

## MEMORANDUM

TO: Governing Board

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

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

DATE: October 5, 2011

RE: September 2011 Hydrologic Conditions Report for the District

### RAINFALL

- Average rainfall was 74% of normal, making September the sixth consecutive month with below-normal rainfall. (Table 1, Figure 1). Totals were generally below average across the District, with the exception of an area extending from Ocean Pond in Baker County to O'Leno State Park in Columbia County along Olustee Creek and New River, which received up to 10.6" for the month. (Figure 2, Figure 3). Much of this rain fell during one event on the night of the 16<sup>th</sup>. The 100-year, 4-hour storm was exceeded at the Sanderson gage with 6.6" during that brief event. Gaged totals ranged from 1.48" at Rosewood Tower in Levy County to 10.4" at O'Leno State Park.
- The average 12-month deficit increased slightly to 12.16". Deficits nearing 25" persisted in the upper Suwannee and Santa Fe Basins (Figure 4). Figure 5 shows the change in annual deficits beginning in 1998.

### SURFACEWATER

- **Rivers:** Conditions at major gages remained extremely low, with the exception of the New River and Olustee Creek which saw rapid rises from intense local rains. While the flow from these tributaries kept the Santa Fe River near Fort White from reaching record low flows at the end of the month, the improvements were modest and the gage still reported near the lowest 1% of records. Seven- and thirty-day flows at the Suwannee River at Branford also remained below the lowest 1% of all records. Discharge statistics for six river stations are presented in Figure 6 and streamflow conditions for major gages are shown in Figure 7.
- **Lakes:** Levels rose slightly at Sampson Lake in Bradford County and Andrews Lake in Taylor County, but all monitored lakes remained below their long-term average levels. Sneads Smokehouse Lake in Jefferson County fell to its lowest recorded level at the end of the month for the second consecutive month. Figure 8 shows levels relative to the long-term average, minimum, and maximum levels for six lakes.

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

## GROUNDWATER

Record monthly lows occurred at 37 wells and historic lows at 19 wells, mostly in Hamilton, northern Columbia, and Baker counties (Figure 10). Levels fell in 85% of monitored upper Floridan Aquifer wells. Average conditions across the District compared to historic September data were at the 10<sup>th</sup> percentile, making September the seventh consecutive month with conditions below the 25<sup>th</sup> percentile (based on records beginning no earlier than 1978). Levels at 72% of the wells were below the 10<sup>th</sup> percentile. Averaged conditions in the Santa Fe Basin remained below the 5<sup>th</sup> percentile of all observations, while in the Suwannee Basin conditions fell below the 10<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 September was 0.07", half of the rate observed during the exceptionally dry months of May and June this year. 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 September.
- The U.S. Geological Survey categorized the Suwannee River as being in extreme hydrologic drought and other basins in the District under severe drought.

## 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 (109 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.*

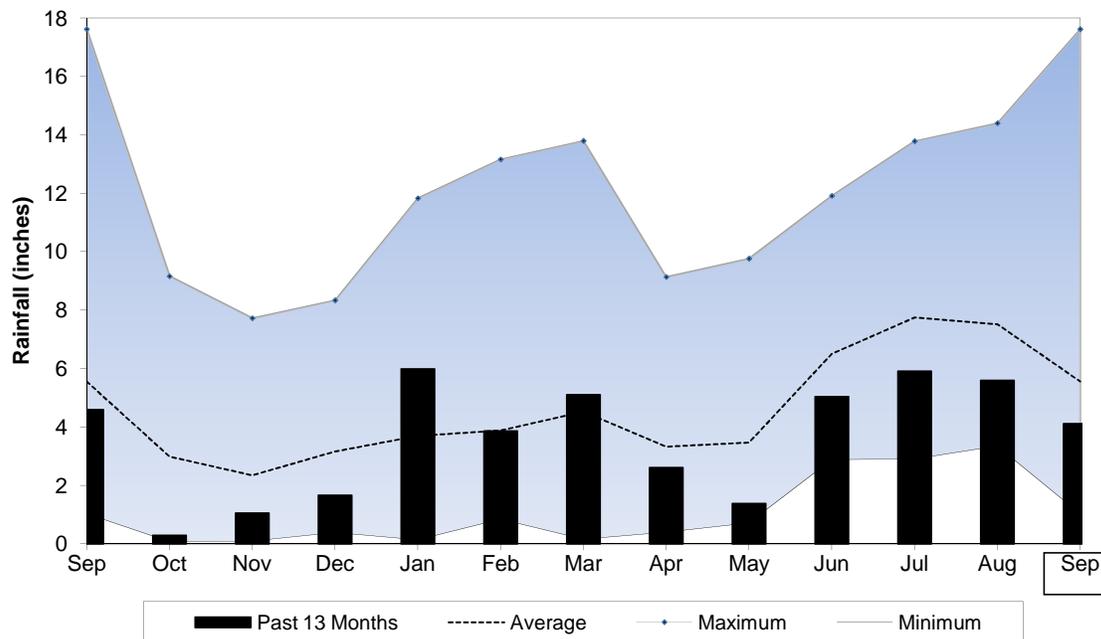
**Table 1: Estimated Rainfall Totals**

County	Sep-2011	September Average	Last 3 Months	Last 12 Months
Alachua	4.42	5.36	15.45	39.44
Baker	4.85	5.44	15.77	39.49
Bradford	4.25	6.13	14.22	36.37
Columbia	5.18	4.85	15.39	40.88
Dixie	3.46	6.58	19.69	48.10
Gilchrist	4.29	5.75	16.99	43.34
Hamilton	3.10	4.63	12.70	37.68
Jefferson	3.19	5.31	12.52	39.95
Lafayette	3.83	5.46	14.90	43.09
Levy	4.00	6.70	19.15	44.46
Madison	3.68	4.62	15.25	42.66
Suwannee	3.82	5.08	15.07	44.77
Taylor	3.92	5.61	13.25	43.28
Union	7.55	4.94	16.74	40.51

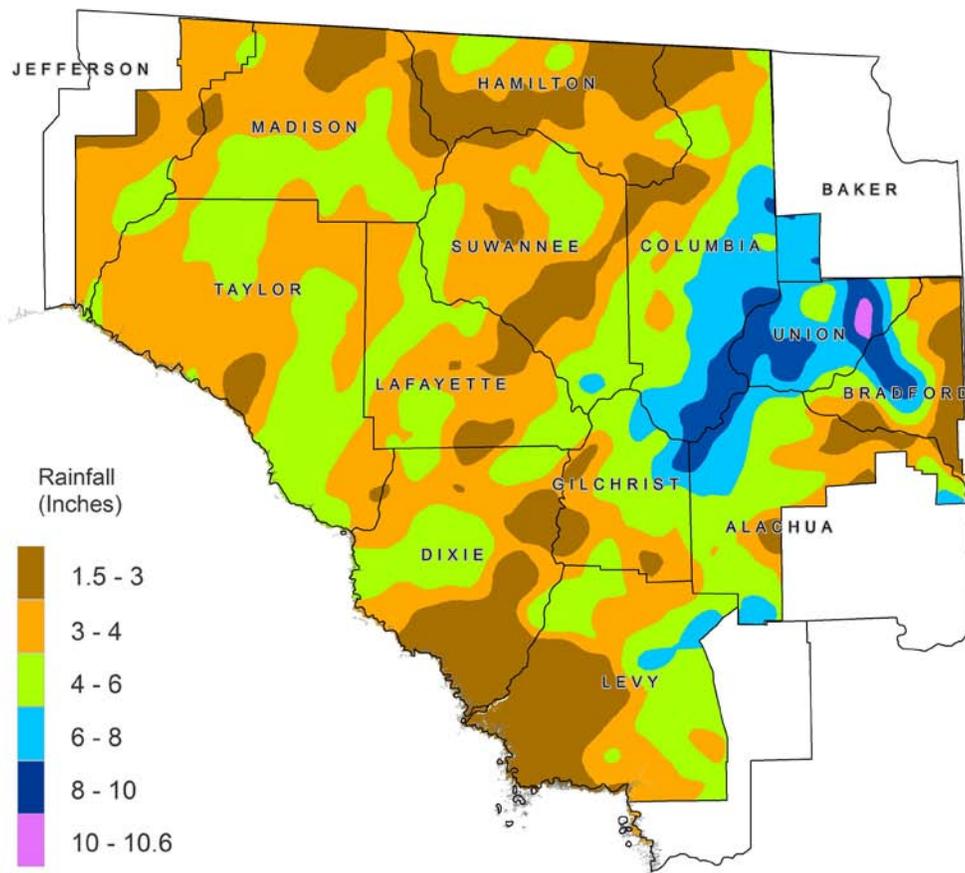
September 2011 Average: 4.11  
 Historical September Average (since 1932): 5.56  
 Historical 12-month Average (since 1932): 54.68  
 Past 12-Month Total: 42.52  
 12-month Rainfall Deficit: -12.16

(Rainfall reported in inches)

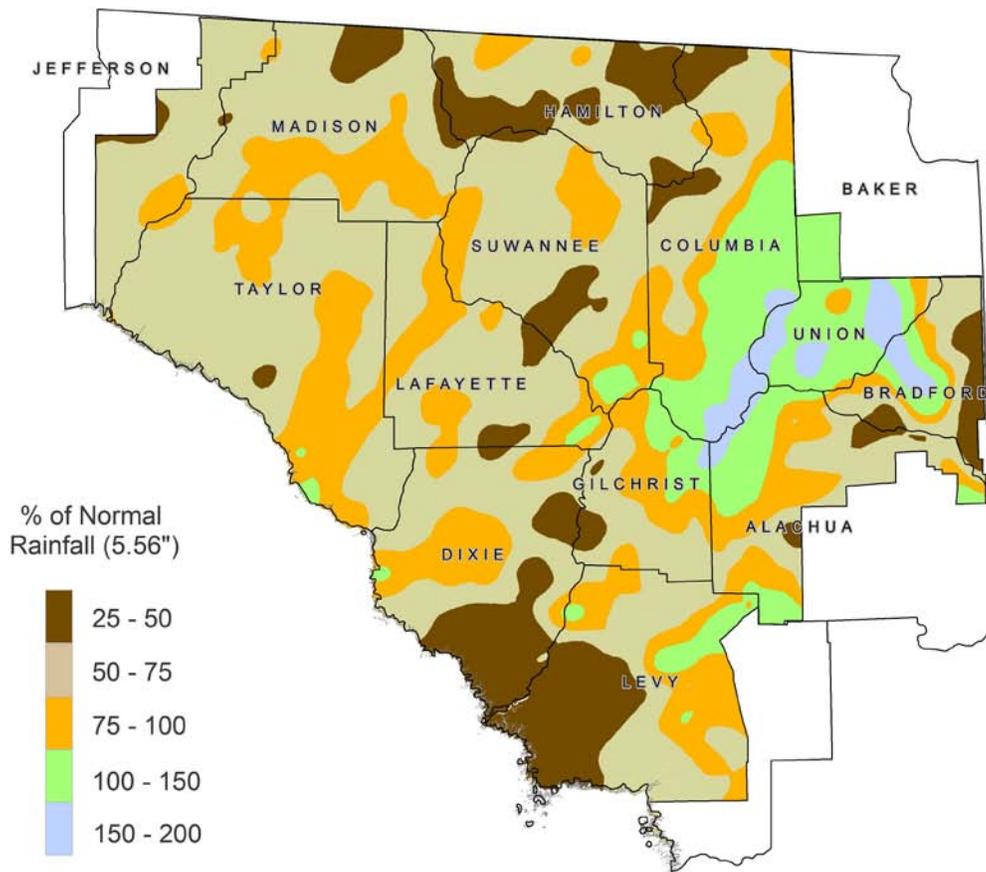
**Figure 1: Comparison of District Monthly Rainfall**



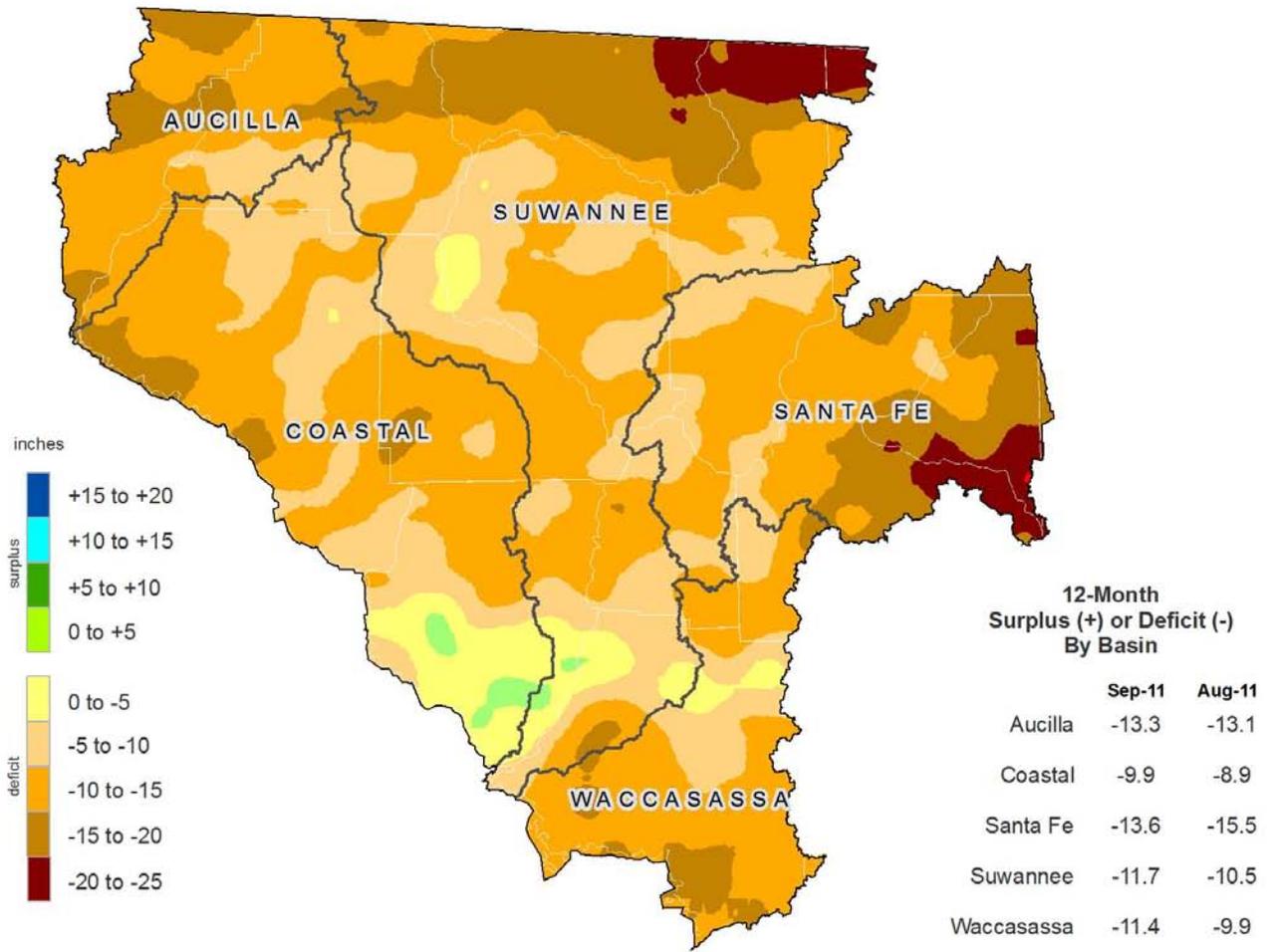
**Figure 2: September 2011 Rainfall Estimate**



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

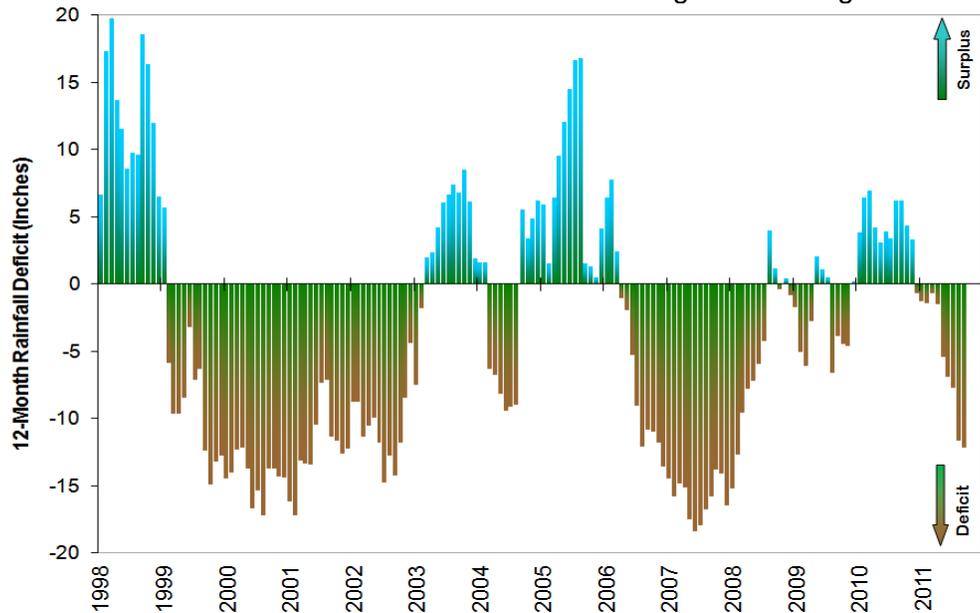


**Figure 4: 12-Month Rainfall Surplus/Deficit by River Basin Ending September 30, 2011**



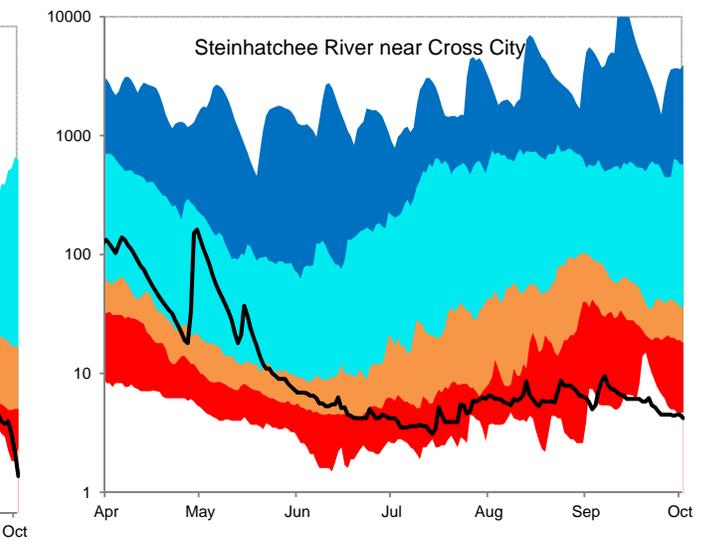
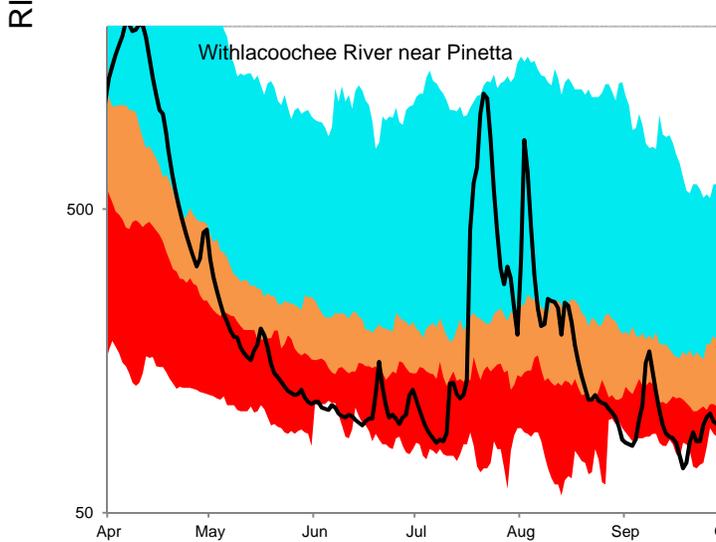
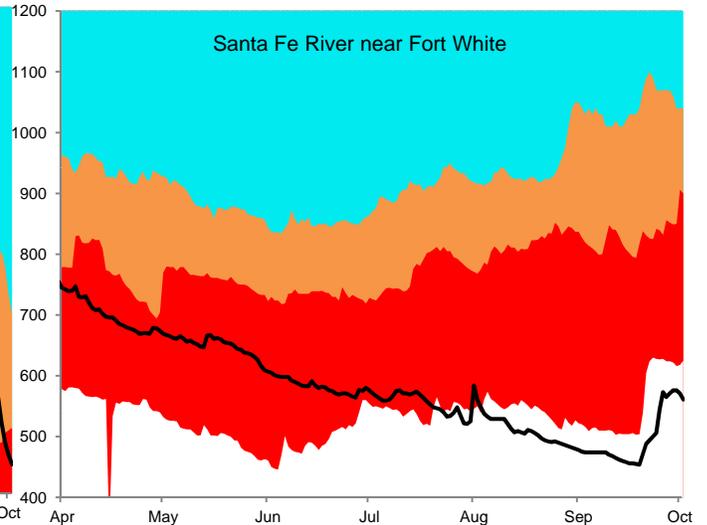
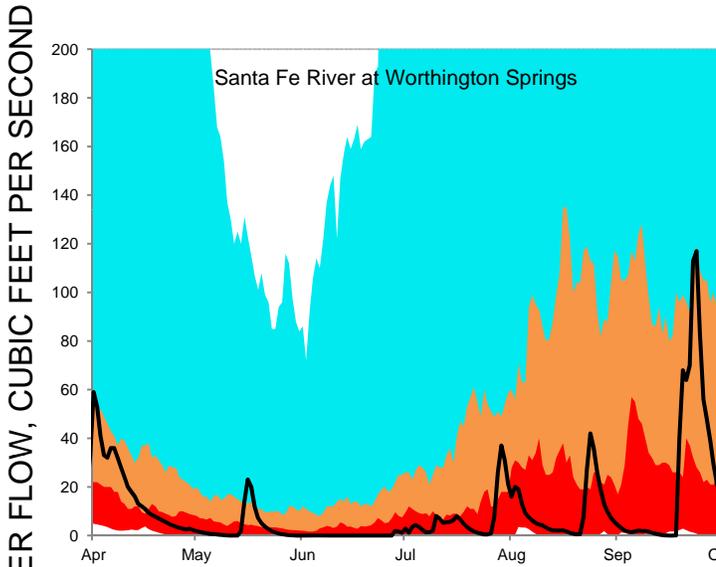
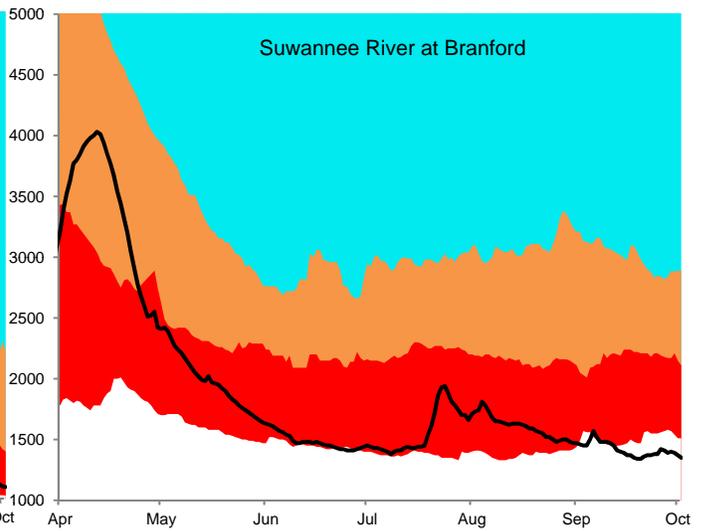
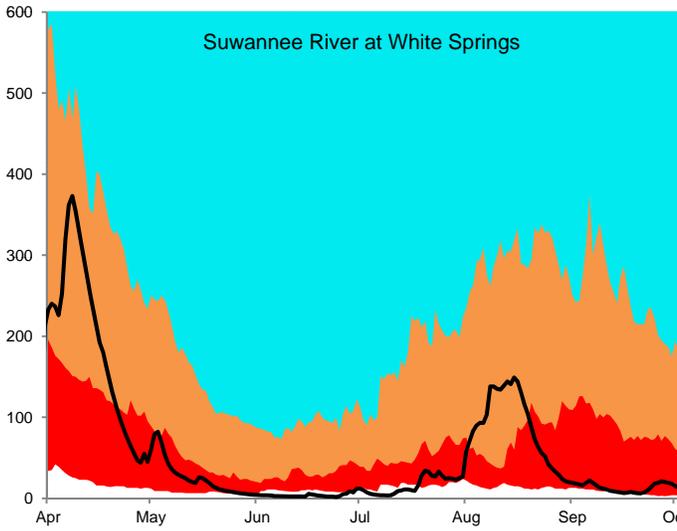
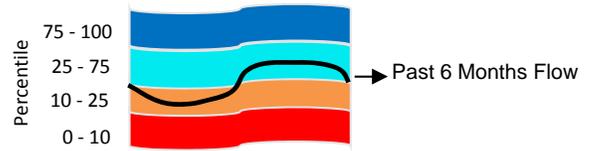
**Figure 5: 12-Month Rolling Rainfall Deficit Since 1998**

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



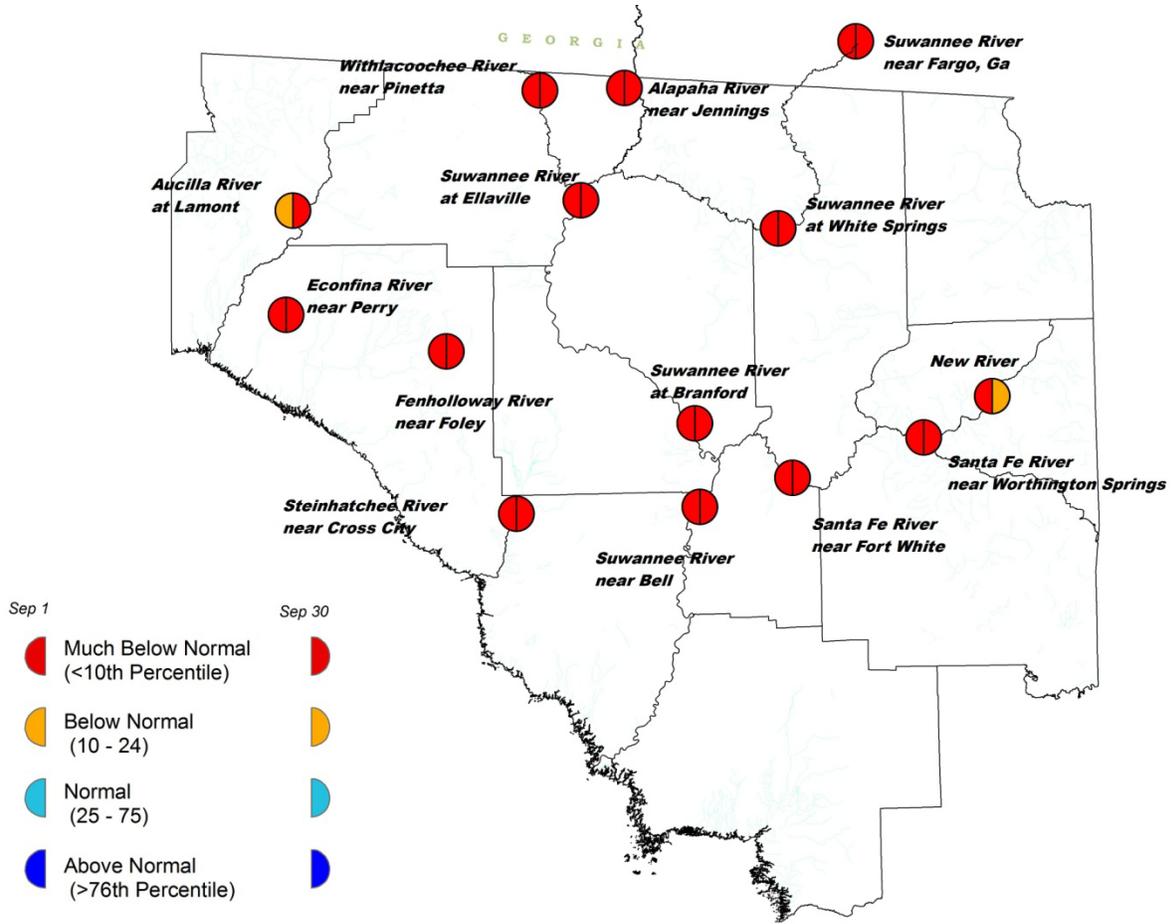
**Figure 6: Daily River Flow Statistics**

April 1, 2011 through September 30, 2011

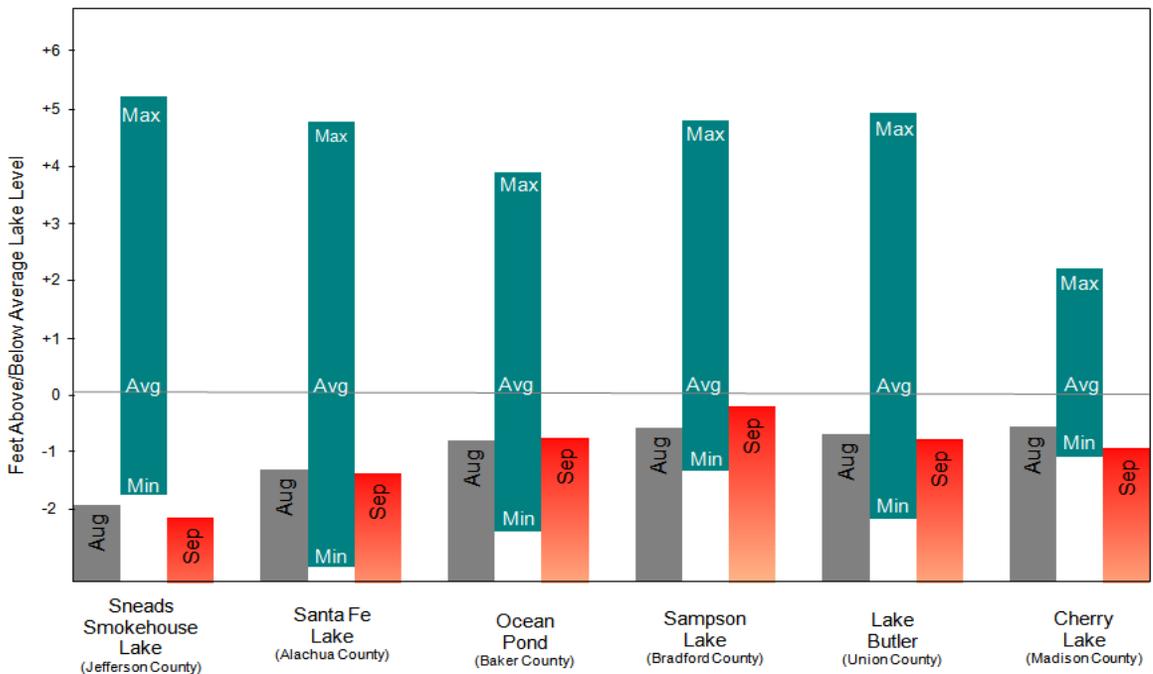


RIVER FLOW, CUBIC FEET PER SECOND

**Figure 7: September 2011 Streamflow Conditions**

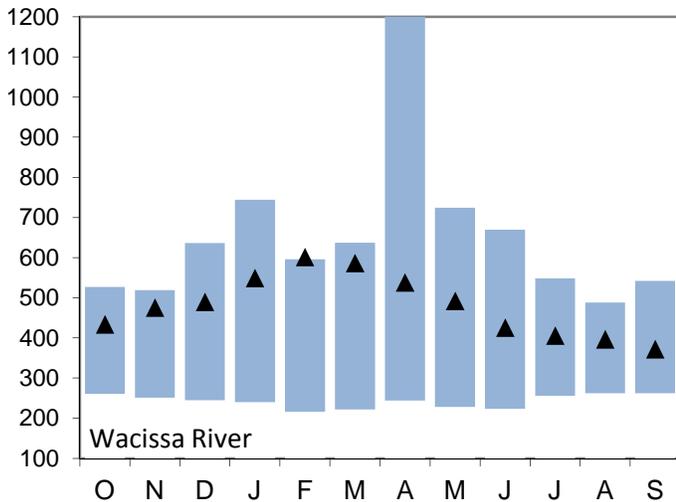
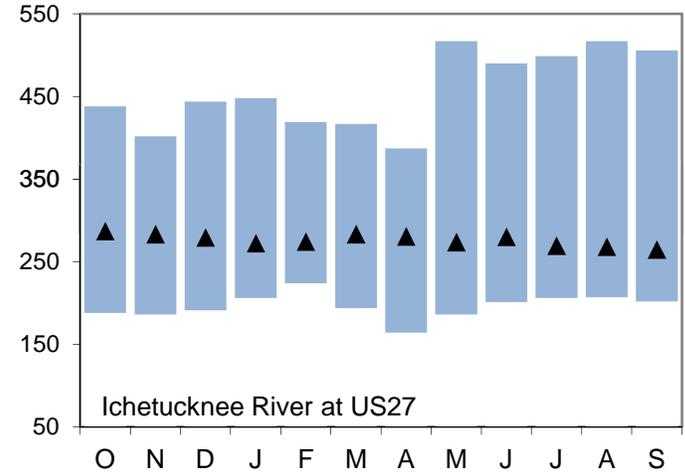
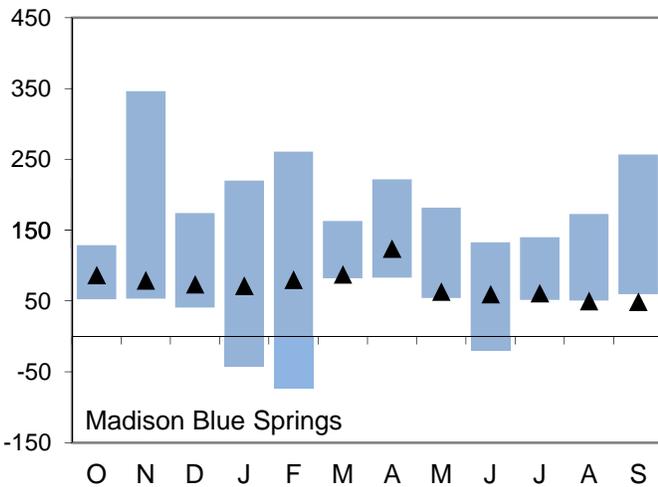
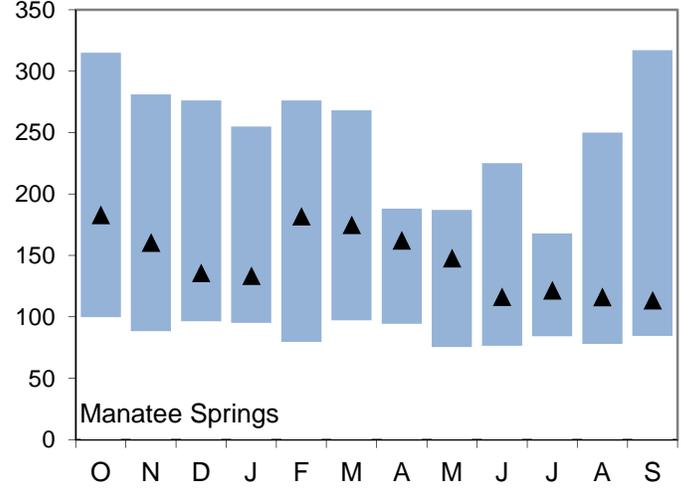
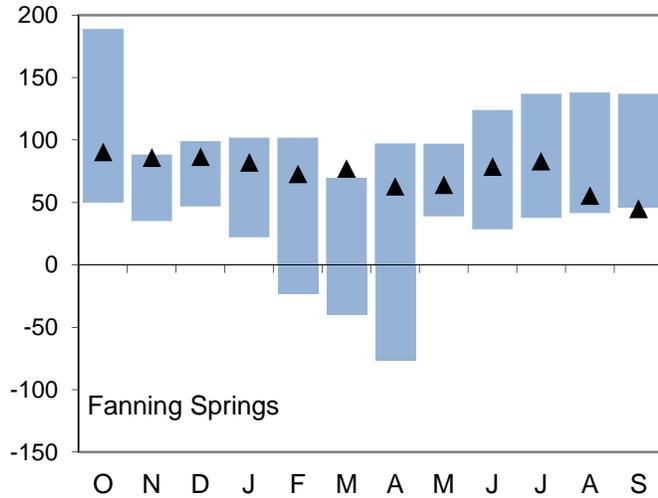
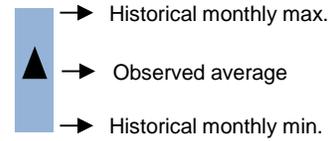


**Figure 8: Lake levels relative to historic maximum, minimum, and average levels.**



### Figure 9: Monthly Springflow Statistics

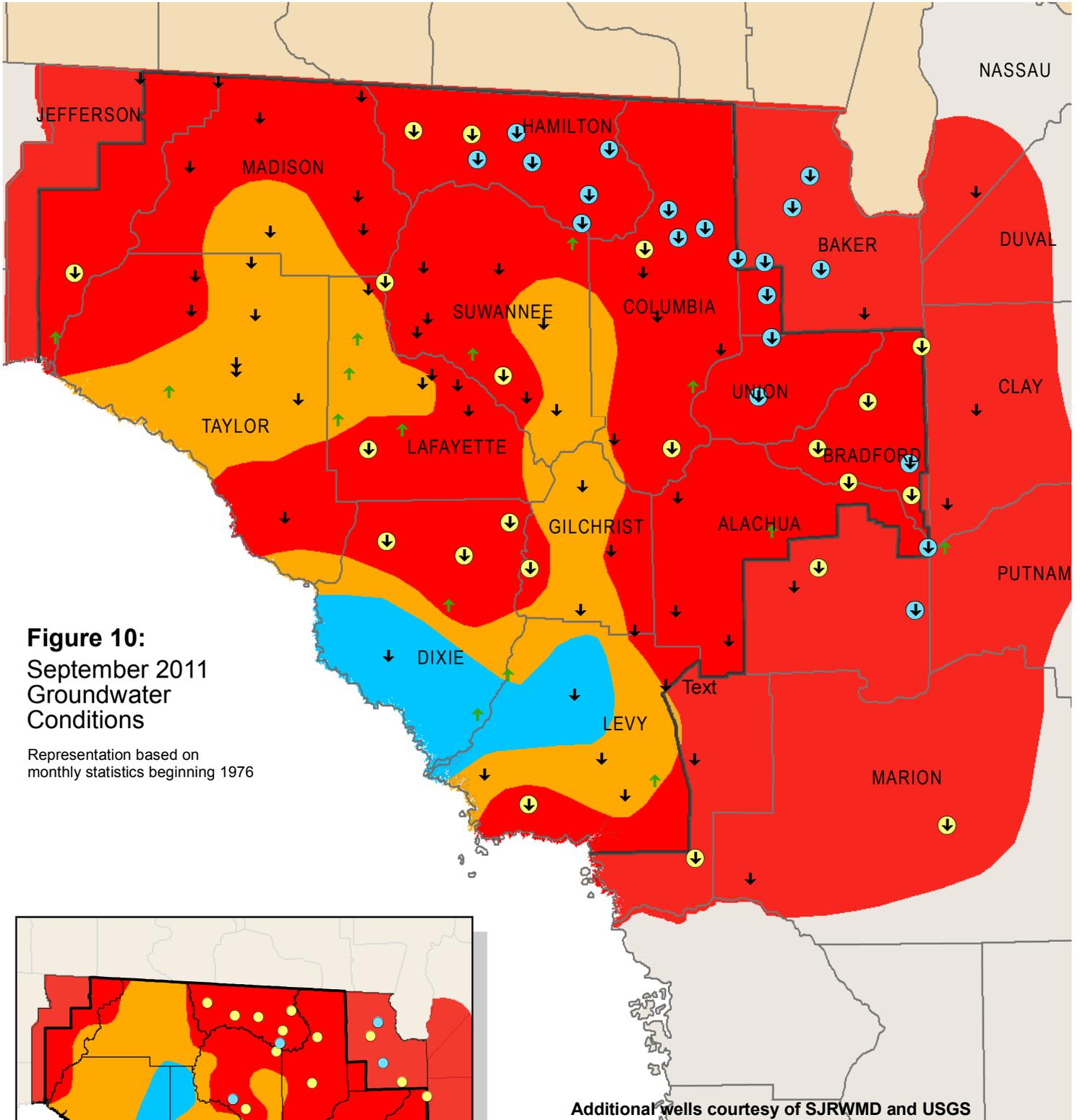
Flows October 1, 2010 through September 30, 2011  
 Springflow data are given in cubic feet per second.  
 Period of record beginning 2002. Data are provisional.



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.

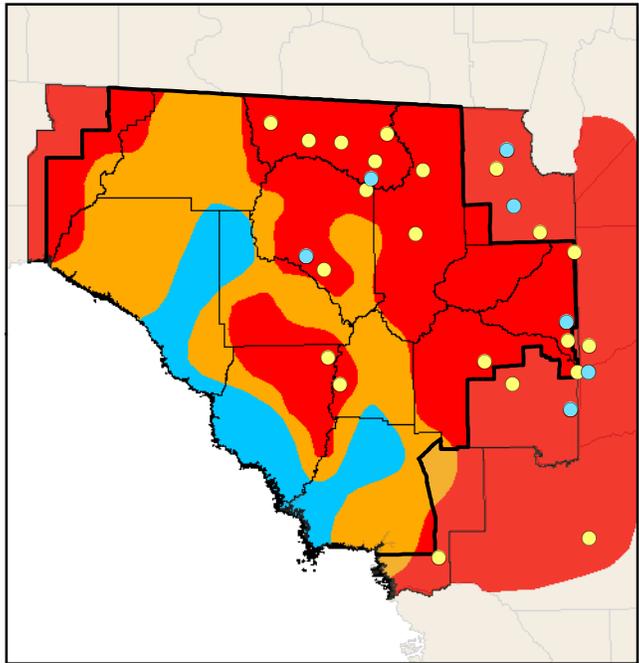


**Figure 10:**  
September 2011  
Groundwater  
Conditions

Representation based on  
monthly statistics beginning 1976

Additional wells courtesy of SJRWMD and USGS

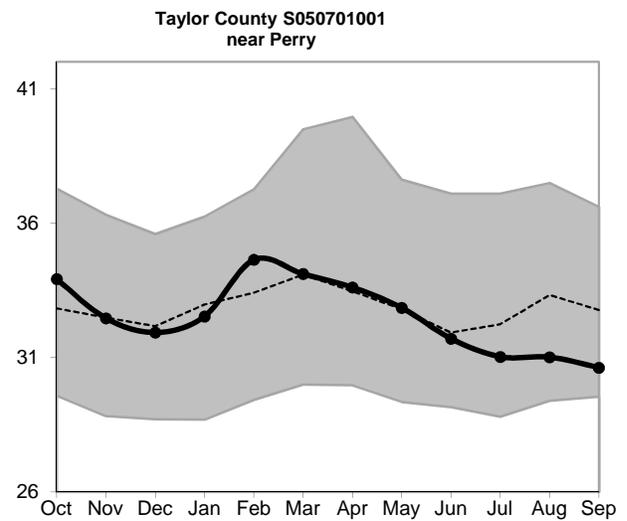
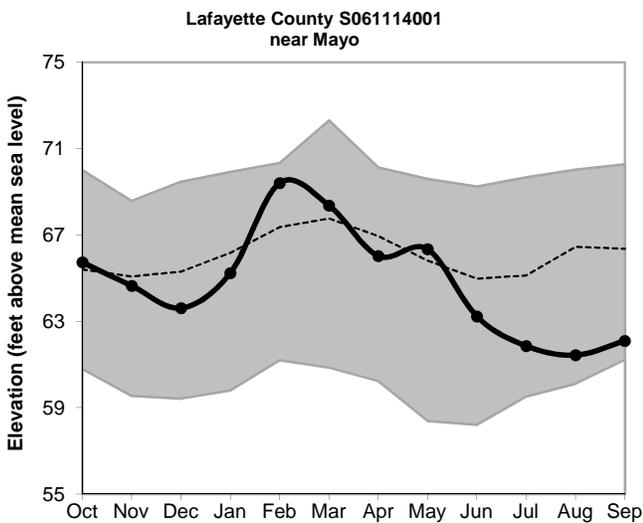
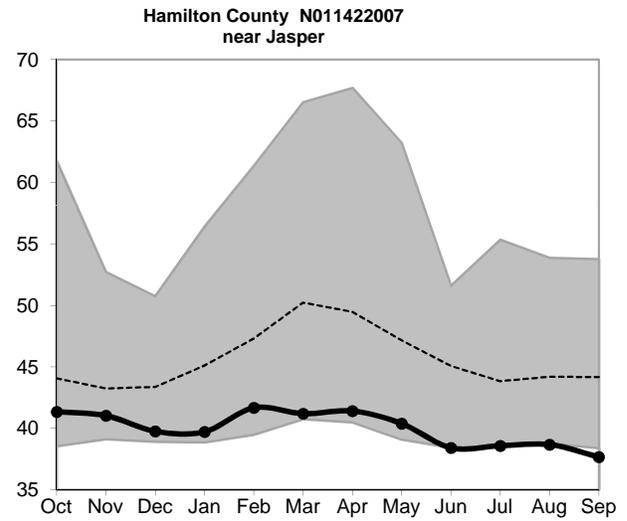
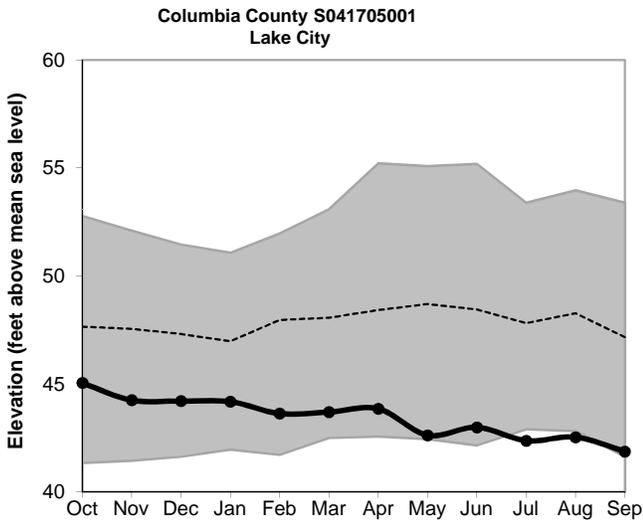
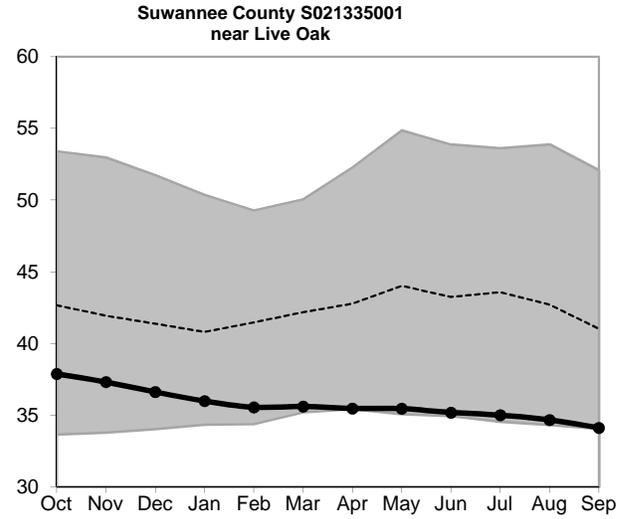
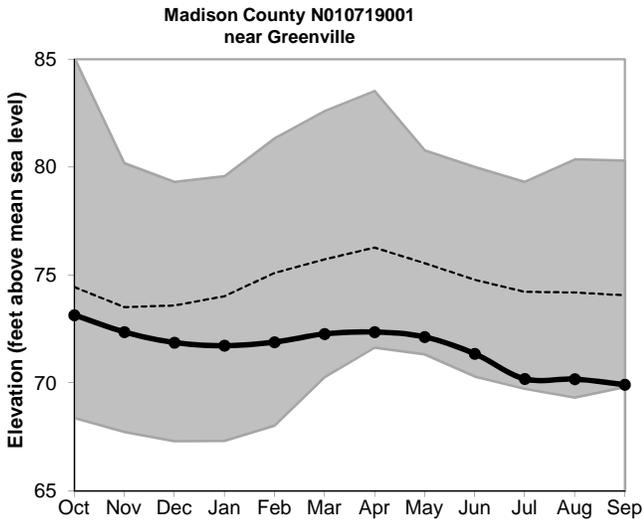
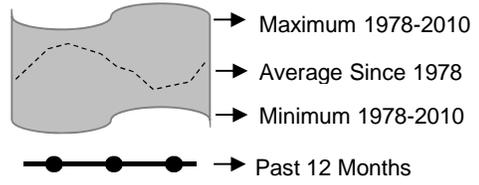
- High  
(Greater than 75th Percentile)
- Normal  
(25th to 75th Percentile)
- Low  
(10th to 25th Percentile)
- Extremely Low  
(Less than 10th Percentile)
- ↑ Increase in level since last month
- ↓ Decrease in level since last month
- Record Low for Month
- Historic Low



Inset: August 2011 Groundwater Levels

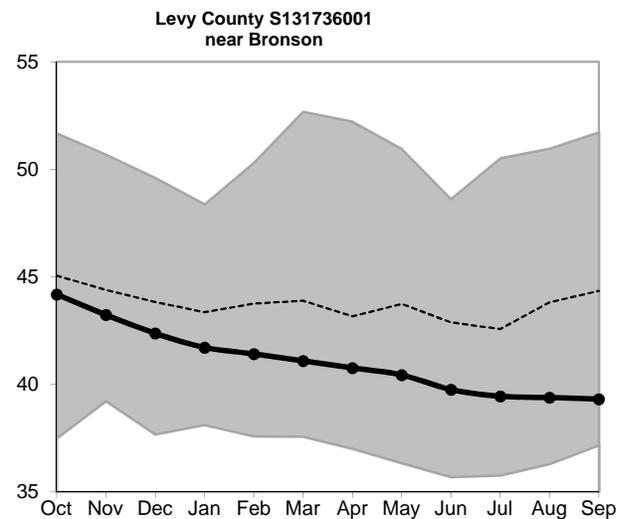
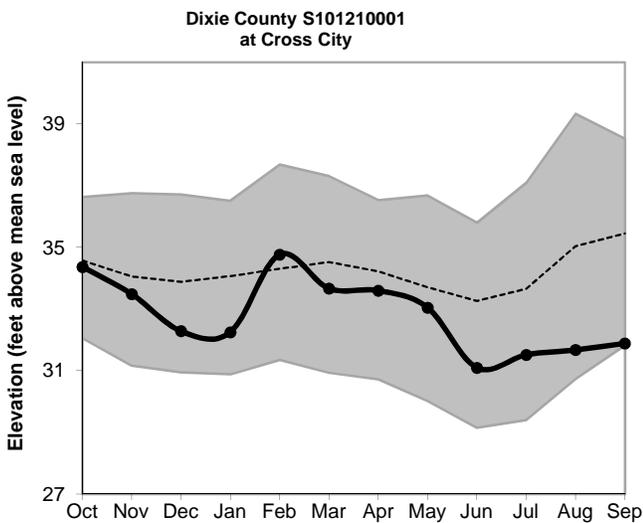
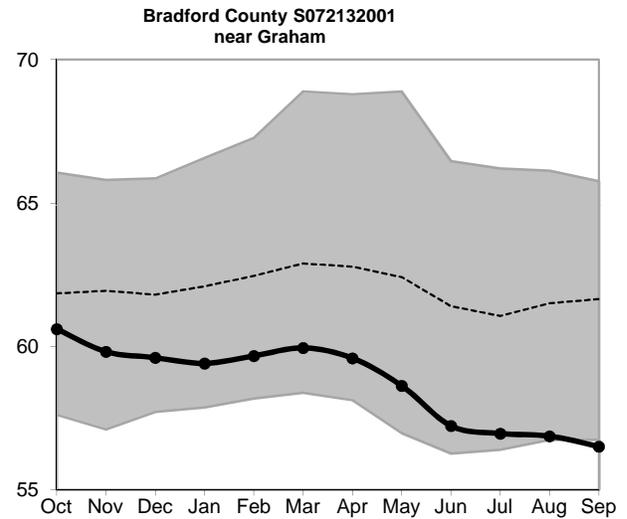
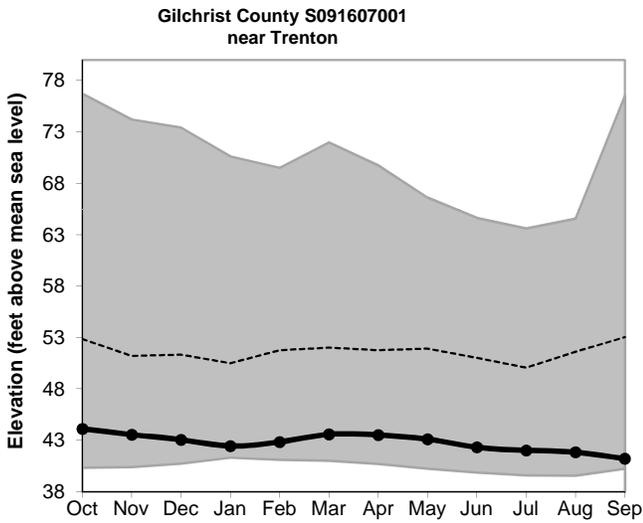
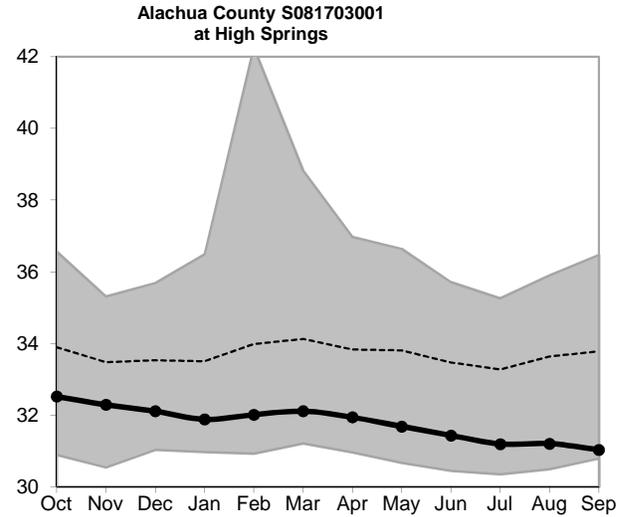
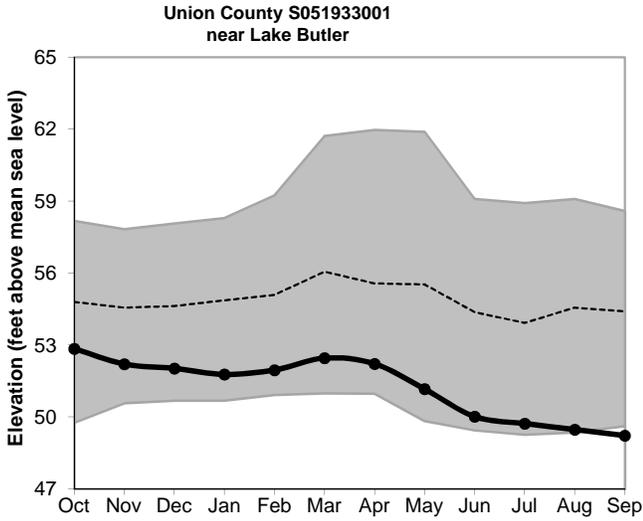
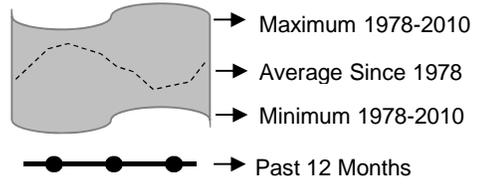
# Figure 11: Monthly Groundwater Level Statistics

Levels October 1, 2010 through September 30, 2011  
 Period of Record Beginning 1978



# Figure 11, cont.: Groundwater Level Statistics

Levels October 1, 2010 through September 30, 2011  
 Period of Record Beginning 1978

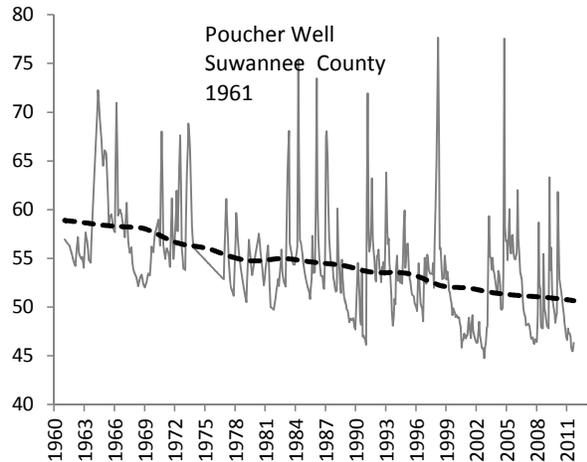
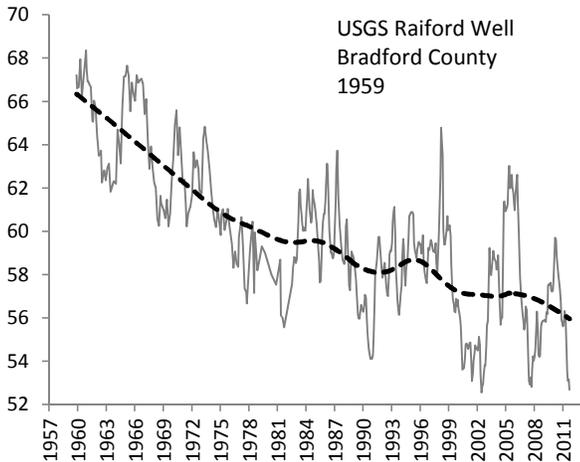
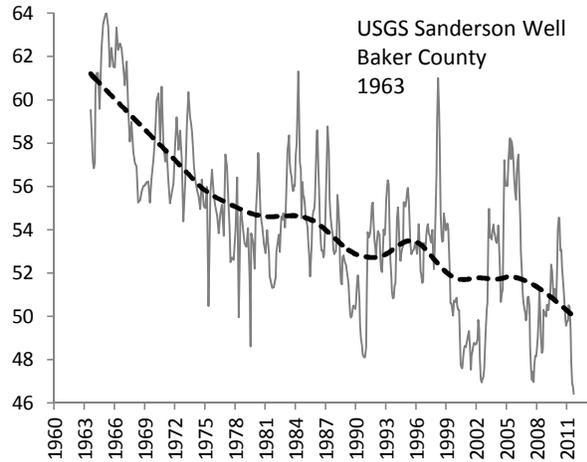
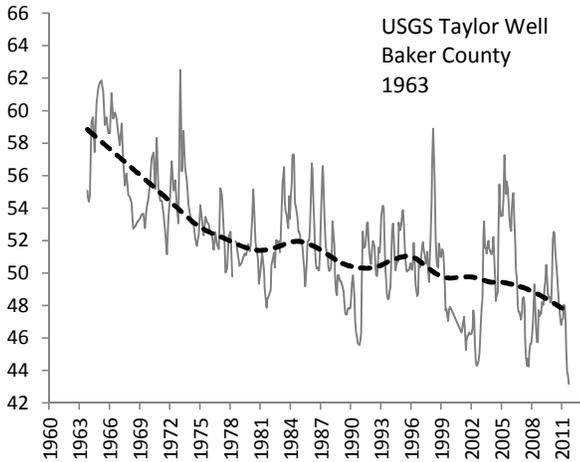
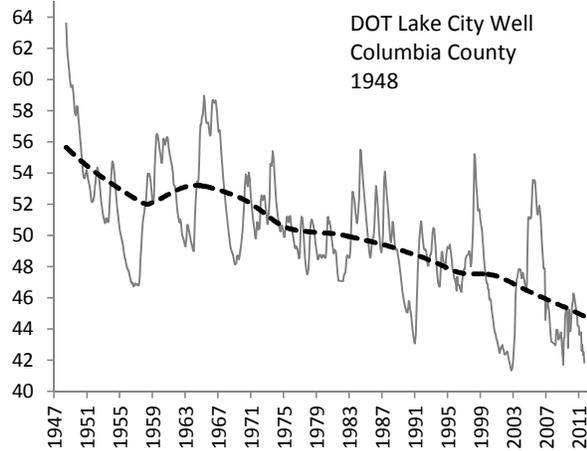
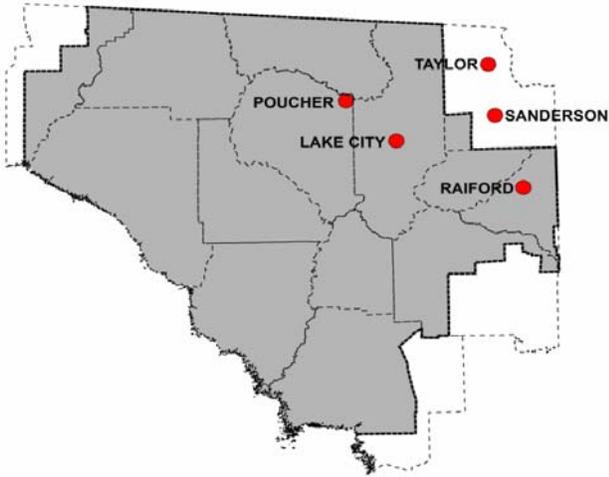


# Figure 12: Long-Term Groundwater Levels

Ending September 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 184 units installed at 48 agricultural operations by permission of the owners. Evapotranspiration data courtesy of University of Florida IFAS Extension.

