Hanford Site
Waste Management Conference

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Hanford Cleanup Overview

Three Components

- River Corridor
- Central Plateau
- Tank Waste
Moved spent nuclear fuel away from Columbia River
- 2,300 tons of spent fuel
- Moved to Central Plateau

Consolidated radioactive sludge
- 27 cubic meters (35 cubic yards) in engineered containers in K West Basin

Cleaned out and demolished facilities
- Facilities removed: 502 of 578
Remediated waste sites

- Waste Sites Remediated: 1,201 of 1,329

Waste removed from River Corridor

- More than 17 million tons disposed of in Central Plateau (Environmental Restoration Disposal Facility)
River Corridor Projects To Go

100 K-Area
- Transport sludge to Central Plateau for treatment
- Demolish facilities
- Remediate waste sites
- Put reactors in Interim Safe Storage

Continue groundwater treatment

Note: Reactor removal and FFTF D&D Post 2030/2040. Additional work to be identified as Records of Decision finalized.
324 Building

- The highly radioactive waste site 300-296 (~12,000 R), is located beneath the 324 Building
618-10 Burial Ground

Progress

- Trenches: continuing excavation, loadout and drum processing
- Vertical Pipe Units: began auguring of 94 pipes (mainly welded drums) buried vertically and filled with waste

Workers have excavated down 35 feet in some areas to remove drums and contaminated soil. The burial ground is expected to contain about 1,700 drums.

Workers are using auguring equipment to grind up vertical pipe units and waste inside steel casings that were driven around the waste pipe units.
100 K Area

- Area consists of K-East and K-West Reactors and Sludge Treatment Project
Sludge Treatment Project

Exterior of annex that will house equipment for transferring sludge from engineered containers in the K West Basin into transport containers (for transport to T Plant)

Interior of the annex

K West Annex Mechanical Room
Richland Operations Office Vision
Continuing Our Legacy of Success: Cleanup and Protection for the Future
2016 - 2028

Mission:
Protect the workers, public and environment by further risk reduction, provide necessary infrastructure for continued safe and effective cleanup operations, and restore Hanford lands for access and use.

K Basin Sludge Transfer
- Complete transfer of K West Basin sludge to the Central Plateau

Complete Remaining River Corridor Cleanup
- Complete dewatering, demolition and removal of K West Basin
- Complete the remainder of K Area facility D4 and waste site remediation
- Complete K Area Reactors Interim Safe Storage
- Complete 615-10 and 316-4 remediation
- Complete 303-296 waste site remediation and 324 Building D4
- Conduct any additional soil remediation required by the final CERCLA RODs
- Complete 618-11 remediation

Complete Capsule Transfer from the WESF to Dry Storage
- Complete design and construction of a transfer and storage facility
- Transfer 1,935 cesium/sodium capsules (~100 million curies) to dry storage

Complete Infrastructure Upgrades to Accomplish the Site Mission
- Upgrade critical site infrastructure
- Support startup of the Waste Treatment Plant and Tank Farm operations

Expand Groundwater Cleanup
- Complete 303 Area uranium sequestration
- Conduct any additional groundwater remediation required by the final River Corridor CERCLA RODs
- Obtain 200 East CERCLA RODs
- Implement 200 East (BP-5/PO-1) remedies
- Implement additional remedies required by the 200 West UP-1 CERCLA ROD
- Conduct well decommissioning

Infrastructure and Facility Base Operations
- Operate key waste management facilities
- Maintain safe operations for Hanford nuclear and non-nuclear facilities
- Provide occupational medicine, laundry and other essential site-wide services
- Provide safeguards and security
- Maintain infrastructure

Groundwater Base Operations
- Contain key contaminants and treat contaminated groundwater
- Maintain RCRA compliance
- Implement RCRA groundwater monitoring requirements

Retrieve, Treat, and Enable Shipping of Transuranic Waste to WPP
- Retrieve and treat "contact-handled" TRU waste
- Retrieve and treat "remote-handled" TRU waste
- Develop and implement new TRU waste disposal capabilities
- Certify and ship TRU waste to WPP
- Treat K Basin sludge

Continue Cleanup of the Central Plateau
- Complete waste site characterization and treatability tests
- Complete RI/FS and obtain RODs
- Remediate waste sites
- Demolish facilities
- Conduct RCRA TSD closures

Initiate Canyon Disposition
- Conduct demolition preparation and hazard reduction
- Complete canyon characterization (B Plant, PUREX, RDCX)
- Complete above ground demolition of U Plant canyon, remediate adjacent waste sites and install protective barrier

Restore Hanford Land for Access and Use
- Manage and operate the Manhattan Project National Historical Park in partnership with the National Park Service
- Increase controlled Tribal and public access and use
- Protect cultural resources and restore natural resources
- Work closely with our partners to enable reuse of Hanford land consistent with the Comprehensive Land-Use Plan
# Hanford Prime Contracts

<table>
<thead>
<tr>
<th>Contract Name</th>
<th>Description</th>
<th>Total Contract Value</th>
<th>Contract Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>RCC</td>
<td>Closure of approximately 220 sq. miles of the Hanford Site along the Columbia River</td>
<td>$2.6B</td>
<td>5 year with 5 year option</td>
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<tr>
<td>PRC</td>
<td>Facility and waste site cleanup groundwater remediation and waste disposal</td>
<td>$7.1B</td>
<td>5 year with 5 year option</td>
</tr>
<tr>
<td>MSC</td>
<td>Cost-effective infrastructure and site services to support the cleanup mission</td>
<td>$3.6B</td>
<td>2 and 3 year options</td>
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<tr>
<td>BNI</td>
<td>Design, Construction, and Commissioning of the Hanford Tank Waste Treatment &amp; Immobilization Plant (WTP)</td>
<td>$11.2B</td>
<td>5 year with 3 and 2 year options</td>
</tr>
<tr>
<td>WRPS</td>
<td>Tank Operations Contract Monitor and manage the 177 underground storage tanks at Hanford, prepare for and provide waste fee delivery to the WTP.</td>
<td>$6.8B</td>
<td>5 year with 3 and 2 year options</td>
</tr>
</tbody>
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- **RCC**
  - Total Contract Value: $2.6B
  - Contract Term: 5 year with 5 year option
  - Total contract fee $229M
  - Cost plus award fee based on an annual fee determination composed primarily of multi-year project activities
  - $1.3B in ARRA funds added to the contract
- **PRC**
  - Total Contract Value: $7.1B
  - Contract Term: 5 year with 5 year option
  - Cost plus incentive fee contract
  - Maximum cost performance incentive Fee is $342M
  - Maximum schedule performance incentive fee is $40M
- **MSC**
  - Total Contract Value: $3.6B
  - Contract Term: 5 year with 2 and 3 year options
  - Total Contract Fee: $209M
  - Cost plus award fee with annual performance incentives; 70% quantitative, 30% qualitative in FY 2015; 65% quantitative, 35% qualitative in FY 2016
- **BNI**
  - Total Contract Value: $11.2B
  - Contract Term: 5 year with 3 and 2 year options
  - Cost-Plus Award-Fee with Award and Multiple Fee Incentives
  - Total Maximum Available Fee $608M
- **WRPS**
  - Total contract fee: $372M
  - Cost plus award fee with annual award fee performance measure and multi-year performance incentives; 95% quantitative, 5% qualitative

**HPM Corporation (HPMC) provides occupational medical services to DOE, Hanford contractors**

- Awarded in 2012 for a two-year hybrid contract with four-one-year option periods that includes firm-fixed price with award fee, cost reimbursement, and Indefinite Delivery Indefinite Quality (IDIQ) component
- Total Contract Value: $99 million
Planning for Future Richland Operations Office Contracts

• Multiple contracts for cleanup and infrastructure will expire in 2018 and 2019
• The Office of Hanford Acquisitions was created to develop the next set of contracts
• Gathering input on ideas for future contracts through meetings with interested parties
• Held an industry day and site tours for interested companies in November
Plutonium Finishing Plant

Pre-2012
Plutonium Finishing Plant

Removing glove boxes from Americium Recovery Facility (a.k.a., McCluskey Room)
Waste Encapsulation Storage Facility

- Built in 1971 to process, encapsulate, and store cesium and strontium from Hanford’s single-shell waste tanks
- Processed cesium and strontium from 1974 through 1985
- Currently stores 1,936 cesium/strontium capsules in pools of water
Groundwater Remediation Progress

- More than 100 square miles of contaminated groundwater
  - Treated 13 billion gallons since cleanup began and removed more than 200 tons of contamination
  - Treated more than 2.4 billion gallons of contaminated groundwater in FY 2015
  - Installation of uranium treatment system at the 200 West Pump & Treatment Facility

Groundwater Strategy: Stop key contaminants from entering the river and eventually clean up groundwater to drinking water standards
Removing hexavalent chromium from groundwater

Injection wells and infiltration field tubing in 300 Area

Expand Groundwater Cleanup

- Additional capabilities and capacity to support final RODs
- Conduct well decommissioning
- Groundwater monitoring
Retrieval, Treat, and Enable Shipping of Transuranic Waste to WIPP

- “Contact-handled” TRU waste
- “Remote-handled” TRU waste
- Develop and implement new TRU waste disposition capabilities
- Certify and ship TRU waste to WIPP

Overpack of waste and preparing for shipment at the Central Waste Complex

Waste package being removed at Perma-Fix Northwest
Initiate Canyon Disposition

- Conduct demolition preparation and hazard reduction
- Complete canyon characterization (B Plant, PUREX, REDOX)
- Complete above grade demolition of U Plant canyon, remediate adjacent waste sites and install protective barrier
Environmental Restoration Disposal Facility

- ERDF Highlights
- More than 17 million tons disposed since 1996
- More than 16 million miles driven by Waste Operations drivers since 2005
ERDF Vertical Expansion Project

• Vertical Expansion allows for continued disposal of Hanford waste without a change in tempo of disposal operations
  – Current ERDF cells (10) have a combined capacity of 18 million tons and contain 17.5 million tons of waste
  – Without expansion, ERDF will be filled to capacity in 2017
  – Excavating and constructing a new disposal cell takes approximately two years and costs approximately $30 million
  – Vertical expansion will provide additional waste disposal capacity equivalent to one super cell (approx. 3.6 million tons)
  – Vertical expansion will cover existing cells and future cells
In-Trench Treatment – Safe and Simplified Operations

• In-trench treatment uses one method (grout) for all waste forms
• Waste is never moved after treatment, assuring the integrity of macro-encapsulation
  – Contaminant migration potential is eliminated upon completion of grouting
  – Curing process is complete in seven days
• Waste handling is at absolute minimum – one time
In-Trench Treatment – Safe and Simplified Operations (cont’d)

• Benefits of in-trench treatment
  – Disposal cell area is compliant and protects environment
  – More room to work: Not confined to small operations areas
  – Workers further from waste
  – Lower treatment cost

• Summary
  – Waiver approved in December
  – Controls and procedures are being finalized
  – In-trench treatment will begin soon

Macro-encapsulating a grout pad at ERDF
Infrastructure

**Water Systems**
- Over 95 miles of buried pipe
- 400 million gallons of water used annually

**Electrical Utilities**
- 246 miles of power lines
- 6,000 power poles
- Loads will double with Waste Treatment Plant

**Emergency Services & Systems**
- Radio Fire Alarm Reporting is essential to the safety and security of facilities and employee welfare

**Information Technology**
- Legacy applications to be updated
- Cyber security improvements

**Roads**
- Over 5,700 passenger vehicles (daily average)
- 397 lane miles of paved roads
- 500 trips by heavy haul trucks (daily average)
Restore Hanford Land for Access and Use

- Manage and operate the Manhattan Project National Historical Park in partnership with the National Park Service
- Increase controlled Tribal and public access and use
- Recent transfer of 1,641 acres of land to TRIDEC
- Work closely with our partners to enable reuse of Hanford land consistent with the Comprehensive Land-Use Plan
Manhattan Project National Historical Park

• Nation’s newest National Park created Nov. 10, 2015
• DOE and NPS jointly manage the park and will work closely on all aspects of planning and implementation
• DOE’s primary role is to preserve and provide access to historic resources related to the Manhattan Project
• Park Foundation Document to be completed in 2016 – one of several planning elements for the new park
• 2016 tours to look much like 2015
Manhattan National Park
Eligible Hanford Facilities

- B Reactor
- Bruggemann’s Warehouse
- T Plant
- Allard Pump House
- White Bluffs Bank
- Hanford Reach National Monument
- River Corridor
- Hanford High School