Presentation to the Savannah River Site Citizens Advisory Board

Savannah River Ecology Laboratory (SREL)
FY23

January 30, 2024

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Professor, University of Georgia (UGA)

The University of Georgia
Savannah River Ecology Laboratory

Objectives

- **Savannah River Ecology Lab (SREL) Mission**
- **Staffing**
- **Funding and Work Scope**
- **Significant Events**
- **Advances**
- **Opportunities For Fiscal Year 2024**
- **Challenges for Fiscal Year 2024**
- **REMOP Summary**

Consistent with the Facilities Disposition and Site Remediation Committee's 2024 Work Plan

Acronyms

ACP	Area Closure Project
DOE	Department of Energy
DOE-HQ	Department of Energy – Headquarters
DOE-SR	Department of Energy – Savannah River
ERDA	U.S. Energy Research and Development Administration
HVAC	Heating, Ventilation and Air Conditioning
NNSA	National Nuclear Security Administration
SREL	Savannah River Ecology Laboratory
SRNL	Savannah River National Laboratory
SRMC	Savannah River Mission Completion
SRS	Savannah River Site
UGA	University of Georgia
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFS-SR	U.S. Forest Service – Savannah River

SREL History

1951 - Atomic Energy Commission (AEC) had concerns about environmental impacts resulting from Savannah River Site (SRS) construction and operations.

Dr. Eugene Odum

1951 to present – Funding from AEC, ERDA, and Department of Energy (DOE)

1954 – Established permanent lab on the SRS

1977 – Established current lab facilities

SREL's Mission:

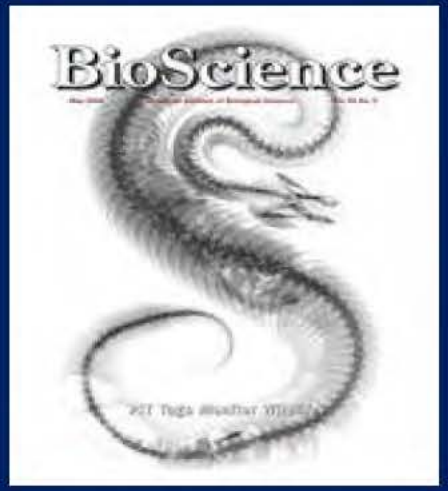
"To enhance our understanding of the environment by acquiring and communicating knowledge that contributes to sound environmental stewardship."

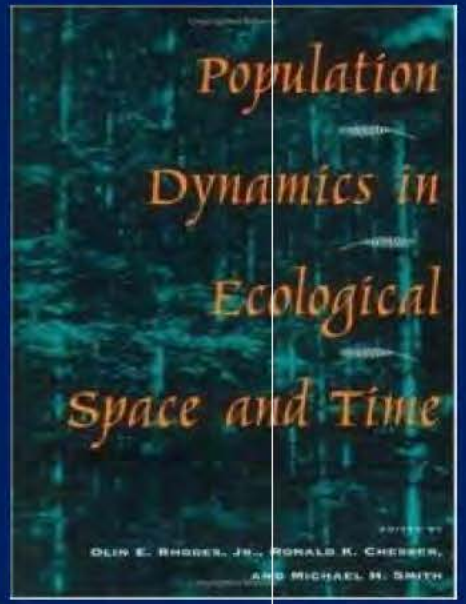
"To provide the public with an independent evaluation of the ecological effects of SRS operations on the environment"

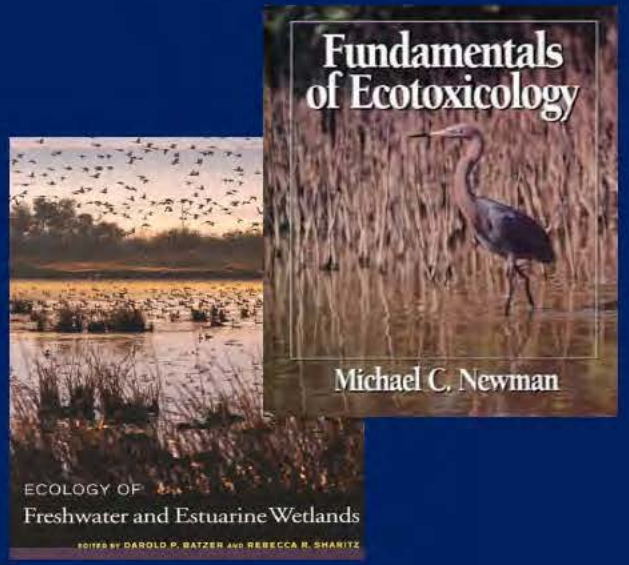
- An interdisciplinary program of field and laboratory **Research** conducted largely on the SRS and published in the peer-reviewed scientific literature
- **Education** and research training for undergraduate and graduate students
- **Service** to the community through environmental outreach activities

SREL Research Program's

- >3750 peer-reviewed scientific publications to date
- 66 books







SREL Education Program

- >600 Theses and Dissertations
- Over 700 undergraduates representing all 50 states have participated in SREL-sponsored experiential learning programs
- Thousands of post –baccalaureate research opportunities for temporary undergraduate technicians

SREL Environmental Outreach Program

- Integrates SREL research into presentations for the general public
- Provides hands-on classroom and field experience for students
- Conducts educator workshops

In FY23, SREL:

- Held 378 events reaching ~32,000 people
- Had ~13,000 social media followers – >475k media impressions
- 99 Media Mentions– 350 million media reach

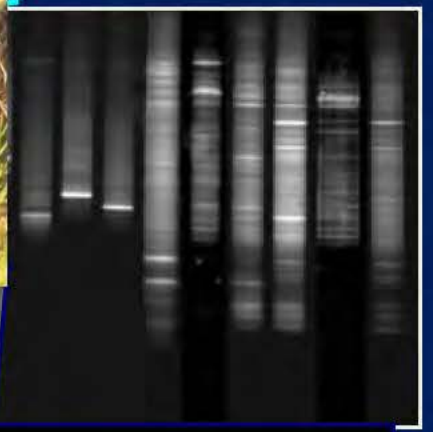
SREL in 2023

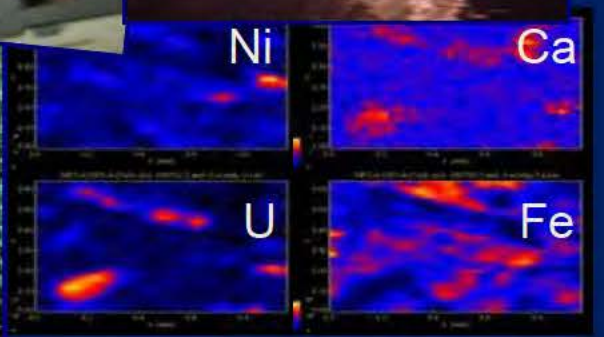
- UGA Employees
  - Research Faculty – 7
  - Tenure Track Faculty - 12
  - Emeritus Faculty - 2
  - Post Docs – 8
  - Outreach - 5
  - Res. Professional - 34
  - Research Support - 20
  - Graduate Students - 69
  - Admin & Support - 19

176 Staff & Students

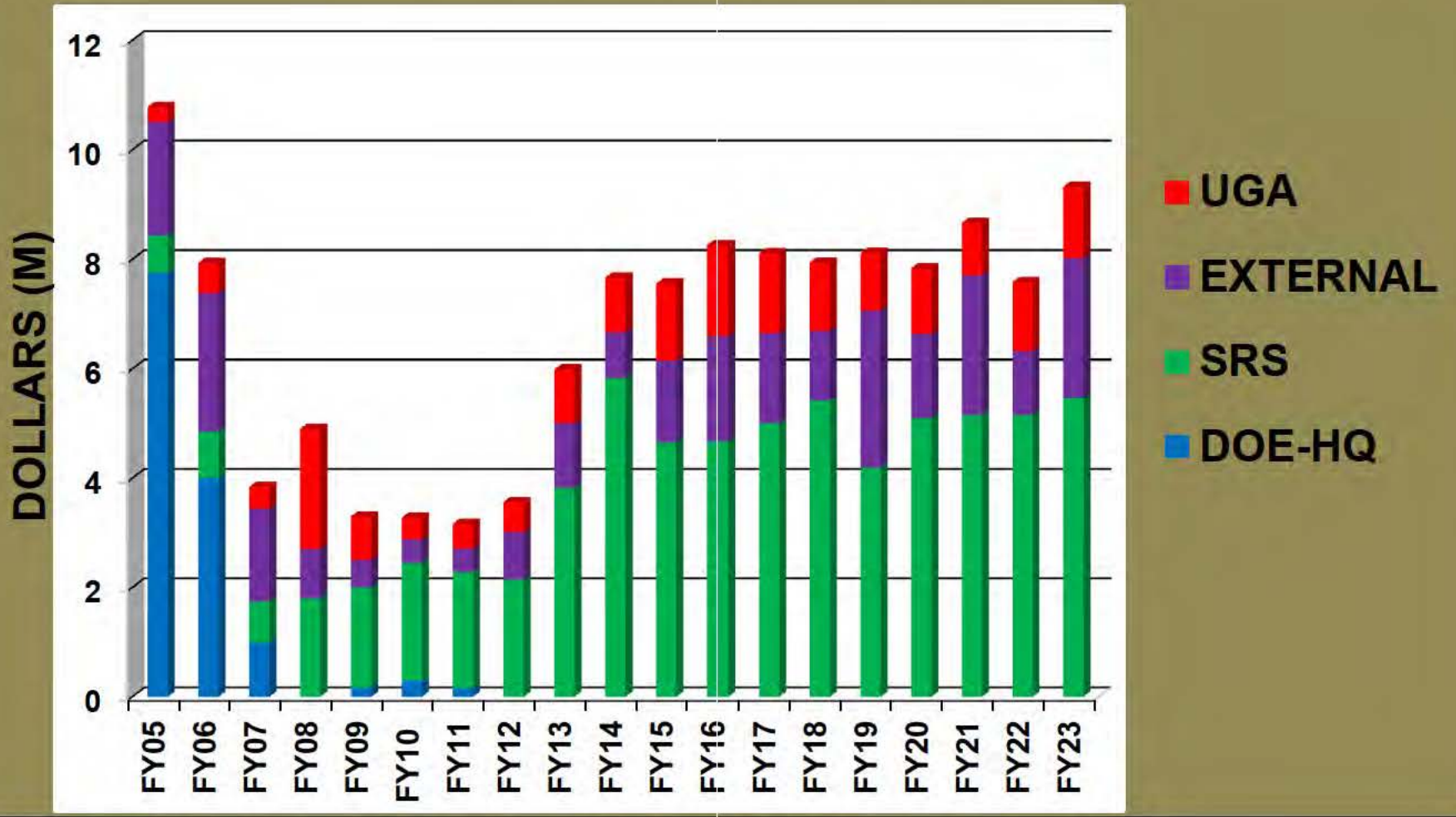
Disciplinary Expertise

- Aquatic and Terrestrial Ecology
- Geology / Soil Science
- Environmental Microbiology
- Epigenetics
- Molecular Genetics
- Environmental Chemistry
- Radioecology
- Ecotoxicology and Risk Assessment
- Wildlife Ecology
- Disease Ecology
- Plant Physiology
- Proteomics and Glycomics
- AI/ML Modelling and Statistics

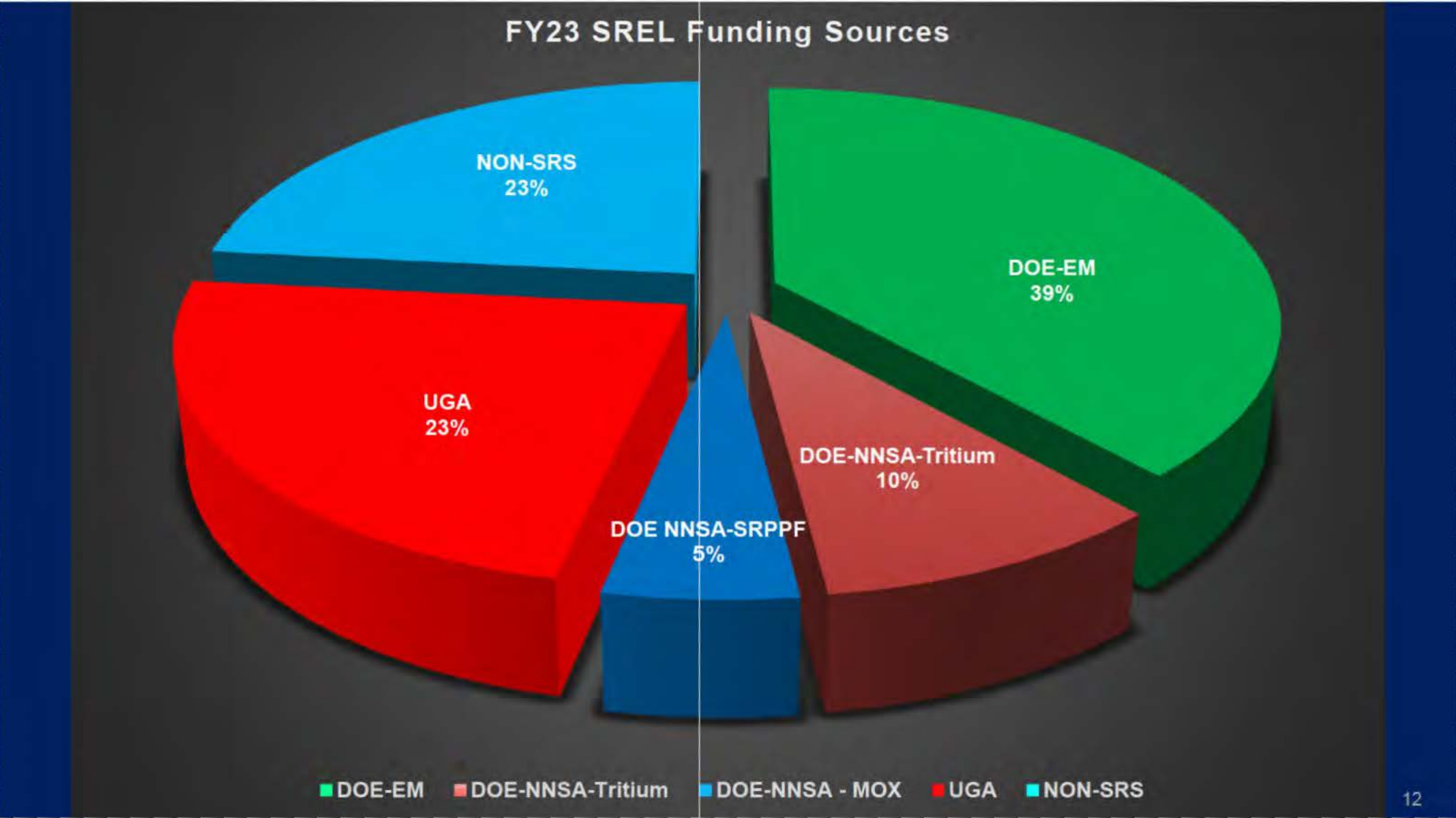




Recent Funding History



FY23 SREL Funding Sources



Significant Events in FY22

UGA

- Allowed majority (75%) of the 35% Indirect Costs to be retained by SREL
- Cost-Shared 11 faculty positions with SREL
- Provided funding for equipment and personnel
- Cost-shared graduate student and postdoctoral positions

DOE / SRS / External

- Building, equipment, utilities, and site access
- Funding provided by Department of Energy – Savannah River (DOE-SR) under 5-year Cooperative Agreement with DOE - EM
- Funding provided by DOE – National Nuclear Security Administration (NNSA)
- Continued project funding from Area Closure Project (ACP) and Savannah River Remediation (SRR)

Advancements in FY23

1. Work scope:

Research Set-Asides, Site Use Permitting

- Enacted significant land management activities for set asides
- Collaborated with USFS to restore habitats for threatened species

Graduate and Undergraduate Education Programs

- Advised 69 graduate students
- Mentored over 146 graduate students total
- Taught 30 courses on main UGA campus including 3 at SREL

Interdisciplinary Research

- Continuing collaborative research programs with Savannah River National Laboratory (SRNL), U.S. Forest Service–Savannah River (USFS-SR), Savannah River Mission Completion (SRMC), UGA, U.S. Department of Agriculture (USDA), National Science Foundation (NSF), U.S. Army Corps of Engineers (USACE) & other university, federal, state, and private partners Involving research on radionuclide and metal remediation, feral swine control & radioecology

Advancements in FY23

1. Work scope: Continued

Site-wide Source of Ecological Expertise

Provided ecological research support to Area Closures Project, SRMC, SRNL, etc.

Scientific Expertise

Submitted 30 Proposals as PI or coPIs to External Granting Agencies

Hired Two New Tenure Track Faculty–Disease Ecology (1) and Modelling (1)

Scientific Productivity

SREL staff and students published over 80 scientific articles and gave over 180 scientific presentations in FY23

Analytical Services

SREL staff and students analyzed over 2,953 samples for metal contaminants using ICP-MS or ICP-OES technologies

SREL staff and students analyzed over 1,235 samples for total or methyl mercury using SREL-based equipment

Showing Return on Investment (ROI)

Yearly Average of 8 Grad Students per 1.0 Faculty Research EFT

Eleven Year Average of 9 Publications per Faculty Member

Average Impact Factor across faculty was >4.00 in FY23

Unit generates ~750K per 1.0 Faculty Research EFT

Unit generates $3-$4.00 in external funds for every $1.00 UGA funding

Growth Since January 2012

Faculty and staff – 46 – 191 (315%)

Graduate Students – 6 – 81 (1,250%)

Faculty – 7 to 19 (171%)

Opportunities for FY24

1. Increasing UGA Collaboration with BSRA Partners

2. Continued Development of Core Missions on the SRS:
   a. Radioecology and Low Dose Radiation Effects
   b. Metal and Radionuclide Ecotoxicology
   c. Radionuclide Fate and Transport Studies
   d. Enhanced Biomonitoring Technologies
   e. Outreach and Education Programs

Opportunities for FY24 (cont.)

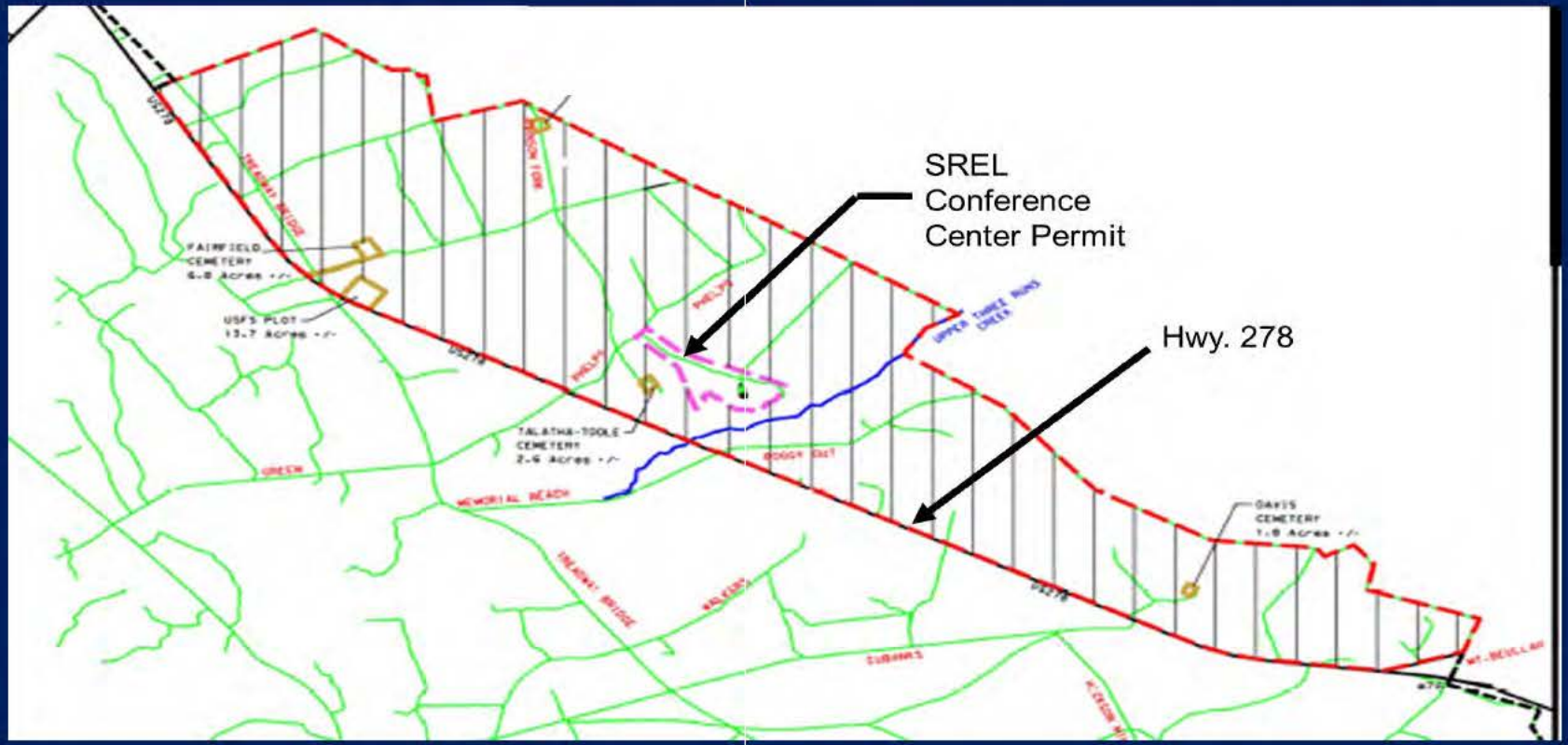
3. **Enhanced Analytical Capabilities**
   a) **High Resolution Inductively Coupled Plasma Mass Spectroscopy**

   a) **Thermal Ionization Mass Spectroscopy**

   a) **High Resolution Mercury Isotope Analysis**

Opportunities for FY24 (cont.)

4. Still Pursuing Land Lease Near Conference Center



Potential Consumption Risk

Ecological Receptors and Environmental Risk Assessment

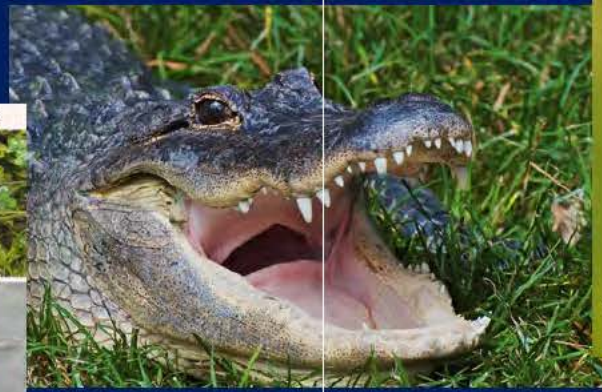








Biomonitoring



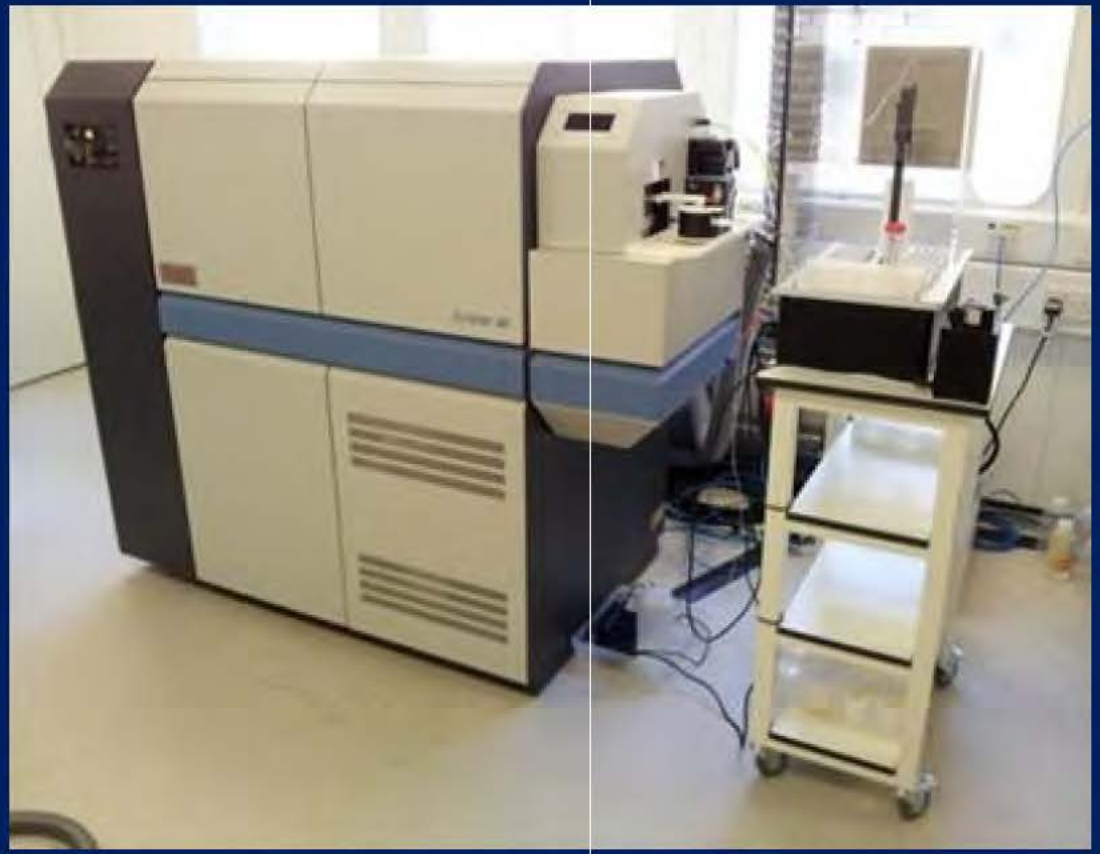
Environmental Stewardship

Human-Wildlife Conflict

Mechanistic Understanding of Contaminant Effects

New Initiatives

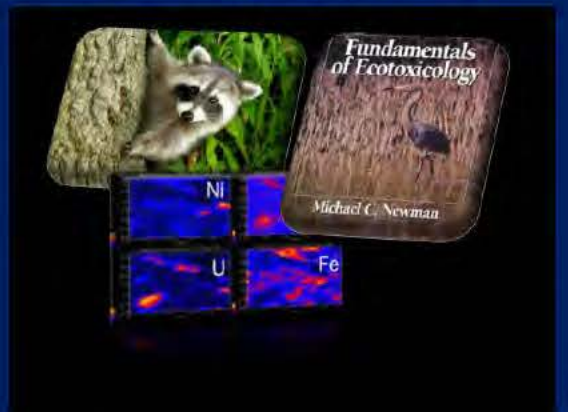
SREL Hot Lab



New Initiatives

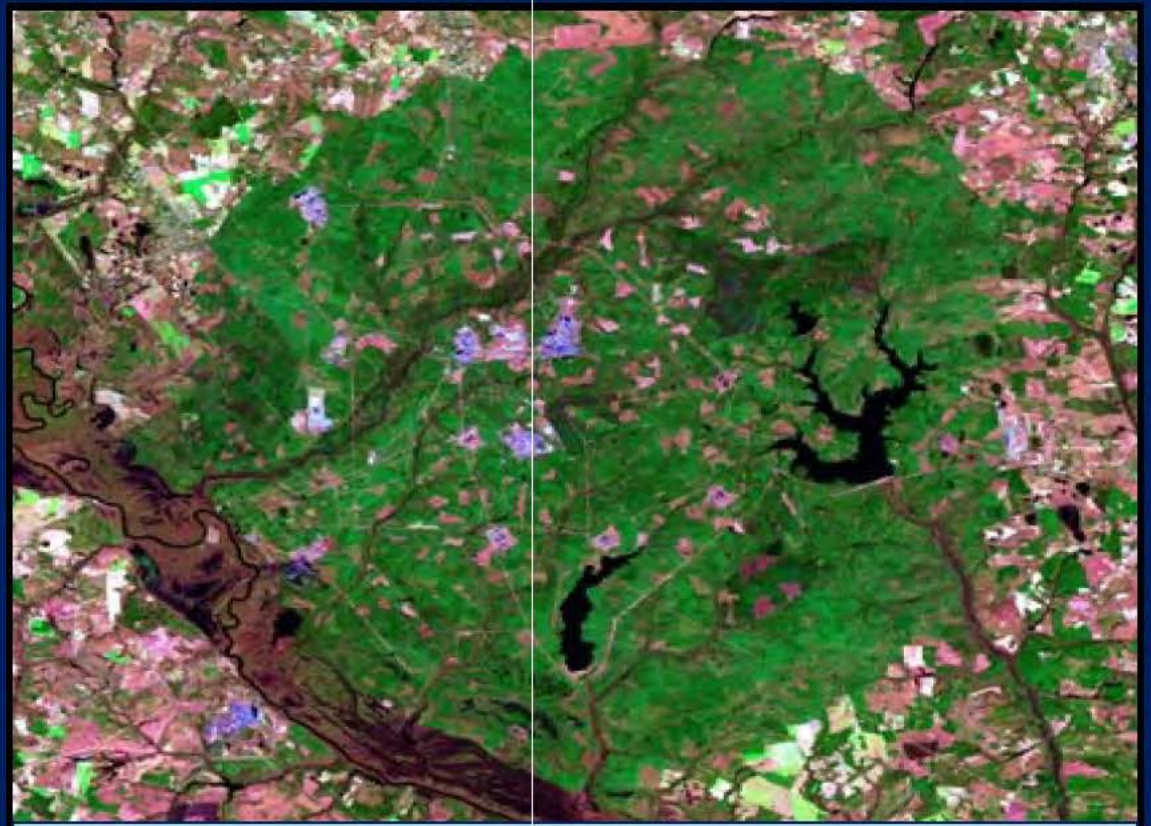
NERP Scholars Program

- Education Program Tied to Environmental Justice Issues of the SRS
- Undergraduate Experiential Learning for Students from Disadvantaged Populations in Communities Surrounding the SRS
- Path to Graduate School for Undergraduate Interns from Summer Experiential Learning Programs Conducted at SREL
- Recruitment from Local High Schools and Regional HBCU's
- Addresses Increasing Executive Branch Emphasis on Environmental Justice and Climate Change



Challenges for FY24

1. Funding Environment for External Grants and Contracts
2. Long Term Stability of SREL Model (> Core Dollars)
3. Administrative Burden at Current Staff Levels
4. Staff Recruitment and Stability
5. Additional Resources to Fulfill NERP Scholars Vision
6. Graduate and Undergraduate Housing Needs



THANK YOU