

Antidegradation

SC Department of Health and Environmental Control

Michael Montebello, Manager

Domestic Wastewater Permitting Section

Bureau of Water





“The health of our waters is the principal measure of how we live on the land.”

Luna Leopold

Background Information

- Who am I?
 - Manager, Domestic Wastewater Section
 - Twenty-nine years experience, civil engineering background
 - Responsible for all private and Public wastewater systems in the State (approximately 900 MGD)
 - Pretreatment Program implementation
 - Sludge and septage program implementation
 - Water Plant dischargers
 - Permitting all new domestic wastewater systems (surface water and land application)
 - Regulation development, Source Water Protection implementation, Special activities/studies (Bacteriological Workgroup, Outside Data Collection, Phosphorus issues)

SCDHEC Bureau of Water



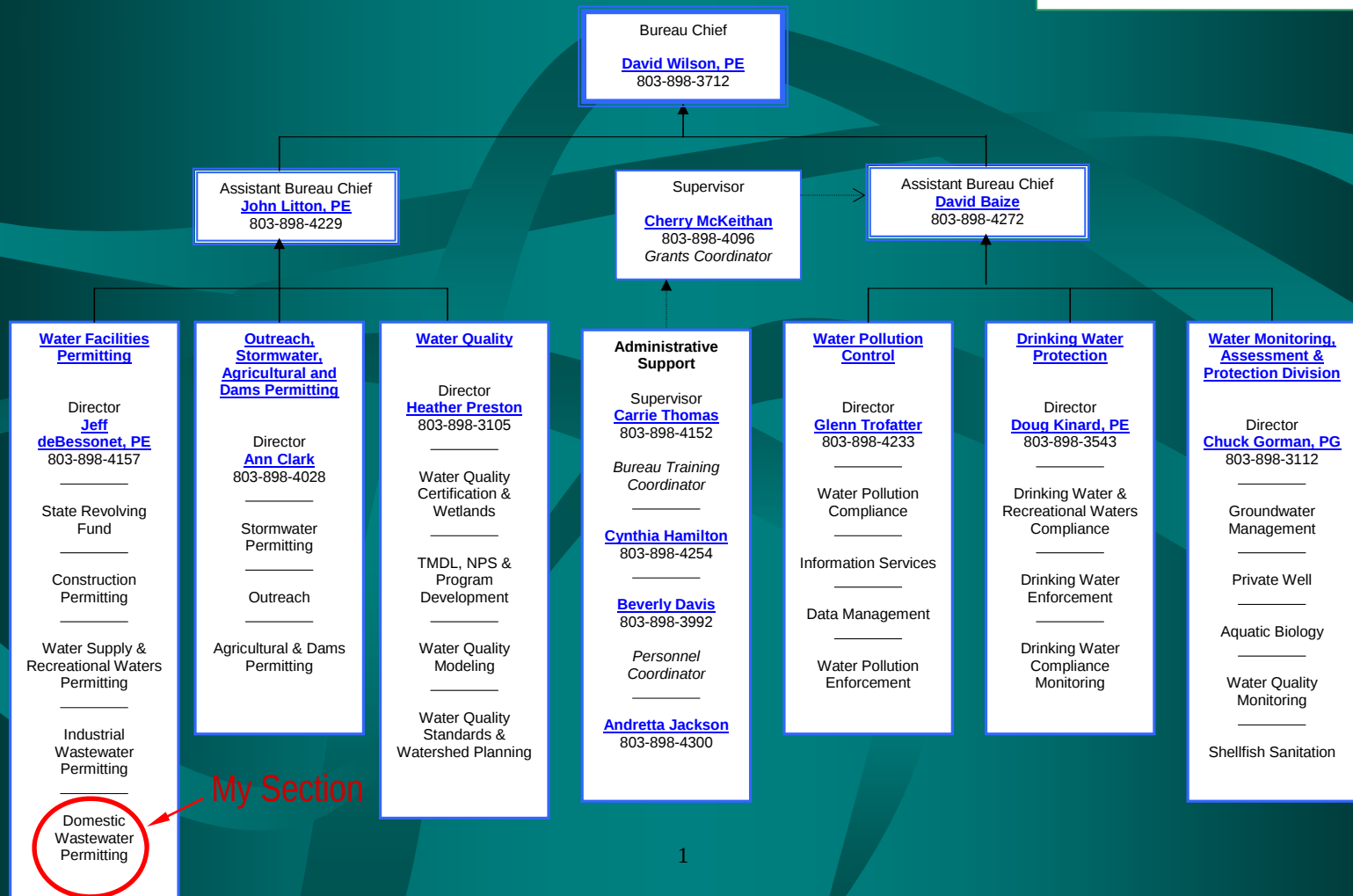
SC DHEC - Environmental Quality Control (EQC)

Bureau of Water

November 19, 2009

SC DHEC – EQC Bureau of Water
2600 Bull Street
Columbia SC 29201
Phone: 803-898-4300
Fax: 803-898-3795
Web Site:

<http://www.scdhec.gov/environment/water/>



Background Information

- First Antidegradation Implementation Guidance completed in July 1998 including:
- Tier 1 (Minimum protection for all waters)
- Tier 2 (High quality waters)
- Tier 2 ½ (Outstanding Resource Waters-ORW)
- Tier 3 (Outstanding National Resource Waters-ONRW)

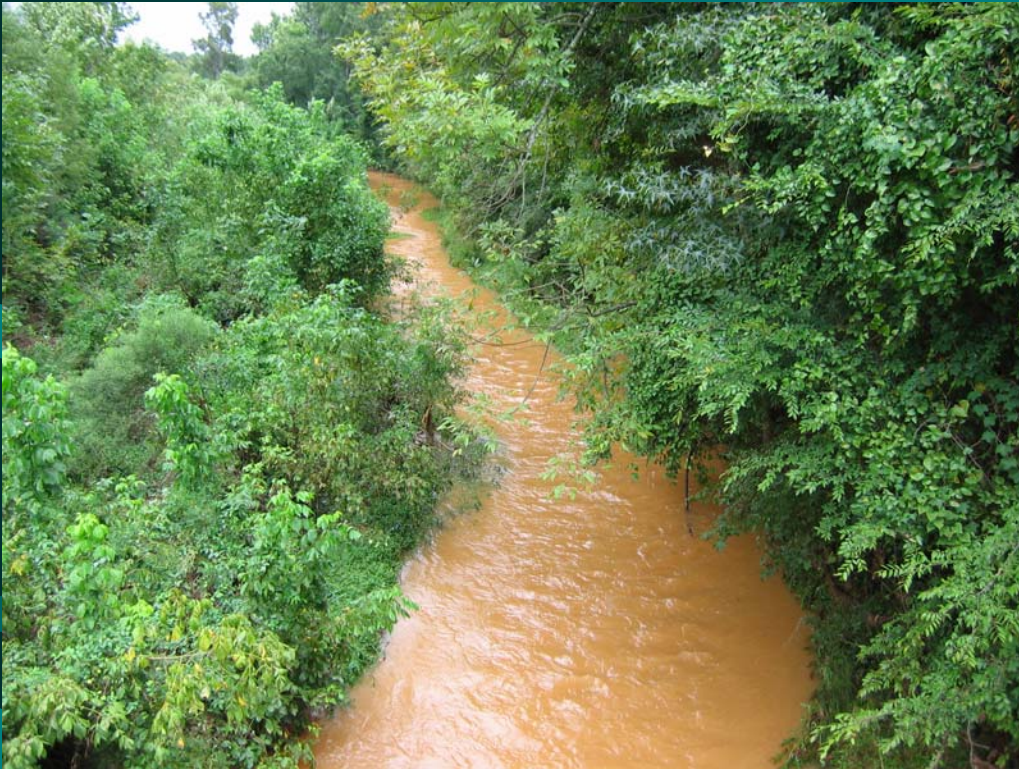
Background Information

- Antidegradation Implementation language included in Part D of the South Carolina Water Quality Standards (R-61-68)

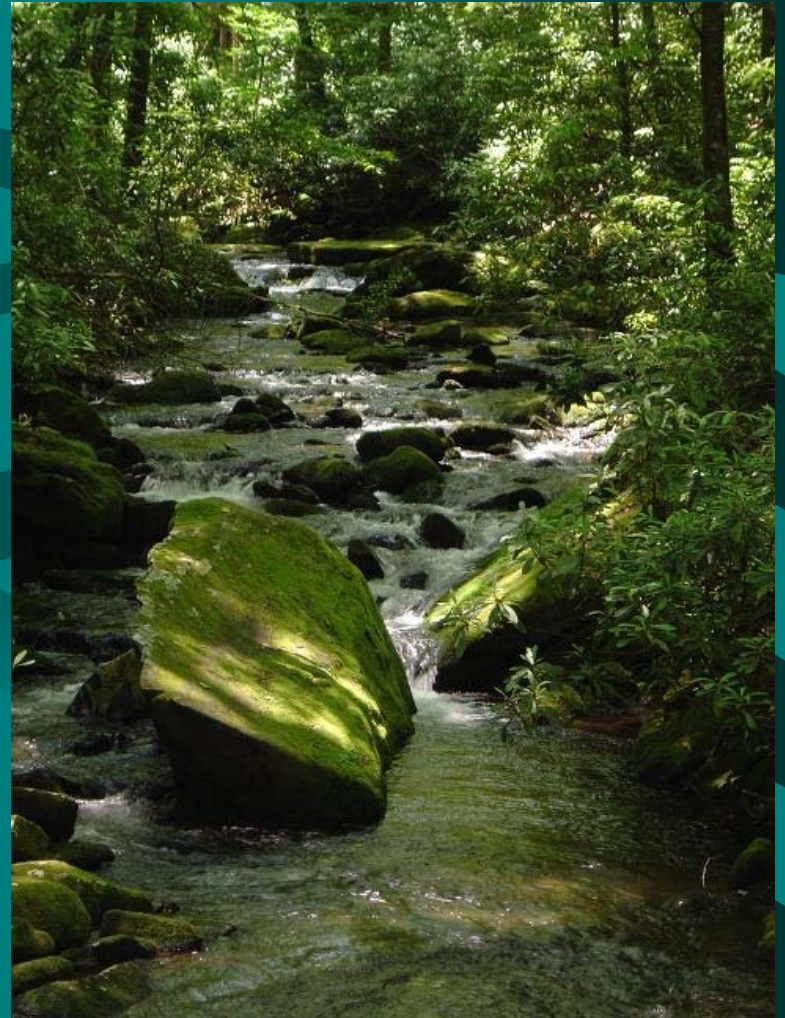
Regulatory Basis

- South Carolina Water Classifications and Standards (R.61-68)
- Classified Waters (R.61-69)
- Construction Regulations (R.61-67)
- NPDES Regulations (R.61-69)
- TMDL Regulations (R.61-110)
- Water Quality Certifications-401 (R.61-101)

What constitutes degradation?



Urban stream setting



Saluda-Reedy Watershed Consortium

Stormwater Runoff (Urban setting)



Designated Uses

- Designated uses are goals set for the waterbody
- In SC we usually refer to these as classified uses
- The designated/classified use varies between waterbodies
- Some waters have a more protective designation or classification

Water Quality Criteria and Antidegradation

- Once we determine the use, we develop water quality criteria to support it
- Trout waters need different conditions than shellfish harvesting waters
- Antidegradation policies are rules to protect the use from deterioration

- Antidegradation rules provide a minimum level of protection to all waters of the State
- Waters which meet standards shall be maintained.
- Waters which do not meet standards shall be improved, wherever attainable, to achieve those standards.
- However, the Department cannot assure that classified waters shall at all times meet the numeric water quality standards for such uses.

South Carolina Water Classifications

- Outstanding National Resource Waters (ONRW)
- Outstanding Resource Waters (ORW)
- Trout Waters –TN, TPGT, TPT
 - Trout Natural (TN)
 - Trout, Put, Grow & Take (TPGT)
 - Trout, Put & Take (TPT)
- Fresh Waters (FW)
- Tidal Saltwaters
 - Shellfish Harvesting Waters (SFH)
 - Class SA
 - Class SB

Tier 2 ½ and Tier 3 Waters

- Outstanding National Resource Waters (ONRW)
- Outstanding Resource Waters (ORW)
- What are the differences between these standards for South Carolina waters?

ORW and ONRW waters

- Outstanding recreational or ecological resource water means waters that are of exceptional recreational or ecological importance or of unusual value. These include:
 - waters in national or state parks or wildlife refuges
 - waters supporting threatened or endangered species
 - waters under the National Wild and Scenic Rivers Act or South Carolina Scenic Rivers Act
 - waters used for or having significant value for scientific research and study

ORW and ONRW waters

- The water quality of outstanding resource surface waters designated as Class ONRW or Class ORW shall be maintained and protected through application of the standards for these classifications

ORW and ONRW waters

- Color, dissolved oxygen, fecal coliform, enterococci, pH, temperature, turbidity, or other parameters
- Numeric and narrative criteria for Class ONRW or ORW shall be those applicable to the classification of the waterbody immediately prior to reclassification including consideration of natural conditions

ORW and ONRW waters

- Discharge from domestic, industrial, or agricultural waste treatment facilities; aquaculture; open water dredged spoil disposal.
- Dumping or disposal of garbage, cinders, ashes, oils, sludge, or other refuse
- None allowed in either ONRW or ORW waters

ORW and ONRW waters

- Stormwater and other nonpoint source runoff, including that from agricultural uses, or permitted discharge from aquatic farms, concentrated aquatic animal production facilities, and uncontaminated groundwater from mining
- None allowed in ONRW waters
- In ORW waters, allowed if water quality necessary for existing and agricultural uses, or permitted classified uses shall be maintained and protected consistent with Antidegradation Rules

ORW and ONRW waters

- Activities or discharges from waste treatment facilities in waters upstream or tributary to:
- ONRW waters:
 - Allowed if there will be no measurable impact on the waters downstream ONRW consistent with Antidegradation Rules
- ORW waters:
 - Allowed if water quality necessary for existing and agricultural uses, or permitted classified uses shall be maintained and protected consistent with Antidegradation Rules

SC Dissolved Oxygen Criteria

- ORW & ONRW Waters
 - Prior DO standard before reclassification
- Trout Waters –TN, TPGT, TPT
 - 6.0 mg/l
- Fresh Waters (FW)
 - Daily Average not less than 5 mg/l with a low of 4 mg/l
- Shellfish Harvesting Waters (SFH) & Class SA
 - Daily Average not less than 5 mg/l with a low of 4 mg/l
- Class SB
 - Not less than 4 mg/l

SC Dissolved Oxygen Criteria

- Some waters have site specific standards (identified in our Classified Waters)
- Typically swamps and slow moving streams
- Dissolved oxygen requirements for these may be not less than 4 mg/l

SC Dissolved Oxygen Criteria

- “Naturally low dissolved oxygen waterbody” is a waterbody that, between and including the months of March and October, has naturally low dissolved oxygen levels at some time
- The months of November through February are not included unless low dissolved oxygen levels are known to exist during those months.

De Minimis Impact

- Certain natural conditions may cause a depression of dissolved oxygen in surface waters while existing and classified uses are still maintained.
- For a naturally low dissolved oxygen waterbody, the quality of the surface waters shall not be cumulatively lowered more than 0.10 mg/l for dissolved oxygen from point sources and other activities, or

De Minimis Impact

- Where natural conditions alone create dissolved oxygen concentrations less than 110 percent of the applicable water quality standard established for that waterbody, the minimum acceptable concentration is 90 percent of the natural condition
 - Under these circumstances, an anthropogenic dissolved oxygen depression greater than 0.10 mg/l shall not be allowed unless it is demonstrated that resident aquatic species shall not be adversely affected

De Minimis Impact

- What about “measurable” conventional and toxic pollutants in addition to dissolved oxygen?
- Practical Quantitation Limit (PQL) means a concentration at which the entire analytical system must give a recognizable signal and acceptable calibration point.
 - It is the concentration in a sample that is equivalent to the concentration of the lowest calibration standard analyzed by a specific analytical procedure, assuming that all the method-specific sample weights volumes, and processing steps have been followed (R.61-68)

Baseline Water Quality Monitoring

- How do we assess South Carolina's waters?
- A primary question is the quality of the data being used for the analysis
- Since data may be used for 303(d) listing, 305(b) reports, or other reporting requirements what do we know about the source?

Quality Assurance Plans (QAPP)

- This following information on the next five slides should be considered draft guidance
- DHEC is developing Outside Agency Data and Quality Assurance Requirements
- Lab Certification is heavily involved in this process to insure data quality
- Before we use data we scrutinize it's origins

Non-Regulatory Monitoring

- An entity outside the Department may wish to learn more about the water quality not currently addressed
- The Department may help in the development of study objectives and provide guidance regarding proper sample collection procedures, certified laboratories, sampling strategies, etc
- Should monitoring suggest potential violations of state water quality standards, this can help prioritize future regulatory sampling

Non-Regulatory Monitoring

- Establish baseline conditions for determining stream health based on chemical, physical, biological, and habitat parameters
- Analyze trends in water quality parameters over time
- Screen waterbodies for water quality problems
- Identify water bodies in need of more detailed monitoring
- Assess the overall health of a watershed and target specific areas within a watershed in need of water quality improvement

Non-Regulatory Monitoring

- Assist local watershed councils and partners in making environmental management decisions in their local and regional watersheds
- Enlist community involvement in their local watershed
- Prioritize areas in a watershed for Best Management Practices (BMPs)
- Assess BMP/remediation project performance
- Identify potential pollution sources
- Provide educational opportunities

Regulatory Monitoring

- Generation of water quality data equivalent with Department data to be used by DHEC
 - in regulatory decisions, e.g. §303(d) list of impaired waters
 - determination of National Pollution Discharge Elimination System (NPDES) permit limits
 - enforcement actions
- All data submitted for regulatory decisions require a DHEC pre-approved written Quality Assurance Project Plan (QAPP)
 - Guidance Document for Preparing Quality Assurance Project Plans, September 2008, Office of Quality Assurance.

Regulatory Monitoring

- Regulatory data is typically used for:
- Ambient water quality monitoring for §303(d) listing
- Determination of NPDES permit limits
- Pollution event documentation
- Water pollution enforcement actions
- Documentation of water quality restoration or improvement

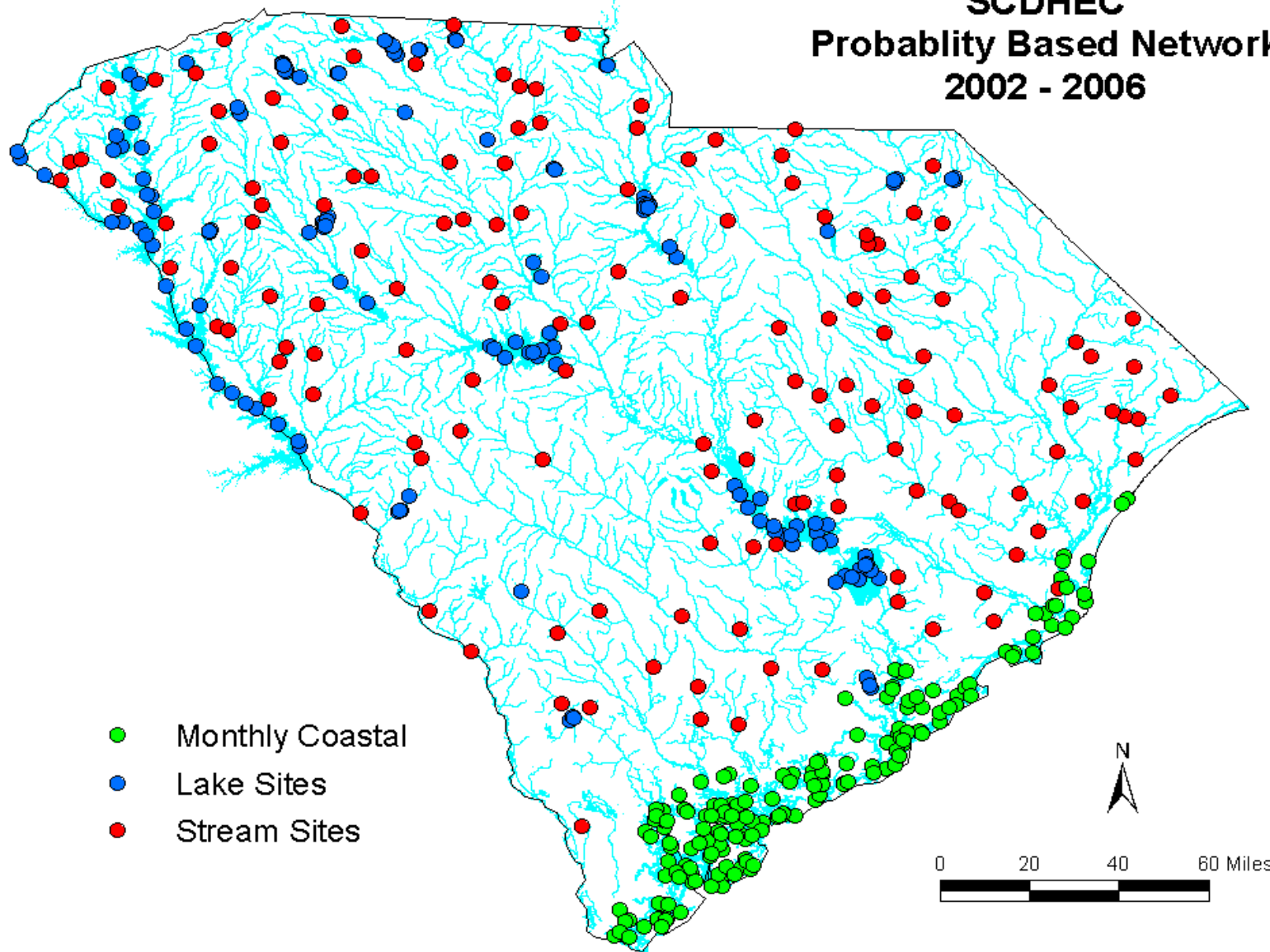
Components of the Ambient Monitoring Network Design

- Fixed Monitoring Network
 - Long-term trends
 - Consistent statewide coverage
- Cyclical Basin Monitoring
 - More spatially dense coverage
 - Watershed focus
- Probability-Based Monitoring
 - Statistical survey of statewide resources
 - Sample new locations

Main Ambient Monitoring Activities

- Physical & Chemical Monitoring
- Water Column
- Sediment
- Biological Community Monitoring
- Macroinvertebrate
- Fish Tissue Monitoring

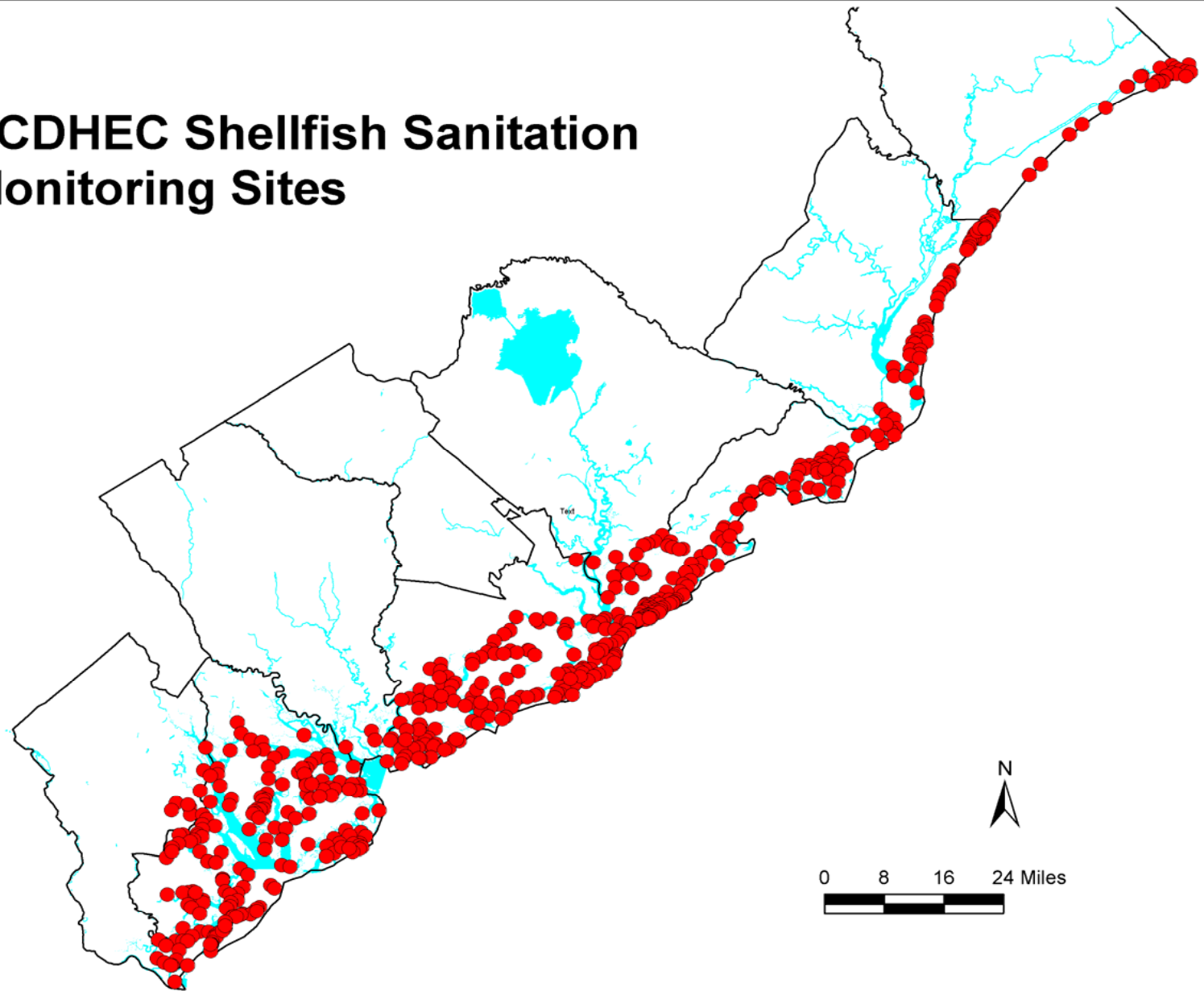
**SCDHEC
Probability Based Network
2002 - 2006**



Shellfish Sanitation Monitoring

- Statewide fixed sites
- 467 sites sampled monthly
- Used to determine shellfish harvesting status

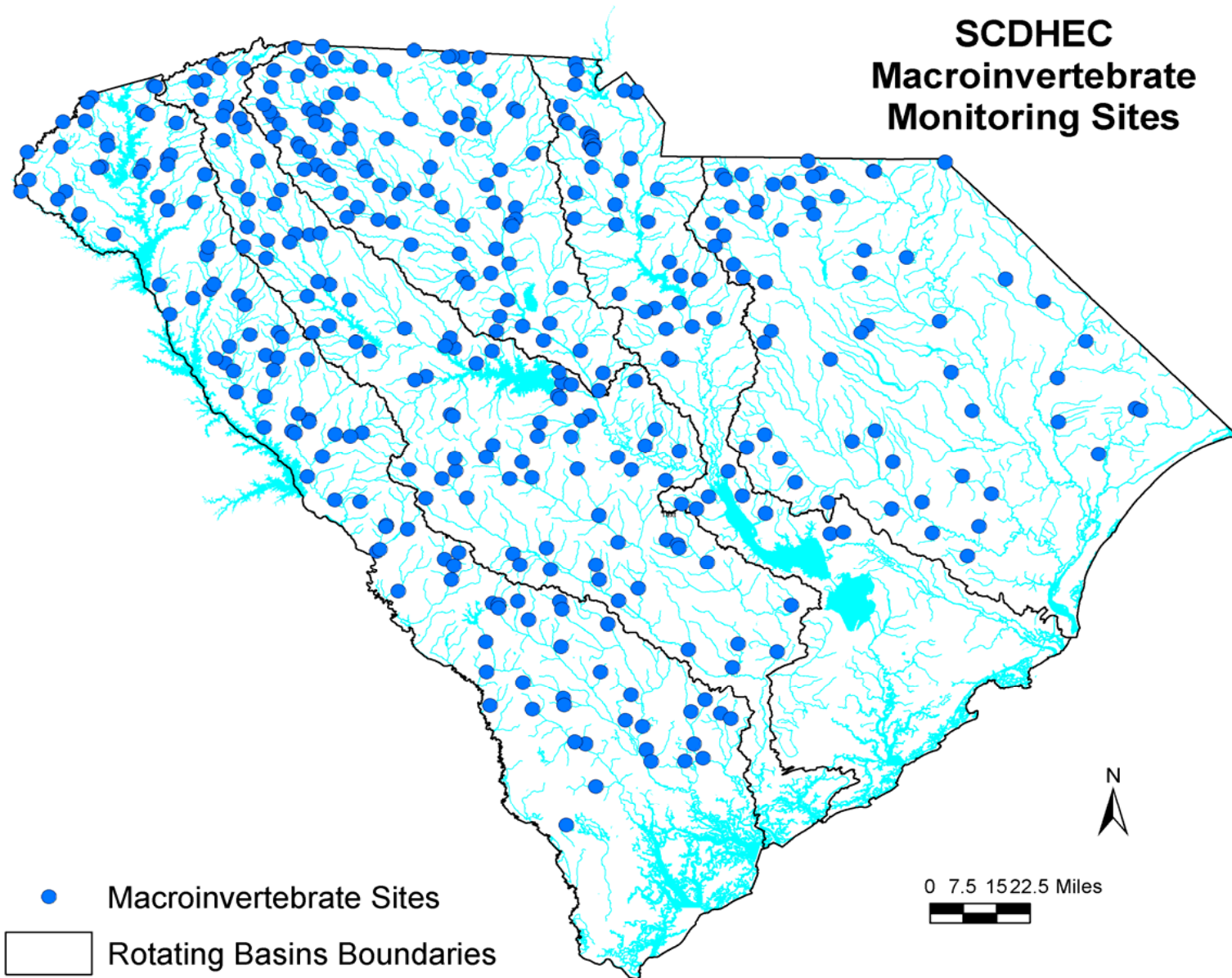
SCDHEC Shellfish Sanitation Monitoring Sites



Macroinvertebrate Monitoring

- Basin sites
- Approximately 80 per year
- Includes reference sites within basin
- Probability-based stream sites
- Wadeable stream sites, up to 30 per year
- Habitat & community assessment at all sites

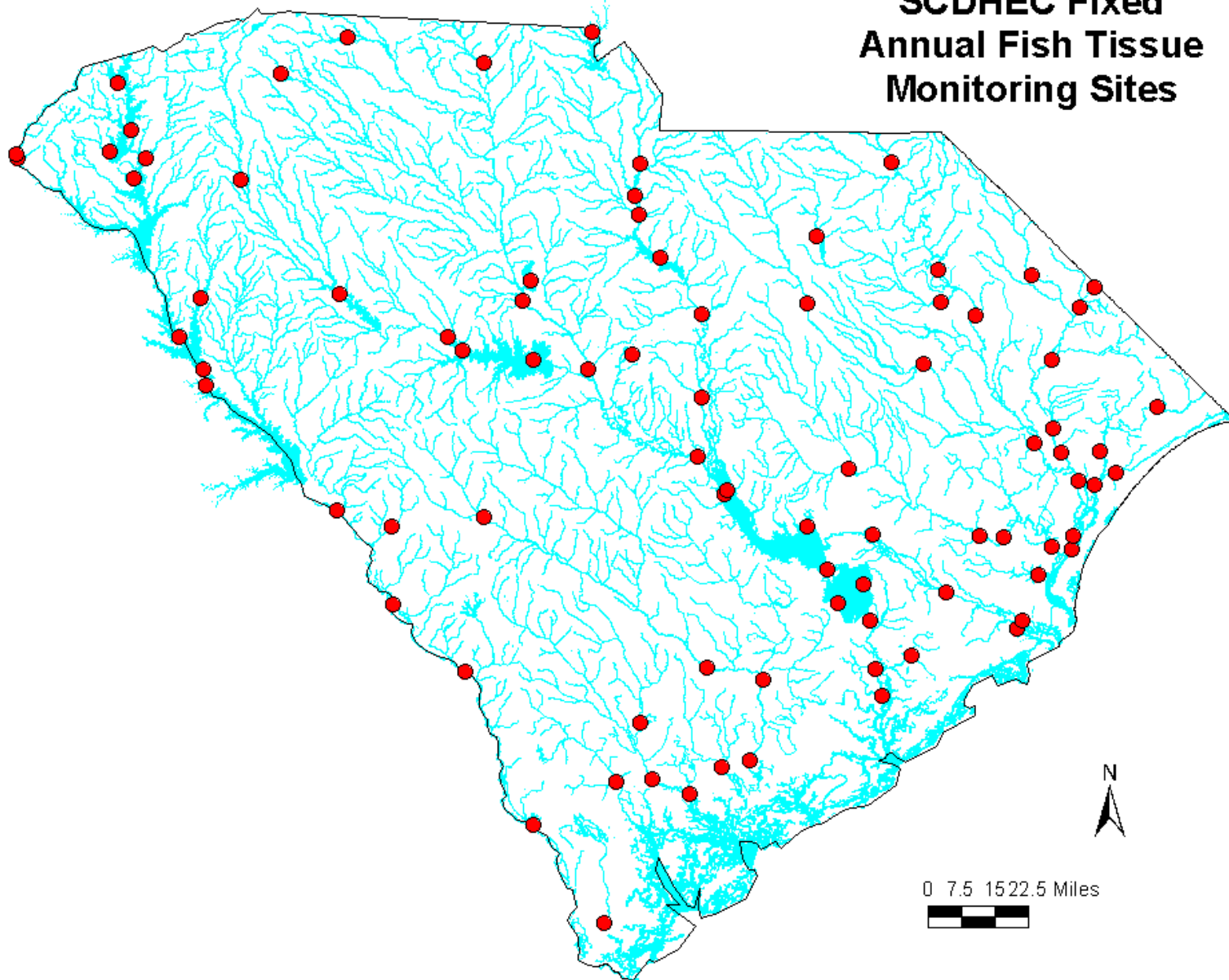
SCDHEC Macroinvertebrate Monitoring Sites



Fish Tissue Monitoring

- ~80 sites visited annually statewide
- At least 2 species per site
- 5 Individuals per species each treated as a separate sample
- Mercury on each sample (individual)
- 12 Samples per month for additional metals

SCDHEC Fixed Annual Fish Tissue Monitoring Sites

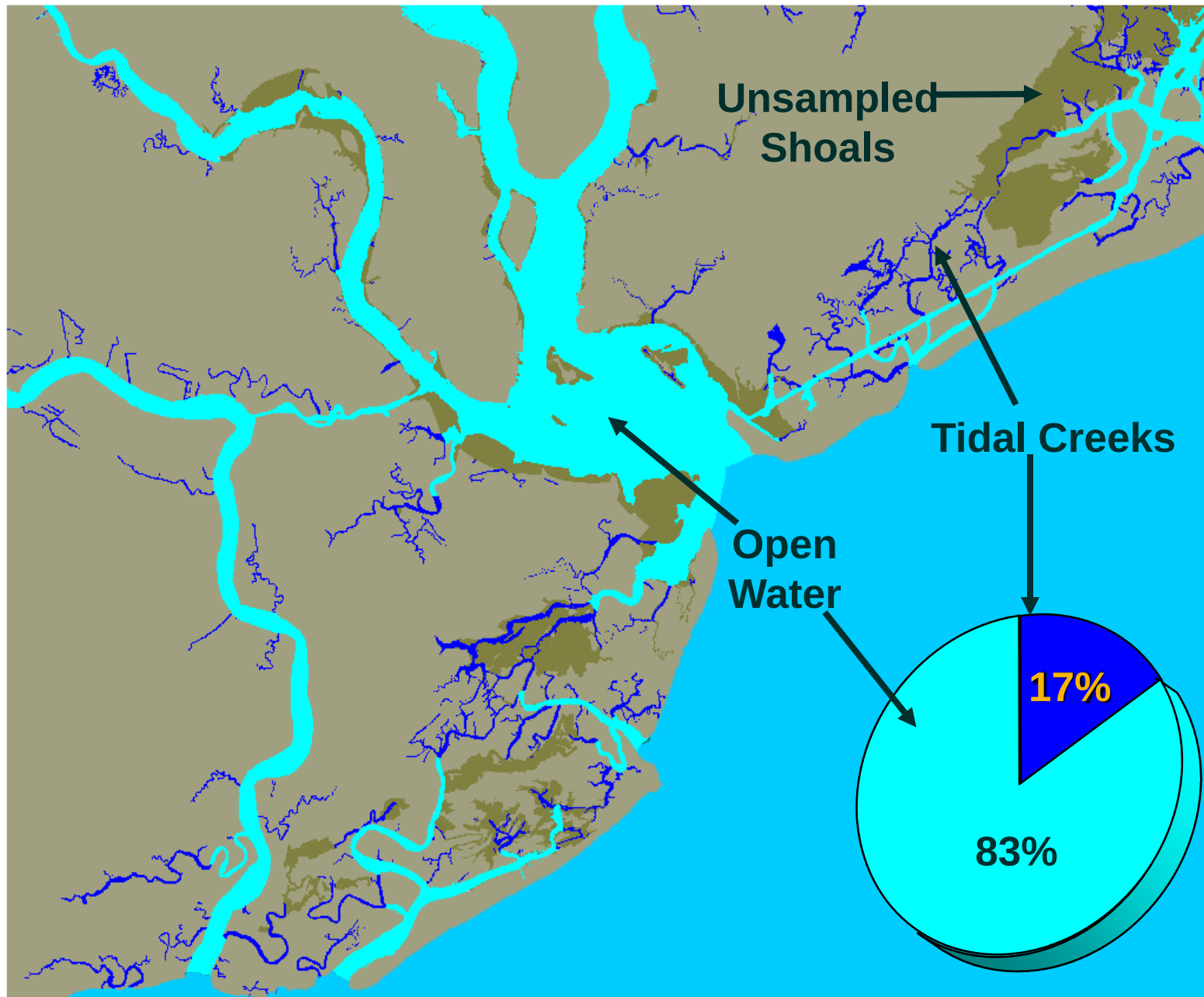


Targeted Categories for Probability-Based Sites

- Estuaries (30 sites per year with cooperators)
 - 30 visited monthly
 - Two distinct strata
 - Open water (> 100 m wide)
 - Creeks (< 100 m wide)

Habitat Designation Criteria

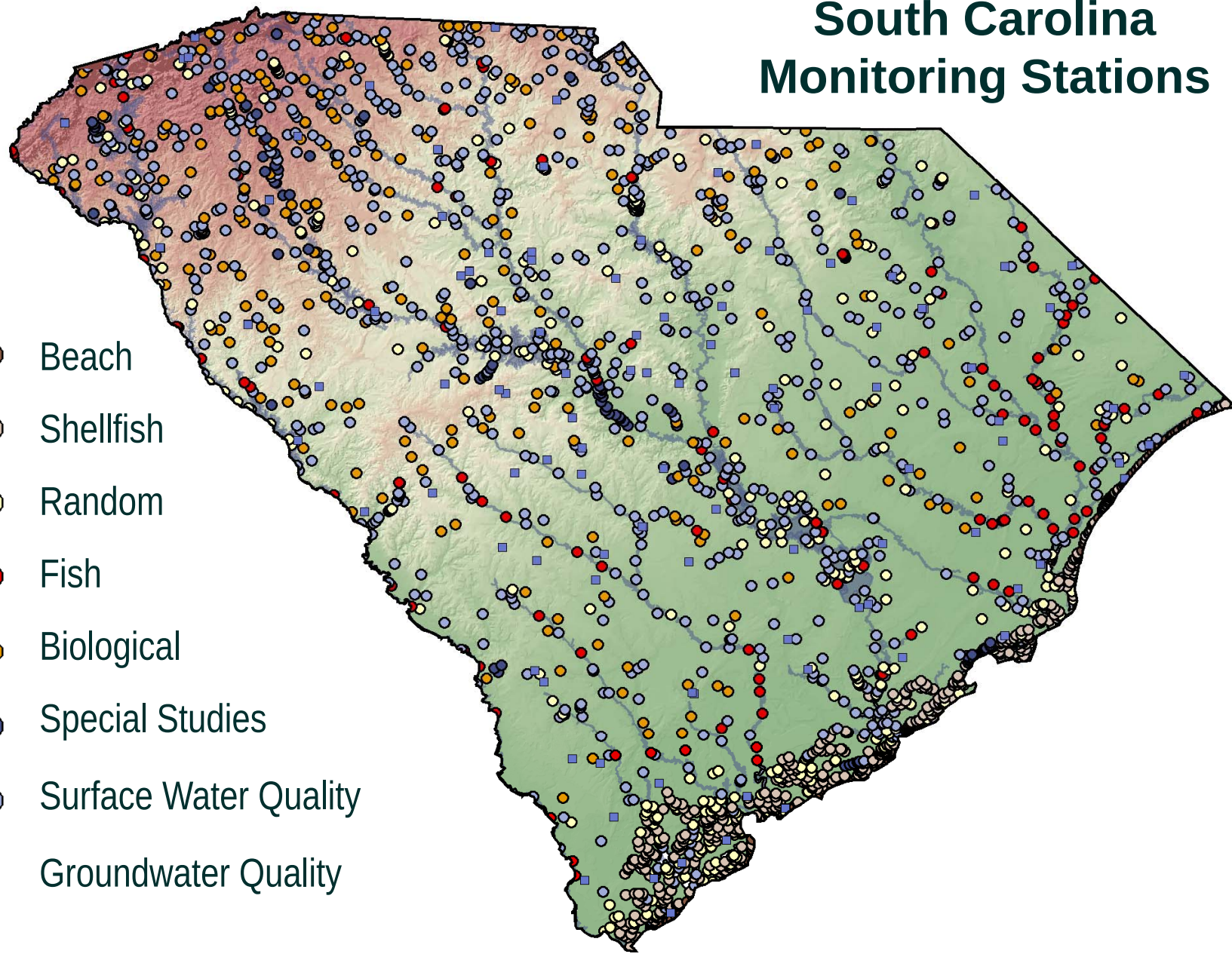




Baseline Water Quality Monitoring

- Putting it all together
- This was a brief and incomplete overview
- Budgeting issues are a major problem in today's economy
- For a more complete picture-request additional information

South Carolina Monitoring Stations

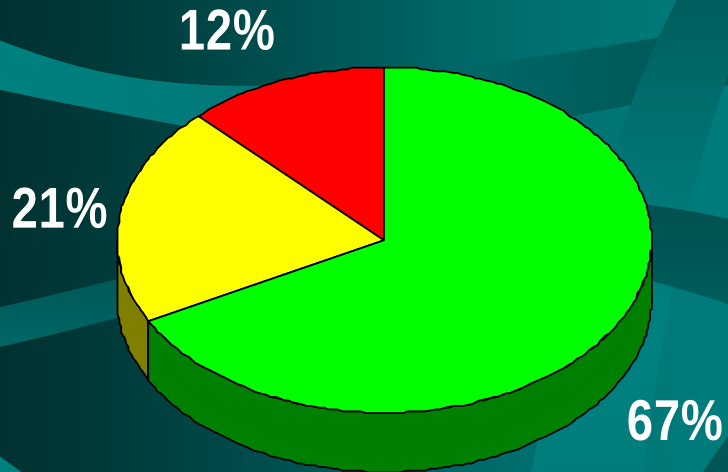
- 
- A map of South Carolina showing the locations of various monitoring stations. The map is color-coded by region: the coastal plain is light green, the piedmont is light brown, and the upstate mountains are light green. Major rivers are shown in blue. Monitoring stations are marked with colored circles and squares. The legend on the left lists the following categories:
- Beach
 - Shellfish
 - Random
 - Fish
 - Biological
 - Special Studies
 - Surface Water Quality
 - Groundwater Quality

Baseline Water Quality Monitoring

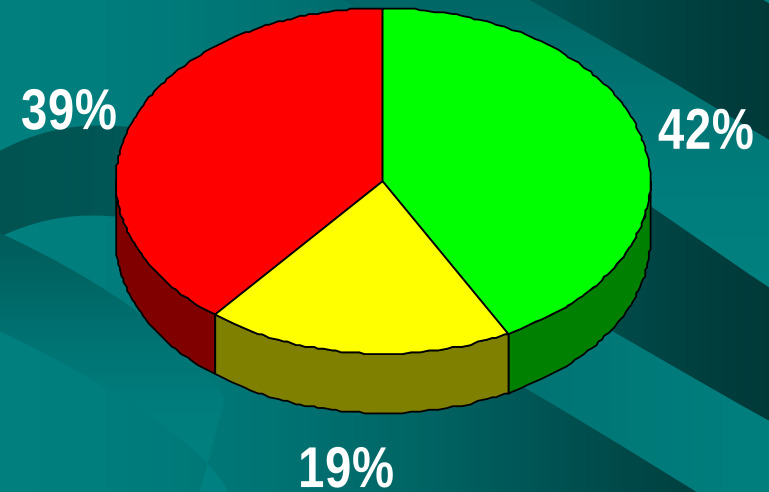
- So how well are we doing in terms of South Carolina waters meeting existing standards?
- And what has this to do with Antidegradation that was the topic right?

SC Rivers & Streams 2002-2006

Aquatic Life Use



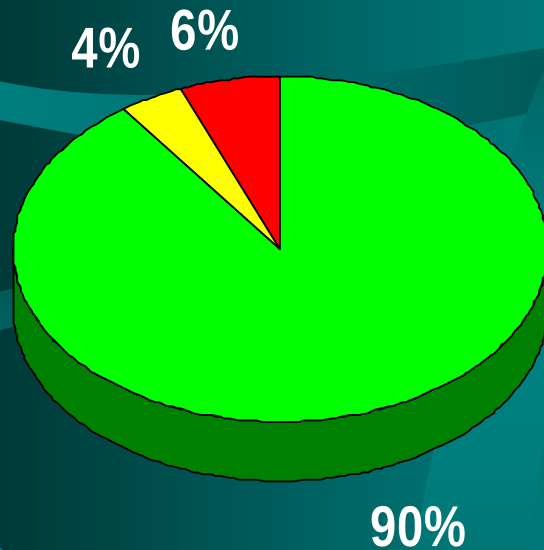
Recreational Use



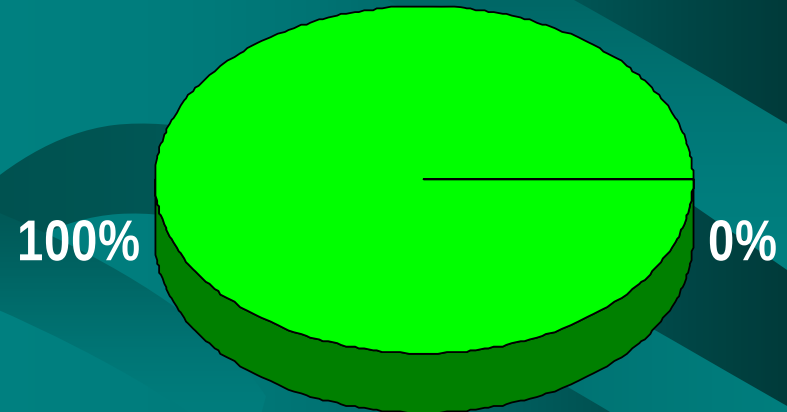
- Fully Supporting (Good)
- Partially Supporting (Fair)
- Not Supporting (Poor)

SC Lakes & Reservoirs 2002-2006

Aquatic Life Use



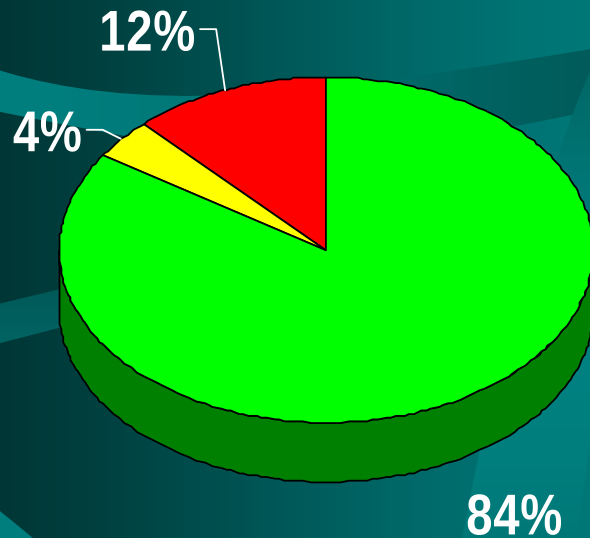
Recreational Use



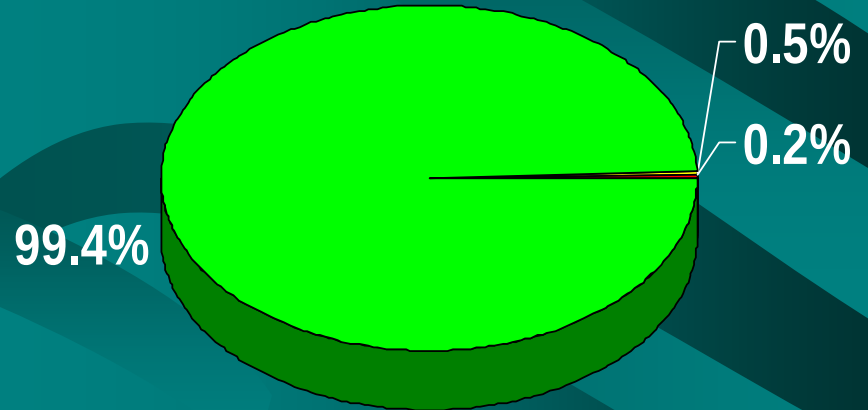
- Fully Supporting (Good)
- Partially Supporting (Fair)
- Not Supporting (Poor)

SC Estuaries 2002-2006

Aquatic Life Use



Recreational Use



- Fully Supporting (Good)
- Partially Supporting (Fair)
- Not Supporting (Poor)

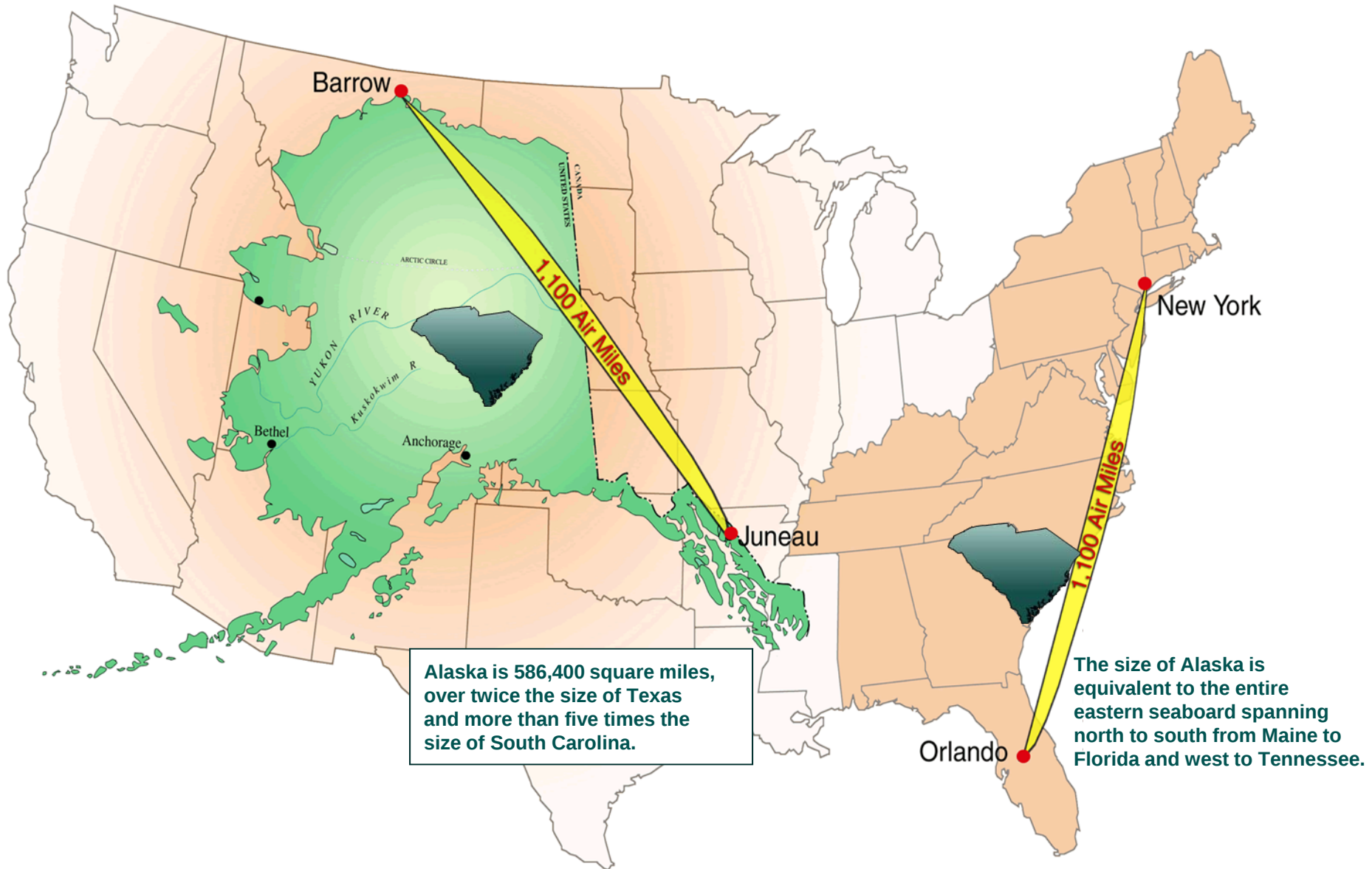
Causes of Impairment Based on 2008 303(d) List

- Recreational - Fecal Coliform Bacteria = 15%
- Shellfish – Fecal Coliform Bacteria = 15 %
- Biological Impairments = 14 %
- Mercury and PCBs in fish tissue = 14 %
- Dissolved Oxygen = 11 %
- Metals = 11 %
- Nutrients = 6 %
- pH = 6 %
- Turbidity = 5 %

Reality Check

- Just how does South Carolina compare to Alaska?
- Is anything we do scalable for consideration?

Size and Distance Comparison



- Recognizing the technical and economic difficulty in restoring water quality, the Department emphasizes a preventive approach in protecting waters of the State.

– Goals-

- Maintain and improve all surface waters to a level to provide for the survival and propagation of a balanced indigenous aquatic community of flora and fauna and to provide for recreation in and on the water.
- To provide, where appropriate and desirable, for drinking water after conventional treatment, shellfish harvesting, and industrial and agricultural uses.

Antidegradation Policies

- A new activity or expansion of an existing activity shall not be allowed in Class ONRW, Class ORW, or Shellfish Harvesting Waters if it would exclude, through establishment of a prohibited area, an existing shellfish harvesting or culture use.
- A new activity or expansion of an existing activity which will result in a prohibited area may be allowed in Class SA or Class SB waters when determined to be appropriate by the Department and would not remove or impair an existing use.

Antidegradation Policies

- Where surface water quality exceeds levels necessary to support propagation of fish, shellfish, and wildlife, and recreation in and on the water, that quality shall be maintained and protected unless the Department finds, after intergovernmental coordination and public participation, that allowing lower water quality is necessary to important economic or social development in the areas where the waters are located.
 - In allowing such lower water quality, water quality adequate to fully protect existing and classified uses shall be maintained.

Antidegradation Policies

- The highest statutory and regulatory requirements for all new and existing point sources shall be achieved and all cost-effective and reasonable best management practices for nonpoint source control shall be achieved within the State's statutory authority and otherwise encouraged.
 - This is required when evaluating any proposed expansion or new discharge to waters of the State that will lower water quality to a measurable effect.
 - This includes, but is not limited to, the new or increased loading of any pollutant or pollutant parameter in the effluent regardless of whether the discharge flow changes.

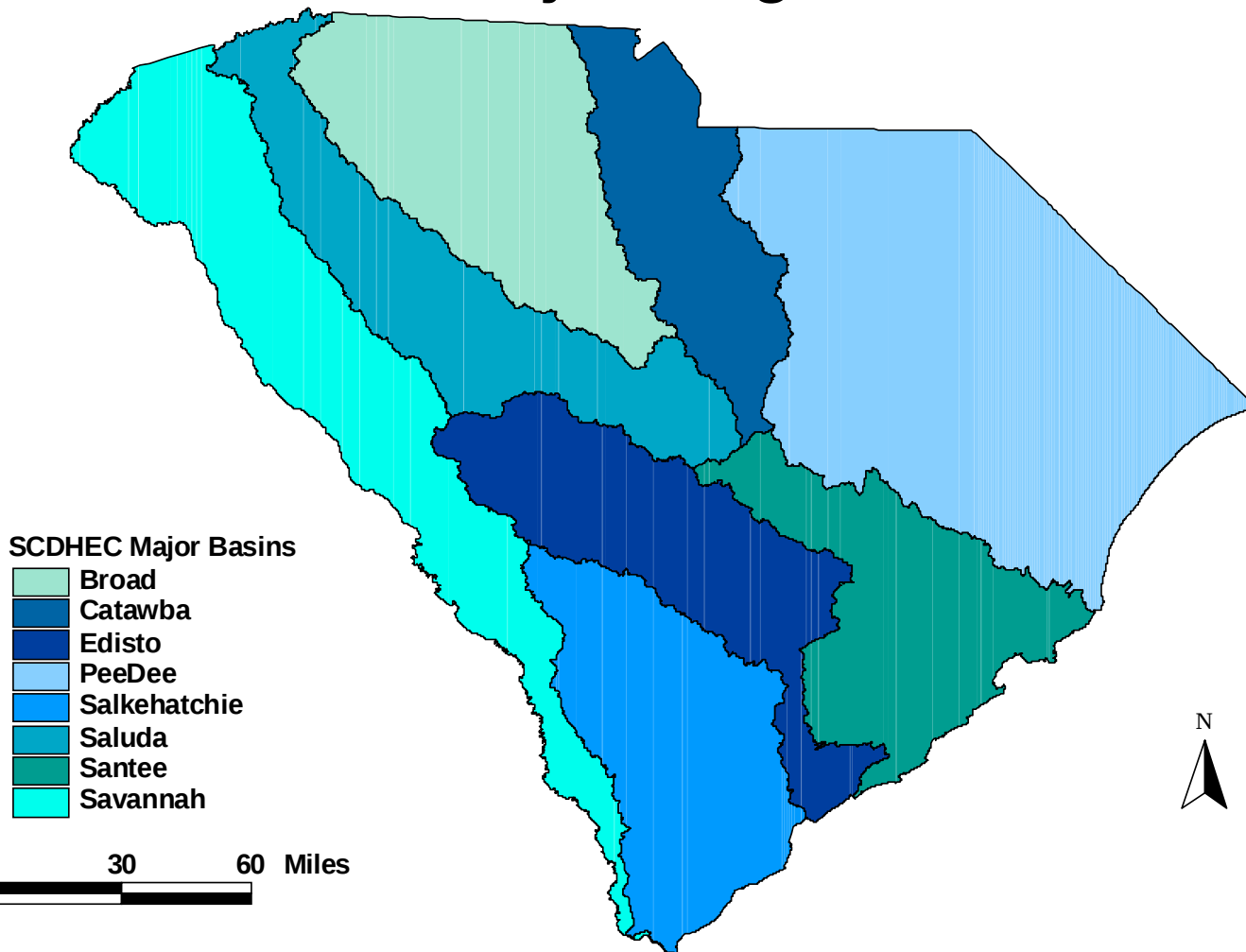
Antidegradation Policies

- An alternatives analysis, conducted by the applicant, must demonstrate to the Department that none of the following applicable alternatives that would minimize or eliminate the lowering of water quality are economically and technologically reasonable:
 - Water recycle or reuse;
 - Use of other discharge locations;
 - Connection to other wastewater treatment facilities;
 - Use of land application;
 - Product or raw material substitution;
 - Any other treatment option or alternative.

Most Bureau of Water programs are organized around a cyclical watershed approach

- **Year One**
 - Additional ambient monitoring
- **Year Two**
 - Assessment of WQ status (5 years of available data) & trends (up to 15 years)
 - Wasteload allocation modeling
- **Year Three**
 - Permit issuance
- **Continuously - Implementation**

SCDHEC Major Program Basins



Antidegradation Policies

- After the alternatives analysis is completed, we have determined there is a proposed lowering of water quality and for which there are no economically or technologically reasonable alternatives, an assessment of important economic or social factors is required.
 - For this to be accomplished, several economic and social factors must be considered.
 - If an evaluation of the economic and social factors reveals that affordable treatment options that, combined with any alternatives, would prevent the need for the lowering of water quality, the Department would deny the request.

208 Water Quality Management Plans

- One method to address social and economic factors is incorporating local involvement with Areawide Planning
- This process in South Carolina has been in place since early 1980's
- Utilized local Councils of Governments (COG's) to address local issues of pressing concerns

208 Water Quality Management Plans

- Conformance of the proposed dischargers with 208 Areawide Water Quality Management Plans may demonstrate importance to economic and social development as well as intergovernmental coordination and public participation.
- Activities requiring permits or certification by the Department provide for public participation through the Department's existing public notification processes.

208 Water Quality Management Plans

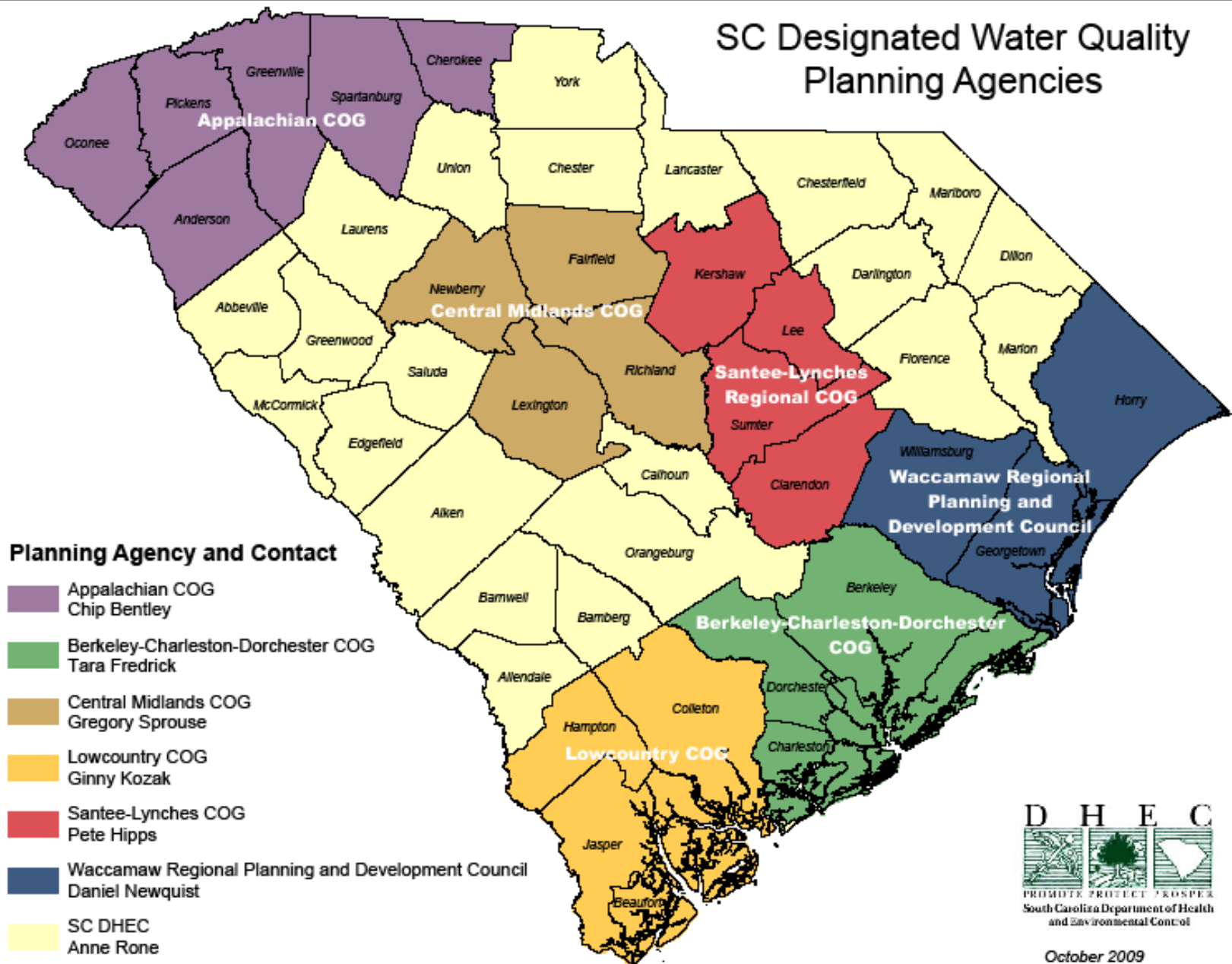
- Economic and social factors to be considered may include the following:
 - Employment (increases, maintenance, or avoidance of reduction);
 - Increased industrial production;
 - Improved community tax base;
 - Improved housing; and/or
 - Correction of an environmental or public health problem.

Local Knowledge

- Natural Resource Conservation Service
- S.C. Forestry Commission
- Conservation Districts
- Department of Natural Resources
- State and Private Universities
- Nonprofit Cooperators
- Clemson University Extension
- South Carolina Sea Grant Consortium
- Local Municipalities
- Regional Councils of Governments
- Community Associations



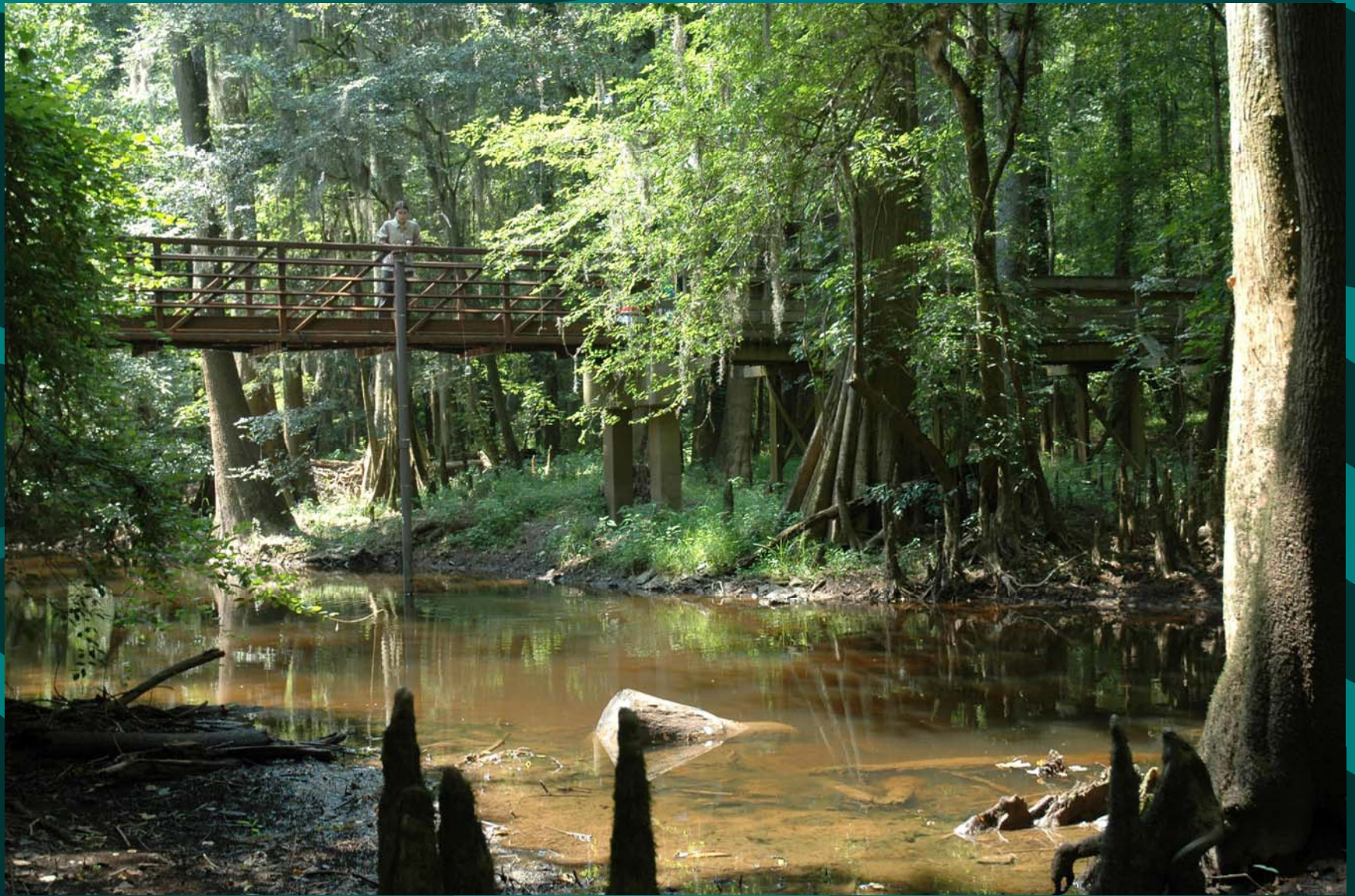
SC Designated Water Quality Planning Agencies



Case Study #1

Water Classification Change







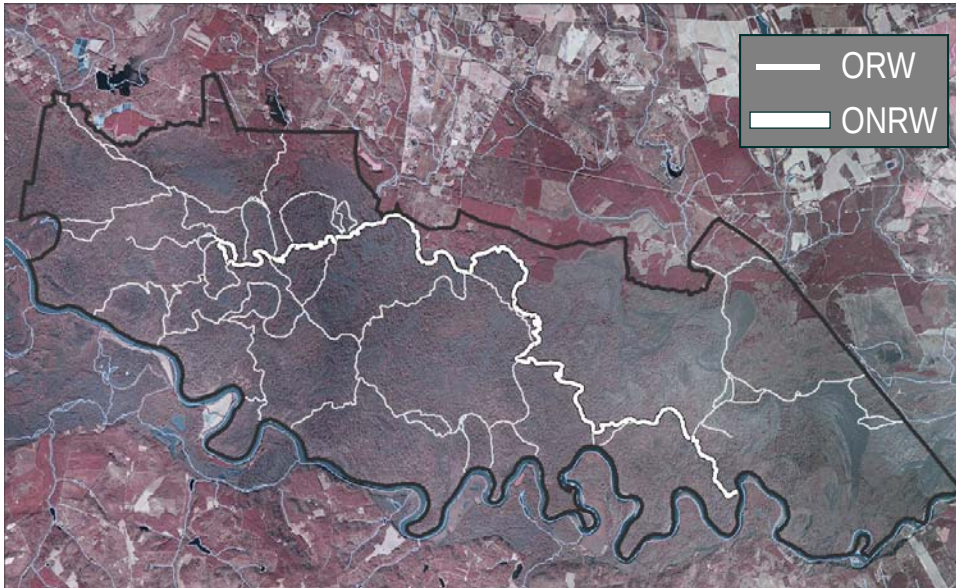
Changing SC Water Classifications

- Notice of Drafting published (Jan or Feb)
- Stakeholder meetings in area of reclass
- Internal meetings with key staff members
- Initial reading before DHEC Board
- Notice of proposed regulation published
- Staff informational forum
- Hearing before DHEC Board
- Transmitted to Legislative counsel
- General Assembly Review
- EPA Approval
- Entire process takes about 18 months

Freshwaters within the Congaree National Park



..... reclassified to Outstanding Resource Waters.



Only one stream segment was reclassified to ONRW (Cedar Creek).

The remaining interior stream segments were reclassified as ORW

The major receiving stream (Congaree River) on the southern border was not reclassified

Congaree River has more than 100 MGD of treated wastewater permitted

SC Regulation Changes

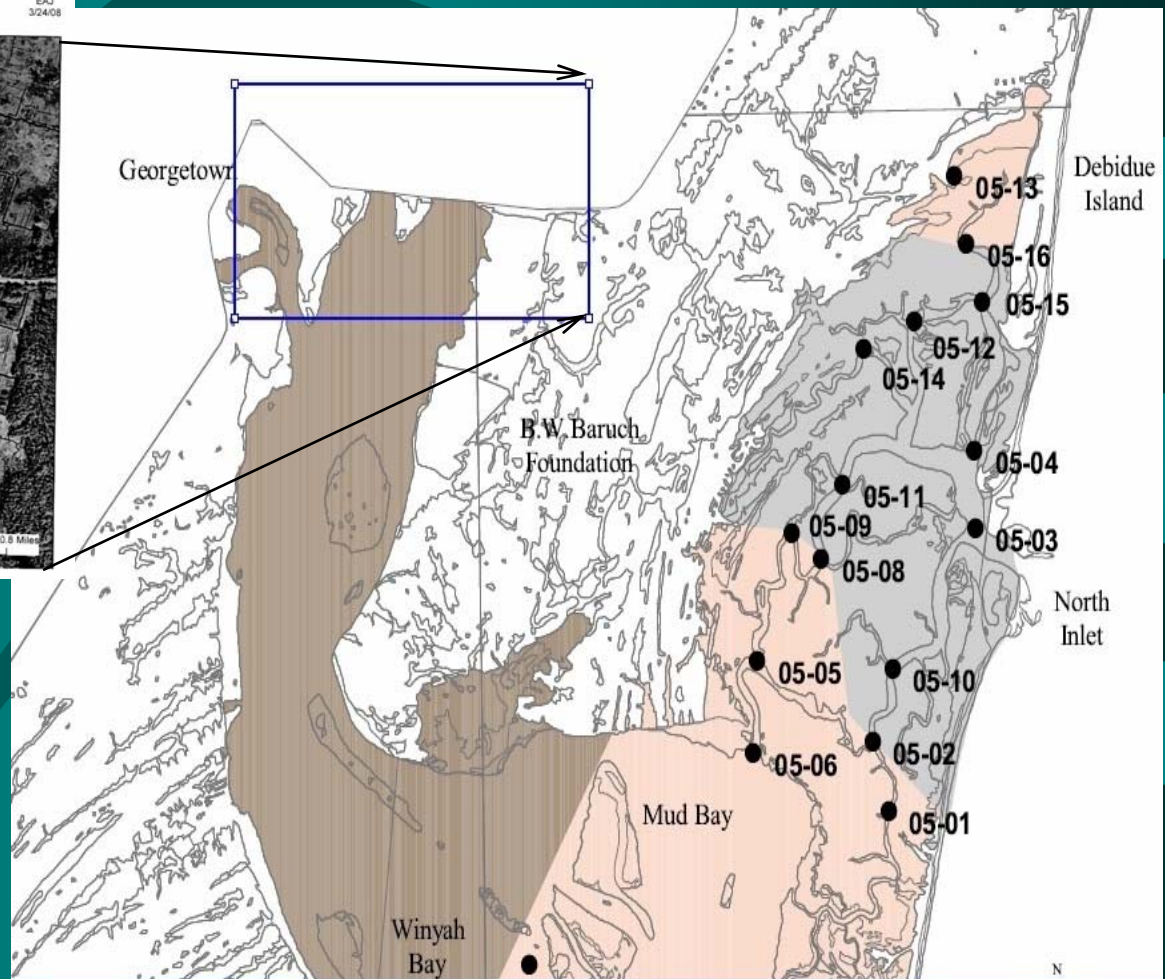
- Once adopted by the DHEC Board, state law requires that regulations be approved by the General Assembly



Case Study #2

Antidegradation Assessment

Debordieu WWTP Proposed Discharge Location



Antidegradation Review

- Land application facility (on a golf course)
- Publicly owned treatment system
- 500,000 gallons per day
- Proposed new discharge to surface waters
- Shellfish Resource Issues
- Dissolved Oxygen (DO) impacts
- Water Quality Standards Issues

Antidegradation Review

- Interest from Environmental groups
- Interest from general public (both positive and negative)
- Protection of ORW resources (North Inlet)
- Protection of Freshwater resources (Waccamaw River)
- Protection of Shellfish Resources (both open and restricted)
- 208 Water Quality Management Plan Review

DHEC NOTICE

PUBLIC HEARING ON TUESDAY, NOVEMBER 17, 2009

TOPIC: New NPDES permit with discharge to Waccamaw River

NOTICE NUMBER: 09-175-H

NOTICE DATE: OCTOBER 14, 2009

PROPOSAL: New NPDES permit Georgetown County Water & Sewer District (GCWSD) DeBordieu Colony WWTf with discharge to Waccamaw River, Permit #: SC0048984.

PERMIT APPLICANT: Georgetown County Water & Sewer District, PO Box 2730, Pawley's Island SC 29585-2730.

PROJECT LOCATION: The facility is located within the DeBordieu Colony Development along Firehouse Street in Georgetown County.

See the draft permit on the DHEC website at <http://www.scdhec.gov/environment/water/eqpnbow.htm>, then select "NPDES & POTW Pretreatment Program Permits, and select "GCWSD/DeBordieu Colony, Permit #: SC0048984"

NOTICE PURPOSE: On Wednesday August 26, 2009, SCDHEC issued Public Notice #09-140-N, based on public comments received on the draft permit, we determined to schedule a public hearing. DHEC proposes to approve the Waccamaw River surface water discharge permit as a back-up disposal location for the land application of treated wastewater from the GCWSD/DeBordieu facility.

HEARING PURPOSE: DHEC is seeking public input on this proposed permit and invites interested people to a public hearing and/or to provide written comments on a new surface water discharge permit. The discharge into the Waccamaw River would be for a limited portion of the year and only under the specific conditions outlined in the permit requirements. DHEC, in consultation with the Waccamaw Regional Council of Governments, has made a decision that this discharge is necessary to important economic or social development while maintaining existing water stream uses. This notice provides for the public participation and intergovernmental coordination regarding this determination.

HEARING DETAILS:

- Tuesday, November 17, 2009 at 7:00 PM, auditorium of Waccamaw Middle School, 247 Wildcat Way, Pawleys Island, SC 29585.
- Before the hearing, at 6:00 PM, DHEC will hold an informal meeting to summarize the draft permit and answer questions.

HOW TO COMMENT? Provide comments at the hearing or give written comments to DHEC's point of contact Weijia Hu: Bureau of Water, 2600 Bull Street, Columbia, SC 29201, huw@dhc.sc.gov, 803-898-4256. Written comments must be received no later than Friday, November 23, 2009. Please identify the notice number (09-175-H) along with written comments. Any individuals with disabilities or special needs who wish to participate or review DHEC's files should contact Weijia Hu, two weeks before the hearing date to discuss any special aids or services required.

MORE INFO? DHEC's project file is available for review at the above address and copies can be made for a fee by contacting our Freedom of Information Office (2600 Bull Street, Columbia, SC 29201, 803-898-3882).

Environmental Quality Control

Learn more about DHEC's
environmental programs at:
www.scdhec.gov/environment



*We promote and protect the health
of the public and the environment.*

Public Participation Process

- Public meetings
- Public hearings
- Web Site Information (timely & current)
- Mailing Lists
- Public Informational Forums
- Can be both in the field and electronically
- Watershed Managers can meet with general public to explain process

Decision Making Process

- Should be open and available to anyone
- Should address regulatory conditions
- Should implement antidegradation process
- Any final Agency action can be appealed to DHEC Board and then Administrative Law Court

To address Antidegradation issues

- From March thru October, permit allows up to 0.5 MGD to be discharged when:
 - There is no remaining effluent storage basin capacity
 - The golf course does not apply either surface water or groundwater

To address Antidegradation issues

- From November- February permit allows a surface water discharge of 0.375 MGD under all conditions, and up to 0.5 MGD under specific conditions
- When there is no effluent storage basin capacity and the golf course does not apply either surface water or groundwater.

To address Antidegradation issues

- Permit requires monitoring the number of days when a surface water discharge occurred when based on the conditions outlines, there should not have been a discharge (noncompliance).
- Permit requires maximization of the use of the land application site for effluent irrigation before the surface water discharge point is used.

Case Study #3

Savannah River TMDL

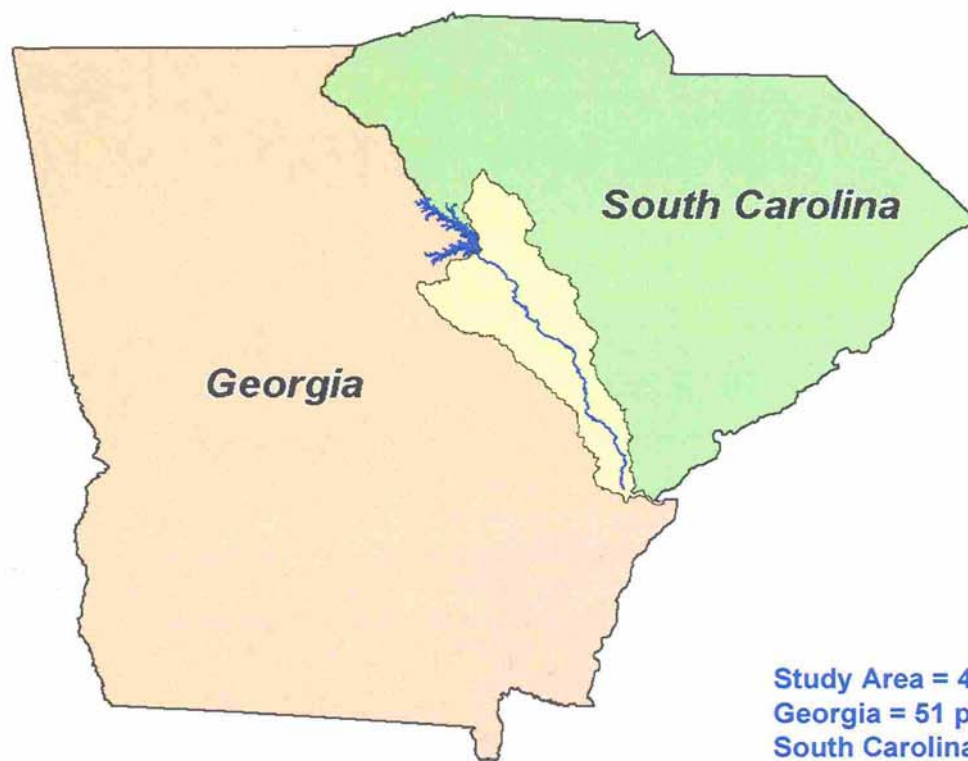
- EPA Issues TMDL (after extended discussions) for Savannah River with zero loading allowed for point sources
- Cross border issues between SC and Georgia
- Significant difference in use between States
 - Georgia presently has more than 90 percent of loading

Case Study #3

Savannah River TMDL

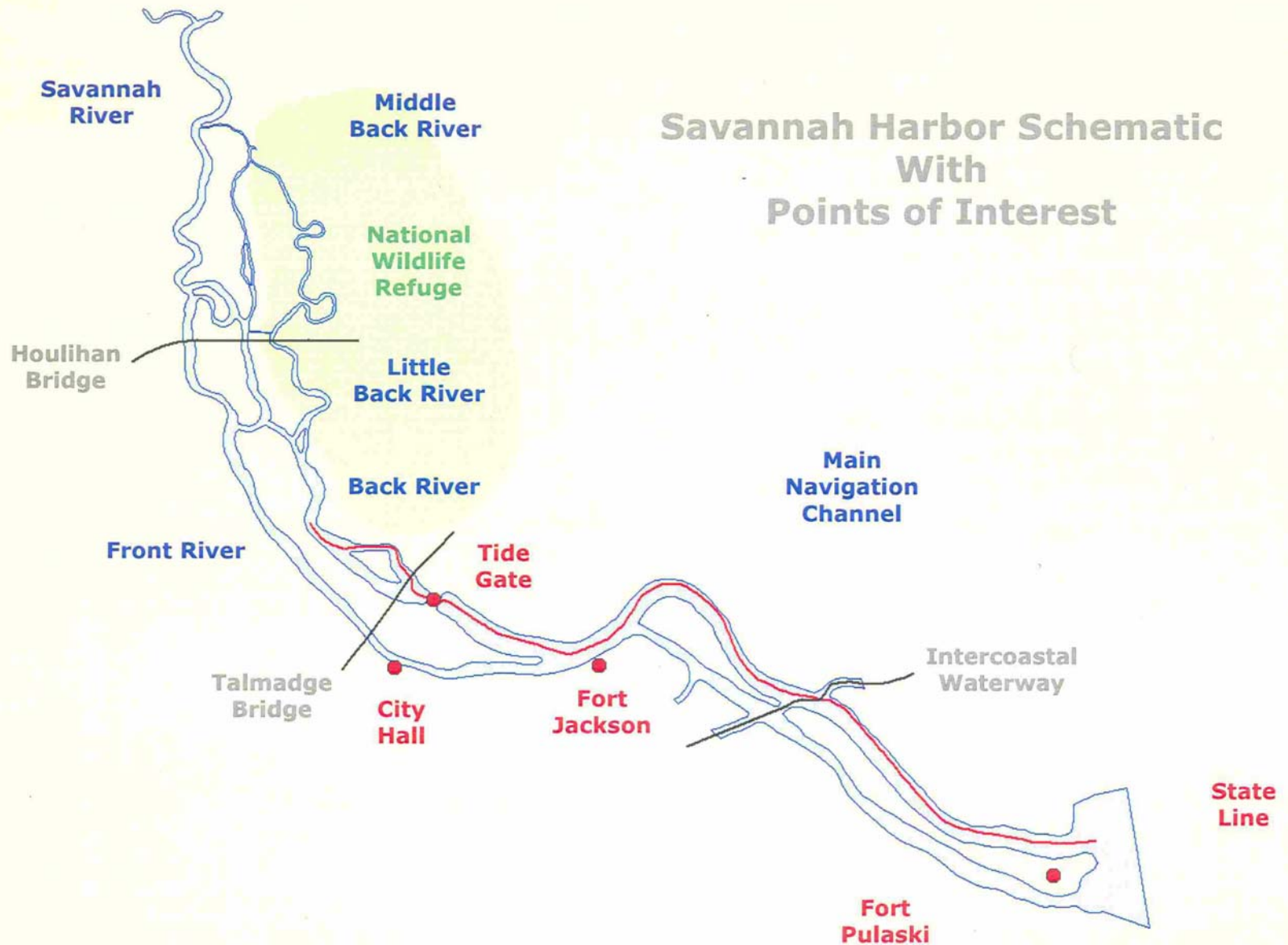
- The State of Georgia's Dissolved Oxygen criteria could not be attained even if all dischargers were removed
- Without a new Dissolved Oxygen standard, it is unlikely that the harbor would ever comply
- Georgia recognized the need to modify their water quality standards.

Savannah River Basin - DO TMDL Study Area



Study Area = 4360 sq.mi.
Georgia = 51 percent
South Carolina = 49 percent
Mainstem Length = 190 mi.

Savannah Harbor Schematic With Points of Interest



Case Study #3

Savannah River TMDL

- Stakeholder Involvement
- State Agencies (Georgia & SC)
- Federal Agencies
- Environmental and Business groups
- Local governments/General public
- Dischargers
 - Savannah River Committee
 - Central Savannah River TMDL Group

Case Study #3

Savannah River TMDL

- Georgia is modifying their water quality standards
- Allocation issues between States
- Very extensive process over many years
- Very brief overview
- Very complex problems
- Looking at all options including variances

Case Study #3

Savannah River TMDL & Variances

- Variance for SC means a “short-term exemption from meeting certain otherwise applicable water quality standards”
- Typically considered for complex problems or financial difficulties
- So far, SC has completed no variances due to legal (standards) issues with EPA Region IV

Case Study #3

Savannah River TMDL & Variances

- The variance is for a specific pollutant(s) or parameter(s) and does not otherwise modify water quality standards; and
- The variance identifies and justifies the criterion that shall apply; and
- The variance is established as close to the underlying criterion as possible; and

Case Study #3

Savannah River TMDL & Variances

- The variance is reviewed every three years, at a minimum, and extended only where the conditions for granting the variance still apply; and
- The variance does not exempt the discharger from compliance with any applicable technology or other water quality-based permit effluent limitations; and
- The variance does not affect permit effluent limitations for other dischargers.

Case Study #4

Bacteriological Assessment-Freshwaters

- Information gathering
- Collect data across the state from both lakes and streams to support any proposed changes
- Updates & reports to document the work & process
- Meaningful stakeholder involvement and public participation efforts statewide throughout this process
- Complete work by 2010 for consideration in next triennial review (to be final by 2011)

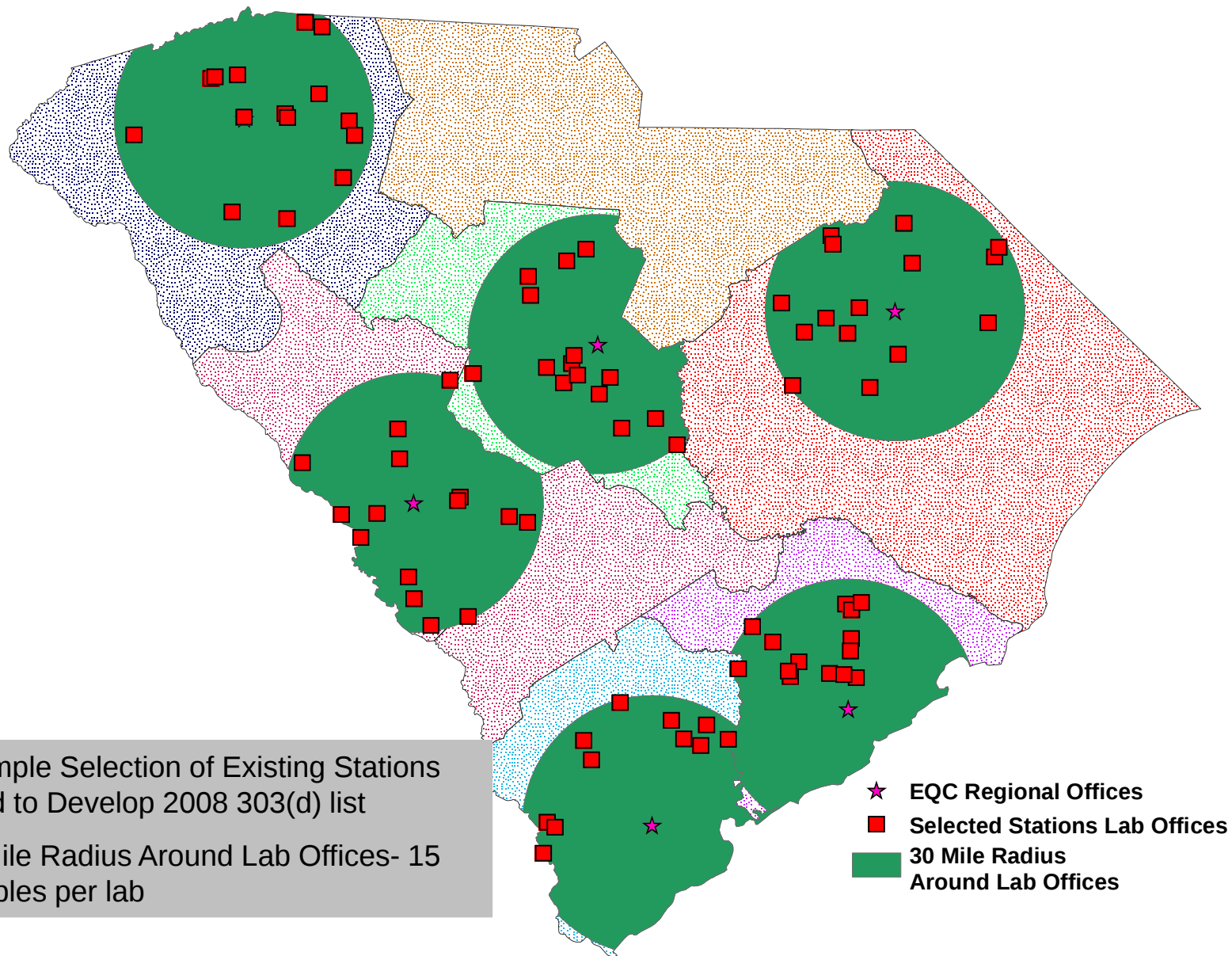
Case Study #4

Bacteriological Assessment-Freshwaters

- DHEC is doing a one year study to determine which pathogen indicator will best protect public health during recreation in freshwater.
- Weekly samples taken at 74 sites and analyzed to compare freshwater recreational water quality indicators.
- Fecal coliform, E. coli and Enterococci samples
- Web Site for more information
 - <http://www.scdhec.net/environment/water/fwater.htm>

Example Selection of Existing Stations
Used to Develop 2008 303(d) list

30 Mile Radius Around Lab Offices- 15
samples per lab



Conceptual Model

To reflect meaningful & realistic protection & expectations
for surface freshwaters of the state,
Involving potential changes to classified uses, criteria, indicators,
standards, & assessment

Monitoring
revisions

Permitting
Implications
Short & long term

EPA
acceptance

Standards
Changes
(indicators, uses
& criteria)

Assessment
Methodology
for listing of
impaired waters

Public
Participation

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- Mihir Mehta, Manager, Watershed Section

Questions



**Golden Orb Weaver Spider
Congaree National Park**