



Georgia's
State Water Plan

**Regional Water Development and
Conservation Plan Review and Revision
Suwannee-Satilla Water Planning Council
Meeting 1, March 9, 2016**

www.georgiawaterplanning.org

Registration

9:00 AM – 9:30 AM

Welcome and Introductions / Approve Agenda

9:30 AM – 9:45 AM

Introduction

- Welcome from Scott Downing
- Council Introductions
- Review and Approve Agenda



Georgia's
State Water Plan

Suwannee - Satilla Regional Water Council Meeting
Wednesday March 9, 2016

Meeting Objectives:

- 1) Plan Review and Revision Overview and Schedule
- 2) Review Updated Population Projections
- 3) Review Municipal Water & Wastewater Forecast Updates
- 4) Discuss Industrial Water and Wastewater Forecasts
- 5) Review Current Agricultural Demand Estimate and Method for Updates

8:30 – 9:00 a.m.	[New Council Member Training and Orientation - Optional/ As-Needed]
9:00 – 9:30	Registration
9:30 – 9:45	Welcome and Introductions / Approve Agenda
9:45 – 10:00	Comment Period for Local Elected Officials in Attendance
10:00 – 10:15	Overview/Schedule
10:15 – 10:30	Vision and Goals / Memorandum of Agreement
10:30 – 11:00	Plan Elements for Review and Revision <ul style="list-style-type: none">• <i>Status/summary of plan review and revision document completed by Council;</i>• <i>Recommendations for engaging key implementation actors;</i>• <i>Implementation status</i>
11:00 – 11:15	Break
11:15 – 12:15 p.m.	Review Updated Population Projections and Municipal Water/Wastewater Forecast
12:15 – 12:45	Lunch
12:45 - 1:15	Industrial Water and Wastewater Forecasts
1:15 – 1:30	Energy Water Use Forecast Updates
1:30 – 2:15	Current Agricultural Water Demand Estimate and Method for Updates
2:15 – 2:30	Break
2:30 – 2:45	Appointment of Technical Subcommittees by Council [or other Council specific needs]
2:45 – 3:15	<u>Special Topic:</u> Section 319(h) NPS Grant/Special Award - Cliff Lewis (EPD)
3:15 – 3:30	Public Comments
3:30 – 3:45	Wrap Up/Council Meeting 2 Preview
3:45 – 4:00	Council Meeting 1 Evaluation
4:00 – 4:30	[New Council Member Debrief - Discuss Additional Training Needs, etc.]

Comment Period for Local Elected Officials

9:45AM – 10:00 AM

Sign up for Public Comments

- Sign up for public comments during morning registration period (to ensure enough time is allotted)
- Please limit comments to 3 minutes total
- Council encourages written submission of comments as well, to ensure meeting summaries accurately reflect comments

Overview/Schedule

10:00 AM – 10:15 AM

Regional WDCP Review and Revision Process

Review and Revision Process

Georgia EPD Contacts

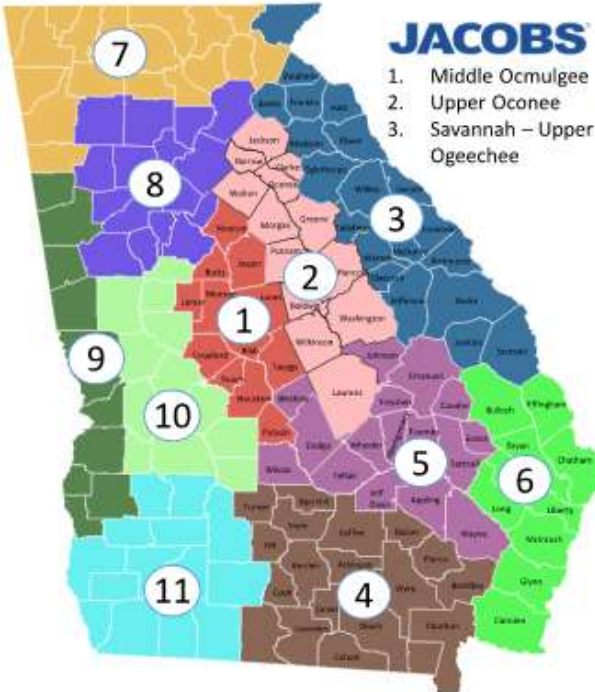
- Jennifer Welte – EPD's Project Manager for Review & Revision Process
- Cliff Lewis – EPD's Lead for Suwannee – Satilla Planning Council
- Dr. Elizabeth Booth – Surface Water Quality Resource Assessment
- Dr. Wei Zeng - Surface Water Availability Resource Assessment
- Dr. Jim Kennedy – Groundwater Availability Resource Assessment

Regional WDCP Review and Revision Process

Planning Contractor – CDM Smith-Jacobs Team

- Primary Council Support – Shayne Wood
 - Project Manager - Shayne Wood
 - Technical Director – Sue Morea
 - Technical Advisor - Rick Brown
-
- Demand Forecasting – Bill Davis
 - Water Availability Resource Assessments (Groundwater and Surface Water) – Lee Wiseman
 - Management Practices – Dale Jones

Georgia's Water Planning Regions



JACOBS
 1. Middle Ocmulgee
 2. Upper Oconee
 3. Savannah – Upper Ogeechee

CDM Smith
 4. Suwannee – Satilla
 5. Altamaha
 6. Coastal

**2016 - 2017
 Plan Review
 and Revision**

1 Middle Ocmulgee

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2 Upper Oconee

Chair [Melvin Davis](#) 

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3 Savannah-Upper Ogeechee

Chair [Ron C. Cross](#) 

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4 Suwannee- Satilla

Chair [Scott Downing](#) 

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5 Altamaha

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6 Coastal

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7 Coosa-N. Georgia

EPD Lead [Becky Champion](#)

Planning Contractor CH2M

8 MNGWPD

Lead ARC

Planning Contractor Black & Veatch/CH2M

9 Middle Chatahoochee

EPD Lead [Christine Voudy](#)

Planning Contractor Black & Veatch

10 Upper Flint

EPD Lead [Glen Behrend](#)

Planning Contractor GWPPC

11 Lower Flint- Ochlockonee

EPD Lead [Gail Cowie](#)

Planning Contractor GWPPC

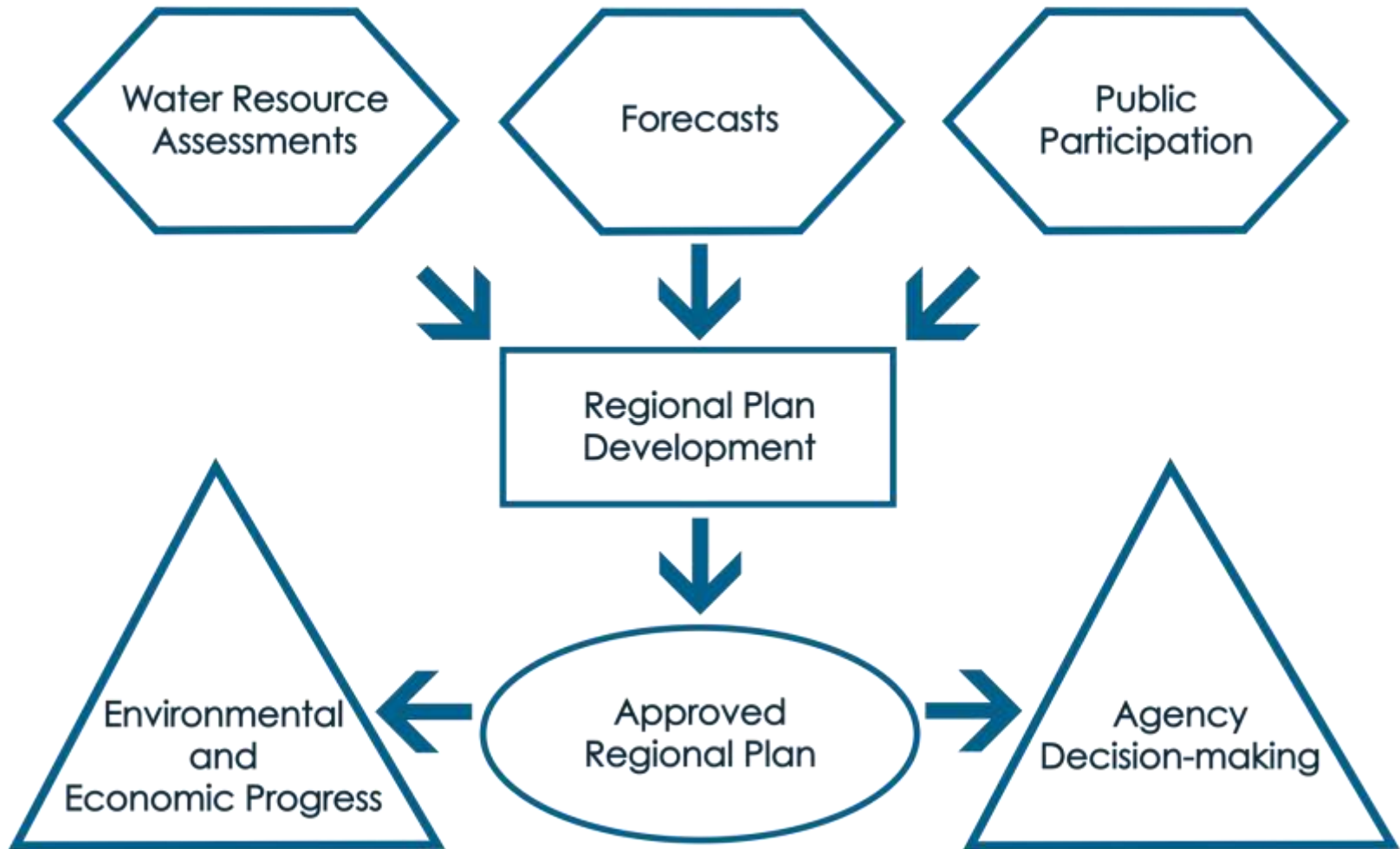
Regional WDCP Review and Revision Process

Interim WDCP Support

- Carl Vinson Institute of Government, University of Georgia (Leigh Elkins)
 - Altamaha; Coastal; Savannah-Upper Ogeechee; Suwanee-Satilla
- Middle Georgia Regional Commission
 - Upper Oconee; Middle Ocmulgee
- North Georgia Regional Commission
 - Coosa – North Georgia
- Georgia Water Planning and Policy Center
 - Middle Chattahoochee; Lower Flint-Ochlockonee; Upper Flint

Review and Revision Process will incorporate, as needed, the findings and conclusions that Council arrived at during the interim planning period

Water Planning Process



Purpose and Use of 2011 Regional Water Plans

- Used by EPD to Inform Permitting Decisions
- Used by EPD and GEFA to inform funding decisions
- Facilitate improvement to Resource Assessment Methods
- Facilitated additional research and data gathering for agricultural water use
- Example Projects/Activities Related to Water Planning
 - Priority 319 funding in every planning region
 - Aquifer Storage and Recovery pilot project in Flint River Basin
 - Ground water to surface water pilot project in Flint River Basin
 - Cretaceous well feasibility study to address Salt Water Intrusion

Schedule

		FY 2016						FY 2017											
		CY 2016												CY 2017					
		Oct	Nov	Dec	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar
Regional Water Planning Council Activities (FY2016 - FY2017)																			
Forecasting	Present Updated OPB Population Forecasts																		
	Evaluate Updates to M&I Water and Wastewater Demand Forecasts																		
	Evaluate Updates to Agricultural Water Demand Forecasts																		
	Evaluate Updates to Energy Water Demand Forecasts																		
Gap Analysis	Revised Surface Water Availability vs. Revised Forecasts (Gap Analysis)																		
	Revised Ground Water Availability vs. Revised Forecasts (Gap Analysis)																		
	Revised Surface Water Quality Availability vs. Revised Forecasts (Gap Analysis)																		
Mgt. Practices	Review & Revise Management Practices and Initial Future Assessment Modeling																		
	Further Refinement of Management Practices and Additional Future Assessment Modeling																		
	Final Selection of Management Practices																		
Plan Approval	Recommended Draft Regional Plans to EPD																		
	EPD Review																		
	Public Comment																		
	Councils Revise Recommended Plans in Response to Public Comment and EPD Adopts Revised WDCP																		
	Project Close-out																		
Meetings	Meeting 1 - Demand Forecasting Updates																		
	Meeting 2 (Joint) - Agriculture Demands and updates to Resource Assessment and Gap Analysis																		
	Meeting 3 - Review Management Practices and Select Future Scenarios to Address Gaps																		
	Meeting 4 - Refining / Selecting Management Practices and Provide Draft Plan to EPD																		
	Meeting 5 - Adopt Revisions to the recommended draft Plan																		



Vision and Goals, Memorandum of Agreement (MOA)

10:15 AM – 10:30 AM



Georgia's
State Water Plan

Vision and Goals

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Vision and Goals

- In Round 1, each Council went through an extensive visioning process to develop Vision and subsequent supporting Goals
- Council Vision will guide and frame the selection of management practices
- Our Region's vision and goals reflect how we see resources managed to meet regional needs

Vision and Goals can carry forward into the 5-year update process

- Have any major water issues surfaced in the region?
- Has what you wish to see for this region regarding water resources changed substantially over the last 5 years?
- Are there any things on the horizon that may influence the vision for the region?
- If answers are substantively no, revisions to Vision and Goals are not necessary.

Vision and Goals

Suwannee-Satilla Adopted Vision

as adopted by the Council 09.23.09

“The Vision of the Suwannee-Satilla Regional Council is to 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.”



Vision and Goals

Suwannee-Satilla Adopted Goals

as adopted by the Council 11.11.09

- 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).
- Manage ground and surface water to encourage sustainable economic and population growth in the region.
- Manage the region's and state's water resources in a manner that preserves and protects private property rights.
- Ensure an adequate water supply of suitable quality to meet current and future human needs, while protecting environmental resources.

Vision and Goals (cont.)

- Identify opportunities to optimize existing and future supplies, and water and wastewater infrastructure.
- Promote efficient use and management of surface and groundwater resources to allow for sufficient supplies for current and future generations.
- Protect and manage surface and groundwater recharge areas to ensure sufficient long-term water supplies for the region.
- Protect, maintain, and where appropriate and practicable, identify opportunities to enhance water quality and river base flows.
- Protect and maintain regional water-dependent recreational opportunities.
- Identify opportunities to manage stormwater to improve water quantity and quality.
- Identify and implement cost effective water management strategies.
- Seek to provide economically affordable power and water resource service to all citizens of the region.
- Identify and implement actions to better measure and share water use data and information.



Georgia's
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**Memorandum of Agreement
Operating Procedures
Meeting Rules
Public Involvement Plan**

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Memorandum of Agreement

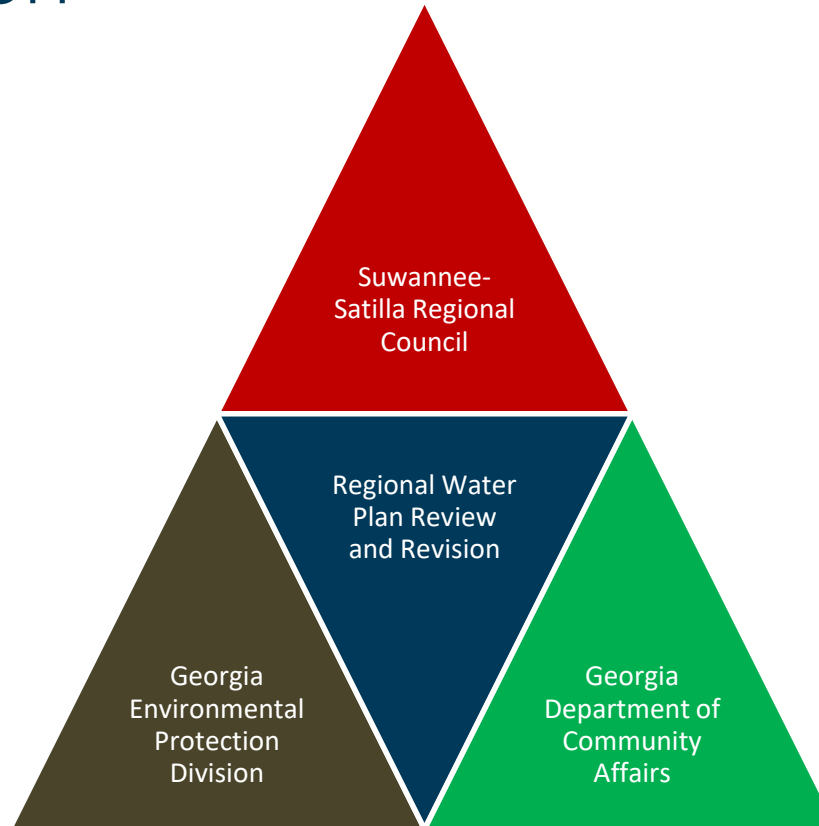
What are We Responsible for and How Will We Operate?

Existing documents define responsibilities, operations, and relationships:

1. Memorandum of Agreement (MOA)
 - a. Operating Procedures
 - b. Rules for Meetings
2. Public Involvement Plan

Memorandum of Agreement

- MOA outlines roles for Regional Water Plan Preparation



Memorandum of Agreement

- Establishes operating procedures, goals and objectives to govern actions and decisions for the Council
- Has a minimum of a 3-year term & can be renewed and amended upon written approval of all parties
- Defines Council, EPD and DCA responsibilities

Memorandum of Agreement

Georgia's

State Water Plan

Suwannee-Satilla Regional
Water Planning Council

Council Responsibilities:

- Submit drafts and final recommended plan to Director
- Identify management practices for the plan using provided data
- Adopt and follow operating procedures and rules for meetings
- Provide regional forum for local governments (inside and outside region) and coordinate with other Regional Councils
- Conduct open meetings and receive public comments in accordance with adopted Public Involvement Plan

Memorandum of Agreement



EPD Responsibilities:

- Provide a Planning Contractor to assist the Regional Council
- Provide technical and planning guidance
- Provide information on water quantity capacity and assimilative capacity, water use and forecasts, and status of the region's waters
- Coordinate planning across regions
- Provide public notice on the draft plan
- Review drafts of the plan and provide feedback
- Adopt final complete and consistent plan

Memorandum of Agreement



DCA Responsibilities:

- Provide information to identify inconsistencies between draft Plans and local and regional comprehensive plans
- Assist in developing a timeline for resolving inconsistencies
- Provide for Regional Council review and comment on local or regional comprehensive plans as they become due

Operating Procedures and Rules for Meetings

Documents to guide Council deliberations

- Includes practices shown to be effective and workable
- Designed to provide common approaches across councils
- Designed to support Council development of adoptable and implementable plan

Operating Procedures

Contents

- Definitions
- Council Membership
- Council Leadership
- Decision Making
- Meetings and Governance
- Amendments

Rules for Meetings

Contents

- Purpose
- Meeting roles: Chair, Vice-Chair, Members, Regional Planning Contractor, and EPD Liaison
- Communications
- Meeting agenda and summaries
- Discussion of issues and proposals
- Decision-making
- Public notice and comment
- Ending the meeting

Memorandum of Agreement

Proposed update to MOA

- Reinforce responsibilities of Council and agencies
- Extension of MOA, past the 2011 Plan adoption process and into the Review and Revision period
- Signatures by Council Chair, EPD Director and DCA Commissioner

Operating Procedures

Proposed updates to Operating Procedures

- Can be amended by Council, after EPD review and comment
- Housekeeping updates to address quorum and voting during Review and Revision process
- **2 changes to consider (see handout)**
- Input at today's meeting; notice to all members to follow, then action at next meeting

Public Involvement Plan

Public Involvement Plan (PIP)

- Maintains transparency of the planning process
- Seeks input from key stakeholders
- Establishes communications with neighboring councils
- Includes mechanisms for public comments



Public Involvement Plan

Procedural criteria

- All regional water planning council meetings will be open meetings
- Comments should pertain to topic(s) of meeting
- 3 minutes per speaker will be provided at the end of our meetings
- Provisions for written comments will be made available



Meeting Announcements

- Posted on Gov Delivery system
- Meeting agendas and meeting summaries will be distributed



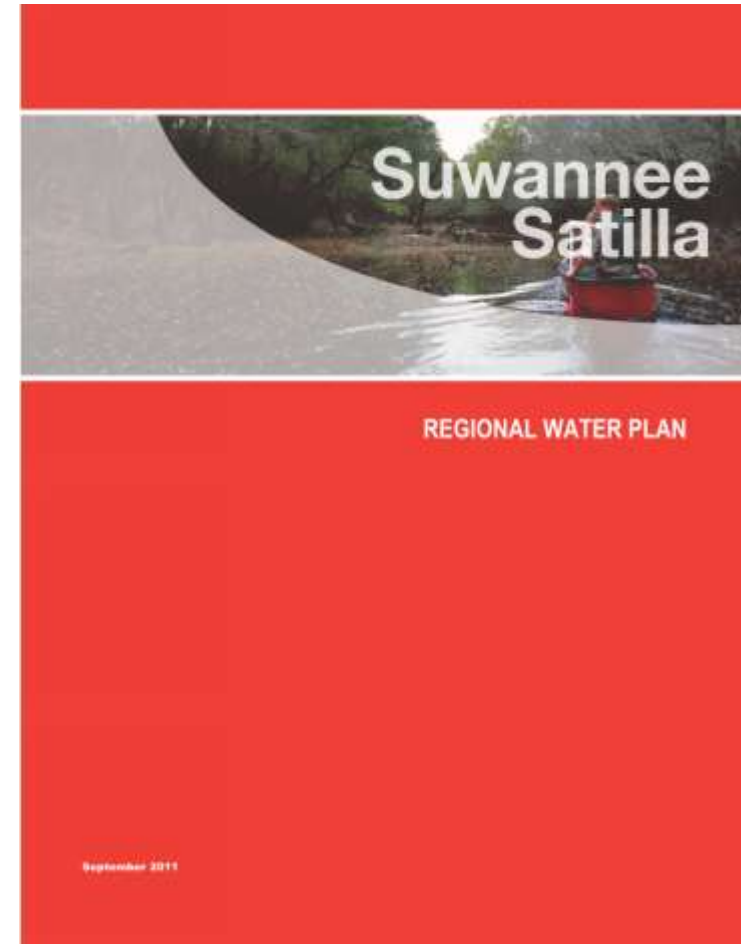
Plan Review & Revision

10:30 AM – 11:00 AM

Regional WDCP Review and Revision Process

Initial 5-Year Review Process will focus on:

- Updated water demand and wastewater forecasts
- Updated Surface Water and Ground Water Availability Resource Assessments (Quantity)
- Updated Surface Water Quality / Assimilative Capacity Resource Assessment
- Refinement of Management Practices, if needed, to address water resource gaps



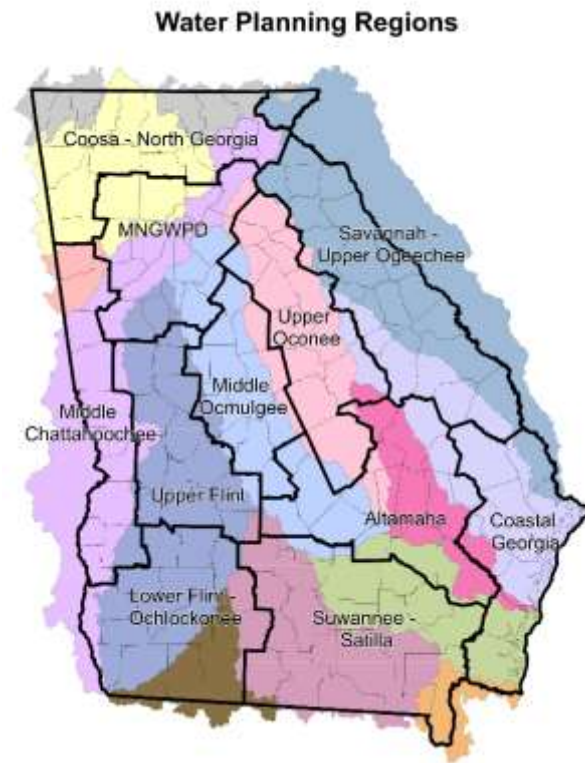
Review and Revision Process (*cont.*)

With the support of the Planning Contractor (PC), the Council will:

- Evaluate updated municipal & industrial water and wastewater demand forecasts
- Evaluate updated energy water demand forecasts
- Evaluate updated agricultural water demand forecasts
- Evaluate updated water resource assessments
- Re-evaluate updated “gaps”
- Re-evaluate management practices

Review and Revision Process (*cont.*)

- EPD adoption of revised Regional Water Plan by March 31, 2017
- Anticipate Council will meet quarterly for a total of 5 meetings
- 2nd quarterly meeting (June 2016) will be a Joint Council Meeting
 - Savannah-Upper Ogeechee
 - Upper Oconee
 - Middle Ocmulgee
 - Coastal Georgia
 - Suwannee-Satilla
 - Delegates (Upper Flint, LFO)
- Joint Council Meeting for western councils also to be held in June 2016



Review and Revision Process (*cont.*)

Revisions to Regional Water Plans

- 1st Draft – Updates to M&I and Energy Forecasting (April 2016)
- 2nd Draft – Updates to Agricultural Forecasting and Resource Assessment (July 2016)
- 3rd Draft – Updates to Forecasts/Gap Information and Management Practices (October 2016)

Review and Revision Process (*cont.*)

Revisions to Regional Water Plans

- Final Draft (December 2016)
 - EPD will public notice a 45-day comment period and conduct concurrent review
 - Council will review comments and incorporate changes during February 2017
 - Council will submit final recommended plan by February 28, 2017
- Plan will be adopted by EPD no later than March 31, 2017

Break

11:15 AM – 11:30 AM

Updated Population Projections and Municipal Water/Wastewater Forecast

11:15 AM – 12:15 PM



Georgia's
State Water Plan

Updated Population Projections

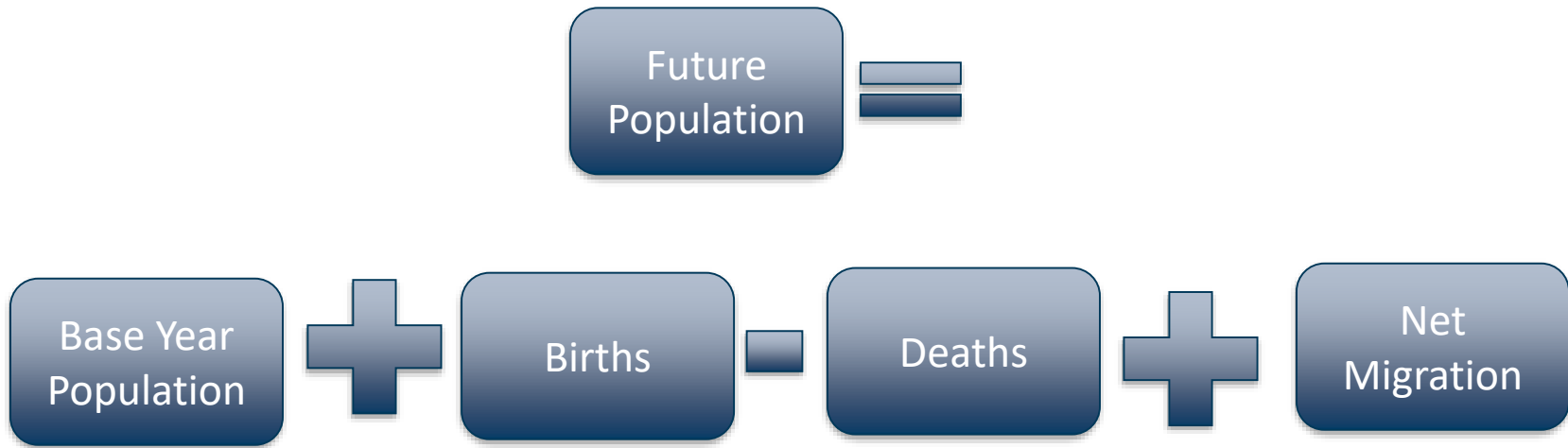
www.georgiawaterplanning.org

Updated Population Projections

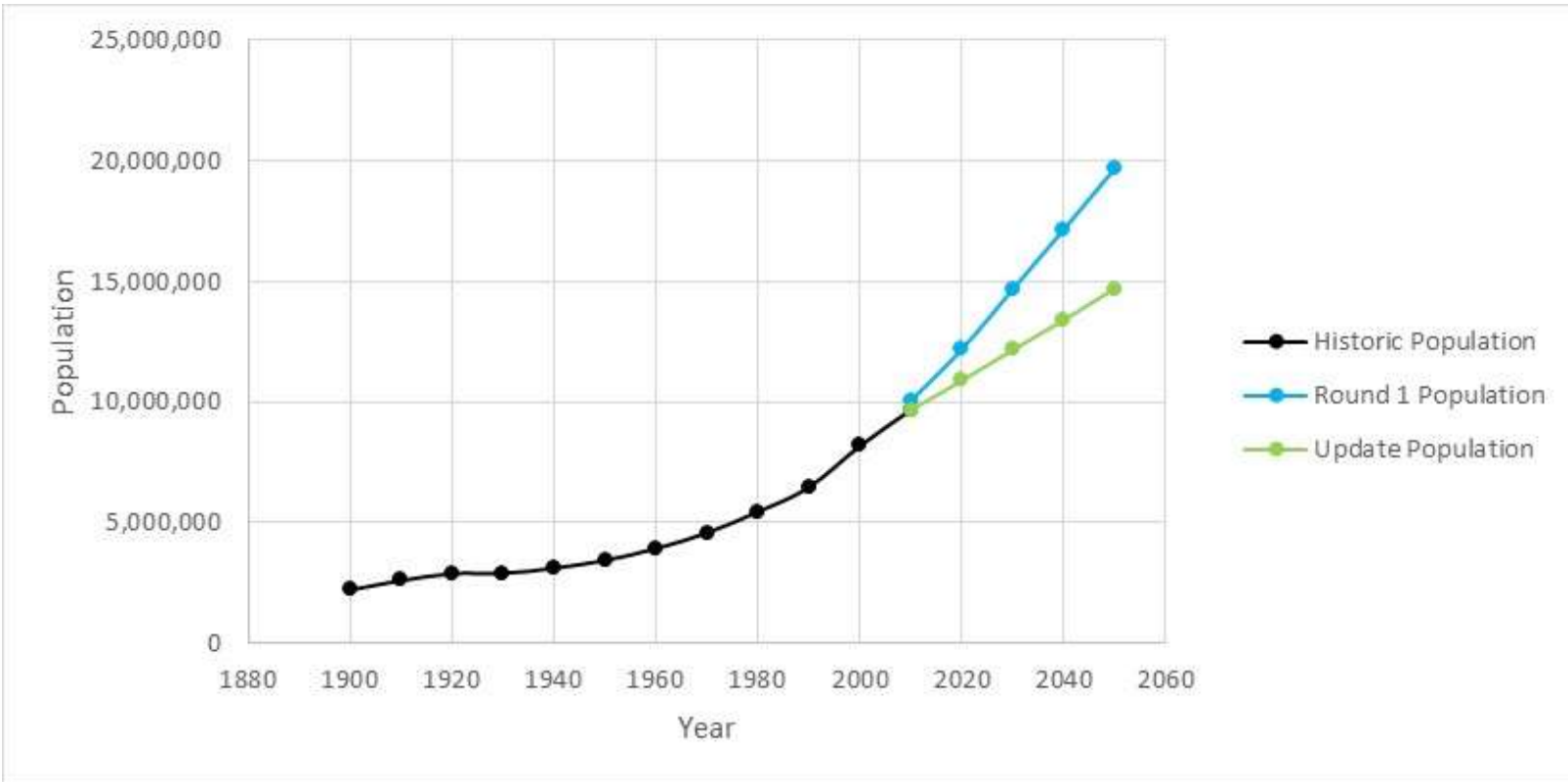
- State and County population projections are prepared by the Governor's Office of Planning and Budget (OPB)
<https://opb.georgia.gov/>
- Used consistently by all state agencies for multiple purposes
- Updated population projections will be used in the Review and Revision process
- Population is dynamic and is an important input to planning

Updated Population Projections

Basic Approach to Population Projections



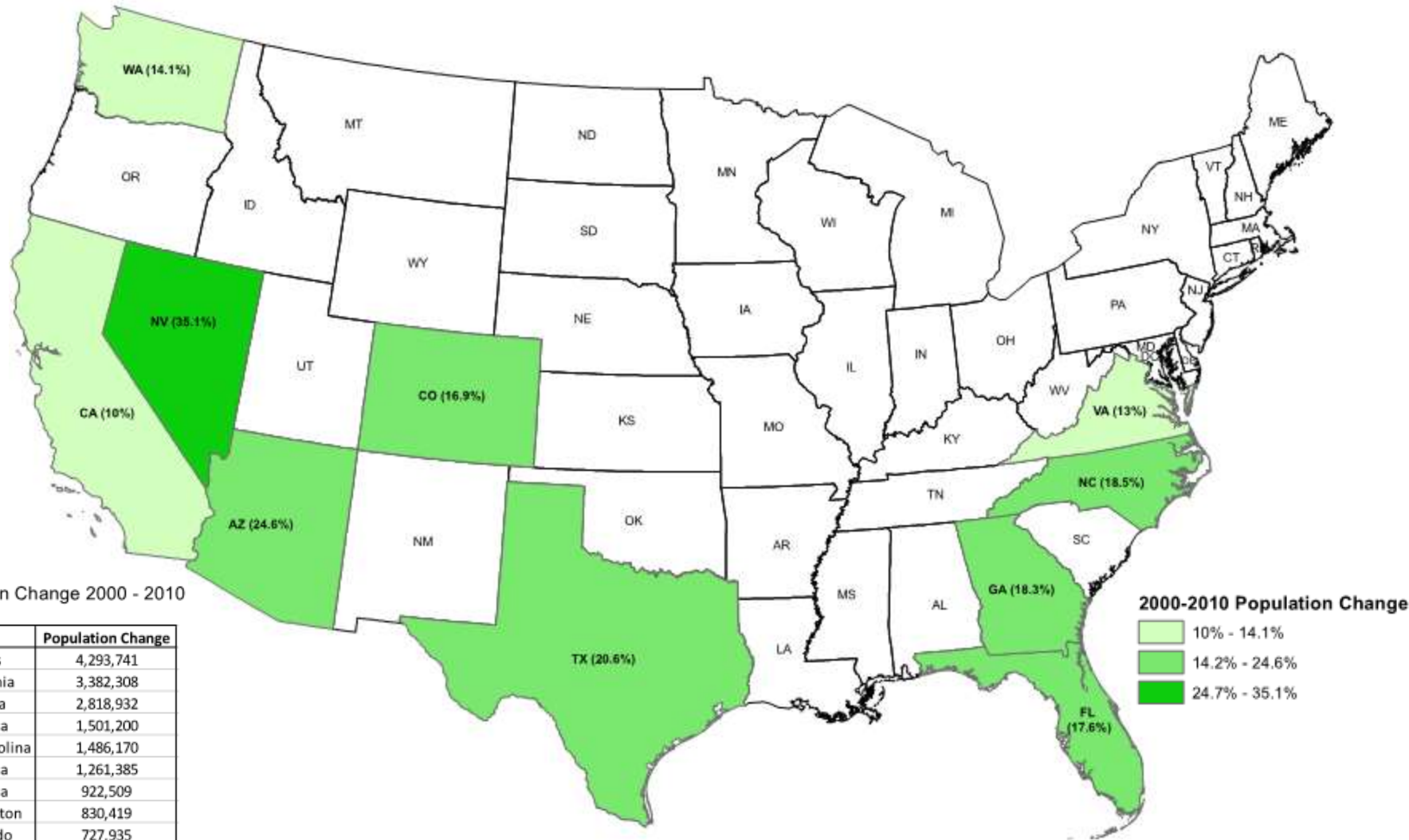
Georgia's Population Growth Over Time



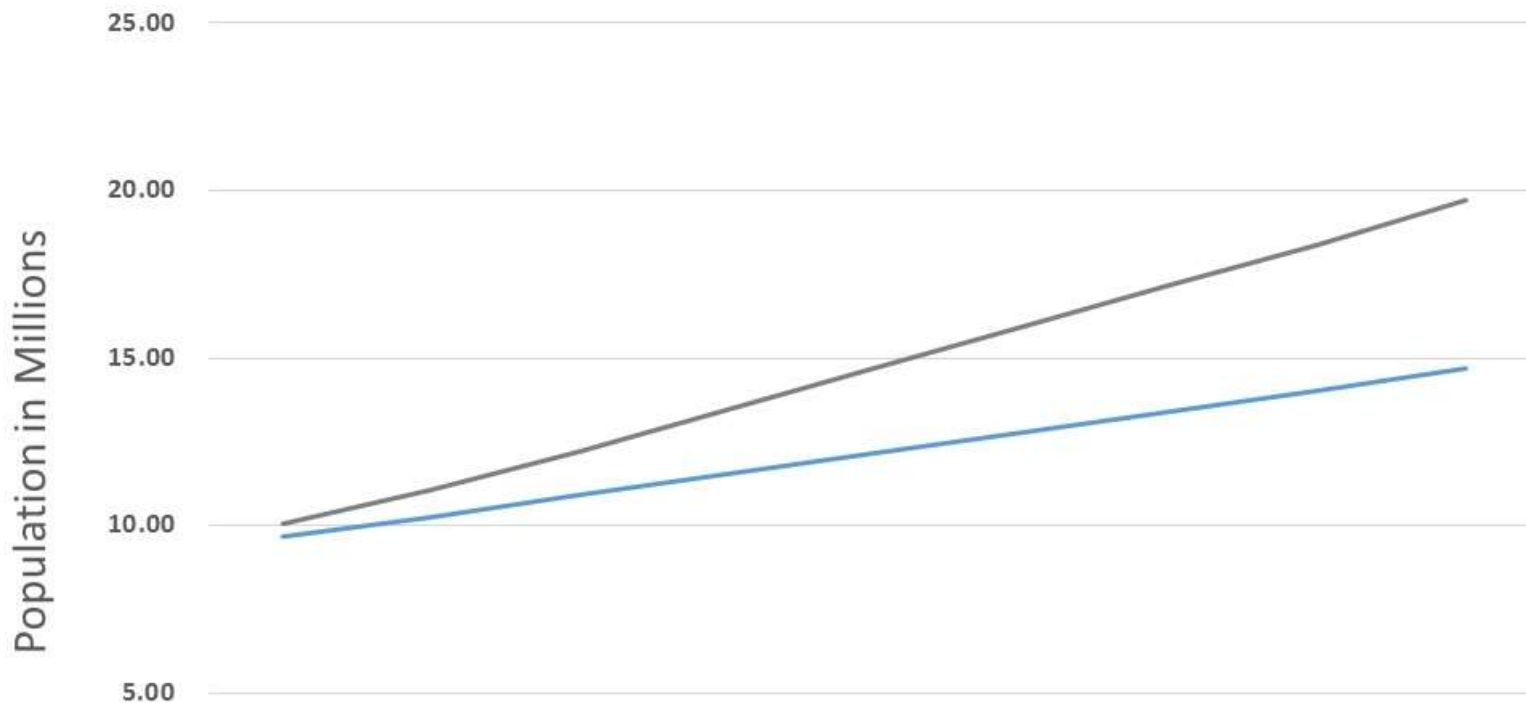
Georgia's Historic Population Growth and Projections



Top 10 States with Highest Population Growth

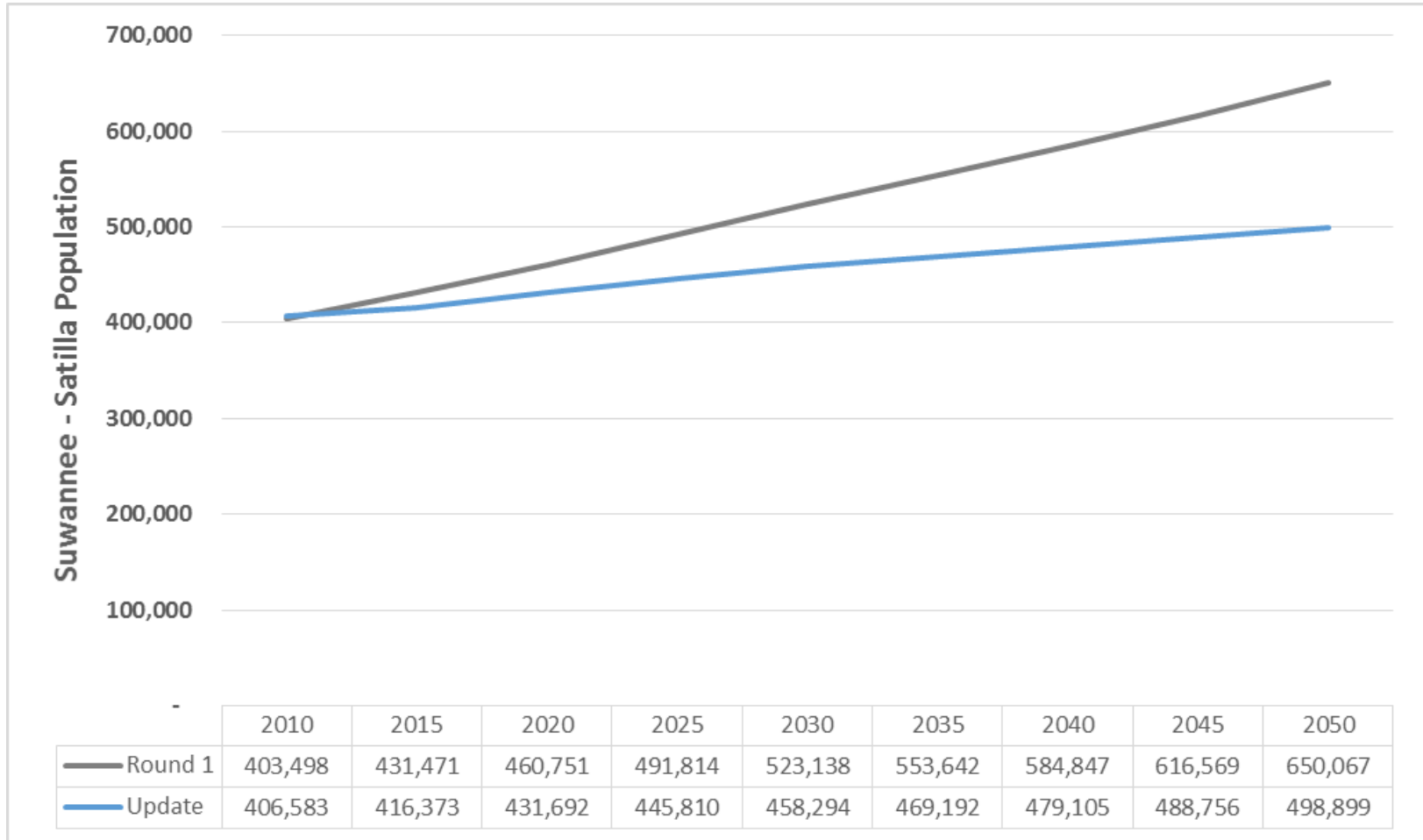


State Population Projections



	2010	2015	2020	2025	2030	2035	2040	2045	2050
— Round 1	10.07	11.08	12.19	13.43	14.69	15.91	17.17	18.37	19.69
— Update	9.69	10.25	10.90	11.54	12.17	12.80	13.41	14.04	14.71

Suwannee-Satilla Region Population Projections



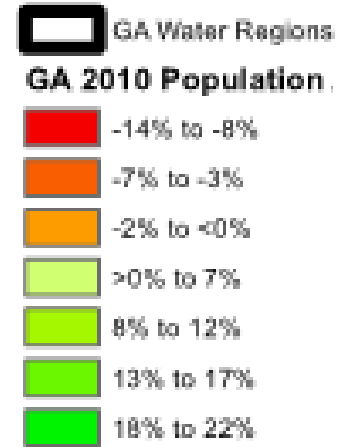
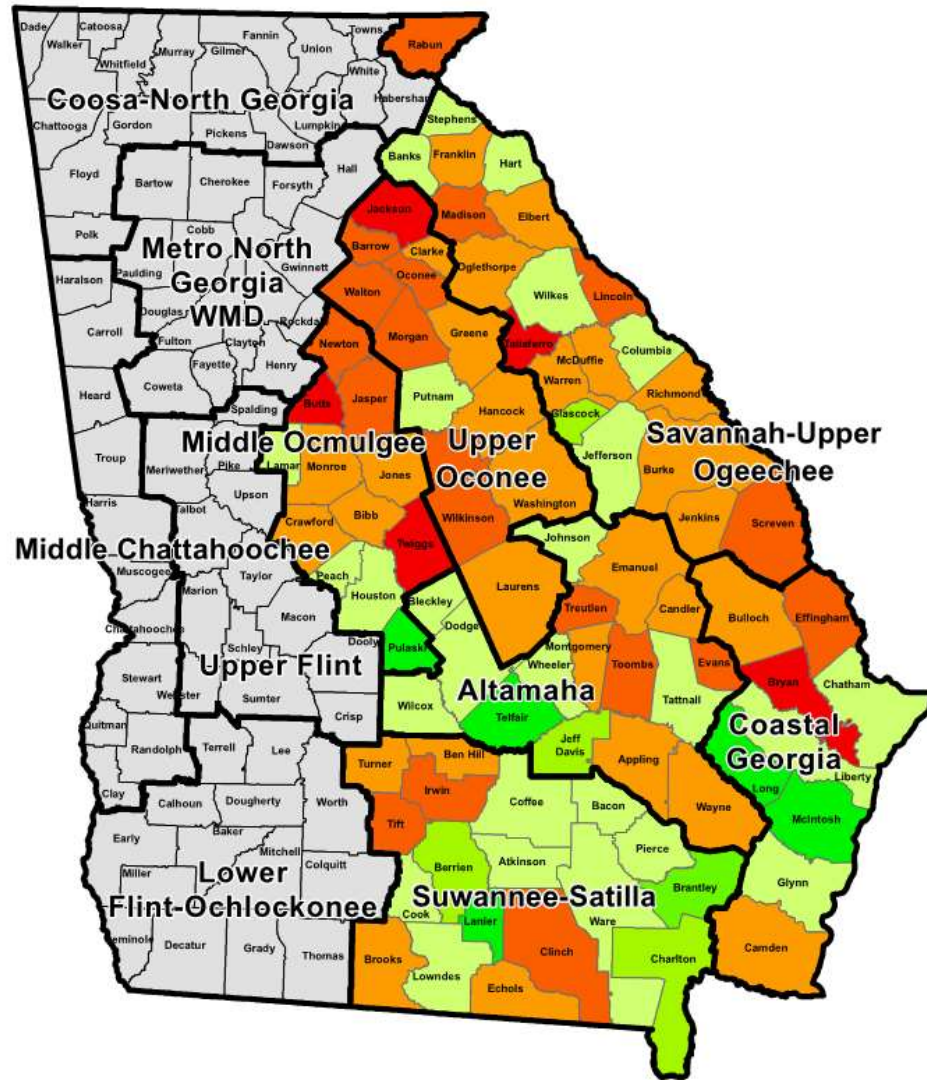
Updated Population Projections

- A Cohort-Component model was used for both the Round 1 and updated population projections – but data inputs have changed based on new/updated information
- Age specific fertility and death rates are updated using 2008-2012 data
- Migration rates are also updated using a series of approaches including:
 - use of U.S. Census Bureau's annual population estimates and components of change for 1990-2014
 - the 2006-2014 period was used to calculate net migration for each county in Georgia
 - data from the U.S. Census Bureau's 2006-2010 American Community Survey was also utilized

Updated Population Projections

- The current population projections are more in line with historic trends
- The projections used for Round 1 were strongly influenced by historical levels of in migration and relatively high birth rates among some cohorts
- Georgia continues to grow but growth is trending toward fewer counties – 50% of Georgia's population growth from 2010-2013 occurred in Fulton, Gwinnett, and Cobb
- Between 2010 and 2013, census data showed that about half of Georgia's counties have experienced population declines
- The majority of counties with declining population are considered rural counties

Georgia 2010 Population Projection Change



- Represents change between Round 1 2010 projection and 2010 Census



Georgia's
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Municipal Water Demand Forecast
Update

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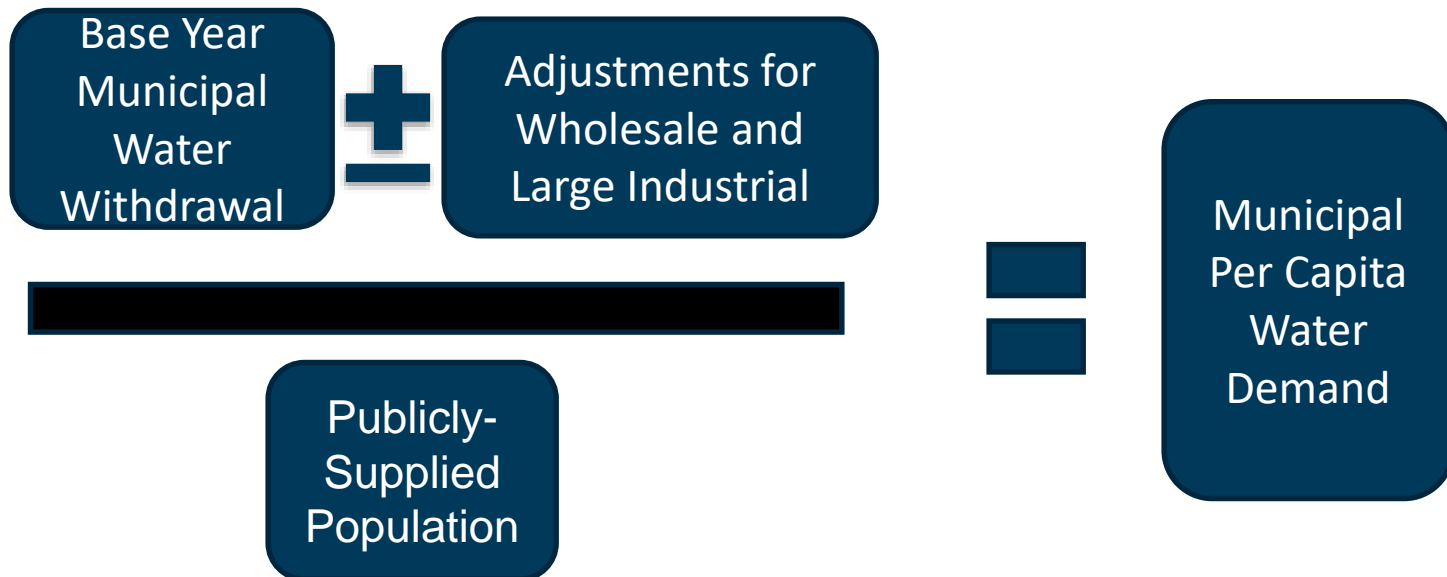
Projecting Municipal Water Demand

Future Water Need:



Calculating Per Capita Demand

- Municipal
 - public/private water systems
 - adjustment for wholesale and large industrial
 - Council feedback for region specific adjustment
- Self-Supply (provided by users)
 - 100 gpcd demand regional specific value
 - Council feedback for region specific adjustment

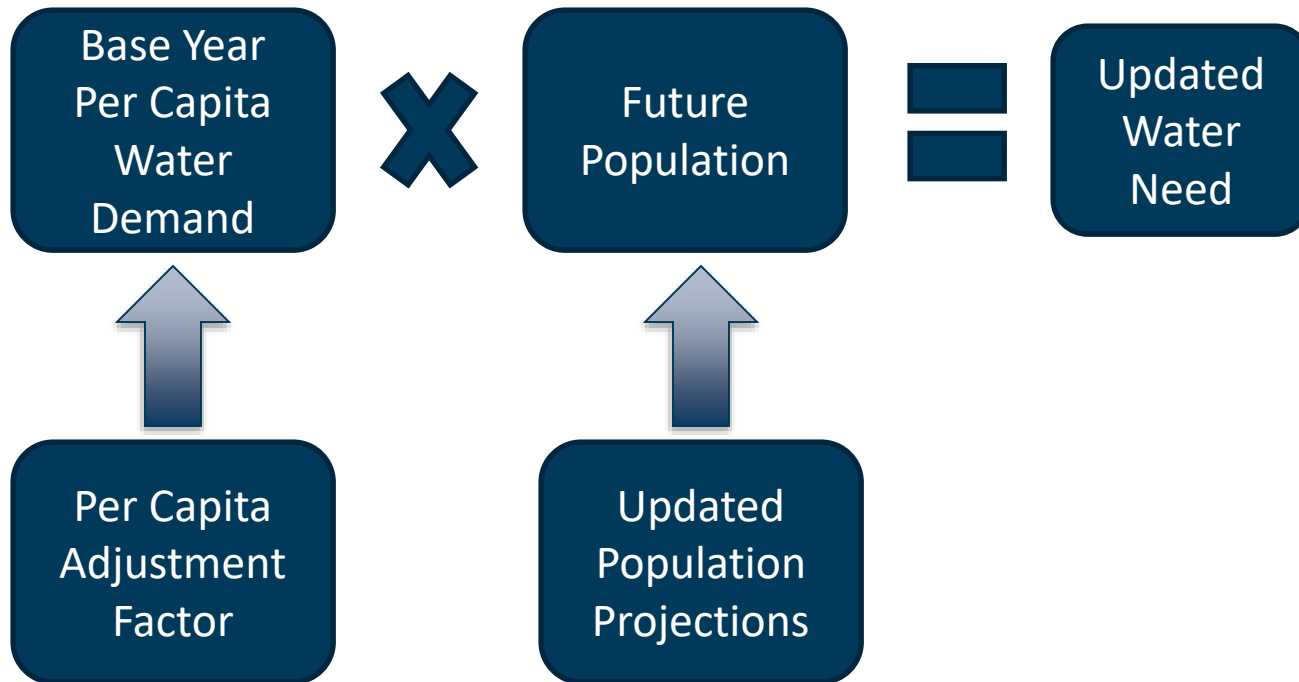


Round 1 Methodology

- Development of the WCDP used an extensive process of:
 - estimating water use and population served by municipalities in each county
 - calculating a weighted average (weighted by population served) for each county
 - reconciling the county average USGS estimates
 - refining the county gpcd values given comments from regional councils

Projecting Municipal Water Demand

Updated Municipal Water Need with Adjustment Factor:



WDCP Updated Adjustment to GPCD

- EPD collected municipal water use and population served by municipalities and water systems from 2010 to 2014 (5 years)
- The % rate of change was calculated for each year interval (2010 to 2011, 2011 to 2012, 2012 to 2013, and 2013 to 2014), and the average of those was calculated as the ***per capita water use adjustment factor***
- The adjustment factor was applied to the Round 1 gpcd values

Update Methodology

- New population projections
- Each county has the “municipal” water demand split between publicly-supplied (i.e., water provider) and self-supplied (i.e., private wells).
- The ratio of public-supplied to self-supplied water use in each county for Round 1 were maintained for update

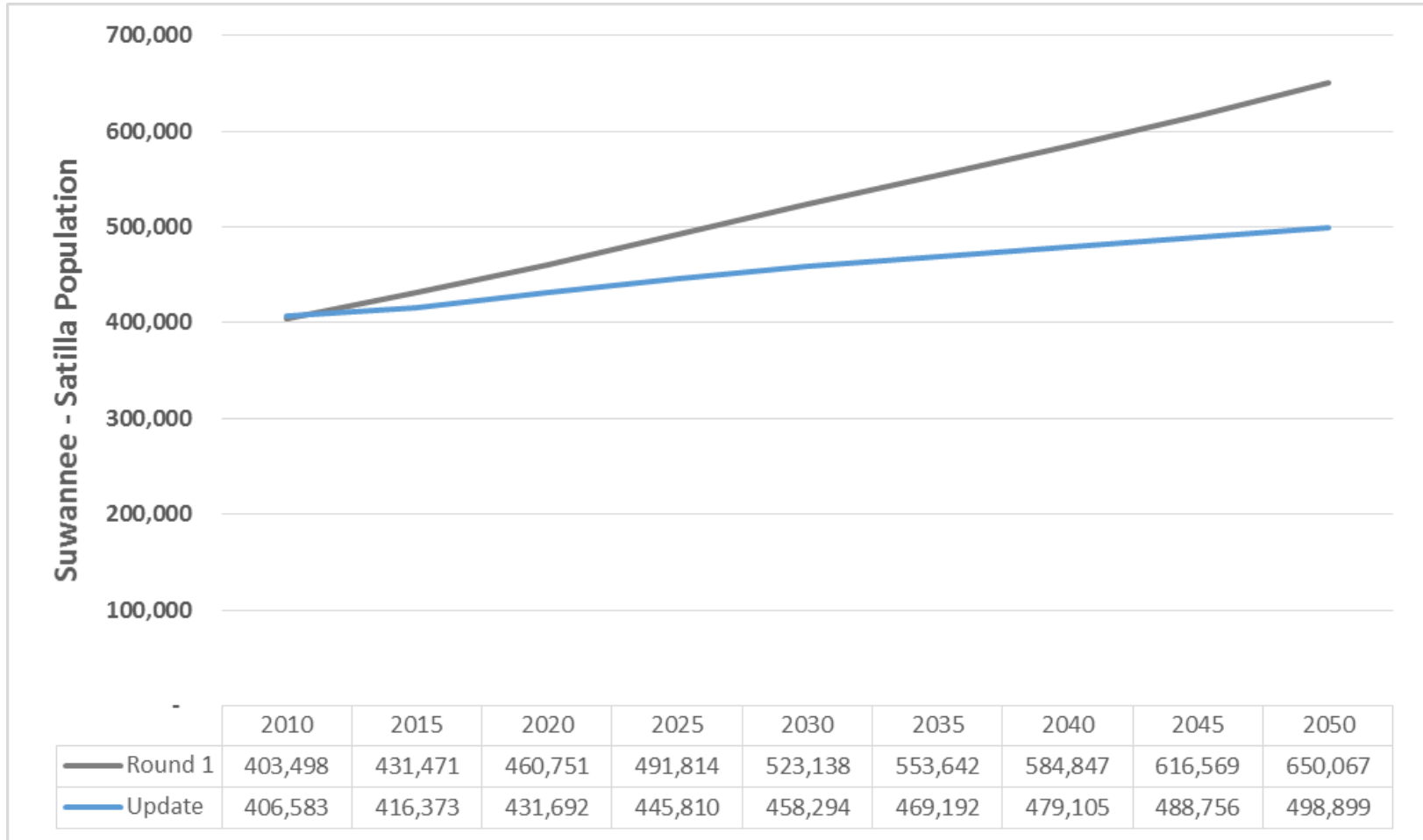
Municipal GPCD Adjustment Results – Suwannee-Satilla Region

- Small relative change
- Less than 10% change across all counties
- 11 out of 18 counties have less than 5 gpcd change
- Round 1 Regional Average GPCD: 137
- Updated Regional Average GPCD: 135
- Average change across region is 1.4%

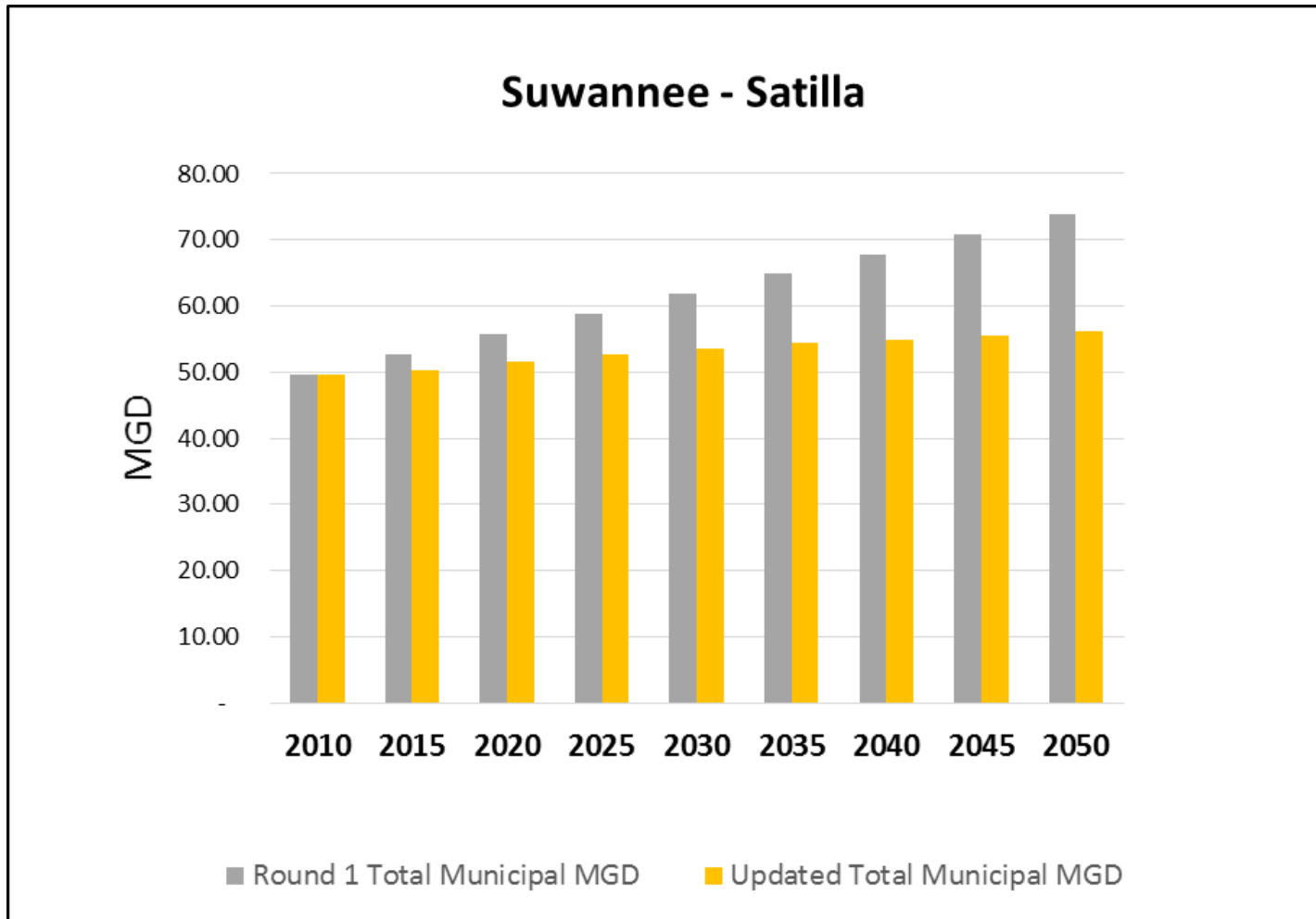
Municipal GPCD Adjustment Results by County

County	Round 1 GPCD	Updated GPCD	GPCD Δ	% GPCD Change
Atkinson	112	111	-1	-1.1%
Bacon	170	177	7	4.3%
Ben Hill	180	177	-3	-2.0%
Berrien	131	128	-3	-2.8%
Brantley	93	96	3	3.5%
Brooks	137	147	10	6.8%
Charlton	123	128	5	4.4%
Clinch	148	140	-8	-5.6%
Coffee	153	139	-14	-9.3%
Cook	142	131	-11	-7.7%
Echols	96	96	0	0.0%
Irwin	152	148	-4	-2.5%
Lanier	153	143	-10	-6.3%
Lowndes	133	129	-4	-2.8%
Pierce	127	131	4	2.7%
Tift	156	153	-3	-1.6%
Turner	140	140	0	0.0%
Ware	114	109	-5	-4.7%

Suwannee-Satilla Region Population Projections



Suwannee-Satilla Region Updated Water Demand



Additional GPCD Analysis by EPD

- EPD will continue to evaluate and refine the additional source of information
- Planning Considerations:
 - Regional and statewide planning are conducted at a different scale than that used in facility planning and permitting
 - Data requirements, local and site specific conditions are unique
- We will keep Council engaged and informed as this work progresses

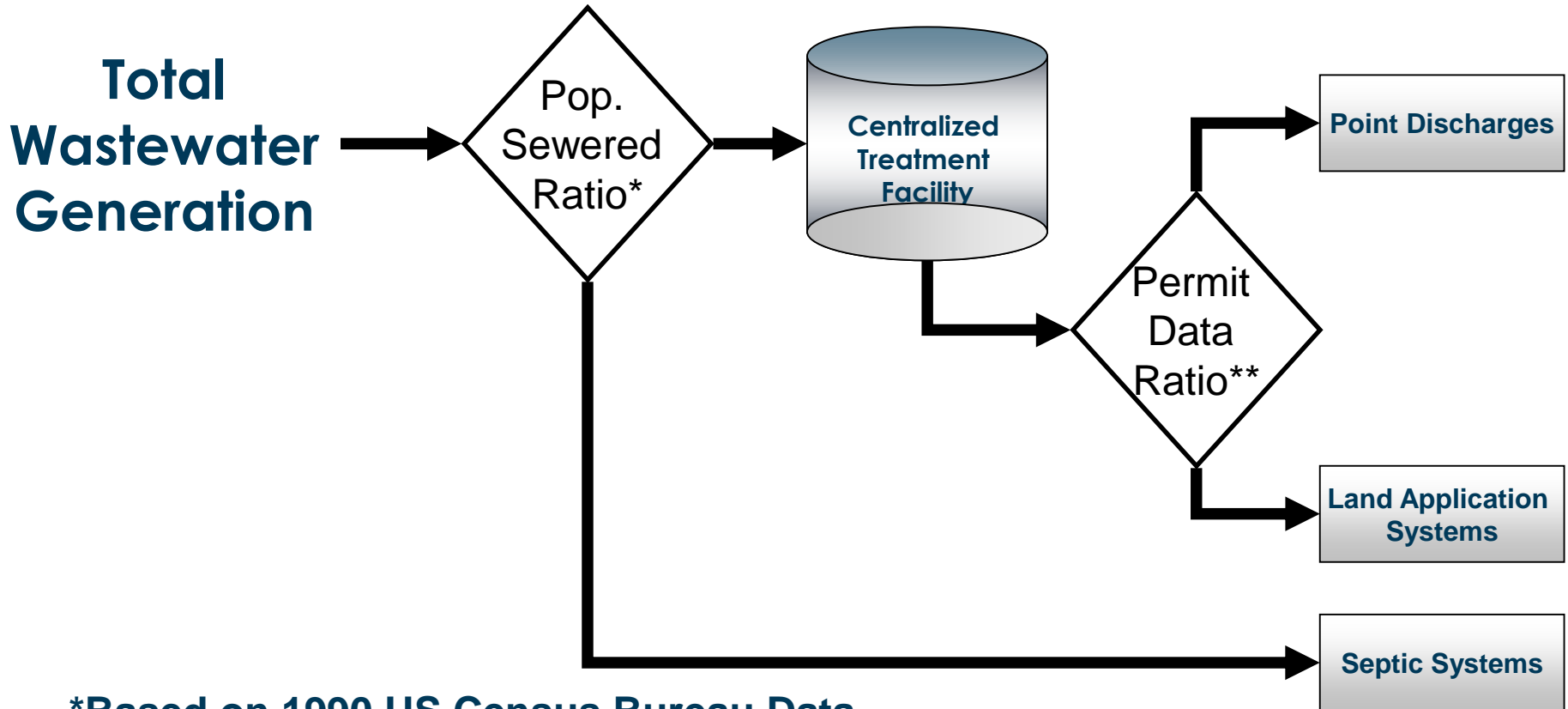


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Municipal Wastewater Demand
Forecast Update

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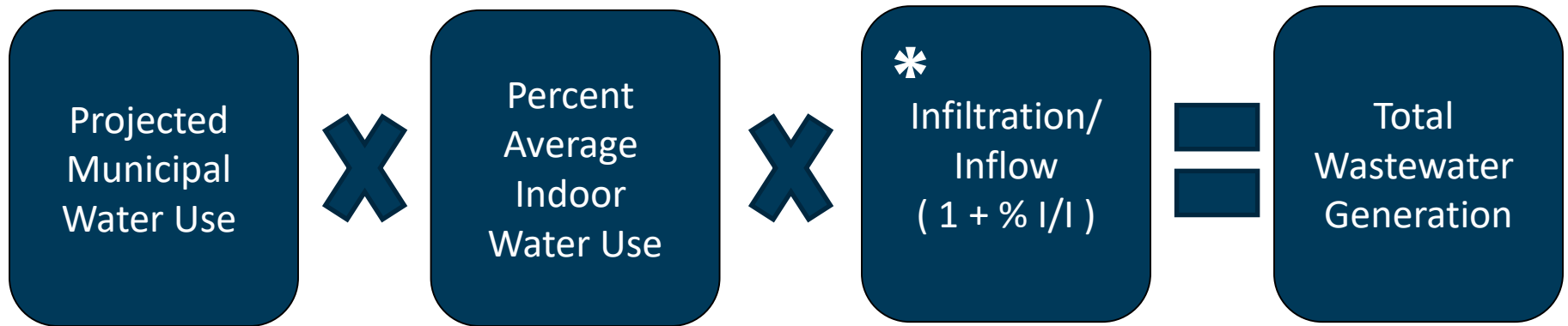
Municipal Wastewater Discharges



*Based on 1990 US Census Bureau Data

**Based on Existing GA EPD Permit Data

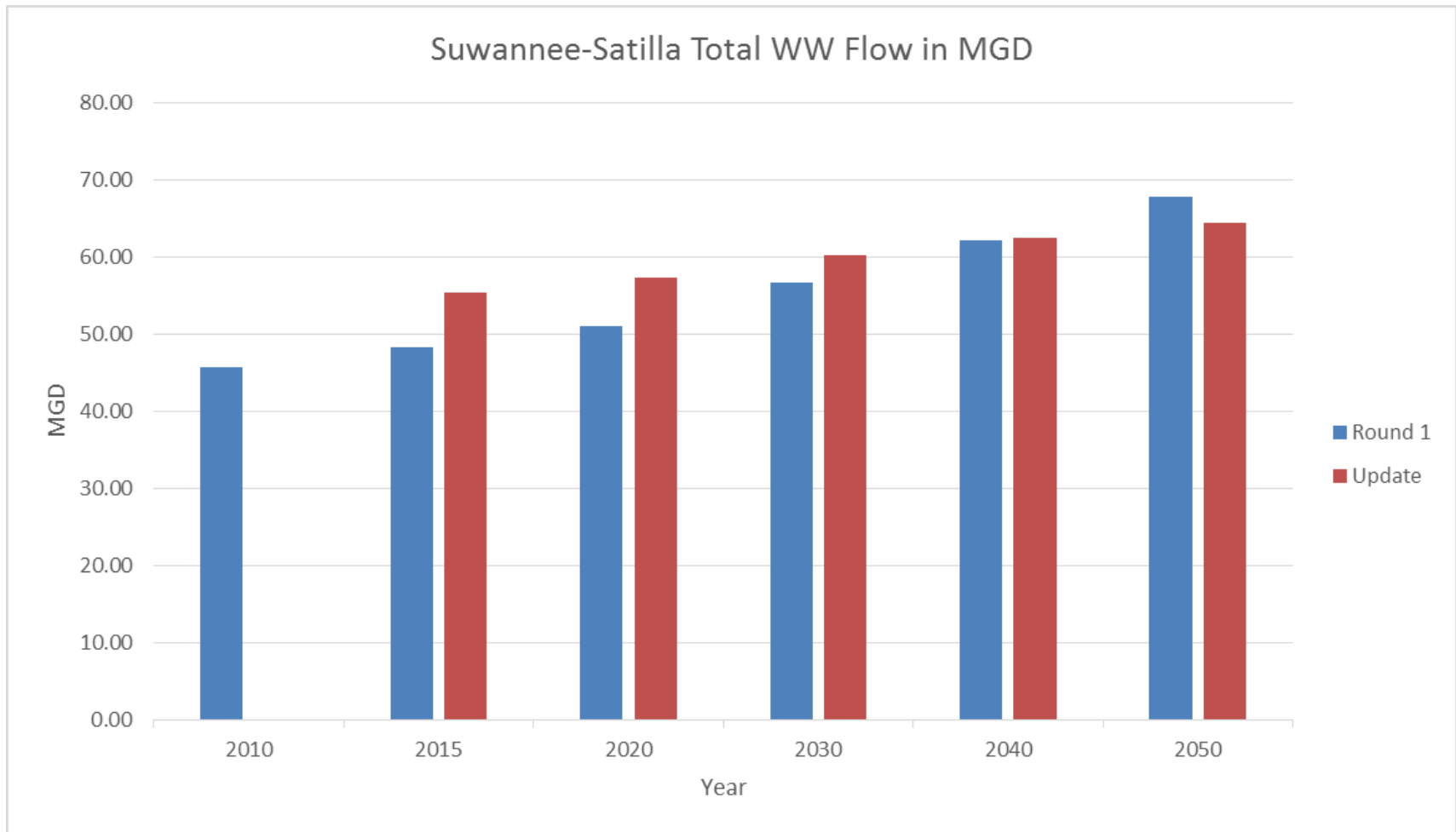
Round 1 Municipal Wastewater Calculation



Municipal Wastewater Forecast Update

- In Round 1 the municipal water demand served as the basis for estimating the municipal wastewater (WW) flows for each county
- **New** methodology based on:
 - 2014 discharges by county
 - % increase in population
 - Future wastewater changes at the rate of population change
 - Incorporates the trend in ratio of centralized/septic to determine the predicted change in centralized flows by county

Municipal Wastewater Forecast Update Results



Lunch Time

12:15 PM – 12:45 PM



Industrial Water Forecast Updates

12:45 PM – 1:15 PM

Industrial Water Needs

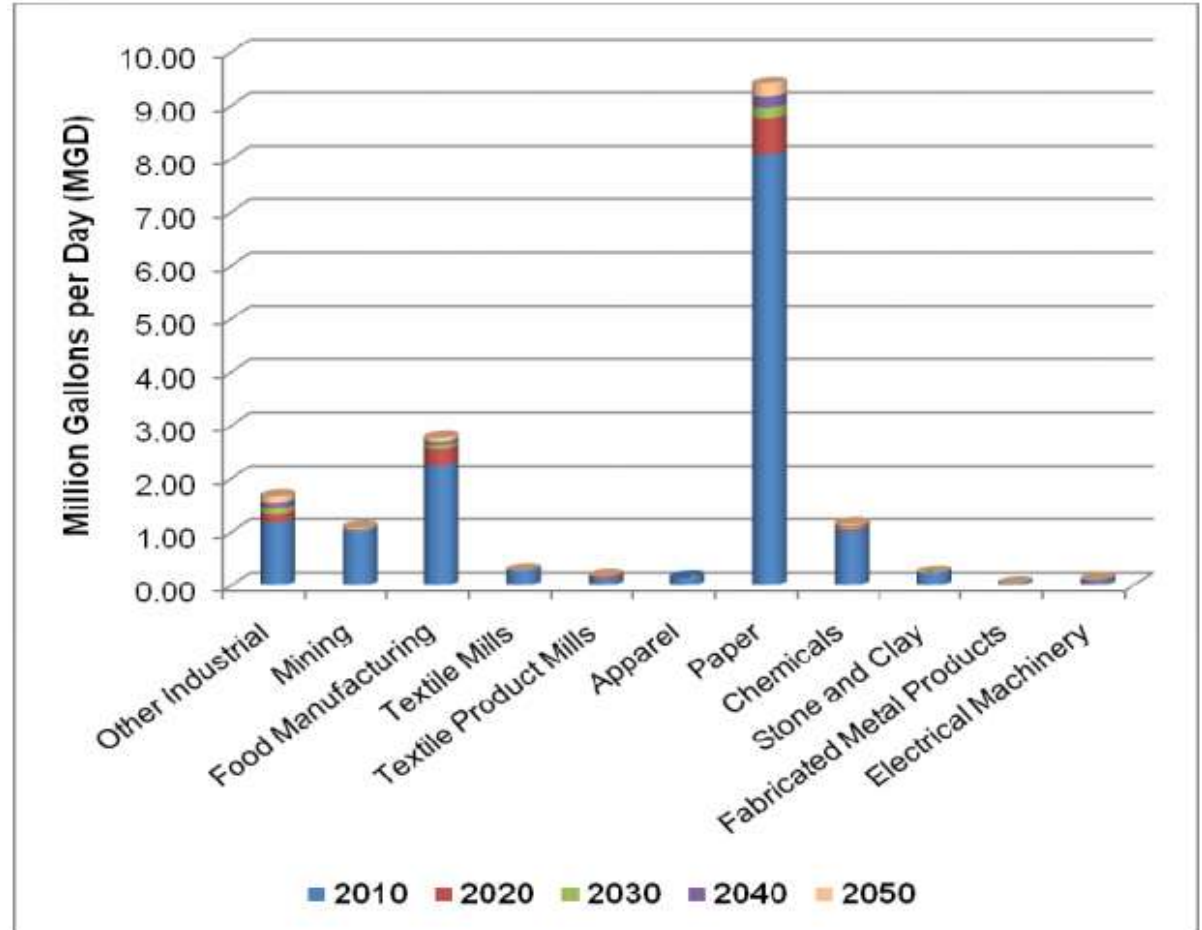
- Water is needed for industrial processes, sanitation, cooling and some domestic (employee) use
- Water need is linked to production
- Employment is linked to production
- Updates of employment data are not available, therefore industrial forecasts are not being updated at this time

Industrial Water & Wastewater Demand

- EPD recommends maintaining Round 1 estimates of industrial water & wastewater forecasts
- Regional Councils are encouraged to review Round 1 projections and identify any significant changes that may have occurred

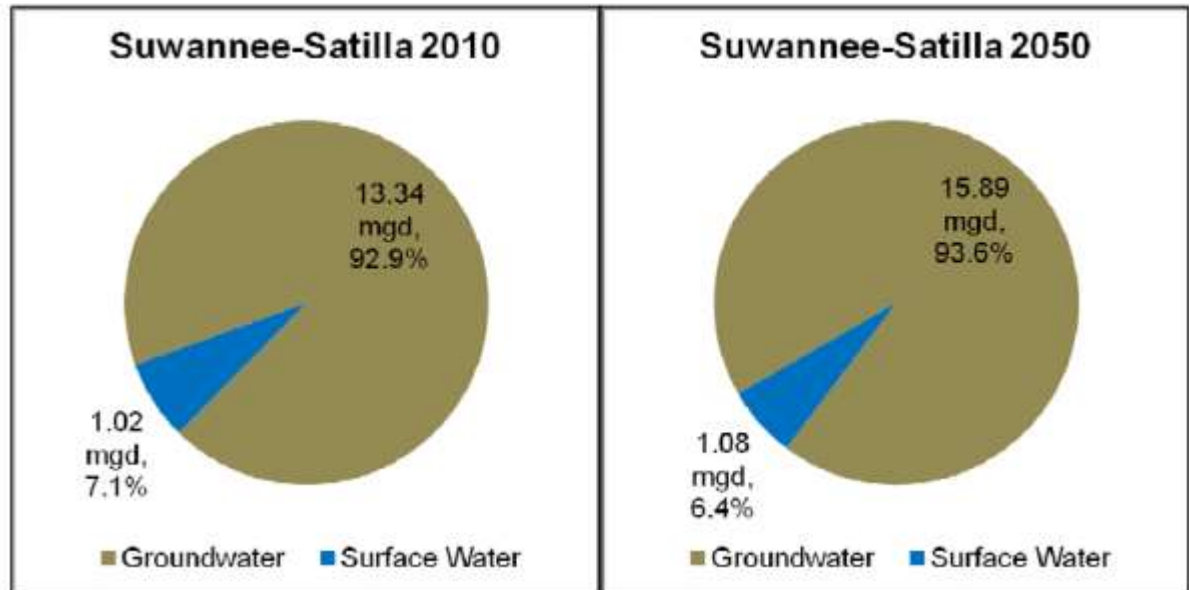
Industrial Water Demand

Round 1 Suwannee- Satilla Industrial Water Demand by Category



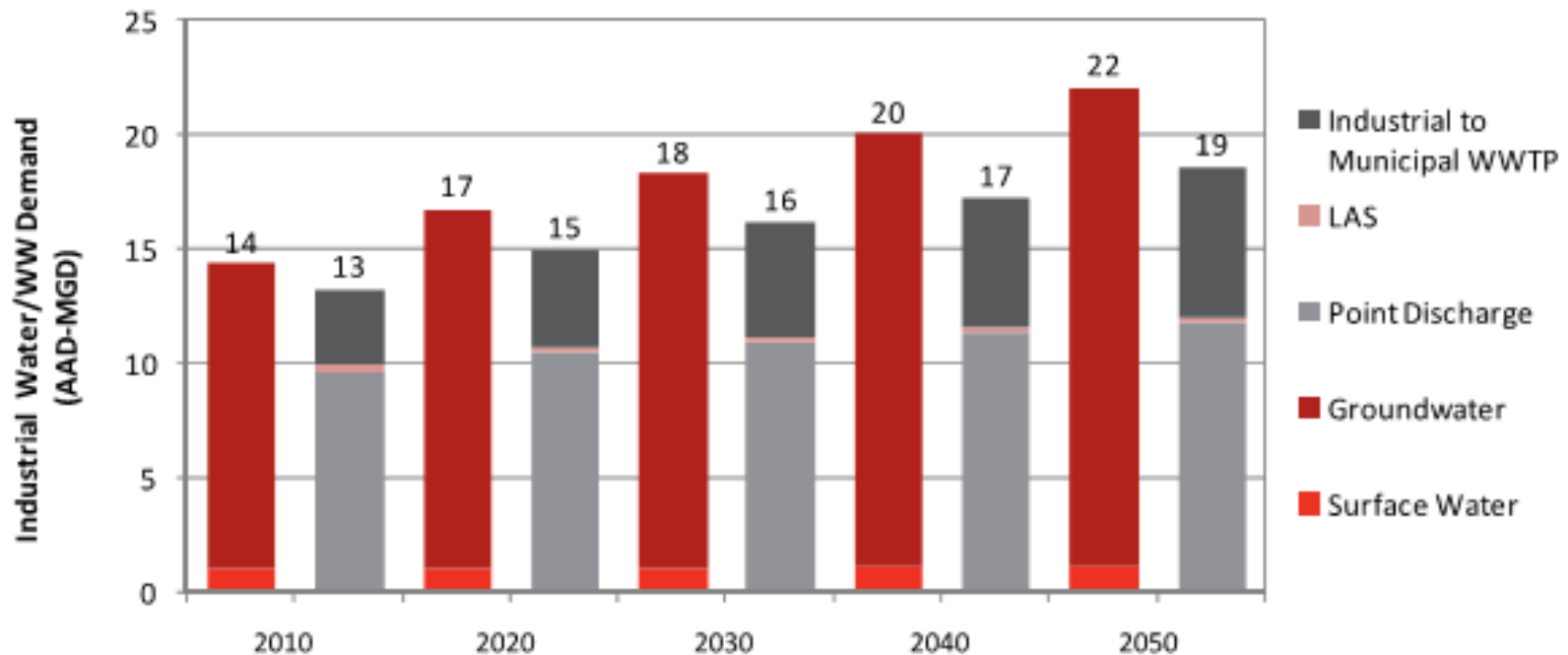
Industrial Water Demand

Round 1 – Suwannee- Satilla Industrial Water Demand by Source



Industrial Wastewater Flow

Round 1 – Suwannee-Satilla Industrial Wastewater Flow by Discharge Method



Energy Forecast Updates

1:15 PM – 1:30 PM

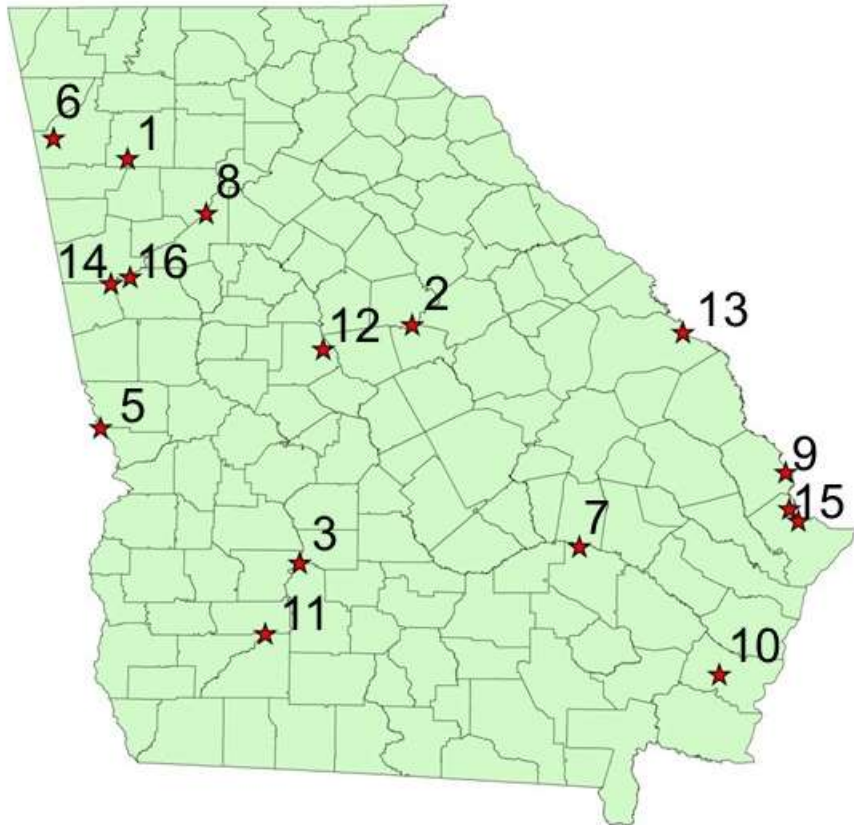


Georgia's
State Water Plan

Energy Forecast Updates

www.georgiawaterplanning.org

Round 1 - Thermoelectric Power Facilities in Georgia with Water Withdrawal Permits

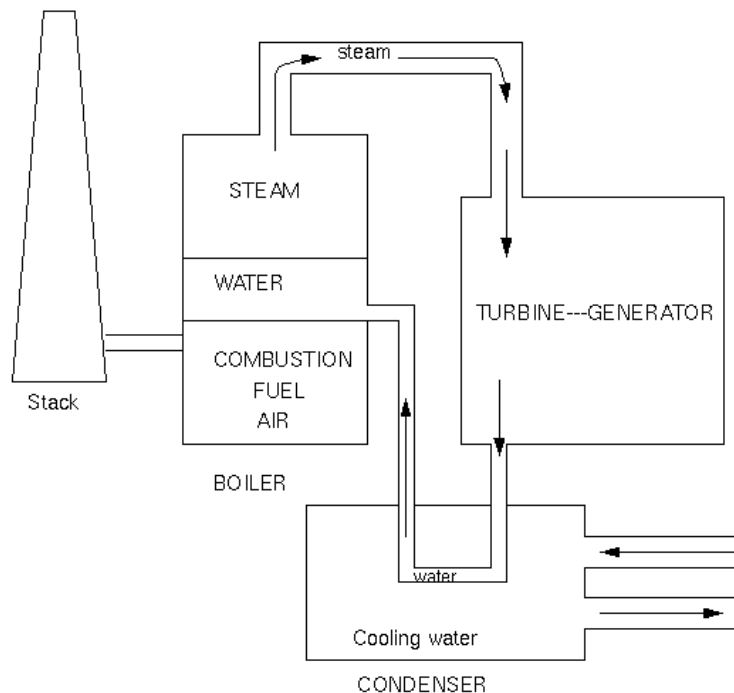


Facility Name	County
1. Plant Bowen	Bartow
2. Plant Branch	Putnam
3. Crisp County Power Comm- Steam	Worth
4. Gum Power Plant LLC	Mitchell
5. H Allen Franklin ¹	Lee (Alabama)
6. Plant Hammond	Floyd
7. Plant Hatch	Appling
8. Plant Jack McDonough	Cobb
9. Plant McIntosh	Effingham
10. Plant McManus	Glynn
11. Plant Mitchell	Dougherty
12. Plant Scherer	Monroe
13. Voglte	Burke
14. Plant Wansley	Heard
15. Plant Wentworth (Kraft)	Chatham
16. Plant Yates	Coweta

¹ Plant is physically located in Alabama; water withdrawal permit from Georgia EPD

Energy Forecast Updates

- Variables for calculations
 - Fuel type (coal, natural gas, nuclear)
 - Prime Mover (thermal energy into mechanical energy)
 - Cooling type (single pass vs. evaporative)



Energy Forecasting Methodology

- Each power facility has a unique water-to – power-to-production signature
- Statewide, each facility contributes a unique portion to the entire power portfolio
- The relative contribution of each facility can change over time as facilities retire or are brought on-line
- This information is used along with total power production (est. from population projections) to determine statewide & regional water needs out to 2050

Water Use Factors by Generating Combination

WATER WITHDRAWALS	
Power Generation Combination	Gal/MWh
Fossil Fuel/Biomass, Steam Turbine, Once-Through Cooling	41,005
Fossil Fuel/Biomass, Steam Turbine, Cooling Tower	1,153
Fossil Fuel/Biomass, Gas (Combustion) Turbine	0
Natural Gas, Combined-Cycle, Cooling Tower	225
Nuclear, Steam Turbine, Cooling Tower	1,372
WATER CONSUMPTION	
Power Generation Combination	Gal/MWh
Fossil Fuel/Biomass, Steam Turbine, Once-Through Cooling	0
Fossil Fuel/Biomass, Steam Turbine, Cooling Tower	567
Fossil Fuel/Biomass, Gas (Combustion) Turbine	0
Natural Gas, Combined-Cycle, Cooling Tower	198
Nuclear, Steam Turbine, Cooling Tower	880

Update Methodology - Water Demands for Thermo-Electric Power Generation

- Updated energy needs are estimated from new population projections
- A baseline and high demand scenario were estimated
 - Baseline is the expected energy need based on regression analysis & population projection
 - The standard error from the regression analysis is used to estimate the 95% upper limit (high demand)

Update Methodology - Water Demands for Thermo-Electric Power Generation (*cont.*)

- Water withdrawal requirements and water consumption rates (in gallons per MWh) are used to estimate the withdrawal and consumptive use
- Water withdrawals and consumptive use are allocated among the regions, watersheds and nodes

Update Methodology - Water Demands for Thermo-Electric Power Generation (*cont.*)

- Water and power results are not yet complete
- Round 1 assumption was 1% of the energy need will be met through renewable (wind & solar) energy. Plan update (2016/2017) assume MW capacity from renewable (being developed with Ad Hoc Group Input)
- Hydropower is constant

Update Results - Water Demands for Thermo-Electric Power Generation

- Energy forecast still under development with input from the Energy Ad Hoc group

Current Agricultural Demand Estimate and Method for Updates

1:30 PM – 2:15 PM



Georgia's
State Water Plan

**Current Agricultural Demand Estimate and
Method for Updates**

www.georgiawaterplanning.org

Break

2:15 PM – 2:30 PM

Appointment of Technical Subcommittee

2:30 PM – 2:45 PM

Technical Subcommittees

- If needed, technical subcommittees may be appointed to continue to review key topics
- Input needed by April 15, 2016 to EPD

Section 319(h) Georgia's Nonpoint Source Implementation Grant Funding

2:45 PM – 3:15 PM



Georgia's
State Water Plan

Section 319(h) Georgia's Nonpoint
Source Implementation Grant
Funding

www.georgiawaterplanning.org

Public Comments

3:15 PM – 3:30 PM

Wrap-Up, What to Expect Next Meeting

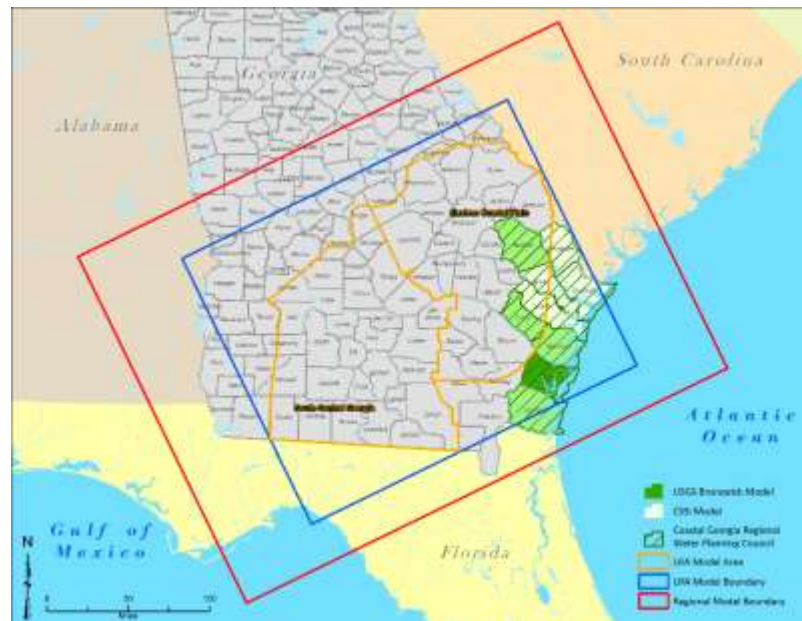
3:30 PM – 3:45 PM

Next Meeting

- 2nd quarterly meeting (June 2016 timeframe) will be a Joint Council Meeting
 - Members can be delegates to attend the afternoon breakout session (Suwannee-Satilla and Coastal)
 - Suwannee – Satilla Council can elect to send delegates to attend the western Joint Council meeting

Council Meeting 2

- Updates to Resource Assessments will focus on both surface water and groundwater and changes, if any, to the Gap Analysis conducted in Round 1



Council Meeting 1 Evaluation

3:45 PM – 4:00 PM

Thank You!

Questions? Comments? Need
More Information?

woodsh@cdmsmith.com

Cliff.Lewis@dnr.ga.gov

Council Meeting Evaluation: Please let us know what went well at this meeting, and any suggestions for next meeting.

Detailed Slides

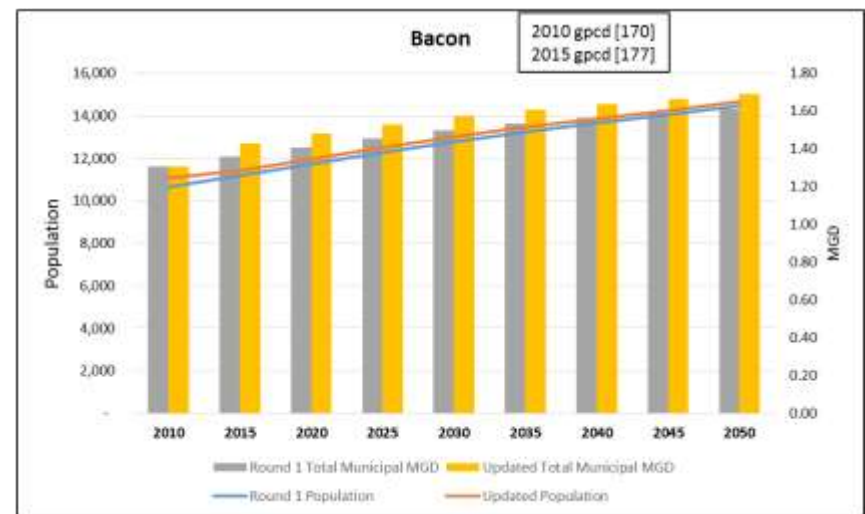
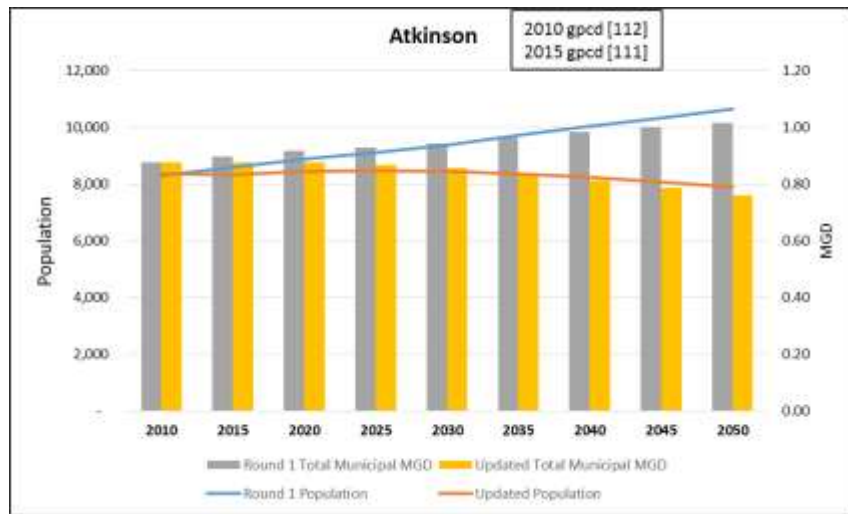
Population & Municipal water demand forecast

Population	change							
2010	2015	2020	2025	2030	2035	2040	2045	2050
(201)	(947)	(1,455)	(2,026)	(2,614)	(3,299)	(3,994)	(4,648)	(5,377)
62	(943)	(1,607)	(2,198)	(2,747)	(3,195)	(3,642)	(4,083)	(4,499)
(76)	(1,522)	(2,926)	(4,612)	(6,531)	(8,816)	(11,337)	(14,180)	(17,375)
1,338	(149)	(1,064)	(2,175)	(3,081)	(3,636)	(4,187)	(4,622)	(5,045)
(543)	(613)	(470)	(558)	(708)	(1,024)	(1,347)	(1,750)	(2,240)
(1,004)	(2,115)	(2,886)	(3,679)	(4,476)	(5,289)	(6,085)	(6,833)	(7,589)
1,392	1,141	1,253	1,294	1,366	1,316	1,299	1,241	1,188
282	(231)	(562)	(900)	(1,249)	(1,701)	(2,126)	(2,500)	(2,876)
(49)	(887)	(1,592)	(2,335)	(2,988)	(3,504)	(4,013)	(4,483)	(4,963)
1,290	(522)	(1,919)	(3,573)	(5,355)	(7,230)	(9,202)	(11,100)	(13,160)
2,971	2,572	1,895	1,167	454	(282)	(983)	(1,613)	(2,265)
(1,635)	(2,905)	(3,387)	(3,898)	(4,504)	(5,643)	(6,946)	(8,832)	(10,698)
(304)	(830)	(1,211)	(1,662)	(2,032)	(2,350)	(2,602)	(2,764)	(2,925)
(176)	(1,655)	(2,418)	(3,373)	(4,357)	(5,626)	(6,858)	(8,148)	(9,470)
382	596	545	527	530	544	571	707	852
377	(355)	(813)	(1,238)	(1,638)	(2,012)	(2,353)	(2,613)	(2,876)
4,106	(9,365)	(18,615)	(29,237)	(39,933)	(51,748)	(63,805)	(76,221)	(89,317)

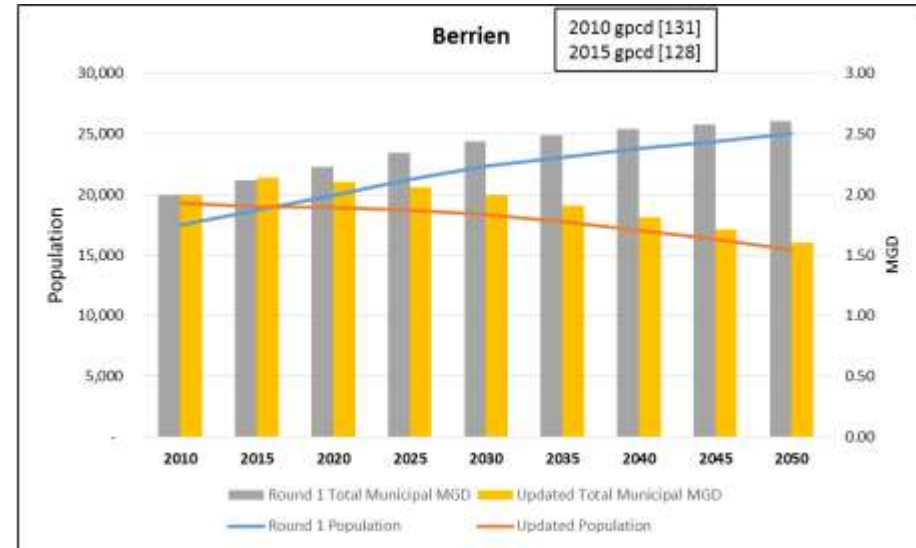
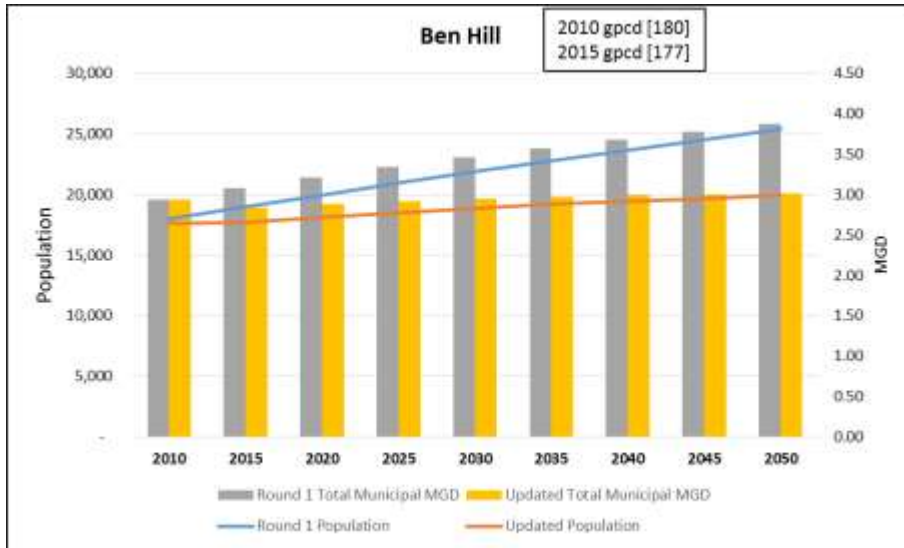
Population & Municipal water demand forecast

SSA - Suwannee - Satilla	Atkinson	112	-1.1%	111	-1.2
	Bacon	170	4.3%	177	7.3
	Ben Hill	180	-2.0%	177	-3.6
	Berrien	131	-2.8%	128	-3.6
	Brantley	93	3.5%	96	3.2
	Brooks	137	6.8%	147	9.3
	Charlton	123	4.4%	128	5.4
	Clinch	148	-5.6%	140	-8.4
	Coffee	153	-9.3%	139	-14.2
	Cook	142	-7.7%	131	-10.9
	Echols	96	0.0%	96	0.0
	Irwin	152	-2.5%	148	-3.8
	Lanier	153	-6.3%	143	-9.7
	Lowndes	133	-2.8%	129	-3.7
	Pierce	127	2.7%	131	3.4
	Tift	156	-1.6%	153	-2.5
	Turner	140	0.0%	140	0.0
Ware	114	-4.7%	109	-5.3	

Population & Municipal water demand forecast



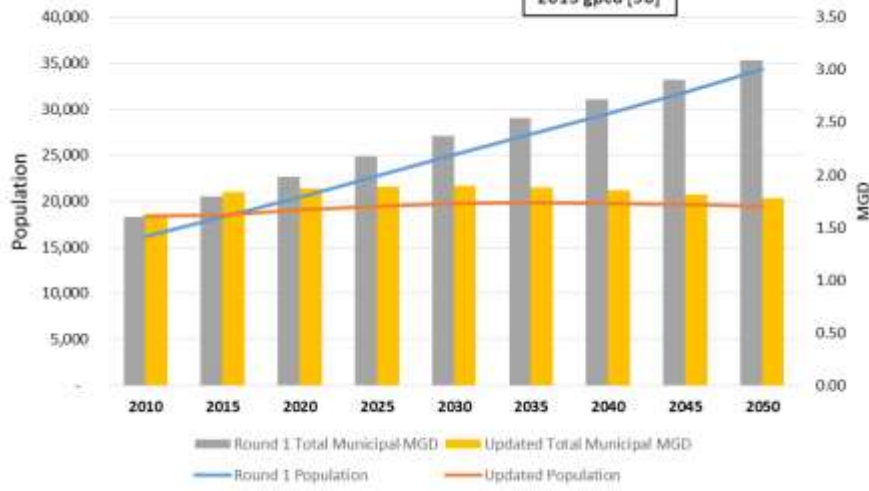
Population & Municipal water demand forecast



Population & Municipal water demand forecast

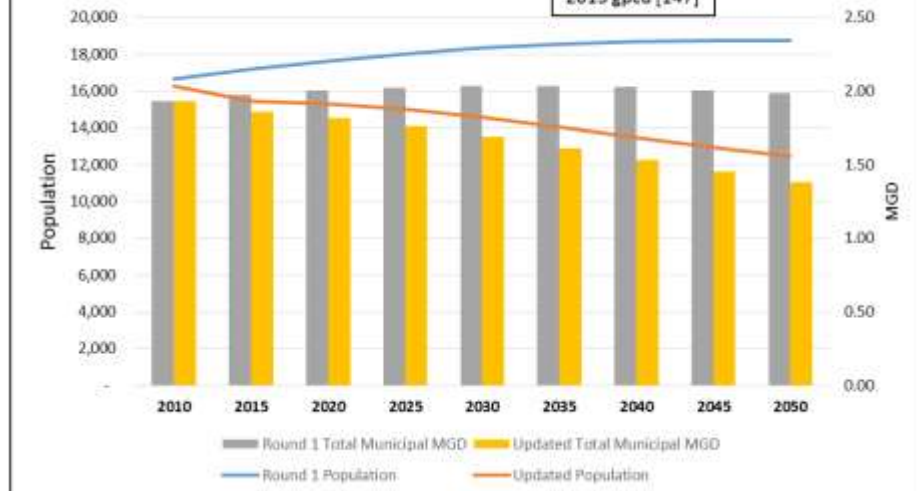
Brantley

2010 gpcd [93]
2015 gpcd [96]

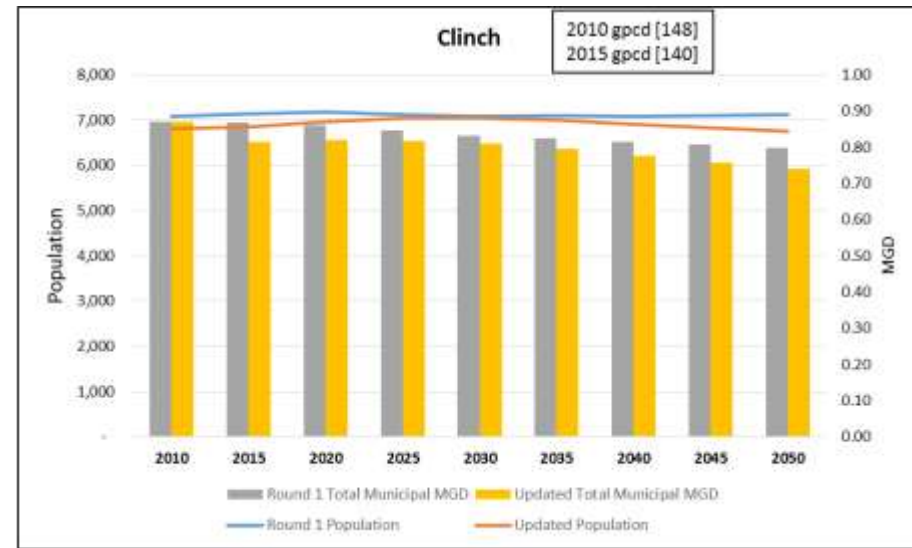
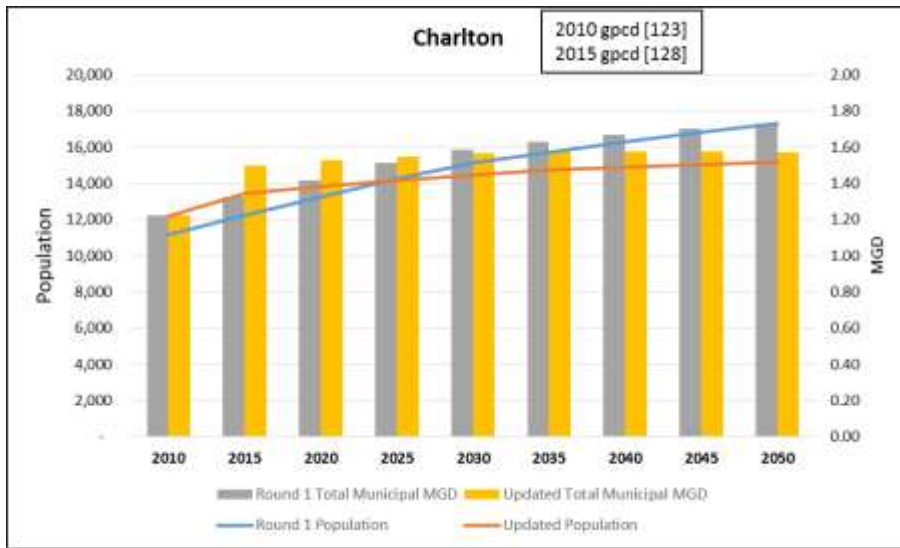


Brooks

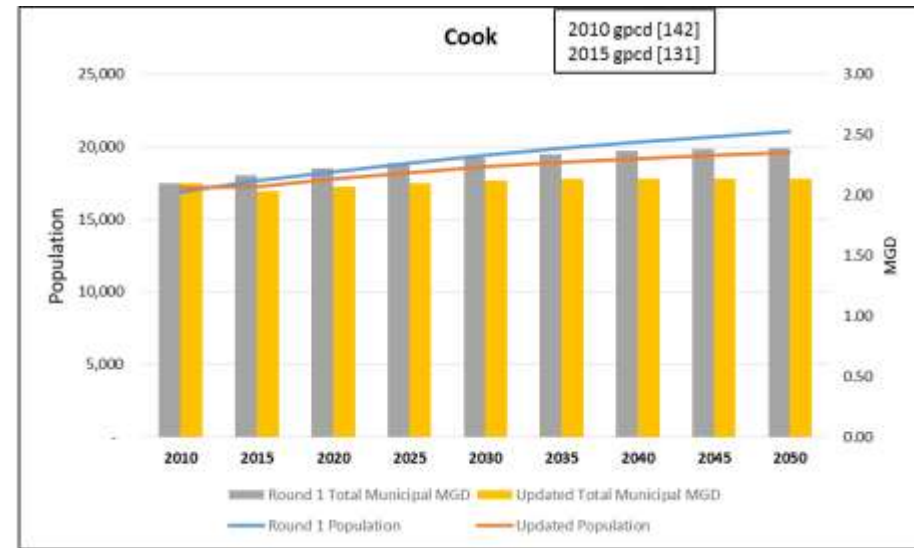
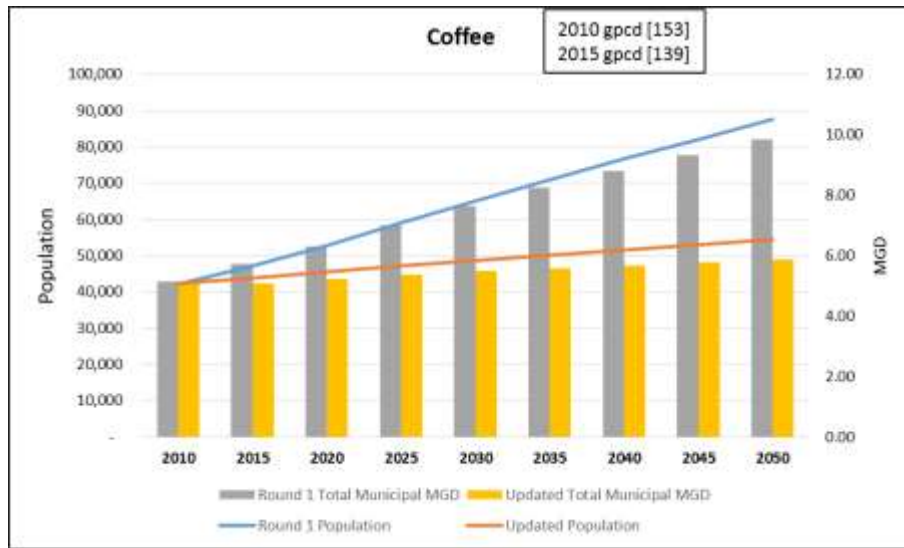
2010 gpcd [137]
2015 gpcd [147]



Population & Municipal water demand forecast



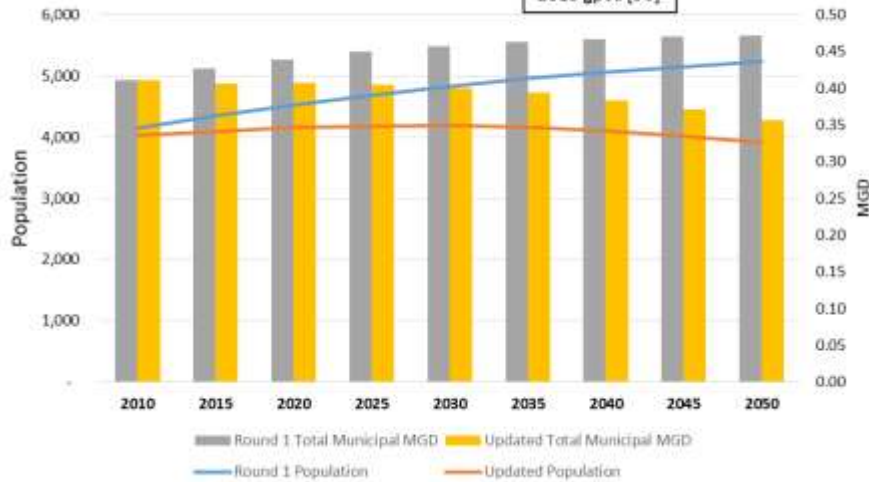
Population & Municipal water demand forecast



Population & Municipal water demand forecast

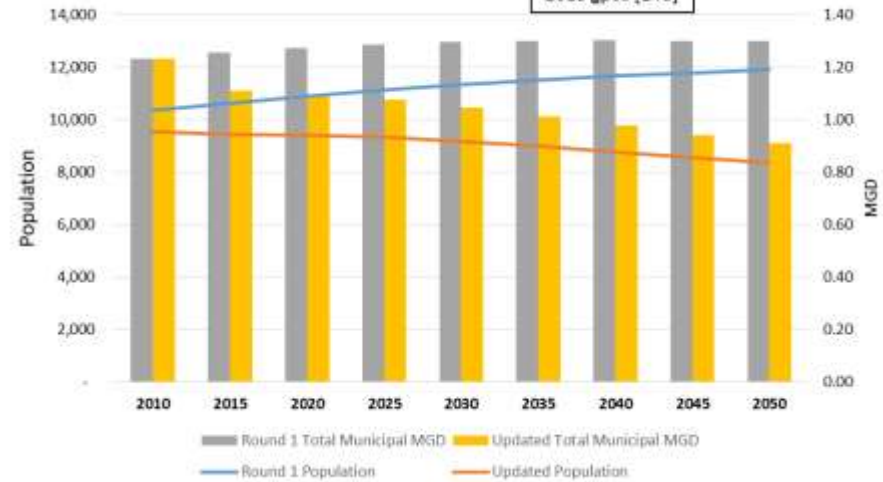
Echols

2010 gpcd [96]
2015 gpcd [96]

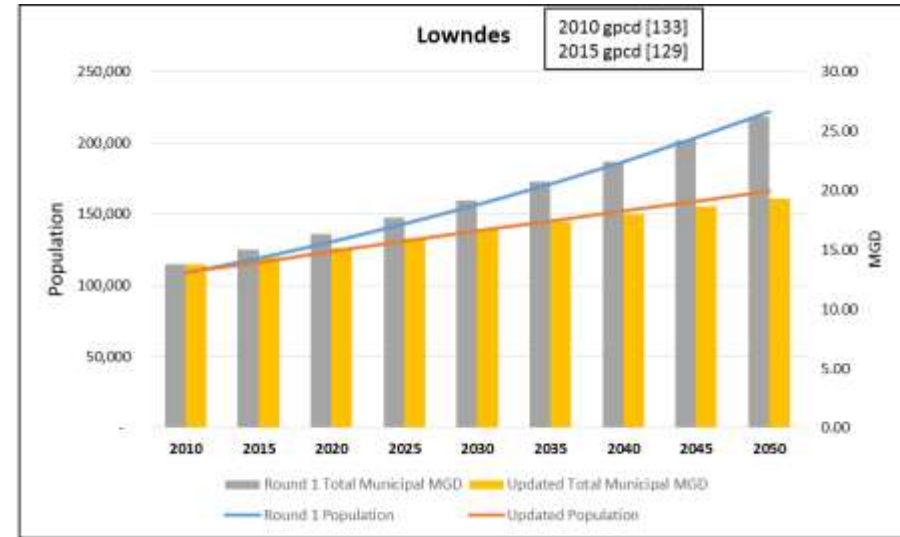
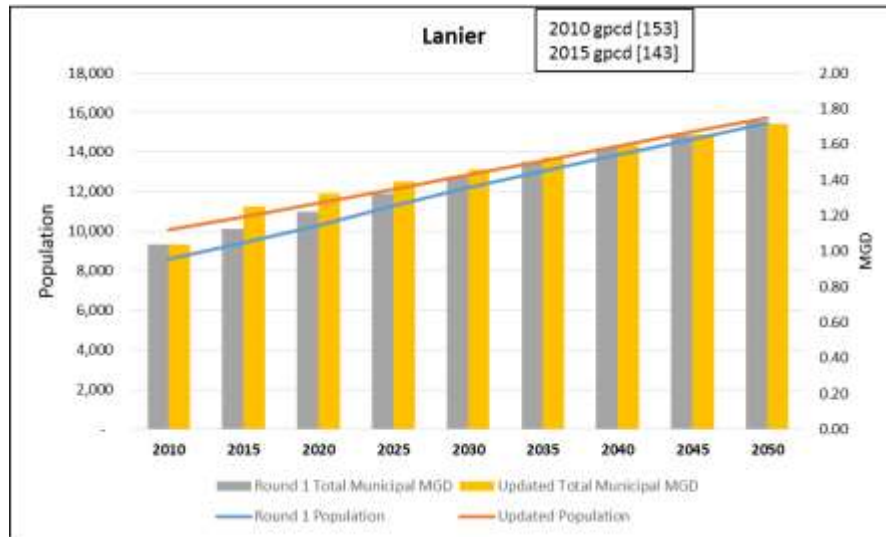


Irwin

2010 gpcd [152]
2015 gpcd [148]



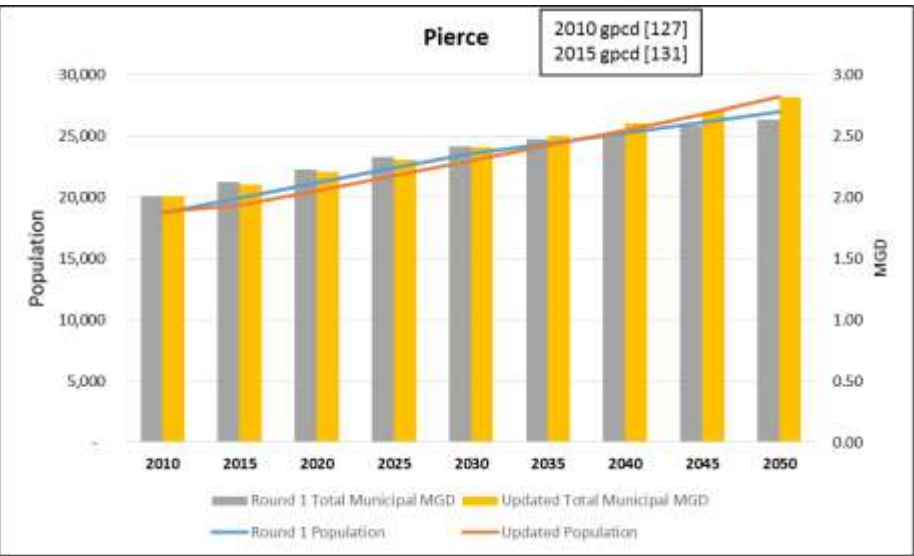
Population & Municipal water demand forecast



Population & Municipal water demand forecast

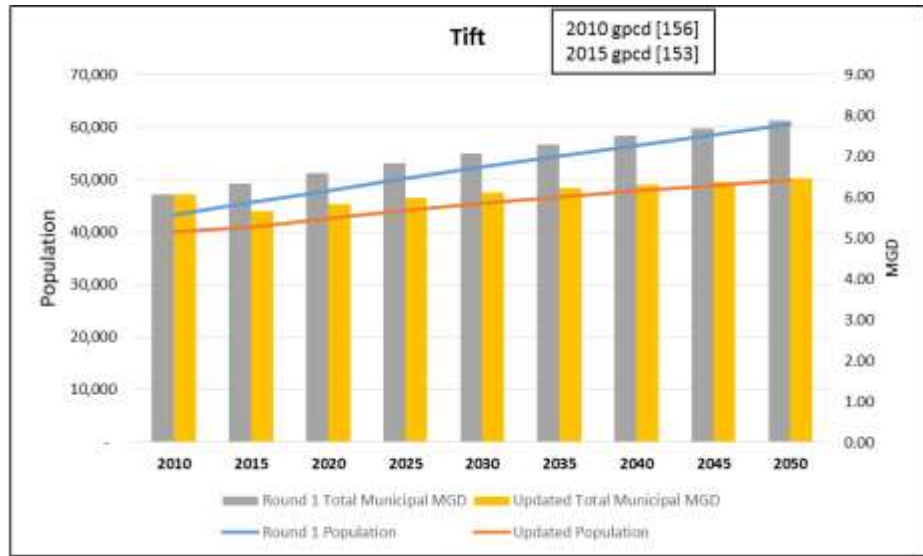
Pierce

2010 gpcd [127]
2015 gpcd [131]

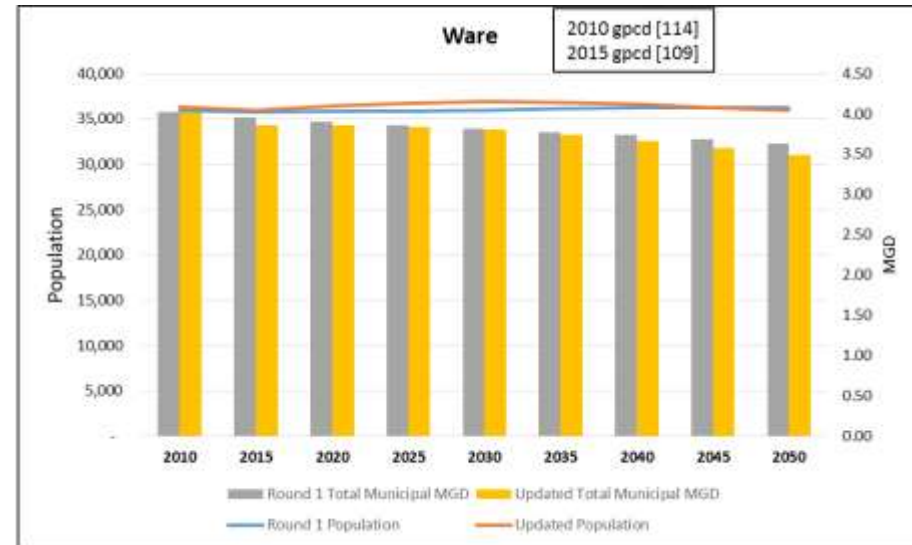
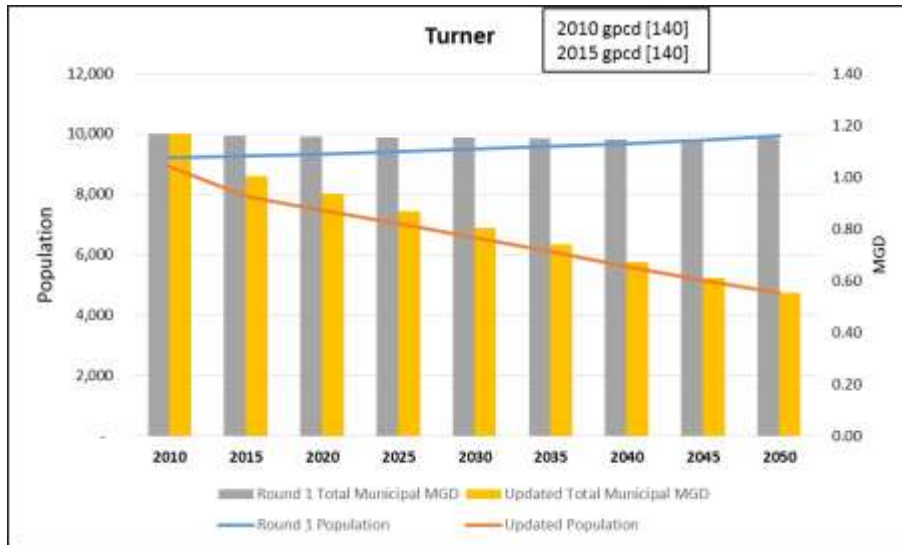


Tift

2010 gpcd [156]
2015 gpcd [153]



Population & Municipal water demand forecast



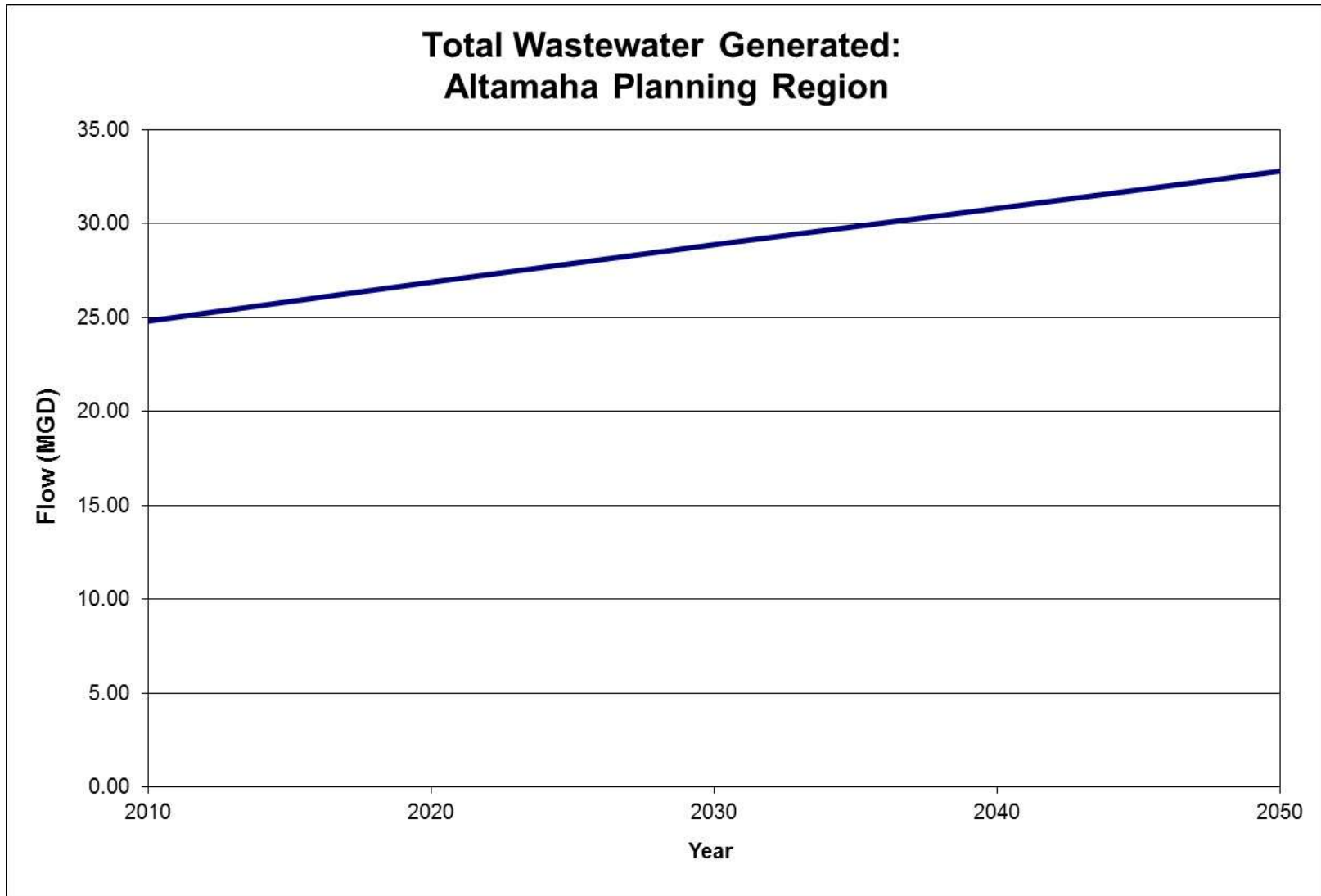
Municipal Wastewater Forecast Update Results

County	2015 Wastewater Flow	% of Total 2015 Wastewater Flow
Atkinson	0.92	1.7%
Bacon	1.26	2.3%
Ben Hill	4.20	7.6%
Berrien	1.28	2.3%
Brantley	1.48	2.7%
Brooks	2.09	3.8%
Charlton	1.59	2.9%
Clinch	0.67	1.2%
Coffee	6.50	11.7%
Cook	3.10	5.6%
Echols	0.33	0.6%
Irwin	1.11	2.0%
Lanier	1.16	2.1%
Lowndes	12.99	23.4%
Pierce	2.08	3.8%
Tift	7.39	13.3%
Turner	1.24	2.2%
Ware	6.02	10.9%
Total	55.41	100%

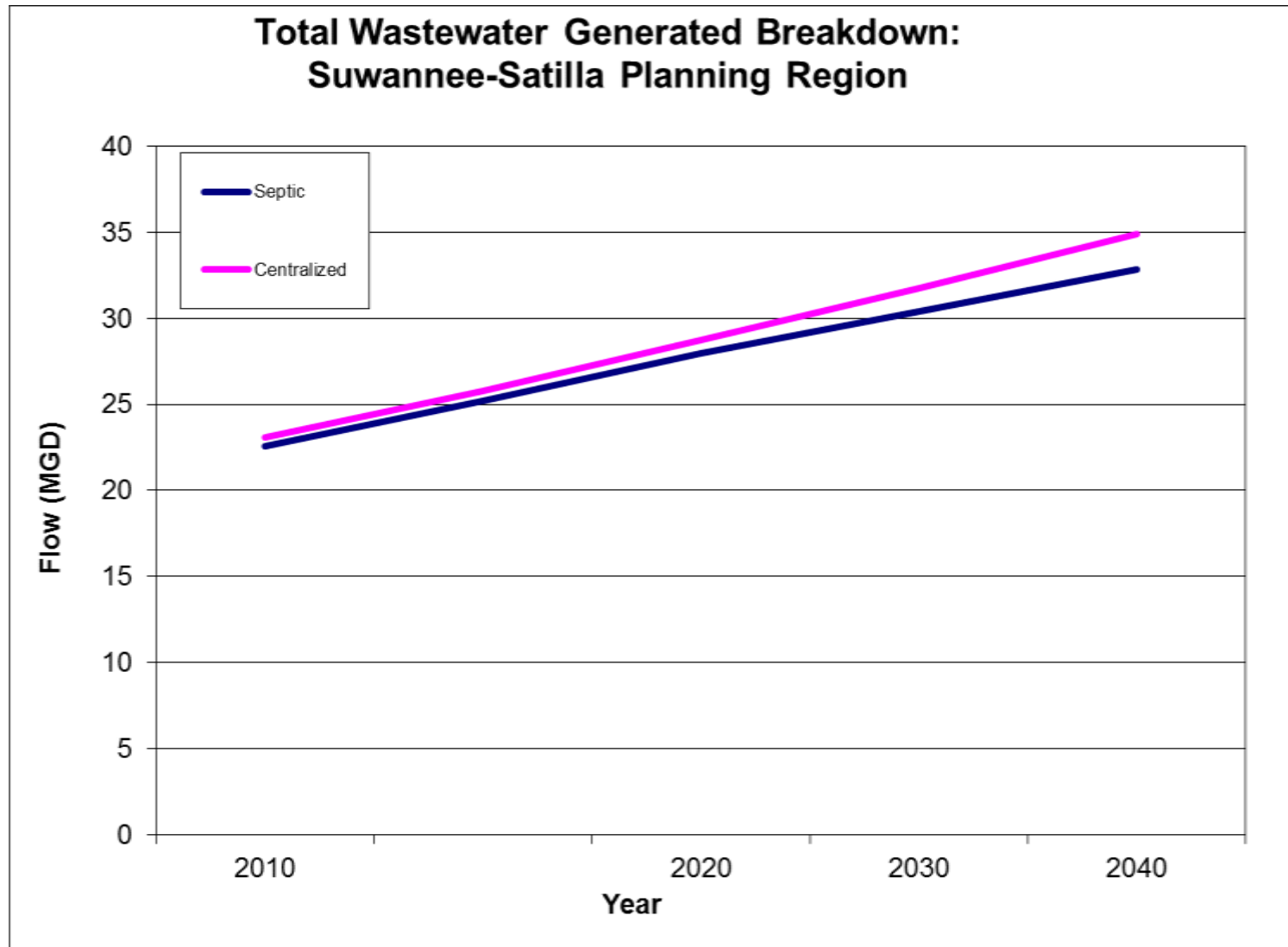
Municipal Wastewater Forecast Round 1 Results

County	2010 Wastewater Flow	% of Total 2010 Wastewater Flow
Atkinson	0.76	1.7%
Bacon	1.21	2.6%
Ben Hill	2.63	5.8%
Berrien	1.90	4.2%
Brantley	1.24	2.7%
Brooks	1.74	3.8%
Charlton	1.08	2.4%
Clinch	0.82	1.8%
Coffee	4.22	9.2%
Cook	1.96	4.3%
Echols	0.34	0.7%
Irwin	1.16	2.6%
Lanier	0.91	2.0%
Lowndes	13.50	29.6%
Pierce	1.82	4.0%
Tift	5.53	12.1%
Turner	1.13	2.5%
Ware	3.69	8.1%
Total	24.82	100%

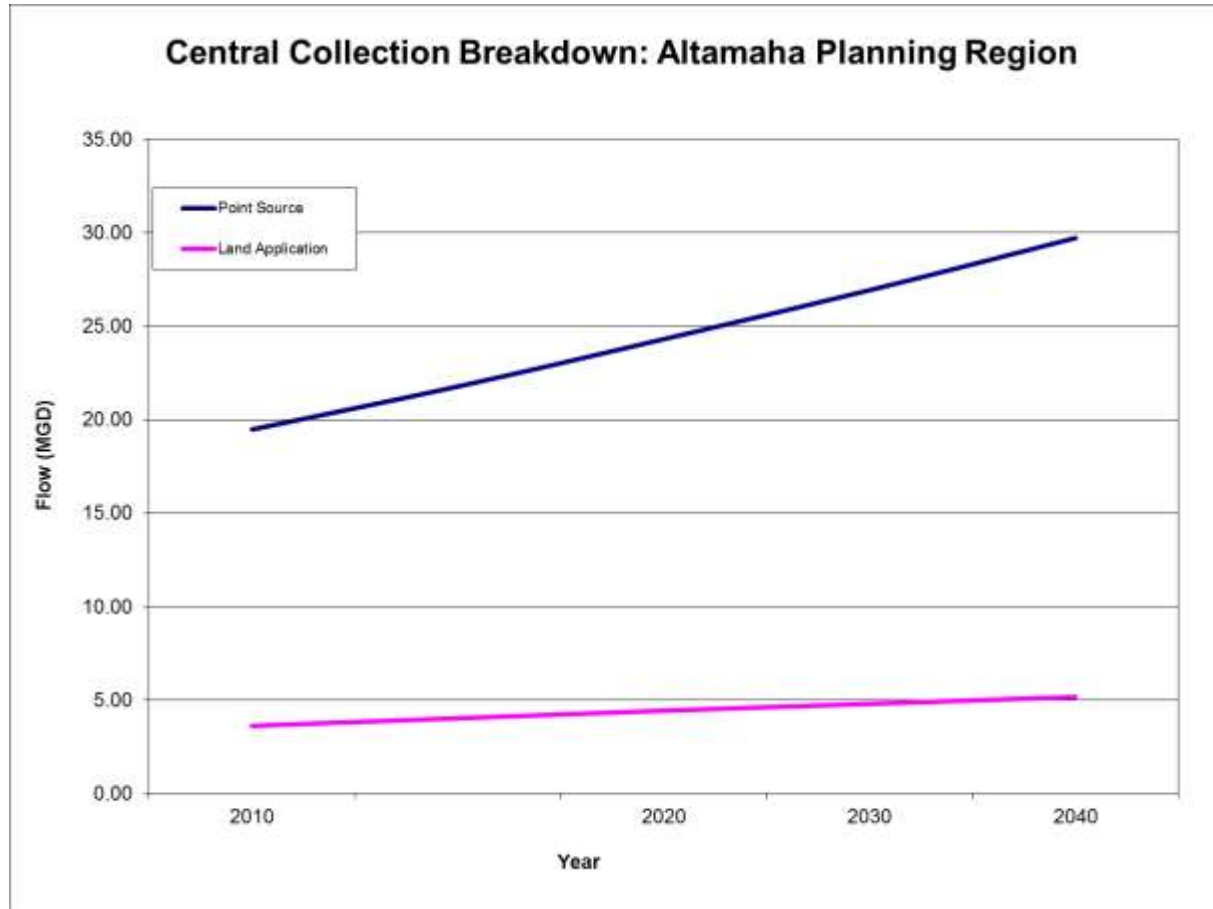
Municipal Wastewater Forecast Round 1 Results



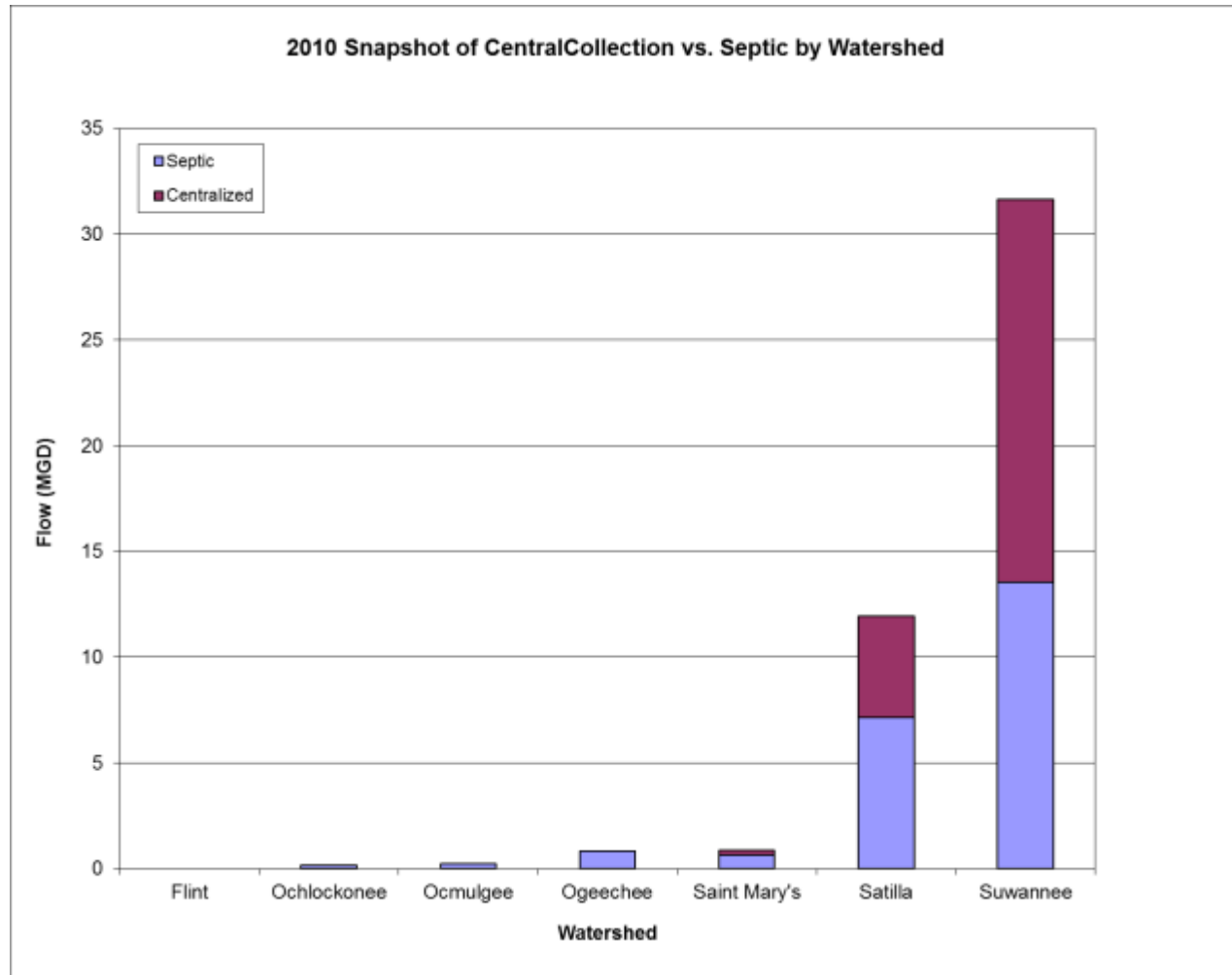
Municipal Wastewater Forecast Round 1 Results



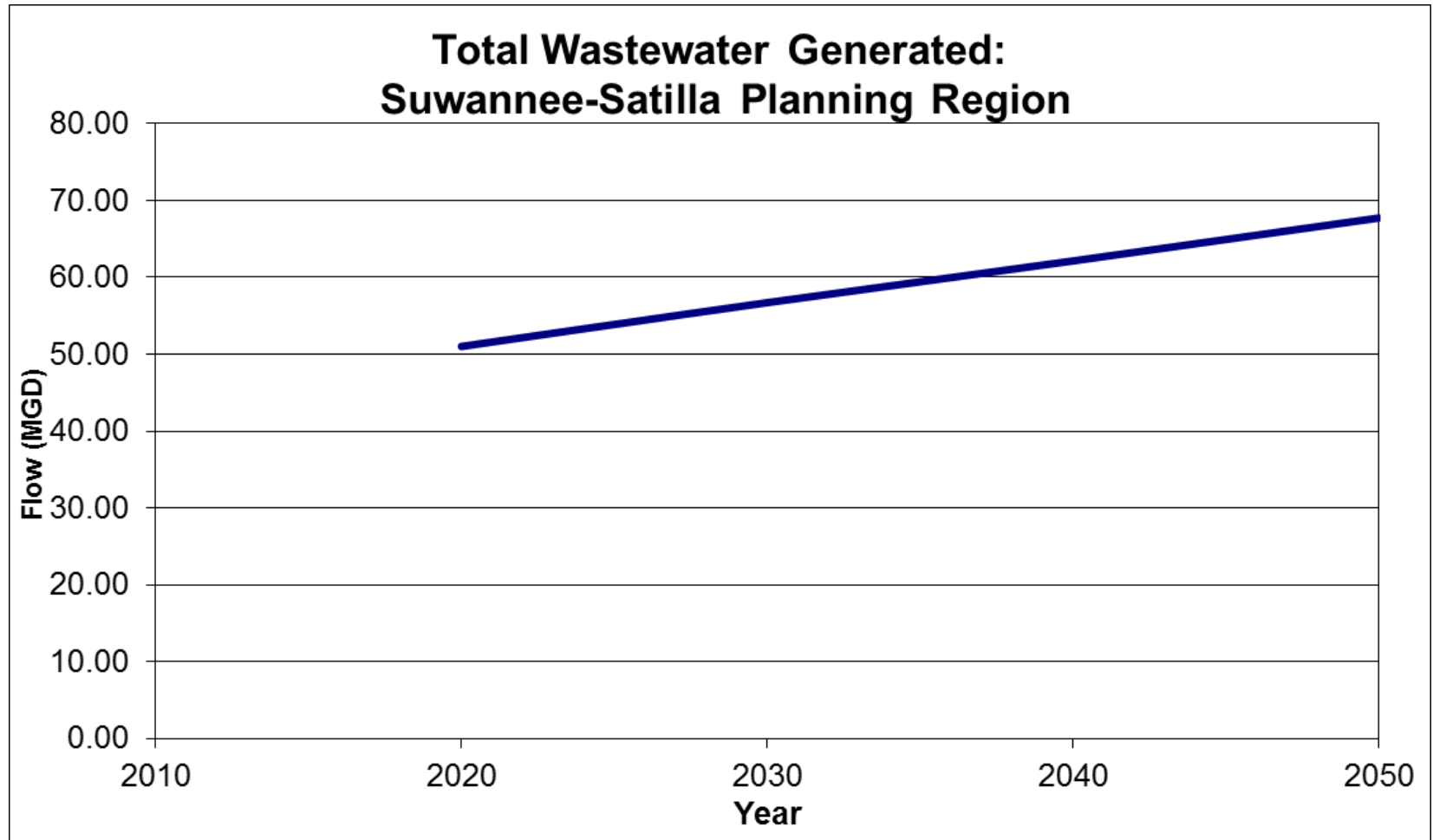
Municipal Wastewater Forecast Round 1 Results



Municipal Wastewater Forecast Round 1 Results

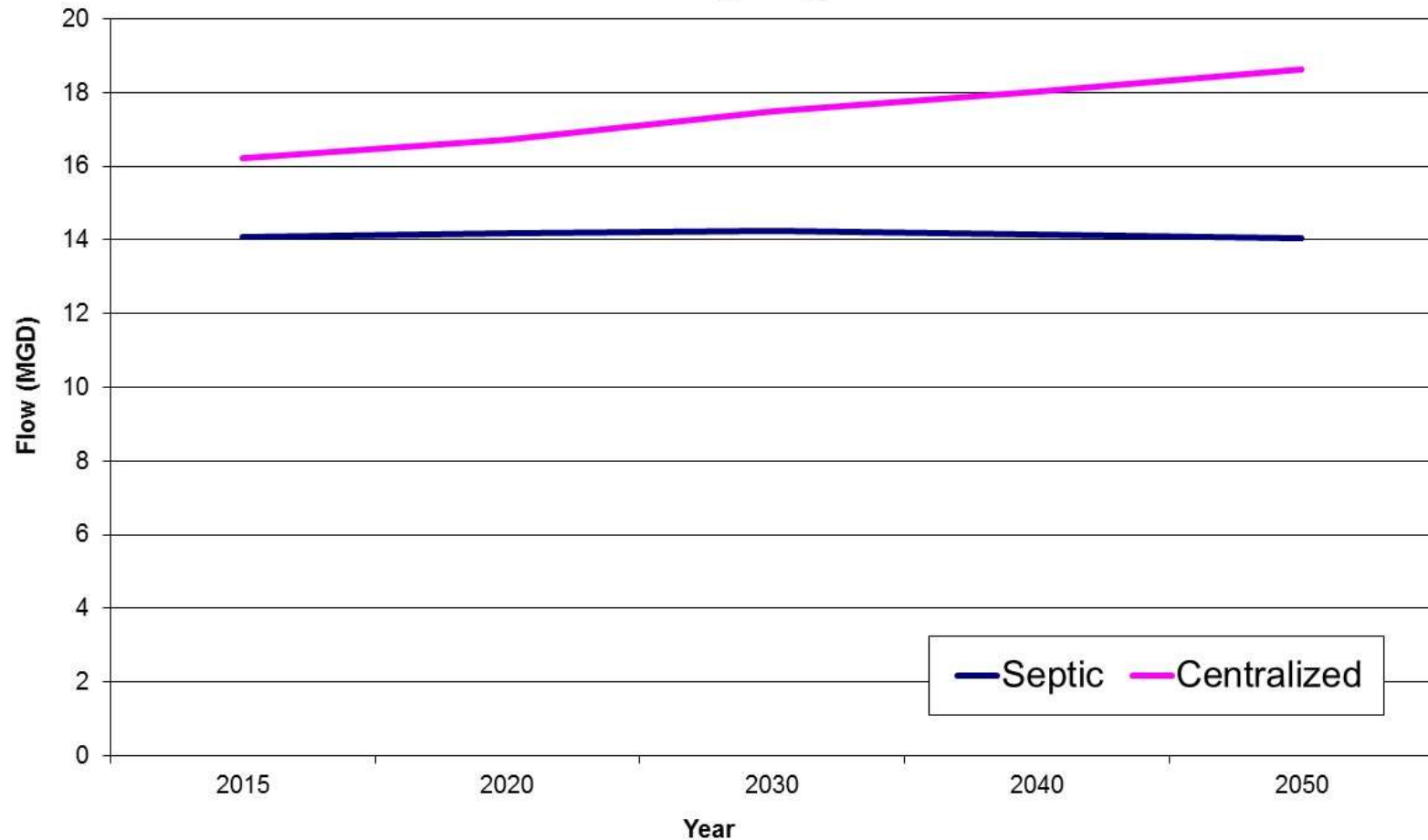


Municipal Wastewater Forecast Update Results

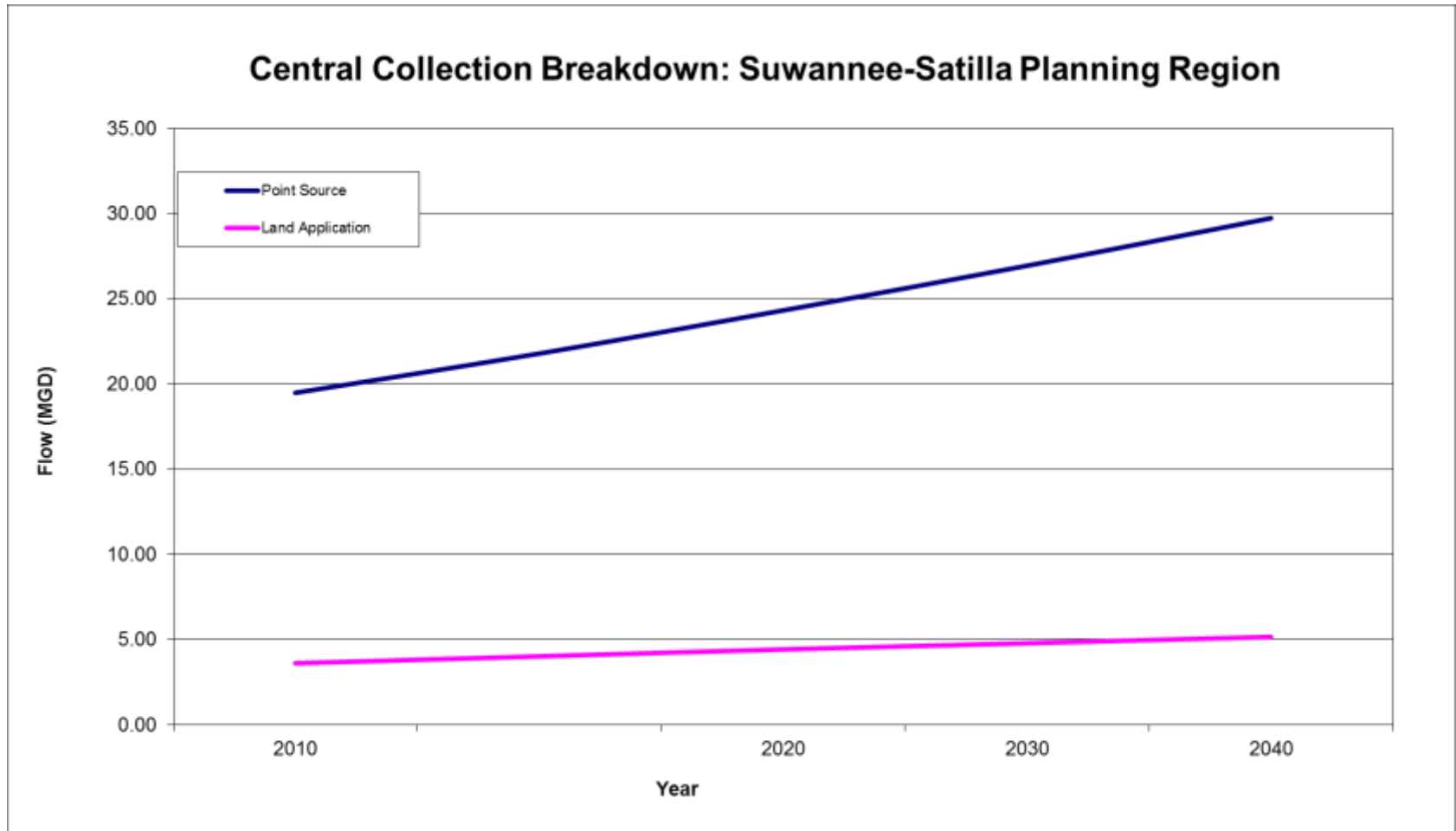


Municipal Wastewater Forecast Update Results

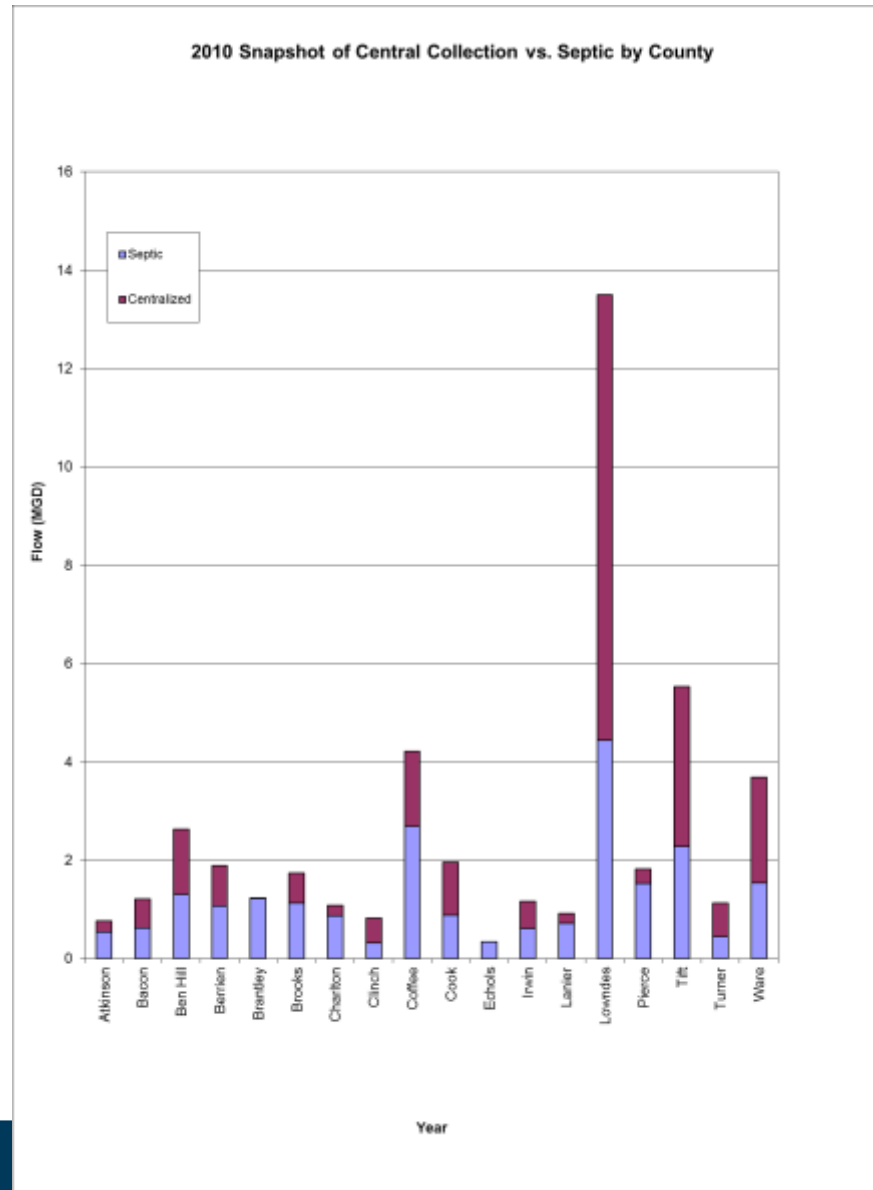
**Total Wastewater Generated Breakdown:
Altamaha Planning Region**



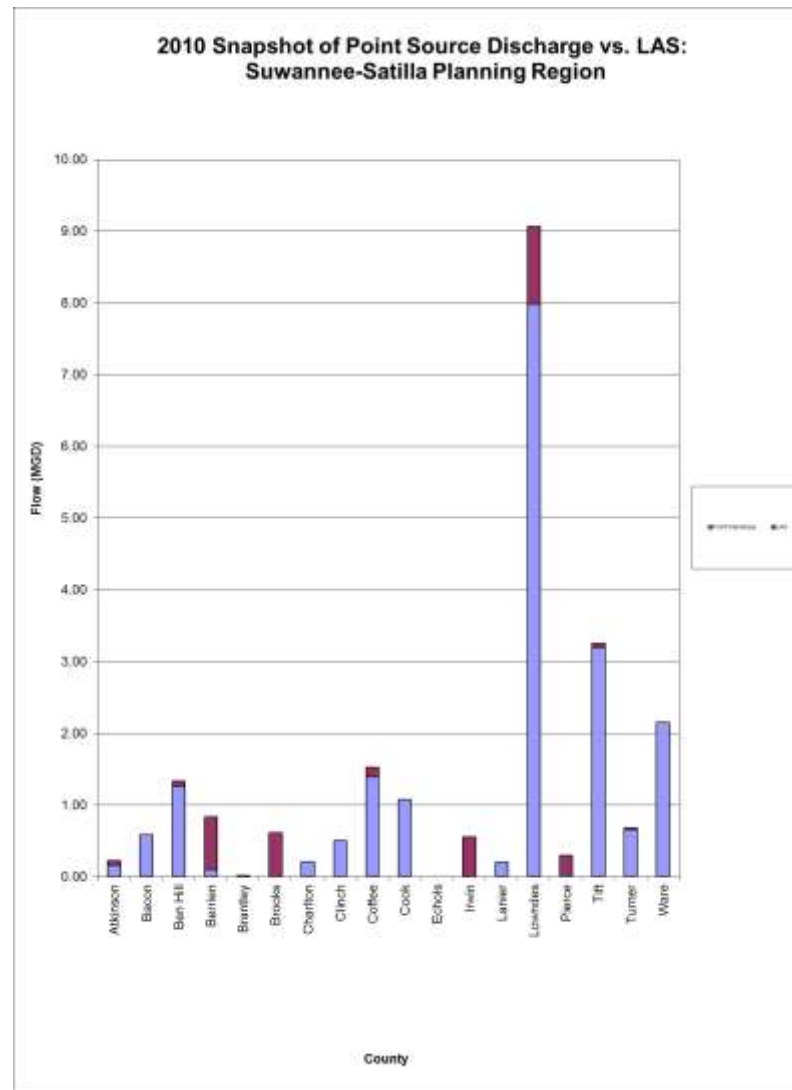
Municipal Wastewater Forecast Update Results



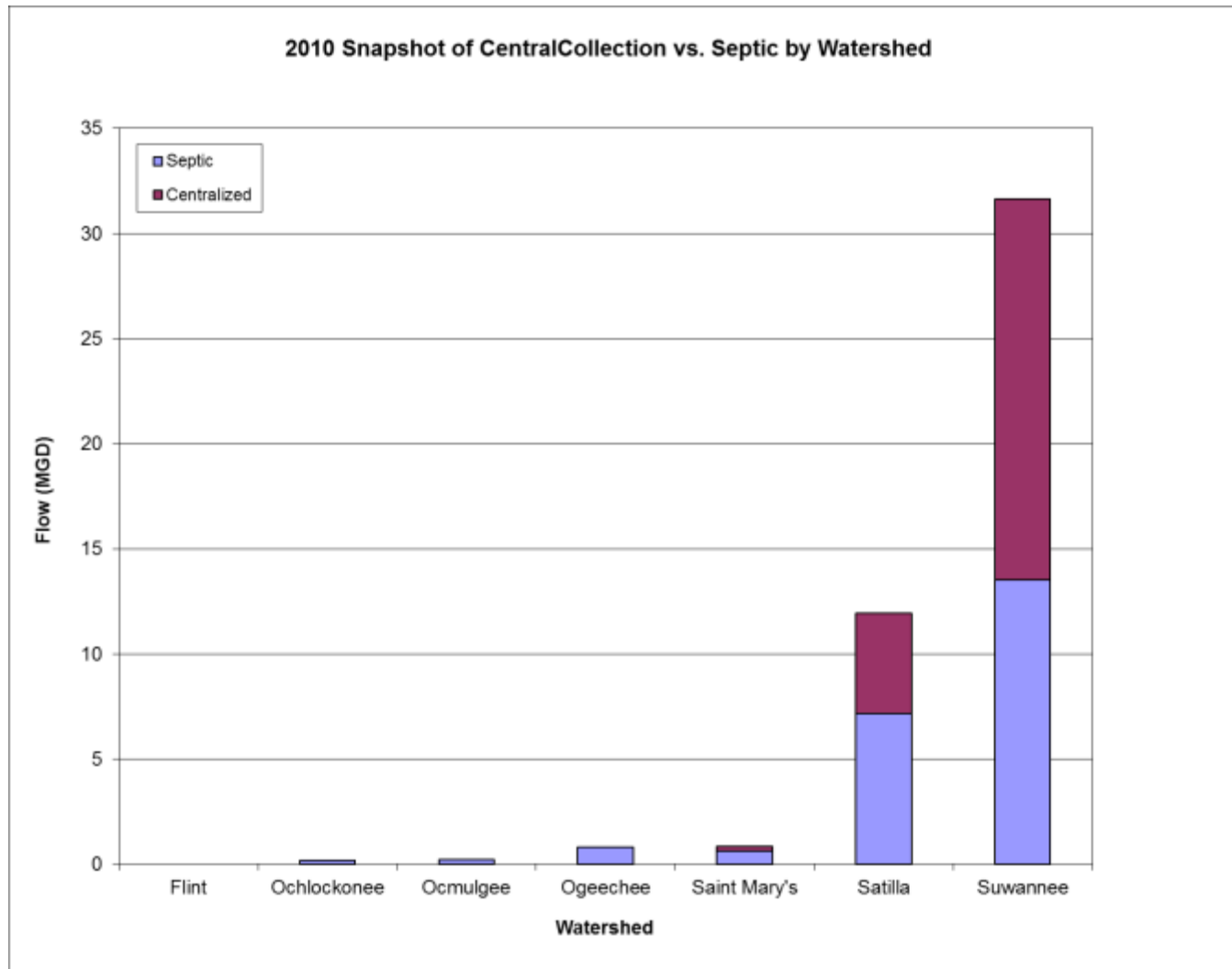
Municipal Wastewater Forecast Update Results



Municipal Wastewater Forecast Update Results



Municipal Wastewater Forecast Update Results



Major Water-Using Industries in Georgia

Industry	SIC Code	NAICS Code	Industry	SIC Code	NAICS Code
Mining	14	212	Petroleum	29	324
Food	20	311 312	Rubber	30	326
Textiles	22	313 314	Stone and Clay	32	327
Apparel	23	315	Primary Metals	33	331
Paper	26	322	Fabricated Metal Products	34	332
Chemicals	28	325	Electric Machinery	36	335