Ground-Water Monitoring Program for the Augusta–Richmond County Area

Study Chief	Lester J. Williams and Stephen J. Lawrence
Cooperator	Augusta Utilities Department
Year Started	2006

Problem

Water supply in the Augusta–Richmond County area is provided in part by three well fields that withdraw water from the Dublin–Midville aquifer system—a sand aquifer of Late Cretaceous age. The Augusta ground-water permit currently is limited to 10 million gallons per day by the Georgia Environmental Protection Division. Low levels of tetrachloroethene and trichloroethene have been detected in a supply well at the northernmost extent of well field number 2. To ensure that ground-water pumping does not adversely affect water levels in adjacent areas and to monitor ground-water quality, the U.S. Geological Survey operates a ground-water monitoring program for the Augusta–Richmond County area. Data from this network will provide information to support water-management decisions and provide a basis for future ground-water modeling efforts while adding to the regional characterization of ground-water conditions.

Objectives

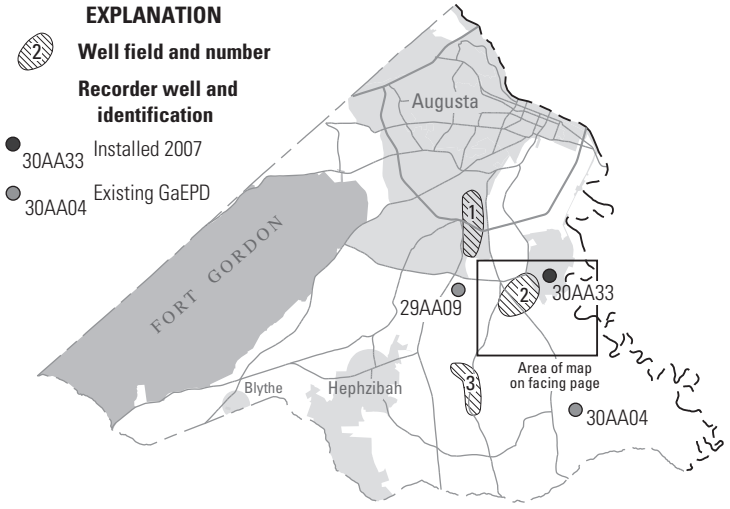
- Determine current ground-water levels, flow directions, and water quality of the Dublin–Midville aquifer system in the Augusta–Richmond County area.
- Expand the continuous water-level recorder network by installing water-level recorders at selected sites.
- Collect synoptic water-level measurements and construct potentiometric-surface maps to establish seasonal flow gradients and directions.
- Collect and analyze water samples from selected wells in and near well field number 2.

Progress and Significant Results, 2006–2007

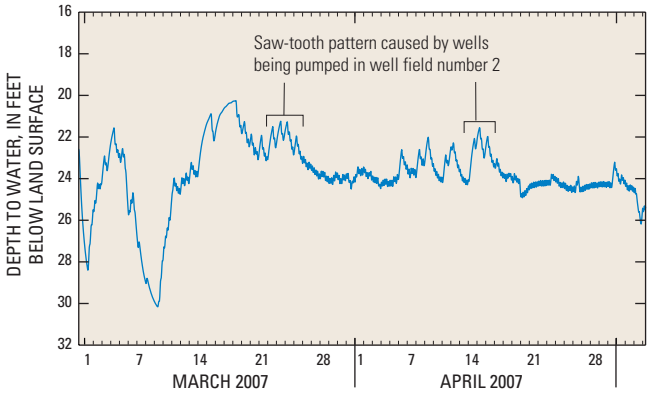
- Installed continuous water-level recorder in well 30AA33 at Augusta Regional Airport.
- Obtained water-level measurements during January 2007 and constructed a potentiometric-surface map for the Dublin–Midville aquifer system (map on facing page).
- Completed a field inventory of new and existing wells to re-establish a ground-water monitoring network in the Augusta–Richmond County area.
- Published a report on the hydrogeologic conditions in the study area (Williams, 2007).

Reference

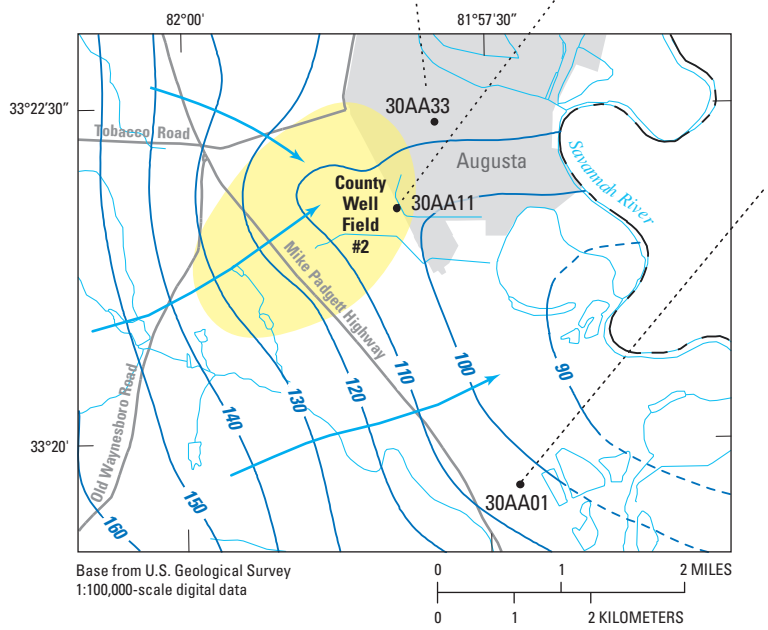
Williams, L.J., 2007, Hydrogeology and potentiometric surface of the Dublin and Midville aquifer systems in Richmond County, Georgia, January 2007: U.S. Geological Survey Scientific Investigations Map 2982, 1 sheet; Web-only publication available at *http://pubs.usgs.gov/sim/2007/2982/.*



General area of the ground-water monitoring study showing the three municipal well fields and recorder wells in the Augusta–Richmond County area of Georgia. [GaEPD, Georgia Environmental Protection Division]



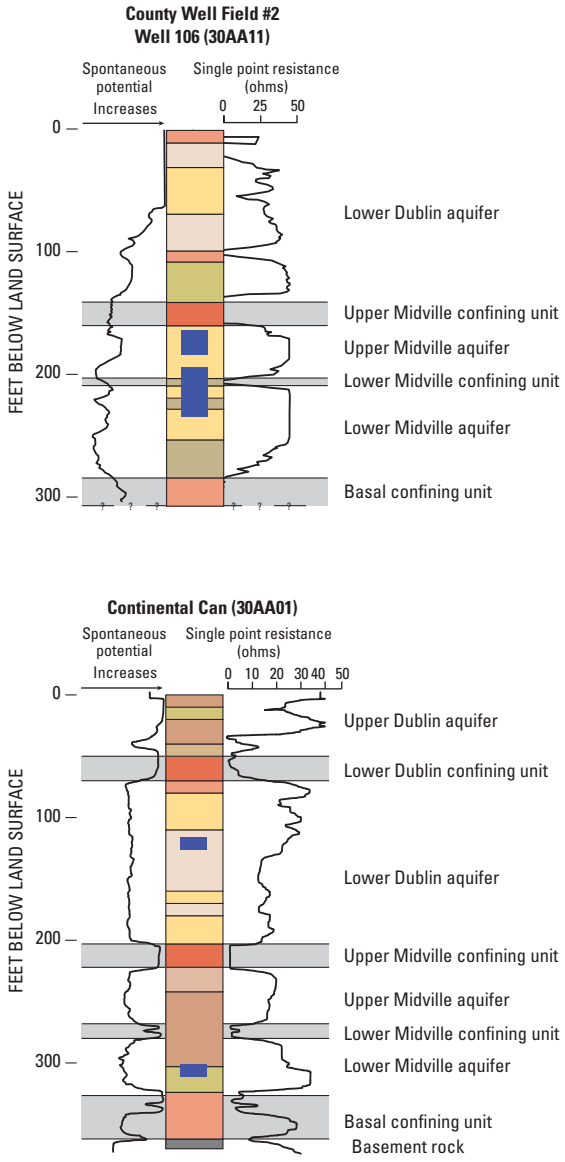
Continuous water-level measurements showing fluctuations in the depth to water at the recorder well (30AA33) east of well field number 2. Saw-tooth patterns are water-level fluctuations caused by nearby pumping wells in the well field.



EXPLANATION

- **Well field**
- **140** — **Potentiometric contour**—Shows approximate altitude at which water level would have stood in tightly cased wells, January 2007. Dashed where inferred. Contour interval 10 feet. Datum is NGVD 29
- **General direction of ground-water flow**
- 30AA33 • **Well and identification**

Potentiometric surface and flow direction of ground water in and around Richmond County well field number 2 during January 2007. Flow direction typically is west to east toward the Savannah River (modified from Williams, 2007).



EXPLANATION

Lithology—Taken from drillers' logs

- Massive clay
- Sand and/or gravel
- Clayey sand
- Sandy clay
- Sandy limestone
- Clay with sand layers
- Sand with clay layers
- Red clay
- Mostly clay
- Rock layers
- Basement rock
- **Screen**

Hydrogeologic profiles showing lithology, confining layers, major aquifers, and well screen locations for Richmond County well 106 (top) and the well at the Continental Can facility (bottom) (modified from Williams, 2007).