Environmental Compliance

CHAPTER 3

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Regulatory Integration & Environmental Services

It is the policy of the U.S. Department of Energy (DOE) that all activities at the Savannah River Site (SRS) will be carried out in full compliance with applicable federal, state, and local environmental laws and regulations, and with DOE orders, notices, directives, policies, and guidance. Compliance with environmental regulations and with DOE orders related to environmental protection is a critical part of the operations at SRS.

The purpose of this chapter is to report the status of SRS compliance with these various statutes and programmatic documents. Some key regulations with which SRS must comply, and the compliance status of each, are listed in table 3–1.

This chapter also provides information on Notices of Violation (NOVs) issued by the U.S. Environmental Protection Agency (EPA) or the South Carolina Department of Health and Environmental Control (SCDHEC). NOVs are the procedures that allege violations of an organization's permits, or of environmental laws or regulations. SRS received no NOVs in 2009.

Compliance Activities

Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA) was passed in 1976 to address solid and hazardous waste management. The law covers such wastes as spent solvents, batteries, and many other discarded substances potentially harmful to human health and the environment. Amendments to RCRA regulate nonhazardous solid waste, underground storage tanks (USTs) and solid waste management units (units that historically contained or managed solid waste).

Hazardous waste generators, including SRS, must follow specific requirements for handling these wastes.

Underground Storage Tanks

The 19 USTs at SRS that contain petroleum products, as defined by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), are regulated under Subtitle I of RCRA. These tanks require a compliance certificate annually from SCDHEC to continue operations. SCDHEC conducts an annual compliance inspection and records audit prior to issuing the compliance certificate. SCDHEC's 2009 inspection and audit found all 19 tanks to be in compliance, marking seven straight years without a violation.

Land Disposal Restrictions

The 1984 RCRA amendments established Land Disposal Restrictions (LDRs) to minimize the threat of hazardous constituents migrating to groundwater sources. The same restrictions apply to mixed (hazardous and radioactive) waste.

Federal Facility Compliance Act

The Federal Facility Compliance Act (FFCAct) was signed into law in October 1992 as an amendment to the Solid Waste Disposal Act to add provisions concerning the application of certain requirements and sanctions to federal facilities. A Site Treatment Plan (STP) (WSRC–TR–94–0608) consent order (95–22–HW, as amended) was obtained and implemented in 1995, as required by the FFCAct. A Statement of Mutual Understanding for Cleanup Credits was executed by SCDHEC in October 2003, allowing SRS to earn credits for certain accelerated cleanup

Table 3–1
Laws/Regulations Applicable to SRS

Legislation	What It Requires	Program In Compliance
RCRA Resource Conservation and Recovery Act (1976)	The management of hazardous and nonhazardous solid wastes and of underground storage tanks containing hazardous substances and petroleum products	✓
FFCAct Federal Facility Compliance Act (1992)	The development by DOE of schedules for mixed waste treatment to meet LDR requirements	✓
CERCLA; SARA Comprehensive Environmental Response, Compensation, and Liability Act (1980); Superfund Amendments and Reauthorization Act (1986)	The establishment of liability compensation, cleanup, and emergency response for hazardous substances released to the environment	✓
EPCRA Emergency Planning and Community Right-to-Know Act (1986)	The reporting of SRS hazardous substances (and their releases) to EPA, state emergency commissions, and local planning units	✓
NEPA National Environmental Policy Act (1969)	The evaluation of the potential environmental impacts of proposed federal activities and alternatives	✓
SDWA Safe Drinking Water Act (1974)	The protection of public drinking water	✓
CWA Clean Water Act (1977)	The regulation of liquid discharges at outfalls (e.g., drains or pipes) that carry effluents to streams (NPDES, Section 402); regulation of dredge and fill of U.S. waters (Section 404) and associated water quality for those activities (WQC, Section 401).	✓
RHA Rivers and Harbors Act of 1899, Section 10	The regulation of construction over and obstruction of navigable waters of the U.S.	✓
FIFRA Federal Insecticide, Fungicide, and Rodenticide Act (1947)	The regulation of restricted-use pesticides through a state-administered certification program	✓
CAA (NESHAP) Clean Air Act (1970), (National Emission Standards for Hazardous Air Pollutants)	The establishment of air quality standards for criteria pollutants, such as sulfur dioxide and particulate matter, and hazardous air emissions, such as radionuclides and benzene	✓
TSCA Toxic Substances Control Act (1976)	The regulation of PCBs, radon, asbestos, and lead used in sensitive populations, as well as evaluation and notification to EPA of new chemicals and significant new uses of existing chemicals	✓
ESA Endangered Species Act (1973)	The protection of critically imperiled species from extinction	✓
NHPA National Historic Preservation Act (1966)	The preservation of historical and archaeological sites	✓

actions. Credits then can be applied to the STP commitment schedules. SRS submitted to SCDHEC an annual update to the approved STP in November 2009 (SRNS–TR–2008–00101, Rev 1) that identified changes in mixed waste treatment and inventory. Changes in the 2009 STP update include

- updating the commitment summary for the new fiscal year
- updating the status of the following waste streams: SR–W001, radiologically contaminated solvents; –W008, separations area sample receipts from Savannah River National Laboratory (SRNL); –W009, silver-coated packing material; –W060, tritiated water with mercury; –W064, investigation-derived waste (IDW) - soils/sludges/slurries; –W065, IDW monitoring well purge/development water; –W066, IDW debris; –W067, IDW personal protective equipment; and –W092, Battelle Columbus Site transuranic (TRU) mixed waste.
- updating the characterization and shipment status for SR–W045, plutonium uranium extraction process (PUREX) organic waste
- changing SR–W060 from onsite treatment to offsite treatment
- revising the salt processing facility information
- revising the current cumulative inventory

Also documented in the 2009 update is SRS's completion of 1,037 TRU waste shipments (as of September 1) to the DOE's Waste Isolation Pilot Plant (WIPP) in New Mexico.

STP updates will continue to be produced annually unless provisions of the consent order are modified.

Liquid Radioactive Waste Tank Closure

The primary regulatory goal of the waste tank closure program at SRS's F-Area and H-Area liquid radioactive waste tank farms is to close the tank systems under the Federal Facility Agreement (FFA) and SCDHEC regulations, which establish requirements for the remediation of tank system(s) that are removed from service. Under these requirements, Tanks 17 and 20 in the F-Area Tank farm were closed in 1997.

Waste removal from tanks 18F and 19F was completed in 2009 using an enhanced mechanical cleaning technology known as the "Sand Mantis." Presentations were made to DOE, SCDHEC, and EPA as part of an SRS request to discontinue waste removal in both tanks. All three parties gave permission to cease waste removal activities. Operation of the Actinide Removal Process/Modular Caustic-Side Solvent Extraction Unit and use of Tank 21H for salt batch preparations were instrumental in supporting waste removal activities.

Waste Minimization/Pollution Prevention (WMin/P2) Program

2009 Program Results and Highlights The SRS Pollution Prevention/Waste Minimization (P2/WMin) Program continued to achieve significant results in 2009. All required site waste generators demonstrated active participation in the program through documented pollution avoidance and/or direct mission support activities for site recycling. Site employees' P2 awareness was increased through online articles and both general employee and job-specific training.

The WMin/P2 Program met all DOE and regulatory agency reporting requirements. Program accomplishments during 2009 included the following:

- Documentation of 24 P2 projects resulting in a DOE–SR-approved FY09 avoidance of 655 cubic meters of hazardous and radioactive waste. Site contractors exceeded their FY09 waste avoidance performance goal of 507 cubic meters by 29 percent. Annual cost avoidance resulting from the documented P2 projects was $25.5 million.
- Two National DOE *E*Star Awards, both of which were forwarded to next-tier competitions. Winning EStar nominations were *SRS Deploys New Gasket Removal and Replacement Tool* (which also claimed a "White House Closing the Circle" Honorable Mention award) and SRS *Bio-Mass Steam Plant Team.* SRS presented information about these projects to DOE Complex environmental representatives on a DOE Environmental Sustainability conference call to share lessons learned.

SRS participates in EPA voluntary P2 programs by maintaining its EPA Waste Wise and EPA National Partnership for Environmental Priorities memberships. The site continued its participation in the

Federal Electronic Reuse and Recycle Campaign, and reported 186,653 pounds of electronics recycled and reused for the FY09 campaign period.

SRS recycled 39 percent (931 metric tons) of its routine (office-type) sanitary waste stream using the North Augusta Material Recovery Facility and Three Rivers Regional Landfill services. This exceeded the 35-percent SRS routine sanitary waste recycling goal established for 2009.

Pollution prevention support was provided to DOE–HQ program offices in 2009. The P2 Program sponsored one employee to attend the June 16–17 Federal Executive Environmental Sustainability Workshop, which included a separate DOE–HQ P2 Planning Workshop June 18; both were held in Bethesda, Maryland.

The SRS pollution prevention team supported P2 awareness in 2009 on site and in the local community, as follows:

- Onsite awareness was increased through online articles and general employee and job-specific training.
- The P2 Program provided voluntary support for the North Augusta Kids Earth Day event, which hosted more than 30 separate exhibits to educate and share with the 2,000-plus attendees.
- The P2 Program provided voluntary support for the Environmental Science Educator's Cooperative (ESEC). The ESEC ECOMEET is a hands-on environmental competition for middle school students. The program also supported ESEC CSRA Electronics Recycle Days, and the Environmental Teacher of the Year Award events—both held in Augusta, Georgia.
- Solid Waste Engineering personnel, representing the P2 Program, completed a presentation on SRS Solid Waste Management and Reduction Programs at the Savannah River Subcontractor Safety Forum in Aiken as part of an Environmental Management System (EMS) topical area.

Comprehensive Environmental Response, Compensation, and Liability Act

SRS was placed on the National Priority List in December 1989, under the legislative authority of CERCLA, as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA). In accordance with Section 120 of CERCLA, DOE, EPA Region 4, and SCDHEC entered into the FFA, which became effective August 16, 1993, and which directs the comprehensive environmental remediation of the site.

SRS has 515 waste units in the Area Completion Projects program, including RCRA/CERCLA units, Site Evaluation Areas, and facilities covered under the SRS RCRA permit. At the beginning of FY09, 373 units were complete or in the remediation phase (360 complete and 13 in the remediation phase). At the end of FY09, 374 units were complete or in the remediation phase (368 complete and six in remediation). A summary of the FY09 FFA milestones follows.

RCRA Facility Investigation/Remedial Investigation (RFI/RI) field starts were initiated for the following units:

- Savannah River Floodplain Swamp Integrator Operable Unit (including Beaver Dam Creek and D-Area Ash Basin Wetlands) Second Phase II
- Fourmile Branch Integrator Operable Unit (including the Unnamed Tributary of Fourmile Branch South of C-Area) Third Phase II

Remedial Actions were initiated at the following units:

- C-Area Burning/Rubble Pit (131–C) and Old C-Area Burning/Rubble Pit - no building number (NBN)
- M-Area Operable Unit

Remedial actions were completed and Post-Construction Reports (PCRs) or Post-Construction Reports/Corrective Measures Implementation Report/Remedial Action Completion Reports (PCR/CMIR/RACRs) submitted for the following units:

- R-Area Reactor Seepage Basins (904–57G, –58G, –59G, –60G, –103G, and –104G) and Overflow Basin (108–4R)
- A-Area Burning/Rubble Pits (731–A, –1A), A-Area Rubble Pit (731–2A), and Miscellaneous Chemical Basin/Metals Burning Pit (731–41A, –5A) [included the A-Area Ash Pile (788–2A)]

No Interim Action Post-Construction Reports (IAPCRs) were submitted in FY09.

A Removal Action Report was issued for the following unit:

- Miscellaneous Rubble Pile #2 (NBN)

Records of Decision (RODs) were submitted for the following units in FY08:

- E-Area Low-Level Waste Facility, 643–26E (Slit Trench Disposal Units 1 and 2) Interim Action
- Early Construction and Operational Disposal Sites (L–1, N–2, P–2, and R–1A, –1B, –1C)
- C-, K-, L-, and R-Reactor Complexes Early Action

RODs were approved and issued for the following units:

- P-Area Operable Unit Early Action
- M-Area Operable Unit

Explanations of Significant Differences (ESDs) were submitted for the following units:

- M-Area Operable Unit
- P Area Operable Unit Early Action

An ESD was issued for the following unit:

- M-Area Operable Unit

The Third Five-Year Remedy Review Report was issued in FY09.

Section X ("Site Evaluations") of the FFA requires SRS to submit Removal Site Evaluation (SE) reports to EPA and SCDHEC for (1) those areas with potential or known releases of hazardous substances not identified before the effective date of the agreement, and (2) those areas listed in appendix G.I of the agreement.

SRS submitted one Remedial SE report:

- Remedial Site Evaluation Report for the Sandblast Area CMB–001 (NBN) (Comment Responses)

SRS submitted eight Removal SE reports, as follows:

- 489–D Coal Pile Runoff Basin, D–006 Outfall, and 484–10D Waste Oil Facility at the D-Area Operable Unit
- Volatile Organic Compound (VOC)-Contaminated Soil at the Bubble Tower Subunit at the D-Area Operable Unit
- Tritium-Contaminated Soil and Concrete at the Moderator Processing Subunit at the D-Area Operable Unit
- P-Area Process Sewer Lines as Abandoned (NBN) Subunit at the P-Area Operable Unit
- R-Reactor Building Complex (105–R)
- R-Reactor Area Cask Car Railroad Tracks as Abandoned (NBN)
- Asphalt Floor Tile Piles at Gunsite 012 Operable Unit
- Heavy Water Components Test Reactor (HWCTR) (770–U)

The FFA requires submittal of an annual removal action report describing all removal actions performed during the previous fiscal year, by January 1 of each year. SRS submitted the report December 15, 2009, to EPA and SCDHEC. The FY09 report described 12 active removal action areas and 25 maintenance activities.

A listing of all 515 waste units at SRS can be found in appendices C ("RCRA/CERCLA Units List") and G ("Site Evaluation List") of the FFA.

Emergency Planning and Community Right-to-Know Act

The Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986 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 Chemical Release Inventory report to include source reduction and recycling activities.

Executive Order 12856

Executive Order 12856, "Federal Compliance with

Right-to-Know Laws and Pollution Prevention Requirements," requires that all federal facilities comply with right-to-know laws and pollution prevention requirements. SRS complies with the applicable reporting requirements for EPCRA, as indicated in table 3–2, and the site incorporates the toxic chemicals on the Toxic Release Inventory Report into its pollution prevention efforts.

Chemical Inventory Report (Tier II)

Under Section 312 of EPCRA, SRS completes an annual Tier II Chemical Inventory Report for all hazardous chemicals present at the site in excess of specified quantities during the calendar year. Hazardous chemical storage information is submitted to state and local authorities by March 1 for the previous calendar year.

Toxic Release Inventory (TRI) Report (Form R)

Under Section 313 ("Toxic Chemical Release Reporting") of EPCRA, SRS must file an annual Toxic Release Inventory (TRI) report by July 1 for the previous year. SRS calculates chemical releases to the environment for each regulated chemical that exceeds its established threshold value and (in addition to other inventory data sets) reports the release values to EPA on Form R of the report. Threshold values are those quantities of regulated chemicals (as defined by EPCRA Section 313) above which additional reporting is required using the TRI Report – Form R.

Form R for 2008 was submitted electronically to EPA July 1, 2009. SRS reported the following chemicals that exceeded their thresholds: barium, chlorine, chromium, copper, fluorine, formic acid, hydrochloric acid, lead, manganese, mercury, nickel, nitrate, nitric acid, sodium nitrite, sulfuric acid, and zinc. (NOTE: The term "exceeded" in an EPCRA context does not indicate a violation. Per EPA regulations, SARA chemical limits are established, and reporting requirements are based on these threshold values.) Specific details, including release amounts and detailed information about toxic release inventory reporting, can be viewed on the EPA website at www.epa.gov/tri/tridata.

During preparation of the 2007 SRS TRI Report Form R in 2008, a substantially higher than normal nitrate release value was traced to a data transcription error that occurred during preparation of the 2000 report. Corrective actions were developed in 2008, and appropriate documentation—including a voluntary self-disclosure—was submitted to EPA, which had not responded to the submittals by the end of 2009.

Table 3–2
SRS Reporting Requirements under "Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements" (Executive Order 12856)

EPCRA Citation	Activity Regulated	Reported in 2009
302–303	Planning Notification	NA[a]
304	Extremely Hazardous Substances Release Notification	NA[a]
311–312	Material Safety Data Sheet / Chemical Inventory	Yes
313	Toxic Release Inventory Reporting	Yes

[a] Did not exceed reporting threshold

National Environmental Policy Act

The National Environmental Policy Act (NEPA) is the federal government's basic charter for assuring the protection and wise use of the "human environment" by federal agencies. NEPA's procedures require that federal agencies identify and consider the potential environmental consequences of their proposed actions early in the planning process so they can make informed, environmentally sound decisions regarding project design and implementation. The NEPA process at SRS is initiated by completing an Environmental Evaluation Checklist (EEC). The EEC is used to characterize the proposed action, identify any potential environmental concerns, and determine which level of NEPA review (if any) will be required [i.e., categorical exclusion determination

(CX), environmental assessment (EA), or environmental impact statement (EIS)]. A total of 412 SRS-related NEPA reviews were conducted in 2009 (see table 3–3). In November 2009, SRS began to post CX determinations on the SRS external (public) website in support of DOE's effort to facilitate NEPA process transparency and openness. By the end of the year, SRS had posted 63 CX determinations on the website. The following is a listing of major NEPA reviews conducted during 2009, some of which are scheduled to be completed in 2010:

- *Surplus Plutonium Disposition Supplemental EIS (DOE/EIS–0283–S2)* – OE has announced its intent to modify the scope of this ongoing Supplemental EIS (SEIS) and to conduct additional public scoping. DOE issued its original Notice of Intent (NOI) on March 28, 2007. The originally stated preferred alternative for the disposition of surplus plutonium was to construct and operate a vitrification facility at SRS. Over the interim, DOE has continued to evaluate alternatives for plutonium disposition, and now is pursuing a project to combine the functions of the planned Pit Disassembly and Conversion Facility (PDCF) and the Plutonium Preparation Project (PuP) and install and operate the required equipment to disassemble pits and convert plutonium metals to oxides in an existing building in SRS's K-Area. Additionally, DOE has determined that some of the surplus plutonium could be disposed of at its WIPP facility. Also, since the Surplus Plutonium Disposition EIS was prepared in 1999, the contract with Duke Energy Company to irradiate mixed oxide (MOX) fuel in its reactors has been terminated, and DOE and the Tennessee Valley Authority (TVA) are evaluating selected TVA reactors for possible use of MOX fuel. A summary of all the alternatives DOE will evaluate in the SEIS follows: (1) PDCF Baseline – DOE would construct and operate a stand-alone PDCF facility in F-Area; (2) PuP Baseline – DOE would construct and operate the equipment required to prepare nonpit plutonium for either H-Canyon processing or as feed material for the MOX Fuel Fabrication Facility (MFFF); (3) Combination Project in K-Area – DOE would construct and operate a facility with combined PDCF and PuP capabilities in K-Area; (4) H-Canyon – DOE would use the H-Canyon to process surplus plutonium for disposal; (5) Vitrification – DOE would install a vitrification facility with can-in-canister capability in K-Area; (6) WIPP – DOE would prepare nonpit plutonium that could not be utilized as MFFF feed material for disposal at WIPP; (7) MFFF feed – PuP capabilities would be used to prepare some additional surplus nonpit plutonium as feed for the MFFF; and (8) DOE will evaluate the impacts of constructing any reactor facility modifications necessary to accommodate MOX fuel operation at TVA reactor locations.

- *Surplus Plutonium Disposition Supplemental EIS (DOE/EIS–0283–S2) Interim Action Determination* – DOE has determined that (2) the impacts of processing up to 420 kg of plutonium materials in H-Canyon for vitrification at DWPF are covered by the Interim Management of Nuclear Materials EIS, and (3) this action would not bias its selection of disposition alternatives in the SEIS process.

- *Programmatic EIS for Disposition of Scrap Metals (DOE/EIS–0327)* – At the end of 2009,

Table 3–3
Summary of SRS-Related NEPA Reviews in 2009

Type of NEPA Review	Number
Categorical Exclusion Determinations	203
"All No" EEC Determinations[a]	189
Actions Tiered to Previous NEPA Reviews	13
Environmental Impact Statements[b]	3
Supplement Analysis[c]	1
Interim Action	1
Revised FONSI	1
Environmental Assessments[d]	1
Total SRS-Related NEPA Reviews	**412**

[a] Proposed actions that require no further NEPA review

[b] DOE/EIS–0283–S2 (in progress); DOE/EIS–0375 (in progress); DOE/EIS–0396 (cancelled in 2009); DOE/EIS–0423 (in progress); DOE/EIS–0327 (schedule uncertain)

[c] SA for SRS Spent Nucleaur Fuel Management FEIS (DOE/EIS–0279) (in progress)

the draft PEIS had not been issued, and the schedule was uncertain.

- *EIS for the Disposal of Greater-Than-Class-C Low-Level Radioactive Waste (GTCC LLW) (DOE/EIS–0375)* – In this EIS, DOE will evaluate the impacts of disposing GTCC LLW in a geologic repository, in intermediate-depth boreholes, or in enhanced near-surfaced disposal facilities. Candidate DOE sites being considered at the end of 2009 for these disposal facilities included SRS, Idaho National Laboratory, Los Alamos National Laboratory, WIPP, Nevada Test Site, Oak Ridge, Hanford, and Yucca Mountain. DOE also will consider generic commercial disposal of GTCC LLW at arid and humid locations. Disposal alternatives being considered for SRS include an intermediate-depth borehole facility and an enhanced near-surface facility. Publication of the draft and final EISs is expected in June 2010 and June 2011, respectively.

- *Programmatic EIS for the Global Nuclear Energy Partnership (GNEP) Technology Demonstration Program (DOE/EIS–0396)* – Cancelled in 2009 because DOE no longer is pursuing domestic commercial reprocessing

- *Supplement Analysis (SA): SRS Spent Nuclear Fuel Management FEIS (DOE/EIS–0279)* – In this SA, DOE is reviewing the continued use of H-Canyon to process spent nuclear fuel that DOE had decided to manage using the melt-and-dilute process. No projected approval dates had been established for the SA or amended ROD by the end of 2009.

- *Environmental Assessment for the Proposed Use of SRS Lands for Military Training (DOE/EA–1606)* – In this EA, DOE will evaluate the potential impacts associated with the proposed use of SRS lands for military training by the U.S. Department of Defense (e.g., U.S. Army). Publication of the draft and final EA are expected in May and September 2010, respectively.

- *Revised Finding of No Significant Impact (FONSI): EA for the Natural Fluctuation of Water Level in Par Pond and Reduced Water flow in Steel Creek below L-Lake at the SRS (DOE/EA–1070)* – This revised FONSI reduces the required flow from L-Lake into Steel Creek and from PAR Pond into Lower Three Runs from 10.0 cubic feet per second (cfs) to 4.5 cfs and 5 cfs, respectively. DOE approved the revised FONSI January 29, 2009.

- *EIS for the Storage and Management of Elemental Mercury (DOE/EIS-0423)* – As directed by the Mercury Export Ban Act of 2008, DOE will evaluate seven sites (including SRS) for the long-term storage of elemental mercury. A scoping meeting was held in North Augusta, South Carolina, July 30, 2009. The draft and final EIS documents are expected in first and third quarters, respectively, of 2010.

Safe Drinking Water Act

The federal Safe Drinking Water Act (SDWA) was enacted in 1974 to protect public drinking water supplies. SRS domestic water is supplied by groundwater sources. The A-Area, D-Area, and K-Area systems are actively regulated by SCDHEC, while the remaining smaller water systems receive a reduced level of regulatory oversight.

Samples are collected and analyzed periodically by SRS and SCDHEC to ensure that all site domestic water systems meet SCDHEC and EPA bacteriological and chemical drinking water quality standards. All samples collected in 2009 met these standards.

The water systems in D-Area and K-Area also were sampled under the state Lead and Copper Rule in 2009. These systems were in compliance with the SCDHEC action levels for lead and copper in the 90th percentile.

Clean Water Act

National Pollutant Discharge Elimination System

The Clean Water Act (CWA) of 1972 created the NPDES program, which is administered by SCDHEC under EPA authority. The program is designed to protect surface waters by limiting releases of effluents into streams, reservoirs, and wetlands.

SRS had four NPDES permits in 2009 (table 3–4):

- Two permits for industrial wastewater discharges (SC0047431, which covered the D-Area Powerhouse, and SC0000175, which covered the

remainder of the site)

- Two general permits for stormwater discharges (SCR000000 for industrial and SCR100000 for construction)

The site also had one no-discharge permit for land applications (ND0072125).

More information about SRS's NPDES permits can be found in chapter 4, "Effluent Monitoring."

The results of monitoring for compliance with the industrial wastewater discharge permit at SRS were reported to SCDHEC in the site's monthly discharge monitoring reports, as required by the permit.

SCDHEC generally conducts an unscheduled "NPDES 3560 Compliance Sampling Inspection" of the site's permitted outfalls annually; however, no such inspection was performed in 2009.

The outfalls covered by the industrial stormwater permit (SCR000000) were reevaluated in 2007. This resulted in the development of a new sampling plan implemented in 2008. No new issues were identified in 2009. Results of stormwater outfall sampling appear in an effluent monitoring data table on the CD housed inside the back cover of this report.

Under the Code of Federal Regulations (CFR) Oil Pollution Prevention regulation (40 CFR 112), SRS must report petroleum product discharges of 1,000 gallons or more into or upon the navigable waters of the United States, or petroleum product discharges in harmful quantities that result in oil sheens. No such incidents occurred at the site during 2009.

SRS has an agreement with SCDHEC to report petroleum product discharges of 25 gallons or more to the environment. No such incidents occurred at the site in 2009.

Notices of Violation (CWA)

SRS received no NOVs under the CWA in 2009. Only four out of 4,989 sample analyses (includes flow measurements and no-flow designations) performed during 2009 exceeded permit limits—a 99.92-percent compliance rate. The four exceptions were as follows.

- A permit exception occurred February 2 at Outfall A–11 because of an elevated pH level.
- An invalid result attributed to contaminated contract laboratory dilution water was reported July 2 for the BOD sample at Outfall TH–1(H–16). This is considered an isolated event.
- On November 8 and 9, the daily maximum water temperature difference value at Outfall D–01 exceeded the limits due to defective temperature monitoring equipment. SRS activated a temperature mediation plan immediately and replaced the defective equipment.

Dredge and Fill; Rivers and Harbors

The CWA, Section 404, "Dredge and Fill Permitting," as amended, and the Rivers and Harbors Act (RHA) of 1899, Sections 9 and 10, "Construction Over and Obstruction of Navigable Waters of the United States," protect U.S. waters from dredging/filling and construction activities by the permitting of such projects. Dredge-and-fill operations in U.S. waters are defined, permitted, and controlled through implementation of federal regulations in 33 CFR and 40 CFR.

In 2009, SRS had four open permits under the Nationwide Permits (NWPs) program (general permits under Section 404), and one permit open under the RHA of 1899, Section 10, as follows:

- Dam construction on an unnamed tributary to Fourmile Branch for the Mixed Waste Management Facility Groundwater Interim Measures project was completed in 2000 under NWP 38, "Hazardous Waste Cleanup." However, mitigation for the impact to wetlands was still pending in 2009 and must be addressed before the permit can be considered closed. The SRS Maintenance and Operations (M&O) contractor, Savannah River Nuclear Solutions, LLC (SRNS), has requested approval from DOE to use wetland mitigation bank credits to satisfy the mitigation issue and close the permit.
- Installation of characterization wells in the wetlands near Joyce Branch and Mill Creek was covered under NWP 5, "Scientific Measurement Devices." The wells will be used to investigate the groundwater in wetlands adjacent to Joyce Branch and Mill Creek near R-Area. The project was completed in December 2008

- A minor discharge of material for research purposes was authorized in May 2008 under NWP 18, "Minor Discharges. The material was placed in Steel Creek below the S.C. Highway 125 bridge and used by SRNL as part of a remediation research project evaluating active caps in streams to remediate contaminants. An active cap is one that actively binds or sequesters contaminants—as opposed to a passive cap, which simply covers contaminants. The cap in this research project consisted of combinations of apatite, sand, organoclay, and a sugar-based polymer. Research continued in 2009, and the permit for this project remains open.

- SRS initiated a project during 2009 to dredge sediments out of the 681–3G and 681–5G pumphouse canals to allow for better flow to the water intake of each pumphouse. On March 24, an RHA of 1899 Section 10 permit, (SAC–2008–1156) was obtained from the U.S. Army Corps of Engineers (COE) to allow the dredging work to begin. Both canals were successfully dredged and returned to their original design. The project complied with the Section 10 permit and was completed in June 2009. The permit remains open until March 31, 2014, to allow for additional maintenance dredging as required.

Water Quality Certification

Section 401, "Water Quality Certification," of the CWA is administered by SCDHEC to ensure the maintenance of water quality during dredge-and-fill projects. On December 4, 2008, a water quality certification (WQC), P/N 2008–1156–6IJ, was issued to Washington Savannah River Company for the sediment dredging project of 681–3G and 681–5G pumphouse canals. This certification was transferred to Savannah River Nuclear Solutions January 14, 2009. The WQC was a prerequisite for the Section 10 permit that the COE required for this project. The WQC remains in effect for this project until December 4, 2011.

Construction in Navigable Waters

SCDHEC Regulation 19–450, "Permit for Construction in Navigable Waters," protects South Carolina's navigable waters. The only state navigable waters at SRS are Upper Three Runs Creek (through the entire site), Lower Three Runs Creek (upstream to the base of the PAR Pond Dam), and the Savannah River (along the site's southwestern border).

A navigable waters permit (P/N 2008–1156–6IJ) was issued to Washington Savannah River Company December 4, 2008, for the sediment dredging project of the 681–3G and 681–5G pumphouse canals. The permit—transferred to Savannah River Nuclear Solutions January 14, 2009—was issued by SCDHEC simultaneously with the WQC, and remains in effect for this project until December 4, 2011.

Federal Insecticide, Fungicide, and Rodenticide Act

The Federal Insecticide, Fungicide, and Rodenticide Act regulates the application of restricted-use pesticides (RUPs) at SRS through a state-administered certification program. The site complies with these requirements through Procedure 8.1, "Federal Insecticide, Fungicide, and Rodenticide Act Compliance for Use of Pesticides," of the Environmental Compliance Manual (3Q). Extensive revisions of the procedure have been incorporated in recent years to improve the efficiency of the site pesticide-application approval process.

According to the SRS Pesticide Activity Report Database, 1,212 pounds of solid pesticides, 233 gallons of liquid or aerosol pesticides, and 291 one-ounce pieces of rodenticide (totaling 18.2 pounds) were applied at SRS during 2009. All pesticides used in 2009 were "unrestricted," meaning that they were lower-toxicity, commercially available grades of pesticide compared to RUPs.

Clean Air Act

Regulation and Delegation

The Clean Air Act (CAA) and the Clean Air Act Amendments (CAAA) of 1990 provide the basis for protecting and maintaining air quality. Though EPA still maintains overall authority for the control of air pollution, regulatory authority for all types of emission sources has been delegated to SCDHEC. Therefore, SCDHEC must ensure that its air pollution regulations are at least as stringent as the federal requirements. This is accomplished through SCDHEC Regulation 61–62, "Air Pollution Control Regulations and Standards." The various CAAA

Titles covered by these SCDHEC regulations are discussed below.

Title V Operating Permit Program

Under the CAA, and as defined in federal regulations, SRS is classified as a "major source" and, as such, falls under the CAAA Part 70 Operating Permit Program. On February 19, 2003, SCDHEC's Bureau of Air Quality issued SRS its Part 70 Air Quality Permit (TV–0080–0041), with an effective date of April 1, 2003, and an expiration date of March 31, 2008. SRS submitted a permit application renewal September 18, 2007, as required by SC R61–62.70. The site expected to receive the new Part 70 Air Permit in 2008; however, due to prioritization issues with SCDHEC, renewal of the permit has been delayed until 2010—and the initial permit has been extended. Until SCDHEC renews the permit, SRS will continue to operate in accordance with requirements of the extended permit.

The Part 70 Air Quality Permit regulates both radioactive and nonradioactive toxic and criteria pollutant emissions from approximately 22 nonexempt emission units, with each emission unit having specific emission limits, operating conditions, and monitoring and reporting requirements. The permit also contains a listing, known as the Insignificant-Activities List, identifying approximately 500 SRS sources that are exempt based on insignificant emission levels, or on equipment size or type.

The renewed Title V permit for the D-Area Powerhouse (TV–0300–0036) was issued to SRS May 15, 2007, with an effective date of July 1, 2007, and an expiration date of June 30, 2012. In 2007, DOE–SR proposed replacement of the existing D-Area Powerhouse boilers with two new biomass cogeneration boilers more closely aligned with current and future steam demands. This proposed action would allow for decommissioning of the existing D-Area Powerhouse prior to its current Title V permit expiring June 30, 2012. SCDHEC issued construction permit No. 0080–0144CA November 12, 2008 for a new biomass-fired cogeneration plant to be located at SRS. Construction of the plant officially got under way with a groundbreaking ceremony November 30, 2009.

SCDHEC issued no revisions to the SRS Part 70 Air Quality Permit (TV–0080–0041) in 2009. Three revisions to the 484–D Powerhouse Part 70 Air Quality Permit (TV–0300–0036) were issued by SCDHEC in 2009 to incorporate two administrative changes and one minor modification to remove insignificant activities.

The Mixed Oxide Fuel Fabrication Facility (MFFF)—a part of the SRS Nuclear Nonproliferation Program—was issued an air construction permit (0080–0139CA) August 22, 2006. Construction of the MFFF, which began August 1, 2007, continued throughout 2009.

Compliance with the SRS Part 70 Air Quality Permit conditions last was evaluated by SCDHEC September 15, 2009, as part of an Air Compliance Inspection. For results of the evaluation, refer to the "Assessments/Inspections" section of this chapter, beginning on page 3–17.

Notices of Violation (CAA)

No NOVs were issued to SRS under the CAA in 2009. SCDHEC had issued a Notice of Alleged Violation (NOAV) to the site June 11, 2008, concerning a particulate matter (PM) exceedance related to the biennial stack test of the site's A-Area Boiler #2 conducted February 20 of that year. During a presentation to SCDHEC, SRS provided evidence that (1) the boiler was operating within limits required by the permit, (2) the issuance of the NOAV by SCDHEC was not legally supportable, and (3) the only exceedance occurred during testing. SCDHEC agreed there was credible evidence that the boiler test was conducted at an operating level much higher than normal operating conditions, and agreed to include in any order language that SRS did not admit a violation. The parties continued to negotiate settlement of the dispute in 2008, and subsequently signed a consent order (09–002A), which included a $6,500 fine, in January 2009.

National Emission Standards for Hazardous Air Pollutants

The National Emission Standards for Hazardous Air Pollutants (NESHAP) is a CAA-implementing regulation that sets air quality standards for air emissions containing hazardous air pollutants, such as radionuclides, benzene, and asbestos.

NESHAP Radionuclide Program The current list of 187 hazardous air pollutants includes all radionuclides as a single item. Regulation of these pol-

lutants has been delegated to SCDHEC; however, EPA Region 4 continues to regulate some aspects of NESHAP radionuclides.

NESHAP Radionuclide Program Subpart H of 40 CFR 61 was issued December 15, 1989, after which an evaluation of all air emission sources was performed to determine compliance status. DOE–SR and EPA Region 4 signed a Federal Facility Compliance Agreement (FFCA) October 31, 1991, providing a schedule to bring SRS's emissions monitoring into compliance with regulatory requirements. The FFCA was officially closed—and the site declared compliant—by EPA Region 4 May 10, 1995. Subpart H was revised by EPA September 9, 2002, with an effective date of January 1, 2003. This revision added inspection requirements for existing SRS sources and allowed the use of ANSI N13.1–1999 for establishing monitoring requirements. SRS is performing all required inspections, has monitoring systems compliant with the regulation, and remains in compliance with Subpart H of 40 CFR 61.

During 2009, the maximally exposed individual effective dose equivalent, calculated using the NESHAP-required CAP88 computer code, was estimated to be 0.04 mrem (0.0004 mSv), which is 0.4 percent of the 10 mrem per year (0.10 mSv per year) EPA standard (chapter 6, "Potential Radiation Doses").

SRS compliance with 40 CFR 61, Subpart H ("National Emission Standards for Emissions of Radionuclides Other Than Radon from Department of Energy Facilities") last was evaluated by SCDHEC in June 2008 as part of a Title V radiological NESHAP inspection. SCDHEC did not conduct a Subpart H inspection at SRS in 2009.

NESHAP Nonradionuclide Program SRS uses many chemicals identified as toxic or hazardous air pollutants, but most of them are not regulated under the CAA or under federal NESHAP regulations. Except for asbestos, SRS facilities and operations do not fall into any of the "categories" listed in the original subparts. Under Title III of the federal CAAA of 1990, EPA in December 1993 issued a final list of hazardous air pollutant-emitting source categories potentially subject to maximum achievable control technology (MACT) standards.

On September 13, 2004, EPA finalized a MACT rule that applied to the coal-fired steam boilers at the 784–A and 484–D powerhouse facilities. The rule, "National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters" (Boiler MACT), had a compliance date of September 13, 2007, and required facilities to meet more stringent emissions limits dealing with PM, mercury, and hydrogen chloride emissions. During 2006, 484–D Powerhouse Facility personnel prepared to conduct the necessary testing during the 2007–2008 timeframe to demonstrate compliance with the new emission limits without the significant expenditure of capital funds. In June 2006, a MACT extension request was submitted to SCDHEC's Bureau of Air Quality requesting a one-year extension from the September 2007 compliance date so SRS could replace the aging A-Area boilers with a smaller wood-fired boiler and an oil-fired boiler capable of meeting the lower MACT emission limits. That compliance extension request was approved by SCDHEC September 5, 2006. Then, on July 30, 2007, the U.S. Court of Appeals for the District of Columbia vacated the Boiler MACT, thereby leaving it up to each state to enforce the rule. The State of South Carolina—one of the few states that elected to proceed with implementation of the rule—decided to give all facilities in the state a one-year extension until September 12, 2008, to comply. In May 2008, SCDHEC provided an additional 24 months—until September 13, 2010—for the facilities to comply.

NESHAP Asbestos Abatement Program SRS began its asbestos abatement program in 1988 and continues to manage asbestos-containing material (ACM) by "best management practices." Site compliance in asbestos abatement, as well as demolitions, falls under SCDHEC and federal regulations, including South Carolina Regulations 61–86.1 ("Standards of Performance for Asbestos Projects") and 40 CFR 61, Subpart M ("National Emission Standards for Hazardous Air Pollutants – Asbestos"). Procedure 4.14 ("Asbestos Management Program") of SRS Environmental Compliance Manual 3Q provides site personnel and contractors applicable guidelines to ensure compliance with state and federal requirements.

SCDHEC finalized extensive revisions to R. 61–86.1 during 2008. The change that most affected SRS was a requirement that mandated a follow-up analysis of suspect ACM using transmission electron microscopy (TEM) of at least one of three bulk samples should all three samples test negative for the presence of asbestos when using customary polarized light microscopy (PLM). Regulatory Integration and

Environmental Services (RI&ES) personnel secured a laboratory to perform the TEM analyses, thus enabling the site to comply with the new requirement. Procedure 4.14 was revised in 2009 to reflect the TEM requirement.

SRS personnel removed and disposed of an estimated 33.75 square feet and 630 linear feet of friable (regulated) ACM during 2009. SRS personnel also removed an estimated 9,846.75 square feet, 673 linear feet, and 1cubic foot of nonfriable (unregulated) ACM.

Radiologically-contaminated asbestos waste was disposed of at the SRS E-Area low-level vaults, engineered trenches, and slit trenches, which are authorized by SCDHEC as asbestos waste disposal sites. Nonradiological asbestos waste was disposed of at the Three Rivers Solid Waste Authority Landfill and the construction and demolition (C&D) debris Landfill (632–G), both of which also are SCDHEC-approved asbestos waste landfills.

Accidental Release Prevention Program

Under Title III of the CAAA, EPA established a program for the prevention of accidental releases of large quantities of hazardous chemicals. As outlined in Section 112(r), any facility that maintains specific hazardous or extremely hazardous chemicals in quantities above specified threshold values must develop a risk management program (RMP). The RMP establishes methods that will be used for the containment and mitigation of large chemical spills.

SRS maintains hazardous and extremely hazardous chemical inventories below the threshold value. This cost-effective approach minimizes the regulatory burden of 112(r) but does not eliminate any liability associated with the general duty clause, as stated in 112(r)(1). No reportable 112(r)-related hazardous or extremely hazardous chemical releases occurred at SRS in 2009.

Ozone-Depleting Substances

The CAAA of 1990 mandated significant new air quality standards for the protection of stratospheric ozone. These initiatives directly impacted operations, maintenance, and recordkeeping activities related to ozone depleting substances (ODS) at SRS. First, the CAAA Title V operating permit program (TV–0080–0041, Condition 4.B.6) requires that SRS comply with the standards for recycling and emissions reduction pursuant to 40 CFR 82. The permit specifies compliance with the requirements of Subpart B ("Servicing of Motor Vehicle Air Conditioners"), Subpart E ("The Labeling of Products Using Ozone-Depleting Substances"), and Subpart G ("Significant New Alternatives Policy Program"). Accordingly, all large (greater than or equal to 50-pound charge) heating, ventilation, and air conditioning/chiller systems leak repair data are reported monthly. Incidental discharges from refrigerant sources at SRS during 2009 totaled 392 pounds.

Additionally, the Title V operating permit also specifies that SRS comply with the requirements of halon emissions reduction and recycling found in 40 CFR 82, Subpart H ("Halon Emissions Reduction"). Halon is used as a fire suppression agent; therefore, the SRS Fire Department (SRSFD) is responsible for providing halon fire suppression equipment at the site. SRSFD personnel maintain and recharge halon-containing equipment, and manage the national halon repository (Savannah River Halon Repository). Halon is maintained at this repository to support existing missions at SRS for the life of the missions. The repository also maintains halon supplies for other sites in the DOE complex.

According to the SRS Halon Management Plan (F–ESR–G–00120, November 16, 2005), all halon systems in service at SRS are scheduled to remain in service for the life of SRS's existing missions. As missions cease, halon will be recovered, recycled, and stored at the SRS repository in support of continuing missions. When stored halon exceeds the amount needed for support of SRS and other DOE sites, the excess is shipped to the U.S. Department of Defense (DOD), or offered to the General Services Administration as excess. SRS continues to phase out its use of halon as part of an overall goal to eliminate halon use in the United States.

The SRSFD details the total halon inventory at SRS in its annual "Halon Report" to DOE. As of December 31, 2009, there was approximately 55,264 pounds on site, including 19,407 pounds in 85 installed fire suppression systems, and 8,590 pounds of unprocessed Halon stored in original containers. The balance, 27,267 pounds of Halon, has been processed and is stored on site in 1-ton bulk containers. The 2009 total represents a significant decrease from the 2008 total of 71,167 pounds. The reduction is attributable to a large shipment of halon to DOD in

December 2009. In addition, to the SRS inventory, halon totaling 34,790 pounds was maintained in the national halon repository at SRS.

Air Emissions Inventory

SCDHEC Regulation 61–62.1, Section III ("Emissions Inventory"), requires compilation of an air emissions inventory to locate all sources of air pollution and to define and characterize the various types and amounts of pollutants. To demonstrate compliance, SRS personnel in 1993 conducted the initial comprehensive air emissions inventory, which identified approximately 5,300 radiological and nonradiological air emission sources. Source operating data and calculated emissions from 1990 were used initially to establish the SRS baseline emissions and to provide data for air dispersion modeling. In 2006, a rerun of the air dispersion modeling accompanied the site's Title V permit renewal application. This modeling was required to demonstrate sitewide compliance with Regulation 61–62.5, Standards No. 2 ("Ambient Air Quality Standards") and No. 8 ("Toxic Air Pollutants").

Regulation 61–62.1, Section III, which was revised in August 2005, requires that air emissions inventory data be updated and recorded annually but reported to SCDHEC on a specific reporting frequency—either an annual cycle for "Type A" sources or a 3-year cycle for "Type B" and "Nonattainment Area" sources—based on "minimum reporting thresholds." The threshold values depend on the actual tons per year of specific criteria pollutants.

SRS, under Title V Permit TV–0080–0041, is classified as a Type B source, required to report only every third year, thus reducing the cost burden associated with annual emissions inventories for sources with moderate emission rates. However, the acquired D-Area Powerhouse (co-located at SRS), under Title V Permit TV–0080–0044, is a Type A source that must report actual emissions annually. Both facilities ("SRS" and "D-Area Powerhouse") compiled and reported CY 2008 emissions to SCDHEC by March 31, 2009, as required. CY 2009 emissions, on the other hand, must be submitted to SCDHEC by March 31, 2010, only for the Powerhouse (as a Type A source with an annual requirement).

During 2009, the site collected CY08 operating data for permitted and other significant sources in accordance with SRS procedures and guidelines. Because data collection for all SRS sources begins in January for the preceding year, and requires up to 6 months to complete, the 2009 site environmental report contains emissions data for CY08. These data were used to generate the site's Title V Permit renewal application. Compilation of 2009 data will be completed in 2010 and documented in the SRS Environmental Report for 2010.

Toxic Substances Control Act

The Toxic Substances Control Act (TSCA) gives EPA comprehensive authority to identify and control chemical substances manufactured, imported, processed, used, or distributed in commerce in the United States. Reporting and record keeping are mandated for new chemicals and for any chemical that may present a substantial risk of injury to human health or the environment.

Polychlorinated biphenyls (PCBs) have been used in various SRS processes. The use, storage, and disposal of these organic chemicals are specifically regulated under 40 CFR 761, which is administered by EPA. SRS has a well-structured PCB program that complies with this TSCA regulation, with DOE orders, and with site policies.

The site's 2008 PCB document log was completed in full compliance with 40 CFR 761, and the 2008 annual report of onsite PCB disposal activities was submitted to EPA Region 4 in July 2009, meeting applicable requirements. The disposal of nonradioactive PCBs routinely generated at SRS is conducted at EPA-approved facilities within the regulatory period. For some forms of radioactive PCB wastes, disposal capacity is not yet available, and the wastes must remain in long-term storage. Such wastes are held in TSCA-compliant storage facilities in accordance with 40 CFR 761.

Endangered Species Act

The Endangered Species Act of 1973, as amended, provides for the designation and protection of wildlife, fish, and plants in danger of becoming extinct. The act also protects and conserves the critical habitats on which such species depend.

Several threatened and endangered species exist at SRS, including the wood stork, the red-cockaded woodpecker, the shortnose sturgeon, the pondberry,

and the smooth purple coneflower. Although the bald eagle is no longer on the endangered species list, it is still protected under the Bald and Golden Eagle Protection Act. Programs are in place to enhance the habitat and survival of such species.

In 2009, as part of the Natural Resource Management Plan, the USDA Forest Service–Savannah River (USFS–SR) developed five biological evaluations (BEs), four of which were conducted for timber-related activities. The one nontimber BE was for the Advanced Tactical Training Area facility expansion. This project was reviewed and determined by the U.S. Fish and Wildlife Service (FWS) to be an informal consultation with no adverse impact to the red-cockaded woodpecker because it did not adversely impact active or recruitment foraging areas or population goals for the bird. The four timber-related BEs—Steel Creek watershed, PAR Pond West watershed, the windstorm in Timber Compartment 21, and tree mortality related to a prescribed burn in Timber Compartment 55—were evaluated by the FWS and considered to have no adverse impacts on the threatened and endangered species.

National Historic Preservation Act

The National Historic Preservation Act (NHPA) of 1966, Section 106, governs archaeological and historical resources. SRS ensures that it is in compliance with the NHPA through several processes. The Cold War Programmatic Agreement and the SRS Cold War Built Environment Cultural Resource Management Plan are in place and being implemented. The site's artifact selection team—which includes DOE, Savannah River Nuclear Solutions, LLC, (SRNS), and the University of South Carolina's Savannah River Archaeological Research Program (SRARP)—meets monthly and is responsible for overseeing the selection, collection, and curation of Cold War-era artifacts from buildings prior to decommissioning and demolition activities.

SRS also helps ensure that it remains in compliance with NHPA through its Site Use Program. All locations being considered for activities such as construction are evaluated by SRARP personnel to ensure that archaeological or historic sites are not impacted. Reviews of timber compartment prescriptions include surveying for archaeological resources and documenting areas of importance with regard to historic and prehistoric significance.

The following information is summarized from the Annual Review of Cultural Resources Investigations by the Savannah River Archaeological Research Program, Fiscal Year 2009, Savannah River Archaeological Research Program, South Carolina Institute of Archaeology and Anthropology, University of South Carolina, October 2009.

SRARP personnel reviewed 51 site-use permit application packages during FY09, of which 42 proposed land modifications resulted in the need to survey 144 acres (7.1 percent) of the total survey coverage for FY09. The remaining site-use packages were found to have no activities of significant impact in terms of the NHPA. SRARP personnel also surveyed 1,880 acres (92.9 percent) of the total survey area coverage in 2009 in support of onsite forestry activities. Sixty-seven surveys were conducted in FY09, totaling 2,024 acres and consisting of 42 Site-Use Application Surveys and 25 Timber Compartment Prescription Surveys. During these surveys a total of 3,723 shovel test pits were dug of which 523 had positive results. These investigations identified 39 new archaeological sites—and resulted in revisits to 19 previously recorded sites for cultural resources management within the 2,024 acres.

In compliance with NHPA, artifacts recovered through daily compliance activities and the analysis of artifacts recovered must be curated. SRARP curated 7,002 artifacts during FY09. Of these curated artifacts, 2006 were from compliance related excavations; 2,690 from site 38AK469 (Flamingo Bay site); and 2,306 from site 38AK11 (Lawton Site).

Floodplains and Wetlands

Under 10 CFR 1022 ("Compliance with Floodplains and Wetlands Environmental Review Requirements"), DOE establishes policies and procedures for implementing its responsibilities in terms of compliance with Executive Orders 11988 ("Floodplain Management") and 11990 ("Protection of Wetlands"). Part 1022 includes DOE policies regarding the consideration of floodplains/wetlands factors in planning and decision making. It also includes DOE procedures for identifying proposed actions involving floodplains/wetlands, providing early public reviews of such proposed actions, preparing floodplains/wetlands assessments, and issuing statements of findings for actions in floodplains. No floodplains/wetlands assessments were performed in 2009.

Executive Order 11988

Executive Order 11988 ("Floodplain Management") was established to avoid long- and short-term impacts associated with the occupancy and modification of floodplains. The evaluation of impacts to SRS floodplains is ensured through the NEPA Evaluation Checklist and the site-use system. Site-use applications are reviewed for potential impacts by SRNS, DOE–SR, the USFS–SR, and the Savannah River Ecology Laboratory (SREL), as well as by professionals from other organizations.

Executive Order 11990

Executive Order 11990 ("Protection of Wetlands") was established to mitigate adverse impacts to wetlands caused by destruction and modification, and to avoid new construction in wetlands wherever possible. Avoidance of impact to SRS wetlands is ensured through the site-use process, various departmental procedures and checklists, and project reviews by the SRS Wetlands Task Group. Many groups and individuals—including scientists from SRNL, SREL, and RI&ES—review site-use applications to ensure that proposed projects do not impact wetlands.

Environmental Release Response and Reporting

Response to Unplanned Releases

RI&ES personnel respond to unplanned environmental releases, both radiological and nonradiological, upon request by area operations personnel. No unplanned environmental releases occurred at SRS in 2009 that required the sampling and analytical services of RI&ES.

Occurrences Reported to Regulatory Agencies

Federally permitted releases comply with legally enforceable licenses, permits, regulations, or orders. If a nonpermitted release to the environment of a reportable (or greater) quantity of a hazardous substance (including radionuclides) occurs, CERCLA requires notification of the National Response Center. Reportable quantities—not to be confused with threshold values, as defined by EPCRA Section 313—are those quantities of a hazardous substance greater than or equal to values specified in table 302.4 ("Designation of Hazardous Substances") of 40 CFR 302 ("Designation, Reportable Quantities, and Notification").

Also, the CWA requires that the National Response Center be notified if an oil spill causes a "sheen" on navigable waters, such as rivers, lakes, or streams. Oil spill reporting has been reinforced with liability provisions in the CERCLA National Contingency Plan. SRS has had no CERCLA-reportable releases since 1999.

No notifications required by CERCLA or SCDHEC Memoranda of Understanding had to be made by SRS during 2009. One SCDHEC-required notification was made regarding a November 10 sewage spill of greater than 500 gallons at 607–68G collection station (due to faulty underground wiring that has been corrected). The site recorded and cleaned up the following spills that did not require reporting under CERCLA or to SCDHEC: 31 chemical, one radioactive wastewater, four sewage, and 97 petroleum products.

EPCRA (40 CFR 355.40) requires that reportable releases of extremely hazardous substances or CERCLA hazardous substances be reported to any local emergency planning committees and state emergency response commissions likely to be affected by the release. No EPCRA-reportable releases occurred at SRS in 2009.

Site Item Reportability and Issues Management Program

The Site Item Reportability and Issues Management (SIRIM) program, mandated by DOE Order 232.1A ("Occurrence Reporting and Processing of Operations Information"), is designed to ". . . establish a system for reporting of operations information related to DOE-owned or -operated facilities and processing of that information to provide for appropriate corrective action . . . ." It is the intent of the order that DOE be ". . . kept fully and currently informed of all events which could (1) affect the health and safety of the public; (2) seriously impact the intended purpose of DOE facilities; (3) have a noticeable adverse effect on the environment; or (4) endanger the health and safety of workers."

Of the 127 SIRIM-reportable events in 2009, none

involved allegations of violations, and one—the November 10 sewage spill described earlier—was categorized as environmental.

Assessments/Inspections

The SRS environmental program is overseen by a number of organizations, both outside and within the DOE complex. In 2009, the site's environmental appraisal program again consisted of self and independent assessments. The program ensures the recognition of noteworthy practices, the identification of performance deficiencies, and the initiation and tracking of associated corrective actions until they are satisfactorily completed. The primary objectives of the assessment program are to ensure compliance with regulatory requirements and to foster continuous improvement. The program—an integral part of the site's Integrated Safety Management System—supports the SRS EMS, which continues to meet the standards of International Organization for Standardization Standard 14001. (ISO 14000 is a family of voluntary environmental management standards and guidelines.) The Site Tracking, Analysis, and Reporting (STAR) is a database used for scheduling self-assessments as well as documenting results and any issues or concerns identified, tracking corrective actions to closure, and trending accumulated data for process improvement. DOE–SR's Environmental Quality Management Division conducted 94 assessments on SRNS and SRR environmental programs during 2009.

SRNS also conducted several environmental program-level assessments in 2009. The self-assessment titles, the environmental topical areas (in parentheses), and brief summaries are as follows:

- *NEPA - Categorical Exclusions - Compliance With the National Environmental Policy Act(NEPA)* – This self-assessment was conducted July 1–30. The objective was to evaluate the use of "all no" EECs at SRS and the level of NEPA compliance achieved by implementing organizations. The overall level of use of "all no" EECs by the site organizations surveyed was minimal, but the level of NEPA compliance achieved by implementing organizations was good. The assessment identified six opportunities for improvement (OFIs) to address observations. Corrective actions for the observations were identified and initiated, and are in progress or completed.

- *Liquid Effluents (Radiological - Surface Water Quality)* – This self-assessment was conducted July 14–31. The purpose was to review the SRS Radiological Liquid Effluent Monitoring Program to ensure that SRNS's program basis conforms to applicable DOE orders and site procedures. The assessment—which included data, document, and procedure reviews, and interviews of environmental monitoring personnel—identified two document items to be updated and five OFIs for database enhancements. Corrective actions for the observations were identified and initiated, and are in progress or completed.

- *Calculations - Radiation Dose Evaluations (Environmental Radiation Protection Dose)* – This self-assessment was conducted September 15–October 29. The purpose was to review SRS's dose calculation program to ensure conformance with applicable DOE orders and standards. The primary focus of the assessment was to ensure that the environmental dosimetry used at SRS is technically defensible, accurate, and current, that doses to the public have not exceeded DOE regulations, and that all potential pathways are considered. This assessment includes document reviews, interviews, and data review. Indirectly, the assessment examined the relationship between environmental dosimetry and other program elements, such as the environmental monitoring radiological effluent and surveillance programs. The results showed that SRS's program for dose calculations meets the requirements defined in federal regulations and in DOE orders. The SRS staff members responsible for dose calculations were found to be sufficiently knowledgeable and qualified. Dose calculations are performed with standard calculating models required or recommended in the regulations. Modifications of standard models are documented and approved for use by appropriate authorities. Five OFIs were identified. Corrective actions for the observations were identified and initiated, and are in progress or completed.

- *Emissions from Motor Vehicles (Air Quality Protection)* – This self-assessment was conducted December 4–14. The purpose was to review the adequacy and effectiveness of contractor policies, procedures, and programs in meeting federally mandated requirements for ride-sharing activities and the reduction of motor vehicle emissions. Procedures/policies reviewed involved

minimizing emissions to the atmosphere from motor vehicles and from gasoline storage and dispensing operations. Applicable regulations, orders, and plans include 40CFR80.22 ("Regulations of Fuel and Fuel Additives, Controls and Prohibitions"), Executive Order 13423 ("Strengthening Federal Environmental, Energy, and Transportation Management"), and the "U.S. Department of Energy Savannah River Site Strategic Plan," May 2009. The assessment identified one OFI to address an observation. A corrective action for the observation was identified, initiated, and completed.

- *Environmental Surveillance - Radiological Air Environmental Surveillance Program (Air Quality Protection)* – This self-assessment was conducted August 10–September 4. The purpose was to verify that program-specific information is included in the SRS Environmental Monitoring Plan (EMP) to address required radiological air surveillance monitoring, sampling, analysis, and reporting needs. Results indicated the radionuclide ambient air sampling program at SRS is well documented, but the EMP is due for an update. The quality assurance aspects of the program appear to be adequate and are being implemented appropriately. During the field walkdown, sample collection was observed. The collection activities were procedurally correct. Four OFIs were identified. Corrective actions for the observations were identified and initiated, and are in progress or completed.

- *Facility Permitting - Protection of Drinking Water Sources (Domestic Water Quality)* – This self-assessment was conducted October 1–15. The purpose was to verify that the health and safety of site employees is protected by providing drinking water that meets all federal and state regulatory requirements and engineering design standards. Construction and/or operating permits are obtained from SCDHEC or SRNS (as appropriate) prior to initiating any construction, expansion, or modification of drinking water wells or of treatment or distribution systems or facilities. Permits are obtained or issued on an as-needed basis. Generally, the domestic water systems were found to be in excellent condition and in compliance with state Primary Drinking Water Regulations. Personnel associated with the operation and maintenance of the systems were adequately trained to perform all necessary functions to maintain compliance. No programmatic findings were identified against this program self-assessment element during the evaluation.

- *Facility Operations and Maintenance - Protection of Drinking Water Sources (Domestic Water Quality)* – This self-assessment was conducted October 1–19. The purpose was to verify that the health and safety of site employees is protected by providing drinking water that meets all federal and state regulatory requirements and engineering design standards. Generally, the domestic water systems are in excellent condition and are being operated in compliance with the state Primary Drinking Water Regulations. Personnel associated with the operation and maintenance of the site's domestic water systems are adequately trained to perform all necessary functions to maintain compliance. No programmatic findings were identified against this program self-assessment element during the evaluation.

- *Operator Certification - Protection of Drinking Water Sources (Domestic Water Quality)* – This self-assessment was conducted October 13–19. The purpose was to determine the adequacy and effectiveness of applicable programs, policies, and procedures to ensure compliance with domestic water operator certification requirements. The assessment involved interviews with the personnel responsible for the operator certification program, and a review of the training records, program policies, and procedures. Also, in conjunction with this assessment, an inspection of the site's domestic water facilities and a review of associated records and logs were performed. These activities indicated that the personnel responsible for operating and maintaining the site's domestic water systems are adequately trained to perform all necessary functions to maintain compliance. Generally, the operator certification program was found to be extremely well-organized, and all aspects of the regulations and procedures followed. Time and cost-saving measures have been implemented to ensure that training requirements can be met easily. No programmatic findings were identified against this program self-assessment element during the evaluation.

- *Effectiveness Evaluation of Environmental Protection Program via Transition Readiness Review (TRR) (Management Discretion)* – This self-

assessment was conducted February 24–March 31. The purpose was to measure how well the transition of SRS's M&O functions to SRNS is progressing, to determine the transformation's overall effectiveness, and to ensure that changes in RI&ES's organizational structure had been communicated and that both staff and customers are cognizant of the changes. The scope of this assessment included reviews of organizational documents, meeting documents, and initiatives, as well as interviews of 28 RI&ES and DOE Environmental Quality Management Division staff members to assess the effectiveness of the changes. Because no minimum requirements were identified in the scope of this assessment, no findings were generated as a result of the review. Concern was expressed with respect to the lack of depth and succession planning. Some positives noted in terms of personnel understanding the changes and of customers recognizing the changes in organizational structure. Eleven OFIs were identified. Corrective actions for the observations were identified and initiated, and are in progress or completed.

- *Environmental Protection Programs - Organizational Structure (Environmental Management Functions)* – This self-assessment, conducted February 10–June 30, evaluated the programmatic implementation of the site's EMS. The purpose was to provide assurance that SRNS and Savannah River Remediation LLC (SRR), the site's Liquid Waste Operations contractor, and subcontractor organizations apply the principles and specific requirements of DOE Order 450.1A, "Environmental Protection Program." This order mandates the implementation of an EMS, which ensures sound stewardship practices that protect air, water, land, and other natural and cultural resources impacted by DOE operations. The assessment provides the basis for ensuring that site activities meet or exceed compliance with applicable environmental, public health, and resource protection requirements. Results indicated the organizational structure at SRS was established in such a manner that the functions, responsibilities, and authorities for environmental protection programs are clearly defined. Both oversight roles and line management responsibilities are accommodated. In general, the RI&ES management team has a keen understanding of EMS policies, procedures, and practices. Existing goals and targets are defined for functional areas. The assessment identified one OFI to address multiple observations. One corrective action for the observations was identified, initiated, and completed.

- *Health and Safety - Release Reporting (Releases)* – This self-assessment was conducted May 5–29. The purpose was to verify that a program is in place to discover, characterize, and report—within required time frames of the laws and regulations—environmental releases of hazardous substances that are reportable to the federal or state government. Interviews indicated that policies and procedures were in place for reporting and responding to hazardous-substance releases. Other site contractors' staff members appeared knowledgeable and also had appropriate procedures and policies in place. The assessment identified three OFIs to address observations. Corrective actions for the observations were identified and initiated, and are in progress or completed.

- *Laboratory Certification - Protection of Drinking Water Sources (Domestic Water Quality)* – This self-assessment was conducted November 16–December 30. The scope of the activity involved evaluating the SRNS laboratory certification program against the state Environmental Laboratory Certification Program. All SRNS certified laboratories were included in this assessment. Results indicated that the laboratory certification program appears to be sound. Most of the professionals involved have been associated with the program for several years, so there is a great deal of undocumented tribal knowledge. It is believed that the program can be enhanced by procedural changes that capture some of this information. One finding resulted from this assessment, and four OFIs were identified. Corrective actions for the finding and observations were identified and initiated, and are in progress or completed.

- *D-Area Clean Water Act (Domestic Water Quality)* – This self-assessment was conducted March 24–May 15. The scope of the activity involved evaluating D-Area compliance with the CWA based on implementation of related SRNS policies, programs, and procedures. The assessment was conducted primarily with several teams of two assessors. Consequently, several trips were made to the D-Area Powerhouse. Several documents were reviewed, and many

Table 3–4
SRS Construction and Operating Permits, 2005–2009

Type of Permit	Number of Permits				
	2005	**2006**	**2007**	**2008**	**2009**
Air	1	3[a]	5[a]	5	5
U.S. Army Corps of Engineers – Section 10, Rivers & Harbors Act of 1899	0	0	0	0	1
U.S. Army Corps of Engineers Nationwide Permit	4	5	5	4	2
Domestic Water	207	207	207	170	170
Industrial Wastewater	63	70	70	70	70
NPDES Discharge	1	2	2	2	2
NPDES No Discharge	1	1	1	1	1
NPDES Stormwater	2	2	2	2	2
Construction Stormwater Grading Permit	13	9	10	11	24
RCRA Hazardous Waste	1	1	1	1	1
RCRA Solid Waste[b]	4	3	4	4	4
RCRA Underground Storage Tank	7	7	7	7	7
Sanitary Wastewater	106	106	106	98	89
SCDHEC 401	0	0	1	0	1
SCDHEC Navigable Waters	0	0	1	0	1
Underground Injection Control	21	14	14	15	13
Totals	**431**	**430**	**436**	**390**	**393**

[a] These numbers were revised to include the Mixed Oxide Fuel Fabrication Facility construction permit received in 2006.

[b] The Saltstone Disposal Facility's landfill permit covers all the Saltstone disposal vaults and cells.

people were interviewed. A key theme identified was that D-Area did not appear to be completely integrated with the rest of the SRNS M&O functions. Procedures are several generations old; most of the staff consists of subcontractors; and facility personnel generally do not rely on the 3Q manual procedures to implement environmental programs. However, the facility has a limited remaining life. Agreements to start construction of a replacement facility were nearing resolution at the time the assessment was nearing conclusion. Ten OFIs were identified. Corrective actions for the observations were identified and initiated, and are in progress or completed.

SCDHEC and EPA personnel conducted external

inspections and audits of the SRS environmental program for regulatory compliance. Agency representatives performed several comprehensive compliance inspections and audits in 2009, as follows:

- *RCRA Compliance Evaluation Inspection* – The RCRA compliance evaluation inspection was conducted by SCDHEC (EPA also represented) June 15–19. A September 18 SCDHEC letter noted, "All deficiencies were corrected during the inspection or prior to issuing this report."

- *Annual Underground Storage Tank Inspection* – SCDHEC inspected the site's USTs September 9. All were found to be in compliance with applicable regulations for the seventh straight year

- *632–G C&D Landfill, 288–F Ash Landfill, and 488–4D Ash Landfill Inspections* – SCDHEC conducted routine (at least every other month) inspections of the 632–G C&D, the 288–F Ash, and the 488–4D Ash landfills; the facilities were found to be satisfactory, with no observed deficiencies.

- *Z-Area Saltstone Solid Waste Landfill Inspections* – Saltstone Disposal Facility inspections continued to be completed on a weekly basis. Moisture areas continued to be observed on the walls of the facility's Vault 4, and were reported to SCDHEC in accordance with the facility's contingency plan. (NOTE: "Moisture areas" are areas on the external walls of the facility's cells that appear damp due to a combination of saltstone shrinkage from curing, bleeding, and process water accumulation at the inner cell walls, and from hydrostatic pressure that causes the water to weep through preexisting construction cracks. Such moisture areas are not areas of free-flowing liquid. Moisture areas on vault walls may indicate the presence of radiological contamination.) SRR facility personnel inspected the vault areas daily and communicated the discovery of any new moisture areas to SCDHEC, per the facility contingency plan. SCDHEC performed onsite weekly inspections of Vault 4 for observation of existing and potentially new moisture areas. SCDHEC inspectors detailed the results of their inspections in the Saltstone Disposal Facility Vault 4 Inspection Checklist. SCDHEC has not mandated any additional actions other than continuous monitoring of Vault 4 via the aforementioned inspections. No further actions are pending.

- *Interim Sanitary Landfill* – SCDHEC personnel conducted an annual post-closure inspection of the Interim Sanitary Landfill September 29, and the landfill was found to be satisfactory, with no observed deficiencies.

- *Groundwater Comprehensive Monitoring Evaluation* – SCDHEC conducted an unannounced RCRA inspection of SRS's groundwater program May 18–20. No deficiencies or permit violations were cited.

- *Site and D-Area Air Compliance Audit* – SCDHEC's Bureau of Air Quality conducted an air compliance audit September 15. The purpose was to verify that SRS and the D-Area Powerhouse were in compliance with applicable regulations, including monitoring, reporting, and recordkeeping requirements contained in both Part 70 Air Quality Permits. No violations or findings were identified during this inspection.

Environmental Training

The SRS environmental training program identifies training needs and appropriate training settings to teach job-specific skills that protect the employee and the environment, in addition to satisfying regulatory training requirements. This process ensures that personnel whose actions could have environmental consequences are properly trained and made aware of their responsibilities to protect the environment, workers, and the public. General environmental awareness training is provided to all employees of SRS via initial General Employee Training (GET) which subsequently is reinforced annually through Consolidated Annual Training (CAT). Specialized training opportunities are developed by and offered through a centralized training organization that relies heavily upon the functional-area subject matter expertise within the environmental organization for the development of environmental and waste management curricula. Regularly scheduled classes in this program cover such topics as Environmental Laws and Regulations, the Hazardous Waste Worker, Hazardous and Radiological Waste Characterization, Management of Polychlorinated Biphenyls, and the Environmental Compliance Authority course. A self-taught Environmental Laws and Regulations course—available for

technical personnel–is updated annually by environmental subject matter experts. More than 60 environmental program-related training courses are listed in the site training database, and individual organizations schedule and perform other facility-specific, environment-related training to ensure that operations and maintenance personnel, as well as environmental professionals, have the knowledge and skills to perform work safely and in a manner that protects the environment in and around SRS.

Environmental Permits

SRS had 393 construction and operating permits in 2009 that specified operating levels for each permitted source. Table 3–4 summarizes the permits held by the site during the past 5 years. These numbers reflect only permits obtained by SRNS for itself and for other SRS contractors that requested assistance in obtaining permits. The numbers include some permits that were voided or closed during 2009.

Editor's note: The "Environmental Compliance" chapter is unique in that its number of contributing authors is far greater than the number for any other chapter in this report. Space/layout constraints prevent us from listing all of them and their organizations on the chapter's first page, so we list them here instead. Their contributions, along with those of the report's other authors, continue to play a critical role in helping us produce a quality document—and are very much appreciated.

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