REVISED HYDROGEOLOGIC FRAMEWORK FOR THE FLORIDAN AQUIFER SYSTEM IN THE NORTHERN COASTAL AREAS OF GEORGIA AND PARTS OF SOUTH CAROLINA

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Abstract. The hydrogeologic framework for the Floridan aquifer system was revised for eight northern coastal counties in Georgia and five coastal counties in South Carolina (Fig. 1) as part of a regional assessment of water resources by the U.S. Geological Survey (USGS) Groundwater Resources Program. In this study, selected well logs were compiled and analyzed to determine the vertical and horizontal continuity of permeable zones that make up the aquifer system, and define more precisely the thickness of confining beds that separate individual aquifer zones. The results of the analysis indicate that permeable zones in the Floridan aquifer system can be divided into (1) an upper group of extremely transmissive zones that correlate to the Ocala Limestone in Georgia and the Parkers Ferry Formation in South Carolina, and (2) a lower group of zones of relatively lower transmissivity that correlates to the middle part of the Avon Park formation in Georgia and updip clastic equivalent units of South Carolina (Fig. 2). This new subdivision simplifies the hydrogeologic framework originally developed by the USGS in the 1980s and helps to improve the understanding of the physical geometry of the system for future modeling efforts. Revisions to the framework in the Savannah–Hilton Head area are particularly important where permeable beds control the movement of saltwater contamination. The revised framework will enable water-resource managers in Georgia and South Carolina to assess groundwater resources in a more uniform manner and help with the implementation of sound decisions when managing water resources in the aquifer system.

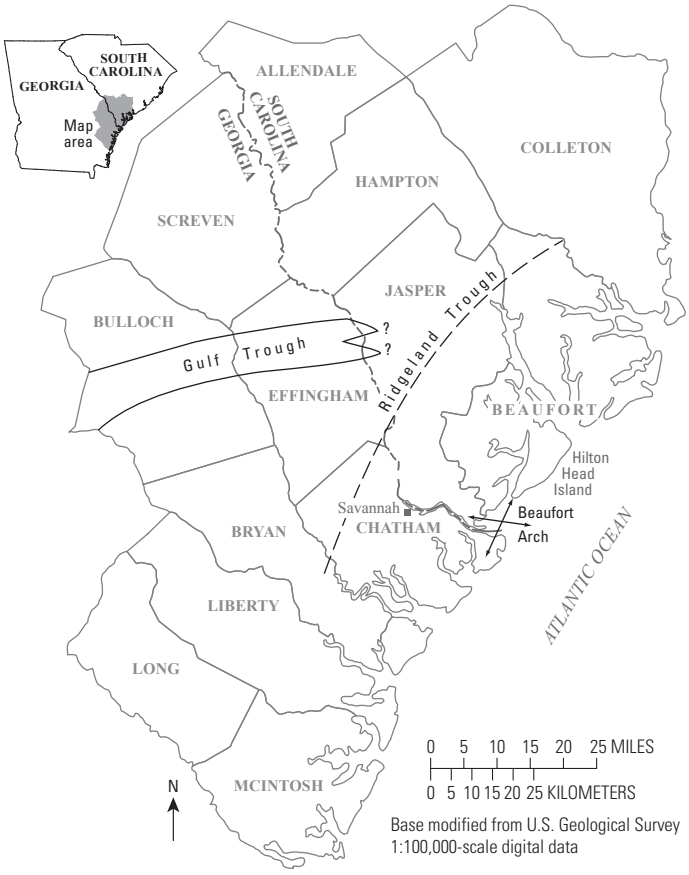

Figure 1. Study area in eight northern coastal counties of Georgia and five southern coastal counties of South Carolina. (Structural features: Gulf Trough from Applied Coastal Research Laboratory, 2002; Beaufort Arch from Clarke and others, 1990; modified from Williams and Gill, 2010).

REFERENCE

Williams, L.J., and Gill, H.E., 2010, Revised hydrogeologic framework of the Floridan aquifer system in the northern coastal area of Georgia and adjacent parts of South Carolina: U.S. Geological Survey Scientific Investigations Report 2010–5158, 103 p., 3 plates.

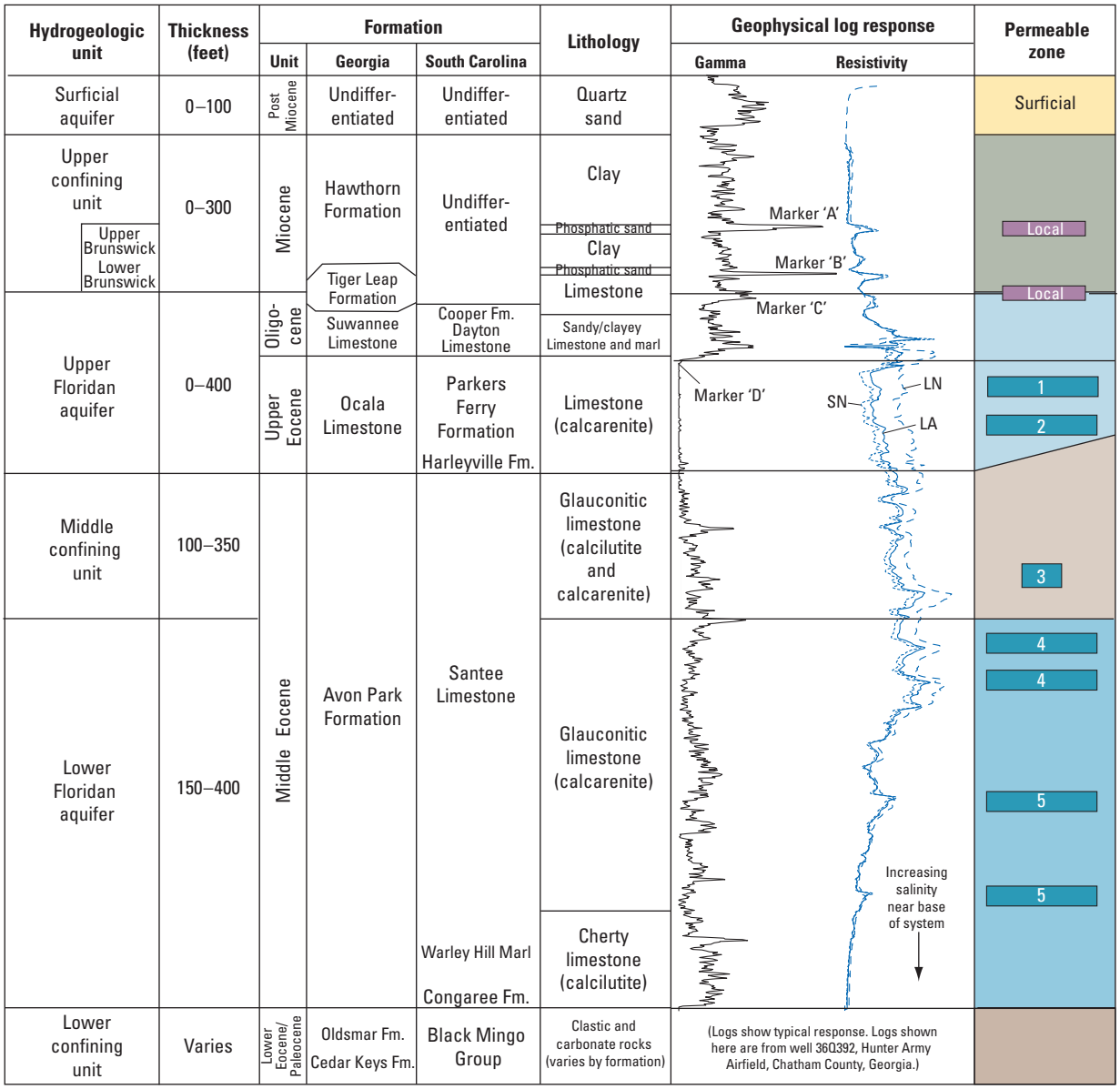

Figure 2. Hydrogeologic units and confining beds of the Floridan aquifer system showing representative log response and location of permeable zones and mapping horizons (modified from Williams and Gill, 2010; Fm., formation)