

Savannah-Upper Ogeechee Regional Water Planning Council Meeting September 23, 2021



#### Welcome Ashley Reid





### **Council Business**

Council Chair, Bruce Azevedo



# **Council Business**

	State Water Plan						
	Savannah-Upper Ogeechee Regional Water Council Draft Agenda - September 23, 2021 10:30 am						
	Edward B. Pope Conference Center, Washington, GA						
	https://us06web.zoom.us/i/84562491075						
	To Join Meeting by Phone: 1 646 558 8656, Meeting ID: 845 6249 1075						
10:00 - 10:30 a.m.	Council Registration/Guest Sign In						
10:30 – 10:35 a.m.	Welcome						
10:35 – 10:45 a.m.	Council Business, Chairman Azevedo						
	<ul> <li>Approve draft meeting minutes from April 27, 2021 Council Meeting</li> </ul>						
	<ul> <li>Approve draft meeting agenda</li> </ul>						
	New Council Member Introductions						
10:45 - 11:10 a.m.	EPD Updates – Jennifer Welte, Georgia EPD						
	<ul> <li>Seed Grant Updates – Haydn Blaize. Georgia EPD</li> </ul>						
	BREAK						
11:20 – 11:45 a.m.	Agriculture Demand Results – Mark Masters, Georgia Water Planning & Policy						
11:45 – 12:00 p.m.	Metro North Georgia Water Planning District Forecasting Updates - Danny Johnson, MNGWPD						
	30 MINUTE BREAK FOR LUNCH						
12:30 – 1:00 p.m.	Seed Grant Project Update: Know Your River Demonstration – Tonya Bonitatibus, Savannah Riverkeeper, Lindsay Wallace, NewFields and Rosco Peters, NewFields						

- 1:00 1:20 p.m. Savannah River Below Augusta Project Update Tonya Bonitatibus, Savannah Riverkeeper and Jeff Schwindaman, U.S. Army Corps of Engineers
- 1:20 1:30 p.m. Public Comments / Wrap Up

- Vote and Approve April 27, 2021 meeting summary
- Vote and Approve today's Draft Agenda



# **New Council Member Introductions**

## Welcome to the Savannah-Upper Ogeechee Water Planning Council!

Suzanne Sharkey

Dink NeSmith

Commissioner Bobby Lee Vaughn





### **Georgia Environmental Protection Division Updates**

Jennifer Welte, GA EPD Haydn Blaize, GA EPD



# Regional Water Plan Process Updates

- Coordinated with the Metro Water District
- Process began in 2020 with Forecasting work
- Target for updated Plans by end of 2022
  - Draft Plans on public notice by Sept. 30, 2022
  - Updated Plans completed by Dec. 2022
- Technical work completed/ongoing that underlies the Regional Water Plans
- Quarterly Council Meetings



# **Resource Assessments**

- Updates to Modeling Tools used for:
  - Water Quality Resource Assessment (RA)
    - Updated information & model recalibration
  - Groundwater Availability RA
    - Refined groundwater model with smaller grid spacing and transient pumping
  - Surface Water Availability RA
    - New modeling tool that provides analysis at more nodes



# Surface Water Availability RA



- Previous surface water availability modeling focused on less nodes
- Modeled flow compared to selected low flow thresholds to identify potential gaps
- Potential gaps at the Eden node



# Surface Water Availability RA

- Now developing Basin Environmental Assessment Models (aka "BEAM") for all basins
  - Finer scale modeling
  - Nodes at all USGS gages, reservoirs, and locations of municipal/industrial/energy withdrawals or discharges
  - Agricultural withdrawals will be aggregated at selected nodes
- Oconee, Ocmulgee & Altamaha basins BEAM models are completed
- Savannah & Ogeechee basins BEAM models are under development



# Surface Water Availability RA

#### ResSim (Prior Model) and BEAM Schematics







# **BEAM Model Components**





# Savannah & Ogeechee BEAM Models





Georgia's State Water Plan

### SEED GRANT PROJECT UPDATS



- Seed Grant FY19: Completed
  - Initiating and Upgrading Publicly Accessible Water Monitoring for the SUO and Coastal RWPs
  - Lead Partner: City of Augusta/Savannah Riverkeeper
  - Date: 9/24/2019 8/31/2021



- Seed Grants FY20: In Progress
  - Historical Analysis of In-stream Water Quantities for the Ogeechee, Savannah, Altamaha and Oconee River Basins
  - Lead Partner: University of Georgia
  - Date: 4/1/2020 3/31/2022



- Seed Grants FY20: In Progress
  - High Frequency Monitoring and the Effects of Agricultural Water Withdrawal in the Savannah Upper Ogeechee Watersheds
  - Lead Partner: City of Augusta
  - Date: 4/1/2020 9/30/2022



#### Seed Grants FY21: In Progress

- Upgrading Publicly Accessible Water Monitoring for the Savannah-Upper Ogeechee RWP – (Phase 11 of Seed Grant FY19: Initiating and Upgrading Publicly Accessible Water Monitoring for the SUO and Coastal RWPs)
- Lead Partner: City of Savannah
- Date: 9/1/2021 8/31/2023



#### SFY2022 REGIONAL WATER PLAN SEED GRANT



State Funding to implement Regional Water Plans Up to **\$75,000** per project

Cost-Share: 60% State/40% match (10% cash match) Letter of support from Water Planning Council 30-month project period

#### WHO CAN APPLY

- Local, regional and state units of government
- Local authorities that operate local government service delivery programs
- Regional commissions
- Resource conservation and development councils
- State colleges and universities
- Local school systems

**More Information**: https://epd.georgia.gov/outreach/grants/regional-water-plan-seed-grant-funds **Contact:** joyce.mcclain@dnr.ga.gov or 470-251-2761

October 15: Last day for required pre-application meeting with GAEPD October 31: Applications DUE via email





# **STRETCH/COFFEE BREAK**





#### Agricultural Water Use Forecast Mark Masters, GWPCC



# AGRICULTURAL WATER USE FORECAST

Savannah-Upper Ogeechee Regional Water Planning Council September 23, 2021

> Mark Masters Albany State University Georgia Water Planning & Policy Center

# **Project Team**

- Albany State University Georgia Water Planning and Policy Center (Lead)
- University of Georgia Agricultural and Applied Economics



#### 2020-21 Agricultural Water Demand Forecasts - Methods

- Acreage Updated 2020 wetted acreage data
  - Field observation and aerial survey
- Crop projections through 2060 modeled based on multiple data sources:
  - Remote sensing and field data
  - USDA Projections, Southeast Model, Georgia Model, Data Trends
- Crop water needs wet, normal, dry years
  - Expanded use of meter data
  - Review estimates used in 2015-2016 and revise if needed
    - Surface water method revised to remove "70% assumption"
- Animal Ag/Nursery

#### Animal Agriculture - Daily Water Use by Water Planning Region Statewide Total: 43.8 MGD



#### Daily Water Use by Horticultural Nurseries (Container, In-Ground, and Greenhouse), Millions of Gallons Per Day Statewide Total: 41.76 MGD - draft





#### **Irrigated Acres**

County	2015	2020
Banks	6	42
Burke	40,244	44,054
Columbia	141	141
Elbert	311	311
Franklin	161	161
Glascock	294	294
Hart	911	1,059
Jefferson	26,688	28,228
Jenkins	13,084	14,770
McDuffie	793	794
Oglethorpe	341	367
Rabun	0	183
Richmond	851	888
Screven	27,117	31,263
Taliaferro	33	33
Warren	99	99
Wilkes	0	0

# Savannah-Upper Ogeechee RWPC

	2015	2020	% Change
Total # of Fields	1,876	2,126	+ 13.3%
Total Acreage	111,075	122,688	+ 10.5%
Total GW Acreage	87,466	98,705	+ 12.8%
Total SW Acreage	23,609	23,984	+ 1.6%
Total Center Pivots	1,525	1,758	+ 15.3%
Center Pivot Acreage	96,999	107,823	+ 11.2%

Center Pivot

Solid Set/Drip

Drip

Solid Set

**Traveler** 









# **Baseline Crop Mix by RWPC**



Savannah-Upper Ogeechee RWPC

Rotation areas assigned use values based on the crop mix percentage in the county. (e.g. the use on this pivot is x% corn, y% peanut, z% cotton, etc...). Areas with a static crop (pecans, orchard, etc...) were assigned water use values specific to that crop.

#### SUO Council – Ag Demand – 75<sup>th</sup> Percentile Round 1 (2011), Round 2 (2015) and Round 3 (2020)



#### Ag Demand – 75<sup>th</sup> Percentile Round 1 (2011), Round 2 (2015) and Round 3 (2020)



### Savannah-Upper Ogeechee RWPC - Monthly



#### Ag Demand – Forecast – 75th Percentile Totals (2020 & 2060)



# **Questions & Discussion**

Mark H. Masters Albany State University Georgia Water Planning & Policy Center mmasters@h2opolicycenter.org 229-430-2900 x36



#### Metro District Updates Danny Johnson, MNGWPD





### 2022 Plan Update Schedule

	Sep-20	Dec-20	Mar-21	Jun-21	Sep-21	Dec-21	Mar-22	Jun-22	Sep-22	Dec-22
Data Collection/Resource										
Forecasting										
Action Items Review and Update		÷					1			
Appendix A - River Basin Profiles			♦			1				
Appendix B - Facility Planning				♦						
Stormwater Forecasting			♦			1				
Supporting Efforts										
Localized Demands Drought Response Options Menu Watershed Resilience						-				
Full Draft Plan for Review								¢	1	
Public Comment										
EPD/Board Approval										



#### Stormwater Forecasting Update

- Planning-level forecast based on total runoff volume at a watershed-scale
  - Support stormwater/ watershed planning
  - Compliment existing (non-district) regulatory requirements
- Timeline
  - July 20, 2021 Stormwater Watershed TCC
  - Late September / Early October Distribute
     County Level Fact Sheets
  - Late October / Early November -Stormwater Watershed TCC





Concepts for Potential Action Item Updates -Efficient Technologies and Water Waste

Codes for New / Renovated Buildings to require More Efficient Technologies

- Plumbing Fixtures
- Landscape Irrigation System Design
- Water-Efficient Appliances
- HVAC Cooling Towers

Adjust Premise Plumbing Sizing Requirements to Account for Efficiency

Update Water Waste Model Ordinance



## Concepts for Potential Action Item Updates-Beyond Mandatory Codes

Rebate Programs to promote leading efficient technologies – Smart Irrigation Controller rebate program – Smart Leak Detector rebate program

Promoting whole home water efficiency – HERS H2O Whole House Water Efficiency Rating



Georgia's State Water Plan

### LUNCH BREAK





# Seed Grant Project Update: Know Your River

Tonya Bonitatibus, Savannah Riverkeeper Lindsay Wallace, NewFields Rosco Peters, NewFields



#### Seed Grant Update









#### A Data Democratization Tool



\*Project funded through GAEPD Seed Program \*Over 6000 data points, 35 layers all publicly accessible

- \*Field Collection App used over 200 collection events
- \*Last 6 months over 10,000 users on website \*Last 24 hours 229







### Next Steps:



\*Creating standard dashboard for data \*Ensure data is standardized for future analysis capabilities \*Additional real time monitoring and additional layers \*Create manuals for expanding beyond existing basins \*Discoduration much

\*Big education push

# Current Work: Combine and Format Data in an Online Back-end Database







Example: Combine Multiple Layers into One



# \*Georgia and South



# Example: Inconsistencies – Sometimes in the Same Datasets



\*STORET reports mercury in fish data different units depending on the source organization. \*A back-end online database will convert data to the same units to allow for accurate analysis.

Organizatior 🔻	Characterist 🕶	Fractio 💌	Result Value 🖃	Result Units
EPA	Mercury	Total	309.2	ng/g
EPA	Mercury	Total	354	ng/g
EPA	Mercury	Total	1070	ng/g
SC DHEC	Mercury	Total	0.23	mg/kg
SC DHEC	Mercury	Total	0.5	mg/kg
SC DHEC	Mercury	Total	1.6	mg/kg

New Result 🔄 💌	New Units 🛛 💌
0.3092	mg/kg
0.354	mg/kg
1.07	mg/kg
0.23	mg/kg
0.5	mg/kg
1.6	mg/kg



## Savannah River Below Augusta Project Briefing

Jeff Schwindaman, U.S. Army Corps of Engineers Tonya Bonitatibus, Savannah Riverkeeper



#### SAVANNAH RIVER BELOW AUGUSTA (SRBA) ECOSYSTEM RESTORATION GEORGIA AND SOUTH CAROLINA

Information Briefing Savannah-Upper Ogeechee Regional Water Council

Jeff Schwindaman, PG, PMP Savannah District

US Army Corps of Engineers ®

23 Sep 2021





#### BACKGROUND

- Between 1880's and 1970's, 46 cuts were made along the SRBA to facilitate commercial navigation
- Commercial navigation effectively ended in 1980's
- Modification of river has led to several problems for the ecosystem: Reduced river length by 27.3 miles, Reduced flow/increased siltation in cutoff bends, reduced fish & wildlife habitat, decreased water quality





# **STUDY AREA AND STUDY AUTHORITY**









Over the 50-year period of analysis (from 2025-2075),

- Improve native fish habitat within the Savannah River;
- Increase the availability of potential spawning, rearing, and foraging habitat for migratory fish species in the Savannah River and its floodplain;
- Restore natural floodplain features and hydrology within the Savannah River;
- Enhance riverine wetlands in the cutoff meanders that have been degraded due to channelization.

#### CONSTRAINTS

- No adverse modification to Atlantic sturgeon critical habitat;
- No impacts to water intakes at SRS and Plant Vogtle;
- No net loss of wetlands.









## **ALTERNATIVES – WILDCAT POINT EXAMPLE**





		Augusta 🤇
Features:	Dimensions	
Tree removal	- 10 acres	Σş
Pilot Channel	- 58,500 CY	
Beneficial use of pilot channel material	- 5 acres	
Partial river diversion structure	- 6,900 sq ft sheet pile - 9,000 Tons of rock	
Removal of existing training structure	- 700 CY of material	

Wildcat Point @ RM 102.2

Wildcat Point @ RM 102.2



Features:	Dimensions
Tree removal	- 10 acres
Pilot Channel	- 58,500 CY
Beneficial use of pilot channel material	- 5 acres
Full river diversion structure	- 13,000 sq ft sheet pile - 15,000 Tons rock
Removal of existing training structure	- 700 CY of material

Savannah



#### MODELING

#### Base model



#### Conceptual sub-model



#### Model development

- HEC-RAS and EPD RIV 1
- Inputs:
  - EPD RIV-1 database
  - Phinizy Center field data
  - Data from literature
  - Topographic/Bathymetric data

EPD-RIV1-Water Quality	LSRM_	HEC-RAS-Water Quality	Sav_R	Habitat
State Variables	comp2	State Variables	SKDA	Index
Water Temperature		Water Temperature		~
Ultimate CBOD1		Ultimate CBOD		
Ultimate CBOD2				
Organic-N		Organic-N		
Inorganic Ammonia-N		Inorganic Ammonia-N		
Inorganic Nitrite-N	X	Inorganic Nitrite-N		
Inorganic Nitrite-N+Nitrate-N		Inorganic Nitrate-N		
Organic-P		Organic-P		
Inorganic Ortho-Phosphate-P		Inorganic Ortho-Phosphate-P		
Dissolved Oxygen		Dissolved Oxygen		✓
Phytoplankton		Phytoplankton		
Total Suspended Solids (TSS)	х	Total Suspended Solids (TSS)	Х	✓
pН	х	рН	Х	✓
Derived Output Variables		Derived Output Variables		
Total-N [Org-N+NH4+NO2/NO3]		Total-N [Org-N+NH4+NO2+NO3]		
Total-P [Org-P + OPO4]		Total-P [Org-P + OPO4]		
Model Forcing Functions		Model Forcing Functions		
Sediment Oxygen Demand		Sediment Oxygen Demand		
Benthic Release NH4		Benthic Release NH4		
Benthic Release PO4	M	Benthic Release PO4	V	
Benthic Algae/Macrophytes		Benthic Algae/Macrophytes	X	
State Variable is Activated		State Variable not Activated		
Variable not Represented	X	Input to Habitat Suitability Index		1





# **MODEL RESULTS – WILDCAT POINT EXAMPLE**

at WP

Reconnecting cutoff meanders:

- Increases discharge -
- Increases DO (similar to main channel)
- Decreases temperature
- Most beneficial during lower flows -
- Partial diversion appears to maximize benefits while minimizing cost
- Pilot channeling is critical -
- Habitat Suitability Index benefits = approximately 20 Habitat Units





CE/ICA output for all 864 plans







### PLAN COMPARISON



Plan Number	CE/ICA	Average Annual Cost (\$000)	Effectiveness: # cutoff meanders restored; proxy for cumulative water quality benefits	Acres restored	River Miles Reconnected/ (percentage of river miles disconnected by cuts)*	Spawning habitat created	Acceptability: Avoids potential negative impacts to migrating fish identified by Agencies**
1	Best Buy	\$0	0	0	0 (0%)	No	Yes
13	CE	\$394	1	19.9	1.5 (5%)	No	Yes
17	Best Buy	\$622	2	129.8	2.6 (10%)	No	Yes
35	Best Buy	\$762	3	149.7	3.9 (14%)	No	Yes
371	Best Buy	\$1,085	4	178.1	4.8 (18%)	Yes	Yes
545	Best Buy	\$1,517	5	210.0	5.7 (21%)	Yes	Yes
833 (TSP)	Best Buy	\$1,963	6	241.7	6.4 (23%)	Yes	Yes

\* Percentage based on 27.3 river miles disconnected between 1880's and 1970's to facilitate commercial navigation

\*\* GADNR, SCDNR, and USFWS prefer partial closure over full closure in draft FWCAR

- Allows fish to use either main channel or restored meander
- Less potential for increased bank erosion
- Less potential for attraction flow to disrupt migration
- Less impact to critical habitat for sturgeon

# U.S.ARMY

### **TENTATIVELY SELECTED PLAN**





#### **Tentatively Selected Plan:**

- Restore riverine conditions at 6 priority cutoff bends
- Combination of partial diversion structures, tree clearing, pilot channels, beneficial use of excavated material
- Adds 180 AAHU
- Adds 6.4 total river miles
- Significant resource:
  - Multiple T&E species including Critical Habitat for Atlantic Sturgeon (technical)
  - TNC Sustainable Rivers Program and Clean Water Fund, South Atlantic Landscape Conservation Cooperative High Priority Area (institutional)
  - Drinking water source for ~1.4 million people, popular for recreation (public)
- Estimated project first cost of \$68.9M (not certified)



## **PROJECT IMPLEMENTATION**



- Project is relatively early in the feasibility phase
- Requires Approved Chief's Report and Congressional Authorization











# Public Comment



# Thank You!

Questions? Comments? Need More Information?

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