8.30 PBS SR-0030 Soil and Water Remediation

8.30.1 Background

After 40 years of producing nuclear materials for defense and non-defense uses, the SRS shifted its strategic direction and resources from nuclear materials production to cleanup of the nuclear waste and environmental contamination created during production. The start of the SRS cleanup 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 and groundwater contamination. The site has identified 515 waste and groundwater units. The Soils and Groundwater Project (SGP) is responsible for cleaning up these waste and groundwater projects 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 the SRS RCRA permit in 1987, which required SRS to begin its environmental cleanup program. Under the RCRA Permit and the State of South Carolina's oversight, SRS is actively remediating contaminated groundwater plumes in various areas around the site.

In 1993, the Department of Energy (DOE), the Environmental Protection Agency (EPA), and the South Carolina Department of Health and Environmental Control (SCDHEC) ("the Parties") entered into an agreement that describes how the SRS will cleanup its inventory of waste and groundwater units. The *SRS Federal Facility Agreement* (*FFA*) was negotiated to ensure SRS cleanup satisfies CERCLA and RCRA requirements and includes cleanup schedules 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.

The *PMP* describes the approach to achieve cleanup of SRS, consistent with the RCRA Permit and the *FFA*'s *FY 2004 Appendix E*, *Long-Term Projections*, a listing of actual and planned milestones for the life cycle of the SGP. Because cleanup of the SRS waste and groundwater units requires active involvement and oversight from EPA and SCDHEC, the *FFA Appendix E* has been approved by EPA and SCDHEC. In support of accelerating the cleanup program at SRS, these regulatory agencies reached agreement with DOE through a Memorandum of Agreement (MOA) for Achieving an Accelerated Cleanup Vision in July 2003. This MOA documents the three Parties' agreement to accelerate cleanup of SRS while focusing on reducing risk to workers, the public, and the environment. The three Parties agreed to re-sequence the SRS cleanup work in a fashion that completes environmental cleanup and facility decommissioning area-by-area until all areas of the SRS are completed. This approach integrates waste and groundwater unit remediation with facility decommissioning activities in a consolidated manner, as waste units and facilities

can be combined to realize economies of scale and reduce administrative requirements.

This strategy offers 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.

When required response actions are completed, the area will be completed and closed. As an area is completed, SRS will petition that area for deletion from the *National Priorities List* (*NPL*), a listing of Superfund (CERCLA) sites. The goal is to delete all SRS areas that are contained in the *FFA* from the *NPL*.

By looking globally at SRS cleanup activities, SGP and the site decommissioning program can appropriately sequence and execute cleanup projects to complete and close specific SRS areas.

The scope and schedule included in this PMP is priced with the expectation that an alternative execution strategy will be established with the regulators to integrate, with changing priorities, decommissioning completions and to levelize resources. Planning an execution strategy that sequences D&D and SGP workscope in this manner will allow SRS, EPA, and SCDHEC to optimize the use of their respective resources. This levelizing approach will be carried forward into future *FFA* and RCRA permit commitments via regulatory negotiations that are concurred upon by the EPA and SCDHEC. As levelized program execution plans are developed and actual performance is realized under the area closure approach, SRS, EPA and SCDHEC will use this information to develop, modify and/or renegotiate regulatory milestones that are currently contained within the RCRA Permit and/or the *FFA* accordingly.

8.30.2 End State

All EM legacy facilities are being deactivated and decommissioned as the inactive waste units are being remediated. Remediated waste units will often require post-closure monitoring and maintenance. As perimeter areas are completed and closed, SRS operations will be further concentrated to a Central Core Area. The land surrounding the central core area will provide a protective buffer. End states will be achieved through risk-informed decisions.

By 2025, all inactive waste sites that pose a risk to surface water or groundwater will be remediated and controlled, and contaminated groundwater will be remediated, in remediation, or closely monitored to ensure protection of human health and the environment. Units that leave waste in place, but that pose no unacceptable risk to groundwater or the Savannah River will be under institutional controls, which feature a maintenance and monitoring program to restrict access to the contaminated media.

8.30.3 Scope and Description

The SGP focuses on 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 contamination that has already migrated from the source.

The SGP will safely investigate, assess, remediate, and close inactive waste units and groundwater units. SGP will remediate the inactive waste units and contaminated groundwater so that all regulatory requirements and compliance commitments as stipulated in the *FFA*, RCRA permit, other environmental permits, settlement agreements, administrative orders, consent decrees, Notices of Deficiency (NODs), Notices of Violation (NOVs), and closure plans or regulatory direction are met. As changes in regulatory requirements occur, SGP scope execution plans will be revised.

Accomplishing the SGP scope will require the achievement of significant savings. The site has proposed a contingency as identified in Section 3.7 in the event sufficient savings are not realized.

8.30.3.1 Upper Three Runs Areas Scope and Description Summary (A and M Areas, B Area and D Area)

A and M Areas — The A and M Areas were constructed to house the main SRS administrative functions and manufacturing areas. These areas are often addressed together because of close proximity and shared contaminants. When combined, the A and M Areas constitute one of the largest groundwater remediation programs in the country. Contamination sources are from the production of fuel and target assemblies, research and development operations, and the disposal of waste and general debris after SRS started its operations and before the establishment of rigorous solid waste management controls. The principal contaminants in the areas are solvents in the groundwater and vadose zone. Aggressive source remedies are in place or planned to eliminate and/or reduce the associated risk.

B Area — B Area is primarily an administrative office complex. Additionally, B Area contained the SRS Sanitary Landfill (SLF), which received solvent rags and wipes during its operations. These substances required that the SLF be closed and remediated under the RCRA Permit. Groundwater cleanup activities continue below the SLF today. A variety of low-risk Site Evaluation waste units are all that remain in B Area.

D Area — D Area was used beginning in mid-1950s to dispose of coal ash, oil, chemicals, and general debris. A power station is operating today 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.

8.30.3.2 General Separations Areas Scope and Description Summary (E Area, F and H Areas, N Area, and T Area)

E Area — E Area consists of several adjacent facilities that are former or currently solid waste disposal facilities primarily for hazardous and radioactive wastes and spent solvents generated from chemical and manufacturing processes. One facility, the Burial Ground Complex, occupies approximately 195 acres and is composed of several contiguous facilities that served as disposal locations for radioactive and hazardous waste (e.g., RCRA regulated metals, volatile organic compounds, tritium, and other radionuclides). The BGC is comprised of three primary units: Old Radioactive Waste Burial Ground (ORWBG), Low-Level Radioactive Waste Disposal Facility (LLRDF), and the Mixed Waste Management Facility (MWMF), which have underlying contaminated groundwater. Remedial actions for the soil contamination have been performed at both LLRDF and MWMF. Effective interim actions have been employed for the groundwater units and are being managed under the SRS RCRA Permit. ORWBG, SGP's highest risk remaining surface unit, has been consolidated with three nearby waste units to form the General Separations Area Consolidation Unit (GSACU). The scheduled closure of the units associated with the GSACU will achieve a 99% risk reduction to industrial workers upon completion.

F and H Areas — F and H Areas are part of the general separations operations where plutonium was separated from irradiated assemblies for refinement into metal buttons. H Area was also used to process tritium and uranium and to produce Pu^{238}.

In F Area, the principal contaminants are tritium within the groundwater, and strontium, uranium, heavy metals, and solvents in soils and sediments. Besides soil and geosynthetic capping, other remedies deployed to treat the contaminants in F Area include Monitored Natural Attenuation, Base Injection with Funnel and Gate Barrier System (for groundwater), and Phytoremediation. Accessibility to many of the remaining SGP waste units in F Area is dependent on completing decommissioning of the facilities in F Area.

In H Area, the principal contaminants of concern are tritium, strontium, and mercury. Like its counterpart, F Area, many of H Area's accessible high-risk units have been completed or are in remediation. An important segment of the accessible high risk units in the area, Warner's Pond, HP-52, and H Retention Basin are being remediated within the context of the GSACU. Other area waste units will be remediated and/or placed under institutional control pending the decommissioning of key area facilities.

Much of the progress in this area is contingent on the completion of deactivation and decommissioning of buildings in F and H Areas. The closure of F Area poses the opportunity to bundle remediation of the inactive waste sites in the area with necessary post decommissioning activities.

The primary remedial goal in the F and H Areas is to achieve source and plume control. Recent environmental assessments have determined there is additional contamination in the seepline area below the F and H Seepage Basins. This expanded contamination area will have to be addressed with SCDHEC concurrence. Funding to address this contamination is not included in this *PMP*. Upon reaching agreement with SCDHEC on the suitable remedial approach for these areas, SGP will adjust its baseline appropriately.

To meet its goal, SGP must first achieve source control and plume reduction sufficient to protect the Fourmile Branch watershed. Although some source control and plume reduction measures have been achieved, a final tritium resolution is

needed, possibly using phytoremediation and monitored natural attenuation to reach a more acceptable level of control.

N Area — N Area consists of burning/rubble pits, equipment maintenance areas and chemical and runoff basins that were used between 1951 and 1973 for the disposal of various waste materials, including hazardous substances such as organic and inorganic chemicals, inert solid wastes, and low levels of radioactivity.

T Area — TNX operated from the mid-1950s through the mid-1980s to conduct pilot tests to support SRS operations. The principle contaminants are mercury, thorium, uranium, radium, and chlorinated solvents. Because of its location near the Savannah River and proximity to the site's exterior boundary, this area is the first slated for remediation and closure.

8.30.3.3 Reactor Areas Area Scope and Description Summary (C, K, L, P and R Areas, CMP Pits and Sludge Land Application Units)

Reactor Areas — All SRS Reactor Areas were constructed with similar facilities and used similar processes during their operations. The Reactor Areas typically consist of several facilities that are former disposal sites for hazardous wastes, radioactive wastes, and spent solvents generated by their operations. There are also burning/rubble pits, equipment maintenance areas, and basins that were used for the disposal of various waste materials. In R Area, the Reactor Seepage Basins consist of six basins that contain sediments that are highly contaminated. Principal contaminants in the Reactor Areas are Cs^{137}, strontium, tritium, spent organic chemicals, and low-level radioactive debris. Monitoring wells typically indicate the presence of tritium and volatile organic compounds in the groundwater. Engineered caps, in situ grouting technology, soil vapor extraction and air sparging, and monitored natural attenuation have been deployed at the completed waste units. The remaining units in these areas are being characterized and cleanup is being accelerated on the high-risk units in order to gain comprehensive source and plume control.

A primary focus of the Reactors Project Area is to accelerate work on its highest risk sites. Full-scale remediation of its high-risk waste sites will move forward wherever possible especially when they can be sequenced with site decommissioning work. As a result, the use of Area RODs is planned in the remediation of waste sites in each of the reactor facilities in conjunction with associated facility decommissioning efforts.

CMP Pits — The CMP Pits are located about a mile north of the L Area Reactor. These pits were used to dispose of chemicals, metals and pesticides. As a result of these past disposal processes, surface soil, subsurface soil, and groundwater have been contaminated. Primary contaminants are volatile organic compounds, pesticides and polychlorinated biphenyls (PCBs). In 1984, the pits were excavated and drums and highly contaminated soil was removed. Enhanced bio-remediation of surface soils contaminated with pesticides, and PCBs is currently being deployed. Soil vapor extraction is ongoing to remove organics from the subsurface soils. Groundwater will be addressed through source control and Monitored Natural Attenuation.

K Area Sludge Land Application Unit — The K Area Sludge Land Application Unit (KSLAU) is located in the central portion of the SRS south of Road B near K Area. The KSLAU was originally a borrow pit of approximately 17 acres that was

reclaimed for land applications of sewage sludge. In 1980, about 300,000 gal of liquid sludge from Augusta Wastewater Treatment Plant were injected 5 to 8 inches below the soil. In 1988, about 210 tons of sanitary sewage sludge from the Central Shops (CS) Sewage Sludge Lagoon was spread on top of the soil. The Par Pond Sludge Application Unit (PSLAU) is approximately 10 acres and is located north of Par Pond, which received sludge from the same lagoon.

The lagoon sludge came from SRS Sewage Treatment Plants. In 1989, it was learned that this sludge contained chlordane, a hazardous pesticide used in termite control, as well as certain metals (including silver, cadmium, nickel, and lead) in concentrations higher than in the underlying soils. Characterization of these sites has commenced.

8.30.3.4 Integrator Operable Units Scope and Description Summary

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

- Lower Three Runs
- Steel Creek
- Pen Branch
- Four Mile Branch
- Upper Three Runs
- Savannah River and Floodplain Swamp.

The second objective of the IOU effort was to develop conceptual models to determine the sources of contamination, which allows the three agencies to better understand the origin of the contamination in surface waters and provide confirmation of the predicted impacts of OU remedial actions.

The final objective was to provide closure for the remediation of the surface and groundwater units within the *FFA* program, which will be accomplished in the final, Phase III, portion of the IOU program. This final phase is sequenced to be executed once the contributing sources and area RODs for the contributing watersheds have been assessed and appropriate remedial actions have been completed. The final IOU phase will include a comprehensive CERCLA evaluation of the human health and ecological risks along with appropriate remedial actions as determined by the *FFA* core team. The Savannah River and Floodplain Swamp IOU will be evaluated last, once all other OUs and IOUs have been completed.

8.30.4 Responsibilities

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

This PBS falls under the responsibility of the DOE-SR Assistant Manager for Closure Project. In accordance with DOE Order 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 EM-1. The Federal Project Director uses an Integrated Project Team (IPT) approach to manage the PBS. The IPTs are 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 Westinghouse Savannah River Company (WSRC). Within WSRC, the responsibility for this work scope resides with the Closure Business Unit, Area Project Manager for the Soil and Groundwater Cleanup Projects (SGCP).

8.30.5 Schedule

The Soils and Groundwater Project (SGP) will continue to be responsible for waste unit, groundwater, and surface water remediation at SRS through 2025. By the end of FY 2006, 370 waste units will be completed or in remediation, as execution is achieved.

8.30.6 Resources

The cost profile for this PBS from FY 2003 to FY 2025 is TBD.

This cost profile varies from the previous lifecycle cost estimate. This cost profile, incorporates significant savings assumptions associated with execution improvements. The cost profile does not include any increases resulting from the inclusion of two better defined elements of work that must now be executed, and that were not included in the *2002 PMP* and previous lifecycle cost estimates. While there is recognition that this scope must be addressed, no costs have been included in the cost profile since the execution details have yet to be determined. After execution plans are determined, with regulator concurrence, cost estimates will be developed. The required work scope includes:

- moving of the Site Evaluation Areas into the full CERCLA remedial process – Previous estimates for the Site Evaluations were based on limited remedial actions. Implementing the full CERCLA documentation and remedial action process (Appendix C of the *FFA*) requires a more extensive and costly remedial process. Because this is an increase to the scope of work that must be performed, addressing the units in the full CERCLA process is more costly. It is expected that the majority of these units will be addressed by use of the Area ROD approach to moderate cost increases.

- revised scope for the Fourmile Branch seepline downgradient from the former F and H Area Seepage Basins – This contamination, associated with the past operation of the F and H Area Seepage Basins, is expanded scope for the F and H Groundwater Projects, which have been treating and managing the contaminated groundwater, in accordance with the RCRA Permit. This scope must be advanced with the concurrence of SCDHEC. It is expected that remedial activities associated with this area will become a condition of the current SRS RCRA Permit.

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

§ Refine spray irrigation phytoremediation and the raising of aquifer pH via base solution injection to expand impact and reduce costs.
Benefit: Reduces the overall contaminant concentrations in Fourmile Branch to regulatory standards. Accelerated implementation of this project will achieve an 80% reduction in risk to human health and the environment in Fourmile Branch and reduce the contaminant flux to the Savannah River three years ahead of the current schedule.
Development timeframe: FY 2004 – FY 2008

§ Accelerate 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 2004 to FY 2028

§ 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 2004 – FY 2028

§ Develop innovative characterization and monitoring technologies. As the cleanup program continues to mature and area Record of Decision's Integrator Operable Units 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 2004 – FY 2008

8.30.7 Key Assumptions, Agreements, Alternatives, Trade-offs, and Risk Management

Key Assumptions
The following assumptions apply for this PBS:

§ SRS boundaries will remain unchanged, and the land will remain under the ownership of the federal government with institutional controls being in place. Land use will be non-residential.

- Current SGP remediation scope will be completed by the end of FY 2025 and will meet all regulatory requirements and milestones (*FFA* and RCRA Part B Permit). In addition, area cleanup will be completed consistent with the schedule included in the *FFA FY 2004 Appendix E* and in accordance with the MOA for accelerating cleanup and the *SRS Comprehensive Cleanup Plan*. The area closure approach integrates site decommissioning and SGP activities. Typically, decommissioning activities will be sequenced to be completed in conjunction with SGP activities. Significant efficiencies (greater than 20%) must be achieved to enable the re-sequencing of implementation schedules to levelize resources while maintaining the end date objectives. In addition, SGP expects to realize additional execution improvements as implementation of the area closure approach develops and matures. The site has proposed a contingency as identified in Section 3.7 in the event sufficient savings are not realized.
- All post-remediation costs will be included in the baseline through FY 2025; any required costs beyond FY 2025 will be the responsibility of another DOE program office.
- For the purposes of achieving Area RODs, the EPA and SCDHEC will accept slabs, facility foundations, and any determined sub-grade structure remaining after facility decommissioning is complete at a risk level of 10 E-04 using an industrial worker scenario.
- 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. If any remediation is necessary scope, schedule, and cost implications will be added in the SGP baseline, as required.
- Addressing the IOUs 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 IOU will have been addressed.

Meeting these assumptions will enable completion of the waste unit, groundwater, and surface water remediation by the end of FY 2025 and support the area closure approach, leading to deletion of the SRS areas from the *NPL*.

Agreements

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

- SRS *FFA* and RODs associated with the *FFA*
- 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
- Comprehensive Cleanup Plan
- Land Use Control Assurance Plan
- Principles of Environmental Restoration
- Core Team Protocols.

Alternatives, Trade-Offs and Risk Management

Alternatives

DOE, EPA, and SCDHEC 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 to managing the remediation program has been in place for nearly a decade. Area closure is a recent example of an alternative approach that was adopted in 2003 and is currently being developed. The area closure 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 SCDHEC through the Core Team, have been identified in the SRS Risk Based End State Vision:

- All soil hazard source terms will be remediated such that any residual hazards or contaminants will be consistent with 10 E-04 – 10 E-06 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 *NPL*. All EM facilities will be demolished or decommissioned in situ such that any residual hazards or contaminants will be consistent with 10 E-04 – 10 E-06 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. For example:

- If new releases or more extensive releases to the environment are identified and included in the SGP scope, then characterization and remediation costs may increase the cost profile. Should additional assessment and remediation be required for the IOUs beyond the minimal actions that are currently planned, the baseline will be increased. If it is determined that the F and H Tank Farms will require remediation then these costs may be additive to the baseline.

- Due to the operational complexity of the high-level waste system and the tank farms, it is not known whether releases to the environment in these areas will require SGP remediation. In addition, these areas have operations plans that extend beyond the next decade. For these reasons, SGP has not included any plans for remediating these areas in this *PMP*. As the high-level waste tank farms near their mission end, SGP will determine if any remediation is necessary and will add scope, schedule, and cost implications in the SGP baseline, as required.

- Currently, the cost profile 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. If SGP is expected to confirm whether the slabs have had a release to the environment, then these costs will be

additive. Likewise, the cost profile may be increased if it is determined that environmental remediation is required for the media around and under these remaining structures, or if remediation is required on the structures themselves. Should the regulatory agencies determine that these remaining structures will require cleanup beyond their 10 E-04 end state, this additional scope will require funding. The schedule and cost profile also assume current plans to leave hardened facilities, such as the reactor buildings and the canyons, in a deactivated in an *in situ* state will be acceptable. If these facilities are required to undergo more extensive physical treatment or regulatory evaluation, the area closure schedule may be affected.

§ Additionally, in some areas, SGP and decommissioning activities will 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 23 months prior to the planned issuance of the Area ROD, then issuance of the Area ROD will be jeopardized. Currently, there are several SRS areas in which special work execution scheduling will be required. One example is L Area. Currently, L Area spent nuclear fuel operations continue until after FY 2019. To complete those operations, decommissioning activities and SGP scope by FY 2025 will require some scope execution to be completed simultaneously.

8.30.8 Performance Monitoring and Evaluation

8.30.8.1 HQ Monitoring and Evaluation

Monitoring of this PBS at the HQ level is completed primarily through use of the Integrated Planning, Accountability, and Budget System (IPABS) system. 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-HQ configuration control. Performance data include the Gold Metrics and the Budget Milestones. Progress toward these measures and any proposed changes to them are provided as follows.

Gold Metrics

The proposed Gold Metrics reflect completion of the SCP cleanup program by the end of FY 2025, consistent with the approved *FFA Appendix E* and the current RCRA Permit. The Project Milestones also reflect completion of the SGP scope by 2025 using the area closure approach which includes cost efficiency improvements and are shown as follows.

SGP Waste Units

Year	Current Baseline	Proposed
Pre FY04	290 (300Actual)	300
FY 2004	13	8
FY 2005	6	4
FY 2006	16	16
FY 2007	8	4
FY 2008	25	27
FY 2009	2	3

FY 2010	5	11
FY 2011	9	7
FY 2012	6	4
FY 2013	8	11
FY 2014	9	7
FY 2015	11	4
FY 2016	14	8
FY 2017	8	6
FY 2018	9	3
FY 2019	4	1
FY 2020	8	6
FY 2021	4	38
FY 2022	6	21
FY 2023	4	13
FY 2024	2	2
FY2025	1	11
Post FY26	44	0
Post FY26	515	515

Basis for Change

The current baseline (June 2003) was developed prior to the area closure approach. The proposed baseline herein integrates decommissioning activities with SGP activities to complete cleanup in entire areas sequentially and accelerates completion of the SGP program to the end of FY 2025.

Project Milestones

These milestones represent the schedule for issuance of interim and final RODs for SGP waste units in accordance with the *FFA FY 2004 Appendix E*.

Year	Current Baseline	Proposed
Pre FY04		
FY 2004	5	5
FY 2005	6	6
FY 2006	2	2
FY 2007	11	11
FY 2008	6	6
FY 2009	1	1
FY 2010	3	3
FY 2011	2	2
FY 2012	1	1
FY 2013	3	3
FY 2014	1	1
FY 2015	3	3
FY 2016	5	5
FY 2017	0	0
FY 2018	4	4
FY 2019	0	0
FY 2020	0	0
FY 2021	6	6

FY 2022	2	2
FY 2023	3	3
FY 2024	1	1
FY 2025	0	0
Lifecycle Total	65	65

Basis for Change

These milestones are consistent with those listed in the *FFA* through 2025 and reflect the area closure approach to completing the SGP scope. These milestones will change as *FFA* schedule modifications occur.

Budget Milestones

Milestone	Current	Proposed
Achieve a field start on the F&H Groundwater Barrier Wall	09/30/2004	09/30/2004
Achieve remedial action start of the General Separations Area Consolidation Unit	09/30/2004	09/30/2004
Achieve remedial action start at the P Area Reactor Seepage Basin	09/30/2004	09/30/2004
Achieve remedial action start for the L Area Hot Shop	09/30/2004	09/30/2004
Complete remedial action at P Area Burning Rubble Pit	09/30/2005	09/30/2005
Complete remedial action at L Area Hot Shop	09/30/2005	09/30/2005
Achieve remedial action start for R Area Reactor Seepage Basin	09/30/2005	09/30/2005
Complete remedial action for the TNX Area	09/30/2006	09/30/2006
Achieve field start for R Area ROD	09/30/2006	09/30/2006

Basis for Change

Not applicable, as there is no change.

8.30.8.2 Site Monitoring and Evaluation

Gold Metrics are tracked on a monthly basis and SGP performance is tracked against those metrics. In addition, performance is evaluated through the weekly Change Control Board meetings and the Monthly Project Review. Monthly performance is evaluated and reported through a formal process where Key Performance Indicators (KPIs) are tracked and reported. The KPIs, along with specific SGP reported items include:

- Safety and security
- Technical capability and performance
- Community, state and regulator relations (specific to SGP is the Environmental Compliance Index)
- Cost effectiveness

§ Contract performance (specific to SGP is the soil and groundwater closure risk reduction and the soil and groundwater release site completions).