Measure 3.1.b.: Supplemental - Increase completion percentage of the Hanford tank waste treatment plant from 63% to 86% by 2016

HEALTHY LANDS

Department of Ecology
Alexandra Smith
November 28, 2016
Background

Hanford: The nation’s largest federal cleanup site

- 586 square miles
- 72 square miles contaminated groundwater

History and Risk from Underground Waste Tanks

- 56 Million Gallons of High Level Waste
- 177 Tanks
  - 149 single-shell
    - Over a million gallons has leaked to the soils and groundwater from the single-shell tanks.
  - 28 double-shell
    - One double-shell tank is now leaking into its outer shell.
The Solution – Vitrify Tank Waste

Waste Treatment Plant consists of five major facilities

1. **Pretreatment Facility (PT)** Receives waste from double-shell tanks, divides into High Level Waste (HLW) and Low Activity Waste (LAW) for vitrification in separate facilities.


3. **High Level Waste (HLW)** Melters vitrify waste. Glass placed in canisters and stored on-site pending transport to national deep geologic repository.

4. **Analytical Laboratory** Ensures that vitrified HLW and LAW waste meets regulatory requirements and standards.

5. **Balance of Facilities** Support services and utilities: steam plant, electrical substation, back-up generators, warehousing, waste transfer pipelines.
Current State of Waste Treatment Plant: Off Target

- Prior Goal: 86% completed by 2016.
- Current Status: 60% completed.
- Construction progress measured since 1999.
- Project construction delays over time due to management, budget, and technical issues.
- Reported to Goal Council in Nov 2015 that we would not meet the 2016 goal.
- State sued USDOE over missed deadlines. Revised federal court consent decree established new date for completion.

History of Tank Waste Treatment Project 1989–2016

- 25-year delay in original hot operations
- Lost 10 years with 3 project terminations
- 15 years with 4 major delays adding 16 years to hot operations of LAW Treatment and 26 years of delay of full WTP start up
- Schedule slip in 2007
- Schedule slip in 2008
- Schedule slip in 2010
- Schedule slip in 2011-12
- Schedule slip in 2011-16
- 2007: Old hot start
- 2011: Full-scale operation plan
- 2012: Full-scale operation plan
- 2018: Hot operations
- 2023: DFLAW Hot operations
- 2032: Entire WTP Hot operations

3.1.b Increase completion percentage of the Hanford tank waste treatment plant from 63% to 86% by 2016
Problem

Waste Treatment Plant completion schedule shifted from 2019 to 2033.

<table>
<thead>
<tr>
<th>Milestones Pushed Back</th>
<th>2010 Consent Decree</th>
<th>2016 Consent Decree</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAW construction substantially complete</td>
<td>2014</td>
<td>2020</td>
</tr>
<tr>
<td>LAW hot commissioning complete</td>
<td>2019</td>
<td>2023</td>
</tr>
<tr>
<td>HLW construction substantially complete</td>
<td>2016</td>
<td>2030</td>
</tr>
<tr>
<td>PT construction substantially complete</td>
<td>2017</td>
<td>2031</td>
</tr>
<tr>
<td>Hot start of Waste Treatment Plant</td>
<td>2019</td>
<td>2033</td>
</tr>
</tbody>
</table>

Opportunities

1) Work with DOE to begin low activity waste treatment by 2023.
2) Resolve technical issues to allow high level waste treatment by 2033.

Low activity waste is expected to fill 60,000-100,000 4’ x 7.5’ containers. High level waste will fill an estimate 12,000-16,000 2’x14.5’ canisters.
Direct Feed Low Activity Waste Treatment - Subset of Overall Tank Waste Mission

Strategies

Ensure Direct Feed Low Activity Waste treatment by December 2023 by completing permitting for DFLAW facilities.

Challenges

Completing DFLAW by 2023
- Funding, design, permitting and construction of **two new facilities** – EMF and LAWPS
- Completing construction of LAW and LAB
- Maintaining sufficient federal funding

Completing High Level Waste Treatment Facility by 2033
- Resolution of technical issues
- Redesign, permitting and construction
- Ensuring USDOE seeks sufficient funding to support the work
Strategies

What Ecology is Doing

DFLAW
- Interactive permitting and design oversight
- Phased permitting
- Construction oversight
- Ensuring DOE seeks sufficient funding for new facilities

High Level Waste Waste Treatment Plant
- Participating in resolution of technical issues
- Incorporating results of technical issues resolution into design
- Phased permitting
- Construction oversight
- Ensuring DOE seeks sufficient funding to support the work

Proposal for New Measure

- Cannot provide meaningful measure of overall WTP progress – recommend removing it from 3.1.b
- Near-term focus (through 2023) shifts to DFLAW, while maintaining support and oversight on overall WTP

New Measure

- Increase the percentage of completed tasks required for constructing and operating Hanford low activity tank waste treatment from 0% in 2016 to 100% by 2023
  - Focuses on successful operation of DFLAW and vitrification of waste at the Hanford site by December 2023.
### TASK TIMELINE

<table>
<thead>
<tr>
<th>Task Leader</th>
<th>ECY Role</th>
<th>Description</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
<th>Aggregate % Complete (approx)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 USDOE</td>
<td>Monitor</td>
<td>Site infrastructure upgrades complete</td>
<td>Apr</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4.5</td>
</tr>
<tr>
<td>2 ECY</td>
<td></td>
<td>Issuance of EMF transfer line class 2 modification</td>
<td>Jul</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>3 USDOE</td>
<td>Monitor</td>
<td>LAWPS submit CD-3A package</td>
<td>Sep</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>13.5</td>
</tr>
<tr>
<td>4 USDOE</td>
<td>Monitor</td>
<td>ILAW transporter complete design</td>
<td>Sep</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>18</td>
</tr>
<tr>
<td>5 USDOE</td>
<td>Monitor</td>
<td>LAWPS submit CD-2/3 package</td>
<td>Oct</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>22.5</td>
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<tr>
<td>6 USDOE</td>
<td>Monitor</td>
<td>LAWPS initiate site prep</td>
<td>Nov</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>27</td>
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<tr>
<td>7 USDOE</td>
<td>Monitor</td>
<td>IDF PA submit final phase 2 WR to ORP</td>
<td>Jan</td>
<td></td>
<td></td>
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<td>37.5</td>
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<tr>
<td>8 USDOE</td>
<td>Monitor</td>
<td>LAW complete construction</td>
<td>Jun</td>
<td></td>
<td></td>
<td></td>
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<td>36</td>
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<td>9 ECY</td>
<td></td>
<td>Issuance of EMF secondary containment class 3 modification</td>
<td>Jun</td>
<td></td>
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<td></td>
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<td>40.50</td>
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<tr>
<td>10 USDOE</td>
<td>Monitor</td>
<td>LAWPS full construction start</td>
<td>Aug</td>
<td></td>
<td></td>
<td></td>
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<td>45</td>
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<tr>
<td>11 USDOE</td>
<td>Monitor</td>
<td>ILAW transporter first transporter delivered</td>
<td>Sep</td>
<td></td>
<td></td>
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<td>49.5</td>
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<tr>
<td>12 ECY</td>
<td></td>
<td>Issuance of EMF large equipment drawings class 3 modification</td>
<td>Dec</td>
<td></td>
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<td></td>
<td></td>
<td>54</td>
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<tr>
<td>13 USDOE</td>
<td>Monitor</td>
<td>EMF complete construction</td>
<td>Jun</td>
<td></td>
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<td>58.5</td>
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<tr>
<td>14 USDOE</td>
<td>Monitor</td>
<td>Complete IDF contractor ORR</td>
<td>Aug</td>
<td></td>
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<td>63</td>
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<tr>
<td>15 USDOE</td>
<td>Monitor</td>
<td>ILAW transporter ready for cold commissioning</td>
<td>Dec</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>67.5</td>
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<tr>
<td>16 ECY</td>
<td></td>
<td>Issuance of LAWPS final permit</td>
<td>Jan</td>
<td></td>
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<td></td>
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<td>72</td>
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<tr>
<td>17 USDOE</td>
<td>Monitor</td>
<td>LAW start cold commissioning</td>
<td>Jul</td>
<td></td>
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<td>76.5</td>
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<tr>
<td>18 ECY</td>
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<td>LAW Operations permit complete</td>
<td>Sep</td>
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<td>81</td>
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<tr>
<td>19 USDOE</td>
<td>Monitor</td>
<td>LAW Facility Construction Substantially Complete</td>
<td>Dec</td>
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<td>85.5</td>
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<td>20 USDOE</td>
<td>Monitor</td>
<td>LAW start hot commissioning</td>
<td>Oct</td>
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<td>90</td>
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<tr>
<td>21 USDOE</td>
<td>Monitor</td>
<td>LAWPS clear AP-107 for startup/1st feed batch prep complete</td>
<td>Oct</td>
<td></td>
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<td>94.5</td>
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<tr>
<td>22 USDOE</td>
<td>Monitor</td>
<td>LAW complete hot commissioning</td>
<td>Dec</td>
<td></td>
<td></td>
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<td>100.0</td>
</tr>
</tbody>
</table>

### 3.1.b Increase completion percentage of the Hanford tank waste treatment plant from 63% to 86% by 2016

#### Detailed Action Plan:

<table>
<thead>
<tr>
<th>Task</th>
<th>Task Lead</th>
<th>Partners</th>
<th>Expected Outcome</th>
<th>Status</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complete infrastructure upgrades to support DFLAW</td>
<td>USDOE</td>
<td>Ecology</td>
<td>Site infrastructure upgrades complete</td>
<td>Apr 2017</td>
<td></td>
</tr>
<tr>
<td>Review permitting, complete regulatory requirements to modify EMF permit</td>
<td>Ecology</td>
<td>USDOE</td>
<td>Issuance of EMF transfer line class 2 modification</td>
<td>Jul 2017</td>
<td></td>
</tr>
<tr>
<td>Complete LAWPS design engineering, informal permitting review</td>
<td>USDOE</td>
<td>Ecology</td>
<td>LAWPS submit CD-3A design package (design of long lead equipment)</td>
<td>Sep 2017</td>
<td></td>
</tr>
<tr>
<td>Complete ILAW design engineering, safety basis requirements</td>
<td>USDOE</td>
<td>Ecology</td>
<td>ILAW transporter complete design</td>
<td>Sep 2017</td>
<td></td>
</tr>
<tr>
<td>Complete LAWPS design engineering, informal permitting review</td>
<td>USDOE</td>
<td>Ecology</td>
<td>LAWPS submit CD-2/3 package (Remaining design)</td>
<td>Oct 2017</td>
<td></td>
</tr>
<tr>
<td>Complete LAWPS design engineering, formal permitting review</td>
<td>USDOE</td>
<td>Ecology</td>
<td>LAWPS initiate site prep</td>
<td>Nov 2017</td>
<td></td>
</tr>
</tbody>
</table>
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**Assistance Needed:**

**How can Goal Council or Governor Help?**

- Monitor progress on DFLAW; insist on continued emphasis and progress on Waste Treatment Plant.

- Communicate to Congressional delegation the importance of DFLAW, of continued funding for Waste Treatment Plant; and support for retrieval of aging tanks.

- Assist with communication to stakeholders and residents about the importance of Hanford cleanup.

- Governor’s office meet with new Secretary of Energy to emphasize the critical need to keep Hanford tank waste treatment a high priority.