



Georgia's
State Water Plan

**Regional Water Development and
Conservation Plan Review and Revision
Suwannee-Satilla Water Planning Council
November 17, 2016**

www.georgiawaterplanning.org

Council Meeting 3 Agenda



Georgia's State Water Plan

Suwannee-Satilla Regional Water Council Meeting 3 Agenda - Thursday November 17, 2016

Meeting Objectives:

- 1) Debrief with Council Members from Joint Meeting earlier in the day
- 2) Council Meeting Business

Suwannee – Satilla Specific Council Meeting (CM3)

- | | |
|------------------------|--|
| 10:00 a.m. – 1:15 p.m. | Joint Council Meeting (Covered under separate agenda) |
| 1:15 p.m. – 2:15 p.m. | Debrief with Council Members from Joint Meeting earlier in the day <ul style="list-style-type: none">• Comparison of available resource capacity• Review and discuss management practices• Joint coordination items |
| 2:15 p.m. – 2:25 p.m. | Council Meeting Business <ul style="list-style-type: none">• <i>319h Grant Update</i>• <i>Approve meeting minutes from June 23, 2016 Council Meeting</i>• <i>Follow-up discussion from September 14, 2016 "Office Hours" Teleconference</i>• <i>Discuss optional Council Meeting 6 to finalize plan review & revision process</i>• <i>New Business</i> |
| 2:25 p.m. – 2:30 p.m. | Public Comment Period |
| 2:40 p.m. – 4:00 p.m. | Joint Council Meeting (Covered under separate agenda) |
| 4:00 p.m. | Adjourn |



Georgia's
State Water Plan

Summary of Available Resource
Capacity

www.georgiawaterplanning.org

De-Brief from Breakout Sessions

- De-Brief from Breakout Session B held with Savannah Upper Ogeechee and members of Suwannee Satilla
- Summary of select forecast information
- Summary of Surface and Groundwater Resource Assessment information
- Preliminary approach to Share Resource analysis and potential gaps
- Begin review of Management Practices based on updated Forecasts, resource Assessments and Regional Vision and Goals

Demand Forecasting Summary Statistics

- Population Changes over the Planning Period (2015 – 2050)

Counties with Highest Projected Population Growth	% Change	Lanier	47%
		Pierce	46%
		Lowndes	43%
	# People	Lowndes	50,200
		Coffee	10,600
		Tift	8,900

Counties with Lowest Projected Population Growth	% Change	Turner	-40%
		Brooks	-20%
		Berrien	-19%
	# People	Berrien	-3,600
		Turner	-3,200
		Brooks	-3,000

Demand Forecasting Statistics (cont.)

- Water Demand over the Planning Period (2015 – 2050)

Counties with Highest Water Demand Increase (Excluding Agriculture)	% Change	Lanier	37%
		Pierce	33%
		Lowndes	25%
	MGD	Lowndes	6.0
		Coffee	1.1
		Tift	0.8

*Red text denotes counties with highest population growth statistics

Demand Forecasting Statistics (cont.)

- Water Demand by Source Type over the Planning Period (2015 – 2050)

Counties with Highest Surface Water Demand Increase (Excluding Agriculture)	% Change	Brantley	6%
		-	-
		-	-
	MGD	Brantley	0.1
		-	-
		-	-

Counties with Highest Groundwater Demand Increase (Excluding Agriculture)	% Change	Lanier	37%
		Pierce	33%
		Lowndes	25%
	MGD	Lowndes	6.0
		Coffee	1.1
		Tift	0.8

*Red text denotes counties with highest population growth statistics

Demand Forecasting Statistics (cont.)

- Wastewater flows over the Planning Period (2015 – 2050)

Counties with Largest Increase in Wastewater Flows	% Change	Lanier	40%
		Pierce	37%
		Lowndes	29%
	MGD	Lowndes	6.6
		Coffee	1.7
		Tift	1.5

*Red text denotes counties with highest population growth statistics

Magnitude of Surface Water Gaps

- Round 2 Current Condition Results
- Preliminary analysis indicates that all surface water usage is agriculture-related

Node	Length of Shortfall (% of Time)	Average Shortfall (MGD)	Counties Affected**	Shared Resource with:
Fargo	3	<1		N/A
Jennings*	11	21		N/A
Pinetta*	11	27		Lower Flint Ochlockonee
Atkinson	10	15		Altamaha
Statenville	16	16		N/A

*Denotes node outside of region

**Counties affected were identified based on local drainage areas upstream of the planning node

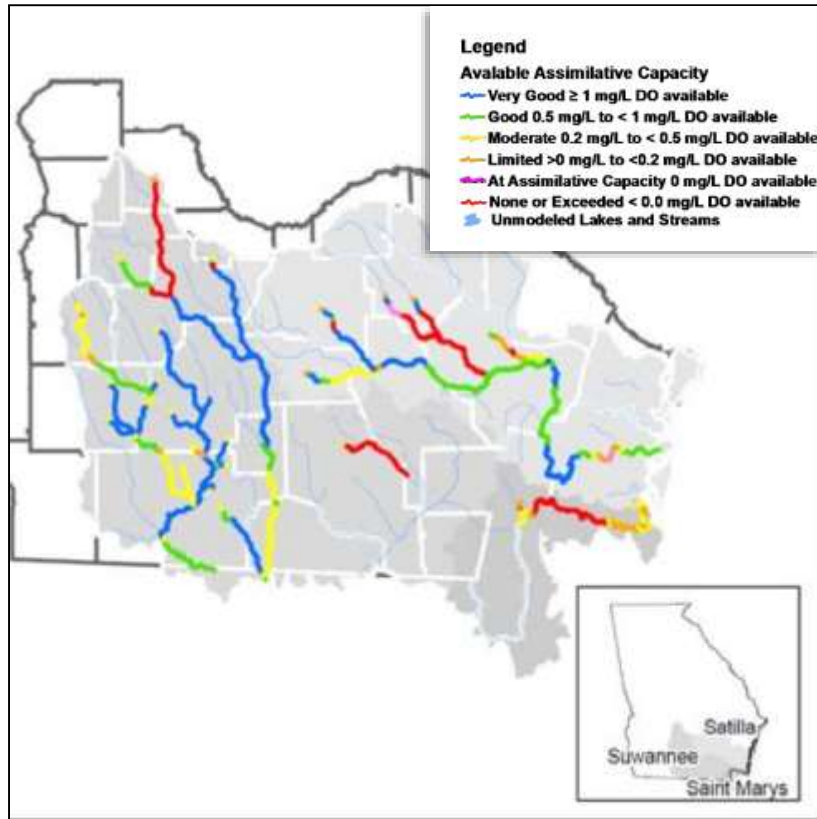
Source: State Water Plan Surface Water Availability Resource Assessment (Zeng, 2016)

Surface Water Quality/Assimilative Capacity Gaps

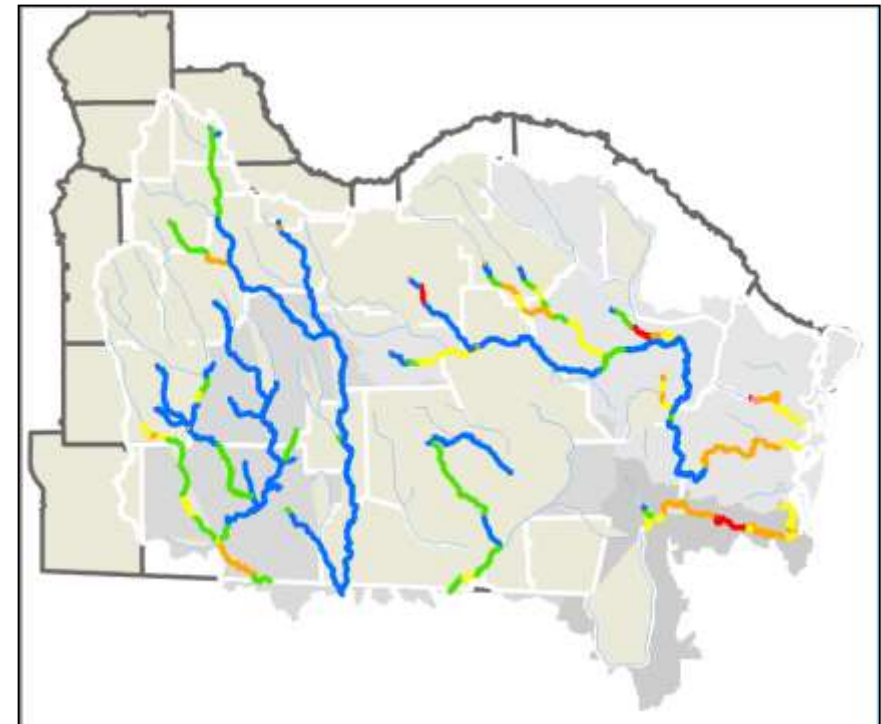
- Assimilative Capacity Assessment Round 2 Results
 - DOSAG & GA Estuary Models
 - 2000 thru 2012 (2012 is critical year)
 - Assimilative capacity for DO appears to be generally improving compared to Round 1 for future conditions **based on assumed permit limits**
 - Will work with EPD to quantify and identify specific reaches that have limited or exceed the assimilative capacity within the Suwannee-Satilla Region

Surface Water Quality/Assimilative Capacity Gaps

- Suwannee-Satilla Region – Results of DO Assimilative Capacity



Round 1 Future Condition



Current Updated Future Condition (2050)

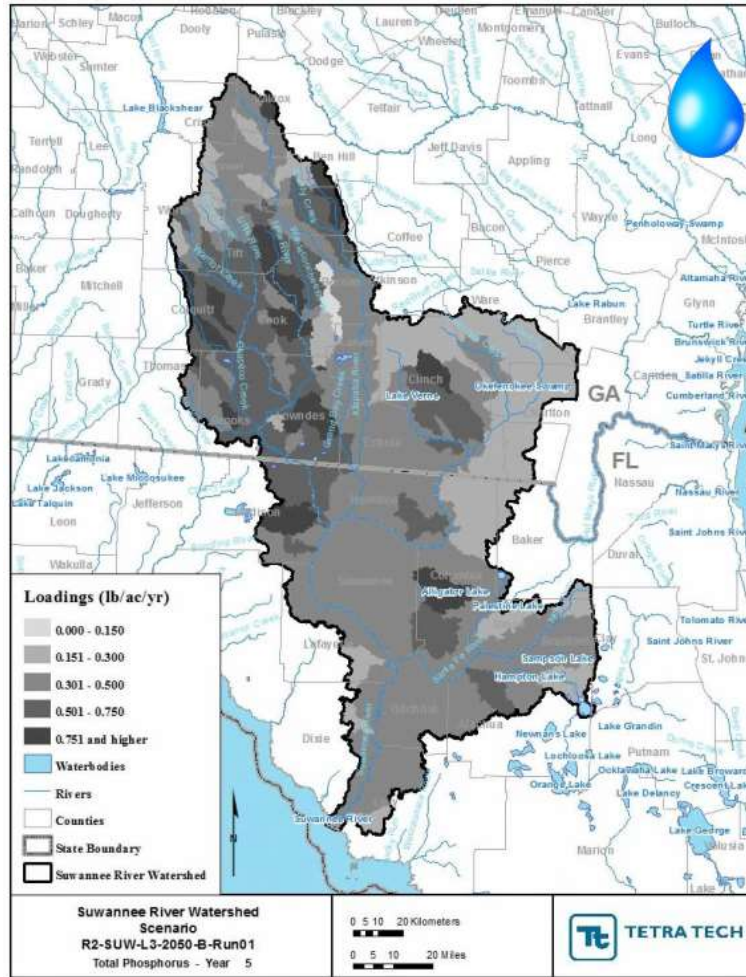
Surface Water Quality/Assimilative Capacity Gaps

- EPD also examined nutrient (TN and TP) in the region
 - Dry & Wet years
 - Areas of higher loadings in dry years can indicate point sources as potential cause (i.e., wastewater discharge)
 - Lowndes, Coffee, and Tift Counties show highest forecasted increases in wastewater discharge
 - Areas of higher loading in wet years are indicative on nonpoint source runoff
 - For nonpoint source loadings, Councils will want to re-visit their stormwater best management practices (BMPs)

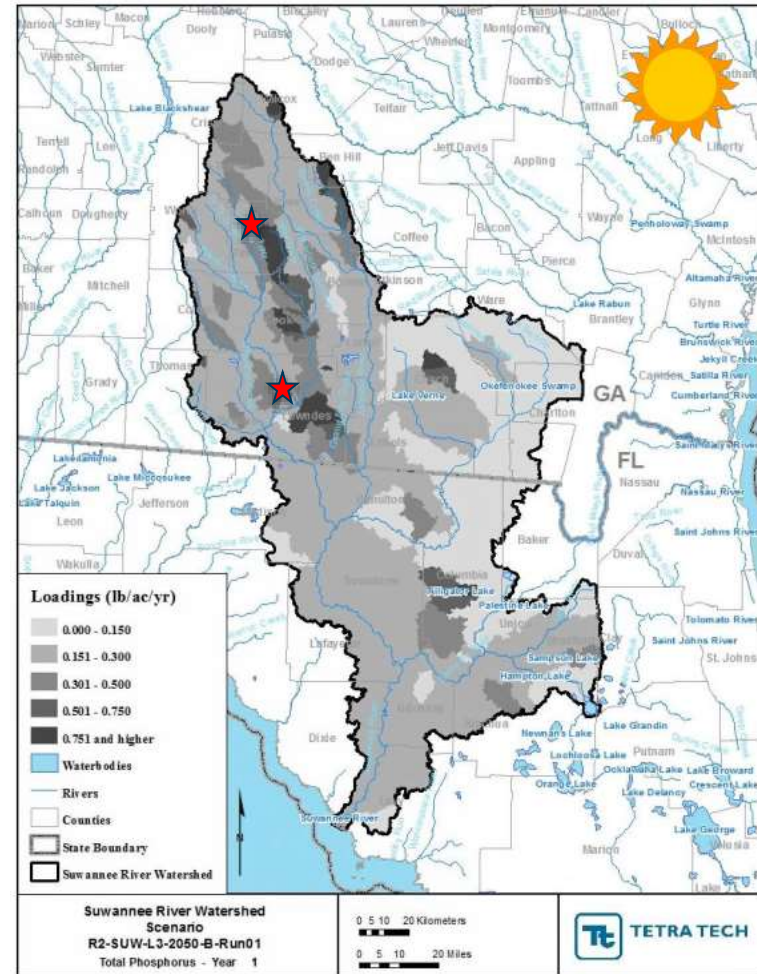
Surface Water Quality/Assimilative Capacity Gaps

SUWANNEE BASIN: TOTAL P "HEAT MAPS"

FUTURE CONDITIONS (2050)



FUTURE CONDITIONS (2050)

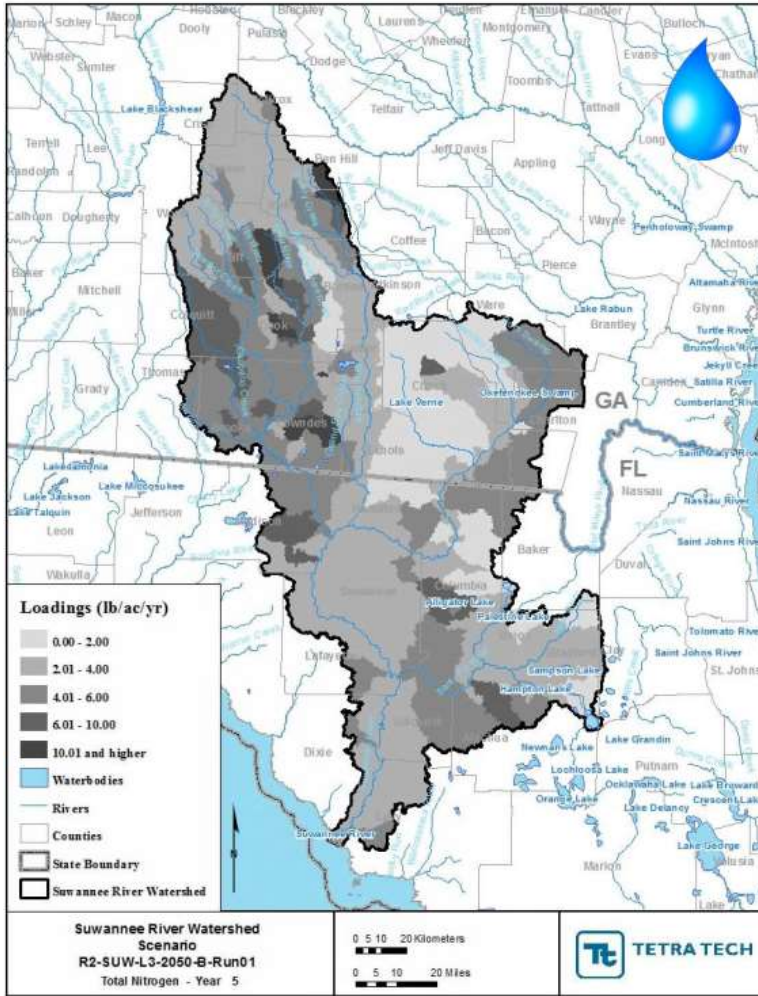


★ Denotes Counties with large forecasted increases (mgd) in wastewater discharge

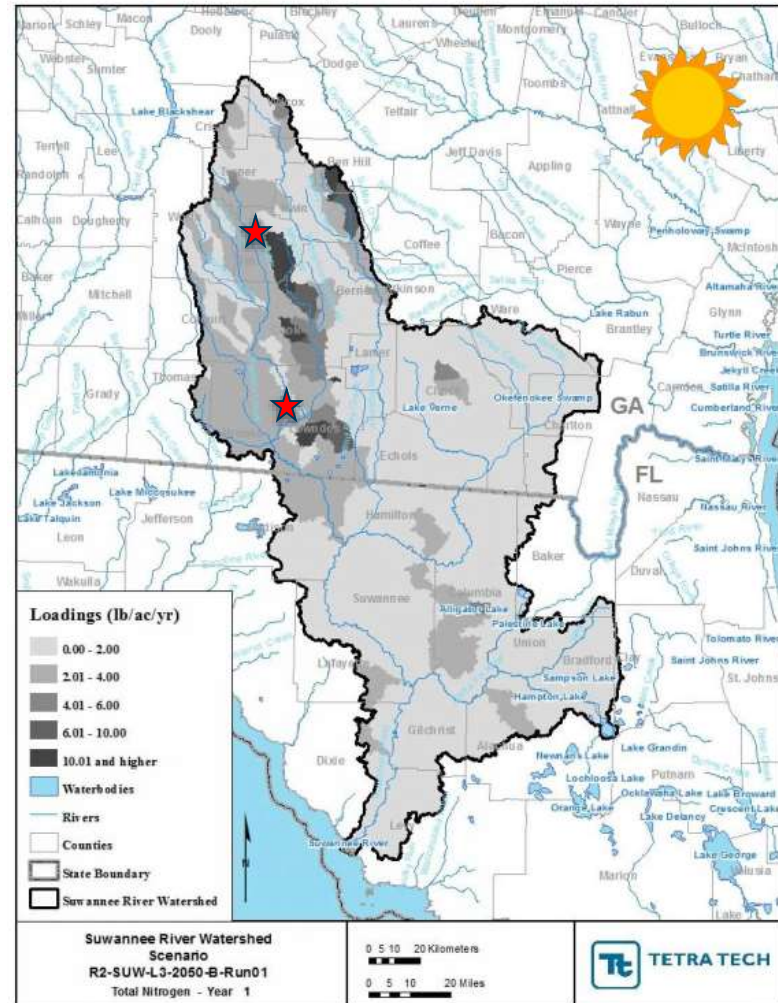
Surface Water Quality/Assimilative Capacity Gaps

SUWANNEE BASIN: TOTAL N "HEAT MAPS"

FUTURE CONDITIONS (2050)



FUTURE CONDITIONS (2050)



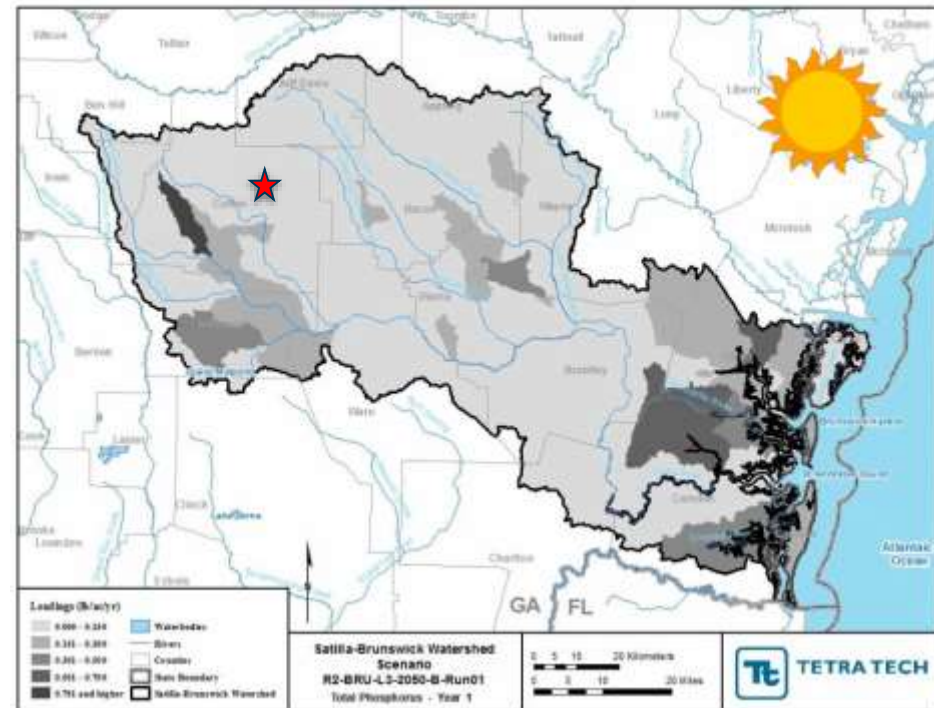
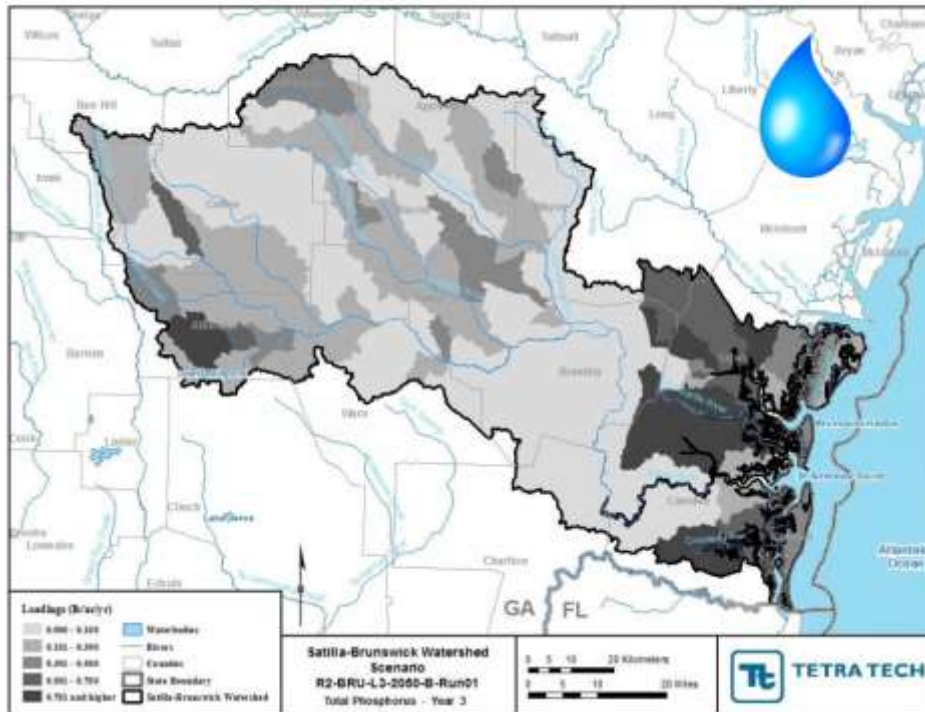
★ Denotes Counties with large forecasted increases (mgd) in wastewater discharge

Surface Water Quality/Assimilative Capacity Gaps

SATILLA BASIN: TOTAL P "HEAT MAPS"

FUTURE CONDITIONS (2050)

FUTURE CONDITIONS (2050)

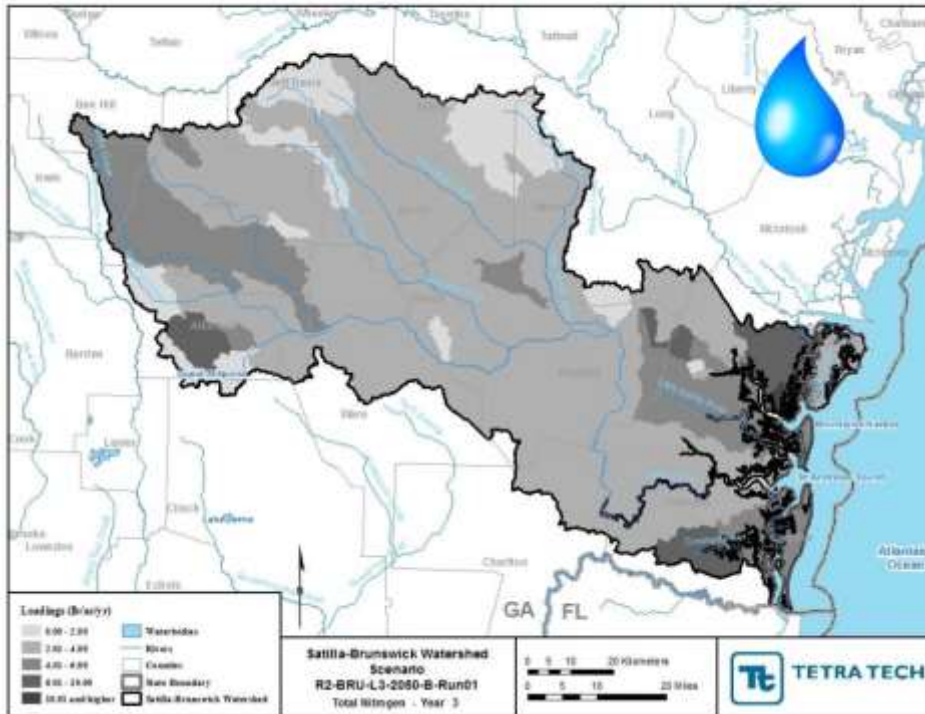


Denotes Counties with large forecasted increases (mgd) in wastewater discharge

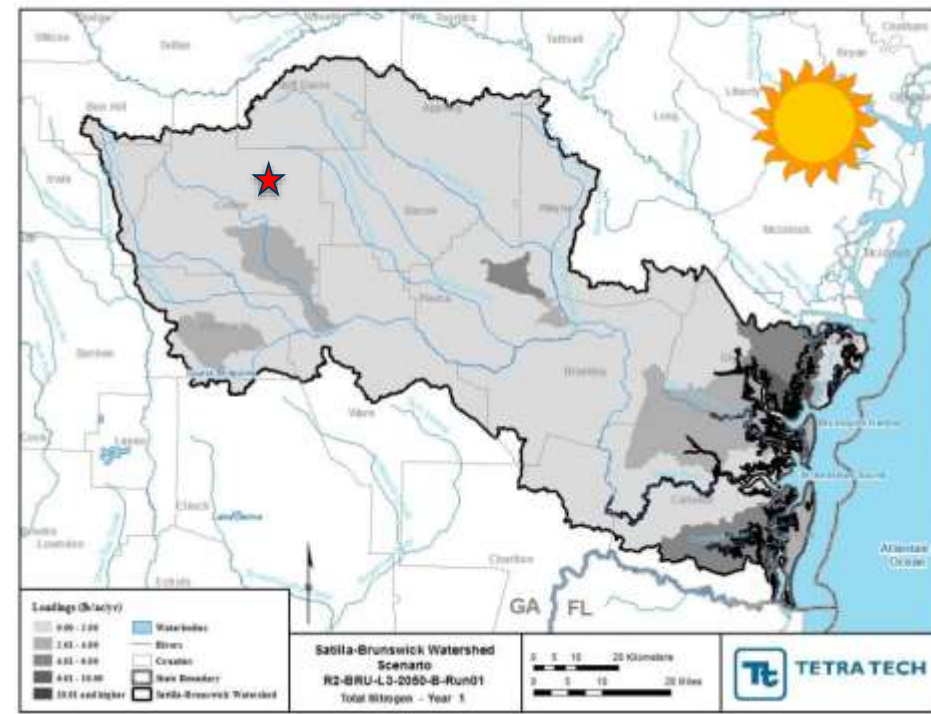
Surface Water Quality/Assimilative Capacity Gaps

SATILLA BASIN: TOTAL N "HEAT MAPS"

FUTURE CONDITIONS (2050)



FUTURE CONDITIONS (2050)

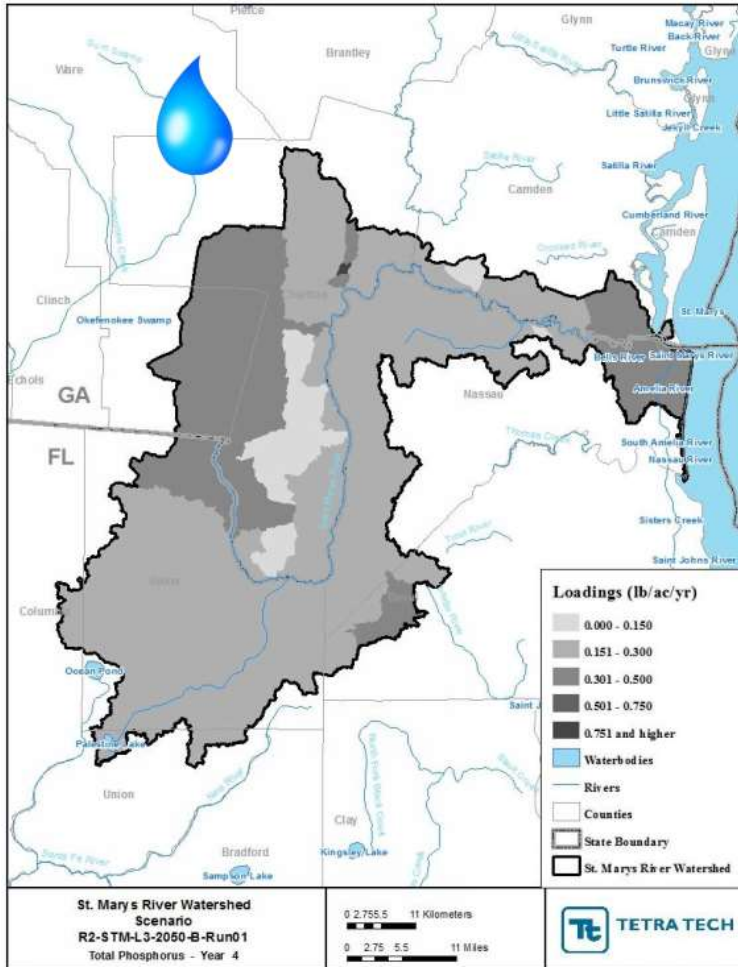


★ Denotes Counties with large forecasted increases (mgd) in wastewater discharge

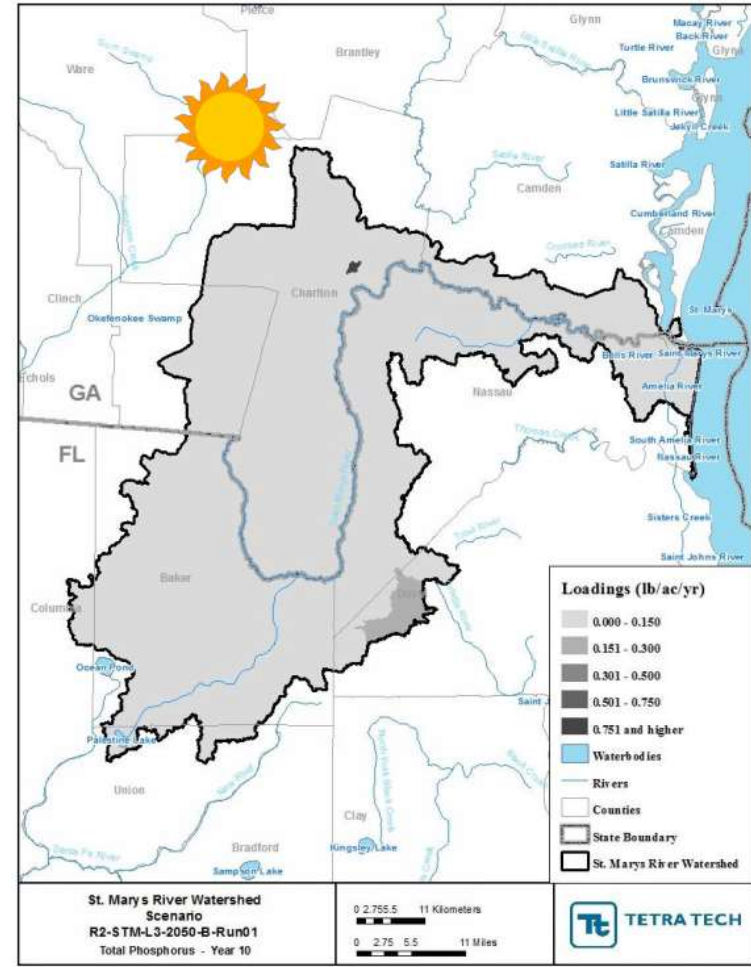
Surface Water Quality/Assimilative Capacity Gaps

ST. MARYS BASIN: TOTAL P "HEAT MAPS"

FUTURE CONDITIONS (2050)



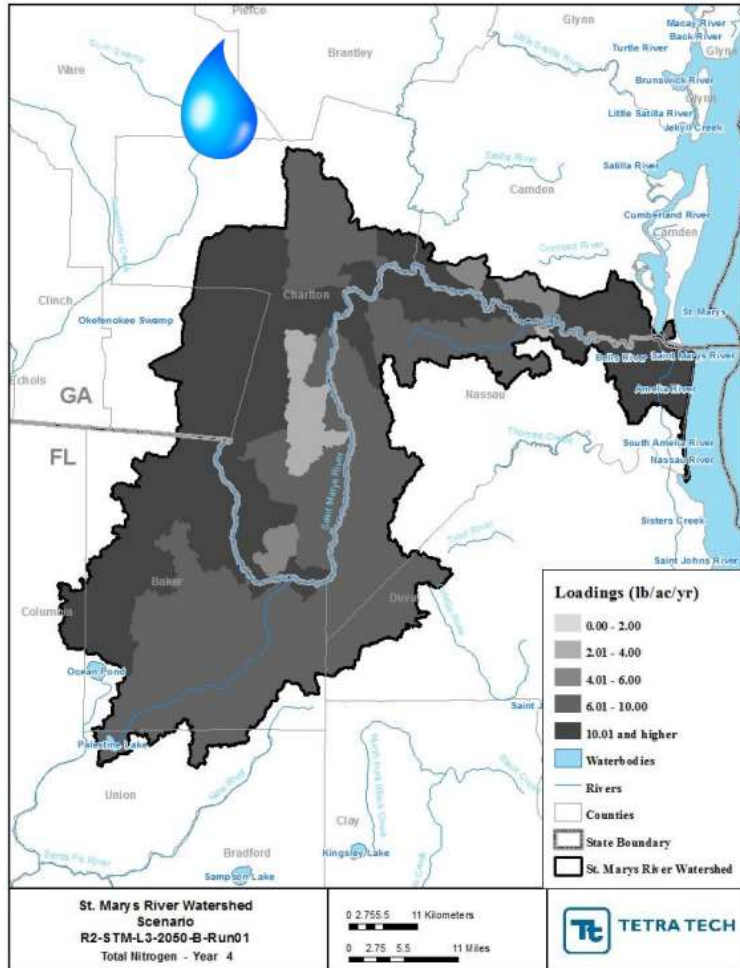
FUTURE CONDITIONS (2050)



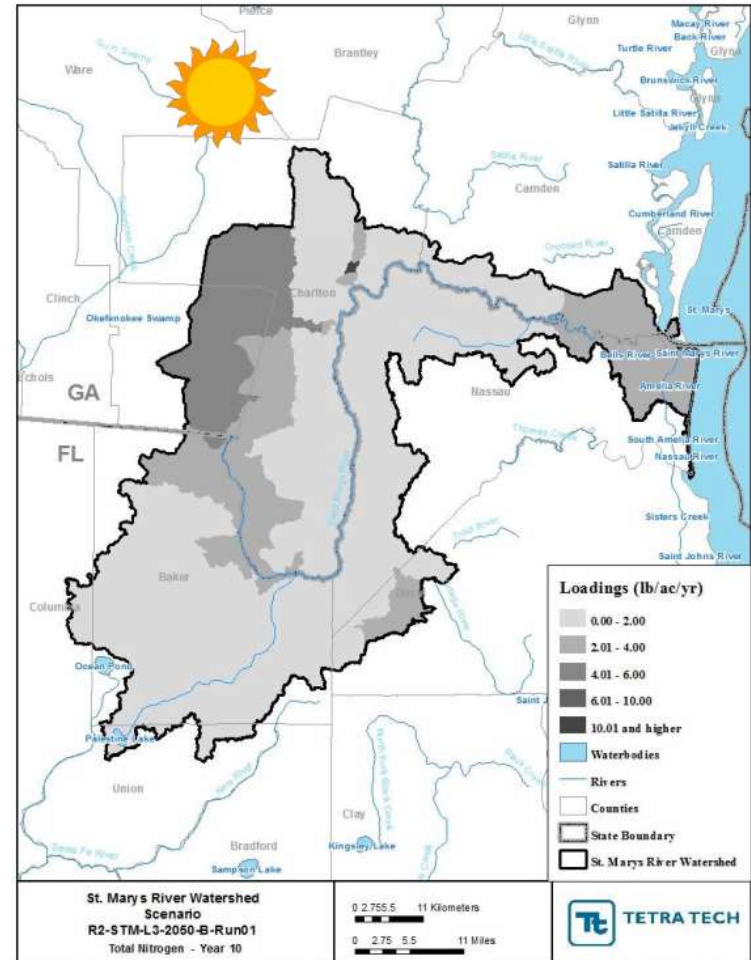
Surface Water Quality/Assimilative Capacity Gaps

ST. MARYS BASIN: TOTAL N "HEAT MAPS"

FUTURE CONDITIONS (2050)



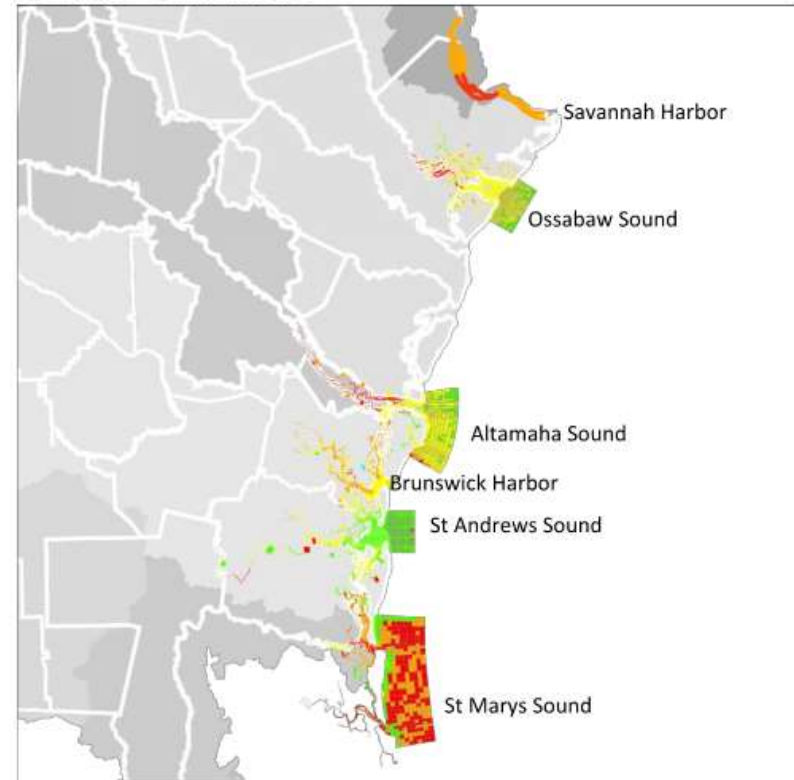
FUTURE CONDITIONS (2050)



Surface Water Quality/Assimilative Capacity Gaps

- EFDC Lake & Estuary Model Results
 - Limited assimilative capacity in lower reaches of St. Mary's River and Sound
 - Lower assimilative capacity may be due to slower moving waters which contribute to naturally low DO levels

CURRENT CONDITIONS



Legend

Available Assimilative Capacity

- Very Good ≥ 1 mg/L DO available
- Good 0.5 mg/L to < 1 mg/L DO available
- Moderate 0.2 mg/L to < 0.5 mg/L DO available
- Limited > 0 mg/L to < 0.2 mg/L DO available
- At Assimilative Capacity 0 mg/L DO available
- None or Exceeded < 0.0 mg/L DO available
- Unmodeled Lakes and Streams

Suwannee-Satilla Region Gap Summary

- Surface Water Resource:
 - All the potential gaps are surface water quantity related
 - Atkinson, Fargo, Jennings, Pinetta, Statenville
 - Brantley County is the only county with non-agricultural surface water use
 - Associated with Atkinson and Fargo planning nodes with potential gaps
 - Therefore, management practices can:
 - Focus on agriculture to address potential surface water gaps
 - Consider groundwater as a resource to make up a portion of the potential gap
 - Consider other demand reduction options
 - Surface water flow is influenced by a number of natural and human induced factors including climate, land use, channel and flow alterations, etc.

Suwannee-Satilla Region Gap Summary (cont.)

- Groundwater Resource
 - Consistent with Round 1, there are no gaps identified
 - Lowndes, Coffee, and Tift Counties have highest forecasted increases in groundwater use
 - Continue water conservation practices
 - Resource may be used to address portion of potential surface water gap
 - Potential gaps in groundwater in Coastal Region
 - Increased coordination & discussion between Councils

Suwannee-Satilla Region Gap Summary (cont.)

- Assimilative Capacity/Water Quality:
 - Assimilative capacity for DO appears to be generally improving compared to Round 1
 - Areas of higher loadings in dry years can indicate point sources as potential cause (i.e., wastewater discharge)
 - Lowndes, Coffee, and Tift Counties show highest forecasted increases in wastewater discharge
 - High TN and TP loading areas near Lowndes and Tift Counties
 - Areas of higher loading in wet years are indicative on nonpoint source runoff
 - Re-visit BMPs for nonpoint source loadings



Georgia's
State Water Plan

Shared Resources

www.georgiawaterplanning.org

Shared Resources

- Surface Water
 - Addressing potential gaps will require evaluating surface water resource availability and demands at the watershed level
 - Council boundaries and demand forecast summaries are county based
 - GIS and other tools will allow a look at potential gaps from a watershed perspective using county based demand forecasts



Shared Resources

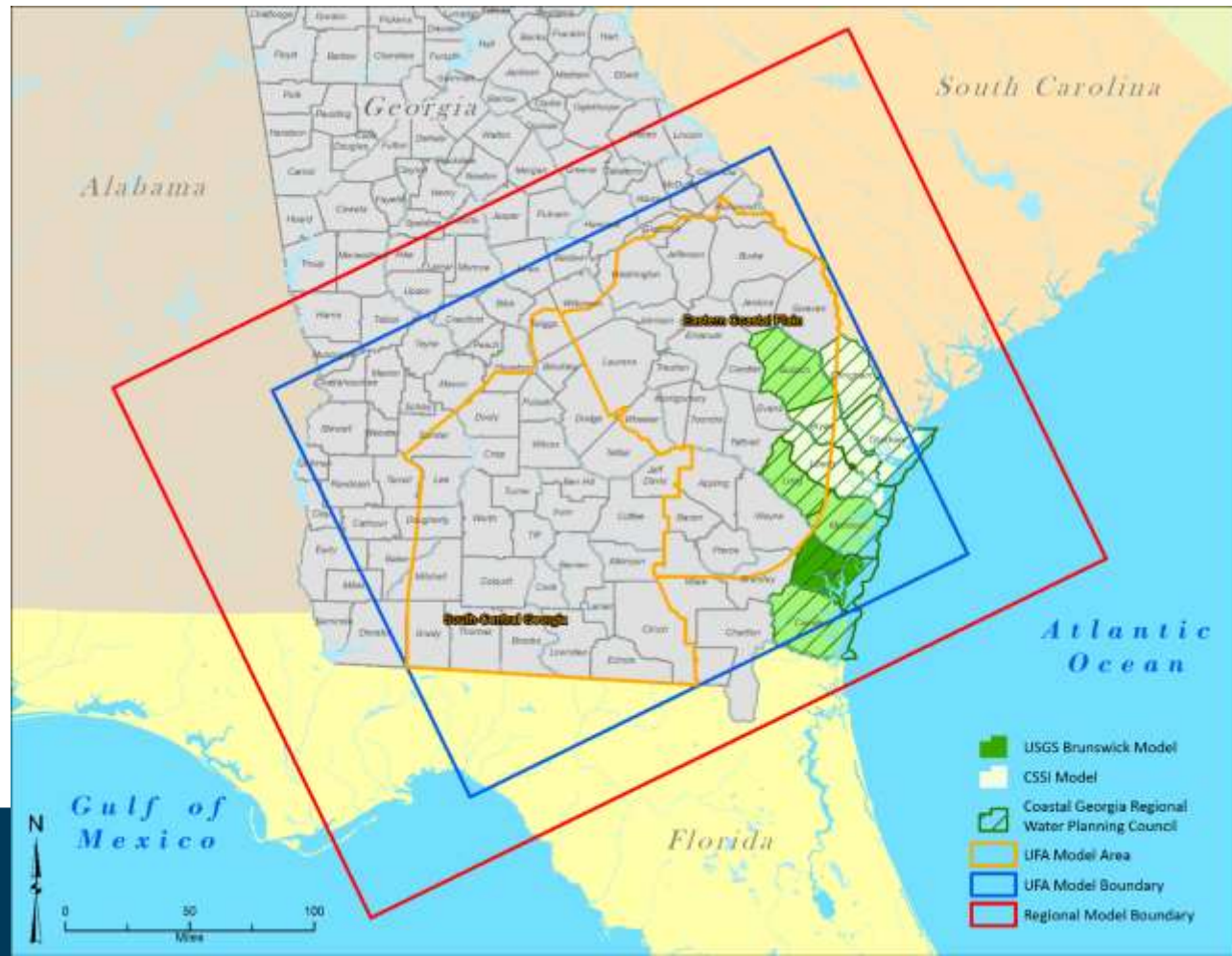
A closer look at spatial relationships of planning nodes, watershed (local drainage areas or LDAs), adjoining councils, and county locations will inform selection of management practices and implementation considerations.



Shared Resources

- Groundwater – Floridan Aquifer model boundaries used for determining sustainable yield – this resource is utilized in multiple planning regions

South
Central and
Dougherty
Plain





Georgia's
State Water Plan

Management Practices

www.georgiawaterplanning.org

Management Practices Definition

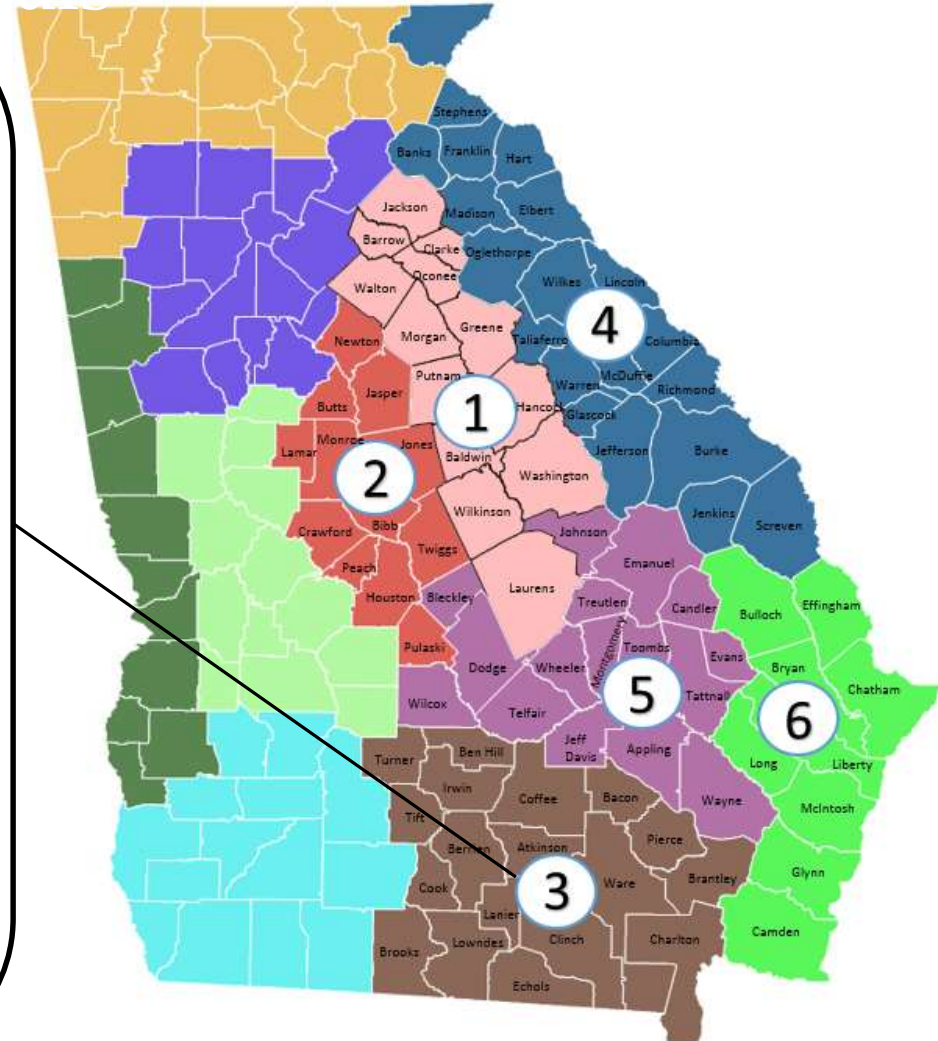
- Any program or activity that:
 - Helps meet the regional vision and goals
 - Can be employed to ensure that there is sufficient water (surface and groundwater quantity) and assimilative capacity (surface water quality) to sustainably meet future needs
- Management practices can increase resource capacity and/or adjusts forecasted demands (i.e., water efficiency measures)

Suwannee-Satilla RWPC Vision

Manage water resources in a sustainable manner under Georgia's regulated riparian and regulated reasonable use laws to support the state's and region's economy, to protect public health and natural resources, and to enhance the quality of life for all citizens; while preserving the private property rights of Georgia's landowners, and in consideration of the need to enhance resource augmentation and efficiency opportunities.

Suwannee-Satilla Water Planning Region

1. Manage and develop water resources to sustainably and reliably meet domestic, commercial, industrial water needs, and agricultural water needs including all agricultural sectors (this includes the agro forestry economy of the region).
2. Manage ground and surface water to encourage sustainable economic and population growth in the region.
3. Manage the region's and state's water resources in a manner that preserves and protects private property rights.
4. Ensure an adequate water supply of suitable quality to meet current and future human needs, while protecting environmental resources.
5. Identify opportunities to optimize existing and future supplies, and water and wastewater infrastructure.
6. Promote efficient use and management of surface and groundwater resources to allow for sufficient supplies for current and future generations.
7. Protect and manage surface and groundwater recharge areas to ensure sufficient long-term water supplies for the region.
8. Protect, maintain, and where appropriate and practicable, identify opportunities to enhance water quality and river base flows.
9. Protect and maintain regional water-dependent recreational opportunities.
10. Identify opportunities to manage stormwater to improve water quantity and quality.
11. Identify and implement cost effective water management strategies.
12. Seek to provide economically affordable power and water resource service to all citizens of the region.
13. Identify and implement actions to better measure and share water use data and information.



Developing a Water Plan Decision Framework

Activity

Decision Tools

Broad Purpose

Vision

Facilitated Planning

More Detailed Goals that Support Overall Purpose

Goals/Objectives

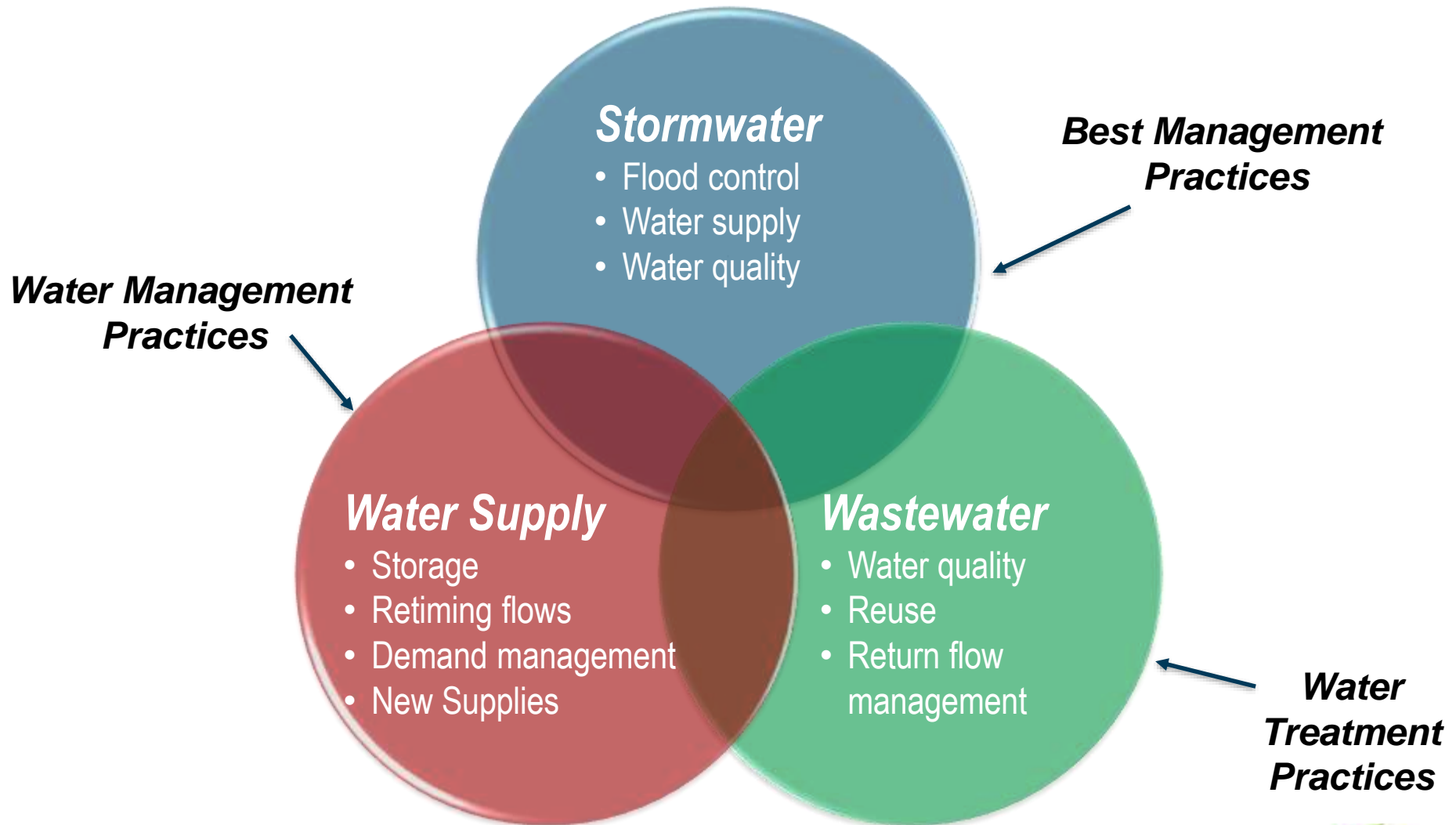
Technical and Systems Model

Actions to meet Future Needs

Management Practices



Developing a Water Plan Decision Framework



2011 RWP Recommended Management Practices

Suwannee-Satilla Council Road Map to Address Water Supply Needs and Regional Goals

Water Quantity

2050
TOTAL REGIONAL WATER
(GROUND AND SURFACE)
SUPPLY NEEDED



- Identify feasibility of regional inter-basin transfer and implement if deemed implementable
- Implement multi-purpose storage if needed and implementable

Monitor progress toward addressing resource gaps and regional needs/goals. Through benchmarks detailed in Section 8. If short- and mid-term measures do not address gaps/needs, implement additional management practices.

- Consider feasibility/implement management practices to improve infiltration and manage wetlands to address gap/low flow concerns
- Evaluate incentive based programs to manage, increase, restore wastewater and stormwater returns
- Identify potential/feasibility of multi-purpose reservoir

Monitor progress toward addressing resource gaps and regional needs/goals through benchmarks detailed in Section 8. If short-term measures do not address gaps/needs, implement additional management practices.

- Utilize surface water and groundwater within the available resource capacity
- **Water Conservation**
- Data collection and research to confirm frequency, duration, severity, and drivers of surface water gaps (forecast methodology/assumptions and resource assessment modeling)
- Evaluate and ensure that current and future surface water permit conditions do not contribute to gap/low flow concerns
- Encourage sustainable groundwater use as preferred supply in regions with surface water gap/low flow concerns
- Identify incentives and a process to sustainably replace a portion of existing agricultural surface water use with groundwater use (for agricultural irrigation) to address gap/low flow concerns
- Evaluate potential to use existing agricultural storage to address gap/low flow concerns
- Education to reduce shallow aquifer groundwater use where it impacts surface water in areas with gap/low flow concerns

SHORT-TERM (1-10 YRS)

MID-TERM (10-20 YRS)

LONG-TERM (20-40 YRS)

WATER RESOURCE PLANNING PERIOD (2010 – 2050)

2011 RWP Recommended Management Practices

Water Quality

Suwannee-Satilla Council Road Map to Address Water Quality Needs and Regional Goals

- Point Sources - support and fund current permitting and waste load allocation process to improve treatment of wastewater and increase treatment capacity
- Point Sources - data collection and research to confirm discharge volumes and waste concentrations, and receiving stream flows and chemistry
- Non-point Sources - data collection to confirm source of pollutants and causes; encourage stormwater ordinances, septic system maintenance, and coordinated planning
- Non-point Sources - ensure funding and support for BMP programs by local and state programs including:
 - Urban BMPs
 - Rural BMP
 - Forestry BMPs
 - Agricultural BMPs
- Non-point Source Existing Impairments – TMDL listed streams
 - Improve data on source of pollutant and length of impairment
 - Identify opportunities to leverage funds and implement non-point source BMPs

- Point Sources - continue wastewater master planning updates and waste load allocation
- Pursue additional non-point source controls and need for stormwater ordinances

- 2050 TOTAL REGIONAL WATER (GROUND AND SURFACE) SUPPLY NEEDED**
- Point Sources - continue wastewater master planning updates and waste load allocation
 - Pursue additional non-point source controls and need for stormwater ordinances

Monitor progress toward addressing resource gaps and regional needs/goals through benchmarks found in Section 8. If short-term measures do not address gaps/needs, implement additional management practices.

Monitor progress toward addressing resource gaps and regional needs/goals. Through benchmarks found in Section 8. If short- and mid-term measures do not address gaps/needs, implement additional management practices.

SHORT-TERM (1-10 YRS)

MID-TERM (10-20 YRS)

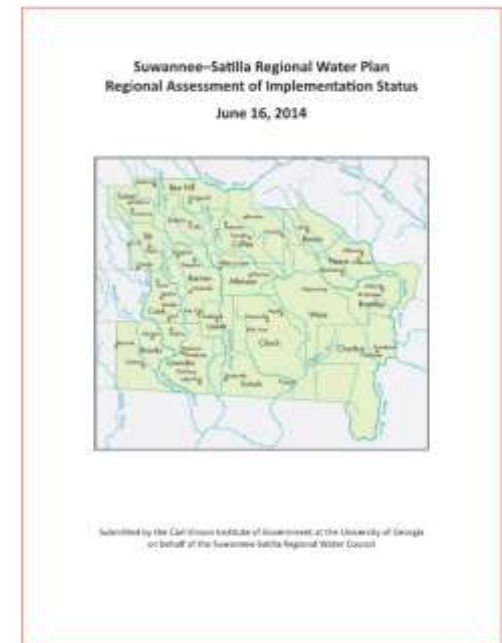
LONG-TERM (20-40 YRS)

WATER RESOURCE PLANNING PERIOD (2010 – 2050)

Interim Planning Period

- Regional Assessment of Implementation Status Report (2014)
- Many accomplishments achieved in the Suwannee-Satilla region in the areas of:
 - Water Demand Management
 - Wastewater & Water Quality
 - Stormwater & Water Quality
 - Data and Information Needs

Councils made recommendations for implementing entities to work with as we move into final phase of updating the management practices and recommendations in the plan update.



Management Practices

- 77 Management Practices Identified in 2011 RWP
 - Water Conservation
 - Water Supply
 - Wastewater and Water Quality
 - Information Needs
- Based on updated forecasts and demands:
 - Are there additional practices not currently in plan?
 - Are there ones that should be refined?
 - Ones that should be eliminated?

Council Meeting Business

- *319h Grant Update*
- *Approve meeting minutes from June 23, 2016 Council Meeting*
- *Follow-up discussion from September 14, 2016 "Office Hours" Teleconference*
- *Discuss optional Council Meeting 6 to finalize plan review & revision process*
- *New Business*

De-Brief from Breakout Sessions

- What did the Council learn during the Breakout Sessions and what are the implications for their Plan updates?
- Can the Council identify any specific management practices that need to be addressed in light of the result of the Resource Assessment updates?
- What topics or messages would be most beneficial to bring back and share with other Councils at the Joint Council Meeting?
- Has the Council identified any further joint coordination items that the Council wants to see occur prior to finalizing updates of their Plans?

Thank You!

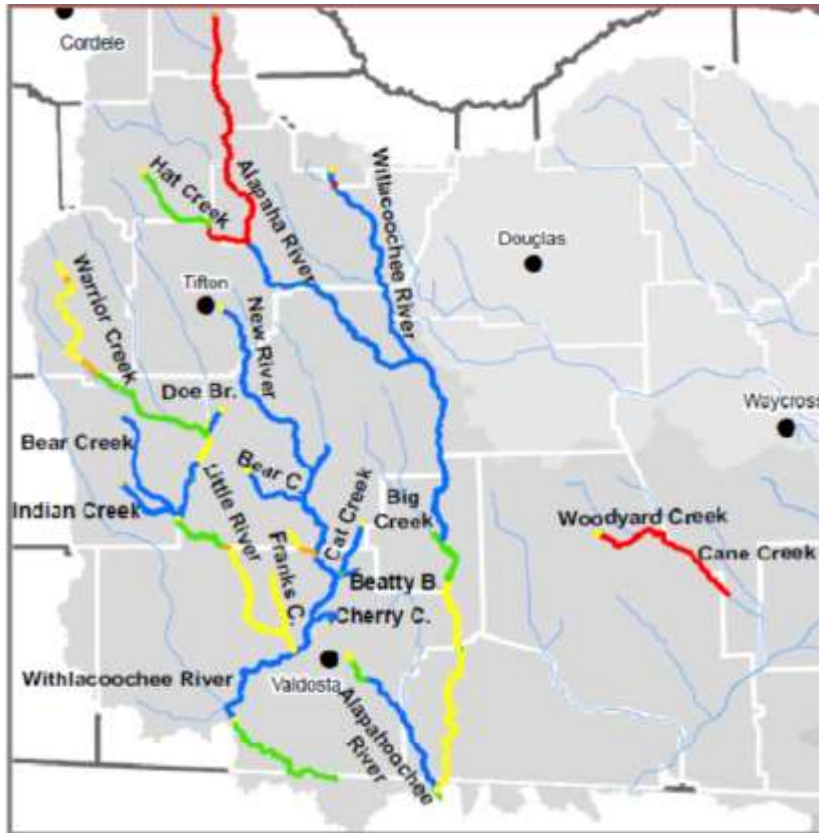
Questions? Comments? Need
More Information?

Cliff.lewis@dnr.ga.gov
woodsh@cdmsmith.com

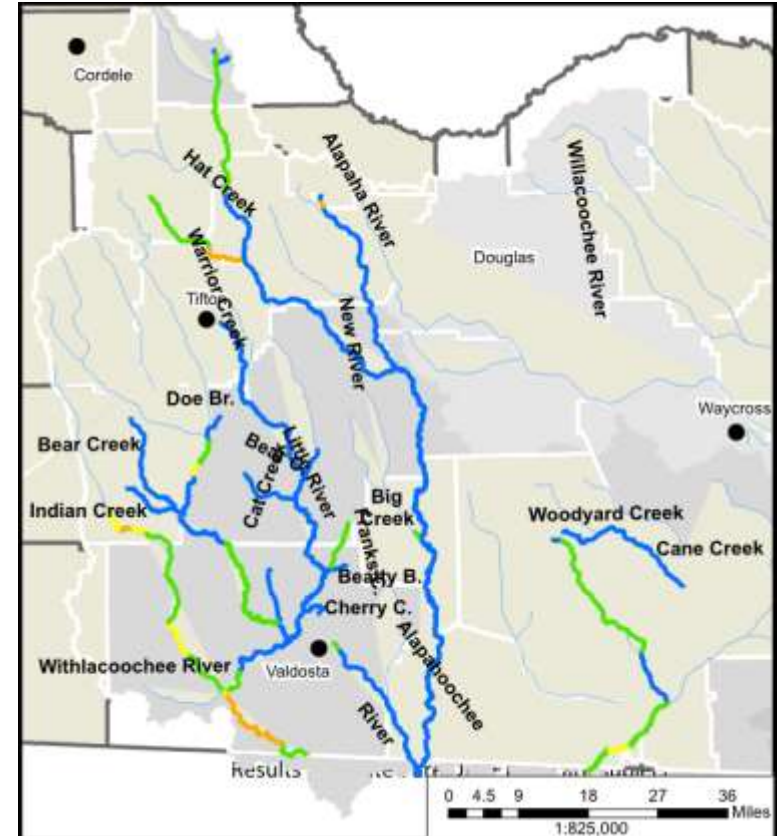
Optional Slides

Surface Water Quality/Assimilative Capacity Gaps

- Suwannee Basin GA DOSAG Model Results



Round 1



Update

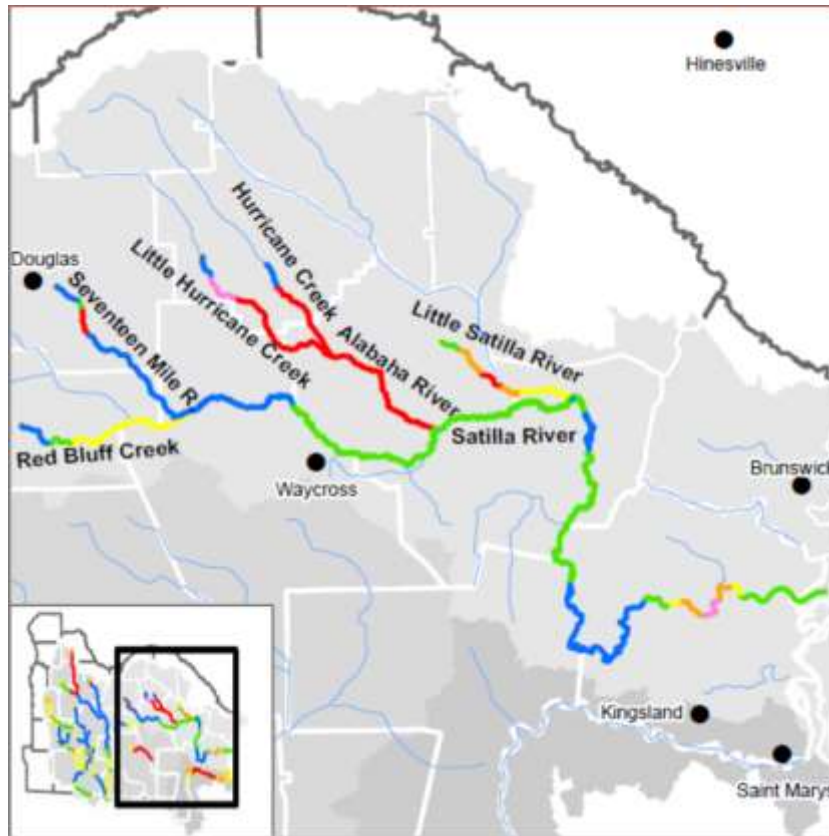
Legend

Available Assimilative Capacity

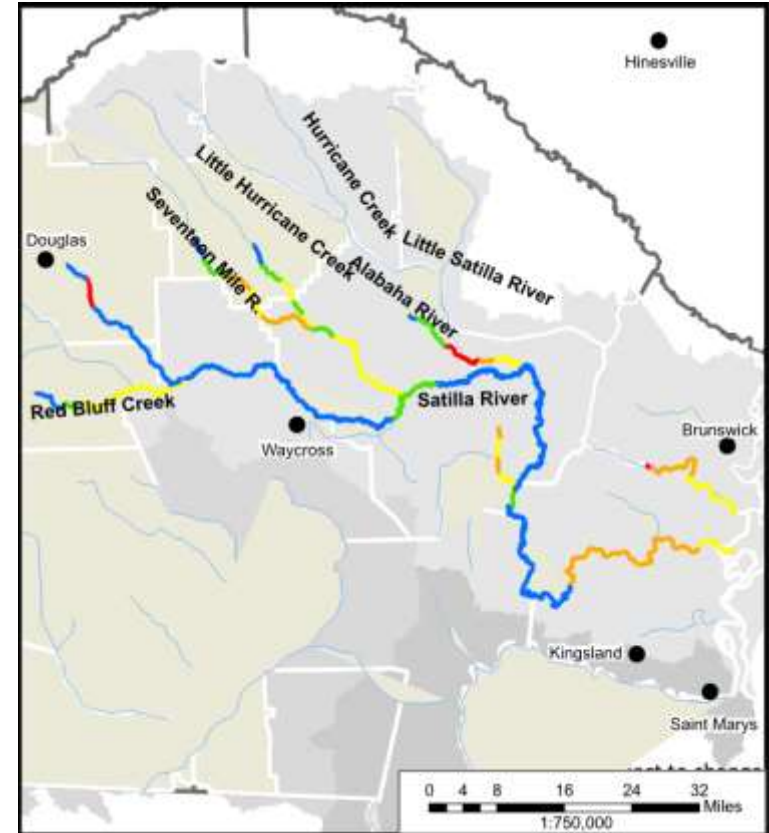
- Very Good ≥ 1 mg/L DO available
- Good 0.5 mg/L to < 1 mg/L DO available
- Moderate 0.2 mg/L to < 0.5 mg/L DO available
- Limited > 0 mg/L to < 0.2 mg/L DO available
- At Assimilative Capacity 0 mg/L DO available
- None or Exceeded < 0.0 mg/L DO available
- Unmodeled Lakes and Streams

Surface Water Quality/Assimilative Capacity Gaps

- Satilla Basin GA DOSAG & GA Estuary Model Results



Round 1



Update

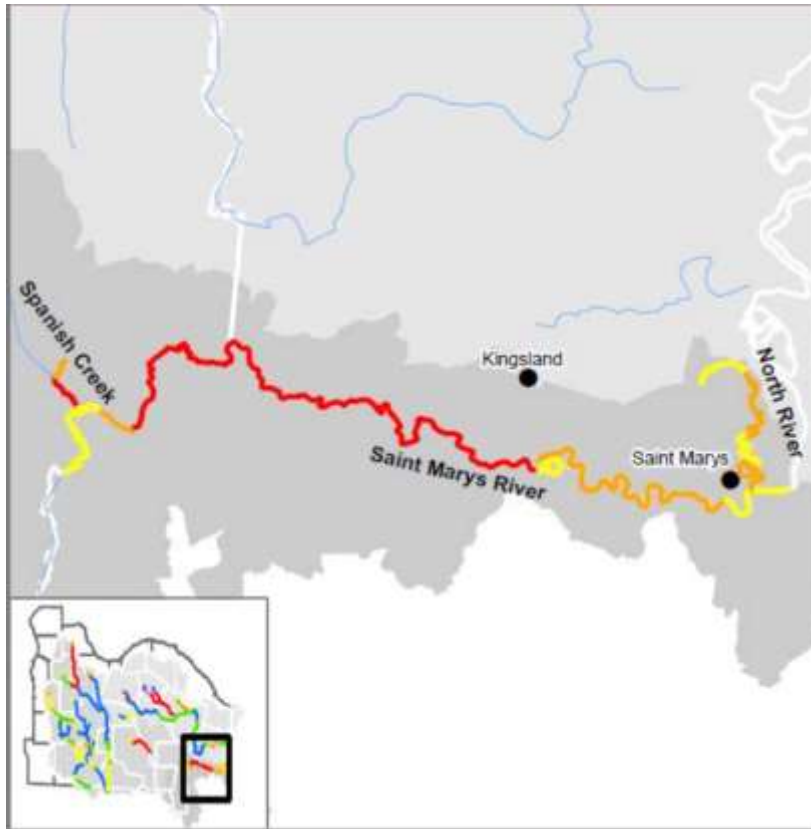
Legend

Available Assimilative Capacity

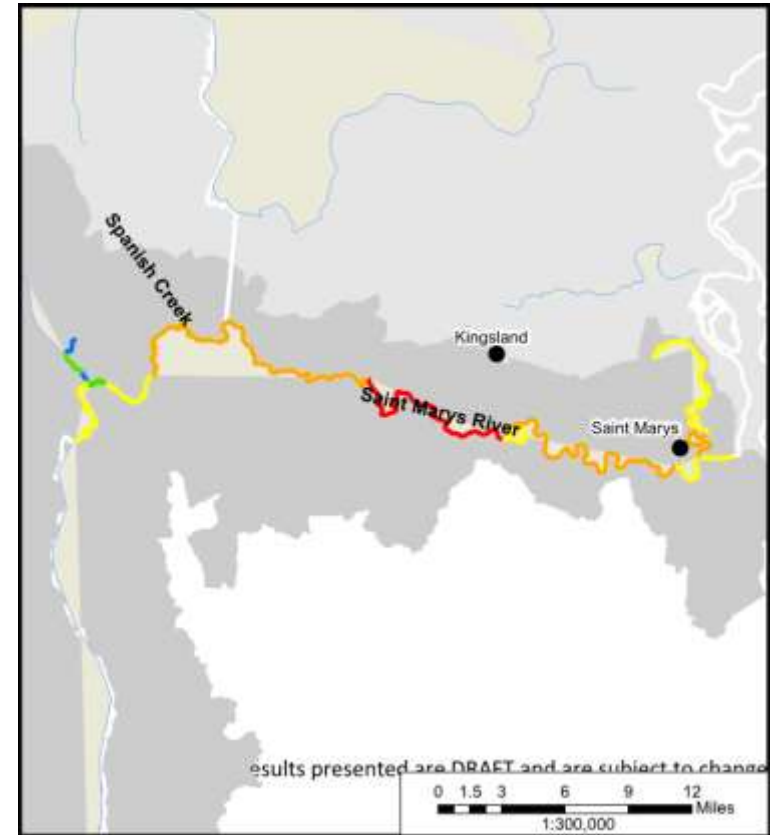
- Very Good ≥ 1 mg/L DO available
- Good 0.5 mg/L to < 1 mg/L DO available
- Moderate 0.2 mg/L to < 0.5 mg/L DO available
- Limited > 0 mg/L to < 0.2 mg/L DO available
- At Assimilative Capacity 0 mg/L DO available
- None or Exceeded < 0.0 mg/L DO available
- Unmodeled Lakes and Streams

Surface Water Quality/Assimilative Capacity Gaps

- St. Marys Basin GA & GA Estuary DOSAG Model Results



Round 1



Update

Legend

Available Assimilative Capacity

- Very Good ≥ 1 mg/L DO available
- Good 0.5 mg/L to < 1 mg/L DO available
- Moderate 0.2 mg/L to < 0.5 mg/L DO available
- Limited > 0 mg/L to < 0.2 mg/L DO available
- At Assimilative Capacity 0 mg/L DO available
- None or Exceeded < 0.0 mg/L DO available
- Unmodeled Lakes and Streams