

Greenville County's IDDE Program Goes "Mainstream": 40 Miles of Kayaking on the Reedy

Judy Wortkoetter, PE- Greenville County, SC

Ben Hammond, PE- Woolpert Inc.

James Riddle, PE- Woolpert Inc.

Greenville County

- * Greenville County- 800 sq. miles
- * NPDES Phase I Stormwater Permittee
 - * Medium MS4
 - * First Permit Cycle: 2001
 - * Second Permit Cycle: 2007
 - * Currently between permits
- * Co-permittees
 - * Traveler's Rest
 - * City of Mauldin
 - * City of Simpsonville
 - * City of Fountain Inn



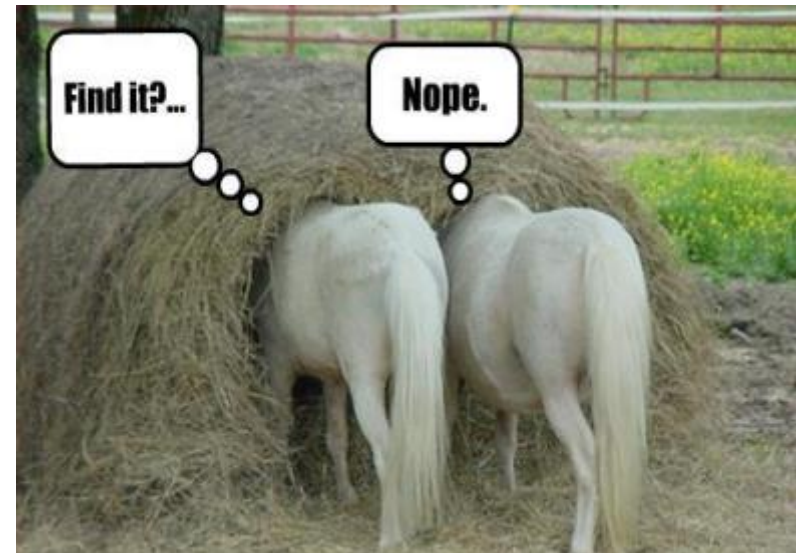
History of Greenville County IDDE Program

- * 1st Permit Cycle
 - * Outfall Inventory + Dry Weather Screening
- * Chemical and Physical Parameters as indicators of:
 - * Potable water
 - * Waste water



History of Greenville County IDDE Program

- * Outfall inventory completed during 1st permit cycle
 - * Cost prohibitive to perform each year
- * 2nd permit cycle IDDE Requirements Include
 - * Ambient monitoring and response

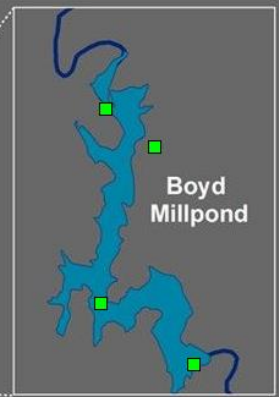
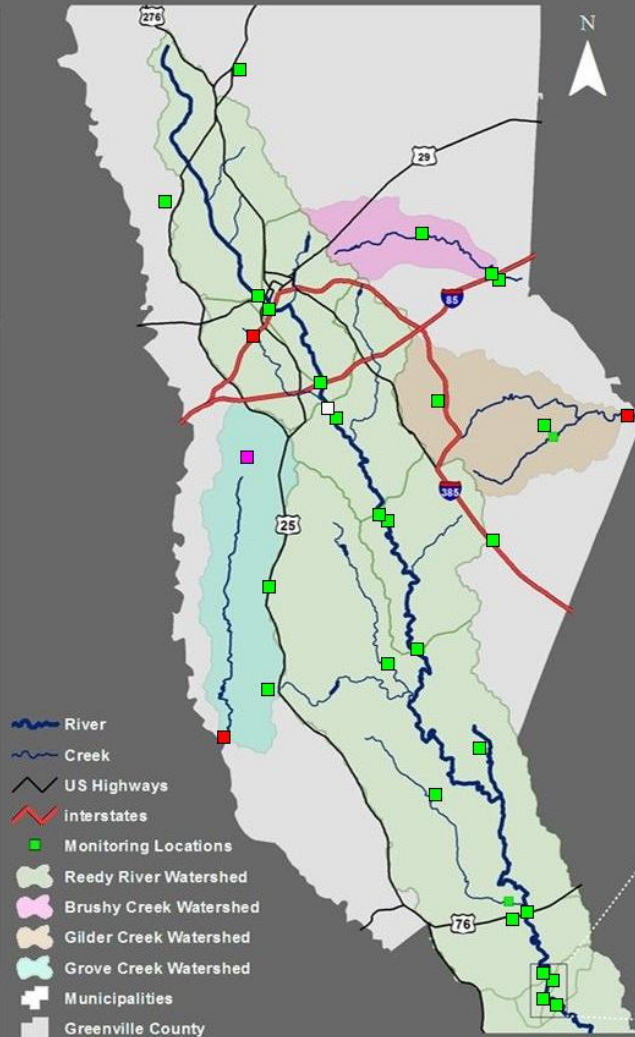
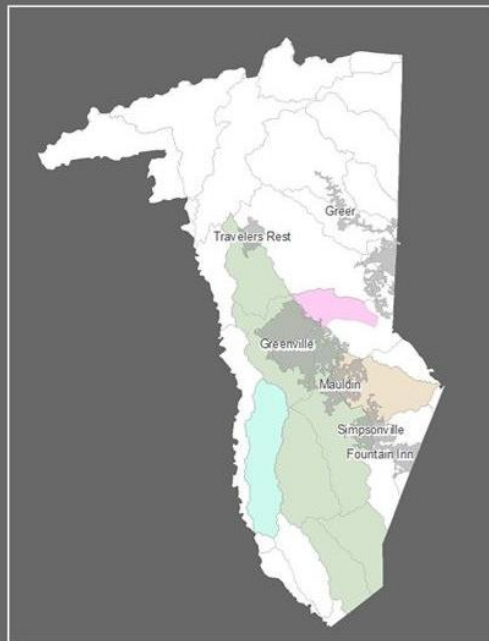


Ambient Monitoring and Response

Main Functions ▾ Configuration ▾ Alarm ▾ Information ▾



A real-time monitoring network for water quality and quantity throughout Greenville County. Select the station and dialogue box to navigate to a station of your choosing, or select the Historical Data icon in the upper left-hand corner of this page to browse all sites.



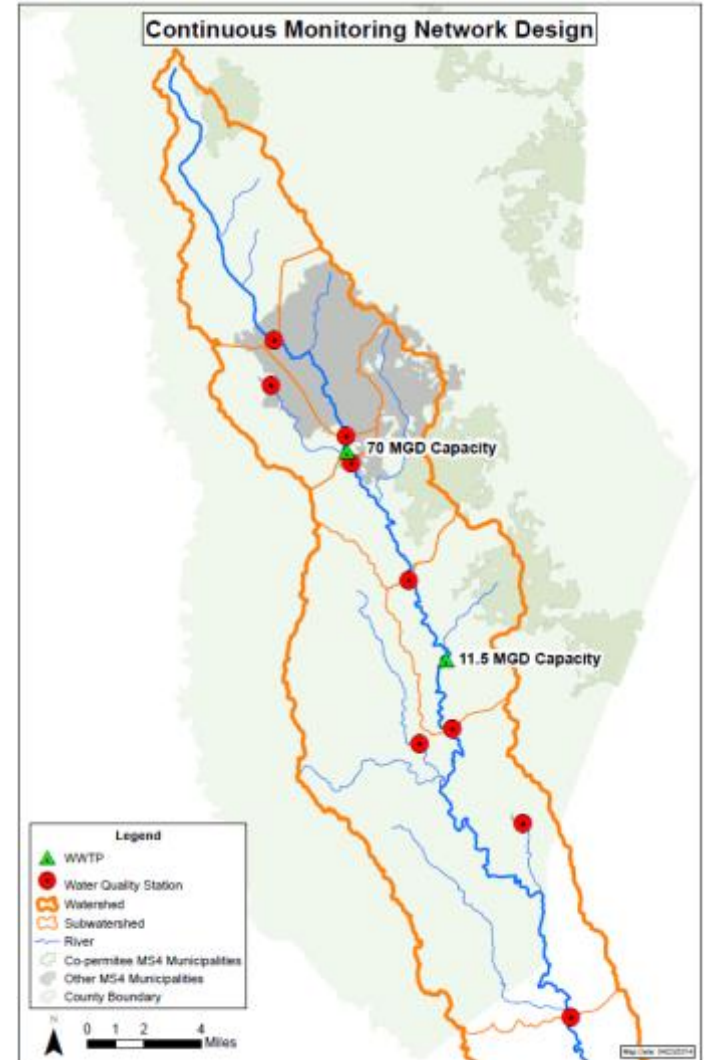
Ambient Monitoring and Response

- * Continuous Rainfall and Water Quality Monitoring Network
 - * 16 rain gauge stations
 - * 12 continuous WQ stations
 - * Reedy River Watershed
 - * Saluda River Watershed
 - * Enoree River Watershed
- * Real-time data hosting and posting



Main-Stream IDDE

- * Reedy River Pilot Watershed
 - * 240 square miles
 - * 40 stream miles
- * County Permanent Continuous Monitoring Network
- * Mobile Continuous Monitoring
 - * Instantaneous surrogate assessment



Main-stem (MS) Approach

- * Wholistic
- * Real-time data
- * Real-time response
- * Chemical analysis limited to points of interests (POIs)

Objectives

- * Evaluate tributaries and point sources
 - * Relative to mainstem
 - * Relative to upstream “boundary” conditions
- * Consider Large-scale impacts
- * Prioritize watersheds of concern

Methods

- * Two YSI data sondes secured to front of kayak
- * Recording Garmin GPS device on board
- * Notes recorded at critical locations to confirm location and sonde data



MS-IDDE Equipment



Methods

- * Paddle main-stem of the Reedy River
 - * 40 miles
 - * 5 days
- * Kayak pushed into tributary when necessary
- * Grab samples collected for analysis of pollutants of concern

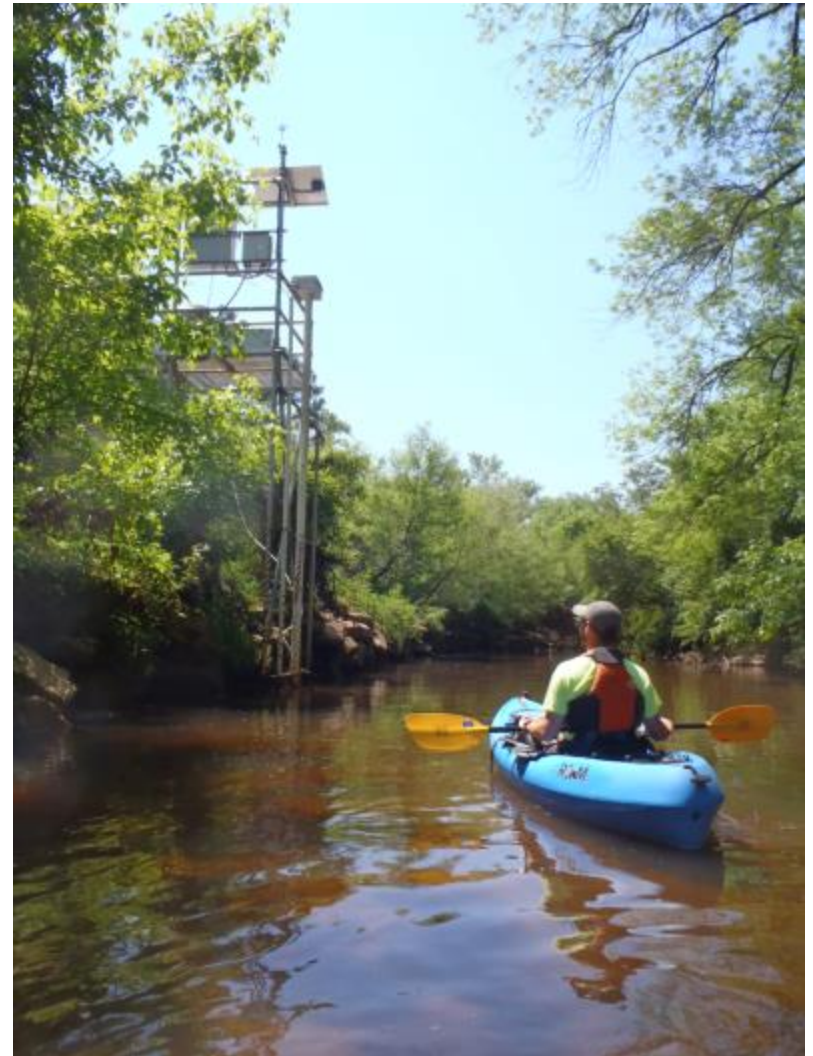


Data Collection

- * 20 second interval
- * Parameters:
 - * Turbidity
 - * Specific Conductivity
 - * pH
 - * Dissolved Oxygen
 - * Temperature

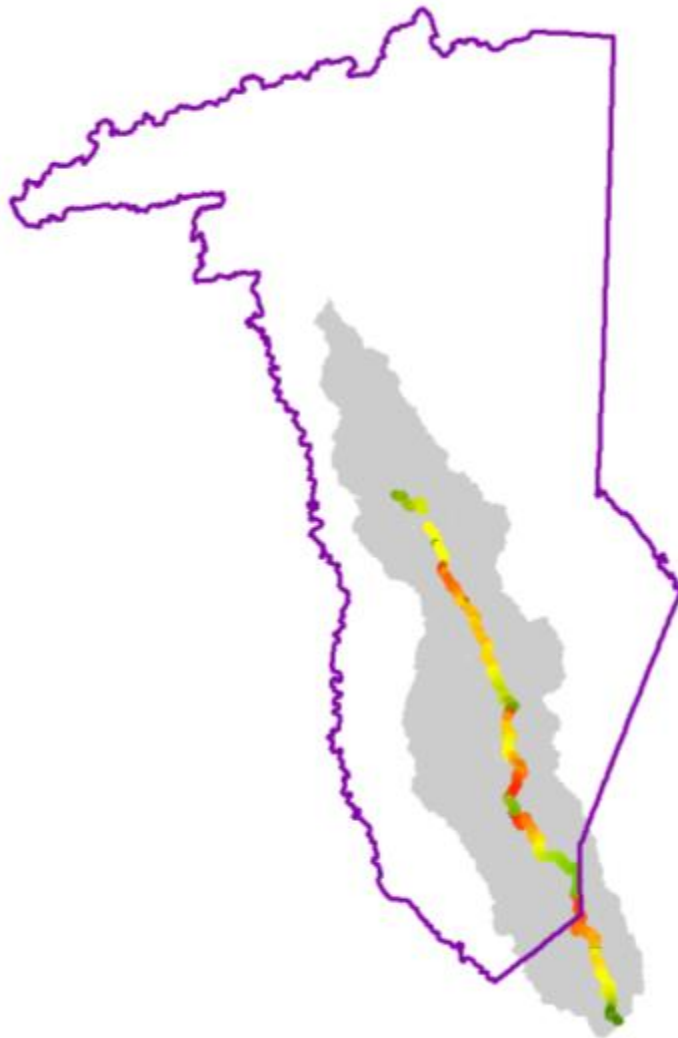
Data Collection

- * Did not float 5 consecutive days
- * Floated during dry weather periods
- * Tie-in to permanent stations

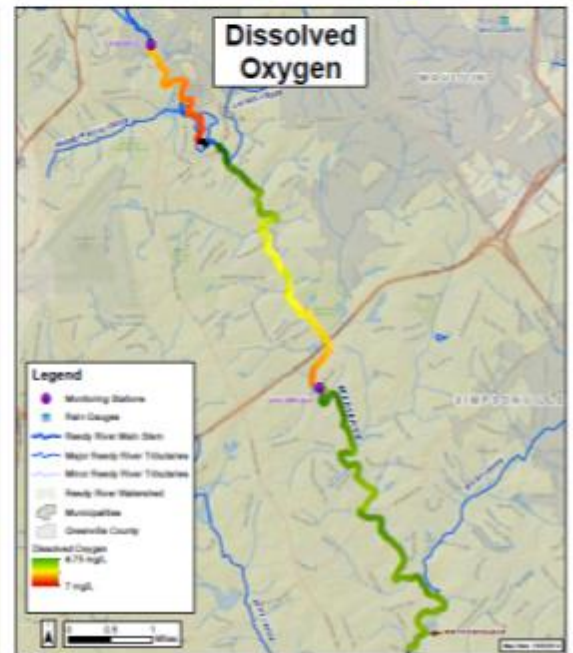
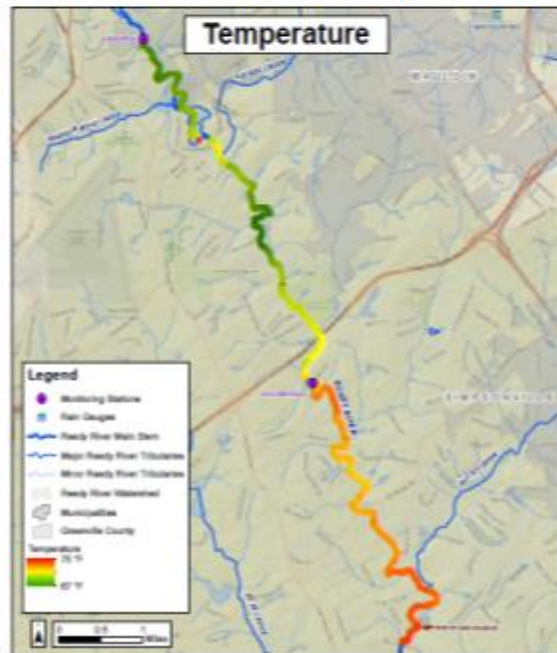
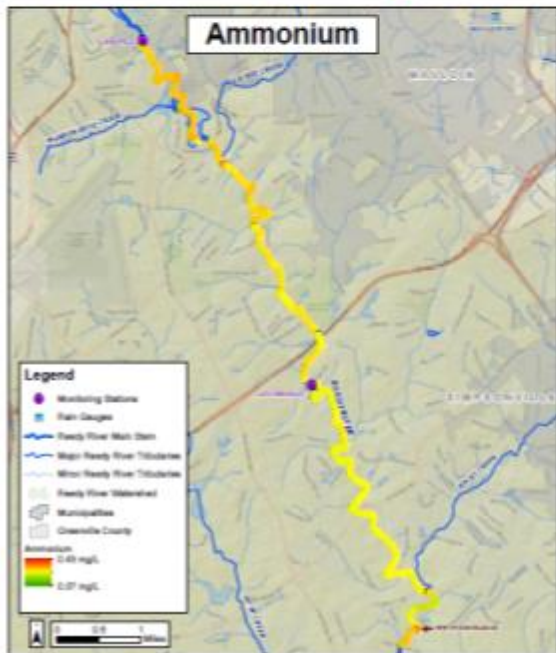
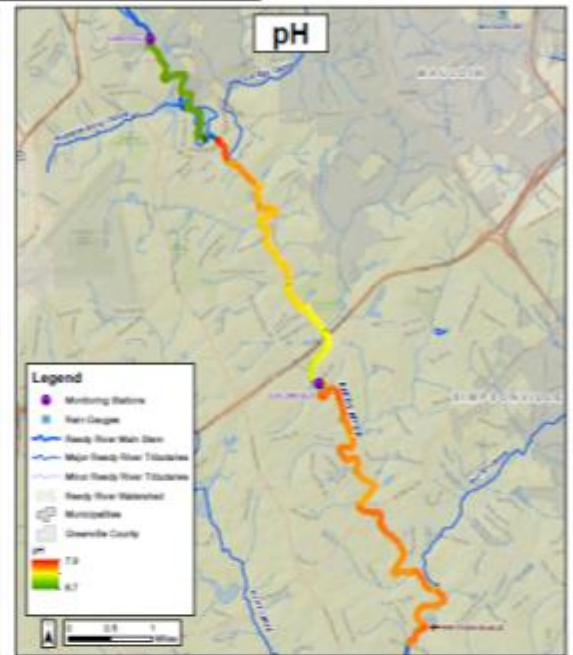
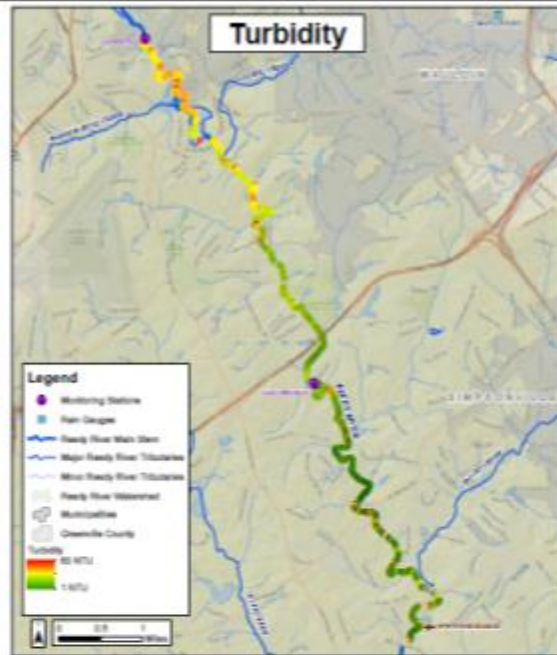
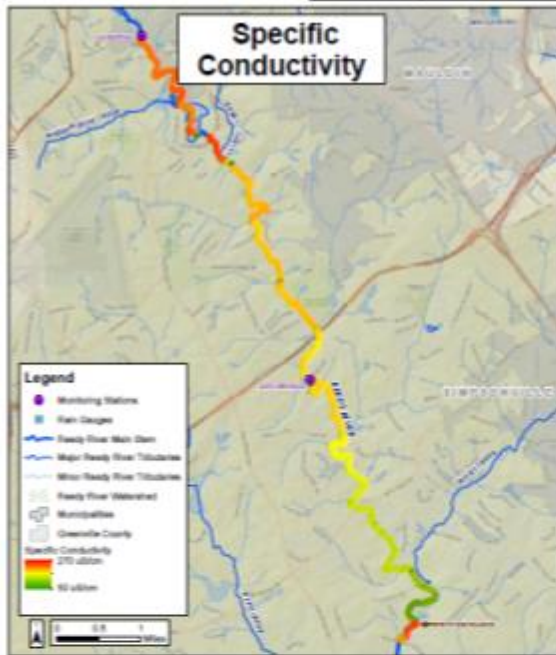


Results

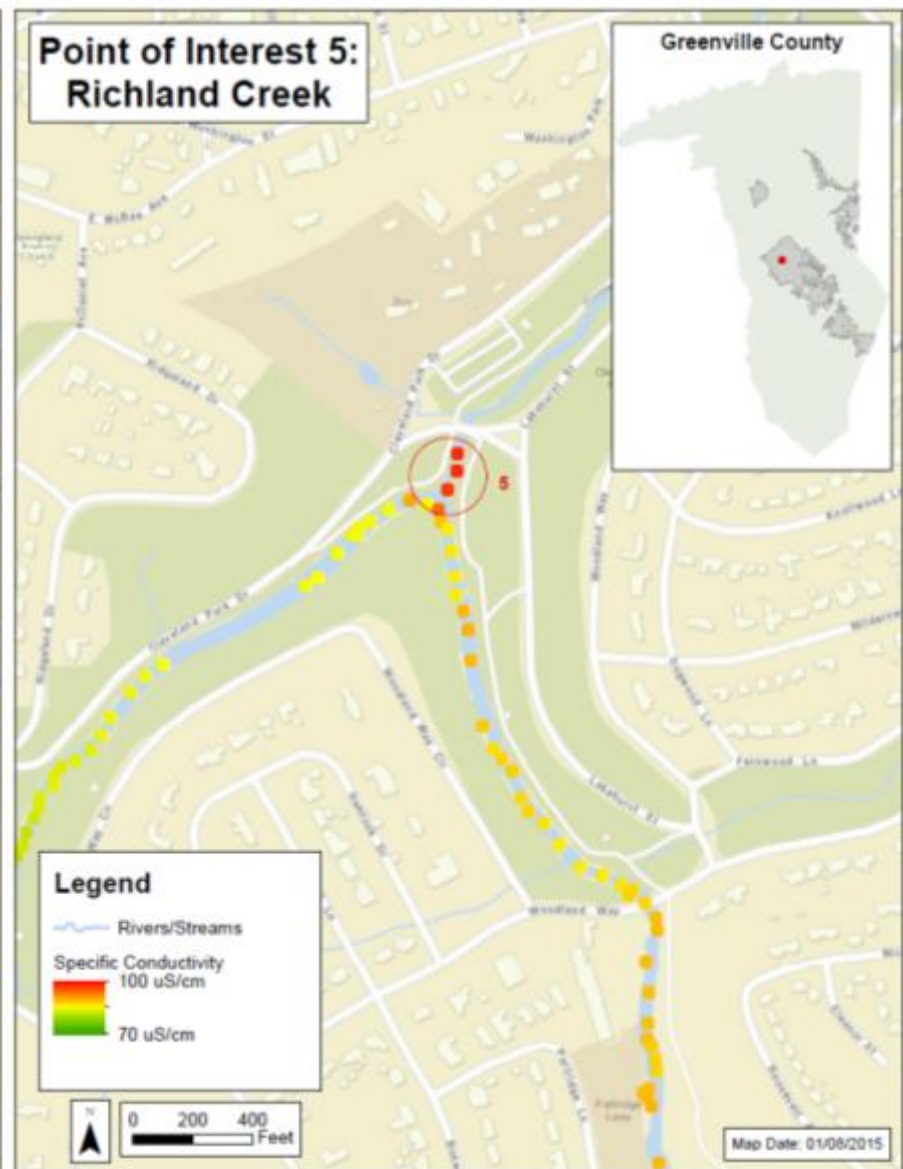
- * Hot Spot Analysis
- * Daily Relative Values



Reedy River IDDE Float Mapping - September 22, 2014



Watershed Investigations



Observations

Bank Erosion



Observations

Treated waste water diffuser



Observations

- * Seepage from Landfill



Lessons Learned

- * Expand list of pollutants of concern
- * Have back-up instrumentation
- * Confirm data collection at various points each day



Summary

- * Main-Stem IDDE approach is a broad-brush approach
- * Supplements a rigorous dry weather screening process
- * Intended to identify large-scale impacts
- * Promotes real-time response and corrective action