



Oregon

Kate Brown, Governor



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August 21, 2020

Mark French
U.S. Department of Energy
Richland Operations Office
P.O. Box 550
Richland, WA 99352

Dear Mr. French,

We appreciate the on-going opportunity to review Hanford cleanup documents that are under development so that we can provide comments at an early stage of the process. This provides the U.S. Department of Energy and its regulators an early "check" on how these documents may be received by the broader audience in their current state.

In reviewing Draft B of the 100-K Feasibility study (DOE/RL-2018-22), we were struck by the absence of an alternative that considers removal of all soil contamination that could potentially pose a threat to a future resident or the Columbia River. Institutional controls (IC) for 16 waste sites are a component of all seven of the alternatives evaluated. The default action for waste sites should be Remove, Treat, Dispose (RTD), especially in the River Corridor Operable Units. Even where RTD is not determined to be a preferred alternative, it should be considered and presented as an option.

The rationale given for not including a complete RTD alternative seems to be that the presence of the reactor buildings precludes removal of contaminated soil at some sites. However, during the expected duration of the proposed ICs, the reactor buildings may be dismantled and removed, rendering the soils accessible. Evaluation of an additional alternative of deferred excavation should be included in the Feasibility Study. Alternatively, the 1993 Record of Decision for the reactor buildings could be amended to include RTD of those waste sites which cannot be excavated due to proximity to the structures, and the proposed ICs listed as an interim action.

Of the seven alternatives presented, we have the least objections with Alternative 5, so long as we add a clarification and a caveat. We agree with the NRC that "institutional controls may not be relied upon for more than 100 years" (10 CFR 61 requirements for land disposal of radionuclides). This option as written has ICs of 108 and 165 years from 2020. DOE should either clarify when they are proposing to implement the IC, or additional effort should be made to remediate the waste sites with longer IC duration. We do view the 100-K Strontium-90 plume to be a good candidate for a technical impracticability waiver, as long as periodic monitoring throughout the lifetime of the plume demonstrates that the plume is stable or decreasing and is not at risk of intersecting the river or any other receptor.

We appreciate the progress being made towards finalizing the cleanup decisions for the River Corridor. It is important that along with a "No Action" option, there is an "All Action" case, so the full range of alternatives can be assessed. Additional comments specific to the information presented on Table 2-8 follow. If you have any questions, please contact Tom Sicilia of my staff at tom.sicilia@oregon.gov.

Sincerely,



Ken Niles
Assistant Director for Nuclear Safety

Cc: Alex Smith, 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, Yakama Nation
Susan Leckband, Hanford Advisory Board
Oregon Hanford Cleanup Board

Comments on Table 2-8

- The reactors (118-KE-1, 118-KW-1) should not be listed as “Not Accepted, Rejected, Consolidated, or Closed Out.” Perhaps a footnote to the table is needed to clarify.
- Waste site 100-K-42 is listed as no further action because of, “site specific considerations.” There does not appear to be any further discussion as to what those considerations were.
- 100-K-53 also overlays the 116-KE-1 waste site (<https://pdw.hanford.gov/document/1210151520>), and should be noted as such.
- 100-K-55:1 is listed as needing an institutional control to prevent deep excavation on the waste site reclassification form (<https://pdw.hanford.gov/document/DA01240104>). What is the rationale for the change?
- The waste site reclassification forms for 100-K-3 and 100-K-36 do not indicate that any Institutional control is needed. DOE/RL-2012-46, REV. 0 states that “ Waste site 100-K-3 will not require institutional controls.” Contrary to this documentation, Table 2-8 instead lists these sites as requiring a deep IC. What is the rationale for adding an IC? If there are subsections of these waste sites that require ICs, consider adding a “:2”.
- Waste site reclassification forms and verification reports indicate that RTD actions at 100-K-24, 100-K-27, 100-K-35, and 100-K-101 were completed prior to 2017. Is additional work planned, or should these be in the “closed out sites” cell?



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August 18, 2020

Dave Einan
U.S. Environmental Protection Agency
Federal Building
825 Jadwin Ave, Suite 210
Richland, WA 99352

Dear Mr. Einan,

As a member of the Hanford Natural Resource Trustee Council, the Oregon Department of Energy (ODOE) is engaged with other members of the Council to ensure that a thorough assessment is conducted to fully quantify past releases of contaminants at Hanford. We seek your help in discovering whether this contaminant inventory may include per- and poly-fluoroalkyl substances (PFAS).

As you probably know, PFAS is a large group of chemicals used at processing facilities since the 1940s and at airports and military installations in firefighting foams since the 1970s. Long-chain PFAS are extremely persistent in both the environment and in living organisms and are highly toxic. The terminology for this family of chemicals has evolved. The current accepted acronym is PFAS, but references to "perfluorinated compounds" or PFC's remain in older literature and fact sheets.

In checking Washington's Environmental Dashboard Application, it appears the U.S. Department of Energy (DOE) has not yet tested for PFOA, PFOS or other long-chain PFAS at Hanford. Discussions with Ecology staff lead us to believe DOE has not considered long-chain PFAS as potential contaminants at Hanford Site.

Based on the activities and history at Hanford, PFAS applications and disposal into the environment seem likely. Hanford had at least one airport and several military areas with military disposal sites. The report *Fire Protection in Caves, Canyons and Hot Cells* (1972) by H. A. Lee discusses the testing of "high expansion, low expansion and aqueous film-forming foams" (AFFF) for fire extinguishing plans at labs and processing plants at Hanford. Lee notes that several kinds of AFFF (a form of PFAS) were found to be especially effective on organic solvent fires and could be easily included in existing systems of at least two of Hanford's processing plants.

The *U.S. Department of Energy Summary of Annual Site Environmental Reports* (published September 2019) lists several DOE CERCLA sites that screened for PFAS: Colorado's Rocky Flats initiated screening in site groundwater and surface water; Ohio's Fernald Preserve found PFAS are "not a widespread issue" (implying it may be a small-scale issue); and at Ohio's Mound Site DOE submitted a phase I assessment report in which areas were identified that required sampling as part of phase II. It is unclear if any similar type of sampling, screening, or testing has occurred at the Hanford site.

We encourage EPA to work with DOE to investigate possible PFAS releases at the Hanford Site. Please contact Sara Lovtang of my staff at 971-718-2030 to follow up on this request.

Thank you for your consideration.

Sincerely,

A handwritten signature in black ink, appearing to read "Ken Niles". The signature is fluid and cursive, with the first name "Ken" being more prominent than the last name "Niles".

Ken Niles
Assistant Director for Nuclear Safety

Cc: Alex Smith, Washington Department of Ecology
Joe Franco, U.S. Department of Energy
Matthew Johnson, Confederated Tribes of the Umatilla Indian Reservation
Naomi Stacy, Confederated Tribes of the Umatilla Indian Reservation
McClure Tosch, Yakama Nation
Laurene Contreras, Yakama Nation
Jack Bell, Nez Perce Tribe



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August 13, 2020

Submitted via Email to BPlantEECA@rl.gov

William F. Hamel,
Assistant Manager for the River and Plateau
U.S. Department of Energy
Richland Operations Office
P.O. Box 550
Richland, WA 99352

Dear Mr. Hamel,

Oregon understands and appreciates the desire and value in continuing to shrink the footprint of aging structures at Hanford. In our July 2019 letter¹, we supported the Non-time Critical Removal Action (NTCRA) for the PUREX facility. In the current case of the B Plant proposed NTCRA, we similarly agree that completing the paperwork authorizing anticipated risk reduction is proactive and will allow for work to be conducted as soon as funding is available. However, there are some concerning details about the particular actions described in the recently published Engineering Evaluation/Cost Analysis (EE/CA) for the B Plant NTCRA (DOE-RL-2016-14). Below we provide comments on the EE/CA.

We also believe it is time for an open discussion about where, how, and when wastes are planned to be immobilized in place on the Central Plateau, as well as plans for their final disposition. We would like to better understand how these decisions are made and understand as well the overall strategy moving forward.

Demolition Timing and Disposal Considerations

With the proposed action in this EE/CA, Deactivation, Decontamination, Demolition, and Disposal (D4) activities at B Plant would apparently be conducted sometime between fiscal year 2022 and 2032. The Remedial Investigation/Feasibility Study (RI/FS) to support the final Record of Decision (ROD) for the canyon has a 2026 milestone (M-15-00). There is therefore a high potential that contemporaneous D4 activities could make the sampling necessary to complete the RI/FS more difficult as staging and exclusion areas may restrict the locations which drilling equipment can access. We recommend that DOE consider the need to access potential future soil sampling sites when determining where to establish operations and support areas for the D4 activities.

In addition to these potential impedances to sampling, EPA and Ecology recently have raised concerns about a lack of contaminated soil to mix with demolition debris in ERDF², leading to clean soil

¹ Oregon Comments on PUREX NTCRA, Niles, July 17, 2019

² October 2019 Hanford Advisory Board (HAB) Committee of the Whole, June 2020 Virtual HAB Meeting

unnecessarily taking up limited disposal space. The NTCRA demolition work at REDOX, PUREX, and B-Plant should be conducted in coordination with soil remediation elsewhere at the site to ensure that ERDF space is used efficiently.

Waste Classification

The preferred action in the EE/CA proposes to grout the 291-B system in place, including six vaults containing loaded HEPA filters. B Plant was a critical piece of the spent fuel reprocessing effort that comprised the production mission. The plant eventually served as what could be considered a precursor waste treatment plant, removing cesium and strontium from tank waste and creating the capsules now stored in WESF. During the production mission and subsequent tank waste reprocessing, the HEPA filters located in the 291-B system vaults effectively captured a substantial amount of highly radioactive radionuclides. The 291-B system vaults are estimated to contain more than 135,000 curies of cesium and strontium, representing more than 50 percent of the total radioactivity remaining in the B-canyon complex.³ In the late 1990s when the plant was decommissioned, Oregon⁴, the DNFSB⁵, and others voiced concern about the high levels of radiation in the plant HEPA filters and the potential for their degradation. In order to reduce the risk of contamination spread, DOE installed interim physical barriers to isolate the filters within the 291-B System vaults until a final decision could be made.

The EE/CA in its current state does not provide sufficient rationale to determine that grouting the system vaults would not make future removal of the HEPA filters technically and economically impractical. The NCP (40 CFR 300.430) specifies that interim actions should not be inconsistent with or preclude implementation of the expected final remedy for an Operable Unit. A DOE CERCLA Information Brief on the use of CERCLA for decommissioning activities at Federal Facilities further states that, "DOE needs to coordinate removal actions with EPA and state authorities to ensure that removal actions are consistent with and will not preclude final actions." The EE/CA's only evaluation of this criterion relative to a future final action is anemic at best, stating that the preferred alternative will, "support future remedial decisions and characterization activities at the B Plant Complex." These "future remedial decisions" are not identified in the EE/CA, nor is there any technical or economic analysis to support the implied assertion that the HEPA vaults will be technically and economically practical to exhume after they have been entombed in grout.

The radiological material in the HEPA filters comprises key radionuclides that resulted directly from the reprocessing of spent nuclear fuel. As such, in accordance with the Nuclear Waste Policy Act, we see the need for DOE to undergo a formal process to determine whether they constitute high-level radioactive waste before any action is taken that could complicate future classification and/or disposal. The HEPA filters at B Plant captured cesium-137 and strontium-90 from a tank waste stream, so they may be appropriately compared to the Tank Side Cesium Removal ion exchange columns, the difference being that they removed key radionuclides from air instead of supernate. The TSCR columns have not been classified and are acknowledged to have no current path for disposal. It is our position that there needs to be consistency between the disposal paths and interim handling of these two waste streams. Even if

³ <https://pdw.hanford.gov/document/AR-03957>

⁴ <https://pdw.hanford.gov/document/0064688H>

⁵ <https://ehss.energy.gov/deprep/1996-2/dm96a15a.pdf>

the HEPA filters are not classified as high-level waste, the reported concentrations of cesium and strontium contained in them would seem to make them Greater Than Class C waste by the NRC's standards in 10 CFR 61.55. It follows that the grouted facility would potentially become a de facto shallow GTCC storage facility, which is a disposal context that the NRC characterizes as, "generally not suitable."

Recommendations for this CERCLA Action

While this EE/CA is appropriate for risk reduction and building demolition prep, the inclusion of grouting the 291-B system vaults potentially precludes a final remedial decision for the HEPA filters and dictates additional consideration. First, the range of reasonable alternatives in the EE/CA should include a removal option for the 291-B system, including an assessment of the disposal options for the HEPA filters based on their waste classification. This assessment was largely completed in 1997, when "alternatives for further risk reduction... ranging from in situ stabilization to complete remediation using remote methods"⁶ were evaluated. This work could be updated to include a waste determination discussion. Second, alternatives 2 and 3 in the EE/CA should evaluate the cost and additional future technical requirements involved with future excavation and disposal of the HEPA filters if they are entombed in grout. The Nuclear Waste Policy Act should also be listed on the EE/CA as an ARAR for this CERCLA action.

If sufficient technical and economic justification is not provided in a revised EE/CA, it cannot be stated that the interim isolation of the HEPA filters would not preclude an expected final remedy, especially when no expected final remedy is named in the EE/CA. Therefore, assuming they can be classified as other than HLW, any wastes entombed as part of the proposed interim removal action would need to be evaluated consistent with the requirements of a low-level waste (LLW) disposal facility under DOE Order 435.1, including a performance assessment.

The EE/CA also discusses that waste generated during decommissioning preparation that is determined to be LLW, "...would preferentially be disposed as ERDF," without describing the process needed to make that LLW determination. As previously mentioned, an evaluation demonstrating that the filters (and other building debris that is radiologically active) qualify as Waste Incidental to Reprocessing would also seem to be required.

If, prior to the B Plant final ROD, there appears to be a substantive risk of collapse for the 291-B system, a more readily retrievable flowable fill should be used to stabilize the structure, or a temporary protective surface cover should be deployed until the final disposition status is known.

Broader Discussion of Central Plateau Disposal Principles Needed

Following DOE's cleanup successes along the river corridor, the Central Plateau contains the majority of the remaining risk at Hanford. There is an understandable desire to mitigate that risk and reduce the cost of managing aging structures. However, there are complexities involved with the Central Plateau that have not yet been resolved publicly. It is critical that decisions made now include an eye to the future. Will a Removal Action delay RI/FS completion? Is there enough contaminated material to

⁶ <https://www.osti.gov/servlets/purl/10149014>

accompany demolition debris so valuable landfill space at ERDF is not wasted? Will grouting highly contaminated subsurface structures make future remediation impractically expensive, or unachievable?

A broader question is one for which Oregon has been requesting a conversation with DOE since October of 2018. Because a variety of wastes within the Central Plateau were produced directly by the reprocessing of spent nuclear fuel, we are uncertain how and whether DOE proposes to make waste classification determinations to ensure that the fraction that qualifies as high-level waste is disposed appropriately. We have previously asked for clarification via e-mail and phone conversations and received no response from DOE on waste classification of residual sludge in hexone tanks (276-S-141, 246-S-142), vitrified tank waste in PUREX Tunnel 2, the "German Logs," Z-9 crib soils (both in-place and mined), and soil contaminated with tank farm waste under the 324 Building.

Our agency has periodically conducted staff-to-staff discussions with DOE and its contractors for complex topics and topics of special interest. The in-place solidification or onsite disposal of potential high-level or GTCC wastes as part of interim decisions appears to be a growing trend and strategy that warrants such a discussion. We would therefore like to request a staff-to-staff discussion (virtual in the time of COVID) so we can have a better understanding of the process DOE goes through to make these waste determinations for potential high-level waste outside of the tank waste treatment train.

If you have any questions related to these B-Plant NTCRA comments, please contact Tom Sicilia of my staff. Please contact me (or my successor) to discuss potential meeting times for the requested waste discussion.

Sincerely,



Ken Niles
Assistant Director for Nuclear Safety

Cc: Alex Smith, 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, Yakama Nation
Susan Leckband, Hanford Advisory Board
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Dr. Trish Holahan, Ph.D.
Director, Division of Decommissioning, Uranium Recovery, and Waste Programs
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Docket ID NRC-2020-0065

Thank you for this opportunity to provide comment on the Nuclear Regulatory Commission's (NRC) proposed interpretation related to the transfer of Very Low-Level Waste (VLLW) to Exempt Persons for Disposal. Agency staff have reviewed the proposed rule interpretation and attended both public webinars focused on this topic. We also appreciated the opportunity to discuss this issue directly with NRC staff and to better understand how this interpretation would interact with Oregon's authority as an Agreement State under Section 274 of the Atomic Energy Act of 1954.

Based on our review and subsequent conversations, we see this proposed rule having little to no effect on the current system of radioactive waste disposal management in Oregon. Oregon Revised Statute 469.525 prohibits the establishment of a radioactive waste disposal facility in the State of Oregon, except under specific circumstances not applicable to the present rulemaking. Oregon Administrative Rule 345 Division 50 provides methods for determining whether a given waste meets the definition of "radioactive waste" subject to the statutory prohibition against disposal. Under the Division 50 rules, the evaluation of the potential risk a waste poses to future residents may not take credit for any administrative protections, nor for any physical protection provided by the disposal environment.

As was affirmed to our agency by NRC staff, Oregon's separate state-level restrictions would not be superseded by the proposed VLLW rule interpretation. We further understand that any landfill that wished to be considered an "authorized recipient" under 10 CFR 20.2001 to accept VLLW would also require disposal approval from the State of Oregon under our Agreement State authority (Please let us know if either of the foregoing statements are not accurate). We think it likely that the state would be disinclined to permit the establishment of a facility for the disposal of VLLW as envisioned by the NRC's interpretive rule, whether or not the safety of its residents could be reasonably ensured, out of respect for the intent of our state statute.

Sincerely,

Ken Niles
Assistant Director for Nuclear Safety



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Kate Brown, Governor



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July 1, 2020

Brian Vance
U.S. Department of Energy
P.O. Box 450, MSIN H6-60
Richland, WA 99352

Alex Smith
WA Department of Ecology
3100 Port of Benton Blvd
Richland, WA 99354

Dave Einan
U.S. Environmental Protection
Agency
825 Jadwin Avenue, Suite 210
Richland, WA 99352

Dear Ms. Smith and Mr. Vance and Mr. Einan,

For the last 30 years, the Oregon Department of Energy has provided formal and informal input on Hanford cleanup priorities to the U.S. Department of Energy and its regulators. Throughout this time, we have emphasized as among our very top priorities beginning vitrification of Hanford's tank waste and taking measures to contain and clean up the contaminated groundwater. We've seen significant progress on groundwater remediation in recent years and it does appear likely that limited tank waste vitrification may finally be near.

As other specific issues or projects have been identified through the years, many have become Oregon priorities and many of these have been successfully resolved.

There has been a consistency in Oregon's priorities through the years, focusing first and foremost on protecting the Columbia River. We have also prioritized work that will reduce serious risks; reduce mortgage costs; and support progress. As a Trustee of Hanford's Natural Resources, we have consistently supported sufficient funding for Natural Resource Damage Assessment and Restoration work, to help move that process toward resolution.

The most recent detailed budget priority letter we submitted was in July 2017. Those priorities for DOE's Richland Office, in turn, were consistent with detailed budget priorities we provided in December 2015. We had hoped many of these priorities we identified three years ago would be done or farther along by this time.

Oregon's current priorities are still reflected in the priorities we shared in 2017, with the exception of those projects that have been completed:

Oregon's priorities – 2017 through December 2019 for DOE-RL

- Complete demolition of the Plutonium Finishing Plant to slab-on-grade [COMPLETE]
- Begin moving the cesium/strontium capsules from pool storage at WESF to dry storage – *Oregon objected to 2025 TPA Milestone as not aggressive enough. DOE may have difficulty meeting even that conservative milestone without consistently prioritizing funding for this project.*
- Complete installation of the extended apatite barrier at N Area – *not yet complete.*
- Begin and complete sludge movement from K West Basin [COMPLETE]

- Begin remediation of the high-dose soil contamination beneath 324 Building – 2021 TPA milestone officially “at risk.”
- Interim stabilize the PUREX tunnels [COMPLETE]
- Expand groundwater treatment into the 200 East Area – *more needs to be done.*
- Complete the River Corridor Records of Decision – *not yet done.*

Oregon’s priorities 2020 through 2022 for DOE-RL

- Complete transfer of cesium/strontium capsules to dry storage – 2025 TPA Milestone may be in jeopardy unless consistent priority of available funding is assured.
- Complete remediation of soil beneath the 324 Building and demolish the building – 2021 TPA milestone officially “at risk.”
- Resume retrieval/treatment of retrievably stored waste from the solid waste burial grounds and resume shipments of transuranic waste to the Waste Isolation Pilot Plant – *does not show up on list of “DOE – Hanford Top Priorities” provided at June 17, 2020 DOE budget meeting.*
- Demolish the K-West basin – *does not show up specifically on list of “DOE – Hanford Top Priorities” provided at June 17, 2020 DOE budget meeting.*
- Develop a more robust program to characterize and remediate contamination in the deep vadose zone – *does not show up on list of “DOE – Hanford Top Priorities” provided at June 17, 2020 DOE budget meeting.*
- Begin Interim Safe Storage of K East and K West reactors – *does not show up specifically on list of “DOE – Hanford Top Priorities” provided at June 17, 2020 DOE budget meeting.*
- Begin characterization of the Central Plateau solid waste burial grounds – *does not show up on list of “DOE – Hanford Top Priorities” provided at June 17, 2020 DOE budget meeting.*

DOE-RL work that Oregon believes can be delayed until after 2026 (unless substantial additional funding is received)

- | | |
|----------------------------|--|
| • PUREX tunnel remediation | • Non-Radioactive Dangerous Waste Landfill (NRDWL) barrier |
| • U Plant closure | • Outer Area soil cleanup |
| • S Pond barrier | |
| • B Pond barrier | |

For DOE-ORP, Oregon continues to support continued progress towards Direct-Feed Low-Activity Waste treatment; a continuation of tank waste retrievals; and full resolution of technical issues so that work can resume on the entire Waste Treatment Plant complex. We do not believe funds should be dedicated toward tank closure until tank waste treatment is well underway.

If you have any questions or wish to discuss any of our comments, please contact me at 503-378-4906.

Sincerely,



Ken Niles
Assistant Director for Nuclear Safety

CC: Matt Johnson, Confederated Tribes of the Umatilla Indian Reservation
Laurene Contreras, Yakama Nation
Jack Bell, Nez Perce Tribes
Oregon Hanford Cleanup Board
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May 13, 2020

The Honorable Ron Wyden
221 Dirksen Senate Office Bldg.
Washington, D.C., 20510

Dear Senator Wyden,

On March 20, I wrote to you and other members of the Oregon Congressional delegation to explain the Oregon Department of Energy's deep concerns about the potential impacts of President Trump's proposed FY 2021 budget on the Hanford nuclear site cleanup. We would also like to share with you our concerns about potential impacts to Oregon's Hanford funding.

We received about \$744,000 from the U.S. Department of Energy for our Hanford oversight and emergency preparedness work for FY 2020. We received an additional \$239,000 in separate funds for our participation as a trustee of natural resources associated with the Hanford Site. Since the late 1980s, Oregon has had a Hanford oversight program and has consistently, forcefully, and effectively worked for cleanup of Hanford and protection of Oregon citizens and the Columbia River.

Funds for our oversight work come from what is called a Project Baseline Summary (PBS), specifically PBS RL-0100, "Richland Community and Regulatory Support." Funding in both FY 2019 and FY 2020 for this specific PBS was \$10,121,000. The President's proposed FY 2021 budget for this PBS is \$2,500,000 – a cut of more than 75 percent.

In addition to funding Oregon's oversight and nuclear emergency preparedness work, PBS RL-0100 also provides funds to the State of Washington and the Hanford Advisory Board. Of long-standing concern to some at DOE Headquarters, funding from RL-0100 also goes to local counties for Payment in Lieu of Taxes (PILT).

The justification provided in the President's budget for the proposed reduction in PBS RL-0100 was "elimination of payment in lieu of tax payments." Even if DOE were not to provide any funding to PILT – and they would likely be under heavy pressure by local governments to continue to provide that funding – the proposed \$2.5 million would not be enough to maintain sufficient funding for Oregon, Washington and the HAB.

Given the COVID-19 situation and the substantial amount of federal funds that have been and will be appropriated to help the economy recover, we recognize there is great uncertainty about the amount of funding that will be available for Hanford in FY 2021.

In addition to these challenges, we wanted to ensure that you were aware of the potential threat to our long-standing program posed by proposed budget cuts that were put forward before this new

circumstance unfolded. We hope you agree there is a need to maintain our funding so as to ensure a viable Hanford oversight program for the State of Oregon.

Please let me know if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Ken Niles". The signature is written in a cursive style with a large initial "K".

Ken Niles
Assistant Director for Nuclear Safety



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March 31, 2020

U.S. Department of Energy
Attn: Jennifer Colborn
P.O. Box 450, H6-60
Richland, WA 99352
AgingStructures@RL.gov

Dear Ms. Colborn,

We appreciate the opportunity to provide comments on the interim disposition of three critically important waste sites within the Plutonium Finishing Plant complex – the Z-9 trench, Z-2 crib, and the Z-361 process storage tank (1). Since these structures are degrading, but are not expected to be remediated until the 2030s, DOE is proposing interim actions for stabilization with the intent to protect workers and the environment for the next decade or two.

We are concerned that documentation provided by the U.S. Department of Energy to support this proposed action fails to consider reasonable alternatives beyond grouting, and does not fully consider what implications these interim, non-final actions might have to final remediation cost; the condition of the contaminants within the stabilized structure; and precedents set for underground waste storage tanks at Hanford. While interim stabilization with engineered grout seems an optimal way to reduce the risk to human health and the environment, a site-by-site evaluation of how this action will affect the total estimated cost of eventual site closure is needed.

Site-wide structural and risk evaluations were undertaken in response to the partial collapse of PUREX Tunnel 1 in 2017. There were three October 2019 reports related to this proposed action, including a Recommendation and Summary Report (2). While interim stabilization was listed as the first recommended step for each of the waste sites, an alternative approach was also presented - that of designing and installing a surface cover to prevent the release of contaminants to the surface in the event of a catastrophic failure.

If grouting of these PFP waste sites pushes final remediation costs into the realm of economic impracticality, then alternate risk mitigation (e.g., surface cover with HEPA filters) should be considered.

Liquid Waste Disposal Units

Oregon agrees that the Interim stabilization of both liquid waste disposal units (the Z-9 trench and Z-2 crib) with engineered grout will effectively reduce the risk of contaminant spread in the event that the roofs of these structures were to collapse. The Z-2 crib seems the most likely candidate for grouting as

the void space is manageable, the contamination is not excessive, and its sister crib (216-Z-1) has already failed (2).

As far as the Z-9 trench, if grouting does move forward, we encourage DOE to take special consideration of the waste site chemistry and how contaminants will react when a wet, basic carbonate is added to the system. During mining, drummed soils from the Z-9 trench had to be vented before burial in 218-W-4c since they released carbon dioxide (thought to be a reaction with cement), and generated hydrogen when wet (3). It is uncertain whether a similar hydrogen buildup could occur if the remaining contaminated soils are encased by cementitious materials, and whether such accumulation would be enough to pose a potential hazard. It is also difficult to predict what effect adding grout will have on the mobility of complex plutonium wastes. Reactions should be anticipated and monitored during and after grout installation.

One benefit of an engineered grout approach would be a stable work surface and shielding for workers and heavy equipment when these sites are eventually excavated, which would likely improve the safety and efficiency of the final action (4). A similar strategy was employed for the demolition of the 100-K East fuel storage basin. Once the grout has cured, we see an opportunity to use the stable and secure surface to support a drill rig and install borings through the center of the waste structures. These can be used to refine the remedial strategy via additional characterization, optimize soil vapor extraction, and monitor the chemical reactions of the contaminated soil with the grout.

Z-361 Settling Tank

Oregon does not support the near-term actions proposed in the Time Critical Removal Action for the Z-361 tank. We are concerned that having a grout plug (5) resting on top of sludge which potentially has semi-liquid properties may greatly complicate future retrieval activities. We are also concerned about the precedent of filling a tank that contains significant quantities of sludge with grout before any attempt is made to remove the sludge.

The procedure for closing underground reprocessing waste storage tanks at Hanford is well established: empty the tank, then stabilize and close. We see no reason to treat this tank, which also contains reprocessing waste, any differently. DOE has demonstrated repeatedly that radioactive sludge is retrievable from underground storage tanks.

While analysis shows that the structural integrity of the tank may be in doubt, the failure of this tank would likely occur along the bottom of the long sidewalls due to external soil pressure. Catastrophic collapse of the roof is considered unlikely. In addition, there does not appear to be much risk of airborne dispersion due to the physical nature of the sludge.

The Recommendation and Summary Report (2), offered an alternative way to mitigate the risk of structural failure for this tank without grout. It proposed to cover the tank with a tent temporarily while the evaluation was conducted. The tank has a small footprint and been covered historically to allow sampling and repair. Alternatively, DOE could dig a trench or install sheeting around the tank to relieve the soil pressure and allow the sludge to be removed. This would reduce both the likelihood of structural failure and the consequence of failure, at a potentially reduced cost, without complicating future tank waste retrieval through a hardened mass of grout. We would like to understand, via a

technical and economic evaluation, why these recommendations are rejected in favor of the proposed action.

Analysis of Alternatives

The extended public comment window due to a global pandemic is a reasonable action to ensure that the public can be informed and involved. However, for future uses of this process, we encourage DOE to reduce the amount of time it takes for time critical reports to be placed on the Administrative Record. The structural analysis reports for these waste sites were completed in October of 2019 (2), but not placed on the Administrative Record until a little more than a month before the public comment period opened. This public dialogue could have occurred before the contract went to bid, and the "time critical" nature of the actions would be reinforced. Additionally, we note that despite the assertion of time criticality, the delay between completion of the summary and recommendations report and this Action Memo suggest that DOE could have pursued a non-time critical removal action with the associated analysis. We observe that such a path would allow the Tri-Parties to understand in greater detail the potential effects these interim actions would have on the chosen final remedies for these sites, and it would have allowed the evaluation of alternative interim measures.

Proactively mitigating risk in a reversible and responsible fashion is in the best interest of all stakeholders at Hanford. However, we do not think that one solution fits all problems. Grout is one tool at DOE's disposal, and it should only be used after a site-specific analysis is completed. The lifecycle costs, alternatives evaluated, and rationale for the preferred alternative should be presented for public review and comment prior to announcing an interim measure.

If you have any questions or wish to discuss any of our comments, please contact Tom Sicilia of my staff at 503-378-5584.

Sincerely,



Ken Niles
Assistant Director for Nuclear Safety

CC: Alex Smith, Washington Department of Ecology
Dave Einan, U.S. Environmental Protection Agency
Matt Johnson, Confederated Tribes of the Umatilla Indian Reservation
Laurene Contreras, Yakama Nation
Jack Bell, Nez Perce Tribes
Oregon Hanford Cleanup Board
Hanford Advisory Board

Table 1: Waste Site Summaries

<u>Waste Site</u>	<u>Group</u>	<u>Dimensions</u>	<u>Contaminants</u>	<u>ROD (4) Disposition</u>	<u>Release to the Environment</u>
216-Z-9	Liquid Waste Disposal	21-foot-deep void covered by a 90 feet by 120 feet concrete roof supported by six concrete columns. The site is shaped like an inverted pyramid, with a bottom of 60 feet by 30 feet	Contained an estimated 100-300 pounds of plutonium.* Carbon tetrachloride also present at non-aqueous phase liquid) concentrations *Soils were mined in the 1970s, removing 128 lbs of plutonium. Contaminated soil was placed in more than 600 55-gallon drums, which were retrievably stored in low level burial ground 218-W-4c. The drums were vented due to soil chemical reactions leading to hydrogen and carbon dioxide generation (2)	Excavation of structure and at least 2 feet of soil from the bottom. Soil vapor extraction for solvents, evapotranspiration barrier once work is completed.	Yes
216-Z-2	Liquid Waste Disposal	Wooden 14 by 14 crib, with 14 feet of void space. Covered by 7 feet of soil	Nitrate and approximately 15 pounds of Plutonium	Remove Crib and four feet of soil, to depth of 25 feet.	Yes
241-Z-361	Underground Process storage tank	Steel lined, concrete tank 28 feet by 15 feet, 19 feet tall, and buried 2 feet underground Filled with 8 feet of sludge, leaving 11 feet of void space	64 pounds of Plutonium, metals, PCBs	Remove Sludge, fill tank with flowable fill, close in place. * *-modified to remove tank (6)	No* *Liner corroded, but tank not thought to have leaked based on sludge level consistency

References:

- 1- *Action Memorandum for the Interim Stabilization of 216-Z-2 Crib, 216Z9 Trench, and 241Z361 Settling Tank Draft A*, US DOE, March 16, 2020, Doc ID 20-AMRP-0021
- 2- *Recommendation and Summary Report*, CHPRC, October 21, 2019, Doc ID CP-64221
- 3- *Report on Plutonium Mining Activities at 216-Z-9 Enclosed Trench*, Rockwell International, September 1, 1978, Doc ID RHO-ST-21
- 4- *Record of Decision Hanford 200 Area Superfund Site 200-CW-5 and 200-PW-1 200-PW-3 and 200-PW-6 Operable Units*, US DOE, September 30, 2011, AR Ascension 0093644
- 5- *Statement of Work for Construction*, CHPRC, January 2020, AR Ascension AR-03559
- 6- *Interim Stabilization of Waste Sites 216-Z-2 Crib, 216-Z-9 Trench, and 241-Z-361 Settling Tank*, US DOE, February 18, 2020, Doc ID 20-AMRP-0006



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March 20, 2020

The Honorable Ron Wyden
221 Dirksen Senate Office Bldg.
Washington, D.C., 20510

Dear Senator Wyden,

The Oregon Department of Energy has deep concerns about the potential impacts of President Trump's proposed FY 2021 budget on the Hanford nuclear site cleanup. We recognize that this is a proposed budget and that historically Congress – led by the Northwest delegation – has typically restored much or all of any proposed cuts. However, the U.S. Department of Energy already appears to be moving forward with planning for a much more limited Hanford cleanup during the coming decade.

The President's proposed budget would cut overall spending at Hanford by more than \$700 million – a 27 percent reduction over FY 2020 funding. Both of Hanford's offices – the Richland Field Office and the Office of River Protection, would each suffer significant cuts – more than \$346 million (a 34 percent cut) for the Richland Office, and more than \$358 million (a 22 percent cut) for the Office of River Protection.

Even with level funding, Hanford will face challenges in meeting its regulatory requirements. In September of last year, the Hanford Site Manager submitted a "compliant" FY 2021 budget request to DOE Headquarters. For the Richland Office, that anticipated budget was \$1.335 billion and for the Office of River Protection the request was \$2.050 billion. That combined budget request totaled \$3.385 billion – a \$771 million increase over the FY 2020 funding level and nearly \$1.5 billion more than the President's FY 2021 request.

The impacts of the President's FY 2021 budget request would be significant. DOE proposes to simply stop progress on several vitally important projects, including efforts to move 1,936 highly radioactive cesium and strontium capsules to safer storage, and work to remove highly concentrated radioactive soil from beneath a building in Hanford's 300 Area. The groundwater treatment program would take a 59 percent cut in funding. Few, if any, new remediation projects would begin. It appears retrieval of waste from Hanford's older single-shell tanks would also be greatly reduced or halted altogether.

The proposed cuts appear to be part of a broader strategy for reduced funding. Last week, DOE unveiled its vision for the Environmental Management program through 2030, touting it as a "A Time of Transition and Transformation." Its goals for Hanford during the next decade show a greatly reduced cleanup – focusing almost entirely on the start-up of tank waste treatment at the expense of most everything else.

DOE has been working for the past several years towards meeting a 2023 Consent Decree milestone to begin vitrification of some liquid lower-hazard waste through a process called Direct-Feed Low Activity

Waste (DF-LAW). While we do support this effort, it should not come at the expense of other important work at Hanford.

The unilateral decision to stop work on the cesium-strontium capsules is particularly concerning. The capsules are stored under water in concrete basins adjacent to Hanford's B Plant. These capsules contain an estimated one-third of the total radioactivity at the Hanford Site.

In 2013, the Oregon Department of Energy raised concerns about potential degradation of the concrete walls due to the high radioactivity they were subjected to over several decades. Risks at this facility derive from potential loss of cooling water. The likelihood of such an event is most directly related to a significant seismic event.

If the concrete is appreciably weakened – and we don't know that to be the case – stresses from an earthquake could lead to direct failure of the walls or the basin bottom, causing the drain down of the pools. Due to the loss of water, the ultimate release from such an event may include a significant fraction of the inventory of cesium 137 and strontium 90 stored in the facility, because of overheating and thermal failure of the capsules. Hanford contractors have analyzed potential impacts from such an event and in some cases found them to be devastating.

DOE has taken some short-term actions to attempt to mitigate those risks but has also acknowledged the severe risk these capsules pose. Although DOE did not act with the urgency we suggested, DOE did begin the process of designing storage casks and upgrading the facility to allow for the transfer of the capsules from pool storage to much safer dry storage. DOE negotiated a milestone with its regulators to complete movement of the capsules to dry storage by August 31, 2025.

In its budget document, DOE explains the change this way: "Decrease reflects re-planning and re-evaluation of former seismic integrity study performed." As yet, DOE has not performed a re-evaluation of the seismic study, nor do they have any new data related to the integrity of the basins. The risk remains and DOE's decision to stop funding this project puts site workers and the region at risk.

Lack of sufficient funding through the years has repeatedly led to missed milestones, increased risks, greatly increased costs, and DOE's own estimates that show cleanup will not be complete for many decades. DOE points out that Hanford receives more money than any other DOE EM site. The pertinent question is not which site is getting the most money. The question that DOE should be asking is: "What does it take to move the cleanup successfully forward and reduce the risks in a reasonable time frame?" This proposed budget does neither.

Please let me know if you have any questions.

Sincerely,



Ken Niles
Assistant Director for Nuclear Safety

Cc: Brian Vance, Hanford Site Manager
Alex Smith, Washington Department of Ecology
Dave Einan, U.S. Environmental Protection Agency
Matt Johnson, Confederated Tribes of the Umatilla Indian Reservation
Laurene Contreras, Yakama Nation
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January 24, 2020

James Joyce
U.S. Department of Energy
1000 Independence Avenue, S.W.
Washington, DC 20585

Dear Mr. Joyce,

We appreciate the opportunity to provide comments on the *Draft Environmental Assessment for the Commercial Disposal of Defense Waste Processing Facility Recycle Wastewater from the Savannah River Site* (EA). This evaluation is of particular interest to Oregon because the U.S. Department of Energy's (DOE) actions on high-level radioactive waste (HLW) will likely affect more decisions on the Hanford Site than on any other site in the country. These actions will in turn affect the real and perceived safety and value of the Columbia River, in which we have a permanent interest.

The action evaluated in the EA is DOE's first attempt to apply its new interpretation of the definition of HLW. DOE has selected a waste for first use of this new interpretation that effectively illustrates that not all waste currently managed as HLW requires deep geologic disposal in order to achieve the same standard of protection as that for low-level radioactive waste (LLW). This is not a new revelation. The DOE and U.S. Nuclear Regulatory Commission (NRC), with support from Congress, have for years implemented a rigorous method to define and evaluate which wastes are worthy of being classified as "other than HLW." What is different now is a new method and a new process by which DOE wishes to arrive at this determination alone.

This EA uses present-day data on a waste stream in order to anticipate its constituents 12 years¹ in the future when DOE is actually prepared to make a waste determination decision. Based on the prospective description of the recycle waste stream in the EA, it appears this waste could most likely be safely disposed in a LLW disposal facility. Our evaluation of the EA found that the total activity of the anticipated 10,000-gallon waste stream would be approximately 495 Curies of Cs-137, 0.5 Curies of Sr-90, and 0.11 Curies of Tc-99, plus potentially trace quantities of actinides below the current analytical detection limit. If concentrated into a single cubic meter of waste, this amount of radioactivity would not rise to the level of Class C LLW. Spread across the entirety of the grouted waste volume, these radionuclides would present a manageable hazard if disposed in a LLW disposal facility that has been verified to meet the 10 CFR 61 performance objectives for wastes with these characteristics.

DOE's proposed action is not taking place in a policy vacuum, however. The method and process by which DOE makes this non-HLW determination could have broader effects for other future reprocessing wastes within Oregon's sphere of interest. More than a year after the first notice regarding this new

¹ There is some confusion as to when this waste will actually be disposed, as described in our technical comments.

interpretation, we are still in the dark regarding how it will affect the final form and resting place of many Hanford wastes for which the expectation has long been deep geologic disposal. If we have one overarching comment, it is that DOE should communicate its full intentions for how it will implement its new interpretation. This reluctance to be transparent will only damage trust in the communities that stand to ultimately host these wastes for the long term.

We do not view this NEPA analysis as written to be a sufficient process vehicle by which DOE can or should make a formal non-HLW classification determination. DOE has not identified the formal process by which future determinations will be made, nor has DOE been willing to say whether the public and interested stakeholders will have a formal opportunity beyond the NEPA process to participate in future non-HLW classification decisions. While we acknowledge a formal waste determination evaluation is not part of this NEPA analysis, we are taking this opportunity to document our comments on the waste determination method because it has not been made clear whether the public and interested stakeholders will get another chance.

Our most significant technical concern in the EA is the inability for a reader to follow how the evaluated waste meets the performance objectives of the disposal facility, as required by DOE's new interpretation of HLW. We are not suggesting that disposal of the DWPF recycle wastewater at the Waste Control Specialists (WCS) facility would fail to meet performance objectives or otherwise be unacceptably dangerous. Our concern is that an excessively streamlined analysis for this waste may set a precedent of inadequate analysis and traceability for future waste classification determinations – especially for more complex or uncertainty-laden wastes such as found at Hanford.

As we said in our formal comments on the HLW interpretation Federal Register Notice, we agree that the decision where and how to dispose of a long-lived hazard can be based on the safety needs of that particular hazard – so long as uncertainty is responsibly managed and public trust is upheld.

Where we primarily took issue with DOE's proposed interpretation regarded when it is wise to take the extra precautionary step of removing key radionuclides to the maximum extent practical. We also differed on the most durable process for verifying that waste classification decisions are justified. We believe in the value of concurrence from an external (non-DOE) technical peer whose responsibility does not include cost effectiveness; to build trust that each decision is rich in the quality of thought that went behind it. If the future of radioactive waste management lies in mathematical models of near-surface disposal facility performance, we believe it is vital to share responsibility for the quality and completeness of those models. This includes the public and other stakeholders – the people who stand to lose if your best estimate is wrong.

Our specific technical comments on the EA follow.

Sincerely,



Ken Niles
Assistant Director for Nuclear Safety

Cc: Brian Vance, U.S. Department of Energy
Alex Smith, Washington Department of Ecology
Dave Einan, U.S. Environmental Protection Agency
Matt Johnson, Confederated Tribes of the Umatilla Indian Reservation
Laurene Contreras, Yakama Nation
Jack Bell, Nez Perce Tribes
Oregon Hanford Cleanup Board
Hanford Advisory Board
National Governors' Association Federal Facilities Task Force

Oregon Technical Comments on the *Draft Environmental Assessment for the Commercial Disposal of Defense Waste Processing Facility Recycle Wastewater from the Savannah River Site (EA)*.

Clarify how a classification determination will be made (including public process and technical evaluation requirements)

As mentioned previously, we recognize that this NEPA analysis is not the process vehicle for making a non-HLW classification determination. Because this decision process has national significance, we request additional information about how the actual determination decision will be made.

It is critical to understand what additional evaluation process DOE intends to implement for non-HLW determinations; the level of documented technical support required to make such determinations; and what role the public will be able to have to review that technical data prior to DOE making a waste determination. We are concerned that the cursory level of analysis in this EA could set a dangerous precedent for the quality and completeness of future waste determination evaluations for more complex or less certain wastes such as those at Hanford.

Clarify when this classification determination will be made

The liquid waste management plan described in the EA appears to be at odds with the Savannah River Site (SRS) Liquid Waste Management System Plan, Rev. 21².

The EA states:

Treatment or disposal of this waste at a commercial LLW facility would help to inform planning activities for the three years between the completion of the Salt Waste Processing Facility (SWPF) mission (estimated 2031) and DWPF mission completion (estimated 2034) (SRR 2019). During this period, DOE will not have the option of returning DWPF recycle wastewater to SWPF for processing because SWPF will have completed its mission of treating salt waste from the tank farms and will undergo closure.

This passage implies that the waste stream under consideration is limited to the wastewater that will remain to be managed following completion of the SWPF mission in 2031. This implication is further supported by the fact that the EA later considered the cumulative effects of disposing of 380,000 gallons of wastewater representing the total estimated wastewater volume in need of management between 2031 and 2034.

Despite these suggestions in the EA, DOE demurred when asked directly about the timeline of an actual waste determination and disposal action³. While the EA claims that the waste in question will not be ready for at least 12 years (when the SWPF has been shut down), the most recent liquid waste management system plan for SRS states that DOE will be looking for alternative treatment options for

² <https://www.energy.gov/sites/prod/files/2019/05/f62/SRS-Liquid-Waste-System-Plan-January-2019-0.pdf>

³ Question from Oregon to DOE during the December 17, 2019 webinar on the EA.

DWPF recycle wastewater starting in 2023⁴. Further clarification is needed on when this waste would actually be disposed.

Subject waste sources are not well defined

The EA states that its scope encompasses a waste called “DWPF Recycle Wastewater,” but there are many sources and processes associated with this waste stream that are not well defined in the EA.

- The EA states, “DWPF produces a dilute secondary aqueous radioactive waste stream known as DWPF recycle wastewater.” This sentence implies a single generating process, but that is not the case. Multiple contributors to “DWPF recycle wastewater” are claimed. These contributors are separated into “major” and “minor” categories by volume.
 - The major contributors are listed as 1) condensates from processing tank sludge and salt waste prior to vitrification, and 2) condensed offgas from the vitrification melter. The term “processing” requires further clarification. What processing action prior to vitrification results in offgases that can be condensed as recycle wastewater?
 - Are the two listed “Major Contributors by volume” also the major contributors of radionuclides? If they are not, where are the radionuclides in the waste stream coming from, and in what proportion?
 - The “Minor Contributors” category contains names of waste types that are not defined, particularly “decontamination solutions” and “sump flushes.” What has been decontaminated and what is the known radionuclide inventory resulting from this activity? Similarly, what sumps are flushed, and what constituents do those sumps contain?
 - The EA and the SRS Liquid Waste System Plan Rev 21 both describe, “beneficial reuse of DWPF recycle for waste removal and tank cleaning.” The EA should make clear whether the DWPF recycle wastewater being considered for offsite disposal was used for tank cleaning, as this could introduce greater uncertainty in the inventory of radioactive constituents in the waste stream. If DWPF recycle is reused for tank cleaning, the contents may change over time, requiring additional characterization. A more variable waste stream would warrant more data than the limited sampling that supports this EA.

Given the uncertainties described above, the EA does not currently provide technical support for the implicit assertion that the sampling conducted to support this EA will be representative of the actual waste DOE proposes to dispose offsite in the future. DOE should provide additional quantitative information and process history related to the DWPF recycle wastewater composition expected at the time DOE plans to dispose of this waste.

⁴ The SRS Liquid Waste System Plan Rev 21 states, “This System Plan assumes that in FY23, the DWPF recycle stream will be diverted for treatment outside of the Tank Farm, but a specific treatment path has not yet been selected. (Page 7)” This statement suggests that DOE may elect to implement the proposed action before 2031.

Environmental Impact Statement not needed, but greater traceability of disposal impacts is needed

Our view is that this particular proposed action does not constitute a major federal action warranting a full Environmental Impact Statement. In the case of a predominantly cesium-137 waste stream, disposal in a facility licensed to accept waste in these concentrations is a relatively simple prospect. However, it is critical to make the full basis for a waste determination available to the public as reprocessing wastes around the nation, long managed as HLW, begin to shift into a waste class destined for near-surface disposal.

We note that we can find no record of a final NEPA analysis for the Federal Waste Facility disposal cell at Waste Control Specialists (WCS) in Texas⁵. The need for such an analysis is supported by the fact that DOE performed a supplemental analysis to its Greater-than-Class-C (GTCC) EIS that specifically evaluated the disposal impacts associated with GTCC disposal at WCS. Further, the EA's stated purpose is to, "evaluate the capability to dispose DWPF recycle wastewater . . . at a licensed commercial facility," yet the environmental impacts associated with disposal in a commercial facility are not included in the EA.

Therefore, the existing EA does need to incorporate any existing Performance Assessment and NEPA analysis for the WCS and EnergySolutions facilities by reference and make them available in the Administrative Record.

Demonstrate attainment of performance objectives to satisfy the new HLW interpretation

Because this is DOE's first attempt to use its new interpretation of HLW, now is the time to establish that DOE will clearly document that each non-HLW determination will be accompanied by a full waste determination evaluation. This should encompass the generation of the waste through a traceable demonstration that the waste will meet the performance objectives of the disposal facility.

DOE's new HLW interpretation states that in order to classify a reprocessing waste as "non-HLW" one of two criteria need to apply:

1. Does not exceed concentration limits for Class C LLW as set out in 10 CFR 61.55 and meets the performance objectives of a disposal facility, or
2. Does not require disposal in a deep geologic repository and meets the performance objectives of a disposal facility as demonstrated through a performance assessment conducted in accordance with applicable requirements.

Between the initial Federal Register notice and the supplemental notice, DOE added the phrase "and meets the performance objectives of a disposal facility," to the first criterion. This addition is explicit recognition that merely meeting the concentration limits for Class C LLW is not sufficient to demonstrate compliance with DOE's new interpretation.

⁵ The 2008 Draft Environmental Assessment that was contemporary to the initial WCS permit application contained several deficiencies identified by TCEQ, which resulted in license conditions requiring additional analysis. No follow-up environmental analysis can be found to exist. Similarly, no versions of the WCS license application or performance assessment are discoverable via the web.

This EA does not demonstrate to the public that disposal of the identified waste stream will meet the performance objectives of 10 CFR 61. Instead it is assumed that if the disposal facility has been licensed by its Agreement State and has Waste Acceptance Criteria (WAC), then any waste with concentrations that meet the WAC will automatically meet the 10 CFR 61 objectives. This is in contradiction to the FR Supplemental Notice, which states, "The technical means to demonstrate compliance with performance objectives are through a modeling and analytical tool commonly referred to as a performance assessment. Safe disposal also entails compliance with *other* facility requirements, such as waste acceptance criteria." (emphasis added) (FR 26835, p.5)

We can appreciate the attempt to streamline the regulatory process by not including the full cradle to grave analysis in this EA (represented by a waste- and facility-specific evaluation of disposal performance). However, if this is the only publicly available window into DOE's new non-HLW classification process, then as interested stakeholders we are not able to trace a technical basis for how this waste meets DOE's new criteria. A waste-specific analysis showing how the waste will meet the performance objectives of the disposal facility is necessary.

In order to complete the implementation of DOE's new HLW interpretation, DOE should trace the attainment of performance objectives for the target disposal facility and incorporate by reference the performance assessment that supports the claim. This performance assessment must also be readily available for public review⁶.

DOE's new simplified non-HLW determination analysis so far appears to rest on the judgment by the Agreement State as represented by the Waste Acceptance Criteria. If the Agreement State has not made the basis for their judgment publicly available, then DOE should do so both to satisfy NEPA and to demonstrate compliance with their own new interpretation of HLW. The EA (or future formal waste determination evaluation) should also include a waste-specific justification connecting the DWPF recycle wastewater to the performance assessment and clearly explaining why this disposal environment will be safe for the duration of the radiation hazard.

Cross-country transport of liquid waste to be solidified does not pass the common sense test

We recognize that the evaluation of transporting the liquid waste to a commercial treatment facility in Richland, Washington is characterized as a "bounding analysis" of transportation impacts. Nevertheless, we would be remiss not to comment that the transportation of a liquid waste from South Carolina to Washington for solidification, then back to Utah or Texas for disposal, would be a nonsensical journey. Further, we perceive that the analysis leans too heavily on a low estimated probability of a fatal accident or an associated release of waste into the environment, without proper consideration of whether the consequence of misfortune is warranted.

⁶ Our research found that the Performance Assessment and associated analysis supporting WCS is not available for public review without submitting a public records request to the State of Texas, subjecting the requested records to a confidentiality evaluation by the state Attorney General's office, and paying associated fees.

Management of all reprocessing wastes as HLW until otherwise classified

We wholeheartedly support the statements made in the EA and during the December webinar that, "DOE will continue its current practice of managing all its reprocessing wastes as if they were HLW unless and until a specific waste is determined to be another category of waste based on detailed assessments of its characteristics and an evaluation of potential disposal pathways." We interpret the phrase "all its reprocessing wastes" to include tank wastes that leaked or were otherwise released into the environment.

We interpret that the definition of HLW in the Nuclear Waste Policy Act of 1982 applies as soon as material "results" from reprocessing activities. It does not indicate that the definition ever ceases to apply, or only applies once waste has been exhumed for disposal. We strongly encourage the DOE to formally document that this practice applies across the EM complex.

Removal of Key Radionuclides to the Maximum Extent Practical

Under the Waste Incidental to Reprocessing classification structure that preceded DOE's new interpretation, the first criterion for making a determination that a waste is not HLW required removal of key radionuclides to the maximum extent practical. While DOE has proposed to make this criterion no longer relevant, we will evaluate DOE's proposed action against it anyway.

As previously stated, the wastewater in question is expected to contain approximately 500 Curies of Cs-137, which has been historically treated as a "key radionuclide" pertinent to the HLW definition. DOE's argument has been that if a disposal facility's Waste Acceptance Criteria would already cover a waste containing cesium-137 in this concentration, it is inefficient to conduct further removal. In the case evaluated here, we agree, although we believe DOE could also have made a defensible justification within the structure of the existing WIR process. We see a defensible argument under the WIR process that further Cs-137 removal would not pass the test of "practicality" given the low relative risk, the high cost of additional pretreatment, and the consequent creation of a new, more concentrated Cs-137 waste stream that would present a relatively greater risk to a future intruder. In this instance, additional pretreatment would also not provide additional certainty about the composition of the waste prior to final disposal.

Where we continue to see a useful role for the "key radionuclides" criterion is for the in-place closure of tanks or contaminated soil sites in future waste classification determinations. We perceive the classification of waste to be sufficiently different when contemplating a well-characterized and packaged waste for disposal in an engineered facility versus a poorly or incompletely characterized waste residual that DOE may propose to leave behind in a makeshift environmental remediation context (e.g., placing a cap over a tank with no liner). The "key" aspect to the "key radionuclides" in this case is the uncertainty regarding their concentration and distribution, and consequently the nature of the long-term hazard that must be managed. Therefore, additional precautionary preventative measures to remove as many of these radionuclides as practical may be warranted.

Our views are consistent with those of the Nuclear Regulatory Commission (NRC) in their comments on DOE's Federal Register Notice⁷. The NRC also discriminated between a waste packaged for offsite disposal versus an in-situ waste management decision when determining the benefit to human health and the environment from additional removal of key radionuclides.

We also want to point out that the interpretation of what constitutes "key radionuclides" may be changing with time and greater experience, much like the HLW definition itself. The original HLW definition from Congress includes the term, "any solid material derived from such liquid waste that contains fission products in sufficient concentrations." At a recent meeting of the National Academies of Sciences, one of the panel members made the observation that the lesson from the Yucca Mountain licensing experience was that, "we were focusing on the wrong radionuclides," and the long-lived mobile radionuclides tend to be the key drivers of long-term risk⁸. Oregon will continue to interpret the definition of HLW to include any waste with "sufficient concentrations" of those isotopes such as Tc-99 and I-129 that could pose a long-term threat to groundwater, and we will continue to advocate for their removal from reprocessing wastes to the maximum extent practical before disposing them in a near-surface environment.

We continue to see value in an NRC review of non-HLW determinations

In 2015, the NRC performed a preliminary review of the WCS GoldSim Performance Assessment model on behalf of the Texas Commission on Environmental Quality (TCEQ)⁹. Their preliminary review of this model – developed to support the potential disposal of depleted uranium at WCS and the removal of disposal limits for technetium-99 and carbon-14 – found many areas of potential concern in the model methodology. Among these concerns were the degradation rate of grout, the starting inventory of waste, and the distribution coefficients for radionuclide transport. The resolution of the NRC's comments has apparently been recently completed to the satisfaction of Texas and the NRC (TCEQ, Pers. Comm.), but the documentation of this resolution is not readily available for public review.

The NRC's preliminary review is further evidence of Oregon's repeated point that an independent review by a technical peer organization is an essential check on the quality and safety of a disposal decision. This review also highlights the importance of having a documented technical justification in order to demonstrate that a waste can meet the performance objectives of a disposal facility as required in DOE's new interpretation of the HLW definition.

In DOE's Supplemental Notice Concerning its interpretation of HLW (84 FR 26835), we and others stated a concern that implementation of the proposed new interpretation would not have rigorous independent oversight of DOE's waste determination evaluations. Specifically, we objected to the lack of required involvement by the NRC in non-HLW determinations. In their response, DOE stated that they are a member of a community of radioactive waste management professionals, and they would not easily deviate from the norms and standards of that community. DOE also stated that they would

⁷ <https://www.nrc.gov/docs/ML1901/ML19010A136.pdf>

⁸ Comment by a member of the National Academies of Science, Engineering, and Medicine at a public meeting for the project "Supplemental Treatment of Low-Activity Waste at the Hanford Nuclear Reservation". <http://dels.nas.edu/Study-In-Progress/Supplemental-Treatment-Activity-Waste/DELS-NRSB-17-02>

⁹ <https://www.nrc.gov/docs/ML1219/ML12198A060.pdf>

continue to maintain a strong relationship with the NRC regarding waste classification and disposal issues.

With these previous responses in mind, we request that DOE identify how it will involve independent third parties in the evaluation and classification determination for the waste stream subject to this NEPA analysis.