

News from the Savannah River Site

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SRS Shifts to Low-Cost Technology to Remove Remaining Solvents at Basin

AIKEN, S.C. December 16, 2019 – Savannah River Nuclear Solutions (SRNS) recently reached a milestone at the Savannah River Site (SRS) by fully transitioning to low-cost solar-powered technology to clean up solvents in a closed basin and the groundwater beneath it.

The system is expected to save about \$200,000 a year, mostly due to the need for less electricity, equipment maintenance, and personnel.

For decades, SRS personnel have worked to remove nonradioactive degreasing solvents from the groundwater beneath the former pond-like body of water, known as the M-Area Settling Basin.

“All the water and the contaminated soil that formed the bottom of the basin were removed during the first phase of the project about 20 years ago,” said John Bradley, SRNS engineer. “Since that time, we’ve made significant progress remediating a large source of degreasing solvents found in the soil and groundwater beneath the former basin using an active remediation process referred to as dynamic underground stripping.”

In that process, steam is injected into the soil and groundwater to mobilize subsurface contaminants. A network of underground piping and equipment then extracts those contaminants. This system has removed about 500,000 pounds of the solvents from the location.

After years of remediation requiring that highly mechanized system,



Savannah River Nuclear Solutions (SRNS) Mechanic Thad Ashely, foreground, checks components of a soil vapor extraction unit, as SRNS engineers Joao Cardoso-Neto, background, left, and John Bradley inspect solar panels.

SRS now uses the solar-powered soil vapor extraction units, known as microblowers, to remove remaining solvents from groundwater beneath the earthen-capped basin.

Installed at multiple wells, these units generate a vacuum to exhaust the chemical vapors. Each unit requires only 20 to 40 watts of solar power to run its primary component, a compact, high-speed fan. A single unit removed 234 pounds of solvent compounds from the subsurface during a 10-month test.

“Early active groundwater cleanup projects at the M-Area Settling Basin concentrated on using more aggressive methods to separate and remove the contaminants from tens of millions of gallons of groundwater,” said Joao Cardoso-Neto, an SRNS project manager. Cardoso-Neto noted that these cleanup technologies require the power of large electric pumps, support facilities, and monitoring equipment.

The amount of degreasing solvents remaining at this location is now so small that the expense of using the highly mechanized methods cannot be justified when alternate low-cost methods are just as effective, Bradley said.

“The time had come to transition completely from active groundwater cleanup methods related to the M-Area Settling Basin Project to the passive microblowers,” Bradley said. “It was like going from a 60-horsepower blower to a hairdryer. We have high expectations of continued success at this cleanup site.”

Cardoso-Neto said SRS has a history of addressing complex environmental challenges with innovative technologies.

“Our plans are to continually move from active to passive methods to remediate soil and groundwater across the site. We are using several proven passive environmental cleanup systems that have had a major, positive impact. It’s a promising future for our cleanup programs at the Savannah River Site,” Cardoso-Neto said.

More than 60,000 pounds of nonradioactive contaminants, such as the degreasing solvents, have been removed from the groundwater beneath M Area since 2008 at a cost savings of more than \$5 million, adding to the 1.6 million pounds of nonradioactive material have been removed beneath SRS since cleanup programs began at SRS in the 1980s.

Savannah River Nuclear Solutions, a Fluor-led company with Newport News Nuclear and Honeywell, is responsible for the management and operations of the Department of Energy’s Savannah River Site, including the Savannah River National Laboratory, located near Aiken, South Carolina.

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