



# Environmental Management Program Project Execution Plan

Savannah River Site



July 2006



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## ACRONYMS

AEA	Atomic Energy Act
AMCP	Assistant Manager for Closure Project
AMNMSP	Assistant Manager for Nuclear Material Stabilization Project
AMWDP	Assistant Manager for Waste Disposition Project
ARP	Actinide Removal Project
BCCB	SR Baseline Configuration Control Board
BGC	Burial Ground Complex
BNG	British Nuclear Group
CAB	Citizens Advisory Board
CCB	EM Configuration Control Board
CCP	Central Certification Project
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFO	Office of the Field Chief Financial Officer
CIF	Consolidated Incinerator Facility
CM	Closure Modules
CMP	Chemicals, Metals, and Pesticides
COR	Contracting Officer Representatives
CPB	Contract Performance Baseline
CRMP	Cultural Resources Management Plan
CSF	Canister Shipping Facility
CSSC	Container Surveillance and Storage Capability
CSSX	Caustic Side Solvent Extraction
CU	Consolidation Unit
D&D	Deactivation and Decommissioning
DHEC	South Carolina Department of Health and Environmental Control
DMB	Deputy Manager for Business
DMC	Deputy Manager for Cleanup
DNFSB	Defense Nuclear Facilities Safety Board
DOE	Department of Energy
DRR	Domestic Research Reactors
DWPF	Defense Waste Processing Facility
EAC	Estimate at Completion
EM FRA	Environmental Management Functions, Responsibilities, and Authorities Document
EM	Office of Environmental Management
EM-1	Assistant Secretary of Environmental Management
EPA	Environmental Protection Agency
EPC	engineering, procurement, and construction
ETP	Effluent Treatment Project
EU	enriched uranium

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FAMS	F-Area Materials Storage
FDP	Federal Project Director
FFA	Federal Facility Agreement
FRAP	SR Functions Responsibilities and Authorities Procedure
FRR	Foreign Research Reactors
FTF	F-Area Tank Farm
GCP	General Closure Plan
GFSI	Government Furnished Services and Items
GPRA	Government Performance Results Act
GSA	General Separations Area
GSACU	General Separations Area Consolidation Unit
GWSB	Glass Waste Storage Building
HA	high activity
HEU	highly enriched uranium
HQ	Headquarters
HTF	H-Tank Farm
HW	hazardous waste
HWCTR	Heavy Water Components Test Reactor
IAEA	International Atomic Energy Agency
ILV	Intermediate-Level Vault
INL	Idaho National Laboratory
IOU	Integrator Operable Unit
IPABS	Integrated Planning, Accountability, and Budgeting System
IPT	Integrated Project Team
ISD	In situ disposal
ISM	Integrated Safety Management
ISMS	Integrated Safety Management System
KAMS	K-Area Material Storage
LANL	Los Alamos National Laboratory
LASR	L Area Storage Racks
LAW	low-activity waste
LLRWDF	Low-Level Radioactive Waste Disposal Facility
LLW	low-level waste
LTS	Long Term Stewardship
LUCAP	Land Use Controls and Assurance Plan
LUCIP	Land Use Controls Implementation Plans
LWDPP	Liquid Waste Disposition Processing Plan
LWO	Liquid Waste Operations
M&O	Management and Operating
MC&A	Nuclear Material, Control, and Accountability
MCU	Modular Caustic Side Solvent Extraction [CSSX] Unit
MEP	Maximum Extent Practical
MFFF	Mixed Oxide Fuel Fabrication Facility

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mgal	million gallons
MLLW	mixed low-level waste
MNA	Monitored Natural Attenuation
MOA	Memorandum of Agreement
MOX	Mixed oxide
MTHM	metric tons heavy metal
MW	mixed waste
MWMF	Mixed Waste Management Facility
NAS	National Academies of Science
NDA	non-destructive analysis
NDE	non-destructive examination
NEPA	National Environmental Policy Act
NFA	No Further Action
NFS	Nuclear Fuel Services
NHPA	National Historic Preservation Act
NNSA	National Nuclear Security Administration
NNSA-DP	NNSA-Defense Programs
NNSA-NN	NNSA- Nuclear Nonproliferation
NPL	National Priorities List
NRC	Nuclear Regulatory Commission
OCC	Office of Chief Counsel
OCM	Office of Contracts Management
OCPM	Office of Cleanup Projects Management
OCR	Office of Civil Rights
OEA	Office of External Affairs
OESH	Office of Environment, Safety, and Health
OHCM	Office of Human Capital Management
OPMP	Organizational Performance Management Plan
ORWBG	Old Radioactive Waste Burial Ground
OSS	Office of Site Services
OSSES	Office of Safeguards, Security, and Emergency Services
OU	Operable Unit
OU	Operable Unit
P2	pollution prevention
PA	Performance Assessment
PA	Programmatic Agreement
PBS	Project Baseline Summaries
PCB	polychlorinated biphenyls
PDCF	Pit Disassembly and Conversion Facility
PEMP	Performance Evaluation and Measurement Plan and Contract Management/Oversight Plan
PEP	SRS Environmental Management Program Project Execution Plan
PILTS	Payments-in-Lieu-of-Taxes

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PMIP	SR Integrated Project Management Implementation Plan
PMM	SR Project Management Manual
PMP	Savannah River Site Environmental Management Program Performance Management Plan
PODD	Performance Objective Determination Document
PSO	Program Secretarial Office
RBOF	Receiving Basin for Offsite Fuels
RCRA	Resource Conservation and Recovery Act
RH	remote handled
RH	remote handled
RLW	radioactive liquid waste
ROD	Record of Decision
ROM	Rough Order of Magnitude
S&S	Safeguards and Security
SB	Sludge Batch
SCIAA	South Carolina Institute of Archeology and Anthropology
SFP	Spent Fuel Project
SGCP	Soil and Groundwater Cleanup Projects
SGP	Soil and Groundwater Project
SHPO	South Carolina State Historic Preservation Office
SLF	Sanitary Landfill
SMT	Senior Management Team
SNF	Spent Nuclear Fuel
SNM	special nuclear material
SR	Savannah River Operations Office
SREL	Savannah River Ecology Laboratory
SRFS	Savannah River Forest Service
SRNL	Savannah River National Laboratory
SRS	Savannah River Site
SST	safe-secure transport
STP	Site Treatment Plan
SWDF	Solid Waste Disposal Facility
SWMF	Solid Waste Management Facility
SWPF	Salt Waste Processing Facility
TRU	Transuranic
TVA	Tennessee Valley Authority
USFS	U.S. Forest Service
WAC	waste acceptance criteria
WBS	Work Breakdown Structure
WCS	Waste Characterization System
WD	Waste Determination
WGI	Washington Group International
WIPP	Waste Isolation Pilot Plant

WIR	waste incidental to reprocessing
WMP	SR 5-Year Workforce Management Plan
WOW	Waste on Wheels
WSDP	Waste Stabilization and Disposition Project
WSI	Wackenhut Services, Incorporated
WSRC	Washington Savannah River Company
WTP	Waste Treatment Plant

# Executive Summary

## Background

The Savannah River Site (SRS) is a major Department of Energy (DOE) industrial complex dedicated to the reduction of risks through safe stabilization, treatment, and disposition of legacy nuclear materials, spent nuclear fuel, and waste. Also, the National Nuclear Security Administration at SRS supports the DOE national security and non-proliferation programs. The current primary focus is on the cleanup of legacy materials, facilities, and waste sites left from the Cold War. This *2006 Savannah River Site Environmental Management Program Project Execution Plan (PMP)* describes the strategy to achieve cleanup and risk reduction. It includes the scope, schedule, cost, roles and responsibilities, milestones, end state descriptions, performance metrics, and actions required to achieve cleanup by the end of FY 2031.

The cleanup strategy has three primary objectives:

- eliminate or minimize risks through safe stabilization, treatment, and disposition of Office of Environmental Management (EM)-owned nuclear materials, spent nuclear fuel, and waste;
- reduce the costs of continuing operations and surveillance and maintenance; and
- decommission all EM-owned facilities except those identified for transfer to another Program Secretarial Office and remediate groundwater and contaminated soils, adopting an Area completion approach.

In April 2004, the draft *Savannah River Site Environmental Management Program Performance Management Plan (2004 PMP)* was published, which included all EM work scope, was based on the Project Baseline Summaries (PBS) used in the budget process and began with an end state defined for each major area of SRS. The *2004 PMP* provided a comprehensive plan to accomplish all EM cleanup work at SRS.

The draft *2004 PMP* received extensive reviews by independent external organizations, the public, employees, and regulators. This *2006 PEP* incorporates the results of these reviews along with programmatic and funding guidance changes. This *2006 PEP* defines the EM lifecycle baseline, which will be kept under DOE-Headquarters (HQ) configuration control.

## Project Approach

SRS is implementing a cleanup strategy that focuses on using a project approach to accomplish the EM cleanup. End states have been defined, and performance measures and project milestones have been established to monitor achievement of objectives.

The scope of this cleanup project is the stabilization and disposition of all EM-owned nuclear material; receipt and disposition of spent nuclear fuel (SNF); removal of waste from and closure of all radioactive liquid waste tanks; treatment and disposition of solid waste; decommissioning of all SRS EM facilities; and remediation of groundwater plumes and soil contamination.

Management of this cleanup project is comprehensively described in this *2006 PEP*. Therefore, this document serves as the Project Execution Plan for the overall EM Cleanup Project at SRS and for each PBS project. This document provides background for the EM Cleanup Project; an end state vision for each major facility and waste unit; and schedules, key milestones, and performance measures for each project. The plan identifies key assumptions to guide program planning, describes the business management approach, and provides the EM lifecycle baseline, which will be kept under HQ configuration control. The sections within the *2006 PEP* and each Project Baseline Summary (PBS) description in Section 7.0, Project Baseline Summaries, as augmented by certain Department of Energy Savannah River Operations Office (SR), SRS, or PBS-specific documents, provide the equivalent of a project execution plan as identified in DOE O 413.3, *Project Management for the Acquisition of Capital Assets*. Therefore, this *PEP* is the Project Execution Plan for the EM Cleanup Project at SRS, and each PBS description included in Section 7.0 of the *PEP* is the Project Execution Plan for that PBS.

Risk reduction, with a continued strong emphasis on protecting the environment and the health and safety of workers and the public, is a primary objective of the EM Cleanup Project at SRS. Completing the EM Cleanup Project by the end of FY 2031 is dependent both on the ability to drive performance improvements and the appropriate application of resources. SRS will continue to implement integrated project management and explore innovative opportunities to advance cleanup.

## Business Management

SR is developing new business management approaches. Key changes have occurred in the areas of contracting and performance monitoring. SR is pursuing an aggressive acquisition strategy to achieve efficient approaches to achieve cleanup and reduce technical risk while being protective of the safety of the workers, the public, and the environment, and safeguarding the materials and resources at SRS. In the area of performance monitoring, SR has shifted from a management and

control system focused on annual performance to a project management system focused on end-state objectives. Effective project management methods and processes will provide assurance of the successful accomplishment of performance objectives. To ensure effective assessment and reporting of performance, SR has assumed the role and responsibility of integrator of all performance reporting for the EM Cleanup Project at SRS.

A performance-based oversight and assessment process is used to monitor contracts and EM projects. This process will ensure that progress is reported against the baseline (technical, scope, cost, schedule, and key performance metrics) and will facilitate management of contracts and open communications of progress and issues among SR, HQ, and the contractors.

## Baseline Management

SR and its contractors have implemented formal techniques and procedures for baseline management and control. The project management process ensures that appropriate levels of control are applied to SRS projects. Baselines are developed as an integral part of the EM planning, budgeting, execution, and reporting process, and the project management requirements of DOE O 413.3, *Project Management for the Acquisition of Capital Assets*, are applied.

Multi-year technical, scope, schedule, and cost baselines have been developed in this *PEP* and provide the basis for the EM lifecycle baseline. The elements of a baseline as identified in DOE O 413.3 are included in this *2006 PEP*. This plan also provides the elements of a federal baseline as required by the *EM Federal Baseline Development Policy*, thus establishing the *2006 PEP* as the SR Federal Baseline. In addition, the *2006 PEP* serves as the basis for the annual environmental liability audit; the EM Corporate Performance Measures reporting; a planning tool for future contract acquisitions; and workforce planning and management.

## Project Risks

During the development of any plan of this duration (20-plus years), numerous opportunities and challenges present themselves for consideration in formulating the scope, schedule, and cost. These options are usually developed based on the risks that are identified while establishing a baseline. This *2006 PEP* provides a brief discussion on the overall risks identified as well as several alternatives, risk mitigation strategies, and open issues still to be resolved. SR recognizes the risk that some of the assumptions and program plans established to achieve cleanup of SRS may not be realized. Several major programmatic risks are identified in this *2006 PEP*. If these risks materialize, SR will identify alternatives to minimize impact to cost or schedule baselines. However, significant adverse changes in scope, schedule, or cost may greatly affect the overall baseline. Consistent with project management practices, the *2006 PEP* includes an estimate of contingency for the lifecycle baseline cost.

## Stakeholders

Success depends in part on key stakeholders. This plan to achieve the aforementioned results will be pursued with deliberate engagement of local communities and stakeholders, including the appropriate regulatory authorities for SRS. SRS is working collaboratively with regulators to find innovative and flexible ways to meet commitments.

# 1.0 Background

The Savannah River Site (SRS) is a key Department of Energy (DOE) industrial complex dedicated to the reduction of risks through safe stabilization, treatment, and disposition of legacy nuclear materials, spent nuclear fuel, and waste. Also, the National Nuclear Security Administration (NNSA) at SRS supports national security and non-proliferation programs. The SRS current primary focus is on the cleanup of legacy materials, facilities, and waste sites left from the Cold War.

In August 2002, the *Savannah River Site Environmental Management (EM) Program Performance Management Plan (2002 PMP)* was published, which described the approach SRS would implement to complete the EM cleanup program at SRS. The *2002 PMP* contained 14 initiatives designed to reduce risk, cut cost, and complete cleanup. In April 2004, a draft *Savannah River Site Environmental Management (EM) Program Performance Management Plan (2004 PMP)* improved on these initiatives and provided a comprehensive approach to the EM cleanup at SRS. Its content was expanded to include all elements of the EM Cleanup Project lifecycle baseline. In August 2005, an updated *PMP* was drafted to reflect changes from the *2004 PMP*. This plan, the *SRS Environmental Management Program Project Execution Plan (PEP)*, incorporates the results of stakeholder comments, four external reviews, and evolution in programmatic guidance since the *2004 PMP*.

## 1.1 Mission Need and Project Objectives

There have been significant changes since issuance of the *2002 PMP*. Beginning in late 2002 and continuing into 2004, DOE Savannah River Operations Office (SR) renegotiated its contract with the site management and operating contractor. In Contract Modification M100 and M120, Washington Savannah River Company (WSRC) was given incentives to accomplish a maximum amount of cleanup work during the contract period. Other significant changes since 2002 include issuance of the *Savannah River Site Integrated Deactivation and Decommissioning Plan*; issuance of a *Savannah River Site End State Vision*, and regulator acceptance of a *Federal Facility Agreement Appendix E*, aligned with the area completion strategy.

Several key programmatic issues have also evolved including, the need to disposition EM excess plutonium that does not meet the requirements to be dispositioned

through the planned Mixed Oxide (MOX) Fuel Fabrication Facility (MFFF) to be constructed by NNSA (non-MOXable plutonium) and a potential change in the approach used to disposition spent nuclear fuel (SNF).

This *PEP* includes all EM work scope, is based on the Project Baseline Summaries (PBS) used in the budget process, and begins with an end state defined for each major area of the SRS. **This *PEP* provides a plan to complete the EM Cleanup Project at SRS by the end of FY 2031.**

The cleanup strategy has three primary objectives:

- eliminate or minimize risks through safe stabilization, treatment, and disposition of Office of Environmental Management (EM)-owned nuclear materials, spent nuclear fuel, and waste;
- reduce the costs of continuing operations and surveillance and maintenance; and
- decommission all EM-owned facilities except those identified for transfer to another Program Secretarial Office and remediate groundwater and contaminated soils, adopting an Area completion approach.

This *PEP* is the central document in the EM lifecycle and near-term planning activities. As such, it serves as the:

- EM Cleanup Project Execution Plan
- SR Federal Baseline
- basis for updating the Integrated Planning, Accountability, and Budgeting System for SRS
- basis for estimates for the EM lifecycle cost baseline
- basis for environmental liability audit
- basis for budget preparation activities
- basis for updating the EM Corporate Performance Measures and Project Milestones
- planning tool for future contract acquisitions
- basis for updating the *SR Organizational Performance Management Plan*, *SR 5-Year Workforce Management Plan*, *SR Functions Responsibilities and Authorities Procedure (FRAP)*, as well as performance expectations within employee Performance & Development Plans.

## 1.2 EM Completion Strategy

This *PEP* expands on earlier initiatives and provides a comprehensive risk-based approach to the EM cleanup at SRS. SRS will:

- disposition radioactive liquid waste through vitrification of the high activity component at DWPF and disposal of the low activity component through Saltstone;
- use existing SRS facilities to receive, store, and disposition aluminum-clad nuclear fuel;
- disposition excess plutonium using SRS facilities;

- disposition legacy transuranic (TRU) waste to Waste Isolation Pilot Plant (WIPP);
- decommission all EM facilities not required for continuing missions;
- remediate all waste sites; and
- use existing SRS waste treatment, storage, and disposal capabilities to efficiently and safely complete the EM Cleanup Project and support other SRS tenants.

These activities are scheduled for completion by the end of FY 2031, at which time the EM mission completes. Responsibility for SRS operations and long-term stewardship will transfer to another Program Secretarial Office.

## 1.3 Cleanup Project Description

**The SRS cleanup is managed as a project with a defined scope of work (all work to complete the EM mission at SRS), cost, and schedule (completion by the end of FY 2031). This 2006 PEP is the project execution plan for the cleanup at SRS—the EM Cleanup Project.**

This *PEP* describes the framework to achieve cleanup and risk reduction more cost-effectively. It includes the scope, schedule, cost, roles and responsibilities, milestones, end state descriptions, performance metrics, and actions required to achieve cleanup by the end of FY 2031.

The EM Cleanup Project at SRS is described in various sections of this *PEP* as described below.

Section 2.0, End State Vision, describes the vision for the final end state for the EM mission.

Section 3.0, Cleanup Strategies and Baseline, includes an integrated schedule; key milestones and performance measures for the EM Cleanup Project at SRS; and the key assumptions. The project approach, project risks, and contingency are also discussed.

Section 4.0, Business Management, describes the SRS business management approach, including roles and responsibilities; acquisition strategy; baseline definition and description; change control; performance monitoring; evaluation and reporting; and the risk management process.

Section 5.0, Resource Requirements, discusses federal resource requirements and PBS resource requirements. Resource challenges are identified.

Section 6.0, Program Interfaces, identifies key interfaces including regulator interfaces and discusses key agreements and implementation plans to facilitate EM cleanup. It also discusses the role of stakeholders in providing advice and recommendations to assist DOE in making the key decisions required to accomplish the EM cleanup objectives.

Section 7.0, Project Baseline Summaries, details the scope, schedule, funding requirements, assumptions, technology requirements, and risks for each PBS. Each

PBS addresses a specific portion of the EM Cleanup Project at SRS. A list of all PBS is provided in the Table 1.3.1, Project Baseline Summaries.

**Table 1.3.1 Project Baseline Summaries**

PBS Number	PBS Title
SR-0011	Nuclear Material Stabilization and Disposition
SR-0012	Spent Nuclear Fuel Stabilization and Disposition
SR-0013	Solid Waste Stabilization and Disposition
SR-0014	Radioactive Liquid Tank Waste Stabilization and Disposition
SR-0020	Safeguards and Security
SR-0030	Soil and Water Remediation
SR-0040	Nuclear Facility D&D
SR-0100	Non-Closure Mission Support
SR-0101	SR Community and Regulatory Support

A summary scope description for each of the PBS is provided below. Detailed information on each PBS, including scope, schedule, and cost is provided in Section 7.0, Project Baseline Summaries.

**SR-0011, Nuclear Material Stabilization and Disposition** – This project scope includes the operation, deinventory, and deactivation of F and H Area facilities; the safe receipt, inventory management, and disposition of special nuclear materials in the K-Area Complex and the F-Area Material Storage facility; and the capability to stabilize and store plutonium materials in accordance with DOE-STD-3013 and a separate capability to disposition plutonium not suitable for the NNSA Mixed Oxide Fuel Fabrication Facility (MFFF). It also includes the deactivation of these facilities, pending final decommissioning.

**SR-0012, Spent Nuclear Fuel Stabilization and Disposition** – This project scope includes the receipt, storage, and disposition of spent nuclear fuel at SRS, including fuel received from foreign and domestic research reactors. It also includes the deactivation of spent nuclear fuel facilities, pending final decommissioning.

**SR-0013, Solid Waste Stabilization and Disposition** – This project includes the storage, treatment and disposal of legacy TRU, low-level, mixed low-level, hazardous and sanitary waste, and landlord functions to support the general operations of the site. It also includes the deactivation of waste management facilities, pending final decommissioning.

**SR-0014, Radioactive Liquid Tank Waste Stabilization and Disposition** – This project includes the removal, treatment, and permanent disposal of radioactive liquid

waste stored in tanks and, ultimately, tank closure. This includes the operation of the Defense Waste Processing Facility, waste tank farms, and future waste facilities including the design, construction, and operation of the Salt Waste Processing Facility, and operation of Saltstone vaults. Upon completion of the liquid waste disposition activities, these facilities will be deactivated, pending final decommissioning.

**SR-0020, Safeguards and Security** – This project provides the protection of SRS nuclear materials, production facilities, and classified matter from theft, sabotage, or unauthorized control. The program provides for uniformed protective force personnel, law enforcement and general site security, aviation operations, and special response teams, as well as special nuclear materials control and accountability.

**SR-0030, Soil and Water Remediation** – This project includes the remediation of contaminated waste sites, surface water, and groundwater. An area completion approach is being used in lieu of individual waste site remediations.

**SR-0040, Nuclear Facility Deactivation and Decommissioning (D&D)** – This project includes the decommissioning of all EM facilities at SRS except for radioactive liquid waste tanks in F and H Areas and facilities in A Area required for continuing Savannah River National Laboratory and Savannah River Ecology Laboratory operations. The basis for the work scope is defined in the *Savannah River Site Integrated Deactivation and Decommissioning Plan*.

**SR-0100, Non-Closure Mission Support** – This project provides support to enable SR to perform its missions and cleanup activities. Examples of support activities include community outreach, environmental activities, geological surveys, archaeological research, forest management, training, and educational grants.

**SR-0101, SR Community and Regulatory Support** – This project provides funding to the State of Georgia for emergency management activities and to the State of South Carolina for independent environmental monitoring and emergency management activities under an Agreement-in-Principle or grant. Funding is provided to the South Carolina Department of Health and Environmental Control (DHEC) for oversight and implementation of the Federal Facility Agreement (FFA) and the Site Treatment Plan (STP). Payments-in-Lieu-of-Taxes (PILTS) are provided for Aiken, Allendale, and Barnwell counties. Funding is also provided for the operation and maintenance of a public reading room for SRS documents to support stakeholder involvement.

## 2.0 End State Vision

This section of the *Savannah River Site (SRS) Environmental Management Program Project Execution Plan (PEP)* presents the end state vision for each of the SRS Areas for EM mission completion at the end of FY 2031. The Department of Energy Savannah River Operations Office (SR) is committed to the achievement of clearly defined, mutually agreed-upon and technically defensible end states that are protective and sustainable, and reflect the planned future use of the property.

### 2.1 EM End State Vision Summary

SRS encompasses 310 square miles with more than 1,000 facilities using only about 10% of the total land area. As cleanup activities are completed, operations will be concentrated to the site central core area. The land surrounding the central core area will provide a protective buffer.

The EM mission completion goal at SRS is to permanently dispose of all Environmental Management (EM) nuclear material and waste hazards, decommission all EM facilities and remediate all SRS inactive waste units. The vast majority of EM nuclear material and waste hazards will be permanently removed from SRS and dispositioned offsite. By the end of FY 2031, inactive waste units will be remediated by employing an area-by-area completion strategy and any contaminated groundwater will be remediated, undergoing remediation, or monitored to ensure protection of human health and the environment. Units at which waste is left in place will be under institutional controls, comprised of access restrictions, inspections, maintenance, and monitoring. Concurrently with area completion, all EM facilities will be decommissioned unless reused to support other long-range federal missions at SRS or designated for historical preservation or economic development.

The removal and offsite disposition of EM nuclear material and waste hazards will significantly reduce risk at SRS. Any remaining hazards will be orders of magnitude less in quantity, and risk to onsite and offsite receptors will be reduced to an acceptable risk level that is protective of human health and the environment and consistent with environmental laws and regulations.

The End State Vision for SRS includes the following:

- SRS land will be federally owned, controlled and maintained as established by Congress.
- EM Cleanup Project and mission at SRS will be complete, and ongoing National Nuclear Security Administration (NNSA) nuclear industrial missions will continue. SRS is a site with an enduring mission and is not a closure site.
- EM Cleanup will be complete consistent with the *SRS Future Land Use Project Report* as follows:
  - EM nuclear materials will be removed from SRS and dispositioned offsite.
  - Radioactive liquid waste, transuranic, mixed, and hazardous waste will be removed from SRS and dispositioned offsite except for the waste facilities closed and monitored in accordance with the *Federal Facility Agreement (FFA)* and the *Resource Conservation and Recovery Act (RCRA)* permit for wastes.
  - Low-level waste will be disposed onsite in accordance with the Atomic Energy Act and DOE Order 435.1, *Radioactive Waste Management*.
  - All SRS inactive waste units will be remediated and deleted (or proposed for deletion) from the *Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)* National Priorities List (NPL), and institutional controls will be in place to ensure access to remediated waste units is limited.
  - All EM facilities at SRS will be permanently decommissioned by demolition or in-situ disposal unless reused by another federal program or designated for historical preservation or for economic development.
  - Facilities associated with NNSA missions, their supporting waste management, and essential site infrastructure are anticipated to remain active and appropriately sized to support ongoing missions.
  - Long-term stewardship activities will continue to ensure that EM cleanup project remedies and end states remain protective of human health and the environment. Environmental research consistent with the SRS National Environmental Research Park designation will continue to validate the protectiveness of end states and long term stewardship activities.

This section describes the end state for all EM facilities and waste sites at SRS. For simplicity, this section focuses on major production areas. In addition, when referring to soil and groundwater remediation, sediments and surface water (respectively) are implied for applicable waste units.

Much of the information used to articulate the End State Vision is based on the *Savannah River Site Environmental Management Integrated Deactivation and Decommissioning Plan* (WSRC-RP-2003-00233), and the *SRS End State Vision* documents. These documents define two possible end states for facilities and waste tanks, and two possible end states for waste sites as follows.

## Facility and Waste Tank End States

**Demolition** - Demolition includes demolishing and removing the entire facility to slab, or beyond if necessary, to meet established release criteria. The end state must be compliant with applicable regulations and with the goal of no new waste sites created at SRS.

**In-Situ Disposal (ISD)** - ISD is the planned end state for some structurally robust facilities for which demolition would be very expensive and hazardous to worker health and safety. In this case, most or all radiological and other hazardous material is removed and the facility or waste tank is decontaminated to a level that meets established criteria, and additional barriers are emplaced as necessary. Some period of post-decommissioning monitoring may be required. The end state must be compliant with applicable regulations, with the goal of no new waste sites created at SRS.

## Waste Site End States

**No Further Action (NFA)** - NFA is the preferred end state when, upon completion of the characterization or remediation process, selected sites are determined as needing no further remedial action. This decision is approved by environmental regulators.

**Long-Term Stewardship (LTS)** - LTS provides safe and effective protection from residual hazards while optimizing future land and resource use. LTS may be achieved through the use of active or passive controls.

The future use for all areas is non-residential and will be maintained as such through the use of institutional controls in accordance with the current *SRS Future Use Plan* and the *Land Use Controls and Assurance Plan* and individual Records of Decisions (ROD)/*Land Use Controls Implementation Plans* and the SRS Resource Conservation and Recovery Act (RCRA) Permit. As identified in the *Soils and Groundwater Project Risk Management Plan*, SR may elect to propose a less conservative exposure scenario in the areas where no future missions or industrial activities are anticipated.

## 2.2 EM Cleanup Project Description by Area

This section describes the EM Cleanup Project description for each area. Buildings and facilities within each of the areas described below will be evaluated in accordance with the *Savannah River Site Cold War Built Cultural Resources Management Plan (CRMP)* to determine their historical preservation status.

In the absence of continuing mission assignments, all EM facilities will be decommissioned and waste sites remediated as described in Section 2.1, EM End State Vision Summary. Specific details on the end state of each facility are contained in the *Savannah River Site Environmental Management Integrated Deactivation and Decommissioning Plan* (WSRC-RP-2003-00233).

### A Area

A Area contains numerous administrative, technical support, and storage facilities including the Savannah River National Laboratory (SRNL) and the Savannah River Ecology Laboratory (SREL). SREL features buildings and structures that are newer than most buildings in A Area. The SREL mission and SRNL operations are projected to extend beyond the end date of the EM cleanup mission. EM plans to transition the laboratory to a new cognizant Program Secretarial Office (PSO) that is better aligned with the evolving SRNL mission.

## **B Area**

B Area consists primarily of administrative, laboratory, and storage facilities. Protective force operations are administered from several buildings and structures located in this Area. Some B Area facilities were constructed in the early 1950s, but most are more recent. Most executive, management, and administrative functions will be performed by workers located in buildings, laboratories, and structures located in B Area for the duration of the EM Cleanup Project.

Contiguous to B Area, in an area formerly called U Area, is the location of the former Heavy Water Components Test Reactor (HWCTR). This facility contained a research reactor built in the 1960s and operated for only a few years. HWCTR was shut down permanently in 1967. The support buildings and structures have been demolished, and the only structure remaining is the reactor building, a steel containment structure that has been deactivated and welded shut, placing the facility into safe storage pending demolition.

## **C Area**

C Area is one of five SRS reactor areas used to produce special nuclear materials. C Reactor is a multiple-story structure that contained a heavy water moderated production reactor. The disassembly area within the reactor building consists primarily of a water-filled basin with metal racks designed to store fuel tubes vertically and metal buckets to store targets used during reactor operation. The basin contains several million gallons of water used to shield the spent nuclear fuel and target assemblies following neutron irradiation. A number of facilities in C Area have been designated as a potential for Cold War Historic Preservation. Deactivation and Decommissioning (D&D) of these facilities is included in the baseline. If a decision to preserve certain facilities is made, the baseline will be modified accordingly.

## **D Area**

D Area is where heavy water was manufactured from 1952 until 1982, and where the site currently generates steam and electricity for site operations. Heavy water was used to moderate the five SRS production reactors. The manufacturing plant was located near the Savannah River and originally contained three sets of extraction towers plus the support facilities needed to concentrate and purify heavy water. The extraction towers and most process support buildings have been demolished.

## **E Area**

E Area has been used to treat, store, and dispose of low-level radioactive, transuranic (TRU), and radioactive mixed waste. EM will not need any SRS facilities after FY 2031. Low-level radioactive waste generated by SRS tenants will continue to be buried within the Solid Waste Management Facility (SWMF) after FY 2031, but the volume will be extremely small. Any remaining operation of SWMF, therefore, will be transferred to NNSA or other PSO.

## **F Area**

F Area is located near the geographic center of SRS where special nuclear materials were processed and waste management operations were performed. F Area contained nuclear, chemical, industrial, administrative, laboratory, and storage facilities such as the F Canyon Building and outside support facilities including the Uranium Processing Facility (FA Line), Plutonium Processing Facility (FB Line), F-

Area Materials Storage (FAMS) facility, a Naval Fuels Fabrication Facility, Central Laboratories, a Mock-up/Fabrication Facility, and F-Area Tank Farm (FTF).

## **G Area**

G Area is the non-industrial portion of SRS which includes buildings and structures used by the U.S. Forest Service (USFS), South Carolina Institute of Archeology and Anthropology (SCIAA), CSX Railroad, land reserved for ecological and environmental research conducted by the University of Georgia Research Foundation, Inc. (operator of the Savannah River Ecology Laboratory), as well as any facility used by the vendors and suppliers that provide specialized design, construction, remediation, waste management, environmental monitoring, and analytical services to the EM Cleanup Project.

The developed or improved portions of G Area may contain light industrial, administrative, or storage facilities. Most tenants will be relocated to B Area or outside SRS, with buildings deactivated and decommissioned and observable elements of the SRS infrastructure—electrical transmission lines, railroad tracks, and roadways—abandoned in place. The USFS may continue to operate from a cluster of small buildings and structures that serve as offices, meeting rooms, training facilities, and storage buildings, and provide for vehicle parking and infrastructure.

## **H Area**

H Area is located near the geographic center of SRS where special nuclear materials were processed and waste management operations were performed. H Area contains nuclear, chemical, industrial, administrative, laboratory, and storage facilities, and includes the H-Canyon Building and processing facility (HB Line) and H Area Tank Farm.

## **J Area**

SR plans to construct a Salt Waste Processing Facility (SWPF) adjacent to S Area. Construction of the SWPF is planned to be completed by the end of FY 2011 and will begin operations in FY 2012 to separate liquid radioactive waste into a high radioactivity stream for disposition in the Defense Waste Processing Facility (DWPF) and a low radioactivity stream for disposition in the Saltstone Facility. SR expects to finish all work in J Area by the end of FY 2026.

## **K Area**

K Area is one of five SRS reactor areas used originally to produce special nuclear materials. K Reactor is a multiple-story structure that contained a heavy water moderated production reactor. The disassembly area within the reactor building consists primarily of a water-filled basin with metal racks designed to store fuel tubes vertically and metal buckets to store targets used during reactor operation. The basin contains several million gallons of water used to shield the spent nuclear fuel and target assemblies following neutron irradiation. K Area is being used temporarily to store plutonium, highly enriched uranium, and a large volume of heavy water that has been contaminated by tritium. All surplus fissile material and tritiated heavy water will be removed from K Area and dispositioned. Consideration is being given to developing capabilities in the K-Area Complex to prepare plutonium for disposition.

**L Area**

L Area is one of five SRS reactor areas similar to K Area. L Area is being used today to store spent nuclear fuel of U.S. origin that was used in domestic and foreign research reactors and returned to the U.S. in accordance with the national nuclear nonproliferation policy.

**M Area**

M Area was used to manufacture the fuel and targets used in the five SRS production reactors and included three large buildings in which reactor fuel elements were fabricated, two laboratories, a wastewater treatment plant, waste vitrification facility, and several support facilities including warehouses and offices for technical and administrative employees.

**N Area**

N Area, also called Central Shops, contains industrial, administrative offices, health and safety facilities, and warehouses. N Area is used to store electrical, mechanical, building materials, and equipment until needed during construction work. Hazardous waste is stored in N Area structures until shipped offsite for treatment and disposal by commercial vendors.

**P Area**

P Area is one of five SRS reactor areas similar to K Area. P Area has no future mission.

**R Area**

R Area is one of five SRS reactor areas similar to K Area. R Area has no future mission.

**S Area**

S Area facilities are used to process radioactive liquid waste for geologic disposal. Current and planned facilities include the Defense Waste Processing Facility (DWPF), Glass Waste Storage Buildings (GWSB) #1 and #2, Failed Equipment Storage Vaults, Canister Shipping Facilities, and typical support structures such as administrative office buildings, maintenance and repair shops, and warehouses to store equipment and material. DWPF accepts waste from H-Tank Farm and will accept waste from the SWPF. These waste streams are converted through vitrification to a stable form, placed in stainless steel canisters, and interim stored at SRS pending shipment to the Federal repository starting in FY 2015. DOE expects to finish all work in S Area by the end of FY 2026.

**T Area**

T Area, originally called CMX/TNX, was used to test processing methods and equipment before installation in SRS production facilities. T Area contained many industrial and administrative buildings, warehouses, underground storage tanks, burial ground, and a seepage basin. All buildings and structures in T Area except a pump test facility and a telephone exchange building have been demolished, and contaminated soil and groundwater are being remediated.

**Z Area**

Z Area contains facilities used to treat and dispose of the low-radioactivity portion of the salt solution in radioactive liquid waste and concentrate from Effluent Treatment

Facility operations. The Saltstone Production Facility blends a low-radioactivity salt solution with cement, slag, and fly ash to create a mixture that hardens into a concrete-like material called saltstone, which is transferred into the Saltstone Disposal Facility (vaults), sealed with concrete, and covered with soil and an engineered capping system constructed of clay and other materials to prevent leaching of contaminants into the local groundwater.

## 3.0 EM Cleanup Project Strategies and Baseline

The Savannah River Site (SRS) has developed project-specific strategies to complete the Office of Environmental Management (EM) cleanup mission. This section describes these EM Cleanup Project strategies, defines the key assumptions critical to meeting the cleanup objectives, and identifies project risks, alternatives, and contingency. It also includes the baseline schedule, which encompasses all EM work scope required to support closure by the end of FY 2031.

### 3.1 Risk Reduction and Cleanup Strategy

SRS is implementing a cleanup strategy that focuses on using a project approach to reduce risk and complete cleanup. SRS has redefined its programs and activities to appropriately align requirements and resources with work to be accomplished. This work is now defined by the Project Baseline Summaries (PBS) as described in Section 7.0, Project Baseline Summaries,. Upon completion of facility missions, decommissioning and appropriate remediation activities will commence. Aligning risk-based requirements to all cleanup activities will ensure safe and cost-effective completion of the EM Cleanup Project. The SRS approach to cleanup is based on the adoption of a strategy with three primary objectives:

- eliminate risks through safe stabilization, treatment, and disposition of EM-owned nuclear materials, spent nuclear fuel, and waste;
- reduce the costs of continuing operations and surveillance and maintenance; and
- decommission all EM-owned facilities except those identified for transfer to another Program Secretarial Office and remediate groundwater and contaminated soils, using an Area completion approach.

Through the aforementioned strategic approach, SRS believes it has achieved an appropriate balance among reducing lifecycle risk and cost, reduction in nearer term

carrying costs, and near-term investment. Success of the EM Cleanup Project is dependent on both the ability to drive performance improvement and the appropriate application of resources. SRS will continue to implement integrated project management and explore innovative opportunities to enhance cleanup.

## 3.2 Key Assumptions

The following represents the key underlying assumptions upon which the *SRS Environmental Management Program Project Execution Plan (PEP)* was based. These assumptions are consistent with cleanup completion by the end of FY 2031.

### General or Site-Wide

- Public health, worker safety, and the environment are protected at all times.
- End state completion date for the EM Cleanup Project at SRS is the end of FY 2031.
- Budgetary authority to support execution of this *PEP* will be provided.
- Risk reduction is considered in any prioritization of work.
- Inventory of materials will be minimized and liquidated.
- Critical site infrastructure elements will remain available to support continued operations through the identified program life or suitable replacements will be secured and on-line before existing services are discontinued.
- No transfers of real property assets to other Program Secretarial Offices (PSO) before the EM mission is complete.
- Post-closure activities and monitoring will continue after EM mission completion at the end of FY 2031. Long-term stewardship is funded by the National Nuclear Security Administration (NNSA) or another PSO after the EM mission is complete.
- The SRS property boundary remains unchanged, land use is non-residential and the title remains under the ownership of the Federal government.

### PBS SR-0011

#### Nuclear Materials Stabilization and Disposition

- F Canyon will be transitioned to PBS SR-0040, Nuclear Facility Deactivation and Decommissioning (D&D), by October 1, 2010.
- The Receiving Basin for Offsite Fuels (RBOF) will be transferred from PBS SR-0011, Nuclear Material Stabilization and Disposition, to SR-0040, Nuclear Facility D&D, by September 30, 2012.
- H-Area nuclear material processing facilities will operate through September 30, 2019, to disposition Department of Energy (DOE) enriched uranium materials and spent nuclear fuel.
- Infrastructure required for continuing H-Canyon operations through September 30, 2019, will be maintained.
- EM will be responsible for the Highly Enriched Uranium Blend Down operations at SRS effective October 1, 2007.
- The Proposed Plutonium Disposition Project will be approved, funded, and facility operations started by April 1, 2013.
- DOE will begin to consolidate special nuclear material at SRS, with shipments from other sites beginning as early as October 1, 2006.
- The K-Area Complex will have the only EM Category I storage facility at SRS.

- K-Area Project will begin operations by January 1, 2010.
- F-Area Material Storage (FAMS) facility will be downgraded to below a safeguards Category I facility by September 30, 2006.

**PBS SR-0012****Spent Nuclear Fuel Stabilization and Disposition**

- Existing Records of Decision will govern spent fuel exchange between Idaho and SRS. The proposed disposition of aluminum-clad spent fuel will be processing through H Canyon instead of a melt-and-dilute process. All of the aluminum-clad fuels will be processed through H Area by September 30, 2019.
- The Spent Nuclear Fuel (SNF) project and program activities are conducted in a single SRS facility (L Area). Funding is provided from EM and receipt revenue from the “Work for Others” account. The total of both funding sources is required to fully support program activities.
- Foreign Research Reactors (FRR) and Domestic Research Reactors (DRR) fuel receipts will continue through September 30, 2019.
- FRR from Canada is not included as an assumption. The addition of Canadian SNF receipts will require significant resource adjustments.
- De-inventory of basins will be completed by December 31, 2019.
- The current Safeguards and Security posture in L Basin will be maintained through FY 2020.
- All heavy water will be dispositioned at no net cost prior to L-Area Complex deactivation.

**PBS SR-0013****Solid Waste Stabilization and Disposition**

- EM will only operate solid waste facilities through completion of the EM mission. EM will provide solid waste services to non-EM waste generators at SRS during this time. No new waste streams from non-EM waste generators will be dispositioned by EM other than those currently planned.
- Transuranic (TRU) waste:
  - Nuclear Regulatory Commission will issue Certificate of Compliance for TRUPACT-III by December 31, 2007.
  - NDA and NDE equipment for large container waste will be provided by June 30, 2007.
  - Central Certification Project will operate and fund non-drum container certification beginning June 30, 2007 and running through September 30, 2010.
  - New Mexico Environmental Division will approve the Waste Isolation Pilot Plant (WIPP) Class 3 Permit Modification for elimination of headspace gas sampling and visual examination of High Activity TRU non-drum waste by September 30, 2006.
- SRS infrastructure will be maintained consistent with identified EM and other organizational needs and requirements.

**PBS SR-0014****Radioactive Liquid Tank Waste Stabilization and Disposition**

- Defense Waste Processing Facility (DWPF) will produce canisters at maximum throughput for duration of the project (based on achievable melt rate and waste loading for sludge being processed).
- A Canister Shipping Facility (CSF) for transferring radioactive liquid waste canisters into Office of Civilian Radioactive Waste Management shipping casks will begin on March 31, 2012, with operational startup by March 30, 2015. Alternate design or contracting strategies, including use of a commercial vendor, will be used to reduce estimated capital costs.
- The Federal Repository at Yucca Mountain will be available to begin accepting DOE spent nuclear fuel and vitrified radioactive liquid waste starting on April 1, 2015, with ramp up to full shipments by April 1, 2018.
- Implementation of the requirements contained in Section 3116, Defense Site Acceleration Completion, of Public Law 108-375, Ronald W. Reagan National Defense Authorization Act for Fiscal Year 2005, for waste determinations will be timely such that salt waste treatment and disposal can begin by August 31, 2006.
- The Salt Waste Processing Facility (SWPF) will be online by September 30, 2011.
- The SWPF will process approximately 5 million gallons (mgal) of salt waste during its first year of operation and 5.9 mgal per year thereafter.
- The Tank Farm feed infrastructure, the Saltstone Facility and the DWPF will support SWPF processing rates.
- Infrastructure scope for the Management and Operating (M&O) contractor to support tie-in of the SWPF will be consistent with the approved Interface Control Documents.
- Salt waste treatment and disposal via the deliquification, dissolution, and adjustment process will be consistent with the *Liquid Waste Disposition Processing Plan (LWDPP)* and associated schedule.
- Tank 48 recovery will be as described in the *LWDPP*.
- A modular cesium removal capability and an actinide processing capability will be online by October 1, 2007, and treat salt waste consistent with the *LWDPP*.
- New projects such as the new low level waste processing tanks will be designed, constructed, and operated as required to support the *LWDPP*.
- Tank closure activities will proceed under Section 3116, Defense Site Acceleration Completion, of Public Law 108-375, Ronald W. Reagan National Defense Authorization Act for Fiscal Year 2005, and will meet *Federal Facility Agreement (FFA)* compliance dates.
- GWSB #2 will be available by June 30, 2006, for additional canister storage, and GWSB #3 by September 30, 2015.
- No new waste streams from non-EM waste generators will be dispositioned by EM other than those currently included in the *LWDPP*.
- “Waste on Wheels” (WOW) will continue to be implemented successfully.
- Sludge heel removal and annulus cleaning alternatives will be successfully implemented to support operational closure of radioactive liquid waste tanks.

**PBS SR-0020**  
**Safeguards and Security**

- The safeguards and security (S&S) footprint will be minimized consistent with nuclear materials storage and disposition schedules developed in the respective PBS.
- New technologies will be used to minimize the reliance on security manpower.
- Security upgrades ("9/11 projects") will be completed by September 30, 2006.
- Security improvements described in the *2005 Implementation Plan* will be completed and upgrades implemented as scheduled.
- HB Line will not be an S&S Category I facility.
- FAMS will be downgraded to a safeguards Category IV facility no later than September 30, 2006, and transition to PBS SR-0040, Nuclear Facility D&D, by June 30, 2007.

**PBS SR-0030**  
**Soil and Water Remediation (Soil and Groundwater Project)**

- Soil and Groundwater Project (SGP) remediation scope will meet all regulatory requirements and milestones contained in the *FFA* and Resource Conservation and Recovery Act (RCRA) Part B Permit. The area completion approach integrates site facility decommissioning and SGP activities. SGP expects to realize execution improvement as implementation of the area completion approach develops and matures.
- Risk handling strategies will be successful.
- For purposes of achieving Area Records of Decision, the Environmental Protection Agency – Region 4 and South Carolina Department of Health and Environmental Control will accept slabs, facility foundations, and any determined sub-grade structure remaining after facility decommissioning is complete at a risk level of  $10^{-4}$  (using an industrial worker scenario) within the context of an acceptable risk level for the completion of the area.
- Closure of the F- and H-Protected Areas and Reactor Areas (i.e., inside the fence) will be achieved by addressing waste units, sewer lines, and known spills and adopting institutional controls, as appropriate. The canyons and reactor buildings will undergo in-situ decommissioning.
- Addressing Operable Units (OU) will be accomplished as planned with minimal assessment and remediation. Remedial actions are expected to be limited since all waste units and groundwater within each OU will have been addressed.
- This PBS will include will include post-closure costs and long-term stewardship costs for waste units through the end of the EM mission at SRS.

**PBS SR-0040**  
**Nuclear Facility Decontamination and Decommissioning**

- An integrated D&D and Soil and Groundwater cleanup approach will be implemented. The approach will utilize the *Integrated D&D Plan* and the *End State Vision* document with the following exceptions:
  - Any changes to facility readiness for decommissioning defined during schedule development of other PBS will be incorporated.
  - There are 1,017 major EM facilities included in the EM D&D project. Not all facilities are included in the baseline to be decommissioned. Savannah River Ecology Laboratory and Savannah River National Laboratory, both in A Area, are projected to continue operations beyond the end date of the EM cleanup mission. EM plans to transition SRNL to a new cognizant Program

Secretarial Office (PSO) that is better aligned with the evolving SRNL mission. D&D of these facilities are not in the baseline. A number of facilities in C Area have been designated as a potential for Cold War Historic Preservation. D&D of these facilities is included in the baseline. In the event that a facility, or group of facilities, is considered for transfer to another PSO, the baseline will be formally changed.

- Since detailed definitions for in-situ disposal of the large, hardened facilities have not been established and agreed upon, the rough order of magnitude (ROM) estimate methodology divides the full decommissioning estimate by two to provide a bounding estimate for the cost of in-situ disposal.
- SRS will have access to onsite and offsite locations and repositories in which nuclear, radioactive, and hazardous wastes can be treated and disposed.
- Deactivation costs for the primary operating facilities are included in the parent PBS for a given facility.
- Deactivation of site general area administrative type facilities is included within this PBS.
- Funding for post-decommissioning surveillance and maintenance through the end of FY 2031 is included in this PBS.

#### **PBS SR-0100**

##### **Non-Closure Mission Support**

- Continued support for identified programs/functions will be at a level consistent with funding target provided.
- Efforts to minimize requirements for these programs/functions should continue in order to focus available EM resources on cleanup.

#### **PBS SR-0101**

##### **Savannah River Community and Regulatory Support**

- Continued support for identified programs/functions will be at a level consistent with funding target provided.
- Efforts to minimize requirements for these programs/functions should continue in order to focus available EM resources on cleanup.

### **3.3 Project Accomplishments**

SRS is implementing a cleanup strategy as described in Section 3.1 that focuses on using a project approach to accomplish the EM cleanup. End states have been defined, and performance metrics and project milestones have been established to monitor achievement of objectives. Following are examples of project accomplishments to date and plans for future accomplishments. As of June 2006, more than 97% of the excess nuclear materials have been stabilized (139,519 of 143,518 items) and 53 of the 54 commitments in response to Defense Nuclear Facilities Safety Board (DNFSB) Recommendation 2000-1 had been met. Additionally, SRS has received and stored the contents of 372 SNF casks (foreign and domestic), while at the same time completing deinventory of the Receiving Basin for Offsite Fuel (RBOF). More than 2,132 vitrified waste canisters have been produced in conjunction with the removal of radioactive liquid waste from the storage tanks. Technical improvements have also permitted an increase in waste loading per canister. Shipments of TRU waste to the WIPP have been increased, and other wastes are being sent offsite to disposition facilities. In the Soils and

Groundwater Project, 323 of the 515 waste sites have been completed or have Records of Decision (RODs) in place. Over 200 facilities have been decommissioned. Relationships between SRS and its regulators have focused on additional completions through the deployment of new technologies and streamlining the regulatory documentation process.

Achievement of the following key milestones is expected by the end of FY 2007:

- Complete repackaging of Rocky Flats classified metal (complete).
- Complete plutonium packaging of 919 3013 containers (complete).
- Complete processing unirradiated Mk-22 fuel in H Canyon.
- Complete deinventory of the F-Area Material Storage (FAMS) facility.
- Complete deactivation of the F-Canyon Complex.
- Select an alternative plutonium disposition option.
- Complete shipment of 24,000 drums of low-activity TRU waste to WIPP.
- Complete disposal of hazardous legacy waste with paths for disposal.
- Complete disposal of mixed legacy waste with paths for disposal.
- Treat and temporarily store onsite 2,385 canisters of vitrified radioactive waste.
- Initiate sludge batch #4 processing at Defense Waste Processing Facility (DWPF).
- Dispose of 1.7 million gallons of salt solution.
- Initiate construction of Salt Waste Processing Facility.
- Initiate radioactive operations of Modular Caustic Side Solvent Extraction [CSSX] Unit (MCU)/ Actinide Removal Process (ARP) facilities.
- Initiate DWPF Recycle Evaporator Project.
- Continue operations of the Dynamic Underground Stripping Facility at M Basin to remove a significant quantity of the 1,000,000 pounds of solvent that were disposed of in M Basin and that have contaminated the vadose zone and the groundwater.
- Continue Area Completion activities in M and P Areas and initiate Area Completion in R Area.
- Complete remediation of more than 340 environmental waste units.
- Decommission up to 239 buildings resulting in a reduction of approximately 2,500,000 square feet.

With continued focus on cleanup, the following accomplishments are projected by the end of FY 2012.

- Initiate 3013 Container Surveillance and Storage Capability (CSSC) project in the K Reactor Building and implement Interim Surveillance Capability in K Area until the CSSC line item is operational.
- Complete shipment of 3,000 high-activity TRU drums and non-drum TRU waste to WIPP by the end of 2012.
- Complete construction and startup of DWPF Recycle Evaporator Project.
- Complete processing of sludge batch #4 and #5.
- Initiate sludge batch #6 processing at DWPF.
- Vitrify 3,315 canisters of DWPF glass.
- Begin operation of the Salt Waste Processing Facility.
- Dispose of 14 million gallons of salt solution.
- Operationally close seven liquid waste tanks.
- Decommission the FAMS facility, P Reactor, and D-Area Powerhouse.

- Achieve completion of the General Separations Area Consolidation Unit remediation.
- Achieve completion of M Area.
- Complete remediation of more than 370 environmental waste units.

At the completion of the EM Cleanup Project in FY 2031, the following will be achieved:

- Disposition of 13 metric tons of plutonium-bearing materials.
- Disposition of nuclear materials and spent nuclear fuel at SRS.
- Shipment of 10,400 cubic meters of TRU to WIPP.
- Disposition of approximately 339,000 cubic meters of low-level, low-level mixed waste and hazardous waste.
- Processing of nearly 36 million gallons of liquid radioactive waste into approximately 5000 canisters.
- Operational closure of 51 radioactive liquid waste tanks.
- Completion, or have in remediation, 515 environmental waste sites.
- Decommission of all remaining EM facilities.

## 3.4 Alternatives and Risks

During the development of any plan of this duration (20-plus years), numerous opportunities and challenges present themselves for consideration as alternatives in formulating the scope, schedule, and cost. These items are usually developed based on the risks that are identified while establishing such a baseline. This section provides a brief discussion on the overall risks identified as well as several alternatives that have been considered, risk mitigation strategies, and some of the open issues still to be resolved.

### Alternatives

Table 3.4.1 provides a listing of alternatives considered and the status of each (see next page).

**Table 3.4.1, Alternatives**

Alternative	Status
In-situ decommissioning of hardened facilities	Included in plan; details in discussion w/ regulators and stakeholders
Area completion	Included in plan; adopted in <i>FFA</i>
Monitored natural attenuation	Included in plan
Risk assessment based on maintenance worker versus industrial scenario	Not included in plan; discussion with regulators underway
Aluminum-clad nuclear fuel reprocessed in H Canyon	Included in plan; awaiting Departmental decision
Pu disposition using can-in-can vitrification process	Included in plan; awaiting Departmental decision
Spent nuclear materials consolidation in single facility	Included in plan
Pu 238 (TRU Pad in-situ)	Included in plan; discussion with regulators underway
Waste disposition charge-back	Considered; not included in plan
Implement LWDPP prior to SWPF operations availability	Included in plan; discussion with regulators underway
Waste on Wheels for bulk waste removal	Included in plan
Direct feed Canyon waste streams to DWPF	Not included in plan; under evaluation

## Risks

### Cross-Cutting Program Risks

Cross-cutting programmatic risks have been identified that could have a significant impact to the overall cleanup scope, schedule, and cost. Cleanup acceleration impacts and potential mitigation strategies are discussed for each specific risk. These will be further developed as the EM Cleanup Project is implemented.

- **Execution of the *PEP* requires over-target funding. Funding may not be provided in the amounts or on the schedule requested.**

**Impact:** Schedules may be delayed and associated EM lifecycle cost may increase.

**Mitigation Strategy:** The project execution strategy would have to be adjusted to accommodate the lack of required funding. Three different strategies will be pursued to avoid or reduce the impacts:

- (1) Review the *PEP* on an annual basis and revise as required.

Department of Energy Savannah River Operations Office (SR) senior management has committed to the annual review of the *PEP* and revision as deemed necessary. Programmatic assumptions and funding expectations, as well as actual performance, will be reviewed to determine whether changes to the *PEP* are necessary.

- (2) Execute an effective and timely Change Control process.

SR and EM have implemented a change control process to evaluate the impacts of changes in funding and/or scope. Lifecycle cost and schedule will be adjusted through this process as described in Section 4.4, Project Management.

- (3) Maintain effective working relationships with customers, regulators, and stakeholders.

Continue to work with regulators and stakeholders to define more efficient end states and processes. Apprise customers, regulators and stakeholders of any expected impacts to the program should funding reductions occur and develop alternative strategies.

- **Cost Estimate Pricing Assumptions**

**Impact:** Significant changes in baseline pricing assumptions outside of SR control, such as escalation rates, cost of subcontract services, contractor pension contributions, etc., could result in funding requirements being inadequate to achieve program objectives, impacting our ability to achieve schedule acceleration and EM cost baseline reductions.

**Mitigation Strategies:** Two mitigation strategies are available that could be taken individually or in combination to address this risk:

- (1) Establish a Cleanup Project Contingency, held by EM, to provide funding for changes outside of SR control.
- (2) Adjust project performance baseline cost estimates through formal change control and adjust activity schedules to stay within the established funding.

- **Adjustment of Workforce Skill Mix Consistent with Project Resource Requirements**

**Impact:** Inability to exercise workforce adjustments for full-service employees may result in an increase in project execution cost and/or delay in project schedules.

**Mitigating Strategies:** Three mitigation strategies are available that could be taken individually or in combination to address this risk:

- (1) Maximize cost effective re-assignment, re-training, and use of other workforce management options to minimize skill mix issues.
- (2) Leverage use of subcontract personnel, where cost effective.
- (3) Develop multi-year staffing plans to anticipate workforce transitions and facilitate stakeholder communications.

## **Program-Specific Risks**

Program-specific risks that could have a significant impact to individual PBS and may impact the overall clean-up scope, schedule, and costs have also been identified. For example, since the radioactive liquid waste program including operation, decommissioning, and environmental remediation is on the cleanup critical path, any

impact to this disposition program will delay completion of the cleanup project. This section provides a brief summary of some of the program-specific risks and potential mitigation strategies that have been identified. These are further discussed in the individual PBS descriptions in Section 7.0, Project Baseline Summaries, and risk management plans that have been prepared for each project.

- **Loss of a major process facility for an extended period of time**

**Impact:** The SRS major processing facilities—H Canyon, DWPF, and K-Area Material Storage (KAMS)—are all unique facilities. Therefore, any major process upset or problem could lead to an extended loss of capability.

**Mitigation Strategy:** Due to the unique nature of many SRS facilities, there is no viable mitigation strategy for the loss of a major facility. The SRS strategy will continue to be to maintain the facilities to standards and levels necessary to reduce the probability of a major outage.

- **Delays in the availability of the Federal Repository at Yucca Mountain**

**Impact:** The radioactive liquid waste program is dependent on the availability of the Federal Repository at Yucca Mountain. This *PEP* assumes that the repository will begin receipt of DWPF canisters in FY 2015 and will complete by FY 2023. Although delay of Federal Repository availability will not result in an extension of DWPF operation, additional interim storage of material awaiting shipment may be required.

**Mitigation Strategy:** Cost of additional storage capacity beyond GWSB #2 has been included in the baseline. The need to construct GWSB #3 will be assessed on an annual basis against the latest projections for Yucca Mountain availability.

- **Uncertainties within the radioactive liquid waste disposition program**

**Impact:** Any delay in the completion of this program could impact completion of the EM Cleanup Project at SRS. The potential issues listed here are further described in Section 7.14, Radioactive Liquid Tank Waste Stabilization and Disposition,;

- Timely approval of waste determinations as stipulated in Section 3116, Defense Site Acceleration Completion, of Public Law 108-375, Ronald W. Reagan National Defense Authorization Act for Fiscal Year 2005.
- Availability and success of the SWPF and the Liquid Waste Disposition Processing Plan.

**Mitigation Strategy:** Inability or significant delay in resolving these concerns will result in significant impact to the entire EM Cleanup Project at SRS.

- (1) Work with the Nuclear Regulatory Commission to streamline the waste determination process and apply lessons-learned from previous experiences.
- (2) Perform additional testing to confirm Caustic Side Solvent Extraction (CSSX) process effectiveness and design facilities accordingly.

- (3) Implement effective lessons-learned process with Hanford and Idaho Liquid Waste Programs.

### **3.5 Baseline Schedule, Milestones and Performance Measures**

A summary of the major cleanup metrics is presented in Table 3.5.1, EM Cleanup Project Performance Measures, and the Savannah River Site EM Cleanup Project baseline schedule is provided at the end of this section. More detailed PBS-specific schedules are provided in Section 7.0, Project Baseline Summaries. Also provided in Section 7.0 are milestones and performance measures for each PBS.

Table 3.5.1 EM Cleanup Project Performance Measures

Performance Measure	2004 PMP Lifecycle Scope	2006 PEP Lifecycle Scope	Delta
Plutonium packaged for long-term disposition	750 containers	919 containers	169 containers
Enriched uranium packaged for disposition	2,809 containers	2,809 containers	None
Plutonium/uranium residues packaged for disposition	414 kg	490 kg	76 kg
Depleted uranium and uranium packaged for disposition	23,182 MT	23,182 MT	None
Liquid waste eliminated	33,100 gal	33,100 gal	None
Liquid waste tanks closed	51 tanks	51 tanks	None
High-level waste packaged for disposition	5,060 canisters	5,862 canisters	802 canisters
Spent Nuclear Fuel packaged for disposition	35.925 MTHM	40.103 MTHM	-76.028 MTHM
Transuranic waste disposed	15,326 m3	15,553 m3	227 m3
Low-level and low-level mixed waste disposed ER and D&D Activities Legacy and Newly Generated	219,320 m3	412,743 m3 50,785 m3	244,208 m3
Material Access Areas eliminated	4 areas	3 areas	-1 areas
Nuclear facility completions	195 facilities	199 facilities	4 facilities
Radioactive facility completions	40 facility	40 facility	None
Industrial facility completions	816 facilities	816 facilities	None
Remediation complete	515 sites	515 sites	None

\* - This delta is the result of a change in the way the radioactive liquid waste is measured and not in the total quantity of waste to be treated and disposed.

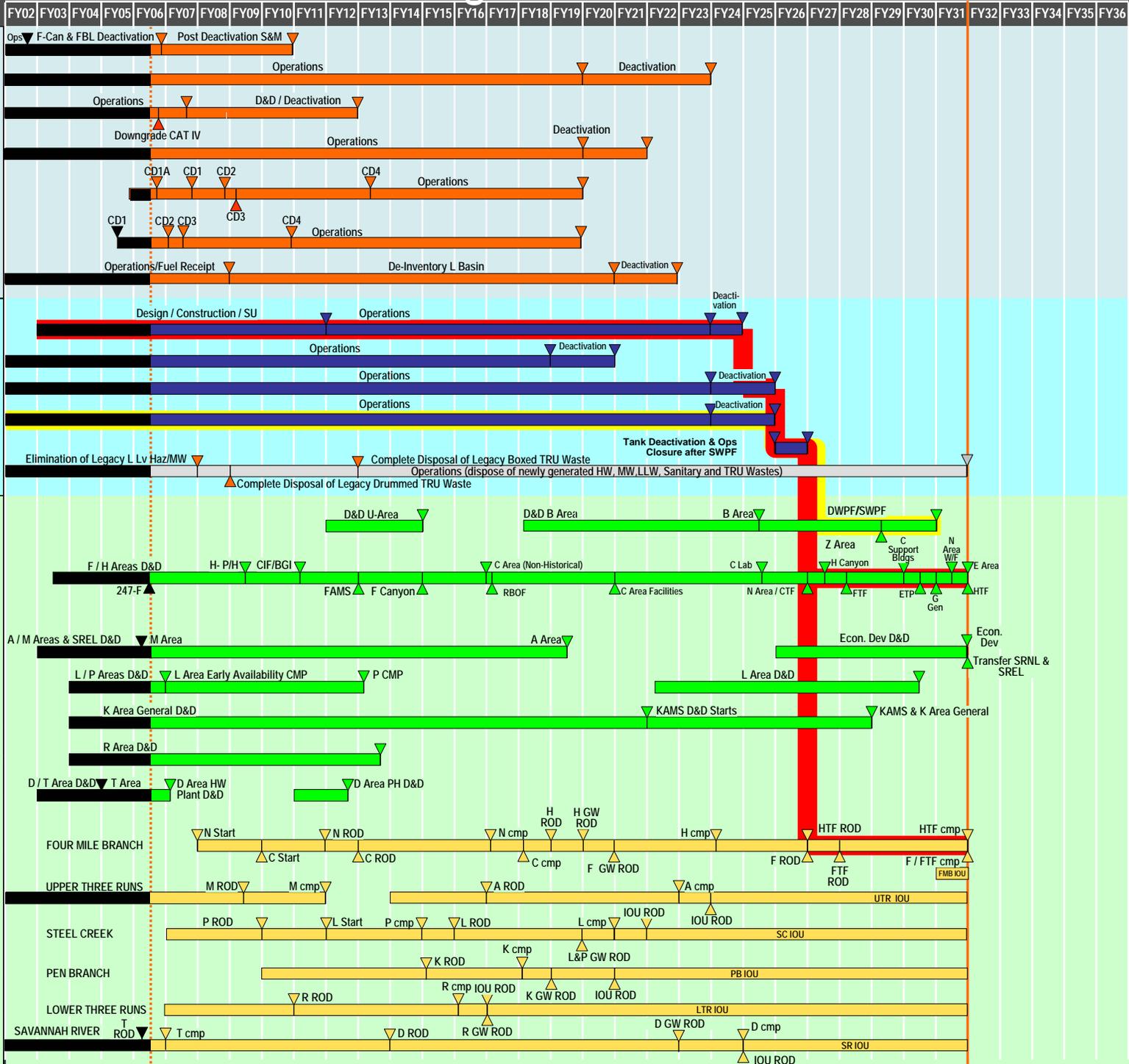
### 3.6 Contingency

SR recognizes that there is a risk that some of the programmatic and project assumptions and plans established to achieve cleanup of SRS may not be realized. Attempts will be made to mitigate these risks, however consistent with project/program management practices, this *PEP* identifies a contingency for the lifecycle baseline cost.

As summarized in Section 3.4, Alternatives and Risks, and further detailed in Section 7.0, Project Baseline Summaries, many risks exist for the EM Cleanup Project. For programs currently underway, the radioactive liquid waste disposition program contains the greatest risk, and it drives the critical path for completion of EM work at SRS. For programs currently in the pre-conceptual phase, the plutonium disposition program has the greatest risk due to the complexity of the task and its early stage of development.

The PBS Risk Management Plans identify the project and programmatic risks for the project and establish the DOE unfunded contingency amount used to determine the EM liability that must be added to the EM performance baseline. The EM Cleanup Project contingency is documented separately in the *SRS Risk Summary and Integrated Contingency Analysis*.

# SRS Integrated Schedule



**Notes:**

- NMMD - Orange
- Waste Disp - Blue
- D & D - Green
- Soil & GW - Gold
- ▼▲ = Milestones

PBS 20 Safeguards & Security supports the general site until the end of the EM project

**Critical Path #1**

**Critical path #2**

ROD = Area Record of Decision

IOU = Integrated Operable Unit

CMP = Complete

GW = Groundwater

## 4.0 Business Management

To further the Office of Environmental Management (EM) cleanup, Department of Energy (DOE) Savannah River Operations Office (SR) is developing new business management approaches. Key changes have occurred in the areas of contracting and performance monitoring. The contracting strategy with the Management and Operating (M&O) contractor has shifted from a traditional M&O approach to a Cost Plus Incentive Fee-like approach. An innovative method of providing incentive to accomplish a maximum amount of cleanup work during the contract period formed the basis of renegotiations between SR and the M&O contractor that resulted in Contract Modification M100 and M120. In the area of performance monitoring, SR has shifted from a management and control system focused on annual performance to a project management system focused on end state objectives. Effective project management methods and processes provide assurance of the successful accomplishment of performance objectives.

SR pursues an aggressive acquisition strategy to achieve efficient approaches to cleanup and reduce technical risk while being protective of the safety of the workers, the public, and the environment, and safeguarding the materials and resources at SRS. To ensure effective assessment and reporting of performance, SR assumes the role and responsibility of integrator of all EM Cleanup Project performance reporting. An integrated project management system has been developed, maintained, and managed by SR.

Recognition of management challenges and the continuing commitment to meet these challenges are integral to success. These management challenges include, but are not limited to:

- maintaining the ongoing commitment to implementation of integrated safety management and continued excellence in safety performance and environmental compliance;
- continued realignment/restructuring of the SR Field Office to facilitate contractor interfaces in a manner that supports achievement of the cleanup plan;
- ensuring human capital management goals and objectives for the SR office as specified in the *SR 5-Year Workforce Management Plan* are met;
- ensuring timely resolution of contractor skills mix and related workforce management issues;

- continuing to strengthen federal and contractor project manager and project control specialist capabilities and related project management and project control systems;
- pursuit of an aggressive acquisition strategy to achieve efficient approaches to cleanup and reduce risk;
- aligning performance monitoring, measuring, and reporting systems to conform with Government Performance Results Act (GPRA) expectations particularly with respect to the acceleration of the EM Cleanup Project described in this plan;
- assuring management and control systems are in place to effectively maintain minimum essential requirements;
- streamlining or tailoring certain DOE Order requirements that are inapplicable or no longer appropriate; and
- maintaining a strong commitment to regulatory collaboration and stakeholder involvement.

## 4.1 Work Breakdown Structure

A key element of the management and control system is the Work Breakdown Structure (WBS). A site-wide WBS is maintained to define required project work activity planning, cost estimating, cost collection and reporting levels. The WBS is under configuration control. Changes are approved through an established change control process.

Level 1 of the SRS WBS hierarchy represents the total SRS. Level 2 represents a specific program, as illustrated by Table 4.1.1, *SRS Level 2 Work Breakdown Structure*. Level 3 of the WBS generally corresponds to a facility, process, line item, or specific cleanup project, e.g., Project Baseline Summary (PBS), as illustrated by Table 4.1.2, *SRS Level 3 EM Work Breakdown Structure*.

Level 1 of the WBS hierarchy is provided below:

- Department of Energy-Savannah River Site (DOE-SRS)

Note: DOE-SRS includes the Department of Energy Savannah River Operations Office (SR); the National Nuclear Security Administration Savannah River Site (NNSA); Washington Savannah River Company (WSRC); Wackenhut Services, Incorporated (WSI); Savannah River Ecology Laboratory (SREL); the United States Forest Service (USFS); and other site contractors.

The WBS employs a hierarchical coding structure to organize both work and resources. Work is organized through the use of the WBS, and site resources are linked and traceable to both responsible and performing organizations. The WBS structure reflects the plan, resources, and responsibility for accomplishing work.

The WBS is modified, as appropriate, to reflect the new Department of Energy Headquarters (HQ) directed PBS structure and the redefinition of the site contractor work scope. EM work scope is captured in a single Level 2 WBS element: 01.30 EM Closure. Other site work and the responsible organizations are identified with their own Level 2 designation. Table 4.1.1 demonstrates these Level 2 identifiers.

**Table 4.1.1 SRS Level 2 Work Breakdown Structure**

WBS	WBS Description
01.03	Tritium
01.07	Work for Others – DOE Complex
01.08	Work for Others – Non DOE
01.14	Office of Science and Technology
01.17	Other Funded Non-Work Accounts
01.24	Office of Security & Emergency Operations
01.25	NNSA
01.30	Environmental Management Cleanup Project
01.40	New Tritium Production Mission

SR has defined by program the EM work scope to be performed by the site M&O in the contract Statement of Work contained in the *Performance Evaluation and Measurement Plan and Contract Management/Oversight Plan (PEMP)* (contract between SR and WSRC, Contract No. DE-AC09-96SR18500). For other site contractors, work scope by program is defined in their respective contracts. The EM work scope is projectized in a separate Level 3 element within the 01.30 portion of the WBS. Table 4.1.2 shows the Level 3 WBS elements and PBS structure within the 01.30 EM Cleanup Project.

**Table 4.1.2 SRS Level 3 EM Work Breakdown Structure**

WBS	PBS	WBS / PBS TITLE
01.30.01	SR-0011A	Nuclear Material Stabilization and Disposition – 2006 (Complete)
01.30.02	SR-0011B	Nuclear Material Stabilization and Disposition – 2012
01.30.03	SR-0014C	Radioactive Liquid Tank Waste Stabilization and Disposition
01.30.04	SR-0040	Nuclear Facilities D&D
01.30.12	SR-0030	Soil & Groundwater Remediation
01.30.14	SR-0011C	Nuclear Material Stabilization and Disposition – 2035
01.30.15	SR-0012	Spent Nuclear Fuel Stabilization and Disposition (Includes PBS DOE-HQ-0012X)
01.30.16	SR-0013	Solid Waste Stabilization and Disposition
01.30.20	SR-0020	Safeguards and Security
01.30.10	SR-0100	Non Closure Mission Support
01.30.11	SR-0101	Community and Regulatory Support
01.30.00	SR-PD	Federal Program Direction

Below Level 3, the work scope is defined by area in a separate Level 4 element and further defined by subproject in a separate Level 5 element. The *subproject* is the primary focal point in the management and control of the work.

Below Level 5, contractors expand the WBS to facilitate internal control. The lowest WBS element, the *terminal* element, is supported by cost activity codes. These cost activity codes are utilized in the collection of actual costs and are unique to a given *terminal* WBS element. To ensure each element reflects total resources required, all

indirect cost, overhead cost, and fee are allocated against the direct costs in accordance with accepted site procedures. Indirect costs and overhead costs include support to the project such as environmental permitting, surveillance, and monitoring; safety basis analysis; industrial hygiene; radiation control and monitoring; laboratory analysis and research; and emergency management provided by specialized technical organizations.

The WBS is the management tool through which work scope, schedules for execution of work, and associated cost are integrated. The WBS is utilized in defining scope, schedule and cost baselines.

Definitions for each WBS element through Level 5 are provided in a WBS dictionary. For WSRC, a WBS Summary Worksheet in the WBS dictionary describes each of the subprojects (Level 5) and work sets (Level 6). These worksheets describe work scope to be accomplished, including key planning assumptions, milestone definitions, Government Furnished Services and Items (GFSI), and the basis for performance measurement. Dictionaries also exist for other site contractors and are included in a corresponding WBS.

## 4.2 Acquisition Strategy and Contract Management

SR utilizes contracts to execute the environmental cleanup work scope at SRS. The majority of the cleanup scope falls within the M&O contractor, currently WSRC. Security services are provided under separate contract, currently awarded to Wackenhut Services, Inc (WSI). SR has a number of additional direct contracts to provide services or perform discrete work scope.

SR is employing new contracting strategies to achieve Departmental goals and objectives. The new strategies are challenging both the federal workforce and site contractors to re-examine traditional approaches to work accomplishment and to develop new approaches that will accomplish more work for less cost.

During 2003, SR renegotiated the existing contract with WSRC and its integrated partners for the management and operation of SRS. Contract Modification M100, implemented in June 2003, and Modification M120, implemented in July 2004, constituted a shift from the traditional M&O approach to a Cost Plus Incentive Fee-like approach to achieve cleanup. An innovative method of providing incentive to the contractor is the basis of the new approach: The Department provided a commitment for a funding profile for the duration of the contract and a scope of work; the contractor is being provided an incentive to accomplish a maximum amount of cleanup work during the contract period.

SR has also re-evaluated its traditional approach of reliance upon a single contractor to execute all site environmental cleanup work scope. EM work scope is now being assessed strategically and contracting strategies employed based on criteria established for discrete scopes of work. This approach has resulted in several work projects being identified for accomplishment through direct contracts managed by the federal workforce. In these instances, the federal employees assume a significant role in the project management, implementation, and execution process. Examples of employing this approach include the Salt Waste Processing Facility (SWPF) and the Glass Waste Storage Building (GWSB) #2.

Within the next two years, the scope of work associated with the present M&O contract and the security contract will be awarded competitively. Competition will ensure DOE obtains “best value” in its execution of the EM Cleanup Project. DOE is considering its many acquisition options for achieving the post-2006 work scope. As aforementioned, discrete scopes of work will be evaluated for accomplishment through contracts managed and executed by SR.

## 4.3 Organizational Structure and Responsibilities

Organizationally, SR reports to DOE Office of Environmental Management (EM), headed by the Assistant Secretary of Environmental Management (EM-1). As Lead Program Secretarial Office (PSO), EM is responsible for planning and executing the environmental management mission and for providing landlord services at SRS. The SR Manager reports to EM-1 and is responsible for managing the Field Office consistent with DOE policy guidance; executing assigned programs and projects; overseeing operational performance including environment, safety, health, safeguards, and security.

SR utilizes contracts to execute the environmental cleanup work scope at SRS. The majority of the cleanup scope falls within the M&O contract, currently WSRC. Security services are provided under separate contract, currently awarded to WSI.

### 4.3.1 SR Organization Structure and Management

SR is committed to conducting work at SRS safely, securely, and efficiently, consistent with DOE environmental management missions and objectives. To meet this commitment, SR has established a management system that relies on integrated processes for work planning, budgeting, work authorization, execution, and change control for SR and its contractor organizations, consistent with DOE P 450.4, *Safety Management System Policy*. It is implemented through the integration and execution of formal procedures and programs that include the involvement of workers throughout the organization. Of key importance in this system is the establishment of clear roles, responsibilities, and authorities for employees and organizations.

The management functions, responsibilities, and authorities of SR are documented in SRM 300.1.1B, Chapter 1, Section 1, *DOE-SR Functions, Responsibilities, and Authorities Procedure (FRAP)*. Safety management is an integral part of the SR management system based on the guiding principle that DOE line management is responsible for safety. The safety management functions, responsibilities, and authorities of the SR organizational elements outlined in the *FRAP* are in accordance with DOE P 411.1, *Safety Management Functions, Responsibilities, and Authorities Policy*; DOE M 411.1-1B, *Safety Management Functions, Responsibilities, and Authorities*; and *Environmental Management Functions, Responsibilities, and Authorities Document (EM FRA)*, as well as specific delegations by EM. The *FRAP* also provides delegations of authorities to SR beyond those defined in DOE M 411.1-1B and provides mission and function statements for each SR organizational entity, identifying responsibilities assigned to each organization as defined by this SRS Environmental Management Program Project Execution Plan (*PEP*).

To implement the mission requirements of this *PEP*, SR developed the *Organizational Performance Management Plan (OPMP)*, which defines the goals

and annual objectives for the SR technical operations and business management systems. The *OPMP* is consistent with and supports the goals and priorities established by EM-1, as well as the *President's Management Agenda*, the Secretary of Energy's strategic missions and priorities, and the *DOE Strategic Plan*. The *OPMP* establishes site-wide programmatic and business goals and objectives to achieve the SRS cleanup mission. These SR goals are cascaded throughout the organization through the development and implementation of Assistant Manager/Office Head Performance Management Plans. The referenced goals are then incorporated into employee Performance and Development Plans in the form of specific performance expectations. .

## SR Organization Structure

The SR organization structure consists of both line management organization and support organizations. Line management organizations have responsibility for the safe, secure, and efficient operation of DOE facilities and activities under their purview. Assistant Managers (AM) and Office Directors (OD) provide programmatic support to the SR Manager, and have delegated authority to represent line management. The direct reports to the Manager compose the SR Senior Management Team (SMT) and, as such, provide the leadership and set the example for SR employees as to how to work together to achieve the mission.

Services provided by organizations in support of the EM mission include: environment, safety, and health; legal; procurement; property management; fiscal management; human capital management; civil rights administration; scientific and technical information management; public affairs administration; technical support; engineering; quality assurance; records management; administrative documentation; budget preparation, execution, and evaluation; obligation and expenditure control of appropriated funds; and other miscellaneous services.

SR implemented a major reorganization in June 2003 to focus site resources and activities on the completion of the EM mission. The resulting SR structure provided for a Deputy Manager for Cleanup (DMC) and a Deputy Manager for Business (DMB).

Organizations reporting to the DMC include:

- Assistant Manager for Closure Project (AMCP)
- Assistant Manager for Nuclear Material Stabilization Project (AMNMSP)
- Assistant Manager for Waste Disposition Project (AMWDP)
- Office of Environment, Safety, and Health (OESH)
- Office of Cleanup Projects Management (OCPM)
- Office of Safeguards, Security, and Emergency Services (OSSES).

Organizations reporting to the DMB include:

- Office of the Field Chief Financial Officer (CFO)
- Office of Human Capital Management (OHCM)
- Office of External Affairs (OEA)
- Office of Chief Counsel (OCC)
- Office of Site Services (OSS)
- Office of Contracts Management (OCM)
- Office of Civil Rights (OCR).

Organizational changes are in process, including changes associated with implementation of DOE Order 226.1, *Department of Energy Oversight Policy*.

## Federal Resource Management

The *SR 5-Year Workforce Management Plan (WMP)* is one of many tools used by the SR leadership to manage its human capital resources. The *WMP* identifies the staffing and workforce capabilities needed for continued operations and cleanup and identifies the process for transitioning employees affected by the closure of SRS facilities. The *WMP* focuses on workforce management versus staffing, with emphasis on managing the workforce by shifting and/or retraining the existing SR workforce for work that is more directly tied to critical cleanup activities. The objective for SR leadership is to manage the human capital resources intentionally, creatively, and efficiently in order to appropriately reduce the current size of the SR federal workforce, while meeting the cleanup objectives identified in this *PEP*, preserving competence, and maintaining diversity.

In October 2003, the SR SMT began the process of allocating and identifying resources, skills, and competencies required for each PBS, as identified in Section 7.0, Project Baseline Summaries, of this *PEP*. The results from this process serve to provide a clear link between workforce planning and work execution, as well as to resource load the Integrated Site Schedule as required by DOE M 413.3-1, *Project Management Manual*, and the *SR Integrated Project Management Implementation Plan (PMIP)*. The *WMP* identifies the resources required to execute the cleanup mission, provide matrix support to other PSOs at SRS, and support other EM closure sites. In determining federal resource requirements, the SMT assigned resources to each PBS; analyzed the potential impacts based on retirement projections; identified resource overages due to facility closures; and identified skill shortfalls. Specific resource requirements are identified in the *WMP*. Section 5.0, Resource Requirements, includes a discussion on federal resource requirements.

## Federal Responsibilities

Major roles of the federal workforce are described below.

**Federal Role in Contract Management and Oversight** – Roles and responsibilities for federal staff regarding contract management and oversight of the prime M&O contract are identified in the *FRAP*, as well as the *PEMP*. The EM work is structured to focus on achievement of Target and Maximum Case work scope by the dates set forth in the *PEMP*. The organizational structure established for administering and overseeing the requirements and provisions of primary contracts include designation as the lead contracting authority, which is the SR Manager. SR Contracting Officers assist the SR Manager in management and oversight of all aspects of the contracts.

Contracting Officer Representatives (COR) are appointed by the Contracting Officer and have primary responsibilities for technical oversight and administration of the contract, as supported by the SR staff. Duties include:

- continuously monitoring the contractor performance against performance requirements and expectations defined in the contract; and
- meeting monthly with the contractor senior management personnel to discuss the status of the contractor performance from an overall perspective.

Roles and responsibilities regarding contract management and oversight for all other contracts are contained in the specific contract language.

**Federal Authorities and Delegations** - The *SR FRAP* delegates approval authority for specified actions to the incumbents of designated positions to approve or disapprove actions proposed by the contractor under the terms of the contract. The delegated officials are authorized to act within the stated limits of the delegation. Delegations related to contractor activities include:

- Change Control Authority – The SR Baseline Configuration Control Board (BCCB), chartered by the SR Manager, approves or disapproves change control requests that crosscut AM/OD areas of responsibility. AM/OD approve or disapprove change control requests within their assigned levels of authority.
- Project Approval – Responsible AMs are delegated authority to authorize General Plant Project funding within limits established by DOE directives or delegated authorities.

The *PEMP* identifies specific roles and responsibilities for federal staff regarding contract management and oversight.

**Federal Role in Regulatory Negotiations** – SR is committed to executing an integrated regulatory strategy to refocus environmental commitments on reducing risk and accelerating cleanup activities at SRS. OESH has been designated the Lead Organization for that function. In coordination with OESH, AMCP implements the *SRS Federal Facility Agreement (FFA)*, which is a tri-party agreement among SR, the Environmental Protection Agency (EPA), and the South Carolina Department of Health and Environmental Control (DHEC), that governs the environmental remediation and radioactive liquid waste tank closure program at SRS. The *FFA* establishes the roles and responsibilities of the three parties.

OESH is responsible for configuration control of the *SRS Site Treatment Plan (STP)*, which is a document that requires radioactive mixed waste to be treated to hazardous waste standards within an agreed-upon schedule. AMCP, AMWDP, and AMNMSP, in coordination with OESH, implement waste stream management commitments in the *STP*. The *STP* lays out the approaches and schedule milestones for treating and managing radioactive mixed wastes that are stored or generated at SRS.

In addition, SR personnel monitor the contractor implementation of the integrated regulatory strategy; conduct long-term planning through periodic update of the *Land Use Controls and Assurance Plan (LUCAP)* and *Land Use Controls Implementation Plans (LUCIPs)* for individual waste sites to reduce footprint of legacy facilities; and assist in the development of environmental policies and compliance strategies to support the development and execution of the *SRS Environmental Management System* and other SR programs and operations.

**Federal Role in Stakeholder Interface** – As a method of ensuring SRS business management systems, technical support functions, and line missions are properly focused on driving cleanup and site closure, SR proactively communicates with and involves stakeholders in the SR decision-making processes. SR personnel provide opportunities for input from the SRS Citizen Advisory Board (CAB) at regular CAB meetings, promptly respond to CAB recommendations, and provide opportunities for public input through other avenues. SR is committed to an open and collaborative

process to implement sound, appropriate, and cost-effective cleanup. Additionally, SR provides information on site activities to the general public, responds to media inquiries, responds to public requests for information, and maintains an active public outreach program to promote a culture of public confidence and trust.

### **4.3.2 Management and Operations Contractor Organization Structure**

WSRC is the M&O contractor for SRS and has responsibility to execute the EM Cleanup Project. The only significant EM program exclusions are the SWPF and GWSB #2 projects, which are managed by SR. The contract additionally assigns WSRC execution scope for the National Nuclear Security Administration missions and several annually authorized Work for Others programs.

WSRC partners include the Washington Savannah River Company, a subsidiary of Washington Group International (WGI); Bechtel Savannah River Company; British Nuclear Group (BNG) America; BWXT; CH2M Hill; and Polestar.

In March 2006, WSRC reorganized into two major functional programs: Liquid Waste Program and M&O Program. These two programs, along with all supporting groups, report to the Office of the President, WSRC.

Liquid Waste Operations has responsibility for the Radioactive Liquid Tank Waste Stabilization and Disposition Project (PBS SR-0014C). M&O Operations has responsibility for Nuclear Materials Stabilization and Disposition Project (PBS SR-0011B and SR-0011C); Spent Nuclear Fuels Stabilization and Disposition Project (PBS SR-0012); Solid Waste Stabilization and Disposition Project (PBS SR-0013); Soil and Water Remediation Project (PBS SR-0030), and Nuclear Facility Deactivation and Decommissioning Project (PBS SR-0040B and SR-0040C). In addition to the aforementioned EM PBS scope of work, M&O Operations has responsibility for execution of the NNSA mission work.

### **4.3.3 Security Services Organization Structure**

WSI is contracted by SR to provide security support services for SRS. WSI is a paramilitary organization that provides total security services, including access control, property protection, law enforcement, criminal investigations, traffic control, canine explosives and drug detection, aviation support, river patrol, alarm equipment monitoring, and a Special Response Team.

WSI maintains a professional training staff to provide basic and specialized security training, physical conditioning, weapons training and qualification, and area-specific field training. The administrative support functions are designed to ensure that the critical WSI mission is conducted effectively, safely, and in the most cost-efficient manner. WSI employs support staff professionals with expertise in performance testing, total quality, safety, human resources, compensation and benefits, resource management, logistics, computer systems, accounting, labor relations, and security program planning.

## 4.4 Project Management

SR has implemented a planning and execution process that reflects a project management approach to work accomplishment. The management system approach based on annual baselines, scope, and funding has been replaced by a project management system that establishes a lifecycle baseline for the EM work scope. The lifecycle baseline defines end-state objectives, identifies all of the scope and a timeline to accomplish the scope, and establishes a funding profile within which the scope is to be executed.

To provide assurance of progress toward performance objectives, SR is assuming the role of integrator for the SRS Project Management System. The OCPM which reports to the DMC is responsible for the Project Management System. Among the project management responsibilities is managing the *SRS Environmental Management Integrated Lifecycle Schedule*, the integrated risk management process, and the configuration control process and for providing for the development and maintenance of qualified Federal Project Directors to manage projects and Project Control Specialists to monitor project performance.

To ensure the project management policies, principles and requirements of DOE O 413.3, *Project Management for the Acquisition of Capital Projects*, are met, SR issued the *PMM* (SRM 410.1.1D, *SR Project Management Manual*) and executed the *SR Integrated Project Management Implementation Plan (PMIP)*. Contractors are required to have systems in place that support the SR role of integrator of site EM performance data.

### Project Execution Plan and Lifecycle Baseline

The elements of a baseline as identified in DOE O 413.3, *Program and Project Management for the Acquisition of Capital Assets*, and the elements of a Federal Baseline as described by the *EM Federal Baseline Development Policy* are included in this *PEP*. Section 7.0, Project Baseline Summaries, of this *PEP* contains a description of scope, cost, schedule, and key performance metrics for each PBS. An integration of the PBS descriptions provides the essential elements of a lifecycle baseline for the EM Cleanup Project at SRS. The sections within this *PEP* and each PBS description in Section 7.0, as augmented by certain SR, SRS, or PBS-specific documents, provide the equivalent of a Project Execution Plan for the EM Cleanup Project and its respective PBS.

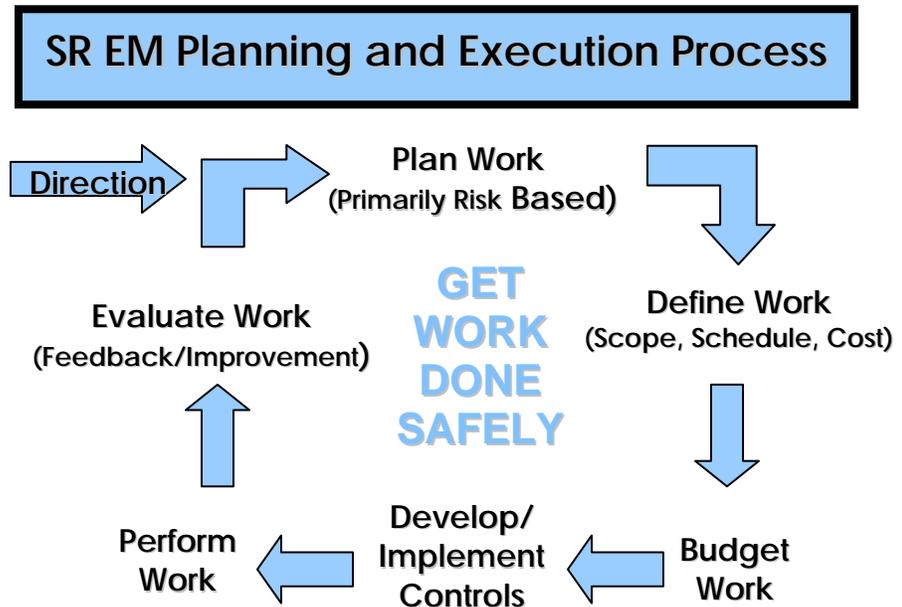
The costs and schedules of the individual PBS are integrated to establish the basis of the EM Lifecycle Cost Baseline reflected in the Integrated Planning, Accountability, and Budgeting System (IPABS) and the EM Integrated Lifecycle Schedule.

### Integrated Safety Management

SR is committed to ongoing implementation of Integrated Safety Management (ISM) and continued excellence in safety performance in the execution of the SRS Cleanup Project. Performing work safely is at the heart of the Planning and Execution Process, as illustrated in Figure 4.4, SR EM Planning and Execution Process. SR management is committed to the safe performance of all work. This commitment is reflected in the contract with the M&O contractor: "The contractor shall manage and perform work in accordance with a documented Safety Management System"

(reference Contract Part II, Section I, I.96 (c)). For federal staff, the SR management commitment, which encompasses the requirements of DOE P 450.4, *Safety Management System Policy*, is communicated and implemented through SR directives. SRM 400.1.1B, *Safety Management System Description Manual*, provides a discussion of these commitments, the DOE P 450.4 requirements for an ISM System, and how they are integrated to provide the *SR Safety Management System*.

Figure 4.4



#### 4.4.1 Performance Monitoring, Reporting, and Evaluation

SR has implemented a performance-based oversight and assessment process to manage contracts and EM projects. This process ensures that progress is reported against the baseline (technical, scope, cost, schedule, and key performance metrics) and facilitates management of contracts and open communications of progress and issues among SR, HQ, and the contractors. Contractors report status to SR, consistent with the requirements of the assessment process on an agreed upon schedule to provide early warning of issues that could threaten the successful completion of the cleanup goals and provide reliable and timely information to HQ. While formal reporting schedules have been established, critical issues are promptly and openly communicated to allow for early action to mitigate their impact. HQ conducts periodic progress reviews to ensure mutual understanding of status and issues and to provide the support required for the successful accomplishment of cleanup goals. Key measurable elements in the performance monitoring process are scope (as reflected in the case of the M&O contractor by progress against the Target Case baseline and in the case of other contractors by progress against the performance measurement baseline), performance measures (as reflected against the corporate performance measures or established project metrics), schedule (as reflected in the EM Integrated Lifecycle Critical Path Schedule), and cost (budget baseline versus actual cost).

#### Performance Elements and Monitoring Processes

**Performance Measures** – The primary performance measure under Contract Modification M100 and M120 is schedule acceleration. While generic performance measures have been established for all SRS projects, the overall progress of the EM Cleanup Project during the current contract period with the M&O contractor is measured against the Contract Performance Baseline (CPB), validated by SR in November 2003. Minimum, Threshold, Target, and Maximum work scope for achievement by WSRC is defined in the *PEMP*. Under the terms of the contract, annual funding levels to support work scope accomplishment are defined, as Government Funded Services and Items (GFSI). WSRC is provided with incentives for schedule acceleration. Minimum threshold requirements must be achieved prior to the contractor receiving fee payments. The amount of fee earned is determined by the degree of demonstrated schedule acceleration. SR management at monthly EM Performance Review meetings assesses the contractor progress. SR staff and management validate performance prior to awarding fee.

In addition to performance being measured against the contract performance baseline, performance is measured against the lifecycle baseline. Each PBS has PBS-specific measures as well as measures that form the basis of the SRS performance relative to the complex-wide EM metrics known as the corporate performance measures (formerly known as the EM Gold Chart Metrics). These performance measures are designated as EM program elements and are under EM configuration control. Negotiation and control are at the EM Configuration Control Board (CCB) level of authority.

**EM Lifecycle Integrated Schedule** – SR maintains an EM Integrated Lifecycle Schedule. SR contractors prepare and maintain schedules for the EM work scope covered within their contract with SR. The EM Integrated Lifecycle Schedule is a

logic diagram that depicts key activities, key internal SRS interfaces, key external interfaces (DOE Complex, regulators, etc), milestones, and the logic necessary for accomplishing the risk reduction goals. The schedule is prepared with the SRS standard scheduling software and has the capability for “what if” exercises that are necessary for developing working options should the baseline logic and assumptions change. All cost estimates and performance measures are based on the EM Integrated Lifecycle Schedule. Approval and control of the schedule is at the BCCB level of authority unless a change in the schedule produces a change in the defined cleanup end point, i.e., extends the PBS baseline schedule. Cleanup end states or end points have been designated as EM program elements and are under the authority of the EM Configuration Control Board.

**EM Baseline Cost** – The cost estimates reflect the accomplishment of the risk reduction goals, performance metrics, and the EM Integrated Lifecycle Schedule. It is recognized that the estimates for the planned work are greater than the expected funding. Accordingly, it is expected that the contractor will implement cost reductions and operational efficiencies to close this gap. Lifecycle cost, as reported in IPABS, is designated as an EM program element and is under the authority of the EM Configuration Control Board.

**Integrated Safety Management** – To ensure safety performance is consistent with safety objectives outlined DOE P 450.4, *Safety Management System Policy*, SR facility representatives perform routine inspections of facilities, SR staff conduct technical assessments, and SR management provide oversight through the management walk-through program. Assurance of safety performance is provided through the use of safety metrics to identify trends and provide the basis for corrective action.

**Systems Engineering** – The systems engineering process is used to define project mission requirements, identify and define risks, and to verify that products and services meet project needs. The systems engineering process focuses on defining project needs and required functionality early in the development cycle, documenting and validating requirements, and then proceeding with solution development. This process continues through the project lifecycle. The process relies on team building and clear definition and delineation of project team member’s roles and responsibilities to maximize communication among functional organizations and ensuring that all stakeholders are involved and committed. This ensures that solutions meet the requirements, interfaces are controlled, and technical work is effectively integrated.

**Value Management** – Value management methods are used to analyze the functions of systems, equipment, facilities, services, and supplies for the purpose of determining the “best value” consistent with the required performance, quality, reliability, safety, and cost. Value management is used early in project development and the design process for maximum benefit. Incentive programs are used in appropriate contracts such as facility construction contracts to share cost savings with contractors who identify design improvements.

**SR Project Reviews** – Federal Project Directors provide project performance data, review trends, and discuss efforts to management quarterly to SR senior managers.

**Financial Reviews** – Contractors provide monthly cost reports that are reviewed by the line organizations. Financial reviews are conducted to compare costs incurred against planned expenditures, and significant variances are identified and

explanations provided. These reviews serve as the basis for earned value measurement and are utilized as a tool to monitor expenditures compared to appropriated funds. In addition, SR management reviews cost performance data at monthly EM Performance Review meetings. Issues and concerns are identified and tracked to closure.

**Estimates at Completion** – Estimate at Completion (EAC) reviews are conducted quarterly with federal and contractor staff. EACs generally analyze execution of the budget by contractors, costs incurred to date, projected expenditures for the year, current spend plans, and variances.

**Contracting Officers Representative Monthly Contractor Performance Feedback** – In accordance with the *PEMP*, SR assesses the contractor performance and provides feedback on a monthly basis. Each designated COR performs this review on PBS within their areas of responsibility. This monthly review includes results of assessments and status of key metrics. The contractor performance is evaluated with respect to five key areas: safety and security, technical capability and performance, cost effectiveness, corporate support, and performance against CPB expectations.

**Real Property Asset Management** – The management of real property assets takes a corporate, performance-based approach to real property lifecycle asset management that links real property asset planning, programming, budgeting, and evaluation to program mission projections and performance outcomes. Acquisitions, maintenance, recapitalization, and disposal are balanced to ensure real property assets are available, utilized, and in suitable condition to accomplish DOE missions. Site-level performance measures have been developed to ensure proper stewardship of SRS real property assets throughout their lifecycle. The performance measures correspond with the major functional components prescribed in DOE directives: planning, real estate, acquisition, maintenance and recapitalization, disposition and long-term stewardship, and value engineering. Assessments are conducted periodically to ensure contractor implementation of order requirements and progress towards accomplishing performance measures.

## 4.4.2 Configuration Control

Multiyear technical, scope, schedule, and cost baselines have been established in the *PEP*. The *PEP* establishes the basis for the EM lifecycle baseline. Management, control, and integration of scope, schedule and cost of the lifecycle baseline is consistent with the requirements of DOE O 413.3, *Project Management for the Acquisition of Capital Assets*. The *PEP* and lifecycle baseline also serves as the basis for updating the EM Integrated Planning, Accountability, and Budgeting System (IPABS). The integrity of the baseline is maintained through formal change control as scope, cost, and schedule baseline changes are identified, significant cost savings initiatives are implemented, or funding assumptions change.

SR and its contractors have implemented formal techniques and procedures for baseline management and control. The SR project management process ensures that appropriate levels of control are applied to SRS projects. Baselines are developed as an integral part of the EM planning, budgeting, execution, and reporting process. The project management requirements of DOE O 413.3, *Project Management for the Acquisition of Capital Assets*, are applied to traditional capital projects and PBS projects on a “tailored approach” (i.e., major line item projects have more restrictive

requirements; smaller capital equipment and general plant projects are less restrictive). The tailored approach applied to each PBS is similar to that of a traditional construction project, thereby promoting a focus on completion of the overall PBS scope and not simply on managing the work.

## Change Control

Changes to baselines are controlled through formal change control. EM work scope at SR is defined by the following baselines:

- line item and capital projects
- contract performance baseline
- lifecycle baseline reflected in *PEP*

Each of the baselines is managed by their respective change control processes. However, implementation of the management and control system ensures appropriate integration of these baselines. SR and the site contractors have established configuration control boards that have been assigned levels of approval authority based on change thresholds and/or contractual authority. This approach ensures that changes can be addressed rapidly without compromising control.

The CPB is controlled through a formal change control process that ensures that changes are authorized at approved levels of authority. SR has established a Baseline Configuration Control Board (BCCB) to manage the SR baseline control process. Changes to the CPB are under the change authority of the BCCB.

Line item, capital, and PBS projects follow a change control process defined in DOE O 413.3, *Project Management for the Acquisition of Capital Assets*, and SRM 410 1 1D, *SR Project Management Manual (PMM)*. If the proposed change will result in a change to the PBS within which the line item or capital project resides or the CPB, the change must be approved by the BCCB.

Changes that impact EM program elements must be approved by the EM CCB. EM program elements are identified in Table 4.4.2, EM Program Elements..

**Table 4.4.2**  
**EM Program Elements**

EM Program Element	Description
Performance Management Plan	Site strategy document
Cleanup End States/End Points	Criteria that define completion
EM Corporate Performance Metrics (formerly EM Gold Chart Metrics)	Schedule and lifecycle scope
Performance Measures/ Performance Incentives	Incentives to accomplish work
Annual Baseline Cost	Cost
Lifecycle Cost	Cost as reported in IPABS
Project Baseline Summary Structure	Budget structure
WIPP Transportation Baseline	Key disposal interface
Federal Non-Labor Resources	Budget allocation

### 4.4.3 Project Management Roles and Responsibilities

SR has project management systems, processes, and oversight techniques to ensure that the EM Cleanup Project baseline and mission are managed in a manner that is consistent with achieving safe, cost-efficient cleanup. The roles and responsibilities for project management are provided below.

**Field Office** – In its site management capacity, SR:

- develops and maintains a comprehensive baseline for the EM Cleanup Project, in accordance with the aforementioned processes;
- realigns, restructures, and focuses contracts and incentives (with appropriate HQ approvals) that drive performance to deliver on cleanup objectives;
- executes a performance-based oversight and assessment process to manage the contract;
- performs appropriate performance monitoring and reporting to meet the requirements of DOE O 413.3, *Project Management for the Acquisition of Capital Assets*, and DOE M 413.3, *Project Management for the Acquisition of Capital Assets*;
- provides for the development and maintenance of qualified Federal Project Directors and Project Control Specialists to manage projects and project control system processes; and
- identifies requirements and appropriately tailored approaches that are safe, effective, and consistent with best practices of both project management and ISM.

**Headquarters** – In its capacity as the highest review and approval authority, HQ:

- reviews and approves site baseline documentation and changes, as appropriate;
- provides timely resolution of issues to ensure the successful accomplishment of the cleanup goals, including work with other Program Secretarial Offices as interfaces dictate; and
- provides timely approval, as appropriate, of the SR acquisition actions.

**SR Contractors** – Contractors are responsible for developing the work plans and estimates required to accomplish the EM Cleanup Project goals and execute the work as planned. In the role of performer, the contractors:

- provide detailed estimates and baseline documentation;
- maintain schedule status and report progress and issues against the schedule activities;
- report performance against baselines and performance measures;
- report cost against approved budgets and funding levels; and
- implement requirements and appropriately tailored approaches that are safe, effective, and consistent with best practices of both project management and ISM.

#### Federal Project Directors

**Federal Role in Project Management** - Roles, responsibilities, and accountabilities for managing projects are identified in DOE O 413.3, *Program and Project Management for the Acquisition of Capital Assets*, and more specifically in

SRM 410.1.1D, *SR Project Management Manual (PMM)*. Each major project has a Federal Project Director whose responsibilities include, but are not limited to:

- serving as the federal official responsible and accountable for overall success of the project;
- tailoring DOE project management requirements to the specific project;
- approving justification for mission need;
- leading development of and approving project execution plans;
- ensuring SR requirements and commitments are included in project schedules;
- developing risk management plans and managing the risks;
- signing all acceptance documents;
- having overall responsibility for the cost of the project through the project cycle; and
- reporting project status via monthly reports and quarterly project reviews.

## Integrated Project Teams

An Integrated Project Team (IPT) is a team of professionals representing diverse disciplines with the specific knowledge, skills, and abilities necessary to support the successful execution of projects. The IPT members are representative of all competencies that influence or affect the execution of the project. Integrated Project Teams may be all federal staff or composed of both federal and contractor staff. Team membership may be either full-time or part-time depending on the scope and complexity of the project. Line item projects have an Integrated Project Team led by a Federal Project Director and that functions throughout all phases of a project lifecycle. The PBS projects have more permanent line and support organizations that function as an IPT.

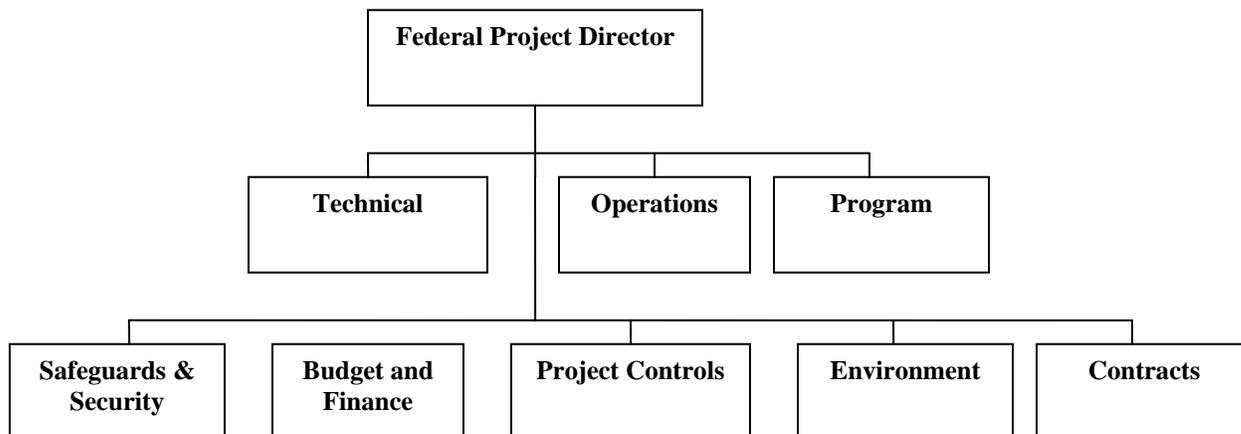
IPTs are responsible for:

- developing a project contracting strategy;
- developing and owning the PEP that includes identification and definition of the project technical scope, schedule, and cost parameters;
- developing and managing the Risk Management Plan;
- preparing and reviewing all Critical Decision packages for completeness and recommending approval/disapproval;
- supporting project performance, scope, schedule, cost, and safety and quality objectives;
- reviewing and commenting on project deliverables (e.g., drawings, specifications, procurement, and construction packages);
- planning and participating in operational readiness reviews;
- identifying and meeting commitments;
- reviewing change requests (as appropriate) and supporting change control boards as requested;
- maintaining communication with their respective departments/organizations, the Federal Project Director, and other Integrated Project Team members;
- developing monthly reviews and reports of project performance and status against established performance parameters, baselines, milestones, and deliverables;
- planning and participating in project reviews, audits, and appraisals as necessary; and
- supporting the preparation, review, and approval of project completion and closeout documentation.

A generic organization chart for a PBS project is provided in figure 4.4.3.2, PBS Project Integrated Project Team.

**Figure 4.4.3.2**

**PBS Project Integrated Project Team (typical)**



## 4.5 Risk Management

Application of a disciplined risk management process is required for SR to achieve success in expediting the cleanup program. The SR risk management approach uses a structured, formal process as outlined in DOE O 413.3, *Project Management for the Acquisition of Capital Assets*, to define risk and develop specific plans to control and/or mitigate the risk to an acceptable level. In general, risk management is a cross-cutting programmatic perspective and project specific perspective. Risk and opportunity identification, including technical risk, is initiated early in the project process and continues throughout all the major phases. The results are documented and the risks are then quantified. Risk handling strategies are developed and implemented. Risks are tracked through the lifecycle of the project.

Programmatic and project risks identified through the risk assessment process are documented in PBS Risk Management Plans. The EM Cleanup Project contingency that must be added to the EM performance baseline as unfunded contingency and is used to establish the EM liability is documented separately in the *SRS Risk Summary and Integrated Contingency Analysis*.

This ongoing process helps to ensure that risks are mitigated, minimizing cost and schedule impacts to each project and task. Implementation of this risk management process increases confidence in project success by up-front and proactive consideration of key technical and project execution risks.

### **Risk Reduction through Management of the Integrated Baseline**

Several parallel efforts are currently underway to reduce baseline uncertainty and risk. For example, an integrated SRS cleanup schedule has been developed to

determine and manage the overall site critical path to closure. Included are key decision points that have the potential to interrupt the critical path cleanup activities. Organizational responsibilities for key activities and decisions at the federal and contractor levels have been established. Monthly meetings with federal and contractor personnel identify and maintain a focus on resolving the high-impact issues. SR continually identifies critical issues and assigns responsibilities and monitoring points to ensure successful resolution. Minimizing the site's risk exposure may require resequencing activities, performing work more efficiently, utilizing alternative technologies, aligning business practices, and improving contracts and incentives. In some cases, project risk will be accepted to gain the benefit of more advanced cleanup and waste processing approaches.

## **Risk Reduction through the Involvement of Stakeholders and Regulators**

Early stakeholder input in the DOE decision-making process is required, including reaching agreement with regulatory agencies on cleanup strategies and specific technical solutions. SR builds on its established processes for stakeholder involvement, including the SRS Citizens Advisory Board (CAB), to ensure all affected stakeholders have an opportunity for input into the decision-making process. DOE and SRS regulators are committed to continuing the current open and collaborative process to implement sound, appropriate and cost-effective cleanup. This process has been instrumental in selection of remedies that meet regulatory requirements at reasonable cost, especially through utilization of innovative technical approaches. SR also engages the Defense Nuclear Facilities Safety Board (DNFSB) early in the planning and technical decision-making process to address technical and safety concerns. Through engagement of these stakeholders in the EM Cleanup Project, issues can be identified and addressed in a way that minimizes risk to meeting overall cleanup objectives.

## **Risk Management Roles and Responsibilities**

**Field Office** – In its site management capacity, SR:

- conducts risk assessments;
- manages critical external and interface risks;
- monitors internal contractor-managed risks, taking management responsibility when deemed appropriate through contractual mechanisms;
- ensures risk handling strategies are developed;
- implements risk mitigation plans;
- prioritizes project risks; and
- reevaluates risks periodically.

**Headquarters** – In its capacity as Acquisition Executive, HQ:

- develops risk management policies and define requirements;
- reviews and evaluates risks during project reviews and at critical decisions; and
- reviews risk management effectiveness through internal project reviews and external independent reviews.

**SR Contractors** – Contractors:

- develop and implement risk management processes to manage internal risks and
- produce risk management data that allows integration across the SRS.

## 5.0 Resource Requirements

This section addresses the resources required to achieve the goals and objectives of the cleanup mission. The resources to support the cleanup mission consists of Congressionally appropriated funds (budgetary authority), federal human resources, specific services and items to be provided by the Department of Energy (DOE) (i.e., Government Furnished Services and Items [GFSI]), and contracts.

The provision of these resources in support of the successful completion of the program defined in this *Savannah River Site Environmental Management Program Project Execution Plan (PEP)* will require resolution of significant budget and management challenges including the following:

- resolution of disparity between lifecycle cost estimates and anticipated annual allocations of budgetary resources;
- maintaining required federal employee skill levels and mix;
- timely delivery of GFSI; and
- appropriate contracting mechanisms and capable contractors

### 5.1 Congressionally Appropriated Funds

Budgetary authority to support the execution of the PEP has been separately identified and reflected in the Department of Energy Savannah River Operations Office (SR) Outyear Budget Request submitted to Environmental Management (EM). Budgetary authority for each year through end of life cycle is reflected in the request. The budgetary authority estimates for this *PEP* have been developed based on historical costs, site cost accounting practices, and planning assumptions articulated in Section 3.2, Key Assumptions. Projected cost savings or cost avoidances were factored into the estimates for planned efficiencies, revised strategies, or technology implementations for which SRS has a high level of confidence. Conversely, situations or circumstances that might impact budgetary requirements have been identified, assessed, and included in project-specific Federal Risk Management Plans. Project Baseline Summary (PBS) risks and crosscutting risks have been assessed and contingency estimates developed. Project-specific resource requirements and risks are provided in Section 7.0, Project Baseline Summaries.

The budgetary authority estimates for this *PEP* are consistent with the lifecycle cost baseline and represent the funding requirements to accomplish the baseline scope and schedule. The estimates do not exceed the level at which SR can reasonably execute/spend in each year. However, the estimates do exceed the annual funding targets provided by EM. Although this gap may be reduced through efficiencies and use of new technologies, this plan is dependent upon above-target funding. To the extent the funding gap can not be addressed through these avenues, the *PEP* will be updated and the lifecycle baseline modified through formal change control.

Near-term budgetary authority estimates for the site Management and Operating (M&O) contractor are consistent with the Contract Performance Baseline (CPB) for the contract period through November 2006. Beyond November 2006 budgetary authority estimates are based on the PBS lifecycle cost baseline estimates.

Because pre-decisional budgetary data are embargoed until submitted to Congress, the estimates of budgetary authority are not included in the published *PEP*. The annual budgetary authority for each year of the lifecycle is maintained separately under configuration control.

## 5.2 Federal Human Resources

Federal human resources needed to support the execution of the PEP are addressed in the SR (Department of Energy Savannah River Operations Office) *5-Year Workforce Management Plan* (WMP) for fiscal years 2006-2011. Budgetary authority to support the federal human resources has also been identified and requested. Section 4.3.1, SR Organization Structure and Management, describes SR organization, structure, and roles.

Successful completion of the program defined in this *PEP* will require focused attention on issues affecting the SR federal workforce. The issues include the following:

- ownership and accountability for work products;
- instilling a project management mindset;
- integrating data from multiple contractors to assess performance and report progress;
- managing federal non-labor resources (travel, training, and support service contractors);
- effective utilization of staffing;
- internalization of work (less reliance on support services contractors and management and operating contractors);
- effective employee development and training; and
- replacing an aging workforce.

## 5.3 Government Furnished Services and Items

Project-specific Government Furnished Services and Items are provided in Section 7.0 Project Baseline Summaries.

## 5.4 Contracts

SR utilizes contracts to execute the environmental cleanup work scope at SRS. The majority of the cleanup scope falls within the M&O contract, currently Washington Savannah River Company (WSRC). Security services are provided under separate contract, currently awarded to Wackenhut Services, Inc (WSI). SR has a number of additional direct contracts to provide services or perform discrete work scope.

## 6.0 Program Interfaces

Execution of the Environmental Management (EM) Cleanup Project at the Savannah River Site (SRS) involves numerous interfaces with other organizations, both internal and external to SRS. Since EM is the major SRS program, it provides landlord services to other organizations, primarily the National Nuclear Security Administration (NNSA). Major interfaces are described below. The EM role as landlord will end with the completion of the *SRS Environmental Management Program Project Execution Plan (PEP)* work scope by the end of FY 2031, and the EM landlord and interface responsibilities will transition to the NNSA, or other Program Secretarial Office, in FY 2032. Activities to ensure a smooth transition will be required.

### 6.1 Interfaces Internal to SRS

This section describes key interfaces with other programs at the SRS.

#### **Landlord**

As landlord, EM provides a range of services to other organizations. The operating cost of these services is allocated to all programs on site. EM is responsible for managing and funding capital projects for all general site infrastructure. General site infrastructure includes utilities, common administrative housing, laboratories, computing, telecommunications, transportation, and emergency systems. The EM program also provides general services, including the following:

- environmental services, such as environmental monitoring and reporting and regulatory compliance assistance and oversight;
- safety and health protection services, including dosimetry, respiratory protection, medical services, and the SRS safety program;
- safeguards and security;

- general site services, such as engineering services, maintenance programs, nondestructive testing, geotechnical support, criticality and safety analysis programs, emergency services and fire department, fleet management, etc.;
- general site infrastructure that operates and maintains shared facilities across the site, such as roads, railroads, bridges, parking lots, grounds, dams and other facilities outside the general areas;
- procurement services and materials management;
- information technology;
- management services including contract administration, document control and records management;
- human resources;
- internal and contractual audits;
- legal counsel;
- finance; and
- public affairs.

The following programs receive this support:

- NNSA-Defense Programs (NNSA-DP)
- NNSA- Nuclear Nonproliferation (NNSA-NN)

The major program interfaces are described briefly below.

#### **National Nuclear Security Administration – Defense Programs – Tritium**

The NNSA-DP mission includes maintaining technical expertise in tritium operations, production, and engineering to support the national nuclear weapons stockpile. The tritium program generates both liquid and solid low-level waste that is disposed at the SRS. This program does not have a forecast end date. This *PEP* assumes that no NNSA-DP facilities will be transitioned to EM for decommissioning and soil and groundwater remediation.

#### **National Nuclear Security Administration – Nuclear Nonproliferation – Plutonium Disposition**

SRS has been selected as the location for the construction and operation of facilities to dispose of approximately 34 metric tons of surplus weapons-usable plutonium.

Three new facilities will be required to accomplish this plutonium disposition mission. One facility is the Pit Disassembly and Conversion Facility (PDCF). The nuclear weapons are disassembled at the Pantex Plant in Texas. Plutonium pits from inside the nuclear weapons that are no longer needed for defense will be sent to the SRS PDCF, which will disassemble the plutonium component of a nuclear weapon, and convert the resulting plutonium metal to a declassified oxide form suitable for the second facility, the Mixed Oxide (MOX) Fuel Fabrication Facility (MFFF). The MFFF will blend depleted uranium dioxide and plutonium dioxide, form the mixture into pellets, and load the pellets into fuel rods for use in commercial nuclear power plants. Approximately 34 metric tons of surplus plutonium will be used to fabricate this fuel.

The MFFF will be owned and financed by DOE but designed, built, licensed, and operated by a private consortium (Duke, Cogema, and Stone & Webster companies). The facility will be licensed by the Nuclear Regulatory Commission and operated so that the facility will be available for inspection by the International Atomic Energy Agency. The ultimate disposition for the fuel, after its use in power plants, will be a

geologic repository planned for Yucca Mountain. The third facility is the Waste Solidification Building that will treat the waste streams from both PDCF and MFFF.

This *PEP* assumes that NNSA will decommission their own facilities and will be responsible for soil and groundwater remediation and any new waste generated.

#### **National Nuclear Security Administration – Nuclear Nonproliferation Program – Enriched Uranium Blend Down**

The U.S. has declared a total of 174.3 metric tons of highly enriched uranium (HEU) surplus to future weapons needs. One path for making this material unsuitable for nuclear weapons is through a dilution process, which makes this material suitable for productive use in commercial reactors. Of the 174.3 metric tons of HEU, approximately 85% will be converted to commercial or research reactor fuel. The remaining HEU will be disposed of as waste.

#### **Savannah River Ecology Laboratory**

The Savannah River Ecology Laboratory (SREL) provides site ecological evaluations and research. The University of Georgia, which manages SREL, employs approximately 90 employees.

#### **U.S. Forest Service – Savannah River Forest Station**

The Savannah River Forest Station (SRFS), an independent unit of the U.S. Forest Service, manages the SRS forest resources, as well as provides a forest fire protection program, manages the secondary road system, conducts erosion control, performs soil restoration, and conducts exterior boundary maintenance. Funding for services provided by USFS is reimbursed by the EM program. There are approximately 90 SRFS employees at SRS.

#### **NNSA – Hydrogen Technologies**

SRS is currently participating in hydrogen technology programs with the potential for expansion.

## **6.2 Interfaces External to SRS**

SRS has many interfaces with other programs and Department of Energy sites. Key interfaces external to SRS are described below.

### **6.2.1 Other Programs**

#### **Waste Isolation Pilot Plant**

Transuranic (TRU) waste resulting from nuclear material stabilization activities has been stored at SRS for years. The TRU waste poses a significant risk due to waste characterization uncertainties and the potential for the build-up of hazardous gases that could lead to an environmental release of contamination. TRU waste is being characterized and processed to ship to the Waste Isolation Pilot Plant (WIPP). Shipments of TRU waste drums began in FY 2001. WIPP provides personnel at SRS who package material for shipment and provides certain equipment required for TRU processing. Deinventory of the TRU inventory at SRS depends on the continued operation and acceptance of TRU waste at the WIPP.

**Federal Repository at Yucca Mountain (DOE-RW)**

Critical to the completion of the EM cleanup at the SRS is operation of a Federal Repository currently planned to be located at Yucca Mountain, Nevada. Key assumptions in this plan are:

- the Federal repository at Yucca Mountain will open in FY 2015;
- all vitrified radioactive waste will be shipped to Yucca Mountain for final disposal with shipments to begin in FY 2015; and
- vitrified radioactive waste shipments to Yucca Mountain will be complete by the end of FY 2026.

**Hazardous and Mixed Waste Disposal (Commercial)**

Hazardous waste is defined by the Environmental Protection Agency (EPA) and requires management in accordance with specific regulatory mandates. Mixed low-level waste is a low-level radioactive waste, which also contains hazardous constituents, and is managed in accordance with DOE Order 435.1, *Radioactive Waste Management*, and hazardous waste regulations. The Solid Waste program receives, stores, and arranges offsite treatment or disposal for SRS-generated hazardous/mixed wastes. Examples of hazardous/mixed waste include materials such as lead, solvents, paints, and pesticides. N Area contains some of the interim hazardous waste storage facilities for the site, which involves three primary operations: receipt of waste from SRS generators, interim storage, and shipment of the waste for treatment and disposal at a location other than SRS. Continued operation and cleanup of the SRS depends on the ability to ship hazardous waste to offsite vendors. Although Nevada Test Site and Hanford may be available in the future, there are presently no federal disposal facilities for treated, listed mixed waste.

**Low-Level Waste Disposal**

Low-level waste is radioactive waste that is not classified as radioactive liquid waste, TRU waste, spent nuclear fuel or byproduct material and does not contain any hazardous waste. Typically, low-level waste at SRS is radioactively contaminated materials such as job-control waste, small and large equipment, plastic sheeting, gloves, soil, and suspect contaminated materials used within radioactive material management areas that cannot be proven to be free of radioactive contamination. Some low-level wastes generated at SRS are disposed of at other DOE locations (e.g., Nevada Test Site or Hanford) or commercial sites. Cleanup of SRS depends on continued shipment of these materials to other sites for disposal.

**Naval Reactor Waste**

Classified waste, such as reactor components, is routinely received from Naval Reactors. These components are disposed in E Area.

**Tennessee Valley Authority (Nuclear Fuel Services)**

As previously mentioned, excess highly enriched uranium at SRS is being dispositioned by both dilution and shipment to the Tennessee Valley Authority (TVA) vendor, Nuclear Fuel Services (NFS), and by direct shipment to NFS. NFS also provides natural uranium for the blending. SRS depends on TVA to provide and accept these materials to enable deinventory of H and K Areas.

**Idaho National Laboratory**

Deinventory of H Canyon is dependent on transferring excess neptunium-237 to the Idaho National Laboratory (INL) for use in producing plutonium-238 (shipments are in progress). Additionally, spent nuclear fuel will be exchanged between SRS and INL.

**Oak Ridge Toxic Substances Control Act Incinerator**

SRS sends waste to the Oak Ridge Toxic Substances Control Act Incinerator for thermal treatment. Although primarily available for treatment of radioactive polychlorinated biphenyl waste, the incinerator is also permitted for mixed and low-level waste. Most recent shipments include F Canyon PUREX solvent.

**Hanford, Los Alamos National Laboratory, and Lawrence Livermore National Laboratory Pu Receipts**

The DOE still has significant excess inventories of Pu at three sites other than SRS: Hanford, Los Alamos National Laboratory, and Lawrence Livermore National Laboratory. The *2002 Performance Management Plan* proposed consolidation of plutonium from across the DOE Complex at SRS to await disposition. At this time, DOE has not made a decision to consolidate EM-owned plutonium at SRS.

**Savannah River National Laboratory (SRNL) Support to Hanford Waste Treatment Plant**

SRNL has provided significant support to the Hanford Waste Treatment Plant (WTP) Research and Technology Program. Primary areas of support have been in the areas of waste characterization, process and design confirmation, obtaining basic data to support design, and obtaining regulatory data to support environmental permitting and waste form qualification. SRNL began supporting WTP in FY 2001 and is anticipated to continue support during design and construction of WTP.

**Spent Nuclear Fuel**

SRS receives, stores, and will ultimately disposition spent nuclear fuel from both domestic and foreign research reactors. This program requires extensive interface with reactor owners, and other DOE programs (e.g., NNSA, Office of Civilian Radioactive Waste Management), other DOE field offices, and the Nuclear Regulatory Commission (NRC).

**Other Programs**

SRS is supporting a variety of national programs in a number of areas, e.g., Homeland Security, Nuclear Forensics, Fusion Energy, etc. Many of these programs have potential for growth at SRS with reuse of existing facilities or installation of new facilities. SRS also depends on organizations external to SRS to accept materials for stabilization and/or disposition. This includes materials such as depleted uranium oxide and depleted uranyl nitrate solutions.

## 6.2.2 Regulatory Organizations

SRS works closely with various oversight groups, environmental regulators, and stakeholders in accomplishing its work. SRS diligently maintains the collaborative relationships with these external parties and credits the cooperative nature of these relationships with many cleanup accomplishments. In addition, the local communities and Congressional, state, and local officials typically are very supportive of SRS, understanding well the critical role SRS plays within the region and the nation and the important nature of the cleanup work.

SR and its contractors will continue to work proactively with the South Carolina Department of Health and Environmental Controls (DHEC), the EPA, the NRC, the Defense Nuclear Facilities Safety Board (DNFSB), oversight groups, and stakeholders to facilitate the accomplishment of the environmental cleanup and risk

reduction objectives at SRS. In addition to environmental laws and regulations, there are several key agreements that facilitate the cleanup of SRS described below.

**The Savannah River Site Federal Facility Agreement** - In August 1993, SR, EPA, and the DHEC, referred to as “the parties,” reached agreement on the cleanup of SRS and began execution of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) through the *Federal Facility Agreement (FFA)*. The *FFA* governs environmental remediation and the closure of selected radioactive liquid waste tanks. The major purpose of the *FFA* is to ensure that the environmental impacts associated with past and present activities are investigated and appropriate action is taken to protect human health and the environment. Appendices to the *FFA* specify milestones for each year and are negotiated annually among the parties.

**The SRS Site Treatment Plan** - The *SRS Site Treatment Plan (STP)* is a document that requires radioactive mixed waste to be treated to hazardous waste standards within an agreed-upon schedule. Radioactive liquid waste is an example of a radioactive mixed waste. The *STP* is enforceable by a consent order signed by DHEC and SR. The *STP* lays out the approaches and schedule milestones for treating and managing radioactive mixed wastes that are stored or generated at SRS. These treatment approaches and milestones are determined to ensure SRS compliance with RCRA land disposal restriction requirements. The *STP* is required by the Federal Facility Compliance Act and is updated annually. This annual update includes an inventory of all mixed waste, status of all treatment residuals, implementation schedule, and projections of new mixed waste streams at SRS or those to be received from organizations external to SRS.

**SRS Cold War Historic Preservation** - The National Historic Preservation Act (NHPA) of 1966, as amended, requires that all Federal agencies consider the impacts to historic properties in all their undertakings, such as environmental cleanup. SR has been consulting with the South Carolina State Historic Preservation Office (SHPO) on NHPA. SHPO is the implementing agency for NHPA in South Carolina.

SR has developed an SRS Cold War History Programmatic Agreement (PA) to meet the requirements of NHPA, as defined in the Protection of Historic Properties regulations (36 CFR 800) (8/20/1981). The PA requires that a management plan be developed for the future management of SRS historic properties and for dealing with mitigation alternatives. The Cultural Resources Management Plan (CRMP) contains the methods by which the buildings, artifacts, historical archival records, film, videos, and photography are to be preserved and protected. The CRMP was completed on December 9, 2004.

### 6.2.3 Defense Nuclear Facilities Safety Board (DNFSB)

The DNFSB is an independent executive branch agency established by Congress in 1988 to provide advice and recommendations to the President and the Secretary of Energy regarding health and safety issues at DOE defense nuclear facilities. The Department and the Board share the common goal of ensuring adequate protection of public and worker health and safety and the environment. To ensure accomplishment of this goal, the Department’s policy is to:

- cooperate fully with Board requests;

- provide access to facilities, personnel, and information necessary for the Board to accomplish its responsibilities;
- consider thoroughly the recommendations and other safety information provided by the Board;
- consistently meet commitments to the Board; and
- conduct interactions with the Board in accordance with the highest professional standards.

Since its inception in 1988, the DNFSB has issued 48 formal recommendations. For each, the Secretary of Energy must provide a response that accepts or rejects the recommendation and, if accepted, provide an implementation plan to resolve the acknowledged issues. To date, the Secretary has accepted every Board recommendation. Of the 48 recommendations issued, 13 are open and the Department continues work on the associated implementation plans. SRS tracks its progress toward the achievement of milestones outlined in the implementation plans and is committed to continue meeting these milestones on time.

## 6.2.4 Stakeholders

**The SRS Citizens Advisory Board** – The CAB was established in response to comments from stakeholders on the proposed SRS *FFA* and Public Participation Plan. The CAB began operations in February 1994 and is comprised of 25 volunteers from South Carolina and Georgia and reflects the diversity of the population affected by SRS. The CAB has provided over 200 recommendations to SR regarding environmental management.

**South Carolina Governor's Nuclear Advisory Council** – The South Carolina Governor's Nuclear Advisory Council (Council) is charged with advising the Governor on numerous issues pertaining to the nuclear industry in South Carolina, including the Atlantic Compact, the Barnwell commercial low-level radioactive waste disposal facility, SRS, etc.

## 7.0 Project Baseline Summaries

This section of the *Savannah River Site Environmental Management Program Project Execution Plan (PEP)* provides more detailed scope, cost, and schedule for each of the Project Budget Summary (PBS) projects. The table below provides a listing of the subsections that compose Section 7.0, Project Baseline Summaries.

**Table 7.0.1 Project Baseline Summaries**

7.11	SR-0011, Nuclear Materials Stabilization and Disposition
7.12	SR-0012, Spent Nuclear Fuels Stabilization and Disposition
7.13	SR-0013, Solid Waste Stabilization and Disposition
7.14	SR-0014, Radioactive Liquid Tank Waste Stabilization and Disposition
7.20	SR-0020, Safeguards and Security
7.30	SR-0030, Soil and Water Remediation
7.40	SR-0040, Nuclear Facility Deactivation and Decommissioning
7.100	SR-0100, Defense Environmental Services - Non-Closure Mission Support
7.101	SR-0101, Defense Environmental Services – Community and Regulatory Support

## 7.11 PBS SR-0011 Nuclear Materials Stabilization and Disposition

This section contains the narratives, scope, cost, and schedule for the Project Baseline Summary (PBS) SR-0011, which includes nuclear materials in various forms, stored in many locations at the Savannah River Site.

### 7.11.1 Background

At the end of the Cold War, the Department of Energy (DOE) was left with a large inventory of nuclear materials in various forms (raw materials, in-process liquids and solids, finished products, etc.) and stored in many locations (vaults, reactor basins, tanks, etc.). With the decreased need for nuclear materials for the national security mission, the Savannah River Site (SRS) focus shifted from nuclear materials production to nuclear materials stabilization during the mid 1990s. Issuance of the Defense Nuclear Facilities Safety Board (DNFSB) Recommendation 94-1 to stabilize "at-risk" nuclear materials, which might pose a significant risk to the safety of the workers, the public, and/or the environment, provided further impetus for these materials stabilization activities. The DNFSB issued Recommendation 2000-1 to amplify this concern. SRS has made significant progress in that more than 97% of the scheduled nuclear materials have been stabilized (139,519 of 143,518 items) and 53 of the 54 DNFSB commitments have been completed. SRS will complete its stabilization mission by December 2006 and has proposed to DOE Headquarters (HQ) an enriched uranium (EU) disposition mission in which the H Canyon and HB-Line facilities disposition enriched uranium materials and aluminum-clad spent nuclear fuel and recycle the resultant uranium in a commercial fuel cycle in lieu of disposing as waste.

The K-Area Complex and F-Area Material Storage (FAMS) facility serve as special nuclear materials inventory management and surveillance facilities for stabilized materials pending final disposition. The SRS offsite receipt, storage, and disposition of materials capability enables the accelerated deinventory and shutdown of other DOE Complex sites, providing substantial Complex risk reduction and significant mortgage reduction savings. Operation of these facilities is included in this PBS.

Nuclear materials capital line item projects are also included in this PBS. The capability to store containers of plutonium and perform surveillance on the containers to validate the storage requirements of DOE-STD-3013 is being installed at SRS, as well as the required security and facility upgrades to support the facility missions. Additionally, the DOE Office of Environmental Management (EM) is reviewing options for disposing plutonium-bearing materials that are not suitable for the Mixed Oxide Fuel Fabrication Facility (MFFF) through a proposed disposition process. The proposed project would be installed at SRS under this PBS.

### 7.11.2 End State

Once the Receiving Basin for Offsite Fuels (RBOF), F Canyon, H Canyon, FAMS, and K-Area Complex including the K-Area Material Storage (KAMS) are deactivated, these facilities will be maintained in a minimal surveillance and

maintenance condition until transferred to PBS SR-0040, Nuclear Facility Deactivation and Decommissioning (D&D), for decommissioning.

### 7.11.3 Scope and Description

This project provides for the operation of F- and H-Area facilities to stabilize and/or disposition EM legacy nuclear materials and fuels; deinventory RBOF (which has been completed); receipt, storage and disposition of nuclear materials and heavy water in K-Area and FAMS; installation of a 3013 Container Surveillance and Storage Capability (CSSC) in the K-Area Complex (formerly planned for the Metallurgical Building), and design and construction, and installation of the proposed plutonium disposition project.

#### **F Area, H Area, and RBOF**

SRS completed deactivation of the RBOF facility in FY 2004, an acceleration of 24 months from the 2002 PMP. F-Canyon and FB-Line processing activities have been completed and these facilities, including the support facilities, will be deactivated by November 30, 2006, an acceleration of 22 months from the 2002 PMP. These facilities will remain in this PBS for continued surveillance and monitoring until ready for decommissioning at which time it will be transferred to PBS SR-0040, Nuclear Facility D&D. Included in the F-Canyon deactivation activities are the disposition of the depleted uranyl nitrate solutions and oxide and low-enriched uranium oxide. The remaining materials to be stabilized and/or dispositioned through the H-Canyon facilities (i.e., H Canyon and HB Line) include plutonium/uranium residues and scrap materials and irradiated and unirradiated fuels. The facility will be fully utilized commensurate with the available resources. Other DOE program offices are funding some activities that occur concurrently with EM mission work associated with H Canyon, e.g., National Nuclear Security Administration (NNSA) highly enriched uranium (HEU) dilution. The H-Canyon facilities will complete operations and begin deactivation by FY 2020. Following deactivation, these facilities will be maintained in a minimum surveillance and maintenance condition until transferred to PBS SR-0040 for decommissioning.

Integral to the *SRS Environmental Management Program Project Execution Plan (PEP)* are the activities that support the accelerated deactivation of F Canyon. These include:

- packaging and stabilization of metal and oxides in FB Line (complete);
- shutdown of Low-Activity Waste and General Purpose Evaporators, and the Acid Recovery Unit (complete);
- elimination of substantial surveillance and maintenance costs by disposition of the depleted uranium solutions and relocation of the PUREX solvent (complete);
- disposition of depleted uranium oxide from Buildings 730-F and 728-F (complete), consolidation of depleted uranium oxide from Building 221-12F into Building 221-21F (complete) pending final disposition; and
- elimination of infrastructure and safeguards and security requirements for significant portions of F Area. (complete).

Materials targeted for stabilization and/or disposition in H Canyon and HB Line include:

- plutonium-239 solutions,

- HEU solutions,
- neptunium solutions,
- plutonium residues,
- enriched uranium residues,
- low-grade plutonium oxide packaged in accordance with DOE-STD-3013,
- unirradiated Mark-22 tubes to support the NNSA Interagency Agreement,
- miscellaneous fuels, and
- domestic and foreign aluminum-clad spent nuclear fuel.

H Canyon and HB Line will remain operational through FY 2019. This is an extension of seven years from the *2005 Performance Management Plan (PMP)* that will enable the disposition of enriched uranium materials and aluminum-clad spent nuclear fuels, which currently have no disposition path established. H Canyon will continue dissolution of Mark-22 fuel tubes to meet vendor specifications. Once the Mark-22 fuel tube campaign is complete, other legacy enriched uranium materials identified by DOE will then be processed including all aluminum-clad spent nuclear fuel (SNF) in storage, the *Spent Nuclear Fuel Management Final Environmental Impact Statement* (DOE-EIS-0279) Table 5.2-1 materials, core filter block metal, and Sodium Reactor Experiment material. The resultant enriched uranium from this process will be blended with natural uranium to a low-enriched uranium form (not suitable for weapons use and meeting vendor specifications) and used for commercial fuel fabrication.

The HB-Line facility will continue to operate Phase I and II production lines to process materials identified by DOE. Some materials such as small quantities of plutonium will be targeted for dissolution and transfer to the radioactive liquid waste system for disposition, while other materials such as enriched uranium materials will be dissolved, blended with natural uranium and shipped offsite for reuse in commercial fuel fabrication. Neptunium materials will be converted to an oxide form and shipped offsite for reuse in future deep space missions.

Also included in this project is a modification to the ventilation system for the H-Canyon facility by November 30, 2006.

### **K Area**

K Area provides safe and secure storage of special nuclear material (SNM), heavy water in drums and tanks, HEU, and other miscellaneous nuclear materials. The K-Area Complex will continue to both ship and receive SNM to support facility missions. It will continue to support storage of SNM designated to be under International Atomic Energy Agency (IAEA) safeguards.

The KAMS is currently configured to store material in 9975 shipping containers that has been stabilized or packaged in accordance with DOE-STD-3013, or specified HEU metal materials. The plutonium inventory at SRS will be provided to NNSA for use in the MFFF or dispositioned by EM through a new plutonium disposition capability.

The capability to perform destructive and non-destructive surveillances on containers of plutonium to validate the storage requirements of DOE-STD-3013 will be installed in K Area. This capability also includes the stabilization and repackaging capabilities in accordance with the DOE-STD-3013 and storage in racks outside of the shipping containers. This capital project is part of the scope and funding for this PBS. When completed in FY 2010, this project will provide, within the facility, the

means to safely perform surveillance of DOE-STD-3013 containers. Additionally a process to disposition plutonium-bearing materials not suitable for the MFFF is being established by EM. This process will be operational in FY 2013.

DOE Savannah River Operations Office (SR) has assumed responsibility for the implementation of the DOE Complex *Surveillance and Monitoring Plan for DOE-STD-3013 Materials* from Los Alamos National Laboratory (LANL). The plan provides the elements for ensuring the long-term reliability of 3013 containers across the DOE Complex.

Heavy water currently stored in K Area will be transferred to an alternate location to provide space for the plutonium disposition capability; however, this project will be dispositioned by FY 2020 under PBS SR-0012, Spent Nuclear Fuels Stabilization and Disposition. HEU in K Area will be shipped to either the Tennessee Valley Authority (TVA) vendor or dispositioned in H Canyon.

### **FAMS**

The FAMS facility will continue the surveillance, maintenance, and operation activities necessary to support safe and secure storage of SNM through September 2006. The facility will continue to ship and receive SNM to support facility missions through this period. The stored plutonium will be transitioned to K Area for storage to reduce the number of Category I safeguards facilities at SRS and accelerate the shutdown of FAMS. The plutonium-238 process and laboratory areas will continue to be maintained in a safe, environmentally sound shutdown condition until deactivated.

### **Capital Line Item Projects**

In addition to operations, several projects are being designed and constructed within this PBS. A permanent 3013 Container Surveillance and Storage Capability will be constructed in K Area by December 31, 2009. EM is also reviewing options to disposition the plutonium-bearing materials that are not suitable for the Mixed Oxide Fuel Fabrication Facility (MFFF) through a proposed plutonium disposition process.

## **7.11.4 Responsibilities**

In addition to the overall responsibilities identified in Section 4.3, Organizational Structure and Responsibilities, PBS-specific responsibilities are summarized below.

This PBS falls under the responsibility of the SR Assistant Manager for Nuclear Materials Stabilization Project. In accordance with DOE 0 413.3, *Program and Project Management for the Acquisition of Capital Assets*, a Federal Project Director has been identified to manage this PBS and approved the by Assistant Secretary for Environmental Management (EM-1). The Federal Project Director uses an Integrated Project Team (IPT) approach to manage the PBS. The IPT is comprised of personnel from a wide variety of disciplines to ensure the work is managed safely and effectively.

The performance of the work scope for this PBS is the responsibility of the management and operating (M&O) contractor. Currently, the contractor is Washington Savannah River Company (WSRC). Within WSRC, the responsibility

for this work scope resides with the M&O Manager for all Area Projects associated with this PBS.

## 7.11.5 Schedule

### F and H Area

F Canyon completed operations in January 2003, upon stabilization of the americium and curium solutions that were stored in the facility. FB Line completed the disposition or stabilization and packaging of nuclear materials for storage in FY 2005. Both facilities have been deinventoried. Deactivation of the F Canyon, FB Line, and supporting facilities is in progress and will be complete by November 30, 2006. Both H Canyon and HB Line facilities will remain operational through FY 2019. Deactivation of the H Canyon and HB Line facilities will begin in FY 2020. The 3013 Container Surveillance and Storage Capability project will be completed in FY 2010, and the proposed plutonium disposition project will be completed in FY 2013.

A schedule, based on the specified assumptions in Section 7.11.8, *Assumptions, Agreements, Alternatives, and Risk Management*, is included at the end of this section.

### FAMS and K Area

KAMS will operate until FY 2019 to receive, store, and ship SNM. Beginning in FY 2013, the facility will begin transferring the non-MOXable SNM for final disposition. Deinventory of SNM from the facilities will continue as the facility begins transferring material to the new MFFF. All SNM will be removed from the facility by FY 2019, after which the K-Area Complex will be deactivated. Following deactivation, this facility will be maintained in a minimum surveillance and maintenance condition until transferred to PBS SR-0040, Nuclear Facility D&D, for decommissioning.

Storage of SNM will be complete in the FAMS facility by the end of FY 2006, and the facility will be maintained in a minimum surveillance and maintenance condition until transferred to PBS SR-0040 for deactivation and decommissioning.

A schedule, based on the specified assumptions in Section 7.11.8, is included at the end of Section 7.11.

## 7.11.6 Resources

The lifecycle cost profile for this PBS is documented separately. This EM cost profile assumes funding for the HEU dilution process is provided by NNSA through 2007. The previous 2005 lifecycle baseline assumed H Canyon facilities completed operations in 2011, with deactivation completed by the end of FY 2014. The assumption for this *PEP* is that DOE enriched uranium materials and aluminum-clad fuels are dispositioned in H-Canyon facilities and the resultant uranium recycled for commercial fuel fabrication in lieu of disposal at the Federal Repository. Additionally, the F-Canyon deactivation end states are changed for a small group of building systems, thereby slightly increasing surveillance and maintenance costs for F Canyon through FY 2011. The EM cost profile also includes funding from NNSA for offsite shipment of HEU ingots from K Area through FY 2006.

### Government Furnished Services and Items

The only Government Furnished Service and Item identified for this PBS is that DOE will supply safe-secure transport (SST) to support the schedule.

## 7.11.7 Technology Needs

In addition to the aforementioned resource requirements, the following technology needs have been identified in support of accelerated cleanup:

- Development of technologies to further minimize waste generation and reduce waste transferred to the radioactive liquid waste system from H Area.  
Benefit: Methods to reduce waste generation from the H Canyon not only reduces waste but also aid the radioactive liquid waste system in the implementation of their *Liquid Waste Disposition Processing Plan*.  
Development timeframe: FY 2007 and beyond.
- Understanding radiolytic gas generation in plutonium-bearing materials due to adsorbed moisture.  
Benefit: Enables safety analyses and packaging certification to be completed for Hanford.  
Development timeframe: FY2006 and beyond.
- Moisture measurement methods for plutonium-bearing materials.  
Benefit: Measures moisture reliably to ensure stabilized plutonium materials meet the DOE-STD-3013 for long-term storage.  
Development timeframe: FY 2006 and beyond.
- Plutonium surveillance and validation of models for safe storage (Various models have been developed to predict the behavior of plutonium materials stored in 9975 and/or 3013 packages. Science-based surveillance of these plutonium packages is essential to validate those models.)  
Benefit: Avoids potential plutonium storage container failures.  
Development timeframe: FY 2006 and beyond.
- Technical basis to model the corrosion tendencies of 3013 canisters stored in the K-Area Complex at SRS (predictive models and a valid technical basis for those models are essential to properly assess corrosion-induced degradation of 3013 canisters and to ensure the long-term safe storage of the canisters in the K-Area Complex).  
Benefit: Provides criteria for selection and evaluation of packages for surveillance.  
Development timeframe: FY 2006 and beyond.

## 7.11.8 Assumptions, Agreements, Alternatives, and Risk Management

### Assumptions

The following assumptions have been used as the basis for the lifecycle cost and schedule development:

- F Canyon will be transitioned to PBS SR-0040, Nuclear Facility Deactivation and Decommissioning (D&D), by October 1, 2010.
- The Receiving Basin for Offsite Fuels (RBOF) will be transferred from PBS SR-0011, Nuclear Material Stabilization and Disposition, to SR-0040, Nuclear Facility D&D, by September 30, 2012.
- H-Area nuclear material processing facilities will operate through September 30, 2019, to disposition Department of Energy (DOE) enriched uranium materials and spent nuclear fuel.
- Infrastructure required for continuing H-Canyon operations through September 30, 2019, will be maintained.
- EM will be responsible for the Highly Enriched Uranium Blend Down operations at SRS effective October 1, 2007.
- The Proposed Plutonium Disposition Project will be approved, funded, and facility operations started by April 1, 2013.
- DOE will begin to consolidate special nuclear material at SRS, with shipments from other sites beginning as early as October 1, 2006.
- The K-Area Complex will have the only EM Category I storage facility at SRS.
- K-Area Project will begin operations by January 1, 2010.
- F-Area Material Storage (FAMS) facility will be downgraded to below a safeguards Category I facility by September 30, 2006.

### Agreements

The following agreements are drivers for this project:

- DNFSB Recommendation 2000-1,
- Interagency Agreement between NNSA and TVA,
- National Defense Authorization Act for Fiscal Year 2001 (Public Law 106-398) as modified by subsection (b) of Section 3115, Continuation of Processing, Treatment, and Disposition of Legacy Nuclear Materials, of the National Defense Authorization Act for Fiscal Year 2004 (Public Law 108-136), and
- DOE-STD-3013

### Alternatives and Risk Management

The PBS Risk Management Plan identifies the risks for this PBS, documents results of the risk assessment process, presents risk handling strategies to mitigate risks, and provides a risk monitoring plan. A summary of major risks identified are below.

- Additional processing needs may be identified, resulting in extended H Canyon operation.
- The K-Area 3013 Container Surveillance and Storage Capability line item may not be completed as scheduled due to the risks and uncertainties of a project at this stage of maturity.

- The Plutonium Disposition Project may not be completed as scheduled due to the risks and uncertainties of a project at this stage of maturity.
- Major facility failure resulting in loss of capability.
- Changing safeguards and security guidance in the future could change the security posture of the facilities.
- Application of new building codes and standards on K Area could require expensive facility upgrades that would impact cost and schedule baselines.

## 7.11.9 Performance Monitoring and Evaluation

### 7.11.9.1 HQ Monitoring and Evaluation

Monitoring of this PBS at the DOE Headquarters level is completed primarily through use of the Integrated Planning, Accountability, and Budget System (IPABS). Actual cost, schedule, and performance data are collected for each PBS and compared to the established baseline. All elements of the lifecycle baseline are under EM configuration control. Performance data include project performance measures and milestones. Progress toward these measures and any proposed changes to them are provided on the following pages:

**Project Performance Measures** (see next page)

Columns displaying Proposed Performance Measures include actual performance for the fiscal years 1997 – 2005.

**Depleted and Other Uranium Packaged for Disposition  
Enriched Uranium Packaged for Long-Term Storage**

Year	Depleted and Other Uranium packaged for disposition: MT (Current)	Depleted and Other Uranium packaged for disposition: MT (Proposed)	Enriched Uranium packaged for long-term storage: Ncont (Current)	Enriched Uranium packaged for long-term storage: Ncont (Proposed)
Pre-1997				
1997				
1998				
1999				
2000				
2001				
2002				
2003	1,815	4,551	225	146
2004		1,406	612	793
2005		2,205	635	734
2006	186	186	635	379
2007			635	379
2008			67	378
2009	3,025	2,136		
2010	3,025	2,136		
2011	3,025	2,136		
2012	3,025	2,136		
2013	3,025	2,136		
2014	3,031	2,136		
2015	3,025	2,018		
2016				
2017				
2018				
2019				
2020				
2021				
2022				
2023				
2024				
2025				
2026				
2027				
2028				
2029				
2030				
2031				
<b>Total:</b>	<b>23,182</b>	<b>23,182</b>	<b>2,809</b>	<b>2,809</b>

**Plutonium Metal or Oxide Packaged for Long-Term Storage  
Plutonium Uranium Residues Packaged for Disposition**

Year	Plutonium Metal or Oxide packaged for long-term storage: Ncont (Current)	Plutonium Metal or Oxide packaged for long-term storage: Ncont (Proposed)	Plutonium or Uranium Residues packaged for disposition: Kg/B (Current)	Plutonium or Uranium Residues packaged for disposition: Kg/B (Proposed)
Pre-1997				
1997				
1998				
1999			54	54
2000			51	51
2001			28	28
2002			89	89
2003	120	54	39	99
2004	423	720	78	79
2005	250	145	75	51
2006	126			39
2007				
2008				
2009				
2010				
2011				
2012				
2013				
2014				
2015				
2016				
2017				
2018				
2019				
2020				
2021				
2022				
2023				
2024				
2025				
2026				
2027				
2028				
2029				
2030				
2031				
<b>Total:</b>	<b>919</b>	<b>919</b>	<b>414</b>	<b>490</b>

**Basis for Change:** This project performance measure has exceeded the current measures due to disposition through HB Line of Rocky Flats residues, Idaho denitrator oxides, and additional residues from HB Line.

**Material Access Areas Eliminated**

Year	Material Access Areas eliminated: Narea (Current)	Material Access Areas eliminated: Narea (Proposed)
Pre-1997		0
1997		0
1998		0
1999		0
2000		0
2001		0
2002		0
2003	0	0
2004		1
2005		0
2006		0
2007	1	0
2008		0
2009		0
2010		0
2011		0
2012	1	1
2013		0
2014		0
2015		0
2016		0
2017		0
2018		0
2019		1
2020	1	0
2021		0
2022		0
2023		0
2024		0
2025		0
2026		0
2027		0
2028		0
2029		0
2030		0
2031		0
<b>Total:</b>	<b>3</b>	<b>3</b>

Basis for Change: SR has accelerated deinventory of facilities as follows:

- FB Line will be deinventoried in end of FY 2006.
- FAMS will be deinventoried in end of FY 2006.
- KAMS will be deinventoried by end of FY 2019.
- HB Line is not an MAA; therefore, it should be removed from list.

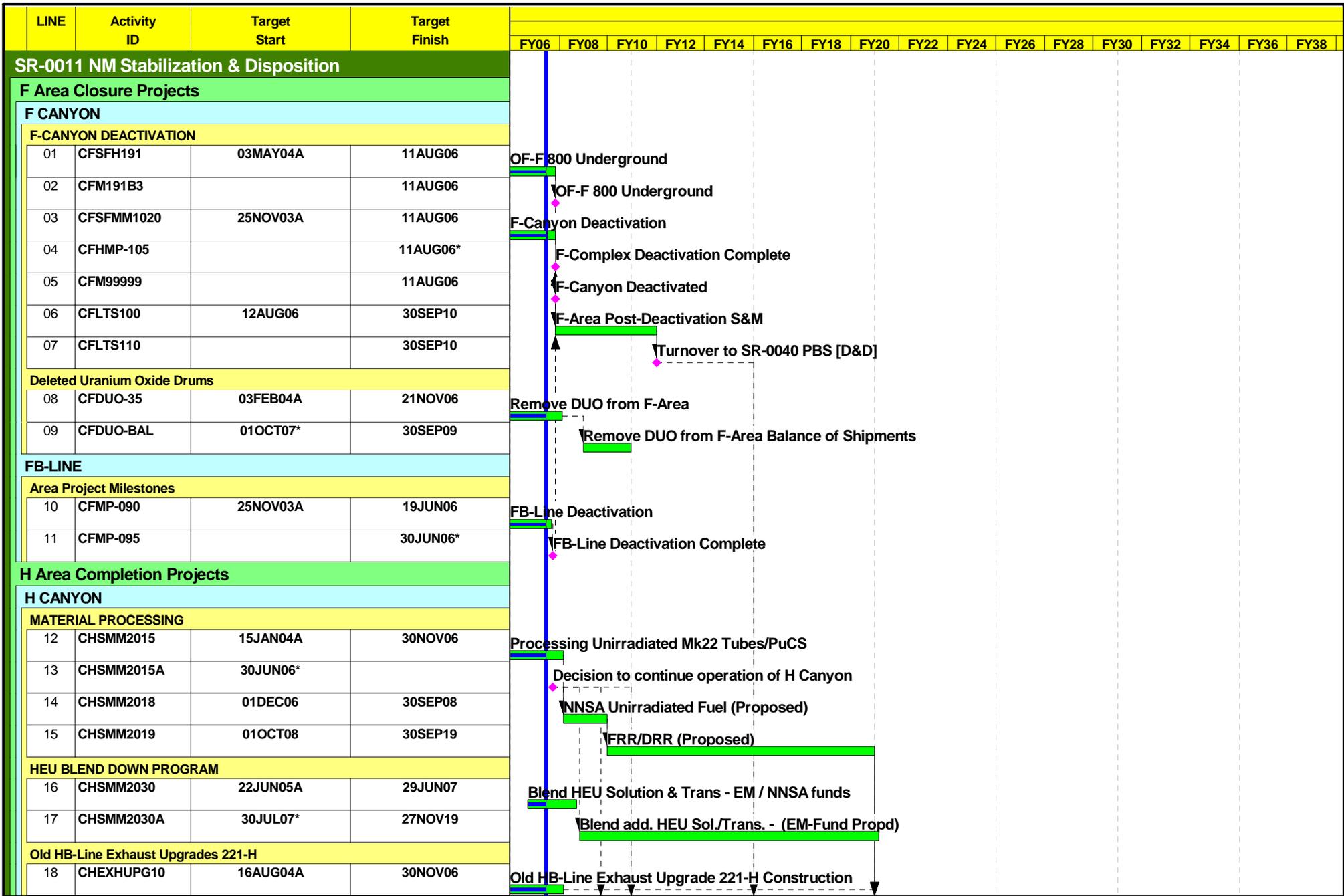
### Project Milestones

Milestone	Date
Complete deactivation of FB Line	06/30/2006
Complete deactivation of F Canyon (transition to PBS SR-0040 by October 1, 2010)	09/30/2006
Complete HB-Line Operations	09/30/2019
Complete H-Canyon Operations	09/30/2019
Begin deactivation of H Canyon/HB Line	10/01/2019
Complete deactivation of H Canyon	09/30/2023
Complete deactivation of HB-Line	09/30/2023
Maintain K Area and KAMS SNM receipt, storage and shipping facilities in an operable condition capable of supporting planned program requirements (should be included in annual milestones through 2019)	Annual
Complete deinventory FAMS and downgrade to below CAT I safeguards facility.	09/30/2006
Complete operations of FAMS and turnover to D&D (PBS SR-0040)	06/30/2007
Complete shipments of neptunium to Idaho	12/31/2006
Complete disposition of EM-owned moxable plutonium and non-moxable plutonium	09/30/2019
Project End	09/30/2023

Basis for Change: The referenced changes are the result of the extension of operation at H Canyon and HB Line until the end of FY 2019, with deactivation to begin in FY 2020 and the revised strategy to reduce the number of Category I safeguards and security facilities at SRS, resulting in moving the CSSC project to K Area in lieu of the FAMS facility. This H-Canyon extension was driven by the need to retain a viable disposition path for SNF and enriched uranium materials.

### 7.11.9.2 SRS Monitoring and Evaluation

Refer to Section 4.4.1, Performance Monitoring, Reporting, and Evaluation, for a description of the performance monitoring and evaluation process.



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 Finish Date 30DEC31  
 Data Date 01APR06  
 Run Date 11JUL06 13:56

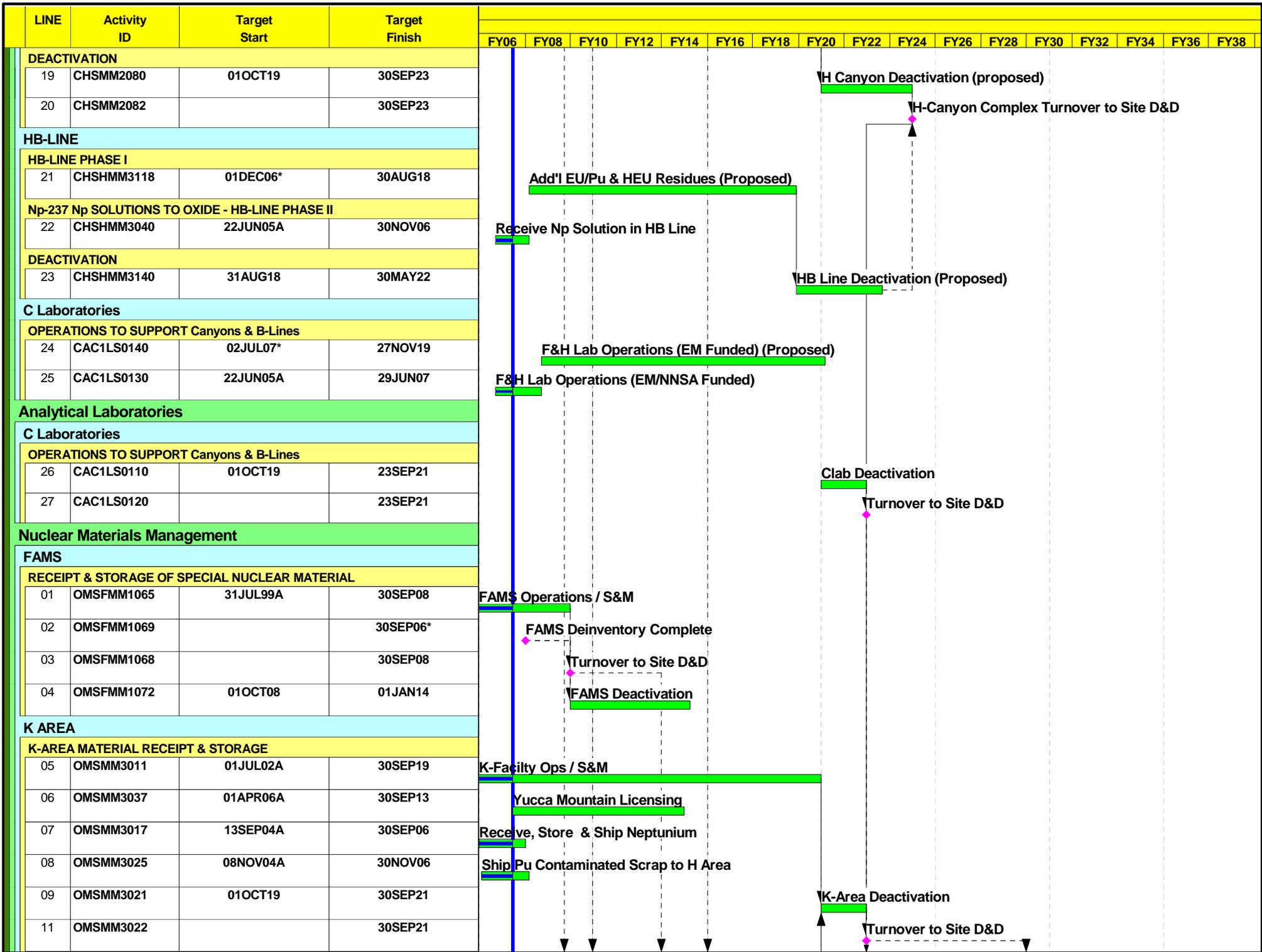
Early Bar  
 Progress Bar  
 Critical Activity

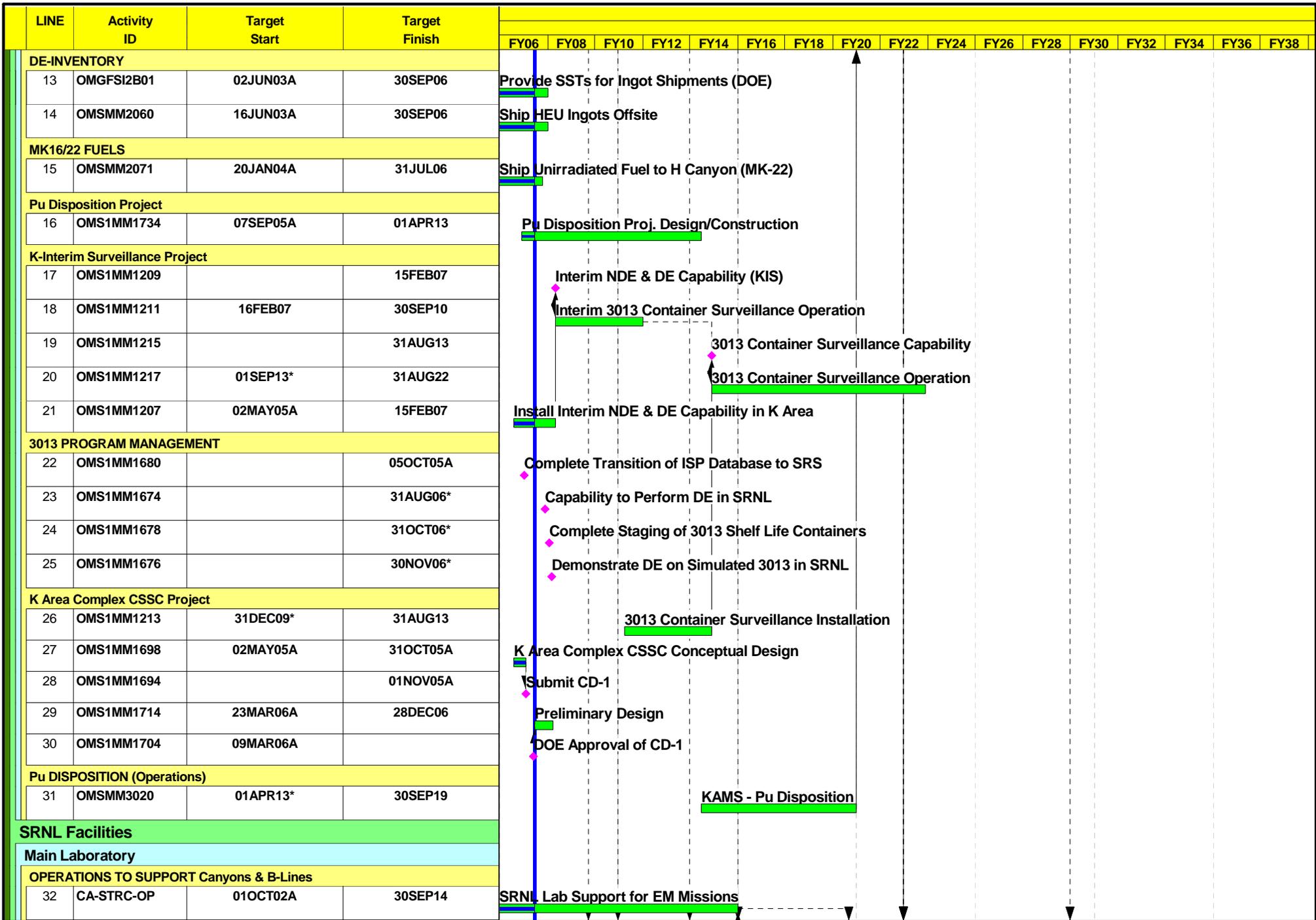
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**Project Execution Plan Lifecycle Schedule**

Critical Path #1  
 Critical Path #2

Date	Revision	Checked	Approved





LINE	Activity ID	Target Start	Target Finish																
				FY06	FY08	FY10	FY12	FY14	FY16	FY18	FY20	FY22	FY24	FY26	FY28	FY30	FY32	FY34	FY36
<b>Spent Fuel Project</b>																			
<b>H-AREA RECEIVING BASIN FOR OFFSITE FUEL (RBOF)</b>																			
<b>RBOF Deactivation</b>																			
33	OMLTS1130	01APR04A	31DEC12	<b>RBOF Post-Deactivation S&amp;M</b>															
34	OMS1MM1130		31DEC12	<b>RBOF Turnover to Site DD</b>															

## 7.12 PBS SR-0012 Spent Nuclear Fuels Stabilization and Disposition

This section contains the narratives, scope, cost, and schedule for the Project Baseline Summary (PBS) SR-0012, which includes both legacy and non-legacy spent nuclear fuel (SNF).

### 7.12.1 Background

The Savannah River Site (SRS) Spent Fuel Project (SFP) receives and stores spent nuclear fuel in L Basin. This includes programmatic and physical support efforts related to safe storage and preparation for final disposition of residual SRS SNF inventories that remained after the completion of the stabilization processing campaign recommended by the Defense Nuclear Facilities Safety Board (DNFSB). The current L Basin SNF inventory originated from Atomic Energy Commission reactors, Department of Energy (DOE) reactors, Domestic Research Reactors (DRR), and Foreign Research Reactors (FRR). The end of the Cold War and the sudden termination of materials production at SRS left a large inventory of irradiated SNF and other materials in underwater storage in three storage basins: the K and L Production Reactor Disassembly Basins, and the Receiving Basin for Off-site Fuel (RBOF). The condition of some of these legacy fuels was identified in the DNFSB Recommendation 94-1 and subsequent Recommendation 2000-1, concerning the need to ensure safe interim storage of the SNF and the need to stabilize the degraded spent fuel. K Basin and RBOF have been deinventoried of all SNF through either stabilization or transfer to L Basin. The Mark-16B and Mark-22 fuel assemblies identified in the DNFSB Recommendation 94-1 were shipped from L Basin to H Canyon for stabilization. L Basin will continue to receive offsite shipments of FRR SNF (non-legacy) and DRR SNF (both legacy and non-legacy) through FY 2019. Several final disposition options have been evaluated for the remaining SNF inventory. The assumption for this *SRS Environmental Management Program Project Execution Plan (PEP)* is that DOE enriched uranium materials and aluminum clad fuels are dispositioned in H Canyon facilities and that the resultant uranium will be recycled for commercial fuel fabrication in lieu of disposal at the Federal Repository.

### 7.12.2 End State

The end state for this project is deinventory and deactivation of the L Basin and associated facilities. These facilities will be maintained in a minimal surveillance and maintenance condition until transferred to PBS SR-0040, Nuclear Facility Deactivation and Decommissioning (D&D), for final decommissioning. The current planning schedule indicates that turnover will occur upon completion of deactivation.

### 7.12.3 Scope and Description

This project provides safe shipping, receipt, storage, and disposition of SNF and heavy water in L Area.

The scope of this PBS includes all programmatic and physical support efforts related to safe receipt and storage of SNF in L Basin and the final disposition of all SNF at

SRS. Heavy water will continue to be stored in L Area pending disposition via sale or other approved method. This PBS also covers facility deactivation and assumes turnover to PBS SR-0040 for surveillance and maintenance pending the initiation of decommissioning.

The Spent Fuel Project is making key infrastructure improvements to ensure the continued safe receipt and storage of SNF in L Basin. The L Basin sand filter has been replaced, which helps to maintain the quality of the L Basin water. Additional L Area Storage Racks (LASR) may be installed, if necessary, to provide increased SNF storage capacity in L Basin to meet the current forecast needs of FRR and DRR fuel receipts. Upgrades to the fire protection system in L Basin are planned. Nuclear Incident Monitor replacements and VMACS (remote monitoring of L Area from K Area) are additional improvements that either are complete or in progress. The Shielded Transfer System is being modified to accept DIDO fuel baskets.

The current programmatic planning assumptions dictate that all current and future SRS aluminum-based SNF will be dispositioned through the H-Canyon facility. The SRS zirconium/stainless steel-clad SNF inventory will be exchanged with the Idaho National Laboratory for their inventory of aluminum-clad SNF consistent with existing National Environmental Policy Act decisions

## 7.12.4 Responsibilities

In addition to the overall responsibilities identified in Section 4.3, Organizational Structure and Responsibilities, PBS-specific responsibilities are summarized below.

This PBS falls under the responsibility of the DOE Savannah River Operations (SR) Assistant Manager for Nuclear Materials Stabilization Project. In accordance with DOE O 413.3, *Program and Project Management for the Acquisition of Capital Assets*, a Federal Project Director has been identified to manage this PBS and will be approved by the Assistant Secretary for Environmental Management (EM-1). The Federal Project Director uses an Integrated Project Team (IPT) approach to manage the PBS. The IPT is comprised of personnel from a wide variety of disciplines to ensure the work is managed safely and effectively.

The performance of the work scope for this PBS is the responsibility of the management and operating (M&O) contractor. Currently, the contractor is Washington Savannah River Company (WSRC). Within WSRC, the responsibility for this work scope resides with the Management and Operations Manager.

## 7.12.5 Schedule

L-Basin and L-Area facilities will operate until FY 2019 to receive, store, and ship SNF. FRR and DRR receipts will continue through FY 2019. SNF disposition shipments to the SRS canyon facility will continue through FY 2019, at which time the deinventory of L Basin will be complete. The L-Basin and L-Area facilities will disposition any residual heavy water inventories during FY 2020, after which, the L-Area facilities will undergo deactivation and be maintained in a minimal surveillance and maintenance condition until transferred to PBS SR-0040, Nuclear Facility D&D, for final decommissioning.

A schedule, based on the specified assumptions in Section 7.12.8, Assumptions, Agreements, Alternatives, and Risk Management, is included at the end of this section..

## 7.12.6 Resources

The lifecycle cost profile for this PBS is documented separately. This funding profile reflects an extension of the FRR and DRR programs through FY 2019 and the utilization of the SRS canyon facility as the preferred disposition option.

### Government Furnished Services and Items

No material Government Furnished Services and Items have been identified to support this project.

## 7.12.7 Technology Needs

In addition to the aforementioned resource requirements, the following technology needs have been identified in support of cleanup:

- Corrosion performance of aluminum/zirconium/stainless steel (Al/Zr/SS) clad fuels at SRS (predictive modeling for extended storage of Al/Zr/SS clad fuels in SRS basins).  
Benefit: Reduces risk of release of materials/criticality from storage of these fuels.  
Development timeframe: FY 2005 – FY 2007.
- Develop technical support for Spent Nuclear Fuel shipments and receipts.  
Benefit: Provides safe storage at reduced cost.  
Development timeframe: FY 2007 – FY 2010.

## 7.12.8 Assumptions, Agreements, Alternatives, and Risk Management

### Assumptions

The following assumptions have been used as the basis for the lifecycle cost and schedule development:

- Existing Records of Decision will govern spent fuel exchange between Idaho and SRS. The proposed disposition of aluminum-clad spent fuel will be processing through H Canyon instead of a melt-and-dilute process. All of the aluminum clad fuels will be processed through H Area by September 30, 2019.
- The Spent Nuclear Fuel (SNF) project and program activities are conducted in a single SRS facility (L Area). Funding is provided from EM and receipt revenue from the 'Work for Others' account. The total of both funding sources is required to fully support program activities.
- Foreign Research Reactors (FRR) and Domestic Research Reactors (DRR) fuel receipts will continue through September 30, 2019.
- FRR from Canada is not included as an assumption. The addition of Canadian SNF receipts will require significant resource adjustments.
- De-inventory of basins will be completed by December 31, 2019.

- The current Safeguards and Security posture in L Basin will be maintained through FY 2020.
- All heavy water will be dispositioned at no net cost prior to L-Area Complex deactivation.

### **Agreements**

The following agreements are drivers for this project:

- DNFSB Recommendation 2000-1
- *Programmatic Spent Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Final Environmental Impact Statement* (PEIS, DOE/EIS-0203, April 1995), Record of Decision, 60 FR 2860, June 1, 1995.
- *SRS Spent Nuclear Fuel Environmental Impact Statement*, (DOE/EIS-0279, March 2000), Record of Decision 65 FR 48224, August 7, 2000

### **Alternatives and Risk Management**

The PBS Risk Management Plan identifies the risks for this PBS, documents results of the risk assessment process, presents risk handling strategies to mitigate risks, and provides a risk monitoring plan. A summary of major risks identified are below.

- Identification of participating countries could result in more (or fewer) SNF receipts than estimated. More fuel receipts may require extension of canyon operations for disposition.
- Additional fuel may be received due to the extension of the FRR and DRR programs. If current capacity is exceeded, additional racks or storage capacity may be required
- A buyer for heavy water may not be found resulting in disposal costs for this material.
- Exchange of fuel between SRS and Idaho may be impacted by availability of shipping casks and transportation.

## **7.12.9 Performance Monitoring and Evaluation**

### **7.12.9.1 HQ Monitoring and Evaluation**

Monitoring of this PBS at the DOE Headquarters level is completed primarily through use of the Integrated Planning, Accountability, and Budget System (IPABS). Actual cost, schedule, and performance data are collected for each PBS and compared to the established baseline. All elements of the lifecycle baseline are under EM configuration control. Performance data include the project performance measures and milestones. Progress toward these measures and any proposed changes to them are provided on the following pages.

**Project Performance Measure:** (see next page)

Columns displaying Proposed Performance Measures include actual performance for the fiscal years 1997 – 2005.

**Packaged and Shipped for Disposition**  
**Metric Tons of Heavy Metal**

	Spent Nuclear Fuel packaged for final disposition: MTHM (Current)	Spent Nuclear Fuel packaged for final disposition: MTHM (Proposed)
Pre-1997		
1997		
1998		
1999		
2000		
2001		
2002		
2003	1.567	1.567
2004	1.254	1.254
2005		
2006		
2007		
2008		0.193
2009		1.110
2010		5.068
2011		5.069
2012		5.069
2013	4.14	5.069
2014	4.14	5.069
2015	4.14	5.076
2016	4.14	0.771
2017	4.14	1.702
2018	4.14	1.702
2019	4.14	1.384
2020	4.12	
2021		
2022		
2023		
2024		
2025		
2026		
2027		
2028		
2029		
2030		
2031		
<b>Total:</b>	<b>35.925</b>	<b>40.103</b>

Basis for Change: The project performance measures assume that existing Records of Decision will govern the spent fuel exchange between Idaho and SRS, and proposed disposition of aluminum-clad spent fuel will be processing through H Canyon instead of a melt-and-dilute process.

The performance measure is determined by the DOE planning assumptions and by participation of eligible countries in the FRR program. Shippers and shipment schedules change each year. These receipt assumptions remain subject to future change. Countries have the option to participate, or not participate, through FY 2019.

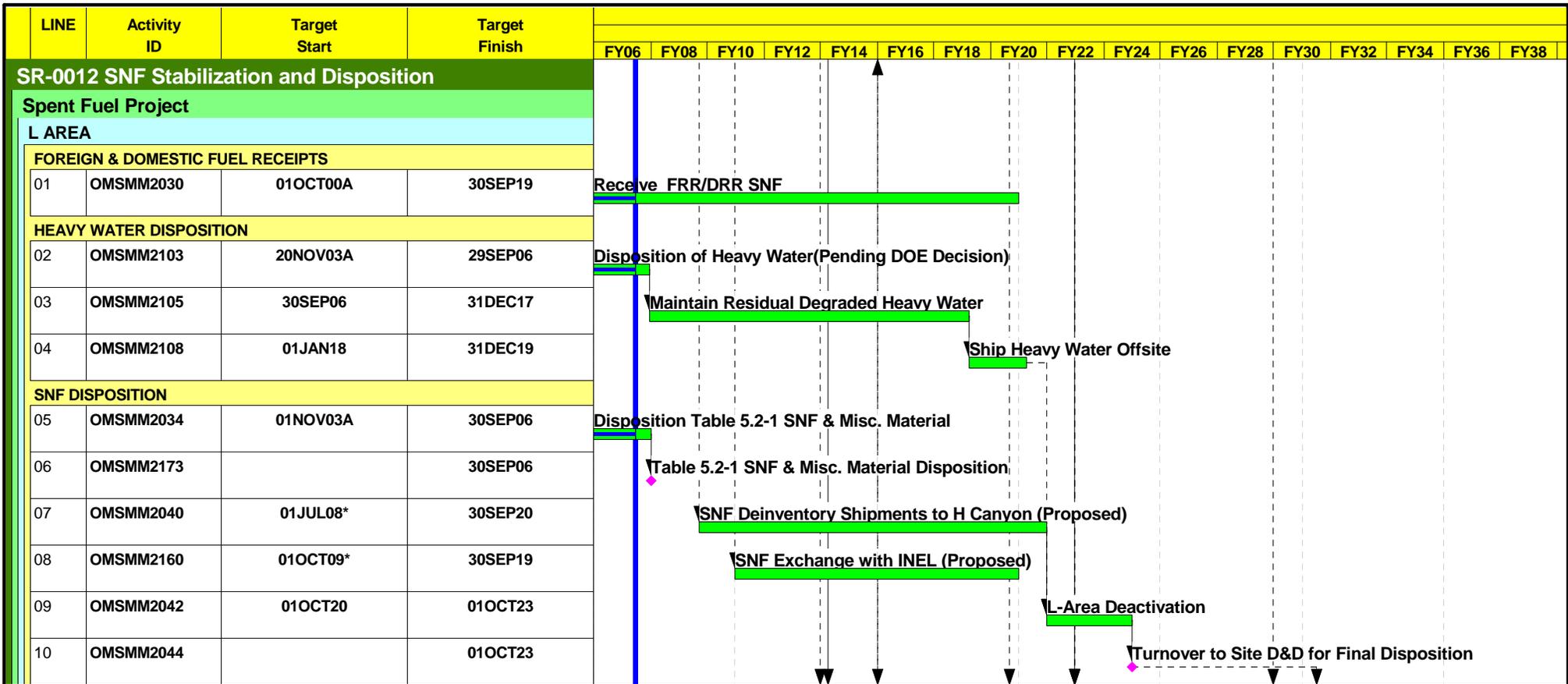
### Project Milestones

Milestone	Date
Maintain L Area SNF receipt, storage and shipping facilities in an operable condition capable of supporting planned program requirements. (should be included in annual milestones through 2020)	Annual
Begin SNF deinventory shipments to H Canyon	07/01/2008
Begin SNF exchange with INEL	10/01/2009
Complete FRR receipt program	09/30/2019
Complete DRR receipt program	09/30/2019
Complete disposition of heavy water inventory	09/30/2020
Complete L Area deactivation	09/30/2022
Turnover L Area for final disposition	10/01/2022

Basis for Change: Milestone changes result from new SNF programmatic assumptions.

### 7.12.9.2 SRS Monitoring and Evaluation

Refer to Section 4.4.1, Performance Monitoring, Reporting and Evaluation, for a description of the performance monitoring and evaluation process.



## 7.13 PBS SR-0013 Solid Waste Stabilization and Disposition

This section contains the narratives, scope, cost, and schedule for the Project Baseline Summary (PBS) SR-0013, which includes receipt, treatment, storage, and disposal of legacy and newly generated low-level waste, mixed low-level waste (LLW/MLLW), transuranic (TRU) waste, hazardous waste, and sanitary waste.

### 7.13.1 Background

Past nuclear operations at Savannah River Site (SRS) have generated wastes which, for many years, have been stored pending the availability of treatment and disposal facilities. Over the last decade, the inventories of these legacy wastes have been steadily reduced to a fraction of their former magnitude using a variety of treatment and disposal facilities both onsite and offsite. In addition to disposition of legacy wastes, SRS generates new wastes as part of ongoing site Department of Energy (DOE) Office of Environmental Management (EM) cleanup work. These newly generated wastes are dispositioned using a variety of treatment and disposal facilities. In order to achieve success in the waste management project, there are also active SRS pollution prevention, waste minimization and waste certification programs. In addition, this project covers surveillance and maintenance activities for the Consolidated Incinerator Facility (CIF) project. This project includes current and future waste disposition support for the National Nuclear Security Administration (NNSA) and other programs performing work at SRS.

This project provides capital funding for general site infrastructure projects in support of all site programs. Also included in the scope of this project are telecommunications, utilities, janitorial support and maintenance in support of DOE users. As the EM cleanup mission has advanced at SRS and nuclear operations facilities have aged, there has been a focused effort to maintain an appropriate level of infrastructure based on the needs of the EM cleanup mission.

### 7.13.2 End State

All legacy low-level, hazardous, mixed and transuranic (TRU) wastes will be disposed of in compliance with applicable regulations and requirements. SRS newly generated wastes resulting from the EM cleanup project will be disposed of as the waste is generated to prevent a legacy waste problem from being created for future generations. This real-time treatment and disposal of wastes will end approximately six months after final cleanup at SRS is finished at the end of FY 2031.

All waste facilities will be deactivated with the possible exception of portions of the Solid Waste Disposal Facility (SWDF). Once deactivated, facilities will be maintained in a minimal surveillance and maintenance condition until transferred to PBS SR-0040, Nuclear Facility Deactivation and Decommissioning (D&D), for final decommissioning or to PBS SR-0030, Soil and Water Remediation, for final area closure. Portions of SWDF may be needed after FY 2031 to support waste generation of other site programs. If determined to be needed, this facility will be transferred to another DOE program office upon completion of the EM cleanup

project at SRS. Any ongoing site infrastructure support or needed support to DOE users will also be transferred to the appropriate DOE program office.

### 7.13.3 Scope and Description

This project funds the receipt, treatment, storage, and disposal of legacy and newly generated low-level waste, mixed low-level waste (LLW/MLLW), TRU waste, hazardous waste, and sanitary waste.

Sanitary waste consists of solid wastes that are neither radioactive nor hazardous as defined by the Atomic Energy Act (AEA) or the Resource Conservation and Recovery Act (RCRA). Sanitary waste consists of materials that would be received by a municipal sanitary landfill and salvageable or recyclable materials.

Waste minimization and pollution prevention (P2) is integral to the SRS Environmental Management System (EMS) and the Integrated Safety Management System (ISMS). The SRS P2 Program establishes the Environmental Management preference of source reduction and recycling over treatment, storage, and disposal and the preferred use of energy-efficient and resource-conservative practices and operations. Activities include increasing P2 awareness, implementation of waste management improvement opportunities, pollution prevention/waste minimization projects to reduce the generation of all waste types or reduce the toxicity of the waste. The Pollution Prevention (P2) Program provides SRS a safe, effective, and environmentally responsible strategy to implement specific waste and pollutant reduction techniques based on current and projected information on waste generation, waste characterization, and ultimate waste disposal costs.

The hazardous waste (HW) and mixed waste (MW) projects involve three primary operations: receipt of waste from on-site generators, interim storage in RCRA-regulated storage facilities, and shipment for off-site treatment and disposal. All HW and MW generated at SRS are shipped offsite to commercial facilities for treatment and disposal. There is no onsite RCRA-permitted disposal facility for hazardous or mixed waste.

The LLW streams are generated from a variety of programs at SRS, plus the Naval Reactors Program and other offsite generators. LLW consists of radioactively contaminated materials including miscellaneous job control waste, small and large equipment, plastic sheeting, soil, and suspect contaminated materials used within radioactive material management areas that cannot be proven to be free of radioactive contamination. The E-Area facilities consist of a Low-Activity Waste (LAW) vault, an Intermediate-Level Vault (ILV), engineered trenches, and components-in-grout and slit trenches. Material awaiting disposition (contaminated large equipment - CLE) that has not been declared waste is being stored.

The historical mission of the TRU waste project has been to receive and safely store TRU waste generated at the SRS and throughout the DOE complex. The focus has shifted to preparation and transportation of waste to the Waste Isolation Pilot Plant (WIPP) disposal facility located in Carlsbad, New Mexico. This is accomplished by: (1) characterizing and certifying TRU waste to meet the WIPP waste acceptance criteria (WAC); (2) segregating out wastes that do not meet the WIPP WAC and that can be disposed in a more cost effective manner; and (3) repackaging the waste to meet transportation requirements.

TRU waste is defined by and managed in accordance with DOE O 435.1, *Radioactive Waste Management*. TRU waste is radioactive waste containing more than 100 nanocuries of alpha-emitting transuranic isotopes per gram of waste with half-lives greater than 20 years. The SRS currently stores approximately 8,000 cubic meters of TRU waste that was generated as a result of nuclear materials production. SRS TRU waste will be transported overland in TRU Package Transporters, Model II (TRUPACT-II) or enhanced Type B shipping containers (TRUPACT-III) and be disposed of at WIPP.

The Consolidated Incinerator Facility (CIF) suspended operations in late FY 2000. Current efforts include surveillance and maintenance activities.

This PBS covers other miscellaneous items of work in support of mission operations, including: operational direct support to DOE, U.S. Forest Service, and Savannah River Ecology Laboratory, site housing support, deactivation planning for infrastructure facilities, infrastructure database management, and small capital projects (capital equipment and general plant projects) for infrastructure support facilities and activities.

## 7.13.4 Responsibilities

In addition to the overall responsibilities identified in Section 4.3, Organizational Structure and Responsibilities, PBS-specific responsibilities are summarized below.

This PBS falls under the responsibility of the SR Assistant Manager for Waste Disposition Project. In accordance with DOE O 413.3, *Program and Project Management for the Acquisition of Capital Assets*, a Federal Project Director has been identified to manage this PBS and has been approved by the Assistant Secretary for Environmental Management (EM-1). The Federal Project Director uses an Integrated Project Team (IPT) approach to manage the PBS. The IPT is comprised of personnel from a wide variety of disciplines to ensure the work is managed safely and effectively.

The performance of the work scope for this PBS is the responsibility of the management and operating (M&O) contractor. Currently, the contractor is Washington Savannah River Company (WSRC). Within WSRC, the responsibility for this work scope resides with the Management and Operations Manager.

## 7.13.5 Schedule

All legacy hazardous, MLLW and LLW, along with approximately 24,000 TRU waste drums, will be dispositioned by end of FY 2007. The remaining TRU inventory of legacy waste will be dispositioned by the end of FY 2012.

A series of small projects and facility enhancements will be required to support operational activities associated with accelerated high activity (HA) TRU waste disposition that include repackaging, remediation, size reduction, characterization, additional storage capacity, and TRUPACT III loading capability.

Thereafter, the schedule reflects the treatment and disposal of newly generated wastes normally within one year of receipt by the Waste Management Area Project organization.

As SRS waste disposal facilities are filled, new facilities will be built.

Portions of Solid Waste Disposal Facility may be needed after FY 2031 to support waste generation of other site programs. If determined to be needed, this facility will be transferred to another DOE program office upon completion of the EM cleanup project at SRS.

A schedule, based on the specified assumptions in Section 7.13.8, Assumptions, Agreements, Alternatives, and Risk Management, is included at the end of this section.

## 7.13.6 Resources

The lifecycle cost profile for this PBS is documented separately.

The previous lifecycle estimate assumed that the high activity (HA) transuranic waste would require a significant Line Item Project. Currently, a series of smaller capital projects will satisfy these needs. HA legacy processing begins in FY 2006 versus FY 2009 in prior plans. This EM cost profile also assumes that a Remote Handled (RH) TRU program is established at SRS in FY07 for the purpose of shipping the Battelle RH waste to WIPP in compliance with the agreement with South Carolina Department of Health and Environmental Control (DHEC). Low-activity, drummed TRU waste shipments to WIPP are now expected to be completed in FY 2008.

### Government Furnished Services and Items

The following are Government Furnished Services and Items (GFSI) assumptions that have been made for the purposes of this plan:

- Central Certification Project (CCP) will operate and fund SRS drum certification through September 30, 2008.
- Nuclear Regulatory Commission (NRC) will issue Certificate of Compliance for TRUPACT-III by December 31, 2007.
- Non-destructive analysis (NDA) and non-destructive examination (NDE) equipment for large container waste will be provided by June 30, 2007.
- Central Certification Project (CCP) will operate and fund non-drum container certification beginning June 30, 2007 and running through September 30, 2010.
- New Mexico Environmental Division will approve the WIPP Class 3 Permit Modification for elimination of head-space gas sampling and visual examination for high activity non-drum waste by September 30, 2006.
- SRS will identify receiver sites for LLW, mixed waste, and hazardous waste.

## 7.13.7 Technology Needs

In addition to the aforementioned resource requirements, the following technology needs have been identified in support of accelerated cleanup:

- Provide for the capability required for the visual inspection, sorting, segregating, and repackaging of plutonium-239 and plutonium-238, and potentially remote handled wastes currently stored in 55- and 83-gallon drums and large black boxes to satisfy WIPP requirements.  
Benefit: Enables technology/reduces costs from continual storage/meets regulatory commitment.  
Development timeframe: FY 2007.
- Provide for the treatment of high-activity TRU (plutonium-238) waste for destruction of organic constituents.  
Benefit: Allows shipment of higher plutonium-238 loaded material to WIPP, enabling technology/reduces risks.  
Development timeframe: FY 2007 – FY 2008.

## 7.13.8 Assumptions, Agreements, Alternatives and Risk Management

### Assumptions

The following assumptions have been used as the basis for the lifecycle cost and schedule development:

- EM will only operate solid waste facilities through completion of the EM mission. EM will provide solid waste services to non-EM waste generators at SRS during this time. No new waste streams from non-EM waste generators will be dispositioned by EM other than those currently planned.
- Transuranic (TRU) waste:
  - Nuclear Regulatory Commission will issue Certificate of Compliance for TRUPACT-III by December 31, 2007.
  - NDA and NDE equipment for large container waste will be provided by June 30, 2007.
  - Central Certification Project will operate and fund non-drum container certification beginning June 30, 2007 and running through September 30, 2010.
  - New Mexico Environmental Division will approve the Waste Isolation Pilot Plant (WIPP) Class 3 Permit Modification for elimination of headspace gas sampling and visual examination of High Activity TRU non-drum waste by September 30, 2006.
- SRS infrastructure will be maintained consistent with identified EM and other organizational needs and requirements.

### Agreements

The following agreements are drivers for this project:

- Site Treatment Plan
- Mound Agreement with SCDHEC
- Battelle-Columbus Agreement

### **Alternatives and Risk Management**

The PBS Risk Management Plan identifies the risks for this PBS, documents results of the risk assessment process, presents risk handling strategies to mitigate risks, and provides a risk monitoring plan. A summary of major risks identified are below.

- High activity TRU waste process throughput does not meet the execution schedule.
- Availability of a certified large box characterization system.
- Availability of TRUPACT III shipping container.

#### **Alternative**

The following alternative has been identified for this PBS:

- NNSA and other site programs could be required to provide funding to support disposition of wastes generated by other programs. This would result in reduced EM lifecycle cost.

## **7.13.9 Performance Monitoring and Evaluation**

### **7.13.9.1 HQ Monitoring and Evaluation**

Monitoring of this PBS at the DOE Headquarters level is completed primarily through use of the Integrated Planning, Accountability, and Budget System (IPABS). Actual cost, schedule, and performance data are collected for each PBS and compared to the established baseline. All elements of the lifecycle baseline are under EM configuration control. Performance data include the project performance measures and milestones. Progress toward these measures and any proposed changes to them are provided on the following pages.

#### **Project Performance Measures**\_(see next page)

Columns displaying Proposed Performance Measures include actual performance for the fiscal years 1997 – 2005.

**Transuranic Waste for Disposal at WIPP  
Volume Disposed in Cubic Meters**

Year	Transuranic Waste shipped for disposal at WIPP: M3 (Current)	Transuranic Waste shipped for disposal at WIPP: M3 (Proposed)
Pre-1997		
1997		
1998		
1999		
2000		
2001	60	60
2002	136	136
2003	840	1,010
2004	840	1,505
2005	840	712
2006	840	590
2007	840	650
2008	840	650
2009	10,090	1,480
2010		1,480
2011		1,480
2012		1,480
2013		240
2014		240
2015		240
2016		240
2017		240
2018		240
2019		240
2020		240
2021		240
2022		240
2023		240
2024		240
2025		240
2026		240
2027		240
2028		240
2029		240
2030		240
2031		
<b>Total:</b>	<b>15,326</b>	<b>15,553</b>

Basis for Change: The current baseline was developed assuming disposition of legacy TRU waste through FY 2013. Since then, disposition of legacy TRU is to complete in FY 2012.

**Low Level and Mixed Low Level Waste Disposed  
Volume Disposed in Cubic Meters**

Year	Low-Level and Mixed Low-Level Waste disposed: M3 (Current)	ER (S&GW) and D&D Activities	Legacy and Newly Generated
Pre-2007	86,550		
2007	67,902	9,606	3,556
2008	4,671	15,347	2,780
2009	3,571	12,193	4,444
2010	3,571	19,626	2,425
2011	3,537	22,786	2,915
2012	3,537	18,278	2,517
2013	3,537	16,930	2,958
2014	3,537	25,754	2,967
2015	3,537	28,853	2,853
2016	3,537	17,935	2,695
2017	3,537	21,049	2,008
2018	3,537	21,049	2,008
2019	3,537	21,049	2,008
2020	3,537	21,049	2,008
2021	3,537	21,049	2,008
2022	3,537	23,982	1,267
2023	3,537	23,982	1,267
2024	3,537	23,982	1,267
2025	3,537	23,982	1,267
2026		23,982	1,267
2027		56	860
2028		56	860
2029		56	860
2030		56	860
2031		56	860
<b>Total:</b>	<b>219,320</b>	<b>412,743</b>	<b>50,785</b>

Basis for Change: The current baseline includes only LLW/MLLW waste from operations. The proposed baseline includes waste from D&D and Soil and Groundwater Projects and operations. The addition of these wastes is important because it is a deviation from the previous performance measure that excluded D&D and Soil and Groundwater projects.

- D&D waste in FY 2006 is over twice the volume of operational waste. This waste is managed onsite the same as non-D&D waste and in some cases is commingled with job control waste. Separating D&D and Soil and Groundwater Projects and operational waste does not accurately reflect waste volumes and is not practical with the SRS data system.
- The current baseline did not reflect the work scope of new contract. The proposed quantities reflect scope of this contract.

LLW/MW proposed metric is based upon existing forecast for all generators. The lifecycle totals include actual performance for the fiscal years prior to FY 2006.

### Project Milestones

Milestone	Proposed
Complete 144 shipments of transuranic waste to the Waste Isolation Pilot Plant (4,000 drums/840 cubic meters)	Complete
Dispose of 10,744 cubic meters of low-level waste/mixed low-level waste	Complete
Elimination of legacy LLW/HW/MLLW	09/30/2007
Complete disposal of legacy drummed TRU waste	09/30/2008
Complete disposal of legacy boxed TRU waste	09/30/2012
Complete EM Solid Waste Program at SRS	09/30/2031

Basis for Change: The 2004 milestones have been completed. Milestones proposed for deletion are captured under Project Performance Measures.

#### 8.13.9.2 SRS Monitoring and Evaluation

Refer to Section 4.4.1, Performance Monitoring, Reporting, and Evaluation, for a description of the performance monitoring and evaluation process.

LINE	Activity ID	Target Start	Target Finish																	
				FY06	FY08	FY10	FY12	FY14	FY16	FY18	FY20	FY22	FY24	FY26	FY28	FY30	FY32	FY34	FY36	FY38
<b>SR-0013 Solid Waste Stabilization &amp; Disposition</b>																				
<b>GENERAL SOLID WASTE PROGRAM</b>																				
<b>Solid Waste &amp; Infrastructure</b>																				
01	OSK001	01OCT02A	30SEP31	Dispose Newly Generated Haz Waste																
02	OSK004	01OCT02A	30SEP31	Dispose of Newly Generated Mixed Waste																
03	OSK007	01OCT02A	30SEP31	Dispose of Newly Generated Low Level Waste																
04	OSK009	01OCT02A	30SEP31	Dispose of Newly Generated TRU Waste																
05	OSK010	01OCT04A	30SEP08	Shipments of Low Activity TRU Drums to WIPP																
06	OSK0016		30SEP08	Complete disposal of legacy drummed TRU waste																
07	OSK006	31JAN05A	30SEP07	Reduce Legacy Mixed Waste to Target Amount																
08	OSK003	01OCT05A	30SEP06	Reduce Legacy Haz Waste to Target Amount																
09	OSK0015		30SEP07	Elimination of all legacy LL Hazardous/MW																
10	OSK0019		31DEC08*	Complete Shipments of Battelle RH TRU Waste (per agreement w/SCDHEC)																
11	OSK011	09JAN06A	30SEP09	Repkg boxed TRU Waste into WIPP Compliant Contrs																
12	OSK013	01OCT08*	30SEP12	Shipment of High Activity TRU Drums to WIPP																
13	OSK011B		30SEP10*	Establish HA TRU Waste Remediation Capability																
14	OSK011C	01OCT10	31MAR12	Remediation of HA TRU Waste																
15	OSK011A		30SEP07*	Establish HA TRU Waste Characterizatn Capability																
16	OSK012	01NOV07*	31MAR12	Characterization of TRU Waste Boxes																
17	OSK013A		30SEP08*	Establish HA TRU Waste Size Reduction Capability																
18	OSK013B	01OCT08	30SEP09	Size Reduction of HA TRU Waste																
19	OSK014	01JUL08*	30SEP12	Shipments of TRU Boxes to WIPP In TRUPACT III																
20	OSK0017		30SEP12	Complete disposal of legacy boxed TRU waste																
21	OSK1009		30SEP31	Completion of Solid Waste Program																

## 7.14 PBS SR-0014 Radioactive Liquid Tank Waste Stabilization and Disposition

This section contains the narratives, scope, cost, and schedule for the Project Baseline Summary (PBS) SR-0014, Radioactive Liquid Tank Waste Stabilization and Disposition, which includes the treatment, storage and disposal of radioactive liquid waste. PBS SR-0014 is also referred to as the Waste Stabilization and Disposition Project (WSDP).

### 7.14.1 Background

The Savannah River Site (SRS) is a Department of Energy (DOE) site that has produced nuclear materials for national defense, research, and medical programs since it became operational in 1951. As a by-product of this production, there are approximately 36 million gallons of radioactive liquid waste currently stored on an interim basis in 49 underground waste storage tanks. Continued, long-term storage of these liquid wastes in underground tanks could pose an environmental risk (12 of the SRS tanks have a waste leakage history). Since FY 1996, the radioactive liquid waste management program at SRS has been removing waste from tanks, pre-treating it, vitrifying it, and pouring the vitrified waste into canisters for long-term storage and disposal. From FY 1996 through April 2006, over 2,100 canisters of waste had been vitrified. The canisters poured to date have contained vitrified sludge waste.

### 7.14.2 End State

Completion of this PBS scope will result in the treatment and permanent disposal of the radioactive liquid waste currently stored at the SRS as well as the radioactive waste from planned nuclear materials stabilization activities. It will also result in the operational closure of the remaining 49 underground storage tanks by the end of FY 2026. (Two of the original 51 tanks were closed and grouted in place in FY 1998.) and the deactivation (flushing and isolation) of the major facilities and equipment that compose the Radioactive Liquid Waste (RLW) System. Once facilities are deactivated, these facilities will be maintained in a minimal surveillance and maintenance condition until transferred to PBS SR-0040, Nuclear Facility Deactivation and Decommissioning (D&D), for decommissioning.

### 7.14.3 Scope and Description

The scope of this project includes the treatment and permanent disposal of approximately 36 million gallons of radioactive liquid waste stored in 49 underground storage tanks, including the management of waste in the F- and H-Tank Farms through transfers, evaporation, and storage to safely and efficiently manage tank space.

The highly radioactive fraction of the removed waste will be processed into borosilicate glass canisters at the Defense Waste Processing Facility (DWPF) and temporarily stored at SRS in Glass Waste Storage Buildings (GWSB) until the Federal Repository at Yucca Mountain is available. A second GWSB was constructed because the first GWSB facility is nearing capacity, and a third GWSB is

planned. This PBS includes the design, construction and operation of a Canister Shipping Facility (CSF) to support shipments to Yucca Mountain.

This PBS also includes the design, construction, and operation of the Salt Waste Processing Facility (SWPF) to pre-treat salt waste. Some other existing facilities at SRS will also be used to treat salt waste and prepare it for disposal. The highly radioactive fraction of the waste will be sent to DWPF for vitrification. The low-level fraction will go to the Saltstone Facility, which treats and permanently disposes of low-level waste by stabilizing it in a solid, cement-based form.

Deactivation (flushing and isolation) of the radioactive liquid waste facilities and tanks is included in this project. All radioactive liquid waste tanks in F- and H- Tank Farms will be operationally closed (i.e., removed from service and filled with grout). The 1H, 1F, 2H, 2F, and 3H Evaporators and contaminated waste transfer systems will be deactivated (flushing and isolation) in preparation for decommissioning activities covered by PBS SR-0040. The DWPF and SWPF, along with the Failed Equipment Storage Vaults will also be deactivated. GWSBs will be deinventoried (canisters shipped to a Federal Repository) and deactivated.

#### 7.14.4 Responsibilities

In addition to the overall responsibilities identified in Section 4.3, Organizational Structures and Responsibilities, PBS-specific responsibilities are summarized below.

This PBS falls under the responsibility of the Savannah River Operations (SR) Assistant Manager for Waste Disposition Project. In accordance with DOE O 413.3, *Program and Project Management for the Acquisition of Capital Assets*, a Federal Project Director (FPD) has been identified to manage this PBS and will be approved by the Assistant Secretary for Environmental Management (EM-1). FPDs have been identified for following subprojects under this PBS: the Radioactive Liquid Waste System and the Salt Processing Program. The FPD use an Integrated Project Team (IPT) approach to manage the PBS. The IPT are comprised of personnel from a wide variety of disciplines to ensure the work is managed safely and effectively.

The performance of the majority of the work scope for this PBS is the responsibility of the management and operating (M&O) contractor under the oversight of the DOE FPD. Currently, the M&O contractor is Washington Savannah River Company (WSRC). Within WSRC, responsibility resides with the Liquid Waste Organization.

Portions of the work scope under this PBS are performed under separate contracts directly managed by SR. Separate contracts were awarded for both the design and construction of the GWSB #2. An engineering, procurement, and construction (EPC) contract has been awarded for the design, construction, and one year operation of the SWPF.

#### 7.14.5 Schedule

DWPF and SWPF processing operations will continue through FY 2024. Waste removal in support of DWPF and SWPF will continue in - Tank Farm (FTF) through FY 2020 and in H-Tank Farm (HTF) through FY 2025. Deactivation of waste tanks and supporting facilities and equipment (flushing, heel removal, isolation and operational closure) will continue for approximately two years after waste processing

operations are complete. Effluent Treatment Project (ETP) will continue to operate through FY 2025.

A schedule, based on the specified assumptions in Section 7.14.8, Assumptions, Agreements, Alternatives, and Risk Management, is included at the end of this section.

## 7.14.6 Resources

The lifecycle cost profile for this PBS is documented separately.

Previous lifecycle baselines assumed that treatment and disposal of radioactive salt waste would commence in FY 2003. However, issues created by the waste incidental to reprocessing (WIR) lawsuit delayed salt processing from proceeding. This *SRS Environmental Management Program Project Execution Plan (PEP)* proposes a revised plan for salt and sludge processing that can be accomplished by FY 2024. The successful use of alternative technology for bulk waste removal from the radioactive liquid waste tanks, known as “Waste on Wheels” (WOW),” and its cost efficiencies have been incorporated in this *PEP*, along with initiatives to minimize non-radioactive liquid waste inputs to the tank farms. The design, construction and operation of a Caustic Side Solvent Extraction (CSSX) Modular Unit prior to SWPF becoming operational are also included.

### Government Furnished Services and Items

No material Government Furnished Services and Items have been identified to support this project.

## 7.14.7 Technology Needs

The critical path for SRS cleanup is the processing of radioactive liquid waste in the DWPF. The tasks listed below can shorten this critical path. In addition to the aforementioned resource requirements, the following technology needs have been identified in support of accelerated cleanup:

- Increase throughput and reduce total number of radioactive liquid waste canisters to significantly reduce costs and accelerate the project. This includes increasing waste loading per can, melt-rate improvements, melter improvements, and facility optimization to reduce bottlenecks, as well as the ability to optimize melter glass waste loading.  
Benefit: Reduced costs and acceleration of treatment and enable completion of cleanup before FY 2026.  
Development timeframe: FY 2006 – FY 2009.
- Address impact of changing feed streams from canyon disposal and salt processing on DWPF process and throughput.  
Benefit: Maintain increased throughput in DWPF.  
Development timeframe: FY 2006 – FY 2009.
- Characterize material for the next two sludge batches.  
Benefit: Improves flowsheet development and supports melt rate and melter improvement initiatives above.  
Development timeframe: FY 2006 – FY 2009.

- Provide accelerated parallel paths for saltcake and supernate treatment to minimize costs. Technology areas include saltcake sampling and characterization, dissolution and retrieval, faster filtration, removal of cesium, strontium and actinide, on-line analytical capabilities, and alternative waste removal technologies (techniques to remove salt waste from radioactive liquid waste storage tanks).  
Benefit: Reduces costs/reduces wastes/reduces exposures.  
Development timeframe: FY 2006 – FY 2009.
- Accelerate saltcake and sludge waste removal in unobstructed and obstructed tanks and tank annuli, improve leak detection/mitigation, and develop better technologies for tank farm water management, including the provision of alternative processing and/or concentration methods for DWPF aqueous recycle streams.  
Benefit: Reduces costs and volume of recycle and other wastes returned to tank farms; reduces the silicon content being sent to tank farm (evaporator buildup issue) (Without technology solutions there will be a loss of storage capacity at tank farm or extended outage of tank evaporators that could eventually halt DWPF operations.)  
Development timeframe: FY 2006 – FY 2009
- Improve bulk waste removal with more efficient mixing and chemical cleaning to minimize residual waste (Tank heel removal/closure technology).  
Benefit: Enables closure/reduces costs/reduces exposures.  
Development timeframe: FY 2006 – FY 2009.

## 7.14.8 Assumptions, Agreements, Alternatives, and Risk Management

### Assumptions

The following assumptions have been used as the basis for the lifecycle cost and schedule development:

- Defense Waste Processing Facility (DWPF) will produce canisters at maximum throughput for duration of the project (based on achievable melt rate and waste loading for sludge being processed).
- A Canister Shipping Facility (CSF) for transferring radioactive liquid waste canisters into Office of Civilian Radioactive Waste Management shipping casks will begin on March 31, 2012, with operational startup by March 30, 2015. Alternate design or contracting strategies, including use of a commercial vendor, will be used to reduce estimated capital costs.
- The Federal Repository at Yucca Mountain will be available to begin accepting DOE spent nuclear fuel and vitrified radioactive liquid waste starting on April 1, 2015, with ramp up to full shipments by April 1, 2018.
- Implementation of the requirements contained in Section 3116, Defense Site Acceleration Completion, of Public Law 108-375, Ronald W. Reagan National Defense Authorization Act for Fiscal Year 2005, for waste determinations will be timely such that salt waste treatment and disposal can begin by August 31, 2006.
- The Salt Waste Processing Facility (SWPF) will be online by September 30, 2011.

- The SWPF will process approximately 5 million gallons (mgal) of salt waste during its first year of operation and 5.9 mgal per year thereafter.
- The Tank Farm feed infrastructure, the Saltstone Facility and the DWPF will support SWPF processing rates.
- Infrastructure scope for the Management and Operating (M&O) contractor to support tie-in of the SWPF will be consistent with the approved Interface Control Documents.
- Salt waste treatment and disposal via the deliquification, dissolution, and adjustment process will be consistent with the *Liquid Waste Disposition Processing Plan (LWDPP)* and associated schedule.
- Tank 48 recovery will be as described in the *LWDPP*.
- A modular cesium removal capability and an actinide processing capability will be online by October 1, 2007, and treat salt waste consistent with the *LWDPP*.
- New projects such as the new low level waste processing tanks will be designed, constructed, and operated as required to support the *LWDPP*.
- Tank closure activities will proceed under Section 3116, Defense Site Acceleration Completion, of Public Law 108-375, Ronald W. Reagan National Defense Authorization Act for Fiscal Year 2005, and will meet *Federal Facility Agreement (FFA)* compliance dates.
- GWSB #2 will be available by June 30, 2006, for additional canister storage, and GWSB #3 by September 30, 2015.
- No new waste streams from non-EM waste generators will be dispositioned by EM other than those currently included in the *LWDPP*.
- “Waste on Wheels” (WOW) will continue to be implemented successfully.
- Sludge heel removal and annulus cleaning alternatives will be successfully implemented to support operational closure of radioactive liquid waste tanks.

### Agreements

The following agreements are drivers for this project:

- The *FFA* is a binding agreement between DOE, the Environmental Protection Agency (EPA) and the South Carolina Department of Health and Environmental Control (DHEC). The *FFA* requires that the remaining 22 non-compliant tanks (tanks lacking full secondary containment) be emptied and closed on an approved tank-by-tank schedule
- *SRS Site Treatment Plan (STP)* is an agreement between SR and DHEC, which requires an annual plan. The *STP* governs the treatment of radioactive liquid waste and establishes a schedule for treating and disposing of mixed waste and identifies the DWPF as the best demonstrated treatment technology for radioactive liquid waste. The *STP* requires that the processing of all radioactive liquid waste (both existing and future) be completed by the end of FY 2028.

### Alternatives and Risk Management

RLW processes and systems for the Waste Stabilization and Disposition Project (WSDP) must be fully integrated to efficiently execute missions. The system complexity requires many aspects of the program to interact such that appropriate prioritization occurs and mission interference is minimized. The PBS Risk Management Plan identifies the risks for this PBS, documents results of the risk assessment process, presents risk handling strategies to mitigate risks, and provides a risk monitoring plan. A summary of major risk categories and major risks associated with each in achieving the PBS objectives are below.

**Regulatory, Stakeholder Concerns (WSDP-001):** These risks relate to Federal, State and local stakeholder actions such as external legislative changes, lawsuits, and stakeholder approval such as permitting and licensing. The highest risk evaluated in this category is stakeholders, including the National Academies of Science (NAS), the Nuclear Regulatory Commission (NRC), DHEC, and EPA, who may not agree with the technical assumptions on which the 3116 Waste Determination (WD) (waste determinations as stipulated in Section 3116, Defense Site Acceleration Completion, of Public Law 108-375, Ronald W. Reagan National Defense Authorization Act for Fiscal Year 2005), the Performance Objective Determination Document (PODD), General Closure Plan (GCP), or Tank Closure Modules (CM) are based. This could include inventory/sampling, concentration averaging (classification), modeling, risk assessment (human health, environmental, etc), point of compliance, and institutional controls.

Other high risks in this category are delays in permitting actions necessary to support *LWDPP* salt processing (Actinide Removal Process [ARP], Modular Caustic Side Solvent Extraction [MCU], SWPF, and Saltstone Processing Facility [SPF]) and permitting or regulatory concerns delaying the approval to operate Yucca Mountain as the Federal Repository.

**Funding Competition Impacts WSDP (WSDP-002):** An additional risk relates to funding shortfalls for the WSDP brought about by shifting priorities within Federal Government, DOE, and SRS Contractor(s).

**Equipment Failure Halts WSDP Processing (WSDP-003):** There are risks relating to equipment failures (e.g., DWPF melter, Evaporator pot, pumps, etc.). The highest risk evaluated in this category is if the replacement melter for DWPF is not available. A vendor and special materials are required for fabrication of replacement melters. If these are unavailable, replacement melters cannot be fabricated. After handling this risk by starting procurement immediately to secure the services of a vendor for specialized materials (e.g., refractory bricks) and assembly services, a delay to the program and additional expenses could be incurred.

**Material and Chemical Balances not Accommodated for WSDP Process Interfaces (WSDP-004):** There are risks relating to process impacts resulting from unexpected material and chemical balance issues between interfacing facilities (e.g., high cesium and actinide concentrations to SWPF, DWPF, etc.). The highest risk evaluated in this category is DWPF impacted by chemistry/rheology of sludge waste feed. Chemistry and rheology properties impact DWPF operations. The event is that unexpected chemical or rheological properties of the waste feed stream interfere with the DWPF vitrification process. This event could cause a significant decrease in canister production or a complete stoppage of canister production. Methods to mitigate this risk include improve characterization of future sludge batches, continue to evaluate process changes at DWPF such as new frit formulations, continue to evaluate methods of processing high aluminum, and continue to evaluate tank sequencing to make up sludge batches that minimize rheology issues.

**Waste Characterization (WSDP-005):** Waste characterization risks relate to the effects of unanticipated variances in established or projected waste characterization data such as the presence of a rogue constituent or primary compound concentration. The highest risk evaluated in this category is an additional sludge mass that results in higher than expected canister production. Sludge batches are planned based on Waste Characterization System (WCS) characterization data. Historically WCS has

focused on capturing the data relevant to concerns in storage and processing of the tank waste. Batches processed to date (Sludge Batch [SB] 1A, 1B, 2 and 3) and preparation of SB-4 has measured higher sludge masses than were originally predicted by WCS. Additional sludge mass above the baseline will result in a higher total number of canisters to be produced at DWPF. Based on processing experience obtained from initial sludge batches (i.e., actual sludge mass was greater than forecast), a task team was formed to investigate WCS sludge mass data for remaining sludge tanks. Based on preliminary information, it is highly likely that the estimated remaining sludge mass to be processed is higher than is in the current planning baseline. This risk is unusual in the sense that the mass of sludge in each waste tank is defined, and this risk must simply be accepted. However, acceptance is based on the following ongoing activities: proper planning of the waste disposition program;; completion of the sludge mass task team evaluation and report; independent review of sludge mass task team findings and recommendations; development of a sampling plan to obtain compositional information to confirm estimated sludge mass values; incorporation of new sludge mass values into the planning baseline; and investigation into process changes to reduce impacts of new sludge mass values (e.g., frit changes to improve processability, aluminum dissolution to reduce total sludge mass, etc.).

Other high risks in this category are unknown physical or chemical properties in heel material and non-routine constituents in sludge impact canister production rate.

**Management Integration of WSDP Subprojects (WSDP-006):** There are risks relating to the effects of internal project delays, issues between prime contractors on WSDP projects and issues with other Federal organizations (e.g., NNSA and Office of Civilian Radioactive Waste Management). The highest risk evaluated in this category is tank farm waste tank availability and associated infrastructure (Inhibited Water System for Bulk Waste Removal, slurry pumps, dedicated transfer lines, etc.) do not support the ability to prepare salt solution to feed the SWPF at planned processing rates of 6 million gallons per year or greater. Other high risks include the close coupling between SWPF and other facilities limits SWPF throughput rates; DWPF operations are limited by ability of the tank farm to receive waste; processing DWPF recycle stream; and the coordination impacts on project implementation

**Tank Farm Space Management (WSDP-007):** The RLW Program also has risks relating to the management of tank farm space, e.g., Evaporator performance, recovery of Tank 48, potential for new leak sites, etc. The highest risk evaluated in this category is waste tank utilization conflict. Outyear Liquid Waste Operations (LWO) planning assumes the use of certain key tanks to meet the *LWDPP*. programmatic commitments. Use of a tank for purposes other than what is designated in the integrated plan (which could occur due to emergent issues) may result in a long-term delay of the program. To handle this risk the LWO System Planning process will continue to identify and resolve the conflicting tank uses as any major assumptions change or as new issues arise. However, after implementing this strategy, the risk of tank utilization conflicts remains. If realized, this would cause delays to the program.

**Federal Repository Availability (WSDP-008):** A major concern across the DOE Complex relates to the risks due to delays in the availability of the Federal Repository (e.g., shipping rates, additional temporary storage capacity, etc.). The highest risk is that the Federal Repository reaches heavy metal limits due to a conflict in priorities. If SRS vitrified waste canisters receive low priority, other incoming wastes could result in the statutory limit of 70,000 MTHM (metric tons

heavy metal) reached before all SRS canisters are shipped. Failure of the Federal Repository to receive SRS HLW canisters when needed would require additional onsite storage to be constructed and maintained until the repository limits are either raised or a new Federal Repository created. If a new Federal Repository is required, SRS waste would have to remain in storage until such time as the repository becomes available.

**Unplanned Influent into WSDP (WSDP-009):** There are risks relating to the effects of new influents into the WSDP as a result of new missions, legacy issues, decommissioning activities, etc. The highest risk evaluated in this category is if the Tank 48 Return to Service Project is delayed.

**Technology Does Not Meet Performance Expectations (WSDP-010):** Examples of technology risks include tank cleaning, annulus cleaning, Waste on Wheels, not meeting performance expectations, etc.. The highest risk evaluated in this category is if the technology utilized for tank heel removal does not meet 3116 Waste Determination Maximum Extent Practical (MEP), Performance Assessment (PA) or Class C requirements, there could be delays in tank closure.

**Standards & Regulatory Requirements Baseline Change (WSDP-011):** There are risks relating to changes in National Standards and Codes, regulatory requirements (e.g., Defense Nuclear Facilities Safety Board (DNFSB) Recommendation 2004-2, transportation requirements, safety basis requirements, etc.). The highest risk evaluated in this category is the SWPF confinement criteria changes. Current design plans are for a PC-3 facility regarding confinement criteria. Additional concerns from DNFSB may surface requiring additional modifications to the SWPF.

**Infrastructure – Site (WSDP-012):** Finally, there are risks relating to the adequacy or vulnerabilities of the existing SRS infrastructure, such as waste transfer system, steam supply, electrical power distribution, other utilities, etc. The highest risk evaluated in this category is if a HLW tank leak requires the use of contingency space. If a tank leaks, it will be necessary to use most of the available contingency space, which will compound transfer problems during sludge processing and future salt processing. The sludge batch preparation may be detrimentally effected by the addition of waste from leaking tank. Additional tank space will also be required to reestablish and maintain contingency space for any subsequent tanks that may leak. Operations would be shut down immediately and would not restart until cause of leak; understood; and a plan for new contingency space was developed. This risk is more significant in the near term (7- 10 years) as tank space is limited, and a high volume of waste is contained in old-style tanks, which are more likely to leak than newer style tanks. It is assumed that funding will be maintained for tank space management, leak detection monitoring programs, and tank management programs (corrosion control programs, etc.). This risk has been accepted as tank space is being maximized by bringing into service compliant tanks such as Tank 48 or Tank 50 as a RLW tank earlier than is required for processing needs. In addition, salt processing is being planned to achieve space gain, and current tank chemistry control programs prevent conditions that facilitate tank leaks.

These topics have been addressed in the Radioactive Liquid Waste Stabilization and Disposition Risk Management Plan. A summary of the results is shown below.

### WDP PBS-SR-0014C Risk Categories and Maximum Single Event Consequences

		Maximum Single Event Consequences Within Category		
Risk Category Number	Risk Category Title	Probability	Worst Consequence	Risk Level
WSDP-001	Regulatory, Stakeholder Concerns	Very Likely	\$1,200M / 3 years	High
WSDP-002	Funding Competition Impacts WSDP	Very Likely	\$800M / 2 years	High
WSDP-003	Equipment Failure Halts WSDP Processing	Likely	\$1,600M / 4 years	High
WSDP-004	Material & Chemical Balances not Accommodated for WSDP Process Interfaces	Likely	\$800M / 2 years	High
WSDP-005	Waste Characterization	Very Likely	\$7,600M / 19 years	High
WSDP-006	Management Integration of WSDP Subprojects	Likely	\$2,400M / 6 years	High
WSDP-007	Tank Farm Space Management	Very Likely	\$2,000M / 5 years	High
WSDP-008	Federal Repository Availability	Very Likely	\$235M / 30 years	High
WSDP-009	Unplanned Influent into WSDP	Likely	\$100M / 3 months	High
WSDP-010	Technology Does Not Meet Performance Expectations	Very Likely	\$1,100M / 18 months	High
WSDP-011	Standards & Regulatory Requirements Baseline Change	Likely	\$112M / 3 months	High
WSDP-012	Infrastructure – Site	Unlikely	\$2,000M / 5 years	High

Note: Risks are still under evaluation. This table will be revised consistent with risk analysis decisions.

Successful execution of the individual projects and completion of the RLW disposition requires the reduction of risk levels to that of residual risk and funding of technical and programmatic risk assessment contingencies to combat the remaining

residual risk. Reductions in risk level depend on successful implementation of the recommended risk-handling strategies. The descriptions of the risks identified and risk-handling strategies are used by SR management for consideration in making decisions which affect the risks and vulnerabilities in order to promote maximum success for the implementation of cleanup activities.

## **7.14.9 Performance Monitoring and Evaluation**

### **7.14.9.1 HQ Monitoring and Evaluation**

Monitoring of this PBS at the DOE Headquarters level is completed primarily through use of the Integrated Planning, Accountability, and Budget System (IPABS). Actual cost, schedule, and performance data are collected for each PBS and compared to the established baseline. All elements of the lifecycle baseline are under EM configuration control. Performance data include the project performance measures and milestones. Progress toward these measures and any proposed changes to them are provided below.

**Project Performance Measures** (see next page)

Columns displaying Proposed Performance Measures include actual performance for the fiscal years 1997 – 2005.

**Radioactive Liquid Waste Disposition Project  
Performance Measures**

Year	High-Level Waste packaged for final disposition: Ncont (Current)	Radioactive Liquid Waste packaged for final disposition: Ncont (Proposed)	Liquid Waste Tanks closed: NT (Current)	Liquid Waste Tanks closed: NT (Proposed)	Liquid Waste in Inventory eliminated: k-gal (Current)	Liquid Waste in Inventory eliminated: k-gal (Proposed)
Pre-1997	64	64				
1997	169	169	1	1		
1998	250	250	1	1		
1999	236	236				
2000	231	231				
2001	227	227				
2002	160	160				
2003	130	115				
2004	250	260				
2005	250	257				
2006	250	230			600	
2007	250	186			1,200	700
2008	250	186	4	2	1,600	700
2009	230	186	2		2,200	700
2010	230	186	2	2	2,800	700
2011	230	186	2	1	2,800	800
2012	230	186	4	2	2,800	2,000
2013	230	186	4	1	2,800	2,500
2014	230	230	4	2	2,800	2,500
2015	230	230	4	2	2,800	2,500
2016	230	230	4		2,800	2,500
2017	230	230	4		7,000	2,500
2018	230	230	5		7,000	2,500
2019	43	230	5	1	7,000	2,500
2020		230	5	7		2,500
2021		230		1		2,500
2022		230		13		2,500
2023		230		2		2,500
2024		61				
2025				10		
2026				3		
<b>Total:</b>	<b>5,060</b>	<b>5,862</b>	<b>51</b>	<b>51</b>	<b>33,100</b>	<b>33,100</b>

Basis for Change: The revised/proposed performance measures incorporate delays realized due to the resolution of the WIR lawsuit and the implementation of Section 3116 of Public Law 108-375 for waste determinations and are based upon the revised *RLW System Plan*.

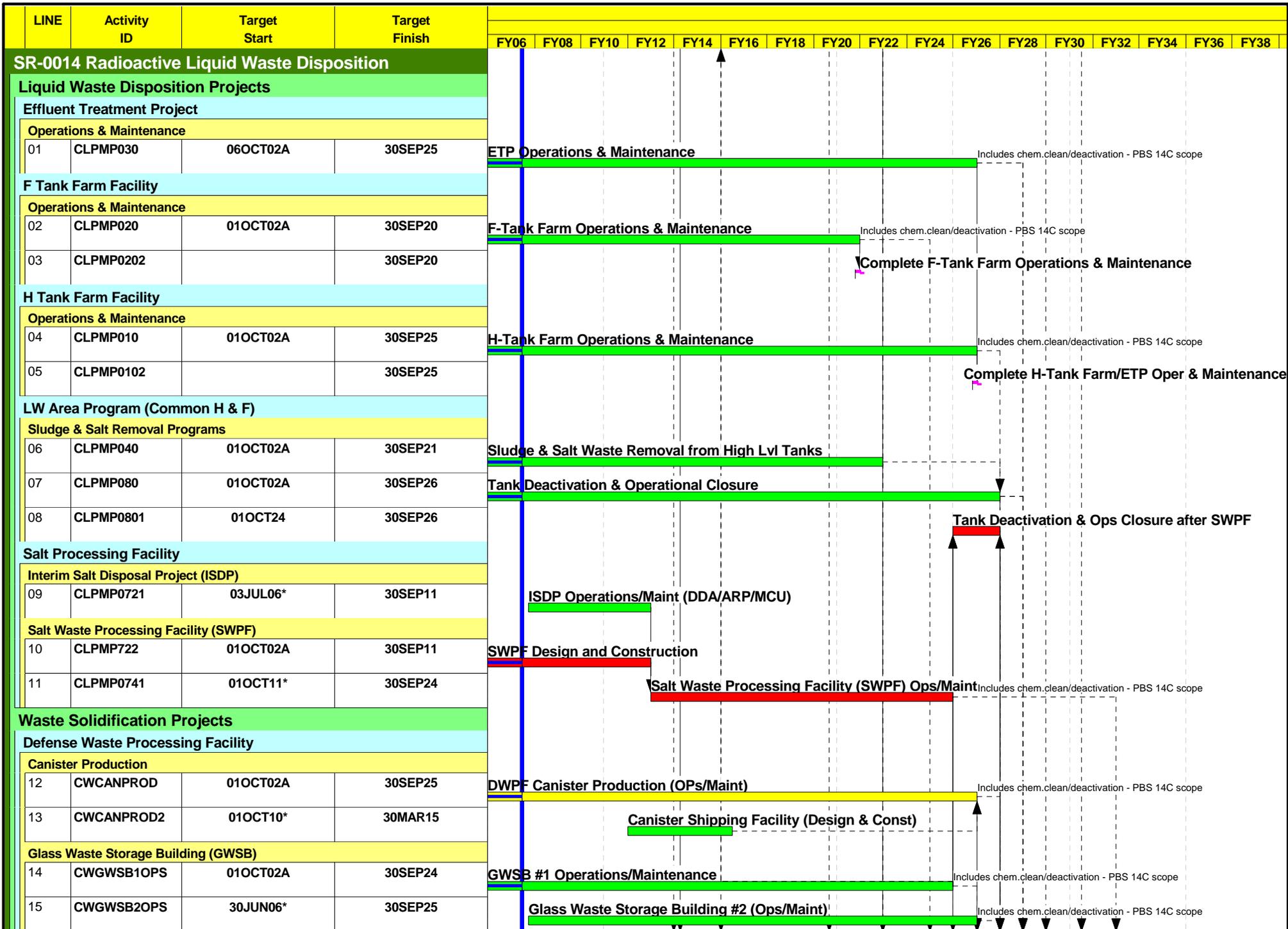
**Project Milestones**

Milestone	Date
Commence operations of the Actinide Removal Project (ARP) and Modular Caustic Side Solvent Extraction Project (MCU)	10/01/2007
Complete operational closure of Tank 19	11/29/2007
Complete operational closure of Tank 18	03/24/2008
Commence operations of the SWPF	09/30/2011
Complete processing operations of the ARP and MCU	09/30/2011
Complete waste removal from tanks in F Tank Farm	09/30/2018
Complete waste removal from tanks in H Tank Farm	09/30/2023
Complete operations of Effluent Treatment Project	09/30/2025
Complete SWPF processing operations	09/30/2023
Complete DWPF processing operations	09/30/2023
Complete Shipment of DWPF Canisters	09/30/2026
Complete treatment and disposal at Saltstone	09/30/2023
Complete deactivation and operational closure of radioactive liquid waste tanks.	09/30/2026
Complete deactivation (flushing and isolation) of remaining major RLW facilities and equipment	09/30/2026
PBS SR-0014C Project Complete	09/30/2026

Basis for change: *Liquid Waste Disposition and Processing Plan (Preliminary)*

### 7.14.9.2 SRS Monitoring and Evaluation

Refer to Section 4.4.1, Performance Monitoring, Reporting, and Evaluation, for a description of the performance monitoring and evaluation process.



LINE	Activity ID	Target Start	Target Finish																
				FY06	FY08	FY10	FY12	FY14	FY16	FY18	FY20	FY22	FY24	FY26	FY28	FY30	FY32	FY34	FY36
<b>Salt Stone Facility</b>																			
<b>Saltstone</b>																			
16	CWPMP050	01OCT04A	30SEP25	<b>Saltstone Operations/Maint Support</b>												Includes chem.clean/deactivation - PBS 14C scope			
17	CWPMP060	01OCT04A	30SEP22	<b>Saltstone Vaults (Design/Construction)</b>															

## **7.20 PBS SR-0020 Safeguards and Security**

This section contains the narratives, scope, cost, and schedule for the Project Baseline Summary (PBS) SR-0020, which includes Safeguards and Security at the Savannah River Site.

### **7.20.1 Background**

Savannah River Site (SRS) encompasses 310 square miles and has a workforce of greater than 10,000. As the result of the Cold War, the Department of Energy (DOE) was left with a large inventory of nuclear materials in various forms and stored in many locations. The Safeguards and Security (S&S) Program ensures appropriate levels of protection for SRS facilities against theft or diversion of special nuclear material (SNM); acts of radiological, chemical, and biological sabotage; espionage; theft or loss of classified matter; theft or loss of government property; and other hostile acts that may cause unacceptable impacts to national security, the health and safety of employees, the public, or the environment.

### **7.20.2 End State**

This project will continue through the cleanup target completion date of FY 2031. S&S requirements for the DOE Office of Environmental Management (EM) Program will ramp down as facilities deinventory through FY 2020. From FY 2021 through FY 2031 S&S support for EM will consist of site access control and property protection. Beginning in FY 2032, remaining site S&S support will be transferred to another DOE Program office.

### **7.20.3 Scope and Description**

The S&S Program provides security for nuclear materials and facilities at SRS to ensure the protection of people and the environment. The program provides for a security police force to control access at the perimeter barricades and onsite facilities; maintain command and alarm centers; maintain response capability for weapons of mass destruction (radiological, biological, chemical, nuclear or explosive); perform onsite and offsite transportation escort functions; provide law enforcement functions; monitor intrusion detection and access control systems; and provide and maintain a special response team.

The S&S Program also provides technical support and documentation to manage an integrated system for the protection of nuclear materials, classified information, site property and personnel. The Nuclear Material, Control, and Accountability (MC&A) Program ensures special nuclear material (SNM) accounting in accordance with DOE requirements, and support ongoing and new risk reduction, material consolidation, and nuclear material hold up removal activities (e.g., residual materials in process equipment). These activities provide assurance that SNM is properly controlled and accounted for at all times. The Information Security Program ensures that material and documents that may contain sensitive or classified information are identified, reviewed, appropriately marked and protected from unauthorized disclosure, and ultimately destroyed in a timely manner. The Personnel

Security Program encompasses those activities necessary to ensure only authorized personnel access the site and ensure adequate control for areas within the site. The Cyber Security Program ensures the protection of sensitive or classified information that is electronically transmitted.

## 7.20.4 Responsibilities

The DOE Savannah River Operations Office (SR) Office of Safeguards, Security, and Emergency Services (OSSES) oversees and manages safeguards, security and emergency service activities at SRS. This organization formulates and executes policies and programs in the areas of physical, information, internal, and personnel security; classification and declassification; computer security; technical surveillance countermeasures; foreign travel; protective force; and MC&A. In addition, SR provides direct management of the perimeter security upgrade construction projects, which are performed under separate contracts outside those identified below.

The SRS has two contractors that perform S&S activities. Wackenhut Services, Inc. (WSI) provides protective forces and law enforcement. The management and operations contractor, Washington Savannah River Company (WSRC), provides security system maintenance, personnel security, MC&A, cyber security, information security and vulnerability assessment programs. Within WSRC, the responsibility for this work scope resides with the Management and Operations Manager.

## 7.20.5 Schedule

The security requirements for the lifecycle baseline are based on the following schedule: As a facility or area is deinventoried, security requirements will be minimized.

<u>Facility</u>	<u>Deinventory of Nuclear Materials Complete</u>
F Area Material Storage (FAMS)	FY 2006
K Area Material Storage (KAMS)	FY 2019
HB Line/H Canyon	FY 2019
L Area	FY 2020

A schedule, based on the specified assumptions in Section 7.20.8, Assumptions, Agreements, Alternatives and Risk Management, is included at the end of this section.

## 7.20.6 Resources

The lifecycle cost profile for this PBS is documented separately.

Resource requirements have changed consistent with revised EM cleanup schedules and new Design Basis Threat (DBT) guidance issued in December 2005 by DOE requiring more stringent guidelines and a completion date of September 2008. Full impact of these requirements is detailed in the *DBT Implementation Plan*.

### **Government Furnished Services and Items**

No material Government Furnished Services and Items have been identified for this PBS.

## **7.20.7 Technology Needs**

Technologies have the potential to significantly reduce the lifecycle cost associated with new DBT implementation. The primary costs associated with sustaining security posture are the increased Pro Force staffing levels. These levels are primarily driven by the need for effective interruption and neutralization of adversary forces at target locations. Avenues for significant cost savings can then be found in:

- reduction of the number of targets locations (consolidate or eliminate);
- enhancement of Pro Force survivability;
- increase Pro Force lethality;
- allowance for better tactical deployment and communications; and
- additional delay or earlier detection.

## **7.20.8 Assumptions, Agreements, Alternatives and Risk Management**

### **Assumptions**

The following assumptions have been used as the basis for the lifecycle cost and schedule development:

- The safeguards and security (S&S) footprint will be minimized consistent with nuclear materials storage and disposition schedules developed in the respective PBS.
- New technologies will be used to minimize the reliance on security manpower.
- Security upgrades ("9/11 projects") will be completed by September 30, 2006.
- Security improvements described in the *2005 Implementation Plan* will be completed and upgrades implemented as scheduled.
- HB Line will not be an S&S Category I facility.

### **Agreements**

The following agreements are drivers for this project:

- *S&S Plan* will be completed per agreed upon implementation plan schedules.
- The actions required by the *DBT Implementation Plan* will be completed by the end of FY 2008.

### **Alternatives and Risk Management**

Key risks identified for this PBS are as follows:

- Deinventory schedules for facilities directly affect S&S lifecycle costs
- Obsolescence in equipment and facilities may require large-scale replacements.

### Alternatives

Mitigating factors being utilized by the Office of Safeguards and Security and Emergency Services to assure full implementation of new 2005 DBT guidance include the acceleration of Vulnerability Assessment work, development and utilization of an acquisition strategy to procure prefabricated equipment and specialized security devices, and optimizing integration within the EM complex and the S&S Program to ensure scope acceleration whenever feasible.

## 7.20.9 Performance Monitoring

### 7.20.9.1 HQ Monitoring and Evaluation

Monitoring of this PBS at the DOE Headquarters level is completed primarily through use of the Integrated Planning, Accountability, and Budget System (IPABS). Actual cost, schedule, and performance data are collected for each PBS and compared to the established baseline. All elements of the lifecycle baseline are under EM configuration control.

Reviews are conducted bi-annually by the Office of Independent Oversight (SP-40) to ensure S&S compliance with DOE Orders, Policies, Plans, and Directives. The most recent review was conducted in May 2006.

#### Project Milestones

Milestone:	Date
Site security upgrades (“9/11” projects)	9/30/2006
DBT implementation	9/30/2008
Facility-specific security forces reduced	12/31/2020
Site security transferred to new landlord	10/01/2031

### 7.20.9.2 SRS Monitoring and Evaluation

A joint review is conducted monthly by the S&S Program. WSRC, WSI, and SR staff (program and financial) meet to discuss S&S ongoing initiatives, planned actions, and resolution of issues.

Annual security surveys and management walkdowns are also conducted to assess performance.

Refer to Section 4.4.1, Performance Monitoring, Reporting, and Evaluation, for additional detail on site performance monitoring processes.

LINE	Activity ID	Target Start	Target Finish																
				FY06	FY08	FY10	FY12	FY14	FY16	FY18	FY20	FY22	FY24	FY26	FY28	FY30	FY32	FY34	FY36
<b>SR-0020 Safeguards &amp; Security</b>																			
<b>Security Requirements</b>																			
01	SG1000	04APR05A	30DEC31	<b>General Site Security Activities Complete</b>															
02	SG1400	04APR05A	31DEC20	<b>L Area Security Activities</b>															
03	SG1300	04APR05A	30SEP19	<b>K Area Material Storage</b>															
04	SG1100	04APR05A	30SEP19	<b>HB Line Security Activities</b>															
<b>DBT Implementation</b>																			
05	SG3000	02AUG05A	30SEP08	<b>DBT Implementation</b>															

## 7.30 SR-0030 Soil and Water Remediation

This section contains the narratives, scope, cost, and schedule for the Project Baseline Summary (PBS) SR-0030, Soil and Water Remediation, which focuses on the environmental restoration that is focused on the cleanup of soils (including vadose zone), groundwater, and surface water contamination. PBS SR-0030 is also referred to as the Soils and Groundwater Project (SGP).

### 7.30.1 Background

After 40 years of producing nuclear materials for defense and non-defense uses, the Savannah River Site (SRS) shifted its strategic direction and resources from nuclear materials production to the cleanup of the nuclear waste and environmental contamination created during production. The start of the SRS environmental restoration program began in 1981 when the site began inventorying waste units. Since then, SRS has established a successful environmental restoration program that is focused on the cleanup of soils (including vadose zone), surface water, and groundwater contamination. SRS has identified 515 waste units, which include surface waste sites, groundwater and surface water. The Soil and Water Remediation Project (PBS SR-0030), hereafter referred to as the Soils and Groundwater Project (SGP), is responsible for cleaning up these waste units to reduce risk and protect human health and the environment. Waste units range in size from a few square feet to tens of acres and include basins, pits, piles, burial grounds, landfills, tanks, and associated groundwater contamination. Remediation of the waste sites and groundwater is regulated under the Resource Conservation and Recovery Act (RCRA) and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

An existing RCRA permit included provisions for addressing releases from hazardous waste management facilities and solid waste management units. The State of South Carolina issued SRS a RCRA permit in 1987, which required SRS to address hazardous waste management facilities. Under the RCRA permit and with the State of South Carolina oversight, SRS has completed closure of the hazardous waste management facilities and is actively remediating contaminated groundwater plumes in various areas around the site.

In 1993, the Department of Energy (DOE) Savannah River Operations Office (SR), the Environmental Protection Agency (EPA), and the South Carolina Department of Health and Environmental Control (DHEC) (hereafter, the three entities are collectively referred to as the "Parties") entered into an agreement that describes how the SRS will disposition its inventory of waste units. The *SRS Federal Facility Agreement (FFA)* was negotiated to ensure SRS cleanup satisfies CERCLA and RCRA requirements and includes cleanup milestones for the lifecycle of the SGP. The inventory of known, suspected, and since discovered waste units currently stands at 515. The *FFA* contains provisions for systematically adding any future-discovered waste units.

### 7.30.2 End State

By the end of FY 2031 all inactive waste units that pose an unacceptable risk will be remediated or undergoing remediation. Units at which waste is left in place will be

under institutional controls comprised of access restrictions, inspections, maintenance, and monitoring. Typically, soils will be remediated to an acceptable residual risk for industrial workers. Groundwater will be addressed such that the Federal Safe Drinking Water Act maximum contaminant levels or alternate concentration levels will be achieved over time through source control, natural attenuation, and active cleanup (as needed).

### 7.30.3 Scope and Description

This project provides for the protection of human health and the environment through the cleanup of contamination that exists in the environment at SRS.

The SGP objective is cleaning up contamination that exists in the environment to protect the public, SRS workers, and the environment. The cleanup methods focus on treating or immobilizing the source of the contamination in the environment to mitigate contamination transport through soil and groundwater and cleaning up, or slowing the movement of or monitoring, contamination that has already migrated from the source.

The SGP will safely investigate, and, if necessary, assess, remediate, and close inactive waste units. The SGP will remediate the waste units so that all regulatory requirements and compliance commitments are met. As changes in regulatory requirements occur, SGP scope execution plans will be revised.

The *Savannah River Site Environmental Management Program Project Execution Plan (PEP)* describes the approach to achieve the cleanup of SRS waste units, consistent with the RCRA Permit and the SRS *FFA*. Because cleanup of the SRS waste units require active involvement and oversight from EPA and DHEC, milestones for the lifecycle of the SGP program are established with EPA and DHEC. The milestones are approved by EPA and DHEC annually. In support of advancing the cleanup program at SRS, the regulators reached agreement with DOE through a Memorandum of Agreement (MOA) in July 2003. This MOA documents the Parties' agreement to increase the pace of SRS cleanup while focusing on reducing risk to workers, the public, and the environment. The Parties agreed to integrate waste unit remediation with facility decommissioning activities and re-sequence the work to complete environmental cleanup and facility decommissioning area-by-area until all areas of the SRS are completed. Consistent with the MOA, all three parties are committed to the use of a core team process that relies on shared technical understandings, problem definition, and uncertainty management to reach decisions jointly and that facilitates the remedial process thorough early and frequent engagement.

This strategy supports the following advantages:

- A single Record of Decision (ROD) or interim ROD can address multiple waste units and building footprints.
- The Area ROD can tailor a remedy package for the total risk in an area.
- The Area ROD can expand the use of presumptive remedies using a focus on an entire area.
- The Area end state can be used as the basis for establishing risk and appropriate remedies.
- Area completion will include the inventory of units identified in the RCRA Permit and or the *FFA*.
- Units outside the fence will have individual schedules.

Through strategic planning, SGP and the site decommissioning program appropriately sequenced and are executing cleanup projects to complete and close 14 specific SRS areas.

Executing an area completion strategy that sequences Deactivation and Decontamination (D&D) and SGP work scope will allow SRS, EPA, and DHEC to optimize the use of their respective resources. This levelizing approach will be carried forward into future FFA and RCRA permit commitments through regulatory negotiations concurred upon by the EPA and DHEC.

The 14 Area Completions are organized into three groups based on process history or geography to address cleanup of soil and groundwater contamination: Upper Three Runs Areas, General Separations Areas, and Reactor Areas (Sections 7.30.3.1 – 7.30.3.3). To fully integrate protection of human health and the environment from exposure to contamination in surface water, six watersheds have been identified as Integrator Operable Units (Section 7.30.3.4).

### **7.30.3.1 Upper Three Runs Areas (A and M Areas, and B Area)**

#### **A and M Areas**

The A and M Areas contained the main SRS administrative and manufacturing facilities. These areas are often addressed together because of their close proximity and commingled contaminants. When combined, the A and M Areas contain one of the most extensive contaminated groundwater plumes under remediation in the country. Contamination resulted from waste discharged from fuel and target assemblies, research and development operations and the disposal of waste and general debris. The principal contaminants in the areas are solvents in the groundwater and vadose zone.

#### **B-Area**

B Area is primarily an administrative office complex. B Area contains the SRS Sanitary Landfill (SLF), at which solvent rags and wipes were disposed. The SLF will be closed and remediated consistent with the RCRA Permit.

### **7.30.3.2 General Separations Area (D Area, E Area, F and H Areas, N Area, and T Area)**

#### **D Area**

The D-Area facilities were utilized to separate heavy water from river water and to remove tritium from the reactor moderator water. D Area has been used for the disposal of coal ash, oil, chemicals, and construction debris. A power station is operating in D Area. Historical records, over-flight data, and sampling results indicate that sediments and groundwater in the area are impacted by metals, tritium, and solvents.

#### **E Area**

E Area contains facilities that were primarily used for the disposal of hazardous and radioactive waste and spent solvents generated from chemical and manufacturing processes. One facility, the Burial Ground Complex (BGC), occupies approximately

195 acres and is comprised of contiguous facilities that were used for the disposal of waste containing RCRA-regulated metals, volatile organic compounds, tritium and other radionuclides. The BGC is comprised of three primary facilities: Old Radioactive Waste Burial Ground (ORWBG), Low-Level Radioactive Waste Disposal Facility (LLRWDF), and the Mixed Waste Management Facility (MWMF), all of which have underlying contaminated groundwater. Remedial actions for the soil have been taken at the LLRWDF and MWMF. Consistent with the RCRA permit, effective corrective actions have been taken for the associated groundwater units. The ORWBG, (highest risk surface unit) has been consolidated with three nearby waste units to form the General Separations Area Consolidation Unit (GSACU), and remediation is in process.

### **F and H Areas**

F and H Areas contain part of the general separations operations where plutonium was separated from irradiated reactor assemblies for refinement into metal buttons. H Area was also used to process tritium and uranium and to produce plutonium-238. Contained in each area is a canyon and associated facilities, a tank farm containing radioactive liquid waste, and seepage basins that were used for wastewater disposition from the canyons and were closed consistent with the RCRA permit.

In F Area, the principal contaminants of concern are tritium within the groundwater, and strontium, uranium, heavy metals, and solvents in soils or pond sediments. In addition to soil capping, other remedies utilized to address the groundwater contamination in F Area include monitored natural attenuation, base injection with a funnel and gate barrier system, and phytoremediation.

In H Area, the principal contaminants of concern are tritium, strontium, and mercury. Many of the accessible high-risk H-Area waste units have been completed or are in remediation. For example, Warner's Pond, HP-52 Outfall, and H-Retention Basin, are being remediated as part of the General Separations Area (GSA) Consolidation Unit (CU). Other area waste units will be remediated or placed under institutional control pending the decommissioning of key area facilities.

### **N Area**

N Area contains burning/rubble pits, equipment maintenance areas, and chemical and runoff basins. Between 1951 and 1973, the area was principally used for the disposal of organic and inorganic chemicals, inert solid waste, and low-level radioactive waste.

### **T Area**

T Area (or TNX Area) was utilized from the mid-1950s through the mid-1980s for conducting pilot tests to support SRS operations. The principal contaminants are mercury, thorium, uranium, radium, and chlorinated solvents.

## **7.30.3.3 Reactor Areas (C, K, L, P and R Areas, and CMP Pits)**

### **Reactor Areas**

SRS Reactor Areas contain similar facilities in which similar processes were conducted. The Reactor Areas contain formally utilized disposal units which contain hazardous waste (including spent solvents) and radioactive waste, and spent solvents.

The areas contain burning/rubble pits, equipment maintenance areas, and basins, all used to dispose of various waste. R Area contains six seepage basins with highly contaminated sediments. Principal contaminants of concern in the Reactor Areas are cesium-137, strontium, tritium, spent organic chemicals, and low-level radioactive waste.

#### **Chemicals, Metals, and Pesticides Pits**

The Chemicals, Metals, and Pesticides (CMP) Pits are located about a mile north of the L-Area Complex and were used for the disposal of chemicals, metals, and pesticides.

As a result of past disposal processes, surface soil, and groundwater have been primarily contaminated with volatile organic compounds, pesticides, and polychlorinated biphenyls (PCBs). In 1984, the pits were excavated, and drums and highly contaminated soil were removed.

### **7.30.3.4 Integrator Operable Units**

The Integrator Operable Unit (IOU) program was established in 1994 with three objectives. The first objective was to evaluate the human health and ecological risk associated with contamination in the streams and associated floodplains. This evaluation is being accomplished through a comprehensive data collection and analysis of water, soil, and ecological specimens with screening-level risk analysis. Six IOUs have been established, which include:

- Lower Three Runs,
- Steel Creek,
- Pen Branch,
- Fourmile Branch,
- Upper Three Runs, and
- Savannah River and Floodplain Swamp

The second objective of the IOU program was to develop conceptual models to determine the sources of contamination. The models facilitate a more comprehensive understanding of the origin of the contamination in surface waters and predict the impacts of Operable Unit (OU) remedial actions. These conceptual models are included in the End-State Vision document.

The final objective is to provide a process to finalize the evaluation of the surface and groundwater units.

## **7.30.4 Responsibilities**

In addition to the overall responsibilities identified in Section 4.3, Organizational Structures and Responsibilities, PBS-specific responsibilities are summarized as follows.

This PBS falls under the responsibility of the SR Assistant Manager for Closure Project. In accordance with DOE O 413.3, *Program and Project Management for the Acquisition of Capital Assets*, a Federal Project Director has been identified to manage this PBS and will be approved by the Assistant Secretary for Environmental Management (EM-1). The Federal Project Director uses an Integrated Project Team

(IPT) approach to manage the PBS. The IPT is comprised of personnel from a wide variety of disciplines to ensure the work is managed safely and effectively.

The performance of the work scope for this PBS is the responsibility of the management and operating (M&O) contractor. Currently, the contractor is Washington Savannah River Company (WSRC). Within WSRC, the responsibility for this work scope resides with the Management and Operations Organization, Area Project Manager for the Soil and Groundwater Cleanup Projects (SGCP).

### 7.30.5 Schedule

The SGP will continue to be responsible for waste unit remediation at SRS through the end of FY 2031. By the end of FY 2006, 370 waste units are anticipated to be completed or in remediation.

A schedule, based on the specified assumptions in Section 7.30.8, Assumptions, Agreements, Alternatives, and Risk Management, is included at the end of this section.

### 7.30.6 Resources

The lifecycle cost profile for this PBS is documented separately.

This cost profile assumes cost avoidances resulting from implementation of the area completion strategy. There is some uncertainty for an indeterminate work scope associated with facility slabs, foundations, and sub-grade structures remaining after D&D and that may require remedial action. Currently this work scope is being managed as risk.

#### Government Furnished Services and Items

Included among the Government Furnished Services and Items (GFSI) identified to support this project are documents required to be submitted in accordance with regulatory commitments and milestone dates in accordance with the SRS RCRA Permit and the Federal Facility Agreement (FAA), under which fines (including civil and criminal penalties) are possible in certain instances of noncompliance. Also considered as GFSI are activities and interactions to facilitate decision-making in the remedial process.

### 7.30.7 Technology Needs

In addition to the aforementioned resource requirements, the following technology needs have been identified in support of cleanup:

- Advance risk reduction through the use of innovative technologies and improved regulatory process.  
Benefit: Through the core team process, continue to implement innovative remedial technologies and regulatory strategies. Keeping this approach as a focus of the program will build on proven results for risk reduction, schedule acceleration, and cost reduction.  
Development timeframe: FY 2006 to FY 2020.

- Refine and expand the application of natural remedial process remedies. Near-term projects have less aggressive dilute and distal plume remedies, employing various aspects of natural remedial processes such as diffusion, biodegradation, and phytoremediation with a primary focus on organic contamination. Further refinement of current natural remedial process remedies and the development of those remedies for non-organic (e.g., metals and radionuclides) contaminants is needed to enable timely regulatory approvals and the earlier shut down of major groundwater cleanup facilities.  
Benefit: Reduces costs/accelerates cleanup/reduces risks.  
Development timeframe: FY 2006 – FY 2020.
- Develop innovative characterization and monitoring technologies. As the cleanup program continues to mature and IOU are addressed, there will be increased emphasis on use of screening data for remedial characterization requiring development of field tools with greater accuracy and versatility at a lower cost. Additionally, as more waste units are closed, long-term monitoring will increasingly be a significant cost center; necessitating enhanced sensor technology.  
Benefit: Development of characterization and monitoring technologies will reduce worker exposure, accelerate cleanup and substantially reduce costs.  
Development timeframe: FY 2006 – FY 2008.
- Longer-term, the goal of the, *Monitored Natural Attenuation (MNA) and Enhanced Passive Remediation for Chlorinated Solvents*, is to provide the scientific and policy support to facilitate implementing appropriate passive cleanup and cost-effective monitoring strategies leading to responsible completion of active remediation activities at SRS and other DOE sites. Components of this project include understanding the applications of MNA and enhanced passive remediation across the DOE Complex.  
Benefit: Reduces costs/accelerates cleanup/reduces risks.  
Development timeframe: FY 2007-FY 2028.

## 7.30.8 Assumptions, Agreements, Alternatives, and Risk Management

### Assumptions

The following assumptions apply for this PBS:

- Current Soil and Groundwater Project (SGP) remediation scope will meet all regulatory requirements and milestones contained in the FFA and RCRA Part B Permit. The area completion approach integrates site facility decommissioning and SGP activities. Typically, decommissioning activities will be sequenced to be completed in conjunction with SGP activities. SGP expects to realize execution improvement as implementation of the area completion approach develops and matures.
- Risk handling strategies will be successful.
- For purposes of achieving Area Records of Decision, assume the Environmental Protection Agency – Region 4 and South Carolina Department of Health and Environmental Control will accept slabs, facility foundations, and any determined sub-grade structure remaining after facility decommissioning is complete at a risk level of  $10^{-4}$  (using an industrial worker scenario) within the context of an acceptable risk level for the closure of the Area.

- Closure of the F and H Protected Areas and Reactor Areas will be achieved by addressing waste units, sewer lines, and known spills and adopting institutional controls, as appropriate. The canyons and reactor buildings will undergo in-situ decommissioning.
- Addressing Operable Units (OU) will be accomplished as planned with minimal assessment and remediation. Remedial actions are expected to be limited since all waste units and groundwater within each OU will have been addressed.
- This PBS will include will include post-closure costs and long-term stewardship costs for waste units through the end of the EM mission at SRS.

Utilizing these assumptions will enable the completion of waste units remediation and implementation of groundwater and surface water actions and support the area completion approach.

### Agreements

SGP cleanup is required by environmental laws and regulations, which are under the jurisdiction of EPA and DHEC. Specific legal documents that establish the scope and enforceable regulatory milestones for SGP include:

- SRS FFA and RODs associated with the FFA and
- SRS RCRA Permit.

Other documents that tier from the FFA and the SRS RCRA Permit and guide SGP execution include:

- *Memorandum of Agreement for Achieving an Accelerated Cleanup Vision,*
- *Land Use Control Assurance Plan,*
- *Principles of Environmental Restoration,*
- *Core Team Protocols,* and
- *SRS End State Vision.*

### Alternatives and Risk Management

#### Alternatives

SR, EPA, and DHEC develop approaches to streamline SGP remediation activities, while protecting human health and the environment. The Parties collaborate, using a Core Team approach, to identify protective, streamlined, risk-reducing, and cost-effective remedial processes. This approach has been in place for nearly a decade. Area completion is a recent example of an alternative approach that was adopted in 2003 and is currently being implemented in T, M and P Areas. The area completion approach allows the program to proceed while reducing separate documentation processes but maintaining its protectiveness. In addition, the following alternative end state options, which may be pursued with EPA and DHEC through the Core Team, have been identified in the *SRS End State Vision*.

- Soil hazard source terms will be remediated such that any residual hazards or contaminants will be consistent with  $10^{-4}$  –  $10^{-6}$  risk, based on a “less than industrial” (Maintenance Long-Term Stewardship) exposure scenario for former industrial land areas with no planned industrial reuse.
- All facility hazard source terms and any contamination (hazardous or radiological) will be removed in the deactivation process to ensure another “inactive waste unit” is not created for the SRS. All EM facilities will be

demolished or decommissioned in situ such that any residual hazards or contaminants will be consistent with  $10^{-4}$  –  $10^{-6}$  risk based on a “less than industrial” (Maintenance Long-Term Stewardship) exposure scenario for land areas with no planned industrial reuse.

### Risks

The cost profile included herein was developed based on the aforementioned assumptions. If the assumed significant cost efficiencies are not realized, if execution levelization is not achieved, and/or if additional or new scope is identified that requires additional resources, then the cost profile may increase accordingly.

The PBS Risk Management Plan identifies the risks for this PBS, documents results of the risk assessment process, presents risk handling strategies to mitigate risks, and provides a risk monitoring plan. A summary of major risks identified are below.

- If new releases or more extensive releases to the environment are identified and included in the SGP scope, then characterization and remediation costs may extend the project completion date or increase the cost profile. Should additional assessment and remediation be required for the IOU beyond the minimal actions that are currently planned, the baseline will be increased.
- The SGP baseline does not include any costs associated with characterizing or remediating the environmental media under or surrounding the facility slabs, foundations, or remaining subgrade that will exist after decommissioning activities are completed. Confirming whether contaminants have been released from the slabs to the environment could increase the current baseline. Likewise, the baseline may be increased if a determination is made that environmental remediation is required for the media around and under these remaining structures, or if structure remediation is required.
- In some areas, SGP and decommissioning activities may have to occur in parallel in order to meet the Area ROD schedule. If activities cannot occur in parallel or facility decommissioning activities are not completed at least 14 months prior to the planned issuance of the Area ROD, then issuance of the Area ROD may require alternate execution considerations prior to issuance.

A more comprehensive discussion of the risks and the management strategies are included in the *Soils and Groundwater Project Risk Management Plan*.

## **7.30.9 Performance Monitoring and Evaluation**

### **7.30.9.1 HQ Monitoring and Evaluation**

Monitoring of this PBS at the DOE Headquarters level is completed primarily through use of the Integrated Planning, Accountability, and Budget System (IPABS). Actual cost, schedule, and performance data are collected for each PBS and compared to the established baseline. All elements of the lifecycle baseline are under EM configuration control. Performance data include project performance measures and milestones. Progress toward these measures and any proposed changes to them are provided as follows.

**Project Performance Measure** (see next page)

The proposed Project Performance Measures (remediation completions) reflect completion of the SCP cleanup program by FY 2031, consistent with the current operations and D&D plans and schedules. The Project Milestones (remediation completions) also reflect completion of the SGP scope by the end of FY 2031 using the area completion approach.

Columns displaying Proposed Performance Measures include actual performance for the fiscal years 1997 – 2005.

**Remediations Complete**

Year	Remediations Complete (Current)	Remediations Complete (Proposed)
Pre 2006	310	315 (actual)
2006	11	9
2007	13	19
2008	6	14
2009	6	12
2010	8	3
2011	18	3
2012	8	3
2013	9	1
2014	6	5
2015	11	6
2016	16	17
2017	7	10
2018	10	11
2019	9	7
2020	11	7
2021	17	13
2022	15	13
2023	7	2
2024	4	7
2025	6	3
2026	7	0
2027	0	0
2028	0	0
2029	0	0
2030	0	14
2031	0	21 (includes FTF)
<b>Total</b>	<b>515</b>	<b>515</b>

Assumptions

- Remediation at all waste units and source units will be completed.
- For waste units and source units, “remediation complete” is defined as:

- Completion of the remedial action as documented in the submittal of a post-construction report or a final remediation report.
- Agreement from the regulators that No Further Action (NFA) is the appropriate remedial action for a waste unit (including site evaluation areas) as documented through the issuance of a Record of Decision or a concurrence from the regulators on NFA for site evaluation areas.
- Remedial actions(s) at all sources (and vadose zone) that contributed to the groundwater contamination have been completed.
- For groundwater units, “remediation complete” is defined as:
  - Construction of remedial system is complete
  - Remedial action is implemented
  - Progress toward remedial goal can be demonstrated

#### Basis for Change

Milestones currently shown represent completion of SGP by the end of FY 2031. The extension from FY 2025 of previous baselines is due primarily to a delay in the completion of the radioactive liquid waste operations and tank farm closure. The proposed baseline spreads the milestones over the life of the program, integrates decommissioning activities with SGP activities to complete cleanup in entire areas sequentially, and achieves completion of the SGP program by end of FY 2031.

#### **Record of Decision Milestones**

These milestones represent the schedule for issuance of RODs for SGP waste units in accordance with a 2031 Project End date.

Year	Issue ROD
FY 2006	12
FY 2007	1
FY 2008	3
FY 2009	3
FY 2010	1
FY 2011	8
FY 2012	6
FY 2013	17
FY 2014	8
FY 2015	11
FY 2016	8
FY 2017	7
FY 2018	15
FY 2019	13
FY 2020	2
FY 2021	7
FY 2022	3
FY 2023	0
FY 2024	0
FY 2025	0
FY 2026	1
FY 2027	17
FY 2028	16
FY 2029	5
FY 2030	0
FY 2031	1

Basis for Change

These milestones are consistent with planned execution of SGP operations and decommissioning activities to achieve completion of projects by the end of FY 2031 using the area completion approach. Milestones will change as *FFA* schedule modifications occur.

**Project Milestones**

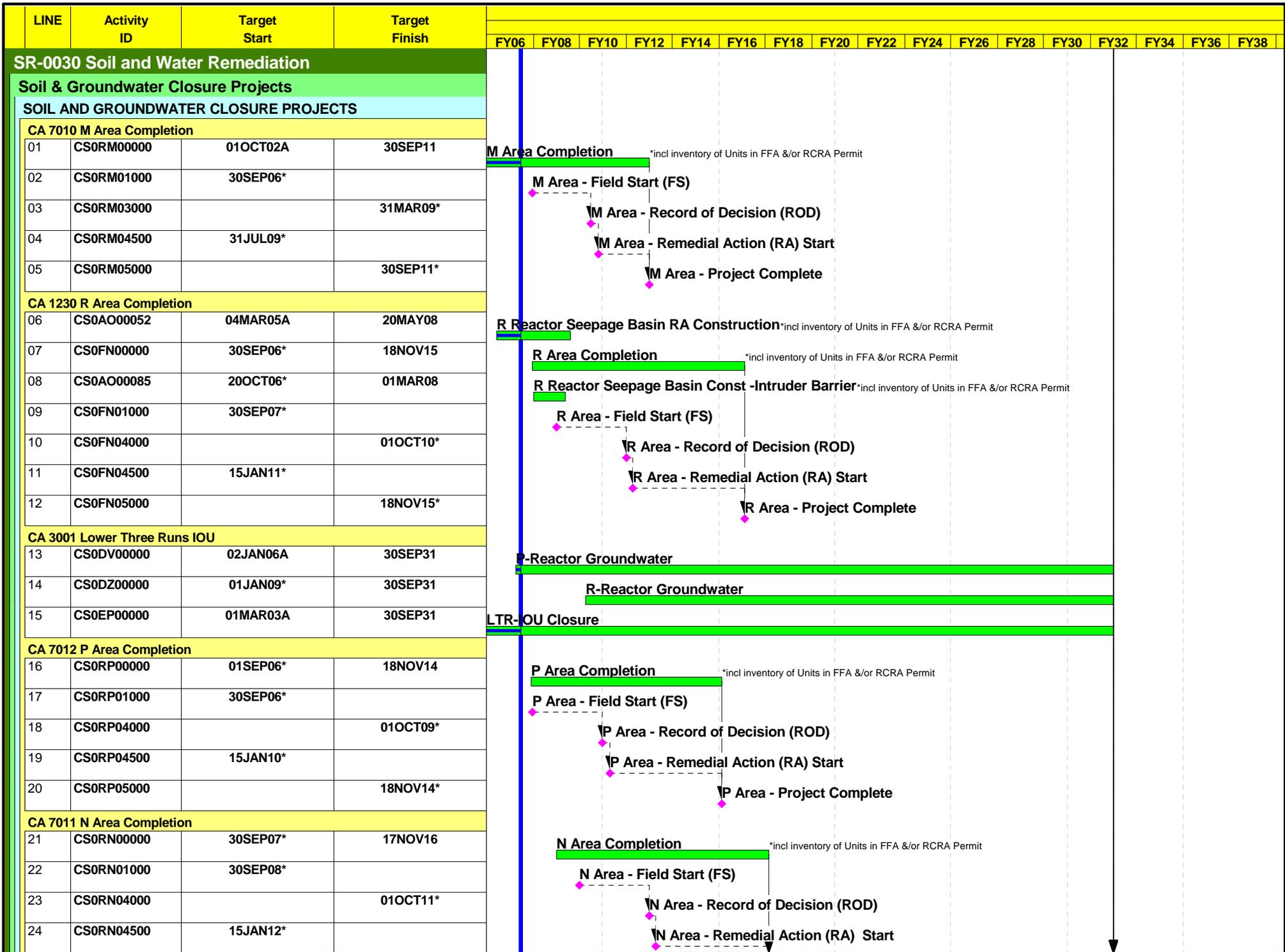
Milestone	Date
Obtain approval of A Burning/Rubble Pits, A Rubble Pit, Miscellaneous Chemical Basin/Metals Burning Pit Record of Decision	09/26/2006
Submit C Reactor Groundwater Electrical Resistance Heating System Post Construction Report	08/11/2006
Complete T Area Operable Unit Construction	09/30/2006
Submit <i>FFA</i> Appendix E (Out Year Milestones)	11/15/2006
Complete D Area Expanded Operable Unit Construction	11/30/2006
Start M-Area Inactive Process Sewer Lines Remedial Action	01/19/2007
Initiate R-Area Operable Unit Field Start	09/30/2007
Start L-Area Southern Groundwater Remedial Action	01/30/2008
Complete General Separations Area Consolidation Unit	06/15/2008
Initiate N-Area Operable Unit Field Start	09/30/2008
Obtain approval of M-Area Operable Unit Record of Decision	03/31/2009
Start M-Area Operable Unit Remedial Action	07/31/2009
Initiate C-Area Operable Unit Field Start	09/30/2009
Obtain approval of P-Area Operable Unit Record of Decision	10/31/2009
Start P-Area Operable Unit Remedial Action	01/31/2010
Obtain approval of R-Area Operable Unit Record of Decision	10/31/2010
Start R-Area Operable Unit Remedial Action	01/31/2011
Initiate K-Area Operable Unit Field Start	09/30/2011
Obtain approval of N-Area Operable Unit Record of Decision	10/31/2011
Initiate L-Area Operable Unit Field Start	09/30/2012
PBS SR-0030 Project End	09/30/2031

Basis for Change

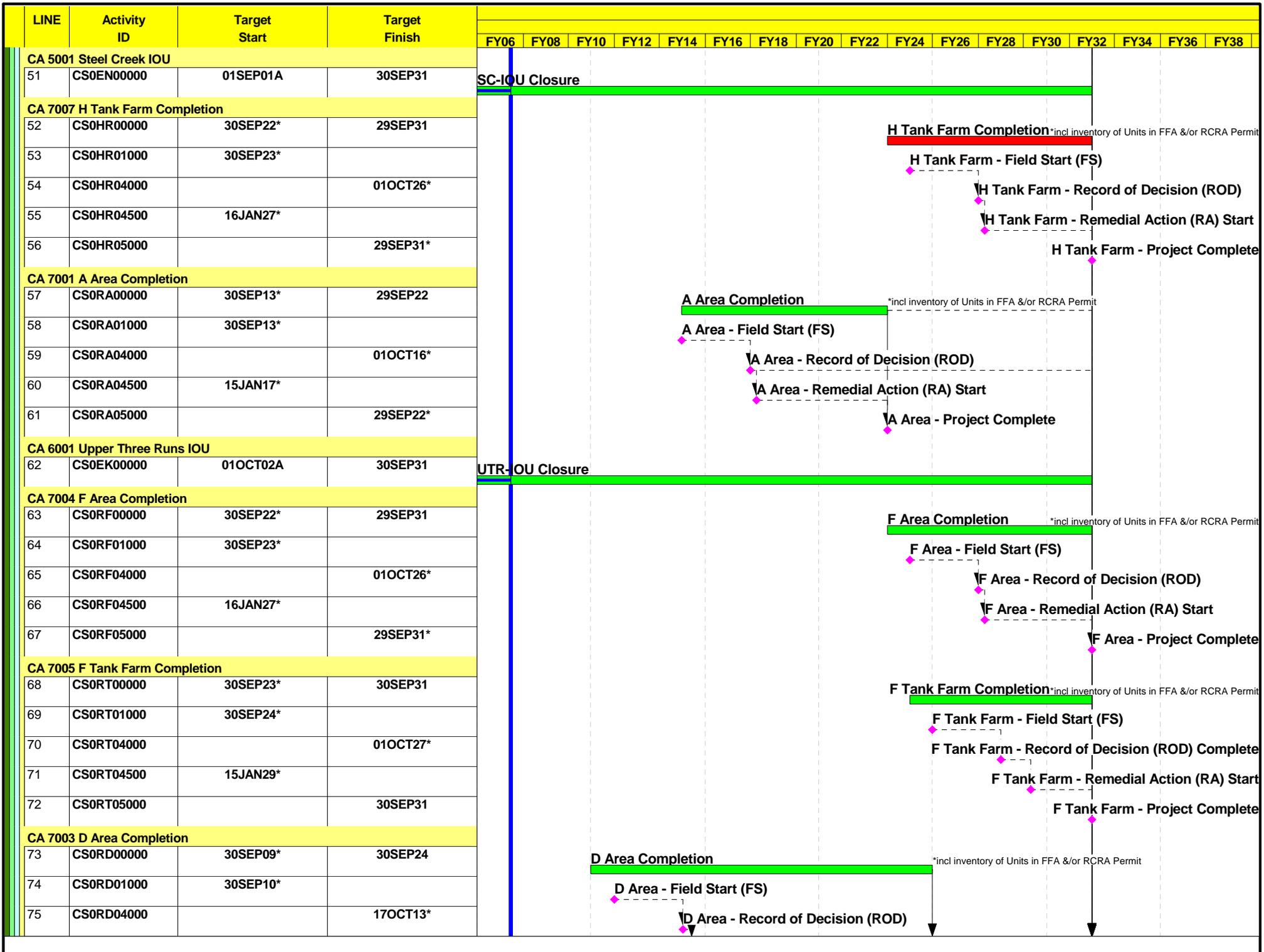
The milestones proposed above align with the near-term area completion strategy and are included in the Project Execution module of IPABS.

**7.30.9.2 Site Monitoring and Evaluation**

Refer to Section 4.4.1, Performance Monitoring, Reporting and Evaluation, for a description of site performance monitoring and evaluation processes.



LINE	Activity ID	Target Start	Target Finish																	
				FY06	FY08	FY10	FY12	FY14	FY16	FY18	FY20	FY22	FY24	FY26	FY28	FY30	FY32	FY34	FY36	FY38
25	CS0RN05000		17NOV16*	N Area - Project Complete																
<b>CA 7002 C Area Completion</b>																				
26	CS0DX00010	06APR06A	10AUG06	C Area Startup Testing ERH Remediation System*incl inventory of Units in FFA &/or RCRA Permit																
27	CS0DX00130	11AUG06*	30NOV06	C Area Operations of ERH Remediation System*incl inventory of Units in FFA &/or RCRA Permit																
28	CS0RC01000	30SEP09*		C Area - Field Start (FS)																
29	CS0RC04000		01OCT12*	C Area - Record of Decision (ROD)																
30	CS0RC04500	15JAN13*		C Area - Remedial Action (RA) Start																
31	CS0RC05000		18NOV17*	C Area - Project Complete																
<b>CA 7008 K Area Completion</b>																				
32	CS0RK00000	30SEP09*	18NOV17	K Area Completion*incl inventory of Units in FFA &/or RCRA Permit																
33	CS0RK01000	30SEP11*		K Area - Field Start (FS)																
34	CS0RK04000		02OCT14*	K Area - Record of Decision (ROD)																
35	CS0RK04500	16JAN15*		K Area - Remedial Action (RA) Start																
36	CS0RK05000		18NOV17*	K Area - Project Complete																
<b>CA 4001 Pen Branch IOU</b>																				
37	CSIPM49316	06APR06A		Chemicals, Metals, Pesticides Field Start																
38	CS0AT00175	19JUL06*	30NOV06	CMP Construction of ERH System*incl inventory of Units in FFA &/or RCRA Permit																
39	CS0AT00101		07SEP07*	CMP ERH Construction Mechanical Complete*incl inventory of Units in FFA &/or RCRA Permit																
40	CS0AT00102	08OCT07*		CMP ERH/SVE OPS Start*incl inventory of Units in FFA &/or RCRA Permit																
41	CS0AT00103		30MAR09*	CMP ERH/SVE OPS Complete*incl inventory of Units in FFA &/or RCRA Permit																
42	CS0DW00000	30SEP11*	17NOV20	K-Area Groundwater*incl inventory of Units in FFA &/or RCRA Permit																
43	CS0EL00000	01OCT02A	30SEP31	PB-IOU Closure																
<b>CA 7009 L Area Completion</b>																				
44	CS0RL00000	30SEP11*	17NOV20	L Area Completion*incl inventory of Units in FFA &/or RCRA Permit																
45	CS0RL01000	30SEP12*		L Area - Field Start (FS)																
46	CS0RL04000		01OCT15*	L Area - Record of Decision (ROD)																
47	CS0RL04500	15JAN16*		L Area - Remedial Action (RA) Start																
48	CS0RL05000		17NOV20*	L Area - Project Complete																
49	CSODY00000	01OCT02A	30SEP24	L-Southern Groundwater*incl inventory of Units in FFA &/or RCRA Permit																
50	CS0FV00000	30SEP11*	30SEP31	L-Northern Groundwater*incl inventory of Units in FFA &/or RCRA Permit																





LINE	Activity ID	Target Start	Target Finish																
				FY06	FY08	FY10	FY12	FY14	FY16	FY18	FY20	FY22	FY24	FY26	FY28	FY30	FY32	FY34	FY36
<b>Site Buildings and Structures</b>																			
<b>Area Project Milestones</b>																			
1	CB-SITE-EM		30SEP31																

EM Site-Wide Mission Complete 2031

## 7.40 PBS SR-0040 Nuclear Facility Deactivation and Decommissioning

This section contains the narratives, scope, cost, and schedule for the Project Baseline Summary (PBS) SR-0040, which focuses on the decommissioning of Savannah River Site (SRS) facilities.

### 7.40.1 Background

After 40 years of producing nuclear materials for defense and non-defense uses, the Savannah River Site (SRS) shifted its strategic direction and resources from nuclear materials production to cleanup. An integral part of the cleanup mission is decommissioning of facilities constructed in support of nuclear materials production as well as those facilities constructed in support of cleanup. This includes 1,013 existing EM Project Performance Measures facilities plus four new facilities (and supporting ancillary facilities) to be constructed that will be dispositioned as part of the Department of Energy (DOE) Office of Environmental Management (EM) cleanup project.

The *2002 Performance Management Plan (PMP)* included deactivation and decommissioning (D&D) scope for only 72 facilities in T, D, and M Areas with deactivation and long-term stewardship assumed for the remaining facilities, both major and ancillary/supporting. The *2004 PMP* included a disposition path for all EM facilities, including planned new EM facilities such as Glass Waste Storage Building (GWSB) #2, Canister Shipping Facility (CSF), and Salt Waste Processing Facility (SWPF). The *SRS Environmental Management Program Project Execution Plan (PEP)* proposes a modification of the EM Project performance measures to reflect D&D of 1,017 SRS EM buildings/facilities. This project also includes surveillance and maintenance of the decommissioned facilities through FY 2031 or until transitioned to PBS SR-0030, Soils and Water Remediation Project. At the end of FY 2031, upon completion of the EM mission at SRS, the responsibility for any remaining surveillance and maintenance of decommissioned facilities will transfer to another DOE program office.

An end state is the status of a facility after decommissioning activities are complete. The selection of end states is very important to the planning process because it dictates the required extent of facility decommissioning, must be supportive of the ultimate area closure end state, and factors heavily into the cost, schedule, and work scope of the decommissioning project.

The vision for SRS is that operations will be concentrated toward the center of the site to form a central core area with continuing non-EM missions. It is envisioned that this central core area will be surrounded by a buffer area, which will provide a safety and security zone between the central core area and the public.

There are two possible decommissioning end state alternatives for SRS facilities: demolition and in-situ disposal (ISD). For each facility, the end state is determined by considering the following elements:

- physical condition at the time of decommissioning,

- structural factors affecting difficulty of removal or effectiveness of containment,
- proximity to public access areas, or surface or groundwater sources,
- known or anticipated area closure end point,
- stakeholder expectations, and
- extent of contamination and/or hazardous material and the degree to which they may pose a threat to the environment or the public.

Preliminary end states have been identified for all the major facilities. A graded approach to the decommissioning process assures the appropriate stakeholder, Environmental Protection Agency (EPA) and South Carolina Department of Health and Environmental Control (DHEC) involvement in decommissioning end state decisions.

Table 7.40.1, SRS Facility End States, illustrates the breakout of the preliminary end states for all of the lifecycle facilities and shows a status as of April 2006.

**Table 7.40.1, SRS Facility End States**

Units	Total Demolition	Total In-Situ Disposal	Projected New	Total	Decommissioned/Closed	To Go
Facilities	896	105	3	1004	218	786
F&H Area Tanks*	0	51	0	51	2	49
<b>Total</b>	<b>896</b>	<b>156</b>	<b>3</b>	<b>1055</b>	<b>220</b>	<b>835</b>

\* These tanks are covered under PBS SR-0014, Radioactive Liquid Tank Waste Stabilization and Disposition.  
Table excludes NNSA facilities.

## 7.40.2 End State

The EM cleanup project is scheduled for completion by the end of FY 2031, at which time EM will have completed its mission at SRS and will not require the use of any facilities. All major facilities and their ancillary structures will be decommissioned.

## 7.40.3 Scope and Description

This project provides for the D&D of all EM facilities at SRS except for radioactive liquid waste tanks in F and H Areas and facilities required to support the operation of Savannah River National Laboratory (SRNL) and Savannah River Ecology Laboratory (SREL) which are projected to continue operations beyond the end date of the EM cleanup mission. EM plans to transition the SRNL to a new cognizant Program Secretarial Office (PSO) that is better aligned with the evolving SRNL mission.

It includes decommissioning of all SRS EM facilities whose missions end by 2027. Closure of the 51 liquid radioactive waste tanks, which are part of the 1,017 major facilities, is covered in PBS SR-0014, Radioactive Liquid Tank Waste Stabilization and Disposition. Decommissioning of the infrastructure surrounding the tanks is included in this PBS. To ensure consistency and clarity in planning, documentation,

and reporting, a controlled listing of SRS facilities for decommissioning, referred to as Appendix K-1 of the *Federal Facilities Agreement*, is maintained.

The Decommissioning Project will work closely with the Soil and Groundwater Project to appropriately sequence and execute decommissioning projects to support Area Closure efforts while reducing risks and operating costs.

#### **7.40.4 Responsibilities**

In addition to the overall responsibilities identified in Section 4.3, Organizational Structure and Responsibilities, PBS specific responsibilities are summarized as follows.

This PBS falls under the responsibility of the SR Assistant Manager for Closure Project. In accordance with DOE O 413.3, *Program and Project Management for the Acquisition of Capital Assets*, a Federal Project Director has been identified to manage this PBS and will be approved by the Assistant Secretary for Environmental Management (EM-1). The Federal Project Director uses an Integrated Project Team (IPT) approach to manage the PBS. The IPT is comprised of personnel from a wide variety of disciplines to ensure the work is managed safely and effectively.

The performance of the work scope for this PBS is the responsibility of the management and operations contractor. Currently, the contractor is the Washington Savannah River Company (WSRC). Within WSRC, the responsibility for this work scope resides with the Management and Operations Manager. The Project Manager is the Director of Site D&D.

#### **7.40.5 Schedule**

The schedule and sequence for D&D of the EM facilities is impacted by a multitude of drivers, the first of which is when the operational mission for the facility will end. Other drivers affecting the schedule are Area Closure Schedules, environmental and safety risk reduction, historic cultural resources review, and the strategy for reducing the operational footprint of the site to the central core areas.

A schedule, based on the specified assumptions in Section 7.40.8, Assumptions, Agreements, Alternatives, and Risk Management, is included at the end of this section.

#### **7.40.6 Resources**

The lifecycle cost profile for this PBS is documented separately.

The Rough Order of Magnitude (ROM) model was used to generate the base estimate for each facility and then factors were added to account for items such as waste disposition, ancillary structures, and process or personnel relocations. This model was used in the previous estimate as well and has been validated by both internal and external organizations. Based on actual SRS overall decommissioning experience, while individual facility costs differ from the ROM estimating methodology by significant factors, the cumulative actual costs for all facilities incurred to date have been within 5% of the ROM estimating methodology.

The funding profile in the 2006 PEP has been revised to sequencing D&D scope to support the current Soil and Water Remediation Project (PBS SR-0030) Area Closure Schedule.

#### **Government Furnished Services and Items**

No material Government Furnished Services and Items have been identified to support this project.

### **7.40.7 Technology Needs**

Better waste characterization technologies are needed to support this project. In addition to the aforementioned resource requirements, the following technology needs have been identified in support of accelerated cleanup:

- Improved methods and equipment for characterizing contaminants in concrete to pre-determine the extent of concrete removal needed to reach an acceptable end state. Current method of incremental removal and sampling is not precise or cost effective.
- Improved contamination control methods specific to plutonium-238 contamination is needed to assist D&D of facilities associated with this isotope. Due to its unique physical properties, plutonium-238 is particularly challenging to immobilize/contain. This coupled with the lay up conditions of the plutonium-238 cells at SRS creates many challenges for safe execution of D&D scope.
- Pursue Technology Alternatives Project, alternatives for environmental assessment at SRS, to develop an interactive, multi-media model that allows decision-makers to assess quickly the impact of various non-baseline alternatives by evaluating contaminant release and transport for assessment of environmental pathways and receptors related to individual actions, as well as the collective impact of multiple actions, on risk and/or cost reductions.

Benefits for all technology needs: Reduce cost and improve schedule through integrated decision making; provide non-baseline alternatives for risk prioritization; and holistically integrate multi-scale environmental data.

Development timeframe: FY 2007 – FY 2012.

### **7.40.8 Assumptions, Agreements, Alternatives, and Risk Management**

#### **Assumptions**

The following assumptions have been used as the basis for the lifecycle cost and schedule development:

- An integrated D&D and Soil and Groundwater cleanup approach will be implemented. The approach will utilize the *Integrated D&D Plan* and the *End State Vision* document with the following exceptions:
  - Any changes to facility readiness for decommissioning defined during schedule development of other PBS will be incorporated.

- There are 1,017 major EM facilities included in the EM D&D project. Not all facilities are included in the baseline to be decommissioned. Savannah River Ecology Laboratory and Savannah River National Laboratory, both in A Area, are projected to continue operations beyond the end date of the EM cleanup mission. EM plans to transition SRNL to a new cognizant Program Secretarial Office (PSO) that is better aligned with the evolving SRNL mission. D&D of these facilities are not in the baseline. A number of facilities in C Area have been designated as a potential for Cold War Historic Preservation. D&D of these facilities is included in the baseline. In the event that a facility, or group of facilities, is considered for transfer to another PSO, the baseline will be formally changed.
- Since detailed definitions for in-situ disposal of the large, hardened facilities have not been established and agreed upon, the rough order of magnitude (ROM) estimate methodology divides the full decommissioning estimate by two to provide a bounding estimate for the cost of in-situ disposal.
- SRS will have access to onsite and offsite locations and repositories in which nuclear, radioactive, and hazardous wastes can be treated and disposed.
- Deactivation costs for the primary operating facilities are included in the parent PBS for a given facility.
- Deactivation of site general area administrative type facilities is included within this PBS.
- Funding for post-decommissioning surveillance and maintenance through the end of FY 2031 is included in this PBS.

### **Agreements**

The following agreement is a driver for this project:

- DOE-SR/DHEC/EPA *Memorandum of Agreement for Achieving an Accelerated Cleanup Vision Savannah River Site.*

### **Alternatives and Risk Management**

The following high-level risks and opportunities in achieving the PBS objectives have been identified:

- Additional and/or more extensive contamination within facilities: There is a risk that contamination (hazardous and radiological) could be more extensive than assumed in the ROM estimate requiring additional characterization and decontamination. This event will result in additional program cost and possible extension of the program past the planned completion date. (Risk ID-002)
- Extended Facility Operating Schedule Impacts D&D: The current *Project Execution Plan (PEP)* defines the expected operating life of facilities which are closely linked to the schedule for D&D. Extended operation of facilities poses a risk that D&D will exceed the baseline plan. This event results in possible extension of the project past the planned completion date. (Risk ID-004)
- Future Use Uncertainty: The current future use for SRS assumes industrial use and exposure. There is a risk that the scenario could change to residential due to no planned mission for SRS. This event could change the cleanup standards and requirements for D&D. As a result, additional cleanup and decontamination to

facilities decommissioned in-situ as well as future decommissioning would be required, causing delays and additional costs. (Risk ID-006)

- Interpretation of “In-situ Decommissioning Endpoint: An unfavorable interpretation of “in-situ decommissioning endpoint” will exceed current baseline cost and schedule. Negotiations and agreements with regulators are required for each facility’s endpoint definition. (Risk ID-009)
- Use of hardened facilities for D&D waste consolidation: There is the opportunity to use these type facilities for the consolidation of D&D waste generated during closure of the area. (Opportunity ID-007)
- New and improved D&D technology: A new and/or improved D&D technology for handling radioactively contaminated equipment will lead to cost and schedule savings, as well as potential benefits in safety. (Opportunity ID-008)
- Interpretation of “In Situ Decommissioning Endpoint: A favorable interpretation of “in-situ decommissioning endpoint” can lead to a decrease in current baseline cost and schedule. (Opportunity ID-009)
- Regulatory agreement to use maintenance worker instead of industrial worker scenario to establish clean-up criteria for D&D: Agreement will decrease the current baseline cost and schedule to reach facility endpoints (Opportunity ID 010)

## 7.40.9 Performance Monitoring and Evaluation

### 7.40.9.1 HQ Monitoring and Evaluation

Monitoring of this PBS at the DOE Headquarters level is completed primarily through use of the Integrated Planning, Accountability, and Budget System (IPABS). Actual cost, schedule, and performance data are collected for each PBS and compared to the established baseline. All elements of the lifecycle baseline are under EM configuration control. Performance data include the project performance measures and milestones. Progress toward these measures and any proposed changes to them are provided below.

#### Project Performance Measures (see next page)

Columns displaying Proposed Performance Measures include actual performance for the fiscal years 1997 – 2005.

Year	Industrial Facility Completions: NF (Current)	Industrial Facility Completions: NF (Proposed)	Nuclear Facility Completions: NF (Current)	Nuclear Facility Completions: NF (Proposed)	Radioactive Facility Completions : NF (Current)	Radioactive Facility Completions: NF (Proposed)
Pre-1997	0	0	0	0	0	0
1997	6	6	1	1	0	0
1998	13	13	0	0	0	0
1999	2	2	0	0	1	1
2000	15	15	0	0	0	0
2001	0	0	0	0	0	0
2002	0	0	0	0	0	0
2003	21	23	0	2	0	0
2004	18	65	3	2	0	0
2005	19	40	0	2	1	1
2006	25	54	1	3	2	4
2007	93	2	5	2	1	1
2008	13	36	1	0	0	0
2009	3	12	0	0	1	1
2010	1	3	15	0	1	0
2011	0	21	4	11	0	5
2012	0	23	7	1	0	1
2013	0	9	7	1	0	1
2014	0	6	6	4	0	1
2015	0	6	4	0	0	0
2016	4	2	9	0	0	0
2017	4	11	7	1	3	0
2018	22	10	9	0	4	0
2019	11	15	15	0	3	0
2020	2	4	8	1	2	0
2021	3	4	10	0	4	0
2022	30	2	26	0	4	0
2023	164	8	28	0	5	0
2024	236	59	17	5	7	1
2025	111	89	12	8	1	1
2026	0	31	0	25	0	4
2027	0	45	0	32	0	3
2028	0	18	0	19	0	2
2029	0	18	0	32	0	4
2030	0	87	0	11	0	9
2031	0	20	0	28	0	0
<b>Total:</b>	<b>816</b>	<b>759</b>	<b>195</b>	<b>191</b>	<b>40</b>	<b>40</b>

**Basis for Change:** Previous baseline (DOE Baseline Change Proposal *EM Corporate Performance Metrics–Gold Chart – Modifications of Nuclear, Radioactive and Industrial Facilities–Life Cycle Metrics, dated 3/16/2004*) includes decommissioning of 1,013 major facilities that existed at the start of FY 2003, including F, H, and S Canyons. The proposed performance measure includes 38 facilities that were decommissioned prior to 2003 plus 1,013 existing facilities and four facilities that are to be constructed that are included in the current baseline. The annual distribution listed above is based upon the 2006 PEP. The funding profile and schedule reflect the current facility availability based upon best available knowledge. It is expected that the performance measure will be updated on a routine basis to reflect operational changes at SRS.

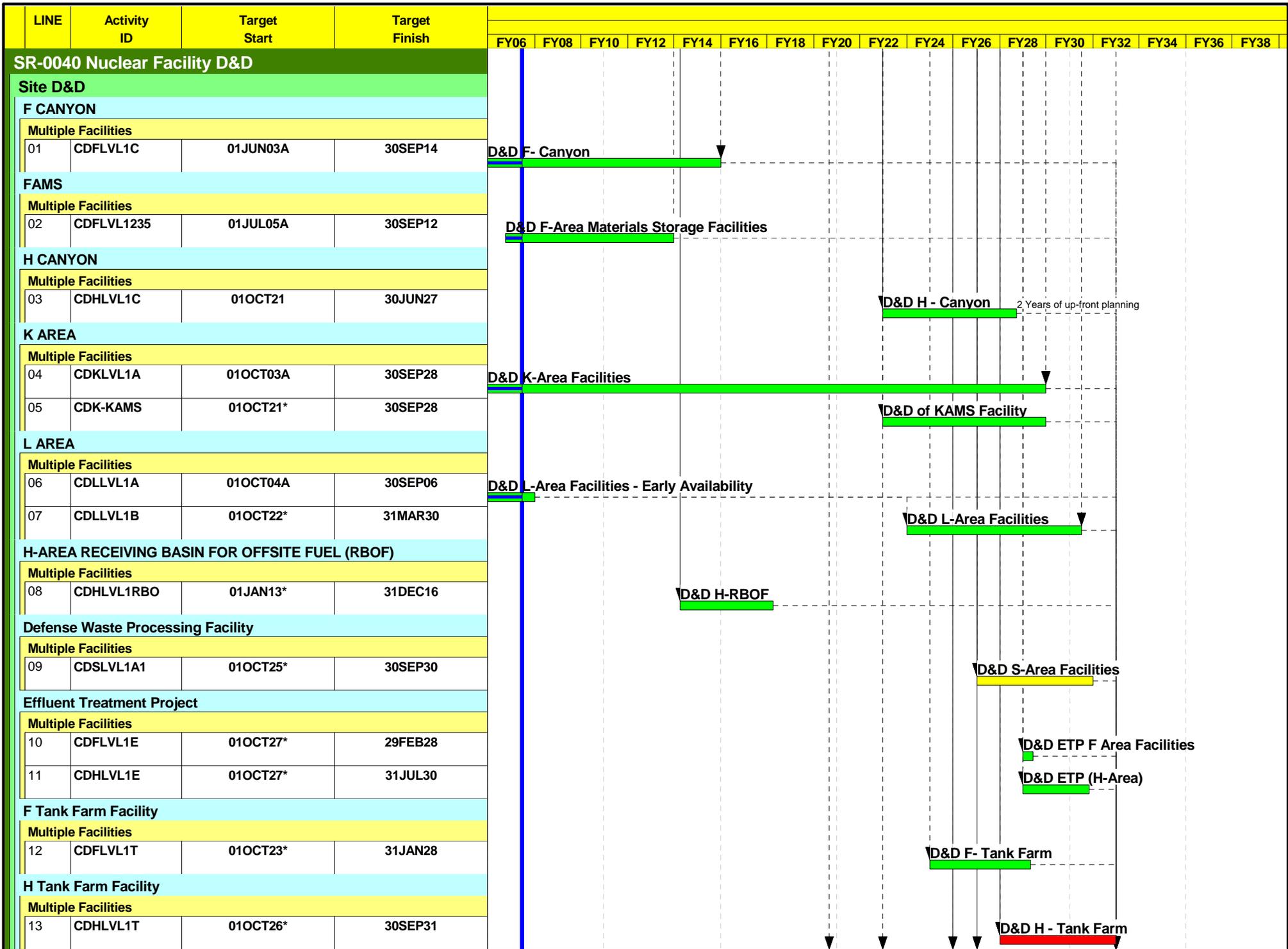
### Project Milestones

Milestone	Proposed
Complete decommissioning of: <ul style="list-style-type: none"> <li>• 62 Industrial,</li> <li>• 2 Nuclear, and</li> <li>• 3 Radiological facility</li> </ul> from October 2003 through September 2006.	09/30/2006 Complete
Complete D Area Heavy Water Plant Facility Decommissioning	11/30/2006
Complete M Area Decommissioning	11/30/2006 Complete
Decommission 247-F Complex	11/30/2006 Complete
Complete decommissioning of 211-F	12/31/2006
Initiate D&D of P Reactor	10/01/2006
Initiate D&D of R Reactor	10/01/2007
Complete D&D of H Area Powerhouse	09/30/2009
Initiate D&D of D Area Powerhouse	10/01/2009
Make decisions regarding SRNL Facility ownership; Economic Development facilities; and, Historical Facilities	09/30/2011
Complete D&D of D Area Powerhouse	09/30/2012
Complete D&D of FAMS	09/30/2012
Complete D&D of P Reactor	09/30/2012
Project End	09/30/2031

**Basis for Change:** Milestones updated to reflect revised scope negotiated in Contract Modifications M100 and M120 and planning conducted for the FY 2008 Budget Request.

### 7.40.9.2 SRS Monitoring and Evaluation

Refer to Section 4.4.1, Performance Monitoring, Reporting, and Evaluation, for a description of the performance monitoring and evaluation process.



LINE	Activity ID	Target Start	Target Finish																	
				FY06	FY08	FY10	FY12	FY14	FY16	FY18	FY20	FY22	FY24	FY26	FY28	FY30	FY32	FY34	FY36	FY38
<b>Salt Processing Facility</b>																				
<b>Multiple Facilities</b>																				
14	CDJLVL1	01OCT24*	30SEP27	D&D Salt Waste Processing Facilities																
<b>Salt Stone Facility</b>																				
<b>Multiple Facilities</b>																				
15	CDZLVL1A	01OCT25*	31DEC28	D&D Z-Area Facilities																
<b>C Laboratories</b>																				
<b>Multiple Facilities</b>																				
16	CDFLVL1CLA	01OCT21*	28FEB25	D&D C-Lab																
<b>Main Laboratory</b>																				
<b>Multiple Facilities</b>																				
17	CDALVL1A1A		01OCT11*	Decision Pt.-Transfer SRNL Facilities																
18	CDALVL1A2	01SEP31*	30SEP31	Transfer SRNL Facilities																
<b>A-AREA</b>																				
<b>Multiple Facilities</b>																				
19	CDALVL1A	01JUL03A	31MAY19	D&D Upper & Lower 700 A-Area Facilities																
20	CDALVL1A3	01SEP31*	30SEP31	Transfer SREL Facilities (A & G Areas)																
21	CDALVL1A1B		01OCT11*	Decision Pt.-Transfer Economic Dev. Facilities																
22	CDALVL1A4	01OCT29*	30SEP31	D&D Economic Development Facilities																
<b>B-AREA</b>																				
<b>Multiple Facilities</b>																				
23	CDBLVL1A	01FEB17*	31MAR25	D&D B-Area Facilities																
<b>C-AREA</b>																				
<b>Multiple Facilities</b>																				
24	CDCLVL1A	01APR04A	30SEP16	D&D C-Area Facilities																
25	CDCLVLC	01OCT11*		Decision Pt.-Transfer Historical Facilities																
26	CDCLVL1A1	01OCT13*	30SEP31	D&D Historical Preservation Facilities																
<b>D AREA</b>																				
<b>Multiple Facilities</b>																				
27	CDDLVL1A	01OCT02A	30NOV06	D&D D-Area Heavy Water Plant Facilities																
28	CDDLVL1A1	01OCT10*	31AUG12	D&D D-Area Powerhouse Facilities																
29	CDDLVL1A2	01JAN31*	30APR31	D&D Other D-Area Support Facilities																

LINE	Activity ID	Target Start	Target Finish																	
				FY06	FY08	FY10	FY12	FY14	FY16	FY18	FY20	FY22	FY24	FY26	FY28	FY30	FY32	FY34	FY36	FY38
<b>E AREA</b>																				
<b>Multiple Facilities</b>																				
30	CDELVL1A	03NOV03A	30SEP31	<b>D&amp;D E-Area Facilities</b>																
<b>F AREA</b>																				
<b>Multiple Facilities</b>																				
31	CD7LVL1A	01SEP03A	31MAR06A	<b>D&amp;D 247-Area Facilities</b>																
32	CDFLVL1A	01JUN03A	30NOV13	<b>D&amp;D F-Area Support Facilities</b>																
<b>G AREA</b>																				
<b>Multiple Facilities</b>																				
33	CDGLVL1A3	01JUL04A	30SEP30	<b>D&amp;D G-Area General Site Facil/Infrastructure</b>																
34	CDGLVL1A1	01JAN18*	31MAY21	<b>D&amp;D SR Natural Res. Mgmt. Inst. Area</b>																
35	CDGLVL1A	01APR18*	31AUG19	<b>D&amp;D Railroads</b>																
36	CDGLVL1A2	01JUN08*	31DEC08	<b>D&amp;D Par Pond Environmental Lab</b>																
<b>H AREA</b>																				
<b>Multiple Facilities</b>																				
37	CDIPM11111		30SEP06*	<b>Complete BG Incinerator</b>																
38	CDHLVL1TRN	01OCT26*	31AUG28	<b>D&amp;D Central Training Facility</b>																
39	CDHLVL1A	01JAN05A	30SEP23	<b>D&amp;D H-Area Support Facilities</b>																
40	CDHLVL1CIF	01OCT05A	31DEC10	<b>D&amp;D H-Area CIF/BGI</b>																
41	CDHLVL1PH	01JAN08*	31MAR09	<b>D&amp;D H - Powerhouse</b>																
<b>M AREA</b>																				
<b>Multiple Facilities</b>																				
42	CDMLVL1A	01OCT02A	31DEC05A	<b>D&amp;D M-Area Facilities</b>																
43	CDMLVL1A1	01MAR17*	30JUN17	<b>D&amp;D M-Area S&amp;GW Equipment</b>																
<b>N AREA</b>																				
<b>Multiple Facilities</b>																				
44	CDNLVL1A2	01JUL04A	30SEP26	<b>D&amp;D N-Area General Site Support Facilities</b>																
45	CDNLVL1A1	01OCT29*	30JUN31	<b>D&amp;D N-Area Central Warehouse Facilities</b>																
<b>P AREA</b>																				
<b>Multiple Facilities</b>																				
46	CDPLVL1A	01OCT03A	31DEC12	<b>D&amp;D P-Area Facilities</b>																

LINE	Activity ID	Target Start	Target Finish																	
				FY06	FY08	FY10	FY12	FY14	FY16	FY18	FY20	FY22	FY24	FY26	FY28	FY30	FY32	FY34	FY36	FY38
<b>R AREA</b>																				
<b>Multiple Facilities</b>																				
47	CDRLVL1A	01OCT03A	30JUN13	<b>D&amp;D R-Area Facilities</b>																
<b>T AREA</b>																				
<b>Multiple Facilities</b>																				
48	CDTLVL1A1	01JUN31*	30SEP31	<b>D&amp;D T-Area Telephone Exchange</b>																
<b>U AREA</b>																				
<b>Multiple Facilities</b>																				
49	CDULVL1A	01OCT11*	30SEP14	<b>D&amp;D U-Area Facilities</b>																
<b>SURVEILLANCE &amp; MAINTENANCE</b>																				
<b>Multiple Facilities</b>																				
50	CD SM	01OCT06*	30SEP31	<b>D&amp;D Ongoing Program Management and S/M</b>																

## **7.100 PBS SR-0100 Defense Environmental Services - Non-Closure Mission Support**

This section contains the narratives, scope, cost, and schedule for the Project Baseline Summary (PBS) SR-0100, which focuses on the support activities for the EM Cleanup Project at SRS.

### **7.100.1 Background**

The purpose and scope of this project is to provide support that enables the Savannah River Site (SRS) to perform its missions and accelerated cleanup initiatives. Support activities include the management of all natural resources within the 310 square-mile site, regulatory-driven cultural resources management, and soil and erosion control expertise to meet project permit requirements. Other activities include medical research, geological surveys, diversity initiatives, and development of a long-term observation network to monitor water level, quality, and flow paths.

### **7.100.2 End State**

Critical support activities will continue through the Department of Energy (DOE) Office of Environmental Management (EM) target completion date of FY 2031. Beginning in FY 2032, remaining support activities, e.g., natural resource management will be transferred to another DOE program office.

### **7.100.3 Scope and Description**

Project scope is accomplished through multiple DOE direct grants, agreements, and contracts. These grants, agreements, and contracts provide critical support to enable DOE Savannah River Operations Office (SR) to perform its missions and cleanup initiatives. Support activities include the following

- Natural Resources Management – involves a comprehensive program conducted to sustain the health, productivity, and diversity of the SRS natural resources to meet regulatory requirements, protect site personnel and facilities, and address site-related natural resources issues that affect off-site stakeholders. Key projects include wildland fire control, secondary road maintenance, site boundary management, soil and erosion control, wildlife and habitat management, and cooperative site management projects involving the South Carolina Department of Natural Resources.
- Cultural Resources Management – provides the site with the technical expertise to meet Federal and state regulatory requirements for the identification, evaluation, and protection of site archaeological and historic sites and artifacts. Services provided include expedited regulatory reviews of site projects, mapping and protection of archaeological sites, curation of historical and archaeological artifacts, and development of cost-saving modeling and mitigation approaches, stakeholder interface, and information to support National Environmental Policy

Act (NEPA) and Comprehensive Environmental Response and Liability Act (CERCLA) documents.

- Natural Resource Conservation – provides site projects with the specialized technical expertise to support expedited pollution prevention, storm water management, and erosion control plans required by state regulation. Key projects include updates to the Site Soils Map, providing soils data, runoff rates, erosion control measures, wetlands impacts, and vegetation recommendations to support site permits, and conducting field reviews and erosion control training for site personnel.
- Water Observation Activities – provides for research on a broad range of water related issues pertaining to in-situ groundwater cleanup, contaminant transport, risk assessment, landfill cover systems and water quality monitoring.
- Medical Research – provides for a multi-disciplinary research program focusing on the understanding of the biological mechanisms of environmentally induced diseases.
- Other – activities include hydrogeological surveys to address emerging issues, project management and control support, historical preservation, summer diversity interns, and Historically Black Colleges and Universities grants that support soil and groundwater remediation focusing on phytoremediation, monitored natural attenuation and other natural remediation approaches.

#### **7.100.4 Responsibilities**

Program managers for each of the aforementioned support activities identify annual scope and requirements. Acquisition strategies to meet the requirements are then identified and evaluated. A strategy will be selected based on the most cost-effective and efficient approach to meet the support requirements. Strategies will include both internal and external delivery of support. Once a strategy is implemented, the program managers will work closely with the SR Chief Financial Officer to ensure the support is provided within available funds.

#### **7.100.5 Schedule**

Requirements for support provided by this project are evaluated annually. Grants, agreements, and contracts are extended if continued support is required. This PBS is a support function that will be required through the completion of the EM cleanup project through the end of FY 2031.

#### **8.100.6 Resources**

Progress has been made in identifying non-essential support activities, allowing associated dollars to be redirected to accelerated cleanup activities. A disciplined, fully integrated management control system has been put in place with an integrated project mindset, which includes a process for prioritizing and approving non-labor activities, establishing cost, schedule, and scope baselines. Only those activities that continue to align with and support the objectives and direction of the EM cleanup program are included in funding proposals. After allocations are established, any

requests for additional funding for support activities are submitted to the EM Configuration Control Board for approval.

## **7.100.7 Technology Needs**

None.

## **7.100.8 Assumptions, Agreements, Alternatives, and Risk Management**

### **Assumptions**

The following assumptions have been used as the basis for the lifecycle cost and schedule development:

- Continued support for identified programs/functions will be at a level consistent with funding target provided, and
- Efforts to minimize requirements for these programs/functions should continue in order to focus available EM resources on accelerated cleanup.

### **Risks**

The following risks in achieving the PBS objectives have been identified:

- Project scope is accomplished through multiple DOE direct grants, agreements and contracts. There is some risk associated with the procurement of the needed support. If support cannot be procured, internal resources would be considered to perform necessary scope
- Interface with all other EM programs and projects will be critical as there is a close correlation between the support requirements and the completion of the various EM programs and projects.

## **7.100.9 Performance Monitoring and Evaluation**

### **7.100.9.1 HQ Monitoring and Evaluation**

Monitoring of this PBS at the DOE Headquarters (HQ) level is performed primarily through use of the EM Integrated Planning, Accountability, and Budgeting System (IPABS). Actual costs are collected for each PBS and compared to the established funding for the fiscal year. Significant variances are explained. Actual cost, schedule, and performance data are also collected for each PBS and compared to the established baseline. All elements of the lifecycle baseline are under EM configuration control.

### **7.100.9.2 Site Monitoring and Evaluation**

The following reviews are conducted to monitor and evaluate progress.

- Estimate-at-Completion reviews are conducted quarterly between financial personnel and program managers to evaluate and analyze costs.
- Monthly reports are provided to program managers and financial personnel for analysis.
- Funding allocations are established for each of the activities annually and costs are monitored throughout the year.
- A yearly non-labor resource review is conducted to help in identifying non-essential EM activities and associated dollars are redirected to accelerated cleanup.

## **7.101 PBS SR-0101 Defense Environmental Services – Community and Regulatory Support**

This section contains the narratives, scope, cost, and schedule for the Project Baseline Summary (PBS) SR-0101, which focuses on community and regulatory support..

### **7.101.1 Background**

The purpose and scope of this project is to provide support that enables the Savannah River Site (SRS) to perform its missions and accelerated cleanup initiatives. Support includes independent environmental monitoring, emergency management activities, and Payments-in-Lieu-of-Taxes (for Aiken, Allendale, and Barnwell counties). The project also supports the South Carolina Department of Health and Environmental Control (DHEC) for oversight and implementation of the Federal Facility Agreement (FFA) and Site Treatment Plan (STP). Their reviews support the cleanup objectives of constructing final remedies for soil and groundwater by the end of FY 2031 and review of plans and permits for treatment and storage of hazardous and mixed wastes. This project scope also provides for the operation and maintenance of a public reading room for SRS documents to support communication and stakeholder involvement and supports the SRS Citizens Advisory Board.

### **7.101.2 End State**

Critical support activities will continue through the Department of Energy (DOE) Office of Environmental Management (EM) target completion date of FY 2031. Beginning in FY 2032, remaining support activities will be transferred to another DOE program office.

### **7.101.3 Scope and Description**

Project scope is accomplished through multiple DOE Savannah River Operations Office (SR) direct grants, agreements and contracts. These grants, agreements and contracts provide critical support to enable SR to perform its missions and accelerated cleanup initiatives.

Support activities consist of the following activities:

- Funding to the State of Georgia for emergency management activities and to the State of South Carolina for independent environmental monitoring and emergency management activities to verify SRS reporting results and support public awareness for offsite risks from SRS operations to stakeholders.
- Oversight and implementation of the FFA – activities are provided by DHEC. The state agency reviews primary and secondary documents listed in the FFA and coordinates public participation processes prescribed by the Comprehensive Environmental Response and Liability Act (CERCLA) and the Resource

Conservation and Recovery Act (RCRA). Also provides for independent verification of accomplishment of accelerated cleanup activities and ensures DHEC continued support for mutual efforts to reduce risk and accelerate cleanup.

- Technical assistance – Environmental Protection Agency (EPA) provides expert technical assistance to DOE sites in Region 4 to support accomplishment of the cleanup mission objectives. This ensures consistency in cleanup among DOE sites and provides support for fundamental changes in approach for soil and groundwater cleanup, e.g., the area closure approach.
- STP Support – DHEC support of cleanup through expedited regulatory review of RCRA permit and STP submittals, as well as cleanup credit implementation in accordance with the Consent Order 95-22-HW and the Site Treatment Plan.
- Payments-in-Lieu-of-Taxes – paid to Aiken, Allendale and Barnwell Counties.
- Public Reading Room – provides for the operation and maintenance of a public reading room for SRS documents to support stakeholder involvement.
- SRS Citizens Advisory Board (CAB) – provides for CAB support including facilitator, technical advisor, meeting rooms and other logistical needs.

#### **7.101.4 Responsibilities**

This PBS falls under the responsibility of the SR Assistant Manager for Closure Project (AMCP) and Office of Chief Financial Officer (CFO). The AMCP program manager identifies and evaluates support requirements and acquisition strategies necessary to meet these requirements. The program manager also approves work scope and oversees its implementation. The CFO staff supports the funding requests for the approved work scope and ensures that costs are reasonable and are within the approved funding level. The program manager and CFO staff work jointly to ensure the support is provided within funds available.

#### **7.101.5 Schedule**

Requirements for support provided by this project are evaluated annually. Grants, agreements, and contracts are extended if continued support is required. This PBS is a support function that will be required through the completion of the EM cleanup project through the end of FY 2031.

#### **7.101.6 Resources**

Progress has been made in identifying non-essential support activities, allowing associated dollars to be redirected to cleanup activities. A disciplined, fully integrated management control system has been put in place with an integrated project mindset, which includes a process for prioritizing and approving non-labor activities, establishing cost, schedule, and scope baselines. Only those activities that continue to align with and support the objectives and direction of the EM accelerated cleanup program are included in funding proposals. After allocations are established, any requests for additional funding for support activities are submitted to the EM Configuration Control Board for approval.

## 7.101.7 Technology Needs

None

## 7.101.8 Assumptions, Agreements, Alternatives, and Risk Management

### Assumptions

The following assumptions have been used as the basis for the lifecycle cost and schedule development:

- Continued support for identified programs/functions will be at a level consistent with funding target provided.
- Efforts to minimize requirements for these programs/functions should continue in order to focus available EM resources on accelerated cleanup.

### Risks

The following risks in achieving the PBS objectives have been identified:

- Project scope is accomplished through multiple DOE direct grants, agreements and contracts. Most of the support is provided by government agencies, both state and federal, leaving little flexibility in procuring support. There is some risk associated with the procurement of the needed support.
- Interface with all other EM programs and projects will be critical because of a close correlation between the support requirements and the completion of the various EM programs and projects.

## 8.101.9 Performance Monitoring and Evaluation

### 7.101.8.1 HQ Monitoring and Evaluation

Monitoring of this PBS at the HQ level is conducted primarily through use of the EM Integrated Planning, Accountability, and Budgeting System (IPABS). Actual costs are collected for each PBS and compared to the established funding for the fiscal year. Significant variances are explained. Actual cost, schedule, and performance data are also collected for each PBS and compared to the established baseline. All elements of the lifecycle baseline are under EM configuration control.

### 7.101.8.2 Site Monitoring and Evaluation

The following reviews are conducted to monitor and evaluate progress:

- Estimate-at-Completion reviews are conducted quarterly between financial personnel and program managers to evaluate and analyze costs.
- Monthly reports are provided to program managers and financial personnel for analysis.

- Funding allocations are established for each of the activities annually and costs are monitored throughout the year.
- A yearly non-labor resource review is conducted to help in identifying nonessential EM activities and associated dollars are redirected to accelerated cleanup.