



## Key Benefits and Design Concept

- Could lead to acceleration of the tank waste mission
- Creates space in waste-storage tanks
- Removes cesium and solids to separate mixed low-activity waste from tank waste
- Moves stabilized-waste disposal out of state
- Simple design limits costs and addresses safety
- Could lead to significant cost savings that could be used to accelerate other Hanford tank waste priorities
- Uses existing tank equipment
- Demonstrates a waste removal approach for areas of limited infrastructure

## Background

The U.S. Department of Energy (DOE) is pursuing an end-state, waste characteristics-driven approach to waste treatment, which would open an additional waste disposal pathway that could significantly enhance the Hanford cleanup mission. The DOE is pursuing these activities to initiate ways to reduce cleanup costs and accelerate the cleanup schedule. A demonstration in 2017 provided the necessary proof-of-concept to treat tank waste from the Hanford Site. This demonstration allowed for mixed low-activity waste from Hanford to be sent to an off-site commercial treatment facility, followed by off-site disposal. The approach leverages waste treatment technology advancements, along with regulatory changes for commercial facilities, to allow disposal of mixed low-level radioactive waste resulting from pretreated tank waste.

Successful deployment of this approach in the Hanford 200 West Area could economize existing tank storage space, reduce risks, and achieve safe, meaningful, and near-term reduction in environmental risk and liability.



# Low-Level Waste Off-site Disposal (cont.)

## Purpose

Hanford's Test Bed Initiative (TBI) is a proposed approach to determine suitability of mixed low-level waste (LLW) off-site disposal. It demonstrates a supplemental treatment option in accordance with federal and state regulations to augment and accelerate the cleanup mission to disposition Hanford Site tank waste.

### 3-gallon TBI Demonstration

An initial demonstration test of 3 gallons was completed in December 2017. The successfully pretreated waste was then stabilized at a local off-site commercial treatment facility. The resulting material was determined to be LLW and to comply with federal and state regulatory requirements. This allowed for the now-treated mixed LLW in a solid form to be disposed of at an out-of-state commercial disposal facility.

### 2,000-gallon TBI Demonstration

DOE is now pursuing the use of 2,000 gallons of waste from waste-storage Tank SY-101 to demonstrate the feasibility of options for LLW off-site disposal. A system will be installed within the tank to pretreat liquid waste by filtration and removal of key radioactive components. The pretreated waste will then be collected in portable containers designed and certified for federal transportation requirements. A commercial treatment facility would stabilize the mixed waste into a solid form for LLW designation prior to out-of-state disposal.

Planning and coordination efforts are underway for this phase of the demonstration project. The pretreatment equipment is being prepared for installation and processing, which is expected to take place in fiscal year 2024.

## Conclusion

DOE continues to explore new and innovative ways to perform its cleanup mission to ensure the safety of its workforce, the public and the environment. The TBI approach can be used in Hanford locations with limited existing infrastructure to create valuable tank-waste storage space. The initiative uses existing technology and off-site commercial facilities to permanently remove waste from Hanford.



*Disposal of treated Hanford waste at an out-of-state commercial disposal facility during the 3-gallon Test Bed Initiative demonstration.*



*Laboratory analysis of tank waste in preparation for the 2,000-gallon Test Bed Initiative demonstration.*



*Equipment for the 2,000-gallon Test Bed Initiative demonstration is moved for modifications ahead of installation.*

