

## MEMORANDUM

TO: Governing Board

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

THRU: David Still, Executive Director *DAS*  
Jon Dinges, Department Director *JWD*

DATE: August 3, 2011

RE: July 2011 Hydrologic Conditions Report for the District

### RAINFALL

- Average rainfall based on radar estimates was 5.90", which is 76% of the long-term July average of 7.74" (Table 1, Figure 1). The average gaged total was 5.96" with accumulations ranging from 2.76" to 12.44". Distribution was highly variable (Figure 2), but in general Columbia County was the driest with widespread areas of less than 50% of normal rainfall (Figure 3). Conditions improved in the Withlacoochee and Alapaha basins in southern Georgia, with large areas approaching 10" for the month.
- The average 12-month deficit increased to 7.8". Deficits nearing 25" persisted in the upper Suwannee and Santa Fe Basins (Figure 4). The average 3-month deficit was 5.4". Figure 5 shows the change in annual deficits beginning in 1998.

### SURFACEWATER

- **Rivers:** After record-breaking low flows in the upper Suwannee basin in June, flows improved modestly at all Suwannee River gages. Average 7-day flow at the Suwannee River at White Springs and Branford and the Santa Fe River near Fort White rose to the 5<sup>th</sup> percentile of all observations, although the 30-day average flow remained in the lowest one percent of all records for these gages. Conditions at the New River near Lake Butler, a tributary of the upper Santa Fe, rose to near median by the end of the month, but the gage near Graham below the Santa Fe Lake/Swamp headwaters reported no flow throughout the month. The Aucilla, Econfina, Fenholloway, and Steinhatchee rivers remained below normal or extremely low. Discharge statistics for six river stations are presented in Figure 6 and streamflow conditions for major gages are shown in Figure 7.
- **Lakes:** Lake levels generally remained stable, but all were below their long-term historic average. Low Lake near Wellborn in Suwannee County set a new record low stage for the second month in a row after falling an

inch since June. Figure 8 shows levels relative to the long-term average, minimum, and maximum levels for six lakes.

- **Springs:** Average July flow relative to historical flows is shown for five spring systems in Figure 9.

## GROUNDWATER

Levels rose in nearly 30% of monitored upper Floridan Aquifer wells, but the average change was a drop of 3.5” (Figure 10). Average conditions across the District compared to historic July data fell to the 15<sup>th</sup> percentile, making July the fifth consecutive month with conditions below the 25<sup>th</sup> percentile (based on records beginning no earlier than 1978). Levels at more than half the wells were below the 10<sup>th</sup> percentile. Averaged conditions in the Santa Fe Basin fell below the 5<sup>th</sup> percentile of all observations, while in the Suwannee Basin conditions stayed near the 15<sup>th</sup> percentile. 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 July was 0.05”, down 0.08” from the observed June rate. 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 severe drought during the last week of July, with 10.88” of rain needed to end the drought.
- The U.S. Geological Survey categorized the Suwannee River and its tributaries as being in moderate hydrologic drought and other basins in the District as below normal.

## CONSERVATION

A Phase I Water Shortage Advisory is in effect. Users are urged to eliminate unnecessary uses. Landscape irrigation is limited 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 (108 wells), surfacewater (35 stations), agricultural water use (106 stations), and general information such as drought indices and forecasts. Data are provisional and are updated as revised data become available. Data are available at [www.mysuwanneeriver.com](http://www.mysuwanneeriver.com) or by request.*

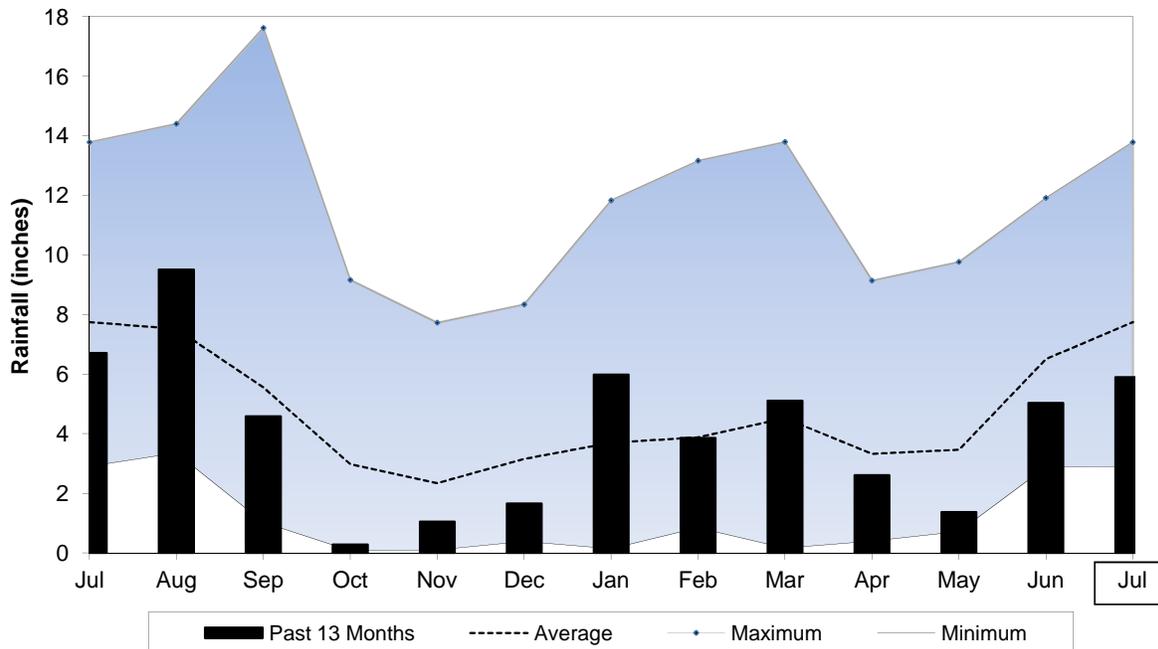
**Table 1: Estimated Rainfall Totals**

County	July-2011	July Average	Last 3 Months	Last 12 Months
Alachua	5.88	6.82	13.84	41.24
Baker	5.42	6.33	12.34	39.32
Bradford	5.90	6.92	13.75	35.74
Columbia	4.15	6.74	11.09	40.45
Dixie	8.06	8.92	14.31	56.16
Gilchrist	6.95	8.03	14.21	47.53
Hamilton	5.25	5.62	10.29	41.16
Jefferson	5.77	6.50	10.59	43.52
Lafayette	5.09	7.60	10.31	46.36
Levy	7.59	8.55	13.72	56.25
Madison	6.48	6.18	12.27	47.17
Suwannee	5.01	6.35	11.52	46.40
Taylor	5.48	8.39	11.93	50.95
Union	4.46	7.49	12.71	39.19

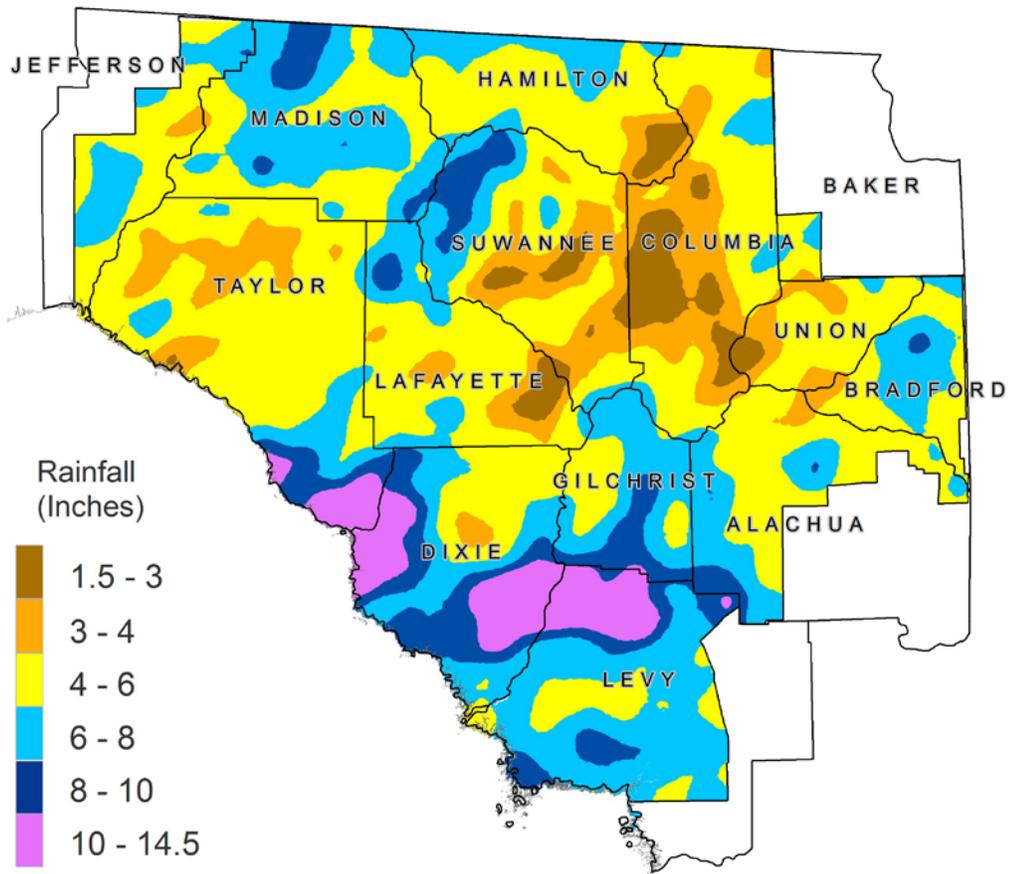
July 2011 Average: 5.90  
 Historical July Average (since 1932): 7.74  
 Historical 12-month Average (since 1932): 54.68  
 Past 12-Month Total: 46.91  
 12-month Rainfall Deficit: -7.77

(Rainfall reported in inches)

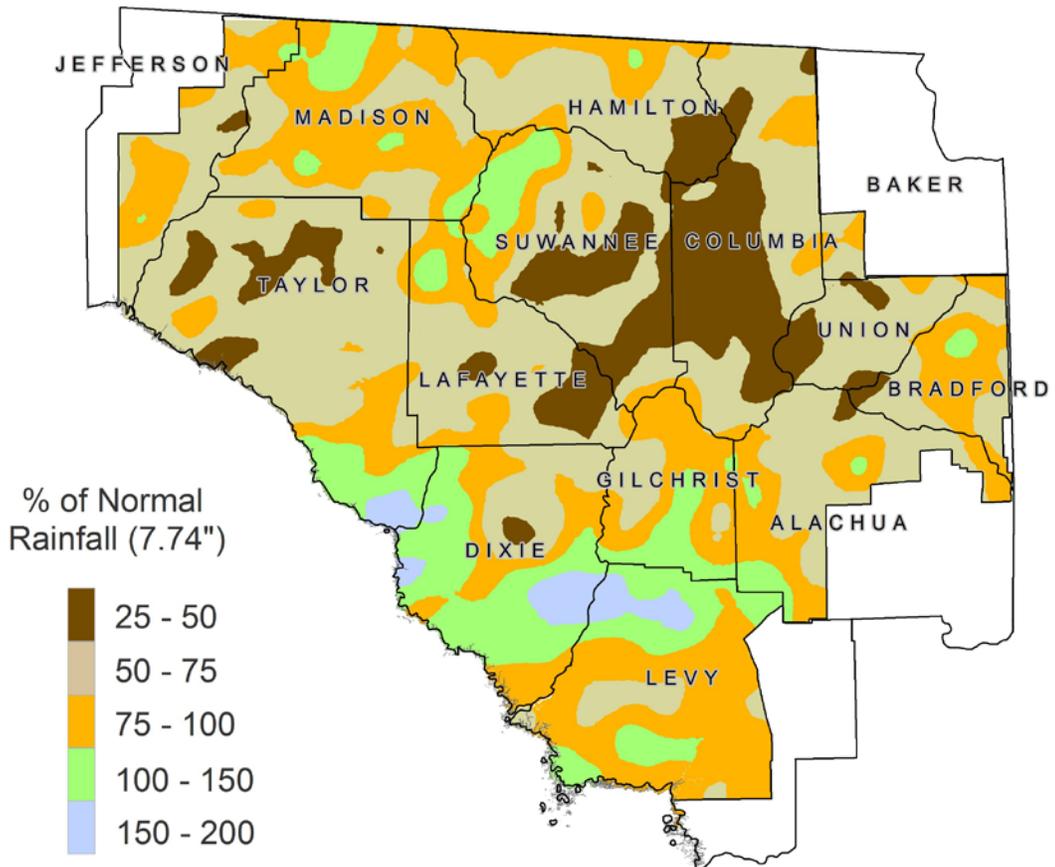
**Figure 1: Comparison of District Monthly Rainfall**



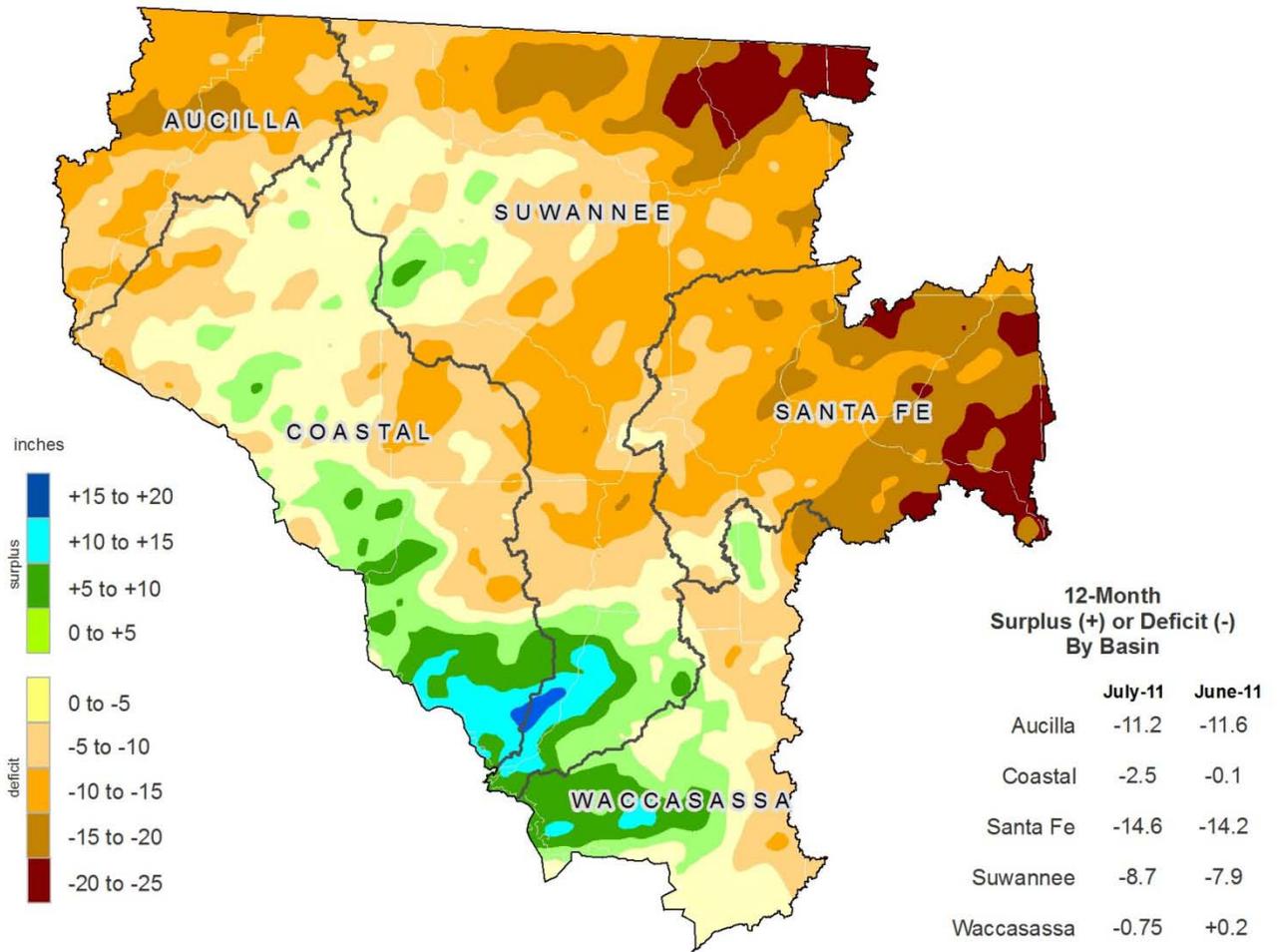
**Figure 2: July 2011 Rainfall Estimate**



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

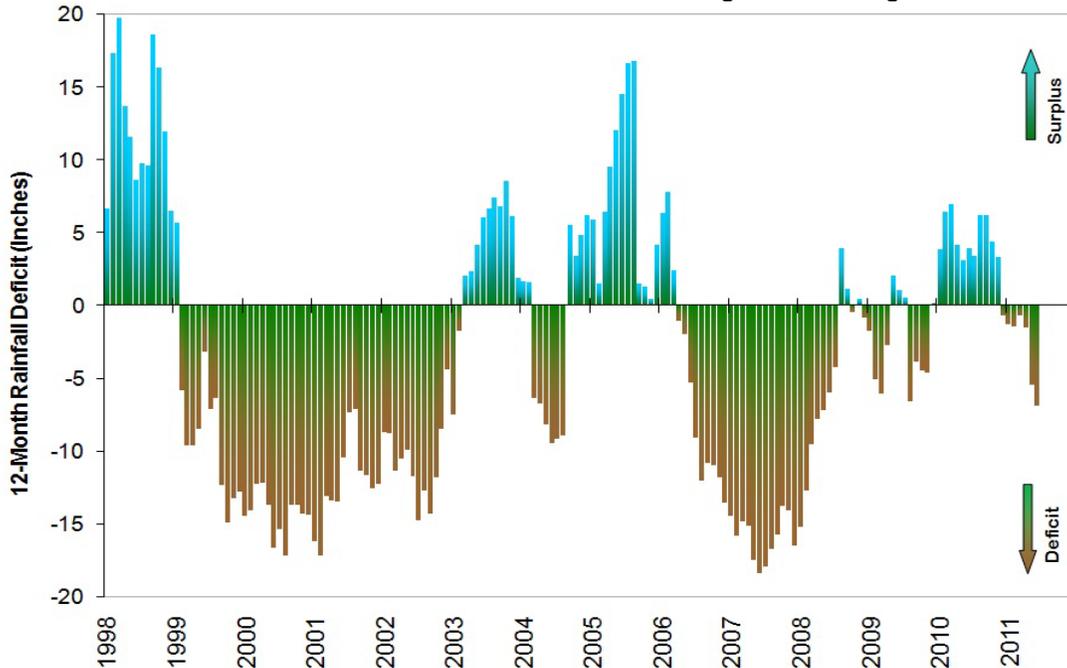


**Figure 4: 12-Month Rainfall Surplus/Deficit by River Basin Ending July 31, 2011**

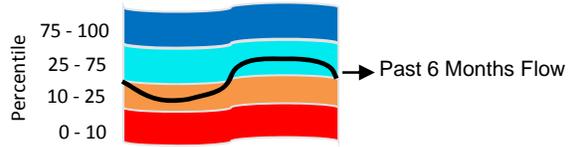


**Figure 5: 12-Month Rolling Rainfall Deficit Since 1998**

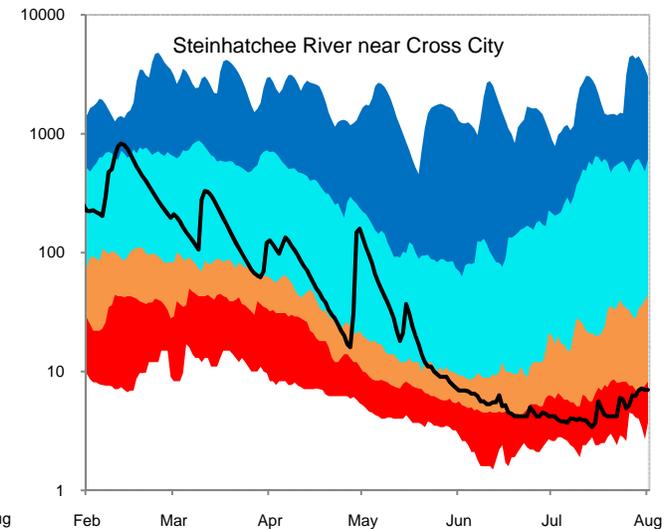
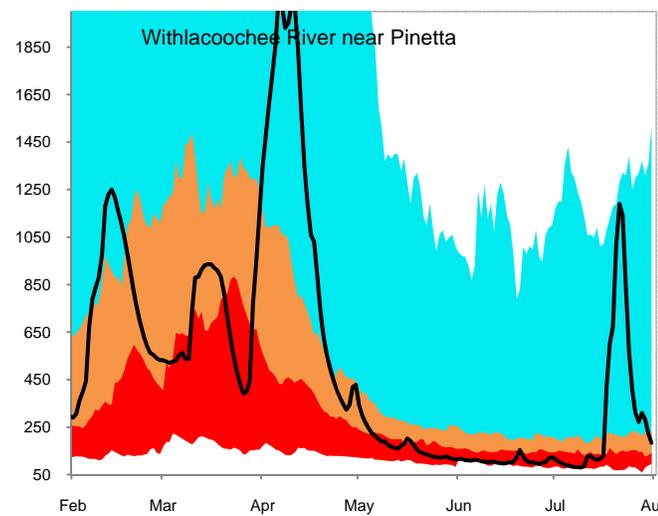
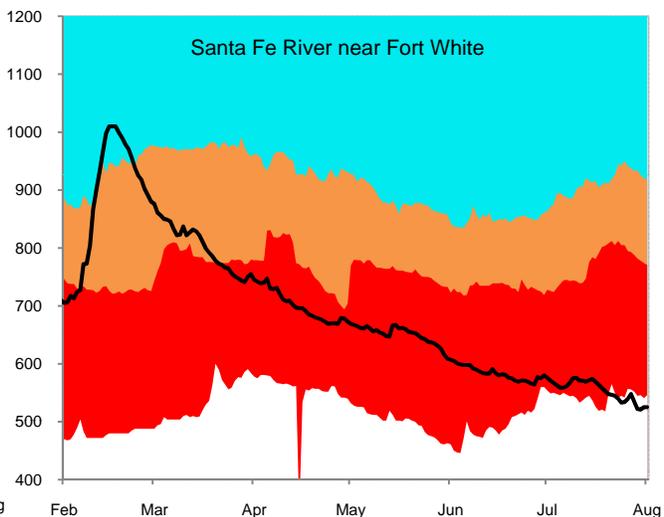
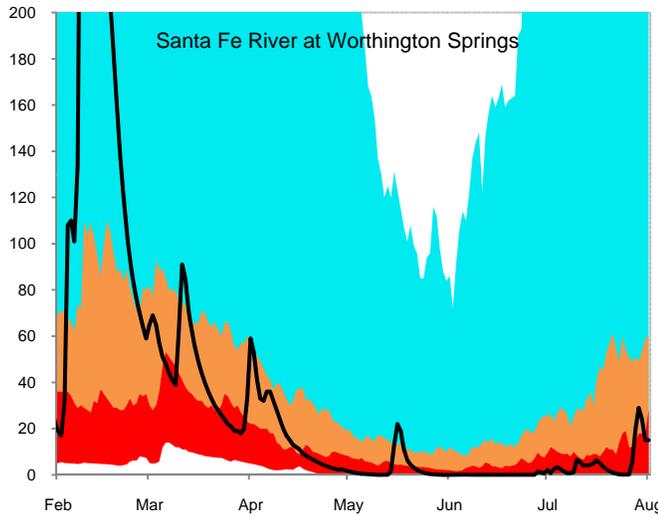
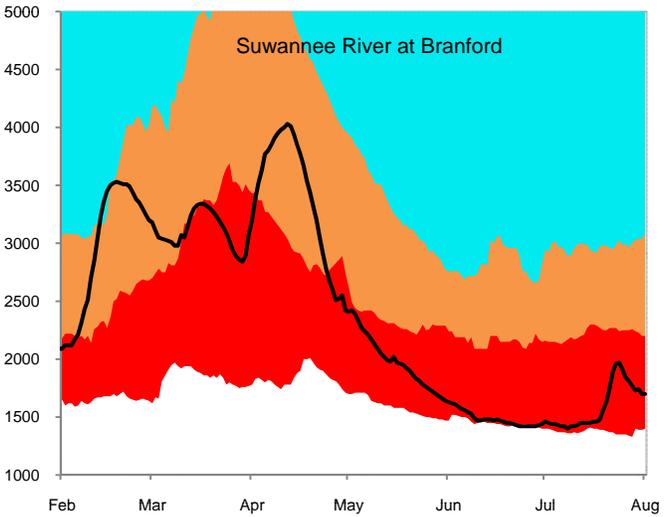
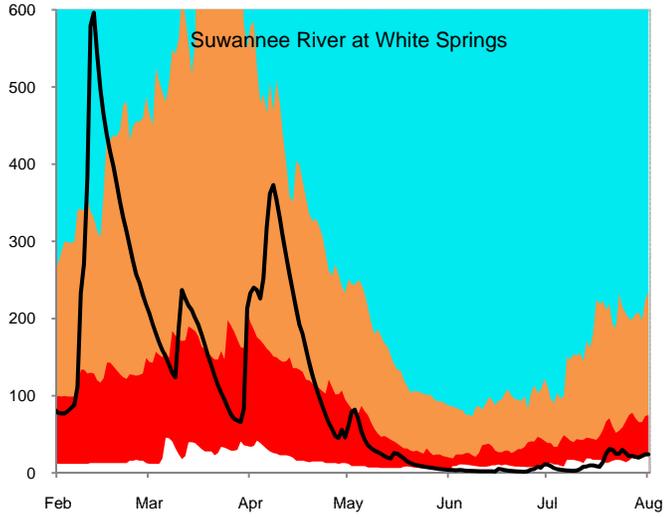
Difference between observed 12-month rainfall and the long-term average over the same period



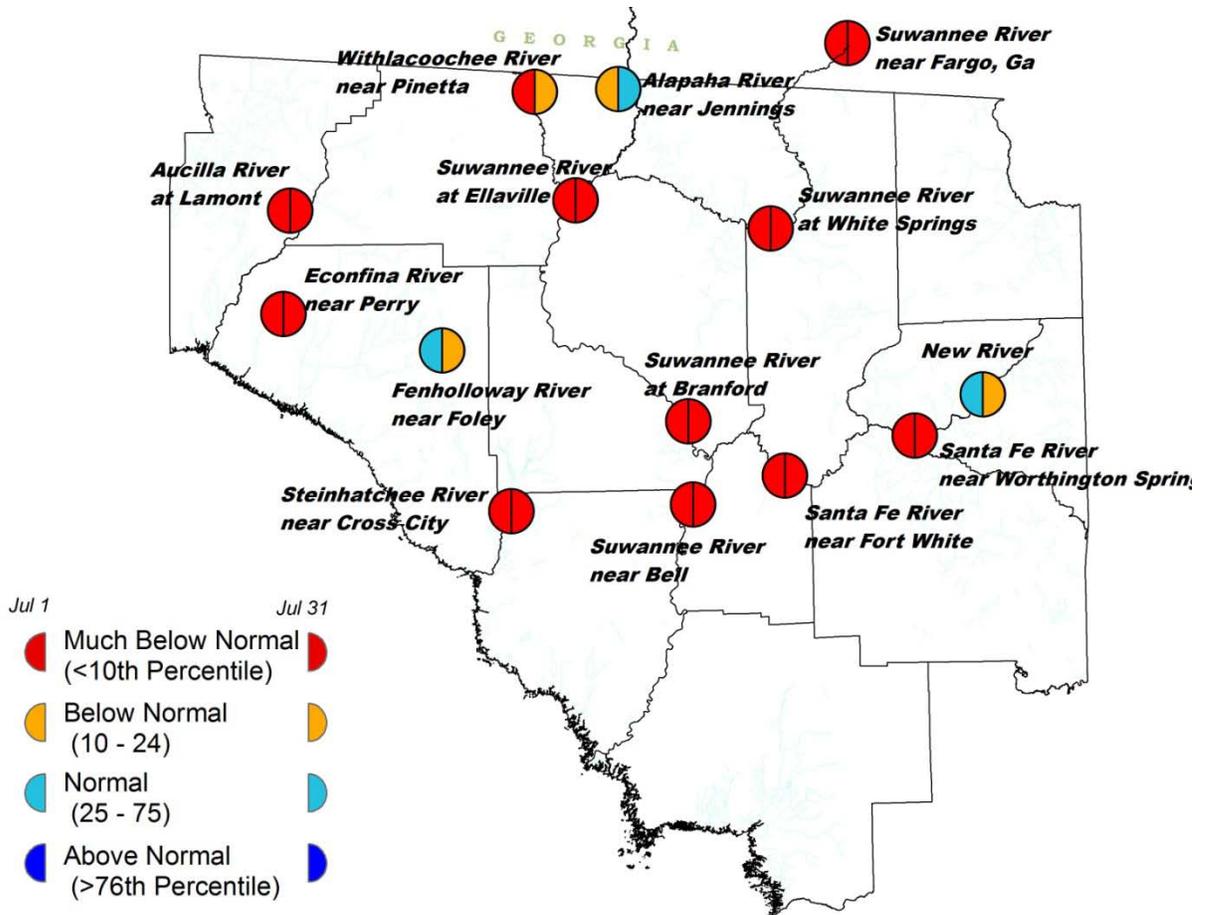
**Figure 6: Daily River Flow Statistics**  
 February 1, 2011 through July 31, 2011



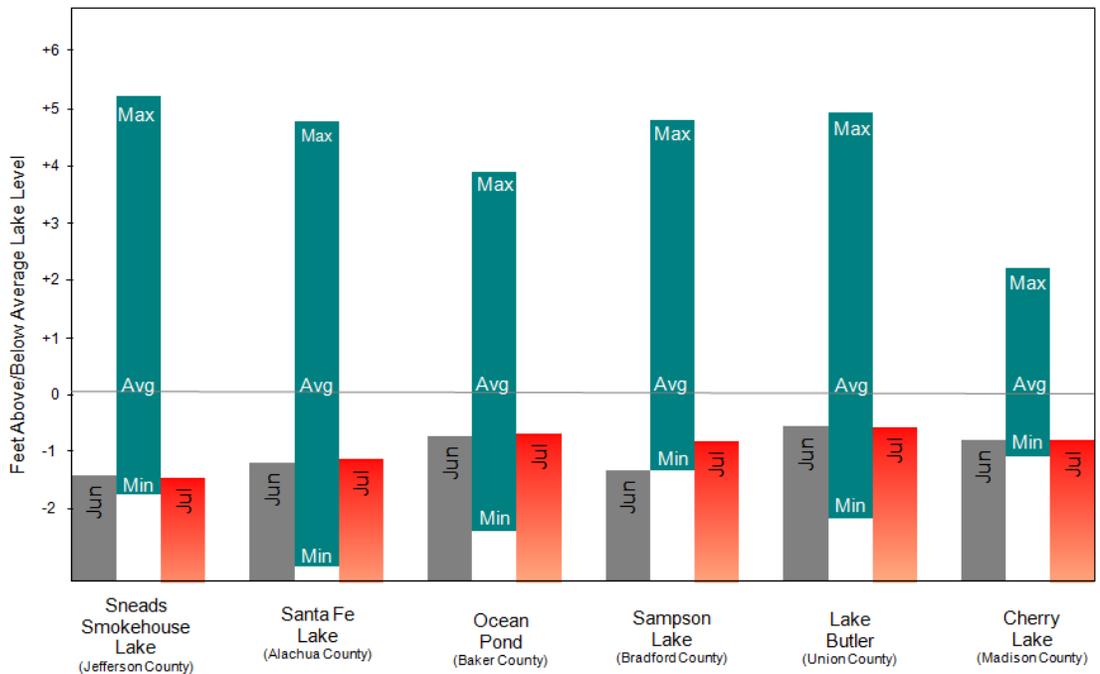
RIVER FLOW, CUBIC FEET PER SECOND



**Figure 7: July 2011 Streamflow Conditions**

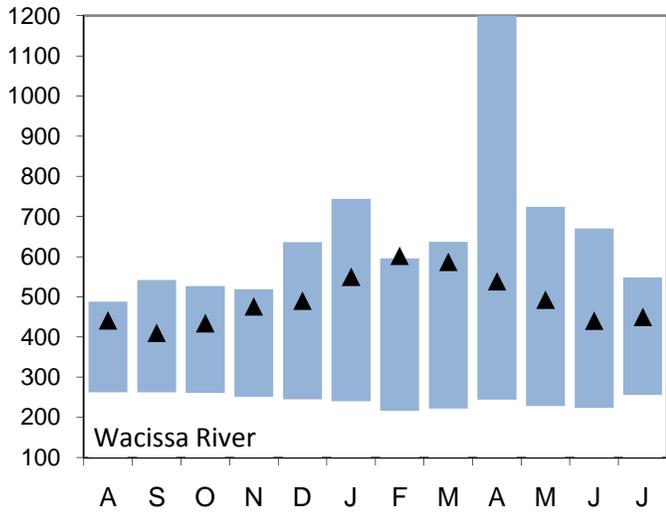
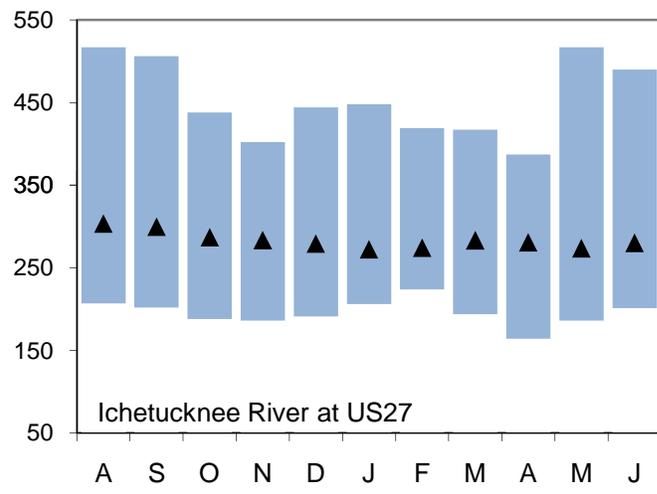
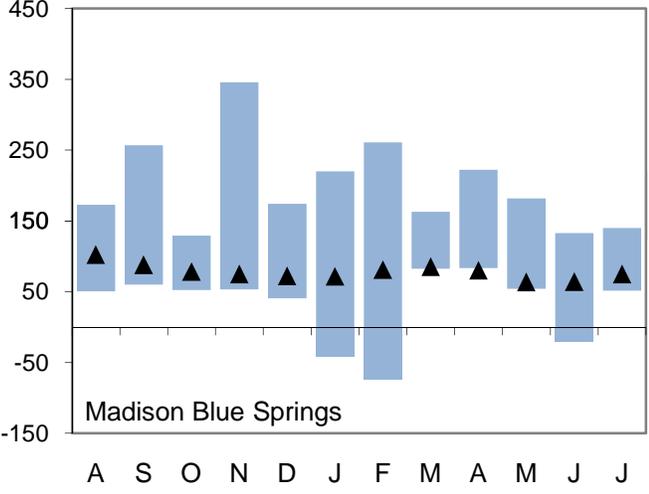
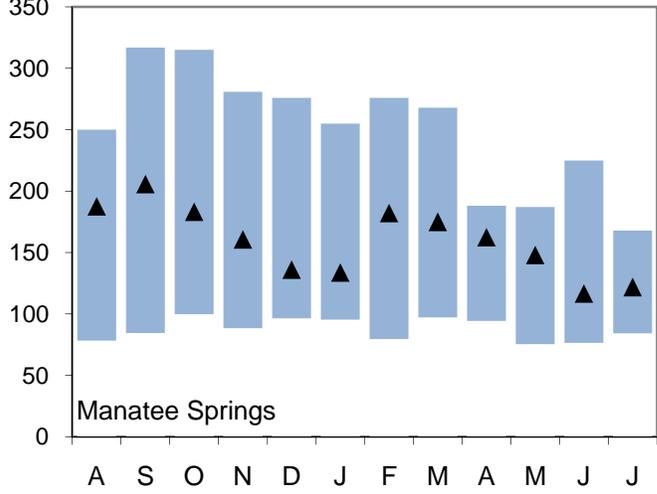
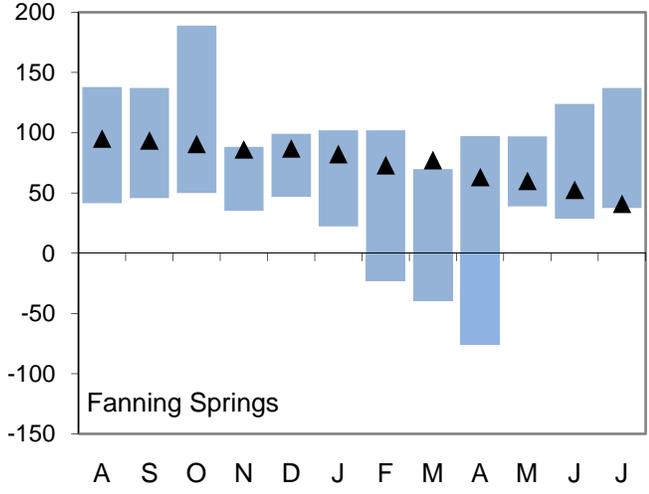


**Figure 8: Lake levels relative to historic maximum, minimum, and average levels.**



**Figure 9: Monthly Springflow Statistics**  
 Flows August 1, 2010 through July 31, 2011  
 Springflow data are given in cubic feet per second.  
 Period of record beginning 2002. Data are provisional.

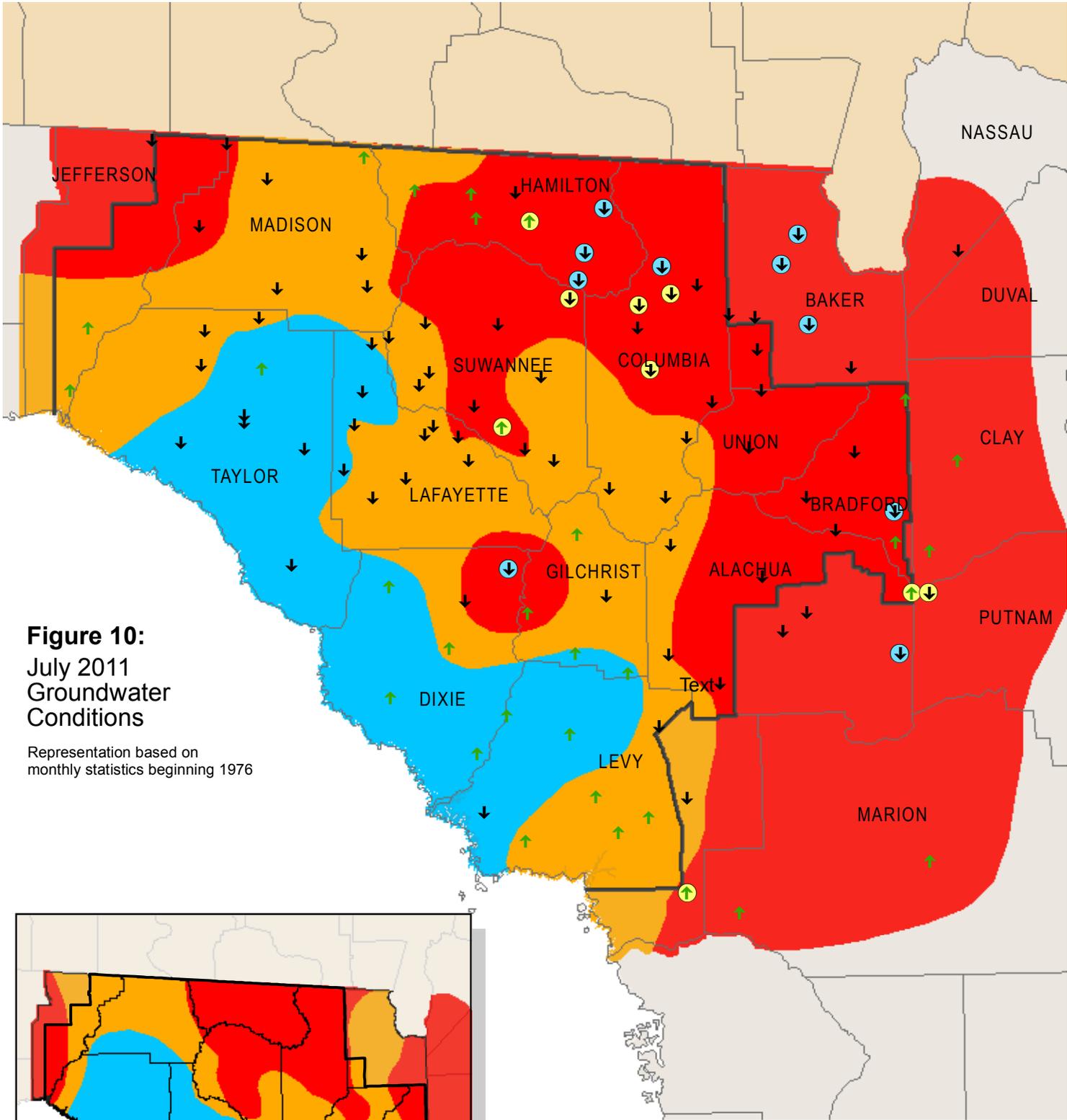
 Historical monthly max.  
 Observed average  
 Historical monthly min.



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.

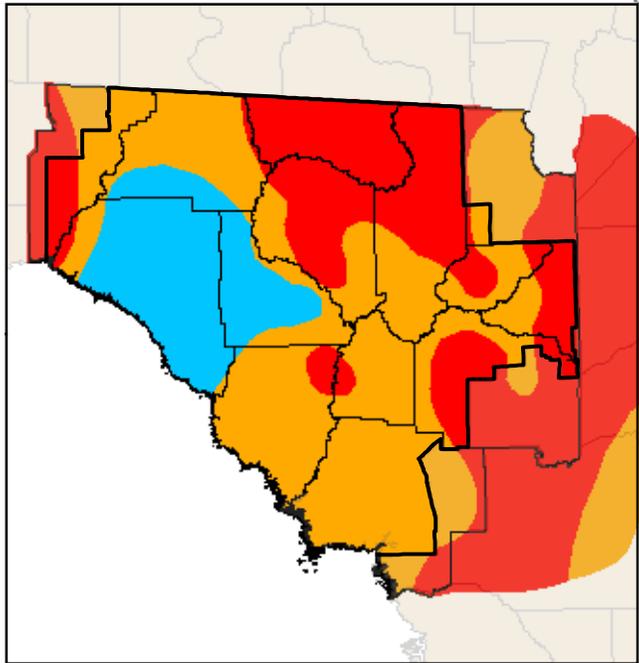


**Figure 10:**  
 July 2011  
 Groundwater  
 Conditions

Representation based on  
 monthly statistics beginning 1976

Additional wells courtesy of SJRWMD and USGS

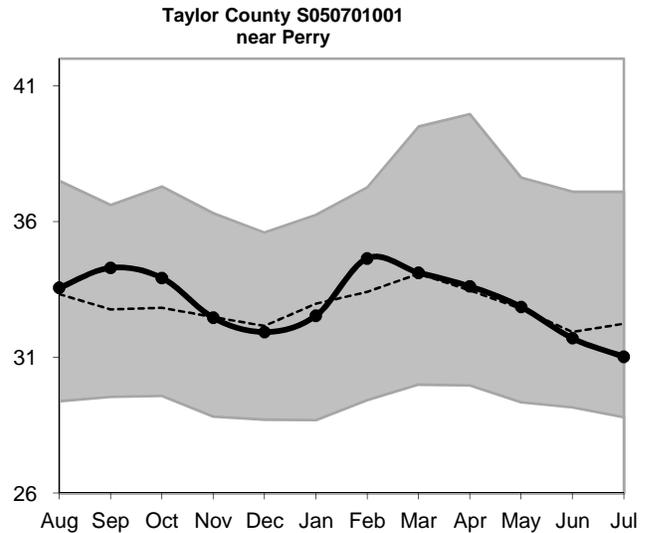
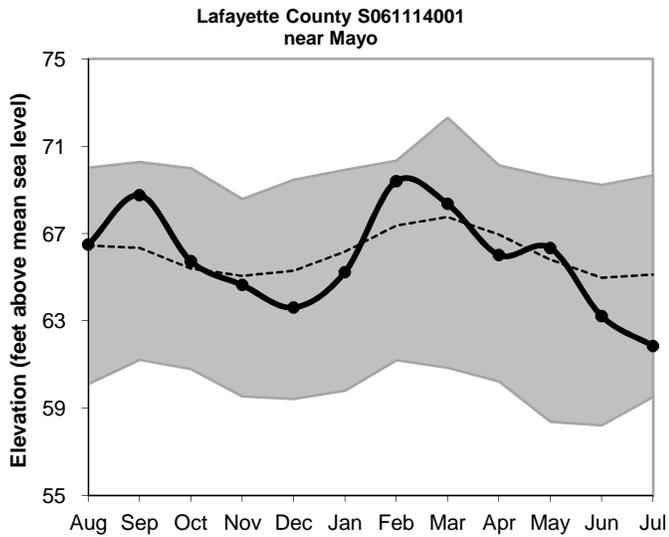
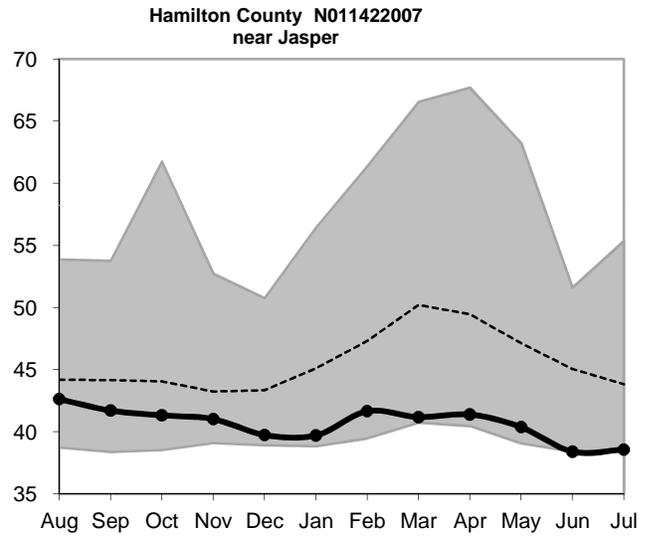
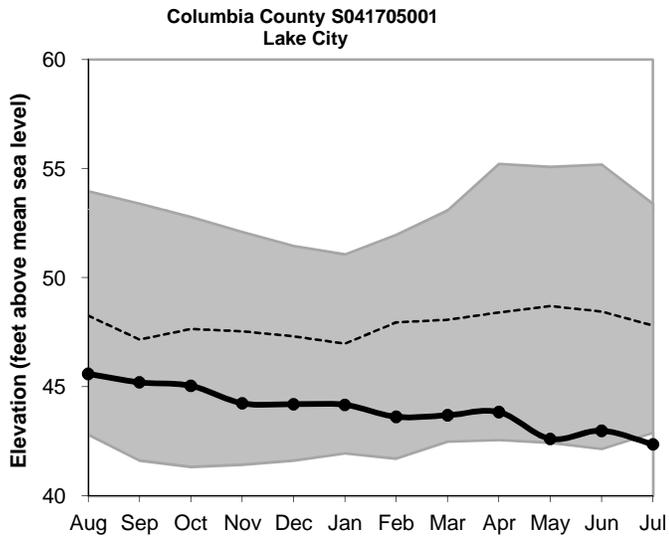
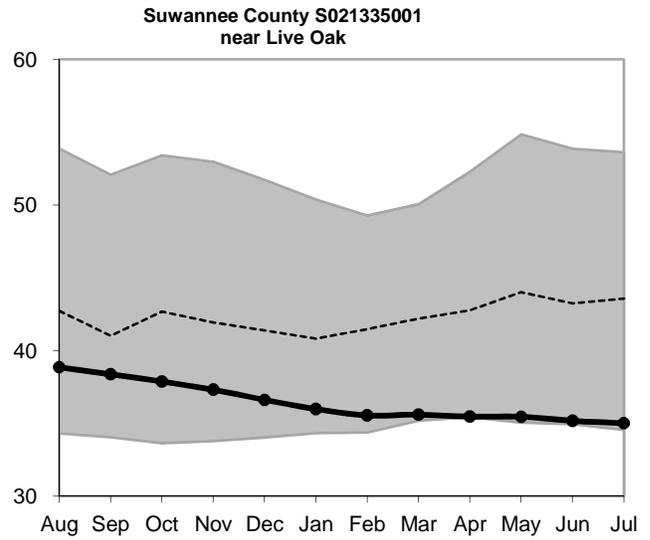
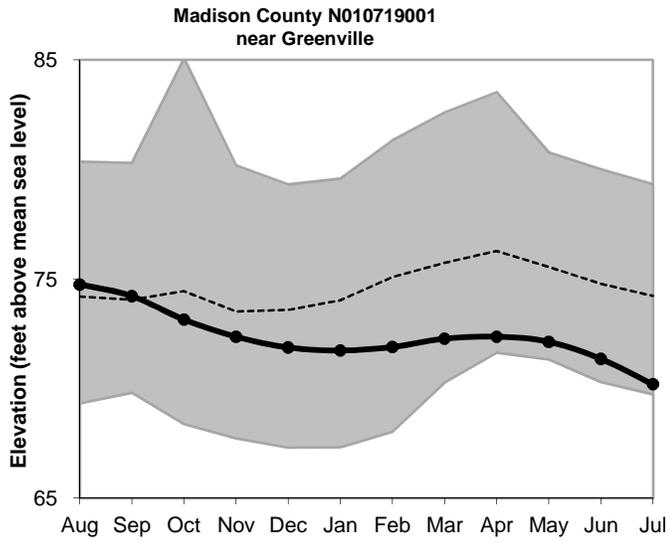
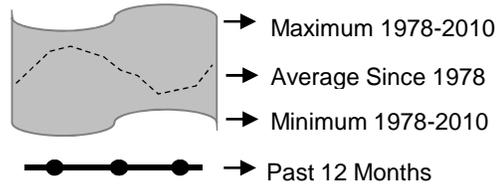
- High  
(Greater than 75th Percentile)
- Normal  
(25th to 75th Percentile)
- Low  
(10th to 25th Percentile)
- Extremely Low  
(Less than 10th Percentile)
- ↑  ↓ Increase/decrease in level since last month
- District Boundary
- Record Low for Month
- Historic Low



Inset: June 2011 Groundwater Levels

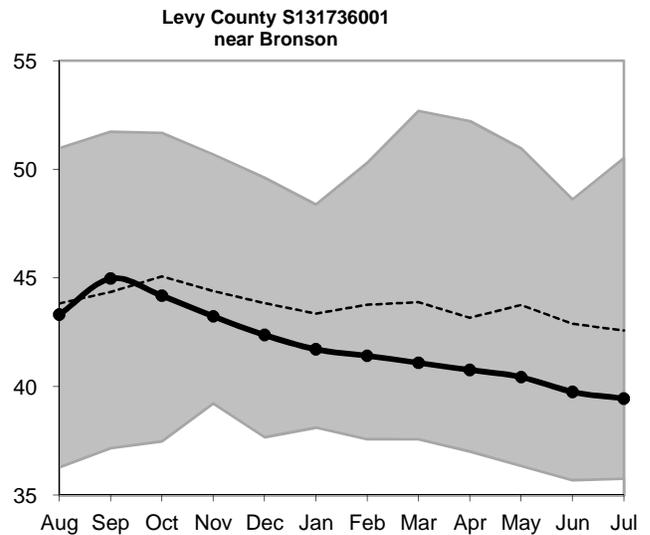
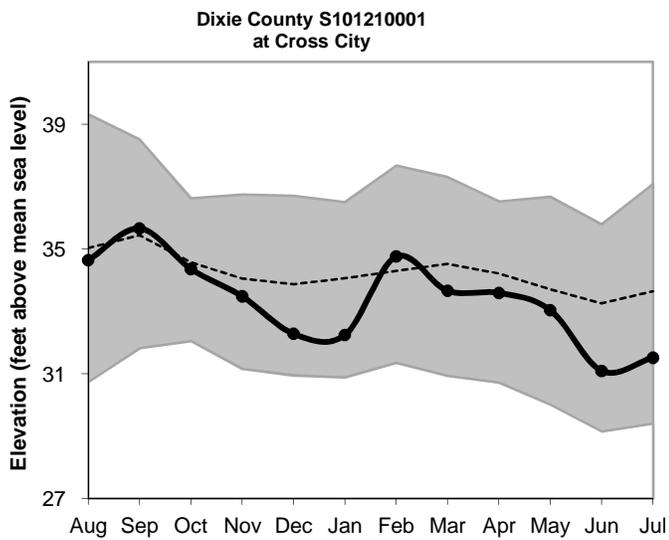
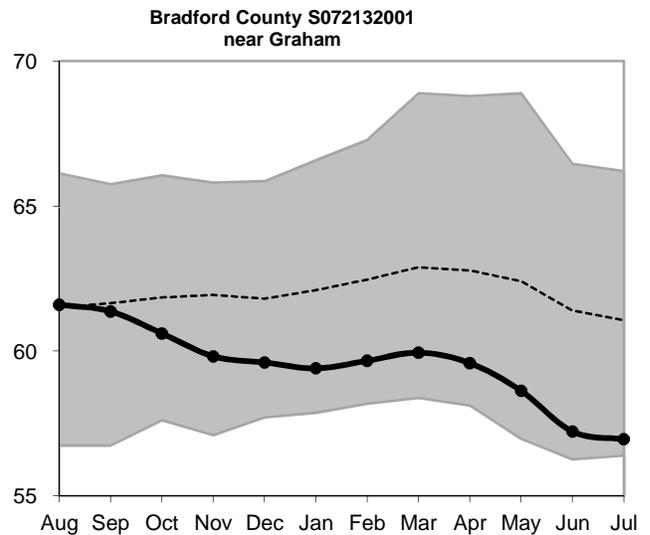
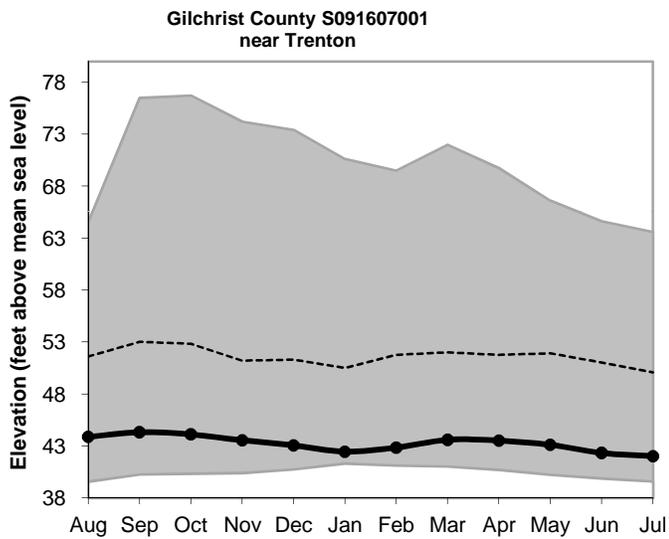
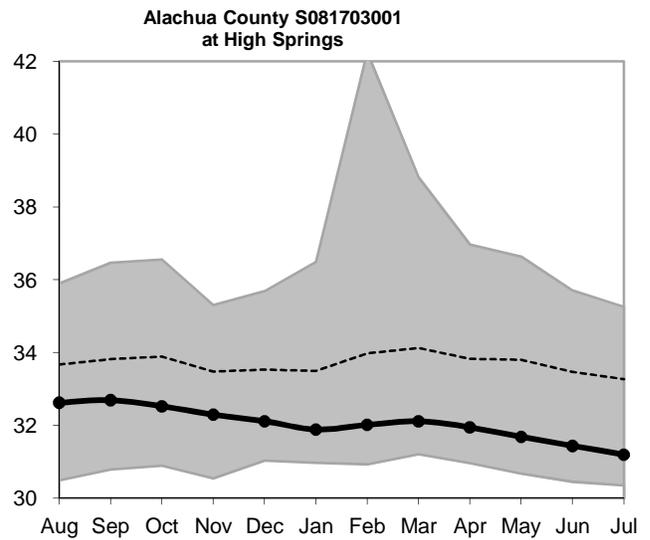
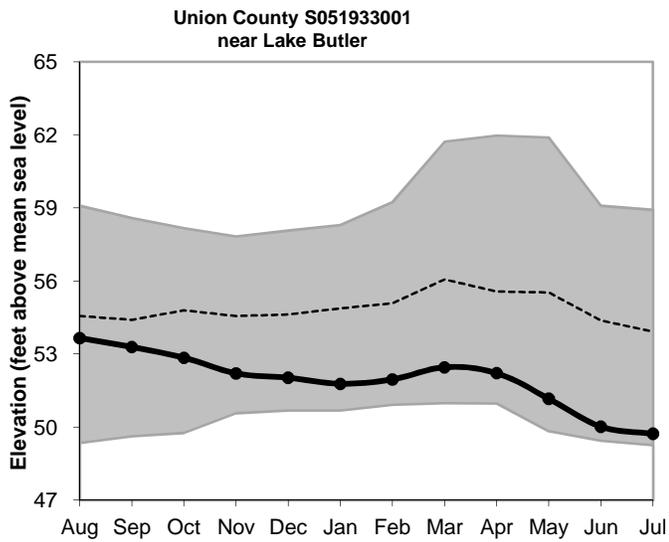
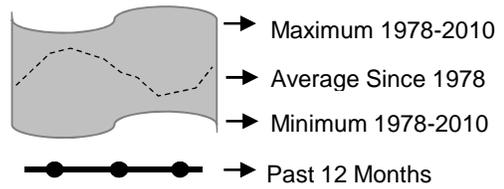
# Figure 11: Monthly Groundwater Level Statistics

Levels August 1, 2010 through July 31, 2011  
 Period of Record Beginning 1978



# Figure 11, cont.: Groundwater Level Statistics

Levels August 1, 2010 through July 31, 2011  
 Period of Record Beginning 1978

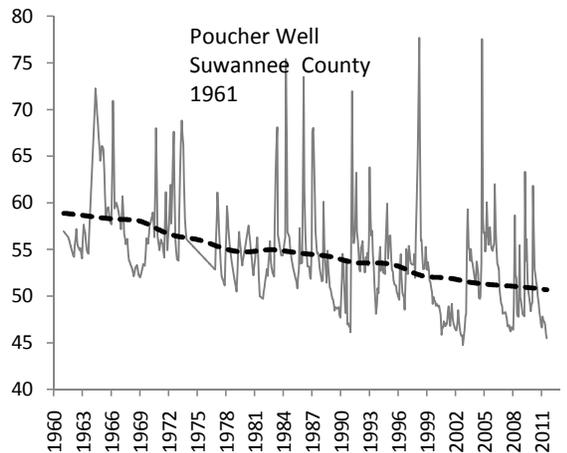
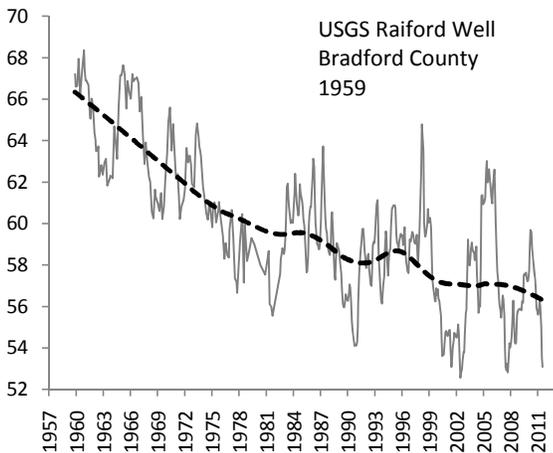
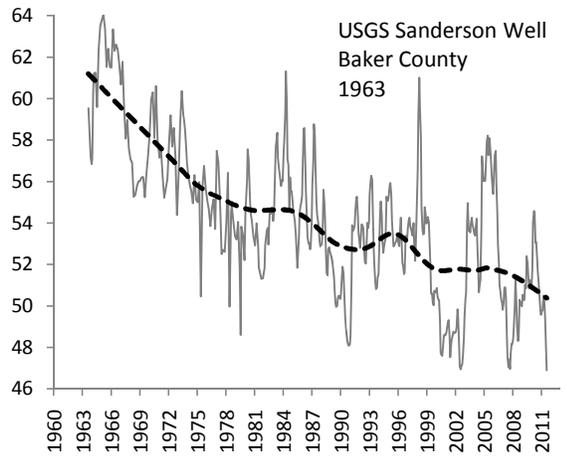
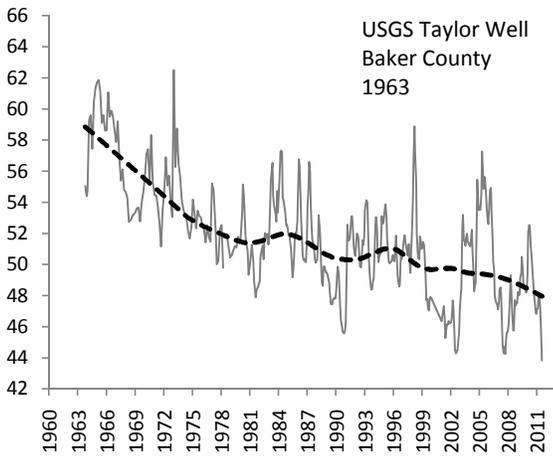
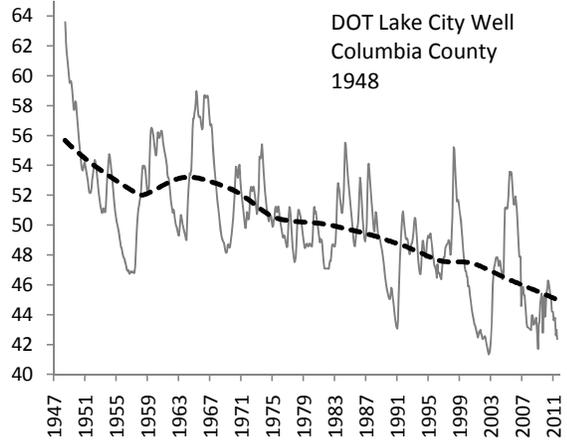
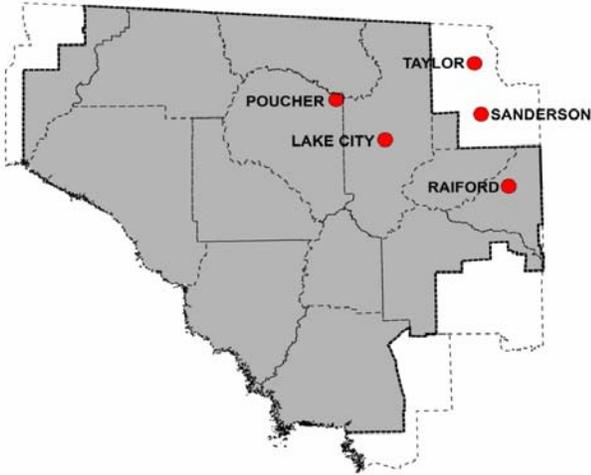


# Figure 12: Long-Term Groundwater Levels

Ending July 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 175 units installed at 48 agricultural operations by permission of the owners. Evapotranspiration data courtesy of University of Florida IFAS Extension.

