

waterSC

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The Charge for WaterSC

Executive Order No. 2024-22

Stakeholder Engagement Plan

October 31, 2024

Report to Surface Water Study Committee

January 31, 2025

Advise on updated State Water Plan

December 31, 2025

Stakeholder Forums



Working Group Meetings



Today's Focus: The State of Surface Water

Time	Agenda Item
1:00 pm	Welcome & Leading the Charge
1:10 pm	State of Surface Water in South Carolina <ul style="list-style-type: none">• Water Use & Modeling• Stakeholder Sector Reports
2:35 pm	State of Surface Water in South Carolina <ul style="list-style-type: none">• Case Studies & Experiences
2:45 pm	Tabletop & Facilitated Discussions
3:50 pm	Next Steps
4:00 pm	Adjourn & Networking

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State of Surface Water in SC

What have we learned from the data?

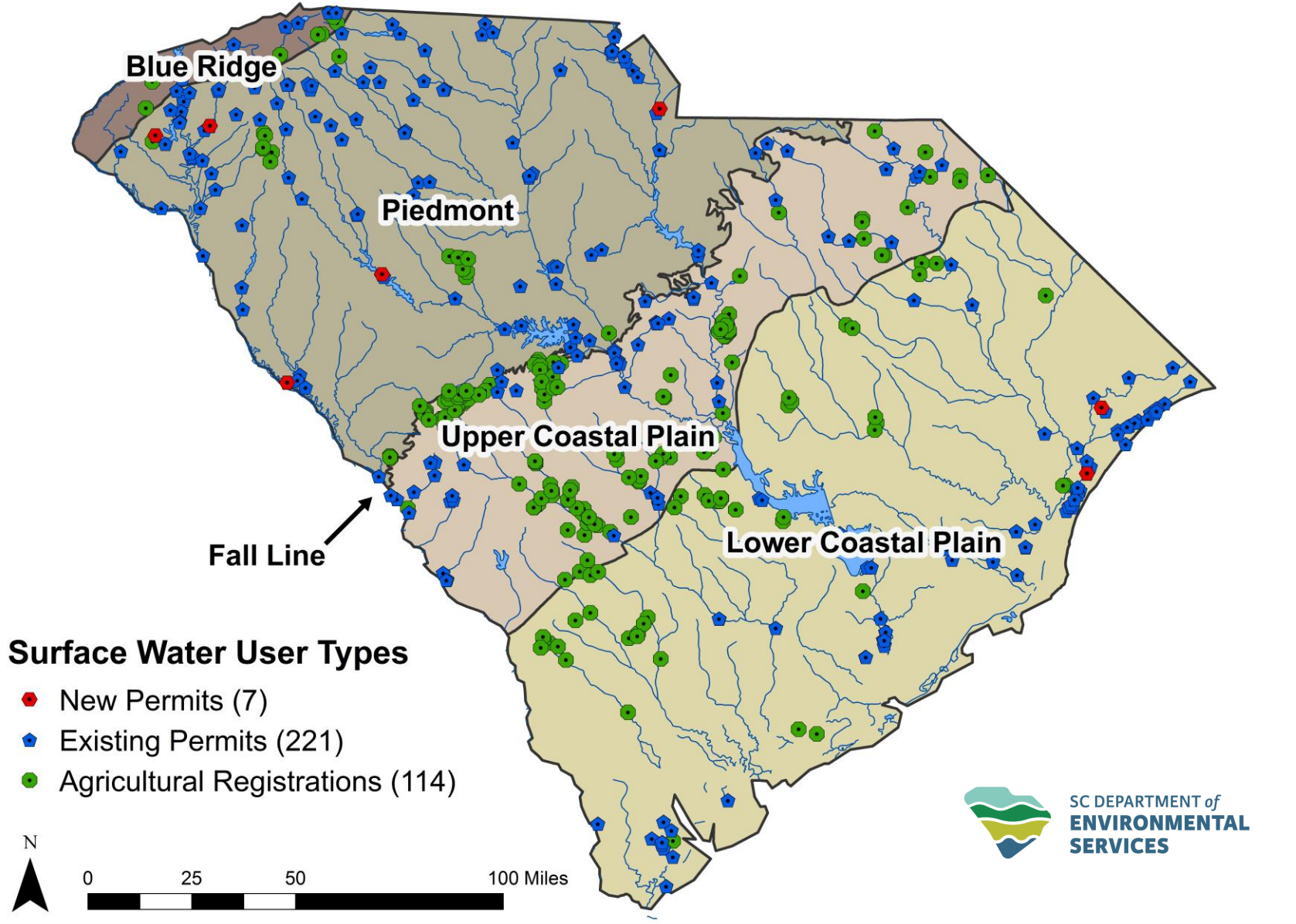
Joe Koon, Director of Water Resources

Bureau of Water

November 22, 2024

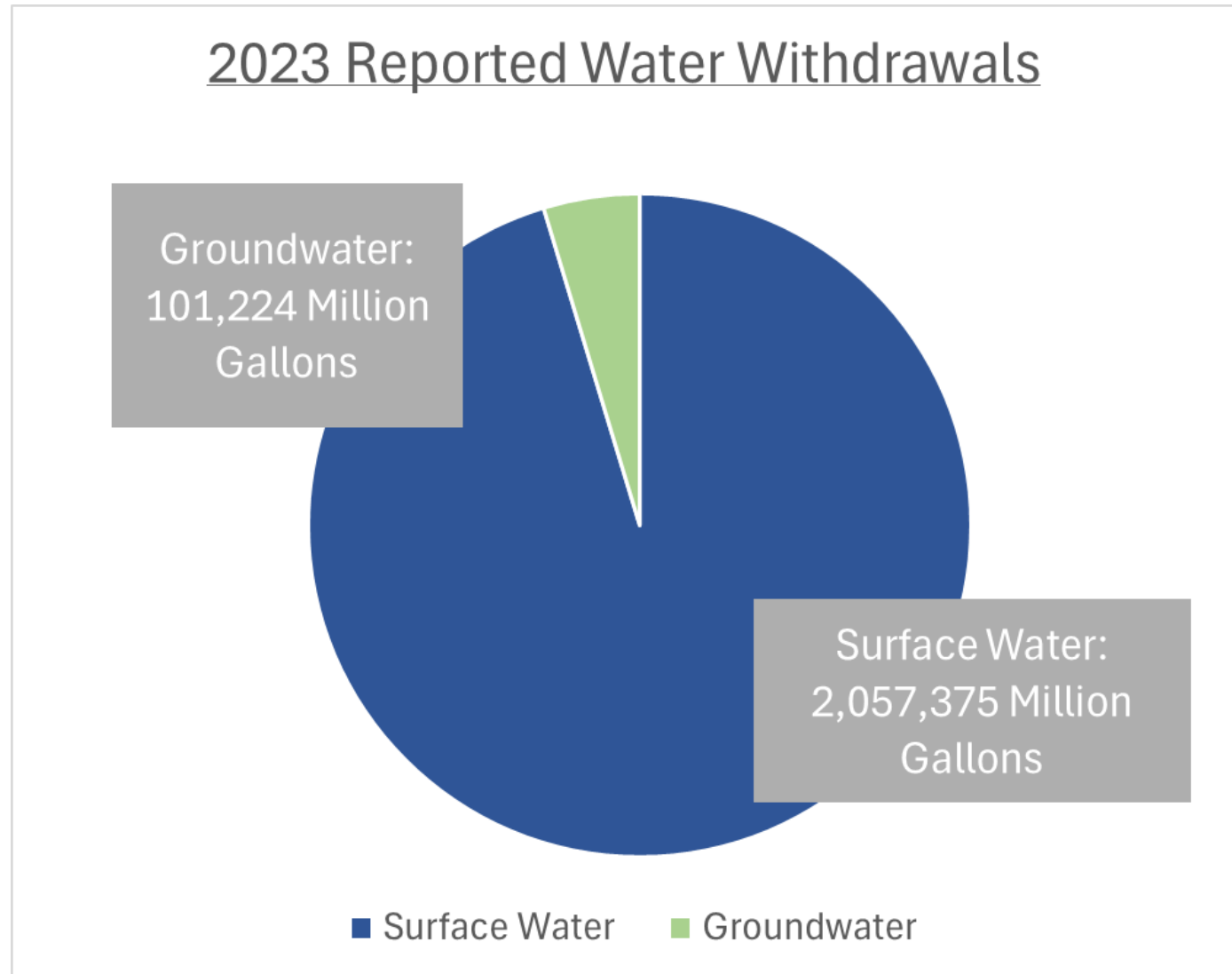


Surface Water Users in South Carolina



2023 Reported Water Withdrawals

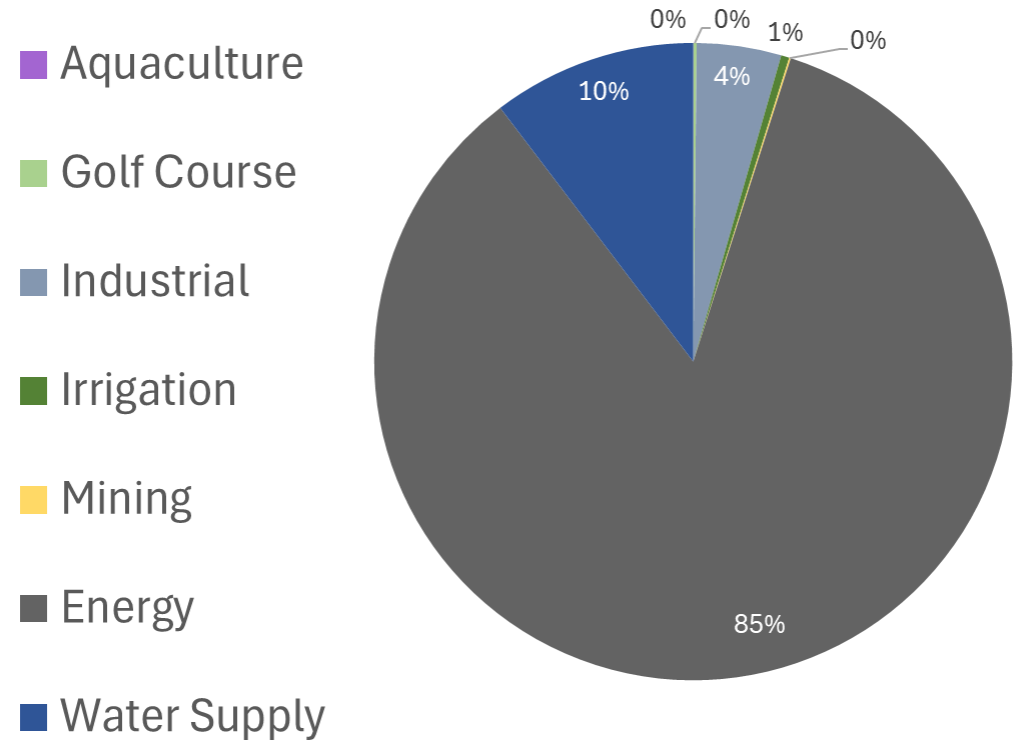
- **95%** of overall water withdrawals are from surface water (excluding hydropower)



2023 Reported Surface Water Withdrawals

Water Use Sector	Water Used (Million Gallons)
1. Energy	1,742,747
2. Water Supply	210,769
3. Industry	90,119
4. Agricultural Irrigation	8,449
5. Golf Course Irrigation	3,214
6. Mining	1,538
7. Aquaculture	337

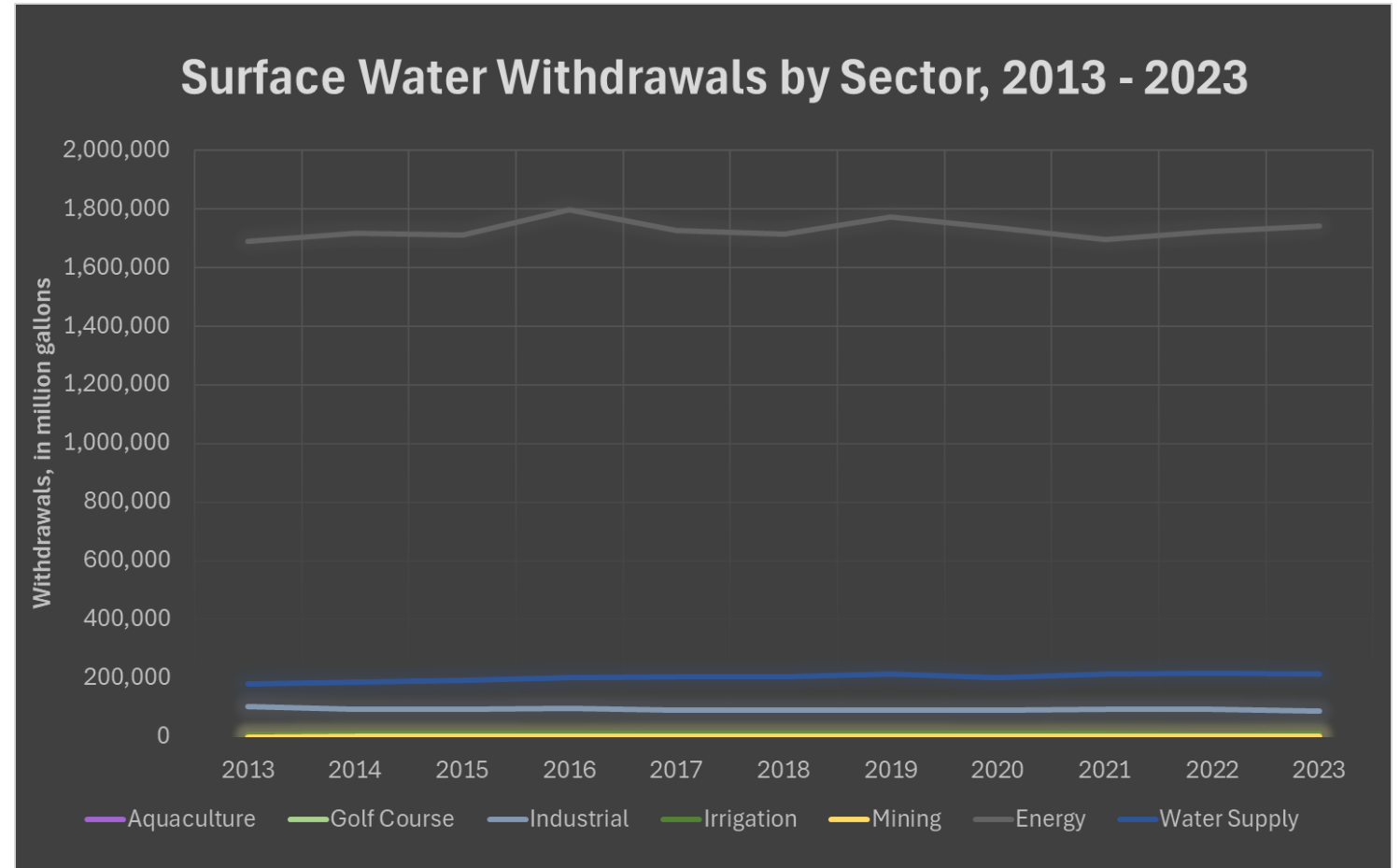
2023 Surface Water Withdrawals by Sector



Sector Surface Water Withdrawals

1. Energy:
3.1% increase

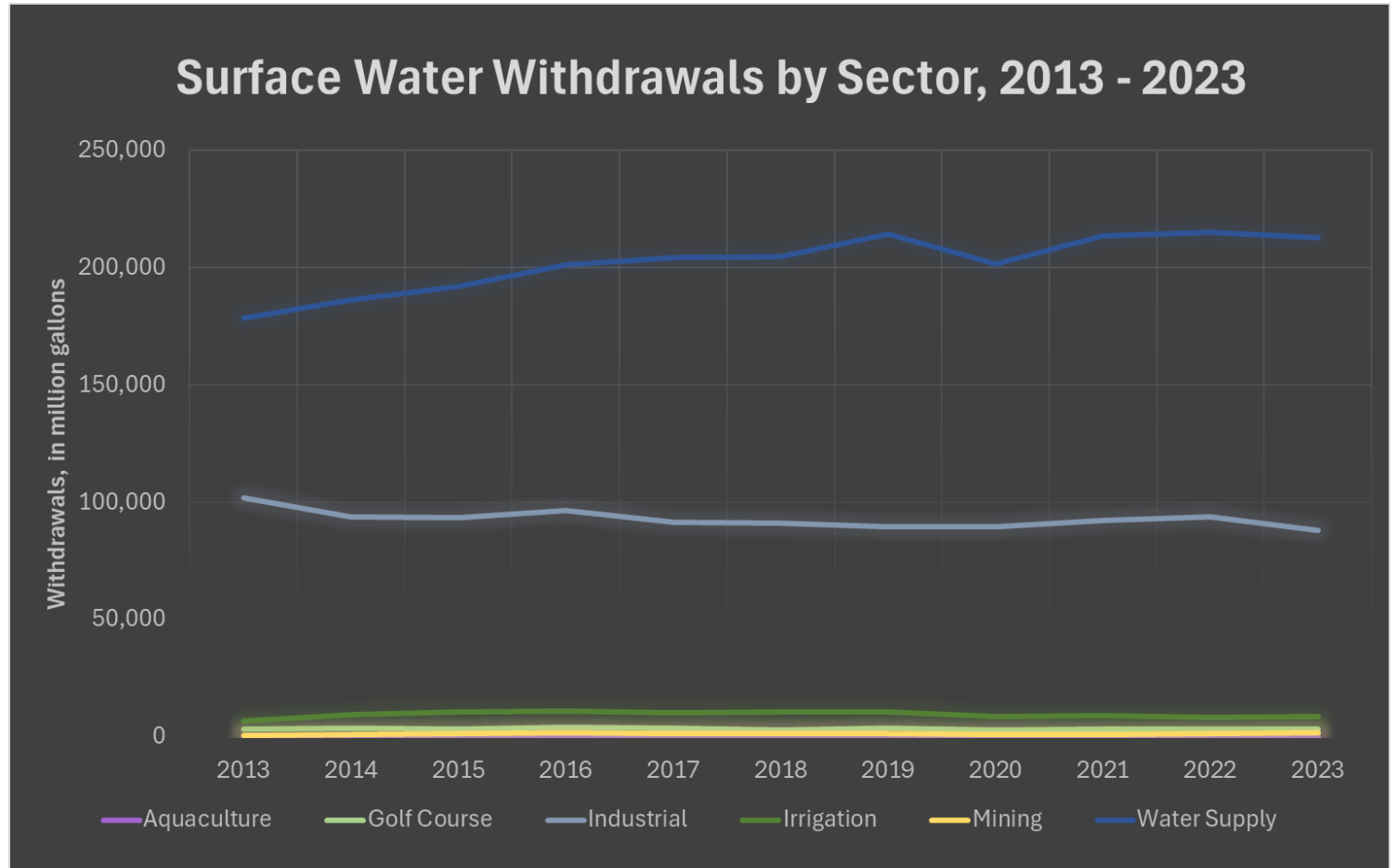
Majority of water is returned
after processing



Sector Surface Water Withdrawals

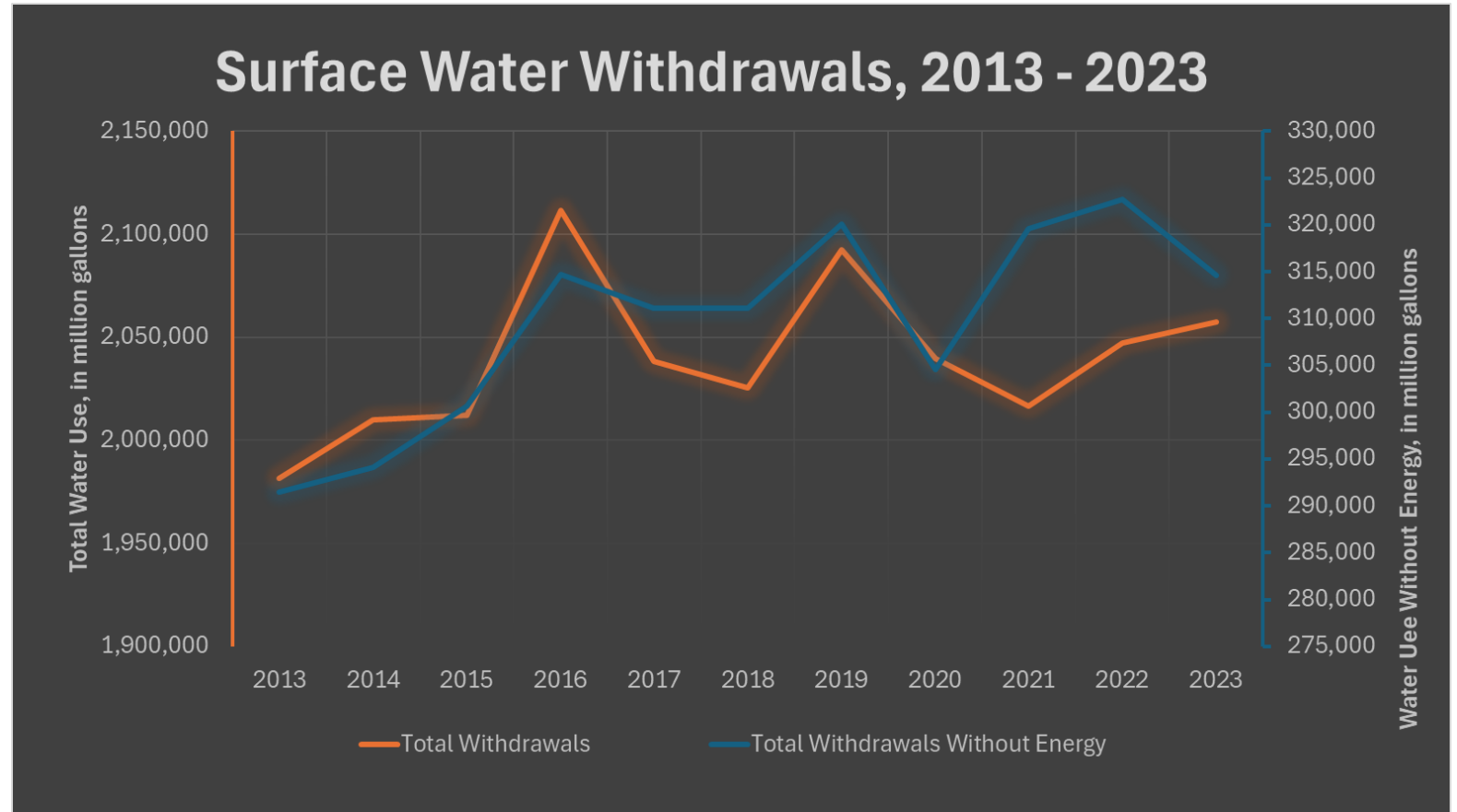
2. Water Supply:
19.3% increase

3. Industrial:
13.7% decrease



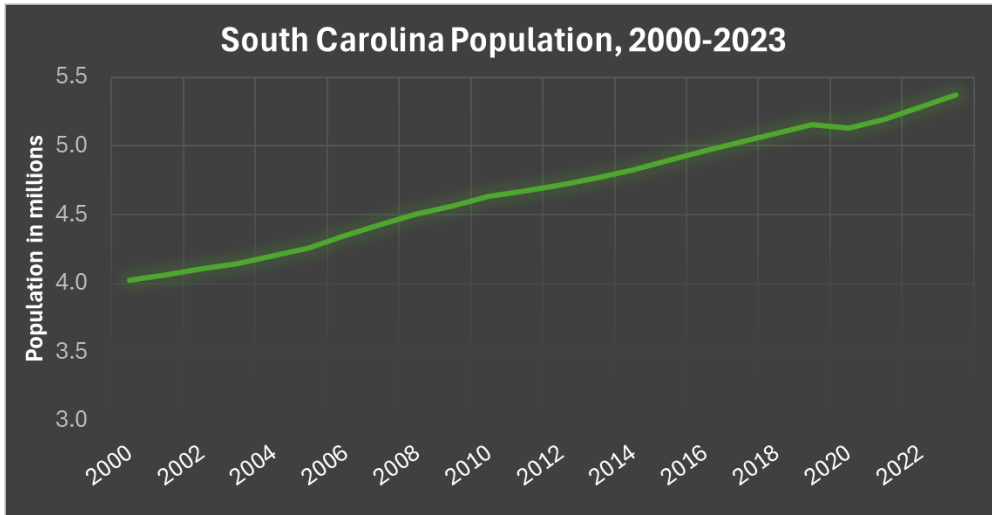
Surface Water Withdrawals

- Total surface water withdrawals have increased **3.8%**
- Excluding energy, withdrawals have increased **7.9%**

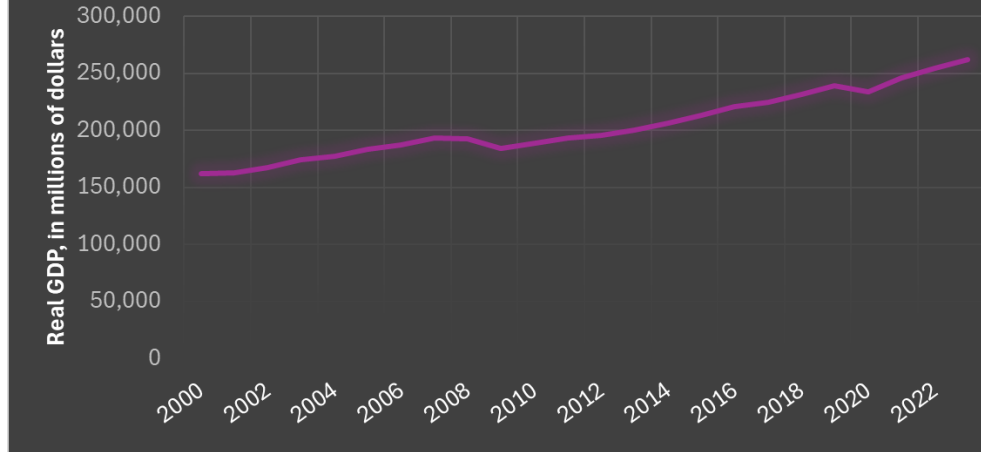


Factors Influencing Withdrawals

Population Growth



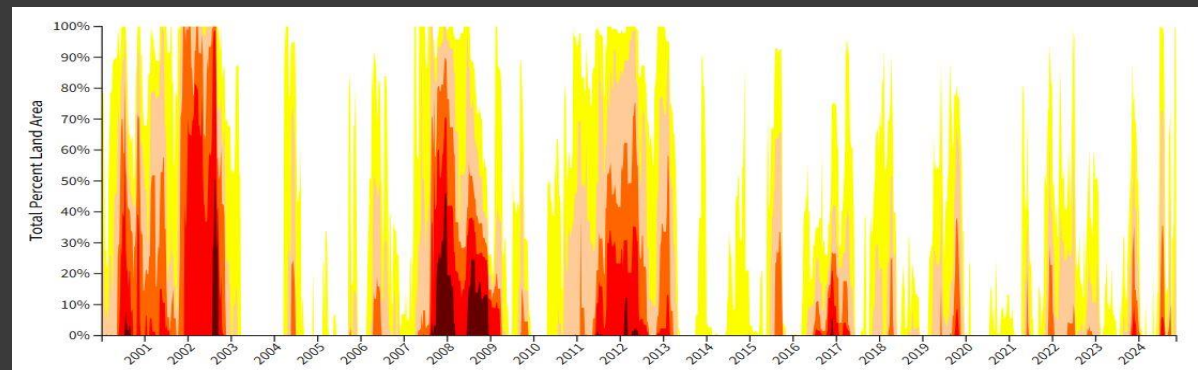
South Carolina GDP, 2000-2023



Economic Growth

Climate

Historical Drought Conditions in South Carolina, 2000 - 2024



SC is a growing state that heavily relies on surface water to meet our needs

- Growing demands and increased efficiencies will affect trends over time
- What have the various sector groups observed regarding demands and efficiencies?
- We'll now hear what we've learned from modeling of surface water



State of Surface Water in South Carolina

What have we learned from modeling?

John Boyer, PE, BCEE, PMP

CDM Smith

November 22, 2024

Surface Water Modeling Background

- To support the water planning process, **surface water models** have been developed for the state's **eight major river basins**
- The models help address **quantity**-related questions such as:

Is there enough surface water to support current water demands during **drought**?

Where are the potential supply gaps and how **frequent** could they be?

Is there enough surface water now and in the future to support a **healthy aquatic ecosystem**?

...to support **recreation**?

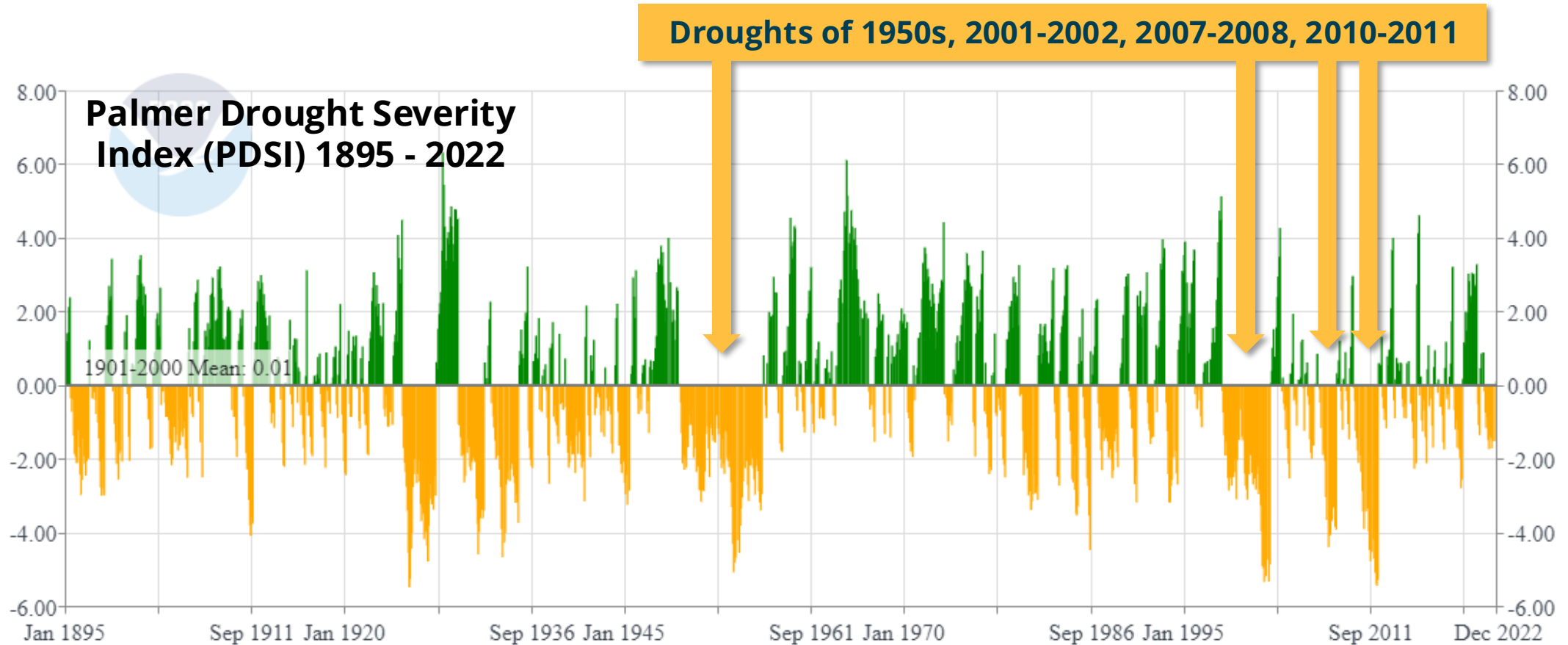
What **water management strategies** can be used to eliminate shortages and increase supply availability?

Is there enough surface water to support projected water demands **50 years** from now?

Can the basins support water withdrawals at the **current permit and registration** amounts?

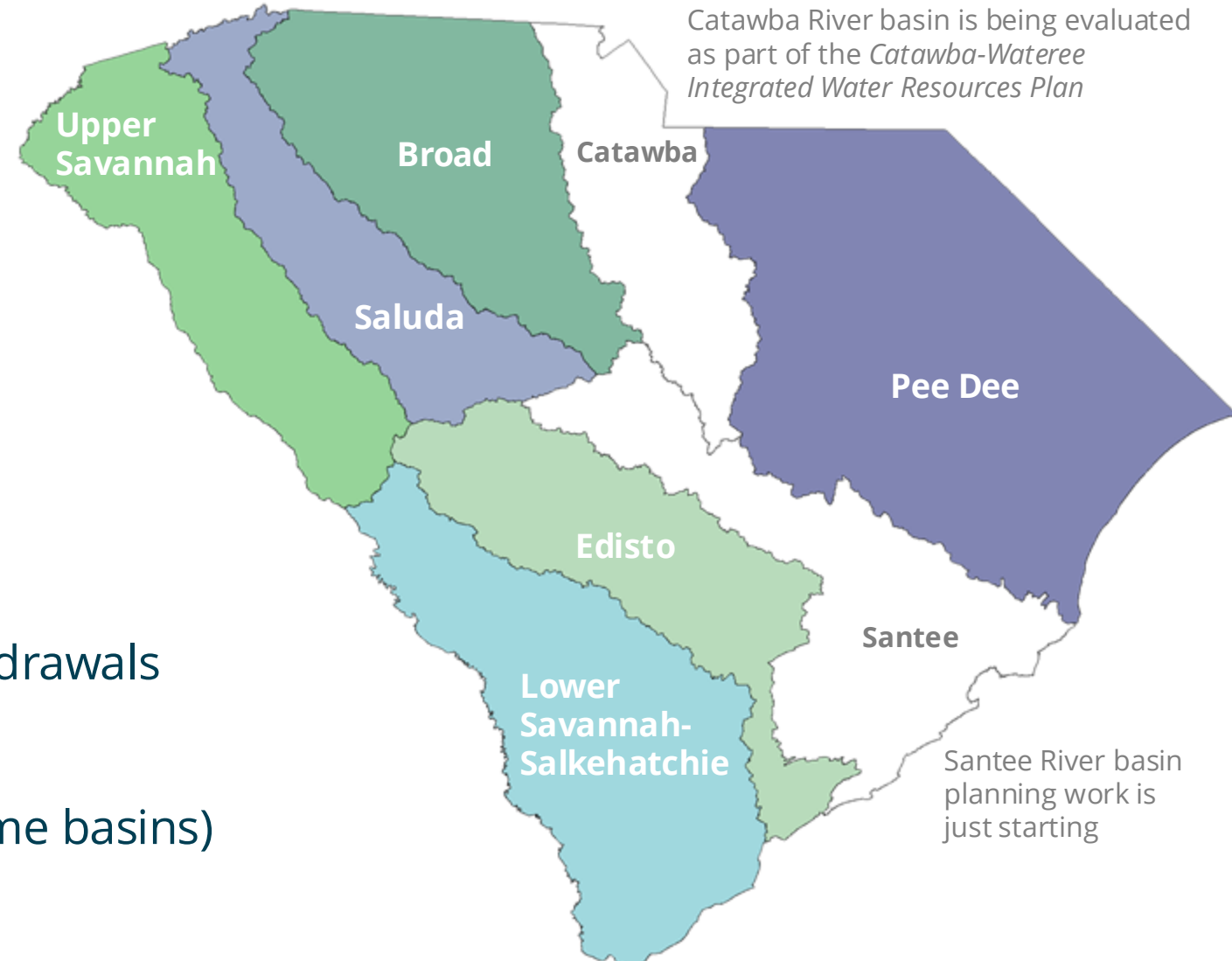
Surface Water Modeling Background

- The models use **historical hydrologic conditions** dating back **70 to 90 years**



Surface Water Modeling Background

- Models have been applied to support the river basin planning process in six of eight basins
- **Modeling Scenarios** evaluated:
 - Current Water Use
 - Moderate Water Demand (to 2070)
 - High Water Demand (to 2070)
 - Fully Permitted and Registered Withdrawals
 - Unimpaired or “Naturalized” flow
 - Extended/Synthetic Droughts (in some basins)



What Have We Learned? – Upstate SC

- Surface water resources of the Upstate basins are generally sufficient to meet **current** water supply needs
- In the **Broad** River basin potential public supply shortages seen in the **High Demand Scenario** can generally be avoided by:
 - Optimizing the operation of existing water supply reservoirs
 - Adding new surface water intakes
 - Building interconnections between water systems



Broad River



Lake Blalock

What Have We Learned? – Upstate SC

- In the **Saluda** and **Upper Savannah** River basins:
 - Surface water resources are generally sufficient to meet projected water supply needs through 2070 under the **High Demand Scenario**
 - Exceptions include several agriculture, mining, and golf course surface water users on small tributaries



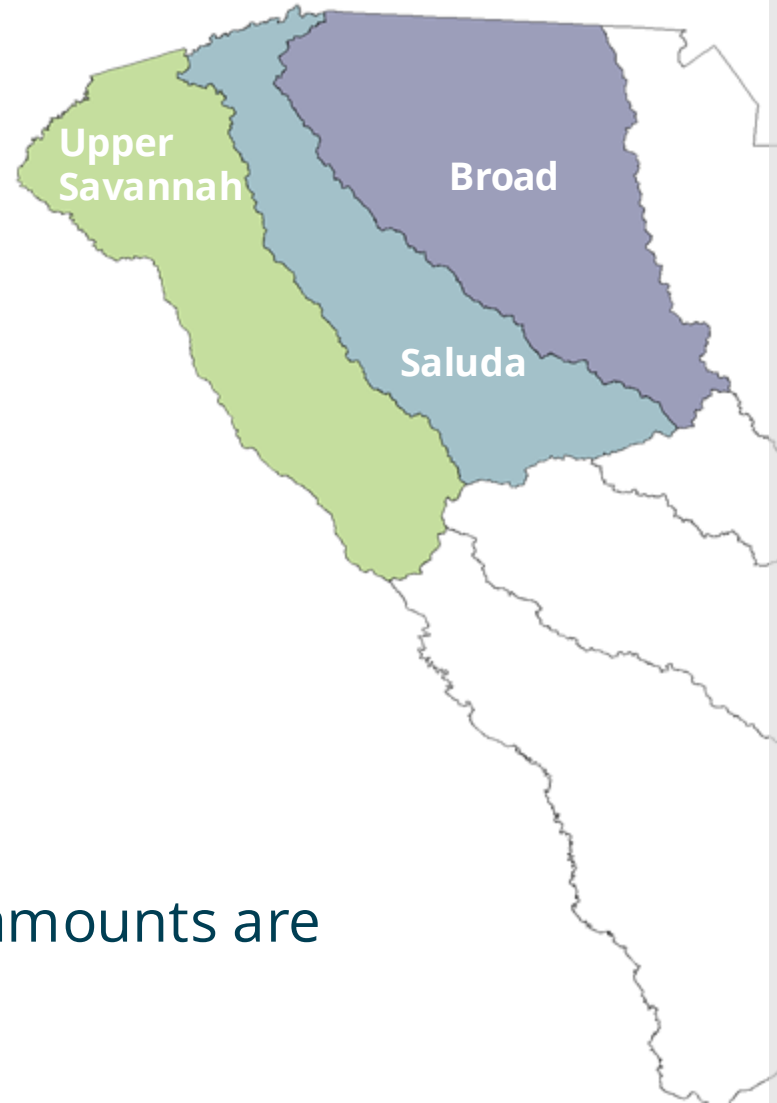
Lake Greenwood



Lake Murray Dam

What Have We Learned? – Upstate SC

- If surface water users withdrew at their **fully permitted and registered** amounts, there would be frequent and significant shortages in the **Broad** and **Saluda**, but relatively few shortages in the **Upper Savannah**
- Only about...
 - 52%** in the Broad,
 - 31%** in the Saluda, and
 - 75%** in the Upper Savannah...of the **permitted and registered** amounts are currently withdrawn



Lake Russell Dam

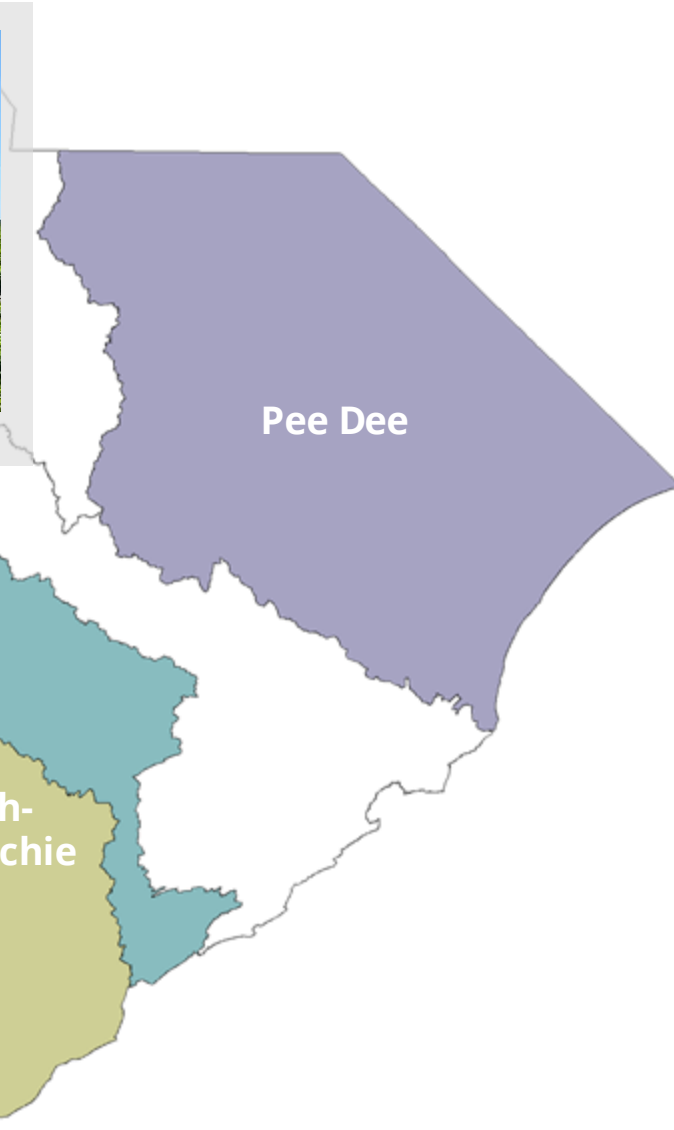


Lake Jocassee

What Have We Learned? – Coastal SC

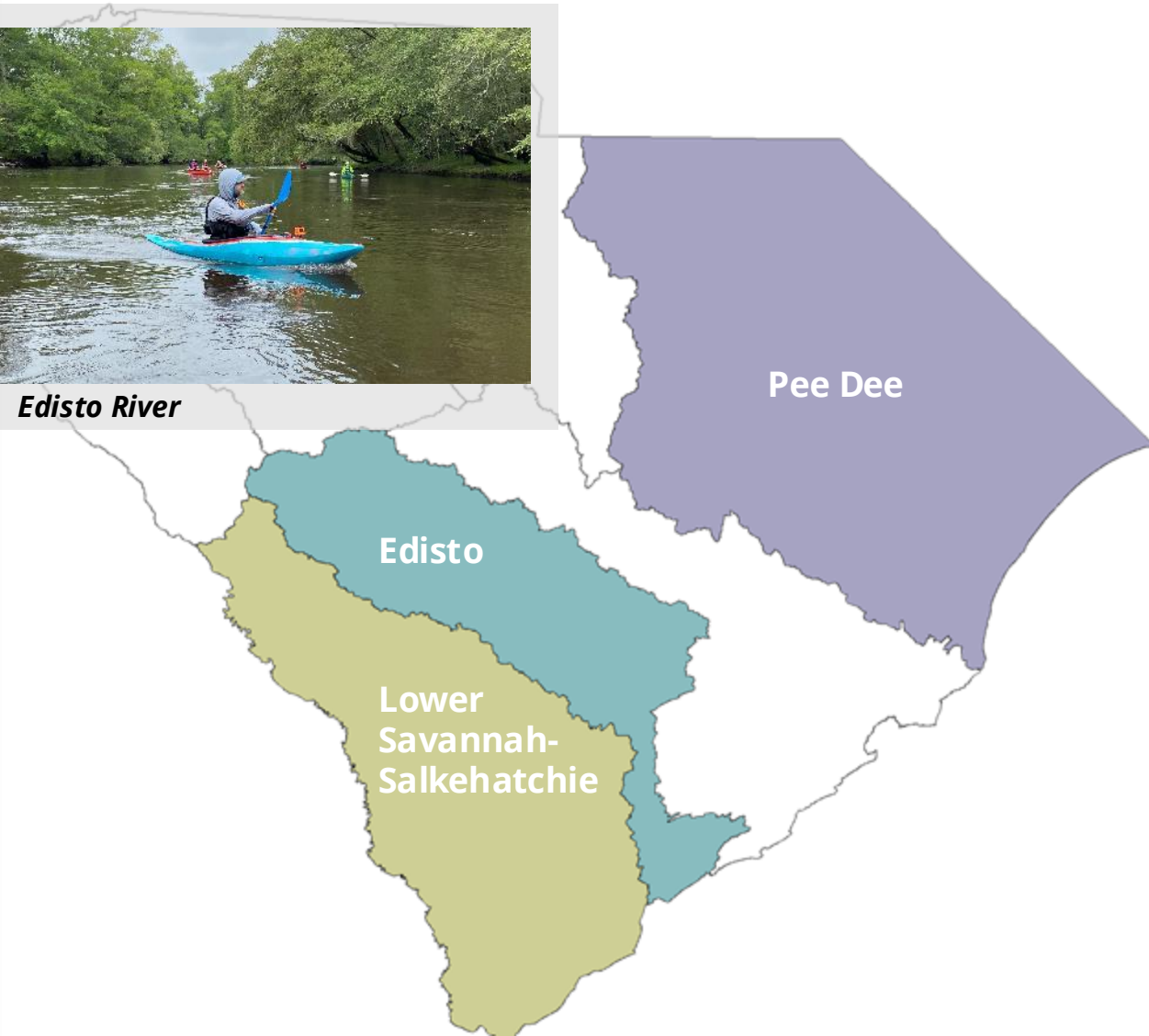


Center Pivot Sprinkler - Edisto Basin



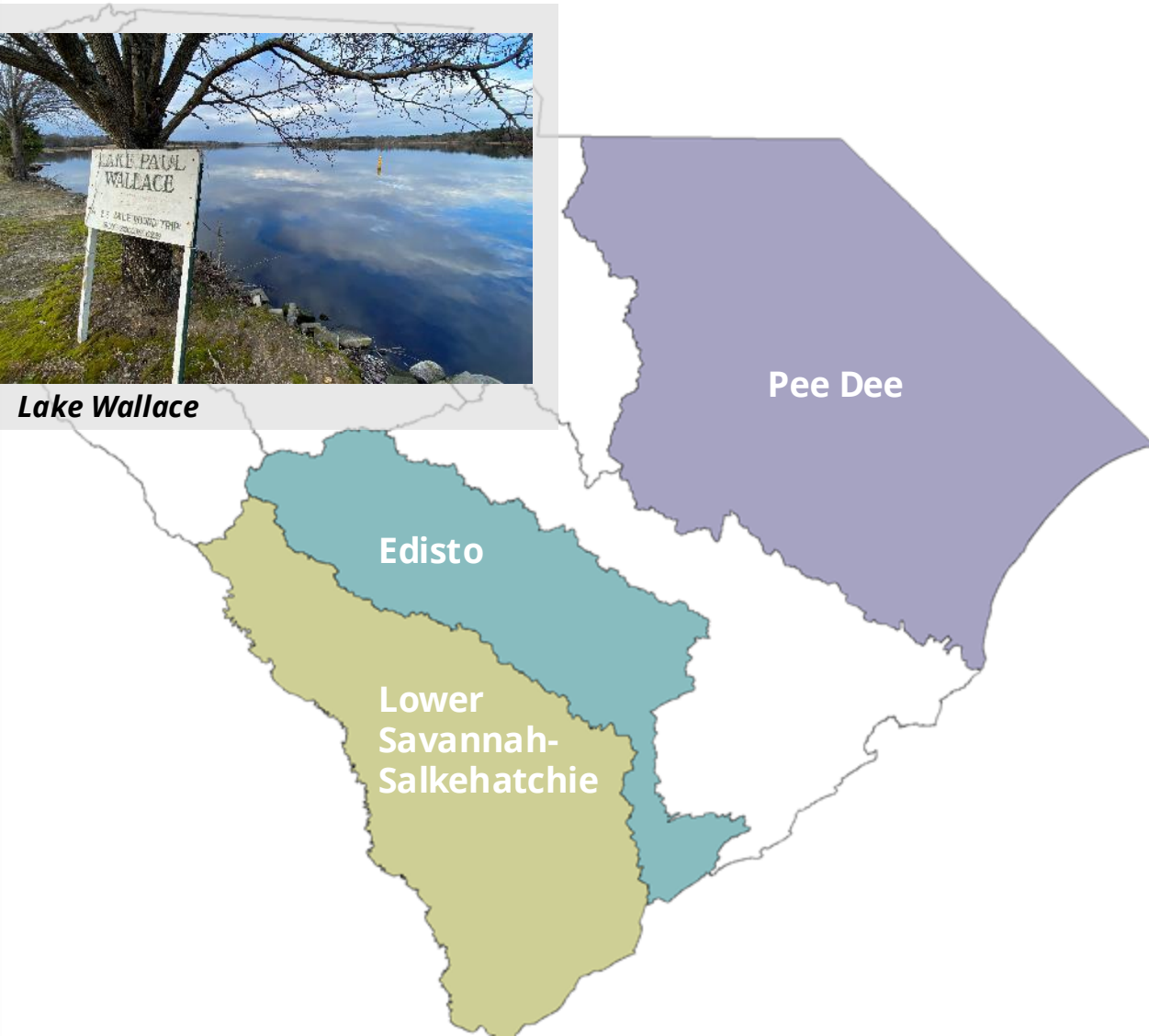
- Surface water resources of the coastal basins are generally sufficient to meet **current** water supply needs, although some agricultural users may be at risk of potential shortages during droughts
- In the **Edisto** River basin:
 - The existing sources of supply for several public water suppliers may be insufficient to meet demands during drought conditions under the **High Demand Scenario**
 - Existing, alternate sources of supply may eliminate the observed shortages

What Have We Learned? – Coastal SC



- In the **Pee Dee** and **Lower Savannah-Salkehatchie** River basins, surface water resources are generally sufficient to meet projected water supply needs through 2070 under the **High Demand Scenario**
- Exceptions include several agriculture, mining, and golf course surface water users on small tributaries
- Further study is needed in near-coastal areas (e.g. Myrtle Beach)

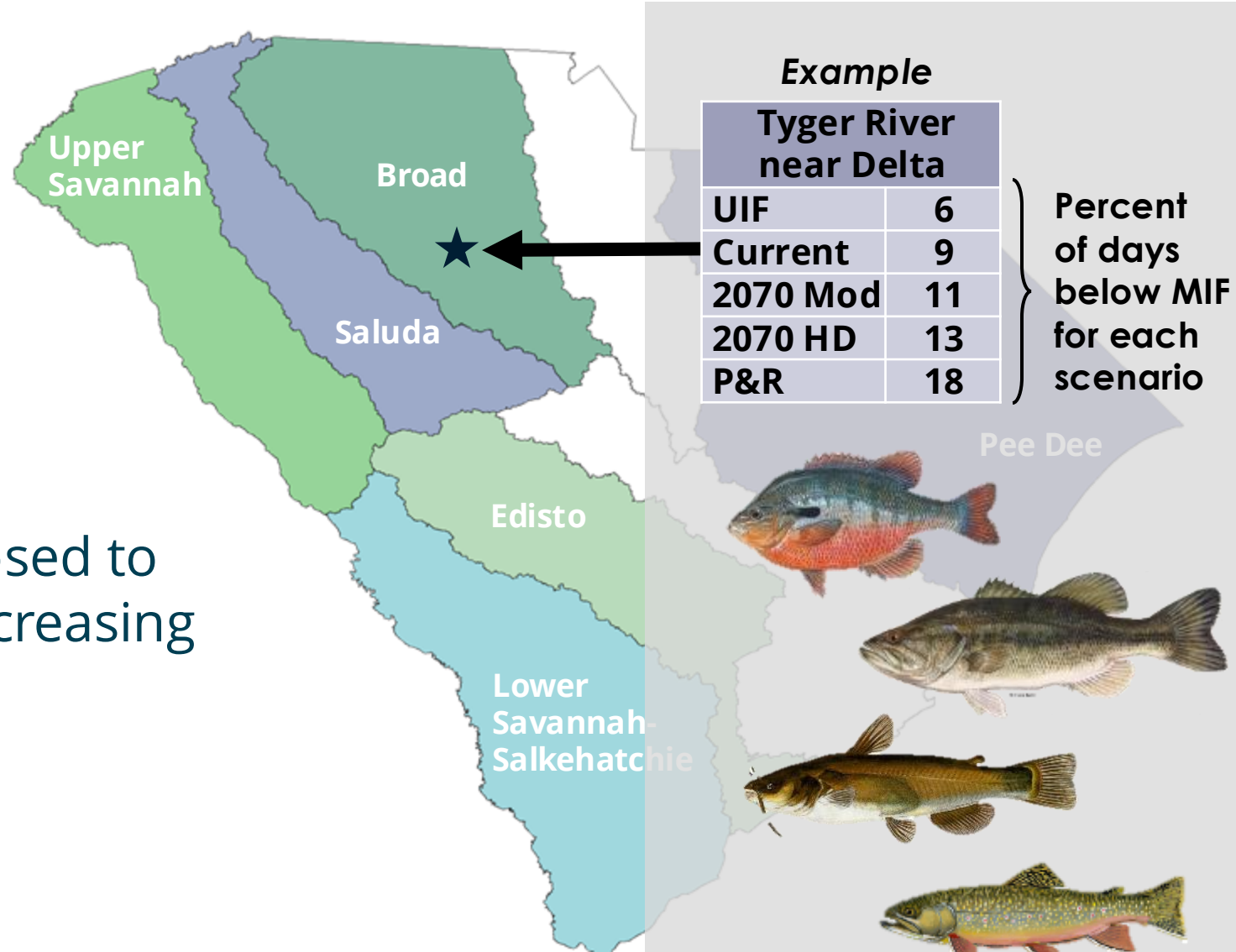
What Have We Learned – Coastal SC



- In all three basins, if surface water users withdrew at their **fully permitted and registered** amounts, the basins would be unsustainably stressed with frequent shortages and low flows
 - Only about...
 - 44%** in the Pee Dee,
 - 17%** in the Edisto,
 - 18%** in the Lower Savannah, and
 - 6%** in the Salkehatchie
- ...of the **permitted and registered** amounts are currently withdrawn

What Have We Learned?

- Modeling has also provided insight into:
 - The frequency of time that streamflow drops below established **Minimum Instream Flows (MIFs)**
 - The potential level of risk posed to **ecological health** due to increasing withdrawals



Surface Water Modeling Additional Considerations

- Longer and more severe droughts could stress surface water resources, causing shortages, especially in the **Upper Savannah** and **Broad** River basins
- Modeling was not performed to evaluate the ability to support new permitted and registered surface water withdrawals at specific locations



Lake Thurmond



Lake Hartwell

*Photos courtesy
Harry Shelley and Doug Young*

Surface Water Modeling Additional Considerations

- The River Basin Council's have identified potential challenges to surface water availability and use:
 - **Sedimentation** in reservoirs which reduces storage
 - **Increasing temperatures** which increase evaporative losses primarily from reservoirs
 - **Changing land use** which can increase impervious surface, reduce infiltration, increase peak flows, and generally alter the hydrologic flow regime
 - **Reductions in water quality** which can limit surface water availability and increase the cost of treatment



Lake Thurmond



Saluda Lake

Photos courtesy Harry Shelley and Melanie Ruhlman

Surface Water Modeling Summary

Modeling has helped address important questions:

- Is there enough surface water to support current and projected surface water withdrawals?
- What could happen if all surface water users withdrew water at their fully permitted and registered amounts?
- What water management strategies are effective at eliminating projected shortages, increasing surface water availability, sustaining growth, and leaving sufficient water in streams and rivers to support ecological health, recreation and other in-stream needs?



Reedy River



Lake Blalock



Questions?

John Boyer, PE, BCEE, PMP
CDM Smith



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Surface Water Case Studies and Experiences

November 22, 2024



Successes: Industry

Domtar Marlboro:
capturing single-pass
cooling water for reuse



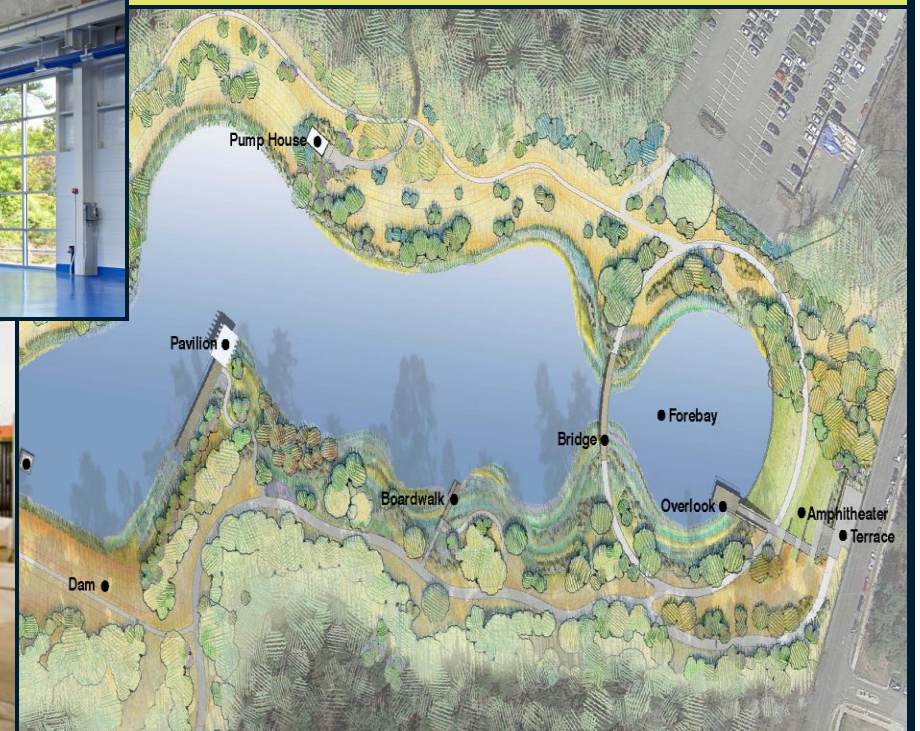
**Duke: Water Reclamation
Pond, collecting storm water
for reuse**



Tower Extrusions: recycling
wastewater from the
municipal sewage plant



Wastewater recycling system created for aluminum company.
[READ MORE](#)



Challenges: Industry and Commerce

1. Request: Industry looking to locate near a surface water supply in South Carolina bringing economic growth to a community
2. Regulatory evaluation: The amount of water requested was available, but unlike grandfathered users, they would be required to stop using surface water immediately in low flows
3. Result: Industry decides not to locate at the South Carolina and the community loses the potential economic growth

Successes: Water Supply and Energy



SWTP Expansion Project

City of Florence:
conjunctive use led to decreased reliance on groundwater

Existing Water Management Strategies in the Edisto Basin

Dominion Energy Cope Station South Fork Edisto River

- Moving from 100% groundwater to a combination of surface and groundwater by 2028
- Eventually will withdrawal ~90% from surface water and ~10% from groundwater when river conditions allow
- During low flow conditions, all water use at the station will be groundwater



Helping Hilton Head
Golf & Wildlife

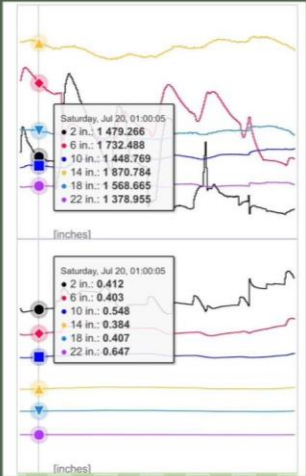
er plays a vital role in the Hilton Head Island's economy and ecology by providing irrigation water for es.

Hilton Head Public Service District: Recycled water provides irrigation water for 12 golf courses and two natural wetlands

Challenges: Water Supply

1. Request: A municipal water supply system requested to increase their permit volume by 30% to prepare for future population growth by using an intake from a neighboring industrial plant
2. Regulatory evaluation: An “industrial” intake cannot be transferred to a “water supply” intake, and the water body is overallocated – the current permit amounts exceed the actual volume of water
3. Result: Municipality challenged to plan for future growth

Successes: Agriculture

<p>Strategy For Conservation:</p> 	<h2>Reducing water losses</h2>		<p>Drip tape in bed covered with plastic mulch</p>
<h2>Capturing and reusing rainfall and runoff</h2>	<h2>Clemson Extension Center Pivot Audits</h2>   <p>CLEMSON PRECISION AGRICULTURE</p> <p>CLEMSON COOPERATIVE EXTENSION</p>	 <p>BRR Watermelon 07/25/2024 02:00 pm</p> <p>72% Full Point 1.75" Available Water</p> <p>18% 15% 10% 10% 16%</p> <p>2" 6" 10" 14" 18" 22"</p> <p>7-Day Moisture Trend</p> <p>Weather Report</p>	<h2>Precise watering by monitoring soil moisture</h2>  <p>Saturday, Jul 20, 01:00:05</p> <ul style="list-style-type: none">2 in.: 1 479.2666 in.: 1 732.45810 in.: 1 448.76914 in.: 1 870.78418 in.: 1 568.66522 in.: 1 378.955 <p>(inches)</p> <p>Saturday, Jul 20, 01:00:05</p> <ul style="list-style-type: none">2 in.: 0.4126 in.: 0.40310 in.: 0.54814 in.: 0.38418 in.: 0.40722 in.: 0.647 <p>(inches)</p>

Challenges: Agriculture

1. Request: In a basin, farmers are seeking new registrations to use surface water
2. Regulatory evaluation: That basin is completely allocated, NO new agricultural registrations can be granted, and current registrations cannot be transferred
3. Result: Farmers cannot get new agricultural registrations for a new farm or an expansion, they would need to be permitted, requiring them to stop using surface water immediately in low flows, unlike other farmers

- **South Carolina has cases of water use successes and challenges...**
- **What successes have you seen?**
- **What challenges have you faced?**



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Get in touch

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The WaterSC Working Group

- Have a statewide resource-focused approach
- Remain committed to the process
- Serve as a voice and connection for stakeholder sectors and categories
- Provide transparency
- Be collaborative and solution-focused

WaterSC Tabletop Discussions

WaterSC Tabletop Discussions--
November 22, 2024



What conservation methods, best practices and successes have you seen?

What challenges have you seen?

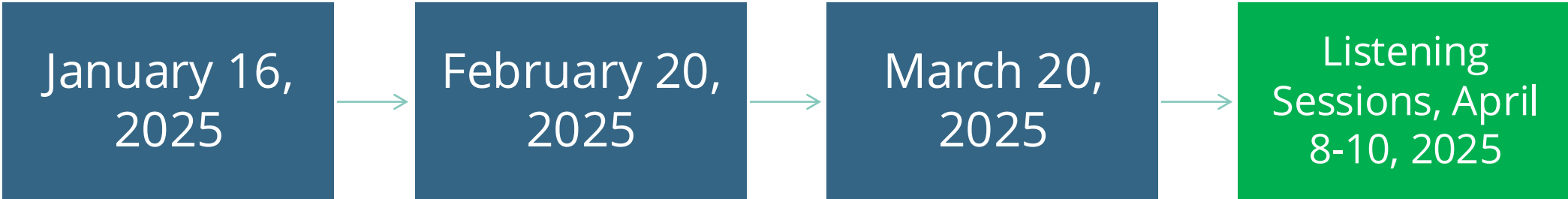
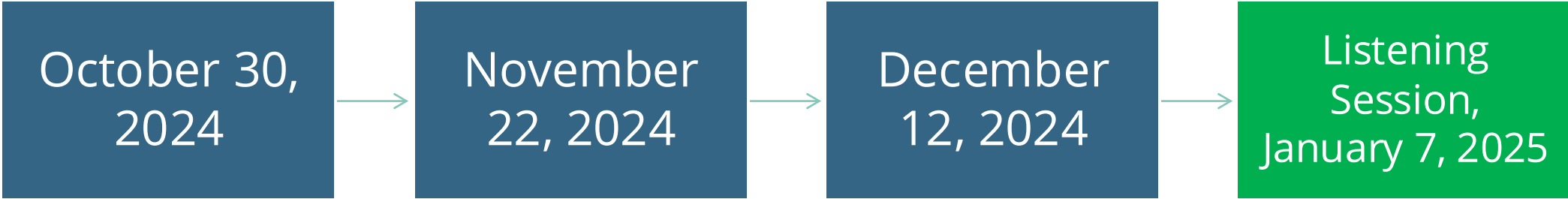
With the challenges, successes and information we have, how can we continue to meet current and future needs of our state while protecting our surface water resources?

How to Be Engaged with WaterSC

- Stay informed via the webpage des.sc.gov/watersc
 - Provide online comments
 - Livestream and meeting resources
- Attend Open House & Listening Session on January 7, 2025 to provide verbal comments
- Connect with Stakeholder Forums hosted by WaterSC members and other related groups



Working Group Meetings



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