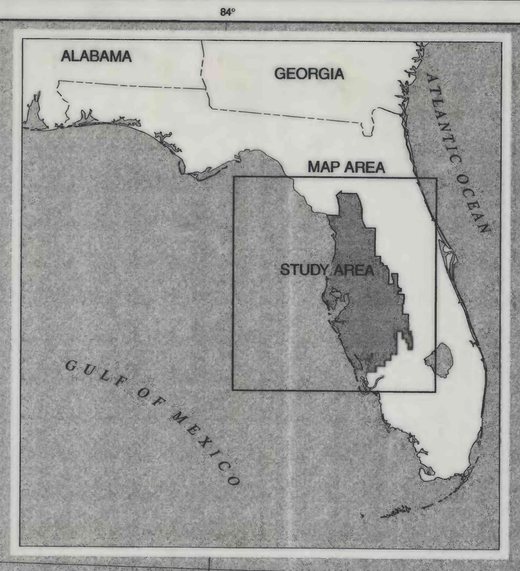
U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

Prepared in cooperation with the
SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

OPEN FILE REPORT 00-72



INTRODUCTION

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 southwest 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 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 depicts the potentiometric surface of the Upper Floridan aquifer measured in May 1999. 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 altitude. This map represents water-level conditions near the end of the dry season, when ground-water levels are usually at an annual low and withdrawals for agricultural use are typically high. The cumulative average rainfall for the study area (from June 1998 through May 1999) was 11.47 inches below the historical mean of 53.22 inches (Southwest Florida Water Management District, 1999).

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 made of the study area. 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 to show the near 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 of May 10-14, 1999. Supplemental data were collected by other agencies and companies. A potentiometric-surface map also 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. Because water-level measurements were made over a 5-day period in mid-May, the measurements may not represent a "snapshot" of conditions at a specific time, nor do they necessarily coincide with a seasonal low.

SUMMARY OF GROUND-WATER CONDITIONS

Water levels in about 95 percent of wells measured in May 1999 were lower than the May 1998 water levels (Broska and others, 1999). In 560 wells with paired measurements, the May 1999 levels ranged from 28 feet below to 4 feet above the May 1998 levels (fig. 1). The largest decrease in water levels was in east-central Hillsborough County and the largest increase in water levels was in De Soto County.

Water levels in about 98 percent of the wells measured in May 1999 were lower than the September 1998 water levels (Torres and others, 1999). In 573 wells with paired measurements, the May 1999 levels ranged from 37 feet below to 2 feet above the September 1998 levels.

REFERENCES

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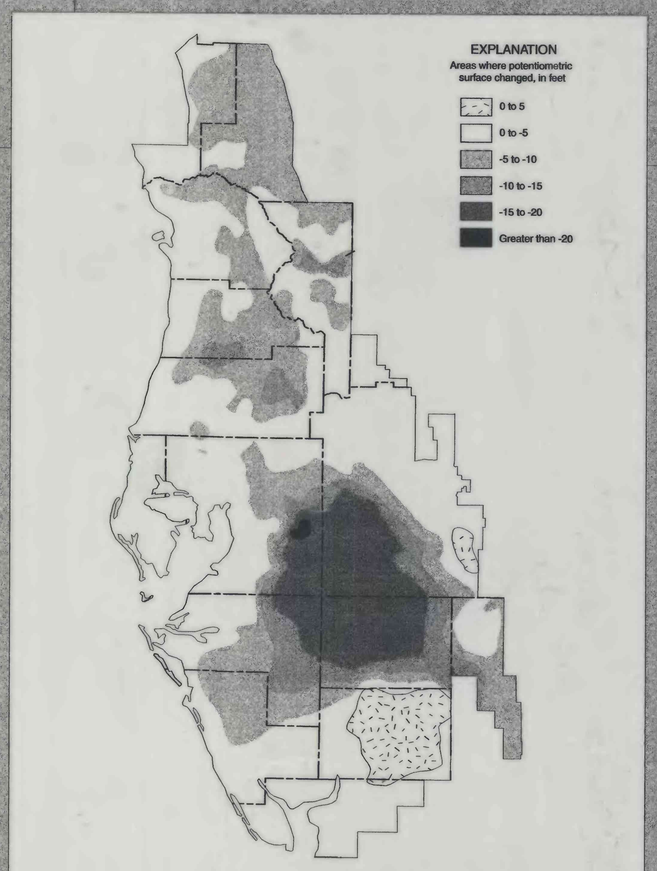

Figure 1. Change in potentiometric surface from May 1998 to May 1999 in west-central Florida

EXPLANATION

- VERNA — MUNICIPAL WELL FIELD
- —20— — POTENTIOMETRIC CONTOUR - - Shows altitude at which water would have stood in tightly cased wells. Contour interval is 10 feet. National Geodetic Vertical Datum (NGVD) of 1929. Hachures indicate depressions. Dashed where approximately located.
- BOUNDARY OF SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
- 18 — OBSERVATION WELLS - - Number is altitude of water level in feet above or below NGVD of 1929.
- SPRING - - Number (if shown) is the measured spring-pool altitude, in feet above NGVD of 1929. The altitudes do not necessarily reflect the potentiometric surface at the spring pool.
- CITY OR TOWN

NOTE: The potentiometric contours are generalized to synoptically portray the head in a dynamic hydrologic system, taking due account of the variations in hydrogeologic conditions, such as differing depths of wells, nonsimultaneous measurements of water levels, variable effects of pumping, and changing climatic influence. The potentiometric contours may not conform exactly with the individual measurements of water level.

SCALE 1:500,000
5 0 5 10 15 20 MILES
5 0 5 10 15 20 KILOMETERS

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, MAY 1999

By A.D. Duerr and A.E. Torres

Copies of this map can be purchased from:
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