, 2025

Submitted to: NEPA_SA@rl.gov

Attn: Dana Cowley

Hanford Mission Integration Solutions
P.O. Box 450, H5-20
Richland, WA 99354

Oregon Comments on the DOE/EIS-0391-SA-5 Draft Supplement Analysis of the Final Tank Closure and Waste Management Environmental Impact Statement for the Hanford Site, Richland, Washington 200 West Area Tank Waste Treatment

Oregon appreciates the opportunity to provide comments on the U.S. Department of Energy's (DOE) Draft Supplement Analysis (SA) for the Hanford 200-West Area Tank Waste Treatment, DOE/EIS-0391-SA-05. This SA evaluates the potential pretreatment, grouting, and subsequent offsite transportation and disposal of approximately 32 million gallons of supplemental low-activity tank waste from Hanford's 200-West Area tank farms. DOE's preliminary determination within the SA is that this proposed action does not constitute a substantial change from current operations and previously-analyzed impacts under the National Environmental Policy Act (NEPA), and as such, additional NEPA review is not required for the 200 West Area project.

We fundamentally disagree with DOE's preliminary determination specifically regarding transportation of Hanford tank waste through Oregon. The proposed action represents a significant departure from the selected alternative in the 2012 Final Tank Closure and Waste Management Environmental Impact Statement for the Hanford Site (TC&WM EIS) Record of Decision, which prioritized onsite vitrification and disposal for this waste stream. Additionally, transportation and risk have not been adequately addressed in any previous Hanford NEPA document, including the 1997 Waste Management Programmatic EIS (WM PEIS), which is used by DOE to supposedly demonstrate compliance with NEPA for transportation risk assessment purposes.

The SA's assessment of transportation risks associated with shipping 32 million gallons of pretreated tank waste relies heavily on prior NEPA analyses, particularly the 1997 WM PEIS¹, which are inadequate or inapplicable given the specific characteristics of the proposed action. The WM PEIS was made when Hanford was still considered to potentially be the disposal destination for all of DOE's wastes from across the nation. This flawed reliance leads to an underestimation of potential environmental impacts and constitutes significant new information

¹ https://www.energy.gov/sites/prod/files/nepapub/nepa_documents/RedDont/EIS-0200-FEIS-v01-1997.pdf

which should be analyzed in a NEPA document, such as a Supplemental Environmental Impact Statement (SEIS).

Oregon believes it is inappropriate to rely upon a 28-year-old document written about a different waste form as sufficient for the NEPA compliance of the 200-West Tank Waste project transportation analysis. In both substance and spirit, NEPA requires federal agencies to assess the environmental impacts of their proposed actions prior to making decisions and to share that information with the public prior to a major federal action. No previous NEPA documentation for Hanford has met this expectation for the proposed actions under consideration here.

As will be further shown in this letter, the SA is deficient in three fundamental ways: (1) it relies on outdated or inapplicable prior analyses, particularly concerning transportation risks, (2) it fails to adequately address significant new circumstances and information relevant to environmental concerns, and (3) it does not sufficiently evaluate the potential impacts on the national waste management infrastructure.

Oregon has repeatedly stated its concerns regarding a large-scale Hanford tank waste transportation program and respectfully reiterates its position that Oregonians must have full and complete information regarding transportation risk, including specific routes under consideration, and that tank waste must be solidified in Washington, before shipping through Oregon.² As described in this letter, Oregon strongly supports an additional NEPA analysis, particularly a SEIS, focused on tank waste transportation risk assessment. Paramount among Oregon's concerns is that the SA fails to assess the environmental hazards of transporting large volumes of liquid Hanford tank waste through Oregon's landscape, including important riparian areas and waterways that abut Oregon's major transportation corridors, as well as through multiple Oregon communities.

Incomplete Transportation Analysis for the Proposed 200-West Area Tank Waste Treatment DOE/EIS-0391-SA-05

The draft SA considers a course of action developed by the Tri-Party Agreement Agencies³ during a four-year long closed-door process known as "the holistic agreement." The plan includes an alternate disposal pathway for approximately 32 million gallons of Supplemental Low-Activity Waste (LAW) from the 200-West (200W) tank farms S, SX, U and SY.⁴ This material would be treated to remove the cesium and a portion of the strontium before being treated via one of two options: either solidified into a grout matrix at a potential new onsite facility or transported offsite in liquid form and grouted at the disposal locations. The entire 32 million gallons of pretreated waste (whether liquid or solidified) will be transported via truck or rail to treatment and/or disposal facilities located outside of Washington State.⁵ These facilities

² <https://www.oregon.gov/energy/safety-resiliency/Documents/2024-08-27-Oregon-Comments-Draft-Holistic-Agreement.pdf> Oregon Department of Energy and Governor Kotek's previous comments on the Holistic Negotiation, 2024

³ In 1989, three government entities signed Hanford Federal Facility Agreement and Consent Order known as the Tri-Party Agreement (TPA). The agencies involved are U.S. DOE, U.S. EPA, and Washington Dept. of Ecology.

⁴ "Alternative" in this case refers to an 'alternative to vitrification,' which is the presumed treatment method for all Hanford tank waste. This is based on the requirement that all tank waste be managed as high-level waste until proven to not be high-level waste; and the only treatment method for high-level waste is vitrification and disposal in a deep geologic repository outside of Hanford (which does not currently exist).

⁵ SUPPLEMENT ANALYSIS OF THE FINAL TANK CLOSURE AND WASTE MANAGEMENT ENVIRONMENTAL IMPACT STATEMENT FOR THE HANFORD SITE, RICHLAND
https://www.energy.gov/sites/default/files/2025-03/eis-0391-sa-05-draft_200W_tank_waste_treatment_SA_2025-03-25.pdf

may include Waste Control Specialists (WCS) in Texas, EnergySolutions (ES) in Utah, and Perma-Fix Northwest in Washington (for treatment prior to shipment to WCS or ES for disposal).

DOE prepared the draft SA per its NEPA implementing procedures (10 CFR Part 1021). Based on the analysis presented in the SA, DOE has preliminarily concluded that this proposed action does not constitute a substantial change to the proposals evaluated in the 2012 TC&WM EIS.⁶

Oregon disagrees with this assessment on several grounds. The proposed offsite treatment and disposal of approximately 32 million gallons of 200-West Area tank waste represents a significant departure from the actions analyzed in the controlling 2012 TC&WM EIS and other cited NEPA reviews. The unprecedented scale of the offsite tank waste transfer, coupled with the reliance on inadequate or inapplicable prior analyses for transportation risks to the public and the environment – notably concerning radiation dose rates associated with high proportions of Class C waste, the environmental behavior of liquid waste forms miscible in water, and potential hazardous constituents in accident scenarios – are significant new potential circumstances and information not previously analyzed in any NEPA document. Furthermore, the draft SA does not adequately assess the substantial impacts this large-scale action will impose on the limited national commercial waste management infrastructure. These factors, amplified by substantive concerns raised by impacted interests such as the State of Oregon, should result in DOE conducting a specific transportation risk analysis under NEPA. And while Oregon understands that a decision on where to grout tank waste will be made later this year, we reiterate our policy position on this matter, that tank waste must be solidified in Washington before shipping through Oregon. We believe that a specific transportation analysis of the 200 West Tank Waste project would demonstrate that shipping solidified tank waste vastly reduces the environmental and human health risk compared to liquid waste.

NEPA and EIS

The National Environmental Policy Act, 42 U.S.C. 4321 et seq. mandates that federal agencies evaluate the environmental impacts of their proposed actions. Council on Environmental Quality Regulations 40 CFR 1502.9(d) that implement NEPA, and DOE's own NEPA implementing procedures, 10 CFR Part 1021, all agree that "DOE shall prepare a supplemental EIS if there are substantial changes to the proposal or significant new circumstances or information relevant to environmental concerns, as discussed in 40 CFR 1502.9(c)(1)."⁷ Oregon strongly believes this is the case, as described herein.

New Circumstances, Information, or Substantial Changes

The proposed determination documented in the draft SA – that the proposed treatment and offsite disposal of 32 million gallons of Hanford 200-West Tank Waste does not warrant additional analysis – fails to meet the legal standards established by NEPA. Multiple factors demonstrate that the proposed action involves substantial changes and significant new circumstances and information relevant to environmental concerns, necessitating new analysis, specifically of transportation impacts.

Foremost of the issues is the massive scale and sheer magnitude of changes to the transportation plan, which prior NEPA documents do not address. The DOE proposal involves pretreating and shipping approximately 32 million gallons of liquid tank waste offsite; or, if

⁶ DOE/EIS-0391: Hanford Tank Closure and Waste Management <https://www.energy.gov/nepa/doeeis-0391-hanford-tank-closure-and-waste-management-richland-washington>

⁷ 10 CFR § 1021.314 - Supplemental environmental impact statements. <https://www.ecfr.gov/current/title-10/chapter-X/part-1021/subpart-C/section-1021.314>

solidified prior to shipment, the volume increases significantly due to the addition of grout materials, potentially reaching approximately 238,000 cubic yards (48 million gallons).

To justify its conclusion that no further NEPA review is necessary, DOE relies upon other previously completed NEPA documents for projects at Hanford, including the following:

- The **2023 Test Bed Initiative (TBI) Environmental Assessment (EA)**⁸ evaluated the pretreatment, offsite grouting, and disposal of approximately 2,000 gallons of low-activity waste from a single tank at Hanford. In contrast, the current proposal represents a more than 14,000-fold increase in the liquid volume from 22 unique tanks, each with different waste contents and chemistry, compared to the TBI demonstration project. The TBI EA explicitly served as an engineering-scale demonstration and cannot reasonably provide an adequate environmental analysis for a program scaled up by four orders of magnitude.
- The **2023 Secondary Waste Management Supplement Analysis (SA-03)**⁹ addressed the offsite treatment and potential disposal of *secondary* wastes generated by the Direct-Feed Low-Activity Waste vitrification process. While it considered offsite transport, the volumes were substantially smaller, with a maximum projected annual disposal rate at offsite commercial facilities of approximately 350 cubic meters. The current proposal involves *shipping primary tank waste, not secondary process waste*, at an average annual solidified volume potentially exceeding 16,000 cubic meters, roughly 47 times greater than the maximum annual rate analyzed for secondary wastes.
- The **2012 Tank Closure and Waste Management EIS (TC&WM EIS)**¹⁰ did analyze the entire Hanford tank waste inventory, approximately 56 million gallons. However, the primary focus of the analysis centered on *onsite* treatment, specifically vitrification of both High-Level Waste and low-activity waste streams within the Waste Treatment and Immobilization Plant, followed by onsite disposal of the immobilized low-activity waste in the Integrated Disposal Facility at Hanford, an alternative that was replaced by the 2020-2024 holistic negotiations and agreement. While the TC&WM EIS considered supplemental low-activity waste treatment technologies (e.g., onsite cast stone under Alternative 3B) and the potential for shipping transuranic waste (“TRU”) to the Waste Isolation Pilot Plant in New Mexico, it did *not* evaluate a scenario where a minimum of 32 million gallons of liquid tank waste would bypass onsite vitrification and be transported for offsite grouting and commercial disposal.

Transportation Risk Assessment

Transportation assessment and risk have not been adequately addressed in any previous Hanford NEPA document. The SA's assessment of transportation risks associated with shipping 32 million gallons of pretreated tank waste relies heavily on prior NEPA analyses, particularly the 1997 WM PEIS, which are inadequate or inapplicable given the specific characteristics of the proposed action. This document was made when Hanford was still considered to potentially be the disposal destination for all of DOE's wastes from across the nation. This flawed reliance

⁸ DOE/EA-2086: Test Bed Initiative Demonstration <https://www.energy.gov/nepa/doeea-2086-test-bed-initiative-demonstration-washington>

⁹ DOE/EIS-0391-SA-03: Supplement Analysis <https://www.energy.gov/nepa/articles/doeeis-0391-sa-03-supplement-analysis-january-2023>

¹⁰ DOE/EIS-0391 [Tank Closure & Waste Management \(DOE/EIS-0391\) FINAL - Hanford Site](#)

leads to an underestimation of potential environmental impacts and constitutes significant new information requiring analysis in a full SEIS. In addition, it is fundamentally inappropriate to rely upon a 28-year-old document, written as a generically broad framework, as somehow sufficient to ensure NEPA compliance of the 200-West disposal project. NEPA requires environmental assessment and disclosure to the public prior to a major federal action, and this has not been done for transportation risk.

The SA acknowledges that approximately 70 percent of the total tank waste volume destined for offsite disposal is expected to be classified as Class C Low-Level Waste (LLW). Class C waste represents the highest concentration of radioactivity generally permissible for near-surface land disposal. This contrasts with the 1997 WM PEIS that as one of its simplifying assumptions for its transportation analysis, employed a "generically representative dose rate of 1 mrem per hour at 1 meter for all LLW and MLLW packages."¹¹ The same document also only studies seventeen of the several hundred potential hazardous constituents in tank waste and only in 55-gallon increments. While the 70% as Class C assumption may be a bounding condition, the SA lacks clarity about the specific waste characteristics and when compared to the previous NEPA documents, forces us to acknowledge the potentially higher-activity nature of the proposed waste stream. Class C waste contains significantly more radionuclides than Class A with a corresponding increase in potential radiological dose up to 10mrem per hour. Thus, the generic assumptions embedded in the relied-upon WM PEIS analysis may not reflect the true nature of this waste and presents "significant new information" or "inadequate information" regarding the waste's characteristics relevant to potential environmental health and safety impacts that could result from an accident during transport.

A critical flaw in relying on the WM PEIS for transportation accident analysis stems from fundamental differences in the assumed physical properties of the waste. This material is characterized by high water solubility, or completely miscible liquids. In contrast, the transportation accident analyses for LLW within the 1997 WM PEIS assumed that the released material would be solid and largely *insoluble*. As stated in supporting documentation for the WM PEIS risk assessment, "As a result of the packaging used in the transportation of LLW, it was assumed that the entire contents of the shipment could be released to the surface waters following an accident, but that only a small fraction of the release would be soluble."¹² This assumption significantly limits the modeled dispersion and potential contamination of water resources in accident scenarios involving spills into rivers or other surface waters. Similarly, the 1997 assessment does not consider migration of liquids into soils and aquifers along the transportation route in the event of a liquid leak or spill.

The SA's reliance on the outdated WM PEIS framework is therefore not adequate to assess the consequences of accidents involving the highly miscible liquid LAW proposed for transport in the SA. The release of this soluble material into soils or critical waterways such as the Columbia or Deschutes Rivers, which lie along potential transport routes through Oregon, would exhibit drastically different environmental behavior compared to the insoluble or aerosolized materials modeled in the WM PEIS. The potential for rapid dissolution and widespread downstream transport of contaminants presents a significantly different and potentially much greater risk profile for aquatic ecosystems and downstream water users than was evaluated in the WM PEIS. Some hazardous components such as hexavalent chromium have had their environmental health impacts reevaluated, while other emerging contaminants such as the

¹¹ Final Hanford Site Solid (Radioactive & Hazardous) Waste

<https://www.nrc.gov/docs/ML0534/ML053460307.pdf>

¹² https://inis.iaea.org/collection/NCLCollectionStore/_Public/29/038/29038948.pdf

PFA/PFOA family of chemicals may not have been tested for at all. Quite simply, the aging WM PEIS has significant data gaps, generalizations, and deficiencies rendering it of little use for the specific scenarios posed by the proposed 200-West tank waste mission.

Each tank in 200W is a unique mixture of waste constituents at differing concentrations and this inherent variability requires further analysis. For the limited-in-volume TBI work to occur, a variance had to be obtained from the Environmental Protection Agency (EPA).¹³ DOE petitioned EPA for a treatment variance under RCRA to authorize treatment and disposal of the TBI waste using the treatment technology stabilization with verification that the treated waste meets the Land Disposal Restriction (LDR) concentration-based standards for hazardous constituents, as applicable for the relevant waste codes, prior to disposal. The SA did not address the risk that some tank waste may not meet LDR criteria but assumes an onsite facility would include treatment for organic and inorganic constituents. If this treatment does not occur, there has been no indication as to how further variances will be handled administratively. A similar variance from the HLWIT code will be required for this 200-West waste once it is determined to be waste incidental to reprocessing.¹⁴ Treating and solidifying the waste on the Hanford site prior to transport may mitigate some uncertainty as to whether the material meets the waste acceptance criteria of the receiving facility.

The Follow-on Report of Analysis of Approaches to Supplemental Treatment of Low-Activity Waste at the Hanford Nuclear Reservation 2023 (led by Savannah River National Lab, SRNL)¹⁵ is the most topical and timely comparative tool for the proposed 200-West actions. However, there are significant discrepancies between the SA's assumptions and those in the SRNL Report, representing new information that bears directly on the environmental analysis. Substantial discrepancies exist between the technical assumptions employed in the SA and those presented in the SRNL. These differences have significant implications for calculated waste volumes, logistical requirements, risk assessments, and the overall evaluation of the proposed action's feasibility and impacts.

The SA utilizes a volume expansion factor of 1.5, meaning 1 gallon of liquid waste produces 1.5 gallons of solidified waste versus the SRNL study of 1.8. The SA acknowledges that the actual expansion factor could range from 1.5 to 1.8, depending on waste composition and grout formulation, and notes that if the actual expansion is higher, impacts such as air emissions, shipment numbers, and disposal volumes could increase by as much as 20%. While this is conservative in maximizing the calculated radionuclide concentration per unit volume, this same assumption is non-conservative for evaluating the operational, transportation, and environmental impacts within the NEPA analysis presented in the SA.

¹³ <https://www.epa.gov/hw/final-response-variance-petition-us-department-energy-hanford-site>

¹⁴ **HLWIT** stands for **High-Level Waste Vitrification**, the standard treatment used to immobilize high-level mixed radioactive wastes by converting them into a stable glass form.

The **Waste Incidental to Reprocessing (WIR)** process allows DOE to reclassify material as Low-Activity Waste if it meets: **WIR by Citation** or **WIR by Evaluation Criterion 1**: The waste has been processed or will be processed to remove key radionuclides to the maximum extent technically and economically feasible. **Criterion 2**: The waste will be managed in compliance with safety requirements comparable to performance objectives set by 10 CFR Part 61, ensuring public health and environmental safety.

Criterion 3: The waste will be incorporated into a solid physical form at a concentration that does not exceed limits considered appropriate for Class C low-level waste as specified under 10 CFR 61.55. Environmental Protection Agency (EPA) treatment **variance**, allowing DOE to treat the waste under the **Land Disposal Restrictions (LDR)** standards. With the variance, the waste must meet LDR technology standard of stabilization (STABL)

¹⁵ [srnl-sti-2023-00007 volume i \(final\) 230116-1.pdf](https://www.srnl.gov/sti/sti-2023-00007-volume-i-final-230116-1.pdf)

Beyond the expansion factor there are several key transportation metrics that are different. If grout is shipped by train, the SA assumes each gondola would contain three 13.1 cubic yard bags compared to six 11 cubic yard bags under the SRNL study. As the total number of train shipments required depends on both the number of packages per car and the number of loaded cars per train, the SA's analysis of a low average train length of five cars has complex implications. Using a lower number of cars per train maximizes the calculated number of train trips needed for a given total volume and is a conservative shipment frequency. However, it is non-conservative when assessing accident risk *per train*, as fewer cars per train might imply lower consequences in a single derailment event compared to a longer train, especially for liquid transportation. The SRNL Report projects that 83 to 93% of the supplemental LAW, when immobilized in a grout form, would qualify as Class A waste likely destined for EnergySolutions in Utah. This facility is closer to the Hanford site meaning lower emissions, cost, and accident risk from miles traveled. This compares to the SA's bounding condition of 70% of the supplemental waste being Class C and disposed of at the WCS facility in Texas. While utilized as a conservative bounding condition, it radically reverses previous analysis and assumptions in the SNRL report. These inconsistencies impact the reliability of estimates for total train shipments, rail line usage, scheduling feasibility, and overall transportation risk profiles. All these factors require more in-depth analysis.

Assuming the full operational availability of a major new waste treatment facility at Hanford by 2030 may be considered optimistic given budget uncertainty and the complex design, permitting, supply-chain, and construction process associated with treatment of mixed low-level tank waste. The SA does not explicitly analyze a scenario involving simultaneous shipment of both liquid and solidified waste, which could occur during facility startup, phased implementation, or if the facility operates below its design capacity. The analysis, based on these bounding cases, without exploring more probable mixed or delayed scenarios, may therefore fail to adequately capture the most likely range of operational impacts, logistical challenges, and associated environmental consequences.

As a final point of disagreement, neither the SA nor any previous NEPA document include transportation route-specific information or risk-analysis. In fact, nowhere in the record is it even mapped which routes might be under consideration by DOE for shipping waste from Hanford to Texas and Utah. It might be assumed that the route using I-82 south and I-84 east through Oregon and through the Confederated Tribes of the Umatilla Indian Reservation would be a primary route; however, the "Test Bed Initiative" project recently shipped liquid tank waste north-northwest from Hanford, through Spokane, and avoided Oregon altogether enroute to Utah and Texas. In addition, the SA includes a generic railroad route alternative, but again no information or specific details of potential railroad routes are included in the SA, and no route-specific risk analysis is included. Oregon has previously seen railroad routing analysis in the Savannah River National Labs Supplemental Low Activity Waste study (2023) that describes how rail could supposedly be used to transport waste from Hanford to disposal locations; that route, if under serious consideration, would use the rail line that runs through central Oregon including through the Confederated Tribes of the Warm Springs Reservation and within 500 feet of lands of the Klamath Tribes. The rail line also runs through the middle of multiple Oregon communities including Bend, Redmond, and Klamath Falls, as well as along limited-access deep river canyons of the Deschutes River. With no specific route identification or analysis, the SA is fundamentally inadequate without additional transportation impact assessment.

Collateral Impacts

The proposed action's reliance on offsite commercial facilities for the treatment and disposal of 32 million gallons of pretreated tank waste introduces significant potential impacts on the national radioactive waste management infrastructure that were not analyzed in the 2012 TC&WM EIS. The SA projects an average annual shipment rate of approximately 2.9 million gallons per year (MGY) if transported as a liquid. The SA identifies the primary commercial facilities capable of receiving and treating (grouting/solidifying) this liquid waste as WCS in Texas (capacity 1-2 MGY) and EnergySolutions in Utah (1 MGY). Permafrix Northwest in Washington is also identified as a potential treatment facility (before shipment to WCS/ES) with a capacity of ~0.36 MGY.

Based on these figures, Hanford's projected annual demand of ~2.9 MGY would consume between 86% (if WCS capacity is 2 MGY) and 123% (if WCS capacity is 1 MGY) of the combined stated liquid treatment capacity of the two primary receiving facilities. Even including Permafrix Northwest's capacity only brings the total stated treatment capacity to between 2.36 and 3.36 MGY. Notably, the claim in the SA that WCS could potentially double its capacity from 1 to 2 MGY within a year relies on a reference marked "Business Sensitive" and is therefore unavailable for independent verification. The assertion in the SA that this doubling could occur "without impacting other waste treatment or disposal commitments" requires significant scrutiny, which should occur through a SEIS process.

The SA states that US DOE anticipates sending approximately 70% of the solidified waste (~166,500 yd³) to the WCS Federal Waste Facility (FWF) for disposal. The SA states this volume represents ~55% of the FWF's total licensed volume limit for containerized Class A, B, and C waste (cited as 300,000 yd³) and ~57% of the *remaining* available capacity as of December 2024. The sheer magnitude of the Hanford waste stream relative to the stated national commercial capacities for both specialized liquid treatment (grouting) and potentially for Class B/C disposal constitutes a significant new circumstance. The potential for this single project to overwhelm existing infrastructure presents nationwide implications not previously analyzed. This is before accounting for the "secondary waste streams" and further supplemental waste streams such as the T-farms at Hanford and potentially, private industry's need to dispose of waste streams at these facilities.

The SA concludes that the proposed volumes "would not impact these facilities' current commitments or licensed capacities." This conclusion is inadequately supported and overlooks the potential for significant cumulative impacts. Dedicating such a large fraction of the available national commercial capacity for liquid waste treatment and Class B/C disposal to a single DOE project over an 11-year period inherently restricts access for other DOE sites. This potential bottleneck effect, delaying cleanup or waste disposition elsewhere, represents a significant cumulative impact under NEPA (40 CFR 1508.7) which should be evaluated in an additional NEPA document. The TC&WM EIS, by assuming onsite disposal for low-activity waste, did not need to address these complex interdependencies within the commercial market. These external factors represent significant new circumstances that affect the feasibility, risk profile, and potential environmental impacts of the proposed action compared to the baseline established in the TC&WM EIS.

Oregon's Concerns

The State of Oregon, through the Oregon Department of Energy and the Governor's Office, has explicitly and repeatedly voiced significant concerns regarding this proposal and related Hanford tank waste management strategies. Key points raised in prior official comments and correspondence include:

- Inadequacy of Prior NEPA Analysis: Oregon's view is that the massive scale of the proposed offsite grouting and transportation campaign significantly exceeds the scope of prior NEPA evaluations (such as the TBI EA and SA-03) and that reliance on aging documents including the TC&WM EIS and WM PEIS is insufficient for reasons outlined in this letter. A new transportation analysis is necessary, particularly if DOE maintains all options for consideration including grouting onsite or offsite, transportation of liquid or solid waste forms, transportation via train or truck, and no specific route analysis for either train or truck transport.
- Opposition to Liquid Waste Transport: Oregon strongly opposes the shipment of liquid tank waste through the state due to inherent risks and unknown routes. The state prefers onsite solidification in Washington prior to any transport through Oregon.
- Need for Route-Specific Transportation Analysis: Oregon must have detailed, route-specific transportation risk analyses and robust emergency preparedness planning and engagement with potentially affected communities and Tribal governments along transport corridors *before* final decisions are made.
- Demand for Public Participation: Oregon calls for DOE to conduct additional NEPA review for the proposed action to ensure comprehensive environmental review and meaningful public participation, including consultation with affected Tribal Nations, some of which may not have institutional knowledge of or subject matter expertise regarding Hanford waste due to their location far from Hanford but along potential transportation routes including the Confederated Tribes of Warm Springs and Klamath Nation.
- Concerns about Transparency: Oregon has expressed frustration with the lack of clarity regarding DOE's intentions and decision-making processes, particularly concerning waste classification and transportation plans.

The Governor's Office reiterated these concerns in its letter from July 2024 to DOE, emphasizing the need for clarity on solidification prior to transport, transportation methods, and NEPA requirements. While DOE acknowledged these concerns and committed to future public engagement, Oregon noted that the underlying Holistic Agreement on Hanford Tank Waste lacked specific commitments, leaving critical decisions solely to DOE without guaranteed further public input (see Attachment 1).

These formally documented objections from Oregon, whose communities are directly impacted by the proposal, highlight significant unresolved environmental and public concerns. The SA fails to adequately address or resolve these state-level concerns. NEPA requires agencies to consider such input, and additional analysis must be conducted to address these issues.¹⁶

¹⁶ <https://ceq.doe.gov/docs/laws-regulations/CEQ%20Regulations-Redline-for-Final-Rule.pdf>

Conclusion

As demonstrated in this letter, the draft Supplement Analysis (DOE/EIS-0391-SA-05) ignores the fact that the proposed 200-West Tank Waste project is a substantial change from the preferred alternative selected in the governing 2012 Tank Closure and Waste Management EIS Record of Decision which prioritized onsite vitrification and onsite disposal for Hanford's low-activity waste fraction, and the 1997 nation-wide Waste Management Programmatic EIS.

The proposed action involves significant new circumstances and information relevant to environmental concerns that were not adequately analyzed in the TC&WM EIS or subsequent, smaller-scale NEPA reviews (TBI EA, Secondary Waste SA-03) or any other transportation analysis reports. In summary, these include:

1. **Unprecedented Scale:** The sheer volume of waste destined for offsite commercial management dwarfs previously analyzed scenarios for similar offsite actions.
2. **Inadequate Transportation Risk Analysis:** The SA's reliance on the 1997 WM PEIS is flawed due to (a) the use of generic dose rate assumptions that likely underestimate risks from a waste stream assumed to be 70% higher-activity Class C waste, and (b) the use of accident models assuming low waste solubility, which is inapplicable to the highly soluble liquid waste proposed for transport, particularly concerning risks to vital water resources.
3. **Unanalyzed Impacts on National Infrastructure:** The proposal threatens to consume a significant majority of the national commercial capacity for liquid radioactive waste treatment and a substantial portion of the available disposal capacity for containerized Class A/B/C waste at the WCS FWF, creating potential bottlenecks and cumulative impacts for other waste generators nationwide - effects not considered in the SA.
4. **Stakeholder Concerns:** Formal objections and specific environmental concerns raised by affected stakeholders, notably the State of Oregon, highlight unresolved issues regarding transportation safety, grouting location, transparency, and NEPA adequacy, underscoring the controversial nature of the proposal.

It is Oregon's belief that these factors, considered both individually and cumulatively, meet the regulatory criteria established in 40 CFR 1502.9(d)(1) and mirrored in DOE's regulations at 10 CFR 1021.314(a) that would direct DOE to prepare a transportation impact analysis under NEPA, analyzing the issues outlined in this letter.

To ensure a thorough, transparent, and legally defensible decision-making process for this major federal action with potentially significant environmental consequences, DOE should conduct a transportation analysis under NEPA, preferably a comprehensive SEIS. This process includes scoping, detailed analysis of alternatives (including onsite solidification), rigorous assessment of impacts (particularly transportation and cumulative effects), and formal public review and comment. All these steps are essential for addressing the substantial changes and significant new circumstances presented by the 200-West Tank Waste project.

Finally, as Oregon has long-stated, we reiterate our support for disposal of Hanford waste outside of the region, in specifically-engineered facilities underlain by favorable geology such as those in Texas and Utah. However, as described in this letter, waste must be solidified before leaving Washington, and additional transportation risk analysis must be conducted prior to a major shipping campaign through Oregon. Together, this will enhance safety, reduce risk, and ensure the protection of human health and the environment. Please contact Maxwell Woods of

my staff (maxwell.woods@energy.oregon.gov or 503-551-8209) if you have any questions or would like to meet to discuss these comments.

Thank you for your attention to this matter,

A handwritten signature in black ink, appearing to read "Janine Be".

Janine Benner
Director
Oregon Department of Energy

A handwritten signature in black ink, appearing to read "Jeff Wyatt".

Jeff Wyatt
Chairman
Oregon Hanford Cleanup Board

Attachment 1: 2024 Oregon Department of Energy and Governor Kotek comments on the Hanford 'holistic negotiations agreement'



Oregon

Tina Kotek, Governor



550 Capitol St. NE
Salem, OR 97301
Phone: 503-378-4040
Toll Free: 1-800-221-8035
FAX: 503-373-7806
www.oregon.gov/energy

August 27, 2024

Submitted online to comment portal <https://tinyurl.com/TPA-CD-Changes>

Attn: Daina McFadden

Ms. McFadden,

Oregon appreciates the opportunity to comment on the proposed Holistic Negotiations Agreement modifying the Hanford Nuclear Waste Site Tri-Party Agreement and Consent Decree. The agreement represents a long-awaited step towards risk reduction at the Hanford site. This set of proposed changes comes after nearly four years of confidential negotiations between the U.S. Department of Energy (DOE), the U.S. Environmental Protection Agency, and the Washington Department of Ecology. The scope and consequence of this agreement are among the most anticipated and significant revisions to the tank waste mission at the Hanford site in recent memory.

This letter transmits comments from Governor Kotek, a letter from the Oregon Department of Energy and members of the Oregon Hanford Cleanup Board, and includes technical comments from Oregon Department of Energy staff. Oregon looks forward to providing additional comments as the TPA agencies publish specific details about the preferred path to achieve the framework described in the agreement. Oregon is ready to help facilitate public information and engagement campaigns in our state regarding tank waste transportation, in particular.

The details of and manner in which the Holistic Agreement has been presented are of concern at the highest levels of Oregon Government (Attachment A). In a letter dated July 11, 2024, Governor Kotek expressed Oregon's position in three critical areas: solidifying waste prior to transport, the means of transport, and the clarity on NEPA requirements. We include Governor Kotek's letter for submittal as a formal comment, along with commitments made by US DOE in a July 26, 2024 response (Appendix B).

The lack of clarity on these key areas, coupled with a not-yet-conducted process for engagement along potential transportation corridors, is a significant concern. Offsite tank waste disposal requires close cooperation between several levels of government, some of whom have never previously been impacted by Hanford issues and must be consulted prior to decision-making. The current draft agreement leaves critical issues open for decision by the U.S. Department of Energy without assurance of further notice, engagement, or comment.

While DOE's response to Governor Kotek's letter assures a commitment to transparency and future public involvement, the effectiveness of these commitments will depend on their implementation. Transportation of Hanford tank waste through Oregon is our top issue and concern. The inherent risks of transporting treated tank waste liquids, the yet-to-be-determined plans for waste transportation methods and routes, and the uncertainty whether there will be any task-and-route-specific NEPA process are issues that require thorough public information-sharing and input, prior to decision-making. As additional preliminary decisions are made, timely outreach to and input from governmental entities, and Tribal governments potentially impacted by proposed transportation routes will be an important component of a decision process that is open and transparent.

While more detailed comments are included in Appendix C, a summary of Oregon's top issues is presented here:

- **Environmental Impact Assessment:** DOE should either conduct a full supplemental Environmental Impact Statement (EIS) for the proposed grouting campaign and off-site transportation of waste, or demonstrate with clarity how the requirements of NEPA are met in the absence of an EIS. Regardless of whether NEPA requirement will mandate an EIS process, DOE needs to undertake a comprehensive plan for the transportation and disposal of treated waste.
- **Emergency Responder Training:** Transportation planning needs to include clarity about how DOW will engage with potentially impacted communities (including sovereign Tribal Governments) to ensure they are prepared for the proposed shipping campaign and a potential transportation accident.
- **Treatment Strategy:** Oregon is opposed to shipping of liquid tank waste through our state. While Oregon supports offsite disposal for treated tank waste, the waste should be solidified on-site at Hanford before offsite shipment. This approach offers several advantages in terms of waste form stability, transportation safety, and local economic benefits.
- **Public Engagement and Transparency:** DOE should provide clear, accessible information to the public about cleanup strategies, timelines, and decision-making processes. This includes making key documents, such as System Plans and Analyses of Alternatives, readily available for public review. Regarding offsite shipping of tank waste, DOE should ensure that transportation plans and shipping options are analyzed and shared with the public, and public comments are actively solicited, prior to decisions. Oregon also recommends that this includes consultation with all potentially impacted Native American Tribes, including those along shipping routes. In Oregon, this may include Confederated Tribes of the Umatilla Indian Reservation, Confederated Tribes of Warm Springs, and Klamath Tribes. The Oregon Department of Energy is ready to support DOE with an information and engagement campaign regarding transportation through our state.
- **Waste Retrieval Optimization:** DOE should build on the requirements of the agreement and continue to develop and implement technologies that maximize waste retrieval from tanks, particularly those that minimize the addition of liquids to leaking tanks. The goal should be to leave as little waste as practicable in tanks

declared "retrieved." The process for declaring a tank retrieved should reflect lessons learned over the decades of retrievals.

- **Timeline and Milestone Management:** DOE should regularly reassess the feasibility of established milestones, particularly considering technological developments, regulatory changes, and project progress. The agency should consider adjusting milestone dates, such as M-062-24-04, to account for the availability of crucial data from initiatives like the Test Bed Initiative (TBI).

The Hanford site cleanup presents complex challenges that require innovative solutions, ongoing technological development, and careful consideration of long-term environmental and public health impacts. By implementing the recommendations outlined above, the Hanford tank waste mission can progress more efficiently, effectively, and safely, while minimizing long-term environmental and public health risks. Continued adaptability, innovation, and commitment to thorough cleanup will be essential as this complex project moves forward.

If you have any questions, please contact Maxwell Woods (503-551-8209 or maxwell.woods@energy.oregon.gov) of my staff.

Thank you for your consideration,



Janine Benner
Director, Oregon Department of Energy



Jeff Wyatt
Chair, Oregon Hanford Cleanup Board

CC:

Dave Einan, U.S. Environmental Protection Agency
Stephanie Schleif, Washington Department of Ecology
Jennifer Colborn, U.S. Department of Energy, Office of River Protection
Mason Murphy, Confederated Tribes of the Umatilla Indian Reservation
Laurene Contreras, Yakama Indian Nation
Anthony Smith, Nez Perce Tribe
Oregon Hanford Cleanup Board
Susan Coleman, Hanford Advisory Board
Geoff Huntington, Office of Governor Tina Kotek

Oregon Department of Energy

Appendix A:

Letter from Oregon Governor Kotek to TPA Agencies, July 11, 2024



TINA KOTEK
GOVERNOR

July 11, 2024

The Honorable David Turk
Deputy Secretary
U.S. Department of Energy
1000 Independence Ave. SW
Washington, D.C. 20585

The Honorable Casey Sixkiller
Regional Administrator, Region 10
U.S. Environmental Protection Agency
1200 Sixth Avenue, Suite 155
Seattle, WA 98102

The Honorable Jay Inslee
Governor
State of Washington
PO Box 40002
Olympia, WA 98504

Dear Deputy Secretary Turk, Governor Inslee, and Regional Administrator Sixkiller:

I am writing today to both support and express concerns regarding what is known as the “Holistic Negotiations Agreement” (hereafter “Draft Agreement”) modifying the Hanford Nuclear Waste Site Tri-Party Agreement and Consent Decree. The scope and consequence of the Draft Agreement is one of the most anticipated and potentially significant risk reduction actions at the Hanford waste site in recent memory. That said, the ongoing process for receiving and accounting for input from the State of Oregon, Tribal governments, and the public on substantive issues relating to the solidification and transport of liquid tank waste is insufficient and risks undercutting support for the accelerated reduction of radioactive waste at the Hanford site that is in everyone’s interest.

After nearly four years of confidential negotiations between the U.S. Department of Energy, the U.S. Environmental Protection Agency, and the Washington Department of Ecology, the Draft Agreement has been released for review and comment by early September in anticipation of completing final terms in late fall. Terms of the Draft Agreement, however, appear to leave at least three critical issues open for future decision by the U.S. Department of Energy without assurance of further notice or comment by the general public, Tribes, or the State of Oregon. These issues are as follow:

1. Treatment of Waste Prior to Transport. Terms of the current Draft Agreement leave as an open question whether liquid tank waste will be solidified into a “cake” form prior to transport to a final disposal site in Texas or Utah, or if that solidification process will occur after transport. Our understanding is that the U.S. Department of

254 STATE CAPITOL, SALEM OR 97301-4047 (503) 378-3111 FAX (503) 378-8970

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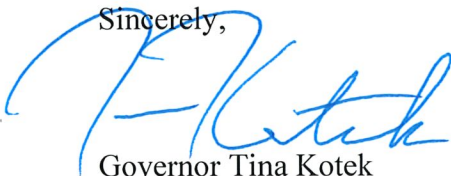
Deputy Secretary Turk, Governor Inslee, Administrator Sixkiller
July 11, 2024
Page 2

Energy will be studying this issue and reaching a determination later this year without any obligation for further input or concurrence. Oregon has significant concerns about the inherent risk of transport of liquid waste, and I encourage you to commit now to an open and transparent process while considering and making this critical decision for implementing the pending Draft Agreement without materially altering the contemplated timelines.

2. Means of Transport. While we understand that transport of waste from the Hanford site is a necessary component of any agreement aimed at accelerating disposal, the plan for transporting the waste is not specified in the current draft and is left as an open decision for the U.S. Department of Energy to make without any clear commitment for further consultation or public engagement. This is problematic regardless of whether the waste is being transported in solid or liquid form, as it necessarily requires transport by either truck or rail through populated corridors in both Washington and Oregon (and quite possibly through lands of sovereign tribal governments) over multiple years. While we agree with the approach of the Draft Agreement to provide time for further study and refinement of a transportation plan, there needs to be assurance of a public process on this important decision before proceeding.
3. NEPA. We need clarity on how the federal agencies intend to address NEPA requirements for assessing alternatives for transport of the waste to the final locations for disposal. Here again, while the Draft Agreement is addressing the essential goal of expediting disposal of waste on the Hanford site, a roadmap for incorporating input and consultation on important implementation decisions in the future is missing.

Again, I thank you for the important work that has been done to date, and I assure you that my staff and Oregon's Department of Energy are ready to partner with you to ensure communities of interest benefit from an open, transparent, and meaningful process to discuss the important substantive implementation decisions that the Draft Agreement anticipates. I look forward to future discussions.

Sincerely,



Governor Tina Kotek

Oregon Department of Energy

Appendix B:

US Department of Energy Reply to Governor Kotek's Letter, July 26, 2024



Department of Energy

Washington, DC 20585

July 26, 2024

The Honorable Tina Kotek
Governor of Oregon
254 State Capital
Salem, Oregon 97301

Dear Governor Kotek:

Thank you for sharing the State of Oregon's (Oregon) perspective on the Hanford holistic agreement and the transportation of treated tank waste for disposal out of the State of Washington (Washington). The Department of Energy (DOE) is committed to safe and effective cleanup of Hanford tank waste – a priority we share with Oregon. I appreciate Oregon's participation in recent public meetings held in Washington and Oregon as part of the 90-day public comment period on the holistic agreement. I also appreciated the opportunity to discuss your concerns personally on July 12, 2024, as I know Deputy Secretary Turk did as well.

As we discussed, DOE has not yet determined where the treated low-activity tank waste retrieved from the 22 tanks identified in the holistic agreement will be grouted (i.e., "alternative treatment" project). Further, the routes that will be used to safely transport the treated waste out of Washington to licensed disposal facilities have not yet been defined. We value your input and commit to public engagement as we conduct the necessary analyses and advance towards these future decisions.

The holistic agreement acknowledges DOE needs to complete applicable regulatory processes, such as those associated with the National Environmental Policy Act (NEPA). NEPA requires Federal agencies to assess the reasonably foreseeable environmental effects of proposed major Federal actions, prior to making decisions. The Department has initiated but not yet completed the development of a Supplement Analysis, which will be used to determine whether a supplemental or new Environmental Impact Statement should be prepared, pursuant to the Council on Environmental Quality and DOE NEPA regulations. The Department intends to complete this NEPA analysis and a business case analysis towards the end of the year. This will inform our path forward. We are available to provide you and your staff more information on our NEPA approach.

With respect to the immobilization of treated tank waste prior to transport, the DOE has not yet but intends to determine whether the treated tank waste associated with the proposed alternative treatment project will be grouted at a facility on the Hanford Site or off-site at a commercial facility. This determination will, in turn, inform future decisions about the facilities, infrastructure and mode of transport necessary to perform the separation, pretreatment, and/or treatment of the tank waste for off-site disposal. As previously stated, the specific details of how and where the waste will be transported for offsite disposal also have not been determined. Additionally, the proposed alternative

treatment project would not commence until at least the 2029 timeframe and will include public engagement. The current priority is to complete ongoing tank waste retrievals in the single shell tank farms A and AX through 2028.

With respect to the means of transport of treated waste, the Department has a long history of safely transporting radioactive materials, including significant quantities of liquid waste. The Department's NEPA analysis associated with these activities will include an analysis of transportation impacts from both normal transportation and accidents and will be made available to the public.

We encourage your staff to submit any additional comments and concerns through the ongoing holistic agreement public comment period (extended to September 1, 2024) so that they can also be considered in the decision-making process. Finally, DOE values public engagement and is committed to providing opportunities during this process. The Department appreciates Oregon's support for the overall agreement and understands your concerns. We want to continue to work with you to increase understanding of the holistic agreement and DOE's decision-making processes now and into the future.

I appreciate your leadership on behalf of Oregon and its citizens and look forward to continuing our discussions as we advance Hanford's tank waste treatment mission. If you have any questions, please contact me or Mr. Spencer Thibodeau, Deputy Assistant Secretary for Intergovernmental Affairs, Office of Congressional and Intergovernmental Affairs, at (202) 586-5450.

Sincerely,



Candice Trummell Robertson
Senior Advisor for Environmental Management

cc: Governor Jay Inslee, State of Washington
Casey Sixkiller, EPA Region 10

Appendix C: Oregon Department of Energy Technical Comments on the Holistic Agreement.

Technical comments from the Oregon Department of Energy are presented below and organized by section of the Holistic Agreement document for ease of response. The specific agreement section or milestone is listed as a heading, followed by the comment(s) associated with that topic.

Attachment A: Waste Treatment Plant (WTP) Construction and Startup

The Waste Treatment Plant (WTP) is slated for a "hot start" on 12/31/2033, with "Initial Start-up" aligning with System Plan 10¹ Baseline and Scenario 1A start dates. By 2036, the WTP is expected to vitrify High Level Waste (HLW) at a rate of 4.2 metric tons of glass (MTG) per day. However, revisions to the plan proposed in the agreement resulting from the holistic negotiations raise concerns. Operating the vitrification plant in a two melter configuration with a direct feed waste form will impact operational efficiency and waste processing capabilities, especially when additional pretreatment capabilities are added as an afterthought once the melters are full of high-level glass.²

Until the Tank Waste Characterization and Staging Facility (TWCS) is completed, there is no plan for removal of aluminum from the waste. This limitation will likely lead to a 10% increase in the quantity of high-level glass logs.³ Without the ability to pretreat the feed, it becomes more critical to select appropriate stock. With less suitable feedstock and more aluminum, there is more likelihood that the vitrification process will facilitate spinel crystal formation or generation of the mineral nepheline instead of more resilient glass.⁴ Because this increased likelihood will need to be actively managed there is a risk that the 70% Total Operating Efficiency (TOE) established in the Consent Decree will not be met until after the TWCS is completed.

Additionally, it is an open question as to whether the resultant waste form meets the acceptance criteria for the eventual national repository without additional pretreatment capability. There should be a publicly available plan that addresses whether such non-compliant glass will be re-introduced into the feedstock, or if it will remain on the Hanford site as an orphan waste.

Under the AoA⁵ there are three Alternatives that call for direct feed high level waste, Alternatives 15 through 17. In these alternatives, leaching aluminum is performed in double-shelled tanks (DSTs), the youngest of which is 38 years old, poses potential risks. The process involves adding sodium hydroxide and heating the solution, potentially causing thermal cycle strain on these aging tanks. To mitigate these risks and improve

¹ <https://pdw.hanford.gov/document/AR-27710/>

² <https://fortress.wa.gov/ecy/ezshare/NWP/HN/HN-Agreement-Proposed-TPA-CD-Changes.pdf> p.23

³ <https://pdw.hanford.gov/document/AR-27710/> p.xxvii

⁴ https://www.pnnl.gov/main/publications/external/technical_reports/PNNL-25835.pdf

efficiency, we recommend accelerating the construction of treatment facilities for better feedstock. This approach would lower the number of waste containers created, provide surety in meeting compliance criterion, and spare critical and aging tanks from thermal shock.

Attachment B and C: Reactivation of Cross-Site Transfer Lines and Build One Million Gallons of Storage in 200 West Area

The reactivation of cross-site transfer lines is crucial for efficient waste management at Hanford. These lines will be essential for moving tens of millions of gallons of existing supernatant and solubilized saltcake to vitrification facilities in the 200 East area. These cross-site transfer lines -line 3150 for liquid and line 3160 for sludge- are expected to be the only link between the 200W area and the WTP facilities. Even the future Waste Receiving Facilities for T-farm tanks, with the T-farm facilities will be linked via a new transfer line to the SY farm. Currently, all waste in 200W requiring treatment must utilize the cross-site transfer lines unless an alternative mode of transport is developed. Given the critical nature of these transfer lines and the potential for cost increases decisions, design, and construction must begin as soon as possible to meet the established deadlines.

We continue to support upgrades to the cross-site transfer lines as they have the potential to safely increase the utilization of available storage capacity. A missing piece of information to add context for comment on the various transfer lines that must be installed or updated is publicly available timelines for the construction of waste receiving facilities.

Given the critical nature of these transfer lines and the potential for cost increases decisions, design, and construction must begin as soon as possible to meet the established deadlines. Because the tank waste mission does not occur in entire isolation from cleanup activities elsewhere at Hanford, the planning and execution of these transfer line projects should be coordinated and optimized with other related and co-located initiatives, such as waste site remediation along the transfer line path and the construction of additional tank waste storage in the 200 West Area (as outlined in Attachment C). This integrated approach will ensure efficient use of resources and minimize potential conflicts, re-works, or delays in the overall waste management and cleanup strategy at Hanford.

Milestone M-042-03 3150 Supernatant Line

Line 3150, designated for supernatant transfer, is scheduled to be operational by 12/21/2030. As of 2017, the estimated cost for reactivation was \$35,189,633, with a projected timeline of 5 years.⁶ To meet the 2030 deadline, work must commence by the end of 2025. We note that due to the federal fiscal process, the soonest that this planning work can be funded is federal fiscal year 2027 (October 2026), with a corresponding budget

⁶ <https://pdw.hanford.gov/document/AR-26310>

request from the Hanford office in spring of 2025. The cross-site transfer lines do not currently appear on the sites' 5-year vision.⁷

Milestone M-042-04 3160 Slurry Line

The slurry/sludge line, 3160, presents a more significant challenge. This line has never been activated or used. A 2011 evaluation estimated the cost to bring the line into modern compliance at approximately \$10,000,000, with a 3-year completion time. The new milestone M-042-04 sets a due date of 12/31/2036 for this line, six years after the supernatant line. This timeframe appears reasonable, considering the 5-year project timeline of line 3150, for upgrading the existing line and making appropriate changes at the SY farm in anticipation of a new 1,000,000-gallon storage facility. Oregon supports these efforts, but would point out potential concerns with budgetary and workforce constraints to completing all these critical components in the allotted timeframe while still safely advancing the cleanup mission and recovering waste from tank farms. Indeed, the concern grows if additional tank capacity is needed before late 2040 expectation.

M-045-138 and M-045-139 re new 1,000,000 Gallon capacity in 200W

Accelerating the installation schedule for a new 1,000,000-gallon tank in the SY farm would have protective benefits to the mission, and it would enhance operations of the 200W waste treatment system. Milestone M-045-139 calls for an operational date of 9/30/2040 a mere three months before the 200W retrievals are scheduled for completion. The new tank will be used to support T-farm retrievals and the High-Level Waste (HLW) treatment mission. Under an accelerated schedule the new tank can support the low activity waste mission portion and be used as emergency space in case of SST or DST leaks.

Tank SY-103 is designated to receive waste from the 200W waste treatment system and must be processed before any other 200W tanks can be retrieved. With 323,000 gallons of supernatant and 410,000 gallons of saltcake⁸, there is not enough spare capacity in the SY farm to absorb this volume without evaporation. This forces the retrieved LAW into temporary storage if treatment facilities are not available. Already, TSCR had to reprocess waste due to contamination that was still present in the receiving tank after retrieval.⁹ There is significant potential that a similar situation arises in tank SY-103 requiring reprocessing of a liquid into a capacity limited system. Having a new tank eliminates the risk of contaminating treated LAW batches and lessens capacity restrictions. The extra capacity would enable 200W TSCR retrieval operations to start even if the transfer line or LAW treatment facilities are delayed. Without capacity to treat or store treated LAW all retrieved LAW would be shipped offsite in liquid form, which Oregon strongly opposes.

⁷ <https://www.hanford.gov/page.cfm/5-YearPlan2023-2028>

⁸ <https://pdw.hanford.gov/document/AR-30176>

⁹ <https://www.dnfsb.gov/sites/default/files/document/30026/Hanford%20Week%20Ending%20February%202%202024.pdf>

Attachments J and M: New TPA Milestones for SST Retrieval and LAW Treatment in 200 West Area

1. These two new sets of proposed milestones are intrinsically linked, as the retrieval of 22 Single Shell Tanks (SSTs) in the S, SX, and U Farms cannot proceed without corresponding treatment capacity in the vicinity. This interdependence underscores the need for a comprehensive approach to waste management in the 200 West Area.
2. Oregon has consistently advocated for disposal of Hanford waste outside the Northwest region, preferring conservatively engineered facilities underlain by favorable, protective geologies.¹⁰ We maintain that incorporating a pathway for offsite disposal of the grouted portion of the low activity tank waste may be a viable component to complete the overall Hanford tank waste mission. This approach would reduce the risk budget burden for the Hanford Central Plateau, particularly concerning key radionuclides like Tc-99 and I-129, and hazardous chemicals such as nitrate species and heavy metals.

Several key aspects remain unresolved and will be crucial in meeting milestone M-062-24 by 12/30/2024. As the information provided as part of the current comment period largely consisted of a plan to announce a plan, we look to the National Academies of Science Engineering and Medicine (NAS) study on Supplemental Treatment Approaches of Low-Activity Waste at Hanford to provide insights applicable to the treatment of 200W tanks.¹¹ The NAS study suggests that solid grouted forms are safer and more resilient for shipping. They offer natural self-shielding, improved safety, and consistency in volume and dimensions. The mixing with grout components dilutes the radioactive portion and fixes it while also reducing mobility and controlling other chemical hazards such as RCRA heavy metals and corrosivity. More materials can be shipped as Class A waste with low concentration of radioactive material and greater ease in meeting applicable regulations. In the event of an incident during transport, solid materials are more easily retrievable and less prone to cause catastrophic damage to human health and the environment.

While grouting increases the volume shipped, our analysis shows that it results in fewer overall rail transportation events, thereby reducing accident risks in the transportation corridor and simplifying logistics. Standardized shipping volumes would aid onsite administration and help delineate site needs for storage space. Moreover, on-site grouting would retain construction, staffing, and operation budgets in the local region and allow for DOE onsite management and oversight.

¹⁰ <https://www.oregon.gov/energy/safety-resiliency/Documents/2022-05-NAS-SLAW-Study-Oregon-Comments.pdf>

¹¹ <https://www.nationalacademies.org/documents/embed/link/LF2255DA3DD1C41C0A42D3BEF0989ACAECE3053A6A9B/file/DB760207C1E4245E165FB35070A0676193DF3E673310?noSaveAs=1>

Given these considerations, Oregon expects that if grouting is deemed an acceptable treatment for Low Activity Waste (LAW), that treatment will be performed on-site at Hanford and then shipped for final disposal off-site. We also expect further analysis of accident scenarios involving liquid shipments to better understand potential risks and cleanup costs, and to ensure that first responders along the transit route have the resources needed to respond to any incident.

3. A full supplemental Environmental Impact Statement (EIS) should be performed for the full grouting and offsite disposal transportation campaign. The impact of a comprehensive off-site transportation and disposal campaign has not been thoroughly assessed. The scale of potential grouting at 200W, tens of millions of gallons, far exceeds scenarios assessed in prior impact evaluations. The most recent submission to the Federal Register was AR-23306,¹² and the 2013 Record of Decision stated, “DOE has decided to implement Waste Management Alternative 2, which includes disposal of LLW [low-level radioactive waste] and MLLW [mixed low-level radioactive waste] at IDF [Integrated Disposal Facility]-East from tank treatment operations.” and ***“While the TC&WM EIS did not anticipate a large increase in the amount of secondary waste sent offsite for treatment and potential disposal, it did acknowledge that it could occur.”*** The above statements were made as justification for the lack of a supplemental EIS for at most 332 m³ of mixed low-level waste (LLW) offsite. Tens of millions of gallons of liquid would be well over 100,000 m³ grouted if as suggested by System Plan 10 approximately 71,000 m³ of LAW is generated by S, SX, SY, and U tank farm. This volume, if shipped, is more than two orders of magnitude higher than previously considered offsite shipping campaigns. Population densities and the standard of care for such evaluations including environmental justice assessments have also changed since the TC&WM EIS was completed. Because of the significant scope change, previously unassessed factors, and time elapsed since the last full EIS and NEPA evaluation, Oregon expects an updated assessment with full public participation and comment, including route-specific analysis of potential transportation options.
4. As is the case with Test Bed Initiative TBI treatment, the Direct-feed Low Activity Waste portion of the waste treatment plant has yet to produce materials using treated tank waste. During public meetings, DOE was confident that there will be sufficient mixed low-level waste in 200 east to ensure that DFLAW can continue to operate using tank waste, once started. However, glass scientists at Pacific Northwest National Laboratories have continued to improve glass formulations and efficiencies.¹³ The DFLAW melters have the potential to produce 15 metric tons of glass (MTG) per melter but are only expected to make 40% total operating efficiency (TOE) or about one full waste container of glass per melter per day. If DFLAW performs at its least efficiency, Oregon’s calculations show that DOE will have exactly enough feed to operate in 200E until 2040. Any improvement to efficiency realized through post-startup operation would result in a potential lack of

¹² <https://pdw.hanford.gov/document/AR-23306>

¹³ https://www.pnnl.gov/main/publications/external/technical_reports/PNNL-30932Rev1.pdf

feedstock. If this occurs, DOE may find itself in the position where there is insufficient feed waste to support DFLAW operations. Instead, 200W tank waste is directed to make grout for offsite disposal with no intention of having a way to transport treated low level waste liquids to serve as feed for DFLAW until 2031 at the earliest. To be clear, while Oregon supports disposal of tank waste off site in grouted form, it is more important to ensure that the DFLAW facility which the nation invested in is operated to the fullest possible measure that it can within safety standards. Rather than restricting DFLAW operation, fully utilizing the facility and adopting modeling updates would feed the virtuous circle and demonstrate efficient use of federal funds. Completion of upgrades to the cross-site supernatant transfer line should include the option to reach DFLAW feed tanks. Improving DFLAW operations and integration with the 200W mission would also serve a role in reducing the technetium-99 and iodine-129 risk budget on the site, as DFLAW condensate enriched in those isotopes can be incorporated into the grout that is transported off-site.

Milestone M-062-24-04 Selection of facilities to support 200W LAW disposal

Oregon is confused by the timing of the Test Bed Initiative, compared to the date in the Holistic Agreement for deciding on where to treat Hanford tank waste. The Test Bed Initiative process has not even begun physical operations, let alone test and ship the treated supernatant. Washington Ecology issued a permit that expires in 2025¹⁴ with the assumption that TBI will start in the middle of calendar year 2025 and the test data available by the end of 2025 or early 2026. And yet, Milestone M-062-24-04 calls for a date of 12/31/2024 to; “Make alternative selection for facilities and infrastructure needed to perform separation, pretreatment, and/or treatment, and mode of transport, for off-site disposal of low-activity waste (LAW) from 200 West Area Single Shell Tanks (SST) and apprise Ecology of that selection.” In the absence of any TBI data making this selection so soon means it will not be supported by the most up to date site-specific data. The date for M-062-24-04 should be moved back a minimum of one year for this reason alone.

Milestone M-045-135 Complete retrieval of 22 SST in S, SX, and U

The timeline for treating 22 tanks in 200W by 2040 appears optimistic, as several issues could cause serious delays. These include the limited capacity of the as yet undesigned 200W treatment system, the need for additional storage capacity, limited available capacity in the SY farm, and potential regulatory hurdles. It's crucial that these challenges are addressed proactively to ensure the successful implementation of the new milestones for 200W tank retrieval and treatment.

Several regulatory and administrative hurdles must be addressed. Each tank has a unique chemistry and the process for determining how many Waste Incidental to Reprocessing (WIR) determinations will be required has not been established. The dissolution of saltcake for retrieval further complicates characterization and tank chemistry. These varying chemistries will necessitate additional EPA variances, requiring more time for analysis and

¹⁴ <https://fortress.wa.gov/ecy/nwp/permitting/TBI.2024.1F/Start.html>

public input to ensure compliant off-site disposal. We advocate for one EPA variance for every tank or group of tanks covered by a WIR determination. This is critical for confirmation that each load meets safety requirements for shipping, public transparency, disposal requirements, and associated waste acceptance criteria.

Attachment I: Establish New TPA Milestones for Retrieval Technology Work Plan and Implementation

1. The current formulation of these milestones suggests that the technology evaluation may cease once this milestone is met. To address this, we recommend developing a longer-term committee or program to ensure continual technological assessment. The proposal for DOE and Ecology to meet periodically (at least every six months) throughout the evaluation and development process is a good start, but this collaborative effort should be extended beyond the initial milestone completion. This encourages longer term innovation and technology development which has the potential to extend beyond Hanford and provide benefit elsewhere in the nation. Opening the process earlier to all stakeholders would assist DOE in fulfilling their own stated conclusion; "... the Office of EM's adaptive management framework can provide ongoing opportunities for stakeholders to engage in risk-reduction decisions regarding tank treatment R&D prioritization. This iterative process is vital for affected local governments, regulators, tribal representatives, and the public to convey their views and engage DOE as the agency pursues a sustainable and effective R&D Roadmap."¹⁵

Continuing these periodic meetings and inviting experts from Federally Funded Research Development Centers, academia, and private industry for "State of Science" discussions would help ensure the best available technology is employed throughout the cleanup process. Including some of the most difficult tank waste problems into a DOE challenge grant concept could expand the number and experience base of those interested in providing innovative solutions. This long-term technology review component would benefit additional milestones as well, such as the retrieval of Tanks A-104 and A-105, scheduled for completion by the end of 2040.

2. Technologies developed for problematic tank retrievals should also be evaluated for their potential application in future tank waste recovery efforts, even when those recoveries are being conducted in non-problematic tanks. Minimizing the waste remaining in tanks when declared closed is a critical aspect of any closure plan. According to Washington Administrative Code (WAC) 173-303-610¹⁶, closures must minimize the need for further maintenance and controls and minimize or eliminate human or environmental exposures to contaminants. Fully retrieving tanks before closure is the best method to meet relevant Washington Ecology and EPA requirements.

¹⁵ <https://www.energy.gov/sites/default/files/2023-07/EMAB-Hanford-Tank-Waste-Roadmap-2023-07-10.pdf>

¹⁶ <https://apps.leg.wa.gov/WAC/default.aspx?cite=173-303-610>

It is worth noting that in the 22 tanks declared retrieved, mostly from AX and C farms, there is still an estimated 100,000 gallons of waste left behind.¹⁷ Until the WMA-C WIR determination is completed, all 100,000 gallons of that waste is managed as high-level waste. This underscores the importance of continued technological development and assessment, and the importance of the TPA agencies in refining the definition of a complete recovery.

3. Considering Attachment F, which establishes new TPA milestones for the closure of various Single-Shell Tank Waste Management Areas (WMAs), it's noteworthy that DOE anticipates using landfill closures for tank farms, following completion of WIR evaluations. The expectation is that once tanks are declared retrieved and a WIR is completed, remaining waste will be landfilled place, with the contaminant load accounted for through other controls such as filling the tank with grout, impermeable caps and/or pump and treat systems. The non-radioactive components of such a landfill would be subject to permitting by the WA Department of Ecology. Additional public dialog is warranted to ensure that landfill closure meets applicable regulatory and legal requirements.

In conclusion, we recommend establishing a long-term, ongoing process for technology evaluation and development. This approach would ensure that the Hanford cleanup effort continues to benefit from the latest advancements in retrieval and treatment technologies, potentially leading to more complete waste removal and safer, more efficient closure options, minimizing the amount of contamination left in unlined landfills on the central plateau.

Milestone M-045-136 and 137 Retrieval Technology Workplan and written technology evaluation development

The inclusion of technological innovation and testing as a milestone is a commendable development in the Hanford cleanup effort. Oregon has long advocated for research into dry mining of tank waste to allow for maximum recovery from non-competent tanks. Of note is the upcoming deadline of 3/30/2025 to submit a work plan for constituting an expert panel on tank retrieval technologies. While the only method explicitly mentioned is salt-well pumping - a previously used and highly rated retrieval technology¹⁸ when there are recoverable liquids present -, it would be beneficial to also include updates on other potential techniques.

Specifically, there is interest in the status of potential dry-mining or other methods that do not require the addition of water into leaking tanks. Such innovative approaches could significantly improve retrieval timelines, especially for tanks of questionable integrity. The continuous technological innovation driven by DOE laboratories¹⁹ means that many technologies are improving, and methods previously deemed ineffective may become viable options. At a minimum dry-mining should be included in Milestone M-045-136 and

¹⁷ <https://pdw.hanford.gov/document/AR-30176>

¹⁸ <https://pdw.hanford.gov/document/AR-04419>

¹⁹ <https://www.energy.gov/em/hanford-tank-waste-research-and-development>

137. The use of dry mining to accelerate the Hanford Tank Waste Mission has been published previously, with techniques that could be useful on site.²⁰ As both salt-well pumping and dry-mining have a preexisting knowledge base the limitations of “at least 2 new, or refined, existing retrieval technologies” is restrictive. We believe a change in the milestone to “at least 2 new, or refined, existing retrieval technologies in addition to salt-well pumping and dry-mining” would provide assurance of a broad and inclusive technology review.

²⁰ <https://www.energy.gov/em/rd-roadmap-hanford-tank-waste-mission-acceleration>