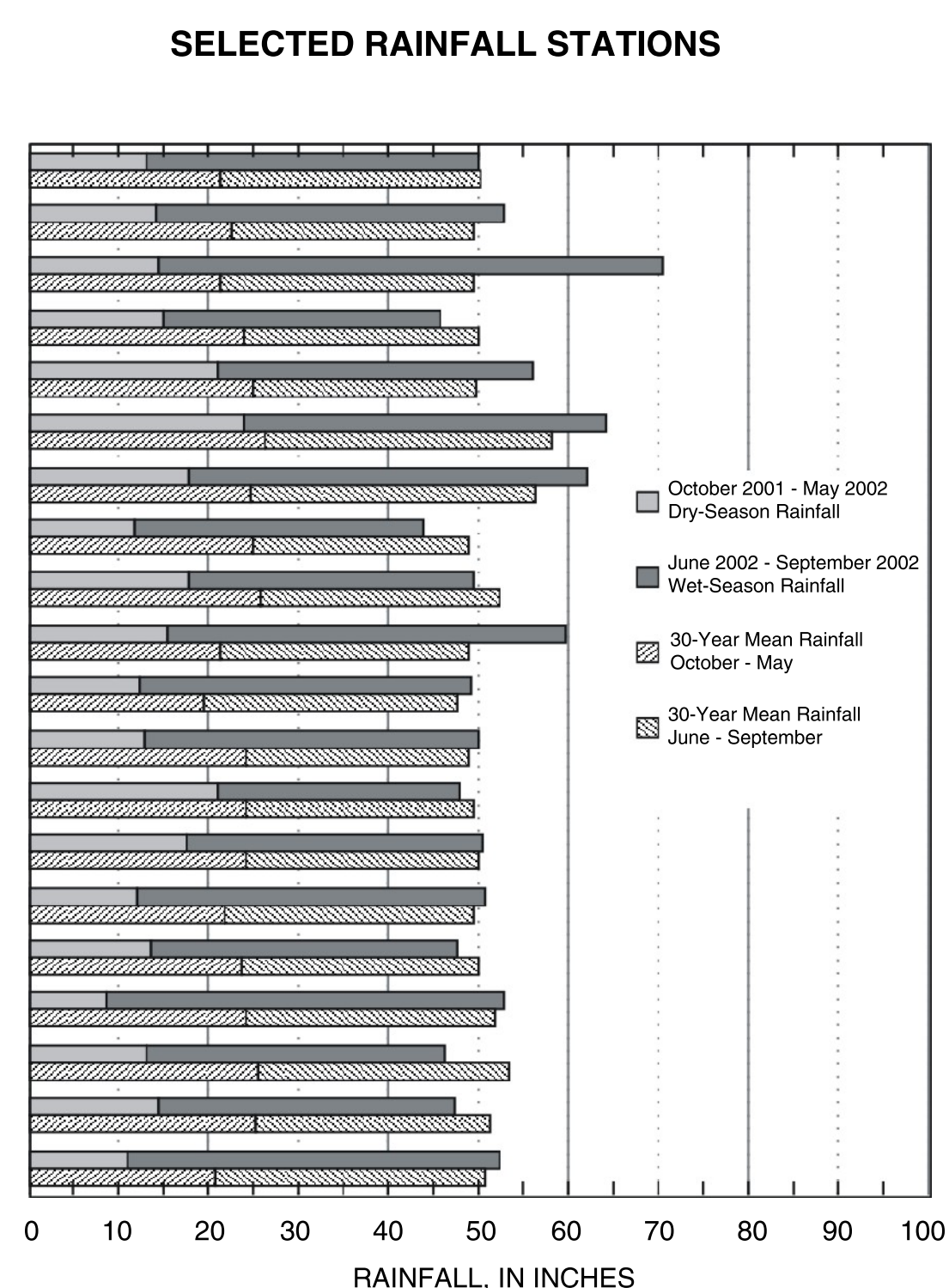


- ### EXPLANATION
- 50 - - - - POTENTIOMETRIC CONTOUR -- Shows altitude at which water level would be stood in tightly cased wells. Hatchures indicate depressions. Contour intervals 10 feet. Vertical datum is NGVD of 1929. Dashed where inferred
  - STATE WATER MANAGEMENT DISTRICT BOUNDARY
  - SRWMD -- 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 NGVD of 1929
  - 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 NGVD of 1929
  - 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 NGVD of 1929
  - 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 NGVD of 1929
  - SPRING -- Line indicates direction of spring outflow
  - FLOWING BOREHOLE
  - SINKHOLE -- Surface collapse feature exposing the Upper Floridan aquifer. Where measured, number is altitude of water level in feet above NGVD of 1929
  - 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.



### 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                                               | 595 <sup>a</sup>                    | 788                                                             |
| Rainbow Springs               | 31                                               | 582 <sup>a</sup>                    | 716                                                             |
| Blue Springs (Volusia County) | 4                                                | 149 <sup>a</sup>                    | 158                                                             |
| Silver Glen Springs           | 2                                                | 152 <sup>b</sup>                    | 111                                                             |
| Alexander Springs             | 11                                               | 122 <sup>b</sup>                    | 106                                                             |

<sup>a</sup> These altitudes do not necessarily reflect the potentiometric surface at the spring pool.  
<sup>b</sup> Mean-daily discharge for September 2002.  
<sup>c</sup> Instantaneous discharge measured on September 17-19, 2002.

### INTRODUCTION

This map depicts the potentiometric surface of the Upper Floridan aquifer in the St. Johns River Water Management District and vicinity in September 2002. Potentiometric contours are based on water-level measurements collected at 659 wells during the period September 16-30, near the end of the wet 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 13 feet below sea level near Fernandina Beach, Florida, to 130 feet above sea level in Polk County, Florida. The average water level of the network in September 2002 was about 5 feet higher than the average in May 2002 following above-average rainfall during the wet season. In 640 wells with previous measurements, the September 2002 levels ranged from about 6 feet below to about 35 feet above the May 2002 water levels. Water levels increased 20 feet or more from May 2002 to September 2002 in 14 of the 52 wells measured in Polk County, in 1 of the 18 wells measured in St. Johns County, in 1 of 17 wells measured in Highlands County, and all three of the wells measured in Hardee County.

The average water level of the network in September 2002 was less than 1 foot higher than the average water level in September 2001. In 638 wells with previous measurements, the September 2002 levels ranged from about 8 feet below to about 10 feet above the September 2001 levels. The largest decrease in water levels was in central Alachua County. The largest increase in water levels was in southeast Hernando County.

### ADDITIONAL REFERENCE

Long-term hydrographs of ground-water levels for continuous and periodic wells are available at internet site: <http://water.usgs.gov/lrnwts/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, SEPTEMBER 2002

By  
Sandra L. Kinnaman and Leel Knowles, Jr.  
2003

Copies of this map can be purchased from:  
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