Implementing TMDLs

SeSwA Seminar

Atlanta Georgia, April 17, 2015

Presented by:
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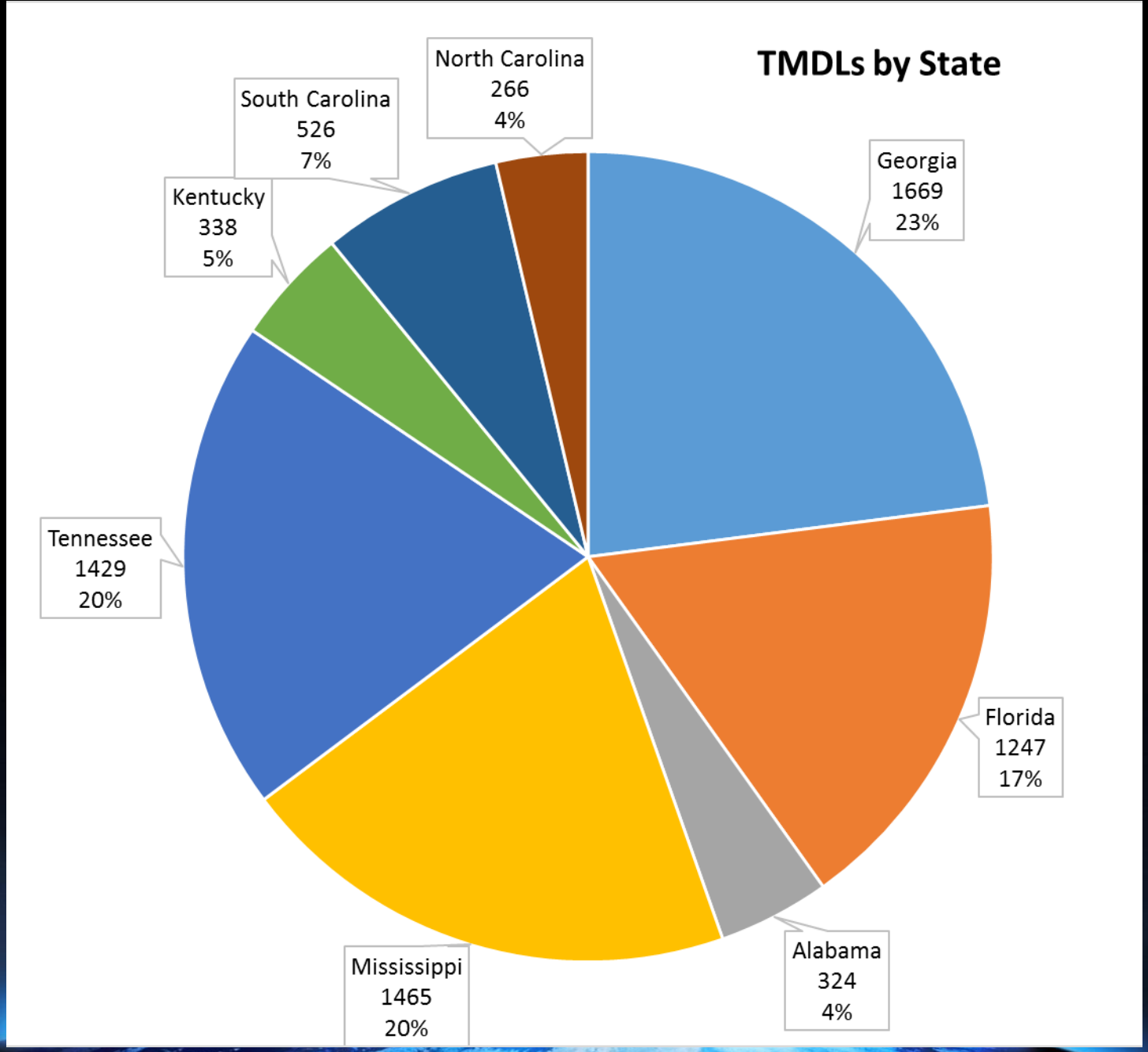
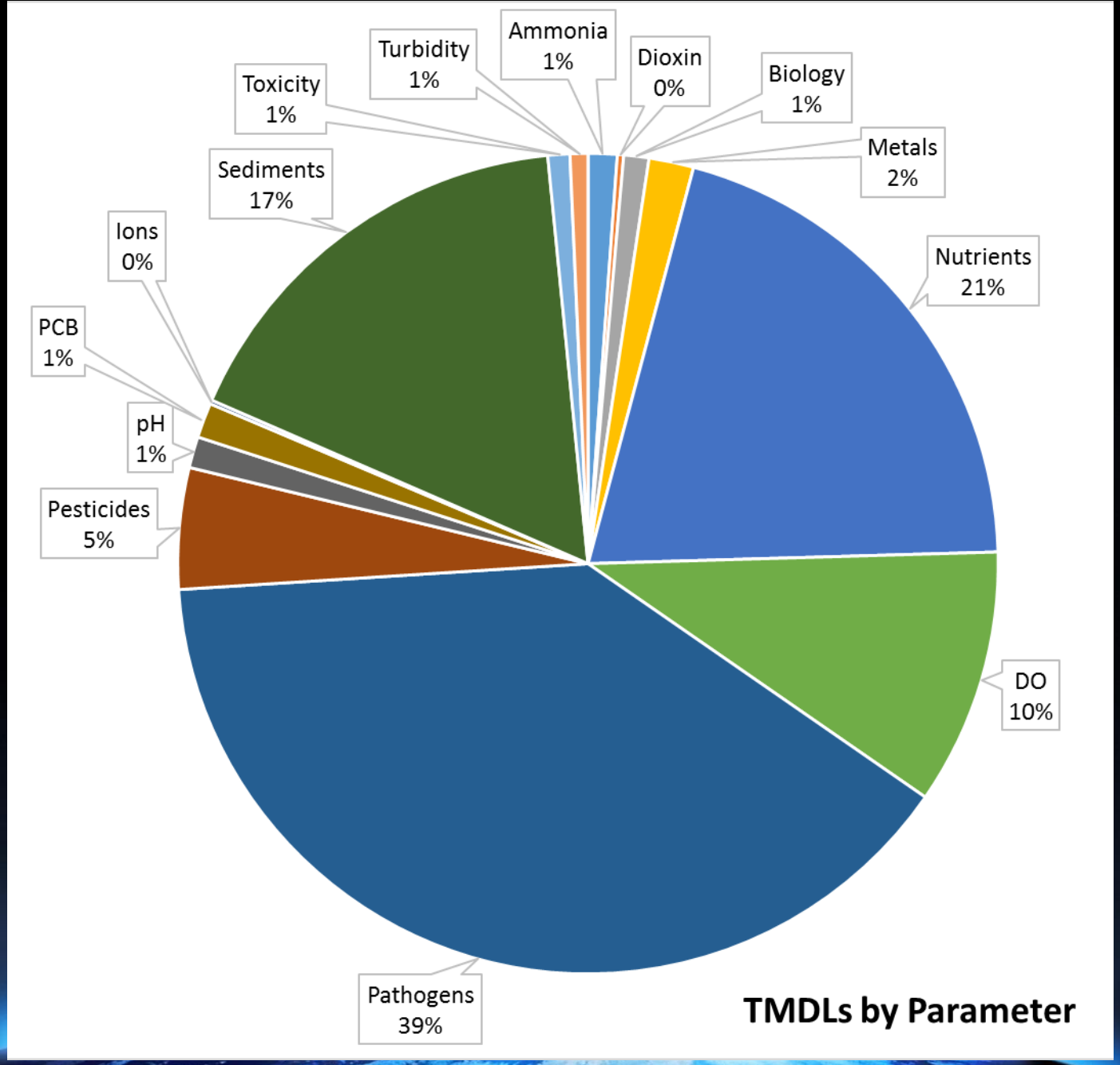
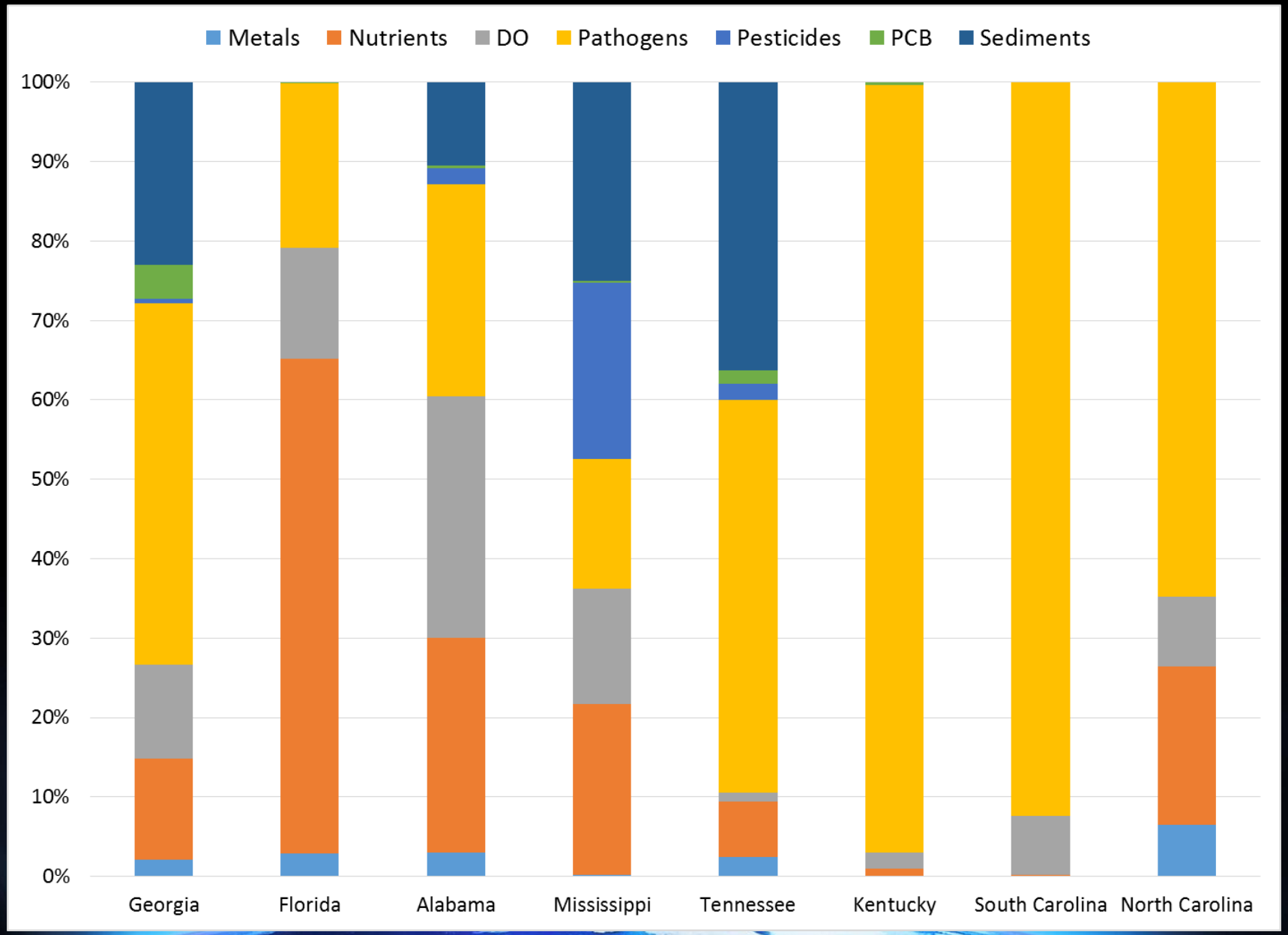
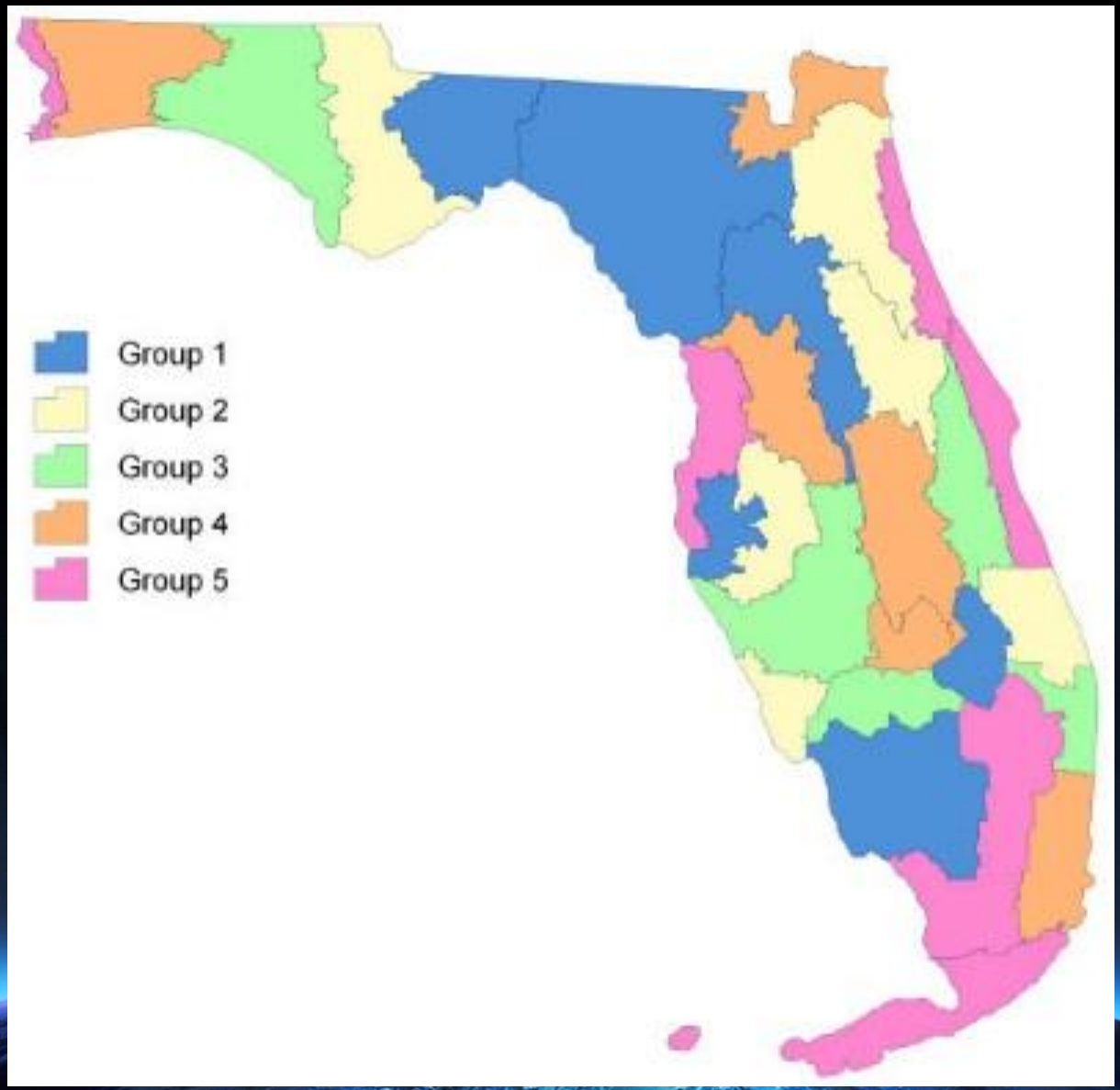
EPA Region 4


TMDLs by State
North Carolina
266
4%
South Carolina
526
7%
Kentucky
338
5%
Georgia
1669
23%
Tennessee
1429
20%
Florida
1247
17%
Mississippi
1465
20%
Alabama
324
4%


Ammonia 1%
Turbidity 1%
Dioxin 0%
Toxicity 1%
Biology 1%
Metals 2%
Sediments 17%
Nutrients 21%
Ions 0%
PCB 1%
pH 1%
Pesticides 5%
DO 10%
Pathogens 39%
TMDLs by Parameter

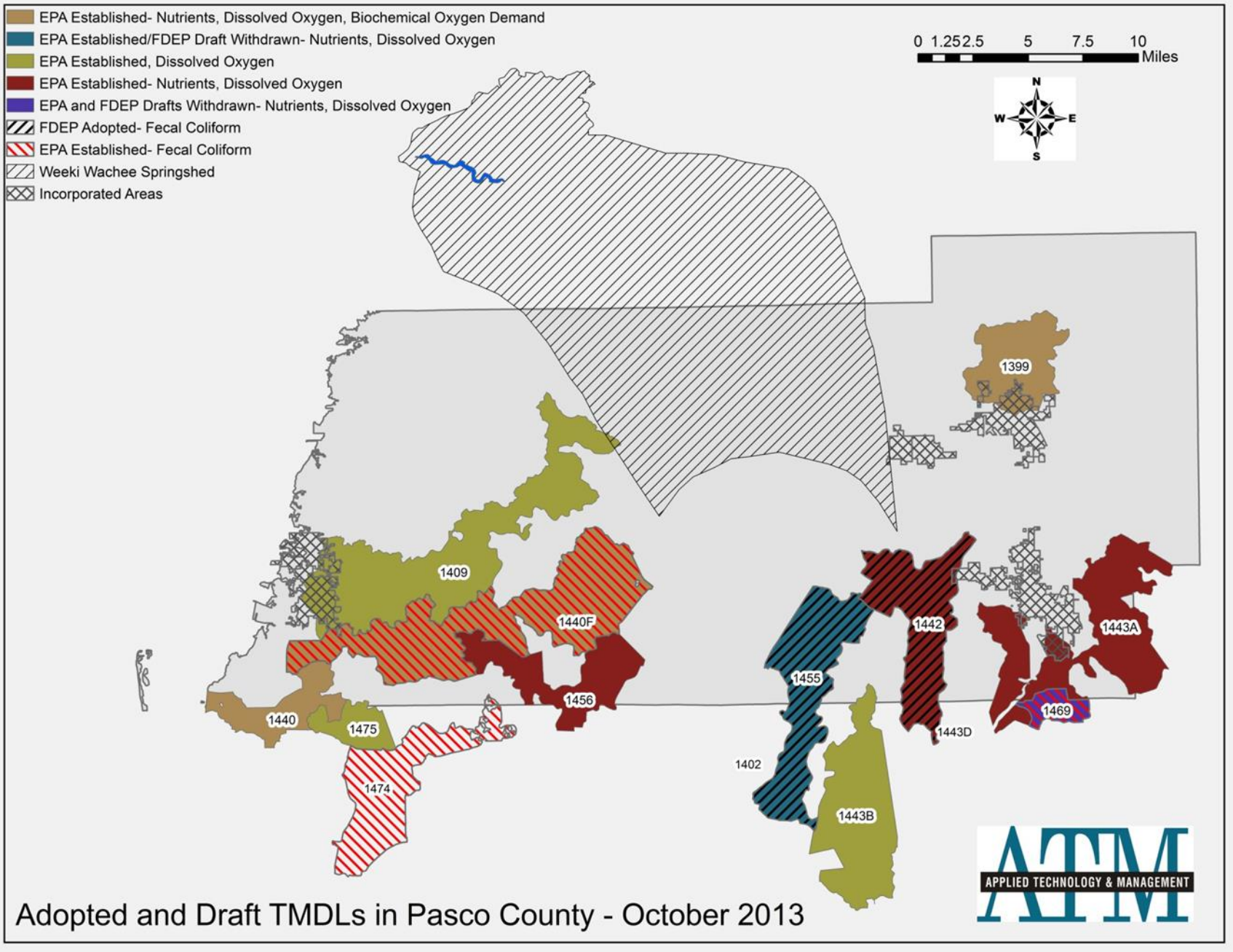

Metals
Nutrients
DO
Pathogens
Pesticides
PCB
Sediments
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Georgia
Florida
Alabama
Mississippi
Tennessee
Kentucky
South Carolina
North Carolina

FDEP Basin Rotation



Florida Nuances

+ Water Body IDs (WBIDs)
+ Impaired Waters Rules
+ FDEP TMDLs vs EPA TMDLs
+ Springs TMDLs
+ Linkage to Basin Management Action Program (BMAP)

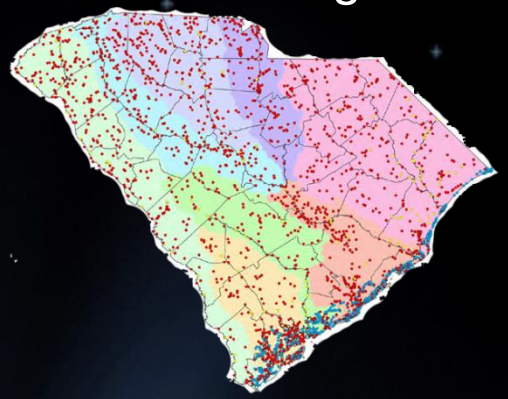

EPA Established- Nutrients, Dissolved Oxygen, Biochemical Oxygen Demand
EPA Established/FDEP Draft Withdrawn- Nutrients, Dissolved Oxygen
EPA Established, Dissolved Oxygen
EPA Established- Nutrients, Dissolved Oxygen
EPA and FDEP Drafts Withdrawn- Nutrients, Dissolved Oxygen
FDEP Adopted- Fecal Coliform
EPA Established- Fecal Coliform
Weeki Wachee Springshed
Incorporated Areas
0 1.252.5 5 7.5 10
Miles
N
W
E
S
1399
1409
1440F
1456
1440
1475
1474
1455
1442
1443A
1469
1443D
1402
1443B
APPLIED TECHNOLOGY & MANAGEMENT
Adopted and Draft TMDLs in Pasco County - October 2013

SC 303(d) Listing- Statewide Monitoring

- 245 permanent stations (5 by Santee Cooper)
- 16 temporary stations annually (includes streams, rives, lakes, tidal creeks, and open waters)
- 5 watersheds
- One outside data QAPPs used to date (Greenville County)
- 5 years of data used
- Submitted to EPA every 2 years
- Points- not watersheds or stream segments

303(d) Listing- Monitoring Stations in SC

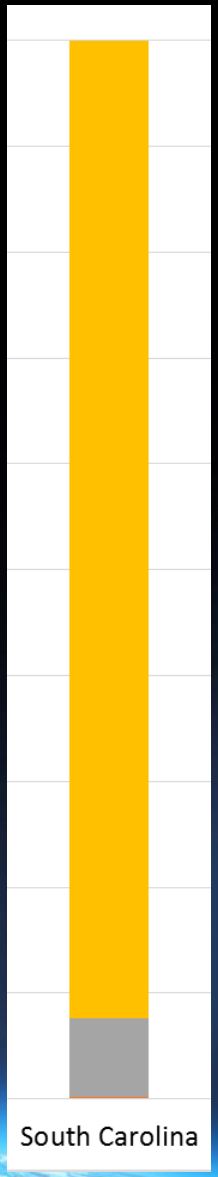
- 914 total sites in the Water Quality Monitoring Site GIS Coverage



- Budget cuts resulting in reduction of sites
  - 2009 – 349 permanent fixed-location sites
  - 2011 – 255 permanent, fixed-location sites
  - 2015 – 245 permanent, fixed-location sites
- From the 2012 303(d) list, there are 2,237 Impaired stations in SC
  - Stations covered by existing TMDLs that are NOT supported (371)
    - 22 DO
    - 337 FC
    - 30 FC SFH
    - 1 TP
    - 2 pH
    - 1 Turbidity

SC 303(d) Delisting

- SC water quality standard obtained
- Listing error identified
- TMDL developed and approved
  - 6 DO
  - 100 E. coli and/or FC
  - 1 TP
  - 2 pH
  - 1 Turbidity



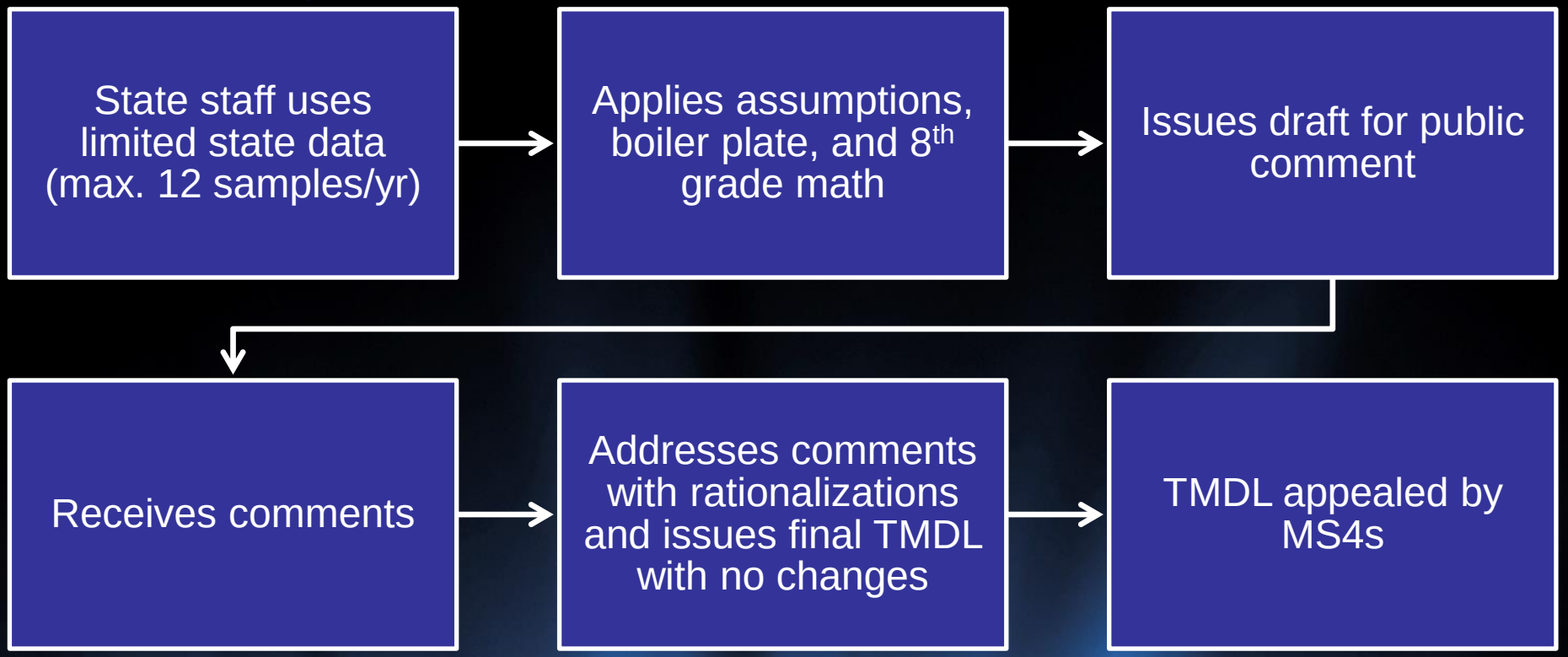
TMDL NPDES MS4 Relationships

State	TMDL Monitoring Required?	BMP's Required?	Monitoring Requirements	Unique Requirements
Alabama	✓	Document in the SWMP how BMP's will ensure that the MS4's discharge to an impaired water does not cause or contribute to the impairment.	Determine whether the POC is likely to be found in stormwater discharges, and if so, determine whether or not currently installed control measurements are in compliance with the TMDL, or if more steps are necessary.	A monitoring plan to assess the effectiveness of BMP's is also required
Florida		WLA must be incorporated into SWMP if not already being met.		
Georgia	✓ Required for permittees with population > 10,000	BMP's required in TMDL watersheds for permittees with populations >10,000	Produce a Monitoring and Implementation Plan for impaired waters with or without a TMDL for each POC. Assessment of data trends required in annual report.	Outfall or in-stream monitoring allowed. Representative outfalls allowed

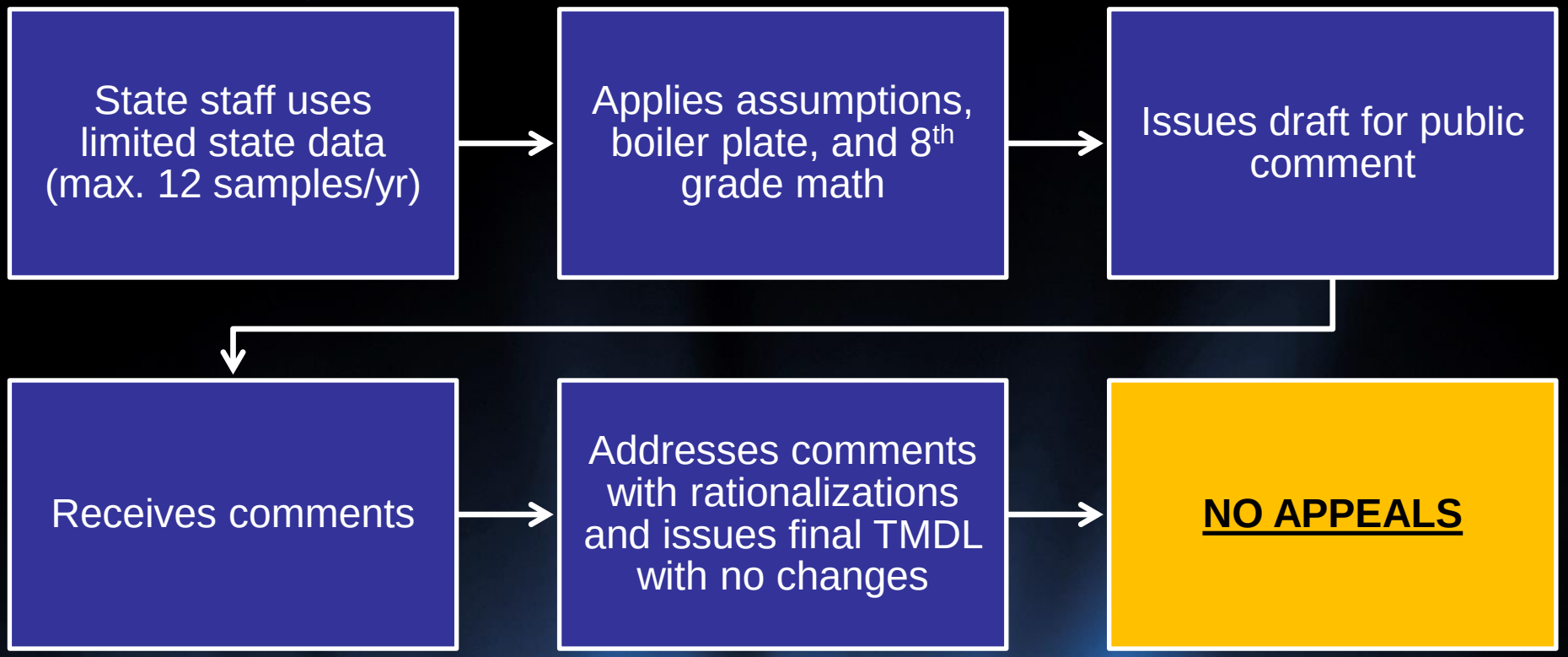
State	TMDL Monitoring Required?	BMP's Required?	Monitoring Requirements	Unique Requirements
Kentucky	✓	Monitoring program needs to evaluate effectiveness of the BMPs to address the TMDL	Include monitoring strategies, locations, frequencies, and methods. Permittee must identify all outfalls to impaired streams. "The permittee shall evaluate the discharge load associated with the identified MS4 major outfalls for the pollutant.	Use outfalls that are representative of particular land uses or geographical uses before and after implementation of control measures
Mississippi	Not required	Include additional control measures when a TMDL has been specified for a waterbody		
North Carolina	✓	Identify TMDL watersheds and map outfalls within those watersheds. List current and planned additional measures to enhance water quality in the TMDL watershed(s).	Conduct an analysis of available monitoring data for TMDL, showing trends if possible. Develop a monitoring plan for each POC. Monitoring Plan requirement can be waived if currently implemented measures are deemed adequate.	Permittee is in compliance with TMDL if in compliance with permit.

State	TMDL Monitoring Required?	BMP's Required?	Monitoring Requirements	Unique Requirements
South Carolina	✓	Identify discharges located in the TMDL watershed draining to the impaired stations. Develop a TMDL Monitoring and Assessment Plan.	Monitoring must be representative. Outfall, in-stream, and/or BMP monitoring allowed.	Data should be assessed for long term trends
Tennessee	✓	SWMP must include BMP's specifically targeted to achieve WLA of TMDLs	Monitoring to determine effectiveness of BMPs in achieving WLA. BMPs and monitoring of BMPs also required for impaired waterbodies without a TMDL. Monitoring must be representative. Visual stream surveys required for streams impaired for siltation, habitat alteration, and pathogens.	Modeling allowed

SC Pre 2011 TMDL Development (typical)



Current TMDL Development (typical)

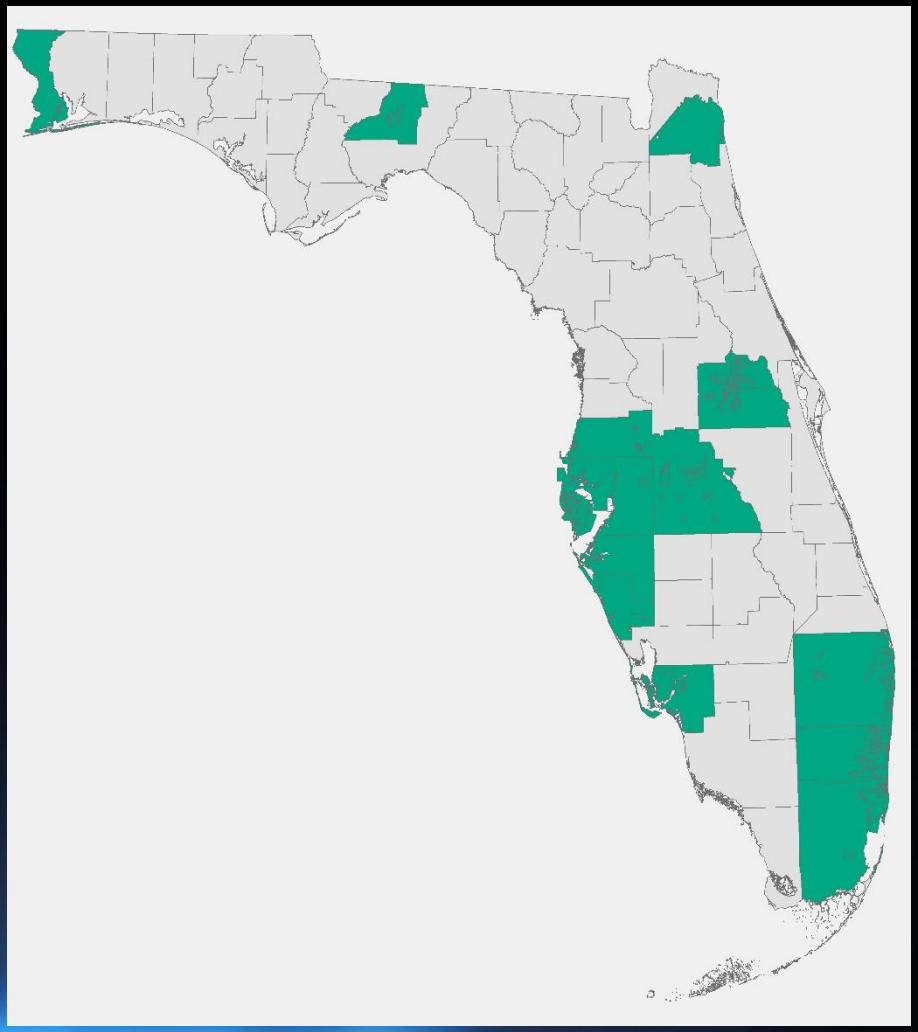


Magic TMDL Language

"For SCDOT and existing and future NPDES MS4, construction, and industrial stormwater permittees, compliance with terms and conditions of its NPDES permit is effective implementation of the WLA to the Maximum Extent Practicable (MEP)".

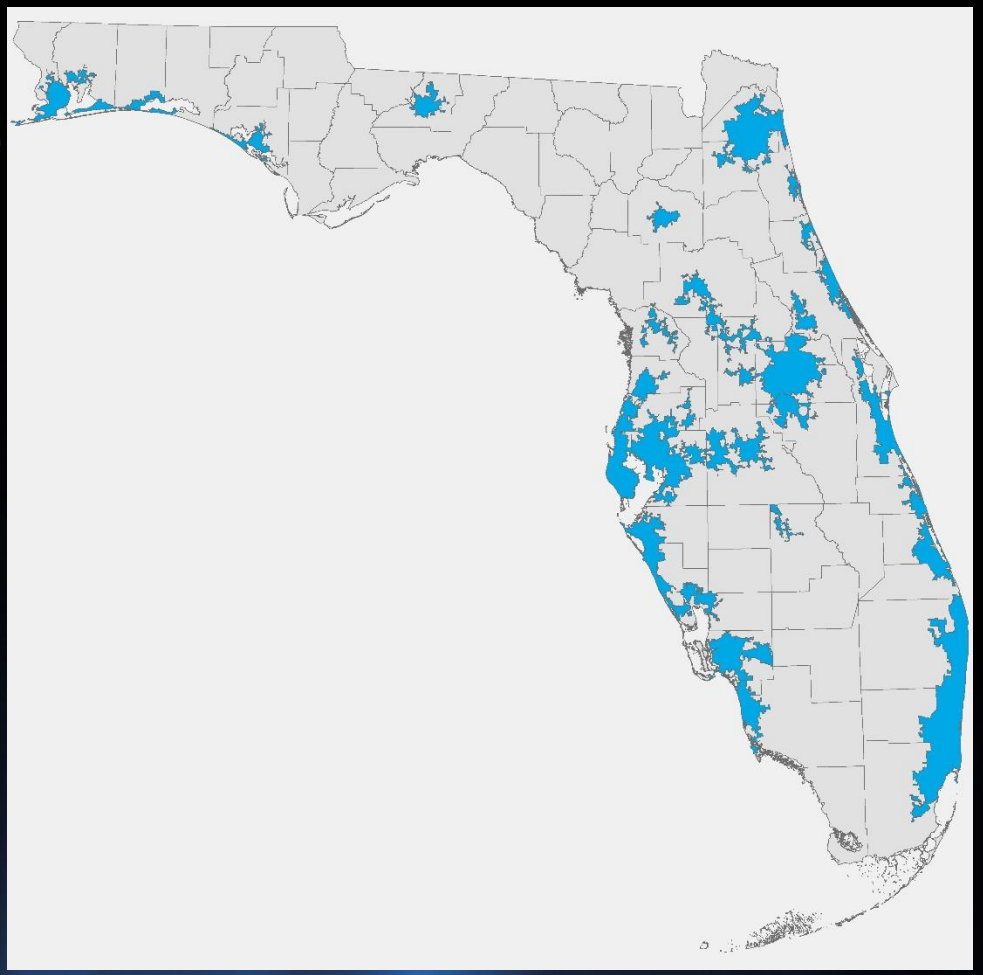
MS4/TMDL Linkages (Phase I)

- BMAP vs Non-BMAP TMDLs
- Prioritization Plan (1-6)
- Monitoring Plan (6-12)
- TMDL Monitoring (12-36)
- Implementation Plan (24-48)
- Bacterial Pollution Control Plan (<30)
- Co-permittee Coordination



MS4/TMDL Linkages (Phase II)

- Phase II Generic Permit in process of revision
- EPA's MS4 Permit Improvement Guide (April 2010)
- Permit must address TMDL implementation with "clear and specific requirements related to identification, evaluation, and implementation of BMPs with timeframes necessary to meet applicable TMDL WLAs for MS4s"

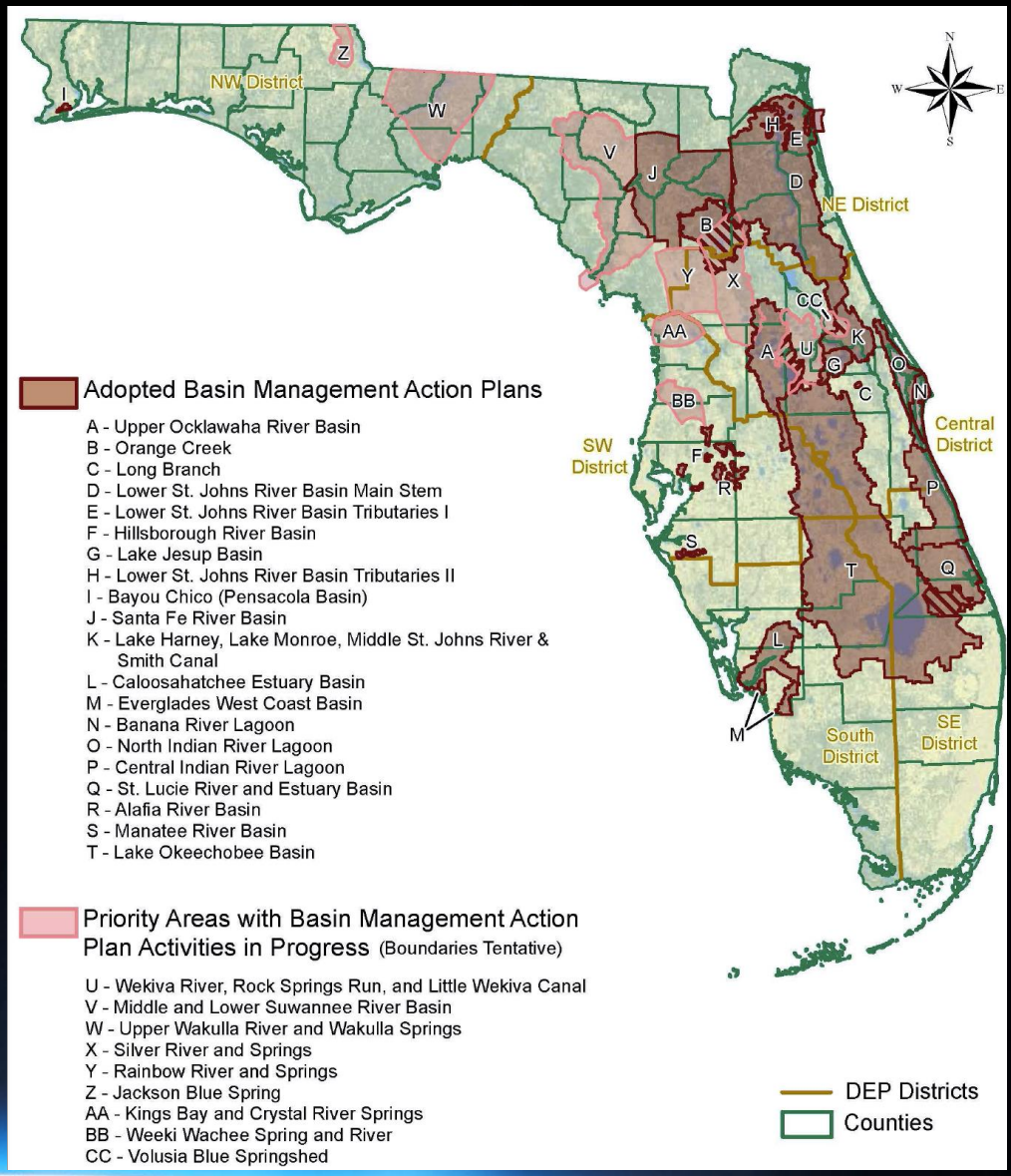


Florida Implementation

- Nutrients and Bacteria Primarily
- Basin Management Action Plan (BMAP)
- Prioritization Plan Implementation
- Reasonable Assurance Plans (RAP) – avoid a TMDL
- Nutrient Management Plan
- Bacteria Pollution Control Plan (BPCP)

BMAP Program

- Authorized under the Watershed Restoration Act
- Develop TMDL Implementation Plan
- Stakeholder driven
- Updated on 5-Year Cycle
- Annual progress meetings
- Signed by Secretary and is enforceable by FDEP
- FDEP can take enforcement action
- Tied directly to MS4 Permits

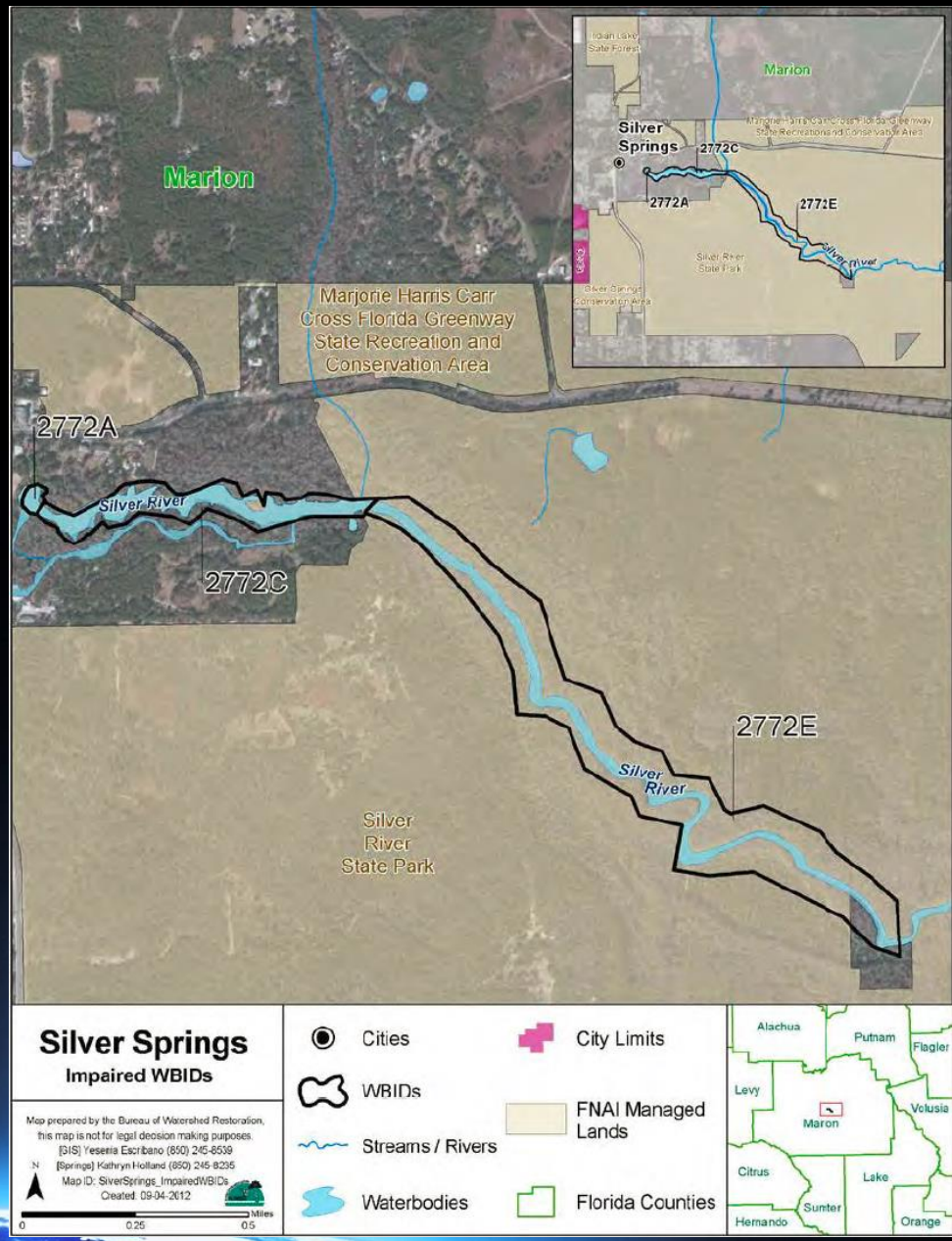


BMAP Aspects/Challenges/Issues

- Detailed Allocations versus Sufficiency of Effort
- Spring BMAPs
- Cross-Border Issues
- Agriculture (presumptive compliance)
- Non-Point Source Credit Trading

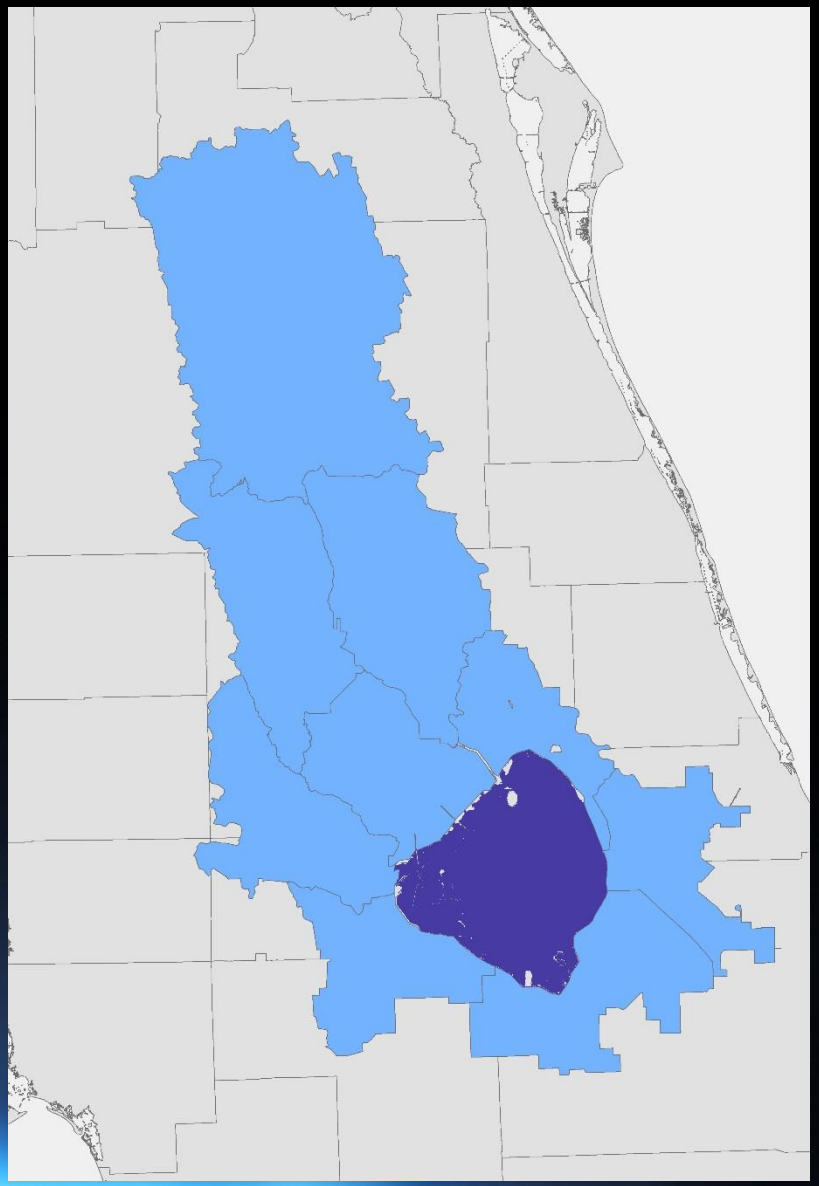
Silver Springs

- Target: 0.35 mg/L N
- Complex groundwater flow regime
- Legacy loading important due to groundwater travel time
- Sources
- Septic
- Ag
- MS4
- Sufficiency of Effort



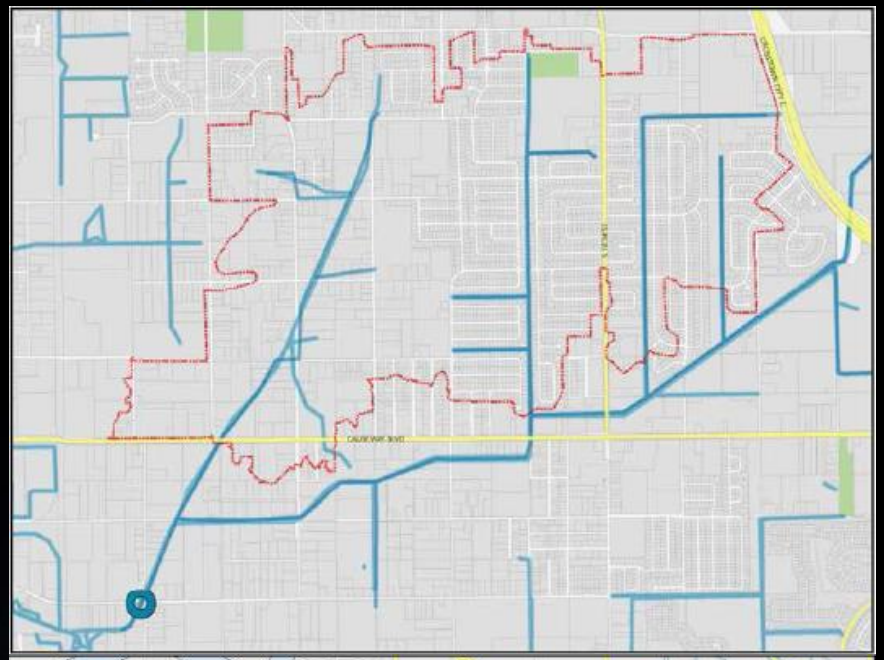
Lake Okeechobee

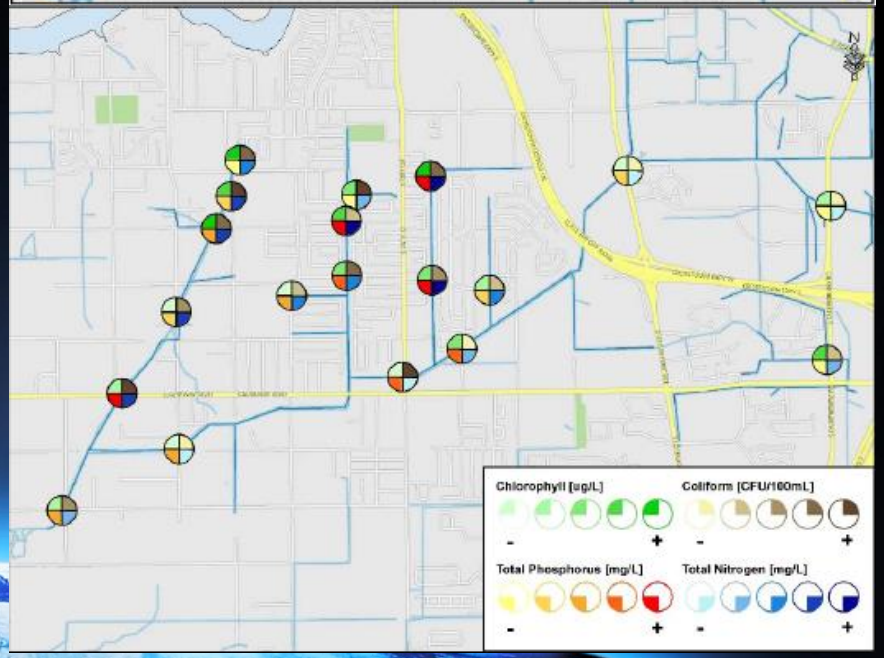
- TMDL: 140 MT/Y
- Allowable Load
- Atmospheric: 35 MT/Y
- Watershed: 105 MT/Y
- Existing Load
- Total: 448.3 MT/Y
- Agriculture: 355.1 MT/Y
- Reductions:
- Ag BMPs: 38.2 MT/Y
- Issue on how to meet reductions under FL rules



Delaney Creek

- EPA TMDL - prioritized
- 72% Nutrient Reduction
- Urban/Residential Land-Use
- Program
  - Phase I: Monitoring to define high load sub-watersheds
  - Phase II: Monitoring in high load sub-watersheds to identify sources
  - Targeted plan to address sources





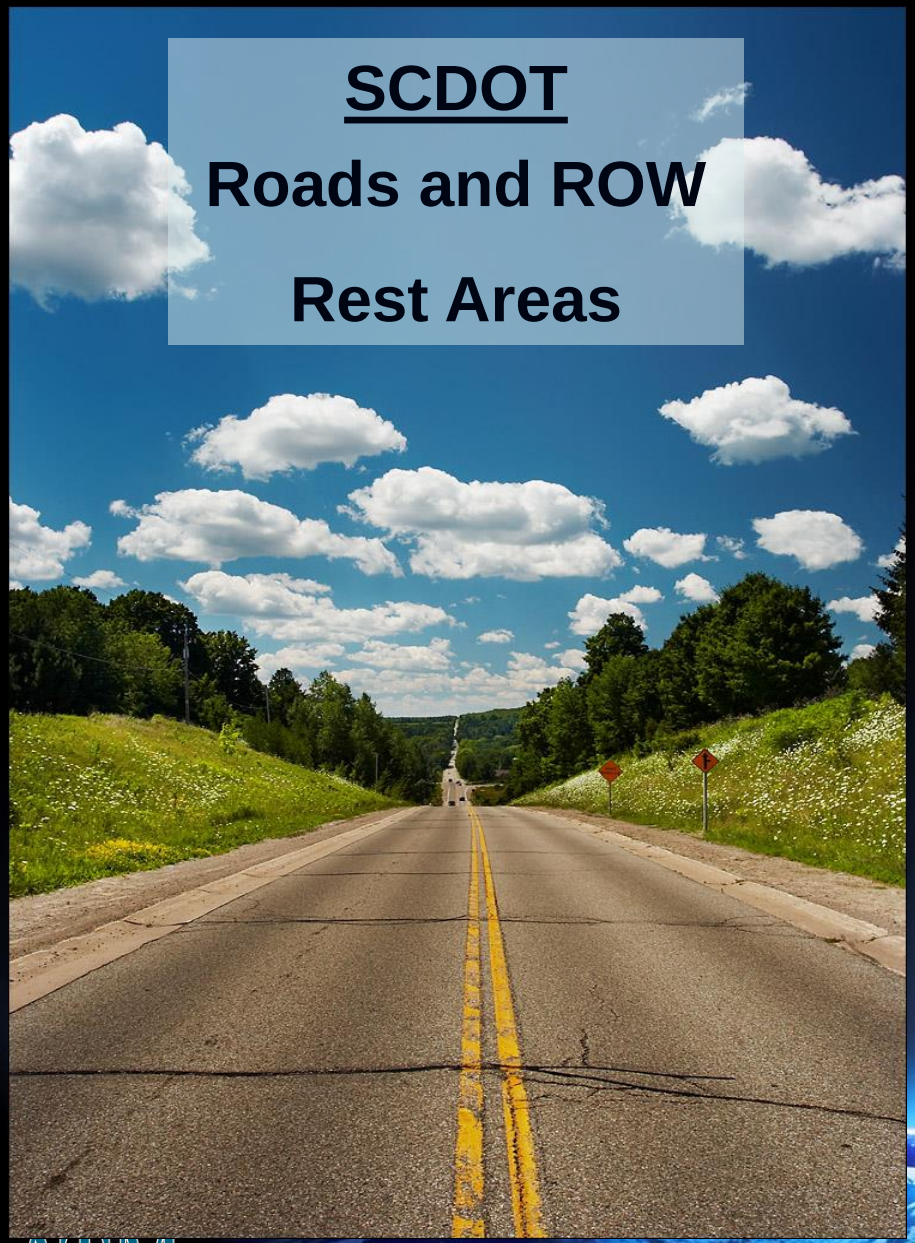
South Carolina TMDL Implementation

SCDOT Case Study

SCDOT vs. Typical MS4

Category	SCDOT	Typical MS4
Landuse	Single	Mixed
Area		
Jurisdiction		
Enforcement		
Funding		

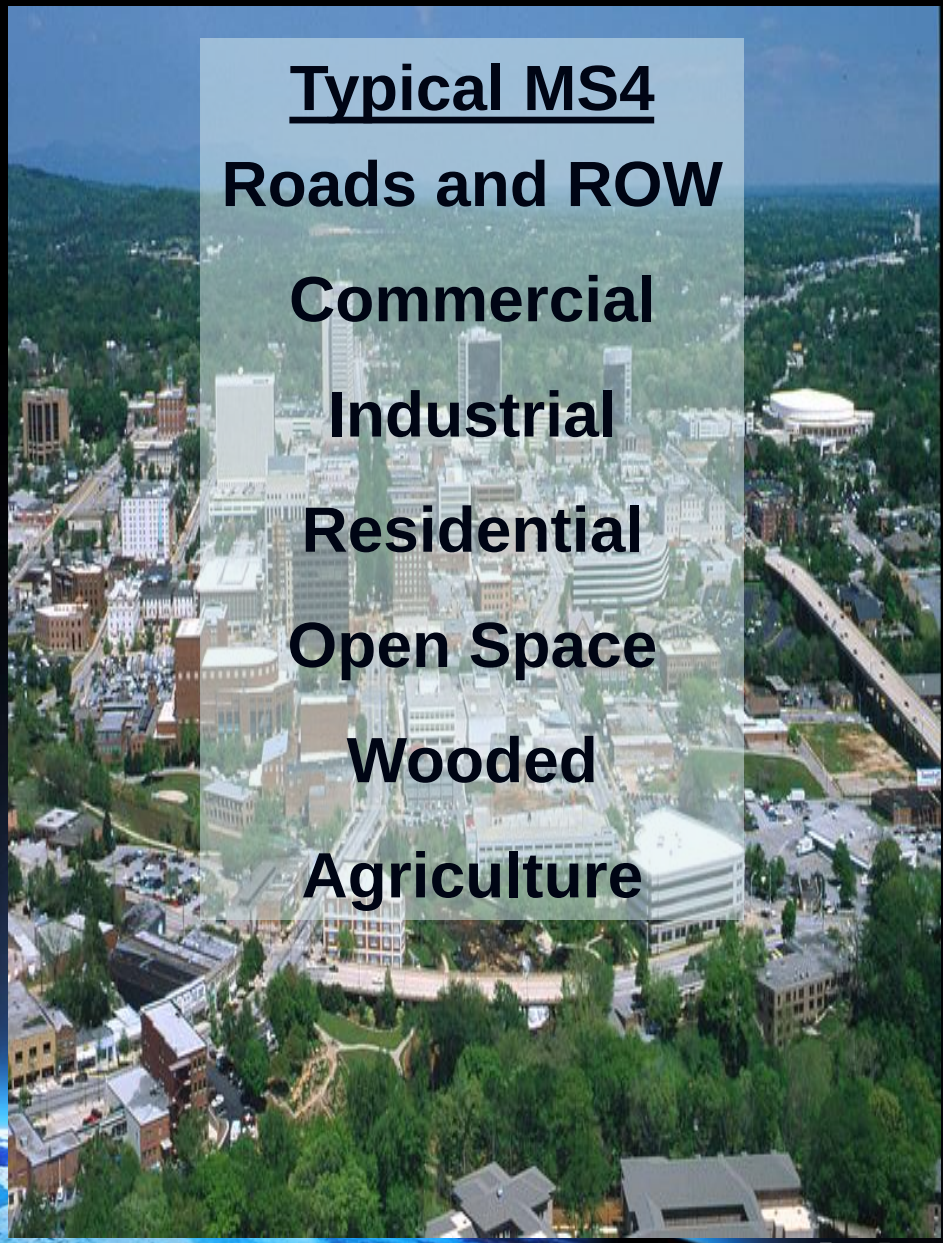
Landuse



SCDOT

Roads and ROW

Rest Areas



Typical MS4

Roads and ROW

Commercial

Industrial

Residential

Open Space

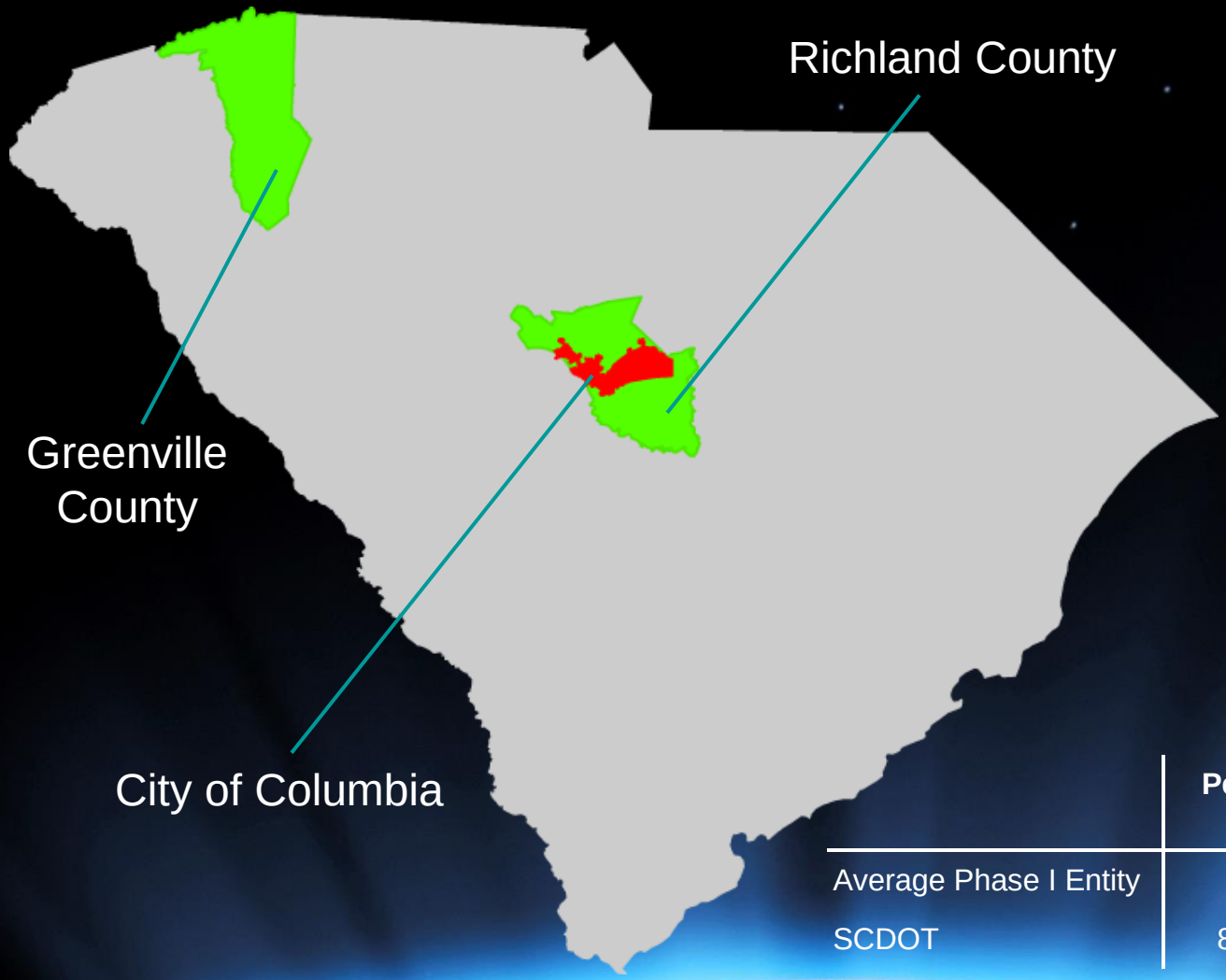
Wooded

Agriculture

SCDOT vs. Typical MS4

Category	SCDOT	Typical MS4
Landuse	Single	Mixed
Area	Statewide	UA's within Municipal and County Boundaries
Jurisdiction	Right-of-Way	Municipal and County Boundaries
Enforcement		
Funding		

Area and Jurisdiction



	Perimeter (mi)	Isoperimetric Quotient
Average Phase I Entity	163.4	0.22
SCDOT	87142.0	0.000001

SCDOT vs. Typical MS4

Category	SCDOT	Typical MS4
Landuse	Single	Mixed
Area	Statewide	UA's within Municipal and County Boundaries
Jurisdiction	Right-of-Way	Municipal and County Boundaries
Enforcement	None	Local Law Enforcement through Home Rule Act
Funding	State Highway Money	Storm Water Utility, Special Tax, Etc.

Solution

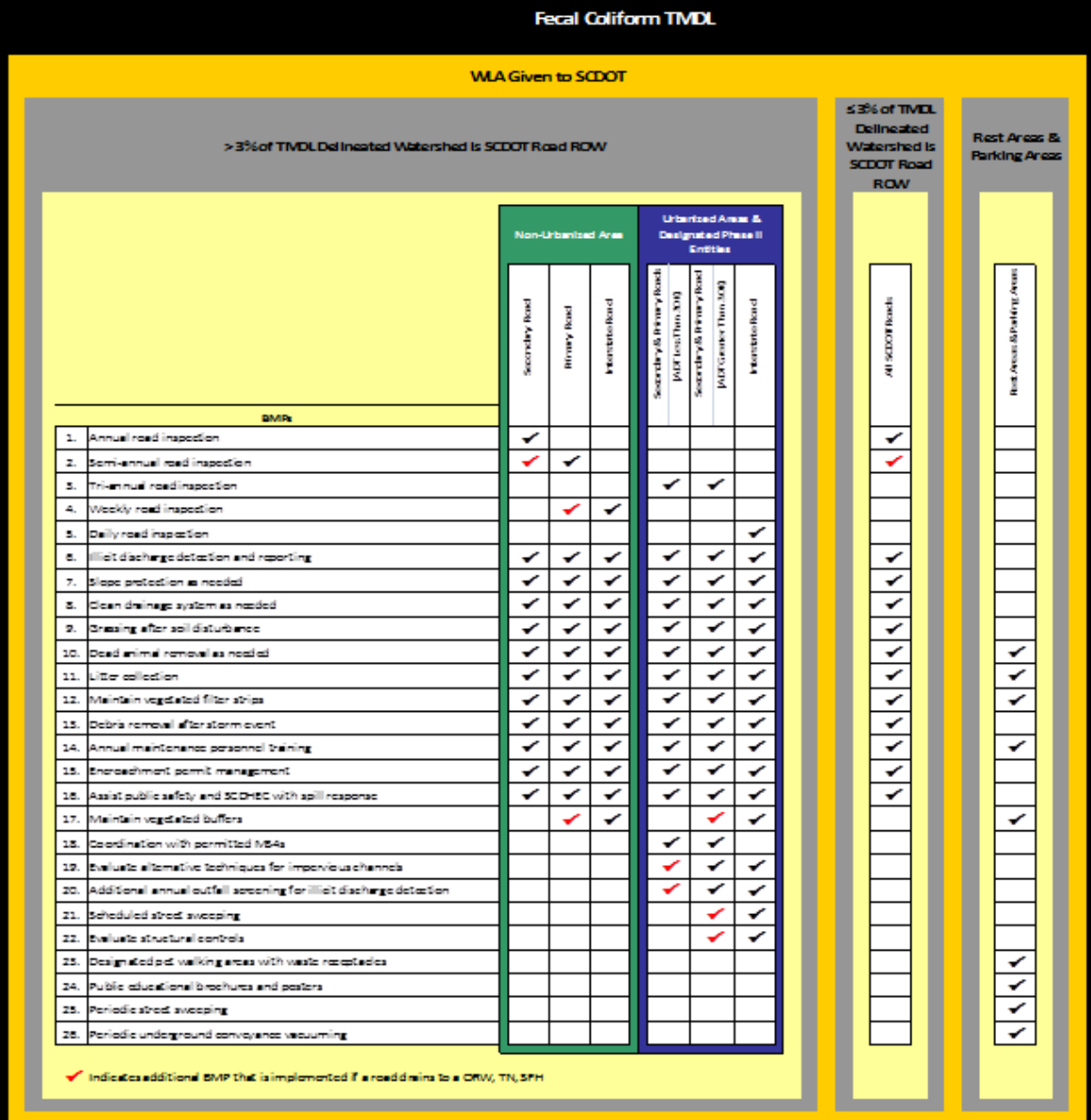
- Determine what is practical from a BMP standpoint for the State Highway System

Develop a BMP Implementation matrix that takes into account MEP criteria:

- Effectiveness to address the pollutant(s) of concern
- Public acceptance
- Technical feasibility
- Compliance with Federal, State, local laws and all applicable regulations
- Safety

SCDOT Case study

- Worked with SCDHEC to define MEP
  - Developed schedule of BMPs for TMDLs
    - Inspections
    - Maintenance
    - Research
    - Evaluation
    - Reporting



Fecal Coliform TMDL

WLA Given to SCDOT

>3% of TMDL Delineated Watershed is SCDOT Road ROW

BMPs		Non-Urbanized Area			Urbanized Areas & Designated Phase II Entities				≤3% of TMDL Delineated Watershed is SCDOT Road ROW	Rest Areas & Parking Areas
		Secondary Road	Primary Road	Interstate Road	Secondary & Primary Road (ADT less than 500)	Secondary & Primary Road (ADT Greater than 500)	Interstate Road		All SCDOT Roads	Rest Areas & Parking Areas
1.	Annual road inspection	✓							✓	
2.	Semi-annual road inspection	✓	✓						✓	
3.	Tri-annual road inspection				✓	✓				
4.	Weekly road inspection		✓	✓						
5.	Daily road inspection						✓			
6.	Illicit discharge detection and reporting	✓	✓	✓	✓	✓	✓		✓	
7.	Slope protection as needed	✓	✓	✓	✓	✓	✓		✓	
8.	Clean drainage system as needed	✓	✓	✓	✓	✓	✓		✓	
9.	Dressing after soil disturbance	✓	✓	✓	✓	✓	✓		✓	
10.	Dead animal removal as needed	✓	✓	✓	✓	✓	✓		✓	✓
11.	Litter collection	✓	✓	✓	✓	✓	✓		✓	✓
12.	Maintain vegetated filter strips	✓	✓	✓	✓	✓	✓		✓	✓
13.	Debris removal after storm event	✓	✓	✓	✓	✓	✓		✓	
14.	Annual maintenance personnel training	✓	✓	✓	✓	✓	✓		✓	✓
15.	Encroachment permit management	✓	✓	✓	✓	✓	✓		✓	
16.	Assist public safety and SCDHEC with spill response	✓	✓	✓	✓	✓	✓		✓	
17.	Maintain vegetated buffers		✓	✓		✓	✓			✓
18.	Coordination with permitted MS4s				✓	✓				
19.	Evaluate alternative techniques for impervious channels				✓	✓	✓			
20.	Additional annual outfall screening for illicit discharge detection				✓	✓	✓			
21.	Scheduled street sweeping					✓	✓			
22.	Evaluate structural controls					✓	✓			
23.	Designated pet walking areas with waste receptacles									✓
24.	Public educational brochures and posters									✓
25.	Periodic street sweeping									✓
26.	Periodic underground conveyance vacuuming									✓

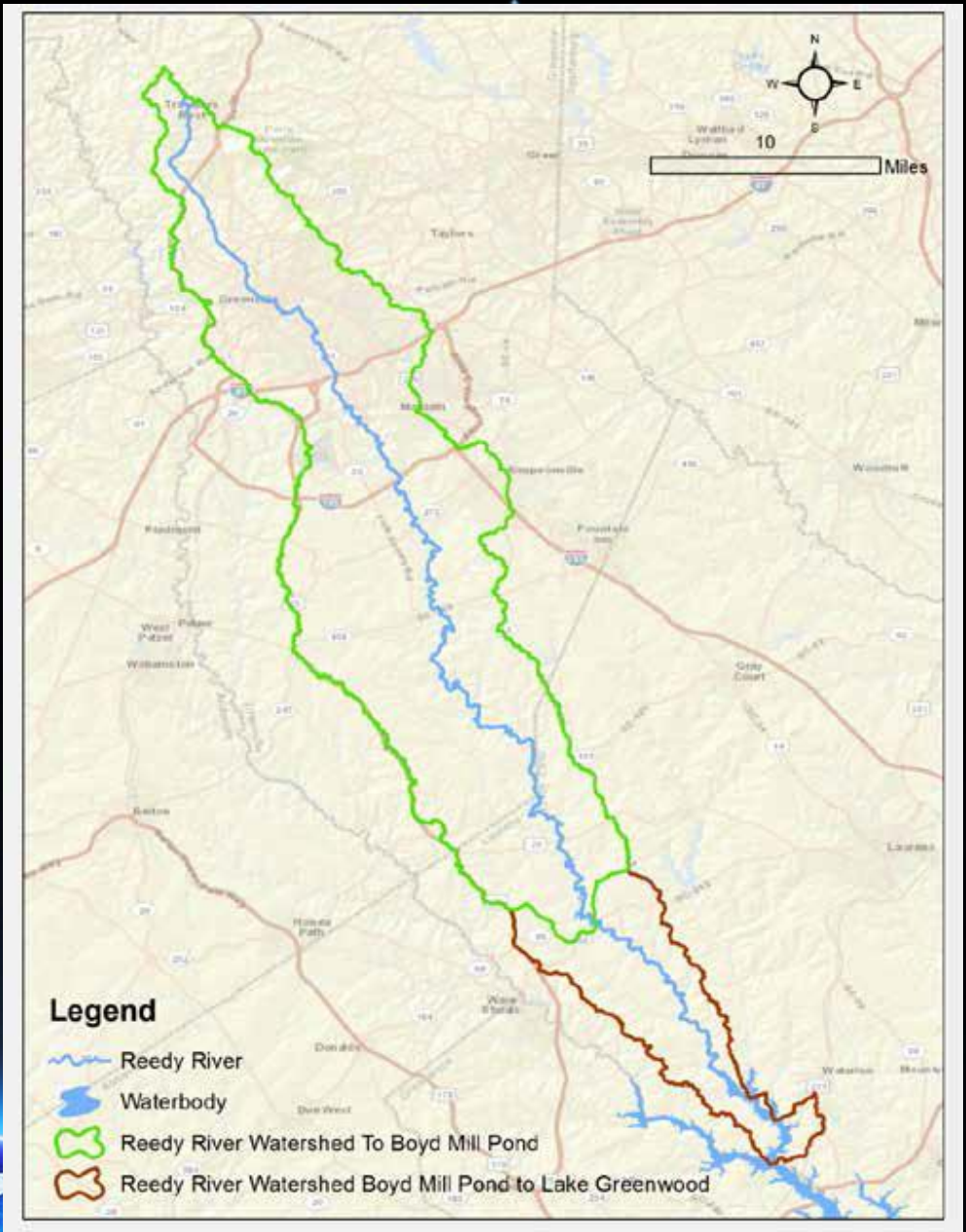
✓ Indicates additional BMP that is implemented if a road drains to a CMW, TN, SFH

Benefits of the Plan

+ SCDOT's compliance with the compliance plan will meet its WLA
+ Compliance with the compliance plan is compliance with their Permit
+ Use TMDLs and the 303(d) list to prioritize implementation
+ Straightforward implementation
+ Immediate action
+ Protection from third-party lawsuits
+ Positively impacts water quality to an impaired waterbody
+ Prudent use of taxpayers money

Reedy River 5R

- Greenville and Laurens Counties
- Boyd Mill Pond and Lake Greenwood
- Historic Nutrient (N & P) impairments
- 7 regulated MS4s (6 phase I)
- 2 Major WWTPs, 3 minor
- Legacy pollutants in sediment



Bottom up Approach

- CWA Section 303(d), Category 4b, Subcategory 5
- “R” stands for Restoration
- Opposite of typical TMDL development
- Voluntary
- Allows local stakeholders to drive process
- Remains on 303(d) list
- Encouraged by Region IV

5R Watershed plan

Local Gov

WWTP

Citizens

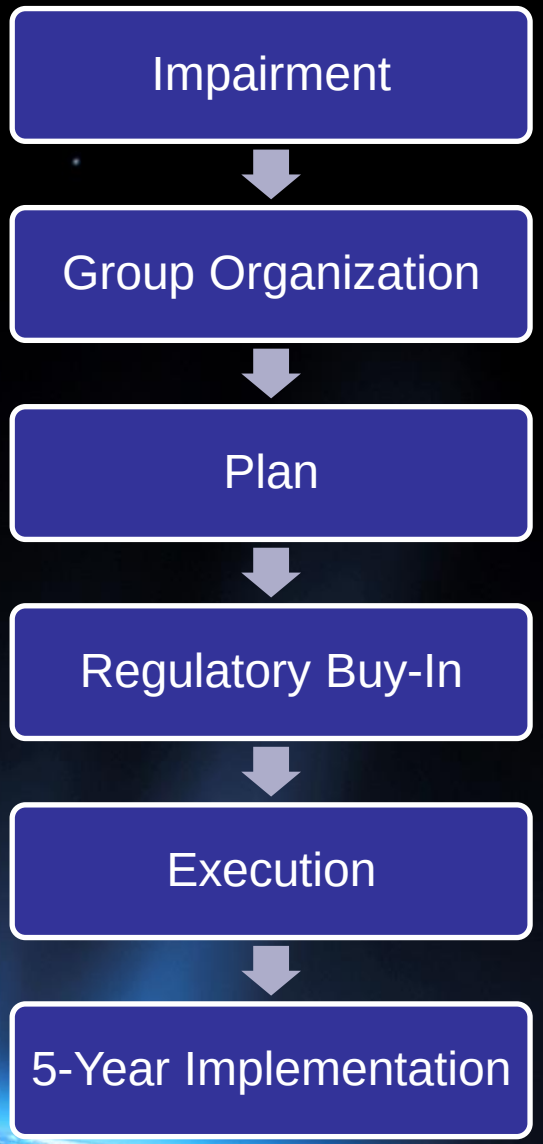
Landowners

MS4s

Env. NGOs

Initial Actions

- Initial Discussions
- Goal Definition
- Cost Estimates
- Participation Agreements
- Initial Proposal to Regulators
- Revised Proposal
- Agreement of Path for TMDL Alternative



Slide provide by Tom Gallo – WQR, Inc.

Plan

Component	Total Nitrogen 5R	Total Phosphorous Plan
Driver	303(d) Impairments	Public and Regulatory Pressure
Plan Document Components	Identify sources	
	Identify load reductions needed to meet WQ standards	Identify load reductions to preserve water quality
	Load reduction actions (NPDES, public outreach, BMPs)	Load reduction actions (load control, public outreach, BMP)
	Identify funding sources	
	Implementation schedule, milestones	
	Education and Outreach	
	Monitoring plan	
	Success criteria (NPDES permit compliance, date to achieve WQ standards)	Load Controls
Regulation	SCDHEC review and approval, public notice via 303(d) process, EPA review and approval	SCDHEC review and comment recommended
Participation Administration	Participation agreements	Participation agreements
Participation Commitment	Memorandum of agreement / commitment letters taking responsibility for a load or action – shared with regulators – NPDES	Signed commitment letters

Slide provide by Tom Gallo – WQR, Inc.

Result

1. Identification of waterbody and statement of causes of impairment
2. Restoration activities expected to achieve WQS
3. Cost estimates and funding commitments
4. Anticipated schedule for implementing each activity
5. Anticipated pollutant load reductions necessary to achieve WQS
6. Monitoring plan to track effectiveness of restoration activities
7. Anticipated date for achieving WQS

Slide provide by Tom Gallo – WQR, Inc.

What 5R Does Not Do

- Inclusion of a waterbody in Category 5R does not change the requirement to establish a TMDL for that waterbody if the restoration activities identified do not ultimately result in attainment of the water quality standard.
- The 5R option does not preclude States from continuing to develop TMDLs.
- Inclusion in the 5R Category does not imply that those waterbodies are a lower environmental priority than other Category 5 waterbodies.

- *From Jennifer Eason DiMaio – Environmental Scientist, EPA Region IV*


THE END
OF
THE ROAD