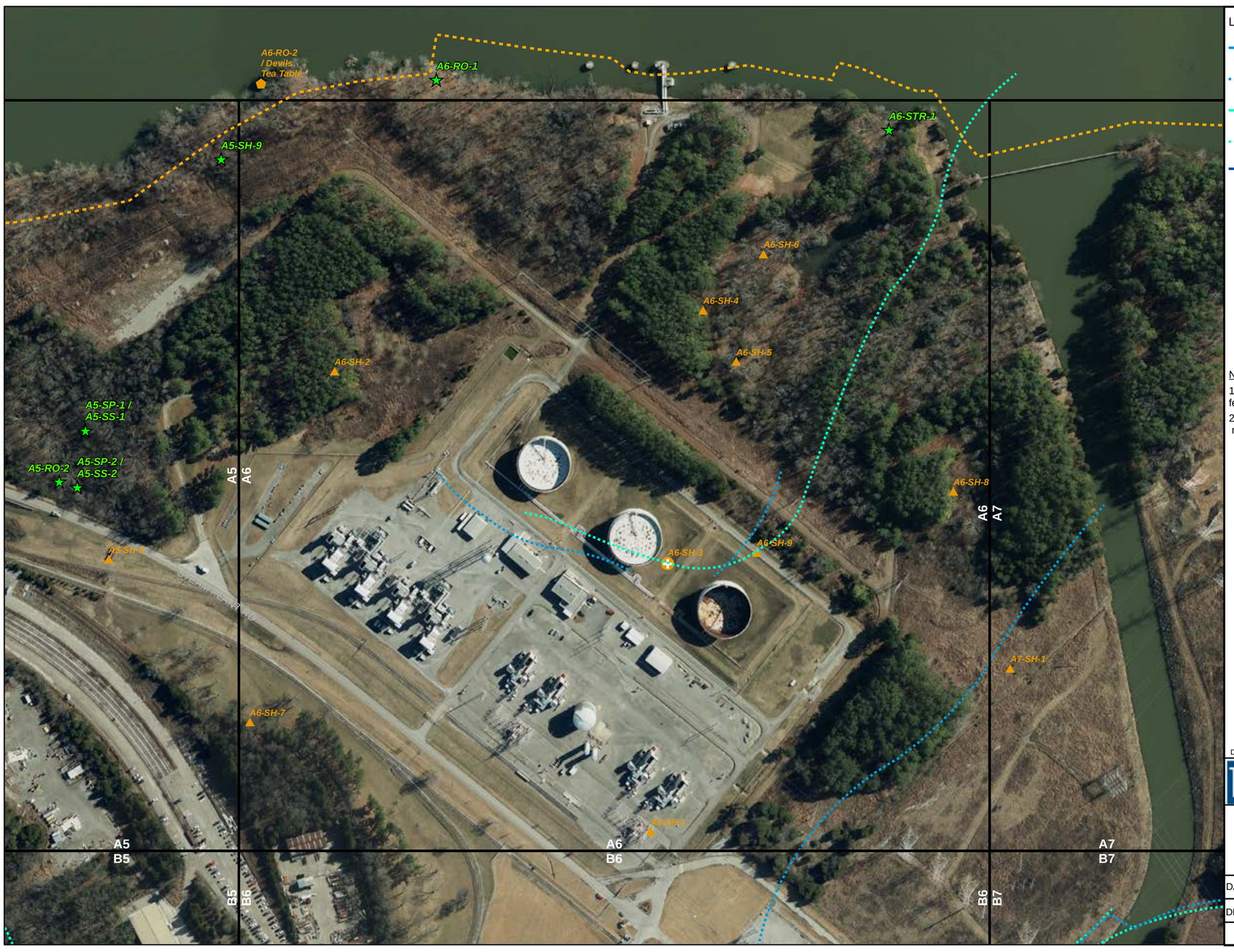
GALLATIN FOSSIL PLANT

EXAMPLE KARST INVENTORY RESULTS



LEGEND:

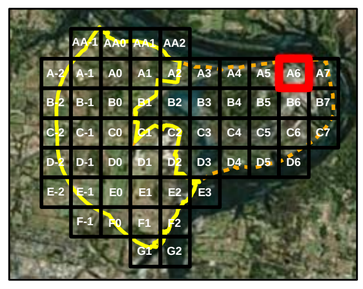
- 1930 Topographic Low
- Intermittent Drainage
- 1952 Topographic Low
- Intermittent Drainage
- USGS Stream
- Did Not Survey Parcel
- 1 Mile Radius
- 2000' Grid
- TVA Gallatin Boundary
- GPS Field Observation

Historically Reported Karst Features

- 1930
- 1950
- 1951
- 1952
- 1963
- 1970
- 2010
- USGS Sinkhole
- Repaired 1977
- Repaired 1978
- Repaired 1990
- Repaired 2007
- Repaired 2010

Notes:

1. Refer to Sheet 60 for additional notes regarding 1951 features.
2. Refer to Karst Inventory Catalog for further data regarding each feature noted herein.



N

0 250 500

Feet

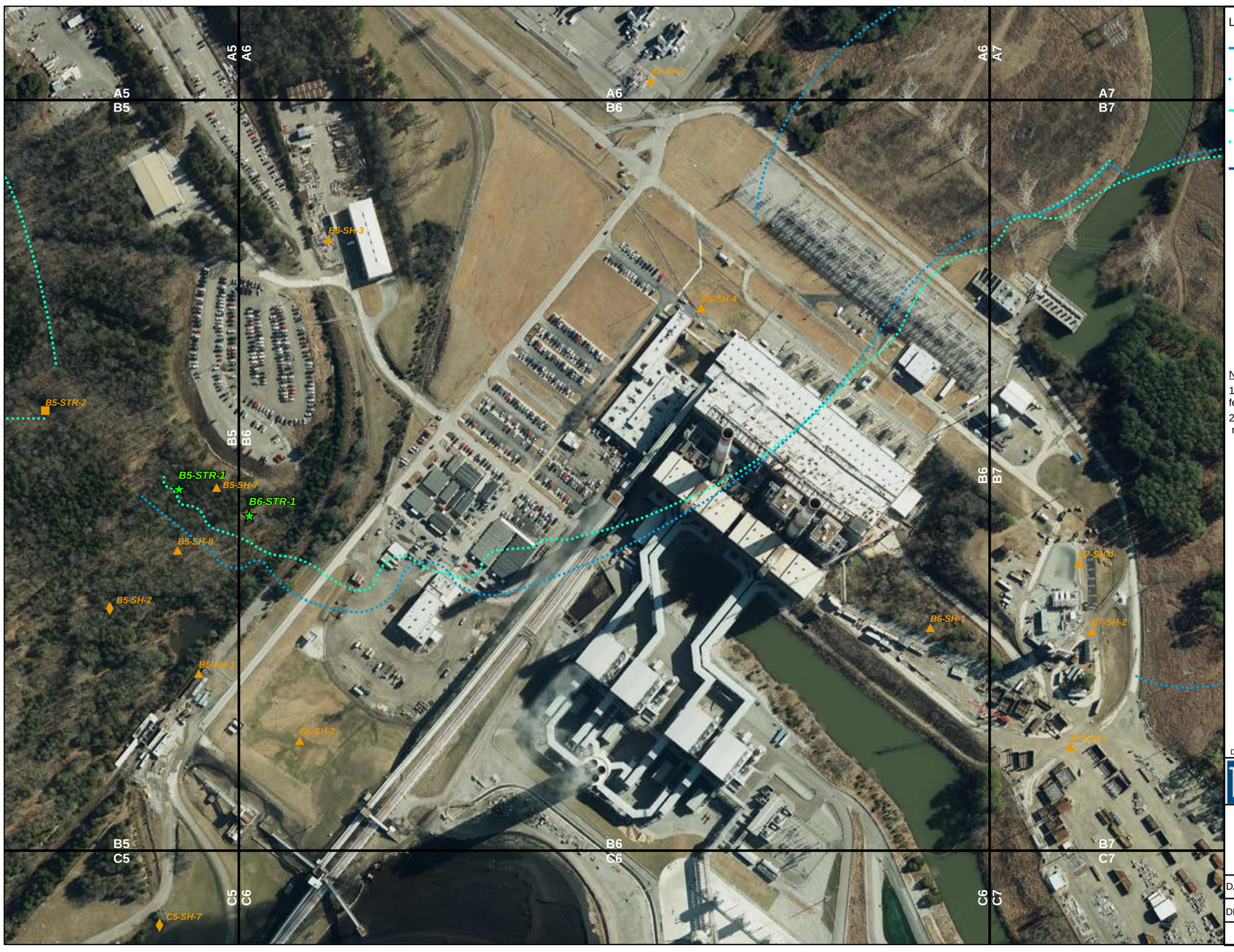
DATA SOURCES: DDS Engineering 2017

TENNESSEE VALLEY AUTHORITY
Gallatin Fossil Plant

KARST INVENTORY

Map Grid: A6

DATE: 3/3/2017	SHEET:15
DRAWN BY: M. SMITH	CHECKED BY: W. KUTSCHKE
	JOB NUMBER: 60513955



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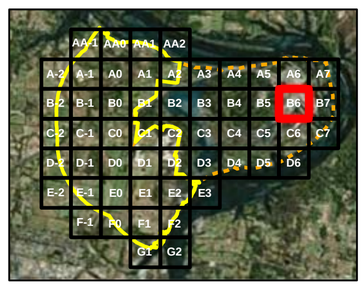


N

0 250 500

Feet

DATA SOURCES: DDS Engineering 2017

TENNESSEE VALLEY AUTHORITY
Gallatin Fossil Plant

KARST INVENTORY

Map Grid: B6

DATE: 3/2/2017	SHEET:25
DRAWN BY: M. SMITH	CHECKED BY: W. KUTSCHKE
	JOB NUMBER: 60513955

GALLATIN FOSSIL PLANT

SEEPAGE INVESTIGATION

What it is and why we do it

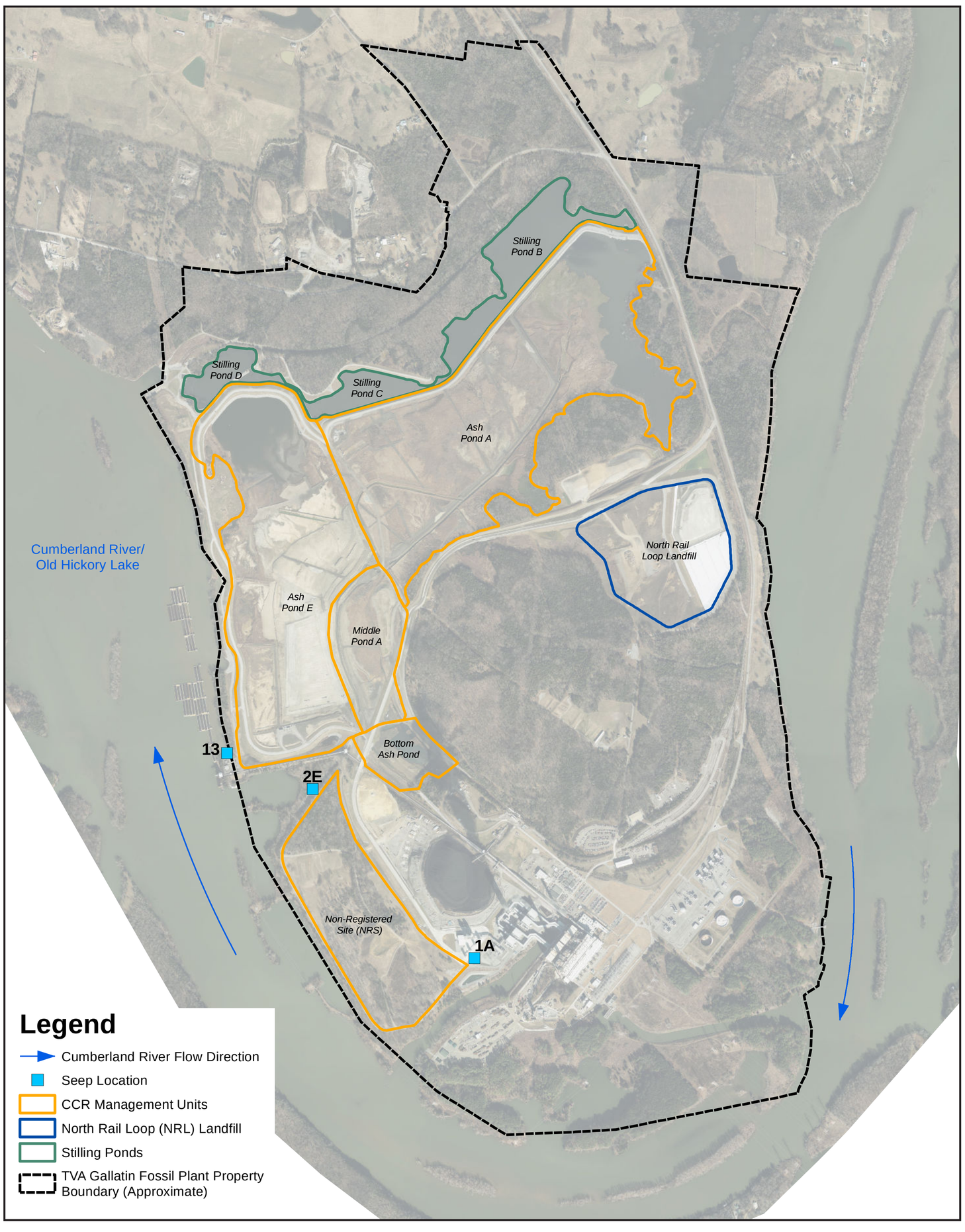
Dikes on the property are checked frequently to identify active seeps.

The soils and water at active seep areas are tested for CCR constituent levels.

What TVA had already done

- Conduct seep inspections in accordance with Seep Action Plan:
  - Quarterly for potential seepage areas
  - Monthly for active seepage areas until remediated
- Annual seep inspection report submitted to TDEC in accordance with National Pollutant Discharge Elimination System (NPDES) permit requirements

Seep Locations



Additional EIP Activities

- Conducted seepage investigation to identify active seeps
- Collected soil and water samples at identified seeps
- Analyzed samples for CCR constituents
- Compared analysis against background soils
- Report the analytical results in the Environmental Assessment Report (EAR)
- Develop Corrective Action Plan if needed

GALLATIN FOSSIL PLANT

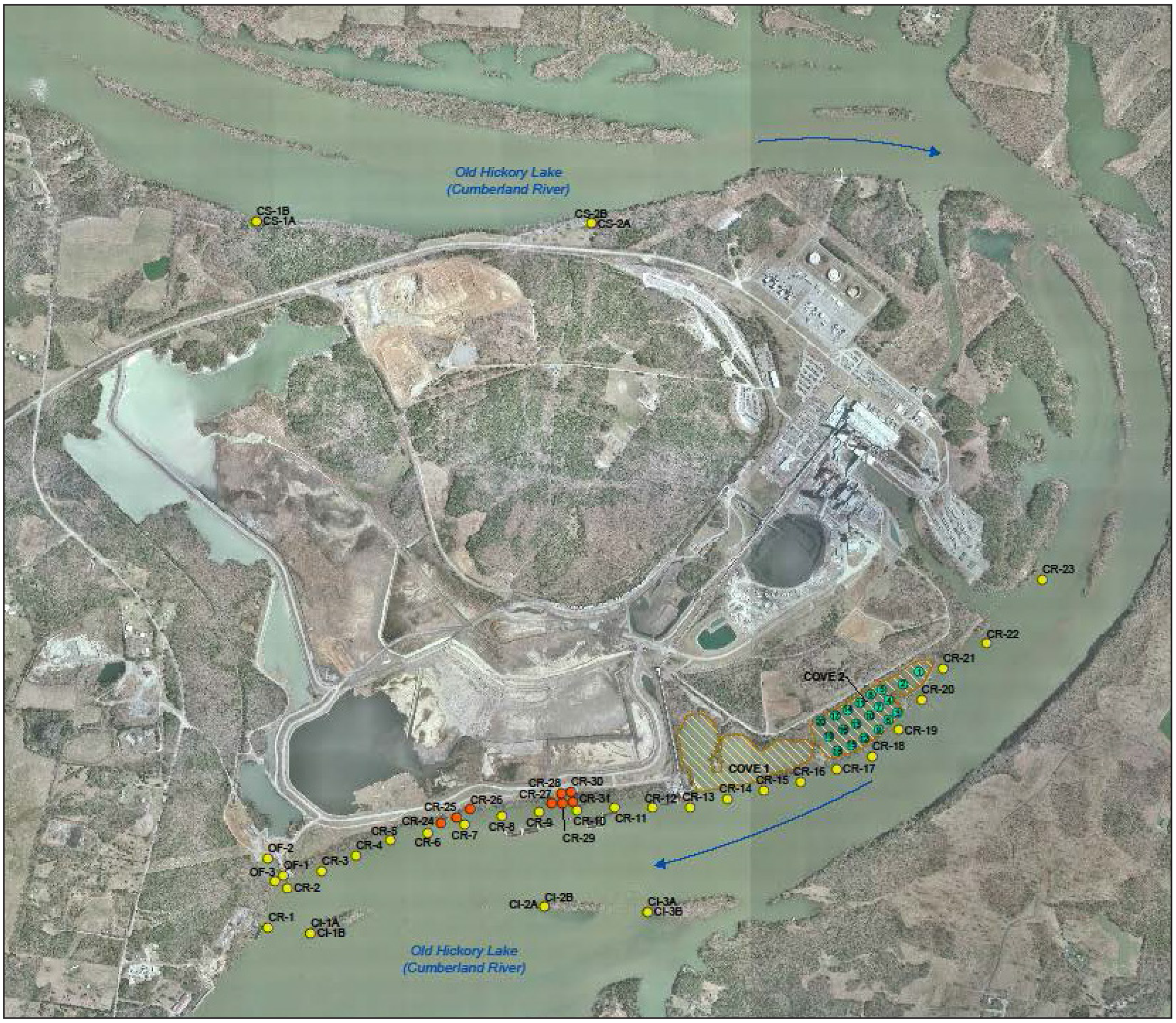
CUMBERLAND RIVER INVESTIGATIONS

INVESTIGATION	ACTIVITIES PERFORMED	PURPOSES
River Sediments and Benthic Invertebrates	• Collected sediment cores, segmented into layers, analyzed for % ash & CCR-related chemical constituents • Collected bottom-dwelling organisms (benthic invertebrates) from coves adjacent to GAF, upstream, and downstream • Compared community structure adjacent vs upstream/downstream • Measured bioaccumulation of CCR-related constituents	• Assess extent of CCR present in river • Evaluate whether GAF operations affect benthic ecology • Evaluate whether GAF operations affect bioaccumulation and whether levels of constituents are at harmful levels
River Water Quality	• Collected river water samples from multiple locations in the Cumberland River upstream, adjacent, and downstream of GAF • Analyzed samples for general water quality parameters and CCR-related constituents	• Compare with historical data and upstream/ downstream to evaluate whether GAF operations affect Cumberland River water quality
Fish Community and Bioaccumulation	• Caught (via electroshocking and netting), counted (by species), & released all species of fish present at locations upstream, adjacent, and downstream of GAF • Collected 6-fish composite samples of fish from locations upstream, adjacent, and downstream of GAF • Analyze fish tissues for CCR-related constituents	• Evaluate whether GAF operations affect fish ecology • Evaluate whether GAF operations affect bioaccumulation and whether levels of constituents are at harmful levels
Near-bottom Temperature and Conductivity	• Slowly cruised along parallel paths that tracked the river bank from near-shore to mid-channel, continuously monitoring water temperature, conductivity, and pH at one meter above the bottom	• Identify any temperature or conductivity anomalies that might be due to submerged seeps or springs
Aerial Imagery	• Collected aerial infrared imagery of the Cumberland River under summer and winter conditions	• Identify any temperature anomaly “signatures” that reach the water surface

GALLATIN FOSSIL PLANT

CUMBERLAND RIVER SEDIMENTS SAMPLING LOCATIONS

Sediment Sample Locations



Legend

- Cove 2 Sample Location
- River Sediment Sample Location
- Sample Location in Response to TDEC 10/24/2016 Comments
- Cumberland River Direction of Flow
- Cove Area

GALLATIN FOSSIL PLANT

SEDIMENT CORE SAMPLE

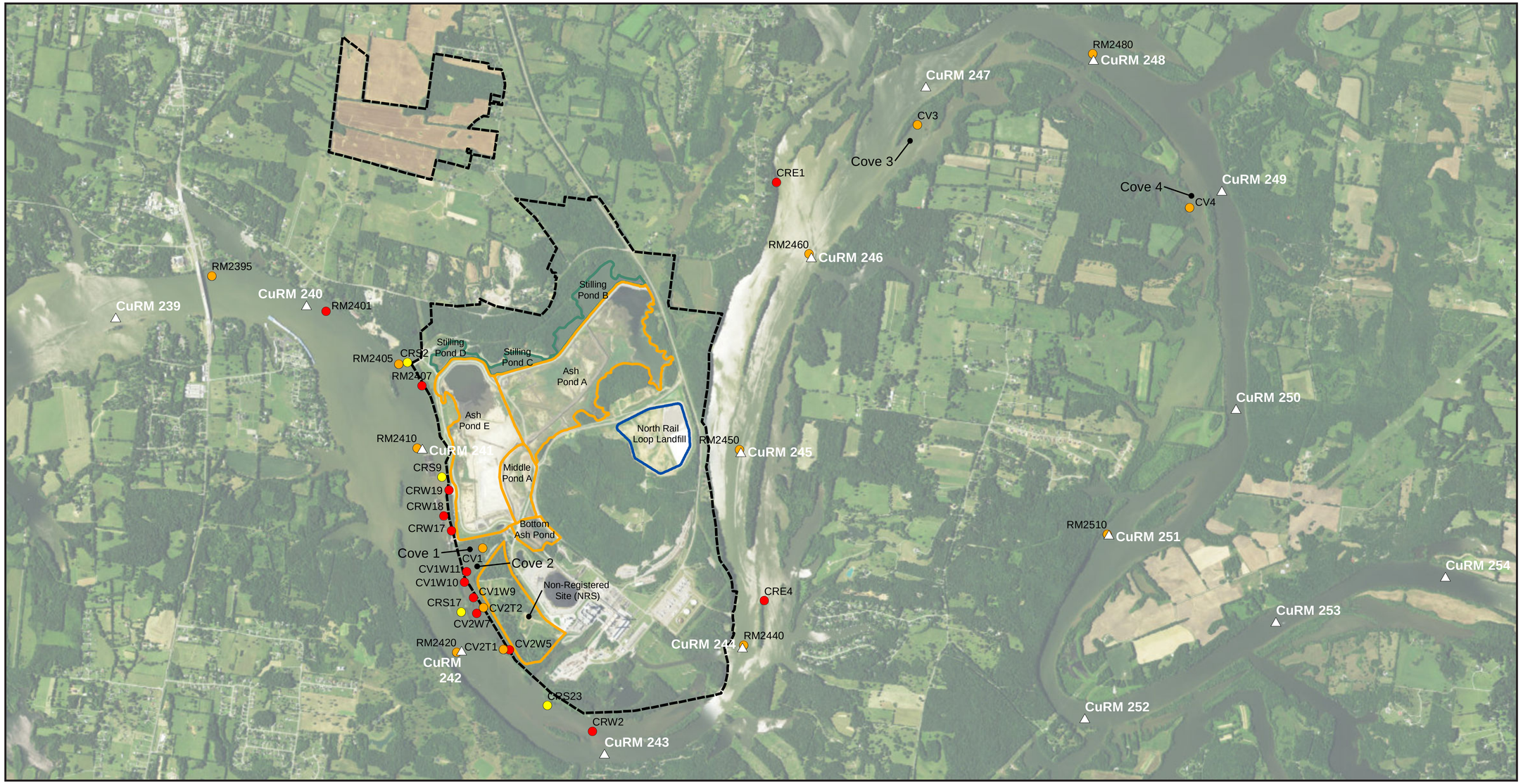
GALLATIN FOSSIL PLANT

BENTHIC INVERTEBRATE ORGANISMS

GALLATIN FOSSIL PLANT

CUMBERLAND RIVER WATER QUALITY SAMPLING LOCATIONS

Surface Water Sample Locations



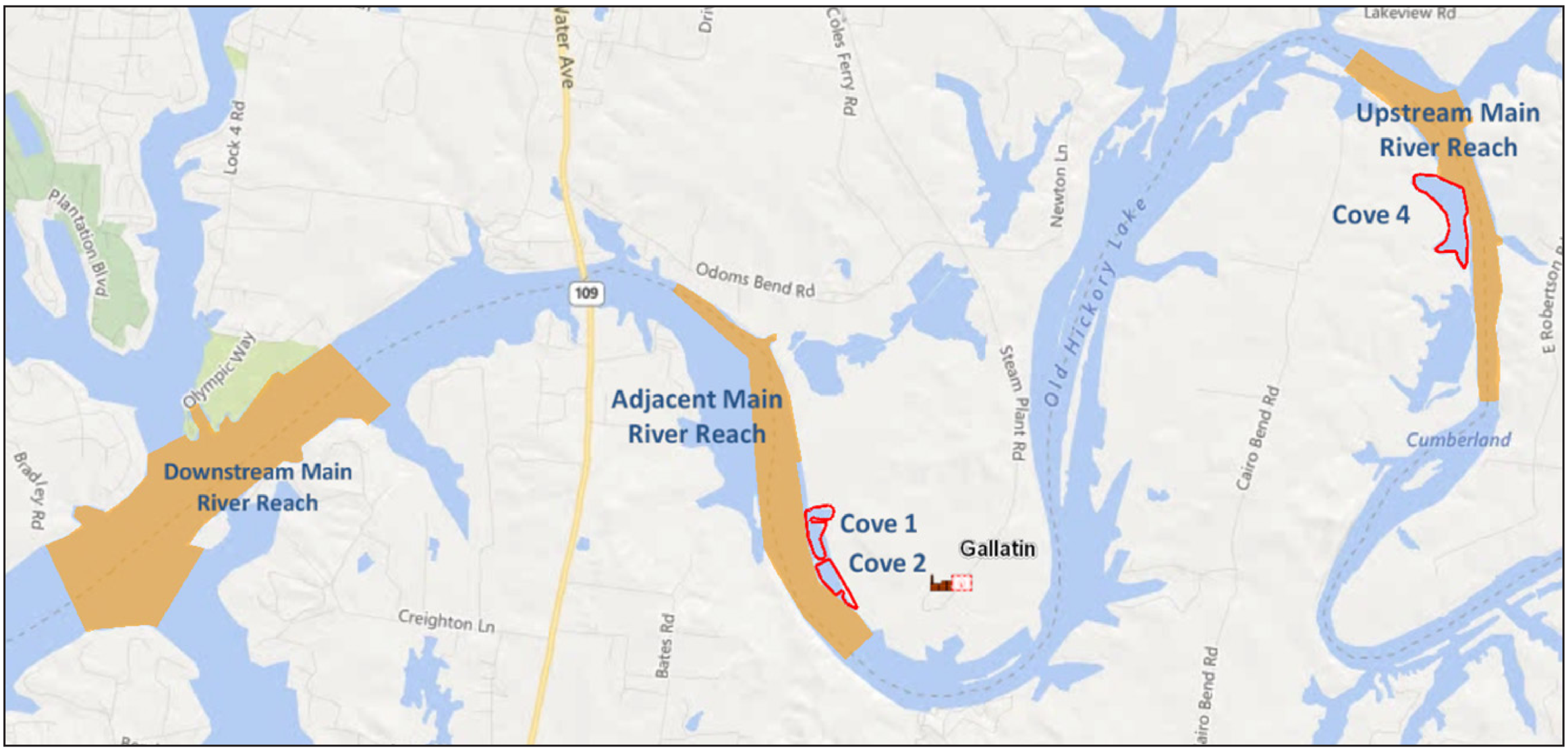
Legend

- River Mile
- Original November 2015 Sampling Locations
- Potential Anomalies
- Surfacewater Sampling at Sediment Sampling Locations
- TVA Gallatin Fossil Plant Property Boundary (Approximate)
- CCR Management Units
- North Rail Loop (NRL) Landfill
- Stilling Ponds

GALLATIN FOSSIL PLANT

FISH BIOACCUMULATION SAMPLING

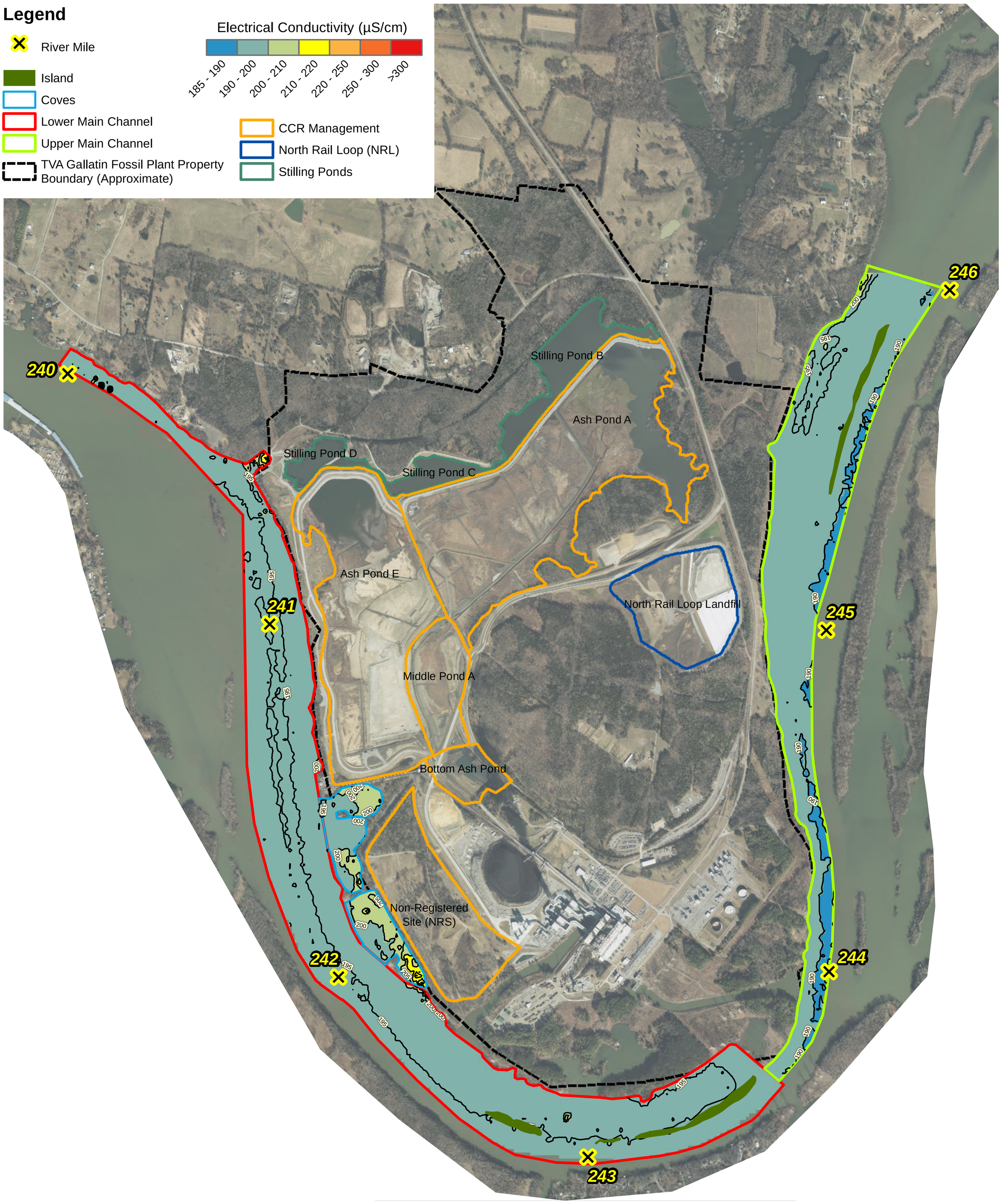
Fish Sampling Locations



Electroshock Fishing

GALLATIN FOSSIL PLANT

NEAR-BOTTOM TEMPERATURE AND CONDUCTIVITY



GALLATIN FOSSIL PLANT

COMMUNITY ACTION GROUP

TVA is creating a Community Action Group (CAG) to help encourage dialogue and communicate the status and plans for activities at the Gallatin site.

Roles of Community Action Group

- Identify community concerns and share them with TVA
- Identify ways in which to communicate to the larger community about CAG efforts and activities
- Communicate opportunities for the public to provide comment and/or input
- Educate their community on how to find information that can answer questions and concerns on the safe management of coal combustion residuals (CCR)

Who can apply

Full-time residents of Sumner and Wilson Counties (must be age 18 years or older)

Terms and Membership

Each Community Action Group will consist of no more than 14 community members

One-year and two-year terms (randomly selected from membership)

Terms are staggered so that there is always a clear link to previous discussions and activities

Volunteer opportunity - compensation for service will not be provided. Certain out-of-pocket expenses can be reimbursed, if requested

Once assembled, the Community Action Group will decide where, when and how often they meet and how they will communicate. Local administrative support will be provided to assist their work

GALLATIN FOSSIL PLANT

SURFACE IMPOUNDMENT CLOSURE AND RESTORATION EIS

TVA is preparing an Environmental Impact Statement (EIS) to address potential environmental effects associated with several projects to facilitate long-term management of CCR.

Proposed Alternatives

- Alternative A – No Action Alternative
- Alternative B – Closure of All Surface Impoundments via Closure-by-Removal, the Potential Removal of De Minimis CCR from the Stilling Ponds, and Expansion of the Existing Onsite Landfill. Note that CCR could be removed to either an on-site landfill or to a beneficial reuse facility.

GALLATIN FOSSIL PLANT

GALLATIN AGREEMENTS

In June 2019, TVA entered into two agreements with TDEC to close the various units at GAF.

Commissioner's Order - Non-Registered Site

- Impacts the Non-Registered Site and known groundwater impacts at the unit
- TVA plans to conduct a treatability test to evaluate various reagents to adjust the groundwater pH to reduce the concentrations of target metals
- A field demonstration will be performed with the most promising reagents to determine if the remediation approach is effective at the unit
- The Treatability Testing and Field Demonstration Plans will be submitted to TDEC for approval
- The results of this study will inform the final closure of the unit

Treatability Test Work Plan

Complete Treatability Testing and Field Investigation

Interim Reporting to TDEC:
- Treatability Test Report
- Field Investigation Report
- Field Demonstration Work Plan
- Monitoring Plan

Implement Field Demonstration and Monitoring Plan

Annual Interim Reporting to TDEC

Corrective Action Risk Assessment (CARA) Plan

1 YEAR

5 YEARS

GALLATIN FOSSIL PLANT

GALLATIN AGREEMENTS

In June 2019, TVA entered into two agreements with TDEC to close the various units at GAF.

Consent Order - Ash Ponds

- Impacts the Bottom Ash Pond, Ash Pond A, Ash Pond E, Middle Pond A, and Stilling Ponds
- TVA will excavate and remove CCR from the units and store in a lined landfill and/or process the material for beneficial reuse
- The NEPA process is underway to address any potential environmental impacts of the closure-by-removal activities and final disposition of CCR

Environmental Impact Study (EIS)

Environmental Assessment Report (EAR)

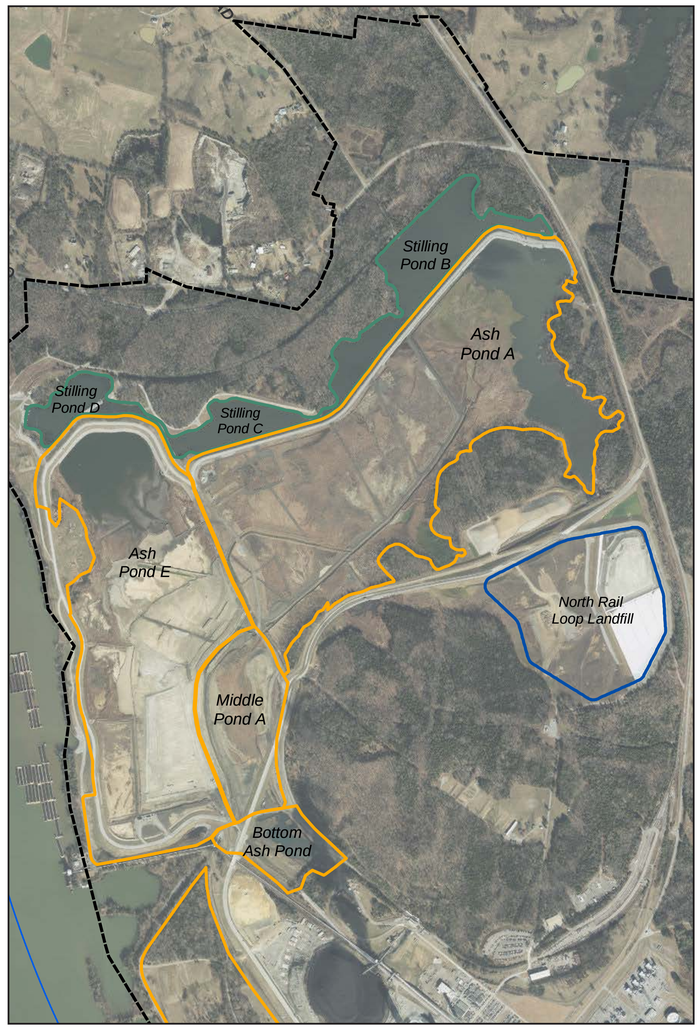
Required Plans:
- Removal Plan
- Monitoring Plan
- Groundwater Corrective Action Risk Assessment (CARA) Plan

Implement Ash Pond CCR Removal and Groundwater Corrective Actions

Annual Interim Reporting to TDEC

1 TO 2 YEARS

20 YEARS



GALLATIN FOSSIL PLANT

SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

Gallatin Fossil Plant Bottom Ash Dewatering Facility Permanent Flow Management System

TVA is preparing a Supplemental Environmental Assessment (SEA) to address the potential environmental effects associated with a permanent flow management system to treat process wastewater at the Gallatin Fossil Plant (GAF). The SEA supplements an Environmental Assessment (EA) and subsequent Finding of No Significant Impact (FONSI) that TVA issued in 2017, which evaluated a bottom ash dewatering (BADW) system that is currently under construction.

Proposed Alternatives

- Alternative A – No Action
- Alternative B – Closure of the Bottom Ash Pond, Construction of Process Water Basin(s) and Permanent Flow Management System

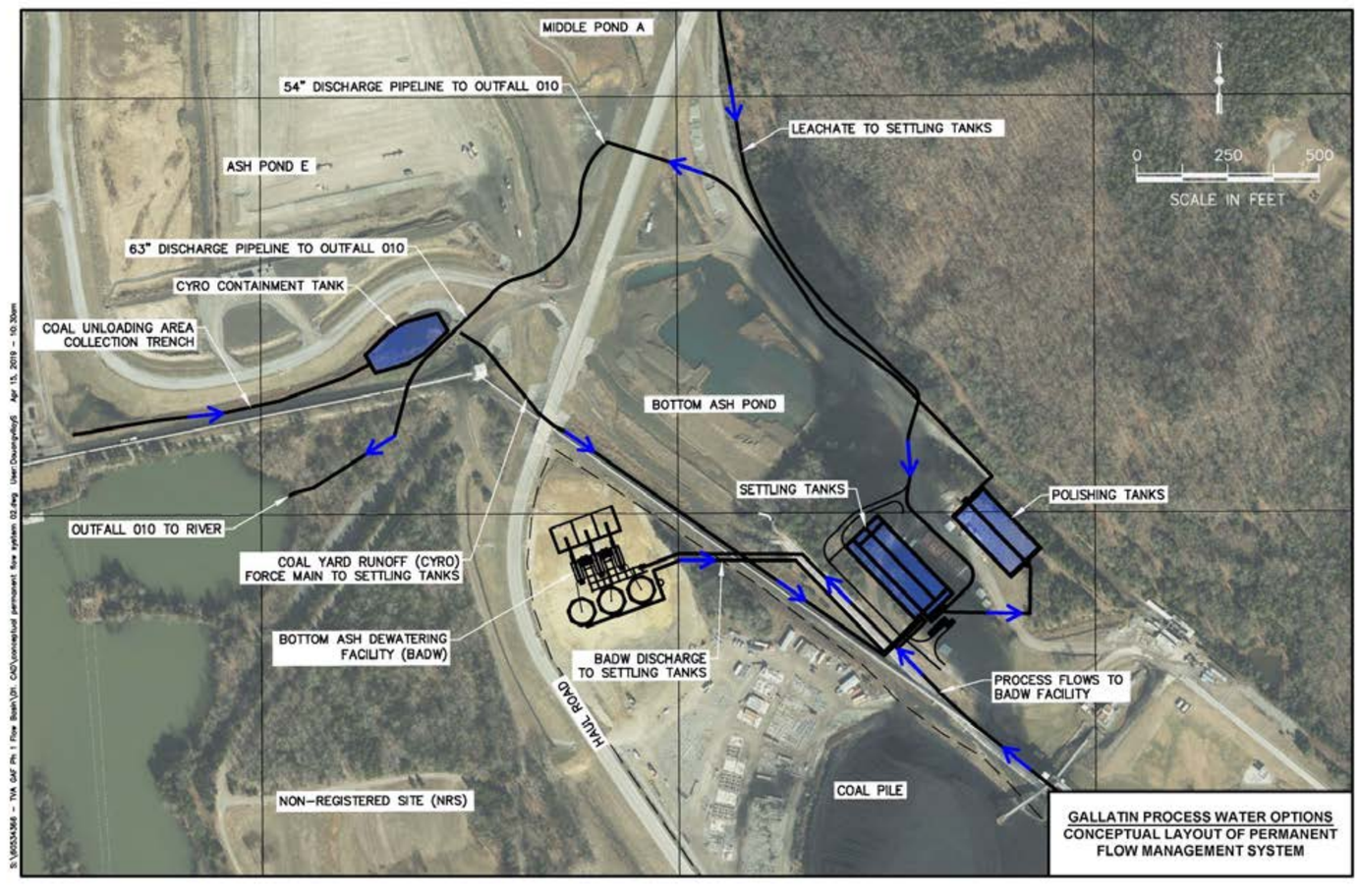
TVA's preferred alternative is Alternative A, under which permanent modifications would be made to the interim flow management system and it would continue to treat process water flows from GAF until the BADW system becomes operational. Under Alternative A, the Bottom Ash Pond would not be closed for the purpose of constructing the process water basin(s) and the process water basin(s) would not be constructed.

Public Comment

TVA will accept comments on the Draft SEA that it receives no later than October 9, 2019. Any comments received, including names and addresses, will become part of the administrative record and will be available for public inspection.

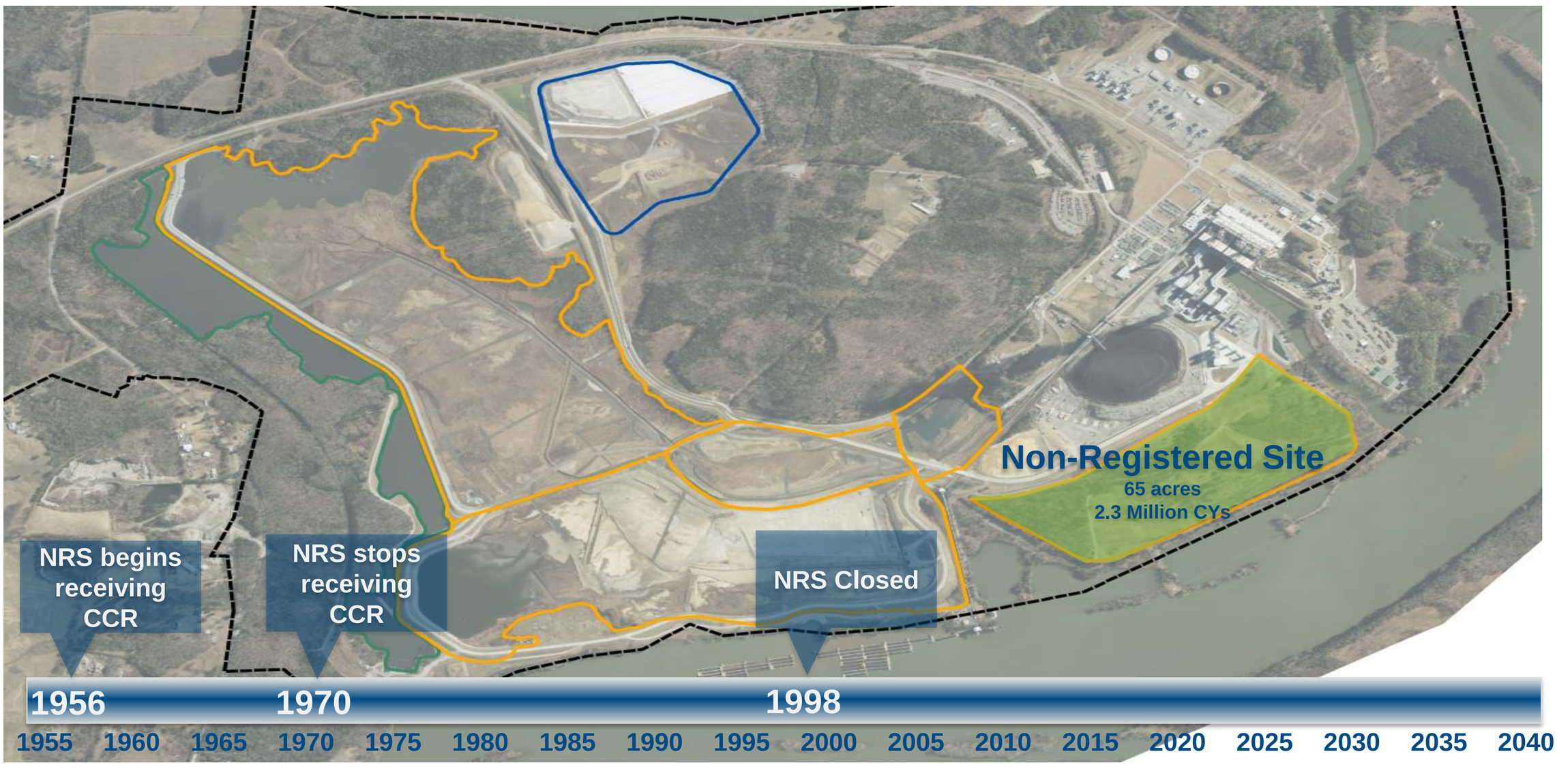
Comments can be submitted online or emailed to arfarless@tva.gov

Comments can also be mailed to:
Tennessee Valley Authority
ATTN: Ashley Farless,
GAF BADW SEA
1101 Market St., BR2C-C
Chattanooga, TN 37402

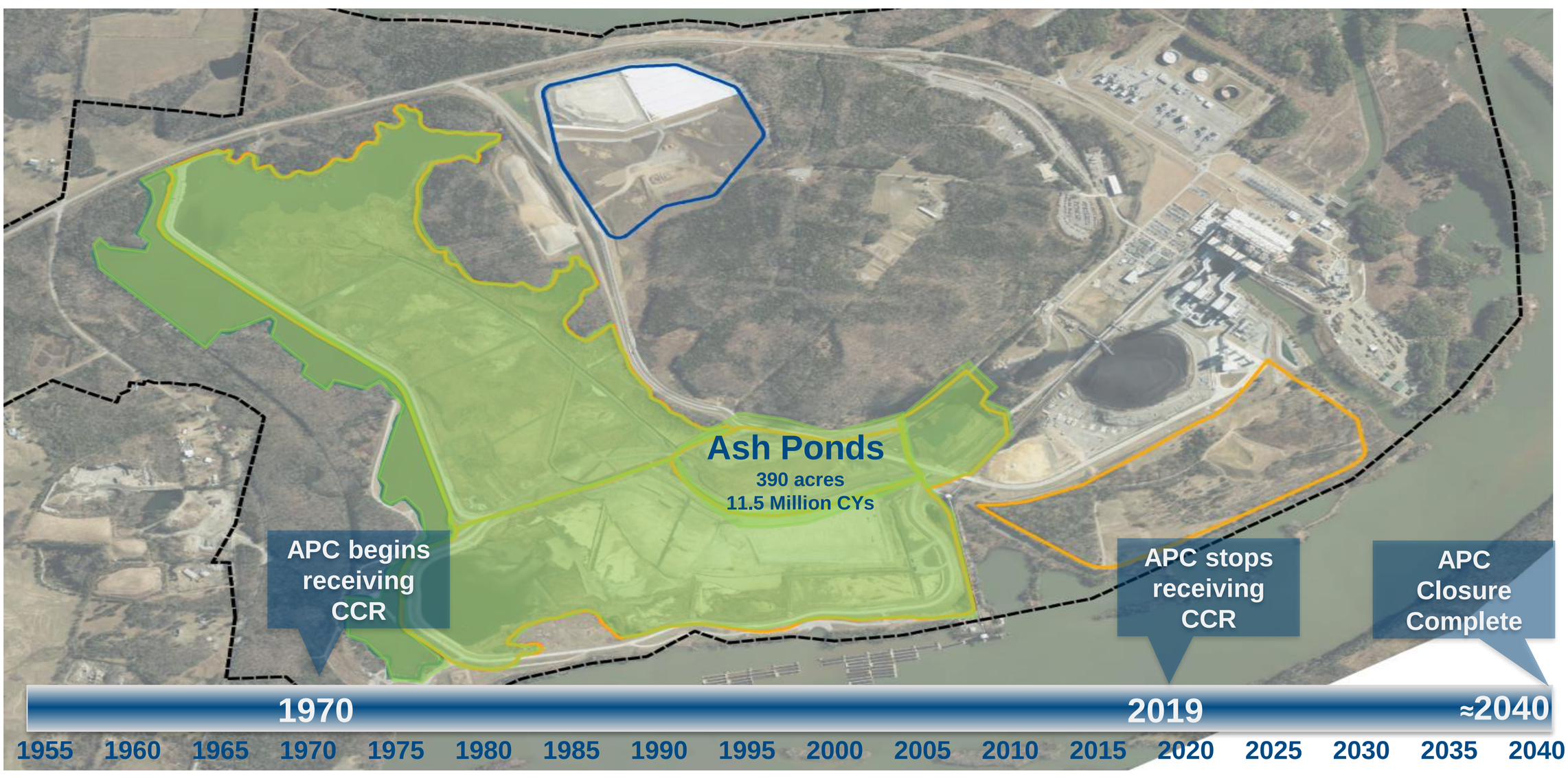


GALLATIN FOSSIL PLANT

LEGACY CCR AREAS



Non-Registered Site



Ash Ponds

GALLATIN FOSSIL PLANT

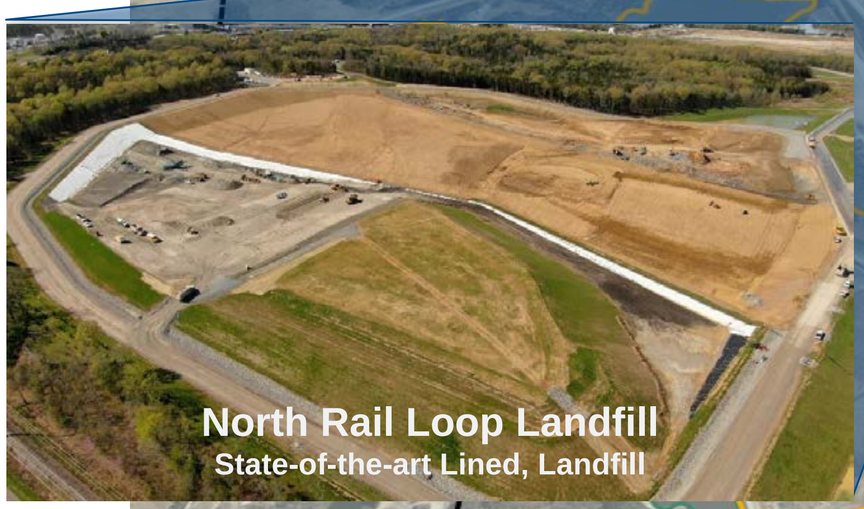
ENVIRONMENTAL STEWARDSHIP

Air Quality Improvements

Air Quality Improvements

- NOx Reduction
  - Low NOx Burners
  - Super Overfired Air
- Scrubber
  - SO^2
  - Mercury
- SCR
  - NOx

Air Quality Improvements



North Rail Loop Landfill

GALLATIN FOSSIL PLANT

ENVIRONMENTAL STEWARDSHIP

Plant Process Water Treatment

Flow Management System

- $46M investment
- In service June 2019
- No more CCR solids or flows to Ash Ponds
- Temporary Bottom Ash Dewatering
- Water treatment

Flow Management in-service

2019

1955 1960 1965 1970 1975 1980 1985 1990 1995 2000 2005 2010 2015 2020 2025 2030 2035 2040

Bottom Ash Dewatering

Bottom Ash Dewatering

- In-service Fall 2019
- $75M investment
- Final step in dry ash conversion

BADW In-service

2019

1955 1960 1965 1970 1975 1980 1985 1990 1995 2000 2005 2010 2015 2020 2025 2030 2035 2040