Central Location

INNER & OUTER AREA OPERABLE UNITS

OPERABLE UNIT LEGEND
- 200-PW-1/3/6 and 200-CW-5 (EPA)
- 200 West (EPA)
- 200 East IS-1 (Ecology)
- Canyons & Associated Waste Sites (see map)
- 200-SW-2 (Ecology)
- Deep Vadose Zone (Ecology)
- Approved Waste Disposal Sites (n/a)
- Tank Farms (n/a)

HANFORD SITE

INNER AREA

Outer Area

Inner Area Operable Units
- 200-PW-1/3/6 & 200-CW-5
- 200-WA-1 & 200-BC-1
- 200-EA-1 & 200-IS-1
- 200-SW-2
- 200-DV-1
- 200-CB-1
- 200-CP-1
- 200-CR-1

Groundwater Operable Units
- 200-ZP-1 & 200-UP-1
- 200-PO-1 & 200-BP-5

Plutonium contaminated soil sites
- 200 West Inner Area & BC Cribs & Trenches
- 200 East Inner Area & Pipelines
- Burial Grounds
- Deep Vadose Zone
- B Plant Canyon
- PUREX Canyon
- REDOX Canyon

Outer Area

- 200-OA-1 & 200-CW-1/3

200 West Area Groundwater
200 East Area Groundwater

U.S. DEPARTMENT OF ENERGY
PUREX Facility

- Processed vast majority of plutonium for US
- Reclaimed uranium for fuel rod production
PUREX Tunnel
PUREX Tunnel 1
Construction History

- Constructed 1954-1956 and filled between 1960-1965
- 358 feet long, 22 feet high x 19 feet wide
- All ceiling and majority of walls composed of 12 x 14 inch creosote treated timbers, first 100 feet of East Wall is 3-foot-thick reinforced concrete
- 90-pound roofing material and tar were laid over the timbers
- Approximately 8 feet of overburden was placed on top
- Tunnel railcar access door located on north end
- Access door was water filled for shielding during operation, but was drained/sealed during deactivation in 1990’s
- Tracks have a 1 percent downward slope to the south
- Capacity: 8 railroad cars (40-42 feet long)
- Currently no power to PUREX tunnels following deactivation
PUREX Tunnel 1
<table>
<thead>
<tr>
<th>Position</th>
<th>PUREX #1 Storage Tunnel (218-E-14)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. &amp; 2.</td>
<td>HA column and miscellaneous jumpers in box placed in Tunnel #1 on 6/60 HA 4,700 Cu. Ft. Jumpers 2,190 Cu. Ft., Pb~115 Kg</td>
</tr>
<tr>
<td>4.</td>
<td>G-E2 Centrifuge, miscellaneous jumpers in box and two tube bundles. Placed in Tunnel #1 on 12/24/60. (FUG SER# 762) 2,465 Cu. Ft., Pb~115 Kg,</td>
</tr>
<tr>
<td>8.</td>
<td>E-F6 (2WW Waste) #3 Spare Concentrator failed 5/23/64. Placed in Tunnel #1 on 1/22/65 Flat Car 3621, 2400 Cu. Ft.</td>
</tr>
</tbody>
</table>
PUREX Equipment Stored in Tunnel 1
PUREX Tunnel 2
Construction History

• Constructed 1964-1966. Different construction than Tunnel 1
• 1,688 feet long
• Steel and concrete
• Capacity: 40 railroad cars
• Service life: 1966-1996
• Current inventory: 28 railroad cars
• Ventilated until 1996
• Deactivated since 1996
PUREX Tunnel 2 Construction
May 9, 2017
PUREX Tunnel 1 Partial Roof Collapse

• May 4, 2017 (Thursday) workers in the area; observed no abnormalities

• May 9, 2017 (Tuesday) ~ 8:00 a.m. PUREX preventative maintenance walkdown
  – elevated background reading and potential subsidence reported
    • emergency action level: Alert/Take Cover
  – investigated and partial roof collapse reported
    • emergency action level: “Site Area”

• May 10, 2017 ~ 11:00 a.m. hole in roof filled
PUREX Tunnel 1 Hole Filled
Interim Stabilization Effort

• CH2M will fill Tunnel 1 with an engineered grout – or low density cellular fill -- to provide further stabilization and reduce the risk of additional collapse
• Grouting Tunnel 1 with an engineered grout will provide additional shielding against radiation and control contamination during eventual waste removal, which is safer for workers, the public and the environment.
• This action does not represent a decision about final disposition of the equipment and materials in Tunnel 1.

Workers fill the U Plant duct tunnel in September 2011.
PUREX Tunnels’ Structural Integrity

- 1980 Silvan report concluded structure was sound for the present time assuming static conditions

- 1990 Study was initiated in response to Washington State Department of Ecology (WDOE) Notice of Deficiency for the RCRA permit applications

- WDOE RCRA Permit requires annual surveillance of the exterior:
  - External surfaces of the PUREX Storage Tunnels are observed for evidence of structural deterioration. Tunnel subsidence, erosion of the earth cover, and vent stack damage are of primary concern. Abnormal conditions are recorded, evaluated, and corrective action initiated as necessary.
  - Past surveillances have not identified any anomalies
  - Last surveillance conducted December 2016
  - Very frequent informal observations
Tri-Party Agreement
(DOE/EPA/State of Washington)

- Establishes Plan & Schedule for Hanford Cleanup
- Requires Annual Compliant Budget Request
- PUREX TPA Milestones
  - **9/30/17**: Submit Data Quality Objective report to Ecology on structural integrity of Tunnels 1 and 2
  - **12/31/17**: Submit approval proposals for Expedited Response Actions for Tier 1 & 2 Facilities (excludes Tunnels 1 and 2)
  - **9/30/20**: Submit Remedial Investigation/Feasibility Study Work Plan for 200-CP-1 to Ecology
  - **9/30/25**: Initiate response actions in accordance with schedule in approved Remedial/Removal Action Work Plan
  - **6/30/26**: Submit a change package to establish a date for major milestone M-085-00 completion
  - **TBD**: Complete response actions for specified canyon facilities and waste sites
Current DOE-RL Cleanup Priorities

Richland Operations Office 2020 Vision
“Safe, Secure, and Compliant Mission Accomplishment by an Engaged and Motivated Workforce”

Key Accomplishments Completed by:

<table>
<thead>
<tr>
<th>CY 2017</th>
<th>CY 2018</th>
<th>CY 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>PFP Demolished to Slab on Grade</td>
<td></td>
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<tr>
<td>Manhattan Project National Park Transition Plan Completed</td>
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<tr>
<td>Protocols for Open and Transparent Access and Use of Remediated Lands Established</td>
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<tr>
<td>River Corridor Orchard Lands Remedial Investigation Report Completed</td>
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<tr>
<td>618-10 Burial Ground and Associated Waste Sites Completed</td>
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<tr>
<td>Initiate Characterization of the Central Plateau 200-WA-1 Operable Unit</td>
<td></td>
<td></td>
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<tr>
<td>Manhattan Project National Park Transition Plan Implementation Initiated</td>
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<tr>
<td>River Corridor Capital Asset Project Completed</td>
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<tr>
<td>All (6) River Corridor Records of Decision Completed</td>
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<tr>
<td>All River Corridor Remedial Actions (except 618-11 and K Area) Completed</td>
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<tr>
<td>All River Corridor Groundwater Remedial Actions Implemented</td>
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<tr>
<td>Remote Excavation of Waste Site under 324 Building Completed and Demolition Initiated</td>
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<tr>
<td>K Area Sludge Removal Capital Asset Project Completed</td>
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<tr>
<td>K Area Sludge Transferred to T Plant for Storage, Treatment, and Disposal</td>
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<tr>
<td>Cleanup of K Reactor Area Initiated</td>
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<tr>
<td>Cesium/Strontium Capsules Storage Area and WESF Modifications Initiated</td>
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<tr>
<td>All Central Plateau Groundwater Records of Decision Completed and Treatment Capacity Increased to 1.3 Billion Gallons a Year</td>
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<td></td>
</tr>
<tr>
<td>Key Infrastructure Projects Completed and Remaining Essential Infrastructure Projects Prioritized</td>
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</tbody>
</table>

Based on Funding Profile of ~$900M.
Future RL/ORP Cleanup Priorities

Improve Collaboration, Coordination and Communications between the Richland Operations Office and Office of River Protection

- RL/ORP co-location - 2016
- Hanford 5-Year Succession Plan - 2016/2017
- Hanford Integrated Priority List (DFLAW 2022 focused) - 2017
- Consolidated Hanford systems, processes, and procedures - 2018
- Hanford contracts awarded and transition initiated - 2019
- Integrated Hanford operations - September 2019
Post 2020 Cleanup Priorities

• Tri-Party Agreement lists current cleanup priorities
• Development of Hanford 2020-2030 Cleanup Priorities in process
  – Hanford Site-Wide Risk Review Project (CRESP August 31, 2015)
  – OMB Presentation
  – DOE/EPA/State National Dialogue
Emergency Communications on May 9

- Hanford has a highly procedural-driven emergency management system designed to steer inquiries to a website or emergency response phone teams.

- Within 10 minutes of notification of the event, 10 national news media calls were received, including ABC, FOX, and LA Times.

- Within 20 minutes of EOC formal activation, the story became international, accompanied by pictures and video of the tunnel, employees sheltering in place and emergency responders.

- Site employees broke the story by posting information, photos, and video to Twitter and other social that was re-posted and responded to, creating ongoing dialogue and news feed to the media. This dialogue never subsided and continued to drive media content.

- www.hanford.com typically receives 30K-70K views per day, depending on content and events. On this day there were between 1.5 and 2 million visits, including 60 countries.
The story propagated so quickly that it reached the White House, Congress, governors, HQ, local elected officials, labor leaders, Tribal Nations, stakeholders, and others before formal notifications could be made.

The RL Manager stayed in the EOC during the emergency talking directly to the White House, Congress, the Governor’s Office, Tribal Nations, local elected leaders, and others.

These personal calls enabled the EOC staff to get back within the bounds of their processes and procedures.

When the emergency was terminated close to midnight on May 10, operations in the EOC more closely mirrored normal conditions, with media, stakeholders, and others receiving information largely from the website or the telephone teams.

It took the better part of 24 hours to re-establish that “control” over the story.
Communications Lessons Learned

- Social media will beat traditional emergency management processes every time.
- Employees quickly become “eyewitnesses” and some believe it is their duty to share information quickly, regardless of its accuracy. Get accurate information to employees ASAP.
- The media uses eyewitness accounts or social media as a source of primary information. Consider tools such as Facebook Live to press conferences and press releases.
- Monitor social media real time it is driving media coverage and perceptions of the event.
- Consider having a social media presence deployed in the field – as safety permits. “At the scene” accounts are highly valued by the media and can help you keep the focus.
- Get to your tier 1 stakeholders quickly – they will likely see it first on social media or the news. Consider having a person in the EOC communicating with them throughout the event.
- Ensure your EOCs are communicating with other EOCs (HQ, state, etc.).
- Websites are not accessible by all foreign governments. Russia, Japan, and Canada contacted the White House seeking information about PUREX because they had no access. Use multiple tools.
- Don’t abandon official processes during the event, even if it feels like they are not immediately effective. Drive back to and maintain processes and procedures as frequently as possible. Take the “noise” away from the EOC or JIC so that staff can focus on their positions.