U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

Prepared in cooperation with the
SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

OPEN-FILE REPORT 03 - 223

HYDROLOGIC CONDITIONS IN WEST-CENTRAL FLORIDA

The Floridan aquifer system consists of the Upper and Lower Floridan aquifers separated by a middle confining unit. The middle confining unit and the Lower Floridan aquifer generally contain highly mineralized water in west-central Florida. In most reports on the hydrology of west-central Florida, the term "Floridan aquifer" has been applied to the water-bearing units herein referred to as the Upper Floridan aquifer. The Upper Floridan aquifer is a highly productive aquifer and supplies more than 10 times the amount of water pumped from either the surficial aquifer system or the intermediate aquifer system in most of the study area (Duerr and others, 1988).

This map report shows the potentiometric surface of the Upper Floridan aquifer measured in September 2002. The potentiometric surface represents the level to which water will rise in tightly-cased wells that tap a confined aquifer system. The surface is mapped by measuring the altitude of water levels in a network of wells and is represented on maps by contours that connect points of equal water-level altitude. This map represents water-level conditions near the end of the wet season, when ground-water levels usually are at an annual high and withdrawals for agricultural use typically are low. The cumulative average rainfall of 49.37 inches for west-central Florida (from October 2001 through September 2002) was 3.57 inches below the historical mean of 52.94 inches (Southwest Florida Water Management District, September 2002).

This report, prepared by the U.S. Geological Survey in cooperation with the Southwest Florida Water Management District, is part of a semi-annual series of Upper Floridan aquifer potentiometric-surface map reports for west-central Florida. Potentiometric-surface maps have been prepared for January 1964, May 1969, May 1971, May 1973, May 1974, and for each May and September since 1975. Water-level data are collected in May and September each year to show the approximate annual low and high water-level conditions, respectively. Most of the water-level data for this map were collected by the U.S. Geological Survey during the period September 16-20, 2002. Supplemental water-level data were collected by other agencies and companies. A corresponding potentiometric-surface map was prepared for areas east and north of the Southwest Florida Water Management District boundary by the U.S. Geological Survey office in Altamonte Springs, Florida (Kinnaman, S.L., 2003). Most water-level measurements were made over a 5-day period, therefore measurements do not represent a "snapshot" of conditions at a specific time, nor do they necessarily coincide with the seasonal high water-level condition.

WATER-LEVEL CHANGES

In about 65 percent of the wells, water-levels measured in September 2002 were higher than the September 2001 water levels (Duerr, 2001). Using data from 426 wells, the September 2002 levels ranged from about 5 feet below to about 13 feet above the September 2001 levels (fig.1). The largest water-level decline was in central and northeast Hillsborough County. The largest water-level rise was in South Pasco well field in Pasco County (see large scale map for location).

In about 99 percent of the wells, water-levels measured in September 2002 were higher than in May 2002 (Knochenmus and others, 2002). Using data from 434 wells, the September 2002 levels ranged from about 0 to 47 feet above the May 2002 levels. The largest water-level decline, was in northern Pasco County and the largest water-level rise was in southern Hillsborough County.

ACKNOWLEDGMENTS

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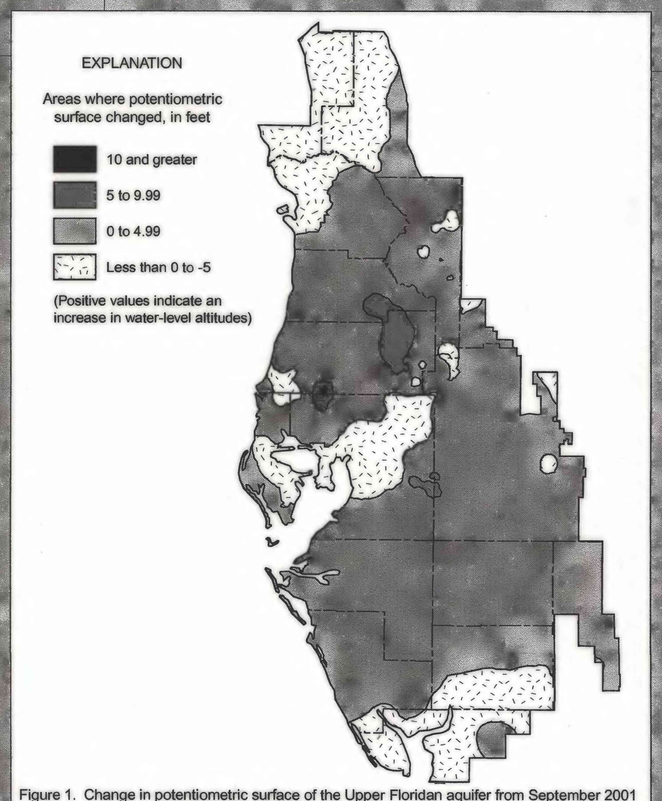
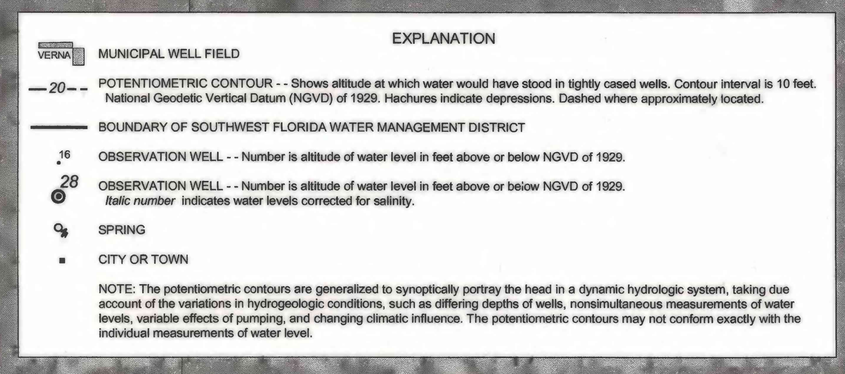


Figure 1. Change in potentiometric surface of the Upper Floridan aquifer from September 2001 to September 2002 in west-central Florida.



Base from Southwest Florida Water Management District digital data, 1992
Universal Transverse Mercator projection, Zone 17, Datum NAD27

POTENTIOMETRIC SURFACE OF THE UPPER FLORIDAN AQUIFER, WEST-CENTRAL FLORIDA, SEPTEMBER 2002

By R.A. Blanchard, L.A. Knochenmus, A.V. Seidenfeld, and D.S. McCulloch

Copies of this map can be purchased from:
U.S. Geological Survey
Branch of Information Services
Box 25286
Denver, Colorado 80225-0286