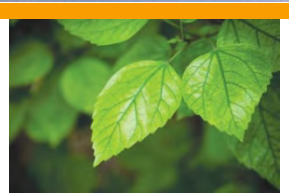
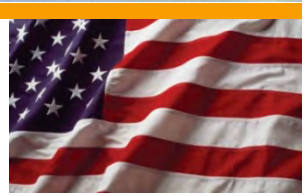
U.S. DEPARTMENT OF ENERGY

Environmental Monitoring and Cleanup

R. Kim Cauthen
Program Management and Integration
Environmental Compliance and Area Completion Projects





Savannah River Site Information Pods

Beaufort High School, Beaufort, S.C.
September 22, 2014

Purpose

- How SRS operations may impact the environment
  - How SRS monitors
  - How and why SRS cleans up

SRS is Bigger Than a Breadbox… But How Big is It?

The Savannah River Site (SRS) covers 310 square miles or 198,344 acres.
It encompasses parts of Aiken, Barnwell and Allendale counties.

Evolution of Site Monitoring and Remediation

- During Site construction in the early 1950s, the first environmental studies were being conducted by:
  - E. I. du Pont de Nemours
  - U.S. Department of Health, Education and Welfare
  - Academy of Natural Sciences of Philadelphia
- Environmental monitoring program established in 1953

Dr. Ruth Patrick, pioneer in studying the health of freshwater streams and rivers, and member of the Academy of Natural Sciences

Why SRS Monitors

To ensure protection of the public and the environment

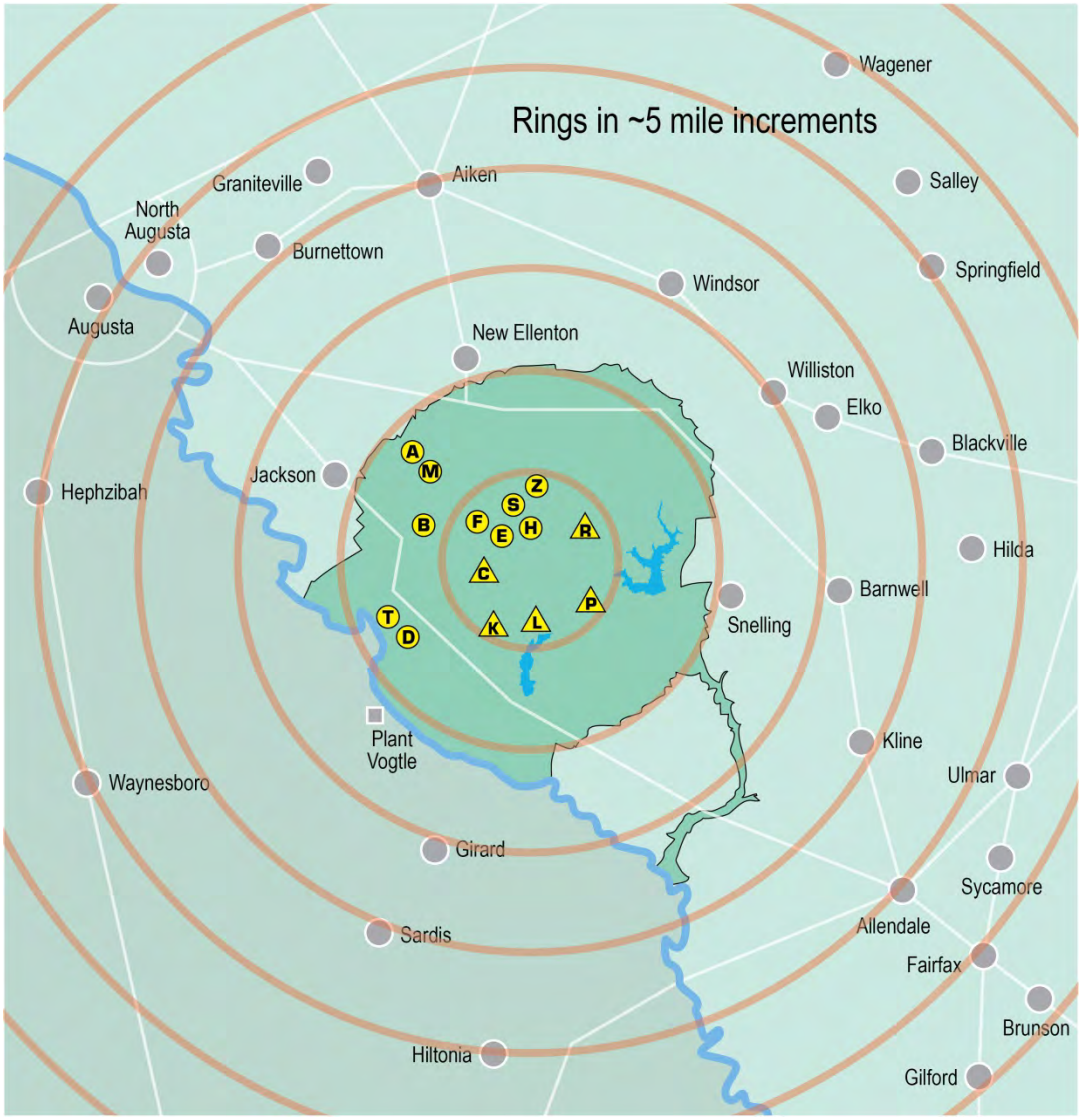
Environmental Monitoring

- SRS has performed environmental sampling for over 60 years
  - Earliest baseline sampling initiated in early 1950s
  - Assess impact to the public and environment from site operations
  - Monitor facility discharges
  - Extensive on- and off-site, extending to Savannah
  - Sample media: air, water, groundwater, soil, food products (including fish) and vegetation
    - *Chemical*
    - *Radiological*

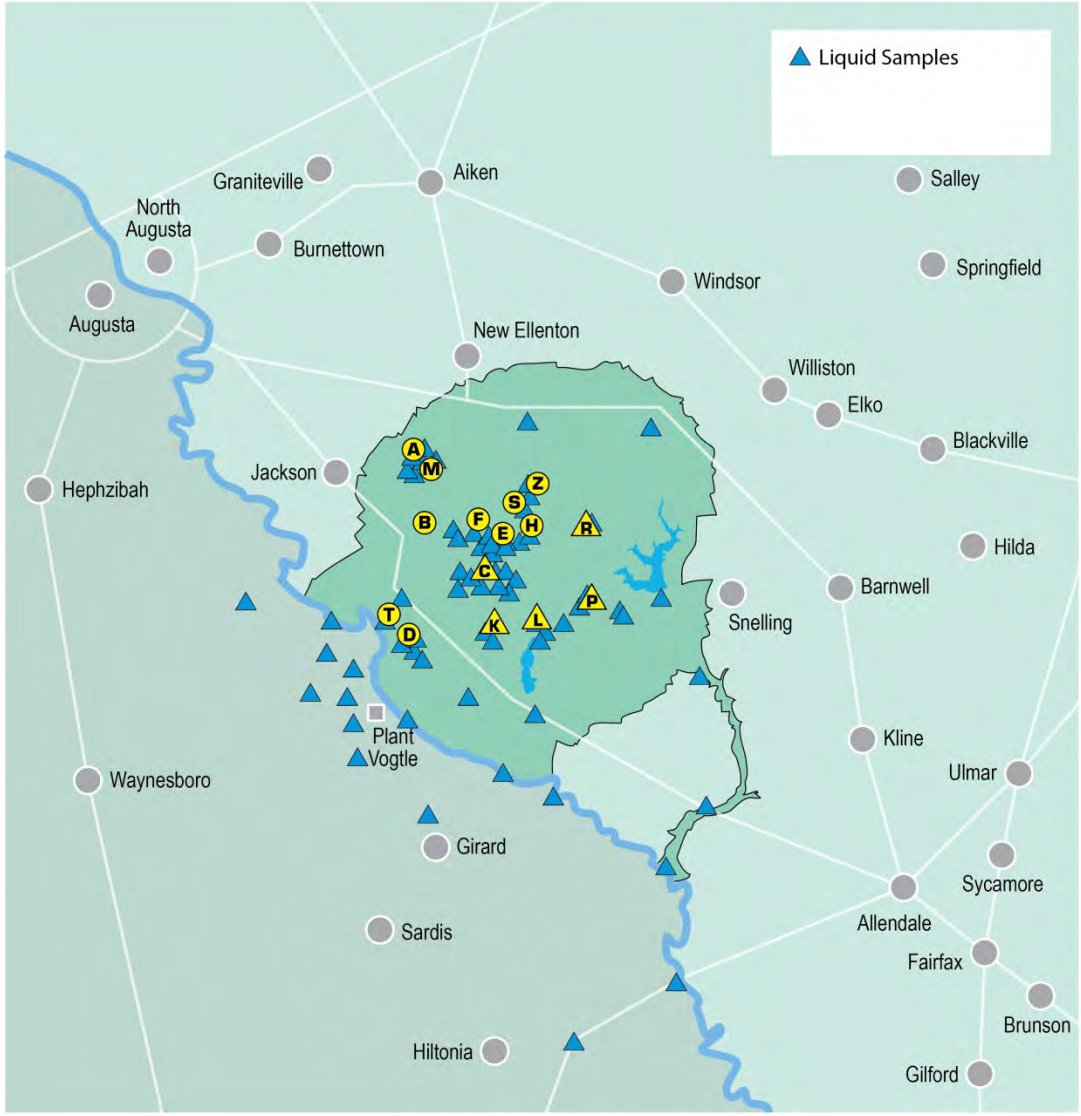
South Carolina and Georgia
Counties Where Monitoring Occurs

Environmental Monitoring: Site Operations

- Site operations
  - Located in the center of site
- Provides large buffer area
- Monitoring focused on Site operational areas
- Monitored population centers
  - Aiken
  - Williston
  - New Ellenton
  - Barnwell
  - Allendale
  - Augusta
  - North Augusta
  - Waynesboro



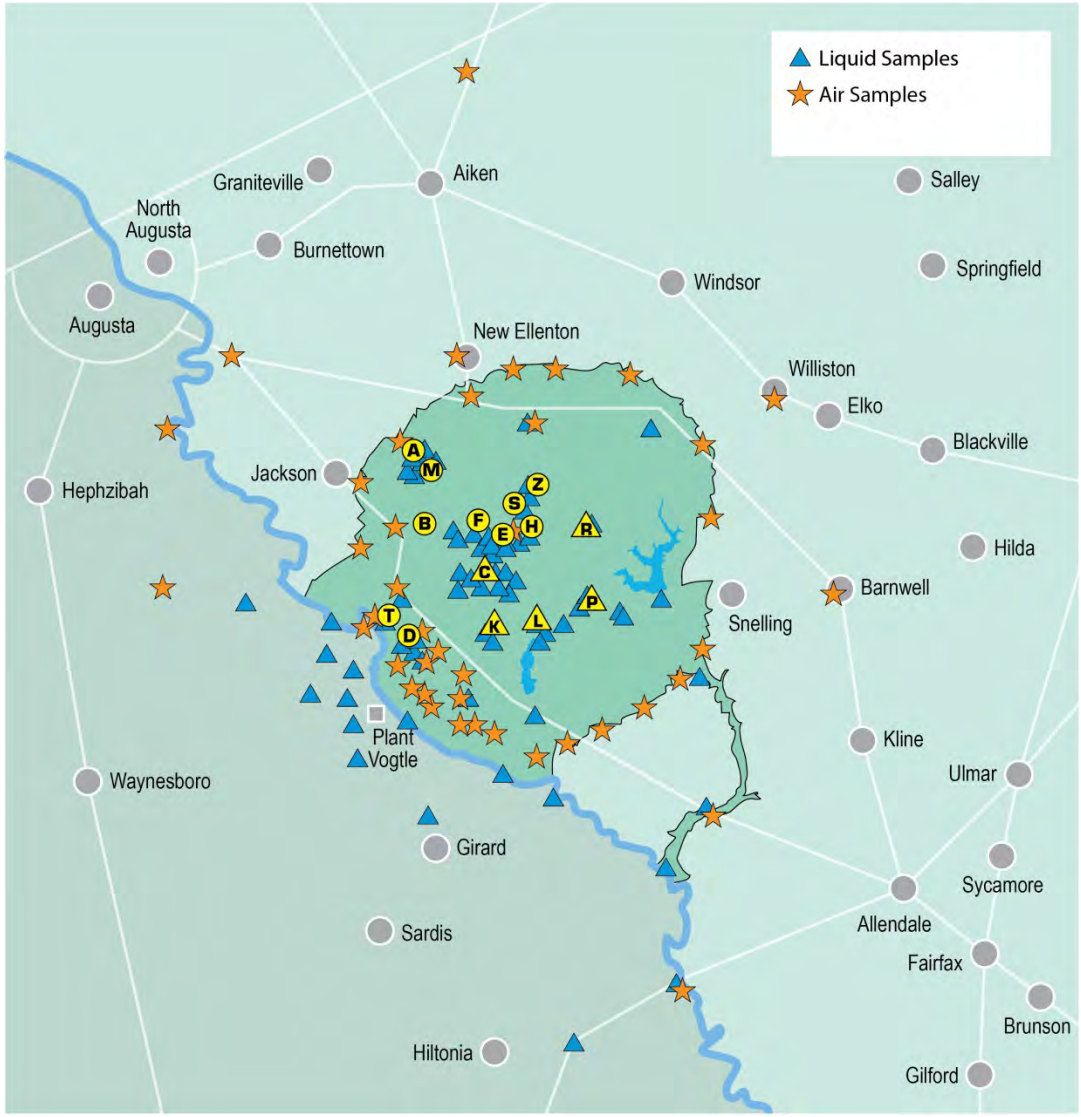
Liquid Sample Locations

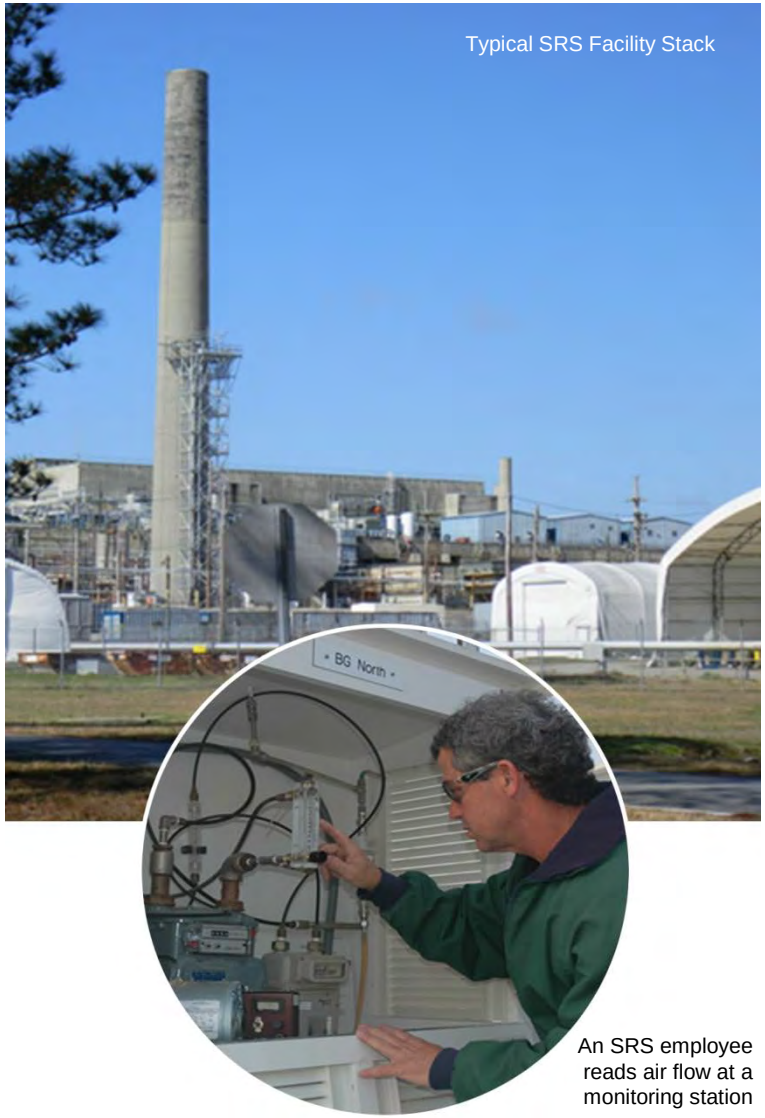


SRS employees collect Savannah River water samples

SRS employees measure water flow in an SRS stream

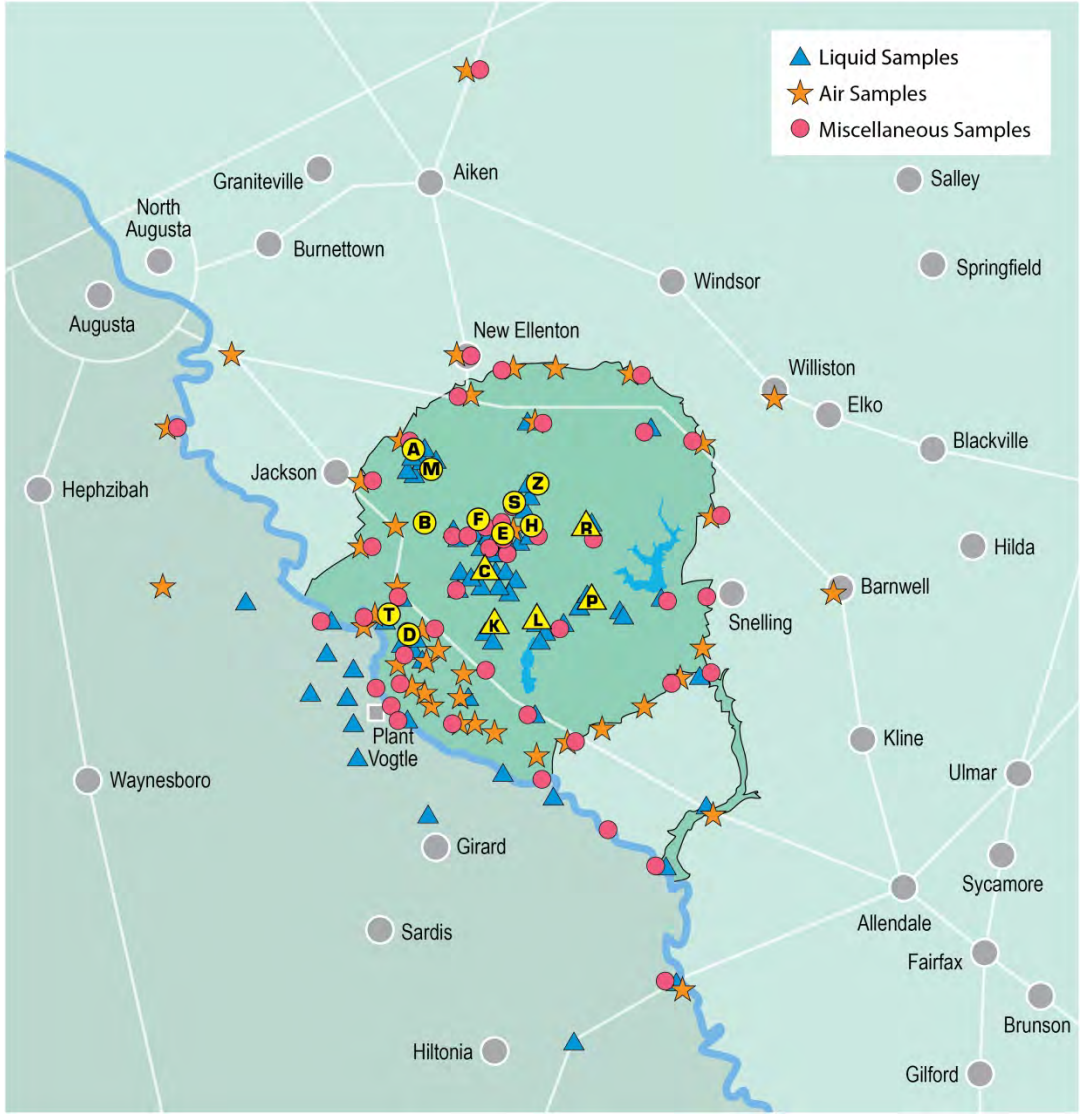
Liquid and Air Sample Locations





An SRS employee reads air flow at a monitoring station

Liquid, Air and Other Sample Locations

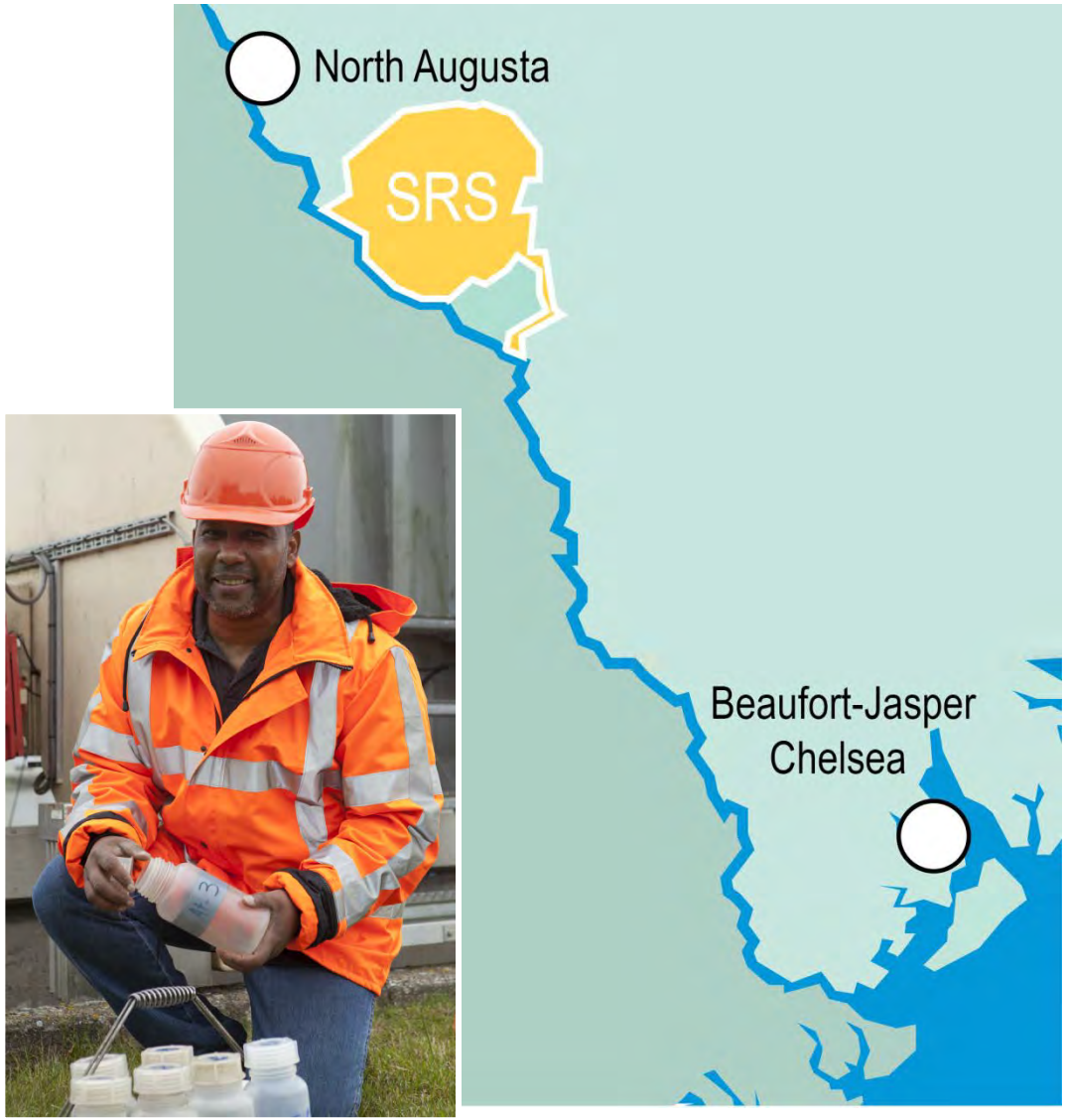


An SRS employee collects sediment samples in Savannah River

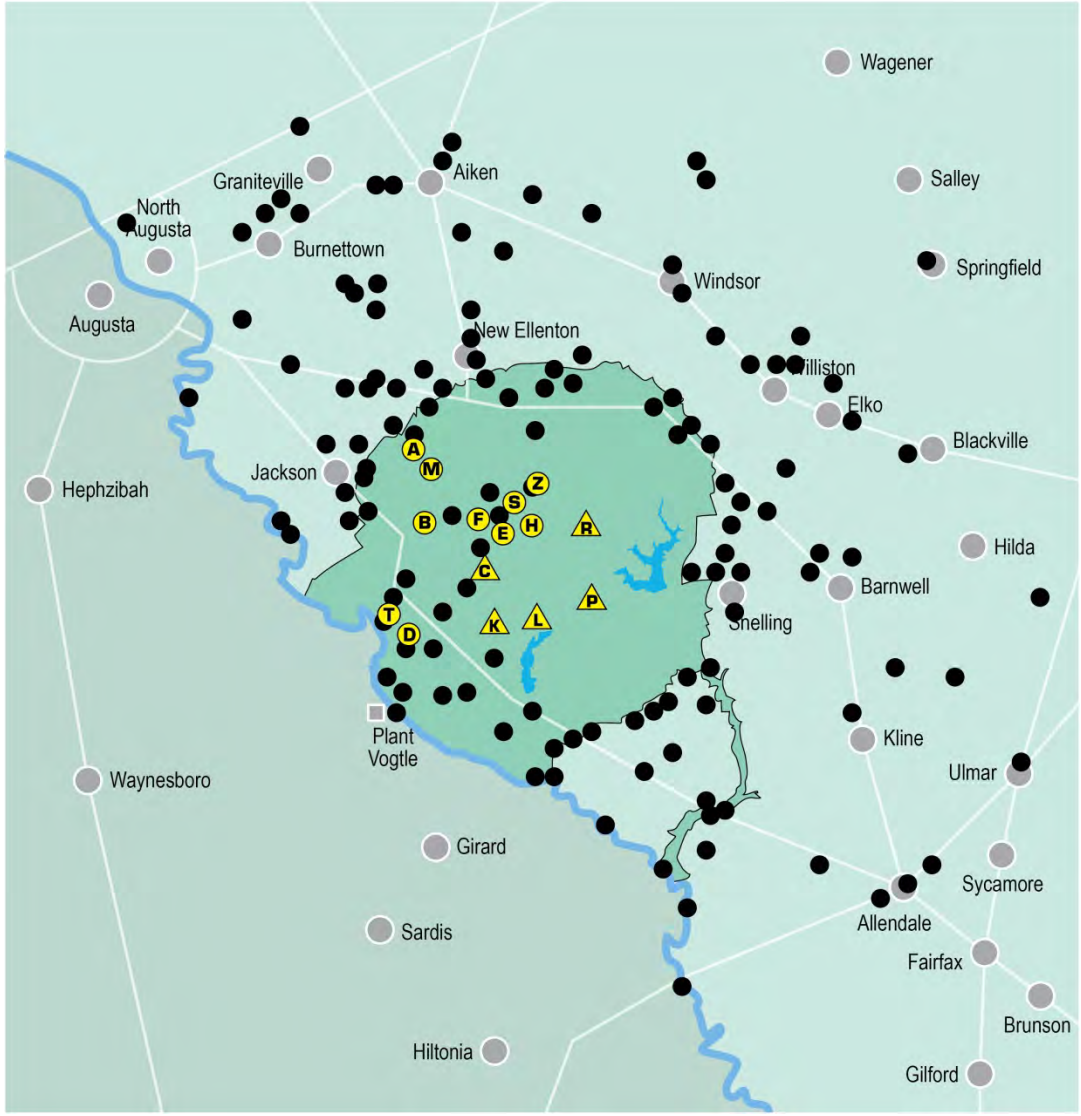
SRS employees collect fish in Savannah River

Drinking Water Locations

- Samples collected at offsite water treatment plants
  - Upriver at North Augusta
  - Downriver at Beaufort-Jasper Chelsea
- Use Savannah River as a water supply
- SRS provides data results to communicate with organizations potentially impacted by site operations.



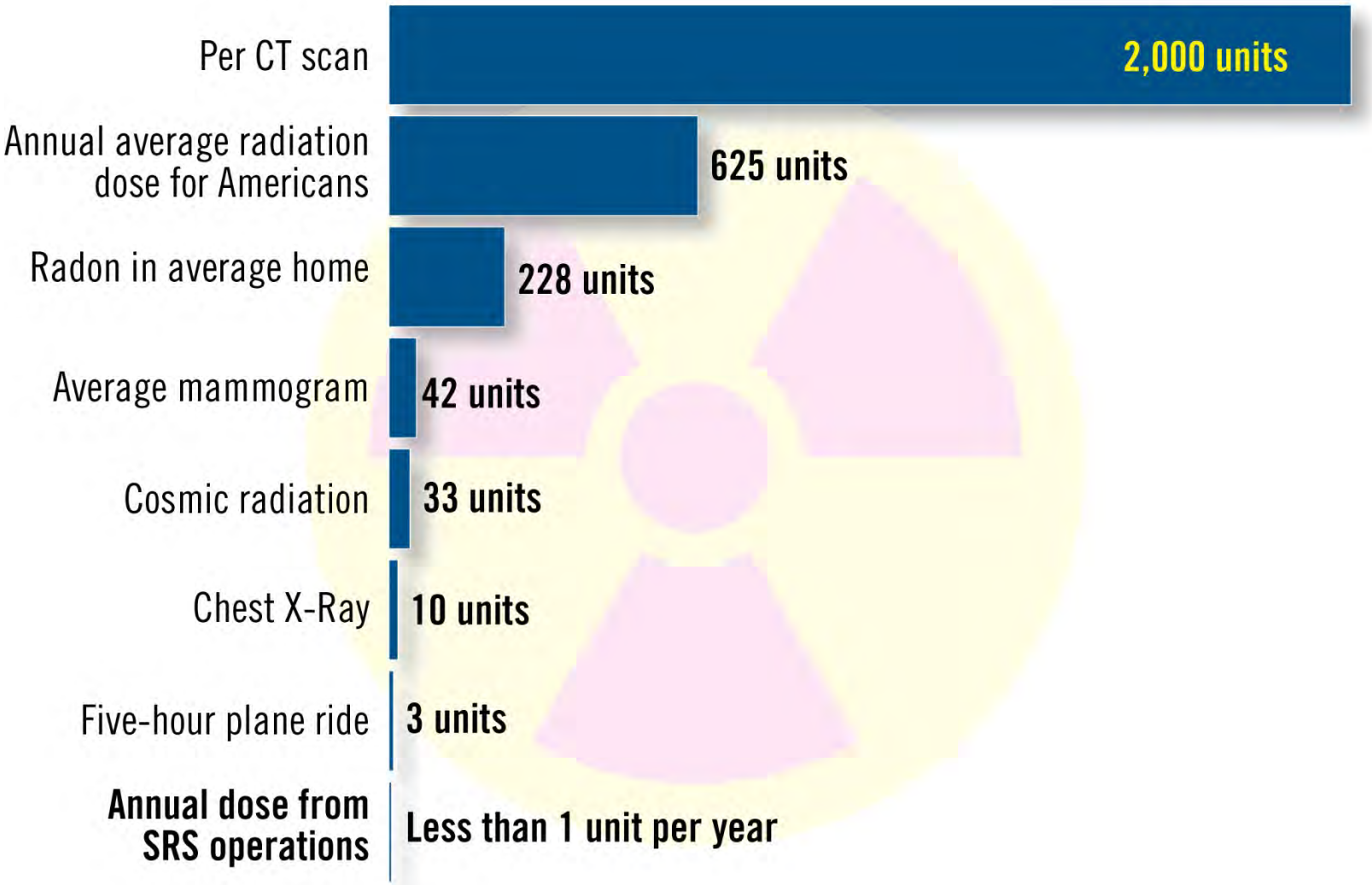
SCDHEC: Independent Verification Sample Locations



SCDHEC samples include various media:

- Vegetation
- Soil
- Sediment
- Fish
- Surface Water
- Drinking Water
- Milk
- Groundwater
- Air
- Thermoluminescent dosimeter

Impact from Radiation Sources



Environmental Monitoring Reporting

- SRS issues monitoring and sampling results annually in the SRS Environmental Report
  - Available to the public in print or at www.srs.gov/general/pubs/ERsum
- Independent assessments are conducted to validate SRS results.
  - South Carolina Department of Health and Environmental Control (SCDHEC)
  - Centers for Disease Control and Protection (CDC)
  - Agency for Toxic Substances and Disease Registry (ATSDR)
- Results confirm SRS operations are protective of the environment and human health.

Soil and Groundwater Cleanup

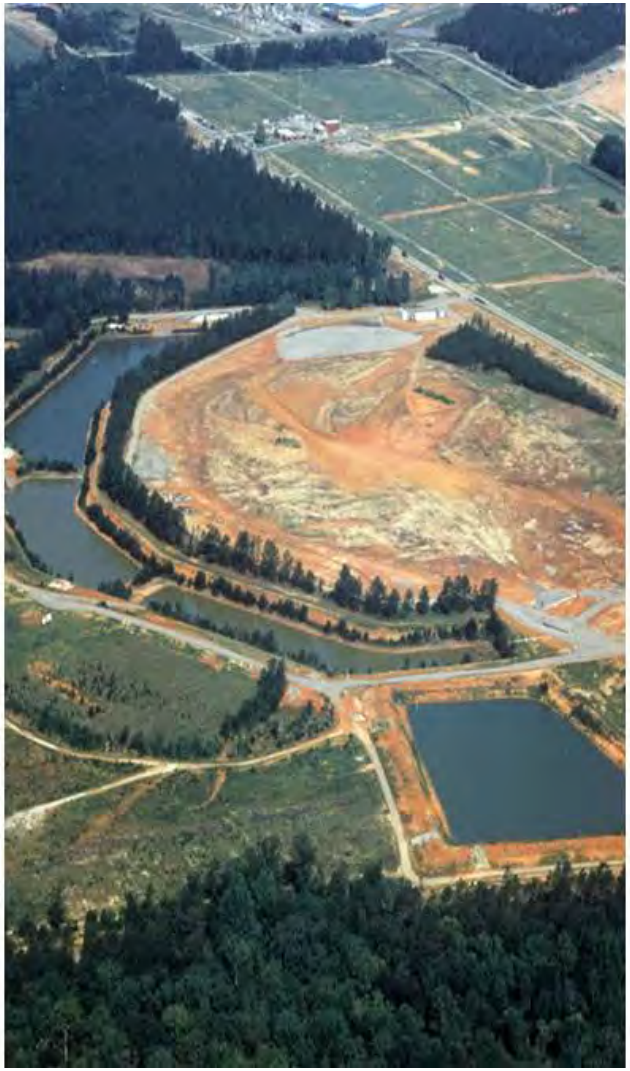
- What is contamination and how did it get there?
- How do we find contamination in soil and groundwater?
- How do we clean it up?

What is Contamination and How Did it Get There?

Landfills

What is Contamination and How Did it Get There?

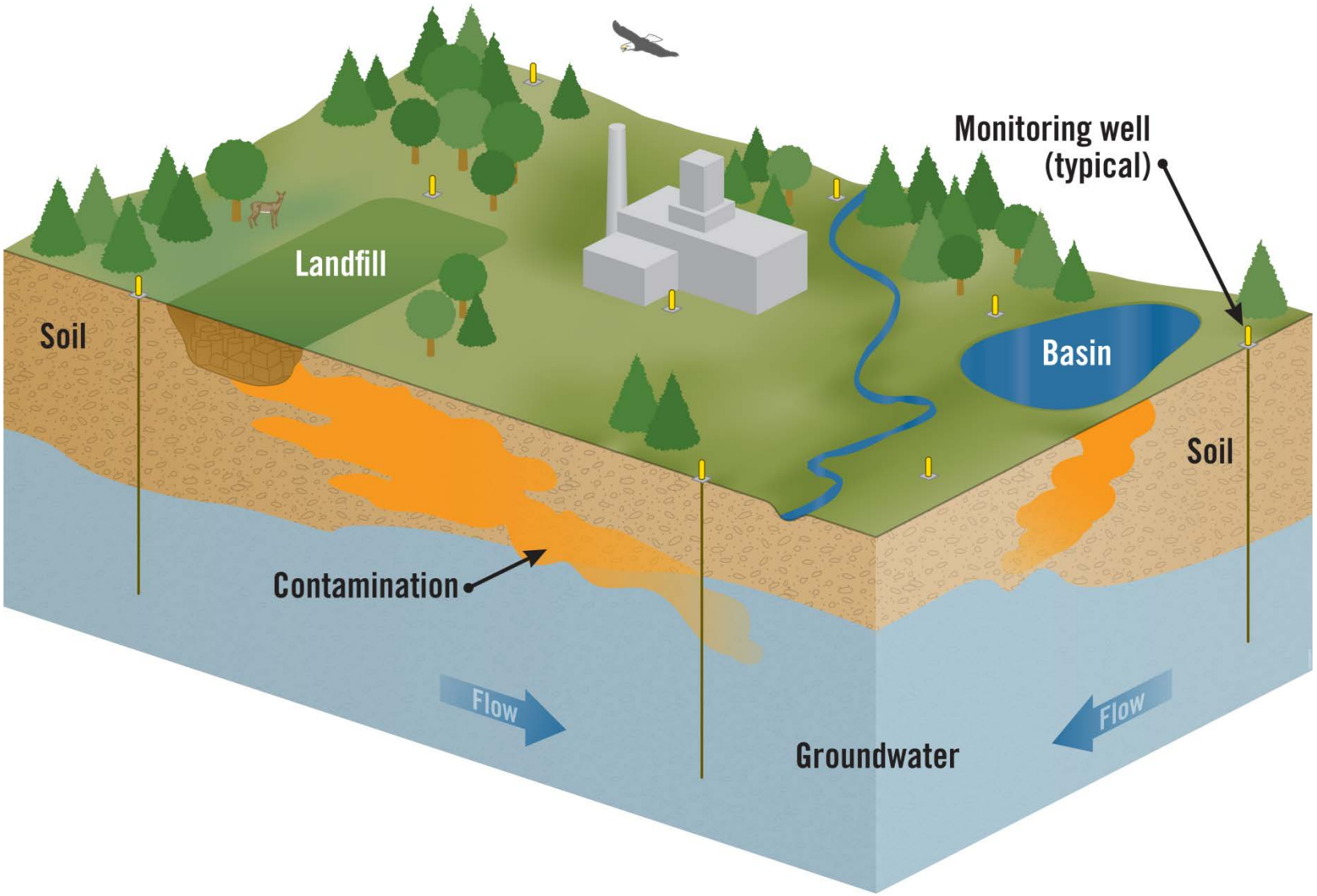
Basins



What is Contamination and How Did it Get There?

Streams / Lakes / Ponds

How Does Contamination Get into Soil and Groundwater?



How Do We Find Contamination in Soil and Groundwater?

- Soil
- Groundwater

How Do We Find Contamination in Soil and Groundwater?

Soil

How Do We Find Contamination in Soil and Groundwater?

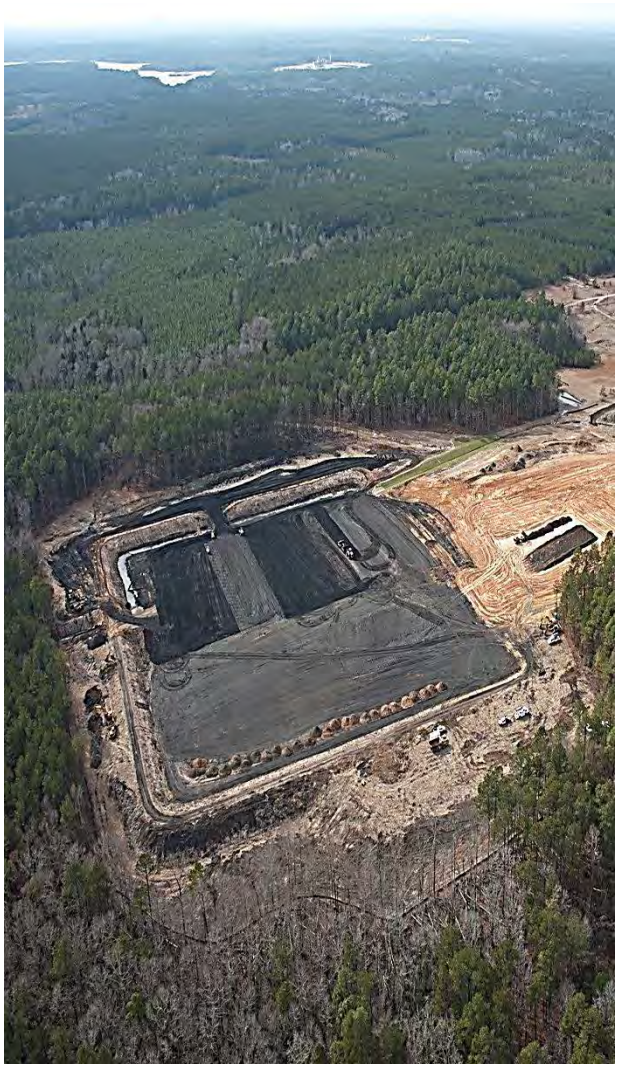
Groundwater

How Do We Clean It Up?

- Soils
- Groundwater

How Do We Clean It Up?

Soil



How Do We Clean It Up?

Groundwater

Where Are We Now?

- 85% of the Site's area is cleaned to regulatory standards
- Remaining contamination areas typically within the core of the Site

- For the future:
  - Continue partnering with the Savannah River National Laboratory to develop innovative cost-effective technologies
  - Maintain strong regulatory oversight and coordination
  - Continue public involvement