# Chapter 3: **Compliance Summary**

*The Savannah River Site (SRS) implements programs to meet the requirements of applicable federal and state environmental laws and regulations, as well as U.S. Department of Energy (DOE) Orders, notices, directives, policies, and guidance. The Site's goal is to comply with regulatory requirements and eliminate or minimize any environmental impacts. SRS continues its decades-long commitment to protect human health and the environment.*

## *2019 Highlights*

### Permitting

SRS managed more than 630 operating and construction permits. SRS received one Notice of Violation (NOV). More information on the NOV can be found below and in Section 3.3.7.1.1.

### Remediation (Environmental Restoration and Cleanup)

As of December, SRS completed the cleanup of 410 of the 515 waste units containing or having contained solid or hazardous waste. An additional eight waste units are currently being remediated.

### Tank Closure (Radioactive Liquid Waste Processing and Dispositioning)

- The Tank Closure Cesium Removal (TCCR) system began operating in January and treated 210,000 gallons of salt solution during the year.
- The Actinide Removal Process and Modular Caustic Side Solvent Extraction Unit (ARP/MCU) processed 404,000 gallons of salt solution in fiscal year (FY) 2019.
- The Defense Waste Processing Facility (DWPF) filled 34 canisters with 126,783 pounds of glass waste mixture, immobilizing 643,624 curies of high-level radioactive waste.
- The Saltstone facilities processed 734,391 gallons of low-activity waste in FY 2019.
- Bulk Waste Removal Efforts (BWRE) in Tank 10 were completed one month ahead of the Federal Facility Act (FFA) deadline.

### Radioactive Waste Management

- The annual reviews for the E-Area Low-Level Waste Facility Performance Assessment (PA) and the Saltstone Disposal Facility PA showed that SRS continued to operate these facilities in a safe and protective manner.
- SRS sent five transuranic waste (TRU) shipments to the Waste Isolation Pilot Plant (WIPP) for deep geologic disposal.

## 2019 Highlights (continued)

### Resource Conservation and Recovery Act (RCRA)

- In October, SRS submitted the Closure Certification Report for the Solvent Storage Tanks (SSTs) to South Carolina Department of Health and Environmental Control (SCDHEC).
- SCDHEC conducted a compliance evaluation inspection at selected RCRA facilities on May 22 and May 23 and did not note any deficiencies.
- SCDHEC performed a Comprehensive Groundwater Monitoring Evaluation on April 22 and 23, inspecting groundwater monitoring systems and corrective actions at the M-Area and Metallurgical Laboratory Hazardous Waste Management Facilities, Sanitary Landfill, Mixed Waste Management Facility, and F- and H-Areas Hazardous Waste Management Facilities. It found one broken monitoring well sign, and the facility promptly replaced the sign. The inspection did not reveal any other problems or concerns.
- During the SCDHEC annual Underground Storage Tank (UST) inspection on October 30, all 19 of the USTs were in compliance.

### Air Quality and Protection

- SRS met all Clean Air Act requirements.

### Water Quality and Protection

- All 41 SRS Industrial stormwater outfalls in the General Permit covered under a Stormwater Pollution Prevention Plan (SWPPP) complied with plan requirements. The SWPPP describes how SRS prevents contamination and controls sedimentation and erosion.
- In November, SRS received an NOV for failing to comply with the reporting requirement of the National Pollutant Discharge (NPDES) Permit. SRS identified and initiated corrective actions. SRS has resolved all matters SCDHEC raised in the NOV. There are no further enforcement actions.

### Radiation Protection of the Public and the Environment

SRS air and water discharges containing radionuclides were well below the DOE public dose limit of 100 mrem per year. (Chapter 6, *Radiological Dose Assessment* explains the public dose.)

### Environmental Protection and Resource Management

- SRS conducted 836 National Environmental Policy Act (NEPA) reviews to identify potential environmental impacts from proposed federal activities. SRS identified 755 of these as categorical exclusions that did not require action from the Site under NEPA.

## 2019 Highlights (continued)

- SRS continued to comply with many other federal laws, including the Emergency Planning and Community Right-to-Know Act (EPCRA); the Superfund Amendments and Reauthorization Act (SARA) Title III; the Endangered Species Act (ESA); the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA); the National Historic Preservation Act (NHPA); and the Migratory Bird Treaty Act (MBTA).

**Release Reporting**

SRS did not have any releases exceeding the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Reportable Quantity.

**External Environmental Audits and Inspections**

The Environmental Protection Agency (EPA) and SCDHEC conducted audits, inspections, and site visits of various SRS environmental programs to ensure regulatory compliance. The Federal Energy Regulatory Commission (FERC) performed a dam safety inspection in March.

## 3.1 INTRODUCTION

Complying with environmental regulations and DOE Orders is integral to SRS operations. This chapter summarizes how SRS complies with applicable environmental regulations and programmatic requirements.

## 3.2 FEDERAL FACILITY AGREEMENT

The 1993 *Federal Facility Agreement (FFA) for the Savannah River Site*, a tri-party agreement between DOE, EPA, and SCDHEC, integrates CERCLA and RCRA requirements to achieve a comprehensive remediation strategy and to coordinate administrative and public participation requirements. The FFA governs remedial actions, sets annual work priorities, and establishes milestones for cleanup and tank closure. SRS conducts remediation and closure activities identified in the FFA in accordance with applicable regulations, whether they are from the state, the federal government, or both. Additional information regarding the FFA commitments discussed in this section can be found on the SRS and SRR web pages.

### 3.2.1 Remediation (Environmental Restoration and Cleanup)

SRS has 515 waste units subject to the FFA, including RCRA/CERCLA units, Site Evaluation Areas, and facilities covered by the SRS RCRA permit. At the end of FY 2019, SRS had completed the surface and groundwater cleanup of 410 of these units and was in the process of remediating an additional eight units. Appendix C, *RCRA/CERCLA Units List*; Appendix G, *Site Evaluation List*; and Appendix H, *Solid Waste Management Units Evaluation* of the FFA list all of SRS's 515 waste units. The *Federal Facility Agreement Annual Progress Report for Fiscal Year 2019* explains the status of FFA activities at SRS for FY 2019.

CERCLA and the National Oil and Hazardous Substances Pollution Contingency Plan require remedy reviews every five years for sites that have hazardous substances remaining at levels that do not allow for

unrestricted use of the area after a remedy is in place. Due to the rising number of SRS remedial decisions requiring five-year remedy reviews and new EPA guidance and format requirements, the DOE, EPA, and SCDHEC agreed in 2014 to submit future SRS Five-Year Remedy Review Reports in a phased approach rather than combining all operable unit (OU) reviews into a single document. The OUs are in groups of the following remedy types: 1) native soil cover and land-use controls, 2) groundwater, 3) engineered cover systems, 4) geosynthetic or stabilization and solidification cover systems, and 5) operating equipment. In order to ensure that SRS completes reviews of all remedy types within five years, it looks at a different remedy type each of the five years. The Site evaluates remedies to determine if they are functioning as designed and are still protecting human health and the environment.

SRS prepared the following reports to satisfy the CERCLA requirements:

- *Sixth Five-Year Remedy Review Report for Savannah River Site Operable Units with Native Soil Covers and/or Land Use Controls:* SCDHEC and EPA approved on August 7, 2019. SRS issued it to the public on November 5, 2019.
- *Sixth Five-Year Remedy Review Report for Savannah River Site Operable Units with Groundwater Remedies.* DOE submitted it to SCDHEC and EPA on December 19, 2019.

During FY 2019, SRS remediated the G-Area Oil Seepage Basin Operable Unit (GOSB OU) and the Wetland Area at Dunbarton Bay. In addition, it conducted removal actions at the C-Area Groundwater OU and P-Area Groundwater OU. Chapter 7, *Groundwater Management Program* provides information regarding these removal actions.

***G-Area Oil Seepage Basin OU***

SRS completed remediation of the GOSB OU in December 2019. Construction of the remedy began in September 2019. The basin was filled with 1,400 tons of stone, followed by 7,000 cubic yards of dirt, and then capped with grass sod.

The Site constructed the basin, spanning approximately 0.4 acres and extending to a depth of up to 10 feet, during SRS plant construction (1951-1956) for liquid waste disposal. It later received sanitary wastewater from treatment plants in Central Shops until the early 1990s. In the early 2000s, investigations found low levels of pesticides and herbicides in the soils at the bottom of the basin. Now, the basin is filled

**The GOSB OU is Just One of Several Remediated Waste Units at SRS**

with clean soil mounded underneath a grass cover, eliminating the risk to human health and ecology in the area. The *Post Construction Report/Corrective Measures Implementation Report/Remedial Action Completion Report (Revision 0),* which will describe the remedy and final state, is being prepared and will be submitted to SCDHEC and EPA by September 2020.

***Wetland Area at Dunbarton Bay***

SRS workers excavated about 29,000 cubic yards of coal ash from a now-defunct powerhouse that created electricity and steam for P Reactor, when it was operable. For more than three decades, the powerhouse supported plutonium production for the nation's nuclear defense program.

Basin remediation had been part of a larger project to decommission P and R Reactors. The powerhouse provided electricity to both reactors. The Site disposed of the ash byproduct in the basin.

**Work in Progress at Wetland Area at Dunbarton Bay**

Relocating the ash, which extended from a basin to nearby wetlands in a layer up to 3 feet thick, to a permitted landfill was a significant step toward completing DOE-Environmental Management's environmental cleanup mission at SRS.

Workers used heavy equipment to remove the soil and ash one acre at a time in order to minimize erosion. A dominant feature and concern of the cleanup area was the Carolina bay, known locally as Dunbarton Bay. Carolina bays are elliptical depressions in the land that are typically marshy, rich in biodiversity, and ecologically sensitive. A variety of trees grow in and around these depressions.

SRS worked with representatives from state and federal agencies to preserve the bay. SRS controlled ash removal to protect Dunbarton Bay's sensitive ecosystem from damage construction caused. With the ash removed, SRS restored the excavation site, with the expectation that one day it will return as a hardwood forest instead of a wetland area.

### 3.2.2 Tank Closure (Radioactive Liquid Waste Processing and Dispositioning)

SRS generates liquid radioactive waste as a byproduct of processing nuclear materials. The Site stores the waste in underground waste tanks grouped into two tank farms (F-Tank Farm and H-Tank Farm). While in the tanks, a sludge settles on the bottom of the tank, and a liquid salt waste rises to the top. The waste removed from the tanks feeds the sludge and salt waste processing programs, as Figure 3-1 depicts.

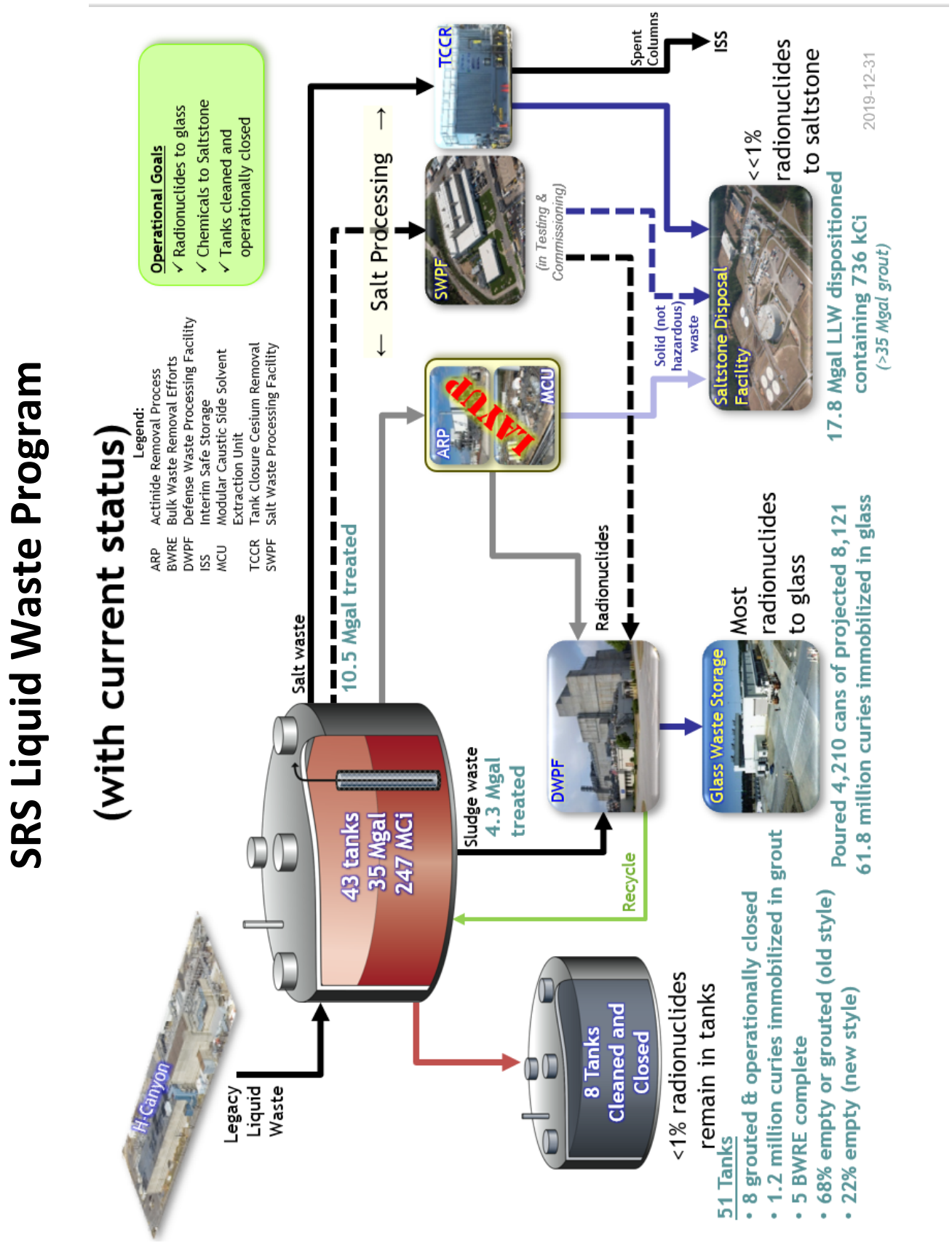



**Figure 3-1 Pathway for Processing and Dispositioning Radioactive Liquid Waste at SRS**

### 3.2.2.1 Tank Closure

SRR operates the F-Tank Farm and H-Tank Farm under the SCDHEC industrial wastewater regulations; however, the FFA Section IX, *High-Level Radioactive Waste Tank System(s)*, establishes requirements for preventing and mitigating releases from these tank systems. The FFA also contains enforceable closure schedules for the liquid waste tanks. Tank closures are subject to DOE Order 435.1, *Radioactive Waste Management*; federal regulations; and Section 3116 of the *Ronald W. Reagan National Defense Authorization Act (NDAA) for Fiscal Year 2005.*

NDAA Section 3116(a) is legislation that allows the Secretary of Energy to consult with the Nuclear Regulatory Commission (NRC) to determine that certain waste from spent fuel reprocessing is not high-level radioactive waste and does not need to be disposed of in a deep geologic repository. The NRC coordinates with SCDHEC to monitor the steps DOE takes to dispose of the waste to assess whether it is complying with the performance objectives of 10 Code of Federal Regulations (CFR) Part 61, Subpart C. Additionally, the EPA may participate in the NRC monitoring. *Section 3116 Determination for Closure of F-Tank Farm at the Savannah River Site* and *Section 3116 Determination for Closure of H-Tank Farm at the Savannah River Site* demonstrate that the stabilized tanks and ancillary structures in the F-Tank Farm and H-Tank Farm meet the necessary criteria and will not need to be permanently isolated at a deep geologic repository.

During 2019, DOE supported the NRC in its F- and H-Tank Farm monitoring role under Section 3116 of the NDAA by providing routine documentation (for example, groundwater monitoring reports, performance assessment [PA] maintenance plan), as the NRC requested. The NRC conducted one onsite observation visit for F- and H-Tank Farms during 2019 and did not identify any issues. Prior to SRS closing the tanks, they undergo an extensive waste removal process that includes specialized mechanical cleaning and isolation from the waste transfer and chemical systems. Once these steps are complete, DOE receives regulatory confirmation that the tanks are ready to be stabilized by grouting.

The first step in this process is Bulk Waste Removal Efforts (BWRE). Preparing for BWRE is typically a multiyear engineering and waste removal process that involves installing specialized equipment that meets strict nuclear safety standards. DOE completed BWRE in Tank 10 in October 2019, one month ahead of the FFA deadline. There were no other FFA tank closure commitments required for 2019, and the follow-up negotiations are scheduled to be completed in 2022 for additional tank closures.

### 3.2.2.2 Salt Processing

SRS is using several processes to dispose of the salt waste from the liquid waste tanks, as Figure 3-2 shows. The Actinide Removal Process and Modular Caustic Side Solvent Extraction Unit (ARP/MCU) is an interim salt waste processing system. SCDHEC permitted ARP/MCU under South Carolina industrial wastewater regulations. The salt form of the liquid waste is 90% of the waste volume stored in the tanks and contains about half of the radioactivity. The ARP/MCU process removes actinides, strontium, and cesium from the salt waste taken from the liquid waste tank farms. In FY 2019, the MCU processed about 404,000 gallons of salt solution. SRS sends the higher activity portion of the salt waste—a very small stream—to the Defense Waste Processing Facility (DWPF) and the remaining portion, a low-activity salt solution, to the Saltstone facilities. In May 2019, the ARP/MCU facility received its last transfer of salt solution and subsequently underwent a final de-inventory and flushing process. The facilities then underwent lay-up activities to be

put in a safe, stable suspended operational configuration, which allowed for final Salt Waste Processing Facility (SWPF) tie-ins to be completed.

SRS procured the Tank Closure Cesium Removal (TCCR) system to treat salt waste, increase salt processing capability, and to expedite tank closure. The Site completed TCCR design and fabrication in 2017, and installation and readiness assessments in 2018. The TCCR started operating in January 2019 and processed 210,000 gallons of salt solution in 2019.

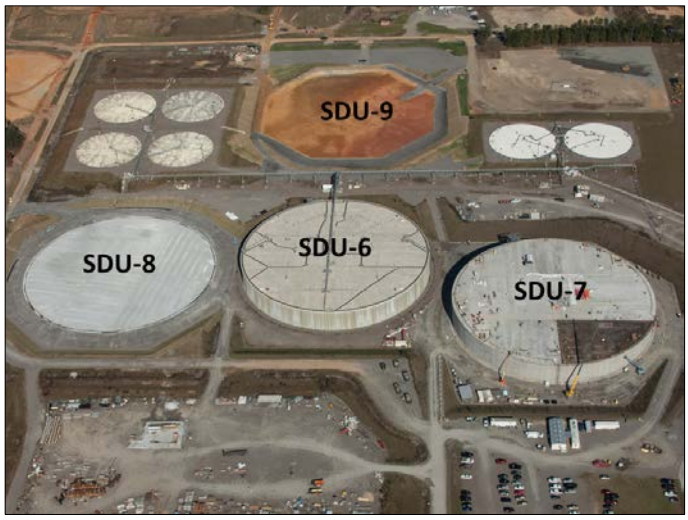

**Ion Exchange Column Installed at TCCR**

### 3.2.2.3 Salt Disposition

After ARP/MCU and TCCR interim processing, the decontaminated salt solution undergoes processing into grout waste at the Saltstone Production Facility and is disposed of in the Saltstone Disposal Facility (SDF). SCDHEC permits the SDF to operate under South Carolina solid waste industrial landfill regulations. SRS disposes of treated low-level salt waste in the SDF, based on the Secretary of Energy's determination pursuant to *Section 3116 Determination for Salt Waste Disposal at the Savannah River Site.* NDAA Section 3116(b) requires the NRC, in coordination with SCDHEC, to monitor the disposal actions DOE takes to assess whether it is complying with the objectives of 10 CFR Part 61.

During 2019, DOE supported the NRC's monitoring of SDF under Section 3116 of the NDAA by providing routine documentation (for example, groundwater monitoring reports, PA maintenance plan), as the NRC requested. The NRC made one onsite observation visit for salt waste disposal during 2019.

In FY 2019, Saltstone facilities processed and disposed of 734,391 gallons of waste. In 2019, SRS continued the permanent disposal of the grout waste in cylindrical concrete Saltstone Disposal Units (SDUs), including SDU-6, the 32.8 million-gallon, 375-foot in diameter rubber-lined mega vault. SRS was constructing SDU-7 in 2019, another mega-vault, with an anticipated completion date of mid-2020 and conducting site preparation for the next two mega-vaults, SDU-8 and SDU-9.




**Saltstone Disposal Units Being Constructed Next to SDU-6**

### 3.2.2.4 Sludge Waste Processing—Vitrification of High-Activity Waste

SCDHEC permits DWPF to operate under South Carolina industrial wastewater regulations. The sludge waste makes up less than 10% of the waste volume stored in the tanks and contains about half of the

radioactivity, as Figure 3-1 shows. At DWPF, SRS combines the high-activity portion of both the sludge and salt waste from the Tank Farms with frit before sending the mixture to the plant's melter. The melter heats the waste/frit mixture to nearly 2,100 degrees Fahrenheit, until molten. The resulting glass-waste mixture is poured into stainless steel canisters to cool and harden. This process, called "vitrification," immobilizes the radioactive waste into a solid glass form suitable for long-term storage and disposal. SRS stores these canisters temporarily in the Glass Waste Storage Buildings, in preparation for final disposal in a federal repository.

During FY 2019, DWPF produced 34 canisters of 126,783 pounds of glass, immobilizing 643,624 curies of radioactivity. Since DWPF began operating in March 1996, it has produced more than 4,200 canisters of 16 million pounds of glass, immobilizing 61.7 million curies of radioactivity.

#### 3.2.2.5 Low-Level Liquid Waste Treatment

The F- and H-Area Effluent Treatment Project (ETP) treats low-level radioactive wastewater from the Tank Farms. ETP removes chemical and radioactive contaminants from the water before releasing it into Upper Three Runs Creek, an onsite stream that flows to the Savannah River. The point of discharge is a South Carolina National Pollutant Discharge Elimination System (NPDES)-permitted outfall. ETP processed more than 6.5 million gallons of treated wastewater in FY 2019. SCDHEC permitted the ETP under the South Carolina industrial wastewater regulations. ETP remained in compliance with the industrial wastewater permit and the NPDES permit throughout 2019.

## 3.3 REGULATORY COMPLIANCE

This section summarizes how SRS complies with the applicable federal and state environmental laws and regulations.

### 3.3.1 Atomic Energy Act/DOE Order 435.1, *Radioactive Waste Management*

SRS waste and materials management is complex and includes numerous facilities that DOE Orders and federal and state regulations govern. DOE Order 435.1 covers all radioactive waste management (low-level waste [LLW], high-level waste [HLW], and transuranic [TRU] waste) to protect the public, workers, and the environment. LLW is the only one of these waste types SRS disposes of onsite, at the E-Area Low-Level Waste Facility and the Saltstone Disposal Facility. LLW is radioactive waste not classified as HLW or TRU waste and not containing any Resource Conservation and Recovery Act (RCRA) hazardous waste.

DOE Manual 435.1-1, *Radioactive Waste Management Manual,* requires DOE to prepare performance assessments (PAs) to evaluate the potential impacts of low-level radioactive waste disposal and closure activities (for example, Tank Farms) to the workers, the public, and the environment. The PAs provide the technical basis and evaluation needed to demonstrate compliance with DOE Order 435.1. The Order also requires a composite analysis (CA) to assess the combined impact of multiple LLW disposal facilities and other interacting sources of radioactive material after closure.

SRS performs a comprehensive annual PA review for disposal facilities. This review ensures any developing information does not alter the original PA conclusions and that there is a reasonable expectation the facility will continue to meet the performance objectives of the DOE Order. In addition, SRS performs an annual CA review to evaluate the adequacy of the 2010 SRS CA and verify that SRS conducted activities within the bounds of the 2010 analysis. The FY 2019 annual reviews for the E-Area Solid Waste

Management Facility, the Saltstone Disposal Facility, and the SRS CA determined that SRS continues to comply with the performance objectives of DOE Order 435.1. Based on the reporting and approval cycle for the PA and CA annual reviews, there is a one-year lag in reporting this information in the *SRS Annual Site Environmental Report.*


**Packaging Waste for Shipment to WIPP**

TRU waste is another category of radioactive waste that SRS generates. DOE Orders define TRU waste as waste containing more than 100 nanocuries of alpha-emitting transuranic isotopes (elements with atomic numbers greater than uranium) per gram of waste with radiological half-lives greater than 20 years. At SRS, TRU waste consists of clothing, tools, rags, residues, debris, and other items contaminated with trace amounts of plutonium. SRS TRU waste is sent to the Waste Isolation Pilot Plant (WIPP), a deep geologic repository located near Carlsbad, New Mexico for permanent disposal. Many different federal and state agencies (EPA, NRC, DOE, and the State of New Mexico), along with multiple regulations, govern TRU waste management and disposal. SRS manages TRU waste under DOE Orders and federal and state hazardous waste regulations. SRS sent five TRU shipments to WIPP for disposal in 2019.

### 3.3.2 Resource Conservation and Recovery Act (RCRA)

RCRA establishes regulatory standards for generating, transporting, storing, treating, and disposing of solid waste, hazardous waste (such as flammable or corrosive liquids), and underground storage tanks. SRS has a RCRA hazardous waste permit, multiple solid waste permits, and multiple underground storage tank permits, as identified in Section 3.3.10.

#### 3.3.2.1 Hazardous Waste Permit Activities

The EPA authorizes SCDHEC to regulate hazardous waste and the hazardous components of mixed waste. SCDHEC issued a RCRA hazardous waste permit to SRS.

SRS closed the Solvent Storage Tanks (SSTs) that the RCRA permit included and submitted the final certification of closure to SCDHEC in October 2019. Upon the acceptance of the closure certification, the volume associated with SRS's RCRA permit for the SSTs will be terminated; all other volumes of the permit remain in effect. The area surrounding the SSTs will remain an Underground Radioactive Material Area (URMA) designation until final closure.

#### 3.3.2.2 Solid Waste Permit Activities

SRS has solid waste permits for the 632-G Construction and Demolition Debris Landfill, the 288-F Industrial Solid Waste Landfill, and the Z-Area Saltstone Industrial Solid Waste Landfill (see Section 3.2.2.3). All the solid waste landfills were active in 2019, and SRS operated them in compliance with their permits. The SCDHEC quarterly landfill inspections in 2019 did not find any issues.

#### 3.3.2.3 Underground Storage Tank Permits

Subtitle I of RCRA regulates 19 USTs containing usable petroleum products. These tanks require an annual compliance certificate from SCDHEC. The October 30, 2019 annual inspection found all tanks in compliance.


**Solvent Storage Tanks, Before and After Closure**

### 3.3.3 Federal Facility Compliance Act (FFCA)

The FFCA was signed into law in October 1992 as an amendment to the Solid Waste Disposal Act. It adds provisions to apply certain requirements and sanctions to federal facilities. SRS obtained and implemented a Site Treatment Plan (STP) Consent Order (95-22-HW, as amended) in 1995, as required by the FFCA. The consent order required annual updates to the STP. SCDHEC executed *A Statement of Mutual Understanding for Cleanup Credits* in October 2003, allowing SRS to earn credits for certain accelerated cleanup actions. Credits can then be applied to the STP commitment schedules. Following a revision to the STP in 2011, SRS prepared and submitted the first five-year STP update to SCDHEC in November 2016. SCDHEC finalized and approved the update in October 2018. In February 2019, SRS formally asked to go back to an annual update instead of the once-every-five-years frequency. Additionally, SRS proposed reducing the scope of update due to the decreasing quantities of waste included in the STP. SCDHEC agreed with SRS's proposal, and SRS submitted the *Site Treatment Plan, 2019 Update* on November 13, 2019.

SRS and SCDHEC held STP Cleanup Credit validation meetings in February, May, August, and November. SRS earned 1,055 validated Cleanup Credits during FY 2019.

### 3.3.4 Toxic Substances Control Act (TSCA)

SRS complies with TSCA regulations when storing and disposing of lead, asbestos, and organic chemicals, including polychlorinated biphenyl compounds (PCBs). SRS disposes of routinely generated nonradioactive PCBs at an offsite EPA-approved disposal facility within the regulatory defined period of one year from the date of generation. SRS made two shipments of PCB waste to offsite hazardous waste facilities in 2019. SRS also generates radioactive waste contaminated with PCBs. Low-level radioactive PCB bulk product waste is

disposed of onsite. PCB waste that is contaminated with TRU requires disposal at WIPP. SRS made two shipments of PCB-containing waste to WIPP in 2019.

As required by the TSCA regulations, SRS submitted the 2019 annual report of onsite PCB disposal activities to EPA on May 11, 2020.

### 3.3.5 South Carolina Infectious Waste Management Regulation

SRS generates a large quantity of infectious waste registered under the SCDHEC Infectious Waste Management Program. SRS has a vendor contracted to pick up infectious waste every four weeks. In 2019, the vendor picked up 14 shipments. Once offsite, the vendor treats and disposes of the waste in accordance with the SCDHEC regulations. In 2019, SRS managed all infectious wastes in compliance with the state regulations. SCDHEC did not inspect the SRS Infectious Waste Management Program during 2019.

### 3.3.6 Air Quality and Protection

#### 3.3.6.1 Clean Air Act (CAA)

EPA has delegated regulatory authority for all types of air emissions to SCDHEC. SRS is required to comply with SCDHEC Regulation 61-62, *Air Pollution Control Regulations and Standards*. SRS facilities currently have the following seven air permits regulating activities on the Site:

- Part 70 Air Quality Permit (TV-0080-0041)
- 784-7A Biomass Boiler Construction Permit (TV-0080-0041a-CG-R1)
- 784-7A Oil Boiler Construction Permit (TV-0080-0041a-CF-R1)
- Building 235-F D&D Construction Permit (TV-0080-0041-C1)
- N-Area Lead Melters Construction Permit (TV-0080-0041-C2)
- Saltstone Baghouse CD-B 0017 Construction Permit (TV-0080-0041-C3)
- Ameresco Federal Solutions, Inc. (“Ameresco”) Biomass Facilities Permit (TV-0080-0144)

Under the CAA, SRS is considered a “major source” of nonradiological air emissions and, therefore, falls under the CAA Part 70 Operating Permit Program. The Part 70 Operating Permit regulates stationary sources with the potential to emit five tons or more per year of any criteria pollutant (six of the most common air pollutants: ozone precursors, particulate matter, carbon monoxide, nitrogen oxides, sulfur dioxide, and lead). These major stationary sources are subject to operating and emission limits, as well as emissions monitoring and record-keeping requirements.

The EPA sets the National Ambient Air Quality Standards air pollution control standards, and SCDHEC regulates them. The Air Quality Permit requires SRS to demonstrate compliance through air dispersion modeling and by submitting an emissions inventory of air pollutant emissions every three years.

The current CAA Air Quality Permit (TV-0080-0041) expired on March 31, 2008. SRS submitted a complete renewal application of the current permit prior to the expiration date. SCDHEC granted an application shield, effective on September 21, 2007, allowing the Site to continue operating under the expired permit. In 2019, the Site continued to operate under the expired Part 70 Air Quality Permit.

#### 3.3.6.2 Accidental Release Prevention Program

The CAA Amendments of 1990, Section 112(r) requires any facility that maintains specific hazardous or extremely hazardous chemicals in quantities above specified threshold values to develop a risk management plan. SRS has maintained hazardous and extremely hazardous chemical inventories below each threshold value; therefore, the CAA does not require SRS to develop a risk management plan. Additionally, no reportable 112(r)-related hazardous or extremely hazardous chemical releases occurred at SRS in 2019.

#### 3.3.6.3 Ozone-Depleting Substances

Section 608 of the CAA prohibits the knowing release of refrigerant during maintenance, service, repair, or disposal of air-conditioning and refrigeration equipment. Refrigerants include ozone-depleting substances and substitute refrigerants such as hydrofluorocarbons. Releases of chemical gases widely used as refrigerants, insulating foams, solvents, and fire extinguishers cause ozone depletion or contribute to greenhouse gas emissions. SRS complies with 40 CFR Part 82 in 2019 to ensure it did not knowingly or willfully release refrigerants into the atmosphere.

#### 3.3.6.4 Air Emissions Inventory

SCDHEC Regulation 61-62.1, Section III (*Emissions Inventory*), requires SRS to compile an air emissions inventory in order to locate all sources of air pollution and to define and characterize the various types and amounts of pollutants.

The schedule for submitting the inventory is either every year or every three years, depending upon the emission thresholds in the regulations. SRS emissions have dropped below the threshold that requires an annual air emissions inventory; therefore, SRS reports on a three-year cycle rather than annually for permit TV-0080-0041. SRS was not required to submit an air emissions inventory for 2019, and will submit the next required inventory for 2020 before March 31, 2021.

#### 3.3.6.5 National Emission Standard for Hazardous Air Pollutants (NESHAP)

NESHAP is a CAA-implementing program that sets air quality standards for hazardous air pollutants, such as radionuclides, benzene, Reciprocating Internal Combustion Engines (RICE) emissions, and asbestos.

##### 3.3.6.5.1 NESHAP Radionuclide Program

SRS complies with the NESHAP Radionuclide Program by performing all required inspections and maintaining monitoring systems. Additionally, Subpart H of the NESHAP regulations requires SRS to determine and report annually (by June 30) the highest effective radiological dose from airborne emissions to any member of the public at an offsite point. SRS transmitted the *SRS Radionuclide Air Emissions Annual Report for 2019* on June 18, 2020 to EPA, SCDHEC, and DOE Headquarters.

During 2019, SRS estimated the maximally exposed individual effective dose equivalent to be less than 1% of the EPA standard of 10 millirem (mrem) per year. Chapter 6, *Radiological Dose Assessment*, contains details on this dose calculation.

#### 3.3.6.5.2 NESHAP Nonradionuclide Program

In 2013, New Source Performance Standards (NSPS) under NESHAP were added (or became effective) for RICE equipment such as portable generators, emergency generators, and compressors. In 2019, SRS continued to operate in compliance with NSPS and NESHAP standards.

#### 3.3.6.5.3 NESHAP Asbestos Abatement Program

Work involving asbestos at SRS falls under SCDHEC and federal regulations. These activities—operation and maintenance repairs, removing asbestos, and demolishing buildings—require an asbestos notification, a renovation permit, or a demolition permit.

SRS issued 281 asbestos notifications and conducted five permitted renovations and demolitions involving asbestos in 2019. Table 3-1 summarizes these removals. Certified personnel removed and disposed of friable (easily crumbled or pulverized) and nonfriable asbestos. Both disposal sites for nonradiological asbestos waste are SCDHEC-approved landfills for disposing of regulated and nonregulated asbestos.

SRS maintains a SCDHEC Temporary Storage Containment Area License that facilitates removing and disposing of waste generated from nonradiological operations and maintenance and minor and small projects. Additionally, SRS maintains a SCDHEC Asbestos Group License that allows Savannah River Nuclear Solutions, LLC (SRNS) and Savannah River Remediation LLC (SRR) to operate as long-term, in-house asbestos abatement contractors for DOE-Savannah River.

**Table 3-1 Summary of Quantities of Asbestos Materials Removed in 2019**

| Asbestos Type | Nonradiological, Friable | Nonradiological, Nonfriable | Radiologically Contaminated Asbestos |
|---|---|---|---|
| **Linear Feet Disposed** | 113 | 459 | 50 |
| **Square Feet Disposed** | 292 | 12,406 | 18 |
| **Cubic Feet Disposed** | 0 | 53 | 0 |
| **Disposal Site** | Three Rivers Solid Waste Authority Landfill | SRS Construction and Demolition Landfill | SRS E-Area Low-Level Waste Facility |

### 3.3.7 Water Quality and Protection

#### 3.3.7.1 Clean Water Act (CWA)

Except for Ameresco, which has its own CWA National Pollutant Discharge Elimination System (NPDES) permit, SRS operated pursuant to the following CWA permits in 2019:

- Land Application Permit (ND0072125)
- General Permit for Stormwater Discharges Associated with Industrial Activities (Except Construction) (SCR000000)
- Permit for Discharge to Surface Waters (SC0000175)
- Permit for Discharge to Surface Waters (SC0047431)
- General Permit for Stormwater Discharges from Construction Activities (SCR100000)

- General Permit for Utility Water Discharges (SCG250000)
- General Permit for Discharges from Application of Pesticides (SCG160000)
- General Permit for Vehicle Wash Water Discharges (SCG750000)
- General Permit for Land Disturbing Activities at SRS

Information on these permits is available at the EPA's Enforcement and Compliance History Online (ECHO) database.

#### 3.3.7.1.1 National Pollutant Discharge Elimination System (NPDES)

SCDHEC administers the NPDES program, which protects surface waters by limiting releases of pollutants into streams, reservoirs, and wetlands. As explained in the previous section, SCDHEC issued multiple NPDES permits to SRS to govern different types of discharges to surface water. A major goal of the NPDES program is to control or eliminate discharges of toxic pollutants, oil, hazardous substances, sediment, and contaminated stormwater to protect the quality of our nation's water. To achieve this goal, SCDHEC requires SRS to prepare the following plans:

- Best Management Practices Plan to identify and control the discharge of hazardous and toxic substances;
- Stormwater Pollution Prevention Plan (SWPPP) to address the potential discharge of pollutants in stormwater;
- Spill Prevention, Control, and Countermeasures Plan to minimize the potential for discharges of oil, including petroleum, fuel oil, sludge, and oily wastewater.

SRS has two NPDES permits for industrial activities that discharge to surface water: one covering D Area (Permit No. SC0047431) and the other for the remainder of the Site (Permit No. SC0000175). Throughout the year, SRS monitors 28 NPDES-permitted industrial wastewater outfalls across the Site on a frequency the permits specify. Monitoring requirements vary from as much as once a day at some locations to once a quarter at others, although typically they are conducted once a month. For each outfall, SRS measures physical, chemical, and biological parameters and reports them to SCDHEC in SRS monthly discharge monitoring reports, as required by the permits. Chapter 4, *Nonradiological Environmental Program,* provides additional information about sampling NPDES permits require of SRS to remain compliant.

The following are highlights of the NPDES program at SRS:

- SCDHEC did not conduct any NPDES compliance evaluation inspections in 2019.
- The 2019 update to the SRS SWPPP contains information on the 39 SRS industrial stormwater outfalls and outfall facilities.
- SCDHEC did not require construction stormwater monitoring on any of the active construction projects underway at SRS during 2019.
- SRS undertakes construction, operating, and closure permitting of industrial wastewater treatment facilities pursuant to the CWA and the South Carolina Pollution Control Act. Facilities permitted are broad in scope and include those involved with groundwater remediation, radioactive liquid waste processing, and nuclear nonproliferation. In 2019, SCDHEC issued an Approval to Place Into Operation for the following projects: 1) Salt Waste Processing Facility East & West Transfer Lines Tie-In, 2) Salt Waste Processing Facility, 3) Salt Waste Processing Facility Next Generation Solvent

Cold Chemical Feed Facility, and 4) Actinide Removal Process/Modular Caustic Side Solvent Extraction Suspended Operations Mode. In addition, SCDHEC issued a construction permit for an additional recovery well for the M-1 Air Stripper remediation system. SCDHEC also approved closing two permits related to the D-Area ash basins and the F-Area Neutralization System.

- In November 2019, SRS received an NOV for failing to comply with the reporting requirement of the NPDES Permit. The Site violated the monitoring and reporting requirements of the NPDES Industrial Wastewater Discharge Permit by exceeding a hold time for a sample analysis. On August 7, 2019, SRS discovered that two H-16 Outfall NPDES samples collected during the first two weeks of July were not analyzed for mercury (Hg) within the 28-day sample hold-time specified by the EPA laboratory method in place to analyze samples. SRS's Environmental Compliance notified SCDHEC verbally and through normal routine reporting, via the Discharge Monitoring Report of industrial discharges. A fact-finding meeting identified corrective actions to improve procedures. These improvements are underway.

Chapter 4 of this report summarizes the sampling results of both industrial and stormwater outfalls.

#### 3.3.7.1.2 Section 404(e) Dredge and Fill Permits

Wetlands make up 25% of the total SRS area, or 48,973 acres. SRS wetlands account for more than 80% of the wetlands across the entire DOE complex nationwide. The Clean Water Act, under Section 404, requires SRS to obtain a permit when it will conduct work in a wetland area. The U.S. Army Corps of Engineers authorizes development in wetlands through a Nationwide Permit (NWP) program. The program is for projects that have minimal impact on the aquatic environment.

SRS wetlands staff reviewed 91 site-use applications for potential wetland impacts and helped review pertinent Environmental Evaluation Checklists (EECs) in 2019. During this time, SRS conducted the following actions under the NWP program:

- Constructed the Mixed Waste Management Facility phytoremediation pond on an intermittent tributary to Four Mile Branch, authorized by the U.S. Army Corps of Engineers under NWP 38, Cleanup of Hazardous and Toxic Waste
- Replaced a culvert on Road 15-32 under NWP 3, Maintenance
- Removed Environmental Sampling Structure 606-2G under NWP 5, Scientific Measurement Devices
- Improved pedestrian access at Environmental Sampling Station PB-3 under NWP 5
- Installed Well CRW-028C in wetlands adjacent to a Castor Creek tributary under NWP 5
- Improved pedestrian access by installing rock at the H Base Injection Project under NWP 5

### 3.3.7.2 Safe Drinking Water Act (SDWA)

SCDHEC regulates drinking water facilities under the SDWA. SRS uses groundwater sources to supply drinking water to onsite facilities. The A-Area drinking water system supplies most Site areas. Remote facilities, such as field laboratories, barricades, and pump houses, use small drinking water systems or bottled water. All 2019 bacteriological samples for drinking water that SRS collected met state and federal drinking water quality standards.

SCDHEC requires SRS to collect 10 bacteriological samples each month from the domestic water system that supplies drinking water to most areas at SRS. SRS usually exceeds this requirement by collecting 15 samples each month from various areas. All samples have bacteriological analyses. The sample results consistently meet SCDHEC and EPA drinking water quality standards, confirming the absence of harmful bacteria.

In 2019, SRS sampled for lead and copper at 30 locations across the Site. The results of this sampling event met all state and federal drinking water standards. SRS samples domestic water systems for lead and copper on a three-year, rotating cycle. Based on this cycle, SRS will sample 30 locations across the Site for lead and copper in 2022.

SCHDEC conducted an inspection of the A-Area drinking water system in 2019 and gave it its highest rating of "satisfactory." SCDHEC generally inspects systems of this classification every two years. SRS expects the next inspection in 2021.

#### 3.3.7.3 Groundwater Management

The South Carolina Groundwater Use and Reporting Act declares that the groundwater resources of the State be put to beneficial use and requires that a Groundwater Management Plan be developed for each capacity use area. The act requires that a groundwater withdrawal permit be in place to withdraw or use groundwater equal to or greater than 3 million gallons in any month in these areas. On November 8, 2018, the SCDHEC Board approved the Western Capacity Use Area. SRS is situated within the Western Capacity Use Area; therefore, SRS pursued and received groundwater withdrawal permits from the SCDHEC Bureau of Water for groundwater systems located in D Area and A Area.

### 3.3.8 Environmental Protection and Resource Management

#### 3.3.8.1 National Environmental Policy Act (NEPA)

The NEPA process identifies the potential environmental consequences of proposed federal activities and the alternatives that support informed environmentally sound decision-making regarding designing and implementing the proposed activities.

The NEPA program complies with 10 CFR Part 1021, *National Environmental Policy Act Implementing Procedures*. SRS initiates the required NEPA evaluation by completing an EEC for new projects or changes to existing projects. SRS uses the EEC to review the proposed action, identify any potential environmental concerns, and determine the appropriate level of NEPA review required for the proposed activity.

SRS conducted 836 NEPA reviews of proposed activities in 2019 (Table 3-2). Categorical exclusion determinations accounted for approximately 90% of completed reviews. Additional information on SRS NEPA activities may be found on the SRS NEPA web page.

The following major NEPA reviews were either completed or in progress in 2019:

- *Supplement Analysis of the Final Long-Term Management and Storage of Elemental Mercury Environmental Impact Statement* (DOE/EIS-0423-SA-01) and Record of Decision ([ROD], 84 Federal Register [FR] 66890). In January 2011, DOE issued *the Final Long-Term Management and Storage of Elemental Mercury Environmental Impact Statement (Mercury Storage EIS)* (DOE/EIS-0423). SRS was one of seven candidate locations (not the Preferred Alternative) that DOE evaluated for

elemental mercury storage. In 2013, DOE issued the *Final Long-Term Management and Storage of Elemental Mercury Supplemental Environmental Impact Statement* (DOE/EIS-0423-S1), which analyzed three additional locations for a long-term elemental mercury storage facility(facilities), all of which are in the vicinity of the Waste Isolation Pilot Plant (WIPP) near Carlsbad, New Mexico, and updated the occupational and public health and safety impact analysis and socioeconomics and environmental justice analyses. In June 2019, DOE prepared a Supplement Analysis (SA) that evaluated changes in environmental conditions at the Waste Control Specialists (WCS) facility in Andrews, Texas. DOE did not evaluate SRS in the SA. In December 2019, DOE issued a ROD identifying WCS as the selected location for elemental mercury storage. At this time, DOE is no longer considering SRS as an alternative location.

- *Supplement Analysis for the Foreign Research Reactor Spent Nuclear Fuel Acceptance Program (DOE/EIS-0218-SA-8).* In April 2019, DOE/National Nuclear Security Administration (NNSA) issued a SA to evaluate the extension of the Foreign Research Reactor Spent Nuclear Fuel (FRR SNF) Acceptance Program through May 12, 2029, and implementation of the Policy on Exemptions to the FRR SNF Acceptance Program. DOE/NNSA concluded that the impacts of the proposed action would be within the range of impacts analyzed in the FRR SNF EIS (DOE/EIS-0218). SRS is one of the three sites previously evaluated for the receipt and transfer/storage of FRR SNF. The majority of the FRR SNF that is the subject of the SA would be shipped to SRS. Receipt and storage operations and practices would not change as a result of implementing the Policy on Exemptions, and the quantity of material received and stored at SRS would be less than that analyzed in the FRR SNF EIS.

- *Supplemental Notice Concerning U.S. Department of Energy Interpretation of High-Level Radioactive Waste (84 FR 26835).* On June 5, 2019, DOE issued *the Supplemental Notice Concerning U.S. Department of Energy Interpretation of High-Level Radioactive Waste*. DOE is initiating a NEPA process separately to study potential environmental impacts associated with implementing the interpretation to dispose of certain waste from SRS at a commercial disposal facility located outside South Carolina and licensed by either the Nuclear Regulatory Commission (NRC) or an Agreement State under 10 CFR Part 61 to receive low-level radioactive waste. If, in the future, DOE proposes an additional action to which NEPA would apply, such as implementation of this interpretation with respect to other specific wastes, DOE will likewise analyze such a proposal pursuant to NEPA.

- *Draft Environmental Assessment for the Commercial Disposal of Defense Waste Processing Facility Recycle Wastewater from the Savannah River Site; Aiken and Barnwell Counties, South Carolina (DOE/EA-2115).* On December 10, 2019, DOE published a Notice of Availability ([NOA], 84 FR 67438) for the *Draft Environmental Assessment.* DOE is evaluating disposing of up to 10,000 gallons of stabilized (grouted) Defense Waste Processing Facility (DWPF) recycle wastewater from SRS at a commercial low-level radioactive waste (LLW) disposal facility located outside of South Carolina, licensed by either the NRC or an Agreement State under NRC's regulations regarding licensing requirements for land disposal of radioactive waste. The DWPF recycle wastewater would be treated, characterized, and if the performance objectives and waste acceptance criteria of a specific disposal facility are met, DOE could consider whether to dispose of the waste as LLW

under DOE's high-level radioactive (HLW) interpretation. The HLW interpretation does not change or revise any current policies or other legal requirements with respect to HLW. As a result of this NEPA process, DOE may consider actions, if any, are necessary and appropriate to implement any decision to dispose of the DWPF recycle wastewater as LLW. DOE extended the public comment period from the original due date of January 9, 2020 to February 10, 2020, in response to reviewers' requests.

- *Draft Supplement Analysis of the Complex Transformation Supplemental Programmatic Environmental Impact Statement (DOE/EIS-0236-S4-SA-02).* On June 28, 2019, DOE/NNSA issued an NOA for a Draft SA regarding the production of plutonium pits. NNSA prepared the SA to determine if the *Final Complex Transformation Supplemental Programmatic EIS (DOE/EIS-0236-S4)* should be supplemented, a new EIS should be prepared, or if no further NEPA analysis is required. NNSA is proposing to produce a minimum of 50 pits per year at a repurposed Mixed-Oxide Fuel Fabrication Facility at SRS and a minimum of 30 pits per year at Los Alamos National Laboratory, with additional surge capacity at each site, if needed, to meet the requirements of producing pits at a rate of no fewer than 80 pits per year by 2030. The Draft SA preliminarily concluded that further NEPA documentation at a programmatic level is not required. NNSA committed to preparing a site-specific analysis prior to initiating pit production at SRS.

- *Notice of Intent to Prepare an Environmental Impact Statement for Plutonium Pit Production at the Savannah River Site (84 FR 26849; DOE/EIS-0541).* On June 10, 2019, DOE/NNSA announced its intent to prepare an EIS to evaluate the potential environmental impacts of alternatives for plutonium pit production at SRS. On June 27, 2019, NNSA held a public scoping meeting inviting the public to submit comments until July 25, 2019, to assist in identifying environmental issues and in determining the appropriate scope of the SRS EIS. Input from the scoping meeting will assist NNSA in formulating the proposed action, refining the alternatives, and defining the scope of EIS analysis. Following the scoping period and, after consideration of comments received during the scoping, NNSA will prepare a Draft EIS. NNSA will announce the availability of the draft in the Federal Register and local media outlets. Comments received on the Draft EIS will be considered and addressed in the Final EIS. NNSA will issue a ROD no sooner than 30 days after the EPA publishes an NOA of the Final EIS.

- *Notice of Intent to Prepare an Environmental Impact Statement for a Versatile Test Reactor* (84 FR 38021; DOE/EIS-0254). On August 5, 2019, the DOE Office of Nuclear Energy announced its intent to prepare an EIS to evaluate potential environmental impacts of alternatives for a versatile reactor-based fast neutron source facility and associated facilities for the preparation, irradiation, and postirradiation examination of test and experimental fuels and materials. SRS will be evaluated as an alternative support facility to be used for the fabrication of the driver fuel for the test reactor.

- *Notice of Intent to Prepare an Environmental Impact Statement for the Disposal of Decommissioned, Defueled Ex-Enterprise (CVN 65) and Its Associated Naval Reactor Plants (84 FR 25243; EIS-0254).* On May 31, 2019, the Department of Navy, with DOE as a cooperating agency, announced its intent to prepare an Environmental Impact Statement/Overseas Environmental

Impact Statement (EIS/OEIS) to evaluate potential environmental impacts of alternatives for disposal of the decommissioned, defueled ex-Enterprise (CVN 65) aircraft carrier, including its reactor plants. SRS will be evaluated as an alternative for a disposal facility for low-level radioactive waste packages of disassembled reactor plants.

The *Environmental Assessment for the South Carolina Army National Guard Proposal to Construct and Operate Training Facilities and Infrastructure on 750 Acres at the Department of Energy Savannah River Site* (DOE/EA-1999) is in progress and is not counted in the Table 3-2 total.

**Table 3-2 Summary of 2019 NEPA Reviews**

| Type of National Environmental Policy Act (NEPA) Review | Number |
|---|---|
| **Categorical Exclusion Determinations[a]** | 755 |
| **"All No" Environmental Evaluation Checklist (EEC) Determinations[a]** | 59 |
| **Previous NEPA Review[a]** | 20 |
| **Environmental Impact Statement (EIS)** | 0 |
| **Supplement Analysis (SA)** | 1 |
| **Interim Action** | 0 |
| **Revised Finding of No Significant Impact** | 0 |
| **Environmental Assessment** | 1 |
| **Total** | **836** |

[a] Proposed action that requires no further NEPA action

### 3.3.8.2 Emergency Planning and Community Right-to-Know (EPCRA)/Superfund Amendment Reauthorization Act (SARA) Title III

EPCRA requires facilities to notify state and local emergency planning entities about their hazardous chemical inventories and to report releases of hazardous chemicals. The Pollution Prevention Act of 1990 expanded the EPCRA-mandated Toxic Release Inventory (TRI) report to include waste management. SRS complies with the applicable EPCRA reporting requirements and incorporates the applicable TRI chemicals into its pollution prevention programs.

As required by Section 312, *Chemical Inventory Reporting* of EPCRA, SRS completes an annual Tier II Chemical Inventory Report for all hazardous chemicals exceeding specified quantities present at SRS during the calendar year. SRS submitted the 2019 hazardous chemical storage information to state and local authorities on February 14, 2020. The report included 60 reportable chemical categories, the same as the previous year.

As required by Section 313, *Toxic Chemical Release Inventory*, of EPCRA, SRS must file an annual TRI report each year by July 1 for the previous year. SRS calculates chemical releases to the environment for each regulated chemical and reports those above each threshold value to EPA. SRS submitted the 2019 TRI report on June 25, 2020 for each of the following regulated chemicals: ammonia, chromium compounds, lead compounds, mercury compounds, naphthalene, nitrate compounds, nitric acid, and sodium nitrite. Details are on the EPA Toxic Release Inventory Program website.

### 3.3.8.3 Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)

The objective of FIFRA is to provide federal control of pesticide distribution, sale, and use. The EPA must register all pesticides used in the United States. Use of each registered pesticide must be consistent with use directions contained on the package's label. SRS must comply with FIFRA and, on a state level, the South Carolina Pesticide Control Act.

SRS must also comply with the South Carolina NPDES General Permit for discharges from the application of pesticides. This permit authorizes applying pesticides to surface water according to limitations set forth in the NPDES general permit.

SRS procedures implement the FIFRA requirements for pesticide application, application recordkeeping, storage, and disposing of empty containers and excess pesticides. General-use pesticides (ready-to-use products that are available for public use) are applied at SRS per the label instructions. SRS applies restricted-use pesticides on a very limited basis, following label requirements and using state-certified pesticide applicators. SRS generates and maintains application records for general use and restricted use pesticides for each application.

### 3.3.8.4 Endangered Species Act (ESA)

The ESA designates and protects wildlife, fish, and plants in danger of becoming extinct. This federal law also protects and conserves their critical habitats. Several federally listed animal species exist at SRS, including the wood stork, the red-cockaded woodpecker, the shortnose sturgeon, and the Atlantic sturgeon, as well as plant species, including the pondberry and the smooth coneflower.

In addition, SRS is home to the gopher tortoise, a candidate for protection under the ESA. SRS is the only DOE site to conduct experimental translocations of gopher tortoises, where they are captured, transported, and released to another location. Conservation organizations use protocols developed during these SRS translocation studies to establish viable populations elsewhere in the species' range.

South Carolina's State Wildlife Action Plan of 2015 recognizes additional plants and animals not on the federal list to encourage conservation of these species. Those found on SRS include the Carolina gopher frog and the southern hognose, as well as numerous other animals and plants considered species of conservation concern. The United States Forest Service-Savannah River (USFS-SR) considers these species sensitive and takes that into consideration when developing forest management plans. While the bald eagle is no longer on the federally listed endangered or threatened species list, the Bald and Golden Eagle Protection Act protects nesting bald eagles and wintering golden eagles. Bald eagles nest on SRS and are considered year-round residents; golden eagles use SRS as a wintering habitat. The 2019 mid-winter bald eagle survey reported eight bald eagles and four golden eagles on SRS.

The USFS-SR actively manages more than 65,000 acres in the red-cockaded woodpecker habitat management areas by using prescribed fire or by mechanical or chemical treatments to control vegetation. These methods create and improve habitat by restoring the natural fire regime, improving native plant diversity in the understory, and enhancing the native longleaf pine and wiregrass communities. Additionally, the USFS-SR inserts artificial cavities into living pine trees to supplement the available cavities for roosting and nesting. From 1985 through FY 2019, active red-cockaded woodpecker clusters increased from 3 to 152 due to successful habitat restoration. As of 2019, the USFS-SR managed 152 cluster sites for the red-cockaded woodpecker, with an average expected population growth rate of 5% each year. The

growth rate over the past five years at SRS has been an outstanding average of 12%. In addition to managing endangered wildlife species, the USFS-SR actively manages six endangered plant populations: four smooth coneflower and two pondberry.

During FY 2019, while implementing the *United States Department of Energy Natural Resources Management Plan for SRS,* USFS-SR developed one SRS watershed management plan for standard USFS-SR project plans, resulting in one biological evaluation for timber, research, and wildlife-related management. The biological evaluation determined that forest implementation plans are not likely to adversely affect federally listed endangered or threatened species due to beneficial, insignificant, or discountable effects.

### 3.3.8.5 Migratory Bird Treaty Act (MBTA)

The MBTA prohibits taking, possessing, importing, exporting, transporting, selling, purchasing, bartering, or offering for sale any migratory bird or its eggs, parts, and nests, except as authorized by the U.S. Department of the Interior under a valid permit. To support migratory bird monitoring, a one-day Christmas Bird Count is conducted annually in December. The 2019 count found 98 species. A one-day bald eagle survey is conducted every year in January. The 2019 bald eagle survey found eight eagles.

In 2019, SRS conducted walkdowns of 66 bird nests at 43 locations for MBTA compliance. The walkdowns identified 38 active nests with incubating eggs or chicks and 28 nests without eggs or chicks. The active nests were being used by Northern mockingbirds (*Mimus polyglottos*), Eastern bluebirds (*Sialia sialis*), barn swallows (*Hirundo rustica*), house finches (*Haemorhous mexicanus*), killdeers (*Charadrius vociferous*), common grackles (*Quiscalus quiscula*), black vultures (*Coragyps atratus*), and purple martins (*Progne subis*).

**Purple Martin in Flight**

SRNS allowed active nests to complete the nesting cycle and barricaded them when deemed appropriate, with two exceptions. SRNS removed an active common grackle nest from a crane at F-Tank Farm in an active radiological work area executed by Savannah River Remediation under permit authorization from the U.S. Fish and Wildlife Service. SRNS also successfully relocated an active purple martin nest located in an aviation marker globe on an electrical line in the K-Area Criticality Control Overpack Pad Project work area.

Also in 2019, USFS-SR found an osprey (*Pandion haliaetus*) nest on a platform staff built in 2014. This marked the fifth year that ospreys nested on the platform after their nest had been moved from a power pole at the L-Lake Dam.

### 3.3.8.6 Invasive Species Management

The purpose of Executive Order 13751, *Safeguarding the Nation from the Impacts of Invasive Species,* is to prevent the introduction and spread of invasive species, and to support efforts to eradicate and control established invasive species. The Site is surveying invasive plant and animal species and taking steps to control their populations.

**Wisteria (Wisteria sinensis)**

Many of the former home and community sites that area residents left nearly 70 years ago to allow for the government to construct the Savannah River Site have since become primary sources of non-native invasive plant species (NNIPS). Escaping cultivation and containment for decades, aggressive plant species such as Chinese privet*,* (*Ligustrum sinensis*)*, w*isteria (*Wisteria sinensis*), chinaberry (*Melia azedarach*), and kudzu (*Pueraria montana*) now threaten native species onsite. Invasive species such as these are a major threat to National Forests in the 21st century. NNIPS contribute to long-term ecosystem degradation due to the loss of diversity and their direct competition with native species. They also provide unwanted ladder fuels that can increase fire intensity during prescribed burning or wildfire.

Prior to 2012, there had been no sitewide effort to document NNIPS as part of the watershed prescription process. However, recently conducted plant surveys include recording observations and locations for NNIPS. This information is now being captured geospatially to include in compartment stand maps and geographic information system layers for management planning. Historical records and image interpretations from photos and maps, compartment folders, and stand exam data helped to identify developed openings, old home sites, and community places (churches, schools, cemeteries) that may contain robust sources of introduced NNIPS communities.

The USFS-SR annually contracts botanical surveys of 5,000 to 7,000 acres, which include 40-50 species of plants considered to be non-native and invasive. USFS-SR chemically treats an average of 57 acres each year to control across target areas that either contain former homesites and community areas or that are in proximity to red-cockaded woodpecker colony sites. When a forest stand is cut and regenerated, the USFS treats any NNIPS populations discovered as part of the site preparation for replanting.

Wild pigs are considered an invasive species in the United States and abroad. As of 2016, the U.S. Department of Agriculture estimated that in the United States alone, these animals cost $1.5 billion each year in damages and control costs. On SRS, wild pigs present safety hazards due to vehicle collisions and disease transmission, and ecological impacts by negatively affecting water quality, disturbing soil, and constantly threatening rare and endangered plant populations. The USFS-SR has two dedicated wildlife technicians who oversee two wildlife contractors who trap and remove wild pigs on SRS. In 2019, USFS-SR removed 1,410 pigs primarily through baiting and trapping. Additionally, USFS-SR and the Southern Research Station, part of the U.S. Forest Service Research and Development organization, are collaborating with the Savannah River Ecology Laboratory to research ways to control the wild pig population.

### 3.3.8.7 National Historic Preservation Act (NHPA)

The NHPA requires all federal agencies to consider the impacts to historic properties in all their undertakings. SRS ensures it complies with the NHPA through several processes. For example, SRS uses the Site Use Program, the *Cold War Programmatic Agreement,* and *SRS's Cold War Built Environment Cultural*

*Resource Management Plan* to ensure it is complying with NHPA. The Savannah River Archaeological Research Program (SRARP) guides DOE in managing its cultural resources to ensure it fulfills its compliance commitments. SRARP also serves as a primary organization to investigate archaeological research problems associated with cultural development within the Savannah River valley. DOE uses the results to help manage more than 2,000 known archaeological sites at SRS.

SRARP evaluates and documents all locations DOE is considering for activities, such as construction, to ensure that they do not affect archaeological or historic sites. In FY 2019, SRARP investigated 524 acres of land on SRS for cultural resource management, including conducting 22 field surveys and testing. It recorded 16 newly discovered sites and revisited 10 previously recorded sites.

### 3.3.9 Release Reporting

Federally permitted releases to the air, water, and land must comply with legally enforceable licenses, permits, regulations, or orders. If an unpermitted release to the environment of an amount greater than or equal to a reportable quantity of a hazardous substance (including radionuclides) occurs, EPCRA, Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Clean Water Act (CWA), and the Clean Air Act (CAA) require SRS send a notice to the National Response Center and applicable state agencies.

SRS did not have any reportable releases in 2019.

### 3.3.10 Permits

SRS had 634 construction and operating permits in 2019 that specified operating levels to each permitted source. Table 3-3 identifies the number of permits by the permit type.

**Table 3-3 SRS Permits**

| Type of Permit | Number of Permits |
|---|---|
| **Air** | 7 [a] |
| **U.S. Army Corps of Engineers (USACE—Nationwide Permits)** | 6 |
| **Asbestos Demolition Licenses/Abatement Licenses/Temporary Storage of Asbestos Waste Notices** | 326 |
| **Asbestos Abatement Group License** | 1 |
| **Asbestos Temporary Storage of Waste License** | 1 |
| **Domestic Water** | 97 |
| **Industrial Wastewater Treatment** | 65 |
| **NPDES Permits** | 9 |
| **Construction Stormwater Grading Permit** | 8 |
| **RCRA Hazardous Waste** | 1 |
| **RCRA Solid Waste** | 3 |
| **RCRA Underground Storage Tank** | 7 |
| **Sanitary Wastewater** | 90 |
| **SCDHEC 401** | 0 |
| **SCDHEC Infectious Waste Registration** | 1 |
| **SCDHEC Navigable Waters** | 0 |
| **Underground Injection Control** | 10 |
| **Groundwater Withdrawal** | 2 |
| **Total** | **634** |

[a] This count includes the CAA permit (TV-0080-0144) for Ameresco.

## 3.4 MAJOR DOE ORDERS FOR ENVIRONMENTAL COMPLIANCE

SRS complies with the following major DOE Orders in addition to state and federal regulations for environmental compliance:

- DOE Order 436.1*, Departmental Sustainability*. See Chapter 2, *Environmental Management Systems,* of this report.
- DOE Order 458.1, *Administrative Change 3, Radiation Protection of the Public and the Environment*. See Chapter 5, *Radiological Environmental Monitoring Program*; and Chapter 6, *Radiological Dose Assessment,* of this report.
- DOE Order 435.1, *Change 1, Radioactive Waste Management*. See Radioactive Waste Management section in this chapter.
- DOE Order 231.1B, *Environment, Safety and Health Reporting*, requires the Site to prepare this Annual SRS Environmental Report.
- DOE Order 232.2, *Administrative Change 1, Occurrence Reporting and Processing of Operations Information*. This order requires DOE to use the designated system called Occurrence Reporting

and Processing System (ORPS). The ORPS ensures that the DOE complex and the NNSA are informed of events that could adversely affect the health and safety of the public and workers, the environment, DOE missions, or DOE's credibility.

- DOE Order 226.1B, *Implementation of Department of Energy Oversight Policy*. This order requires DOE to provide oversight related to protecting the public, workers, environment, and national security assets effectively through continuous improvement.

## 3.5 REGULATORY SELF-DISCLOSURES

SRS made no regulatory self-disclosures in 2019.

## 3.6 ENVIRONMENTAL AUDITS

SCDHEC, EPA, the Nuclear Regulatory Commission (NRC), and the United States Army Corps of Engineers (USACE) inspected and audited the SRS environmental program for regulatory compliance. Table 3-4 summarizes the results of the 2019 audits and inspections.

During 2019, the SRS Independent Evaluation Board evaluated field implementation of selected Environmental Protection requirements as part of the overall field execution reviews of several facilities. Each review identified several findings and opportunities for improvement. Also during 2019, the DOE Office of Enterprise Assessment (EA-30) performed an Assessment of Radioactive Waste Management at SRS. The assessment concluded that SRS's waste management program ensures proper characterization, packaging, and shipping of radioactive waste for disposal, and that both DOE-Environmental Management and NNSA provide adequate operational awareness of these activities.

**Table 3-4 Summary of 2019 External Agency Audits/Inspections of the SRS Environmental Program and Results**

| Audit/Inspection | Action | Results |
|---|---|---|
| **632-G C&D Landfill and 288-F Ash Landfill Inspections** | South Carolina Department of Health and Environmental Control (SCDHEC) conducted four quarterly inspections of the 632-G and 288-F landfills. | During the June 2019 inspection, SCDHEC noted that one monitoring well pad on the 288-F landfill had overgrown vegetation. The issue was corrected the same day, and pictures of the corrective action were sent to the inspector. No violations resulted from this issue. Three other inspections were conducted during 2019, and there were no issues. |
| **Federal Energy Regulatory Commission (FERC) Inspection** | Savannah River Nuclear Solutions (SRNS) completed an annual Potential Failure Mode Analyses for Par Pond Dam and Steel Creek Dam. FERC also performed annual inspections in March 2019 but has not issued the reports. | Because of the Potential Failure Mode Analysis and Inspection, SRNS is enlarging the rip-rap blankets on Pond C and Par Pond dams and has asked for help from the U.S. Army Corps of Engineers for alternatives to redevelop the emergency spillway for Par Pond. |
| **Comprehensive Groundwater Monitoring Evaluation** | SCDHEC inspected groundwater facilities associated with the F- and H-Area Seepage Basins, M-Area Settling Basin, Metallurgical Laboratory Basin, Mixed Waste Management Facility, and Sanitary Landfill on April 22 and 23. SCDHEC also completed a records review of groundwater-related files. | The inspection identified one broken well sign on April 23. SRS replaced the sign on April 24. The inspection noted no other problems or concerns. |
| **Industrial Wastewater Construction Permit Inspections** | • SCDHEC inspected the F-Area Neutralization System on October 9 to support closure of the facility.<br>• SCDHEC toured the Waste Solidification Building (WSB) on September 25 as part of the biennial WSB meeting.<br>• The Integrated Independent Evaluations Board conducted an environmental review of Defense Waste Processing Facility (DWPF) during the fall.<br>• SCDHEC inspected the final tie-ins with DWPF and Saltstone for Salt Waste Processing Facility (SWPF) operation and provided the Approval to Place into Operation. | No issues were identified. |

**Table 3-4 Summary of 2019 External Agency Audits/Inspections of the SRS Environmental Program and Results (continued)**

| Audit/Inspection | Action | Results |
|---|---|---|
| **SCDHEC Sanitary Survey of SRS Drinking Water Systems** | SCDHEC inspects the wells, tanks, and treatment systems supporting the A-Area drinking water system biannually. | SCDHEC conducted a Sanitary Survey of SRS A-Area Drinking Water System in 2019 and received a "Satisfactory" rating |
| **Interim Sanitary Landfill and the F-Area Railroad Crosstie Pile Landfill Post-Closure Inspection** | SCDHEC conducted an annual review of the landfills. | SCDHEC identified no issues. |
| **Air Compliance Inspection** | SCDHEC did not conducted an onsite inspection during 2019. | |
| **Resource Conservation and Recovery Act (RCRA) Compliance Evaluation Inspection (CEI)** | SCDHEC inspected six facilities and reviewed SRS's Hazardous Waste Program requirements (that is, RCRA notifications and reports to SCDHEC, manifests, contingency plans, training records, internal inspections, and waste documentation) during its May 22-23 CEI. | SCDHEC did not observe any deficiencies during the inspection. |
| **Underground Storage Tank (UST) CEI** | SCDHEC inspected 19 USTs on October 30 | No issues were identified. |
| **Z-Area Saltstone Solid Waste Landfill Inspections** | SCDHEC performed monthly inspections of the Saltstone Disposal Facility (SDF). This included reviewing facility procedures and performing walk downs of the SDF. | No issues were noted. |
| **National Pollutant Discharge Elimination System (NPDES) Compliance Evaluation Inspection (3560)** | SCDHEC performed monthly inspections of the SDF. This included reviewing facility procedures and performing walk downs of the SDF. | No issues were noted. |

## 3.7 KEY FEDERAL LAWS COMPLIANCE SUMMARY

The Code of Federal Regulations implements Federal laws and state regulations that a federal agency has delegated to the state. Additional information is on the EPA website. Table 3-5 summarizes SRS's 2019 compliance status with applicable key federal environmental laws.

**Table 3-5 Status of Key Federal Environmental Laws Applicable to SRS**

| Regulatory Program Description | 2019 Status |
|---|---|
| **The Atomic Energy Act/DOE Order 435.1 grants DOE the authority to develop applicable standards (documented in DOE Orders) to protect the public, workers, and environment from radioactive materials.** | The FY 2018 annual reviews for the SRS performance assessments showed that radioactive low-level waste operations were within the required performance envelope, and the facilities continued to comply with performance objectives. |
| **The Clean Air Act (CAA) establishes air quality standards for criteria pollutants, such as sulfur dioxide and particulate matter, and for hazardous air emissions, such as radionuclides and benzene.** | SRS continues to operate under a CAA Permit (TV-0080-0041) that expired on March 31, 2008 and was administratively extended; the Ameresco permit (TV-0080-0144); and other applicable CAA regulatory requirements. |
| **The Clean Water Act regulates liquid discharges at outfalls (for example, drains or pipes) that carry effluent to streams (National Pollutant Discharge Elimination System [NPDES], Section 402). It also regulates dredge and fill operations in waters of the United States (Section 404) and water quality for those activities (Water Quality Criteria, Section 401).** | The SRS NPDES program received one NOV for NPDES Industrial Wastewater. |
| **The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) establishes criteria for liability and compensation, cleanup, and emergency response requirements for hazardous substances released to the environment.** | SRS continues to comply with CERCLA and the requirements of the Federal Facility Agreement (FFA). |
| **The Emergency Planning and Community Right-to-Know Act (EPCRA), also referred to as Superfund Amendments and Reauthorization Act (SARA), Title III, requires SRS to report hazardous substances and their releases to U.S. Environmental Protection Agency, state emergency response commissions, and local planning units.** | SRS complied with all reporting and emergency planning requirements. |
| **The Endangered Species Act (ESA) prevents the extinction of federally listed endangered or threatened species and conserves critical habitats.** | SRS continued to protect these species and their habitats as outlined in the Natural Resource Management Plan for SRS. |

**Table 3-5 Status of Key Federal Environmental Laws Applicable to SRS (continued)**

| Regulatory Program Description | 2019 Status |
|---|---|
| **The FFA for the Savannah River Site between the EPA, DOE, and SCDHEC integrates CERCLA and Resource Conservation and Recovery Act (RCRA) requirements to achieve a comprehensive remediation strategy and sets annual work priorities and establishes milestones to clean up and close the high-level radioactive waste tanks at SRS.** | SRS met all the commitments contained within the FFA. |
| **The Federal Facility Compliance Act (FFCA) requires federal agencies to comply with federal, state, and local solid and hazardous waste laws.** | SRS continues to comply with the FFCA. |
| **The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) regulates restricted-use pesticides through a state-administered certification program.** | SRS continues to comply with FIFRA requirements. |
| **The Migratory Bird Treaty Act (MBTA) protects migratory birds, including their eggs and nests.** | SRS continues to comply with the MBTA. |
| **National Defense Authorization Act, Section 3116(a) (NDAA) allows the Secretary of Energy, in consultation with the Nuclear Regulatory Commission (NRC), to determine that certain waste from reprocessing is not high-level radioactive waste requiring deep geologic disposal if it meets the criteria set forth in Section 3116. Section 3116(b) addresses monitoring by NRC and SCDHEC.** | SRS provided routine documents as requested by the NRC to support monitoring SRS facilities in accordance with NDAA 3116(a). NRC conducted one onsite monitoring observation visit to F- and H-Tank Farms and Saltstone in 2019. |
| **The National Environmental Policy Act (NEPA) requires federal agencies to identify potential environmental consequences of proposed federal actions and alternatives to ensure informed, environmentally sound decision-making regarding design and implementing programs and projects.** | SRS is in compliance with NEPA. |
| **The National Historic Preservation Act (NHPA) protects historical and archaeological sites.** | The Savannah River Archaeological Research Program (SRARP) provides cultural resource management guidance to DOE to ensure continued compliance with the NHPA. |
| **RCRA governs hazardous and nonhazardous solid waste management and underground storage tanks (USTs) containing petroleum products, hazardous materials, and wastes. RCRA also regulates universal waste and recyclable used oil.** | SRS continues to manage hazardous waste, nonhazardous solid waste, and USTs in compliance with RCRA. |

**Table 3-5 Status of Key Federal Environmental Laws Applicable to SRS (continued)**

| Regulatory Program Description | 2019 Status |
|---|---|
| **The Safe Drinking Water Act (SDWA) protects drinking water and public drinking water resources.** | All drinking water samples taken in 2019 met drinking water quality standards. |
| **The Toxic Substances Control Act (TSCA) regulates polychlorinated biphenyls (PCBs), radon, asbestos and lead, and requires users to evaluate and notify EPA when new chemicals are used and significant new uses of existing chemicals occur.** | SRS managed all TSCA-regulated materials in compliance with all requirements. The 2019 annual PCB report was submitted on May 11, 2020. |

## 3.8 ENVIRONMENTAL COMPLIANCE SUMMARY

SRS was not involved in any environmental lawsuits during 2019. SRS received one NOV in 2019, which is discussed in Section 3.3.2.3. Table 3-6 summarizes the NOVs/NOAVs SRS received from 2015–2019.

**Table 3-6 NOV/NOAV Summaries, 2015–2019**

| Program Area | Notice of Violation (NOV)/Notice of Alleged Violation (NOAV) | | | | |
|---|---|---|---|---|---|
| | 2015 | 2016 | 2017 | 2018 | 2019 |
| **Clean Air Act (CAA)** | 1 | 0 | 3 | 1[a] | 0 |
| **Clean Water Act (CWA)** | 0 | 1 | 2 | 0 | 1 |
| **Resource Conservation and Recovery Act (RCRA)** | 0 | 0 | 0 | 1[b] | 0 |
| **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)** | 0 | 0 | 0 | 0 | 0 |
| **Others** | 0 | 0 | 0 | 0 | 0 |
| **Total** | **1** | **1** | **5** | **2** | **1** |

[a]This NOV was issued to Ameresco, a direct contractor to DOE.

[b]NOAV