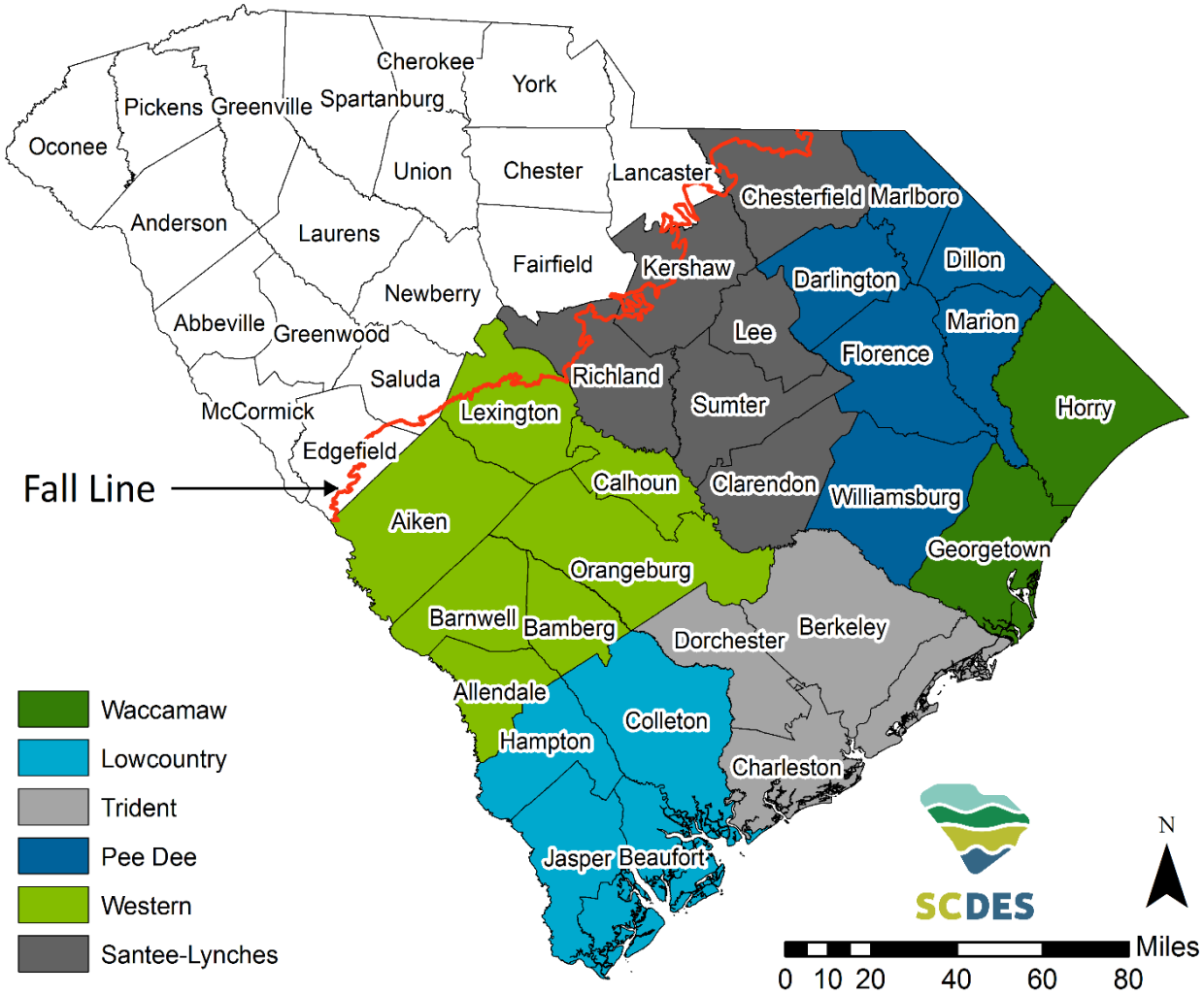
SC DEPARTMENT *of*
ENVIRONMENTAL
SERVICES

Pee Dee Capacity Use Area

Groundwater Conditions & Management



The Pee Dee Capacity Use Area (Pee Dee Area), which includes the whole of Marlboro, Darlington, Dillion, Marion, Florence, and Williamsburg Counties, was the fourth of six currently designated areas of South Carolina's (SC) Coastal Plain to be incorporated into the Capacity Use Program

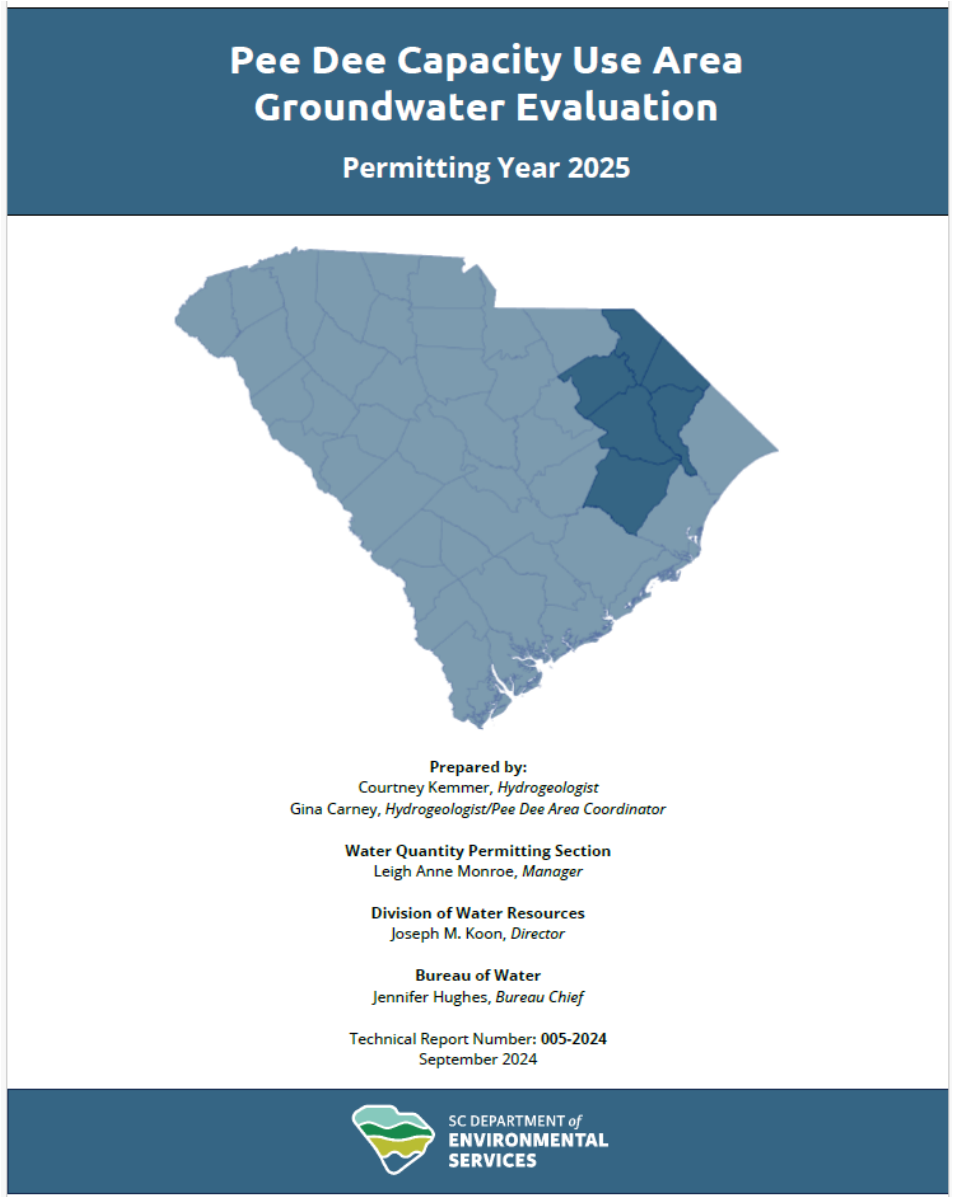
Groundwater Evaluation Reports

Every 5 years permitting cycle total annual groundwater withdrawals will be compiled and compared to available aquifer potentiometric maps. The report includes the following

Listing of all permitted withdrawers, permitted withdrawal limits, and average groundwater withdrawal;

Evaluation of withdrawal by category and by aquifer;

Identification of areas of aquifer stress, current conditions, monitoring well, and all withdrawers utilizing the stressed aquifer(s).



Pee Dee Capacity Use Area Groundwater Evaluation

Permitting Year 2025

Prepared by:
Courtney Kemmer, *Hydrogeologist*
Gina Carney, *Hydrogeologist/Pee Dee Area Coordinator*

Water Quantity Permitting Section
Leigh Anne Monroe, *Manager*

Division of Water Resources
Joseph M. Koon, *Director*

Bureau of Water
Jennifer Hughes, *Bureau Chief*

Technical Report Number: **005-2024**
September 2024

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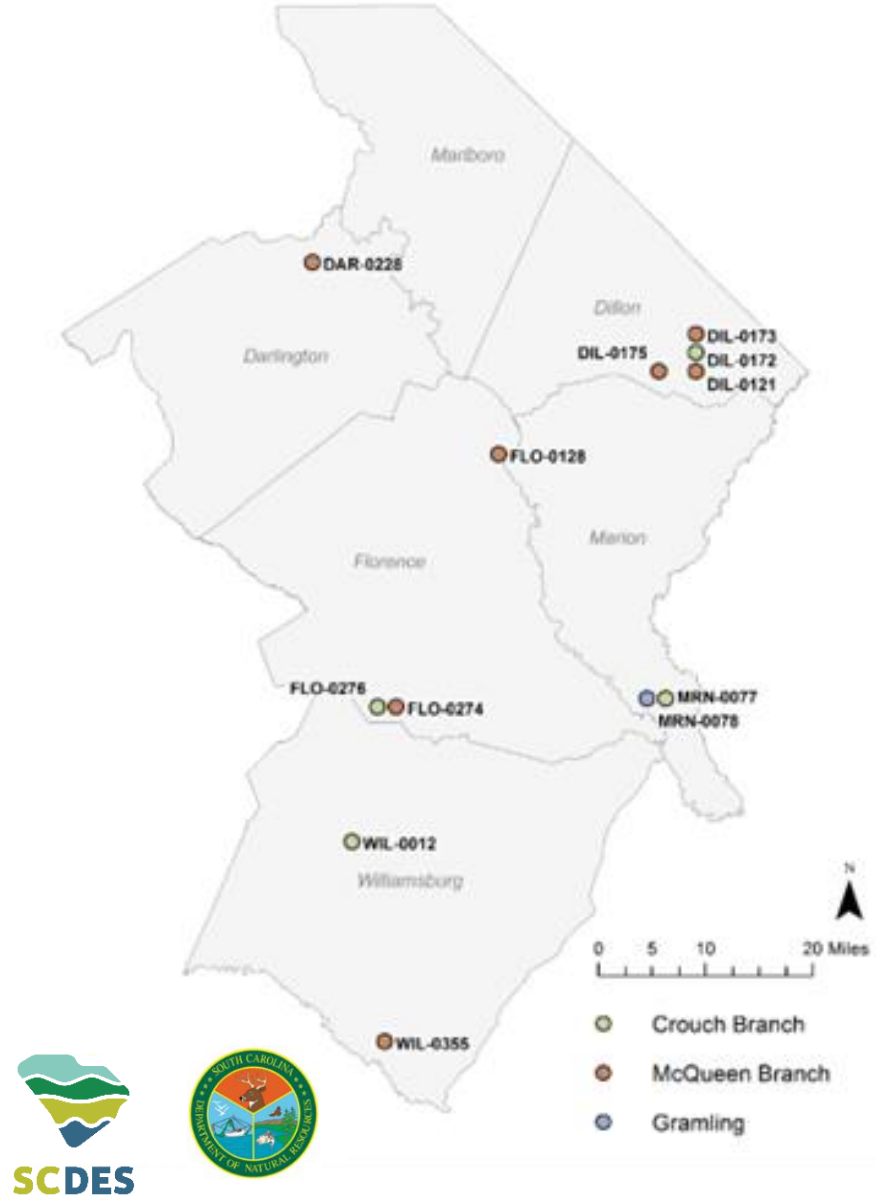
Groundwater Conditions

SCDES Hydrology Monitoring Wells

Well ID	County	Aquifer	Record Length (years)
DAR-0228	Darlington	McQueen Branch	23.7
DIL-0121	Dillon	McQueen Branch	22.7
DIL-0172	Dillon	Crouch Branch	7.7
DIL-0173	Dillon	McQueen Branch	6.7
DIL-0175	Dillon	McQueen Branch	6.7
FLO-0128	Florence	McQueen Branch	39.7
FLO-0274	Florence	McQueen Branch	21.7
FLO-0276	Florence	Crouch Branch	21.7
MRN-0077	Marion	Crouch Branch	39.7
MRN-0078	Marion	Gramling	17.6
WIL-0012	Williamsburg	Crouch Branch	5.7
WIL-0355	Williamsburg	McQueen Branch	8.7

*Water level measurements collected before July 1, 2024, were obtained by the SCDNR Hydrology Section. Water level measurements collected on or after July 1, 2024, were obtained by the SCDES Hydrology Section.



SCDES

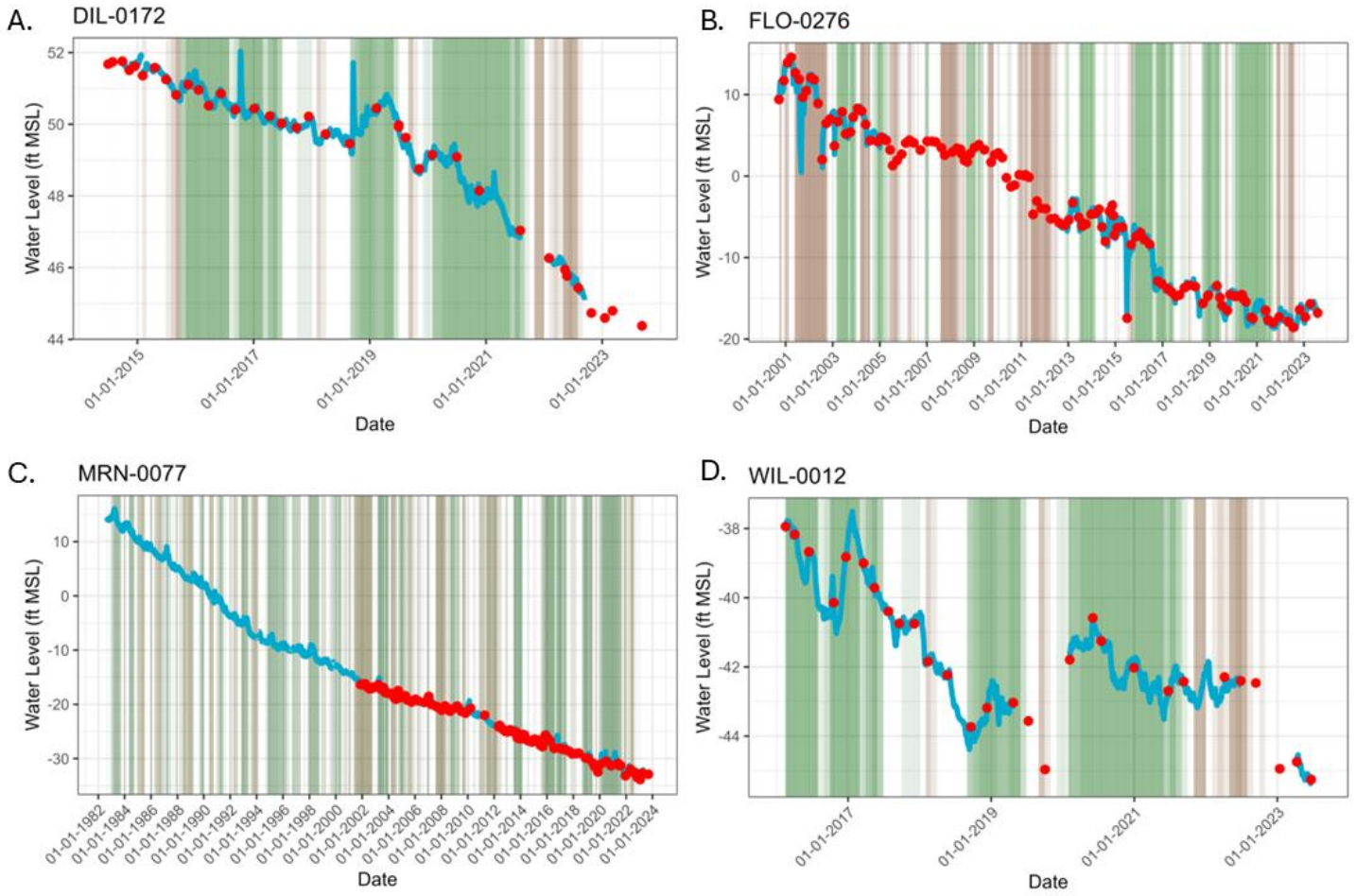
Crouch Branch Aquifer

DIL-0172
- Decline of approximately 7.3 feet since 2014 (~0.7 feet per year).
- Spikes in 2016 and 2018 correspond with tropical systems that brought heavy rainfall to the Pee Dee Area.

FLO-0276
- Decline of approximately 26.2 feet since 2000 (~1.2 feet per year).

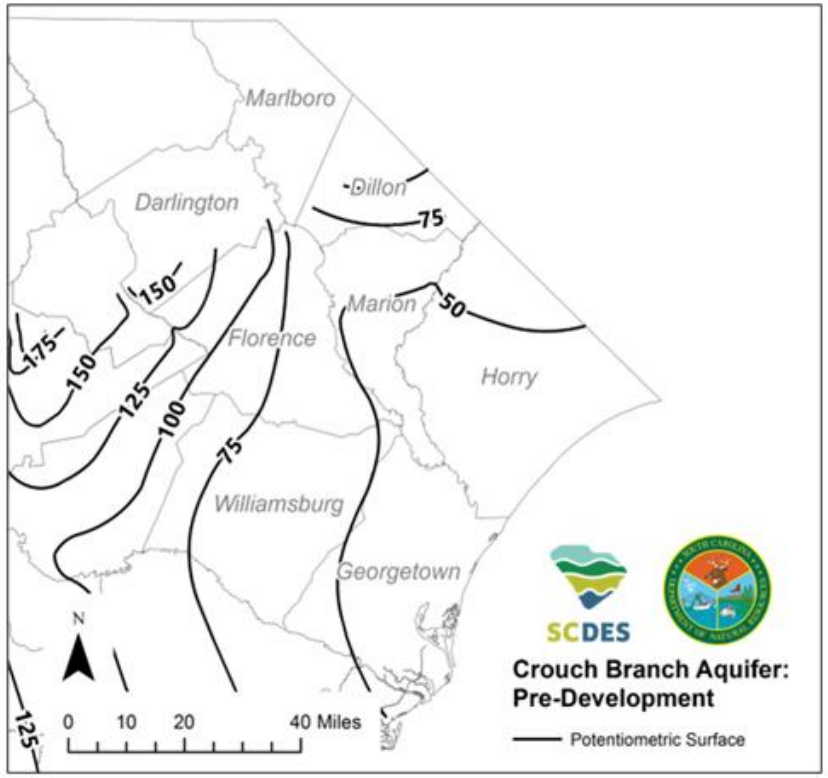
MRN-0077
- Decline of approximately 47.3 feet since 1982 (~1.2 feet per year).

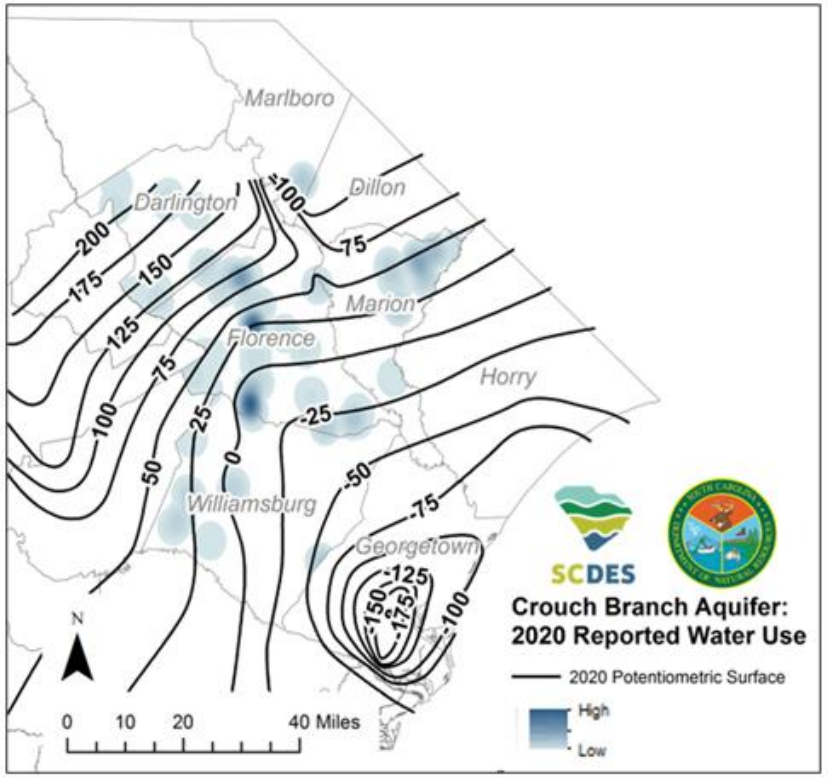
WIL-0012
- Decline of approximately 7.3 feet since 2016 (~0.9 feet per year).
- The shallow nature of the aquifer at this location makes it particularly susceptible to climatic influences.



Crouch Branch Aquifer

- Darlington, Dillon, and Marlboro Counties have shown minimal changes in water levels since pre-development.
- Marion County has experienced a lowering of the potentiometric surface by 25 feet, Florence County by 75 feet, and Williamsburg County by up to 100 feet.
- Groundwater flow has shifted from east to southeast.





McQueen Branch Aquifer

DAR-0228

- Water levels have remained relatively stable, overall, since 2011.
- Heavily influenced by climatic conditions and interactions with surface water.

DIL-0121

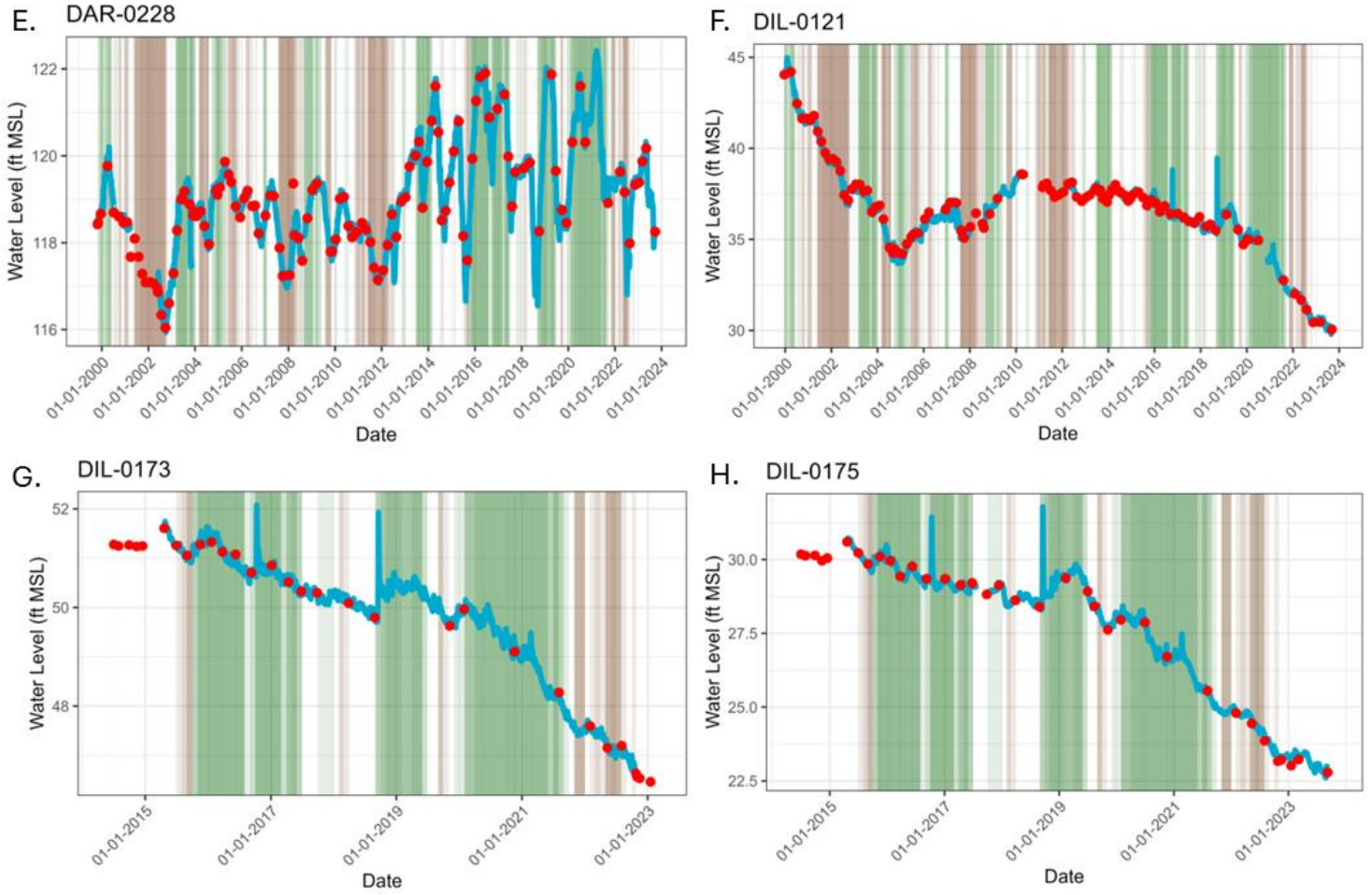
- Decline of approximately 14 feet since 1999 (~0.6 feet per year).

DIL-0173

- Decline of approximately 4.8 feet since 2014 (~0.8 feet per year).

DIL-0175

- Decline of approximately 7.4 feet since 2014 (~1.2 feet per year).



McQueen Branch Aquifer, continued

FLO-0128

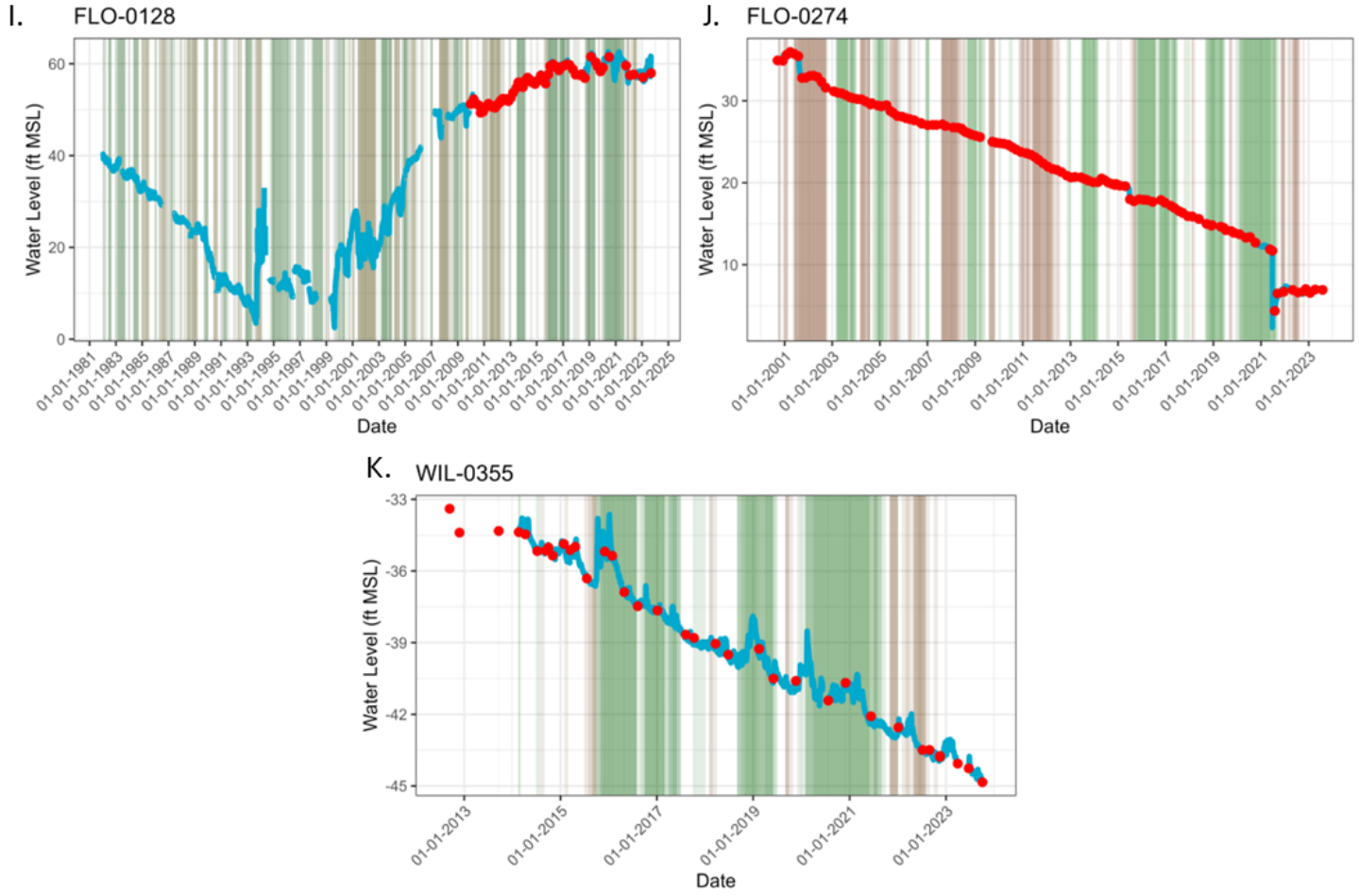
- Drawdown period in the 1990s, subsequent recovery through 2019, and recent stabilization of water levels.
- This recovery holds significant implications for groundwater management efforts across the state to ensure the sustainable use of the State's groundwater resources.

FLO-0274

- Decline of approximately 28 feet since 2000 (~1.4 feet per year).

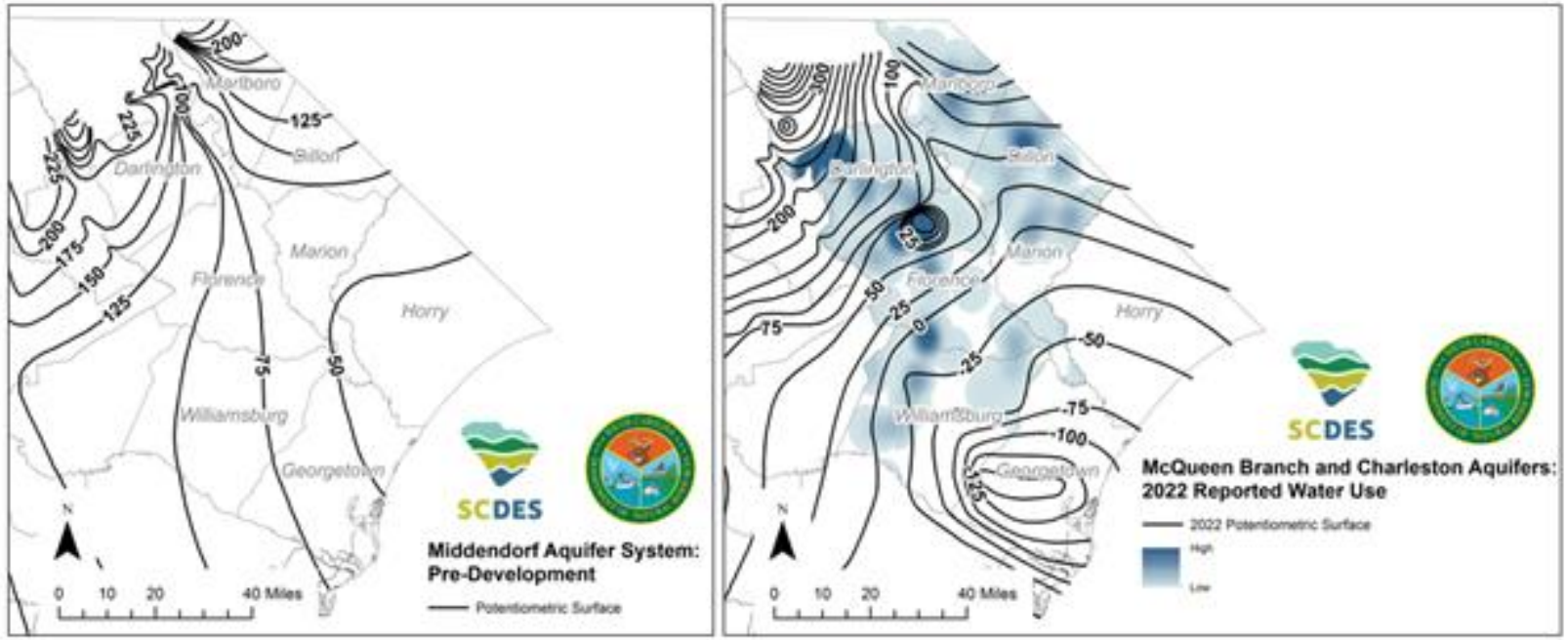
WIL-0355

- Decline of approximately 11.5 feet since 2012 (~1.3 feet per year).



McQueen Branch & Charleston Aquifers

- Darlington County has shown minimal changes in water levels since pre-development.
- Eastern Florence, Marion, and Williamsburg Counties have experienced a lowering of the potentiometric surface by approximately 100 feet.
- Groundwater flow has shifted from east to southeast.
- Cone of depression centered in northwestern Florence County has recovered by approximately 70 feet since reaching a record low of 92 feet below MSL in the late 1990s.

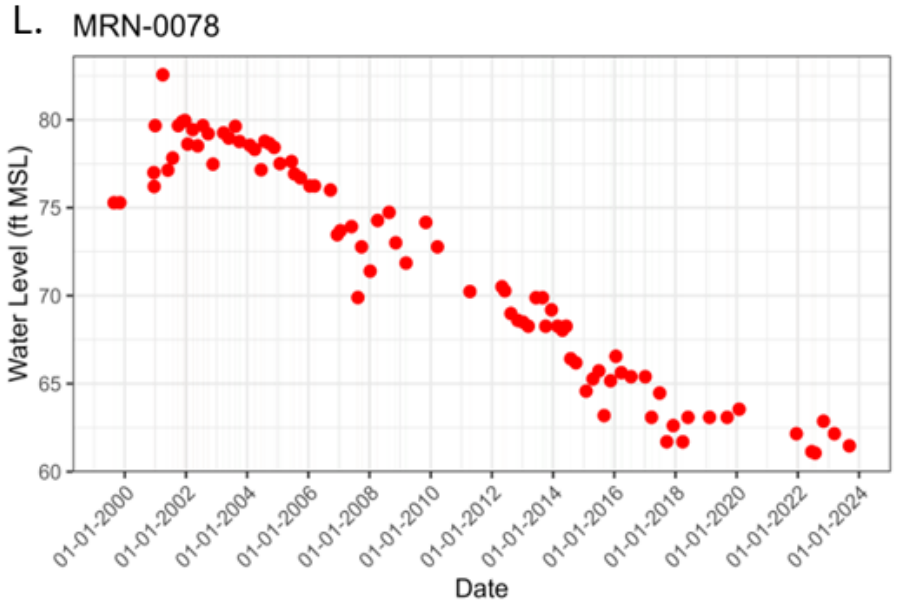


The predevelopment map was created for the Middendorf Aquifer System as a whole (including the McQueen Branch, Charleston, and Gramling aquifers). The most 2022 potentiometric surface was created for the McQueen Branch and Charleston aquifers.

Gramling Aquifer

MRN-0078

- Decline of approximately 18 feet since 2001 (~1.0 foot per year).
- Water levels stabilized at approximately 63 feet MSL in recent years.
- No Capacity Use Wells currently withdraw water from the Gramling aquifer in the Pee Dee Area.



Recommendations for Management

Recommendations For Crouch Branch & McQue Branch Aquifers

- No increases in permitted groundwater withdrawal rates should be approved for existing wells screened in the Crouch Branch aquifer or McQueen Branch aquifer in Florence County or Williamsburg County.
- No new wells with associated groundwater withdrawal rate increases should be permitted for construction and production in the Crouch Branch aquifer or McQueen Branch aquifer in Florence County or Williamsburg County.
- Encourage the use of Aquifer Storage and Recovery (ASR) wells and increase the use of Artificial Recharge (AR).
- Staff evaluations should include a groundwater model assessment to determine the potential for the development of pumping cones and potential interference on neighboring wells.

Recommendations For Pee Dee Capacity Use Area

- Requested groundwater withdrawal rate increases should be diverted to surface water sources. Groundwater should be used as a supplemental and/or backup source, if possible.
- Encourage groundwater withdrawers to discontinue using and properly abandon wells that have been screened across multiple aquifers and ensure that all future wells are screened in the target aquifer only.
- Work toward educating all South Carolinians on best practices for water conservation must continue in cooperation with all stakeholders.
- Work in conjunction with local, state, and federal partners to expand the SC Groundwater Monitoring Network in Pee Dee Area aquifers.

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Questions?

Ashley Carothers Hydrogeologist

Ashley.Carothers@des.sc.gov

803-898-4220

des.sc.gov

@SouthCarolinaDES