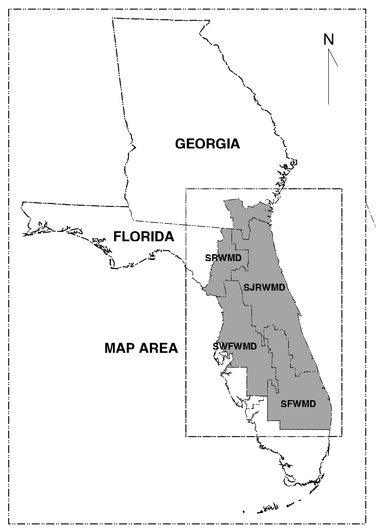
Prepared in cooperation with
ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
SOUTH FLORIDA WATER MANAGEMENT DISTRICT
SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

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

OPEN FILE 2004-1377

Sandra L. Kinnaman and Leel Knowles, Jr., 2004, Potentiometric surface of the Upper Floridan aquifer in the St. Johns River Water Management District and vicinity, Florida, May 2004



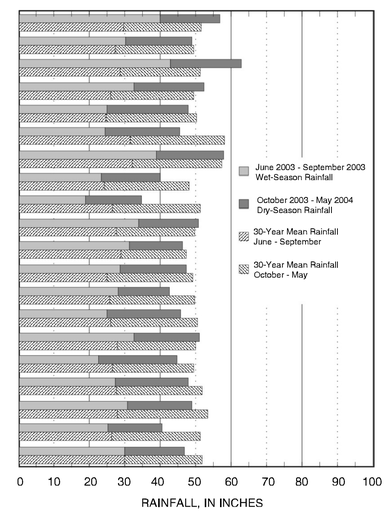
EXPLANATION

- 50 ---- POTENTIOMETRIC CONTOUR -- Shows altitude at which water level would have stood in tightly cased wells. Hachures indicate depressions. Contour intervals 10 feet. Vertical datum is NGVD29. Dashed where inferred
- STATE WATER MANAGEMENT DISTRICT BOUNDARY
  SJRWMD -- St. Johns River Water Management District
  SRWMD -- Suwannee River Water Management District
  SFWMD -- South Florida Water Management District
  SWFWMD -- Southwest Florida Water Management District
- 37 SURVEYED WELL WITH KNOWN OPEN-HOLE INTERVAL -- Measuring-point datum is referenced to benchmark datum. Number is altitude of water level in feet above or below NGVD29
- 31 SURVEYED WELL WITH UNKNOWN OPEN-HOLE INTERVAL -- Measuring-point datum is referenced to benchmark datum. Number is altitude of water level in feet above or below NGVD29
- 46 UNSURVEYED WELL WITH KNOWN OPEN-HOLE INTERVAL -- Measuring-point datum is estimated from topographic map. Number is altitude of water level in feet above or below NGVD29
- 36 UNSURVEYED WELL WITH UNKNOWN OPEN-HOLE INTERVAL -- Measuring-point datum is estimated from topographic map. Number is altitude of water level in feet above or below NGVD29
- SPRING -- Line indicates direction of spring outflow
- FLOWING BOREHOLE
- 42 SINKHOLE -- Surface collapse feature exposing the Upper Floridan aquifer. Where measured, number is altitude of water level in feet above NGVD29
- A RAINFALL STATION -- Letter is index to bar graph.

NOTE: The potentiometric contours are generalized on a regional scale to portray water levels in a dynamic hydrologic system taking due account of the variations in hydrogeologic conditions such as well-depth differences, non-simultaneous 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.

SELECTED RAINFALL STATIONS

MAP INDEX	RAINFALL STATION NAME
A	BARTOW
B	BUSHNELL 2 E
C	CLERMONT 7 S
D	CRESCENT CITY
E	DAYTONA BEACH WSO AP
F	DELAND 1 SSE
G	FORT DRUM 5 NW
H	GAINESVILLE REG AP
I	JACKSONVILLE WSO AP
J	KISSIMMEE 2
K	LEESBURG
L	LISBON
M	MELBOURNE WSO
N	OCALA
O	ORLANDO WSO MCCOY
P	PALATKA
Q	SANFORD EXP STN
R	TITUSVILLE
S	VERO BEACH MAP
T	WINTER HAVEN



FIRST-MAGNITUDE SPRINGS

First-magnitude spring name	Spring-pool altitude, in feet above NGVD of 1929	Discharge, in cubic feet per second	Period-of-record mean-daily discharge, in cubic feet per second
Silver Springs	40	572 [a]	776
Rainbow Springs	31	563 [a]	697
Blue Springs (Volusia County)	0	136 [a]	156
Silver Glen Springs	1	117 [a]	107
Alexander Springs	11	117 [b]	106

These altitudes do not necessarily reflect the potentiometric surface at the spring pool.
[a] Mean-daily discharge for May 2004.
[b] Instantaneous discharge measured on May 21, 2004.

INTRODUCTION

This map depicts the potentiometric surface of the Upper Floridan aquifer in the St. Johns River Water Management District and vicinity for May 2004. Potentiometric contours are based on water-level measurements collected at 644 wells during the period May 10 - 27, near the end of the dry season. The shapes of some contours have been inferred from previous potentiometric-surface maps with larger well networks. The potentiometric surface of the carbonate Upper Floridan aquifer responds mainly to rainfall, and more locally, to ground-water withdrawals. Potentiometric-surface highs generally correspond to topographic highs where the aquifer is recharged. Springs and areas of diffuse upward leakage naturally discharge water from the aquifer and are most prevalent along the St. Johns River. Areas of discharge are reflected by depressions in the potentiometric surface. Ground-water withdrawals locally have lowered the potentiometric surface. Ground water in the Upper Floridan aquifer generally flows from potentiometric highs to potentiometric lows in a direction perpendicular to the contours.

SUMMARY OF HYDROLOGIC CONDITIONS

Measured values of the potentiometric surface ranged from 3 feet below NGVD29 near Fernandina Beach, Florida, to 127 feet above NGVD29 in Polk County, Florida. The average water level of the network in May 2004 was about 4 feet lower than the average in September 2003 following below-average rainfall during the intervening dry season. Seasonal differences generally range from 4 to 6 feet. For 628 wells with previous measurements, May 2004 levels ranged from about 25 feet below to about 7 feet above September 2003 water levels. Water levels decreased 20 feet or more from September 2003 to May 2004 in 1 of the 47 wells measured in Polk County and 2 of the 3 wells measured in Hardee County.

Below-average rainfall during the preceding 12 months, contributed to the average water level of the network in May 2004 being about 1 foot lower than the average water level in May 2003. For 616 wells with previous measurements, May 2004 water levels ranged from about 7 feet below to about 7 feet above May 2003 water levels.

ADDITIONAL REFERENCE

Long-term hydrographs of ground-water levels for continuous and periodic wells are available at internet site: http://waterdata.usgs.gov/fl/nwis/gw

Base from U.S. Geological Survey digital data, 1:100,000, 1983
Universal Transverse Mercator projection, Zone 17

POTENTIOMETRIC SURFACE OF THE UPPER FLORIDAN AQUIFER IN THE ST. JOHNS RIVER WATER MANAGEMENT DISTRICT AND VICINITY, FLORIDA, MAY 2004

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2004

Copies of this map can be purchased from:
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