Georgia's
State Water Plan

Upper Oconee Regional Water Planning Council
September 30, 2020

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Upper Oconee Council Meeting

Georgia's State Water Plan

Virtual Council Meeting
Upper Oconee Regional Water Planning Council
Draft Agenda – September 30, 2020

9:45 – 10:00 a.m.	Virtual Registration for Council Members
10:00 – 10:10 a.m.	Roll Call, Welcome, Introductions – *Chairman Davis*
10:10 – 10:15 a.m.	Council Business – *Chairman Davis*
	• *Approve draft meeting minutes from October 24, 2018 Council Meeting*
	• *Approve draft meeting agenda*
10:15 – 10:35 a.m.	GA EPD Updates
	• *OPB Population Projections – Michelle Vincent (Jacobs)*
	• *Status of Forecasting Process – Ania Truszczynski (GA EPD)*
10:35 – 10:50 a.m.	Municipal Forecasting Effort – *Jennifer Welte (GA EPD)*
10:50 – 11:00 a.m.	Seed Grant Updates – *Ania Truszczynski (GA EPD)*
	• *GIS mapping of water delivery system for City of Madison (City of Madison, 2019)*
	• *Flow-dependent benefits and values in Upper Oconee Region (Albany State, 2020)*
	• *Upcoming Seed Grants: Schedule and Possible Projects*
11:00 - 11:15 a.m.	Seed Grant Update - *Dr. Nandita Gaur (UGA)*
	• *Septic system GIS mapping supporting Upper Oconee plan implementation (2020)*
11:15 - 11:25 a.m.	Metro North Georgia Water Planning District Updates - *Danny Johnson (MNGWPD)*
11:25 - 11:30 a.m.	Public Comments / Wrap Up

- Welcome and Introductions
- Approve Meeting Summary from Oct. 24, 2018
- Approve Today's Draft Agenda

Georgia

Upper Oconee Council Meeting

Population Projections and Forecasting Update

- **Population Projections**
  - Michelle Vincent, Jacobs
- **Status of Forecasting Process**
  - Ania Truszczynski, EPD

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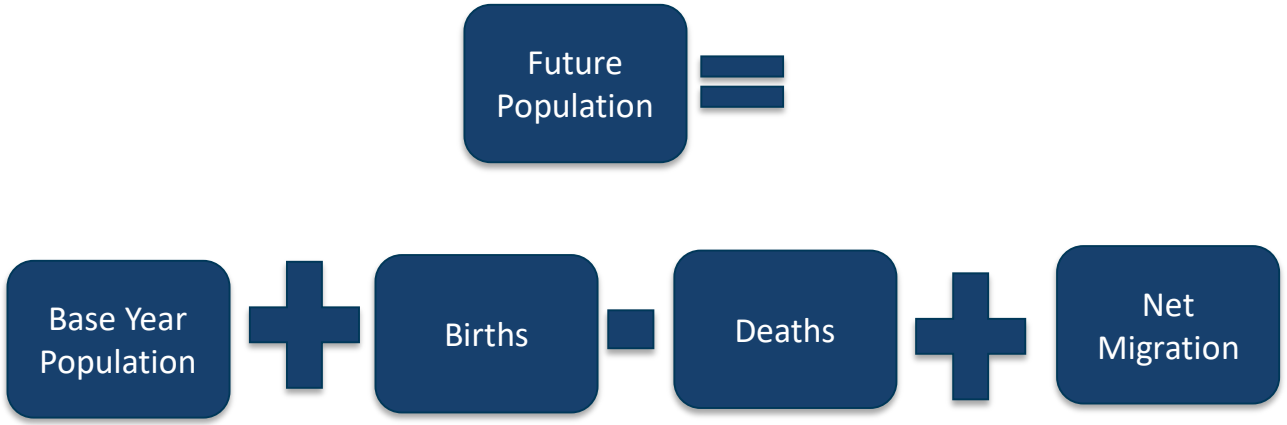
Population Projections

Updated Population Projections

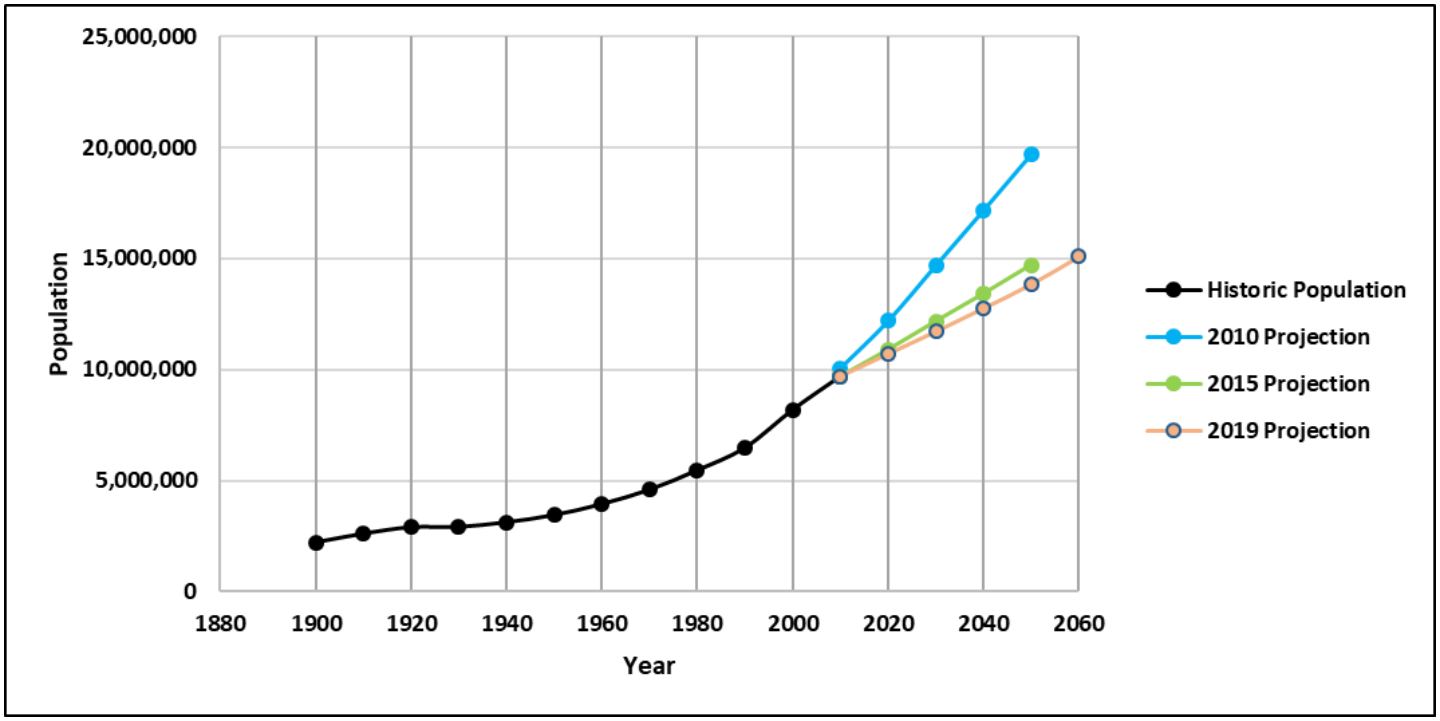
- State and County population projections are prepared by the Governor's Office of Planning and Budget (OPB) https://opb.georgia.gov/
- Used consistently by all state agencies for multiple purposes
- Updated population projections will be used in the Plan review and revision process
- Population is dynamic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

Basic Approach to Population Projections (The Cohort-Component Method)

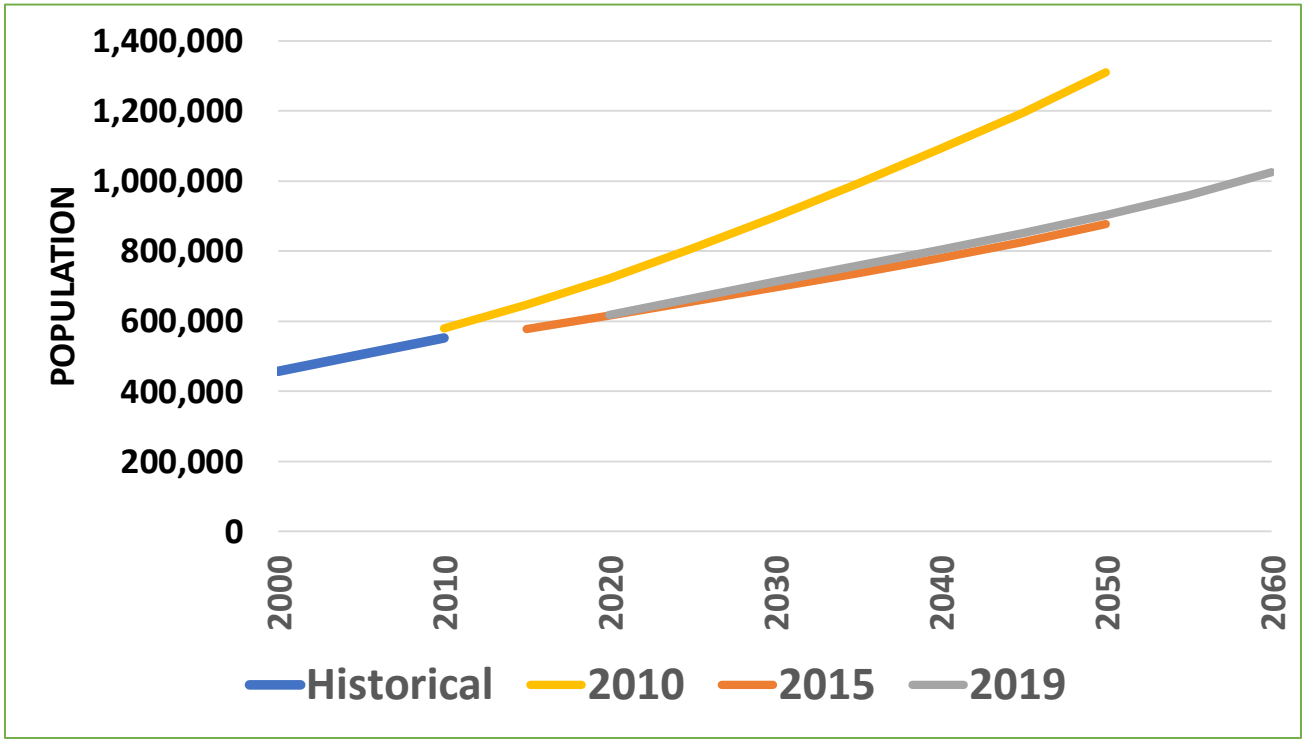


- Fertility and death rates updated using 2013 – 2017 county-level data by Carl Vinson Institute
- Migration rates updated using:
  - U.S. Census Bureau's annual population estimates and components of change
  - Data from the U.S. Census Bureau's 2006-2010 American Community Survey

Population Growth Projections - Statewide



Regional Population Growth – Upper Oconee



October 2019 Series: County Residential Population Projections 2018 - 2063						
	2018	2020	2030	2040	2050	2060
Georgia (Statewide)	9,873,843	10,216,181	11,579,145	12,495,205	13,284,995	14,081,840

October 2019 Series: County Residential Population Projections 2018 - 2063						
	2018	2020	2030	2040	2050	2060
Baldwin County	44,564	44,428	43,637	41,221	38,125	35,806
Barrow County	80,313	86,383	116,916	149,706	189,385	239,941
Clarke County	126,907	129,779	146,104	158,840	168,872	181,071
Greene County	17,610	18,717	22,546	24,505	27,014	30,982
Hancock County	8,317	8,193	7,637	7,004	6,557	6,482
Jackson County	69,962	74,700	95,493	115,088	136,627	160,808
Laurens County	47,325	47,296	47,405	46,964	45,989	45,193
Morgan County	18,855	19,138	20,757	22,438	24,206	26,328
Oconee County	39,272	41,737	52,926	63,566	75,060	87,460
Putnam County	21,809	21,885	22,308	22,341	22,478	23,209
Walton County	93,503	95,814	109,179	124,621	141,993	162,652
Washington County	20,387	20,302	20,009	19,452	18,595	18,066
Wilkinson County	9,044	8,919	8,361	7,791	7,095	6,665
Upper Oconee Totals:	**597,868**	**617,291**	**713,278**	**803,537**	**901,996**	**1,024,663**

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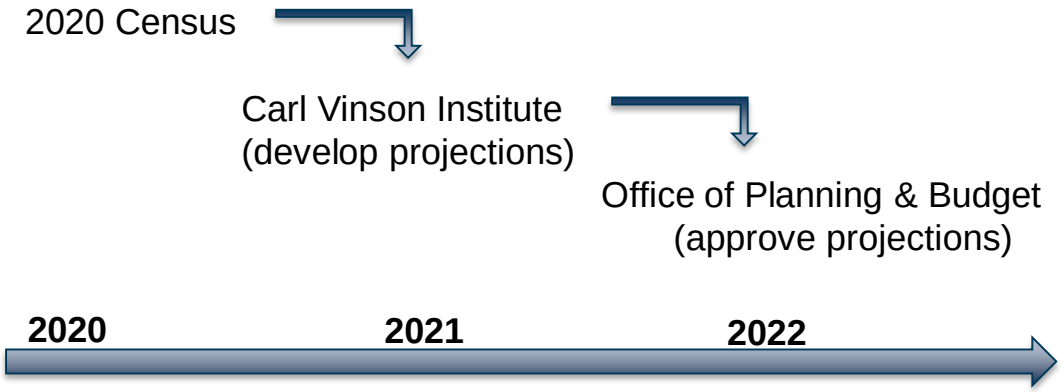
Incorporating the 2020 Census

Data from the 2020 Census will be available in late 2021 or 2022; population projections based on 2020 Census data will be incorporated into 2026 Regional Plan update.



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Status of Forecasting Process

Water Demand Forecasting

- 4 Sectors of Water Demand Forecasts
  - Municipal
  - Industrial
  - Energy
  - Agricultural → Albany State/UGA; to be completed by March 2021

  Municipal, Industrial, Energy: Stakeholder Groups Convened; Forecasts completed by Dec. 2020
- Water Demand Forecasts will extend out to 2060

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Status of Municipal Sector Forecast

Municipal Water Demand Forecasting

- Municipal Forecasting Stakeholder Group
  - Includes one representative from each Council & the Metro Water District (Hunter Bicknell represents Upper Oconee Council)
  - Stakeholder Meetings held on April 16 and June 3
    - Reviewed methodology and initial data collection
    - Reviewed draft forecast results
  - Next meeting to be held this fall (date TBD)
- Forecast being prepared by Black & Veatch team
- Information from Industrial forecasting efforts will inform this forecast (municipally-supplied industries)

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Status of Industrial Sector Forecast

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Introductory Kickoff Meeting held June 3, 2020

Participating Industrial Stakeholders:

- Industry Trade Groups:
  - Georgia Poultry Federation
  - Georgia Mining Association
  - Georgia Paper and Forest Products Association
  - Georgia Association of Manufacturers
  - Georgia Chemistry Council
- Governor's Office of Planning and Budget
- Georgia Department of Economic Development
- Georgia Tech Research Institute
- Representatives from a cross-section of industries, including:
  - International Paper
  - Mohawk Industries
  - Gulfstream
  - BASF
  - KIA Motors
  - Rayonier Performance Fibers
  - Packaging Corp. of America

Industrial Water Demand Forecasting

- Industrial Forecasting Stakeholder Group
  - Initial stakeholder meeting held on June 3
  - Developed subgroups by major sectors to further inform data and methodology:
    - Poultry & Food Processing
    - Mining
    - Paper and Forest Products
    - Manufacturing
- Expected completion of draft forecast by October

Industrial Water Demand Forecast Coordination

Coordination with Municipal Water Demand Forecast

- Sharing information with municipal forecast team where municipal water use is identified and greater than 0.2 MGD

Georgia Department of Economic Development (GDED)

- Coordination with GDED on industry trends and available data to inform the forecast
- If specific information about the locations/amounts of water needs from new industries is available, it will be incorporated in the forecast

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Status of Energy Sector Forecast

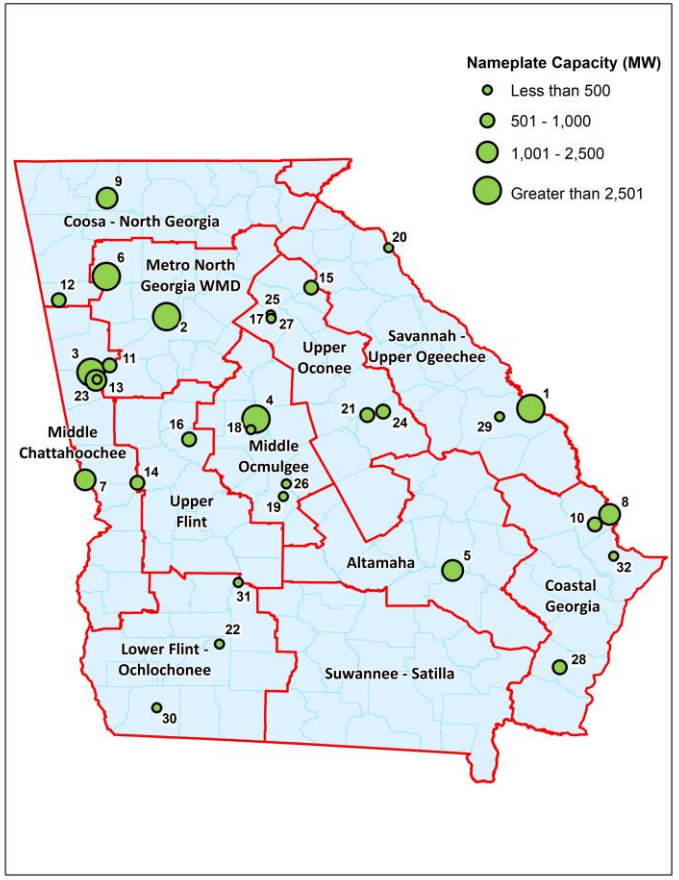
Energy Water Demand Forecasting Stakeholder Group

Participating Representatives from:

- Georgia Power / Southern Company
- Municipal Electric Authority of Georgia (MEAG)
- Oglethorpe Power Corporation
- Dalton Utilities
- Georgia Public Service Commission
- Georgia Environmental Finance Authority

Purpose of Energy Stakeholder Group

- Provide input on the methodology used to estimate future water demand for thermoelectric power generation
- Review and provide input on:
  - Available data
  - Updated list of thermoelectric facilities
  - Method for statewide energy generation estimate
  - Estimation of water withdrawal and consumption forecast by facility



Where We Are in the Process

EPD & Planning Contractor

- ✔ Refined estimate of statewide need for energy
- ✔ Estimated future generation by configuration type to meet future need
- ✔ Estimated need for additional capacity if necessary
- ✔ Estimated future withdrawal & consumption by location

Stakeholders

- ✔ Provided feedback on materials presented at April 29th kickoff meeting
- ✔ Reviewed draft forecast technical memorandum (TM) from 7/28/20
- ✔ Participated in follow-up meeting on August 14th to discuss draft forecast and provided feedback
- CDM Smith/EPD addressing stakeholder comments to finalize forecast TM

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Status of Agricultural Sector Forecast

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Water Demand Forecasting – Agricultural

- Georgia Water Planning & Policy Center at Albany State University will be updating this sector forecast
- Forecast includes irrigated land and other agricultural uses
  - Nurseries, animal operations, golf course irrigation
- Estimates of irrigation water use informed by estimates of wetted acreage and irrigation use
  - Wetted acreage informed by aerial surveys and site visits
  - Irrigation use informed by meters and crop types
- Forecasts informed by economic models that look at crop projections (UGA conducts this modeling)

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Municipal Water Demand Forecast

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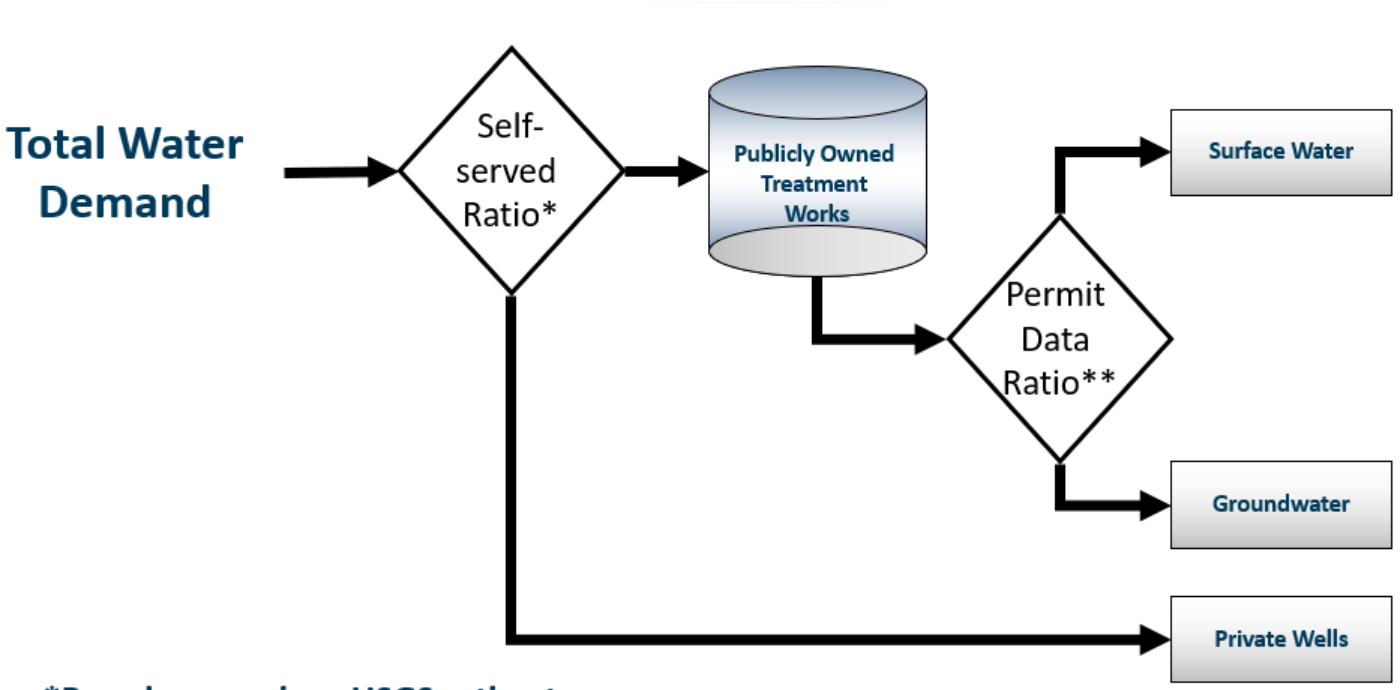
Municipal Water Demands



*Based on previous USGS estimates

**Based on existing GA EPD permit data

Municipal Water Demands – Self Supplied

- County % population self-supplied water (groundwater wells)

- The % self supplied will remain constant into the future, unless County-specific information is received.

County	2017 Plan Percent Population Self Supplied	Self Supplied Per Capita	Updated Percent Population Self Supplied [1]
Baldwin	1%	75	8%
Barrow	47%	75	41%
Clarke	0%	75	1%
Greene	24%	75	39%
Hancock	37%	75	9%
Jackson	5%	75	19%
Laurens	47%	75	48%
Morgan	54%	75	57%
Oconee	40%	75	32%
Putnam	40%	75	11%
Walton	46%	75	28%
Washington	46%	75	40%
Wilkinson	30%	75	28%

[1] Ratios as shown in the Estimated Use of Water in Georgia for 2015 and Water Use Tends, 1985-2015 (USGS, 2019).

Municipal Water Demands – Public Supply

- Data collection was focused on 2019 average annual water withdrawals (as reported to EPD)
- Current municipal water use in the Upper Oconee region:
  - 2019 Groundwater use: 7.1 mgd
  - 2019 Surface water use: 52.3 mgd
- Forecast public supply (through 2060) is based on updated per capita use estimates and population projections
  - 2060 Forecasted Groundwater use: 13.4 mgd
  - 2060 Forecasted Surface water use: 70.9 mgd

Municipal Water Demands – Per Capita

- Updated per capita demand values based on water audit results
- Forecasting team is reviewing 2019 data and adjusting for large industrial customers

Upper Oconee Per Capita Water Demand (gpcd)

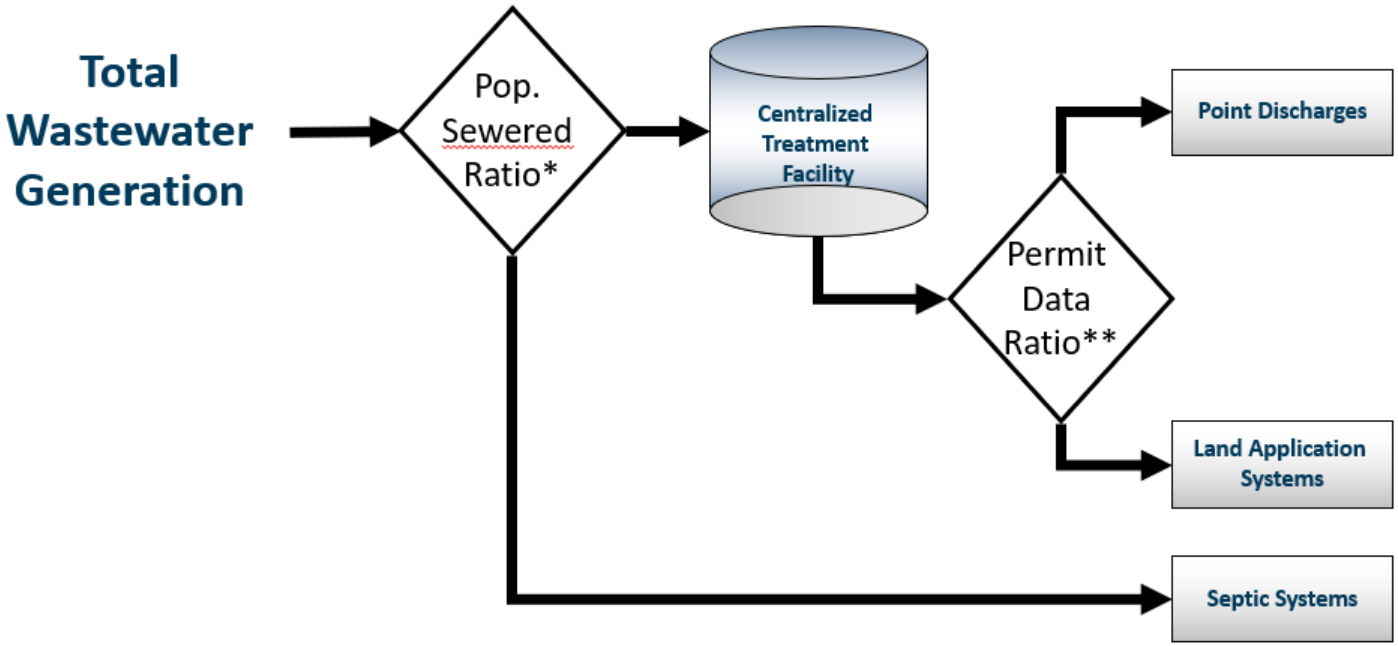
County	2011 Plan Per Capita Demand	2017 Plan Per Capita Demand	Updated Per Capita Demand [1]
Baldwin	140	137	146
Barrow	153	153	103
Clarke	157	167	105
Greene	153	160	160
Hancock	125	120	192
Jackson	111	110	129
Laurens	157	153	166
Morgan	164	163	220
Oconee	142	136	125
Putnam	131	129	142
Walton	138	142	102
Washington	195	191	181
Wilkinson [2]	132	135	138

NOTES:

[1] Weighted average per capita calculated using the available 2015-2018 Water Loss Audits.

[2] Per capita was calculated using the population stated in SDWIS and the recorded water demands.

Municipal Wastewater Demands



*Based on 1990 US Census Bureau data

**Based on existing GA EPD permit data

Municipal Wastewater – Septic

- County % population on septic systems
  - Will be held constant, unless specific input received
- Values shown in unshaded cells are from Georgia Dept. of Public Health data (through 2018)
- Values shown in shaded cells are from the 1990 Census housing characteristics for Georgia (used where DPH data was deemed inappropriate for use by forecasting team)

County	% Septic Users in 2020
Baldwin County	65%
Barrow County	68%
Clarke County	23%
Greene County	65%
Hancock County	82%
Jackson County	74%
Laurens County	53%
Morgan County	67%
Oconee County	87%
Putnam County	72%
Walton County	71%
Washington County	59%
Wilkinson County	76%

Municipal Wastewater – Municipally Treated

- Data collection was focused on 2019 average annual wastewater discharges (as reported to EPD)
- Current municipal wastewater flows in the Upper Oconee region (2019 annual avg.):
  - Point source discharges: 37.4 mgd
  - Land application system (LAS): 2.2 mgd
- Wastewater Forecast (2060), based on population projections
  - 2060 Forecasted point source discharges: 59.1 mgd
  - 2060 Forecasted LAS discharges: 3.7 mgd

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Seed Grant Updates

GIS mapping of water delivery system for City of Madison

- City of Madison, 2019: The purpose of this project is to revise and replace outdated data with current GIS mapping of water delivery and wastewater systems.
- Meets two BMPs supported by the 2017 Upper Oconee Regional Water Plan.
  - WS-7: Continue mapping of water system assets
  - WW-5: Create a sewer system map.
- Database structure has been developed; field data collection in process this quarter

Flow-dependent benefits and values in Upper Oconee Region

- Albany State, 2020: The purpose of this project is to develop basin-specific information on water uses important to stakeholders.
- Meets two goals of the 2017 Upper Oconee Regional Water Plan.
  - ES-2: Ensure that management practices balance economic development, recreation, and environmental interests.
  - ES-7: Identify and plan measures to ensure sustainable, adequate water supply to meet current and predicted long-term population, environmental, and economic needs.
- Compiling scientific and technical studies and building stakeholder contact list. Contact Dr. Cowie gcowie@h2opolicycenter.org if you would like to participate or recommend a stakeholder.
- First set of stakeholder meetings in February/March 2021.

Upcoming Regional Water Plan Seed Grant Fiscal Year 2021 Grant Period

- Announcement released in July 2020
- Eligible recipients of Seed Grant funds can include local, regional and State government, regional commissions, resource conservation and development councils, local schools, State college and universities, and State agencies
- Must attend a pre-application meeting by **October 16, 2020**
- Applications must be postmarked by **October 31, 2020**.

https://epd.georgia.gov/outreach/grants/regional-water-plan-seed-grant-funds

Septic system GIS mapping supporting Upper Oconee plan implementation

Presented by: Nandita Gaur, Ph.D.

Assistant Professor, Crop and Soil Sciences

University of Georgia

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SEPTIC SYSTEM CONTRIBUTION TO WATER QUALITY- How do we understand what we cannot measure?

- **Septic systems**- Significant non-point source of potential pollution of freshwater bodies including groundwater and surface water.
  - *Estimates of failing systems vary from 1-5 % (DPH, 2012; Meile et al., 2010) to over 20% (Pessell and Young, 2011; USEPA, 2002).*

- **Most counties in Georgia lack a digital representation of this data.**

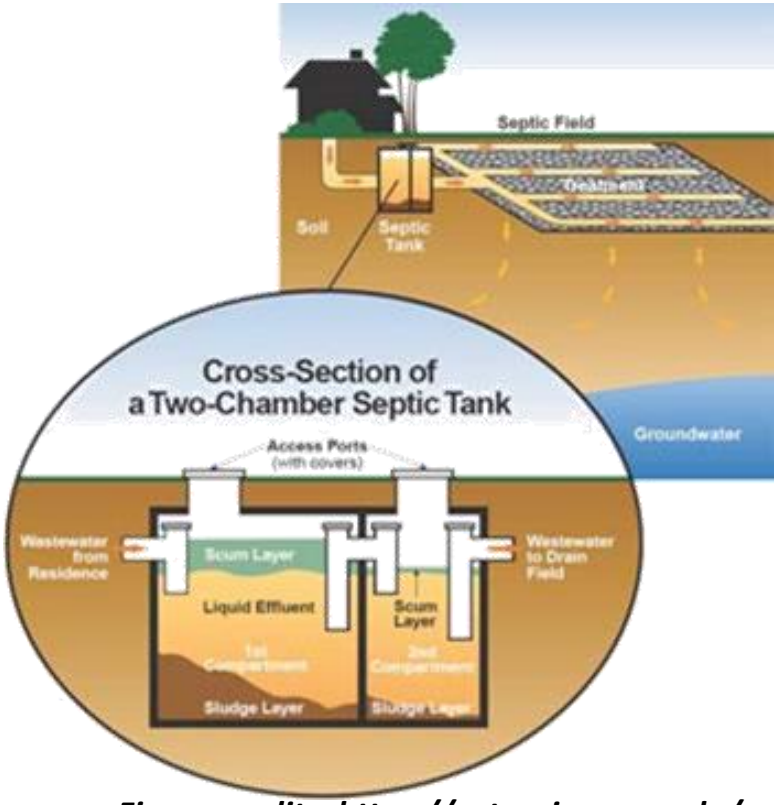

Figure credits: https://extension.usu.edu/

Recommendations in the Upper Oconee Regional Water Plan

Action Needed	Definition of Action
WW-1. Encourage implementation of centralized sewer in developing areas where density warrants	Identify areas that would benefit from being served by a centralized sewer versus septic systems.
WW-4. Develop septic system planning and management policies and guidance	Identify and manage septic systems in environmentally sensitive areas. Create a septic system map

Objectives of the Seed Grant

1. Develop an algorithm for estimating septic system density and age using only existing GIS and remote sensing datasets.
2. Digitize septic inspection permits for select sub-divisions of Jackson County and create a GIS layer.
3. Comprehensive literature review on the various ancillary information required with a GIS layer for septic systems. Involve all the major entities associated with interest in such a database including counties, wastewater experts, metro water district and WelSTROM.

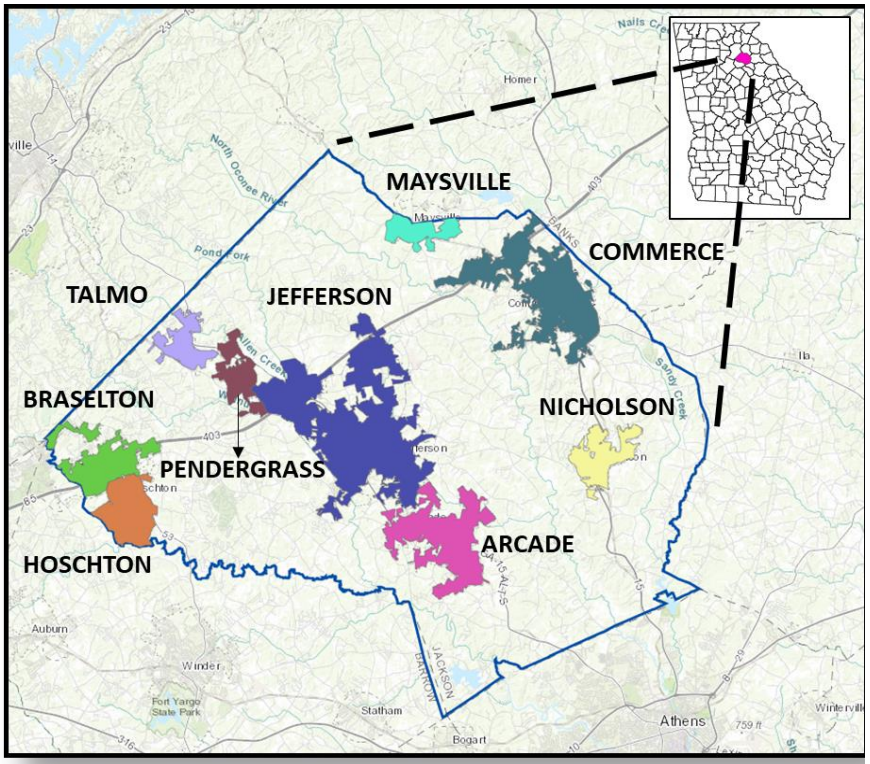

Figure 1, Georgia County Map (inset) and a zoomed in view of Jackson County. Highlight shows Jackson county. The highlighted areas in the figure are the main cities in Jackson County (Study Area)

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Progress so far..

- Formal start date of the project- 05/28/20
- LOGISTICS
  - Hiring of graduate student and undergraduate student workers for the project
  - Laptop and Scanner purchased (Jackson County)
- Scanning work underway at the Jefferson Environmental Health Office.
- Conversations with WelSTROM and Counties initiated.

Deliverables and Updates

- **OBJECTIVE 2:** Digitize septic inspection permits and create a GIS layer for Jackson County.
  - Geotagged septic system records and ArcGIS layer
  - **Updated deliverable:** Entering scanned records into the Digital Health Database to connect directly to WelSTROM

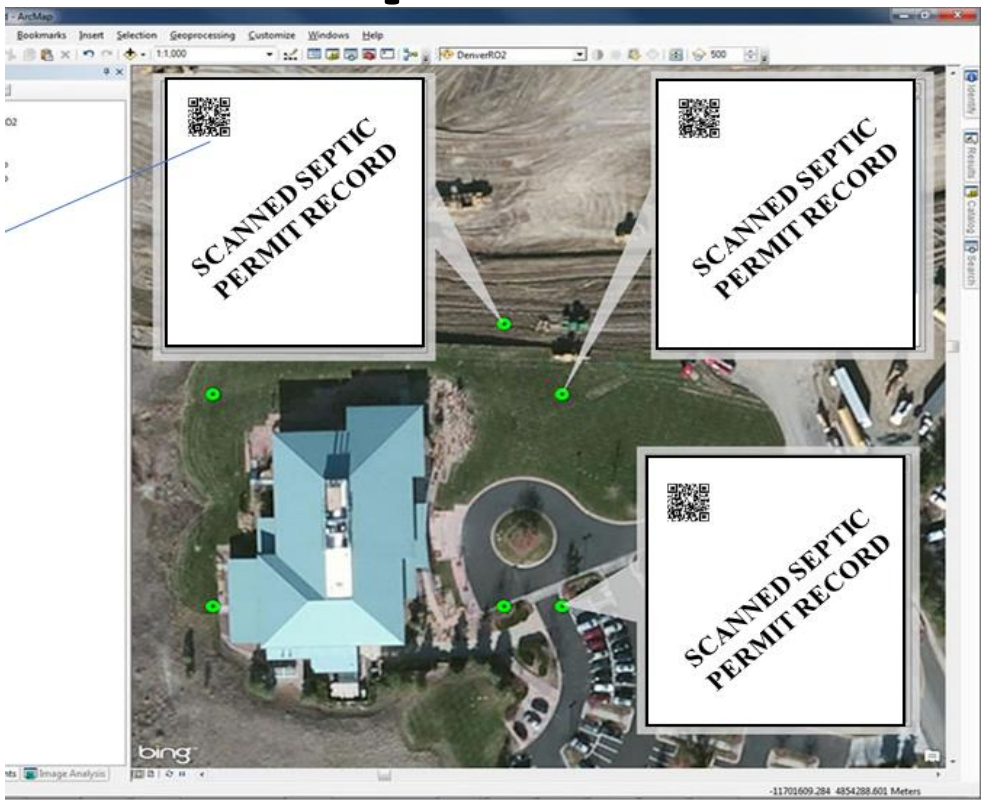

Figure 2, Schematic example of final geotagged data layer.

Why WelSTROM?

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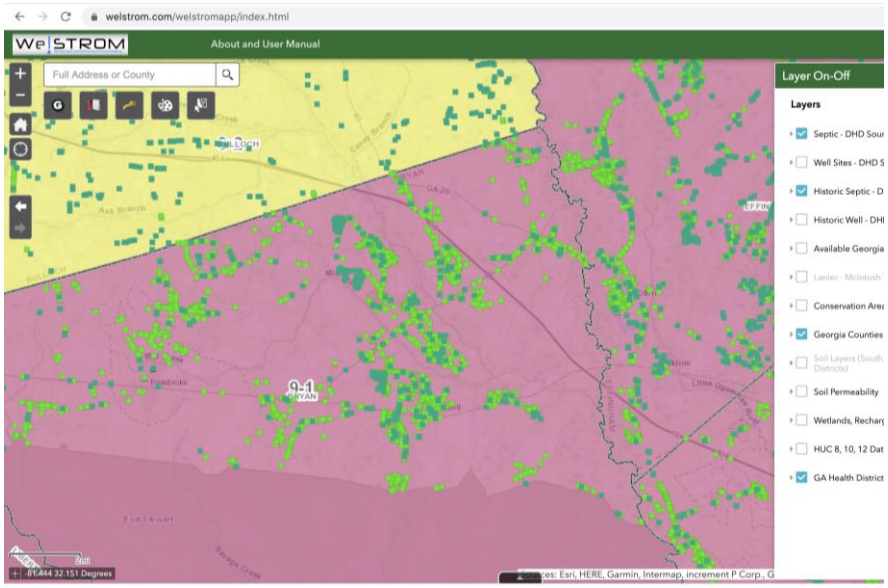
Digital Septic System Database for Georgia



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Our Team

- UGA
  - Brandi Renee Carr, M.S. Student
  - Lacey Michelle Tucker, Undergrad student worker
  - Bethlehem Agajayelleh, Undergrad student worker
  - Nandita Gaur, Ph.D., Assistant Professor
- Jackson County Office
  - Joel Logan, GIS Manager
  - Gina K. Roy, Assistant County Manager
- Environmental Health Office
  - Keli Hinson, Environmental Health District Director

ACKNOWLEDGMENTS

- Blue Cole, Grants Administrator, GA EPD
- Dr. Krista Capps, UGA
- Danny Johnson, Metro Water District
- Tim Callahan, DPH
- Rachel Strom
- Jefferson Environmental Health Staff

FUNDING SUPPORT PROVIDED BY

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

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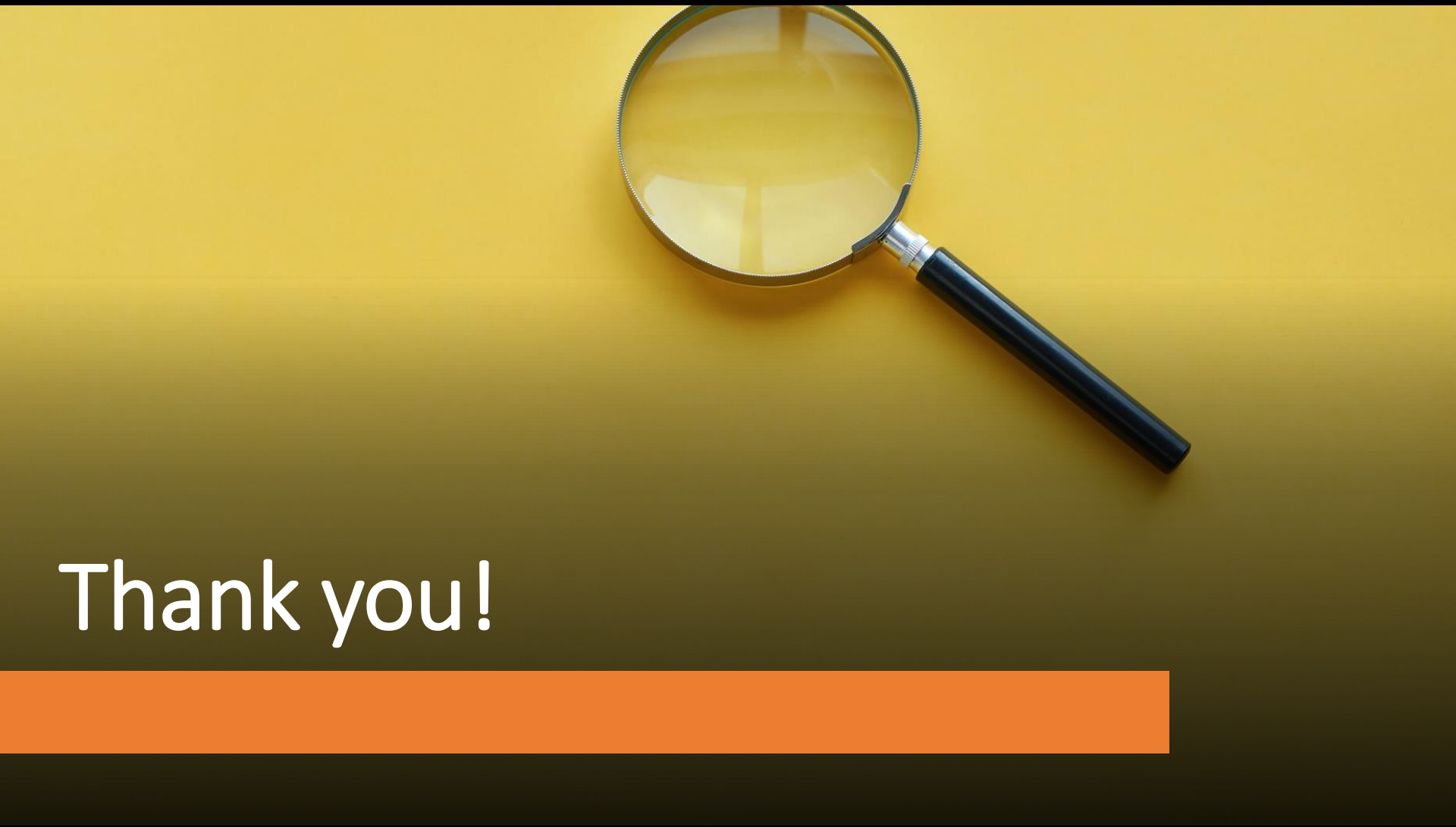
Jackson County
Georgia

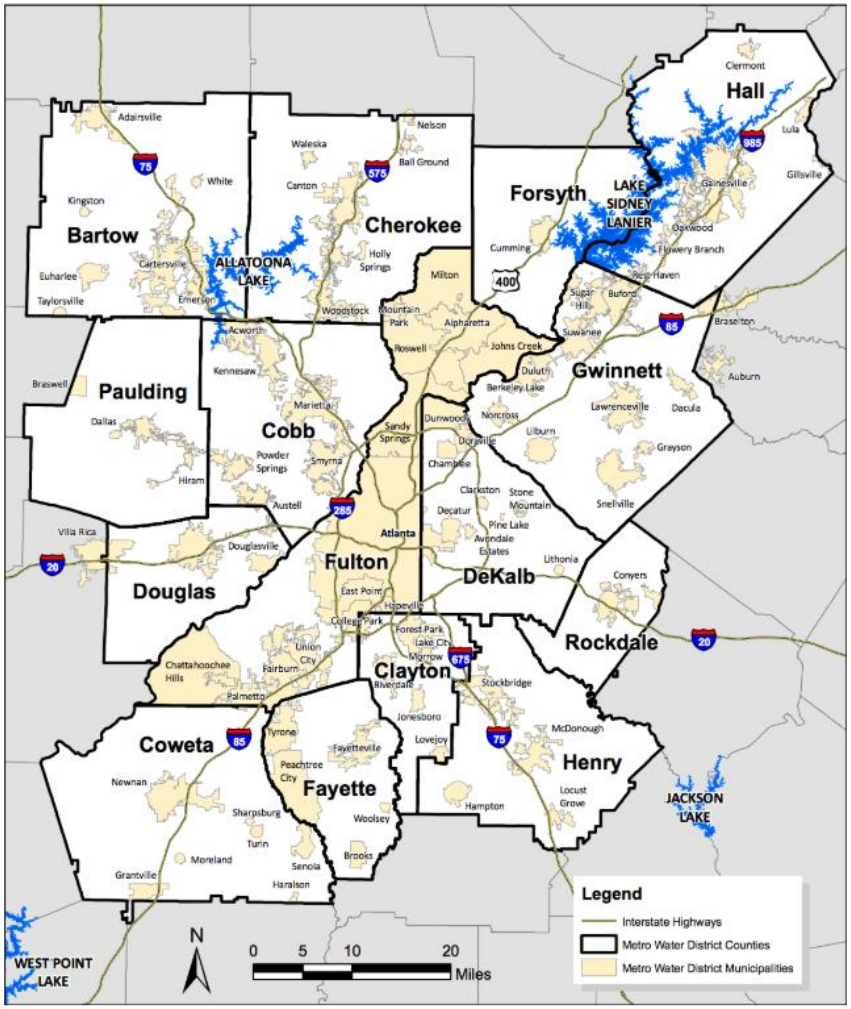

Thank you!

Upper Oconee Council Meeting

Metro District Update

- **Plan Updates**
- **Biosolids Update**

– Danny Johnson, ARC



Metropolitan North Georgia Water Planning District

Georgia

Metropolitan North Georgia Water Planning District Update

Scope of Work for 5-year Plan Update

- **Forecasting**
  - Will include biosolids for first time
- **Facility Planning**
- **Action Item Assessment and Update**
- **Technical Resource Studies**
  - Residential water demands
  - Drought response options menu
  - Watershed resilience evaluation
  - Cost-Benefit Analysis

Schedule

Highlights from the Statewide Biosolids Management Survey

For full survey results, contact Danny Johnson (djohnson@atlantaregional.org)

Upper Oconee Council Meeting

Biosolids Management in Georgia: Results of the GAWP Statewide Survey

Georgia Association of Water Professionals

2020 GAWP Virtual Annual Conference

Mike Thomas, GAWP & *Danny Johnson*, MNGWPD

Metropolitan North Georgia Water Planning District

Background

Since 2018, the disposal of wastewater biosolids to landfills has become more difficult and costly due to recent slope instabilities:

- 2014 Pine Ridge Landfill
- 2014 Eagle Point Landfill
- 2018 Eagle Point Landfill
- 2017 Greentree Landfill, Pennsylvania

GAWP Biosolids Survey

Data collected for 2018 calendar year

Did not include water plant residuals

Survey sent to all GAWP Utility Members – October 2019

52 communities responded **99** facilities

EPD's Annual Biosolids Reports reviewed

21 communities **28** facilities

TOTAL

73 communities **127** facilities

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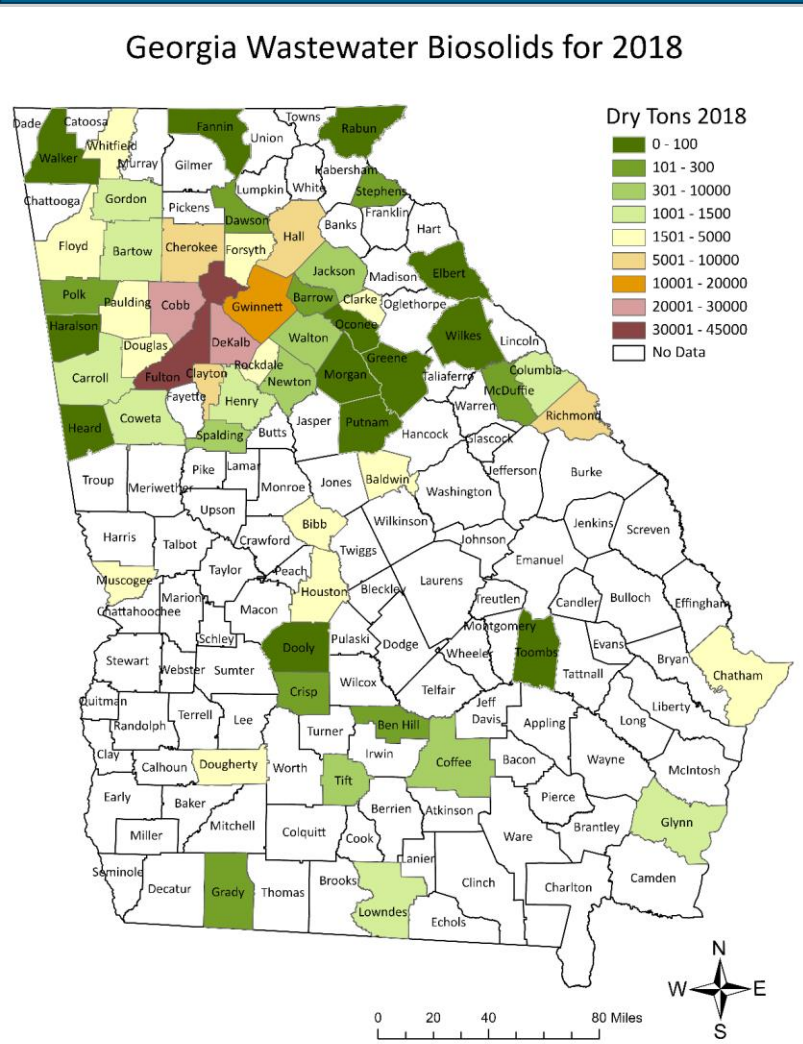

Dry Tons by County

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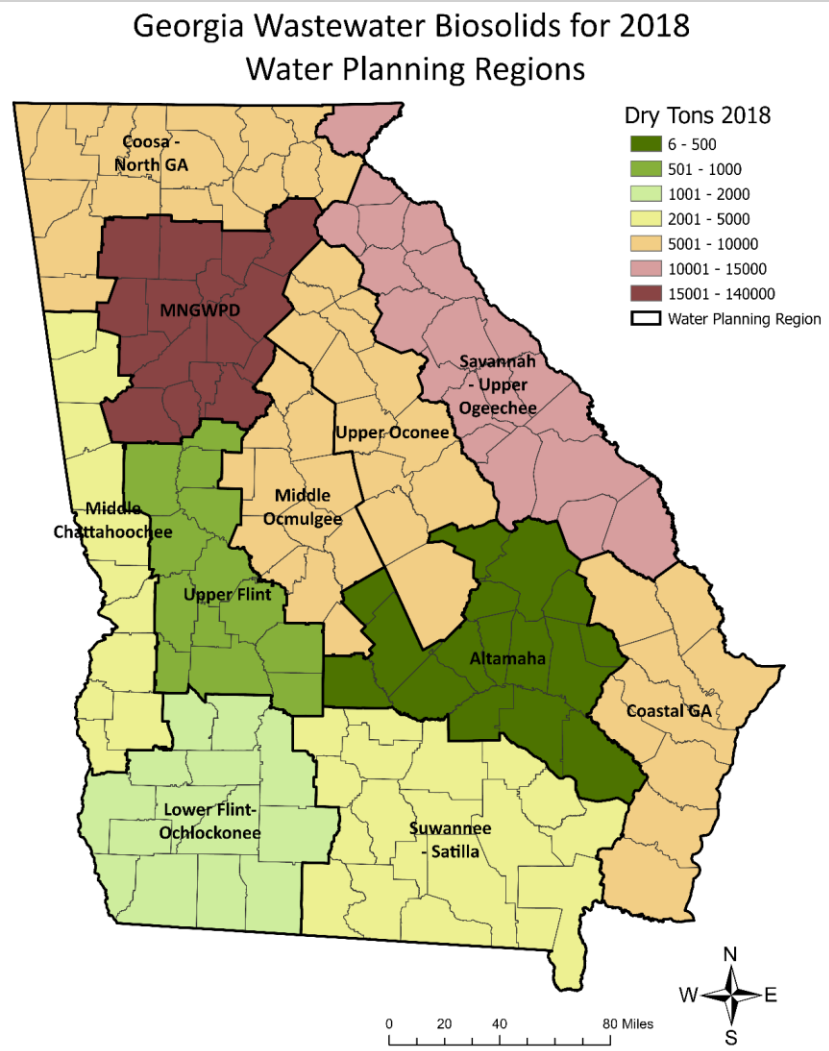
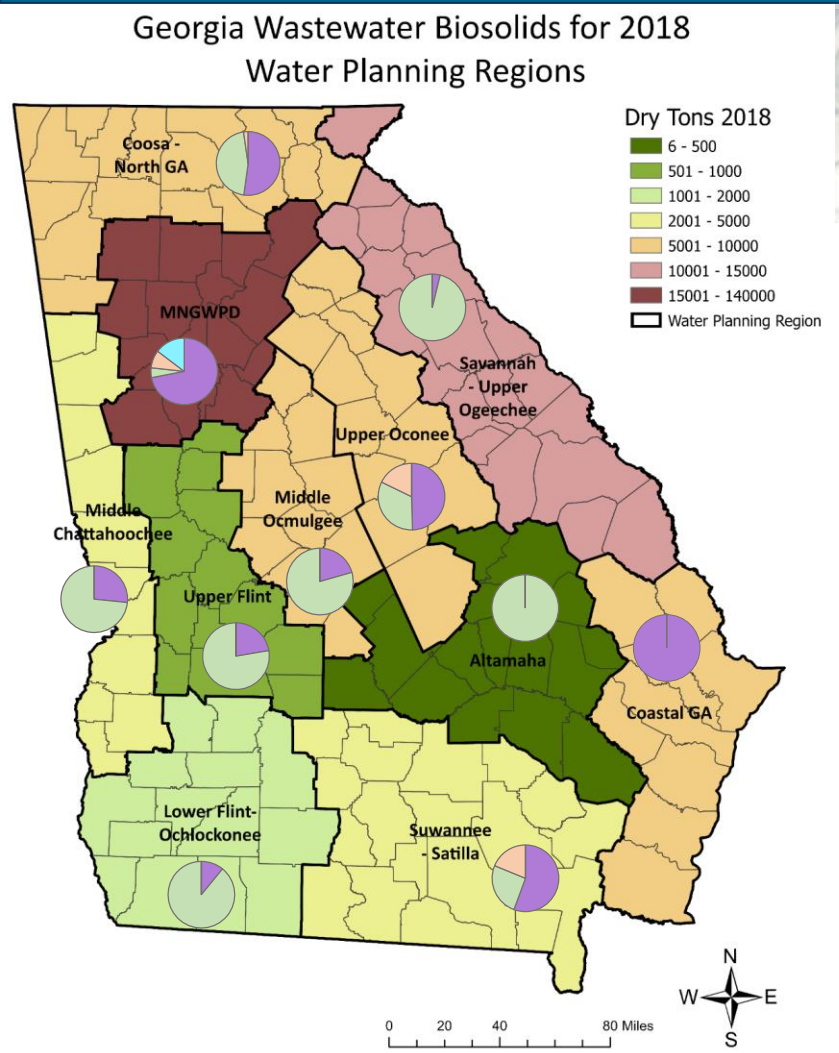


Dry Tons by Regional Water Council



Disposal Method by Dry Tons Regional Water Council

Most common disposal methods

- Landfill – 65% of Dry Tons
- Land Application – 16% of Dry Tons

Only incinerator used in 2018 was by the City of Atlanta

Composting:

- 8% of Dry Tons
- 16 Facilities

Recapping Biosolids Management Trends

Landfilling – Regulatory pressures likely to continue

More utilities looking at advanced drying technology

- Now cost effective
- Beneficial reuse options

Land application is still an option

- Public perception, PFAS/PFOA, available land difficult for large utilities

Incineration

- Air quality, fuel costs, ash disposal

Regional Solutions

- Multiple under consideration

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Public Comment Period

- Please limit comments to 3 minutes total
- Council encourages written submission of comments as well

Upper Oconee Council Meeting

- **Wrap Up and Next Steps**
  - Seed Grant Applications – Due October 31
    - Contact Laura or Ania
  - Next Council meeting?
    - General date range
    - Any topics or ideas you would like to see on agenda?
    - Contact Laura or Michelle with input or ideas

Georgia

Thank You!

Questions? Comments? Need More Information?

Laura.Hartt@Jacobs.com
Michelle.Vincent@Jacobs.com
Anna.Tuszczynski@dnr.ga.gov