

INTRODUCTION

The potentiometric surface is the level to which water will rise in tightly cased wells that tap the Upper Floridan aquifer. The surface is mapped by determining the altitude of water levels in a network of wells and is represented on maps by contours that connect points of equal altitude. Maps of the potentiometric surface of the Upper Floridan aquifer in west-central Florida are prepared semiannually by the U.S. Geological Survey in cooperation with the Southwest Florida Water Management District. Maps for May and September show, respectively, the potentiometric surfaces of the normally expected annual low and high water-level conditions. Potentiometric-surface maps have been prepared for January 1964, May 1969, May 1971 to 1974, and for May and September since 1975.

This report shows the potentiometric surface of the Upper Floridan aquifer for May 1986. Most of the water-level data were collected during May 12-16. Supplemental data were collected by other agencies and companies. The map represents water-level conditions before the beginning of the summer rainy season when ground-water withdrawals for agricultural use are high. Hence, the potentiometric surface is near its lowest level for the year.

SUMMARY OF CONDITIONS

Annual and seasonal fluctuations of the potentiometric surface are shown by hydrographs in figure 1. The hydrographs generally indicate that water levels in northern areas, where water use is small, remain fairly uniform, whereas water levels in southern areas, where water use is large, show large annual and seasonal fluctuations. Daily maximum water levels for selected wells from May 1985 to May 1986 are shown in figure 2. In this figure, hydrographs representative of selected areas show water levels in September 1985 recovering from drought conditions seen in the previous May and then declining in response to climatic and irrigation stresses in May 1986.

May 1986 water levels averaged about 2 feet lower than September 1985 levels in areas north of about latitude 28°07' and about 9 feet lower in southern areas. Water-level declines since September in the north were about 3 feet or less along coastal regions and were about 10 feet or less in inland areas. To the south, declines in water levels were about 5 feet or less along coastal and extreme southern regions and about 5 to 36 feet in other southern areas. The greatest decline, about 36 feet, occurred in southern Hillsborough County where irrigation pumping contributed to large seasonal fluctuations.

Water levels in individual wells in May 1986 averaged about 2 feet higher than May 1985 levels. Rises in water levels in most wells in the north were about 11 feet or less, whereas a few wells had a rise of only about 1 foot or less in coastal regions as the result of tidal controls. Rises in water levels in most wells in the south were about 3 feet or less along coastal and extreme southern regions and about 16 feet or less in other southern areas. The largest rises occurred in southeastern Hillsborough, southwestern Polk, northeastern Manatee, and northern Hardee Counties.

SELECTED REFERENCES

Barr, G. L., 1985. Potentiometric surface of the Upper Floridan aquifer, west-central Florida, May 1985. U.S. Geological Survey Open-File Report 85-482, 1 sheet.

—, 1985. Potentiometric surface of the Upper Floridan aquifer, west-central Florida, September 1985. U.S. Geological Survey Open-File Report 85-479, 1 sheet.

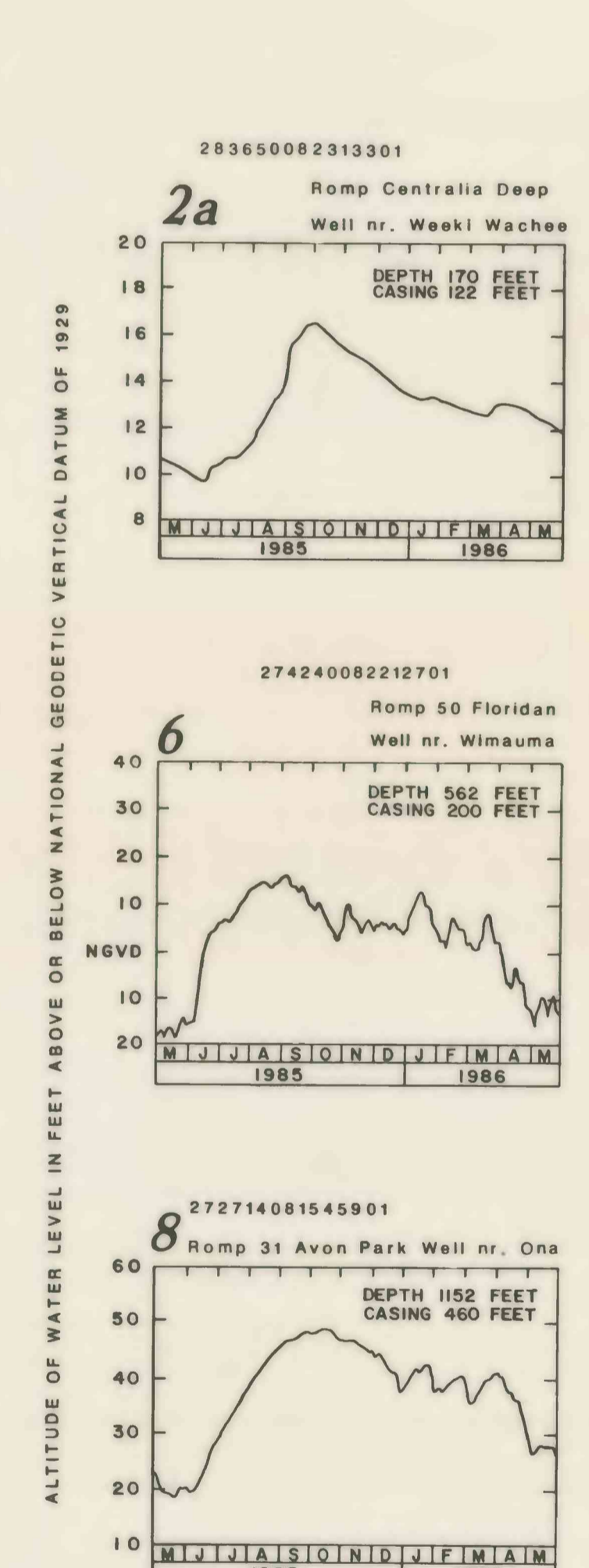
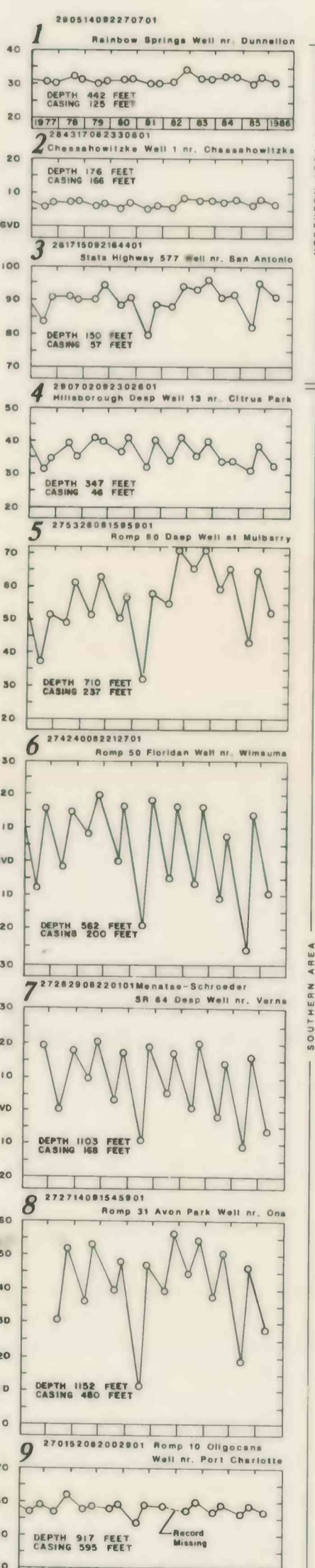


Figure 2. -- Hydrographs showing maximum daily water levels from May 1985 to May 1986 in selected wells

Figure 1. -- Hydrographs showing May and September water levels in selected wells, 1977-86.

EXPLANATION

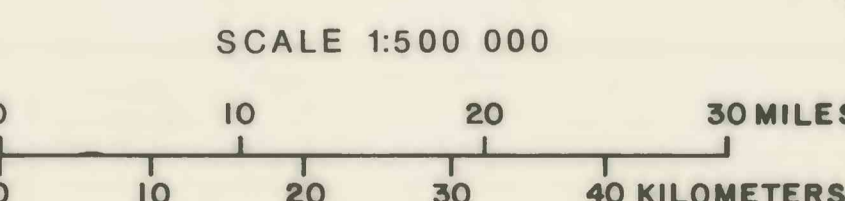
POTENTIOMETRIC CONTOUR— Shows altitude at which water level would have stood in tightly cased wells. Contour interval 5 and 10 feet. National Geodetic Vertical Datum of 1929 (NGVD). Hashures indicate depressions. Dashed where approximated

OBSERVATION WELLS— Large number identifies hydrograph (fig. 1). Small number is altitude of water level in feet above or below (–) NGVD

BOUNDARY OF THE SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

BOUNDARY OF WATER MANAGEMENT BASIN

NOTE: The potentiometric contours are generalized to portray synoptically 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 thus may not conform exactly with individual measurements of water level



POTENTIOMETRIC SURFACE OF THE UPPER FLORIDAN AQUIFER,
WEST-CENTRAL FLORIDA, MAY 1986

By
G.L. Barr and B.R. Lewelling

Copies of this map can be purchased from:
Open-File Services Section
U.S. Geological Survey
Box 25425
Denver, Colorado 80225

Base from U. S. Geological Survey
State of Florida map 1967 1:500 000