Area Completion Projects

Program Overview

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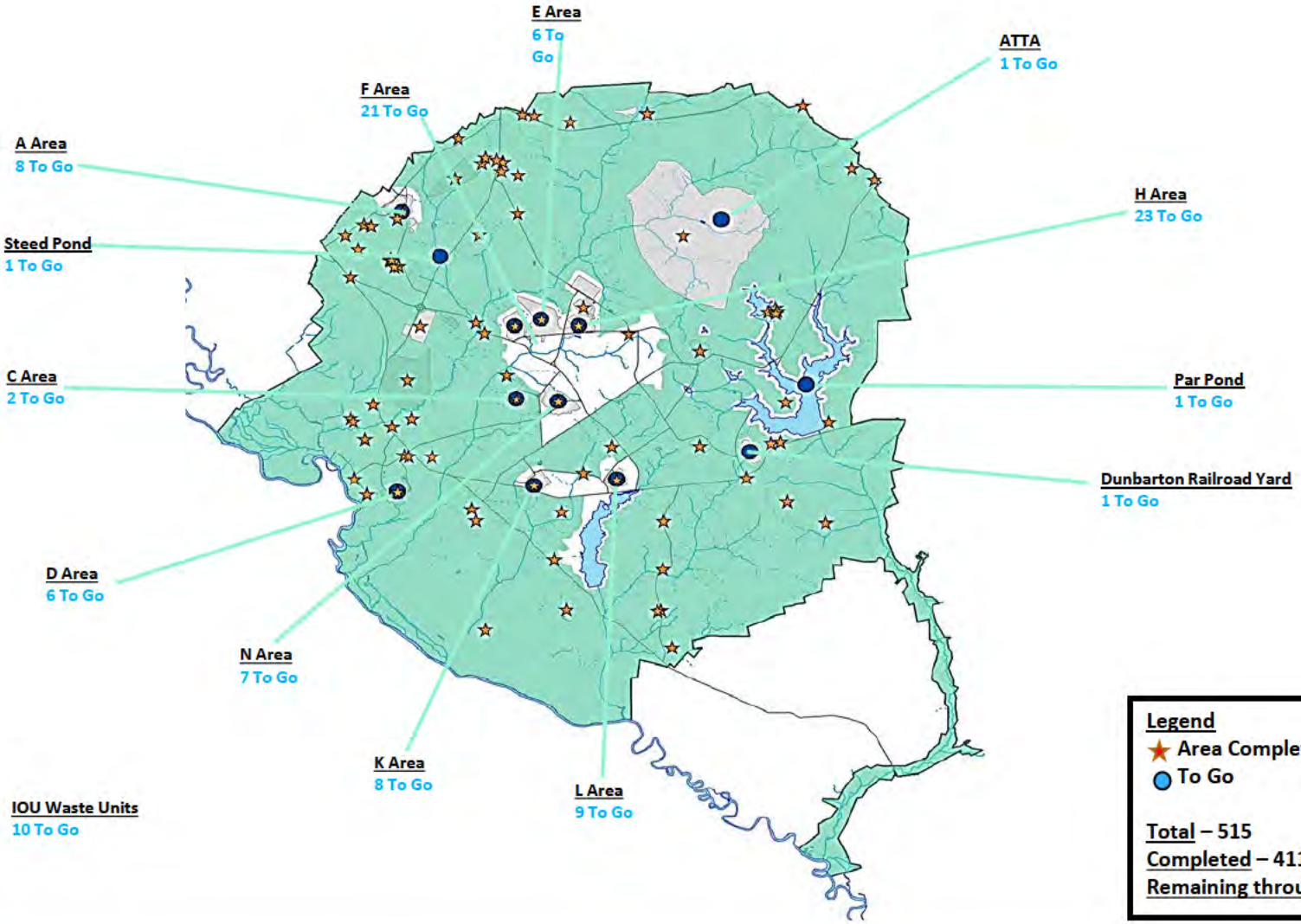
SRS Citizens Advisory Board
September 2020

WHAT WE DO?

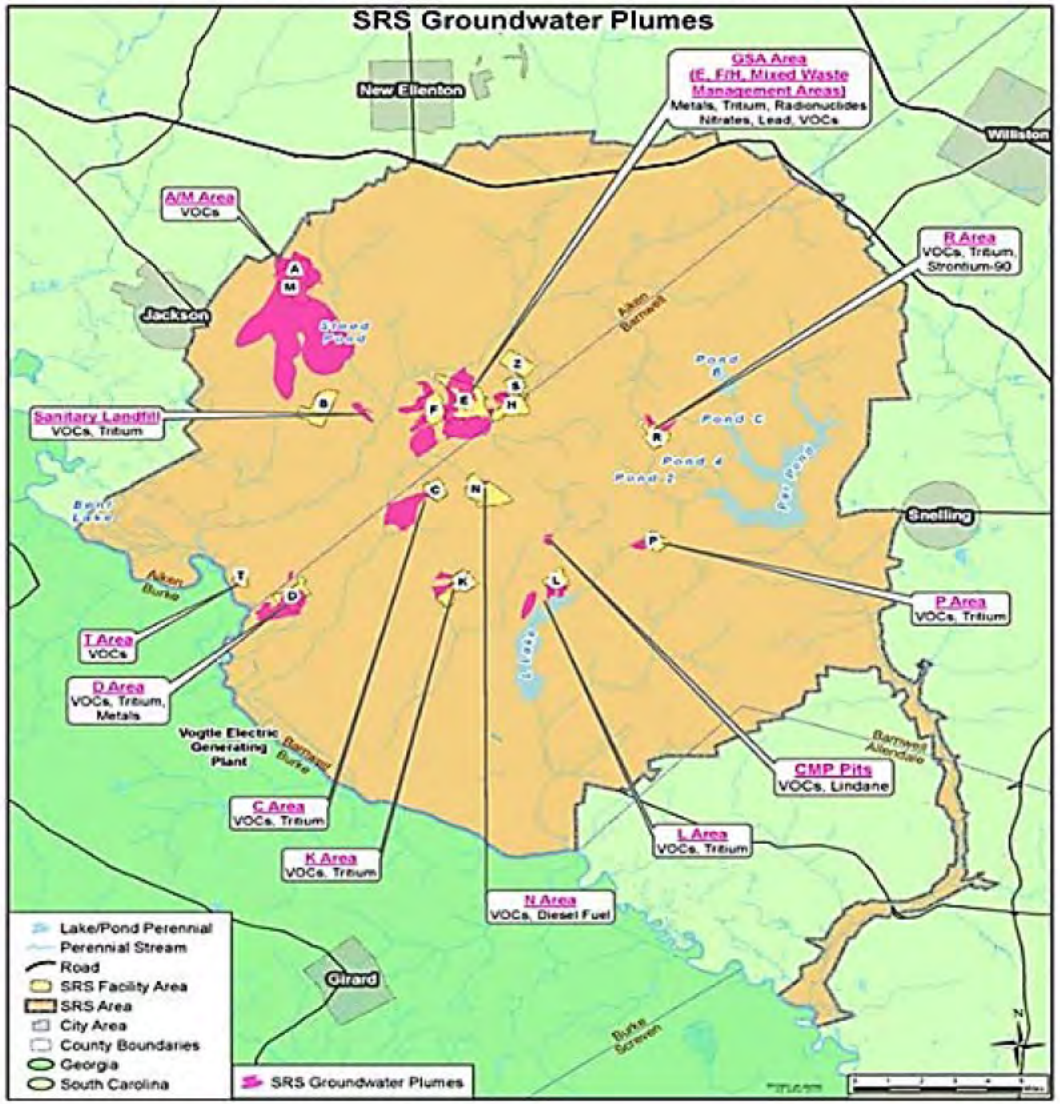
- Objectives
  - Remediate contaminated soil, surface water, and groundwater
  - Decommission inactive facilities after they have been deactivated by the operating organization
  - Prevent offsite migration of contamination in groundwater and surface water/sediments
- To Date
  - 411 of 515 waste units completed
    - *Remedy selected, including No Action, and systems operating as required*
    - *18 groundwater plumes being evaluated and/or remediated*
    - *5 major Savannah River Site (SRS) streams and the Savannah River*
    - *73 waste units required post-closure care*
  - 296 of 1127 facilities decommissioned
  - 38 remediation systems operational (3 active, 14 low energy, 21 passive)
  - 5 of 14 Areas Closed
    - *T Area, M Area, R Area, P Area, and B Area*
  - As of August 31, 2020, Area Completion Projects has achieved all 3,924 Federal Facility Agreement (FFA) milestones and Resource Conservation and Recovery Act (RCRA) Permit commitments on or ahead of schedule

WHAT WE DO? (CONTINUED)

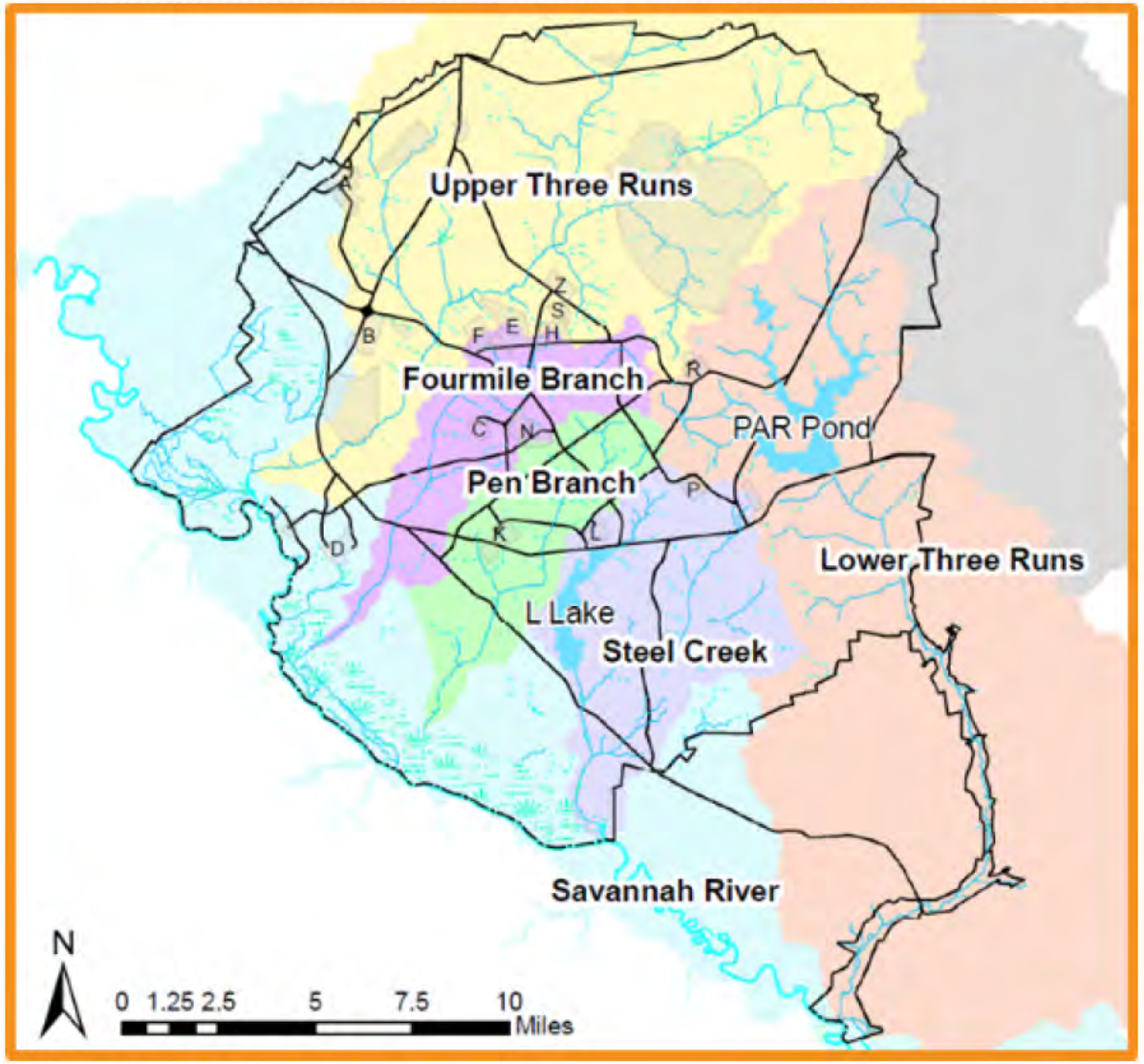
- 85% of the Site's area is cleaned to industrial standards (Green)
- Remaining contamination areas primarily within the core of the Site



WHAT WE DO? (CONTINUED)

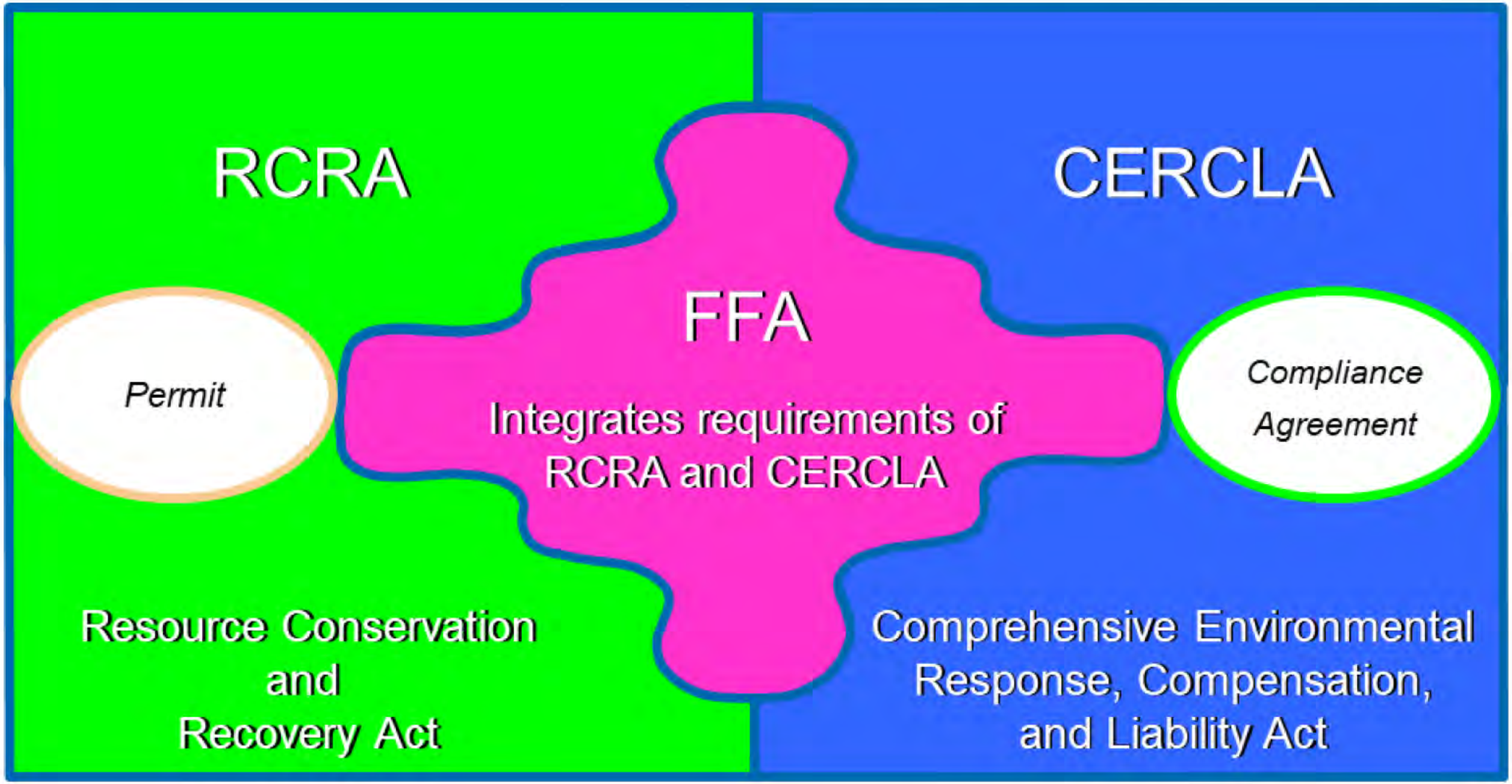


WHAT WE DO? (CONTINUED)



- **SRS streams were added to the FFA in Fiscal Year 1997**
- **"Integrator Operable Units" (IOUs) include surface water, sediment, floodplain soils, and biota (plants and animals)**
  - Include large reservoirs L-Lake and PAR Pond

WHY DO WE DO IT?



WHY DO WE DO IT? (CONTINUED)

- RCRA (Resource Conservation and Recovery Act of 1976)
  - Regulates the management of both hazardous and non-hazardous solid waste (including the treatment, storage, and disposal of hazardous waste)
  - Requires corrective action for releases of hazardous waste or hazardous constituents (chemicals, not radionuclides)
  - Cleanup of abandoned waste sites / solid waste management units (SWMUs)
- Authority to administer RCRA is delegated to South Carolina Department of Health and Environmental Control (SCDHEC) by U.S. Environmental Protection Agency (EPA)
- SCDHEC issues SRS RCRA Permit Renewal and addresses:
  - Post closure care and maintenance of closed RCRA hazardous waste management facilities (HWMFs) (e.g., M-Area and Metallurgical Laboratory HWMFs, F-Area HWMF, H-Area HWMF, Mixed Waste Management Facility, and Sanitary Landfill)
  - RCRA SWMUs (e.g., waste units)
    - *Addressed through the FFA process*
    - *RCRA permit renewal inclusive of all remedial decisions reached for SWMUs*

WHY DO WE DO IT? (CONTINUED)

CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act of 1980)

- Protects human health and the environment from releases or threatened releases of hazardous substances (radionuclides and chemicals)
- Provides for the cleanup of abandoned and uncontrolled waste sites, as well as responsibilities for addressing the release of hazardous substances to the environment
- Requires the owner of any federal facility placed on the EPA National Priority List (NPL) to negotiate an FFA to integrate RCRA and CERCLA requirements to govern the cleanup process
- Cleanup remedies and end states are contained within CERCLA Records of Decision
  - *Documents signed by EPA, DOE, and SCDHEC declaring cleanup decisions after public review and comment on proposed remedy*
  - *Legally-binding documents*
- Some early cleanup actions are taken before a Record of Decision is issued
  - *Removal actions under DOE's Lead Agency authority*

WHY DO WE DO IT? (CONTINUED)

Federal Facility Agreement

- Established August 1993
  - *A legally binding agreement among DOE, EPA, and SCDHEC*
  - *Includes administrative requirements, enforceable schedules, and milestones for actions and documents*
  - *Lists the RCRA/CERCLA waste units and other potential releases that must be addressed, and describes a process for any additional ones*
  - *Includes requirements for Removal from Service of 24 of the SRS Liquid Waste tanks*
  - *Spells out authorities and responsibilities of the three agencies and procedures for resolving disputes*
- Appendices (these require annual updates)
  - *C: RCRA/CERCLA Units List*
  - *D & E: Current year milestones and Long-term projections (out-year milestones)*
  - *G: Site Evaluation List*
  - *H: RCRA Permitted Facilities and SWMUs*
  - *K: D&D Facilities*

WHY DO WE DO IT? (CONTINUED)

The Federal Facility Agreement and Supporting Documentation, including Federal Facility Annual Process Report for Fiscal Year 2019, Land Use Control Assurance Plan, Savannah River Site Community Involvement Plan, etc. is available online at:

http://www.srs.gov/general/programs/soil/ffa/ffa.html

The Federal Facility Agreement for the Savannah River Site is available at:

http://www.srs.gov/general/programs/soil/ffa/ffa.pdf

WHY DO WE DO IT? (CONTINUED)

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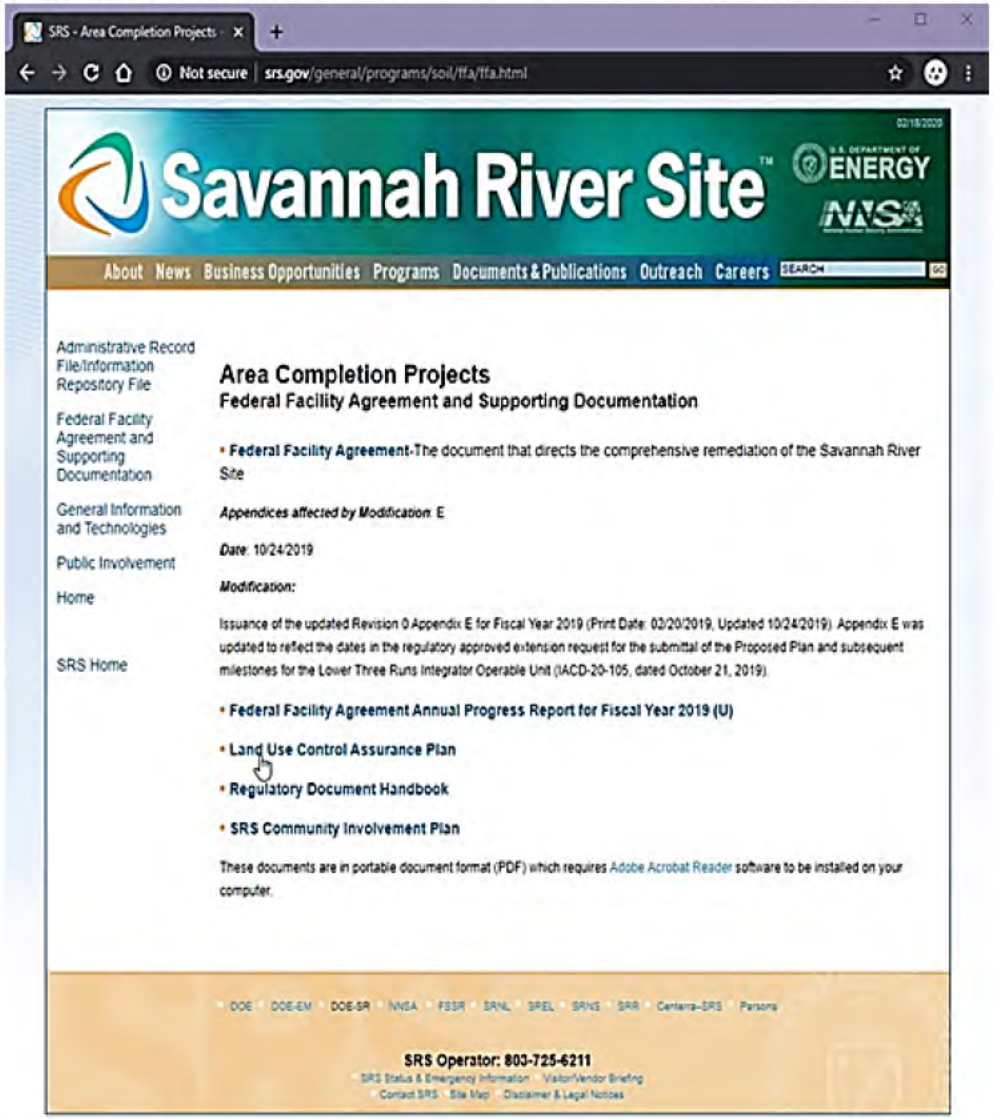

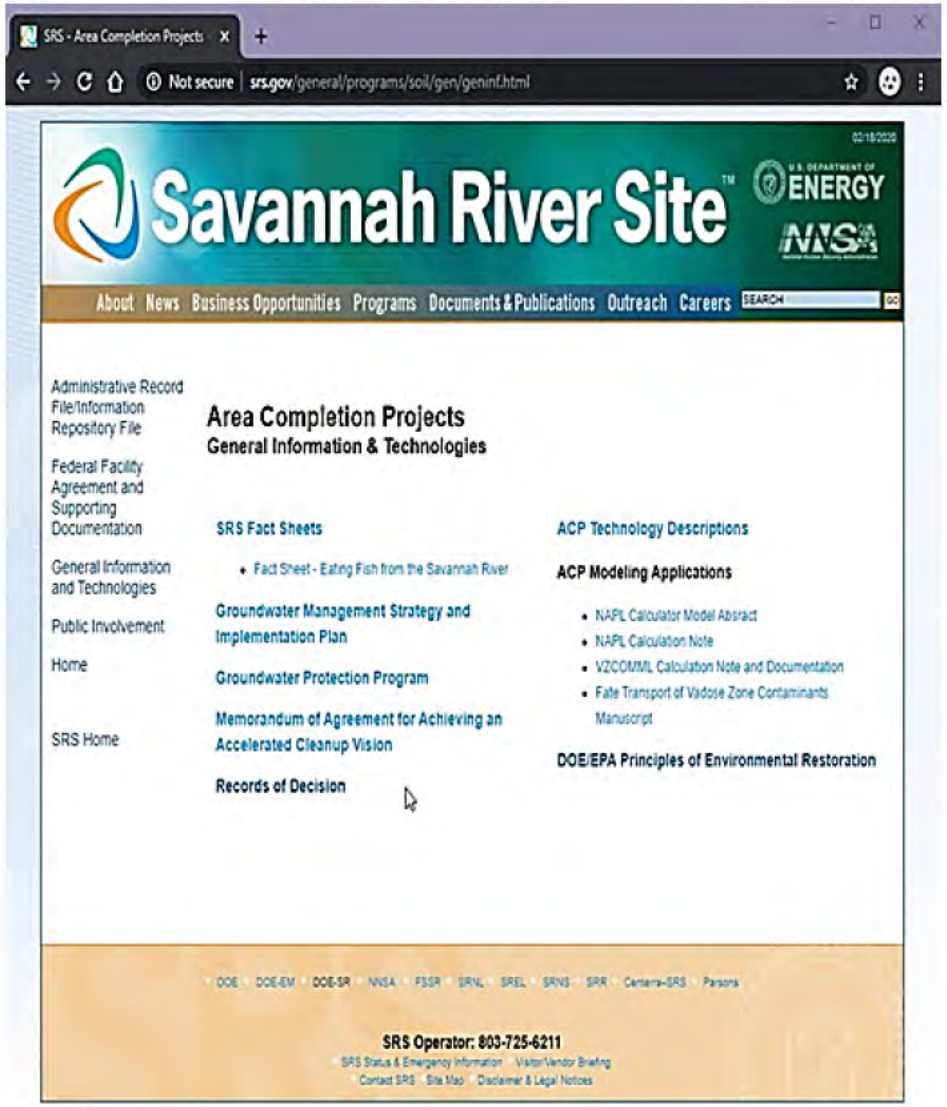

WHY DO WE DO IT? (CONTINUED)

SRS has begun the process of posting the Administrative Record File/Information Repository File (ARF/IRF) on the SRS external web page. The ARF/IRF web page contains an Index of Documents and the initial group of portable document format (PDF) records that are dated between October 1, 2017 and July 31, 2020. More records will be added during quarterly updates.

The ARF/IRF is available online at:

http://www.srs.gov/general/programs/soil/arf/arfirf.html

WHY DO WE DO IT? (CONTINUED)

03/31/2020

Seventy Years of Service

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Administrative Record File/Information Repository File

Federal Facility Agreement and Supporting Documentation

General Information and Technologies

Public Involvement

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Area Completion Projects

Administrative Record File/Information Repository File (ARF/IRF)

Index of documents contained in the ARF/IRF, which are available at the University of South Carolina Libraries - Aiken and Columbia on CD. This index is in PDF (portable document format) which requires Adobe Acrobat Reader software to be installed on your computer.

PDFs of documents contained in the ARF/IRF from 10/1/2017 through 7/31/2020 are located here. The PDFs will be updated approximately once per quarter. Historical PDFs will be added at a later date.

Disclaimer - The scanning process used to transfer documents into the portable document format may unintentionally create minor inaccuracies in the text. The viewer is warned that minor spelling errors may occur and numerical data may be missing decimal points or exponential values. Should the viewer have any questions regarding a particular section of text, an accurate hardcopy is always available from the Area Completion Project Document Control at the Savannah River Site, LeAnne Barkley at 803-725-5633

Introduction

The Administrative Record File contains the documents and information considered or relied on in the selection of a response action and in controlling hazardous waste management activities. At the Savannah River Site, the Administrative Record File will fulfill the requirements of Section XXXIV, Administrative Record, of the Federal Facility Agreement (FFA).

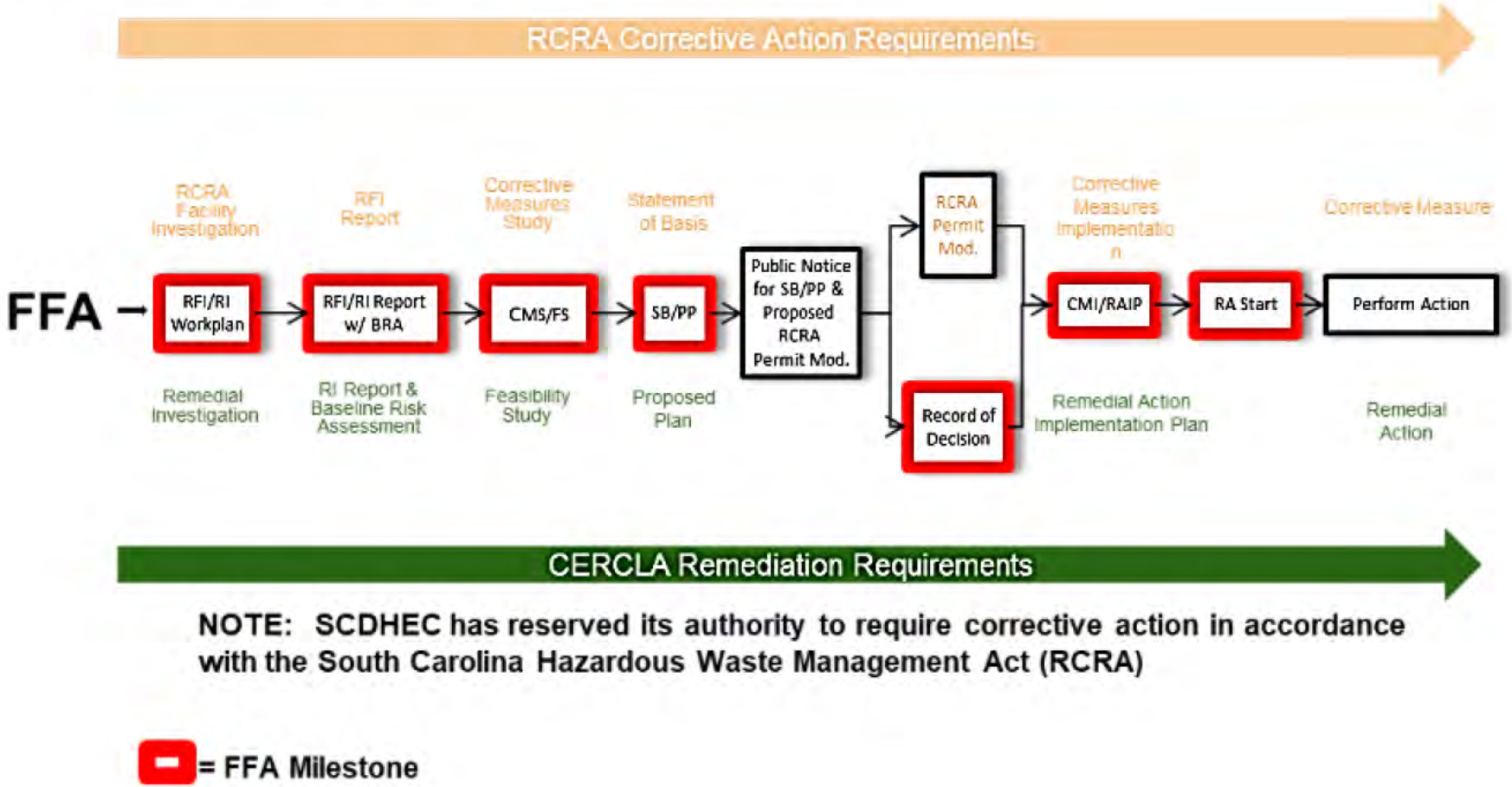
An Administrative Record File for an individual waste unit is initiated upon the approval by the EPA-IV and the SCDHEC of an RFI/RI Work Plan. The File is compiled until the decision of the response action is chosen (the signing of the Record of Decision). At that time the Administrative Record File is finalized and is called the Administrative Record for that waste unit.

An Administrative Record serves two primary purposes. First, it is a vehicle for public participation in the selection of the response action. Section 113(k)(2) of CERCLA provides the public with an opportunity to participate in a response decision. The Administrative Record makes available the information considered or relied on in the selection and provides the opportunity for public involvement. Without opportunity for this involvement of interested persons, the limitation of court review solely to the Administrative Record can be challenged. Therefore, the Administrative Record will also record the public participation in the decision process and reflect the views of members of the public.

The second purpose of the Administrative Record is concerned with the presentation of evidence in the event of litigation. Judicial review of any issue concerning the adequacy of a response selection is limited to the Administrative Record. Under section 113(j)(2) of CERCLA, the trial court reviewing the selected response decision is limited the facts as set out in the Administrative Record. The Courts will not allow the use of discovery, hearings or additional fact findings unless the Administrative Record is found to be incomplete or poorly prepared. Provided the Administrative Record is adequate, the court will limit its review of the response decision made to the standard of arbitrary and capricious or otherwise not in accordance with the law. The Administrative Record should therefore chronicle the response decision process, whereby a judge could easily follow how and why a decision was made.

An Information Repository File contains information and documents that do not meet the definition of Administrative Record Files but that contain site and unit information, documents on site and unit activities, and general information.

RCRA/CERCLA Integration Process

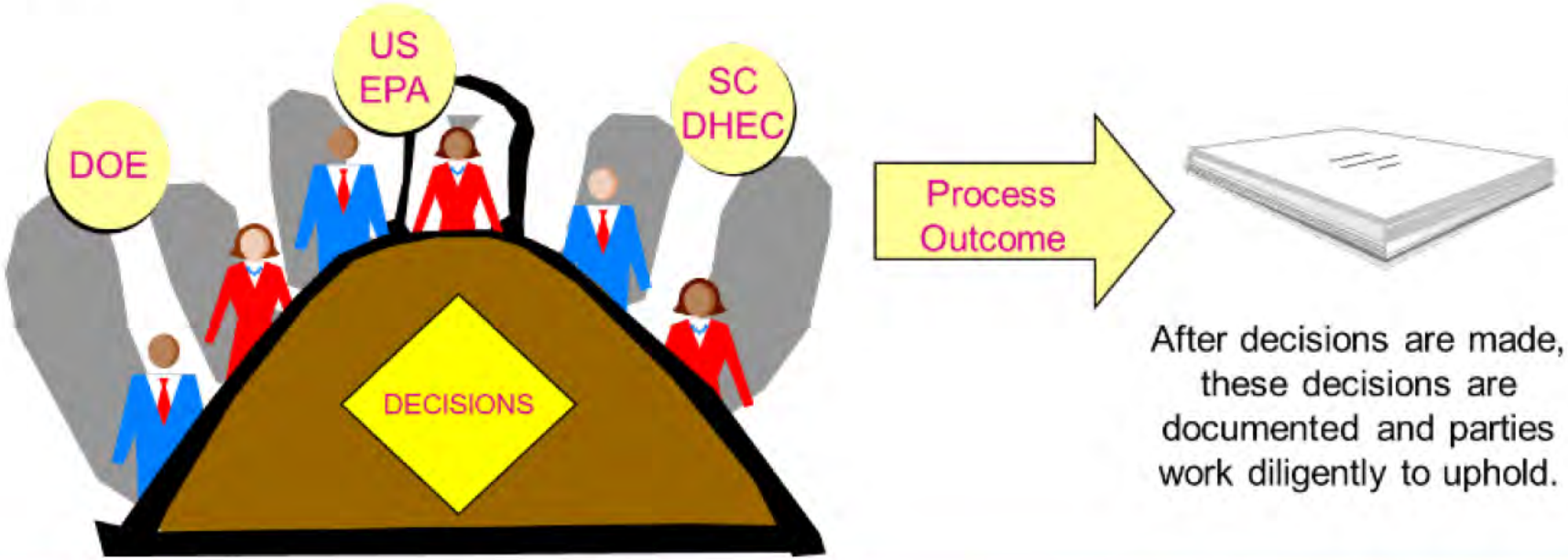


NOTE: SCDHEC has reserved its authority to require corrective action in accordance with the South Carolina Hazardous Waste Management Act (RCRA)

= FFA Milestone

Core Team Process

- SRS is held up as the model in the DOE Complex for implementing a cleanup program with decisions that are technically risk-driven, cost effective and achieve incremental progress.
- DOE, EPA, and SCDHEC work collaboratively to develop and implement sound remediation approaches, avoid disputes
- Open communication produces common understanding of data (site conditions), and generally leads to consensus on needed actions



HOW DO WE DO IT AND HOW ARE WE DOING? (CONTINUED)

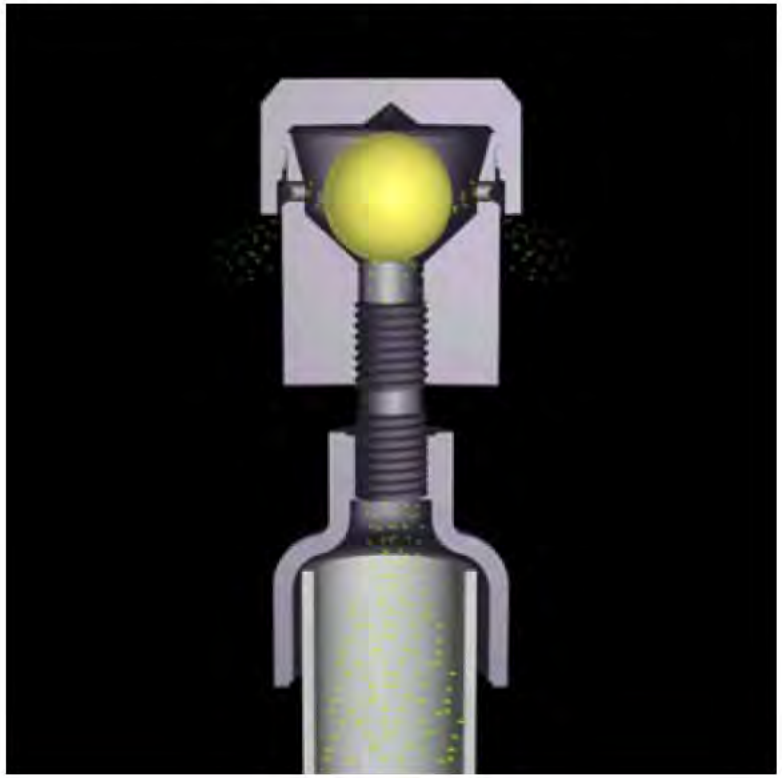
Types of remedies as selected by DOE, EPA, and SCDHEC

- No Action
- Land Use Controls (LUCs)
  - *Institutional controls (i.e., administrative controls) and engineering controls*
  - *Can include monitoring, maintenance, reporting, access restrictions, signage, fencing, and land use restrictions*
- Soil
  - *Removal and Disposal*
  - *Covers to prevent exposure*
  - *Caps to prevent exposure AND infiltration*
  - *Heating (electrical and steam) to vaporize volatile organic compounds (VOCs) for extraction*
  - *Soil vapor extraction (high energy active systems to low-energy systems such as BaroBalls™ and MicroBlowers™)*
- Groundwater
  - *Barrier walls with treatment zones*
  - *Monitored natural attenuation or mixing zones*
  - *Permeable treatment barriers*
  - *Pump-and-treat (i.e., air stripping to remove VOCs)*
  - *Passive (enhanced) – Bioremediation of VOCs*

HOW DO WE DO IT AND HOW ARE WE DOING? (CONTINUED)

BaroBalls™

- When the subsurface pressure is higher than at ground surface, contaminants naturally more upward through venting well.
- When the above ground pressure is greater, air is prevented from traveling down by a simple plastic sphere.

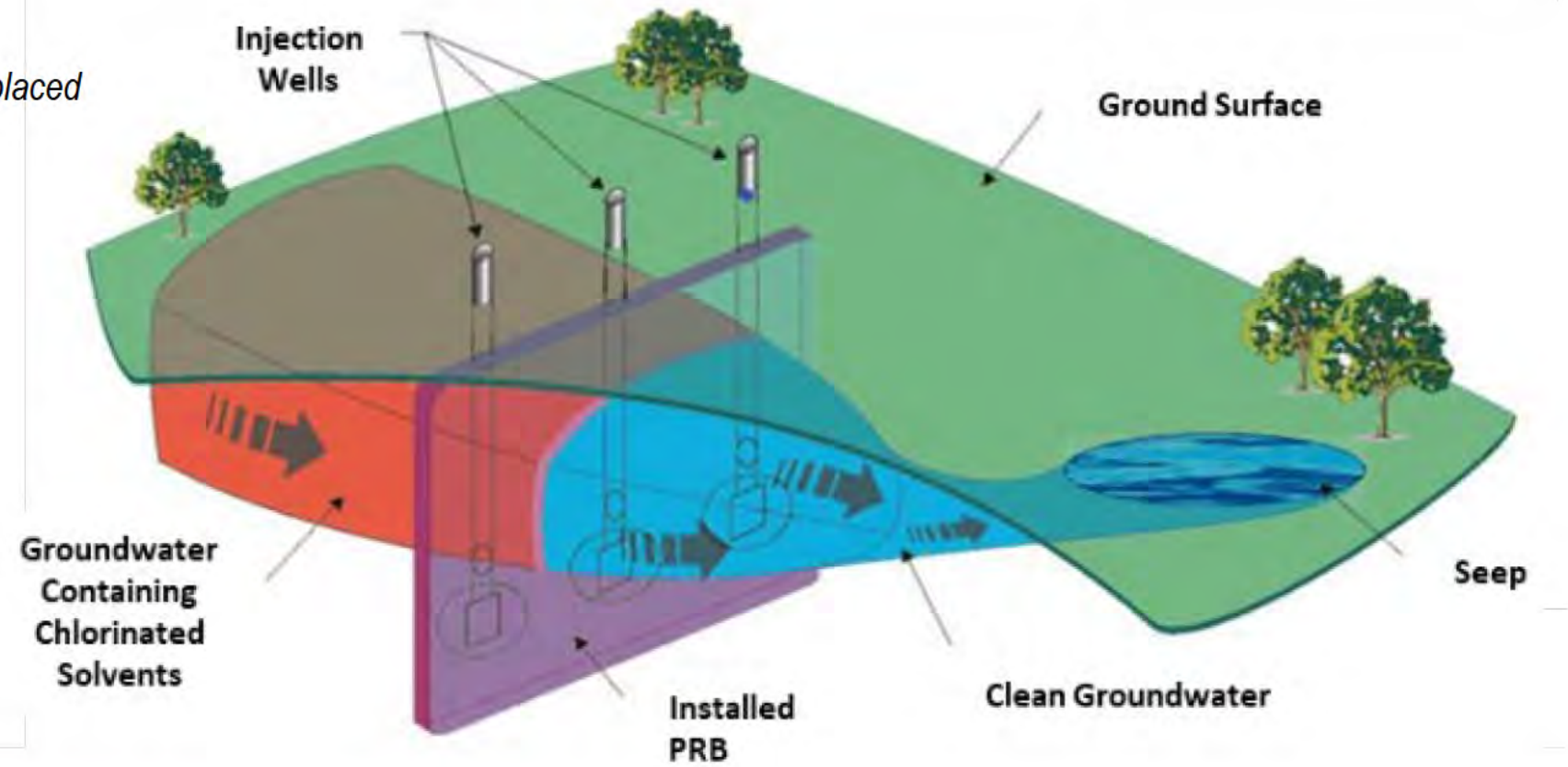


Photovoltiac Powered MicroBlower™ Configuration

P-Area Groundwater Permeable Reactive Barrier (PRB)

– Design Attributes

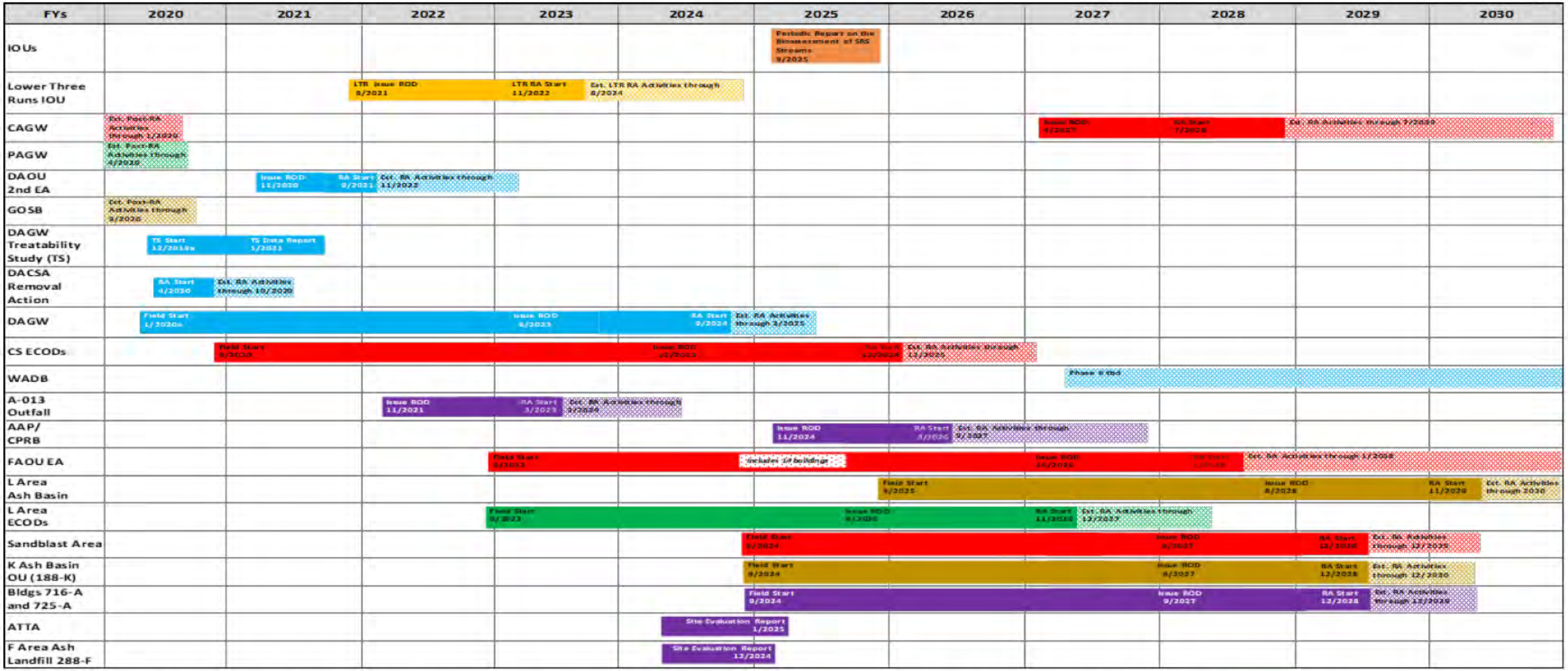
- *264 ft long*
- *22 injection wells*
- *760 tons of zero-valent iron emplaced*
- *Depth from 45 ft to 135 ft*



System Plan

- Fiscal Years 2020 to 2030
- Thirteen major projects are expected to require funding during the planning period
  - *Stormwater Outfall A-013*
  - *A-Area Ash Pile & Coal Pile Runoff Basin*
  - *C-Area Groundwater*
  - *Central Shops Early Construction and Operational Disposal Site (ECODs) N-1, Central Shops Scrap Lumber Pile, Building 690-N, Process Heat Exchanger Repair Facility (Ford Building)*
  - *D-Area Groundwater*
  - *D-Area Coal Storage Area (484-17D)*
  - *D-Area Groundwater Treatability Study*
  - *Wetland Area at Dunbarton Bay – Phase II*
  - *F-Area Operable Unit (14 building remnants)*
  - *G-Area Oil Seepage Basin*
  - *Lower Three Runs Integrator Operable Unit*
  - *L-Area ECODs*
  - *P-Area Groundwater*

CURRENT AND NEAR-TERM CLEANUP WORK (CONTINUED)



Acronyms

AAP/CPRB – A-Area Ash Pile (788-A)/A-Area Coal Pile Runoff Basin (788-3A)
ATTA - Advanced Tactical Training Area Firing Ranges
CAGW – C-Area Groundwater
CS - Central Shops
DAGW – D-Area Groundwater
DACSA - D-Area Coal Storage Area (484-17D)
DAOU - D Area Operable Unit
EA - Early Action
ECODs – Early Construction and Operational Disposal Site
FAOU - F Area Operable Unit
FMB - Fourmile Branch
FYs - Fiscal Years
GOSB – G-Area Oil Seepage Basin
IOU - Integrator Operable Unit
LTR - Lower Three Runs
PAGW – P-Area Groundwater
PB - Pen Branch
RA - Removal Action or Remedial Action
ROD – Record of Decision
SC - Steel Creek
SRFS – Savannah River and Floodplain Swamp
UTR - Upper Three Runs
WADB – Wetland Area at Dunbarton Bay

G-Area Oil Seepage Basin (GOSB) Operable Unit

- Basin was approximately 0.4 acres and up to 10 ft. deep
- Basin was constructed for liquid waste disposal during SRS plant construction (1951 to 1956) and later received sanitary wastewater from treatment plants in Central Shops in the early 1990s.
- Investigation of the GOSB found low levels of pesticides and herbicides in the soils at the bottom of the basin.
- Remediation of the basin began in September 2019 and was completed in December 2019.
- Basin was filled with 1,400 tons of stone, followed by 7,000 cubic yards of dirt, and then capped with grass sod.

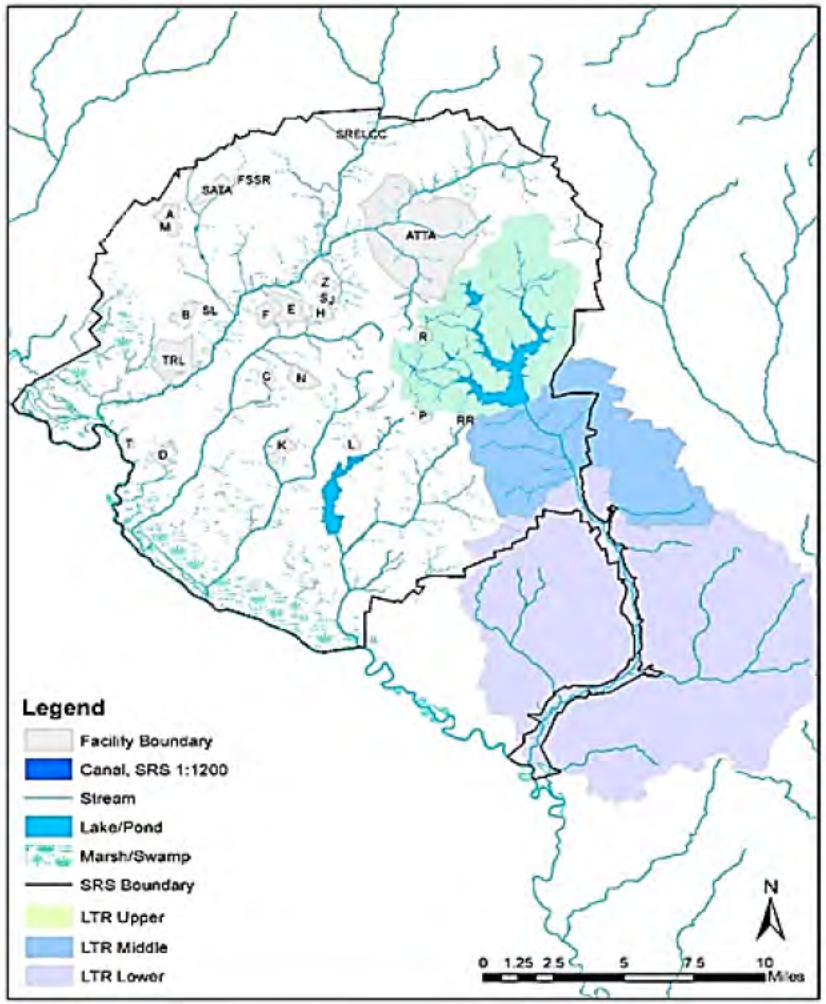
GOSB - Before

GOSB - After

Mixed Waste Management Facility Phytoremediation – Collection Pond with Irrigation

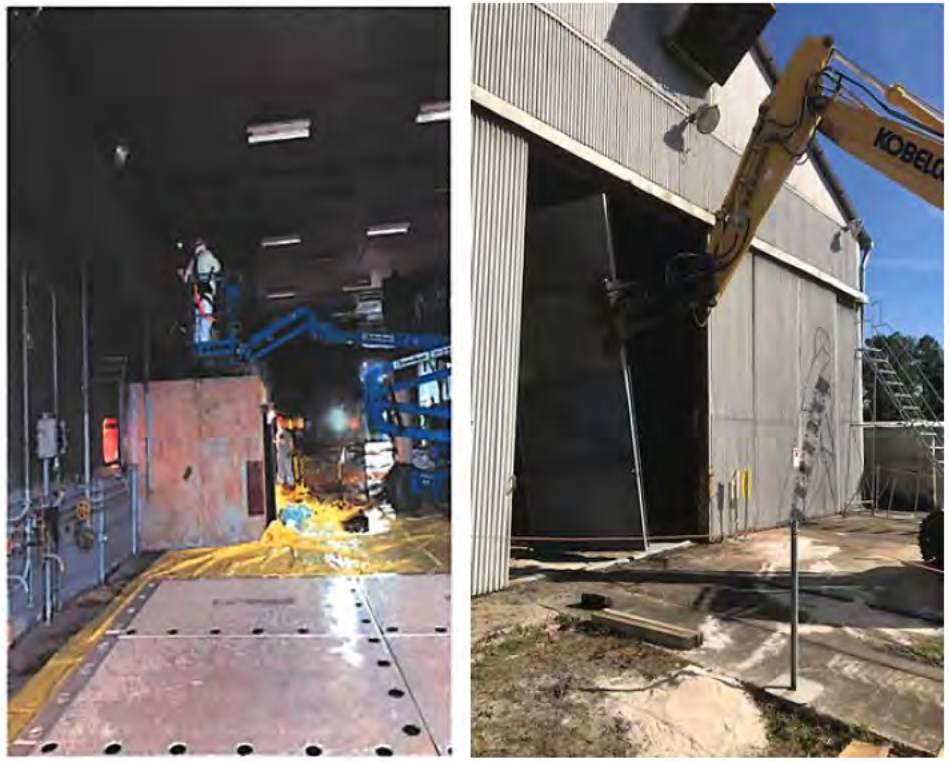
- RCRA Permitted Corrective Action
- Simple "green" solution
- Irrigation started in October 2000 as an interim corrective measure
- Reduced tritium entering Savannah River by 65% or better to date, near remedial goal of 70% reduction of tritium influx to Fourmile Branch

Lower Three Runs IOU – R-Area Discharge Canal



Building 690-N, Process Heat Exchanger Repair Facility

Building 690-N (Pre-D&D)



Building 690-N Deactivation Photos

Deactivation Photos

- Preparation for deactivation of the airlock – checking material to determine removal and disposition; foreground shows floor covering material to protect the slab from equipment (photo on the left)
- Grapple is removing doors to provide equipment access to the building interior and the laydown and waste container staging areas outside the building (photo on the right)

D-Area Coal Storage Area (484-17D)

Field Activities – Mid-May 2020

- Very low-pH soil has been acidified by coal storage (~65 years), causing shallow groundwater acidification and contamination with metals from coal and native soil
- Removal action start for 484-17D was achieved on May 5, 2020, with the installation of the stormwater pollution prevention controls along the perimeter of the excavation area.
- Excavation and addition of soil amendment began May 12, 2020. As of August 2020, nine of twelve acres are completed. Soil amendment is ongoing in the tenth acre.
- ACP has taken several soil pH samples and verified the effectiveness of the amendment.
- Construction activities will be ongoing until November 2020.

Ash Disposition Evaluation

- DOE is developing a comprehensive evaluation for the disposition of the remaining coal ash at SRS in A-, D-, F-, H-, K-, L-, and P-Areas
- Potential Options on-site (in-place or consolidated) and off-site (landfill disposal or beneficial re-use)
- DOE, EPA, and SCDHEC will be discussing these options during calendar year 2020
  - *First meeting was held on August 12, 2020*
    - Purpose of the meeting was to discuss and agree upon the preliminary range of alternatives
  - *Second meeting is tentatively planned for October 2020 to December 2020 timeframe*
    - Purpose is to present the preliminary results of the evaluation with the objective of reaching agreement on the path forward for ash disposition

QUESTIONS?