

# Hanford Tank Cleanup Update

May 2009

*Tank C-110 retrieval*

**W**ashington River Protection Solutions (WRPS), a company owned by URS Corporation and EnergySolutions, assumed responsibility for Hanford tank operations on Oct. 1, 2008. The primary focus of the work is reducing risk to the Columbia River, employees and the public. WRPS is working with the U.S. Department of Energy's Office of River Protection to safely store, retrieve and treat Hanford tank waste and close the tank farms at the 560-square-mile Hanford Site in southeastern Washington state.

## Focus continues on waste retrieval from single-shell tanks

### Tank C-110 waste retrieval nears completion

Retrieval of waste from single-shell tank C-110 resumed in January making it the first waste retrieval operation for WRPS since taking over Hanford's Tank Operations Contract last October. Now, with approximately 90 percent of the waste removed, WRPS believes that modified sluicing has reached the limits of the technology to remove any further waste and is preparing documentation for use in decision making about any future retrieval actions.

Tank C-110 is located in C Farm near the center of the Hanford Site. It is a 530,000 gallon tank, built in 1946, and held approximately 126,000 gallons of sludge and other radioactive and chemical waste materials when retrieval resumed.

Modified sluicing technology uses liquid waste from a nearby double-shell tank to break up, dissolve and mobilize the solid material so it can be pumped. Because of the variety of waste forms, sluicing is often not able to remove all of the waste. The remaining waste will next be sampled for analysis, and results will be used to guide decisions regarding future actions.

### Preparing for retrieval from Tank C-104

Work is moving rapidly in preparation to retrieve waste from a second single-shell tank this summer and transfer it to safer double-shell tank storage. Construction activities necessary to retrieve waste from Tank C-104, a 530,000 gallon tank built in 1943, are approximately 60 percent complete as WRPS maintains its focus on reducing the risk posed by Hanford's aging single-shell waste tanks.

C-104 is one of Hanford's oldest radioactive and chemical waste storage tanks, containing approximately 263,000 gallons of wet sludge with a top layer that is dry and powdery. This will be the largest sludge volume retrieval ever attempted using modified sluicing technology. Modified sluicing uses high pressure water or liquid radioactive waste sprayed from nozzles above the waste. The liquid dissolves and/or mobilizes the waste so it can be pumped.

In addition to other challenges, tank C-104 contains a significant amount of plutonium and uranium. It also contains a host of contaminated legacy equipment so the entire process is being managed carefully to protect workers and the environment.



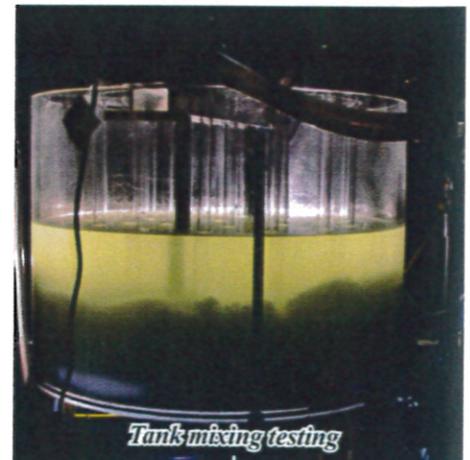
## Integration with the Waste Treatment Plant key element of WRPS activities

### Tank mixing and sampling demonstration program under way

Feeding the Waste Treatment Plant high-level tank waste that meets strict regulatory and operating requirements will be one of the toughest challenges faced by Washington River Protection Solutions.

The current requirements call for delivering homogenous waste, with all the different-sizes of solid particles evenly distributed. To test the plan to use two 300-horsepower mixing pumps in the feed tanks to mix the waste, a demonstration was conducted at the Savannah River National Laboratory using a 1/22nd scale model of tank AY-102.

The test demonstrated that the lightweight waste particles can be thoroughly distributed in the mixture, but the heavy particles settle out. The question now is can WRPS meet the feed requirements with a non-homogenous waste mixture? Or, do bigger and/or more efficient mixer pumps or additional mixer pumps need to be placed in the Hanford feed tanks? A panel of experts will be convened in June to decide how best to proceed.



# Worker and environmental protection remain priorities

## Removal of hose-in hose waste transfer lines begins

Field work has been completed to remove the first of 11 above-ground hose-in-hose waste transfer lines inside the Hanford tank farms. Six of the lines were left in place from past transfers prior to WRPS taking over the contract. Five additional hoses used in more recent transfers are being removed with increased funding received from the federal budget.

Hose-in-hose transfer lines were developed for use at Hanford to transfer waste from aging single-shell tanks to newer and safer double-shell tanks. Use of the flexible, environmentally compliant hoses avoids the expense of installing rigid pipes and other permanent infrastructure that would eventually have to be removed.

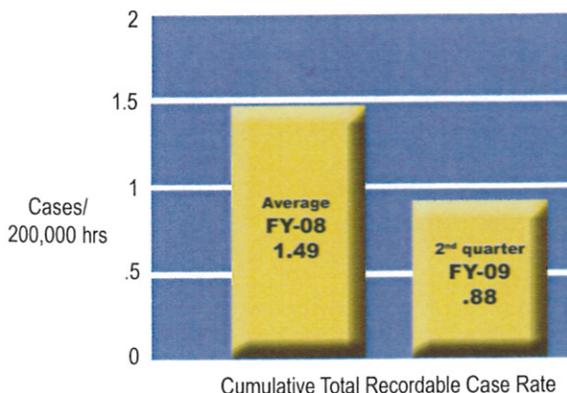
Removal of the transfer lines is a commitment made to the Office of River Protection and to the Washington State Department of Ecology which had become concerned over the contaminated lines being left in place long after the service life had expired. The first line that was removed earlier this year was the only one that was not contaminated. Work leading to removal of the remaining lines is now under way. The lines will be flushed, packaged and treated for disposal at an approved location on site.



*Tank Operations workers recently removed a 130-foot section of uncontaminated hose-in-hose transfer line from U Farm.*

## Tank farm workers maintain outstanding safety performance

WRPS' safety performance is the best the project has seen in the last five years, with the current cumulative total recordable case rate continuing to be well below last year's average. (See graph below)



*Note: Due to reclassifications of cases from prior years, the FY-08 average was readjusted from 1.32 to 1.49.)*

## Mentor-Protégé agreement to help Richland firm

The Department of Energy has approved WRPS' first mentor-protégé agreement. The agreement is with Total Site Services, a small Richland firm that specializes in industrial construction, and technical services, plus the rental of heavy equipment and modular building.

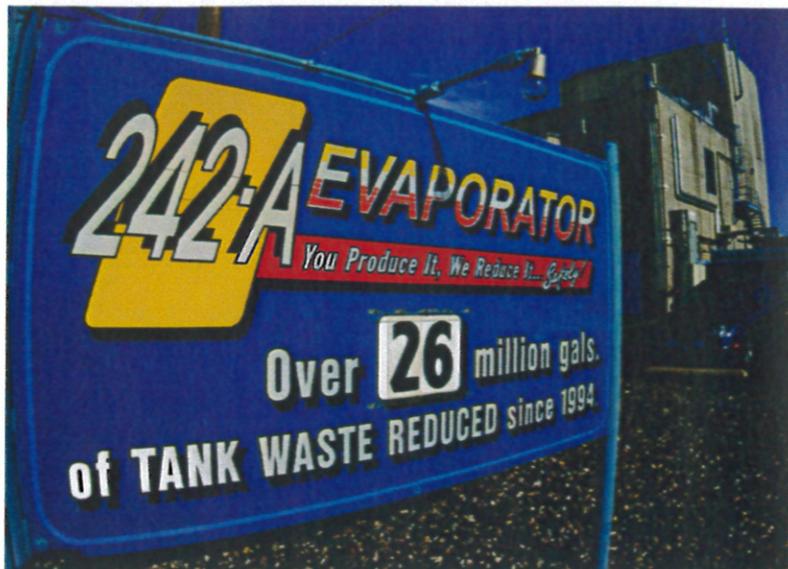
The mentor-protégé program provides an opportunity for eligible small businesses to receive developmental assistance in business and/or technical areas from experienced large and small businesses performing as DOE contractors. The intent is to help the small businesses in improving and expanding their capabilities to perform contracts and subcontracts for DOE and its prime contractors.

Under the two-year agreement WRPS will provide guidance and support in a number of areas, including an evaluation of Total Site Services' business and technical capabilities, a review of its business development practices and assistance with designing its accounting system to make sure it is appropriate for government work.



*WRPS supports Total Site Services at local trade show.*

# Recovery Act funding a tremendous opportunity



The \$326 million in Recovery Act funding gives Washington River Protection Solutions the opportunity to accelerate work in fiscal years 2009, 2010 and 2011 to reduce the risk posed by Hanford's high-level tank waste and to prepare for Waste Treatment Plant operations.

WRPS will use the Recovery Act funding to improve the tank farm infrastructure and make preparations to feed and eventually operate the Waste Treatment Plant, which is the cornerstone of the Hanford cleanup mission.

## **Tank farm upgrades will minimize risk, maximize reliability**

Waste tank infrastructure upgrades have been delayed for years. Recovery Act funding is a tremendous opportunity to fix problems in the tank farms before they become urgent.

- Instituting a long list of projects including fabricating a new truck-mounted system for obtaining waste core samples, upgrading ventilation and exhaust systems, replacing outmoded or undersized electrical services, replacing valves, installing upgraded controls for waste transfer systems, replacing leak detection equipment and removing obsolete instruments, alarms and other equipment.
- Extending the life of both the double-shell and older single-shell tanks is a high priority. Life-extension projects include corrosion control and monitoring improvements, spare transfer pumps for moving waste between tanks and replacing filters on tank exhaust stacks.
- Evaluating an alternate evaporator technology known as the Wiped Film Evaporator for deployment in the tank farms will address the risk of a failure at the 242-A Evaporator.

## **Upgrading operating facilities is critical to Hanford cleanup**

Upgrading the 242-A Evaporator and the 222-S Laboratory is critical to the waste tank cleanup mission and to the operation of the Waste Treatment Plant. If one of these facilities had to shut down, waste could not be fed to the Waste Treatment Plant.

- Upgrading the 242-A Evaporator has kept the facility operating safely for more than 30 years, but a series of additional upgrades are needed to keep the evaporator in operation until 2035.
- Upgrading and extending the life of the 222-S Laboratory will support both tank farm and Waste Treatment Plant operations for decades to come. This will pay for modernizing equipment, purchasing new instruments and making modifications to keep the laboratory in compliance with environmental regulations.
- Improving reliability is the goal of Recovery Act funding that will pay for building an inventory of critical spare parts, updating the exhaust system and filters and upgrading instruments.

## **Preparing to feed the Waste Treatment Plant**

WRPS is responsible for feeding waste to, and operating, the Waste Treatment Plant. The Recovery Act supplies funding for tank farm infrastructure that will enable unhindered operations of the vit plant.

- Completing the engineering and planning for the waste-feed system, replacing waste transfer lines and upgrading the waste transfer system that feeds the 242-A Evaporator.
- Testing the ability of tank farms to consistently feed high-level waste to the Waste Treatment Plant that meets strict regulatory and operating requirements. The waste sludge must be broken up, mixed to evenly distribute the solid waste particles and delivered in consistent 150,000 gallon batches to the vitrification plant.