

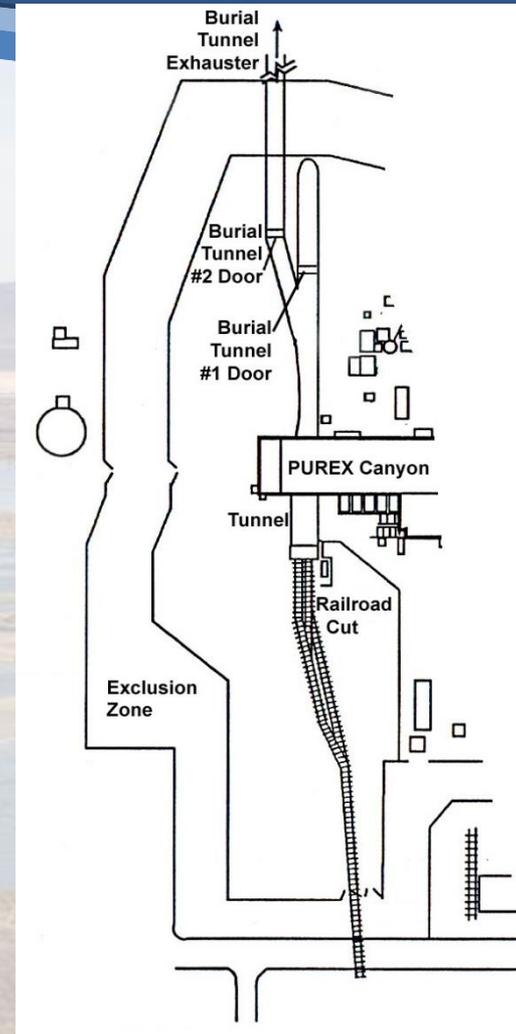
PUREX Tunnels Update

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PUREX Tunnel Construction



Background



Tunnel 1



Tunnel 2

Tunnels 1 and 2 during construction

Background

- May 9, workers discovered a partial collapse of the roof of PUREX Tunnel 1.
- Actions taken to protect personnel in the area, monitored for potential release of contamination.
- No injuries and no release of contamination were noted.
- Collapsed zone was backfilled on May 10.
- Temporary cover placed over Tunnel 1 to provide limited dust/contamination control in event of future collapse.
- Additional surveillance activities implemented.

Administrative Order

- Partial collapse prompted Washington State Department of Ecology to issue Administrative Order on May 10, directing corrective actions.
- Action 1: Conduct engineering evaluations of Tunnels 1 and 2: COMPLETED
- Action 2: Submit draft report detailing corrective actions to ensure safe storage of waste in Tunnels 1 and 2: COMPLETED

Engineering Evaluation Reports

- DOE submitted engineering evaluations of Tunnels 1 and 2 to Ecology on June 30. These were based on the 2012 International Building Code standards and used load and resistance factor design techniques.
- Tunnels 1 and 2 do not meet current structural codes and standards.
 - Tunnel 1: Overstressed and at risk of future collapse; near-term stabilization needed to ensure safe storage of waste; cause of partial collapse cannot be determined but likely due to heavy rainfall and deterioration of the wood timber structure over more than 60 years.
 - Tunnel 2: Overstressed design elements (at construction joints and external loading); potential for localized collapse; structural stabilization is recommended as soon as possible.
- In response to the new information, additional surveillances were established for Tunnel 2.

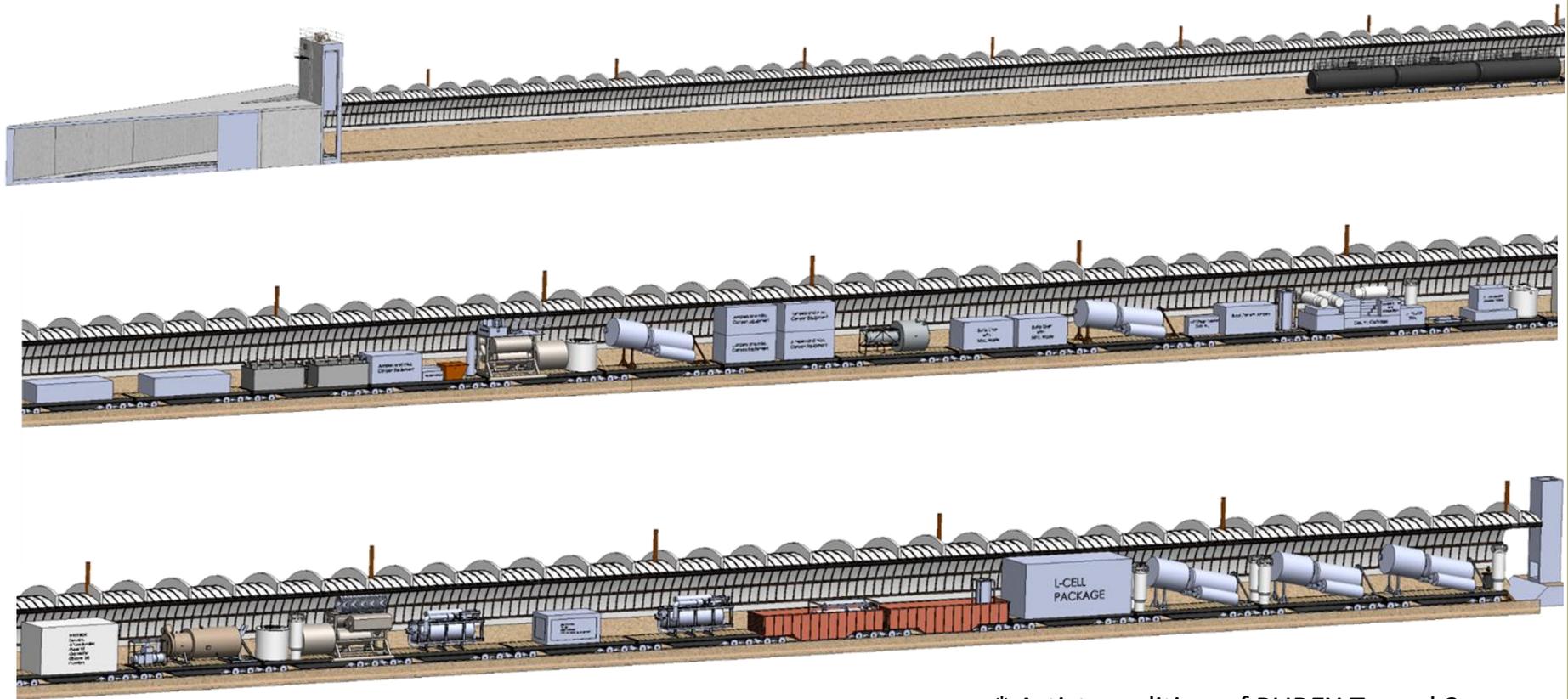
Draft Report on Corrective Actions

- On August 1, DOE submitted its draft report detailing corrective actions to ensure safe storage of waste in Tunnels 1 and 2.
- A range of potential corrective actions for Tunnel 2 were identified to ensure safe storage of waste in Tunnel 2.
- A phased approach of enhanced surveillance and monitoring is being conducted at Tunnel 2 until a corrective response action is selected and implemented.
- A “Best and Brightest” panel will be convened to consider tunnel design, operating history, and waste inventory. This team of recognized technical experts will look at the potential options for Tunnel 2 and potentially generate additional options.
- A response action for Tunnel 2 will be selected following completion of the detailed alternative analysis.
- Enhanced surveillance and monitoring of Tunnel 2 will ensure safe operations until a further response action is selected and implemented.

Regulatory Framework

- Tunnels 1 and 2 are “miscellaneous units” under the Washington Dangerous Waste Regulations and are included in the Hanford Facility RCRA Permit.
- The PUREX Plant and tunnels are included within the 200-CP-1 Operable Unit under the Comprehensive Environmental Response, and Liability Act of 1980 (CERCLA).
- The Tri-Party Agreement requires submittal of a draft 200-CP-1 remedial investigation/feasibility study (RI/FS) work plan to Ecology by September 30, 2020.
- This action will initiate the process for development of cleanup decisions for Tunnels 1 and 2.
- The CERCLA RI/FS process will be coordinated with the RCRA closure decisions for the tunnels to prevent overlap and duplication of work.

PUREX Tunnel 2



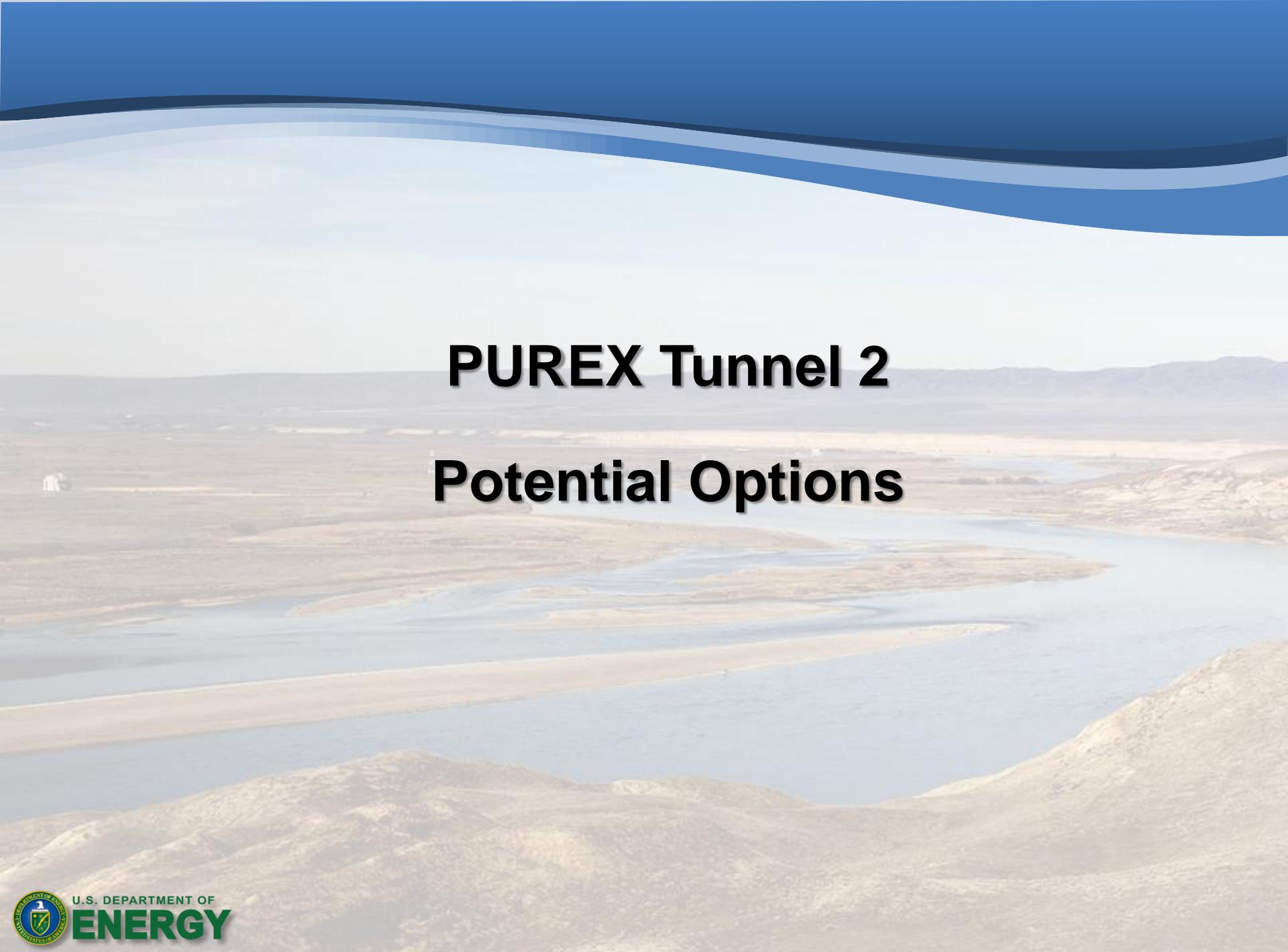
* Artist rendition of PUREX Tunnel 2

Tunnel Waste Inventory

- Variety of equipment and other components used during operation of PUREX Plant.
- Large vessels such as concentrators, dissolvers, heating and cooling coils, and ventilation system equipment, as well as steel or concrete boxes containing connectors known as jumpers and other miscellaneous failed equipment.
- Wastes were generally placed in PUREX tunnels because they were highly radioactive and transport to the burial grounds for disposal was deemed to be too hazardous to the workers.
- When final cleanup decisions are made, additional investigation and inventory development will be performed.

Tunnel 2 Potential Options

- A team including environmental, structural, construction and facility resources identified a range of options that could be implemented to ensure continued safe storage of waste in Tunnels 1 and 2.
- Measures that involved additional structural engineering calculations, removal of soil overburden, or personnel entry for internal inspection of the tunnels were not viewed as viable options.
- These not viable options because personnel would need to go inside the tunnel to gather structural information from installed components (i.e., bolts), and personnel access to the tunnel surface is not possible due to high radiation levels. Removing the soil potentially cause a collapse.



PUREX Tunnel 2

Potential Options

Tunnel 2 Potential Options



No Further Action Baseline

Tunnel 2 Potential Options



High-Density Polyethylene Cover

Tunnel 2 Potential Options



Soft-Surface Tent Cover

Tunnel 2 Potential Options



Hard-Surface Tent Cover

Tunnel 2 Potential Options



Pre-Engineered Building Construction

Tunnel 2 Potential Options



Injection of Poly Foam Void Fill

Tunnel 2 Potential Options



Controlled Collapse In Place

Tunnel 2 Potential Options



Sand or Clay Void Fill

Tunnel 2 Potential Options



Grout Void Fill

Tunnel 2 Potential Options



Stored Waste Retrieval

Tunnel 2 Potential Options



Surveillance and Monitoring Enhancements

Next Steps – Tunnel 1

- May 31, DOE notified Ecology of plans to fill Tunnel 1 with engineered grout.
- Grouting Tunnel 1 will improve tunnel stability, provide additional radiological protection, and increase durability while not precluding future remedial actions or final closure decisions.
- Grout fill will be used as part of continuing response actions in accordance with the Hanford Facility RCRA Permit.
- June 8, Ecology approved plan to grout Tunnel 1 as interim response action that would not preclude future closure/remedial decisions.

Next Steps – Tunnel 1 (cont'd)

- Use of grout as void fill has been successfully used at the Hanford Site and can be implemented effectively and in a timely manner.
- In the interim, surveillance and monitoring enhancements have been implemented including walkdowns 7 days a week including holidays, and video camera installed to provide real-time observation of the tunnel surface.
- Grouting operations are expected to be done by the end of calendar year 2017.

Next Steps – Tunnel 2

- Daily visual observations and radiological surveys of the exterior of Tunnel 2 were initiated in June 2017 and will continue until stabilization response actions are completed.
- A video camera used to observe the Tunnel 2 surface was installed, and daily review of associated video footage was initiated in June 2017 and will continue until stabilization response actions are completed.
- An advanced monitoring system of the Tunnel 2 exterior will be selected and installed.

Next Steps – Tunnel 2 (cont'd)

- A “Best and Brightest” panel will be convened to perform a detailed alternative analysis for the selection of the final corrective action for Tunnel 2.
- Additional data will be collected and evaluated (e.g., use of unmanned/robotic equipment to gather information on visual and radiological conditions from the Tunnel 2 interior).
- Ecology has the decision making authority with regard to the hazardous waste component of the mixed waste.