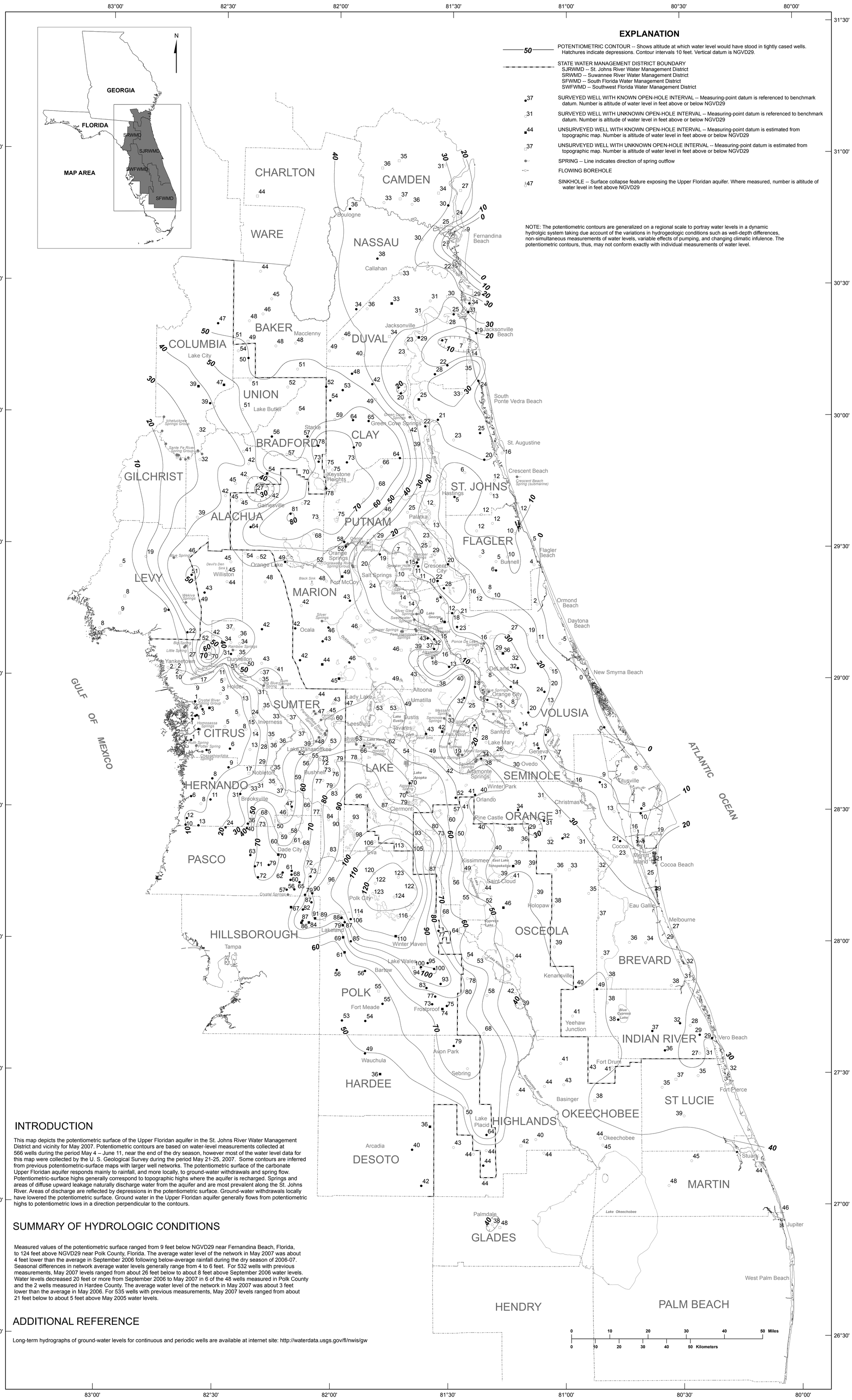
Prepared in cooperation with
ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
SOUTH FLORIDA WATER MANAGEMENT DISTRICT
SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

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

OPEN FILE 2007-1371

Sandra L. Kinnaman and Joann F. Dixon, 2007, Potentiometric surface of the Upper Floridan aquifer in the St. Johns River Water Management District and vicinity, Florida, May 2007



EXPLANATION

50 — POTENTIOMETRIC CONTOUR -- Shows altitude at which water level would have stood in tightly cased wells. Hatchures indicate depressions. Contour intervals 10 feet. Vertical datum is NGVD29.

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

44 — 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

37 — 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

47 — SINKHOLE -- Surface collapse feature exposing the Upper Floridan aquifer. Where measured, number is altitude of water level in feet above NGVD29

NOTE: The potentiometric contours are generalized on a regional scale to portray water levels in a dynamic hydrolgic 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 infulence. The potentiometric contours, thus, may not conform exactly with individual measurements of water level.

INTRODUCTION

This map depicts the potentiometric surface of the Upper Floridan aquifer in the St. Johns River Water Management District and vicinity for May 2007. Potentiometric contours are based on water-level measurements collected at 566 wells during the period May 4 – June 11, near the end of the dry season, however most of the water level data for this map were collected by the U. S. Geological Survey during the period May 21-25, 2007. 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 spring flow. 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 9 feet below NGVD29 near Fernandina Beach, Florida, to 124 feet above NGVD29 near Polk County, Florida. The average water level of the network in May 2007 was about 4 feet lower than the average in September 2006 following below-average rainfall during the dry season of 2006-07. Seasonal differences in network average water levels generally range from 4 to 6 feet. For 532 wells with previous measurements, May 2007 levels ranged from about 26 feet below to about 8 feet above September 2006 water levels. Water levels decreased 20 feet or more from September 2006 to May 2007 in 6 of the 48 wells measured in Polk County and the 2 wells measured in Hardee County. The average water level of the network in May 2007 was about 3 feet lower than the average in May 2006. For 535 wells with previous measurements, May 2007 levels ranged from about 21 feet below to about 5 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 Meracator projection,
Zone 17

POTENTIOMETRIC SURFACE OF THE UPPER FLORIDAN AQUIFER IN THE ST. JOHNS RIVER WATER MANAGEMENT DISTRICT AND VICINITY, FLORIDA, MAY 2007

By
Sandra L. Kinnaman and Joann F. Dixon
2007

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