



U.S. DEPARTMENT OF
ENERGY



Overview of the Savannah River Site's 2020 Annual Site Environmental Report (ASER)

Matt Baker,

DOE Environmental Quality Management

Teresa Eddy,

SRNS Environmental Monitoring Program Manager

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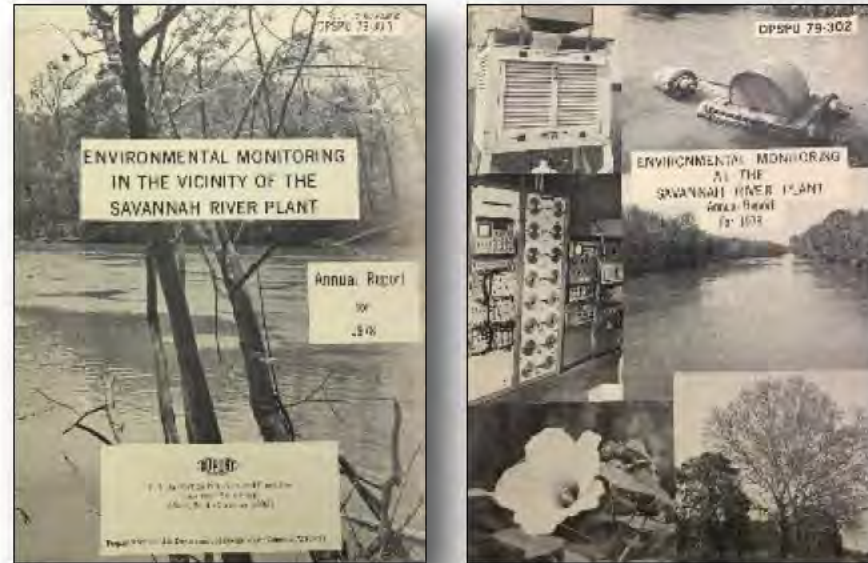
Presentation Outline

- SRS Environmental Report: Background
- 2020 SRS Environmental Report: Highlights
- 2020 ASER Summary Report
- Summary



SRS 2020 Annual Site Environmental Report: Background

- Annual Site Environmental Reports (ASERs) are required by U.S. Department of Energy (DOE) Order 231.1B, *Environment, Safety, and Health Reporting*, to provide the public and stakeholders information on:
 - Environmental program performance
 - Sitewide environmental monitoring and surveillance effectiveness
 - Meets requirements of DOE Order 458.1, Radiation Protection of the Public and the Environment
 - Compliance status with environmental standards and requirements
- SRS began publishing the ASER in 1959.



Cover (left) and Inside Page (right) of 1978 ASER

SRS Annual Site Environmental Report for 2020: Cover

- *Savannah River-Silver Bluff Audubon*, taken by Philip Monaco, Savannah River Remediation
- *Coreopsis*, taken by Steve Ashe, SRS Photographer



SRS Annual Site Environmental Report for 2020: Format

- **Topics Covered in Report**
 - Environmental Management Systems
 - Environmental Compliance Summary
 - Nonradiological Environmental Monitoring Program
 - Radiological Environmental Monitoring Program
 - Radiological Dose Assessments
 - Groundwater Management Program
 - Quality Assurance
- **SRS Environmental Report Summary:**
 - Highlights SRS accomplishments
 - Provides ASER overview
 - Features articles focused on the SRS history and current commitments to environmental restoration and management

<http://www.srs.gov/general/pubs/ERsum/index.html>



Chapter 2 – Environmental Management System Highlights

Emphasis: Environmental Sustainability

- During 2020 SRS recycled 48% (278 metric tons) of nonhazardous solid waste.
- SRS reduced greenhouse gas emissions 82% since 2008.
- SRS exceeded fleet management goals with 87% of current fleet of light-duty vehicles being hybrid, electric, or powered by E85 fuel.
- During 2020, energy intensity dropped 17%.
 - The increase in telework due to the COVID-19 pandemic contributed to this reduction.



Chapter 3 – Compliance Summary Highlights

Emphasis: How SRS performs against environmental requirements

- **In 2020 and through the COVID-19 pandemic, SRS remained compliant with all applicable environmental regulations, permits, federal agreements, and DOE Orders.**
 - Completed the cleanup of one waste unit during the 2020 fiscal year, and work continued on eight additional units during this time. By December 2020, the Site completed 411 of the Site's total 515 waste units.
 - Received DOE 2020 Project Management Excellence Award for remediating two coal ash basins and a coal pile basin.
- **Received one NOV for exceeding the NPDES permit limit for ammonia-nitrogen at Outfall G-10 with no fines or penalties**



Before: Aerial of D Powerhouse Coal Pile Remediation



After: Aerial of End State of D Powerhouse Coal Pile Remediation

Environmental Monitoring (EM) Program Purpose

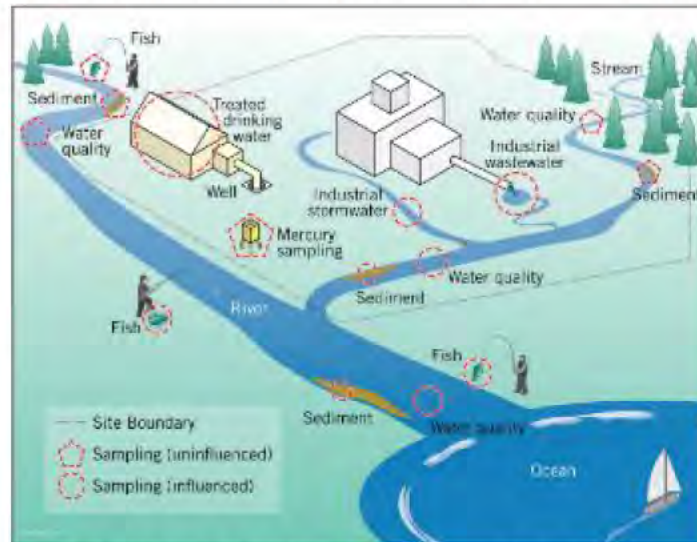
Emphasis for Chapters 4 and 5 Environmental Monitoring is twofold:

- **Effluent Monitoring**

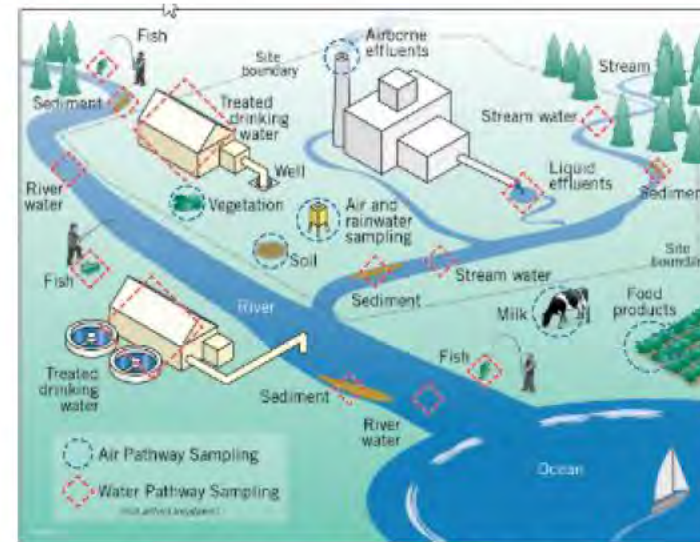
- Monitoring at the points of release to the environment
- Compliance with applicable permitted/regulated activities and DOE requirements

- **Environmental Surveillance**

- Compliance with DOE requirements to monitor effects of SRS operations beyond effluent, from the surrounding environment – on and offsite



Nonradiological EM Sample Types



Radiological EM Sample Types

Chapter 4 – Nonradiological Environmental Monitoring Program Highlights

- **Effluent Monitoring Results**
 - SRS complied with NPDES Industrial Wastewater and Industrial Stormwater Permits.
 - *SRS discharges did not negatively impact the water quality in onsite streams or the Savannah River*
 - SRS complied with Air Permits.
- **Onsite Drinking Water**
 - SRS complied with all SCDHEC and EPA water quality standards for drinking water systems.
- **Environmental Surveillance Results**
 - Water Quality, sediment, and fish samples indicated levels comparable to the previous 5 years and to the background control locations.
 - *SRS added flathead catfish to the freshwater fish program.*



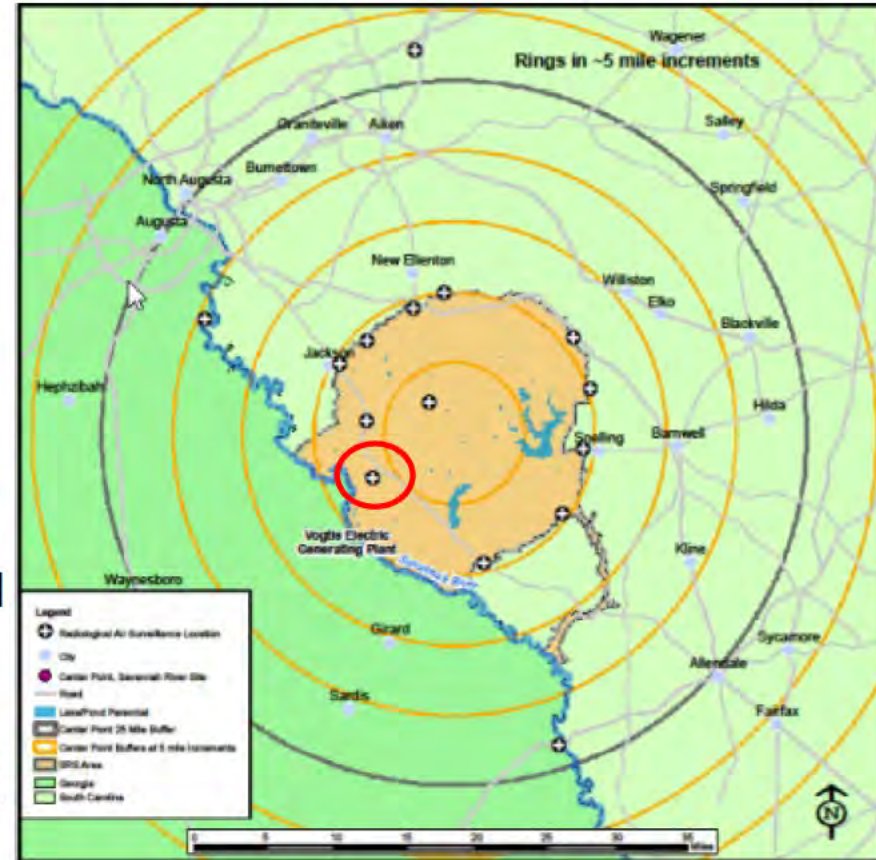
Collecting a Low-level Mercury Sample



Fish Sampling

Chapter 5 – Radiological Environmental Monitoring Program Highlights

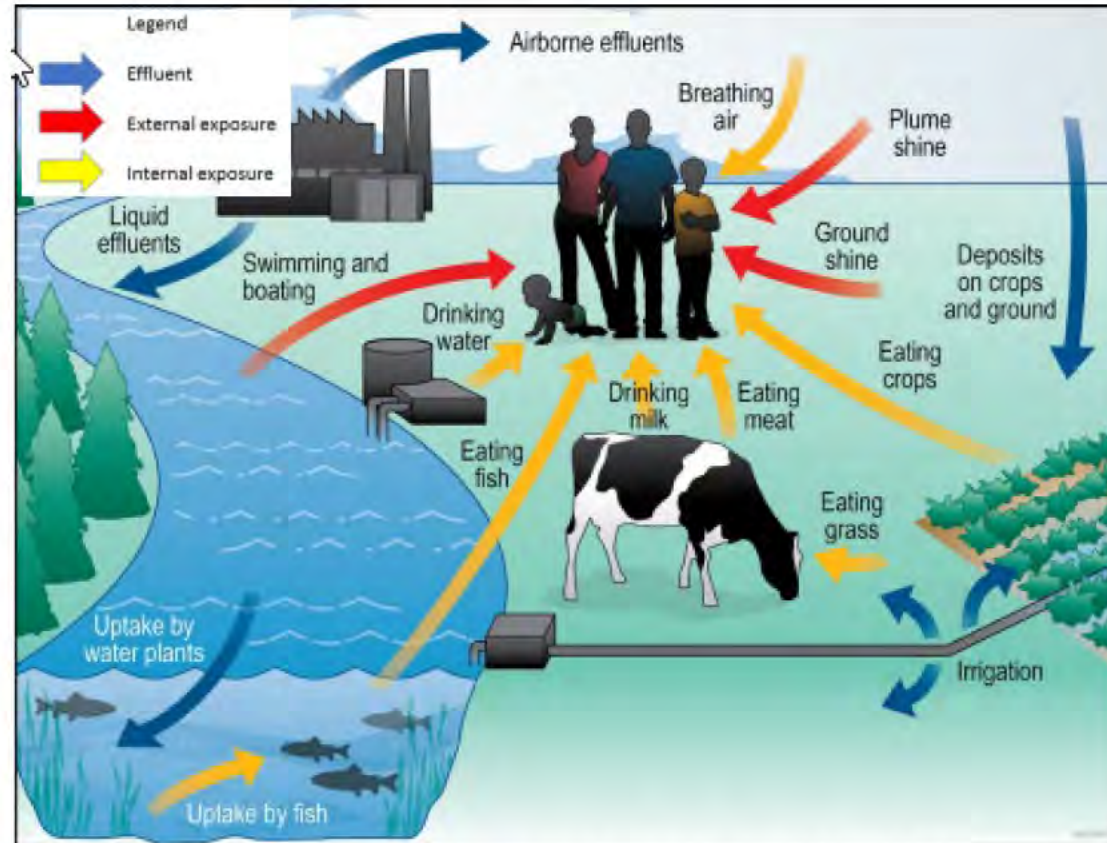
- **Effluent Monitoring Results**
 - Radiological liquid effluent releases met DOE Requirements
 - Radiological Air Effluent Results met EPA's NESHAP Requirements
- **Environmental Surveillance Results**
 - Radiological results for surveillance media associated with air and water pathways, and terrestrial foodstuffs were within historical trends and comparable to background control locations .
 - *SRS released all 347 deer, feral hogs, and coyotes to hunters in 2020 during wildlife hunts. All were below the 22 mrem SRS Administrative Game Animal Release Limit.*



Chapter 6 – Radiological Dose Assessment Highlights

Emphasis: Radiological Dose Assessments confirms compliance and protects the public from the effects of radiation from SRS activities.

- For 2020, the potential representative person all-pathway dose was 0.36 mrem, 0.36% of the 100 mrem/year DOE dose limit.
 - 0.012 mrem from air pathways
 - 0.35 mrem from liquid pathways

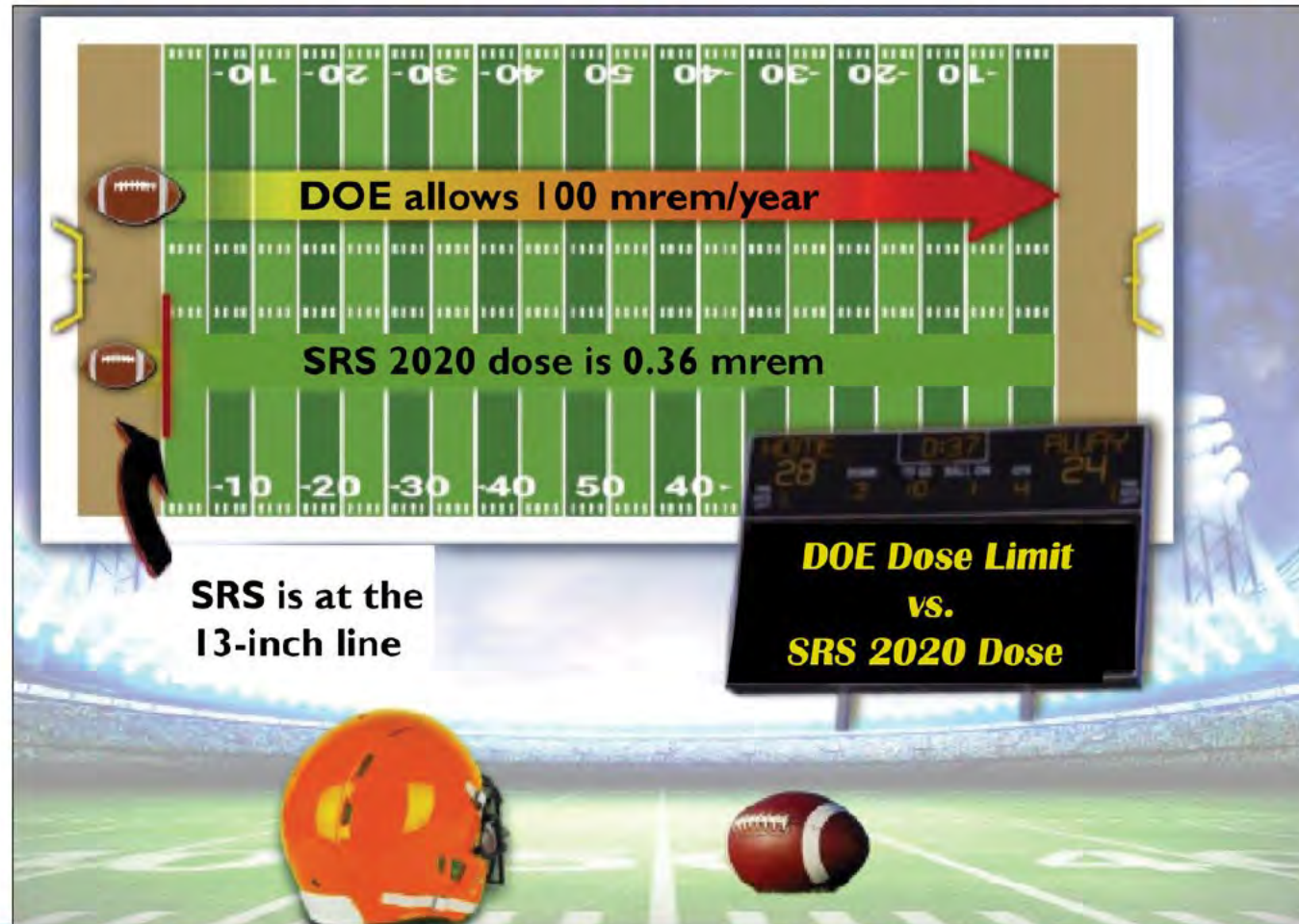


Exposure Pathways to Humans from Air and Liquid Effluents

Chapter 6 – Radiological Dose Assessment Highlights

Results confirm SRS operations do not exceed DOE dose limits:

- The all-pathway dose is 0.36% of the 100 mrem/yr DOE dose standard



Chapter 7 – Groundwater Management Program Highlights

Emphasis: Monitors, remediates, and conserves groundwater at SRS

- **Drinking Water Standards**
 - No exceedances of drinking water standards
- **Groundwater Monitoring (Georgia)**
 - Tritium detections in Georgia groundwater monitoring wells have stayed well below the MCL for tritium
- **Groundwater Remediation**
 - Removed 15,303 pounds (lbs) of volatile organic compounds (VOCs) from groundwater and the vadose zone
 - Prevented 42.7 curies of tritium from reaching SRS streams
- **Conserving SRS Groundwater**
 - Used 2.27 million gallons of water per day during 2020
 - *SRS continues to report its drinking and process water use to SCDHEC.*

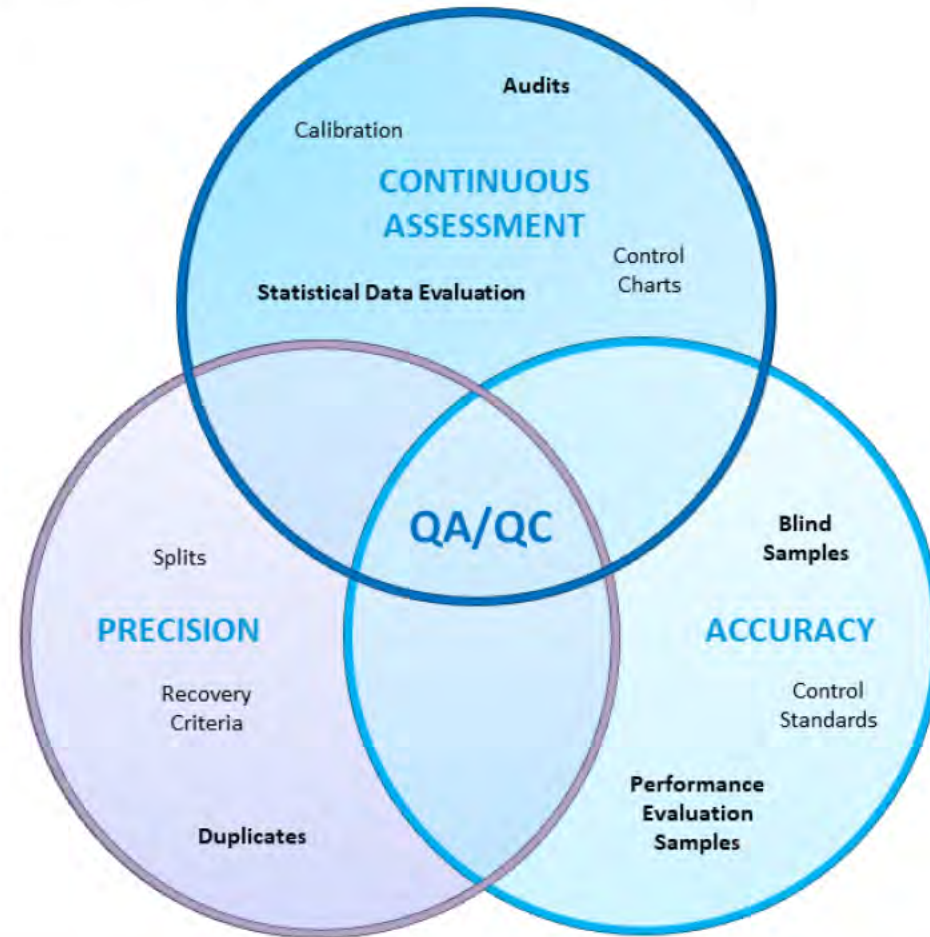


Remediation Using Trees and Plants to Remove or Break Down Contaminants

Chapter 8 – Quality Assurance

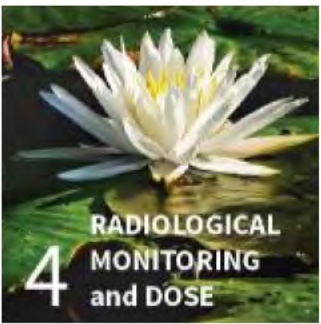
Emphasis: Ensures quality data for the Environmental Monitoring Program (EMP)

- SRS laboratories (onsite and contract):
 - Maintained SCDHEC certification
 - Passed audits performed under the U.S. Department of Energy Consolidated Audit Program (DOECAP)
 - Passed Proficiency testing for lab
- EMP showed acceptable duplicate and blind sample results
- EMP conducted Continuous Improvement Initiatives



Interrelationship between QA/QC Activities

2020 ASER Summary Report



SAVANNAH RIVER SITE

2020 Environmental Report Summary

This report highlights the Savannah River Site's activities, environmental performance, and engagement with the local communities. Many articles in this Summary are based on the information presented in the 2020 *Environmental Report* and touch on the following:

- Significant environmental accomplishments that support Site missions
- Compliance with environmental laws and regulations
- Dose to the public from onsite activities
- Monitoring that supports dose calculations and compliance requirements
- Community involvement



Conclusions of 2020 ASER

- SRS has maintained a comprehensive environmental monitoring program for more than 70 years.
- SRS continues to employ innovative, cost-effective technologies to achieve the Site's sustainability goals.
- SRS continues to monitor, remediate, and conserve groundwater at SRS, protecting the public and environment from future contamination.
- Annual dose from SRS operations is less than 1 mrem, demonstrating that SRS operations do not cause undue harm to our community.