

City of Brunswick area

Water supply in the Brunswick area primarily is obtained from wells completed in the Upper Floridan aquifer. Intense pumping has reduced pressure in the aquifer and resulted in saltwater intrusion locally at Brunswick. Saltwater was first detected in the southernmost part of Brunswick during the late 1950s (Wait, 1965). Saltwater was migrating upward from deep saline zones through breaches in confining units as a result of reduced pressure in the aquifer. By the 1960s, a plume had migrated northward toward two major industrial pumping centers. Currently (June 2001), chloride concentration in water from the Upper Floridan aquifer is above State and Federal secondary drinking-water standards (Georgia Environmental Protection Division, 1997; U.S. Environmental Protection Agency, 2000) in a 2-square-mile area, and exceeds 2,250 milligrams per liter in part of the area.

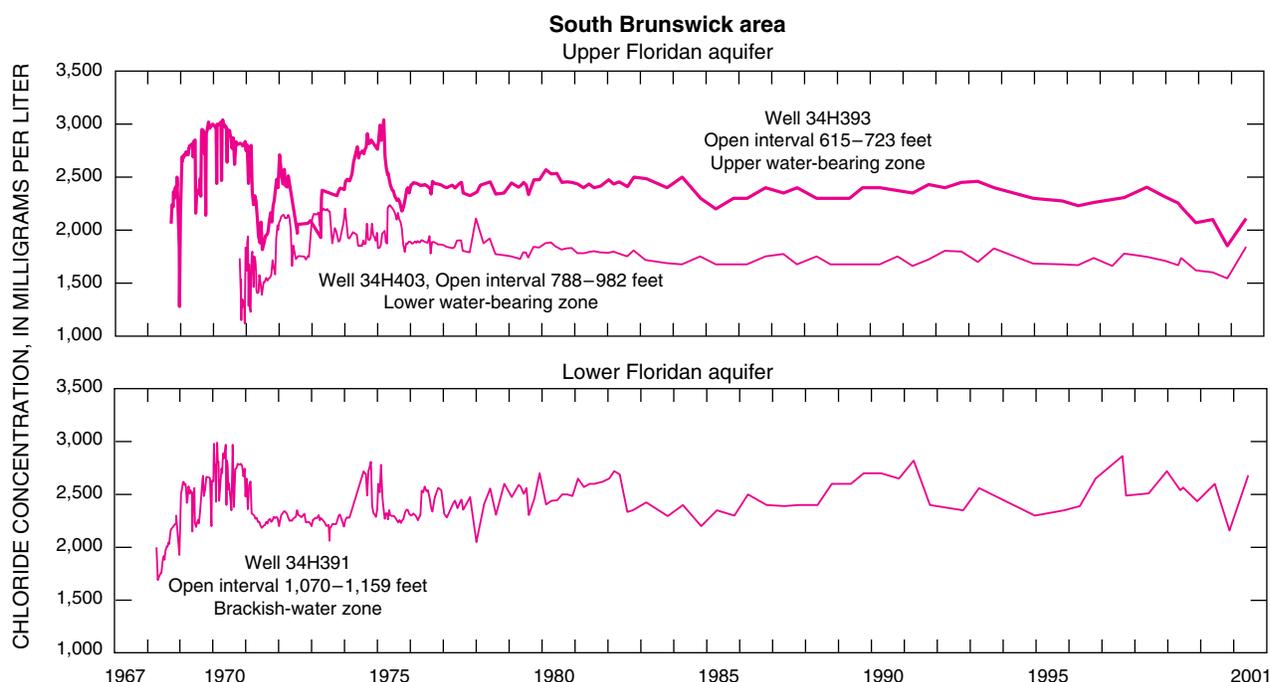
During June 11–14, 2001, 66 wells completed in the Upper or Lower Floridan aquifers were sampled and analyzed for dissolved-chloride concentration and a map showing the plume of elevated chloride concentration in the Upper Floridan aquifer was produced (facing page). The map shows that areas of highest concentration are near the two industrial pumping centers in the northern part of the city, as well as the original area of contamination in the southern part of the city. Along the outer margin of the chloride plume, concentrations fluctuate in response to changes in ground-water pumping. For example, chloride concentration in the city of Brunswick Perry Park production well (34H468), located along the eastern margin of the area of chloride contamination, fluctuates rapidly in response

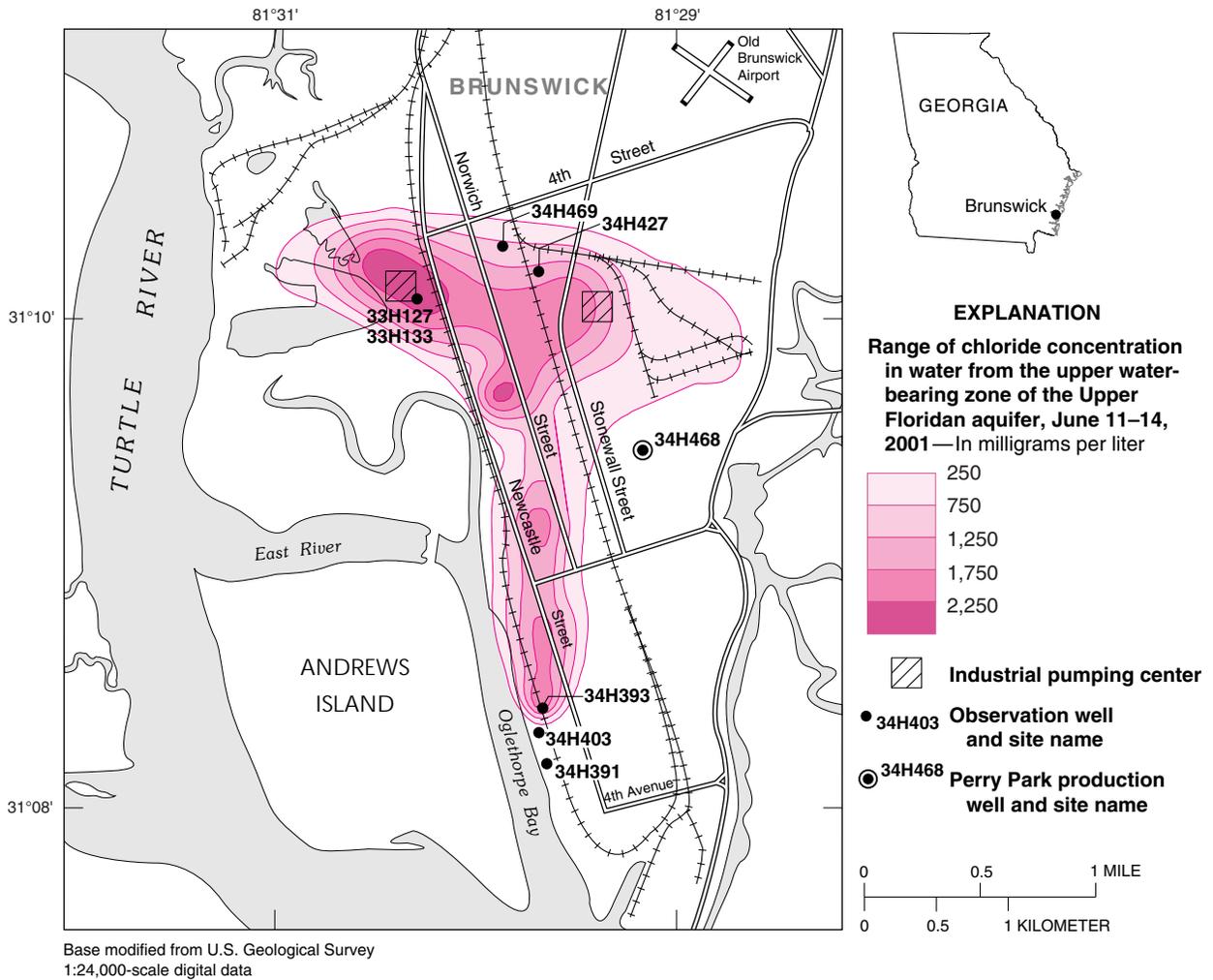
to changes in pumping. Elevated chloride concentrations necessitated discontinuation of pumping from the well. The city currently is examining strategies to reduce chloride concentrations in the production well by adjusting pumping time and rate and by backfilling deeper parts of the well's production interval that may be contributing water having high chloride concentration.

Chloride concentrations have been monitored in the Brunswick area since the late 1950s. Graphs of chloride concentration in water samples from wells in the upper and lower water-bearing zones of the Upper Floridan aquifer are shown for wells in the south Brunswick area (graphs for wells 34H393 and 34H403, below) and north Brunswick area (graphs for wells 33H127 and 33H133, facing page). Chloride concentration in water from the Lower Floridan aquifer is shown for well 34H391 in the south Brunswick area (graph, below). More information on the Brunswick area monitoring can be accessed at URL: <http://ga2.er.usgs.gov/Brunswick>.

References Cited

- Georgia Environmental Protection Division, 1997, Secondary maximum contaminant levels for drinking water: Environmental Rule 391-3-5-19, revised October 1997: Official Code of Georgia Annotated Statutes, Statute 12-5-170 (Georgia Safe Drinking Water Act), variously paginated.
- 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.
- Wait, R.L., 1965, Geology and occurrence of fresh and brackish ground water in Glynn County, Georgia: U.S. Geological Survey Water-Supply Paper 1613-E, 94 p.





North Brunswick area
Upper Floridan aquifer

