



DEPARTMENT OF
ECOLOGY
State of Washington

Response to Comments
PUREX Storage Tunnels
February 12 to April 12, 2018

*Summary of a public comment period and responses
to comments*

August 2018

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Response to Comments

PUREX Storage Tunnels

February 12, 2018 – April 12, 2018

Nuclear Waste Program
Washington State Department of Ecology
Richland, Washington

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Introduction

The Washington State Department of Ecology's Nuclear Waste Program (NWP) manages dangerous waste within the state by writing permits to regulate its treatment, storage, and disposal. When a new permit or a significant modification to an existing permit is proposed, NWP holds a public comment period to allow the public to review the change and provide formal feedback. (See [Washington Administrative Code \[WAC\] 173-303-830](#) for types of permit changes.)

The Response to Comments is the last step before issuing the final permit, and its purpose is to:

- Specify which provisions, if any, of a permit will become effective upon issuance of the final permit, providing reasons for those changes.
- Describe and document public involvement actions.
- List and respond to all significant comments received during the public comment period and any related public hearings.

This Response to Comments is prepared for:

Comment period: PUREX Storage Tunnels Permit Modification, February 12, 2018, through April 12, 2018

Permit: *Hanford Facility Resource Conservation and Recovery Act (RCRA) Permit for the Treatment, Storage, and Disposal of Dangerous Waste, Plutonium Uranium Extraction (PUREX) Plant Storage Tunnels*

Permittee(s): U.S. Department of Energy Richland Operations
CH2M Hill Plateau Remediation Company

Original issuance date: September 27, 1994

Draft effective date: N/A

To see more information related to the Hanford Site and nuclear waste in Washington, please visit our website: <https://www.ecology.wa.gov/Hanford>.

Reasons for issuing the permit

The proposed permit modifications affect the PUREX Storage Tunnels. The purpose of the proposed permit modification is to describe:

- The stabilization actions taken for Tunnel 1.
- The actions proposed for stabilizing Tunnel 2.

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PUREX Storage Tunnels

- The relationship between the current interim closure activities and its impact for future closure and cleanup actions.

The tunnels store waste, mostly large equipment components, from the PUREX Plant and other onsite sources. Completion of the response action for Tunnel 1 and the proposed interim closure action for Tunnel 2 will allow the tunnels to continue to safely store the waste.

Filling the tunnels with engineered grout will help mitigate potential threats to human health and the environment, and will not preclude future remedial or final closure actions until future cleanup decisions have been reached.

Because the tunnels will no longer accept waste, this proposed permit modification will add the PUREX Storage Tunnels as a closing unit to the Hanford Facility RCRA Permit, Revision 8c.

Public involvement actions

Ecology encouraged public comment on the PUREX Storage Tunnels Permit Modification during a 60-day, public comment period held February 12, through April 12, 2018.

The following actions were taken to notify the public:

- Mailed a public notice announcing the comment period to 1364 members of the public.
- Distributed copies of the public notice to members of the public at Hanford Advisory Board meetings.
- Placed a public announcement legal classified advertisement in the *Tri-City Herald* on February 12, 2018.
- Emailed a notice announcing the start of the comment period to the [Hanford-Info email list](#), which has 1405 recipients.

The Permittees held a public meeting on March 14, 2018, at 5:30 pm at the Richland Public Library. 38 members of the public attended; no comments were collected.

The Hanford information repositories located in Richland, Spokane, and Seattle, Washington, and Portland, Oregon, received the following documents for public review:

- Public notice
- Transmittal letter
- Draft PUREX Storage Tunnels Permit Modification

The following public notices for this comment period are in [Appendix A](#) of this document:

- Public notice (focus sheet)
- Classified advertisement in the *Tri-City Herald*
- Notice sent to the Hanford-Info email list

List of Commenters

The table below lists the names of organizations or individuals who submitted a comment on the PUREX Storage Tunnels Permit modification. The comments and responses are in [Attachment 1](#).

Commenter	Organization
Kroening, Nancy	Citizen
Smith, Gordon	Citizen
Gallaher, Benjamin	Citizen
Colan, Mike	Citizen
Zimman, Erin	Citizen
Johns, Bill	Citizen
Smith, Mark	Citizen
Boehm-Brady, Leah	Citizen
Kemman, Randall	Citizen
Poirier, Jeanne	Citizen
Shomer, Forest	Citizen
Becker, Lloyd	Citizen
Sundermann, Kathryn	Citizen
Paolini, Liza	Citizen
Alzheimer, James	Citizen
Daly, Geoff	Citizen
Janison, Debra	Citizen
Johnson, Marjorie	Citizen
Columbia Riverkeeper	Columbia Riverkeeper
George, Marlene	Confederated Tribes and Bands of the Yakama Nation

Attachment 1: Comments and responses

Description of comments:

Ecology accepted comments from February 12 through April 12, 2018. This section provides summary of comments that we received during the public comment period and our responses, as required by RCW 34.05.325(6)(a)(iii). Comments are grouped by individual and each comment is addressed separately.

Comment From: Nancy Kroening

I-1-1

Dear People: It seems to me that putting "grout" in the tunnels will just make it much harder to dispose of the radioactive materials in the future. Using ground glass or tiny pebbles or sand seems like a better solution if they don't move. Breaking up concrete would cause air pollution I would think. And more harm to workers. And, yes, interactions with the items in the tunnels should be checked. It seems that the grout is to be more of an intended permanent solution rather than an interim one.

I-1-2

We are not anywhere near satisfied with the progress that has been made in truly securing the wastes at Hanford. So much money has been spent, yet huge challenges remain with danger to the workers and public.

I-1-3

Thank you for the opportunity to comment. I had to try the email address twice. I used an "I" at the end rather than a "J". The address was not clear. I'd suggest a simpler address for people to use next time. We have a personal interest in these proceedings as family members could be affected. Sincerely, Nancy Kroening, Phoenix, AZ

Response To: Nancy Kroening

I-1-1

USDOE proposed to Ecology and we agreed that grouting Tunnel 1 was the best path forward in order to stabilize the structure of the tunnel to eliminate the potential for structural failure prior to final remediation. The use of sand or clay was considered and rejected because the way the fill material would flow into the tunnel presents a challenge to void fill operations. A physical property called "angle of repose" would cause the sand or clay (or gravel or glass beads) to pile up rather than flow into all the void spaces. Completely filling the tunnel with dry material would require many more injection points than are currently available. Drilling into the tunnel to create new injection points is not recommended because of the potential for structural failure. Air emissions would also be a concern with dry materials.

Alternatively, the sand or clay could be mixed with large volumes of water to create a slurry that would flow into all the void spaces. However, unlike grout which fully incorporates the water into the grout matrix during the curing process, use of a slurry method with sand, gravel or glass beads, would leave the water free to potentially drive contamination into the soil beneath the tunnel. Clay may absorb some or all of the water used, but would swell potentially creating future structural issues. Clays would likely gradually release water over time potentially driving contamination into the soil beneath the tunnel.

Chemical compatibility of grout with the waste in the tunnel was evaluated and no issues were identified. The proposed interim stabilization action of grouting Tunnel 2 may not

preclude future remedial or final closure actions. If removal of the waste in the tunnels is selected as the final closure option, cutting methods, such as diamond wire saws or other technology, would mostly likely be used to cut the tunnel into sections that could be treated as necessary and disposed of in the appropriate disposal facility. While this cutting process would require detailed planning and engineering, it is commonly used technology and is well suited to this application. Air emission controls would be installed and licensed in accordance with applicable requirements.

I-1-2

Ecology is also concerned about the delays with the Hanford cleanup. We are committed to the cleanup of waste at Hanford and to get the waste to a stable form for long-term storage. Ecology expects USDOE and their contractors to work towards closure in accordance with the schedule contained in Chapter 11 Closure and Financial Assurance, Section 11.7 Closure Schedule and Time Frame. Ecology does not get involved in the contractual agreements between USDOE and their contractors, Ecology is focused on the protection of human health and the environment.

I-1-3

Thank you for your suggestion. The website auto-generates the URL addresses, but we can consider other options in the future.

Comment From: Gordon Smith

I-2-1

Dear Hanford Stewards, In response to WAC 173-303-830 permit changes Letter regarding the grouting of PUREX Storage Tunnels, have you ever had a leaky basement? Have you ever seen a rock pocket in a concrete wall? The grouting those Tunnels WILL crack, leak in and out, and be a compounded mess if you ever do figure out what to do with that stuff. But Listen, you've got 50,000 years to figure it out. Don't grunt and keep thinking we can do better. Thanks- Gordon Smith, 80291 Meridian, Seattle, WA 98103

Response To: Gordon Smith

I-2-1

Ecology expects DOE to stabilize the PUREX Storage Tunnels and work towards closure in accordance with the schedule in Chapter 11 Closure and Financial Assurance, Section 11.7 Closure Schedule and Time Frame.

Comment From: Benjamin Gallaher

I-3-1

The tunnel has significant amounts of radioactive material. Grouting the tunnel will make eventual disposal of this material next to impossible, i.e. grouting the tunnel will turn the PUREX tunnel into the final disposal repository for this waste. This is unacceptable. The tunnel needs to be stabilized while taking into account that this material will be removed at some point in the future.

Response To: Benjamin Gallaher

I-3-1

Thank you for your comment. The final closure decision for the PUREX Storage Tunnels has not been made, and will be made together with the remedial actions decisions for the 200-CP-1 CERCLA Operable Unit. Chapter 11 Closure and Financial Assurance, Section 11.7 Closure Schedule and Time Frame, contains a table detailing the schedule for closure activities. TPA milestone M-085-80 requires DOE to submit a Remedial Investigation/Feasibility Study Work Plan for 200-CP-1 to Ecology by September 30, 2020. The grouting of the PUREX Storage Tunnels will not preclude any final future closure or remedial decision.

Comment From: Mike Conlan

I-4-1

1. Remove all nuclear waste, 2. Do not allow anymore nuclear waste into the facility, 3. Replace all the single storage tanks, 4. Stop all the nuclear leakage entering the Columbia River Mike Conlan, Redmond WA

Response To: Mike Conlan

I-4-1

Ecology is working to ensure that long-term storage, treatment and disposal of the waste is protective of human health and the environment. The proposed permit changes are not to allow new waste, but to better manage the waste already at Hanford. Single-shell tanks are not in the scope of this comment period. Ecology does agree the tanks pose a threat. We believe a better approach to addressing it is to remove the waste from the single-shell tanks and put it in the compliant double-shell tanks to prepare for eventual treatment in the Waste Treatment Plant now being built. The grouting of Tunnel 1 and proposed grouting of Tunnel 2 will provide interim stabilization and provide protection of human health and the environment until a final closure decision has been made. The proposed interim stabilization action of grouting Tunnel 2 will not preclude future remedial or final closure actions.

Chapter 11 Closure and Financial Assurance, Section 11.5.5.4.1 Grout Design, of the proposed permit modification describes how the engineered grout was formulated in order to achieve desired characteristics for the long term storage of waste in the tunnels. Addendum F Preparedness and Prevention, Section F.2.2 Runoff/Run-on, of the proposed permit modification describes how runoff/run-on will be controlled after grouting is completed. Run-on is controlled by the design features of the exterior of the tunnels that serve to divert run-on away from the interior of the tunnels. Additionally, all waste within the tunnels is stored well above the floor level on railcars. The potential for run-on contacting the waste is further reduced after grouting because the grout encapsulates the waste to present another physical barrier between the source of potential run-on and the waste. With this information, the potential for release of dangerous waste as a result of run-on is negligible. Depth to groundwater at the PUREX Storage Tunnels is approximately 400 feet below ground surface.

Comment From: Erin Zimman

I-5-1

The agencies involved with the Hanford area need to be mindful of the BIG PICTURE. This isn't about right now and you. It's about our future in this area. This radioactive contamination needs to be CLEANED UP, not filled in, not left there. Do what is right, not what is cheap and/or easy.

I-5-2

If you are transparent with the people, clearly communicating the expected quantity and/or type of radioactive pollution present in the tunnel, the threat this contamination poses to our health, we will pay more to have it dealt with properly.

Response To: Erin Zimman

I-5-1

The final closure decision for the PUREX Storage Tunnels has not been made, and will be made together with the remedial actions decisions for the 200-CP-1 CERCLA Operable Unit. Chapter 11 Closure and Financial Assurance, Section 11.7 Closure Schedule and Time Frame, contains a table detailing the schedule for closure activities. TPA milestone M-085-80 requires DOE to submit a Remedial Investigation/Feasibility Study Work Plan for 200-CP-1 to Ecology by September 30, 2020. The grouting of the PUREX Storage Tunnels will not preclude any final future closure or remedial decision. However, Ecology is also concerned about the length of time it is taking to clean up the Hanford Site. As an agency, we are dedicated to the protection of human health and the environment. In addition, we agree with transparent and early communications in cleanup decisions.

I-5-2

Table 3.1 contained in Chapter 3.0 (Waste Analysis Plan) contains an inventory of the contents in the PUREX Storage Tunnels. Ecology's permit for the PUREX Storage Tunnels only regulates the dangerous constituents residing in the rail cars. The following documents were received and evaluated by Ecology to confirm the wastes contained in Table 3.1:

- Reference 1: WHC-IP-0977, dated February 22, 1994, "Estimation of PUREX Equipment and Materials that are Candidates for Removal and Waste Processing during PUREX Plant Closure."
- Reference 2: HNF-SD-EN-WAP-007, Rev 4, PUREX Storage Tunnels Waste Analysis Plan
- Reference 3: RHO-MA-116, PUREX Technical Manual
- Reference 4: 96-EAP-111, Request for approval of NOC
- Reference 5: HW-31000, PUREX Technical Manual, Hanford Atomic Products Operation
- Reference 6: SD-HS-SAR-001, PUREX Plant Final Safety Analysis Report, Rev 3

The above referenced documents can be found in the administrative record. The administrative record is located here: <https://pdw.hanford.gov/arpir/>

Comment From: bill johns

I-6-1

I believe grouting the Hanford PUREX tunnels is a sufficient treatment. I have worked with grouting and find it to be a suitable stabilizer. Do not spent the extra dollars now to remove the material.

Response To: bill johns

I-6-1

The final closure decision for the PUREX Storage Tunnels has not been made, and will be made together with the remedial actions decisions for the 200-CP-1 CERCLA Operable Unit. Chapter 11 Closure and Financial Assurance, Section 11.7 Closure Schedule and Time Frame, contains a table detailing the schedule for closure activities.

Comment From: Mark Smith

I-7-1

The most pitiful excuse for a cover-up I've ever seen, and I'll be 78 tomorrow. You shovel some dirt ("grout") over radioactive waste, and that justifies the billions of dollars in profits that Hanford brought in, plus the clean-up funds. Just cover it up, no matter how ineffective and ephemeral the cover-up. Buy time. Radioactive waste will be around for millions of years, but you won't, so kick the Chernobyl cans and PUREX tunnels down the road for our kids to figure out. I've begun to wonder if the primary qualification for decision making these days is to be criminally insane. Could you at least try for a better cover-up?

Response To: Mark Smith

I-7-1

The grout recipe is not dirt, but it is made up of sand, Type III cement, water, and admixtures and it provided the stabilization of Tunnel 1 as an interim action to keep human health and the environment protected. Ecology felt there was a significant further threat of collapse for Tunnel 1 requiring immediate stabilization of the tunnel to not preclude further collapse. The proposal for grouting Tunnel 2 has been put out for public review and the final permit decision has not been made for Tunnel 2. The final closure decision for the PUREX Storage Tunnels has not been made, and will be made together with the remedial actions decisions for the 200-CP-1 CERCLA Operable Unit. Chapter 11 Closure and Financial Assurance, Section 11.7 Closure Schedule and Time Frame, contains a table detailing the schedule for closure activities. TPA milestone M-085-80 requires DOE to submit a Remedial Investigation/Feasibility Study Work Plan for 200-CP-1 to Ecology by September 30, 2020.

Comment From: Leah Boehm- Brady

I-8-1

Please do not 'grout' in the rail tunnels where high level radioactive waste is waiting for REAL disposal. Leaving such contamination in place is dangerous and dumb. Won't the grout make it harder to remove later? If real removal and disposal is to come, won't grout prevent easy access? I oppose grouting it in. Leah Boehm Brady

Response To: Leah Boehm- Brady

I-8-1

The grouting of Tunnel 1 and proposed grouting of Tunnel 2 will provide interim stabilization and provide protection of human health and the environment until a final closure decision has been made. The proposed interim stabilization action of grouting Tunnel 2 will not preclude future remedial or final closure actions. Chapter 11 Closure and Financial Assurance, Section 11.6 Final Closure Activities, includes a description of potential final closure options. If removal of the waste in the tunnels is selected as the final closure option, cutting methods, such as diamond wire saws or other technology, would mostly likely be used to cut the tunnel into sections that could be treated as necessary and disposed of in the appropriate disposal facility. While this cutting process would require detailed planning and engineering, it is commonly used technology and is well suited to this application.

Comment From: Randall Kemman

I-9-1

These need to be secured no matter what the cost. Do we even know what materials are inside those tunnels?

I-9-2

A good south wind on the wrong day will bring the contaminants right to Desert Aire. For that matter, any wind takes it to populated area.

I-9-3

Seal it in place, do something that will keep it on the reservation. Nevada does not want it. Chernobyl was sealed in place. Do the same for Hanford.

Response To: Randall Kemman

I-9-1

Table 3.1 contained in Chapter 3.0 (Waste Analysis Plan) contains an inventory of the contents in the PUREX Storage Tunnels. Ecology's permit for the PUREX Storage Tunnels only regulates the dangerous constituents residing in the rail cars. The following documents were received and evaluated by Ecology to confirm the wastes contained in Table 3.1:

- Reference 1: WHC-IP-0977, dated February 22, 1994, "Estimation of PUREX Equipment and Materials that are Candidates for Removal and Waste Processing during PUREX Plant Closure."
- Reference 2: HNF-SD-EN-WAP-007, Rev 4, PUREX Storage Tunnels Waste Analysis Plan Reference 3: RHO-MA-116, PUREX Technical Manual
- Reference 4: 96-EAP-111, Request for approval of NOC
- Reference 5: HW-31000, PUREX Technical Manual, Hanford Atomic Products Operation
- Reference 6: SD-HS-SAR-001, PUREX Plant Final Safety Analysis Report, Rev 3

The above referenced documents can be found in the administrative record. The administrative record is located here: <https://pdw.hanford.gov/arpir/>

I-9-2

The proposed interim closure action stabilizes the waste in the tunnel by totally encapsulating it in grout, thereby minimizing the potential for future structural failure and potential release of dangerous waste constituents into the air.

I-9-3

The grouting of Tunnel 1 and proposed grouting of Tunnel 2 will provide interim stabilization and provide protection of human health and the environment until a final closure decision has been made. The proposed interim stabilization action of grouting Tunnel 2 will not preclude future remedial or final closure actions. Chapter 11 Closure and Financial Assurance, Section 11.6 Final Closure Activities, includes a description of potential final closure options.

Comment From: Jeanne Poirier

I-10-1

Your challenge at Hanford with regard to these Purex tunnels is similar to other problems at Hanford. They were never built to last so long and there is not a clear solution to deal with the waste properly. ENSURE whatever actions you do PROTECT any spilling into the Columbia River, especially underground seepage. Thank you for your work.

Response To: Jeanne Poirier

I-10-1

The grouting of Tunnel 1 and proposed grouting of Tunnel 2 will provide interim stabilization and provide protection of human health and the environment until a final closure decision has been made. The proposed interim stabilization action of grouting Tunnel 2 will not preclude future remedial or final closure actions.

Chapter 11 Closure and Financial Assurance, Section 11.5.5.4.1 Grout Design, of the proposed permit modification describes how the engineered grout was formulated in order to achieve desired characteristics for the long term storage of waste in the tunnels. Addendum F Preparedness and Prevention, Section F.2.2 Runoff/Run-on, of the proposed permit modification describes how runoff/run-on will be controlled after grouting is

completed. Run-on is controlled by the design features of the exterior of the tunnels that serve to divert run-on away from the interior of the tunnels. Additionally, all waste within the tunnels is stored well above the floor level on railcars. The potential for run-on contacting the waste is further reduced after grouting because the grout encapsulates the waste to present another physical barrier between the source of potential run-on and the waste. With this information, the potential for release of dangerous waste as a result of run-on is negligible. Depth to groundwater at the PUREX Storage Tunnels is approximately 400 feet below ground surface.

Comment From: Forest Shomer

I-11-1

Modifying the state hazardous waste permit for the stabilization plan should include an analysis under the State Environmental Policy Act (SEPA). Hanford cleanup must be accelerated lest hazardous wastes enter the larger environment.

Response To: Forest Shomer

I-11-1

Environmental impacts for stabilization of the tunnel were considered in Appendix R of the Tank Closure & Waste Management (TC&WM) Environmental Impact Statement (EIS). The EIS can be found here: <https://www.hanford.gov/page.cfm/finaltcwmeis>. Ecology expects to issue a SEPA notice of adoption of the TC&WM EIS, no later than the date that Ecology begins public comment on the permit modification request. Note that while the TC&WM EIS included stabilization of the tunnel in the Cumulative Impacts Assessment, final closure of the tunnels will require a National Environmental Policy Act/SEPA evaluation of alternatives.

Comment From: Lloyd Becker

I-12-1

After attending and listening to Mr. Farabee talking about the PUREX facility, I worked at 272AW when PUREX was closed down from its mission of producing Plutonium. Here is where the problem lies about PUREX. PUREX had 24 years, 1994 to 2018, to have PUREX dismantled, decontaminated and removed to a pit. Mr. Farabee stated the budget. I find that interesting because they had 23 years of past budgets and the current one to allocate budgeted dollars to clean up and remove PUREX. I stated this was my job in the Military. It entailed, cleanup, training, decontamination and removal. If every Contractor that worked at Hanford was having trouble in accomplishing the cleanup at Hanford, all they needed to do was call for a couple of battalions of engineers and Chemical Corp personnel. Since they have been grouting the tunnel, I asked Mr. Farabee, When will that be cleaned up? All of these questions and comments are pertinent to the conversation. Why did they wait so long and when will it be cleaned up? Mr. Farabee did exactly what any Handfordite would have done. Create work for their following familial generations.

I-12-2

Last comment. From a newspaper article, there is 56 million gallons of waste sitting in the tanks. Question, Why is there that much? There should be a few million gallons, not 56. 56 Million gallons only spells one word, "LAZY"! Billions of dollars spent and no work is being done. Because of this inaction, two very large problems exist. WHY????

I-12-3

DOE, RL needs to schedule this so they can explain why PUREX was never cleaned up in the first place. This will never be put to rest, because there are answers to be given. Why is there 56 million gallons of waste on Hanford? Why has PUREX not been cleaned up, dismantled and removed. Please,,,,,, do not say budget. They have had 23 years of budgets. Thanx FYI. I received a note from MSA. I do not handle ignorant ploys very well.

Response To: Lloyd Becker

I-12-1

As part of the Hanford Federal Facility Agreement and Consent Order the Tri-Parties, (USDOE, Ecology, and the Environmental Protection Agency (EPA) set milestones for cleanup priorities. Hanford, one of the most contaminated waste sites in the USDOE complex, has competing resources with federal budgetary restraints, regulatory constraints, and aging infrastructure across 300+ square mile of geographic area. Currently, important cleanup work is being achieved and progress continues on many parts of the Hanford Site. A high priority is placed on mitigating risk to human health and environment, while maintaining cleanup progress, and continuing to focus on improving the condition of Hanford infrastructure.

The condition of the many legacy structures, underground containment structures, and other cleanup activities are taken into consideration along with regulatory compliance and legal obligations when funding and work priorities are set. The Tri-Parties will continue to establish priorities based on ensuring safety of the work force, the public, and the environment, while considering the best technical information available and available funding.

I-12-2

Ecology is working to ensure that long-term storage, treatment and disposal of the waste is protective of human health and the environment. Tank waste contained at Hanford is not in the scope of this comment period. However, Ecology expects the permittees to work towards closure of the tanks in accordance with the schedule in the closure plan.

I-12-3

The final closure decision for the PUREX Storage Tunnels has not been made, and will be made together with the remedial action decisions for the 200-CP-1 CERCLA Operable Unit in accordance with the schedule set in Chapter 11 Closure and Financial Assurance, Section 11.7 Closure Schedule and Time Frame.

Comment From: Kathryn Sundermann

I-13-1

Dear Ms. McFadden: I am very concerned that ground water and the Columbia River will be contaminated by the dangerous waste from the PUREX Tunnels.

I-13-2

The hazards posed by lead, mercury, silver and silver salts, chromium, cadmium, barium, and mineral oil, not to mention Plutonium-239/240, Iodine-129 and Tritium must be considered. We need solid evidence that "landfill closure," grouting waste in place, provides secure long-term protection.

I-13-3

Please act to protect the lives of people who live in this region, the workers of Hanford, and the environment.

Response To: Kathryn Sundermann

I-13-1

The grouting of Tunnel 1 and proposed grouting of Tunnel 2 will provide interim stabilization and provide protection of human health and the environment until a final closure decision has been made. The proposed interim stabilization action of grouting Tunnel 2 will not preclude future remedial or final closure actions.

Chapter 11 Closure and Financial Assurance, Section 11.5.5.4.1 Grout Design, of the proposed permit modification describes how the engineered grout was formulated in order to achieve desired characteristics for the long term storage of waste in the tunnels. Addendum F Preparedness and Prevention, Section F.2.2 Runoff/Run-on, of the proposed permit modification describes how runoff/run-on will be controlled after grouting is completed. Run-on is controlled by the design features of the exterior of the tunnels that serve to divert run-on away from the interior of the tunnels. Additionally, all waste within the tunnels is stored well above the floor level on railcars. The potential for run-on contacting the waste is further reduced after grouting because the grout encapsulates the waste to present another physical barrier between the source of potential run-on and the waste. With this information, the potential for release of dangerous waste as a result of run-on is negligible. Depth to groundwater at the PUREX Storage Tunnels is approximately 400 feet below ground surface.

I-13-2

Potential final closure options are described in Chapter 11 Closure and Financial Assurance, Section 11.6 Final Closure Activities, of the proposed permit modification. Chapter 11 Closure and Financial Assurance, Section 11.6.2 In Situ Disposal (Landfill Closure), describes the option of "In Situ" Disposal (Landfill Closure). The final closure decision for the PUREX Storage Tunnels has not been made, and will be made together with the remedial actions decisions for the 200-CP-1 CERCLA Operable Unit in accordance with the schedule set in Chapter 11 Closure and Financial Assurance, Section 11.7 Closure

Schedule and Time Frame. Ecology expects the permittees to work towards closure in accordance with the schedule contained in Chapter 11 Closure and Financial Assurance, Section 11.7 Closure Schedule and Time Frame, of the proposed permit modification.

I-13-3

Thank you for your comment. Ecology is focused on the protection of human health and the environment.

Comment From: Liza Paolini

I-14-1

This site needs to be formally cleaned up and a final closure plan put in place and acted upon now! "Wooden structure failure" means that the only thing protecting the environment from the contamination at this site is dirt and wood and now you want to add tile grout to reinforce it?! The same stuff that crumbles in my bathroom after a few years of use? This is the best plan you can come up with? It is not acceptable. Grout and cement did not contain Chernobyl, but you are trying to get the citizens of the United States to believe it will when it won't. There's not one contaminated nuclear site in our country that is contained properly nor has any decontamination plan in place now. What happens when an earthquake cracks the grout? This is just as poorly planned and executed as West Lake and all the areas in St. Louis. Why is it so impossible to create timely plans to decontaminate these sites that have been festering since the 1940's to the 1960's mainly untouched and unmitigated?

I-14-2

I want a public hearing that addresses the decontamination of everything contained in both tunnels in addition to addressing the immediate failure of "dirt and wood" that was used in the 1960's and has been and will be inadequate to contain any nuclear contaminated devices or waste.

I-14-3

As a member of the Green Party, we make it our mission to make our environment safe, and this is nowhere near safe. It's not ecologically or economically sound in the short or long term. We can send a car into orbit, but can't solve the decades long issue of nuclear waste?

Response To: Liza Paolini

I-14-1

A thorough engineering design process was used to ensure that the grout used to stabilize the tunnel will be strong enough to eliminate the potential for future structural failure that may result from continued aging or from natural phenomenon such as earthquakes. The grout design is described in Chapter 11 Closure and Financial Assurance, Sections 11.5.5.4.1 Grout Design and 11.5.6.4.1 Grout Design, of the draft permit.

The final closure decision for the PUREX Storage Tunnels has not been made, and will be made together with the remedial actions decisions for the 200-CP-1 CERCLA Operable Unit. Ecology expects the permittees to work towards closure in accordance with the schedule

contained in Chapter 11 Closure and Financial Assurance, Section 11.7 Closure Schedule and Time Frame, of the proposed permit modification.

I-14-2

Thank you for your comment and your request for a public hearing. Ecology received requests for public hearings during the second portion of the Class 3 modification. Public hearings are scheduled for August 27 in Richland, WA and September 5 in Seattle, WA. For additional public hearings in other locations, a request for a public hearing must be received by Ecology during the second comment period for the proposed permit modification. Please submit a request for a public hearing during the second comment period for consideration.

I-14-3

The grouting of Tunnel 1 and proposed grouting of Tunnel 2 will provide interim stabilization and provide protection of human health and the environment until a final closure decision has been made. The proposed interim stabilization action of grouting Tunnel 2 will not preclude future remedial or final closure actions.

Chapter 11 Closure and Financial Assurance, Section 11.6 Final Closure Activities, includes a description of potential final closure options. The final closure decision for the PUREX Storage Tunnels has not been made, and will be made together with the remedial actions decisions for the 200-CP-1 CERCLA Operable Unit in accordance with the schedule set in Chapter 11 Closure and Financial Assurance, Section 11.7 Closure Schedule and Time Frame.

Comment From: James Alzheimer

I-15-1

April 11, 2018 Filling Tunnel 2 at PUREX with grout may ultimately be the best permanent solution to address the risk of the high-level waste currently being stored there. However, the Expert Panel's recommendation that grouting is the best option to stabilize Tunnel 2 has not adequately considered the long-term requirements for disposal of the high-level waste. The waste contained inside the PUREX Tunnels is high-level waste.

I-15-2

There are regulatory requirements to perform a Clean Closure Practicability Determination as part of the Closure Process. This has not been done for the PUREX Tunnel waste.

I-15-3

Also, since the waste is high-level, there is a requirement that a Waste Incidental to Reprocessing Determination must be made before the waste can be left in place. Both the Clean Closure Practicability Determination and the Waste Incidental to Reprocessing Determination are in the process of being done for the waste currently stored in the Single-Shell Tanks.

I-15-4

The waste in the SST is in the same category as the waste being stored in the PUREX Tunnels. The same regulatory requirements apply.

I-15-5

The Expert Panel's recommendations were focused on the near-term stabilization of Tunnel 2. The evaluation criteria used in ranking the various options was highly biased toward near term risk reductions with almost no consideration of the overall, long term costs and regulatory requirements. While the Expert Panel considered that the contaminated equipment in the PUREX Tunnels might ultimately have to be removed from the grout, the evaluation criteria did not adequately rank the cost and risk of this operation. Removing the equipment from the grout would be orders of magnitude more costly and present significantly higher risk to the workers than most other Tunnel stabilization approaches. If Tunnel 2 is filled with grout, a future evaluation would surely find the cost and risk of removing the contaminated equipment from the Tunnels as impracticable. While the use of grout might be the best method to stabilize Tunnel 2, stabilization to prevent collapse is not really the only option to mitigate the risks of a tunnel collapse. Other options such as surface barrier or a containment building, while not preventing a collapse, would provide containment of the contamination if the Tunnel were to collapse. The structural integrity evaluation of Tunnel 2 indicates the design likely does not meet current codes and standards. Admittedly, there has not been an inspection to determine how much degradation of the Tunnel structure has occurred. However, the codes and standards have built in factors of safety that probably are large enough that collapse of the Tunnel is unlikely. The materials of construction for Tunnel 2 are not as susceptible to degradation as much as Tunnel 1's wooden timbers. The risk of a contamination release if a section of Tunnel 2 were to collapse is modest. Almost all of the contamination stored in the PUREX Tunnels is inside the vessels and other components. The outside of the equipment was decontaminated as much as practicable before being placed on the railcars. There was essentially no detectable contamination release from the collapse of Tunnel 1. I would expect a similar situation if there were a Tunnel 2 collapse. The decisions being made with respect to the contamination currently being stored in PUREX Tunnels 1 and 2 must consider the long-term costs, risks, and regulatory requirements. These Tunnels are near other contaminated sites that also need to be mitigated and closed. Coordination of cleanup activities within the Central Plateau is a significant part of intent of the Tri-Party Agreement. The cleanup activities for the PUREX Tunnels must be coordinated with cleanup activities for the nearby sites. Long-term, grouting to PUREX Tunnel 2 might be the best approach. However, the U.S. Department of Energy Richland Operations Office has not shown that it is the best long-term approach. If Tunnel 2 is grout filled and it is determined in the future the high-level waste must be removed, the cost and risk to the workers would be very high. The use of grout filling needs to be evaluated against the other options from a long-term perspective that considers realistic risk and cost estimates. Funding and other resources for Hanford cleanup are limited. The work needs to be done wisely. Until a cost and risk evaluation that includes the ultimate disposal of the contamination in the PUREX Tunnels, I do not think Tunnel 2 should be grouted. A temporary surface cover would be more than adequate for the near term. Thank you for your considerations, Jim Alzheimer
2185 Newcomer Avenue Richland, WA 99354

Response To: James Alzheimer

I-15-1

The proposed interim stabilization action of grouting Tunnel 2 will not preclude future remedial or final closure actions, nor has the waste been designated as high-level. The final closure decision for the PUREX Storage Tunnels will be made together with the remedial actions decisions for the 200-CP-1 CERCLA Operable Unit in accordance with the schedule in Chapter 11 Closure and Financial Assurance, Section 11.7 Closure Schedule and Time Frame, and will consider the actions necessary to address the radiological classification and final disposition of waste in the tunnels at that time.

In addition, Table 3.1 contained in Chapter 3.0 (Waste Analysis Plan) contains an inventory of the contents in the PUREX Storage Tunnels. Ecology's permit for the PUREX Storage Tunnels only regulates the dangerous constituents residing in the rail cars. The following documents were received and evaluated by Ecology to confirm the wastes contained in Table 3.1:

- Reference 1: WHC-IP-0977, dated February 22, 1994, "Estimation of PUREX Equipment and Materials that are Candidates for Removal and Waste Processing during PUREX Plant Closure."
- Reference 2: HNF-SD-EN-WAP-007, Rev 4, PUREX Storage Tunnels Waste Analysis Plan Reference 3: RHO-MA-116, PUREX Technical Manual
- Reference 4: 96-EAP-111, Request for approval of NOC
- Reference 5: HW-31000, PUREX Technical Manual, Hanford Atomic Products Operation
- Reference 6: SD-HS-SAR-001, PUREX Plant Final Safety Analysis Report, Rev 3

The above referenced documents can be found in the administrative record. The administrative record is located here: <https://pdw.hanford.gov/arpir/>

I-15-2

The grouting of Tunnel 1 and proposed grouting of Tunnel 2 will provide interim stabilization and provide protection of human health and the environment until a final closure decision has been made. The proposed interim stabilization action of grouting Tunnel 2 will not preclude future remedial or final closure actions. A closure decision has not been made. Potential options for final closure are included in Chapter 11 Closure and Financial Assurance, Section 11.6 Final Closure Activities, of the proposed permit modification.

I-15-3

The proposed permit modification describes stabilization actions for interim closure of the PUREX Storage Tunnels. USDOE-RL does not need a Waste Incidental to Reprocessing Determination (WIR) at this phase of interim closure. The waste has not yet been designated as high-level and the permittees are not currently treating or disposing of the waste. Once a final closure decision has been made, Ecology will ask USDOE-RL to initiate a WIR.

I-15-4

The waste contained in the Single Shell Tanks are not in the same category as the waste currently being stored in the PUREX Storage Tunnels. Table 3.1 contained in Chapter 3 (Waste Analysis Plan) of the permit describes what wastes are stored in PUREX Storage Tunnel 2. The following documents were received and evaluated by Ecology to confirm the wastes contained in Table 3.1:

- Reference 1: WHC-IP-0977, dated February 22, 1994, "Estimation of PUREX Equipment and Materials that are Candidates for Removal and Waste Processing during PUREX Plant Closure."
- Reference 2: HNF-SD-EN-WAP-007, Rev 4, PUREX Storage Tunnels Waste Analysis Plan Reference 3: RHO-MA-116, PUREX Technical Manual
- Reference 4: 96-EAP-111, Request for approval of NOC
- Reference 5: HW-31000, PUREX Technical Manual, Hanford Atomic Products Operation
- Reference 6: SD-HS-SAR-001, PUREX Plant Final Safety Analysis Report, Rev 3

The above referenced documents can be found in the administrative record. The administrative record is located here: <https://pdw.hanford.gov/arpir/>

I-15-5

The structural evaluation completed in 2017 for Tunnel Number 2 identified that timely stabilization of the tunnel is necessary to avoid potential structural failure that may result in a release to the environment. The Expert Panel focused on the ways to prevent the structural failure of Tunnel 2. The panel did consider the possible ways of retrieving the equipment following the various options reviewed. Using diamond wire saws to cut the grout and the waste is a commonly used technology and is well suited to this application. The grout will provide the structural support necessary to prevent the failure of the tunnel structure while still allowing it to be cut for later removal if the Clean Closure path is chosen. Grout will also provide shielding from the radiation dose from the equipment during future remediation.

During investigation conducted in support of the stabilization design, DOE obtained additional information about the condition of the tunnel that confirms the need to proceed with stabilization in the very near future. The benefit of additional study of options for the tunnel is outweighed by the risk to human health and the environment and the impact to nearby operations essential to the cleanup mission that would result from a structural failure of Tunnel 2.

The final closure decision for the PUREX Storage Tunnels will be made together with the remedial actions decisions for the 200-CP-1 CERCLA Operable Unit in accordance with the schedule contained in Chapter 11 Closure and Financial Assurance, Section 11.7 Closure Schedule and Time Frame. Ecology will oversee the evaluations required to support development of the final closure and remedial decisions and will ensure that the final disposition of the waste within the tunnels complies with applicable laws and regulations.

Comment From: Geoff Daly

I-16-1

Dears Sirs/Madam, I have followed the situation of the Purex tunnel 1 Collapse last year and the eventual use of Solidifying Grout being used to secure the tunnels from further collapsing: my question(s) is as follows: - The Purex Plant and Tunnels are due for complete demolition including the removal of all the radionuclide materials, rail cars and equipment from the two tunnels, yet one is now full of solidified grout, WHY was it solidified? -The two tunnels if both are solidified; will require very special equipment to remove the Grouts from around the Rail Cars, Equipment, Storage vessels et. And will take an enormous amount of forward planning/engineering and consideration [as Tunnel 1 is now solidified]; through having to build a mock up of both tunnels and the products inside, to see what works etc. to remove the grout efficiently and safely: - such as jackhammers on remote arms, High Pressure air or water demolition nozzles, Ultra-Sonic destruction heads, Laser cutters or newer devised degROUTING methods! Without damaging or releasing any of the now contained Radionuclides. All this, will do is, extend the time schedule and costs for closing both tunnels if the 2nd is grouted like 1st? -

I-16-2

I passed onto the EOM site comment section [just after the tunnel 1 collapsed]; a written comment for utilizing non- solidifying methods. Such as small diameter glass/ceramic spheres, fumed silica's, Diatomaceous earth types or Bentonite clays with Moisture Absorbent silica gels mixed in, to stop and clumping or moisture reactions. Even to the use of, certain Zeolite resins or GAC's mixed in so they remain powdery for easy removal, when the final demolition/remediation of Tunnel 2 takes place. {please note: all these materials can be Vitrified with all the Nuclides removed for burial!}.

I-16-3

Also Tunnel 1 needs to be planned - NOW not later! The costs involved are going to be in the Hundreds of Millions of dollars before work can commence and years down the road.

I-16-4

Consider Tunnel 2 being filled with the above materials to ensure an easier removal and decontamination/closure when time comes, do not duplicate tunnel 1's filling at the expense of the TAXPAYER having to foot the Remediation costs for the years involved - all concerned need to think outside the BOX and not the same old same old methods. The Japanese and EU Nuclear folks are using non-solidifying methods to store various materials safely before their final disposition!

I-16-5

-Ladies and gentlemen there are no excuses, for not having maintained both Tunnels integrity since their end of use, in the 1988 period and is, really, sheer negligence for not being Diligent in the stewardship over these 50+ year old, poorly constructed tunnels, whose lives are more than past their usefulness and safety!

I-16-6

"Engineered Solidifying Grout" is not the short or long-term answer. Thus, reconsider other methods before anything else than, solidifying grouts.

I-16-7

Please reach out to all who raise concerns and questions on the use of solidifying grouts, during the public review on March 14th [Please include all, of this communication in the March 14th meeting] and the comment period documents; prior to any final decision on how to handle Tunnel 2 and expending vast amounts of Public taxpayer's money unnecessarily. -The above is my "Public Comment" as per the 60-day Public comment period on the proposed modification to the Purex storage tunnels and advertised
Sincerely yours. Geoff PS please place me on your mailing list for the PUREX notifications on the Hanford site. 74 Walden Pond Dr. Nashua NH 03064-2877 USA Skype: - carvergmdl Phone: - 603-318-5900 Fax: - 603-882-7860

Response To: Geoff Daly

I-16-1

The final closure decision for the PUREX Storage Tunnels has not been made, and will be made together with the remedial actions decisions for the 200-CP-1 CERCLA Operable Unit in accordance with the schedule in Chapter 11 Closure and Financial Assurance, Section 11.7 Closure Schedule and Time Frame. The interim stabilization action of grouting Tunnel 1 and the proposed action of grouting Tunnel 2, will provide safe storage of the waste contained inside of the tunnels and protection of human health and the environment, until a final closure decision has been made. Chapter 11 Closure and Financial Assurance, Section 11.1 Introduction, of the permit modification discusses the phased approach for closure of the tunnels. Chapter 11 Closure and Financial Assurance, Section 11.6 Final Closure Activities, discusses potential options for closure when a decision is made. Filling the tunnel void spaces with engineered grout will not preclude final closure actions, including clean closure.

If removal of the waste in the tunnels is selected as the final closure option, cutting methods, such as diamond wire saws or other technology, would mostly likely be used to cut the tunnel into sections that could be treated as necessary and disposed of in the appropriate disposal facility. While this cutting process would require detailed planning and engineering, it is commonly used technology and is well suited to this application. DOE frequently uses mockups to support design or implementation of new or complex technologies, especially when deployed in hazardous conditions.

I-16-2

Grout stabilizes the structure of the tunnel to eliminate the potential for structural failure prior to final remediation. The use of sand or clay was considered and rejected because the way the fill material would flow into the tunnel presents a challenge to void fill operations. A physical property called "angle of repose" would cause the sand or clay (or gravel or glass beads) to pile up rather than flow into all the void spaces. Completely filling the tunnel with dry material would require many more injection points than are currently available.

Drilling into the tunnel to create new injection points is not recommended because of the potential for structural failure. Air emissions would also be a concern with dry materials.

Alternatively, the sand or clay could be mixed with large volumes of water to create a slurry that would flow into all the void spaces. However, unlike grout which fully incorporates the water into the grout matrix during the curing process, use of a slurry method with sand, gravel or glass beads, would leave the water free to potentially drive contamination into the soil beneath the tunnel. Clay may absorb some or all of the water used, but would swell potentially creating future structural issues. Clays would likely gradually release water over time potentially driving contamination into the soil beneath the tunnel.

Chemical compatibility of grout with the waste in the tunnel was evaluated and no issues were identified. The proposed interim stabilization action of grouting Tunnel 2 will not preclude future remedial or final closure actions. If removal of the waste in the tunnels is selected as the final closure option, cutting methods, such as diamond wire saws or other technology, would mostly likely be used to cut the tunnel into sections that could be treated as necessary and disposed of in the appropriate disposal facility. While this cutting process would require detailed planning and engineering, it is commonly used technology and is well suited to this application. Air emission controls would be installed and licensed in accordance with applicable requirements.

I-16-3

The final closure decision for the PUREX Storage Tunnels has not been made, and will be made together with the remedial actions decisions for the 200-CP-1 CERCLA Operable Unit. Chapter 11 Closure and Financial Assurance, Section 11.7 Closure Schedule and Time Frame, contains a table detailing the schedule for closure activities. TPA milestone M-085-80 requires DOE to submit a Remedial Investigation/Feasibility Study Work Plan for 200-CP-1 to Ecology by September 30, 2020.

I-16-4

A structural evaluation of the PUREX Storage Tunnels was completed in 2017. The structural evaluation for the tunnels was submitted to Ecology on February 8, 2018 (Letter 18-AMRP-0051) and can be found here:

<https://www.hanford.gov/page.cfm/PUREXTunnelsInformation> An expert panel was put together to evaluate the current state of Tunnel 2 and also provide guidance and decision-making criteria for near-term stabilization of Tunnel 2 hazards. Non-solidifying methods were evaluated, but the expert panel concluded that stabilization with grout was the preferred option. The expert panel report can be found here:

<https://www.hanford.gov/page.cfm/PUREXTunnelsInformation>

I-16-5

See Response to I-16-6

I-16-6

Ecology is also concerned about the delays in Hanford cleanup. We are committed to the cleanup of waste at Hanford and to get the waste to a stable form for long-term storage.

Ecology expects USDOE and their contractors to work towards closure in accordance with the schedule contained in Chapter 11 Closure and Financial Assurance, Section 11.7 Closure Schedule and Time Frame. Ecology does not get involved in the contractual agreements between USDOE and their contractors, Ecology is focused on the protection of human health and the environment.

I-16-7

The concerns and questions expressed at the March 14th meeting are not individually responded to, but are considered before any final decisions are made. We have added your email to the Hanford Listserv and your physical mailing address can be added upon request. We do not manage other USDOE/Nuclear Regulatory Commission sites' mailing lists and you must contact them in order to be placed on their mailing lists.

Comment From: Debra Janison

I-17-1

I am an ordinary citizen with concerns about DOE plans to grout the Purex Storage Tunnels in place as a measure to shore up the supporting elements of the structure which have been seriously compromised due to persistent exposure to radioactivity.

I-17-2

From what I understand, grouting would seal a high level of radioactive material in place which may fail in the future due to the permeability of grout and the danger of groundwater contamination.

I-17-3

What is needed is a permanent repository for nuclear waste that is more geographically and geologically stable than the Hanford site. This problem has been on the table for decades and is still not being addressed. I urge you to make efforts to seek such a permanent solution.

Response To: Debra Janison

I-17-1

Chapter 11 Closure and Financial Assurance, Section 11.1 Introduction, of the proposed permit modification states "Interim closure activities will ensure safe storage of dangerous waste until final closure can be completed." The interim stabilization action of grouting Tunnel 1 and the proposed action of grouting Tunnel 2, will provide safe storage of the waste contained inside of the tunnels and protection of human health and the environment, until a final closure decision has been made.

I-17-2

Chapter 11 Closure and Financial Assurance, Section 11.5.5.4.1 Grout Design, of the proposed permit modification describes how the engineered grout was formulated in order to achieve desired characteristics for the long term storage of waste in the tunnels. Addendum F Preparedness and Prevention, Section F.2.2 Runoff/Run-on, of the proposed permit modification describes how runoff/run-on will be controlled after grouting is

completed. Run-on is controlled by the design features of the exterior of the tunnels that serve to divert run-on away from the interior of the tunnels. Additionally, all waste within the tunnels is stored well above the floor level on railcars. The potential for run-on contacting the waste is further reduced after grouting because the grout encapsulates the waste to present another physical barrier between the source of potential run-on and the waste. With this information, the potential for release of dangerous waste as a result of run-on is negligible. Depth to groundwater at the PUREX Storage Tunnels is approximately 400 feet below ground surface.

I-17-3

The final closure decision for the PUREX Storage Tunnels will be made together with the remedial actions decisions for the 200-CP-1 CERCLA Operable Unit in accordance with the schedule contained in Chapter 11 Closure and Financial Assurance, Section 11.7 Closure Schedule and Time Frame. Ecology will oversee the evaluations required to support development of the final closure and remedial decisions and will ensure that the final disposition of the waste within the tunnels complies with applicable laws and regulations.

Comment From: Marjorie Johnson

I-18-1

All these issues need to be addressed ASAP. The real safe future of our country depends on it. As an example, if we don't take care of these problems, more apathy will promote more apathy and then the whole world is in trouble. We need to make sure our workers are safe and stop the radio active waste from creeping closer to the Columbia River. Please take care of these tunnels. Thank you for listening.

Response To: Marjorie Johnson

I-18-1

The proposed permit modification to stabilize the PUREX Storage Tunnels with engineered grout would further reduce both the potential for run-on contacting the waste and also the potential to impact groundwater located 400 feet below the tunnels. This information is described in Addendum F Preparedness and Prevention, Section F.2.2 Runoff/Run-on, of the proposed permit modification. The interim stabilization action of grouting Tunnel 1 and the proposed action of grouting Tunnel 2, will provide safe storage of the waste contained inside of the tunnels and protection of human health and the environment, until a final closure decision has been made. The final closure decision for the PUREX Storage Tunnels will be made together with the remedial actions decisions for the 200-CP-1 CERCLA Operable Unit in accordance with the schedule contained in Chapter 11 Closure and Financial Assurance, Section 11.7 Closure Schedule and Time Frame. Ecology will oversee the evaluations required to support development of the final closure and remedial decisions and will ensure that the final disposition of the waste within the tunnels complies with applicable laws and regulations.

Comment From: Columbia Riverkeeper

O--1-1

Dear Ms. McFadden, Columbia Riverkeeper is a 501(c)(3) nonprofit organization with a mission to protect and restore the Columbia River, from its headwaters to the Pacific Ocean. Since 1989, Riverkeeper and its predecessor organizations have played an active role in educating the public about Hanford, increasing public participation in cleanup decisions, and monitoring and improving cleanup activities at Hanford. On behalf of our 13,000 members in Oregon and Washington, Columbia Riverkeeper offers the following comments on the proposed permit modifications for the PUREX Tunnels at the Hanford Nuclear Site. The Washington Department of Ecology (Ecology) and U.S. Department of Energy (Energy) want approval to fill failing infrastructure at Hanford, known as PUREX Tunnel 2, with grout to stabilize the tunnel. Energy proposes a permit modification that would: describe the stabilization action taken for Tunnel 1, direct the proposed actions for stabilizing Tunnel 2, and evaluate the implications of these actions for future closure and cleanup of the PUREX Tunnels. Riverkeeper has significant concerns about these permit modification proposals.

As Energy is aware in May 2017, a 20-foot section of Tunnel 1's roof collapsed, causing a two-day emergency response. Energy verified that no contamination was released into the environment and temporarily backfilled the collapsed area with sand.ⁱ Notably, in 2016 Energy extended a 2024 cleanup deadline for the PUREX Tunnels to 2042.ⁱⁱ As part of the delay, Energy committed to completing a structural integrity analysis by September 30, 2017. PUREX Tunnel 1 collapsed before Energy completed the analysis. In fall 2017, Energy filled Tunnel 1 with engineered grout, a type of cement. Energy also released information showing that Tunnel 2 was at risk of collapse. Now, after evaluating Tunnel 2 and identifying a threat of potential collapse, Energy proposes filling Tunnel 2 with engineered grout to stabilize the structure and mitigate the risk of potential future failure. Ecology is still reviewing Energy's proposal and accepting public comment.ⁱⁱⁱ The permit modification request is necessary to approve this work, which Energy plans to begin in summer 2018.

Riverkeeper has concerns about Ecology and Energy's proposal to fill PUREX Tunnel 2 with engineered grout. By filling Tunnel 2 with grout (a type of cement), Energy may be setting the stage to leave long-lived, highly radioactive contamination in Hanford's soil. The PUREX Plant is located in the 200-East Area of the Hanford Site near Richland, Washington, and its history of use demonstrates why pollution at PUREX is long-lived and dangerous. The federal government operated PUREX from 1956 to 1988 to process spent nuclear reactor fuel. PUREX recovered plutonium, uranium, and other radioactive isotopes for use in the U.S. nuclear weapons program. Two tunnels, known as the PUREX Tunnels, store waste from the PUREX Plant and other onsite sources. The tunnels are filled with old railcars containing a variety of failed or derelict equipment. The stored waste contains highly radioactive residues. The PUREX Tunnels contain 2.8 million curies of radioactive contamination.^{iv} Waste also includes very toxic chemicals, such as lead, barium, and chromium.^v Soils and groundwater around PUREX and the PUREX Tunnels already contain elevated levels of radioactive and chemical pollution.

Energy's website offers in-place grouting as an alternative to direct remediation of materials in the tunnels, stating, "the option of grouting the rail cars in-place within the tunnel is being evaluated since removal of the cars would entail extreme worker safety hazards and would be more costly than grouting in-place." The Tri-Party Agreement (TPA) agencies Energy, Ecology, and the U.S. Environmental Protection Agency should explain how grouted waste could be removed, treated, and disposed of outside of the PUREX Tunnels. If grouting waste precludes Energy from removing, treating, and disposing of waste in Tunnel 2, Energy should not proceed with grouting without further study and a clear explanation of long-term impacts to soils and groundwater.

Furthermore, Energy should have a clear understanding of the waste stored in PUREX Tunnel 2 and provide this information to the public. Energy provides few details about the expected quantity or type of radioactive pollution present in the Tunnel.

O--1-2

Energy's Tank Closure and Waste Management Environmental Impact Statement shows that Tunnel 2 likely contains significant amounts of Plutonium-239/240, Iodine-129, chromium, lead, and other contamination. Similarly, a 2015 report by the Consortium for Risk Evaluation and Stakeholder Participation shows that the Tunnels contain high levels of long-lived radionuclides such as Plutonium, Americium, and Iodine-129. Energy should evaluate whether grouting waste in Tunnel 2 will permanently impair the agency's ability to evaluate the contents of the tunnel.

Lastly, long-lived contamination present in the PUREX Tunnels could pose a long-term risk to soils, ground water, and ultimately the Columbia River. Dangerous waste stored in Tunnel 2 contains lead, mercury, silver and silver salts, chromium, cadmium, barium, and mineral oil. Radionuclides present include Plutonium-239/240, Iodine-129 and Tritium. Large concentrations of Iodine-129 are present in the 200 East area in the vicinity of PUREX.viii The Hanford Site Environmental Report for 2016 shows groundwater plumes originating in the 200-East Area approaching, and in some cases, reaching the Columbia River.

Contamination in the PUREX Tunnels will likely outlive and escape containment. Energy must evaluate the long-term risk to soils, groundwater, and the Columbia River from waste in the PUREX Tunnels.

O--1-3

Energy should not assume that "landfill closure," grouting waste in place, provides acceptable long-term protection for the Columbia River.

Thank you for accepting these comments on behalf of Columbia Riverkeeper, and please accept the enclosed 695 comments of Columbia Riverkeeper members. Sincerely, Simone Anter Associate Attorney Columbia Riverkeeper

O--1-4

Daina McFadden Washington State Department of Ecology 3100 Port of Benton Boulevard Richland, WA 99354 Re: Class 3 Permit Modifications Relating to the PUREX Tunnels Dear

Ms. McFadden, Thank you for accepting comments on the proposal by U.S. Department of Energy (Energy) to address the long-lived, dangerous radioactive and chemical pollution in Hanford's PUREX Tunnels 1 and 2. In evaluating modifications to Hanford's dangerous waste permit, I urge Ecology and Energy to evaluate how pollution in the PUREX Tunnels may impact human health and the environment for generations to come. First, Energy must ensure that the PUREX Tunnels do not become a long-term waste dump. For any stabilization plan chosen, Energy should retain the ability to remove, treat, and dispose of contaminated materials inside the tunnels. By filling Tunnel 2 with grout, I am concerned that Energy may be setting the stage to leave long-lived, highly radioactive contamination in Hanford's soil. Energy and Ecology should explain how grouted waste could be removed, treated, and disposed of outside of the PUREX tunnels. If grouting waste precludes Energy from removing, treating, and disposing of waste in Tunnel 2, Energy should not proceed with grouting without further study and a clear explanation of long-term impacts to soils, groundwater, and the Columbia River.

O--1-5

I am also concerned that Energy has not provided a comprehensive assessment of the pollution risks associated with the PUREX Tunnels. Energy should have a clear understanding of the waste inside stored PUREX storage Tunnel 2 and provide this information to the public. For example, Energy should disclose the presence and quantity of very long-lived contaminants such as Plutonium-239 and Iodine-129, which have half-lives of 24,000 and 15.7 million years, respectively.

O--1-6

Lastly, Energy should recognize that very long-lived contamination, if left in the ground in the PUREX Tunnels, will ultimately enter the environment. Already, large plumes of contaminated groundwater extend from Hanford's 200-East Area. In the case of radioactive Tritium, the plume already reaches the Columbia River. Energy's own modeling shows that very long-lived radionuclides, such as Plutonium-239 and Iodine-129, will outlast containment provided by shallow, grouted, buried tunnels. Once released into the environment, these contaminants would pose a serious risk to the health of future generations. I urge Energy and Ecology to assess tunnel stabilization and cleanup options thoroughly. This includes long-term protection of soils, groundwater, and the Columbia River at Hanford. Sincerely, [The undersigned sign onto this comment, below please find additional comments]

Response To: Columbia Riverkeeper

O--1-1

The final closure decision for the PUREX Storage Tunnels has not been made, and will be made together with the remedial actions decisions for the 200-CP-1 CERCLA Operable Unit in accordance with the schedule contained in Chapter 11 Closure and Financial Assurance, Section 11.7 Closure Schedule and Time Frame. The interim stabilization action of grouting Tunnel 1 and the proposed action of grouting Tunnel 2, will provide safe storage of the waste contained inside of the tunnels and protection of human health and the environment, until a final closure decision has been made. Chapter 11 Closure and Financial Assurance,

Section 11.1 Introduction, of the permit modification discusses the phased approach for closure of the tunnels. Chapter 11 Closure and Financial Assurance, Section 11.6 Final Closure Activities, discusses potential options for closure when a decision is made. Filling the tunnel void spaces with engineered grout will not preclude final closure actions, including clean closure. Chapter 11 Closure and Financial Assurance, Section 11.5.5.4.1 Grout Design, of the proposed permit modification describes how the engineered grout was formulated in order to achieve desired characteristics for the long term storage of waste in the tunnels. Addendum F Preparedness and Prevention, Section F.2.2 Runoff/Run-on of the proposed permit modification describes how runoff/run-on will be controlled after grouting is completed. Run-on is controlled by the design features of the exterior of the tunnels that serve to divert run-on away from the interior of the tunnels. Additionally, all waste within the tunnels is stored well above the floor level on railcars. The potential for run-on contacting the waste is further reduced after grouting because the grout encapsulates the waste to present another physical barrier between the source of potential run-on and the waste. With this information, the potential for release of dangerous waste as a result of run-on is negligible. Depth to groundwater at the PUREX Storage Tunnels is approximately 400 feet below ground surface.

Ecology has a clear understanding of the dangerous constituents that are currently being stored in PUREX Storage Tunnel 2. Table 3.1 contained in Chapter 3 (Waste Analysis Plan) of the permit describes what wastes are stored in PUREX Storage Tunnel 2. The following documents were received and evaluated by Ecology to confirm the wastes contained in Table 3.1:

- Reference 1: WHC-IP-0977, dated February 22, 1994, "Estimation of PUREX Equipment and Materials that are Candidates for Removal and Waste Processing during PUREX Plant Closure."
- Reference 2: HNF-SD-EN-WAP-007, Rev 4, PUREX Storage Tunnels Waste Analysis Plan Reference 3: RHO-MA-116, PUREX Technical Manual
- Reference 4: 96-EAP-111, Request for approval of NOC
- Reference 5: HW-31000, PUREX Technical Manual, Hanford Atomic Products Operation
- Reference 6: SD-HS-SAR-001, PUREX Plant Final Safety Analysis Report, Rev 3

The above referenced documents can be found in the administrative record. The administrative record is located here: <https://pdw.hanford.gov/arpir/>

O--1-2

As described in the response to comment O-1-1, Ecology has a clear understanding of the dangerous constituents that are currently being stored in PUREX Storage Tunnel 2. The waste in the tunnel is contaminated with radionuclides, including plutonium, americium, and others.

The structural evaluation completed in 2017 for Tunnel Number 2 identifies that timely stabilization of the tunnel is necessary to avoid potential structural failure that may result in a release to the environment. The structural evaluation for Tunnel Number 2 was submitted to Ecology on February 8, 2018 (Letter 18-AMRP-0051) and can be found here:

<https://www.hanford.gov/page.cfm/PUREXTunnelsInformation>. During investigation conducted in support of the stabilization design, DOE obtained additional information about the condition of the tunnel that confirms the need to proceed with stabilization in the very near future. The benefit of additional characterization information that could be gained from an ungrouted tunnel is outweighed by the risk to human health and the environment and the impact to nearby operations essential to the cleanup mission that would result from a structural failure of Tunnel 2.

The final closure decision for the PUREX Storage Tunnels will be made together with the remedial actions decisions for the 200-CP-1 CERCLA Operable Unit in accordance with the schedule in Chapter 11 Closure and Financial Assurance, Section 11.7 Closure Schedule and Time Frame. Ecology will oversee the evaluations required to support development of the final closure and remedial action decisions and will ensure that the final disposition of the waste within the tunnels complies with applicable laws and regulations. The public will also have the opportunity to review the plan for the closure and remedial action before final decisions are made. Changes to groundwater monitoring will not be proposed as part of this permit Modification. Chapter 11 Closure and Financial Assurance, Section 11.1 Introduction, of the proposed permit modification states "Interim closure activities will ensure safe storage of dangerous waste until final closure can be completed."

The interim stabilization action of grouting Tunnel 1 and the proposed action of grouting Tunnel 2, will provide safe storage of the waste contained inside of the tunnels and protection of human health and the environment, until a final closure decision has been made.

O--1-3

See response for O-1-1

O--1-4

See response for O-1-1

O--1-5

See response for O-1-1

O--1-6

Information on groundwater: O-1-1

Information on DOE assurances for safe storage until final closure: O-1-2

Comment From: Marlene George Confederated Tribes and Bands of the Yakama Nation

T--1-1

Dear Ms. McFadden: In our May 11, 2017 letter to Secretary of Energy, Mr. Rick Perry, and subsequent June 13, 2017 letter to U.S. Department of Energy, Richland Operations Office Manager, Mr. Doug Shoop, Yakama Nation (YN) expressed our concerns regarding the collapse of the PUREX tunnels. Subsequently, YN has reviewed the Hanford Facility

Dangerous Waste Class 3 Permit Modification Request to update the Closure and Financial Assurance Chapter and Supporting Documents for the Plutonium Uranium Extraction (PUREX) Storage Tunnels Operating Unit Group (18-AMRP-0051) dated February 8, 2018 (herein referred to as the Request) and Corrective Actions to Ensure Safe Storage of Waste in The Plutonium Uranium Extraction Plant Storage Tunnels 1 and 2 (CHPRC-03379 Draft A). YN has several concerns regarding the proposed permit modifications and plan for closure of the PUREX tunnels. PUREX Tunnel 2 construction used steel structural supports and exterior panels rather than the wood and mineral surface roofing material construction used for construction of PUREX Tunnel 1 (Request pp. 4A.5, 4B.5). Analysis of PUREX Tunnel 2 performed by CH2M indicates that calculated loads for selected structural members exceed current design code requirements by between 1- and 12-percent (Request, p. 4B.8-4B.9); less than the calculated 43- to 49-percent exceedances identified for PUREX Tunnel 1 structural members (Request, p. 4A.8). The U.S. Department of Energy (DOE) plans to fill Tunnel 2 with grout as an interim closure action within the coming year. While this action is expected to provide additional structural support to the tunnel, it also has significant implications regarding waste characterization, disposal, and final closure alternatives for the facility. - A comprehensive inventory of both tunnel wastes has not been made available, and implications for future characterization and segregation of grouted tunnel wastes have not been thoroughly evaluated. -Measures to ensure proper disposal of transuranic wastes stored in both PUREX tunnels have not been identified or evaluated and may be compromised by tunnel grouting. -Interim actions to stabilize the PUREX tunnels should preserve options for clean closure under the Resource Conservation and Recovery Act (RCRA). YN concurs that measures should be taken to address the long-term stability of PUREX Tunnel 2. However, stabilization measures should be conducted with proper public input and review and incorporate adequate analysis to ensure that they do not compromise or limit future alternatives for clean closure or proper handling and disposal of the wastes. CHARACTERIZATION AND SEGREGATION OF WASTES A comprehensive inventory of wastes currently stored in both PUREX tunnels, including estimated radionuclide mass and activity inventories, as well as detailed mapping of each waste's placement within the tunnel has not been provided for public review. The combined waste inventory of Tunnel 2 includes low-level radioactive waste, transuranic wastes, and other radioactive wastes; some of which do not have final dispositions paths. RCRA-regulated materials identified in the Request include mercury, silver and silver salts, chromium, cadmium, barium, and mineral oil. CHPRC-03379 states that the waste within Tunnel 2 is "variable" in nature, and includes unknown radioactive dose and contamination levels that will require additional characterization and potential treatment prior to disposal. For obvious reasons, grouting of PUREX Tunnel 2 will make such characterization and future segregation of tunnel waste significantly more difficult, if not impossible. While these disadvantages are acknowledged in the CHPRC-03379 analysis, the full implications and costs do not appear to have been considered since grouting is also described as not "precluding future remedial actions or closure decisions." Recommendation: YN recommends a comprehensive inventory of PUREX Tunnel 2 waste including documenting mass, isotopic composition, activity, and mapping of placement within the tunnel for both radiologic and non-radiologic constituents be performed and provided for public review. No destructive or otherwise permanent interim stabilization measures should be performed prior to completing the necessary characterization to support final disposal of

tunnel wastes. DISPOSAL OF TRANSURANICS AND OTHER RADIOACTIVE WASTES

Publicly available information indicates a complex array of radioactive wastes, including transuranic waste, and remote handled waste, are currently stored in PUREX Tunnel 2. YN remains firmly committed to disposal of all radioactive and transuranic wastes in accordance with the applicable U.S Environmental Protection Agency requirements identified in 40 CFR Part 191. No analysis has been provided to identify how these requirements will be met for the transuranic and other radioactive wastes present in PUREX Tunnel 2 or what effect grouting the wastes will have on final disposal options and costs. Recommendation: Detailed analysis identifying the steps that will be undertaken to meet transuranic waste and other radioactive waste disposal requirements should be provided to the public. The analysis should include standard criteria for evaluating alternatives including relative costs and technological feasibility. Permanent and/or destructive interim stabilization measures should not be enacted until an alternative is identified that includes pathway for proper final disposition of transuranic and radioactive wastes in the tunnel.

T--1-2

PUREX TUNNEL INTERIM STABILIZATION MEASURES As noted in the evaluation presented in CHPRC-03379 (and above), solidification of the PUREX tunnels and the waste stored within them: -Limits DOE's ability to perform additional characterization of stored waste; and -Requires application of cutting technologies to retrieve waste for clean closure. -Complicates DOE's ability to segregate wastes requiring different disposition paths; To date, no analysis has been publicly presented that identifies the steps required to perform final disposition of grouted wastes from the PUREX tunnels. Removal of grouted tunnel waste would presumably include multiple technically challenging steps including - Completing additional waste characterization and mapping within Tunnel 2; -Containment, cutting, and segregation of grouted wastes with unspecified technology; -U.S. Department of Transportation compliant packaging of cut and segregated waste; and -Transport of packaged waste to a licensed disposal facility. Final disposal facility requirements may impose additional treatment to address waste size, weight, heat or activity loading, and so forth. Meeting these final, but currently unspecified, requirements will be more difficult to fulfill should the waste in question be prematurely encased in grout. Retrieval of stored waste from Tunnel 2, which was also considered in CHPRC-03379, represents a final remedial action and closure pathway that permanently removes radiological and mixed waste. Many of the potential disadvantages identified for this alternative are similar to those that apply to final disposal of grouted tunnel waste. However, retrieval and proper disposal of the waste requires these disadvantages be addressed presently, rather than at an indeterminate point in the future. Evaluation of the full lifecycle cost for tunnel stabilization and waste disposal should consider that the difference in cost between segregation and handling of the wastes in their current state (e.g. can be visually identified, individually unloaded, separated and/or disassembled), and the costs to perform the same operations with the added complication that everything has been entombed in grout. The costs for cutting and/or breaking radioactive grout, separating wastes that require segregation, handling of grouted wastes, and packaging the grouted wastes in accordance with applicable state and federal regulations should all be considered. Recommendation: YN has previously stated its commitment to clean closure of the Hanford Site, and as many

facilities as possible therein. Therefore, YN supports further evaluation and implementation of the Stored Waste Retrieval Option (Option 1 OJ), which fully addresses characterization and final disposition of stored wastes in PUREX Tunnel 2. We look forward to meeting with you to discuss our concerns regarding the Hanford Site and the concerns identified in this letter. Please respond to Ms. Rose Longoria, at (509) 865-5 12 1 x6365 / (509) 452-2502 or lonr@yakamafish-nsn.gov regarding our concerns and requests listed above. Sincerely, Marlene George, Project Coordinator, YN ER WM Program

Response To: Marlene George Confederated Tribes and Bands of the Yakama Nation

T--1-1

The final closure decision for the PUREX Storage Tunnels has not been made, and will be made together with the remedial actions decisions for the 200-CP-1 CERCLA Operable Unit in accordance with the schedule in Chapter 11 Closure and Financial Assurance, Section 11.7 Closure Schedule and Time Frame. The interim stabilization action of grouting Tunnel 1 and the proposed action of grouting Tunnel 2, will provide safe storage of the waste contained inside of the tunnels and protection of human health and the environment, until a final closure decision has been made.

Chapter 11 Closure and Financial Assurance, Section 11.1 Introduction, of the permit modification discusses the phased approach for closure of the tunnels. Chapter 11 Closure and Financial Assurance, Section 11.6 Final Closure Activities, discusses potential options for closure when a decision is made. Filling the tunnel void spaces with engineered grout will not preclude final closure actions, including clean closure. Chapter 11 Closure and Financial Assurance, Section 11.5.5.4.1 Grout Design, of the proposed permit modification describes how the engineered grout was formulated in order to achieve desired characteristics for the long term storage of waste in the tunnels. Addendum F Preparedness and Prevention, Section F.2.2 Runoff/Run-on, of the proposed permit modification describes how runoff/run-on will be controlled after grouting is completed. Run-on is controlled by the design features of the exterior of the tunnels that serve to divert run-on away from the interior of the tunnels. Additionally, all waste within the tunnels is stored well above the floor level on railcars. The potential for run-on contacting the waste is further reduced after grouting because the grout encapsulates the waste to present another physical barrier between the source of potential run-on and the waste. With this information, the potential for release of dangerous waste as a result of run-on is negligible. Depth to groundwater at the PUREX Storage Tunnels is approximately 400 feet below ground surface.

Ecology has a clear understanding of the dangerous constituents that are currently being stored in PUREX Storage Tunnel 2. Table 3.1 contained in Chapter 3 (Waste Analysis Plan) of the permit describes what wastes are stored in PUREX Storage Tunnel 2. The following documents were received and evaluated by Ecology to confirm the wastes contained in Table 3.1:

- Reference 1: WHC-IP-0977, dated February 22, 1994, "Estimation of PUREX Equipment and Materials that are Candidates for Removal and Waste Processing during PUREX Plant Closure."
- Reference 2: HNF-SD-EN-WAP-007, Rev 4, PUREX Storage Tunnels Waste Analysis Plan Reference 3: RHO-MA-116, PUREX Technical Manual
- Reference 4: 96-EAP-111, Request for approval of NOC
- Reference 5: HW-31000, PUREX Technical Manual, Hanford Atomic Products Operation
- Reference 6: SD-HS-SAR-001, PUREX Plant Final Safety Analysis Report, Rev 3

The above referenced documents can be found in the administrative record. The administrative record is located here: <https://pdw.hanford.gov/arpir/> Radiological waste information is contained in the above references. Ecology expects USDOE will require all final disposal of all high-level waste at a deep geologic repository.

T--1-2

As described in the response to comment T-1-1, Ecology has a clear understanding of the dangerous constituents that are currently being stored in PUREX Storage Tunnel 2. The grouting of Tunnel 1 and proposed grouting of Tunnel 2 will provide interim stabilization and provide protection of human health and the environment until a final closure decision has been made.

The structural evaluation completed in 2017 for Tunnel Number 2 identifies that timely stabilization of the tunnel is necessary to avoid potential structural failure that may result in a release to the environment. The structural evaluation for Tunnel Number 2 was submitted to Ecology on February 8, 2018 (Letter 18-AMRP-0051) and can be found here: <https://www.hanford.gov/page.cfm/PUREXTunnelsInformation>. During investigation conducted in support of the stabilization design, USDOE obtained additional information about the condition of the tunnel that confirms the need to proceed with stabilization in the very near future. The benefit of additional characterization information that could be gained from an ungrouted tunnel is outweighed by the risk to human health and the environment and the impact to nearby operations essential to the cleanup mission that would result from a structural failure of Tunnel 2.

The final closure decision for the PUREX Storage Tunnels will be made together with the remedial actions decisions for the 200-CP-1 CERCLA Operable Unit in accordance with the schedule contained in Chapter 11 Closure and Financial Assurance, Section 11.7 Closure Schedule and Time Frame. Ecology will oversee the evaluations required to support development of the final closure and remedial action decisions and will ensure that the final disposition of the waste within the tunnels complies with applicable laws and regulations. The Yakama Nation, along with other tribal nations and members of the public, will also have the opportunity to review the plan for the closure and remedial action before final decisions are made.

Appendix A: Copies of all public notices

Public notices for this comment period:

1. Public notice (focus sheet)
2. Classified advertisement in the *Tri-City Herald*
3. Notice sent to the Hanford-Info email list

Public Comment Period on Proposed Modification to Hanford Dangerous Waste Permit

Proposed Modifications to PUREX Storage Tunnels

The U.S. Department of Energy Richland Operations Office (DOE-RL) is holding a 60-day public comment period from February 12 to April 12, 2018, to support a Class 3 Permit Modification to the [Hanford Dangerous Waste Permit](#). The modification addresses the stabilization of Tunnels 1 and 2 at the Plutonium Uranium Extraction (PUREX) Plant, until final closure decisions are made and implemented.

February 2018

U.S. Department of Energy

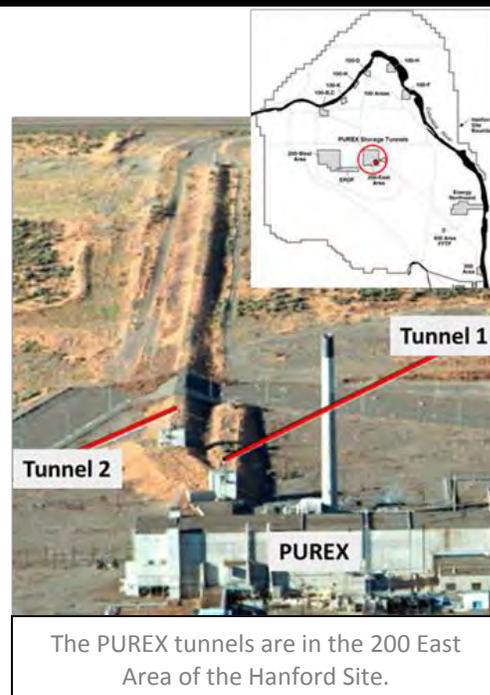
Sequence of Class 3 Permit Modifications

As per [WAC 173-303-830](#), "Permit Changes," this Class 3 Permit Modification will go through a public review process that includes this fact sheet, newspaper advertisement and public meeting.

PUREX Storage Tunnels Background

The PUREX Plant is located in the 200 East Area of the Hanford Site, near Richland, Washington. It was used from 1956 to 1988 to process spent nuclear reactor fuel, and recovered plutonium, uranium and other radioactive isotopes. Spent nuclear fuel is fuel that has been exposed to radiation in a nuclear reactor, usually a power plant.

In an effort to continue cold war production, a location was needed to store radioactive failed equipment. Two tunnels near PUREX were constructed in the mid-1950s (Tunnel 1) and 1960s (Tunnel 2) for the storage of waste, mostly large equipment and components. The tunnels provided a means of protecting workers, the public and the environment from exposure to radioactive residues.



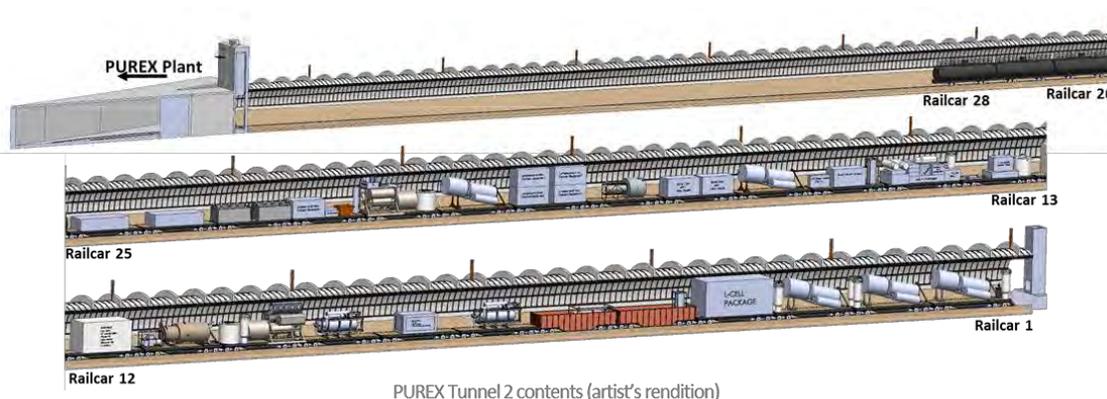
On May 9, 2017, workers discovered a collapse in a portion of Tunnel 1 and failed wood timber roof structure resulting in a hole approximately 5.8 meters (19 feet) wide by 5.2 meters (17 feet) long. The Hanford Emergency Operations Center was activated and although no evidence of release from the unit was found, an informational notification was made to the Washington State Department of Ecology (Ecology) that the [Resource Conservation and Recovery Act of 1976 \(RCRA\)](#) contingency plan was being implemented. That plan is designed to take steps necessary to minimize hazards to human health or the environment.

The collapse caused a two-day emergency response that involved notifying the public and regulatory agencies, sheltering site employees until surveys confirmed no contamination was released and filling the collapsed portion of the tunnel with soil. The immediate and thorough response actions by workers resulted in zero injuries and no release of contamination.

On May 10, 2017, Ecology issued an [Administrative Order](#) to DOE-RL, requiring Corrective Actions for Tunnel 1 and Tunnel 2. DOE-RL evaluated Tunnel 1 and addressed the threat of further failure of Tunnel 1 by filling it with engineered grout as a response action under Section J.4.5 of the Hanford Facility RCRA Permit PUREX storage tunnels contingency plan. Grout is a mixture of water, cement and sand that makes a mortar used to fill void spaces. Engineered grout is mixed with a variety of other materials to customize it for a specific project. More than 4,400 cubic yards of engineered grout filled Tunnel 1, surrounding all of the equipment

inside. Grouting of Tunnel 1 began in October and was finished in November 2017. Completion improved tunnel stability, added radiological protection and did not preclude future closure decisions or cleanup actions.

As part of the Administrative Order, DOE-RL also evaluated the structural integrity of Tunnel 2. The structural evaluation of Tunnel 2 identified a threat of potential collapse, and DOE-RL believes filling Tunnel 2 with engineered grout is also necessary to stabilize the tunnel and mitigate the risk of potential failure. Stabilizing Tunnel 2 with grout is planned as an interim closure action in this RCRA permit modification.



PUREX Tunnel 2 contents (artist's rendition)

Summary

The Class 3 Permit Modification Request has been submitted to Ecology, which describes the stabilization action taken for Tunnel 1, actions proposed for stabilizing Tunnel 2 and their relationship for future closure and cleanup actions. The proposed permit modification will include changes to the permit sections covering Preparedness and Prevention, Inspection Requirements, Contingency Plan, Waste Analysis Plan, Process Information, and Closure and Financial Assurance.

The permit modifications will describe the following:

- Control of rain and snow run-off and run-on
- Grout formulation (determining the mix of water, cement, sand and other materials for project needs)
- Design of the grout injection system
- Process used to inject grout and determine that voids are filled
- Confirmation that grout will not adversely react with waste stored in the tunnel
- Alternatives available for final closure
- Confirmation that final closure options are not precluded by grouting
- Coordination of final closure action with the PUREX plant under the [Comprehensive Environmental Response, Compensation, and Liability Act of 1980](#)

Path Forward

This proposed modification includes a 60-day public comment period, along with an opportunity to learn more and provide comments at a public meeting. The public meeting will be held on Wednesday, March 14, 2018, at 5:30 p.m. at the Richland Public Library, and will include a question-and-answer session.

DOE-RL recognizes the importance of informing the public on the entire sequence of activities. In addition to information on plans to stabilize Tunnel 2, the meeting will also include information on the outcome of grouting Tunnel 1. The permittees' compliance history during the life of the permit being modified is available from Ecology's contact person.

Electronic access to the proposed permit modification and supporting documentation is available online at <http://www.hanford.gov/pageaction.cfm/calendar?IndEventId=8797>.

How to get involved...

A 60-day public comment period will run from February 12, 2018 to April 12, 2018. The public meeting will be held on Wednesday, March 14, 2018, at 5:30 p.m. at the Richland Public Library, 955 Northgate Drive, Richland, WA. To register for the meeting's webinar go to:

URL: <https://attendee.gotowebinar.com/register/3881544714904416002>

Webinar ID: 997-328-411

The RL point of contact is Rich Buel, Richard.buel@rl.doe.gov, (509) 376-3375.

The Ecology point of contact is Stephanie Schleif, Stephanie.schleif@ecy.wa.gov, (509) 372-7929.

Please submit comments on the proposed changes by **April 12, 2018**, via eComments, to:



PUREX: <http://wt.ecology.commentinput.com/?id=3cRfj>

or mail to: Daina McFadden

Washington State Department of Ecology

3100 Port of Benton Boulevard

Richland, WA 99354

<http://www.hanford.gov/pageaction.cfm/calendar?IndEventId=8797>

Electronic access is available for review at the locations listed below

HANFORD PUBLIC INFORMATION REPOSITORY AND RESOURCE CENTER LOCATIONS

Portland

Portland State University Library

Branford Price Millar Library

1875 SW Park Avenue

Portland, OR 97201

Attn: Bertrand Robinson (503) 725-4128

Map: <http://bit.ly/1K7Bfuk>

Richland

U.S. Department of Energy Public Reading Room

Washington State University, Tri-Cities

Consolidated Information Center, Room 101-L

2770 University Drive

Richland, WA 99352

Attn: Janice Parthree (509) 375-7443

Map: <http://bit.ly/1LpZKUa>

Ecology Nuclear Waste Program Resource Center

3100 Port of Benton Blvd. Richland, WA 99354

Attn: Teresa Booth (509) 372-7950

Online: <http://www.ecy.wa.gov/programs/nwp/commentperiods.htm>

Seattle

University of Washington

Suzzallo Library

4000 15th Avenue NE

Seattle, WA 98195

Attn: Hilary Reinert (206) 543-5597

Map: <http://bit.ly/1QMtUog>

Spokane

Gonzaga University

Foley Center Library

East 502 Boone Avenue

Spokane, WA 99258

Attn: John Spencer (509) 313-6110

Map: <http://bit.ly/1Cp0mRT>

Hanford Events Calendar:

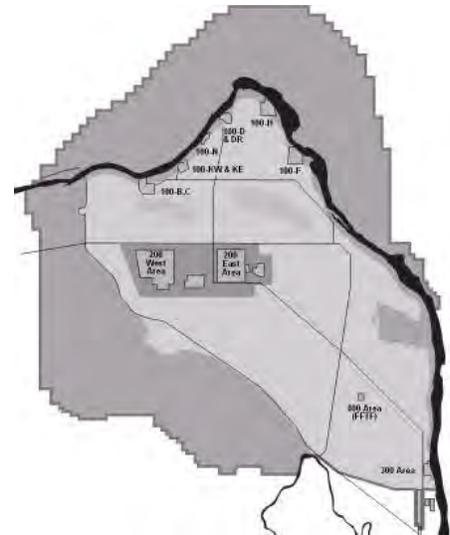
<http://www.hanford.gov/pageaction.cfm/calendar?IndEventId=8797>

Hanford Public Comment Opportunities:

<http://www.hanford.gov/page.cfm/Outreach/PublicCommentOpportunities>

Hanford Public Involvement Opportunity

We want to hear from you on the proposed modification for the Hanford Sitewide Permit!



Comment Period: February 12, 2018 – April 12, 2018
Public Meeting: March 14, 2018, 5:30 p.m., Richland Public Library, 955 Northgate Drive, Richland, WA 99352

Dangerous Waste Permit Modification Fact Sheet
U.S. Department of Energy
Richland Operations Office
P.O. Box 550, H5-20
Richland, WA 99352

8 people dead, 40 hurt in Bolivia Carnival blast

The death toll from the explosion of a gas canister at a Bolivian Carnival parade rose to eight Sunday, and authorities said at least 40 people were injured.

Police commandant Romel Rana said three children were among those killed in Saturday's explosion in the city of Oruro, some 155 miles south of the Bolivian capital, La Paz.

Rana said police believe hot oil spilled and burned a hose connected to the tank, releasing gas that exploded.

— ASSOCIATED PRESS

Sheriff: Suspect among 5 dead in shooting spree

A Kentucky gunman killed his parents, his girlfriend and his girlfriend's mother in a weekend shooting spree before ending his own life, Kentucky State Police said Sunday.

Presumed shooter Joseph Nickell's parents, James and Arlene Nickell, were gunned down Saturday at a residence in Flatgap, Kentucky, and Joseph Nickell's girlfriend, Lindsey Vanhose, and her mother, Patricia Vanhose, were fatally shot at an apartment in nearby Paintsville, State Police Trooper William Petry said.

Joseph Nickell's body also was found at the apartment.

— ASSOCIATED PRESS

Militants storm army base in India, 10 killed

A brazen weekend attack by heavily armed militants who stormed an Indian army base in the Jammu region killed at least 10 people, including five soldiers, army officials said Sunday.

It was one of the deadliest attacks on the army in recent years, and Indian officials blamed a Pakistan-based militant group.

The target of the attack early Saturday was the base of the army's 36th Brigade, which houses more than 3,500 troops.

There was no immediate claim of responsibility for the attack this weekend.

— NEW YORK TIMES

Explosion, fire at substation severs power in Puerto Rico

BY DANICA COTO
Associated Press

SAN JUAN, PUERTO RICO

An explosion and fire at an electric substation threw much of northern Puerto Rico into darkness late Sunday in a setback for the U.S. territory's efforts to fully restore power more than five months after Hurricane Maria started the longest blackout in U.S. history.

The island's Electric Power Authority said several municipalities were without power, including parts of the capital, San Juan, but they were optimistic it could be restored within a day as they worked to repair a substation that controls voltage.

The blast illustrated the challenges of restoring a power grid that was crumbling before it was devastated by the Category 4 hurricane.

In many cases, power workers are repairing equipment that should have long been replaced but remained online due to the power authority's yearslong financial crisis.

71 killed in Russian airliner crash

BY JIM HEINTZ
Associated Press

MOSCOW

A Russian airliner that had just taken off from the country's second-busiest airport crashed Sunday, killing all 71 people aboard and scattering jagged chunks of wreckage across a snowy field outside Moscow.

The pilots of the An-148 regional jet did not report any problems before the twin-engine aircraft plunged into the field about 25 miles from Domodedovo Airport, authorities said.

The Saratov Airlines flight disappeared from radar just minutes after departure for the city of Orsk, some 1,000 miles to the southeast.

Transport Minister Maxim Sokolov confirmed that there were no survivors.

The 65 passengers ranged in age from 5 to 79, according to a list posted by the Russian Emergencies Ministry, which did not give their nationalities. Six crew members were also aboard.

Emergency workers combed through the field while investigators descended on the airport to search for clues to what brought the jet down. One of the flight recorders was recovered, Russian news reports said, but it was not immediately clear if it was the data or voice recorder.

The airport has been the focus of security concerns in the past. Security lapses came under sharp criticism in 2004, after Chechen suicide bombers destroyed two airliners that took off from the airport on the same evening, killing a total of 90 people. A 2011 bombing in the arrivals area killed 37 people.

Investigators also conducted a search at the airline's main office in Saratov, reports said.

In Washington, The Trump administration expressed sympathy for the families of the 71 people killed in the crash. White House press secretary Sarah Huckabee Sanders said the

U.S. "is deeply saddened by the tragic deaths of those on board Saratov Airlines Flight 703."

Russia's Investigative Committee said all possible causes were being considered. Some reports suggested there were questions about whether the plane had been properly de-iced. Moderate snow was falling in much of Moscow at the time of the crash.

Airline spokeswoman Elena Voronova told the state news agency RIA Novosti that one of the pilots had more than 5,000 hours of flying time, 2,800 of them in an An-148. The other pilot had 812 hours of experience, largely in that model plane.

Tass said the plane entered service in 2010 for a different airline, but was held out of service for two years because of a parts shortage. It resumed flying in 2015 and joined Saratov's fleet a year ago.

TV footage from the crash site showed airplane fragments lying in the snow. Reports said the pieces were strewn over an area about 0.6 miles wide.

A plane can disappear from radar when it gets too close to the ground to reflect radar signals.

President Vladimir Putin put off a planned trip to Sochi to monitor the investigation. Putin was to meet Monday with Palestinian leader Mahmoud Abbas at the Black Sea resort, where the president has an official residence.

Instead, Abbas will meet with Putin in Moscow in the latter part of Monday, Kremlin spokesman Dmitry Peskov told Russian news agencies.

The An-148 was developed by Ukraine's Antonov company in the early 2000s and manufactured in both Ukraine and Russia.

Shabby equipment and poor supervision plagued Russian civil aviation for years after the 1991 collapse of the Soviet Union, but its safety record has improved in recent years.

White House hit by fallout from aide's resignation

BY JONATHAN LEMIRE
Associated Press

WASHINGTON

Reeling from the downfall of a senior aide, the White House was on the defensive Sunday, attempting to soften President Donald Trump's comments about the mistreatment of women while rallying around the embattled chief of staff.

Several senior aides fanned out on the morning talk shows to explain how the White House handled the departure of staff secretary Rob Porter, a rising West Wing star who exited after two ex-wives came forward with allegations of

spousal abuse. And they tried to clarify the reaction from Trump, who has yet to offer a sympathetic word to the women who said they had been abused.

"The president believes, as he said the other day, you have to consider all sides," said senior counselor Kellyanne Conway. "He has said this in the past about incidents that relate to him as well. At the same time, you have to look at the results. The result is that Rob Porter is no longer the staff secretary."

On Saturday, Trump tweeted that "lives are being shattered and destroyed by a mere allegation. Some are true and some are false." And the day before, he pointed to Porter's assertions of innocence and wished him a great future.

Conway delivered what she said was a vote of confidence from Trump for chief of staff John Kelly, who has come under fire for his handling of the Porter matter.

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PLAN

Trump's Monday submission was completed before the budget pact delivered the nearly \$300 billion increase above prior "caps" on spending. The 2019 budget was designed to double down on last year's proposals to slash foreign aid, the Environmental Protection Agency, home heating assistance and other non-defense programs funded by Congress each year.

"A lot of presidents' budgets are ignored. But I would expect this one to be completely irrelevant and totally ignored," said Jason Furman, a top economic adviser to President Barack Obama. "In fact, Congress passed a law week that basically undid the budget before it was even submitted."

Trump would again spare Social Security retirement benefits and Medicare as he promised during the 2016 campaign. And while his plan would reprise last year's attempt to scuttle the "Obamacare" health law and sharply cut back the Medicaid program for the elderly, poor and disabled, Trump's allies on Capitol Hill have signaled there's no interest in tackling hot-button health issues during an election year.

Instead, the new budget deal and last year's tax cuts herald the return of trillion-dollar-plus deficits. Last year, Trump's budget predicted a \$526 billion budget deficit for the 2019 fiscal year starting Oct. 1; instead, it's set to exceed \$1 trillion once the cost of the new spending pact and the tax cuts are added to Congressional Budget Office projections.

Mick Mulvaney, the former tea party congressman who runs the White House budget office, said Sunday that Trump's new budget, if implemented, would tame the deficit over time, though unlike last year's submission, it wouldn't promise to balance the federal ledger eventually.

"The budget does bend the trajectory down, it does move us back towards balance. It does get us away from trillion-dollar deficits," Mulvaney said on "Fox News Sunday." "Just because this deal was signed



ANDREW HARNIK AP

After another government shutdown, Congress passed a long-term spending bill President Donald Trump signed Friday.

does not mean the future is written in stone. We do have a chance still to change the trajectory. And that is what the budget will show tomorrow."

The White House is putting focus this year on Trump's long-overdue plan to boost spending on the nation's crumbling infrastructure. The plan would put up \$200 billion in federal money over the next 10 years to leverage \$1.5 trillion in infrastructure spending, relying on state and local governments and the private sector to contribute the bulk of the funding.

Critics contend the infrastructure plan will fail to reach its goals without more federal support. Proposals to streamline the permitting process as a way to reduce the cost of projects have already generated opposition from environmental groups.

Administration officials, briefing reporters on details of the plan before the budget was released, said the \$200 billion in federal support would come from cuts to existing programs.

Mulvaney also said Sunday that the administration's budget plan will include \$3 billion for Trump's long-promised wall along the U.S.-Mexico border. However, that figure would jump to \$25 billion over two years if Congress passes legislation to deal with young "Dreamer" immigrants brought to the country illegally as children.

The White House budget office said Friday that Monday's submission would reflect stringent limits on appropriated spending — that's the more than \$1 trillion spent each year for

agency operations — that were the hangover from a failed 2011 budget deal. Last year, Trump promised a \$54 billion, 10 percent increase for the Pentagon, financed by an equal cut to foreign aid and domestic agencies.

What Congress instead delivered on Friday was a budget law would instead increase defense by \$80 billion this year and boost nondefense appropriations by \$63 billion. For the 2019 budget year submitted on Monday — and Trump's plan as originally devised would adhere to the old limits — Congress has already shattered the spending cap by \$153 billion.

"Our leadership caved. The swamp won. And the American taxpayer lost," said Rep. Mark Meadows, R-N.C., on CBS' "Face The Nation."

Presidential budgets tend to reprise many of the same elements year after year. While details aren't out yet, Trump's budget is likely to curb crop insurance costs, cut student loan subsidies, reduce pension benefits for federal workers and cut food stamps, among other proposals.

Such cuts went nowhere in Congress last year as Republicans focused on trying to repeal and replace Obama's Affordable Care Act and, after that failed, turned their sights to a successful rewrite of the tax code.

But the election in December of Alabama Democrat Doug Jones to the Senate seat cut the GOP's margin of control to 51-49. Majority Leader Mitch McConnell, R-Ky., says the chamber won't tackle politically toxic cuts to so-called mandatory programs.

The U.S. Department of Energy Wants Your Input on Stabilizing Hanford's PUREX Plant Tunnels



The U.S. Department of Energy is holding a 60-day public comment period from February 12 to April, 12, 2018 for a Class 3 Permit Modification to the Hanford Dangerous Waste Permit. The modification addresses the Plutonium Uranium Extraction (PUREX) plant for stabilization of tunnels 1 and 2 and the potential impact from future structural failure until final closure decisions are made and implemented.

A public meeting will be held on Wednesday, March 14, at 5:30 p.m., in the Richland Public Library, 955 Northgate Drive. The meeting will also be accessible via webinar. To register go to:

URL: <https://attendee.gotowebinar.com/register/3881544714904416002>

Webinar ID: 997-328-411

The permittee's compliance history during the life of the permit being modified is available from the Ecology contact person.

For More Information Please Contact:
DOE-RL, Rich Buel at 509-376-3375 or Ecology, Stephanie Schleif at 509-372-7929

Please submit comments on the proposed changes by April 12, 2018, via eComments, to: <http://wt.ecology.commentinput.com/?id=3cRfI>

Daina McFadden
Washington State Department of Ecology
3100 Port of Benton Boulevard
Richland, WA 99354
Phone: (509) 372-7950

Electronic access to the proposed permit modification and supporting documentation is available online at <http://bit.ly/2nM0Mm0>



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From: ^TPA
To: HANFORD-INFO@LISTSERV.ECOLOGY.WA.GOV
Subject: Advance Notice of Public Comment Period on Proposed Changes to the Hanford Dangerous Waste Permit
Date: Monday, January 8, 2018 11:17:25 AM

This is a message from the U.S. Department of Energy

Notice of Public Comment Period on Proposed Changes to the Hanford Dangerous Waste Permit for Proposed Modifications to the Plutonium Uranium Extraction (PUREX) Plant Storage Tunnels

The U.S. Department of Energy Richland Operations Office is planning a 60-day public comment period to support a Class 3 Permit Modification to the [Hanford Dangerous Waste Permit](#). The modification addresses [PUREX Storage Tunnels](#) for stabilization of Tunnels 1 and 2 to reduce the potential impact from future structural failures until final closure decisions are made and implemented.

The public comment period is expected to begin in February 2018, with a public meeting planned for March 2018. A summary fact sheet and details of the public meeting will also be provided when the comment period begins.

The proposed modification and supporting documentation will be available during the comment period at <http://pdw.hanford.gov/arpir/> as well as at the Hanford Administrative Record and Public Information Repositories located in Richland, Seattle, Spokane and Portland. These locations and additional information on public involvement can be found [here](#).

Questions? Please contact Rich Buel, DOE-RL, at Richard.buel@rl.doe.gov.



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

The meeting will also be accessible via webinar. To register go to:

URL: <https://attendee.gotowebinar.com/register/3881544714904416002>

Webinar ID: 997-328-411

A summary fact sheet is attached to this message and is available at
<https://www.hanford.gov/pageAction.cfm/calendar?&IndEventID=8797>

The proposed permit modification and supporting documentation is available at
<https://pdw.hanford.gov/arpir/index.cfm/viewDoc?accession=0066780H>, as well as the Public Information Repositories located in Richland, Seattle, Spokane and Portland. These locations and additional information on public involvement can be found [here](#).

Questions? Please contact Rich Buel, RL, at Richard.Buel@rl.doe.gov.

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From: ^TPA
To: HANFORD-INFO@LISTSERV.ECOLOGY.WA.GOV
Subject: 60-day public comment period starts today on PUREX tunnels
Date: Monday, February 12, 2018 2:08:26 PM
Attachments: [RL Fact Sheet PUREX Tunnels Class 3 Permit-FINAL-1.pdf](#)

This is a message from the U.S. Department of Energy

Notice of Public Comment Period on Proposed Changes to the Hanford Dangerous Waste Permit for Proposed Modifications to the PUREX Storage Tunnels

The U.S. Department of Energy Richland Operations Office (RL) is holding a 60-day public comment period from February 12 to April 12, 2018, to support a Class 3 Permit Modification to the [Hanford Dangerous Waste Permit](#). The modification addresses the [stabilization of Tunnels 1 and 2](#) at the Plutonium Uranium Extraction (PUREX) Plant, until final closure decisions are made and implemented.

The PUREX Plant is located in the 200 East Area of the Hanford Site near Richland, Washington. It was used from 1956 to 1988 to process spent nuclear reactor fuel, and recovered plutonium, uranium and other radioactive isotopes. Spent nuclear fuel is fuel that has been exposed to radiation in a nuclear reactor. Two tunnels are used for the storage of waste — mostly large equipment components — from the PUREX plant and other onsite sources. The tunnels protect workers, the environment and the public from exposure to highly radioactive residues within the stored waste.

In May 2017, a 20-foot section of the roof of Tunnel 1 collapsed. The collapse caused a two-day emergency response that involved notifying the public and regulatory agencies, sheltering site employees until surveys verified no contamination was released and filling the collapsed portion of the tunnel with soil. RL addressed the threat of further failure in Tunnel 1 by filling it with engineered grout. That work began in October and was completed in November. RL also evaluated the structural integrity of Tunnel 2, identified a threat of potential collapse, and also determined that filling Tunnel 2 with engineered grout is also necessary to stabilize the tunnel and mitigate the risk of potential failure. If this permit modification is approved on schedule that work will begin this summer.

Engineered grout is a mixture of various materials customized for a specific job. More than 4,400 cubic yards of engineered grout was used to surround all of the equipment inside Tunnel 1.

The purpose of this permit modification is to describe the stabilization actions taken for Tunnel 1, actions proposed for stabilizing Tunnel 2, and their relationship for future closure and cleanup actions.

This proposed permit modification includes a 60-day public comment period, along with an opportunity to learn more and provide comments at a public meeting. The public meeting is Wednesday, March 14, 2018, at 5:30 p.m. in the Richland Public Library, 955 Northgate Drive, Richland, Washington 99352.

Please submit comments on the proposed changes by April 12, 2018, via eComments, to: <http://wt.ecology.commentinput.com/?id=3cRfJ> or via mail to:

Daina McFadden