The Black Creek aquifer is the source of water for many public, industrial, and agricultural supplies in much of the Coastal Plain of South Carolina. This important water resource is monitored by regularly measuring the corresponding water levels in wells. The potentiometric surface of an aquifer is defined by the elevation at which water stands in tightly packed wells completed in the aquifer.

The boundaries of the Black Creek aquifer used in this investigation are those defined by Aucott, Dier, and Spiehler (1987), who delineated the aquifer on the basis of geophysical well logs, water-level data, waterchemistry data, and previous investigations. The Black Creek aquifer is the youngest of the Cretaceous aquifers in the region. It is composed mostly of permeable sediments of the Black Creek Formation (hereinafter, the aquifer), but locally it may include sediments from underlaying or overlying formations. The aquifer comprises thin to thick bedded sand and clay deposited in marginal marine or delta plain environments. The coarsest sand and least clay content are found in the eastern Coastal Plain along a narrow band extending from Lexington County to Sumter County and along a wider area from Sumter County to Dillon County. It dips southeastward toward the coast. The top of the aquifer is at a elevation 390–500 ft and 440 ft (120–152 m) below mean level of Ahtan, Myrtle Beach, and Charleston, respectively. Thickness ranges from about 180 ft near Adelus to more than 400 ft at the coast.

The potentiometric map presented here was constructed by using water levels measured in 389 wells in June, 2012 (see table). Data were collected by the South Carolina Department of Natural Resources, the U.S. Department of Energy, the South Carolina Department of Health and Environmental Control, and the U.S. Geological Survey. Similar maps have been produced for the Black Creek aquifer describing the potentiometric surface in 1989 (Hocken Smith, 2002), 2004 (Hocken Smith, 2005), and 1995 (Hocken Smith, 1995).

The potentiometric surface of the Black Creek aquifer for November 2012 shows that the generally southward groundwater flow is affected by several potentiometric lows. These zones of depression have developed because of groundwater pumping in Georgetown, Florence, and Williamsburg Counties.

References
Hocken Smith, B.L., 1997, Potentiometric surface of the Black Creek aquifer in South Carolina, November 1997: South Carolina Department of Natural Resources, Water Resources Report 18, 1 sheet.