

City of Albany Cooperative Water-Resources Program

Study Chief Debbie Warner
Cooperator Albany Water, Gas, and Light Commission
Year Started 1977

Problem

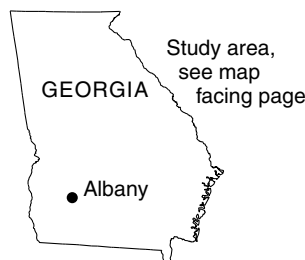
Long-term heavy pumping from the Claiborne, Clayton, and Upper Cretaceous aquifers, which underlie the Upper Floridan aquifer, has resulted in significant water-level declines in the deeper aquifers in the Albany area. These declines have raised concern over the ability of the deeper aquifers to meet the increasing demand for potable water supply. To provide additional water supply and reduce the demand on the deeper aquifers, the Albany Water, Gas, and Light Commission (WGL) is developing a large wellfield southwest of Albany. The supply wells at this location will primarily tap the Upper Floridan aquifer, a karstic unit that is the uppermost reliable source of water in the area. Because of local recharge to the aquifer, water quality may be affected by land-use practices. Nitrate levels exceeding the 10-milligram per liter Maximum Contaminant Level (MCL) (U.S. Environmental Protection Agency, 2000) have been detected in some wells upgradient of the proposed wellfield. The ground-water-flow system and water quality of the Upper Floridan aquifer in the vicinity of the wellfield are complex and poorly understood.

Objectives

- Monitor water-level fluctuations in the four aquifers used in the Albany area and relate water-level trends to changes in climatic conditions and pumping patterns.
- Describe the ground-water flow and water quality of the Upper Floridan aquifer in the southwestern Albany area including: identify ground-water-flow directions and gradients for the Upper Floridan aquifer; determine if there is a rapid hydrologic response between rainfall and ground-water levels; describe the distribution of ground-water ages for the Upper Floridan aquifer in the study area; and describe ground-water quality with a particular emphasis on nitrate concentrations.

Progress and Significant Results, 2001

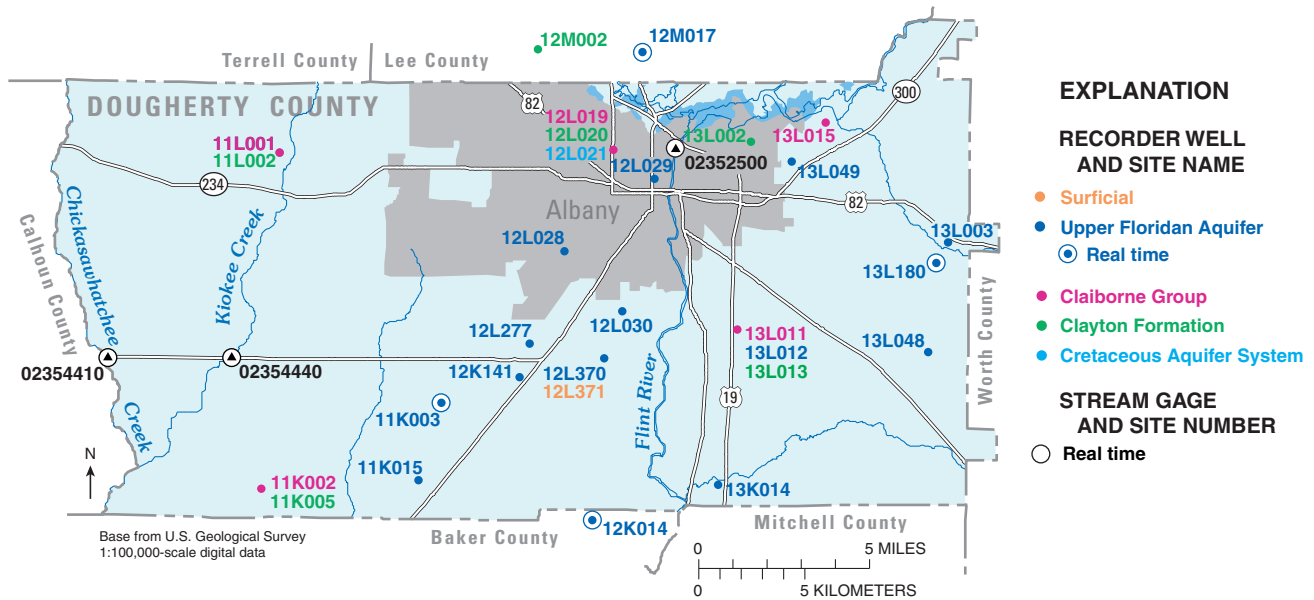
- Continued investigating of nitrate contamination in the vicinity of the southwestern Albany area wellfield. Samples were collected from six wells during March 2001 for field properties, dissolved nitrite plus nitrate, and nitrogen-15 and oxygen-18 isotopes to help determine the source of nitrate contamination.
- Continued hydrologic and water-quality monitoring, and operation of continuous ground-water-level monitoring network, which includes 23 wells in 5 aquifers;
 - a. Added three new wells to continuous recorder network in the vicinity of the wellfield;



- a. Presented hydrographs from eight of the wells in the network in a monthly letter report and on the Web at URL: <http://ga.water.usgs.gov/projects/albany/conditions/>; and
 - c. Summarized local water-resources conditions for year 2000 in the USGS Open-File Report "Ground-Water Conditions in Georgia, 2000" (Cressler and others, 2001).
- Collected water-level measurements from 66 wells in the southwest Albany area during October 29–30, 2001, and constructed a potentiometric-surface map.
 - Collected water samples from 11 wells in the same area during November 13–16, 2001, are being analyzed for major cations, anions, and nutrients.
 - Developed a Web site for the Albany program to provide the public with hydrologic information in the Albany area. Included on the Web site is information on ground-water activities; references and publications; ground-water, surface-water, and drought monitoring; ground-water-quality data; and links to many other Web pages related to Albany's water issues. The Web site may be accessed at URL: <http://ga.water.usgs.gov/projects/albany/>.
 - Continued maintaining Albany area databases. During 2001, a water-quality database was developed to provide information on water-quality data collected since 1951 in the Albany area. This database is available on a CD-ROM (Warner and others, 2002) and is linked to the aforementioned Web site.

References Cited

- Cressler, A.M., Blackburn, D.K., and McSwain, K.B., 2001, Ground-water conditions in Georgia, 2000: U.S. Geological Survey Open-File Report 01-220, 182 p.
- U.S. Environmental Protection Agency, 2000, Maximum contaminant levels (Part 143, National Secondary Drinking Water Regulations): U.S. Code of Federal Regulations, Title 40, Parts 100–149, revised as of July 1, 2000, p. 612–614.
- Warner, Debbie, Easoz, J.E., and Priest, Sherlyn, 2002, Ground-water-quality data for Albany and surrounding areas, southwest Georgia, 1951–99: U.S. Geological Survey Open-File Report 02-124, CD-ROM.



The USGS continuously records water levels in 29 wells and 3 stream gages in the Albany area, shown on the map above. Data from four of these wells and the three stream gages are available in realtime at URL: <http://ga.waterdata.usgs.gov/nwis/current/?type=gw>.

A CD-ROM report entitled "Ground-Water-Quality Data for Albany and Surrounding Areas, Southwest Georgia, 1951-99" was published to provide information on water quality since 1951, in the Albany area.

A Web site was developed for the Albany program to provide the public with hydrologic information in the Albany area. The Web site can be accessed at URL: <http://ga.water.usgs.gov/projects/albany>.