Groundwater Update

Jon Peschong
Richland Operations Office

May 2015
**Hanford Site Groundwater Numbers**

- **12 billion gallons of contaminated groundwater treated**
- **171 tons of contaminants removed in all pump and treat systems since the facilities began operating**
- **1.95 billion of gallons of groundwater treated in 2014**
- **62 tons of contaminants removed in 2014**
Groundwater Key Focus Areas

• Expand pump and treat systems
  – Continue pump and treat operations
  – Install and connect new and existing wells to maximize remediation effectiveness
  – Install uranium treatment system
• Continue progress on decision documents
• Groundwater strategy: stop key contaminants from entering the river and eventually clean up groundwater to drinking water standards
Groundwater Accomplishments

FY 2014 Accomplishments

Soil & Water Remediation – Groundwater

• Continued integration of site-wide groundwater and vadose zone cleanup activities; groundwater contamination monitoring, operations, maintenance, and necessary modifications of existing remediation systems; and deployment of chemical and biological treatment to select areas in support of final remedies

  ▪ Extracted and treated 1.95 billion gallons of groundwater, removing 62 tons of contaminants

  ▪ Initiated construction of the uranium treatment system and well network as required by the 200-UP-1 Record of Decision (ROD)

• Continued progress toward completing decision documentation for the Comprehensive Environmental Response, Compensation, and Liability Act Remedial Investigation/Feasibility Study process to obtain the ROD for the 100/300 Areas located in the River Corridor and the 200 Area located in the Central Plateau

  ▪ Obtained the 100-F Reactor Area and 300 Area RODs

• Provided site-wide and other support services
Groundwater Accomplishments

FY 2014 Accomplishments

2014 Annual Groundwater Report

• 100-HR-3
  • Further reduction in 20 ug/L river shoreline impact (cleanup level in 1996 Interim ROD).
  • Maximum concentrations of hexavalent chromium detected in wells by end of 2014 was less than 500

• 100-KR-4
  • Reduction in high concentration hexavalent chromium via pump-and-treat operation
  • Reduction in length of river impacted by 20 ug/L contour (cleanup level from 1996 Interim ROD)

• 100-ZP-1
  • Area of carbon tetrachloride above 2,000 ug/L reduced to 0 m²
  • Reduction in overall area of carbon tetrachloride plume since 2012
<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operable Unit</td>
<td>Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May</td>
<td>Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May</td>
<td>Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May</td>
</tr>
<tr>
<td>300 Area (EPA)</td>
<td></td>
<td>Reg Review</td>
<td>Prepare Draft Rev 8</td>
</tr>
<tr>
<td>100-F/IU (EPA)</td>
<td>Public Review</td>
<td>ROD Development</td>
<td>ROD Issued</td>
</tr>
<tr>
<td>100-N (Ecology)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100-BC (EPA)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100-K (EPA)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orchard Lands (EPA/Ecology)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# CERCLA Decision Documents Path Forward

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operable Unit</td>
<td>Jul</td>
<td>Aug</td>
<td>Sep</td>
</tr>
</tbody>
</table>

**Legend:**
- **-** Regulatory Agency
- **-** DOE
- **-** CHPRC
- **-** Progress to Date

**Milestones:**
- TPA Milestone M-015-113 met March 23, 2015
- TPA Milestone M-015-110A met March 18, 2015
- TPA Milestone M-016-125 due Sept 30, 2015
- TPA Milestone M-015-21A Under Negotiation
Groundwater Accomplishments

Recent (FY 2015) Accomplishments

Soil & Water Remediation – Groundwater

- Approximately 1.2 billion gallons of groundwater treated so far in FY15, ahead of the fiscal year to date target of 1.05 billion gallons
- Pump and treat throughputs have increased to nearly 5,000 gallons per minute
- TPA Milestone M-015-110A, “Submit RCRA FI/CMS & RI/FS Work Plan for 200-DV-1 Operable Unit” was completed March 19, 2015 ahead of schedule (due March 31, 2015)
FY 2015 Work In Progress

- Construction of the uranium treatment system at the 200 West Pump and Treatment Facility
- Construction of a pipeline from the 200 East Area to the 200 West Area to treat 200 East groundwater
- Remedial investigation for the orchard lands in the River Corridor.
Groundwater Planned Activities

Planned Activities through FY 2016

Soil & Water Remediation – Groundwater

- Continue integration of site-wide groundwater and vadose zone cleanup activities; groundwater contamination monitoring; as well as operations, maintenance, and necessary modifications of existing remediation systems
- Continue operation of the River Corridor and Central Plateau Area Pump and Treatment Facilities for treatment of at least 2.1 billion gallons of contaminated groundwater (removing uranium, carbon tetrachloride, nitrates, hexavalent chromium and technetium-99)
- Continue to support well drilling commitments in Tri-Party Agreement milestone M-024
- Continue progress on completing the groundwater characterization and supporting decision documentation needed for Comprehensive Environmental Response, Compensation, and Liability Act requirements and to obtain final remediation Records of Decision for operable units in the River Corridor and Central Plateau
- Continue remedial investigation for the orchard lands in the River Corridor

Workers install groundwater monitoring wells
Groundwater Planned Activities

**FY 2017 Work Descriptions**

**Soil & Water Remediation – Groundwater**

- Continue integration of site-wide groundwater and vadose zone cleanup activities; groundwater contamination monitoring; as well as operations, maintenance, and necessary modifications of existing remediation systems.
- Continue operation of the River Corridor and Central Plateau Area Pump and Treatment Facilities for treatment of at least 2.1 billion gallons of contaminated groundwater (removing uranium, carbon tetrachloride, nitrates, hexavalent chromium and technetium-99).
- Continue to support well drilling commitments in Tri-Party Agreement milestone M-024.
- Continue progress toward completing decision documentation for the Comprehensive Environmental Response, Compensation, and Liability Act Remedial Investigation/Feasibility Study process to obtain the final RODs for the 100/300 Areas located in the River Corridor and the 200 Area located in the Central Plateau.
- Support apatite barrier actions at 100-NR-2 and uranium sequestration at 300-FF-5 Operable Units in support of interim/final remedies to stop strontium-90 and uranium from reaching the Columbia River.