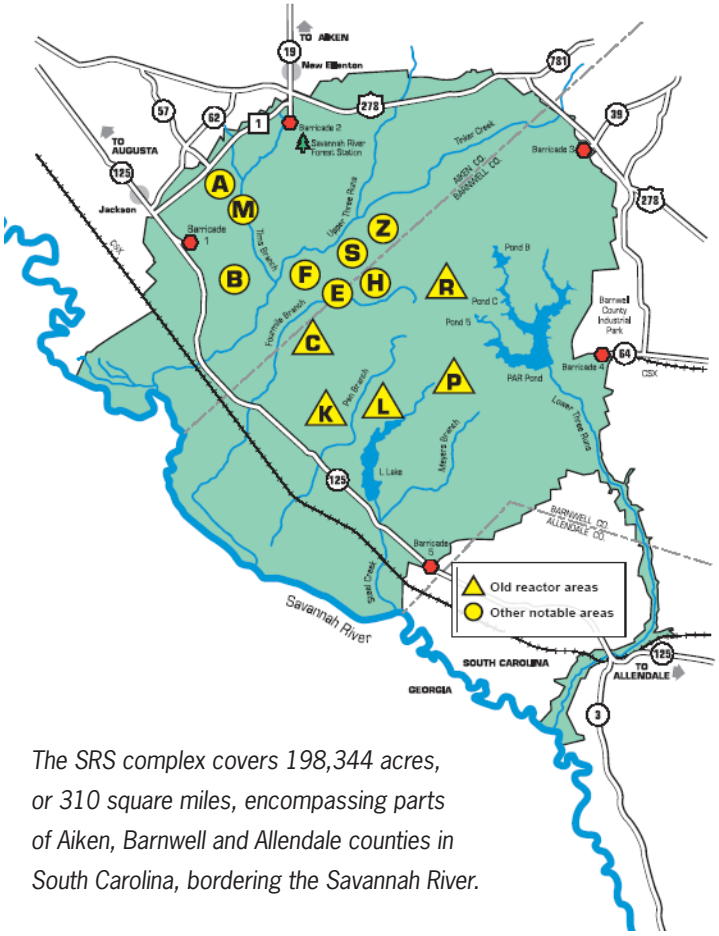
facts

ABOUT THE SAVANNAH RIVER SITE

Savannah River Site

- 198,344 acres, or 310 square miles
- DOE: Savannah River Operations Office
- NNSA: Savannah River Site Office
- Office of Site Engineering and Construction Management
- USDA Forest Service-Savannah River
- U.S. Nuclear Regulatory Commission
- U.S. Army Corps of Engineers
- Contractors
  - Savannah River Nuclear Solutions, LLC
    (Site Management and Operations, and Savannah River National Laboratory)
  - Savannah River Remediation LLC
    (Liquid Waste Operations)
  - WSI SRS Team
    (SRS security)
  - Shaw AREVA MOX Services
    (Mixed Oxide [MOX] Fuel Fabrication Facility construction)
  - Parsons
    (Salt Waste Processing Facility construction)
  - University of Georgia
    (Savannah River Ecology Laboratory)
- SRS workforce: 12,000
- Annual budget ~$2 billion



The SRS complex covers 198,344 acres, or 310 square miles, encompassing parts of Aiken, Barnwell and Allendale counties in South Carolina, bordering the Savannah River.

Dedicated to maintaining the highest possible safety and security standards, the Savannah River Site (SRS) is a key Department of Energy (DOE) industrial complex responsible for environmental stewardship, environmental cleanup, waste management and disposition of nuclear materials. More specifically, SRS processes and stores nuclear materials in support of national defense and U.S. nuclear nonproliferation efforts. The Site also develops and deploys technologies to improve the environment and treat nuclear and hazardous wastes left from the Cold War.

The Savannah River Site is owned by the U.S. Department of Energy and is managed and operated by Savannah River Nuclear Solutions, LLC.

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Savannah River Site Focus

The Savannah River Site is committed to its people, missions and the future. SRS has a long track record of being the safest site in the DOE Complex and one of the safest major industrial sites in the world. Protecting workers, the public, the environment, and national security interests is its highest goal. SRS will continue to maintain needed facilities and infrastructure while training and retaining a skilled and motivated workforce to ensure its technical capability and performance.

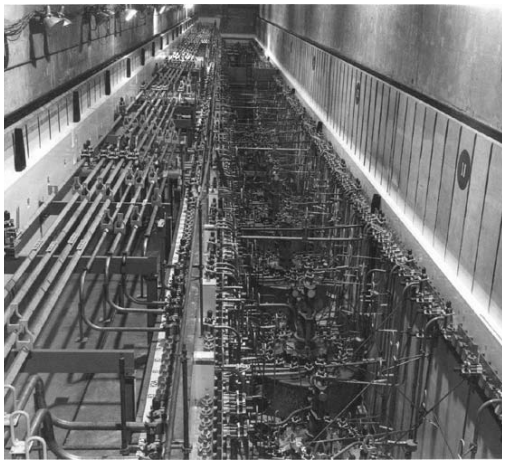
Recognizing the imperative of open communication and trust, SRS will strive to accomplish regulatory milestones and community-driven obligations. We also focus on cost- effectiveness in contract and project management and a cross-cutting corporate perspective that will best serve SRS, other DOE sites and national laboratories.

SRS waste tanks under construction

History

During the early 1950s, SRS began to produce materials used in nuclear weapons, primarily tritium and plutonium-239. Five reactors were built to produce nuclear materials. Support facilities, including two chemical separations plants, a heavy water extraction plant, a nuclear fuel and target fabrication facility, a tritium extraction facility and waste management facilities were also built.

Irradiated materials were moved from the reactors to one of the two chemical separations plants. In these facilities, known as “canyons,” the irradiated fuel and target assemblies were chemically processed to separate useful products from waste. After refinement, nuclear materials were shipped to other DOE sites for final application. SRS produced about 36 metric tons of plutonium from 1953 to 1988.



The interior of one of SRS's chemical separations facilities before operations began

Ongoing Missions

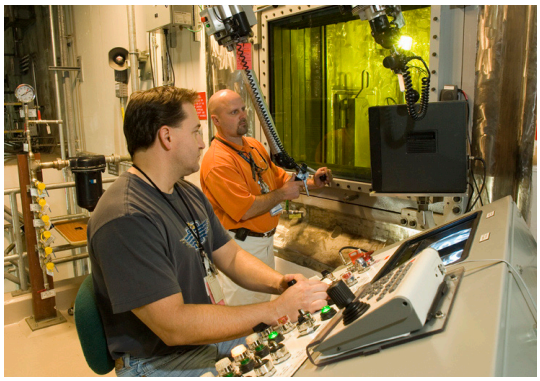
Tritium

Tritium, with a half-life of 12.3 years, must be replenished, and SRS is the nation’s only facility for extracting, recycling, purifying and reloading tritium so that nuclear weapons reservoirs can be returned to service. Recycling tritium allows the United States to stretch its tritium supplies.

The nation’s tritium production capability was lost when the last heavy water reactor at SRS shut down in 1988. Interim stockpile requirements were met through recycling, which involved recovering and purifying the gas from dismantled nuclear weapons and from routine tritium reservoir exchanges from the existing nuclear stockpile. In December

SRS's state-of-the-art Tritium Extraction Facility

1998, DOE announced that commercial reactors would be the source for new tritium production. The Tennessee Valley Authority's (TVA) Watts Bar Unit 1 and Sequoyah Unit 1 and Unit 2 reactors were selected for irradiation of DOE-supplied Tritium Producing Burnable Absorber Rods (TPBARs). The TPBARs are irradiated in the Watts Bar reactor and then transported to SRS, where the tritium is safely and efficiently extracted in the Tritium Extraction Facility (TEF). The tritium is then piped to the existing Tritium Loading Facility at SRS for further purification prior to loading into reservoirs for shipment to the Department of Defense (DoD).



Operations in the Tritium Extraction Facility

In October 2003, the first TPBARs were inserted into TVA's Watts Bar reactor for irradiation. The first shipment of irradiated TPBARs arrived at SRS in August 2005 and was stored, awaiting completion of the TEF. A celebration of the completion of non-radioactive startup testing in TEF was held on Feb. 28, 2006. Over 700 different systems and components were successfully tested. Included among the startup accomplishments were hydrogen tests, shielding surveys, and the startup tests of individual components and remote handling features. The startup testing program was accomplished six months ahead of the baseline schedule. In November 2006, NNSA approved radioactive startup of TEF and the first tritium was introduced into the building. The first tritium was extracted from TPBARs in January 2007 and transferred via underground piping to the Tritium Loading Facility in February 2007.

Mixed Oxide Fuel Fabrication

SRS is one of the primary DOE sites with missions to address issues of national security and nonproliferation, including legacy material disposition.

The Mixed Oxide Fuel Fabrication Facility began construction in 2007.

Plutonium and nuclear material management missions now being conducted at SRS will be expanded to include materials from dismantled weapons and surpluses from other DOE sites. This new mission will be focused on the disposition of excess weapons-grade material consistent with the U.S.-Russian agreement on nonproliferation. DOE has chosen SRS to be the location for the Department's plutonium Pit Disassembly and Conversion operations and Mixed Oxide Fuel Fabrication Facility (MFFF). These missions, which convert excess weapons-usable plutonium to a form that can be used in commercial power reactors, establish SRS's vital role in plutonium management for DOE.

On Aug. 1, 2007, construction began for the MFFF, which is being built in F Area and will be operated by Shaw AREVA MOX Services. In 2009, construction started on the Waste Solidification Building. Pit Disassembly and Conversion, which will disassemble pits from nuclear weapons and convert the plutonium for use in MFFF, is still in the design phase.

Canyon Operations

SRS's two primary separations facilities, called "canyons," are located in F and H areas. F Canyon and H Canyon—together with FB Line and HB Line, which are located atop the canyons—are where nuclear materials historically have been chemically recovered and purified.

F Canyon and FB Line have completed their production mission and have been deactivated, and both facilities are awaiting future disposition decisions.

H Canyon and HB Line remain and are supporting the DOE Enriched Uranium and Plutonium Disposition Programs by reducing the quantity of fissile materials in storage throughout the United States. This supports both the environmental cleanup and nuclear nonproliferation efforts and the creation of a smaller, safer, more secure and less expensive nuclear weapons complex. The canyon is used to support the disposition of highly enriched uranium and plutonium from across the DOE Complex.

SRS has "blended down" weapons-usable highly enriched uranium (HEU) to make low enriched uranium, which is being converted to commercial reactor fuel for use by TVA. Since March 2003, 22 metric tons of surplus highly enriched SRS uranium has been blended down and shipped to TVA for use in its Browns Ferry reactors. This material is now providing electricity for homes throughout the Southeast.

Both facilities continue to disposition plutonium-bearing materials at SRS that are not suitable for the MOX facility. The plutonium-bearing materials are transferred to existing waste processing facilities for final processing into forms not suitable for weapons use.

HB Line has also produced plutonium-238 for NASA. In 1995, SRS completed a five-year campaign to supply plutonium-238 for NASA's Cassini mission. The unmanned expedition to the planet Saturn was launched October 13, 1997, and arrived at the ringed planet July 1, 2004, after a flawless flight.

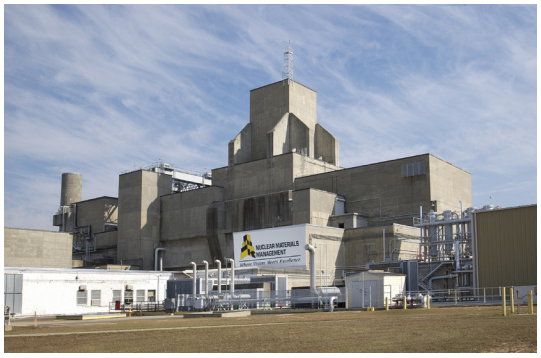
H Canyon

Operators in H Canyon's crane control room

Nuclear Materials Management

Operations at SRS's K Area Complex (KAC) provide an interim safe storage location for much of DOE's excess plutonium. New plutonium facilities were built at SRS, under a Record of Decision issued by the DOE in 2000. This makes SRS the nation's cornerstone of excess plutonium management and disposition.

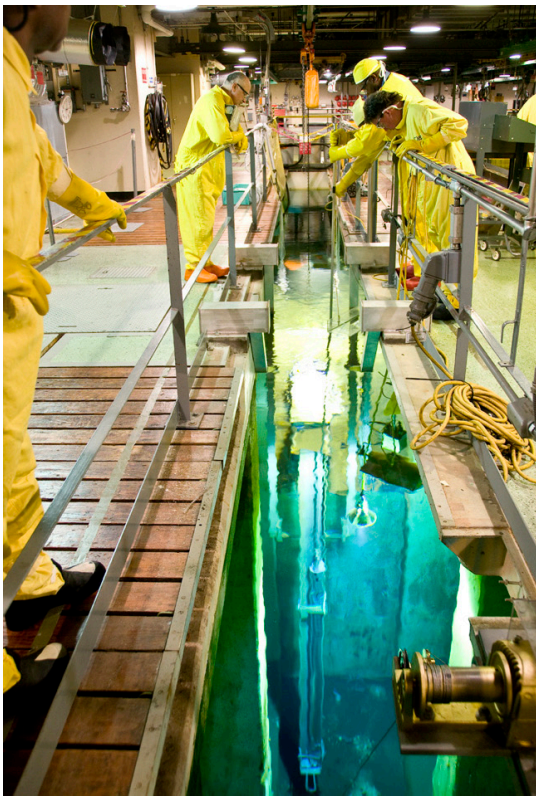
Over the last several years DOE has been seeking viable alternatives to properly secure and disposition the nation's Special Nuclear Materials (SNM). SRS assisted DOE in saving millions of taxpayer dollars through the safe receipt and storage of the excess plutonium from the Rocky Flats Environmental Technology Site in Colorado. To date, KAC has received shipments of excess plutonium from the Hanford Site, the Lawrence Livermore National Laboratory (LLNL) and the Los Alamos National Laboratory (LANL). In addition, shipments of highly enriched uranium (HEU) from LLNL, LANL and the Y-12 Site continue.



The K Area Complex

The KAC is DOE's only SNM storage facility designated for interim safe storage of plutonium and HEU at SRS. The principal operations building formerly housed K Reactor, which produced nuclear materials to support the United States during the Cold War for nearly four decades. It was DOE's last operating production reactor, shutting down in 1992.

In recent years, significant security upgrades have been implemented in the KAC to ensure the continued safe storage of SNM until it can be dispositioned. In addition, a full range of plutonium-handling options will soon be realized through other planned improvements. A stabilization and repackaging capability in addition to an expanded surveillance and storage capacity has been provided in the KAC. These changes further enhance DOE's ability to manage excess plutonium and other SNM until a final disposition path is achieved.



Spent fuel handling in L Area Complex

Spent Nuclear Fuel

Spent nuclear fuel (SNF) from the Site's production reactors, and from domestic and foreign research reactor programs, is currently stored at the L Area Complex (LAC), awaiting final disposition.

DOE has announced plans to use conventional processing through H Canyon as the final disposition of all SRS aluminum-clad SNF. This plan also includes exchanging SRS's stainless steel and zirconium clad fuel for aluminum-based fuel stored at the Idaho National Laboratory. SRS will continue to receive aluminum-based SNF from foreign and domestic research reactors until the planned shutdown of H Canyon in 2019. Conventional processing of this SNF will provide additional uranium for the HEU Blend Down program and produce liquid waste to be vitrified in the Defense Waste Processing Facility (DWPF). The final disposition of DWPF canisters containing vitrified SNF waste will be placement in a geological repository.

Since 1996, LAC has received over 10,000 SNF assemblies in approximately 500 casks from off-site sources. Fuel types include uranium-aluminum alloys, uranium oxides and silicides, and others that vary in uranium enrichment between 19 and 93.5 percent uranium 235. LAC has received and handled 10 different spent nuclear fuel transportation casks weighing up to 65,000 pounds. LAC also made about 360 on-site spent fuel cask transfers during this time.

SRS personnel have extensive experience in safely receiving and managing SNF. This work continues to be accomplished with no lost time injuries for the past 19 years.

Waste Management

Nuclear material production produced unusable by-products, such as radioactive waste. About 36 million gallons of radioactive liquid waste are stored in 49 underground tanks.

DWPF is processing the high-activity waste, bonding radioactive elements in borosilicate glass, a stable storage form. Since DWPF began operations in March 1996, more than 10 millions pounds of radioactive glass has been produced.

Much of the volume in the tanks is being separated as relatively low-level radioactive salt solution through a new, innovative approach to waste removal, called the Actinide Removal Process and Modular Caustic Side Solvent Exaction Unit. These facilities treat, decontaminate and disposition radioactive salt waste removed from SRS storage tanks, sending the higher activity waste to DWPF. The facilities use the same unit processes as those in the SRS Salt Waste Processing Facility, which is now under construction and is targeted for operations by 2015. The SWPF will provide high volume, highly efficient treatment capacity for longer term salt processing at SRS.

Low-level salt waste from salt treatment processing is sent to the Saltstone Production Facility, where it is mixed with cement, ash and furnace slag and poured into permanent concrete vaults for safe disposal at the Saltstone Disposal Facility.

SRS is the first site in the DOE Complex to disposition salt waste.

Removing waste from the tanks will result in the permanent closure of the Site's high-level waste tanks, a high priority for DOE. Four non-compliant tanks are on schedule for closure in 2010, years ahead of the Federal Facility Agreement requirement.

Liquid waste stablization at DWPF

The Saltstone Disposal Facilities

In addition to radioactive liquid waste, other radioactive wastes at the Site are: low-level solid and liquid waste (which includes items such as protective clothing, tools and equipment that have become contaminated with small amounts of radioactive material); and transuranic (TRU) waste, which contains alpha-emitting isotopes with an atomic number greater than uranium. Other wastes include hazardous waste, which is any toxic, corrosive, reactive or ignitable material that could affect human health or the environment; mixed waste, which contains both hazardous and radioactive components; and sanitary waste, which, like ordinary municipal waste, is neither radioactive nor hazardous.

SRS disposes of low-level radioactive waste on Site in specially engineered facilities. Some types of low-level waste are technically unsuitable for disposal at SRS waste management facilities. In July 2001, SRS began shipping some of these wastes to offsite treatment and disposal facilities.

TRU waste had been stored temporarily at SRS until the opening of the Waste Isolation Pilot Plant (WIPP) in New Mexico; WIPP is a DOE deep geological disposal facility specifically designed for TRU waste. In 2001, SRS began shipping its TRU waste, about 28,000 legacy drums—about 6,000 cubic meters—to WIPP. At the end of 2009, over 30,000 55-gallon drums, or 6,000 cubic meters, of the original TRU waste inventory has been shipped. SRS's current projections have the Site scheduled to ship all of the SRS TRU drummed waste to WIPP by 2012, 22 years ahead of the original baseline.

Hazardous waste is routinely shipped offsite to commercial facilities for treatment and disposal. In 2001, SRS made its first-ever shipments of mixed waste for treatment offsite, and continues to decrease the inventory of mixed waste using available Resource Conservation and Recovery Act (RCRA)-regulated treatment and disposal vendors.

A TRU waste shipment leaving SRS's waste management facilities

T Area was SRS's first area completion. The top photo is of T Area in 2002, before demolition of buildings began, and in the photo below, in 2006 after closure was completed.

Area Completion Project

Area Completion Project (ACP) is responsible for removing excess facilities and remediating surface water and groundwater in waste units. In its efforts to remediate contaminants in the environment, thereby reducing risks to human health and the environment, ACP approaches environmental restoration by utilizing effective project management, continuous communications, and strong working relationships with the regulators. Deployment of numerous cost-effective technologies expedites the cleanup process for DOE.

Soil and Groundwater Cleanup

ACP is responsible for dispositioning 515 soil, surface water and groundwater waste units. ACP approaches environmental restoration by utilizing effective project management, continuous communications, and strong working relationships with the regulators and stakeholders. Deployment of numerous cost-effective technologies expedites the cleanup process.

Remediation under a Federal Facility Agreement began in early 1993, and continues at an aggressive pace with 375 of 515 waste units completed to date and more than 2,300 associated cleanup milestones met without missing a milestone.

Buildings covering more than 2.6 million square feet have been demolished at SRS since 2002.

The focus is on cleaning up contamination in the environment. The approach is to treat or immobilize the source of the contamination to mitigate transport through soil and groundwater and clean up or slow the movement of contamination that has already migrated from the source. From capping waste sites to installing efficient groundwater treatment units, field work is a top priority. Field work includes closure of inactive seepage basins, rubble pits, rubble piles, and disposal facilities. Major groundwater cleanup systems operate extensively in nearly every Site area.

22 underground tanks were filled with grout as part of closure work at the General Separations Area Consolidated Unit.

Remediation is being executed in a fashion that completes environmental cleanup and facility decommissioning area by area until all areas at SRS are completed by 2031. Units at which waste is left in place will be under institutional controls that feature access restrictions, inspection, maintenance, and long-term stewardship monitoring. Typically, soils will be remediated to an acceptable residual risk for industrial workers. Groundwater will be addressed in a manner such that required cleanup levels, approved by regulators, will be achieved over time.

Site contractors and DOE work with the U.S. Environmental Protection Agency (USEPA), and the South Carolina Department of Health and Environmental Control (SCDHEC) to reduce risk and accelerate SRS environmental cleanup. Two major federal laws drive environmental cleanup: the Resource Conservation and Recovery Act, which establishes a system for tracking and managing hazardous wastes from generation to disposal; and the Comprehensive Environmental Response, Compensation, and Recovery Act (CERCLA), or Superfund, which addresses the protection and cleanup of the environment from known and potential releases of hazardous substances. SRS is meeting the integrated requirements of these two laws through a Federal Facility Agreement with DOE, USEPA Region 4, and SCDHEC. The Federal Facility Agreement, effective August 16, 1993 specifies how SRS will address contamination or potential contamination at waste units in accordance with RCRA and CERCLA requirements. The Federal Facility Agreement is required under CERCLA.

Research and Development

The Savannah River National Laboratory (SRNL) puts science to work to create, test and deploy solutions to the technological challenges facing the Site and the nation in three key areas: national and homeland security, energy security, and environmental management. SRNL researchers have made significant advances in glass technology, hydrogen technology, nonproliferation technology, environmental characterization and cleanup, radioactive waste treatment, sensors and probes, and other fields.

From left, waste vitirification technologies, applied research and development for meeting the nation's future energy needs, and sensitive analysis in an ultra-clean room

In 2006, the Department of Energy Office of Environmental Management (EM) designated SRNL as EM's "corporate laboratory." In this capacity, SRNL applies its unique expertise and applied technology capabilities to reduce technical uncertainties in order to assist sites across the DOE Complex in meeting cleanup requirements.

The laboratory's approximately 900-person research staff includes several internationally recognized experts; about one-fourth of the research staff members have doctorates.

SRNL's unique facilities include biotechnology laboratories, for the safe study and handling of radioactive materials, a field demonstration site for testing and evaluating environmental cleanup technologies, and laboratories for ultra-sensitive measurement and analysis of radioactive materials.

While the laboratory continues to solve the Site's technological challenges, about half of its work comes from non-SRS customers, including DOE, the NNSA, other DOE sites and other federal agencies, such as the Department of Homeland Security and the Federal Bureau of Investigation.

To maximize the nation's return for its investment in the laboratory, SRNL forms strategic partnerships with private industry, academia and other government agencies to apply the laboratory's unique expertise to challenges of mutual interest. For example, SRNL is applying its extensive hydrogen expertise in collaboration with the automotive industry to develop the technologies needed to make the widespread use of hydrogen vehicles practical for the American consumer, including methods for efficiently storing hydrogen on board a vehicle.

The laboratory also shares its expertise by licensing private companies to manufacture and market technologies created at SRNL, a move that helps American businesses sharpen their competitive edge and provides taxpayers a second return on their investment.

Environment

Originally farmland and swamp land, SRS now encompasses a timber and forestry research center managed by the U.S. Forest Service-Savannah River, part of the United States Department of Agriculture. In 1972, DOE's predecessor agency, the Atomic Energy Commission, designated SRS as the first National Environmental Research Park. Endangered species, including the shortnose sturgeon and wood stork, visit the Site from time to time. SRS is also home to the bald eagle and the red-cockaded woodpecker. Other wildlife commonly found on the Site includes alligators, white-tailed deer, wild turkeys and otters.

Employment

Today, nearly 12,000 people are employed at SRS, making it one of the largest employers in South Carolina. About 55 percent are employees of SRNS and its major subcontractors. DOE employees represent about 3.7 percent of the SRS population. SRNS is responsible for the Site's nuclear facility operations, with the exception of the liquid waste facilities; SRNL; environment, safety, health and quality assurance; and all administrative functions. The SRNS team includes Fluor Daniel, Northrop Grumman and Honeywell. Savannah River Remediation, LLC, is responsible for liquid waste operations under a contract that is in place for six years beginning July 1, 2009. The SRR team includes URS, Babcock & Wilcox, Bechtel and CH2MHill. The rest are SRNS subcontractors, the U.S. Forest Service-Savannah River, and other DOE contractors; the security contractor, WSI-Wackenhut Services Inc.; Shaw AREVA MOX Services; Parsons; and the Savannah River Ecology Laboratory, operated by the University of Georgia.

Economic Impact

The Site's economic impact ripples across a two-state area at a rate of about $2.6 billion each year. Currently, the overall budget is about $2 billion. Of that, roughly 70 percent is payroll and employee benefits. The Site spends about $200 million each year in procurements in the two-state area. Site employees paid over $150 million in federal and state taxes, and $100 million in medical claims.

Recovery Act at SRS

The American Recovery and Reinvestment Act (ARRA) was signed into law on February 17, 2009, by President Barack Obama in an effort to stimulate the struggling American economy. The focus of the president's efforts lay heavily in the energy sector as America's dependence on foreign energy sources remains a constant challenge for the nation. Therefore, President Obama invested significant funds across the DOE Complex, including more than $1.6 billion at SRS, to accelerate the cleanup of legacy waste to prepare the Site for future energy and research missions. This investment enables the SRS to transform more expeditiously while addressing the need for increased employment opportunities.

Through the aggressive acceleration of the SRS area completion schedule, the plan achieves a 75 percent Site footprint reduction by 2012, reducing the ACP schedule by 10 years over previous projections. The physical size of SRS will remain unchanged but will open the Site to new missions. Contracting activities to perform this work will take place locally, providing jobs, training and benefits where it is needed. To ensure that taxpayers receive the maximum economic stimulus benefit, SRS is using American products and contracting American businesses to complete the Recovery Act mission.

The ARRA project at SRS sets the stage for a renovation of government resources while creating and/or sustaining thousands of jobs across the Site. Moreover, the economic benefit of this project is anticipated to continue after the Recovery Act mission is completed.

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January 2011 11PA00116KP