

Ground-Water Information and Project Support

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Georgia Geologic Survey
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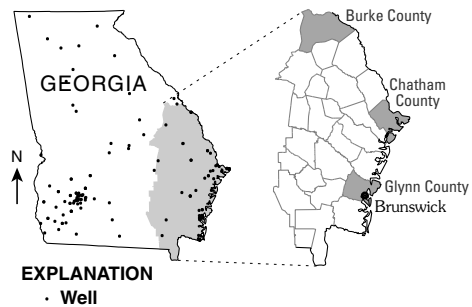
Year Started 1938

Problem

Ground water accounts for about 22 percent of fresh-water withdrawals in Georgia—more than 2.7 billion gallons per day. More than 1.8 million people are served by ground-water supplies, and 734 million gallons per day are withdrawn for irrigation (Julia L. Fanning, U.S. Geological Survey, oral commun. with David C. Leeth, October 7, 2002). The distribution and quality of ground water are highly variable and directly related to geology, and natural and human stresses. Monitoring ground-water levels and ground-water quality is essential to the management and development of this resource.

Objectives

- Collect ground-water-level and ground-water-quality data to assess the quantity, quality, and distribution of ground water;
- Address water-management needs and evaluate the effects of national and local management and conservation programs;
- Advance the knowledge of the regional hydrologic system;
- Advance field or analytical methodology;
- Advance the understanding of hydrologic processes;
- Provide data or results useful to multiple parties in potentially contentious inter-jurisdictional conflicts about water resources;
- Furnish hydrologic data required for interstate and international compacts, Federal law, court decrees, and congressionally mandated studies;
- Provide water-resources information that will be used by multiple parties for planning and operational purposes; and
- Contribute data to national databases that will be used to advance the understanding of regional and temporal variations in hydrologic conditions.

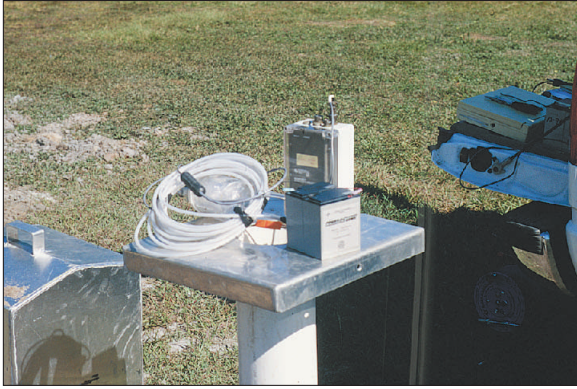


Progress and Significant Results, 2001

- Continuous water-level recorders were operated in 184 wells, and data from 159 wells (map, above; photo A, facing page) were reported in an annual data report (Coffin and others, 2002). Periodic water-level measurements were made in more than 257 wells throughout the State (photo B, facing page). Water-level data were collected to define potentiometric surfaces during the current severe drought. Water samples were collected for chloride analysis from 66 wells in the Brunswick area, 10 wells in the Savannah area, and 6 wells in Camden County. Borehole-geophysical logs were collected from 27 wells—12 in the Lawrenceville area and 15 in the coastal area. The type of logs collected include caliper, natural gamma (photo C, facing page), electric (lateral, long and short normal resistivity) fluid-temperature, fluid-resistivity, electromagnetic induction, full-wave sonic, acoustic televiewer, and spinner-flowmeter (photo D, facing page). Borehole video logs were collected in all of the Lawrenceville wells and in one well in Glynn County.
- Well-inventory, water-level, and geologic data were verified for entry into the National Well-Inventory System (NWIS) database. Field inventories were conducted to assist projects, and sites were added to the NWIS Ground-Water Site Inventory (GWSI) to improve ground-water data coverage in the State. Thirteen wells were instrumented with real-time transmission (satellite relay) of continuous water-level records to aid in drought planning. The NWIS database may be accessed on the Web at URL: <http://waterdata.usgs.gov/ga/nwis/current/?type=gw>.

Reference Cited

Coffin, Robert, Grams, S.C., Cressler, A.M., and Leeth, D.C., 2002, Continuous ground-water-level data, and periodic surface-water- and ground-water-quality data, calendar year 2001, v. 2 in Alhadeff, S.J., and McCallum, B.E. (compilers), Water resources data—Georgia, 2001: U.S. Geological Survey Water-Data Report GA-01-2, CD-ROM.



A. A typical continuous recorder setup on a well at Coastal Georgia Community College, Brunswick, which is part of the ground-water-level monitoring network. The equipment consists of a data logger, 30-pounds-per-square-inch transducer, and battery. The recorder is set to collect data on an hourly basis, downloaded on a monthly basis, and processed and stored in NWIS. Photo by Michael F. Peck, USGS.



B. A USGS employee using a graduated steel tape to measure the water level in an irrigation well in Burke County. Periodic water-level measurements were made in 257 wells throughout the State during 2001. These measurements are used to construct potentiometric-surface maps for selected aquifers. Photo by Michael D. Hamrick, USGS.



C. A logging truck collecting geophysical logs, and a hydraulic rotary drill rig at a well in Chatham County. As part of the Coastal Sound Science Initiative, geophysical, geologic, and water-quality data are collected from test wells drilled by the USGS and from wells drilled by private citizens. Photo by Michael F. Peck, USGS.



D. A public supply well in Glynn County is shown being pumped at about 1,000 gallons per minute while spinner flowmeter logs were collected to estimate percentages of water from different zones. This well is completed in the upper and lower Brunswick aquifers and the flowmeter logs help to quantify the ground-water contribution from each aquifer. Photo by Michael F. Peck, USGS.