Georgia Comprehensive State-Wide Water Management Plan Assessment of Groundwater Availability

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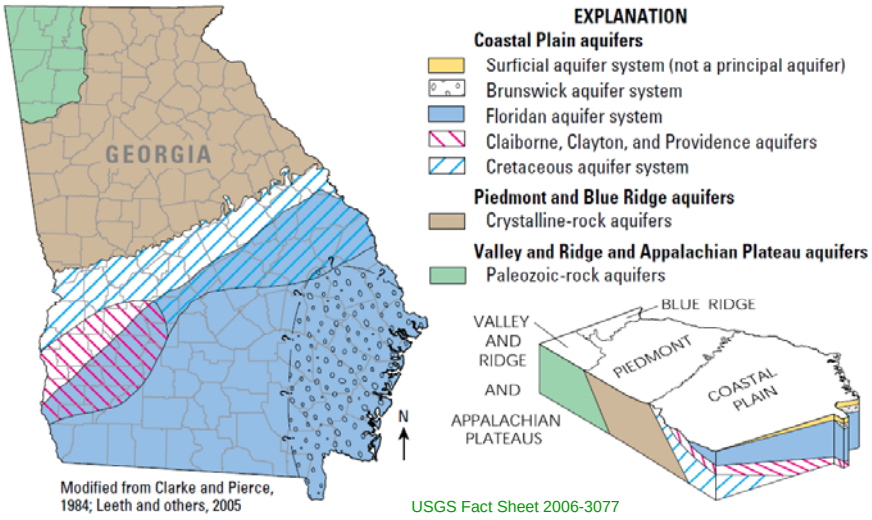
Prioritization of Aquifers and Aquifer Units for Assessment of Sustainable Yield

- A comprehensive accounting of the sustainable yields of all aquifers in Georgia would be extraordinarily expensive and time consuming
- Aquifer assessments of sustainable yield are prioritized
- Bases for aquifer prioritization
  - Functional characteristics of the aquifer (extent and thickness, recharge to the aquifer, well yield)
  - Existing evidence of adverse effects due to withdrawals
  - Forecasts suggesting significant increases in demands
  - Aquifers where it will not be possible to determine sustainable yield within a reasonable time period

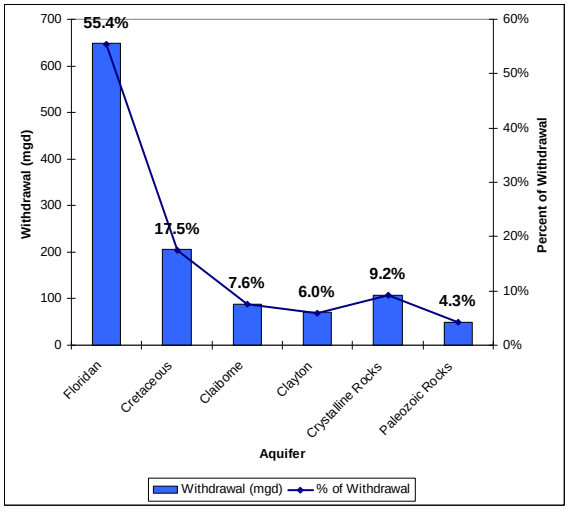
Georgia's Aquifers



Modified from Clarke and Pierce, 1984; Leeth and others, 2005

USGS Fact Sheet 2006-3077

2005 Groundwater Use by Aquifer



- 86.5% of groundwater was withdrawn from Coastal Plain aquifers in southern Georgia (Floridan, Cretaceous, Claiborne, Clayton)
- 13.5% of groundwater was withdrawn from crystalline rock and Paleozoic rock aquifers in northern Georgia

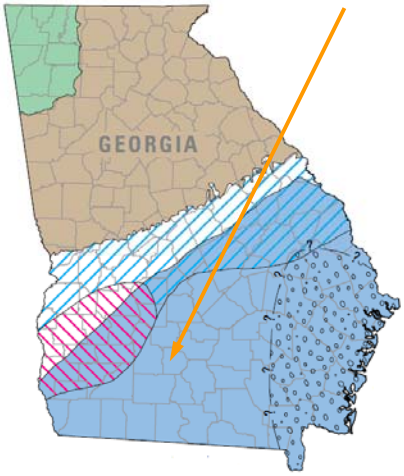
Data from Fanning, J.L. and V.P Trent, USGS SIR 2009-5002

Prioritization of Aquifers for Determination of Sustainable Yield

- Numerical (MODFLOW) computer models of Coastal Plain aquifers where most groundwater is withdrawn, groundwater withdrawals have caused some unacceptable impacts, and forecasts suggest increases in future withdrawals
  - Upper Floridan aquifer in the Dougherty Plain
  - Upper Floridan aquifer in Tift County area
  - Cretaceous aquifer between Macon and Augusta
  - Claiborne aquifer in southwestern Georgia
  - Upper Floridan aquifer in the eastern Coastal Plain
- Water balance models in the north Georgia crystalline and Paleozoic rock aquifers where less groundwater is withdrawn

4

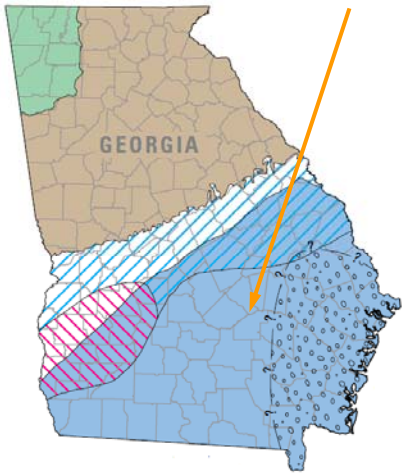
Prioritization of the Upper Floridan Aquifer in Tift County area



- Highly productive aquifer
- Aquifer currently heavily used for public water supply and irrigation
- Dropping water levels during the 2007 irrigation season caused domestic wells to go dry
- Increased groundwater use expected due to increasing population and changes in crops to those requiring more irrigation

5

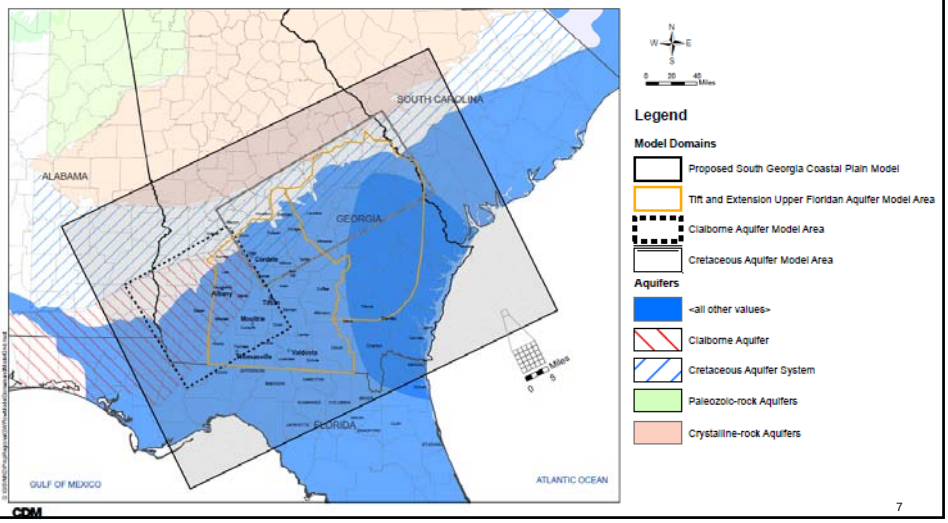
Prioritization of the Upper Floridan Aquifer in the Eastern Coastal Plain



- Highly productive aquifer
- Aquifer currently heavily used for public and industrial water supply, and for irrigation
- Large cone of depression due to industrial withdrawals
- Aquifer is an alternate source of water to the Cretaceous aquifer
- Increased groundwater use may occur for industrial and energy development

6

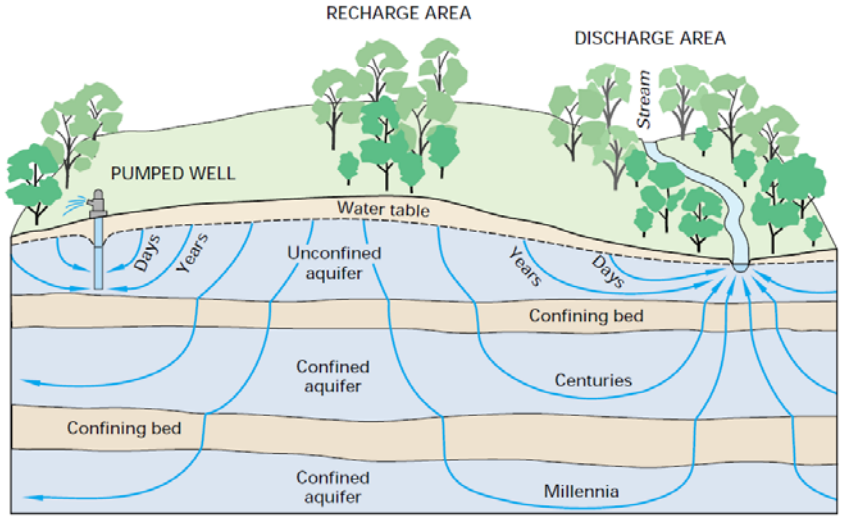
Calibrate the Regional Coastal Plain Model and Telescope to Prioritized Aquifers to Determine Sustainable Yield



CDM

7

The Model Incorporates Multiple Aquifer Layers



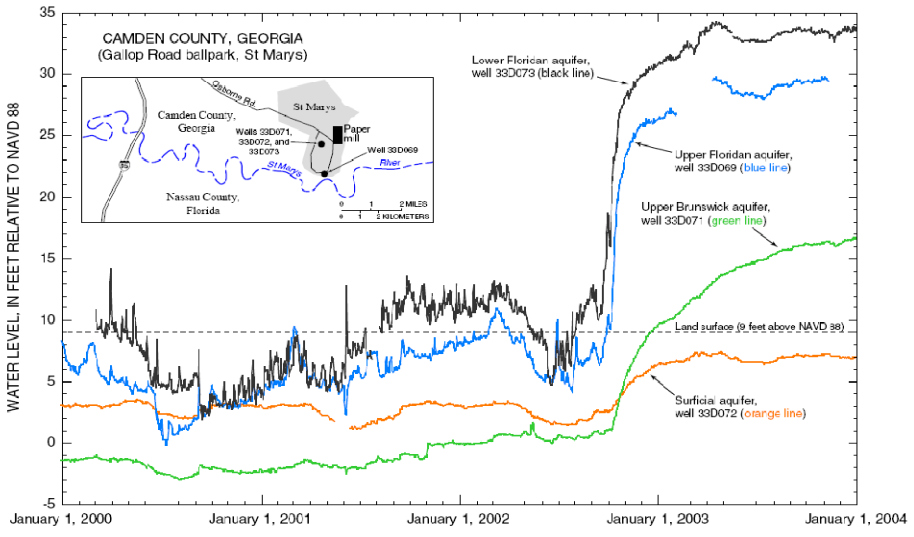
8

Other Aquifers in the Georgia Coastal Plain

- Upper Floridan aquifer in the Savannah area is being numerically modeled as part of the Georgia Coastal Sound Science Initiative
- Upper Floridan aquifer in the Brunswick-Glynn County area is being numerically modeled by the USGS in cooperation with the City of Brunswick and Glynn County
- Upper Floridan aquifer groundwater levels in Camden County recovered by 20 to 30 feet within weeks of withdrawals decreasing from about 40 to 5 mgd after the Durango paper mill stopped withdrawing groundwater, indicating that a withdrawal of 40 mgd did not exceed recharge and was therefore below the sustainable yield of the aquifer

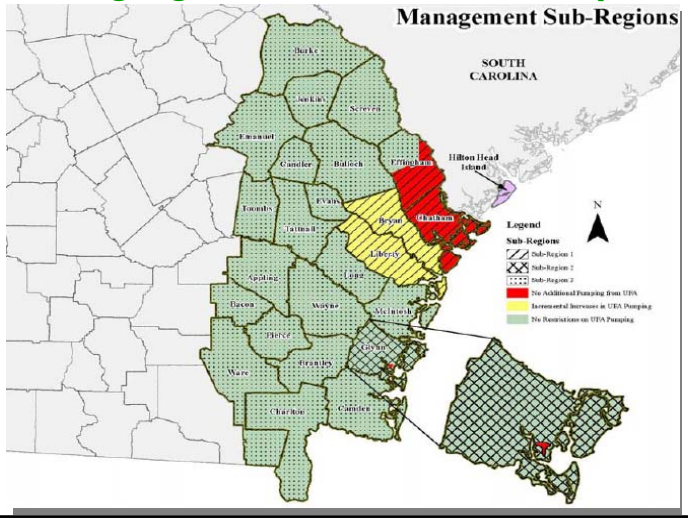
9

Recovery of Floridan Aquifer Water Levels



USGS Scientific Investigations Report 2005-5124

Coastal Georgia Water & Wastewater Permitting Plan for Managing Salt Water Intrusion (June 2006)



11

Management Plan Elements

Sub-Region 1 Rd Zone	**No Additional Upper Floridan Aquifer Withdrawals** **Reduction of 5 Million Gallons per Day in the Upper Floridan Aquifer Withdrawals** **Source Diversification**
Sub-Region 1 Yellow Zone	**Incremental Increases in Withdrawals from the Upper Floridan Aquifer**
Sub-Region 2	**No Restrictions on Withdrawals from the Upper Floridan Aquifer** **Avoid Plume Growth** **No New Wells in the Plume**
Sub-Region 3	**No Restrictions on Withdrawals from the Upper Floridan Aquifer**
All Sub-Regions	**Conservation and Reuse** **Justification of Need** **Monitoring**

12