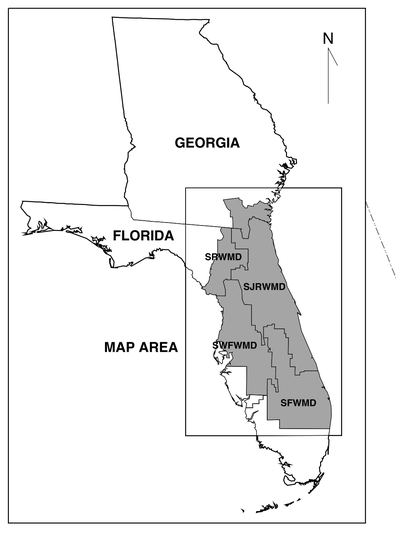
Prepared in cooperation with
ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
SOUTH FLORIDA WATER MANAGEMENT DISTRICT
SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

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

OPEN FILE 2006-1394

Sandra L. Kinnaman, 2006, Potentiometric surface of the Upper Floridan aquifer in the St. Johns River Water Management District and vicinity, Florida, May 2006



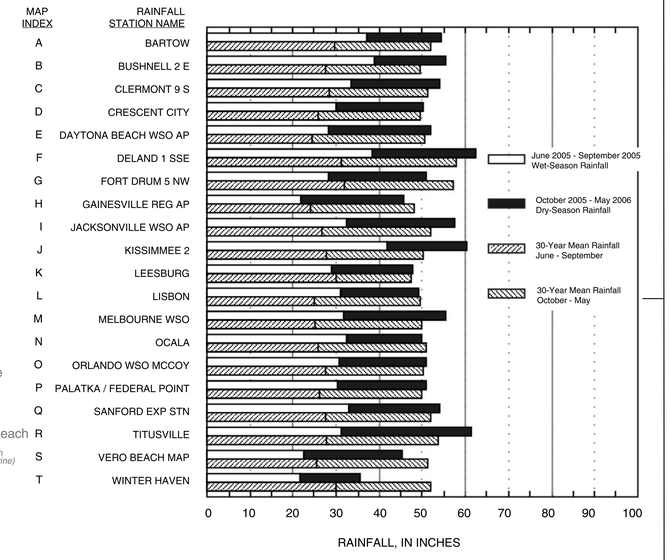
EXPLANATION

- 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
- 47 — 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
- 34 — 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
- 49 — 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 9 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 / FEDERAL POINT
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	42	630 [b]	773
Rainbow Springs	31	600 [a]	697
Blue Springs (Volusia County)	1	163 [a]	156
Silver Glen Springs	1	105 [a]	107
Alexander Springs	11	102 [b]	106

These altitudes do not necessarily reflect the potentiometric surface at the spring pool.
[a] Mean-daily discharge for May 2006.
[b] Instantaneous discharge measured on May 17-19, 2006.

INTRODUCTION

This map depicts the potentiometric surface of the Upper Floridan aquifer in the St. Johns River Water Management District and vicinity for May 2006. Potentiometric contours are based on water-level measurements collected at 599 wells during the period May 14-31, near the end of the dry season. Some contours are 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 and springflow. 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 7 feet below NGVD29 near Fernandina Beach, Florida, to 126 feet above NGVD29 in Polk County, Florida. The average water level of the network in May 2006 was about 4 feet lower lower than the average in September 2005 following below-average rainfall during the dry season of 2005-06. Seasonal differences in network average water levels generally range from 4 to 6 feet. For 587 wells with previous measurements, May 2006 levels ranged from about 31 feet below to about 3 feet above September 2005 water levels. Water levels decreased 20 feet or more from September 2005 to May 2006 in 6 of the 47 wells measured in Polk County and all three of the wells measured in Hardee County. The average water level of the network in May 2006 was about 3 feet lower than the average in May 2005. For 560 wells with previous measurements, May 2006 levels ranged from about 22 feet below to about 4 feet above May 2005 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 2006

By
Sandra L. Kinnaman
2006

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