



# Oregon

Kate Brown, Governor



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September 3, 2021

Glyn Trenchard  
Assistant Manager for Safety and Environment  
US Department of Energy, Richland Operations Office

Sent via email: [Glyn.Trenchard@rl.gov](mailto:Glyn.Trenchard@rl.gov); [TBI-EA@rl.gov](mailto:TBI-EA@rl.gov)

Dear Glyn Trenchard,

We appreciate this opportunity to provide agency comments on the Environmental Assessment for the Hanford Test Bed Initiative Phase 2 proposed action. The Phase 1 action in 2017 represented the first time the Department of Energy had successfully treated and disposed of three gallons of Hanford tank waste in an offsite disposal facility in a cementitious solidified form. Phase 2 proposes to increase the project to an engineering-scale demonstration and continue to test the legal, policy, and technical aspects of the concept. A future Phase 3 action would grow the concept even further, attempting to prove the viability of production-scale tank waste processing for offsite grout disposal.

Oregon has not previously issued public statements regarding the Test Bed Initiative. However, Oregon has been heavily involved in the ongoing National Academy of Sciences study looking at Supplemental Low Activity Waste treatment options, of which offsite disposal similar to the Test Bed Initiative is one potentially promising alternative. Oregon and other states along the transport routes also have a role to play in logistical support of safe transportation for off-site disposal.

Low activity tank waste still contains some of the more difficult to manage long-lived radionuclides, and disposing of that waste out of the region, away from the Columbia River, is an idea to which few in the Pacific Northwest would object. We also recognize and appreciate the Department of Energy's position that disposal of low activity waste in a grouted form could help to make the big picture tank waste treatment mission more feasible given the site's funding constraints. However, it is important to note that the TBI proposal is occurring within a larger context of how Hanford's many different types of presumed high-level waste may be credibly and legally classified as legal for disposal in a shallow environment. We still see this as an unsettled issue that needs to be resolved between USDOE and its partners and stakeholders in the cleanup mission – including Oregon. We also believe there to be multiple risks and uncertainties to manage before making long-term policy decisions and steering investments towards a plan that would assume large-scale offsite disposal of grouted Hanford tank waste.

Oregon Department of Energy

The Test Bed Initiative could lead to an important approach in the larger mission, and we cautiously support DOE's efforts to prove out the technologies, logistics, and acceptability of the approach – provided that all applicable regulatory agencies approve the proposal. We look forward to talking with DOE and others about how to fit TBI within the bigger picture of Hanford waste treatment and disposal.

As a matter of process, Oregon would have preferred that DOE solicit public comments on the Environmental Assessment, and that the comment period be extended for at least 30 days. While we understand that DOE is planning to open a future public comment opportunity specifically on the TBI Waste Incidental to Reprocessing (WIR) evaluation, the NEPA process and the EA document itself are likely to be more familiar and accessible to the general public than the WIR. The TBI project is an important initiative for the residents of Oregon, and also the residents along the transportation corridor and presumably near the proposed disposal locations in Texas or Utah. As a matter of transparency and openness in government decision-making, Oregon supports allowing the public a sufficient opportunity to provide meaningful input to DOE. In the absence of a public comment opportunity on the EA, DOE should consider a strong information campaign related to the public comment opportunity on the WIR, such as public meetings and an easy to navigate website, to allow the public to be educated on the project, process and the WIR document so that they may better be able to understand and comment appropriately and effectively.

Our technical accuracy and completeness comments follow. If you have any questions or would like to further discuss the content of this letter, please contact Jeff Burrigh, ODOE Radioactive Waste Remediation Specialist: [jeff.burrigh@energy.oregon.gov](mailto:jeff.burrigh@energy.oregon.gov) or 503-856-2597.

Sincerely,



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Cc:

David Bowen and John Price, Washington Department of Ecology  
Dave Einan, U.S. Environmental Protection Agency  
Matt Johnson, Confederated Tribes of the Umatilla Indian Reservation  
Jack Bell, Nez Perce Tribe  
Laurene Contreras and McClure Tosch, Yakama Nation  
Stephen Wiegman, Hanford Advisory Board  
Oregon Hanford Cleanup Board

## Oregon Department of Energy Technical Accuracy and Completeness Comments

- NEPA vs DOE Order 435.1 comment response requirements. The EA states that a separate public process will be followed for the Waste Incidental to Reprocessing evaluation associated with the TBI project, and that this process will include a comment opportunity for all stakeholders and the general public. Please provide additional information for this public involvement process, including the planned duration of the comment period and whether there will be any public informational meetings associated with the WIR evaluation. Public stakeholders are likely to be understandably concerned by the lack of a review and comment opportunity on this EA, and this in turn risks undermining public trust in DOE. Documenting additional information and commitments in the NEPA documentation may help to mitigate this risk.
- What the proposed action fails to consider is, to us, one of the greatest risks - that in testing the legal and technical aspects of the Test Bed Initiative, DOE fails to convince its regulators, its stakeholders, and the public that it has performed a sufficient amount of treatment to turn high-level waste into low-level waste. The purpose and need of this action hinges on the hope that technetium-99 and iodine-129, the two key long-lived mobile radionuclides in Tank SY-101, must either not be present in the liquid, which our review of the Best Basis Inventory for that tank would suggest is unlikely,<sup>1</sup> or be deemed impractical or unnecessary to remove. Assuming then that these key radionuclides will be present in the liquid extracted from the tank, the proposed action must then rely on a hope that the WIR process determines that they were removed to the maximum extent practical despite no action being taken or seemingly considered to remove them. Finally, this action relies on an assumption that the waste will be able to go to an off-site landfill that has high enough limits for those two radionuclides in its Waste Acceptance Criteria. If this “Test Bed” fails, or if stakeholders successfully argue that DOE has not appropriately classified this waste as non-HLW suitable for a shallow land disposal facility, what effect has occurred as a result of the proposed action? Will the solidified tank waste be destined for a deep geologic repository that does not yet exist and may not accept a grouted waste form? Will it be left at Hanford as another orphan waste? The EA should consider these risks, evaluate their potential effects under NEPA, and perform such mitigating measures as are necessary to minimize the potential effects.
- The Purpose and Need section of the EA does not adequately explain why an in-tank pretreatment system form factor is the preferred method for the “front end” of the TBI Phase 2 demonstration. Please explain why other reasonable alternatives were not considered for providing pretreated liquid feed for grout treatment, such as the existing Tank Side Cesium Removal system. Are there trade-offs from a worker risk, cost, or waste management standpoint associated with the use of a novel in-tank system instead of a pre-existing TSCR system that has the capacity and capability to provide 2,000 gallons of feed for offsite treatment?
  - Relevant reference from the DOE Citizen’s Guide to NEPA: “The purpose and need statement explains to the reader why an agency action is necessary, and serves as the basis for identifying the reasonable alternatives that meet the purpose and need. . . The

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<sup>1</sup> From phoenix.pnnl.gov, the Best Basis Inventory for SY-101 estimates 63.3 Ci of Tc-99 are present in 2.8 million liters of upper layer supernatant, which equates to 2.2E-5 Curies or 22 million picoCuries per liter. The iodine-129 concentration in the upper layer supernatant is estimated to be 24,000 picoCuries per liter.

identification and evaluation of alternative ways of meeting the purpose and need of the proposed action is the heart of the NEPA analysis. The lead agency or agencies must, 'objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated.'" ([https://ceq.doe.gov/docs/get-involved/Citizens\\_Guide\\_Dec07.pdf](https://ceq.doe.gov/docs/get-involved/Citizens_Guide_Dec07.pdf))

- Please provide greater specificity regarding the expected source term in the Tank SY-101 extracted liquid, including expected concentrations of all radionuclides and non-radiological hazardous constituents. What fraction of the estimated 1.8 curies remaining in the pretreated will be long-lived, mobile radionuclides? The presence of certain constituents would affect the environmental analysis in myriad ways, as discussed below.
- Please specify how much flush water is expected to be added to Tank SY-101 during the Proposed Action. Please also describe how the Proposed Action would or would not affect the amount of space available in this tank.
- Please explain in greater detail how potential organic and non-radionuclide hazardous constituents in the extracted tank waste would be treated prior to disposal. Page 2-3 of the EA states in reference to the 2,000 gallons of tank liquid, "There would also be hazardous constituents in the decontaminated solution such as heavy metals and organics." The only treatment specified is grouting for immobilization of radionuclides. No treatment method for organics is specified in any alternative, yet page 2-4 states, "Treatment and stabilization of the liquid MLLW using an in-container mixer [will] form a waste that meets the RCRA LDR requirements and waste acceptance criteria of the permitted disposal facility operated by either WCS or EnergySolutions." The recent National Academy of Sciences study on Hanford Supplemental Low Activity Waste has made it clear that treatment of organics is in many cases a necessary precursor to grouting in order to meet RCRA land disposal restrictions, especially if organics are to be expected as described in the EA. We are concerned that this represents an incomplete analysis in the EA and likely an incomplete description of the alternatives. It would also fail to meet the Purpose and Need for Agency Action to verify the attainment of Waste Acceptance Criteria for an offsite commercial disposal facility and to establish that all activities will protect human health and the environment.
- Appendix A of the EA presents a transportation risk evaluation that focuses exclusively on radiological constituents in the waste. Given that hazardous constituents are reportedly expected to be in the waste liquid, please revise the transportation effects analysis to reflect the actual waste form to be transported under each alternative scenario. This assessment should also include the potential human health and environmental risks associated with a liquid spill in the event of an accident and the subsequent cost of a remediation action.
- Please provide additional evaluation of potential seasonal variability in transportation risk as it relates to the anticipated shipping schedule, such as winter weather, and how DOE will plan for transportation shipments. Please also provide information related to the proposed shipping routes and potential schedules, with an expectation that the routes and schedules will be shared with the appropriate state agencies responsible for transportation safety planning. As is well-known, the I-84 transportation corridor in northeast Oregon between Umatilla and Union Counties can be particularly dangerous in winter and the freeway is occasionally shutdown due

to snow, ice, and dense fog. Oregon would prefer to see solidified waste, not liquid, transported through our state.

- The EA does not specify a final disposition pathway for the ion exchange column to be used in the TBI demonstration or the potential infrastructure and equipment that could be necessary to extract the highly-radioactive spent ion exchange resin from its container for ultimate dispositioning. Please provide greater detail regarding the potential future effects of creating a single, uniquely contained waste form and how its management would be distinct from that for the ion exchange columns planned to be generated during operation of the TSCR system.
- Page 2-3 of the EA states, “The proposed TBI Demonstration would use non-elutable IX media that permanently bind the cesium to the IX media [emphasis added].” The assertion of permanence in this sentence is an unsupported statement. A similar statement is made on page 3-20. Please support, revise, or delete.
- Page 2-3 appears to indicate that a single sample would be analyzed for all six totes of extracted liquid waste. What is the basis for selecting the number of samples to be representative of the waste stream, and how does this relate to the waste verification requirements of the receiving facilities? Please provide additional detail.
- Page 3-10 states, “Because there would be no measurable radiological emissions or effluents at PFNW, and no direct radiation dose off site, there would be no additional doses to the public [emphasis added].” The assertion of no measurable radiological emissions is an unsupported statement. Please support, revise, or delete.
- The EA does not discuss the final dispositioning of the solids filter that is integrated in the ITPS arm. The final loading of Cesium-137-laden IX material fines onto the filter is uncertain. Similarly, it is unlikely, yet unknown, to what degree the filter might become laden by solids containing radionuclides of interest for long-term risk. In order to facilitate classification of this waste source and to demonstrate that the filter meets the WAC of a receiving disposal facility, it will be necessary to accurately estimate the concentration of radionuclides entrained on the filter. Please discuss the potential human health or environmental effects associated with the proper characterization and disposal of this waste term, including how this waste verification process will be conducted safely and adequately for legal disposal.
- The schedule and duration of the proposed action is unclear based on the descriptions in the EA. Page 2-3 states that the operation is expected to take about nine days, but page 3-21 describes a period of three to four weeks to air dry the ITPS IX column following completion of pumping. The time required for mobilization and demobilization also appear to not be reflected. Please clarify and provide a complete accounting of the expected duration of activities on site.
- The EA does not describe the process, requirements, or potential human health or environmental effects associated with the decommissioning of the ITPS, including safe extraction of the ion exchange cartridge from the ITPS arm. We note that a public presentation displays images of a shielded ground-level structure and tool intended for this purpose, but it is not described or discussed in the EA.<sup>2</sup>

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<sup>2</sup> <https://doeresearch.fiu.edu/Reports/FIU%20Research%20Review%20-%20Project%204%20-%20DOE%20Fellow%20Jason%20Soto.pdf>

- Please include in the description of alternatives the process and equipment associated with safe removal of the CST IX cartridge from the ITPS arm and other ITPS decommissioning activities.
  - Please include in the description of alternatives the process for extracting the ITPS solids filter should it be necessary to accomplish in order to meet waste acceptance criteria for ultimate disposal of the ITPS arm.
- The EA asserts that average dose to a worker supporting the DOE-ORP mission is 0.7 mrem/week, but it does not state whether this average includes workers who are not actively operating within the tank farms (e.g., working in an office). Please confirm whether the dose projection accounts for at-tank worker activities and revise the comparison to the Proposed Action as appropriate, and please also include a minimum and maximum dose, as appropriate.
- The EA further asserts that the average DOE-ORP dose is applicable to the Proposed Action because it is similar to existing ORP operations. The removal of the IX cartridge from the ITPS arm appears to be distinct from “normal tank farm operations” used as the basis for estimating the worker dose associated with the TBI project. It also represents a novel at-tank activity not addressed in the TCWMEIS or the DFLAW Supplement Analysis. Please revise the dose assessment in the EA to acknowledge the novel challenges and requirements associated with ITPS decommissioning, including removal of the IX cartridge and potential removal of the integrated ITPS solids filter, should it require removal for additional treatment and disposal.
- The Hanford Site map provided in Figure 1-1 is old and poor quality. Please replace with a more current higher quality figure.
- Please provide estimates of the greenhouse gas emission tradeoffs associated with each alternative, including the no action alternative and the carbon footprint of the grouting process.
- Please clarify how the long-term impacts of offsite disposal are addressed by NEPA documents for the two proposed disposal facilities. If no NEPA documentation exists for these facilities, please explain how the full impacts of this proposed action are covered by a NEPA analysis.