SAVANNAH RIVER SITE FACT SHEET

Fifth Five-Year Remedy Review Report for SRS Operable Units with Engineered Cover Systems

ERD-EN-2016-0049

Savannah River Site, Aiken, SC
November 2017

The United States Department of Energy (USDOE), the United States Environmental Protection Agency (USEPA), and the South Carolina Department of Health and Environmental Control (SCDHEC) has prepared the Fifth Five-Year Remedy Review Report for Savannah River Site (SRS) Operable Units (OUs) with Engineered Cover Systems. This report documents the methods, findings, and conclusions for ten remedy decision document reviews for the SRS.

What is a Five-Year Remedy Review?

The Comprehensive Environmental Response, Compensation, and Liability Act requires that a remedy review is conducted every five years for sites where any hazardous substances, pollutants, or contaminants remain following a remedial or cleanup action. The remedies are evaluated to determine whether they are functioning as designed and whether they are protective of human health and the environment. The methods, findings, and conclusions of remedy reviews are documented in a five-year remedy review report.

Three Major Questions:

1) Is the remedy functioning as intended by the decision documents?
2) Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives used at the time of remedy selection still valid?
3) Has any other information come to light that could call into question the protectiveness of the remedy?

Previous five-year remedy review reports were single reports that included all SRS OUs that had implemented a remedial action. Agreement was reached to conduct future remedy reviews in phases to reduce the volume of the reports and to more effectively identify and resolve issues for similar remedies. For this reason, the SRS Fifth Five-Year Remedy Review Report will be conducted in five phases with OUs grouped by the remedy types.

- Phase 1: Native soil covers and/or land use controls (LUCs)
- Phase 2: Groundwater
- Phase 3: Engineered cover systems
- Phase 4: Geosynthetic or stabilization/ solidification cover systems
- Phase 5: Operating equipment

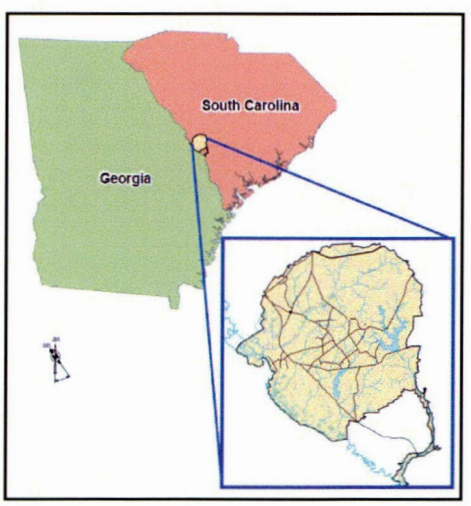

Figure 1. SRS General

This report presents the third phase of the fifth year remedy review for OUs that selected engineered cover systems as part of the final remedy. SRS OUs were grouped together in this review if the selected cover features exceeded those of a basic native soil cover.

SRS History

SRS occupies approximately 310 square miles of land adjacent to the Savannah River, principally in Aiken and Barnwell counties of South Carolina. SRS is located approximately 25 miles southeast of Augusta, Georgia, and 20 miles south of Aiken, South Carolina (Figure 1). Approximately 90 percent of SRS land consists of natural and managed forests.

The primary mission of SRS was to produce tritium, plutonium, and other special nuclear materials for our nation's defense programs as well as for medical, industrial, and research efforts. Production of nuclear materials for the defense program was discontinued in 1988. Chemical and radioactive wastes are by-products of nuclear material production processes. These wastes have been treated, stored, and in some cases, disposed of at SRS. Past disposal practices have resulted in soil and groundwater contamination.

Site Chronology	
1989	*SRS included on the National Priorities List as needing a long-term cleanup plan.*
1993	*Federal Facility Agreement established with the USDOE, USEPA – Region 4, and the SCDHEC to coordinate remedial actions at SRS into one comprehensive regulatory program.*
1997	*First SRS Five-Year Remedy Review is issued.*
2004	*Second SRS Five-Year Remedy Review is issued.*
2009	*Third SRS Five-Year Remedy Review is issued.*
2014	*Fourth SRS Five-Year Remedy Review is issued.*
2015	*Fifth Five-Year Remedy Review for SRS OUs with Native Soil Covers and/or LUCs (Phase 1) is issued.*
2017	*Fifth Five-Year Remedy Review for SRS OUs with Groundwater Remedies (Phase 2) is issued.*

What are the Cleanup Objectives?

Remedial goals are defined for individual OUs, but generally support the following cleanup objectives:

- To prevent unacceptable exposure of human receptors and ecological receptors to contaminants in soils and groundwater.
- To prevent or minimize the migration of contaminants from soils to groundwater at levels that exceed groundwater maximum contaminant levels (MCLs).
- To prevent or minimize the discharge of contaminated groundwater to surface water at levels that exceed MCLs.

Remedial Actions

Primary soil contaminants at SRS are cesium-137 and other radionuclides, organic chemicals, metals, polychlorinated biphenyls, and pesticides. The primary contaminants in groundwater are volatile organic compounds, tritium, strontium-90, iodine-129, and metals to a lesser extent. Surface water has been impacted by the discharge of contaminated groundwater to site streams.

Remedial decisions were implemented for SRS OUs that included engineered cover systems as part of the final remedy. Engineered cover systems are similar to native soil covers, but have a lower permeability if well compacted and promote more effective surface drainage to minimize infiltration. SRS OUs were also included in the remedy review of engineered cover systems if the selected cover features included the use of common fill or clayey material from offsite sources and had some form of engineering controls (i.e., soil material requirements, soil compaction requirements, and/or stormwater management systems).

Table 1 identifies the OUs and associated remedial actions included in the third phase of the Fifth Five-Year Remedy Review Report. Figure 2 shows the location of the OUs that correspond with Table 1.

Table 1. SRS OUs with Engineered Cover Systems

#	CERCLIS No.[a]	Operable Unit	Remedial Action[b]
1	50	Central Shops Burning/Rubble Pits (631-1G/631-3G)	Stormwater Management, LUCs
2	15	D-Area Burning/Rubble Pit (431-D/431-1D)	LUCs
3	58	Ford Building Seepage Basin (904-91G)	Excavation, Consolidation, Low Permeability Cover, LUCs
4	6	F-Area Hazardous Waste Management Facility (F-Area Seepage Basins [904-41G, 904-42G, and 904-43G])	In Situ Stabilization/Solidification, RCRA Soil Cover, LUCs
5	7	H-Area Hazardous Waste Management Facility (H-Area Seepage Basins [904-44G, 904-45G, 904-46G, and 904-56G])	In Situ Stabilization/Solidification, RCRA Soil Cover, LUCs
6	40	K-Area Burning/Rubble Pit (131-K) and K-Area Rubble Pile (631-20G)	Soil Cover, Groundwater Mixing Zone, LUCs
7	1	M-Area Hazardous Waste Management Facility (Lost Lake [904-51G] and M-Area Settling Basin [904-112G])	In Situ Stabilization/Solidification, RCRA Soil Cover, LUCs
8	2	Metallurgical Laboratory Hazardous Waste Management Facility (904-110G)	In Situ Stabilization/Solidification, RCRA Soil Cover, LUCs
9	33	Mixed Waste Management Facility (643-28E)	In Situ Stabilization/Solidification, RCRA Soil Cover, LUCs
10	47	SRL Seepage Basins (904-53G1, 904-53G2, 904-54G, and 904-55G)	Excavation, Offsite Disposal, LUCs

[a] USEPA Comprehensive Environmental Response, Compensation, and Liability Information System
[b] OUs may also include subunits with contaminants in building material or groundwater that are also addressed by the remedy decision document.

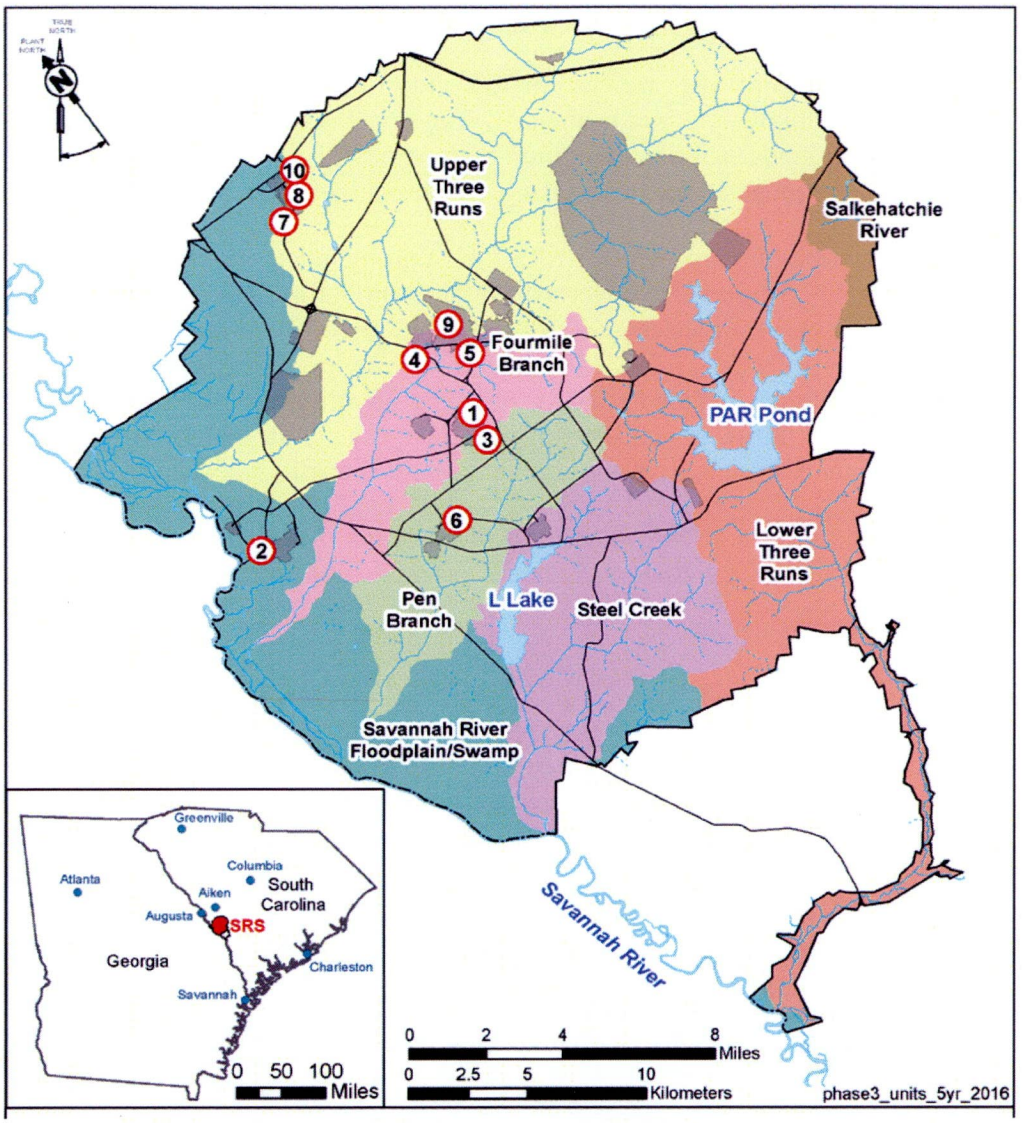

Figure 2. Location Map for SRS OUs with Engineered Cover Systems

Major Developments Since Last Five-Year Remedy Review

The USEPA, SCDHEC, and USDOE determined that continued monitoring for 1,4-dioxane at the K-Area Burning Rubble Pit and K-Area Rubble Pile OU is no longer needed. SRS previously recommended monitoring of 1,4-dioxane due to the presence of chlorinated solvents at the site. Groundwater wells were sampled in 2013 and all results for 1,4-dioxane were non-detect.

Protectiveness Summary

All ten remedies were determined to be protective of human health and the environment. SRS engineered cover systems and related activities are functioning as intended.

Next Five Year Remedy Review

The Sixth Five-Year Remedy Review Report for SRS OUs with Engineered Cover Systems is due in January 2022.

Issues and Recommendations

There are no recommendations or follow-up actions.

For More Information

For more information regarding the complete Fifth Five-Year Remedy Report for SRS OUs with Engineered Cover Systems, please contact:

Janet Griffin
Savannah River Nuclear Solutions, LLC
Public Involvement
Savannah River Site
Building 730-1B
Aiken, South Carolina 29808
(803) 952-8467
janet.griffin@srs.gov