Edisto Basin Groundwater Management Plans Overview

October 20, 2021 Meeting #16
Background

- 3 Capacity Use Areas (CUAs) across Edisto Basin:
  - Western – largest at 7 counties est. November 2018
  - Trident – 3 counties est. August 2002
Progress with Groundwater Management Plans (GWMP)

- GWMP for each area has been completed
- Evaluations for Trident and Lowcountry (still in draft) have been completed
  - Western evaluation will be done in 2023, year before permit renewals
Strategies for the Edisto CUAs GWMPs

1. Reduction of GW withdrawals in areas of concentrated pumping
2. Review permit applications based on demonstrated reasonable use
3. Establish a comprehensive GW monitoring program
4. Establish a conservation education plan for the general public and existing GW withdrawers
5. Regulation and Planning/Issue permits in accordance with the GWMP
Western GWMP Observations

- Historic reported groundwater use increased until around 2017 and has leveled out (largest increase was in irrigation)
- Population across Western counties has increased from 520,813 to 610,177 over 17 years (in Aiken and Lexington counties)
Aiken County 2018 Use by Sector

- Golf Course: 57%
- Industrial: 17%
- Irrigation: 26%
- Water Supply: 0%
Allendale County 2018 Use by Sector

- Allendale County
- Industrial (16%)
- Irrigation (3%)
- ThermoPower (10%)
- Water Supply (71%)
Barnwell County 2018 Use by Sector

- **87%** for Water Supply
- **13%** for Irrigation
Bamberg County 2018 Use by Sector

- Barnwell County
  - Industrial: 5%
  - Irrigation: 37%
  - Water Supply: 58%

Legend: [Industrial] [Irrigation] [Water Supply]
Calhoun County 2018 Use by Sector

- Golf Course: 7%
- Industrial: 0%
- Irrigation: 0%
- Water Supply: 93%
Lexington County 2018 Use by Sector

- Golf Course: 62%
- Industrial: 9%
- Irrigation: 1%
- Mining: 6%
- Water Supply: 22%
Orangeburg County 2018 Use by Sector

- Golf Course: 80%
- Industrial: 3%
- Irrigation: 9%
- Mining: 4%
- ThermoPower: 1%
- Water Supply: 3%

South Carolina Department of Health and Environmental Control
Healthy People. Healthy Communities.
Western Area Water Use by County
Wester Area Water Use by Category
Floridan/Gordon Aquifer

[Maps showing the Floridan/Gordon Aquifer for 2004 and 2016]
Crouch Branch Aquifer
McQueen Branch Aquifer
Data Compiled for Lowcountry Report (Currently in Draft)

- Historic use has increased across sectors, mostly irrigation (due to increased reporting)

- Population has increased across Lowcountry by 60,635 from 2000 to 2015
Beaufort County 2021 Use by Sector and Aquifer

- Aquaculture
- Golf Course
- Industrial
- Irrigation
- Water Supply

Beaufort County
- Aquaculture: 0%
- Golf Course: 7%
- Industrial: 13%
- Irrigation: 0%
- Water Supply: 80%

Beaufort County
- Gramling: 8%
- Middle Floridan: 51%
- Surficial: 1%
- Upper Floridan: 40%
Colleton County 2021 Use by Sector and Aquifer

- Golf Course: 40%
- Irrigation: 3%
- Water Supply: 57%

- Aquifer Zone Used By Edisto Beach: 55%
- Charleston: 17%
- Crouch Branch: 8%
- Gordon: 11%
- Upper Floridan: 5%
- Middle Floridan: 3%
- Middle Floridan-Gordon: 1%
Hampton County 2021 Use by Sector and Aquifer

- Aquaculture: 14%
- Irrigation: 5%
- Water Supply: 81%

- Crouch Branch: 62%
- Gordon: 17%
- Middle Floridan: 7%
- Upper Floridan-Middle Floridan: 0%
- Upper Floridan: 4%
- Floridan: 5%
- Gordon-Crouch Branch: 5%
Jasper County 2021 Use by Sector and Aquifer

- **Jasper County**
  - Golf Course: 33%
  - Irrigation: 10%
  - Water Supply: 57%

- **Jasper County**
  - Floridan: 38%
  - Gordon: 7%
  - Middle Floridan: 0%
  - Upper Floridan: 1%
  - Upper Floridan-Middle Floridan: 54%
Recommendations from Lowcountry (Draft) Evaluation

- Suggests limiting withdrawals from the Upper Floridan due to saltwater intrusion and declining water levels
- Using aquifer storage and recovery (ASR) wells when appropriate
Data Compiled for Trident Report (Written in 2017)

- Permitted use and aquifer use
- Potentiometric maps of pertinent regional aquifers
- Data from evaluation is based on 2016 use
Berkeley County 2016 Use by Sector and Aquifer

Berkeley County

- Golf Course: 3%
- Industry: 2%
- Water Supply: 95%

Berkeley County

- Surflcial/Floridan/Gordon: 87.97%
- Crouch Branch: 8.63%
- McQueen Branch/Charleston: 3.40%
Charleston County 2016 Use by Sector and Aquifer

Charleston County

- Golf Course: 19%
- Industry: 2%
- Water Supply: 79%

Charleston County

- Surficial/Floridan/Gordon: 0.13%
- Crouch Branch: 0.79%
- McQueen Branch/Charleston: 2.77%
- Gramling: 96.31%
Dorchester County Use by Sector

Dorchester County

- Golf Course: 2%
- Industry: 31%
- Irrigation: 1%
- Other: 11%
- Thermo Power: 20%
- Water Supply: 35%

Dorchester County

- Surficial/Floridan/Gordon: 78.44%
- McQueen Branch/Charleston: 7.19%
- Crouch Branch: 14.38%
McQueen Branch/Charleston Wells in the Trident Area

Legend
- mcQueen2016contours

McQueen_Branch
Aquifer, Status
- Charleston, A
- Charleston, E
- Grafton, E
- McQueen Branch, A

0 3.5 7 14 21 28 Miles
Recommendations from Trident Evaluation

- Reduce withdrawals in McQueen Branch and Charleston Aquifers
- Increase use of ASR wells and artificial recharge (AR)
- Infrastructure audits for PWS systems
  - Encourage conservation by PWS customers
Strategies for the Edisto CUAs GWMPs

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General Notes Compared with Strategies

• Look to decrease use in aquifers when appropriate – Strategies 1, 2, 3, and 5
• ASR wells when appropriate – Strategies 1 and 5
• Infrastructure audit – Strategies 2, 4, and 5