

## MEMORANDUM

TO: Governing Board

FROM: Megan Wetherington, P.E., Senior Professional Engineer *MW*

THRU: David Still, Executive Director *DS*  
Jon Dinges, Department Director *JMD*

DATE: May 9, 2011

RE: April 2011 Hydrologic Conditions Report for the District

### RAINFALL

- Average rainfall in April was 2.62", which is 79% of the long-term average of 3.32" (Table 1, Figure 1). Eighty percent of the month's total fell during two fronts on the 5<sup>th</sup> and the 28<sup>th</sup>. The highest rainfall was observed in Suwannee and Lafayette Counties (Figure 2), while the Santa Fe Basin received less than half of normal rainfall (Figure 3). The highest gaged total was 5.09" at Cooks Hammock in Lafayette County, which also had the highest 24-hour total of 3.98" on the 28<sup>th</sup>.
- The average 12-month deficit of 1.49" was near the long-term average of 54.68". However, significant deficits nearing or exceeding 20" persisted in the upper Aucilla, Suwannee, and Santa Fe Basins (Figure 4). Figure 5 shows the change in annual deficits beginning in 1998.

### SURFACEWATER

- **Rivers:** Most gages on the Suwannee River and its tributaries ended the month with flows below the 10<sup>th</sup> percentile of April records. Flows at the Alapaha and Withlacoochee Rivers improved slightly at the end of the month. Conditions in coastal basins (the Econfina, Fenholloway, and Steinhatchee) declined but flows remained in a range considered typical for the season. Discharge statistics for six river stations are presented in Figure 6 and streamflow conditions for major gages are shown in Figure 7.
- **Lakes:** Levels at monitored lakes fell by an average of 0.2 feet. Fifteen of sixteen lakes were below their historical average level. The exception, Lake Butler in Union County, fell to its long-term average level. Figure 8 shows levels relative to the long-term average, minimum, and maximum levels for six lakes.
- **Springs:** Average April flow relative to historical flows is shown for five spring systems in Figure 9.

## GROUNDWATER

Levels fell in 69% of monitored upper Floridan Aquifer wells, dropping by an average of 1.5 inches since March (Figure 10). Conditions averaged across the District using monthly statistics remained at the 25<sup>th</sup> percentile for the second consecutive month (based on records beginning no earlier than 1978). Conditions based on the entire period of record fell to the 33<sup>rd</sup> percentile from the 35<sup>th</sup> percentile in March. Average conditions in the Suwannee and Santa Fe Basins were below the 30<sup>th</sup> percentile of all observations and the 20<sup>th</sup> percentile of monthly observations. Statistics for a representative sample of wells are shown in Figure 11, and Figure 12 shows statistics for 5 wells in or near the District with continuous records that predate the mid-1970's.

## HYDROLOGICAL/METEOROLOGICAL/WATER USE INFORMATION

- The District monitors agricultural water use on 106 overhead irrigation systems. The average daily application rate in April was 0.07", an increase of 0.02" since March. Figure 13 shows average daily application and evapotranspiration since 2008.
- The Palmer Drought Severity Index (PDSI), a climatological tool produced by the National Weather Service, evaluates the severity and frequency of abnormally dry or wet weather using precipitation, temperature, and soil moisture data. The PDSI indicated moderate drought during the last week of April.
- The U.S. Geological Survey categorized the Suwannee River and its tributaries as being in moderate hydrologic drought.

## CONSERVATION

A Phase I Water Shortage Advisory is in effect. Users are urged to voluntarily reduce consumption. Homeowners and others within the District are required to limit landscape irrigation to two days per week between March and October, based on a water conservation rule that applies to residential landscaping, public or commercial recreation areas, and public and commercial businesses that aren't regulated by a District-issued permit.

This report is compiled in compliance with Chapter 40B-21.211, Florida Administrative Code, using rainfall (radar-derived estimate), groundwater (113 wells), surfacewater (35 stations), agricultural water use (106 stations), and general information such as drought indices and forecasts. Data are provisional and statistics are updated as revised data become available. Data are available at [www.mysuwanneeriver.com](http://www.mysuwanneeriver.com) or by request.

MW/dd

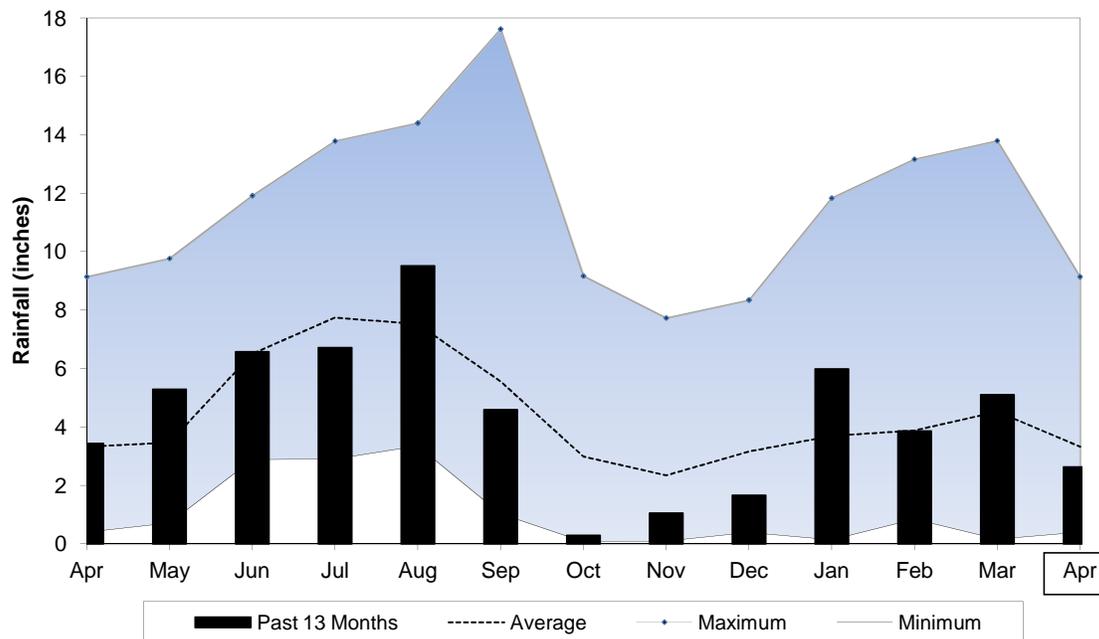
**Table 1: Estimated Rainfall Totals**

County	Apr-2011	Apr Average	Last 3 Months	Last 12 Months
Alachua	1.50	3.35	9.56	43.55
Baker	1.24	3.07	8.35	44.84
Bradford	0.94	3.16	8.01	36.52
Columbia	2.20	3.10	9.81	47.92
Dixie	2.96	3.35	13.11	67.57
Gilchrist	2.71	3.58	10.94	51.27
Hamilton	3.16	3.21	10.74	48.56
Jefferson	2.83	4.04	12.86	47.19
Lafayette	3.45	3.24	12.55	56.20
Levy	2.78	3.11	11.89	64.21
Madison	2.55	3.23	12.26	50.26
Suwannee	3.87	3.24	13.11	53.52
Taylor	2.47	3.35	12.88	56.62
Union	1.24	3.65	8.17	43.76

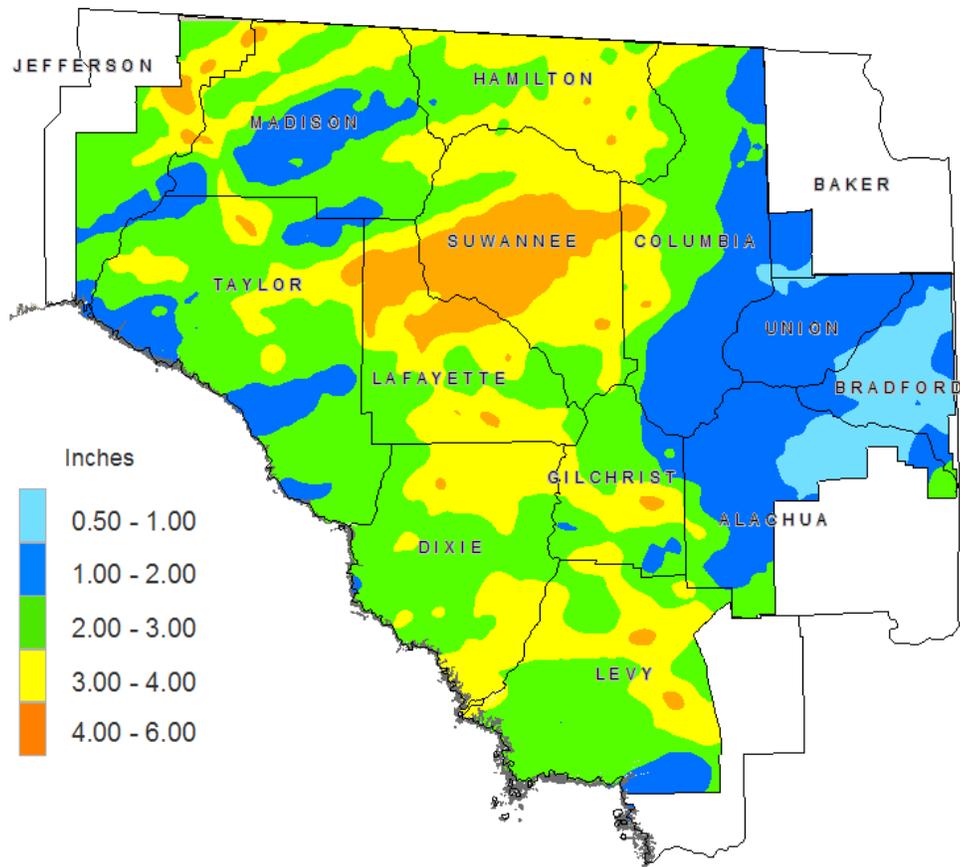
April 2011 Average: 2.62  
 Historical April Average (since 1932): 3.32  
 Historical 12-month Average (since 1932): 54.68  
 Past 12-Month Total: 53.19  
 12-month Rainfall Deficit: -1.49

(Rainfall reported in inches)

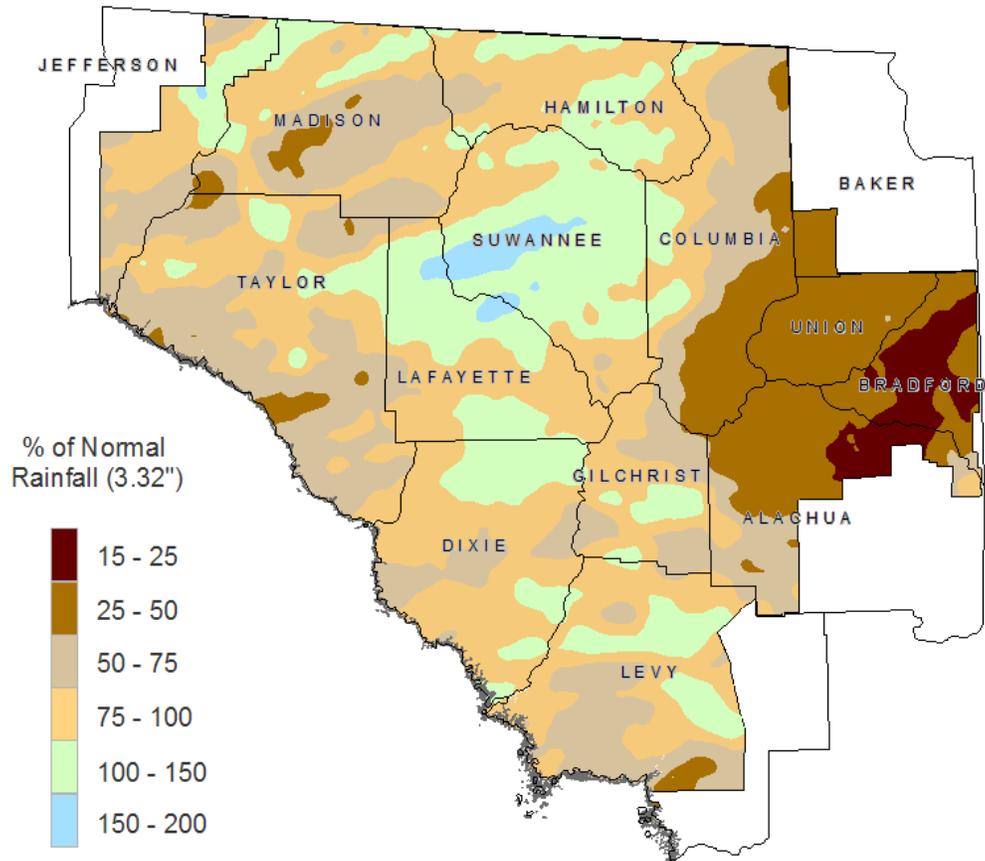
**Figure 1: Comparison of District Monthly Rainfall**



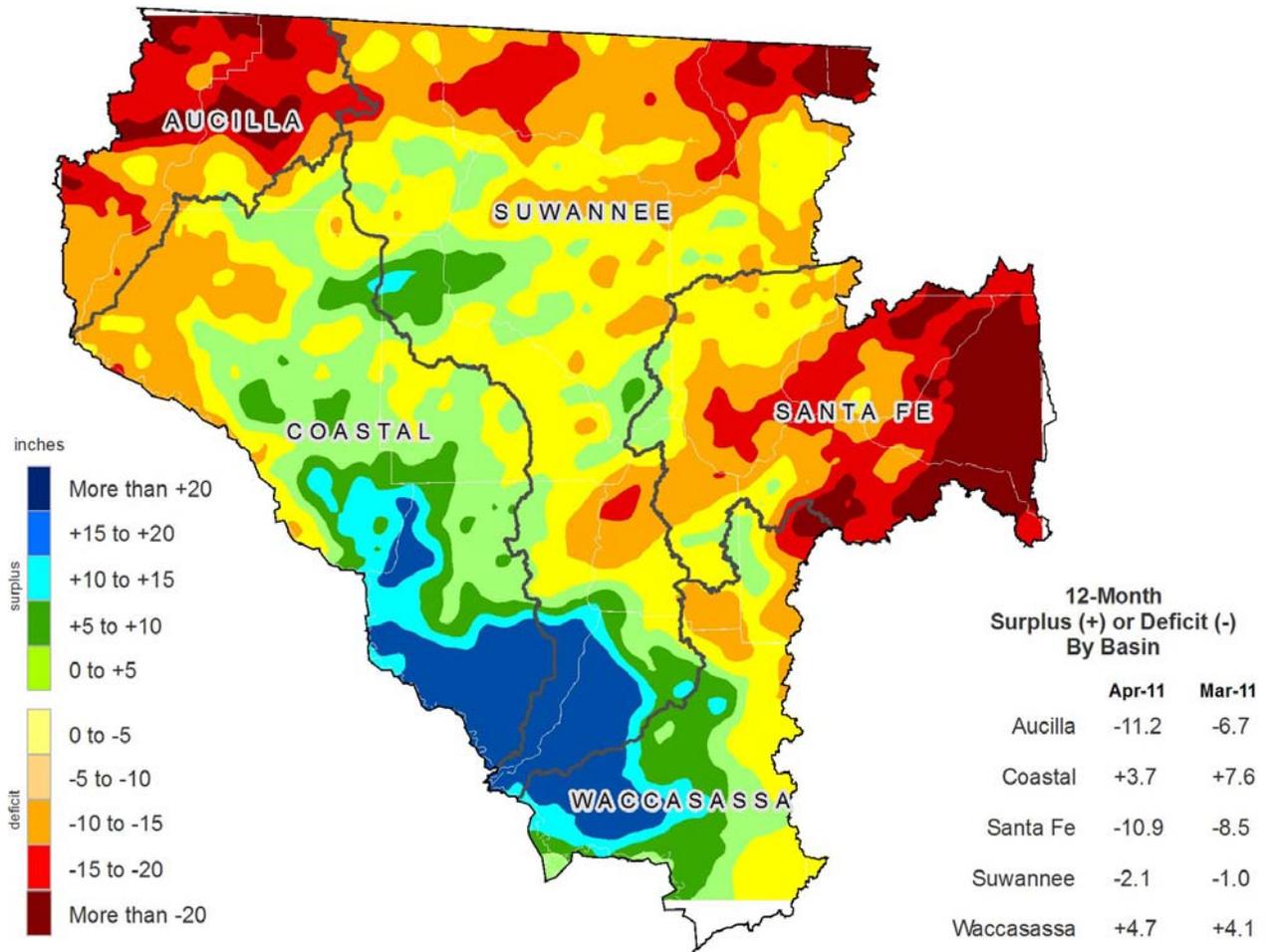
**Figure 2: April 2011 Rainfall Estimate**



**Figure 3: April 2011 Percent of Normal Rainfall**

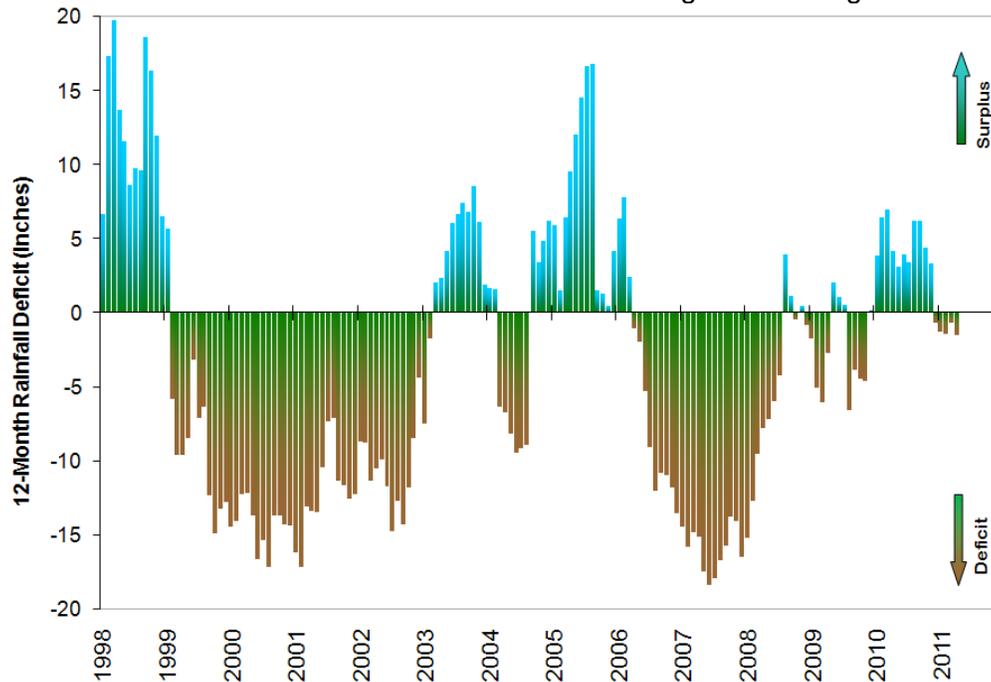


**Figure 4: 12-Month Rainfall Surplus/Deficit by River Basin Ending April 2011**



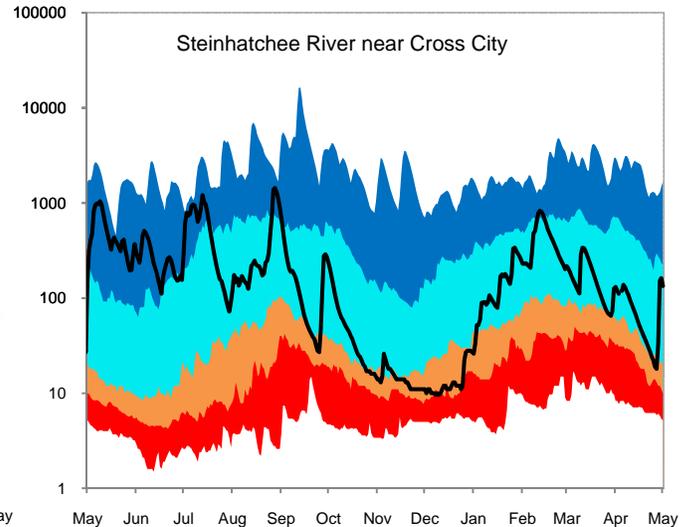
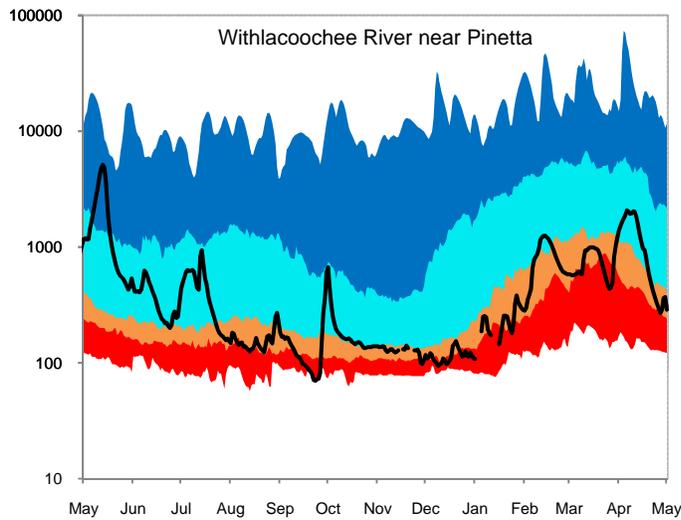
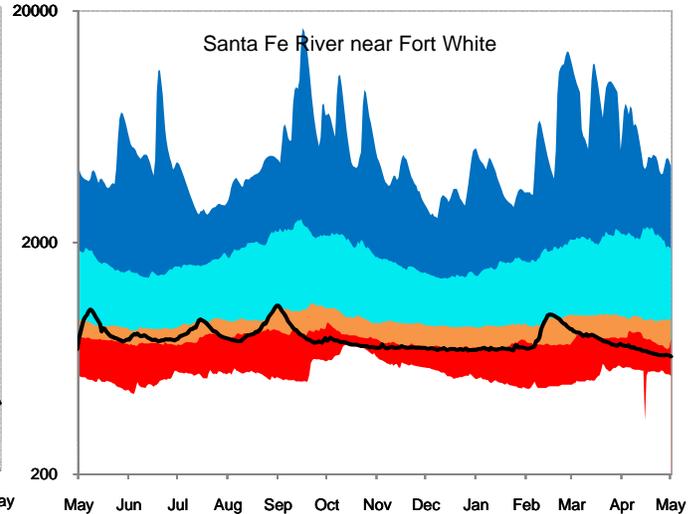
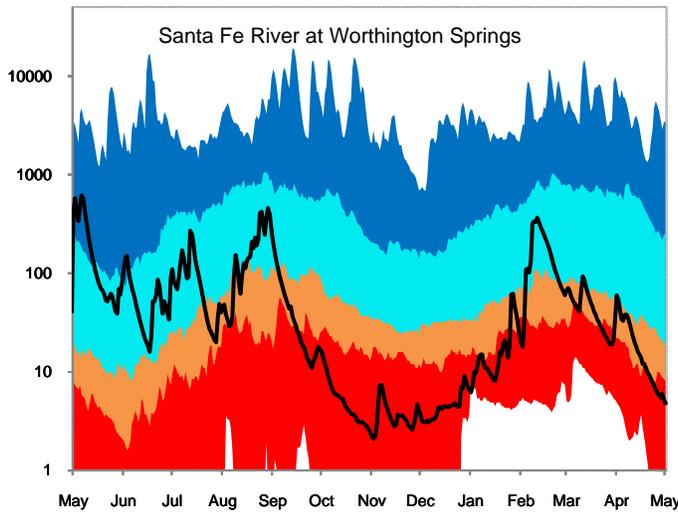
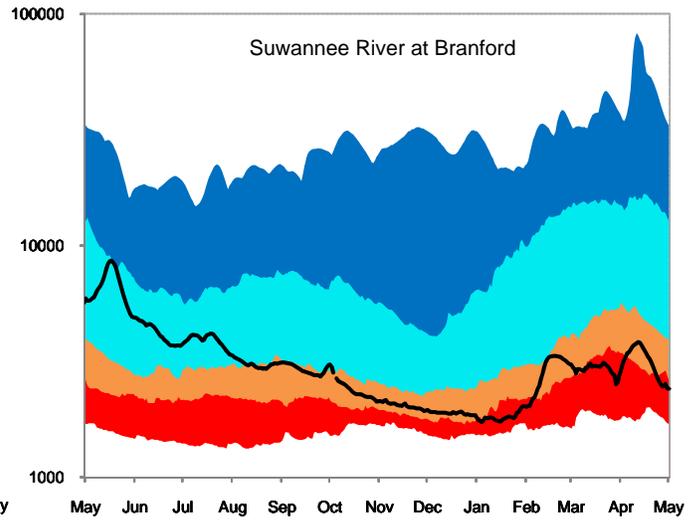
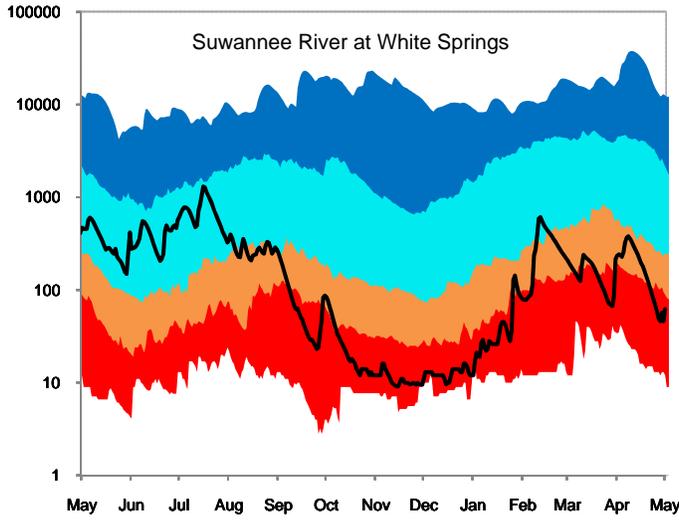
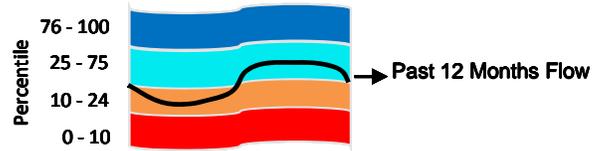
**Figure 5: 12-Month Rolling Rainfall Deficit Since 1998**

Difference between observed 12-month rainfall and the long-term average over the same period



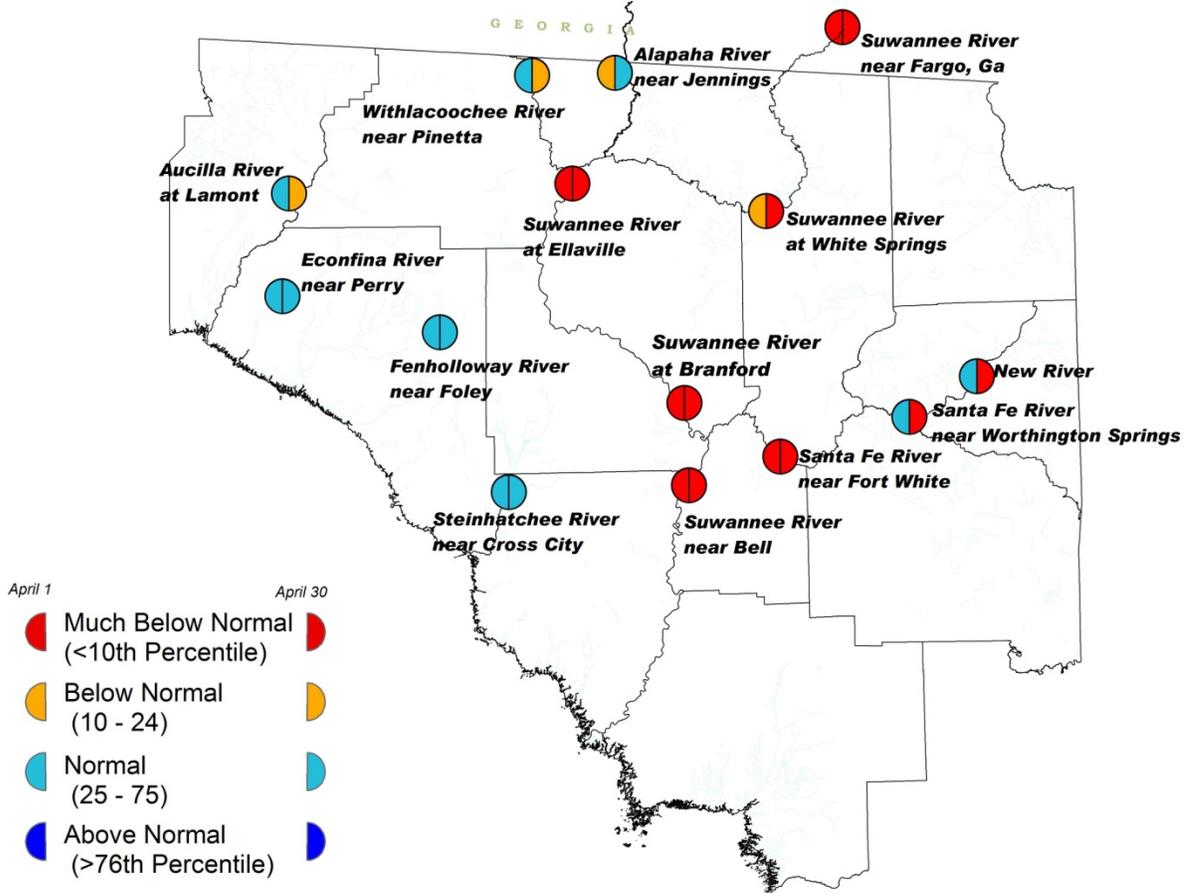
**Figure 6: Daily River Flow Statistics**

May 1, 2010 through April 30, 2011

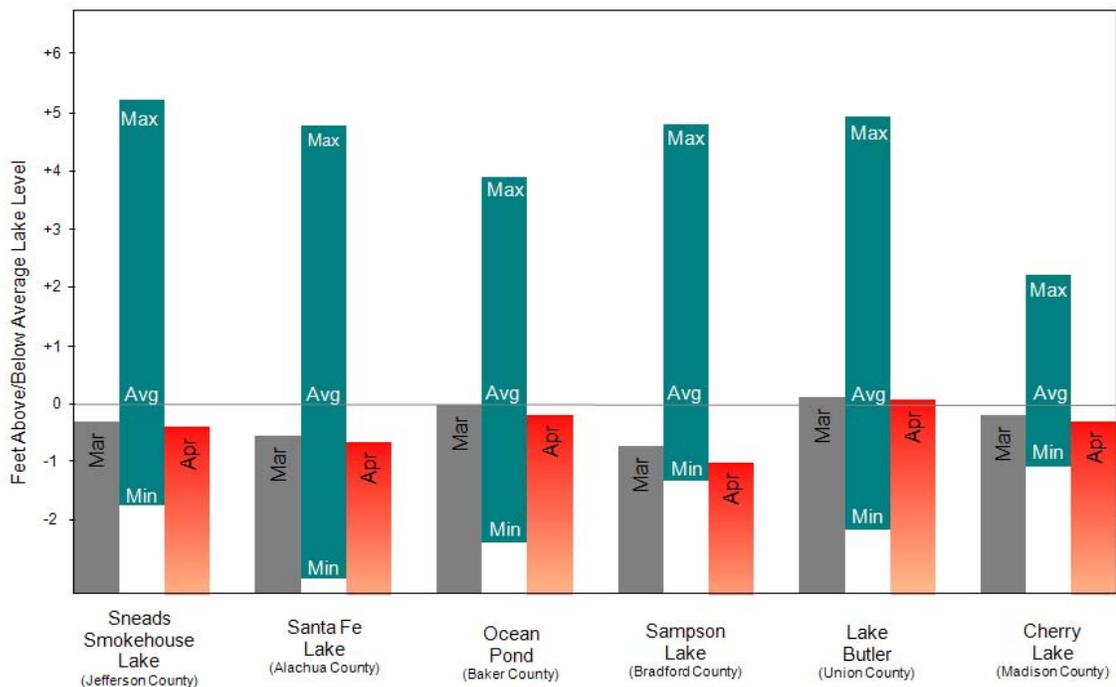


RIVER FLOW, CUBIC FEET PER SECOND

**Figure 7: April 2011 Streamflow Conditions**



**Figure 8: Lake levels, relative to historic maximum, minimum, and average levels.**

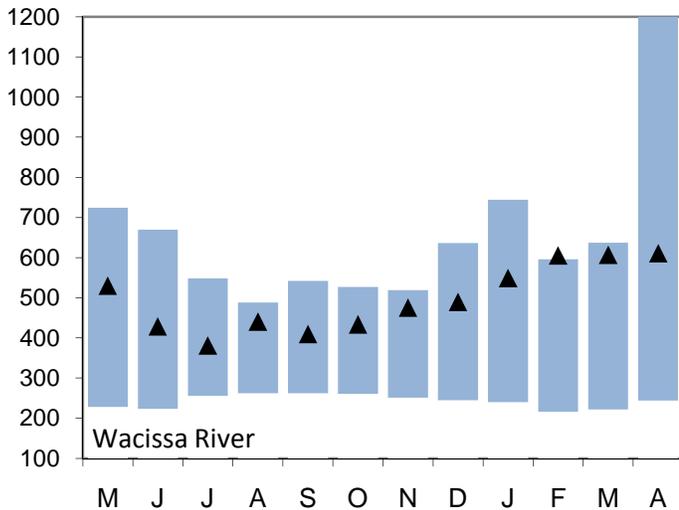
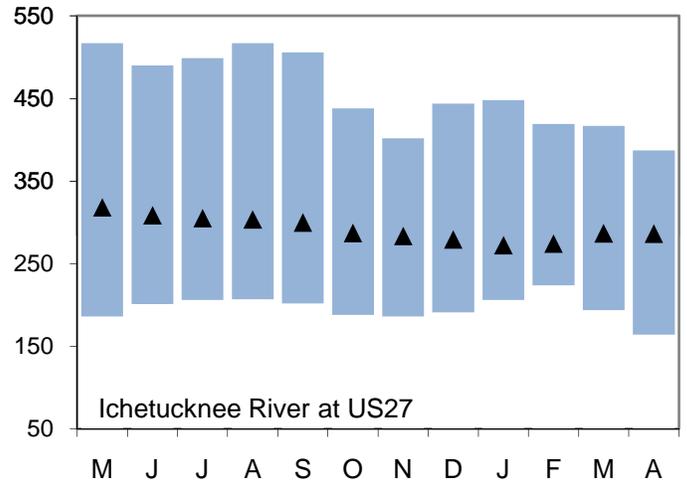
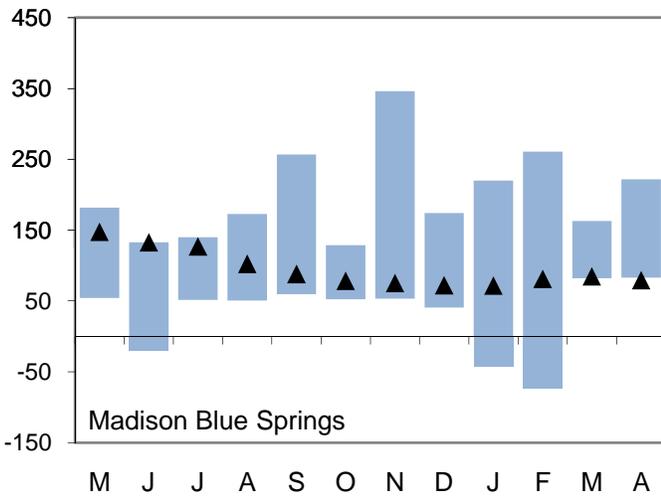
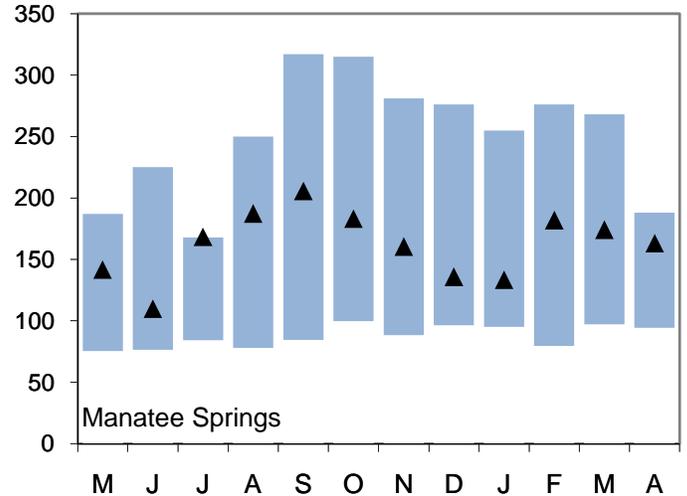
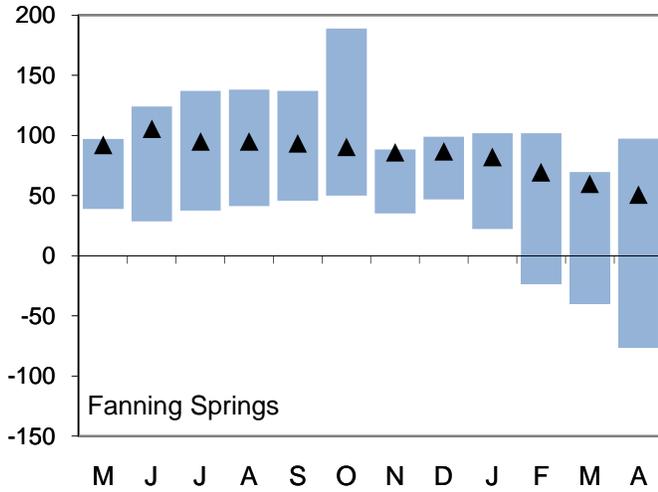
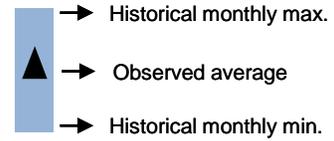


### Figure 9: Monthly Springflow Statistics

Flows May 1, 2010 through April 30, 2011

Springflow data are given in cubic feet per second.

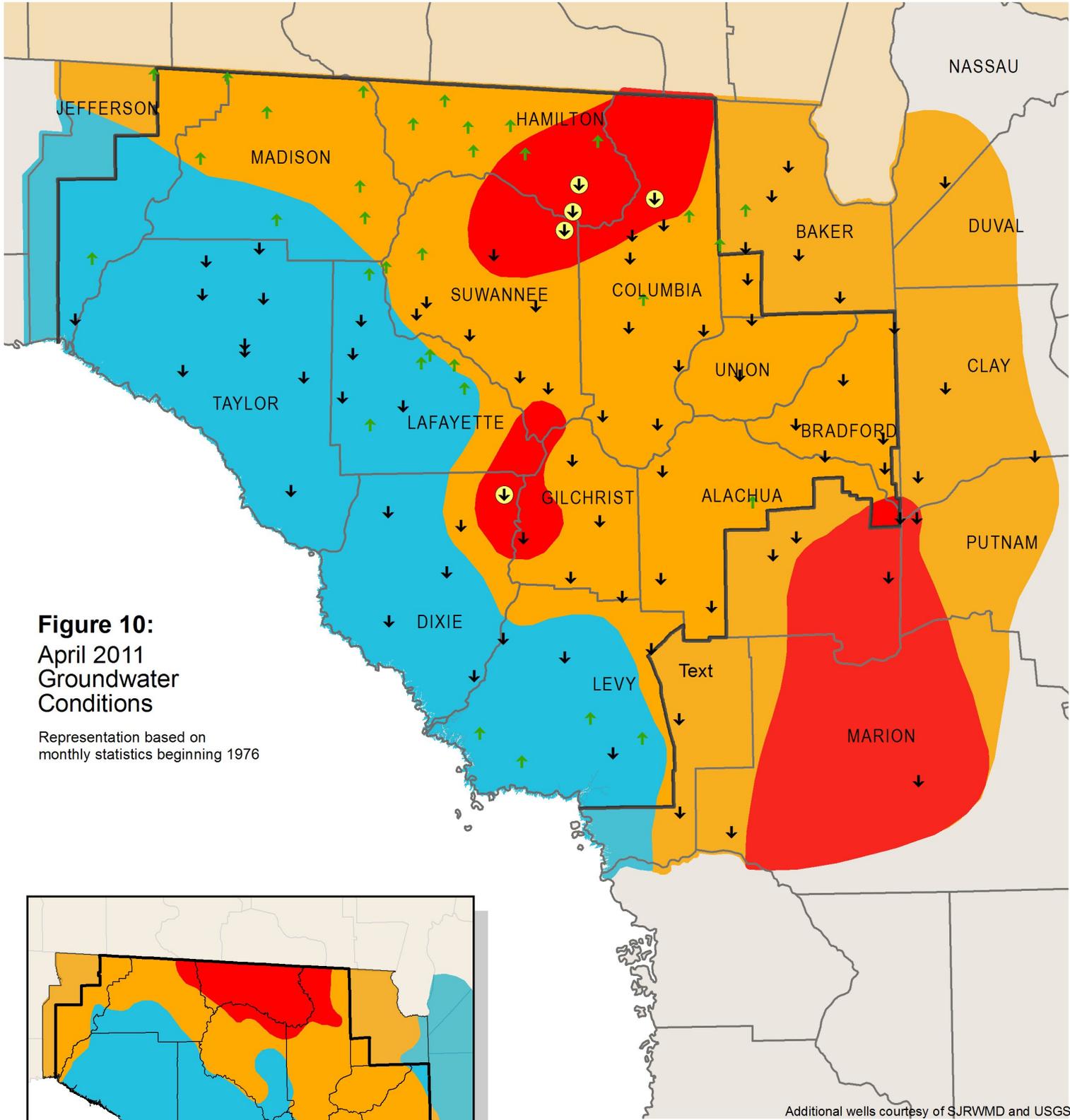
Period of record beginning 2002. Data are provisional.



Note: Rising river levels caused by high tides or flooding can cause springflow to slow or reverse.

Springflow for months marked by an asterisk (\*) was strongly affected by river conditions.

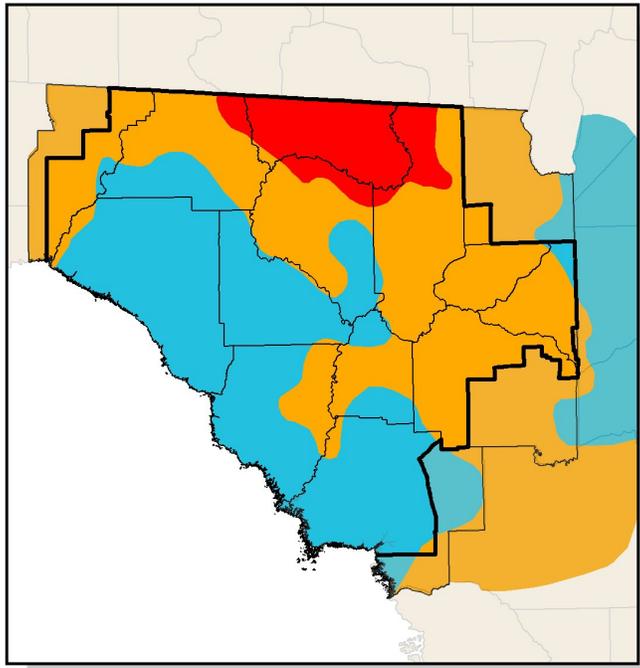
Data will be revised once approved and published by the U.S. Geological Survey.



**Figure 10:**  
 April 2011  
 Groundwater  
 Conditions

Representation based on  
 monthly statistics beginning 1976

Additional wells courtesy of SJRWMD and USGS

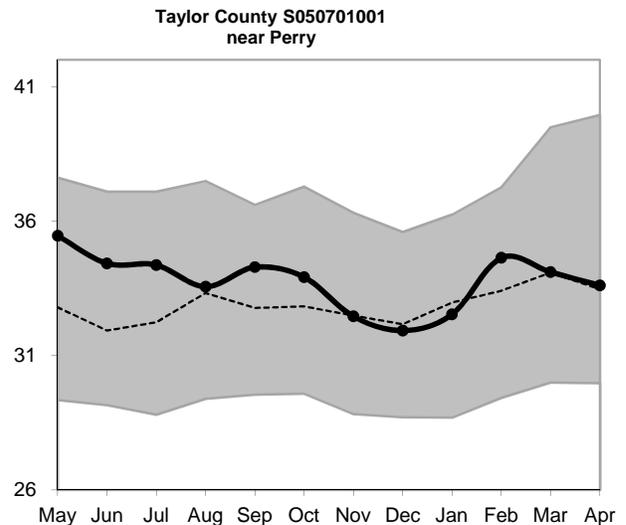
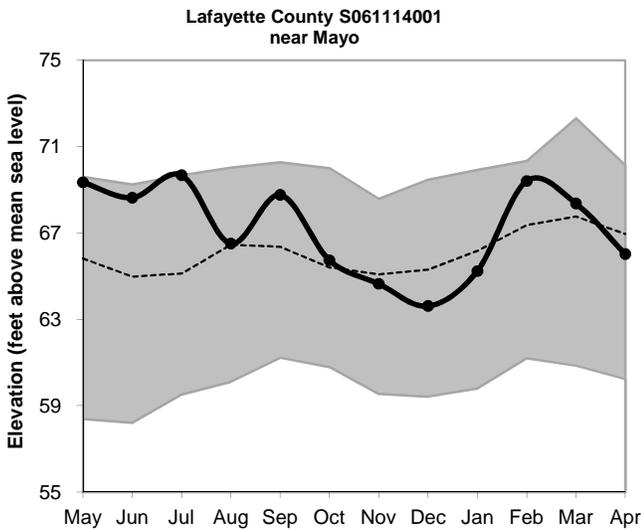
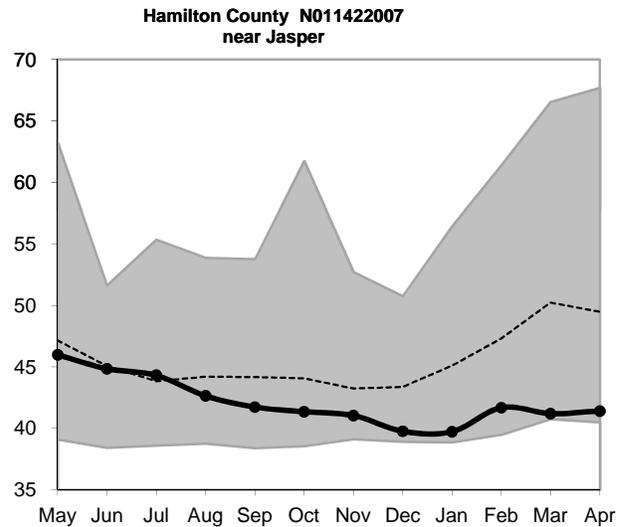
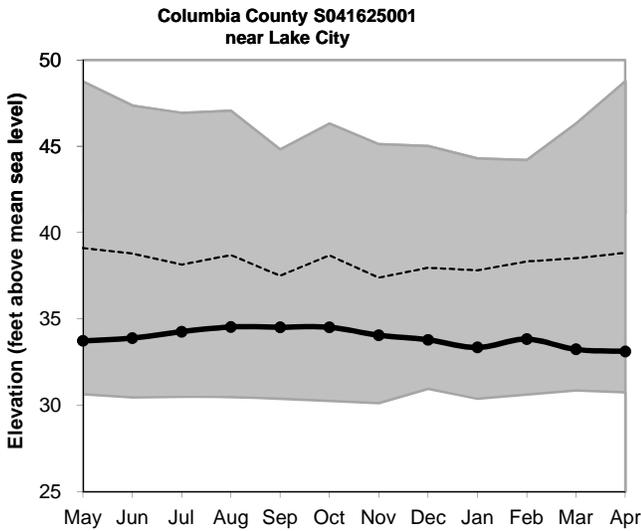
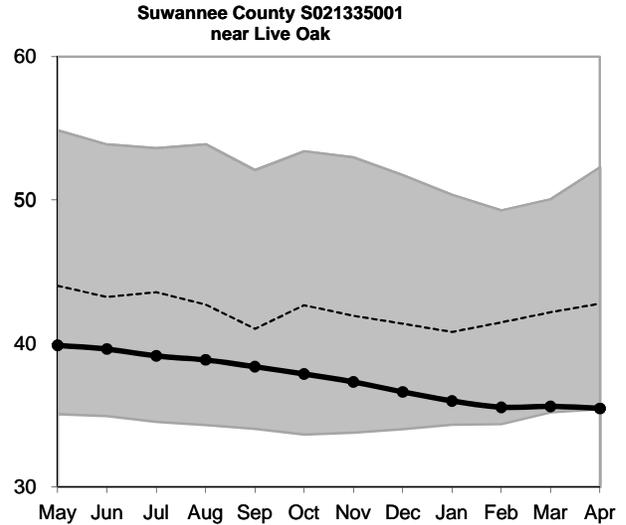
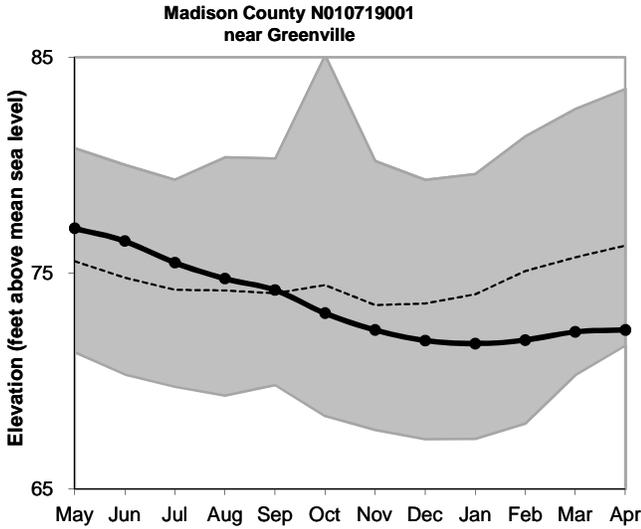
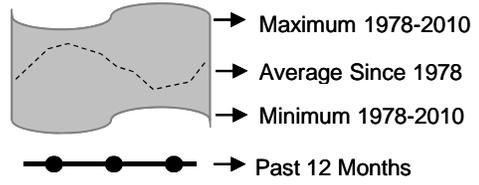


Inset: March 2011 Groundwater Levels

- High  
(Greater than 75th Percentile)
- Normal  
(25th to 75th Percentile)
- Low  
(10th to 25th Percentile)
- Extremely Low  
(Less than 10th Percentile)
- ↑    ↓ Increase/decrease in level since last month
- District Boundary
- Record Low for Month

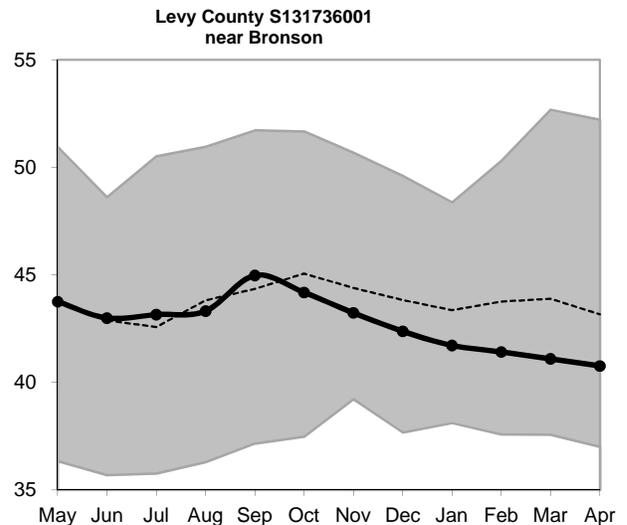
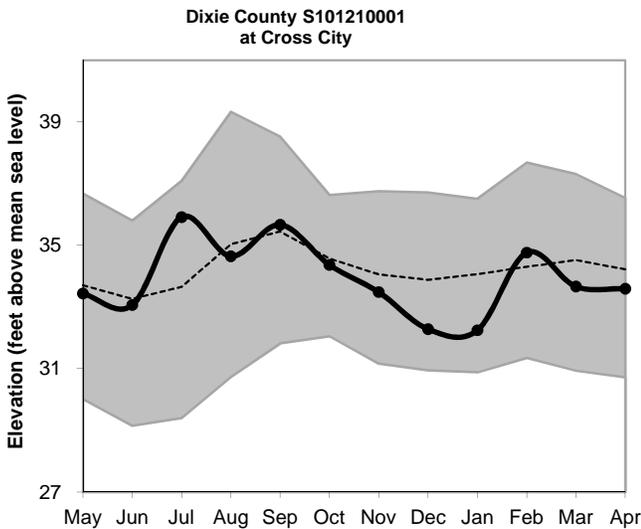
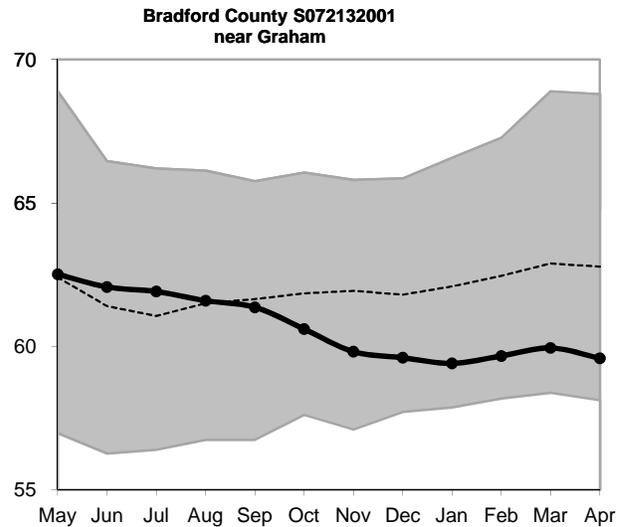
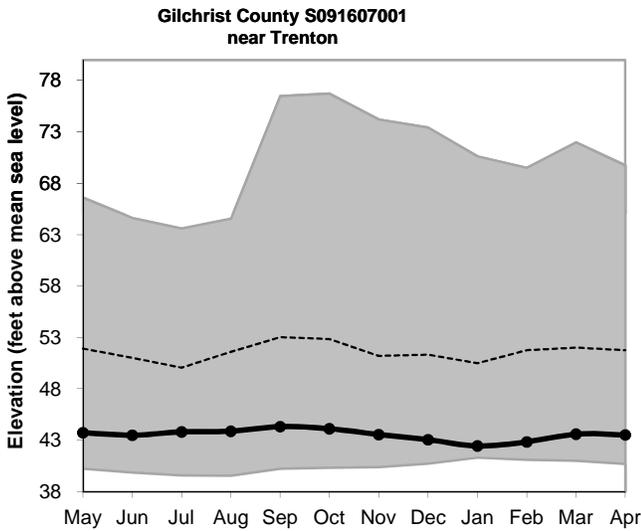
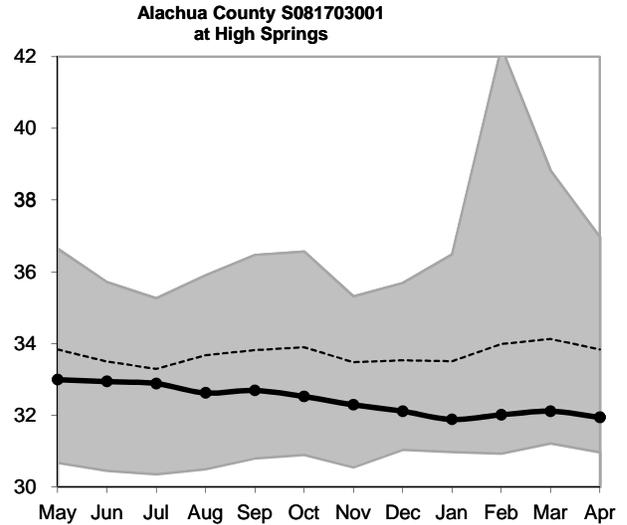
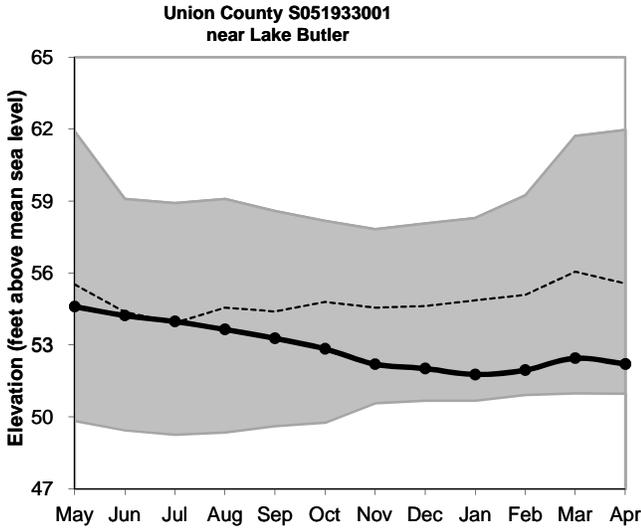
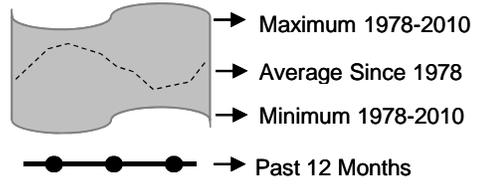
# Figure 11: Monthly Groundwater Level Statistics

Levels May 1, 2010 through April 30, 2011  
 Period of Record Beginning 1978



# Figure 11, cont.: Groundwater Level Statistics

Levels May 1, 2010 through April 30, 2011  
 Period of Record Beginning 1978

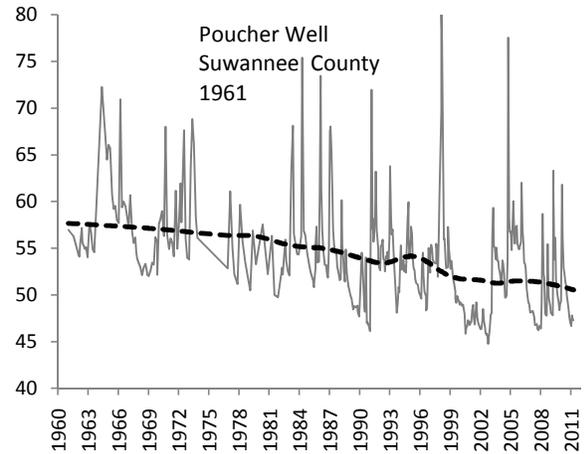
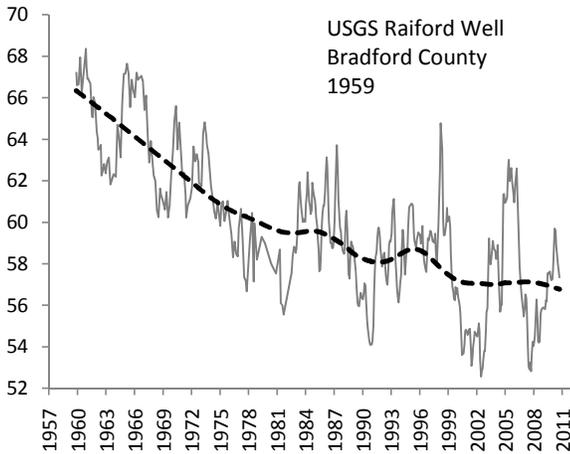
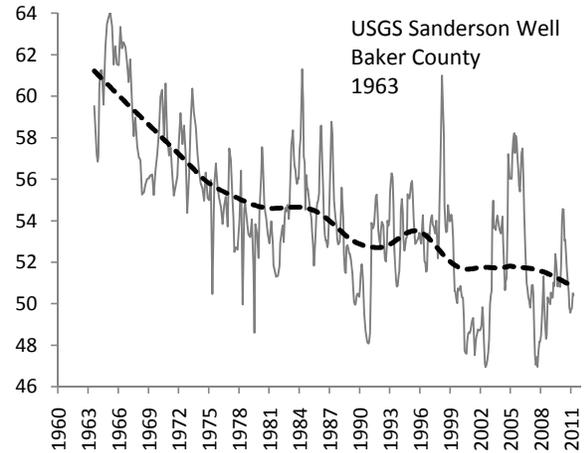
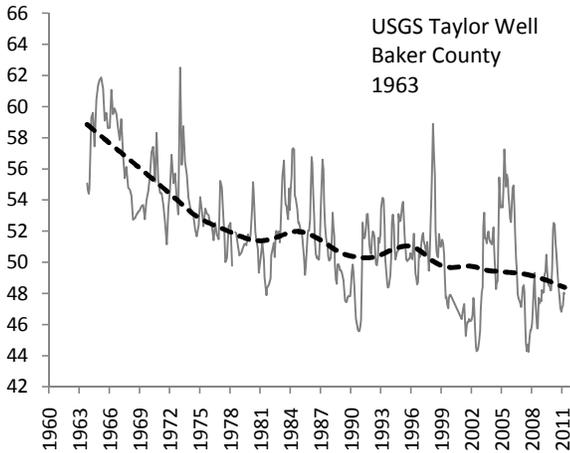
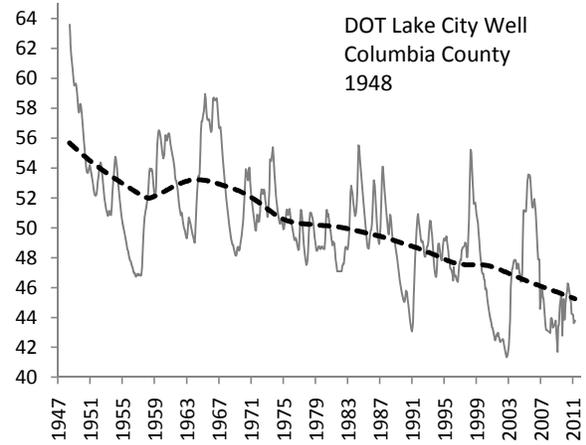
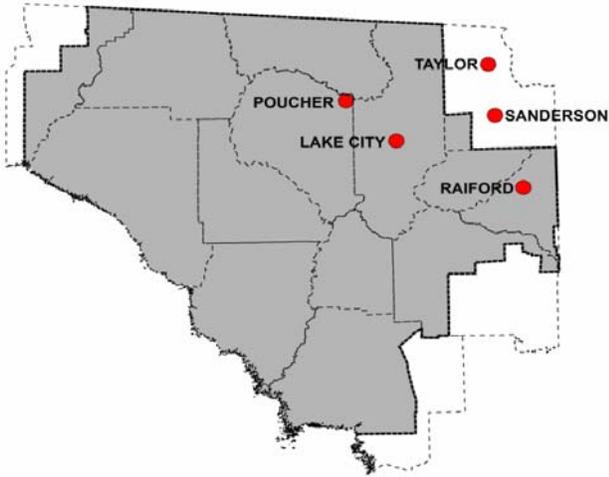


# Figure 12: Long-Term Groundwater Levels

Ending April 2011

Levels in feet above mean sea level

— Observed data  
 - - - Observed data smoothed using LOWESS (locally weighted polynomial regression)



### Figure 13: Agricultural Water Use

Daily evapotranspiration (loss of water by evaporation and plant transpiration) and irrigation based on usage reported by up to 106 overhead irrigation systems (12,250 acres total) on a variety of crops throughout the District. These units are part of a network of 168 units installed at 48 agricultural operations by permission of the owners. Evapotranspiration data courtesy of University of Florida IFAS Extension.

