



OFFICE OF  
**RIVER PROTECTION**  
United States Department of Energy

# Double-Shell Tank AY-102 Retrieval Update

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Presented by: U.S. Department of Energy Office of River Protection

March 1, 2017

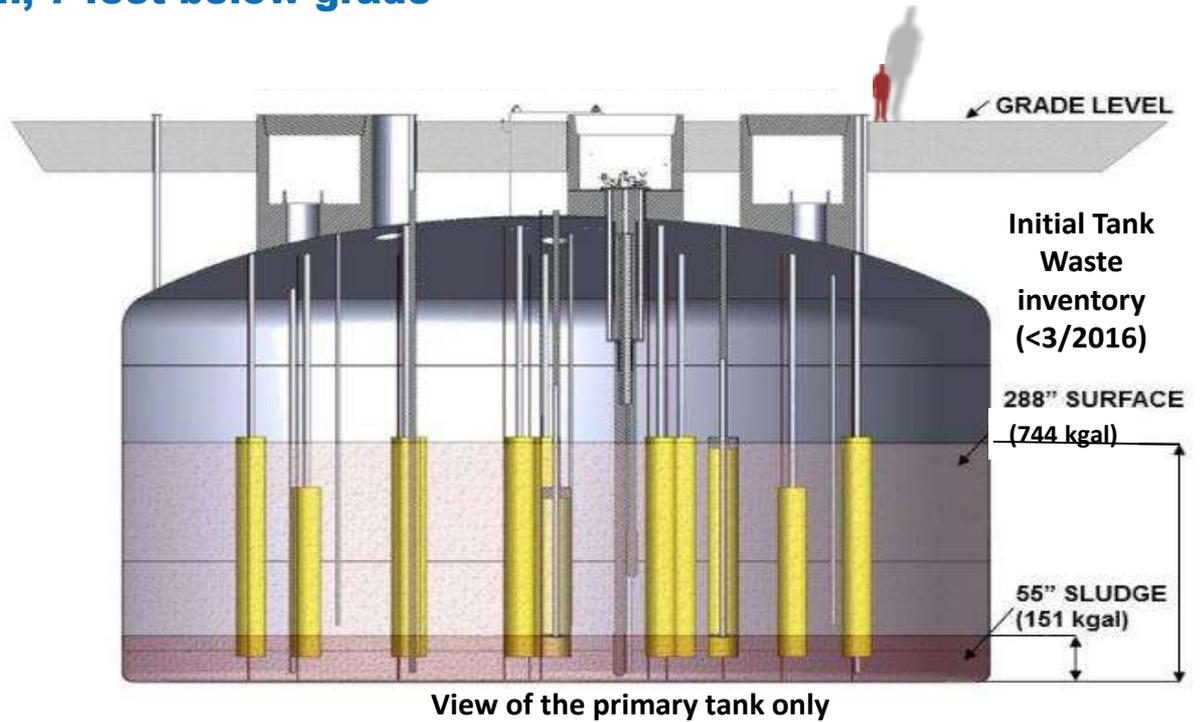
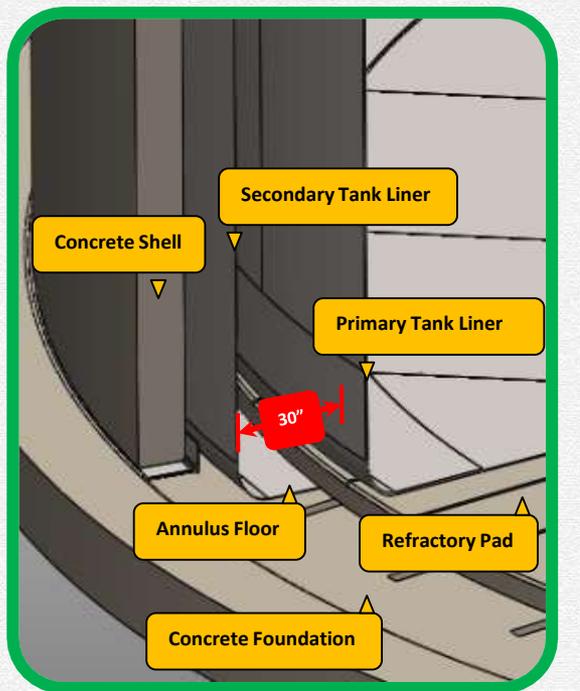


- **March 3, 2016:** AY-102 retrieval begins
- **Beginning waste volume:** ~744,000 gallons
  - Supernate (liquid): ~593,000 gallons
  - Sludge: ~151,000 gallons
- **March/April 2016:** 95 percent of waste removed
- **May 2016:** Retrieval paused to install 4 extended reach sluicers
- **December 13, 2016:** Retrieval resumes for remaining 41,000 gallons of sludge
- **February 15, 2017:** Limits of retrieval technologies reached
- **Waste remaining:** ~19,000 gallons = 2.5%





- **Wastes from historic B Plant operations and strontium/cesium extraction**
- **1 Million Gallons Capacity**
- **75 feet wide x 46 feet high, 7 feet below grade**





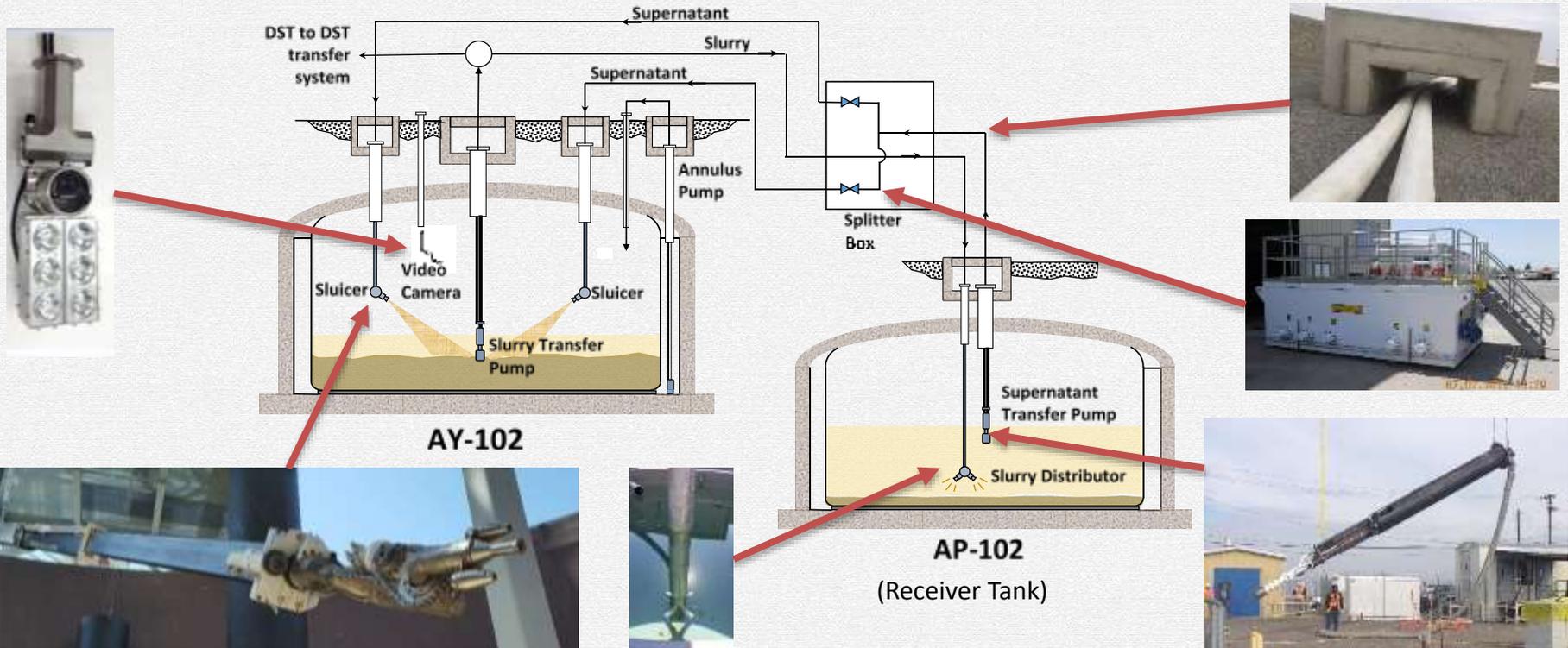
# Retrieval & Transfer Process

## 1<sup>st</sup> Technology: Sluicing

Mobilize solids with sprayed liquid, pump slurry to a receiver tank  
Decant solids and recycle supernatant for further sluicing

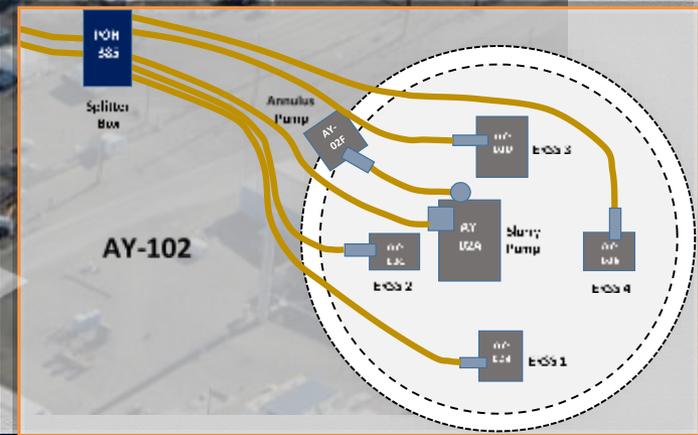
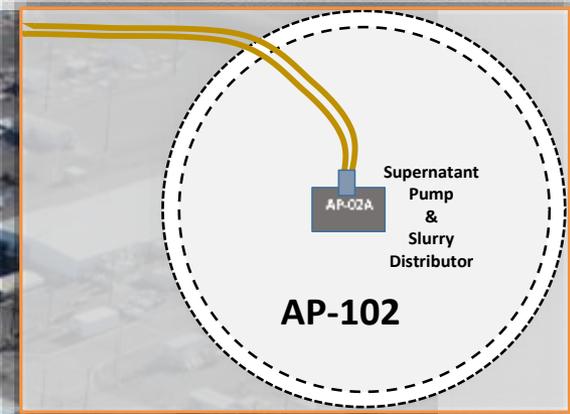
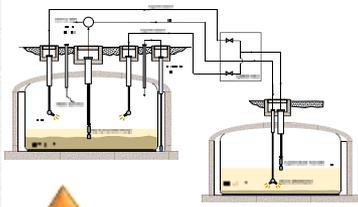
## 2<sup>nd</sup> Technology: High pressure water (extended reach sluicers)

Breakdown residual hard heel in a slurry, pump slurry to receiver tank





# Retrieval & Transfer System Layout





# Retrieval & Transfer System Installation

- Removed 5 obsolete pumps from AY-102 and AP-102
- Upgraded 7 pits to receive new equipment
- Designed, fabricated, installed and tested 3 new pumps, 2 sluicers, and 2000 ft of hose-in-hose transfer line



Equipment removal and pit upgrades in 2014 - 2015



Pump installations in November 2015



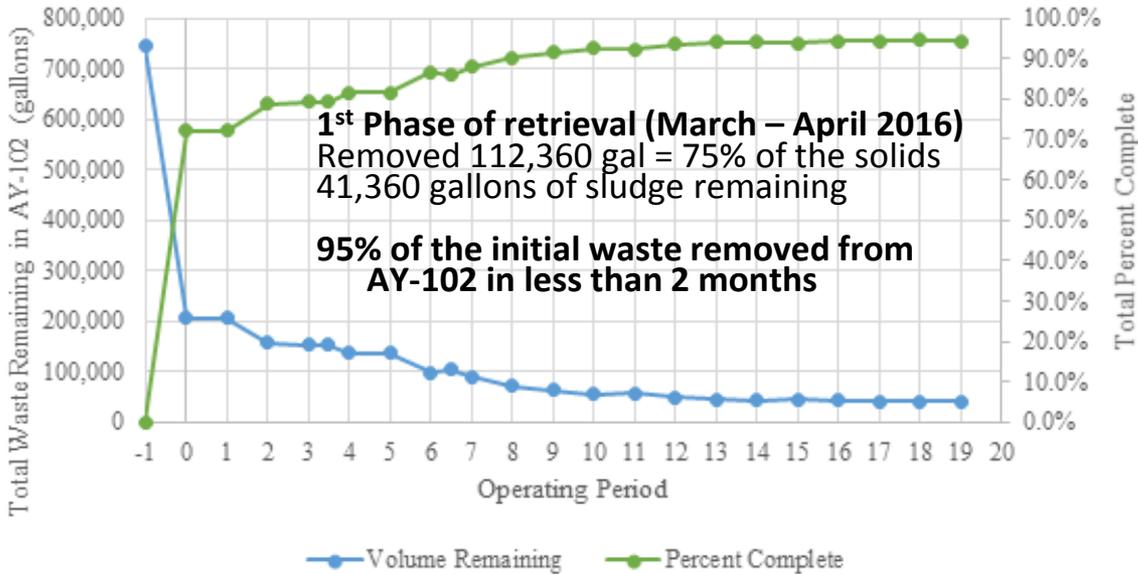
Equipment installation completed in January 2016





# Retrieval Operations with Standard Sluicers

AY-102 Retrieval



March 2016



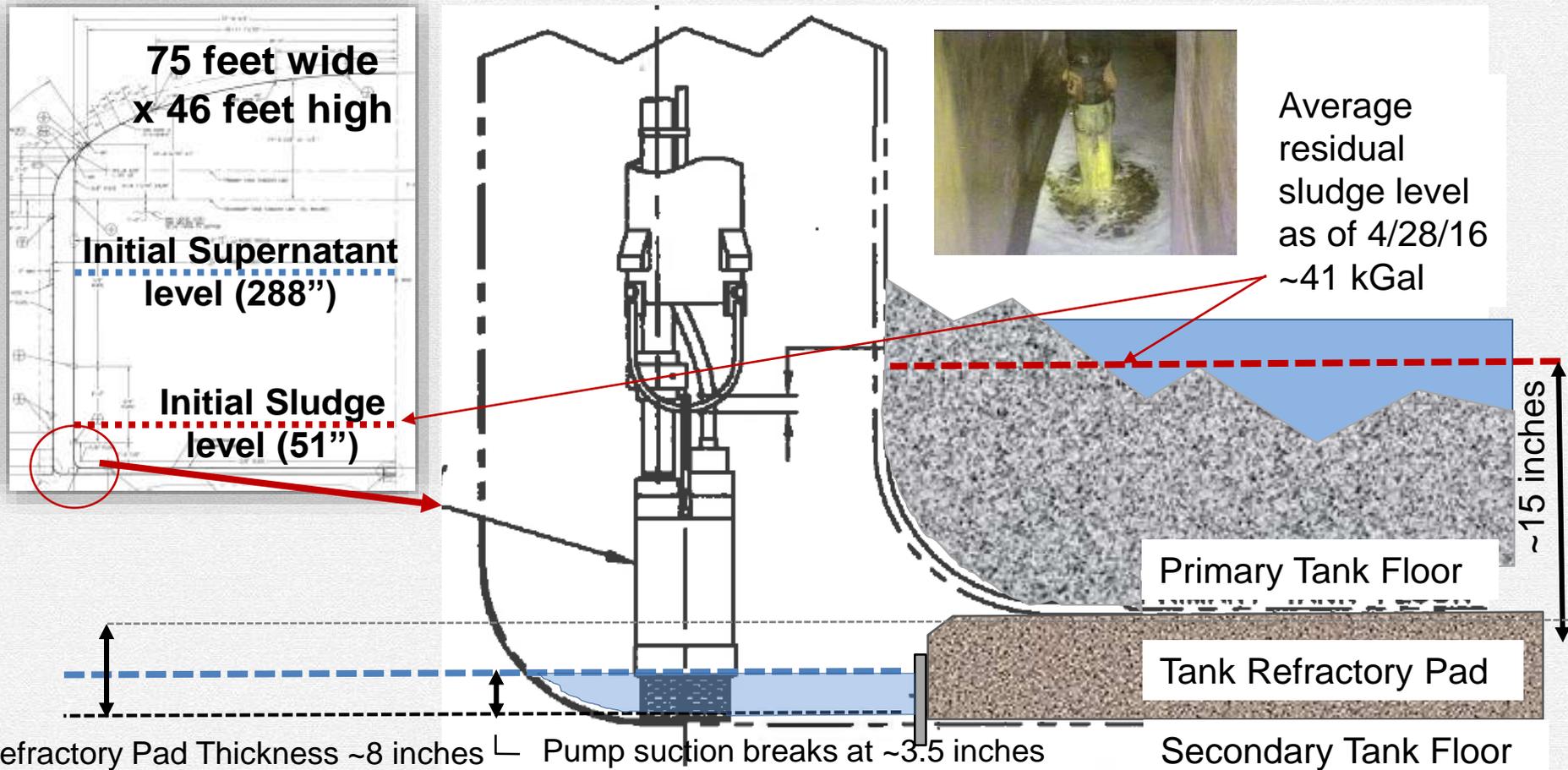
April 2016





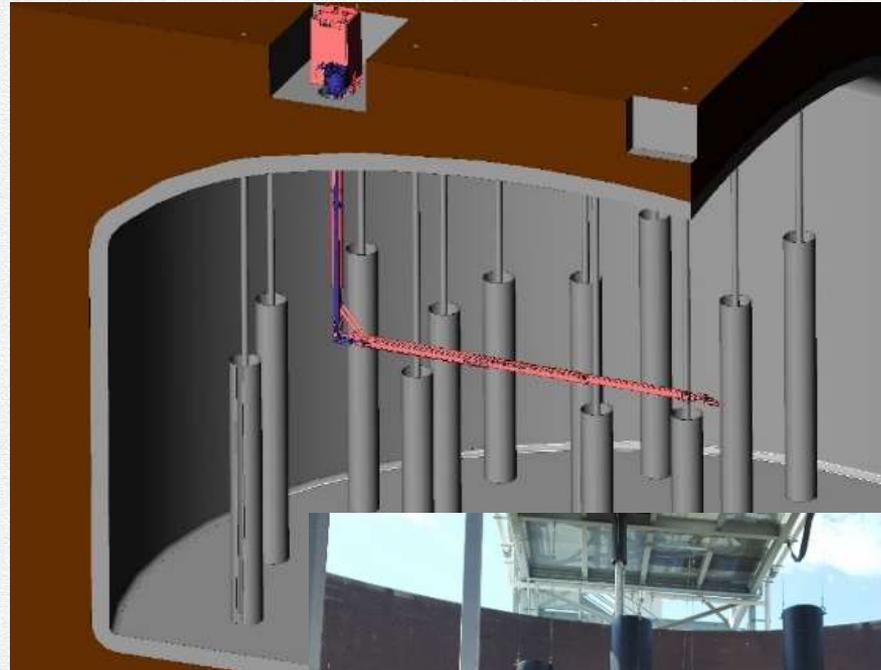
# Response to increased leak to annulus

- On 4/17/16, the leak increased and filled the annulus with up to 8 inches of liquids.
- Annulus pump was operated to return the liquid to primary tank
- Annulus pump is available for continued pumping, if needed





- Retrieval system reconfigured with four Extended Reach Sluicers after first phase of retrieval
- Full-scale mockup of AY-102 primary tank built at Cold Test Facility with prototype ERSS to train operators





- 500,000 hours of work over 3 years
- 24 months of field work
- 5 months of retrieval operations
- More than 30,000 farm entries
- Only 5 first aid cases





February 2017

**97.5% of waste removed  
(over 725,000 total gallons)**

- 587,000 gallons of supernate
- 138,000 gallons of sludge

**Estimated 19,000 gallons remaining**



## Next steps per Settlement Agreement

- Provide Ecology with status report on waste remaining and determination of whether conditions allow for a video inspection of the leak site(s).
- If conditions allow, complete video inspection of tank to determine cause of leak.
- Provide Ecology with inspection results, which will include recommendations for repairing or closing the tank.





# Questions?

The Hanford Reach  
White Bluffs Overlooking the Columbia River

