



U.S. DEPARTMENT OF
ENERGY

OFFICE OF
ENVIRONMENTAL
MANAGEMENT

ANNUAL INTEGRATOR OPERABLE UNIT (IOU) PROGRAM UPDATE

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Department of Energy - Savannah River

FACILITIES DISPOSITION & SITE REMEDIATION COMMITTEE

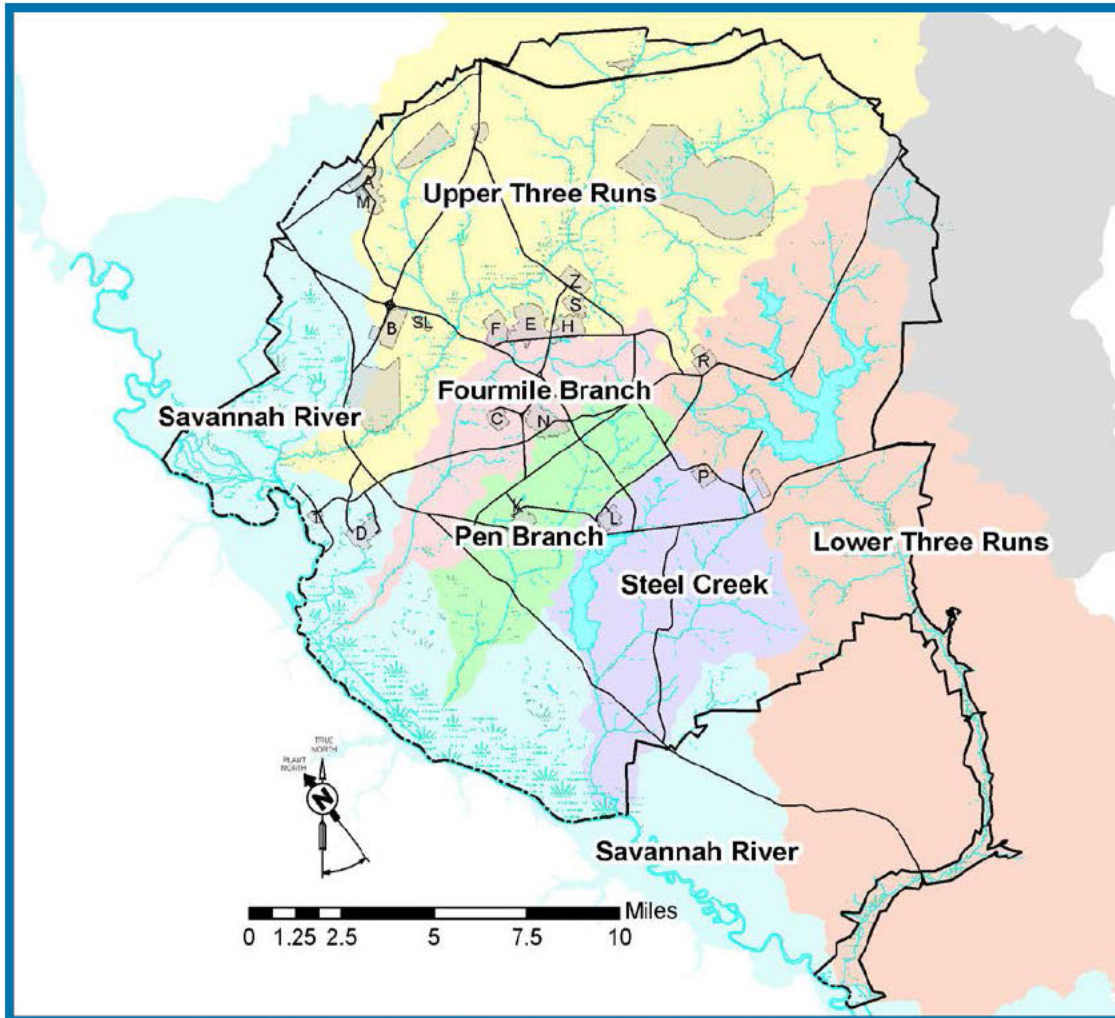
December 8, 2015

Provide an update of the Integrator Operable Unit (IOU) Program for the Facilities Disposition and Site Remediation Committee

Agenda

- **IOU Program Description**
- **Pen Branch IOU Status**
- **Lower Three Runs IOU Status**
- **IOU Program Path Forward**



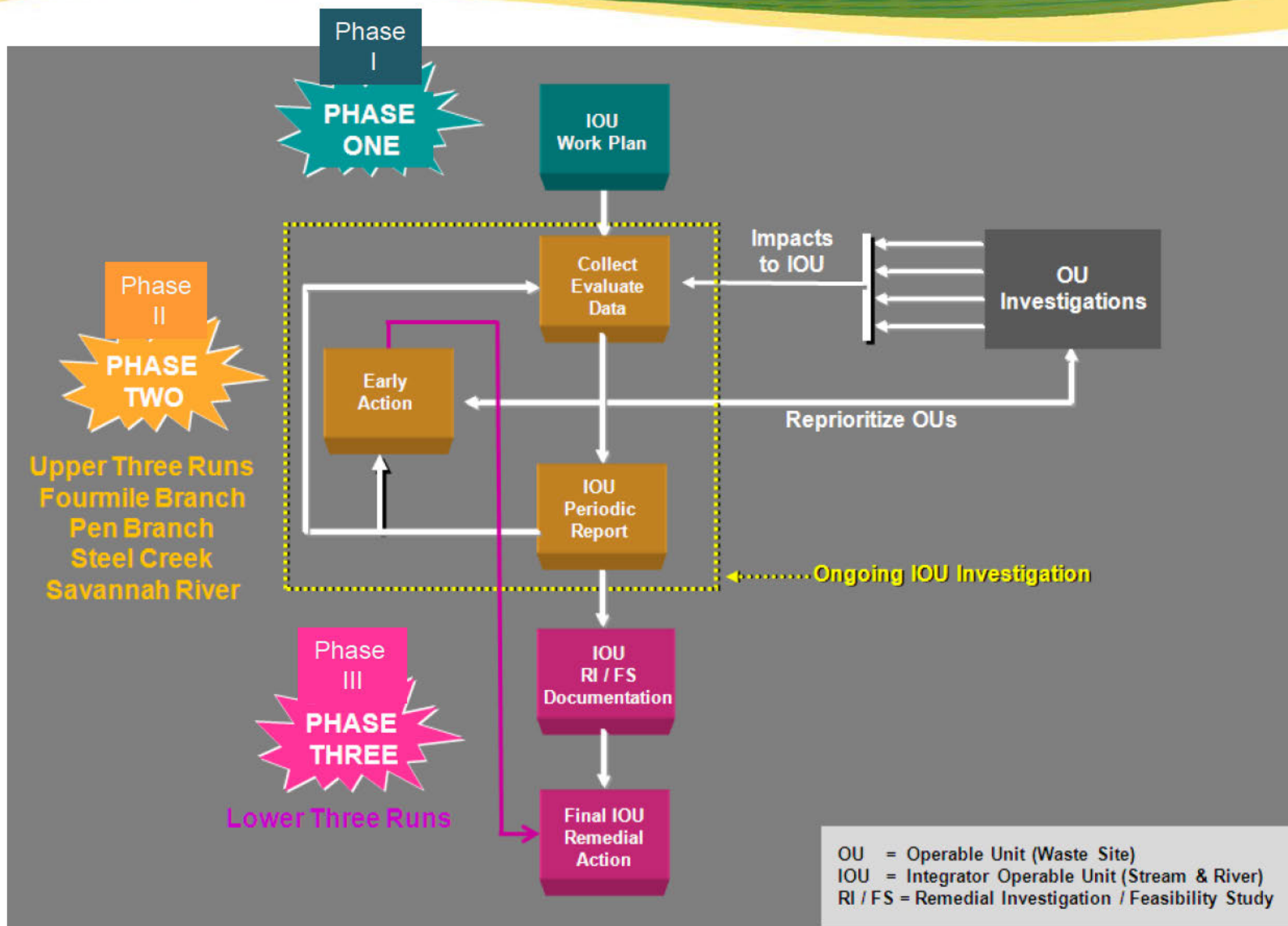


- SRS streams were added to the Federal Facility Agreement (FFA) in FY 1997
- SRS segregated into 6 IOUs
- IOU includes surface water, sediment, floodplain soils, and biota (plants and animals)

- **Evaluate contaminants in SRS stream systems**
 - Evaluate human health risk in stream corridors
 - Assess the ecological health of the stream system
 - Monitor stream contaminant levels based on IOU and other data
- **Determine whether early cleanup actions are needed**
- **Final IOU cleanup decision is made upon completing all Operable Unit cleanup actions within the watershed**



IOU Program – Three Phase Strategy



IOU Program - Phase II Screening

- IOU Phase II Receptors

- Human Health

- On-site Worker
- Adolescent Trespasser
- Hypothetical Resident
- Fisherman (subsistence level - meat consumption only from fish)
- Recreational Hunter

- Ecological

- Benchmark screening, trophic modeling, and biological data

Early Action
Human Health Screening Level

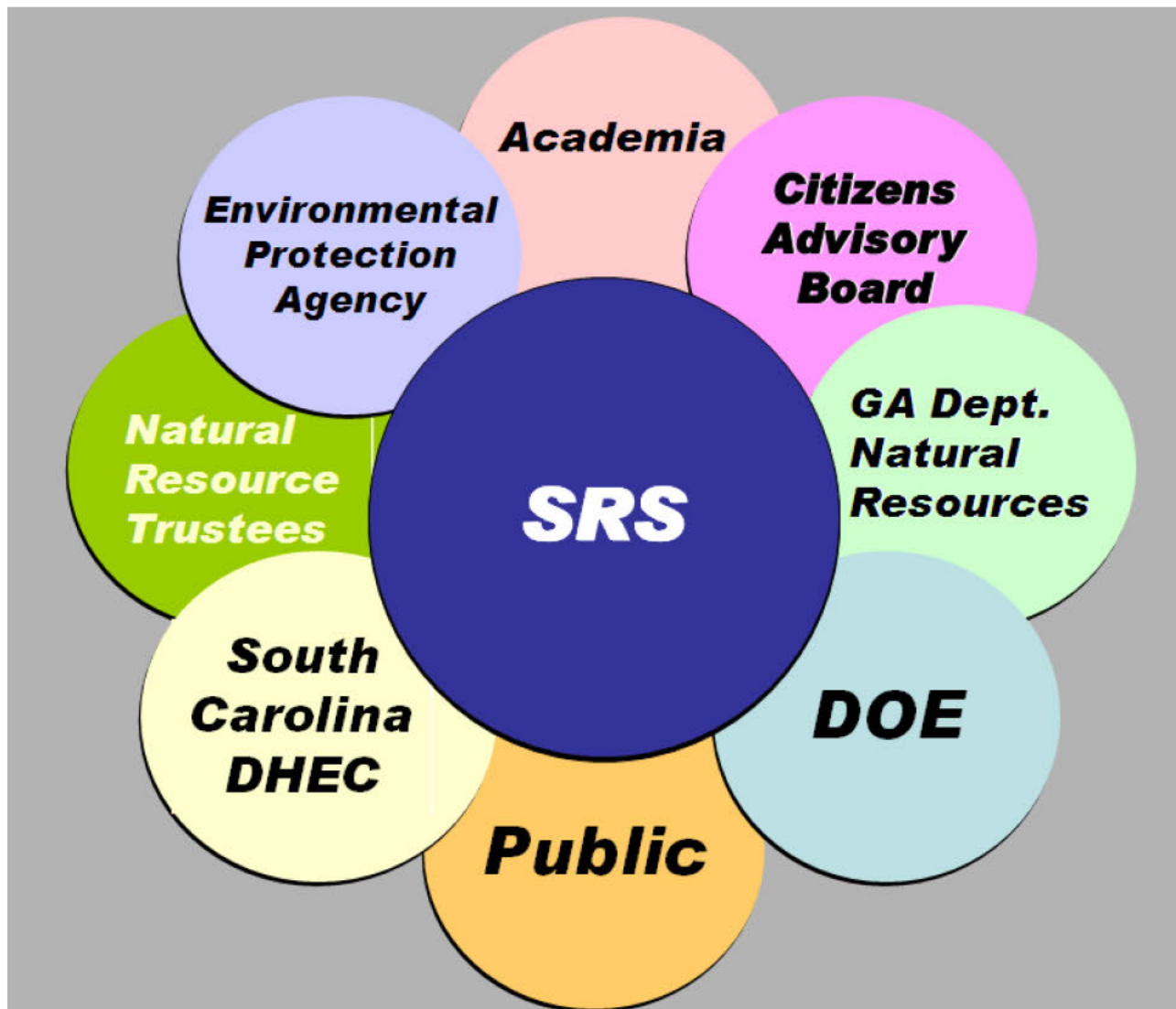
*1 in 10,000 **cancer** risk level (10^{-4})*

- or -

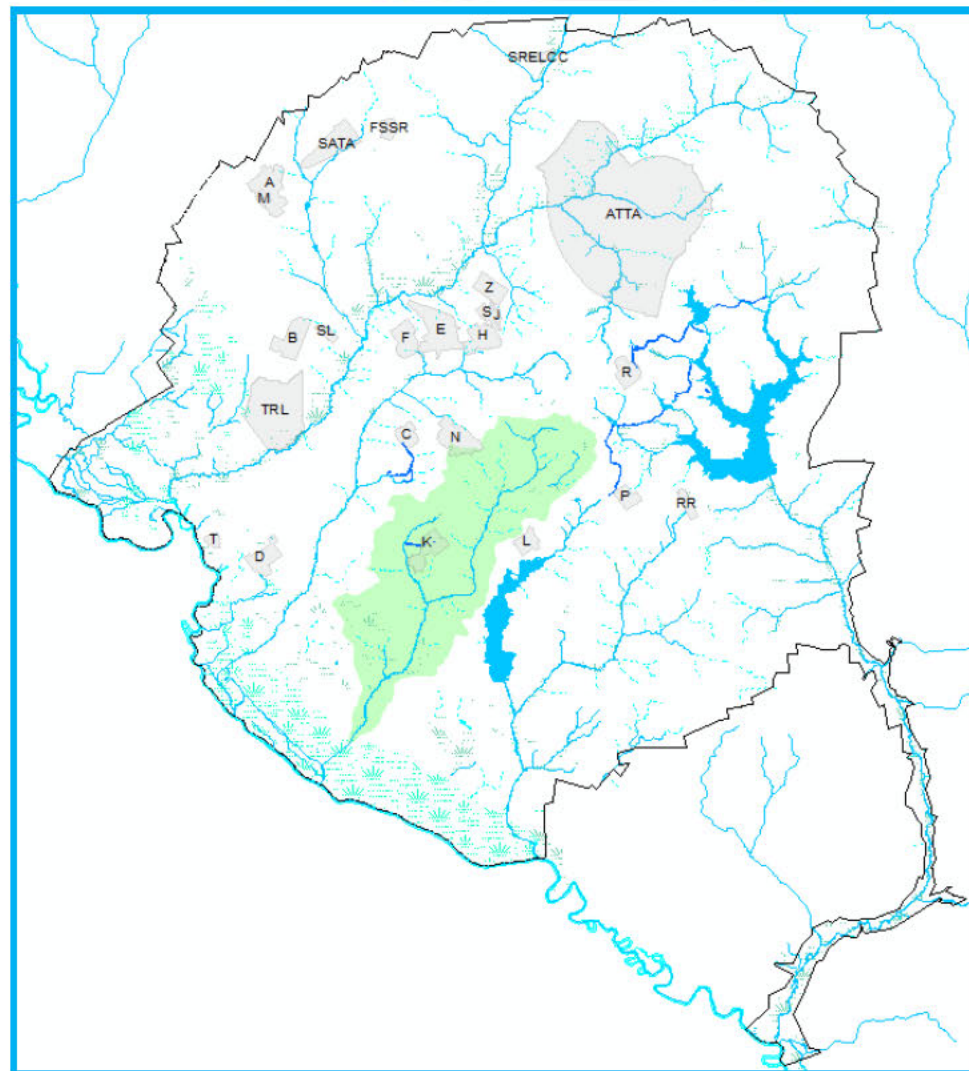
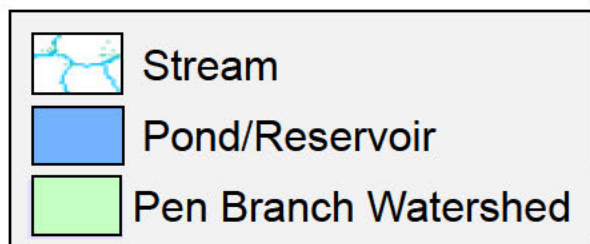
*3 x greater than **non-cancer** threshold
(Hazard Quotient = 3)*

Program Involvement

(Savannah River Site – Department of Energy)

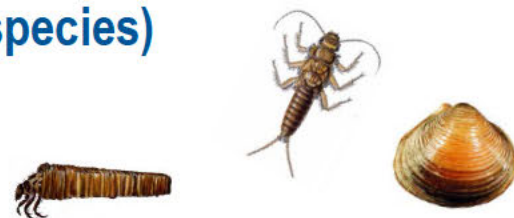


- **Phase I Field Start - Dec 2002**
- **Phase II Activities**
 - First Phase II Field Start – Dec 2004
 - Periodic Report (PR)# 4 - July 2015
 - 4th Phase II Field Start - May 2016
- **Phase III Field Start - Nov 2032**

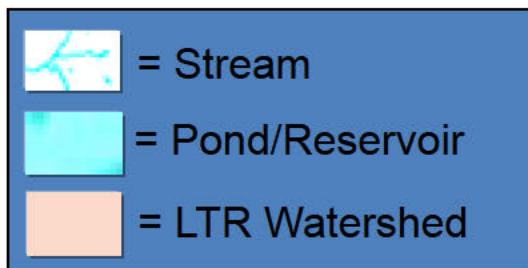
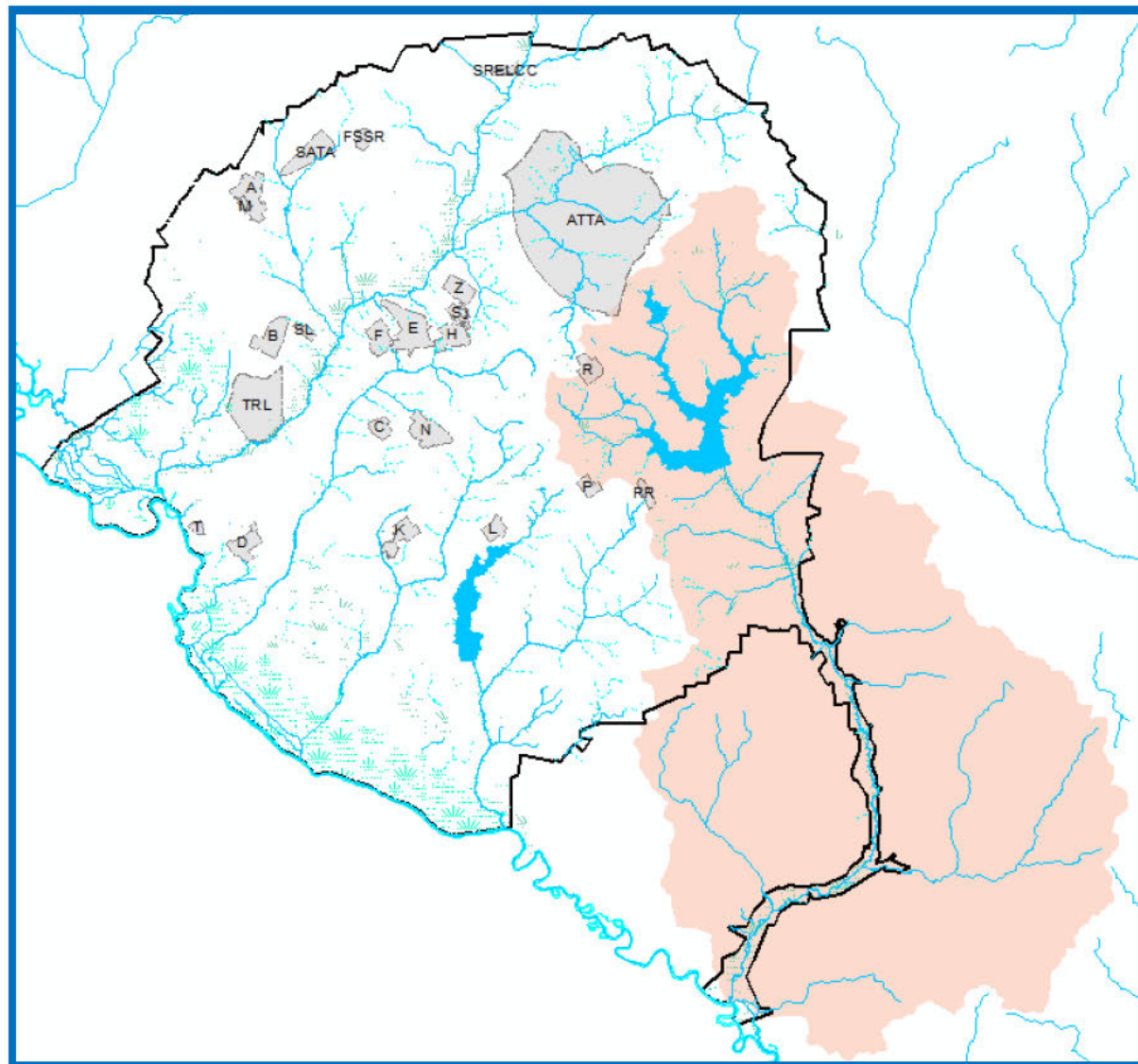


Pen Branch IOU - PR4

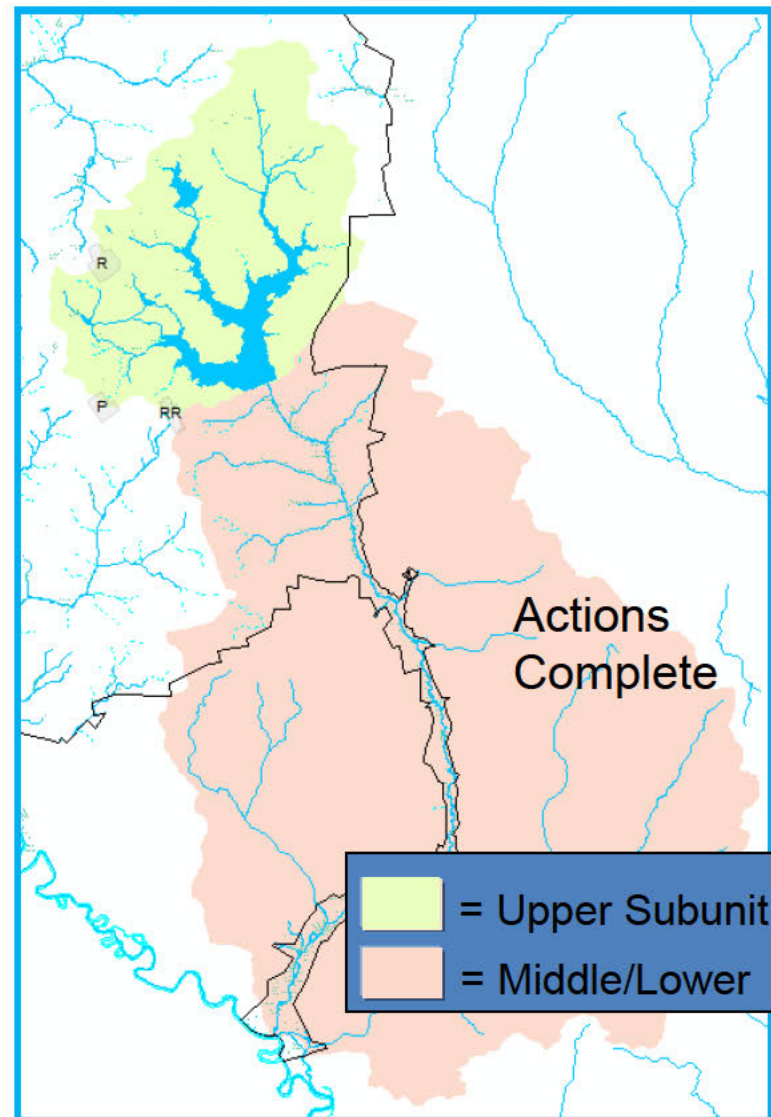
- Pen Branch PR4 Revision 0 - July 2015
- Human Health Evaluation
 - No problems warranting action were identified
- Ecological Evaluation
 - Trophic modeling showed a potential risk from mercury to the river otter, belted kingfisher, and blue heron in PB but also in background locations
 - No problems warranting action were identified
- Data Needs
 - Fish body burden data (predator, regional, and benthic species)
 - Fish and macroinvertebrate assemblage surveys



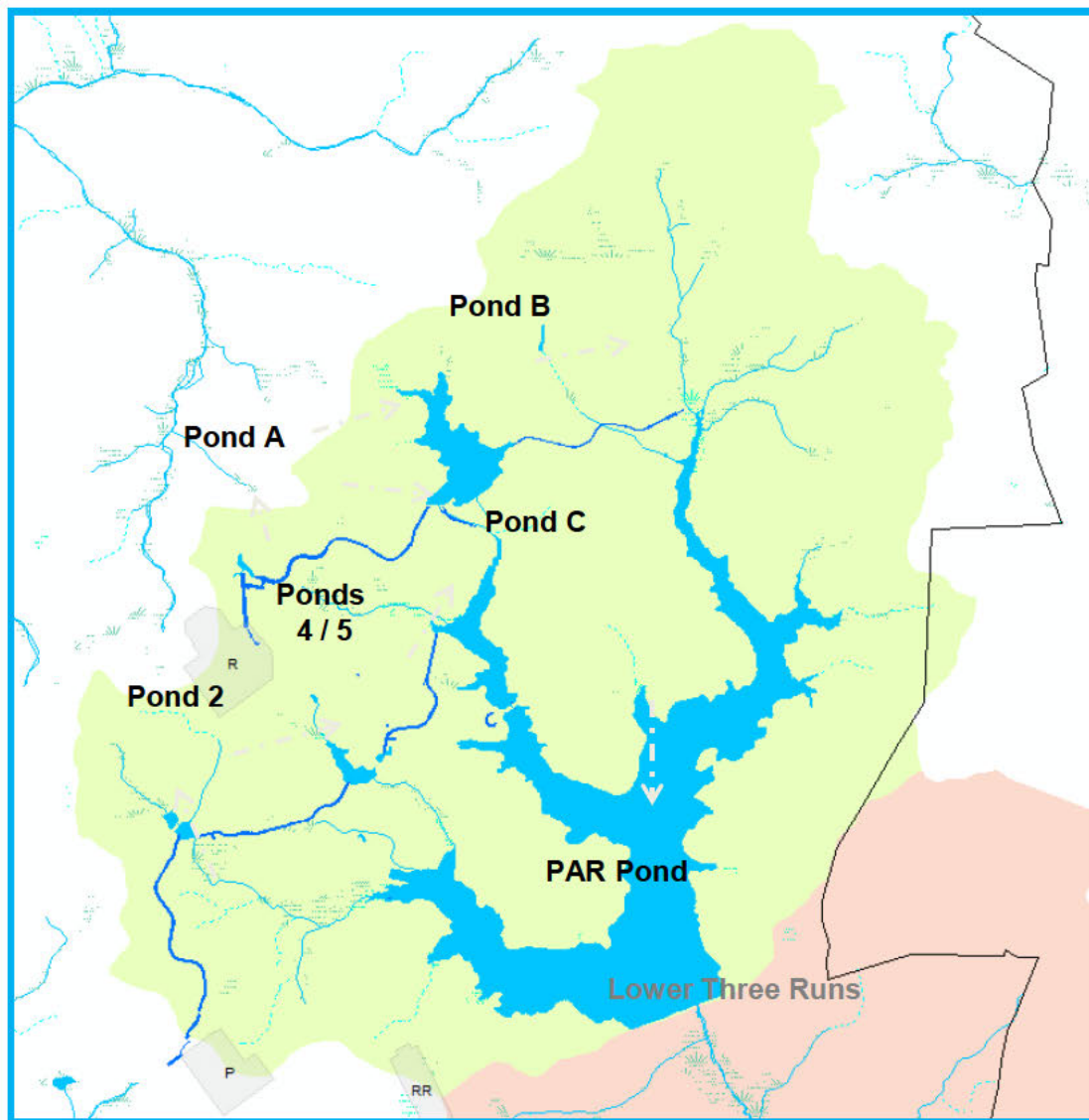
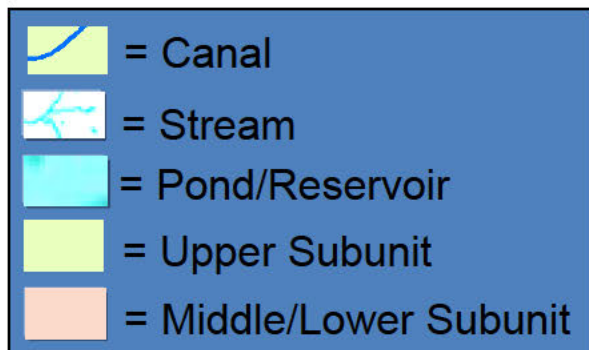
LTR Watershed



- Intensive characterization - 2009/2010
- Periodic Report 4 - Approved September 2012
 - Early Action taken in Middle and Lower subunits (below PAR Pond dam) and completed in 2012
 - Removal of cesium-137 contaminated sediment/soil
 - Additional fencing
 - Warning and no trespassing signs
- Phase III Field Start - March 2013



- The Phase III final assessment focuses on the Upper Subunit
 - PAR Pond
 - Pre-cooler ponds
 - Canal System



Scoping for the “final” assessment (Baseline Risk Assessment)

○ Define Exposure Areas and Determine Data Sufficiency

➤ *Human Health Risk Assessment*

- On-site Worker scenario identified for assessment

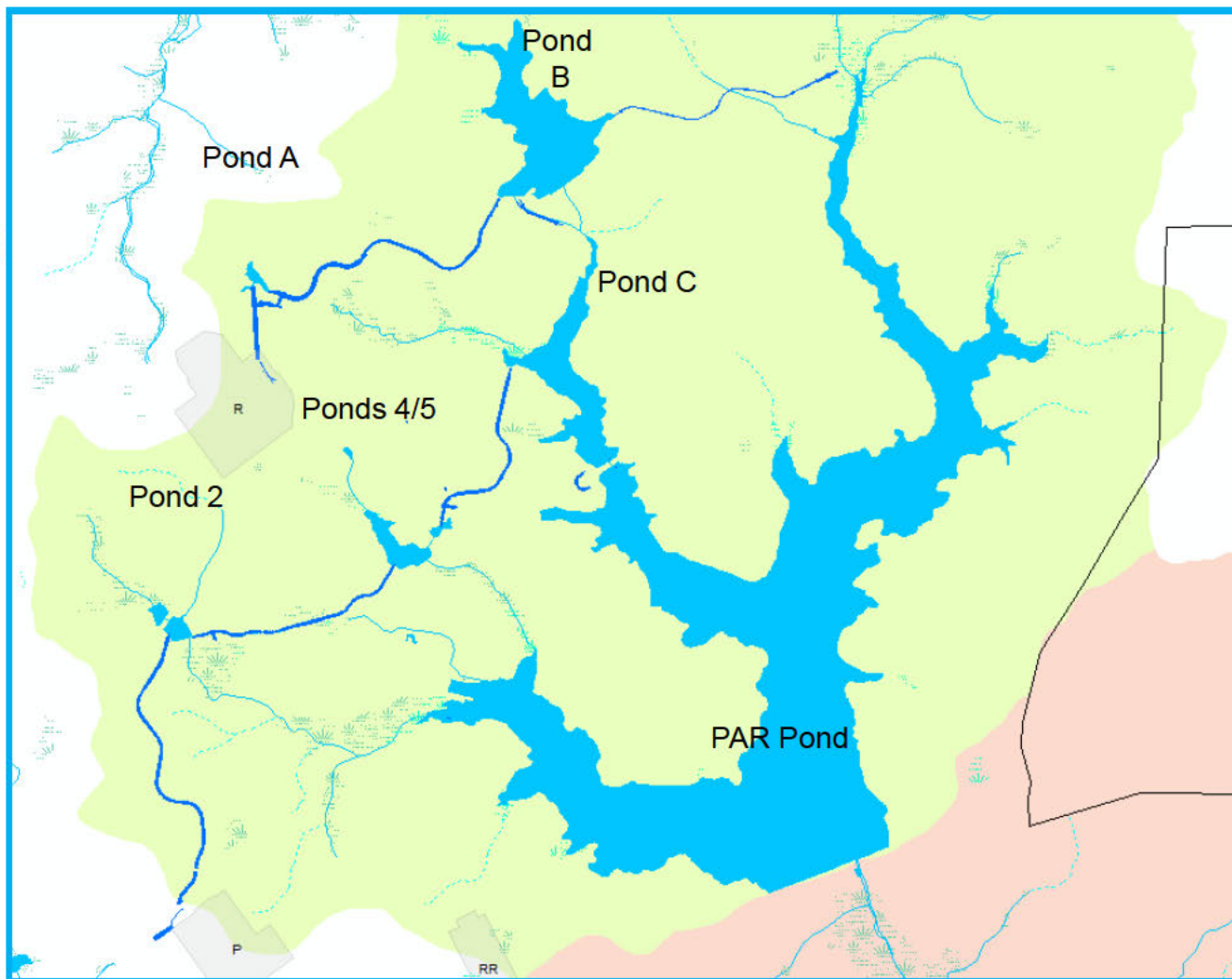
➤ *Ecological Assessment*

- Trophic modeling (great blue heron, raccoon, belted kingfisher, river otter)
- Evaluation of coots at Pond B, long-lived reptiles, and other biological data



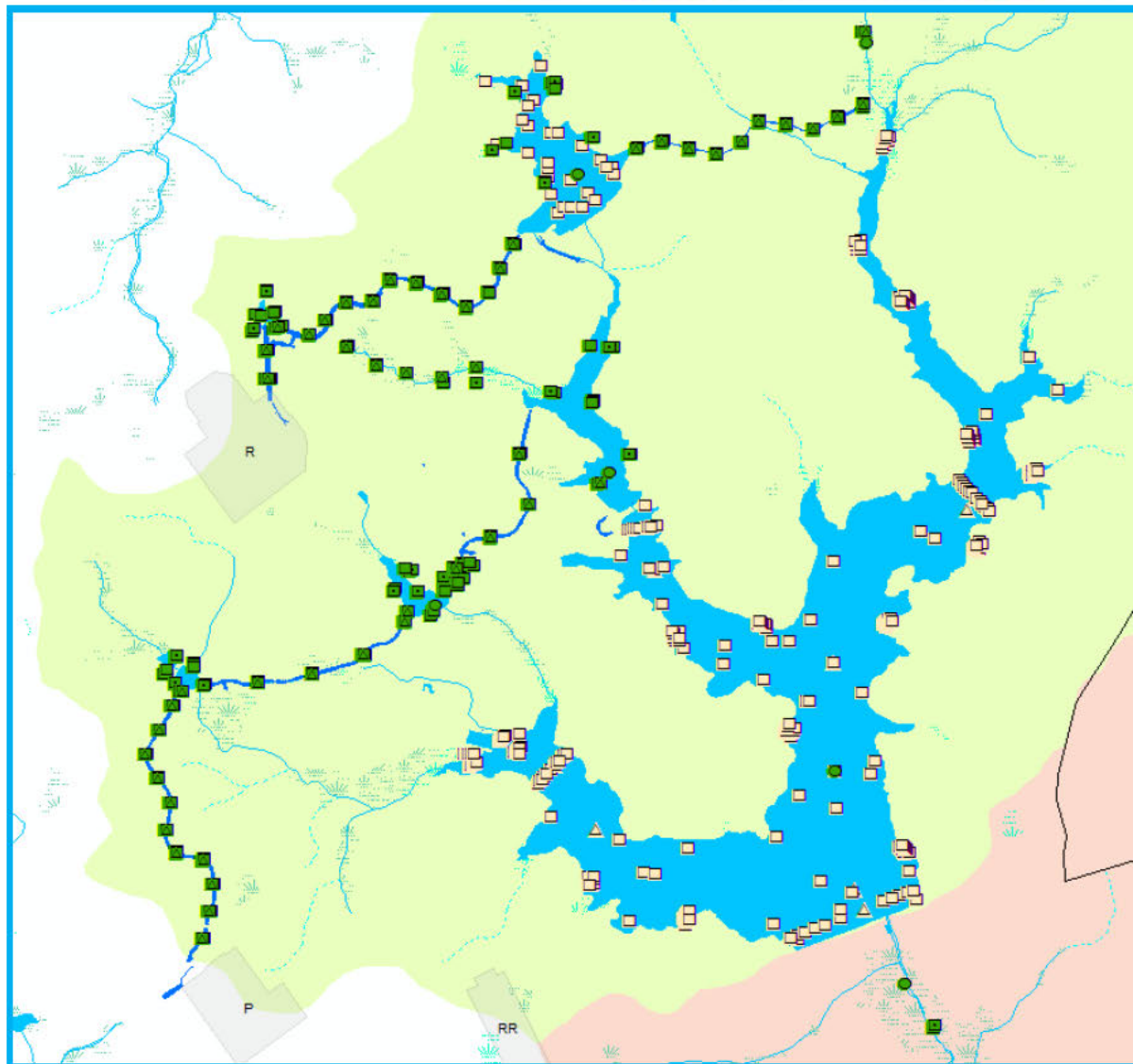
Exposure Area

Location where a receptor (human or wildlife species) may reasonably be assumed to move about and have contact with environmental media.

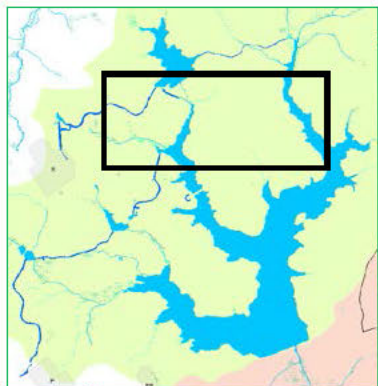


Data Sufficiency

Ensuring adequate
data exist to support
Phase III remedial
decision making.



LTR IOU – Pond C and PAR Pond



Pond C: 132 acres
PAR Pond: 2640 acres





LTR IOU – PAR Pond





LTR IOU – PAR Pond (View of Pond C Dam)







LTR IOU – PAR Pond (North Arm Canal Inlet)





202 Acres







LTR IOU – Canal (Between Pond B and PAR Pond North Arm)



LTR IOU – R Canal and Outlet Structure to Joyce Branch



LTR IOU – Pond A (Summer)



LTR IOU – Pond A (Winter)



IOU	FY14	FY15	FY16	FY17	FY18	Final ROD
Upper Three Runs	PR 4 Complete					2040
Fourmile Branch			PR 5			2038
Pen Branch		PR 4 Rev. 0				2037
Steel Creek					PR 6	2039
Lower Three Runs				BRA*		2020
Savannah River and Floodplain Swamp			PR 4			2041

* Baseline Risk Assessment supporting Phase III of the IOU program