3.1.a. Increase the percent of completed tasks required for constructing and operating Hanford low activity tank waste treatment facilities from 0 to 100 percent by 2023

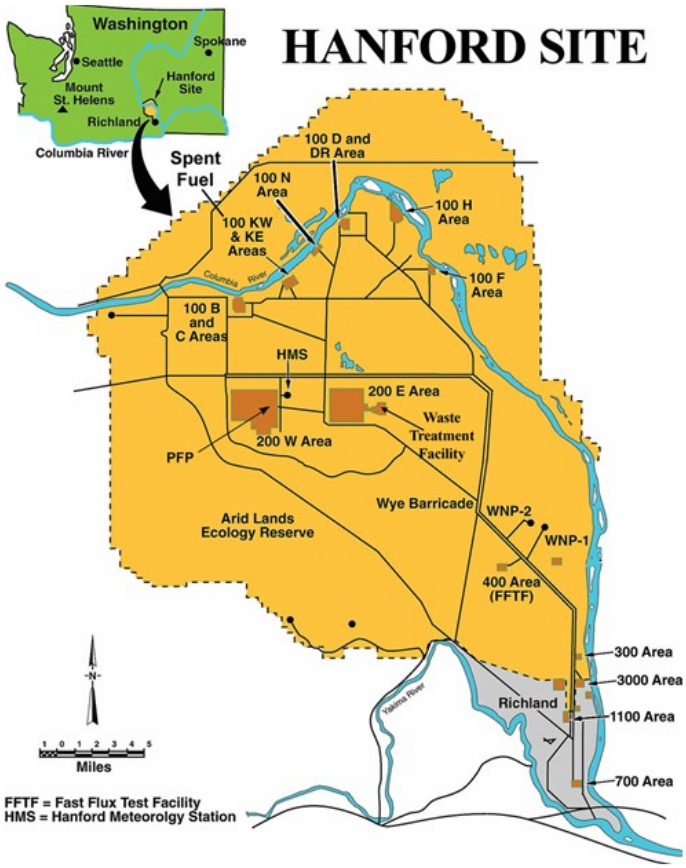
3.1.b Increase percentage of completed tasks for construction and operation of Hanford's direct feed low activity tank waste treatment facilities from 0% to 100% by 2023

Background

Hanford:

The nation's largest federal cleanup site

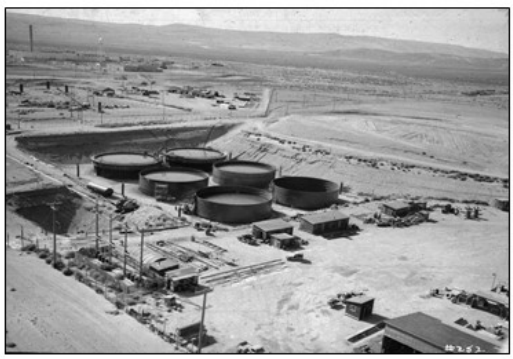
- 586 square miles
- 72 square miles contaminated groundwater



3.1.b Increase percentage of completed tasks for construction and operation of Hanford's direct feed low activity tank waste treatment facilities from 0% to 100% by 2023

History and Risk from Underground Waste Tanks

Tank foundation under construction.



Tanks are grouped in tank "farms" of 6 to 12 tanks.

Tanks are underground to shield radiation.

- 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

- Turning waste into glass immobilizes it.
- Immobilization reduces potential for environmental impact.

3.1.b Increase percentage of completed tasks for construction and operation of Hanford's direct feed low activity tank waste treatment facilities from 0% to 100% by 2023

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.

2. **Low Activity Waste (LAW) Melters** vitrify waste. Glass placed in containers and taken for permanent disposal at Integrated Disposal Facility.

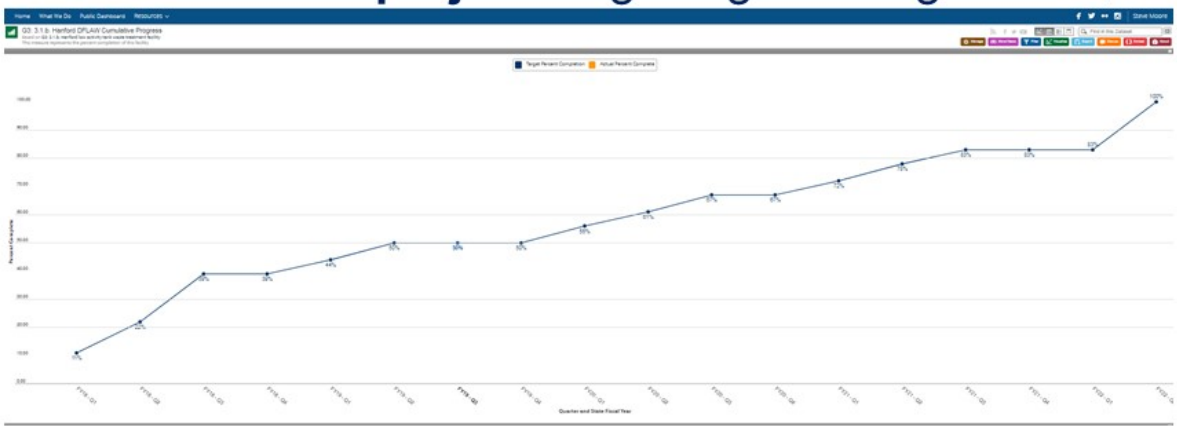
3. **High Level Waste (HLW) Melters** vitrify waste. Glass placed in canisters and stored on-site pending transport to national deep geologic repository.

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.

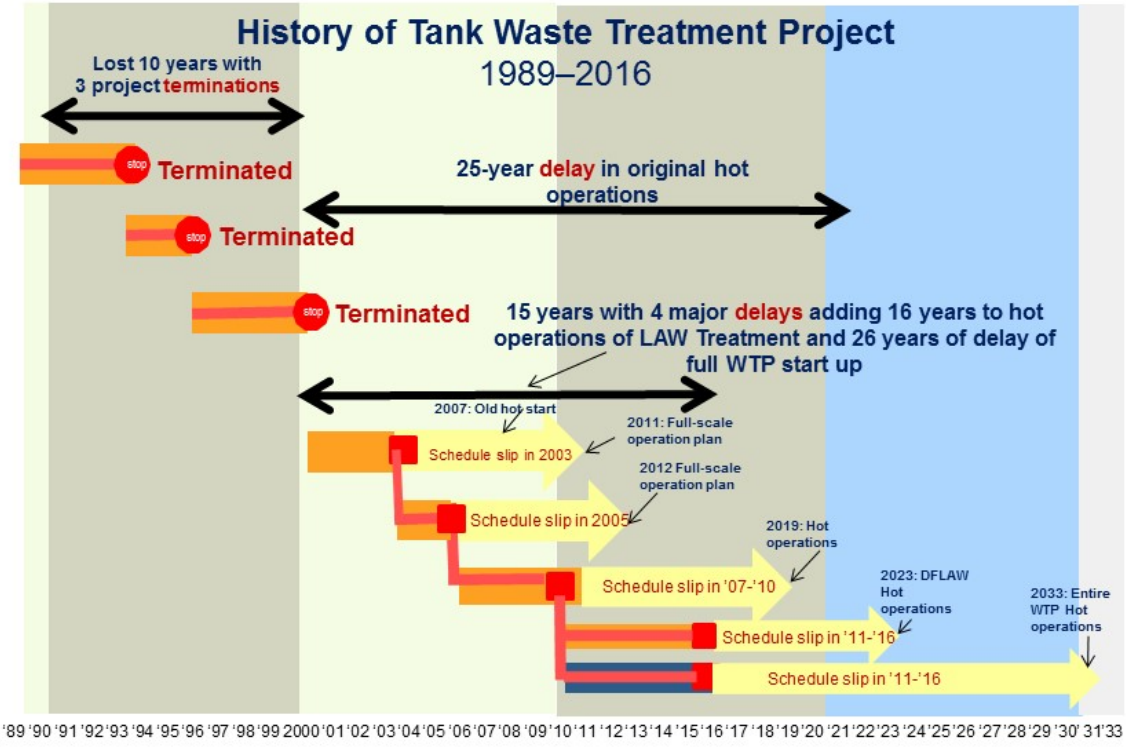
3.1.b Increase percentage of completed tasks for construction and operation of Hanford's direct feed low activity tank waste treatment facilities from 0% to 100% by 2023

Current DFLAW project: Beginning Tracking FY18 Q1



- Goal: 100% of DFLAW tasks completed by 2023.
- Current Status: First two tasks scheduled for FY18 Q1. Graph shows planned progress.
- Overall Hanford Tank Waste Treatment facility progress has been measured since 1999.
- Project construction delays over time due to management, budget, and technical issues.
- Reported to Goal Council in November 2016 that we would shift measure to DFLAW.
- State sued U.S. Department of Energy (USDOE) over missed deadlines. Revised federal court consent decree established new date for completion and new requirement for DFLAW by 2023.

3.1.b Increase percentage of completed tasks for construction and operation of Hanford's direct feed low activity tank waste treatment facilities from 0% to 100% by 2023



Problem

Waste Treatment Plant completion schedule shifted from 2019 to 2033.

Milestones Pushed Back	2010 Consent Decree	2016 Consent Decree
LAW construction substantially complete	2014	2020
LAW hot commissioning complete	2019	2023
HLW construction substantially complete	2016	2030
PT construction substantially complete	2017	2031
Hot start of Waste Treatment Plant	2019	2033

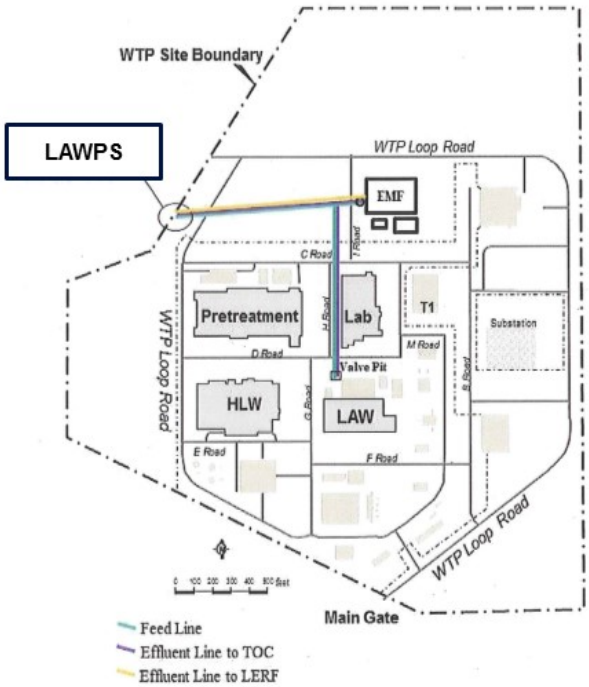
3.1.b Increase percentage of completed tasks for construction and operation of Hanford's direct feed low activity tank waste treatment facilities from 0% to 100% by 2023

Opportunities

1. Work with USDOE to begin low activity waste treatment by 2023.
2. Resolve technical issues to allow high level waste treatment by 2033.
   - 3 of 8 Technical issues are at point of resolution.

Low activity waste is expected to fill 60,000-100,000 4' x 7.5' containers.

High level waste will fill an estimated 12,000 -16,000 2' x 14.5' canisters.



3.1.b Increase percentage of completed tasks for construction and operation of Hanford's direct feed low activity tank waste treatment facilities from 0% to 100% by 2023

Direct Feed Low Activity Waste Treatment - Subset of Overall Tank Waste Mission

3.1.b Increase percentage of completed tasks for construction and operation of Hanford's direct feed low activity tank waste treatment facilities from 0% to 100% by 2023

Strategies

Ensure Direct Feed Low Activity Waste treatment by December 2023 by completing permitting for DFLAW facilities and continuing regulatory engagement with USDOE on design, engineering, construction, commissioning, and budget.

Challenges

Completing DFLAW by 2023

- Funding, design, permitting and construction of **two new facilities** – EMF and LAWPS.
- Completing construction of LAW and LAB facilities.
- Whether USDOE obtains sufficient funding to complete the project on time.

Completing High Level Waste Treatment Facility by 2033

- Resolution of technical issues.
- Redesign, permitting, and construction.
- Whether USDOE obtains sufficient funding to support the work.

Strategies

What Ecology is Doing

Direct Feed Law Activity Waste

- Interactive permitting and design oversight.
- Phased permitting - that permits the facility as design is available to allow construction to proceed.
- Construction oversight.
- Supporting USDOE's requests for sufficient funding for the new facilities and completing project tasks.

High Level Waste Treatment Plant

- Participating in resolution of technical issues.
- Incorporating results of technical issues resolution into design.
- Phased permitting.
- Construction oversight.
- Supporting USDOE's requests for sufficient funding to support the work.

TASK TIMELINE

	Task Lead	ECY Role	Description	2017	2018	2019	2020	2021	Aggregate % Complete (approx)
1	USDOE	Monitor	Low Activity Waste Pretreatment System (LAWPS): submit Critical Decision-3A package	Jul					5.5
2	USDOE	Monitor	Immobilized Low Activity Waste (ILAW) container transport vehicle: complete design	Sep					11
3	USDOE	Monitor	Low Activity Waste (LAW): complete construction	Nov					16.5
4	USDOE	Monitor	Site infrastructure upgrades to support Direct Feed Low Activity Waste (DFLAW) operations complete	Dec					22
5	USDOE	Monitor	Submit final phase 2 Waste Incidental to Reprocessing (WIR)		Jan				27.5
6	USDOE	Monitor	Low Activity Waste Pretreatment System: submit CD-2/3 package		Feb				33
7	USDOE	Monitor	LAWPS: initiate site prep construction		Feb				38.5
8	USDOE	Monitor	ILAW transporter: first transporter delivered		Sep				44
9	USDOE	Monitor	LAWPS: full construction start		Nov				49.5
10	USDOE	Monitor	Effluent Management Facility (EMF): construction readiness for startup			Sep			55
11	USDOE	Monitor	Immobilized Low Activity Waste transporter: ready for cold commissioning			Dec			60.5
12	ECY	Action	Low Activity Waste Pretreatment System: Issuance of final permit				Jan		66
13	ECY	Action	LAW: Operations permit complete				Sep		71.5
14	USDOE	Monitor	LAW: start cold commissioning				Oct		77
15	USDOE	Monitor	Integrated Disposal Facility (IDF): complete contractor ORR					Feb	82.5
16	USDOE	Monitor	Low Activity Waste Pretreatment System clear double-shell tank AP-107 for startup/first feed batch prep complete					Oct	88
17	USDOE	Monitor	LAW: start hot commissioning					Oct	93.5
18	USDOE	Monitor	LAW: complete hot commissioning					Dec	100

Detailed Action Plan:

Task	Task Lead	Expected Outcome	Status	Due Date
Low Activity Waste Pretreatment System: submit CD-3A package	USDOE	LAWPS submit Critical Decision-3A design package (design of long lead time equipment)	On Schedule	July 2017
Immobilized Low Activity Waste transporter: complete design	USDOE	Immobilized Low Activity Waste container transport vehicle complete design	On Schedule	September 2017
Low Activity Waste : complete construction	USDOE	Low Activity Waste vitrification facility construction is complete	Currently anticipate a one month project slip to Dec 2017.	November 2017
Site infrastructure upgrades complete	USDOE	Site infrastructure upgrades complete to water, power, and waste transfer piping to support DFLAW operations.	Currently anticipate a two month project slip to Feb 2018.	December 2017

3.1.b Increase percentage of completed tasks for construction and operation of Hanford's direct feed low activity tank waste treatment facilities from 0% to 100% by 2023

Assistance Needed:
How can Goal Council or Governor Help?

- Monitor progress on DFLAW; insist on continued emphasis and progress on Waste Treatment Plant.
- Governor's office meet with new Secretary of Energy to emphasize the critical need to keep Hanford tank waste treatment a high priority, to reinstitute a transparent and robust project management approach, and to request necessary funding to complete the project by 2023.
- Communicate to Congressional delegation the importance of DFLAW, of continued funding for Waste Treatment Plant, and of support for retrieval of aging tanks.
- Assist with communication to stakeholders and residents about the importance of Hanford cleanup.