

MEMORANDUM

TO: Governing Board

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

THRU: David Still, Executive Director *D.S.*
Kirk B. Webster, Deputy Executive Director *KBW*

DATE: September 3, 2009

RE: August 2009 Hydrologic Conditions Report for the District

RAINFALL

- Average District rainfall in August was 6.90", which is 92% of the long-term monthly average of 7.50" (Table 1, Figure 1). The northern half of the District received near-average rainfall, although portions of Madison and Taylor counties were well above average. Dixie, Levy, Gilchrist, and Bradford counties saw less than normal rainfall. Figure 2 shows the estimated rainfall accumulation across the District, and Figure 3 shows the rainfall totals as a percent of normal August precipitation.
- Rainfall for the past twelve months was 47.94", 88% of the long-term average of 54.68". The twelve-month rainfall deficit was 6.74". Figure 4 depicts the 12-month surplus/deficit across the District. Figure 5 shows the change in annual deficits beginning in 1998. Tropical Storm Fay in August 2008 accounted for 26% of the precipitation that fell in the twelve months ending July 2009. August 2008 rainfall dropped out of the rolling twelve month record, causing a significant increase in the rainfall deficit since July. This demonstrates how a single event can influence the statistical record.

SURFACEWATER

- **Rivers:** Most river stations began the month with near-average flows, declined slightly during the first two weeks, then recovered to near-average at the end of the month as rains intensified. Exceptions were the Santa Fe River near Fort White and the Suwannee River near Wilcox, which finished the month with flows slightly below the 25th percentile, which is considered below normal (Figure 6). The percentile is the percentage of historic levels that are equal to or below the observed value. Discharge statistics for six river stations are presented in Figure 8.
- **Lakes:** Santa Fe Lake remained at its highest level since 1997. Levels at other monitored lakes generally showed little change since July. Half of the sixteen monitored lakes remained below their long-term average

levels. Figure 7 shows levels relative to the long-term average, minimum, and maximum levels for six lakes.

- **Springs:** Average August flow relative to historical flows is shown for 5 spring systems in Figure 11. As the Suwannee River rose in late August, the river flowed back into White Springs. A flow rate of 21 cubic feet per second was recorded on August 24.

GROUNDWATER

- Groundwater levels decreased in 66% of the District's monitored wells, but 78% were normal for August (Figure 9). Average groundwater levels dropped from the 48th percentile in July to the 37th percentile in August. Areas of below-normal groundwater levels occurred around the lower Santa Fe basin and in southern Levy County. Statistics for a representative sample of wells are shown in Figure 10.

HYDROLOGICAL/METEOROLOGICAL INFORMATION

- The 12-month Standardized Precipitation Index (SPI), based on long-term precipitation patterns that impact streams and groundwater, indicated below-normal to moderately dry conditions throughout the District. The 3-month SPI, which better describes soil moisture deficits, also indicated below-normal to moderately dry conditions.
- Long-range outlooks from the National Weather Service Climate Prediction Center show probable above-normal precipitation through November.

WATER CONSERVATION

A Phase I Water Shortage Advisory requesting voluntary reductions in water use remains in effect. The District urges all water users to eliminate wasteful and inefficient water use. Water is conserved by using the minimum amount needed and by irrigating only when necessary and in the morning before 10 a.m. and in evening hours after 4 p.m., when lower temperature and wind velocity reduce the amount of water lost to evaporation. The District offers a variety of free water conservation information to the public via its website and by request.

The hydrologic conditions report is compiled in compliance with Chapter 40B-21.211, Florida Administrative Code, using water resource data collected from the following: rainfall (radar-derived estimate), groundwater levels (114 wells), surfacewater levels (16 lakes and 11 rivers), river flows (6 stations on 4 rivers), spring flows (5 stations, courtesy of the Florida Department of Environmental Protection and the U.S. Geological Survey), and general hydrological and meteorological information (drought indices and weather forecasts). Data are provisional, and subject to revision. Statistics are updated as revised data become available.

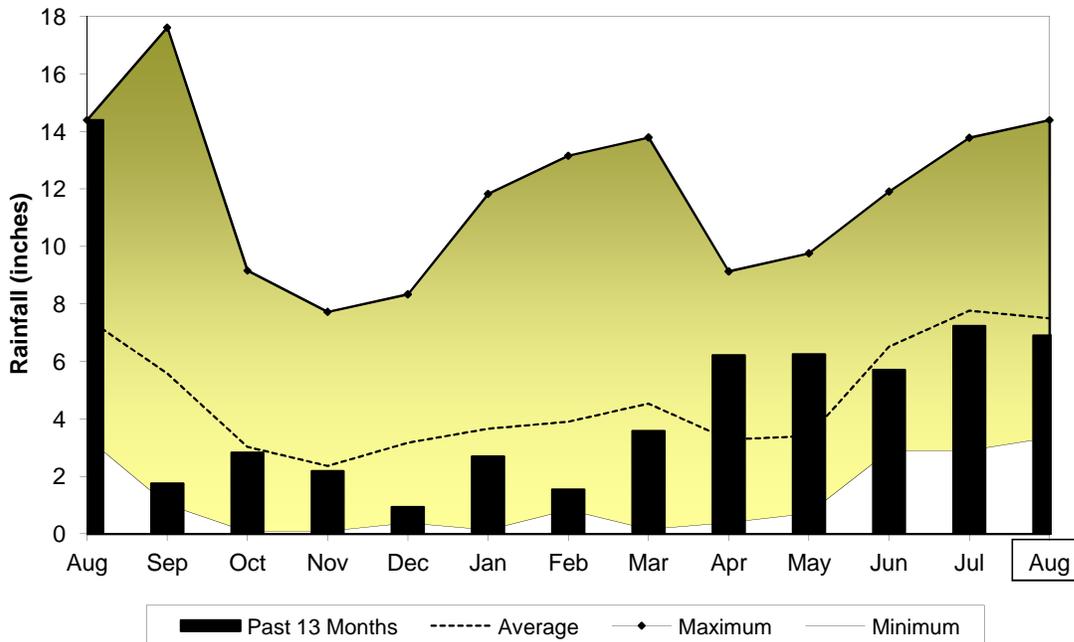
Table 1. Estimated Rainfall Totals

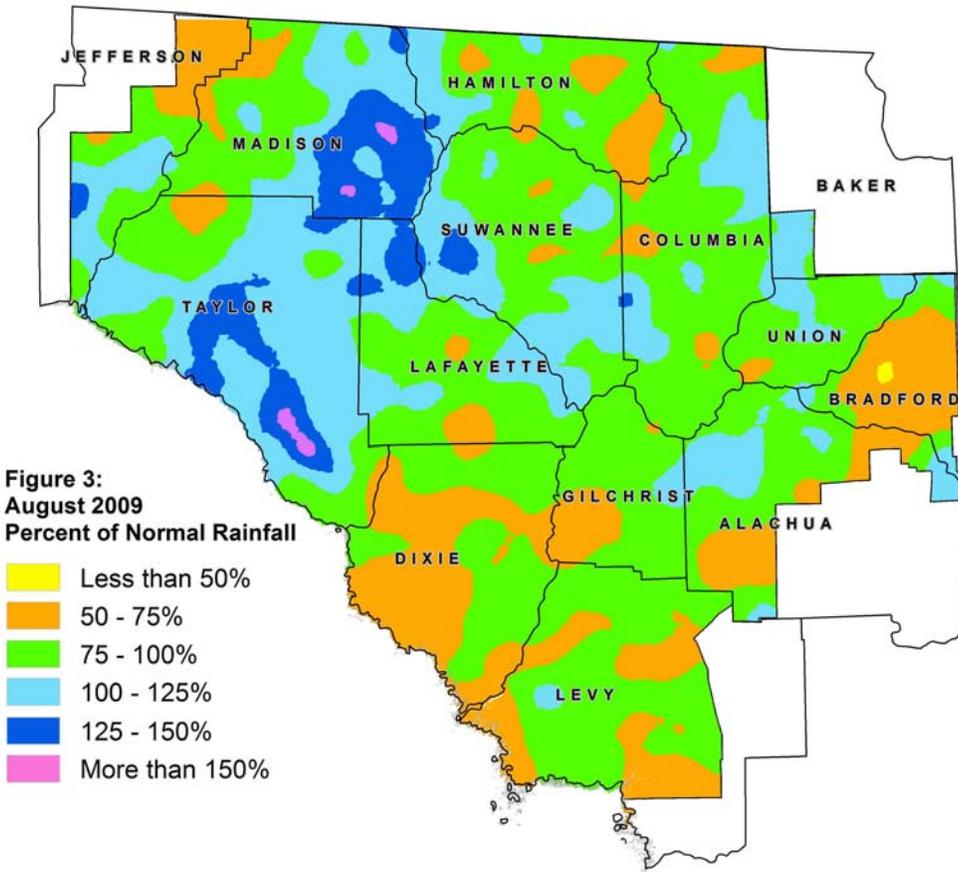
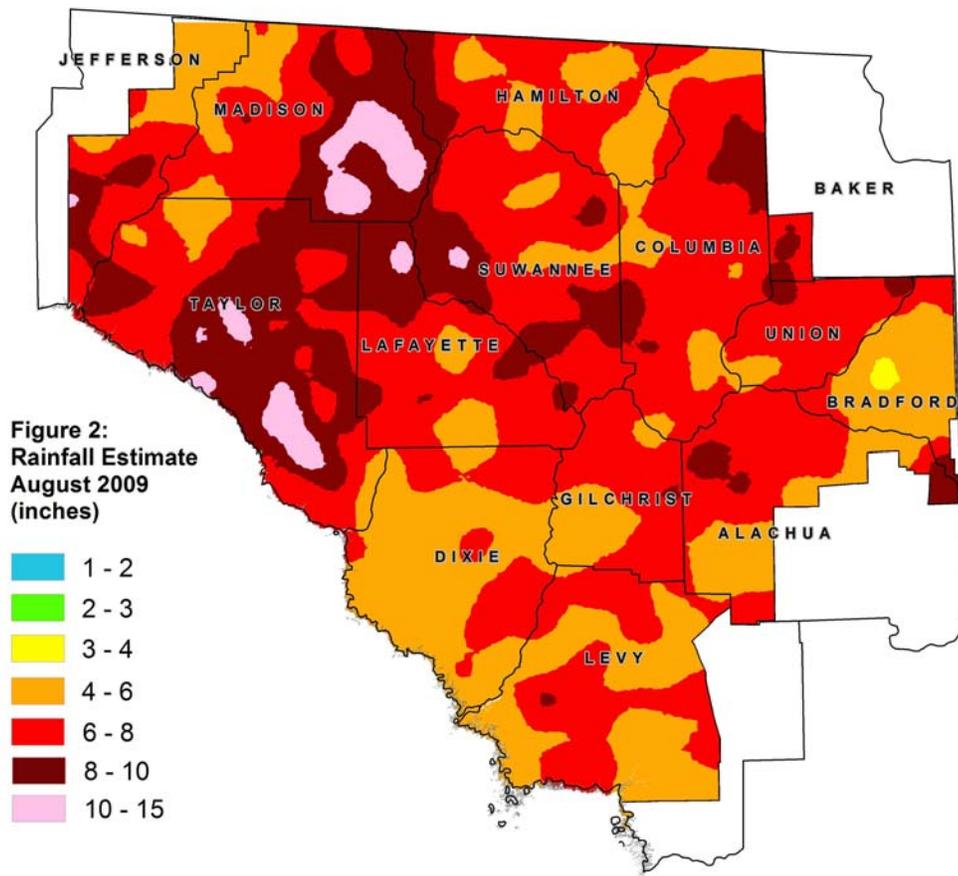
County	August-2009	August-2008	Last 12 Months	August Average
Alachua	6.53	11.57	47.73	7.10
Baker	7.77	15.89	49.25	6.59
Bradford	5.45	12.52	48.18	7.39
Columbia	6.88	12.93	46.04	6.63
Dixie	5.69	17.21	49.07	9.11
Gilchrist	6.22	13.41	47.08	7.83
Hamilton	6.52	10.15	47.88	6.13
Jefferson	6.60	18.33	49.27	6.46
Lafayette	7.24	16.83	50.61	7.78
Levy	5.95	13.35	46.12	9.80
Madison	8.08	15.53	51.77	6.13
Suwannee	7.41	15.21	45.89	6.40
Taylor	8.13	17.83	48.16	8.01
Union	6.98	10.85	43.93	7.77

August 2009 Average: 6.90
 Historical August Average (since 1932): 7.50
 Historical 12-month Average (since 1932): 54.68
 Past 12-Month Total: 47.94
 12-month Rainfall Deficit: -6.74

(Rainfall reported in inches)

Figure 1: Comparison of District Monthly Rainfall





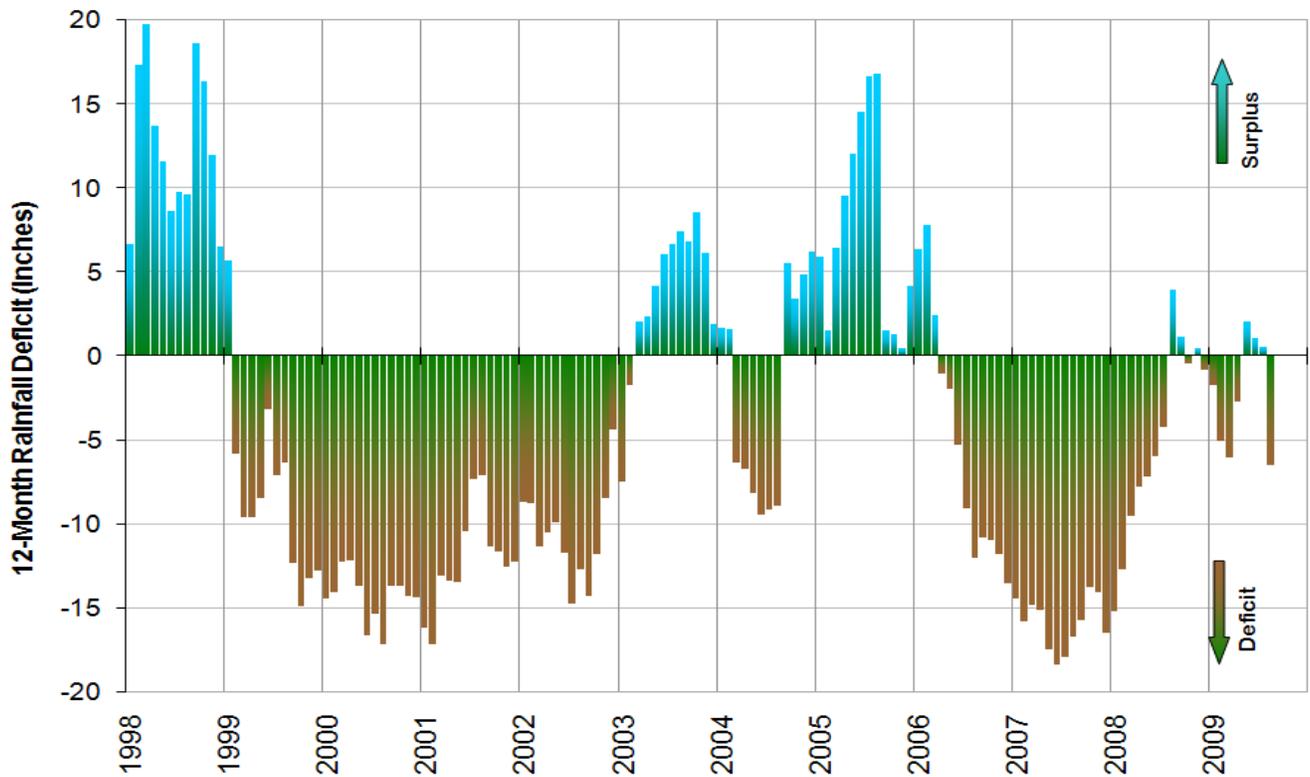
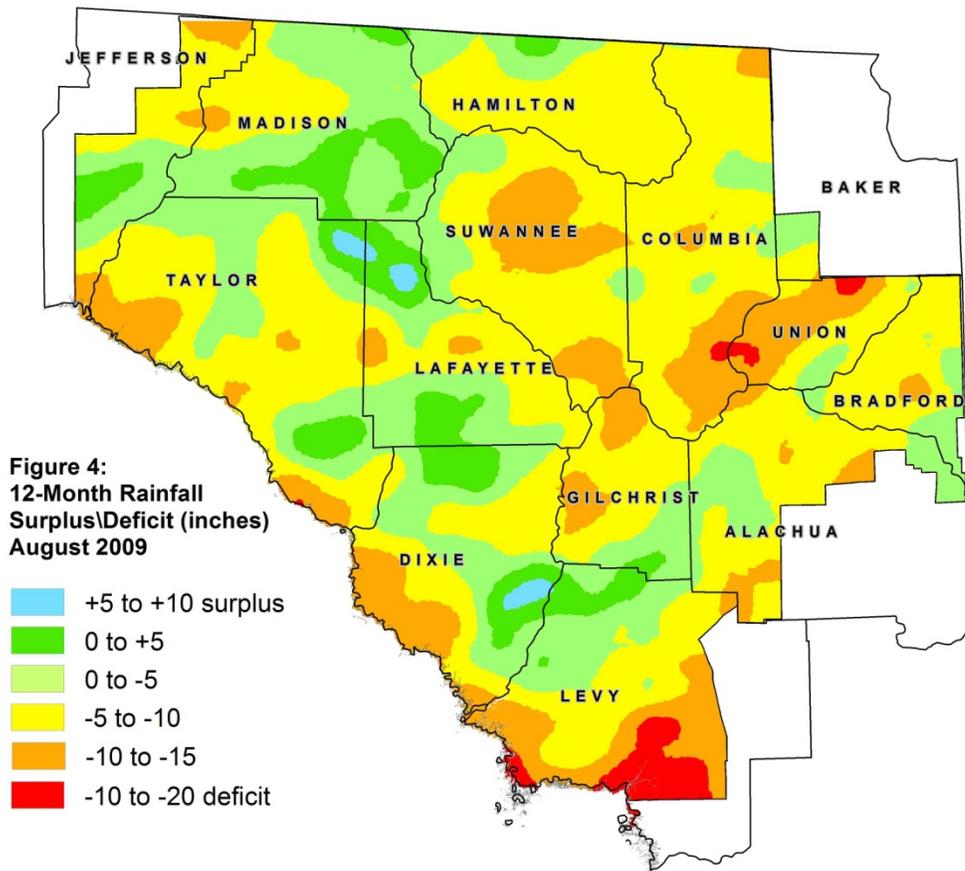


Figure 5: 12-month rolling rainfall deficit (difference between the rainfall that fell during any 12-month period and the long-term average expected over the same period, January 1998-August 2009)

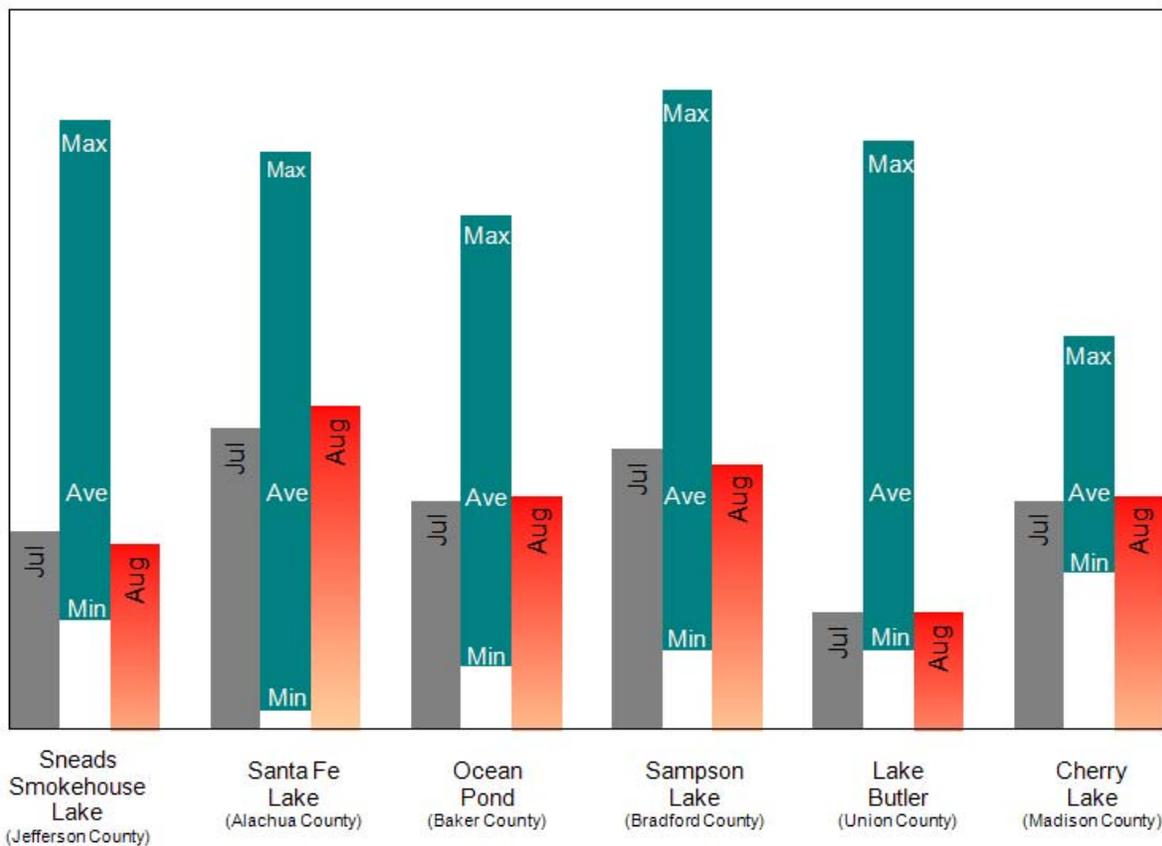
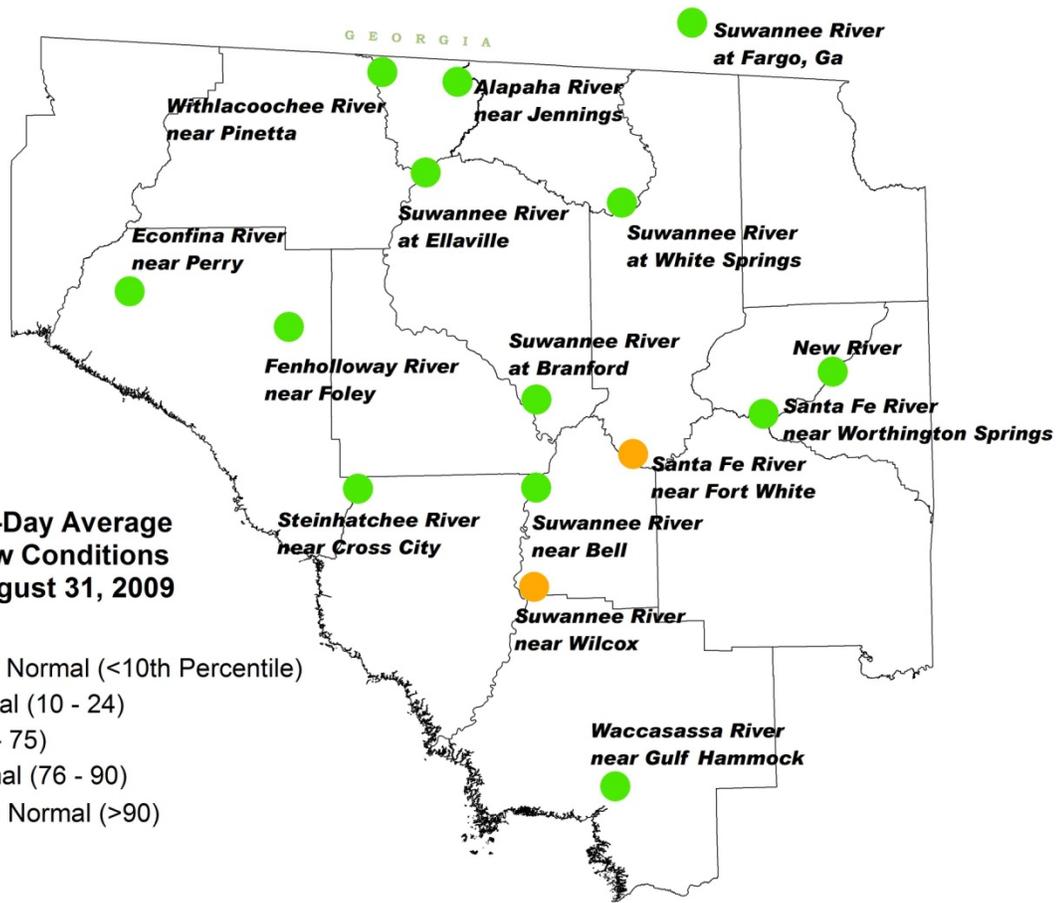
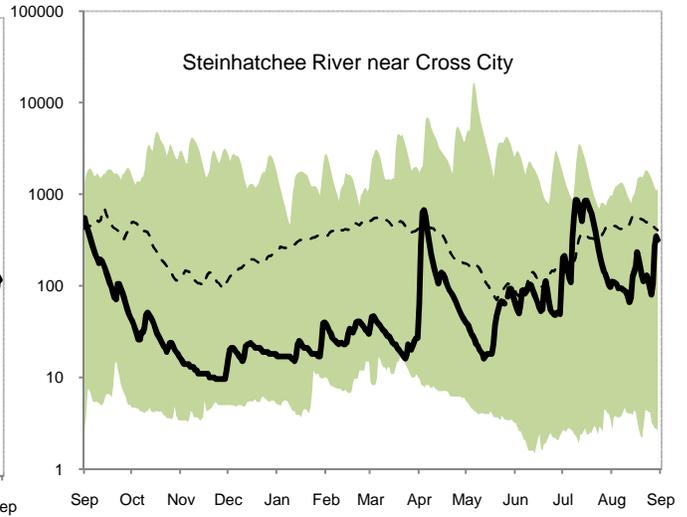
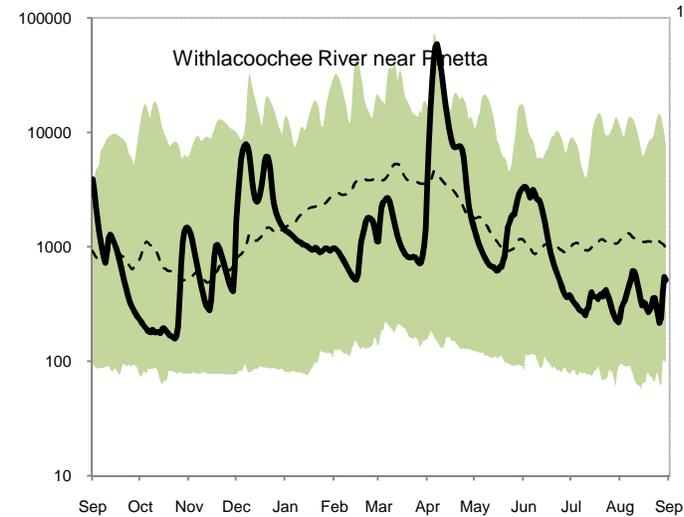
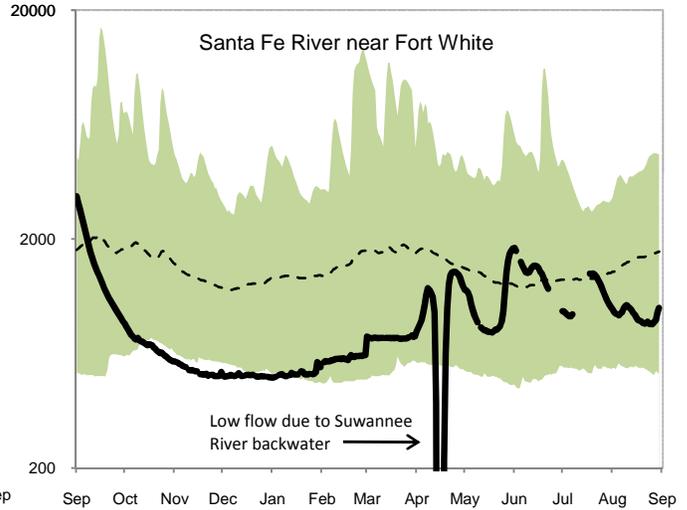
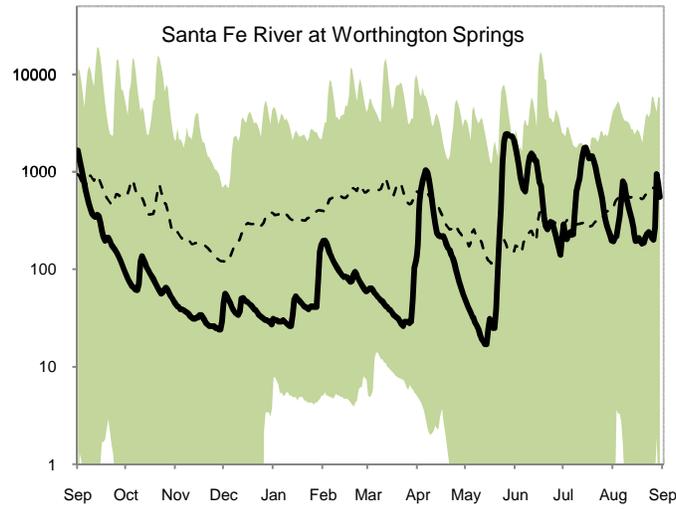
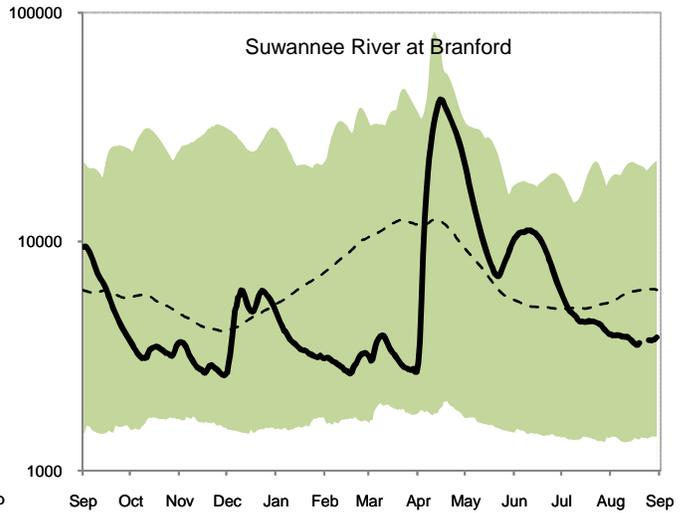
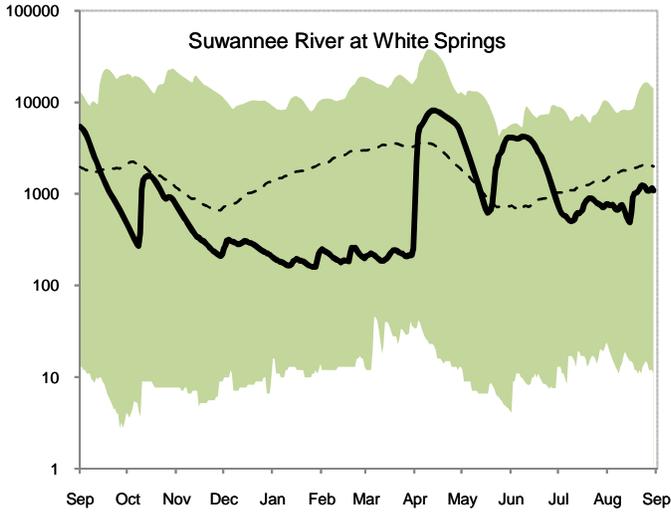
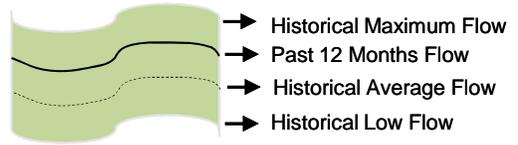


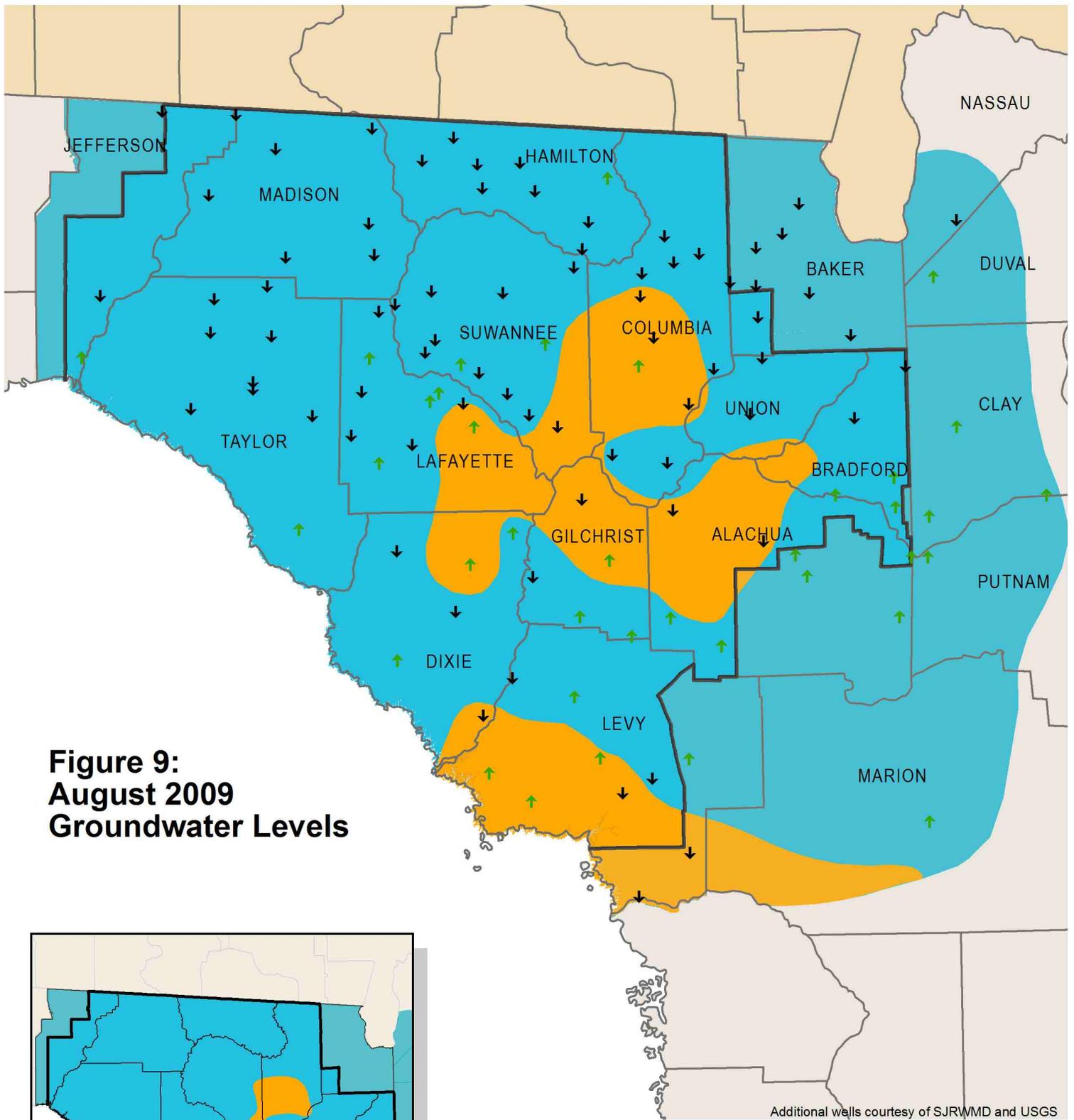
Figure 7: Lake levels, relative to historic maximum, minimum, and average levels.

Figure 8: Daily River Flow Statistics

September 1, 2008 through August 31, 2009

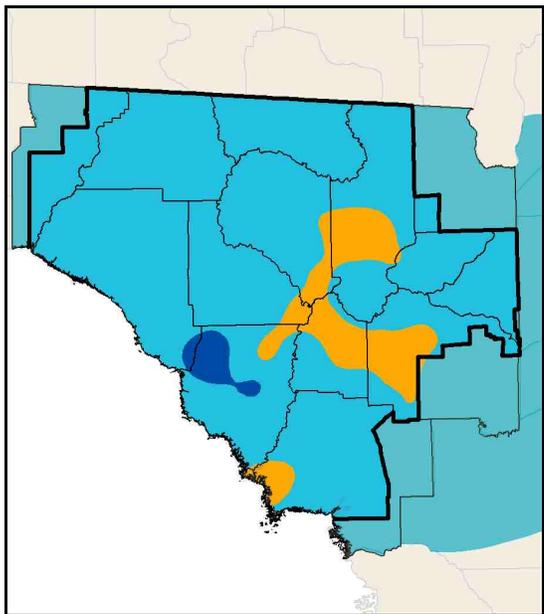


RIVER FLOW, CUBIC FEET PER SECOND



Additional wells courtesy of SJRWMD and USGS

**Figure 9:
August 2009
Groundwater Levels**



Inset: July 2009 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

Figure 10: Monthly Groundwater Level Statistics

Levels September 1, 2008 through August 31, 2009
 Period of Record Beginning 1978

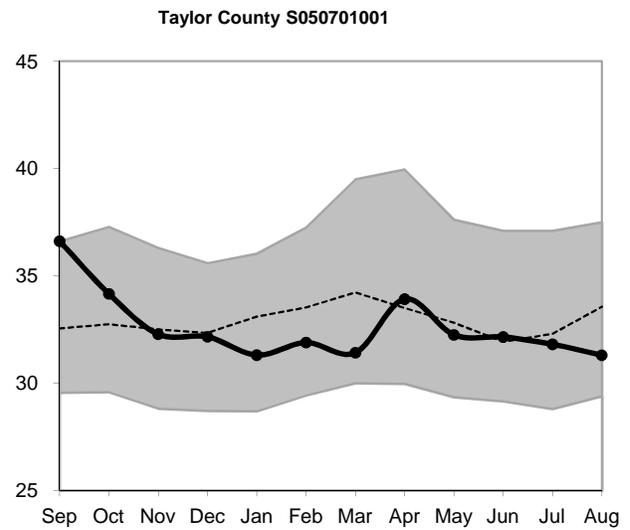
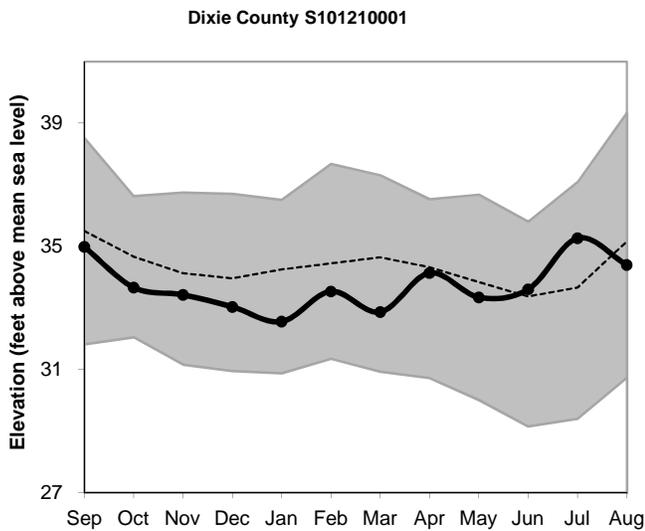
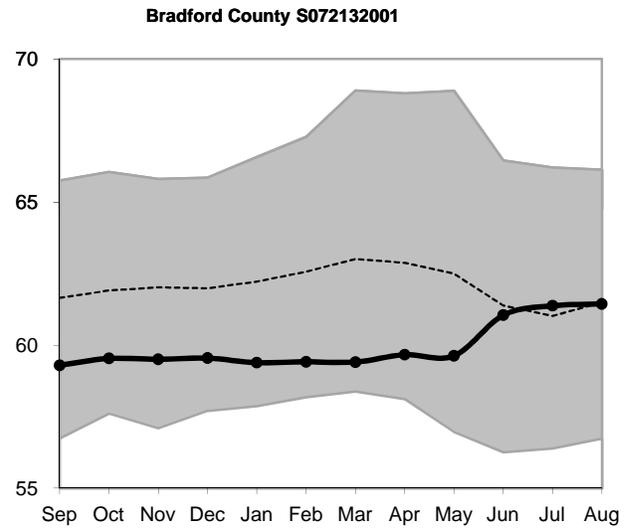
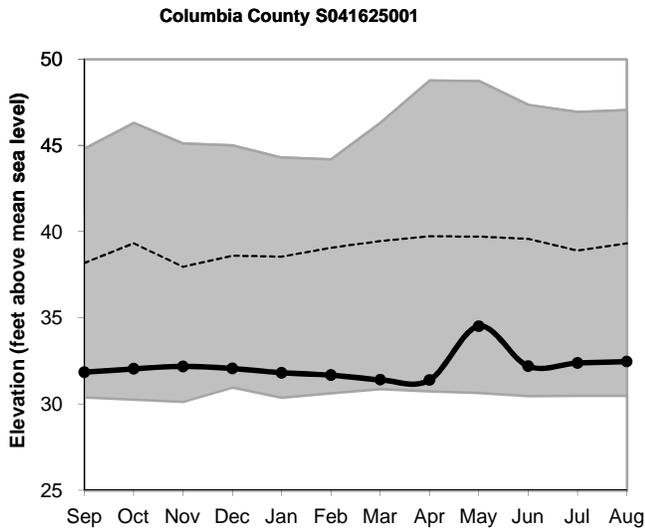
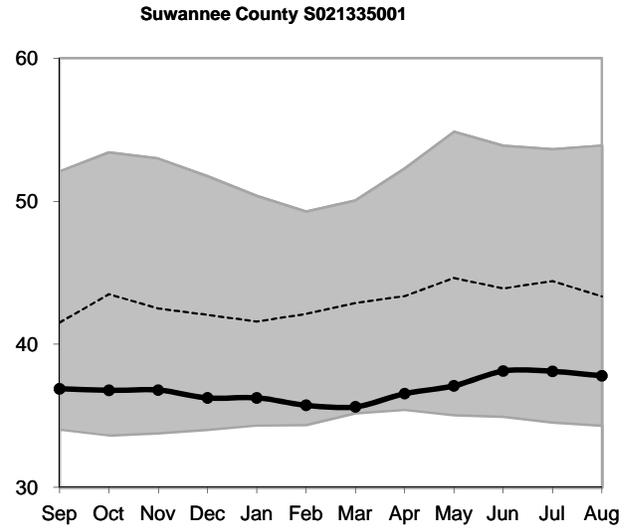
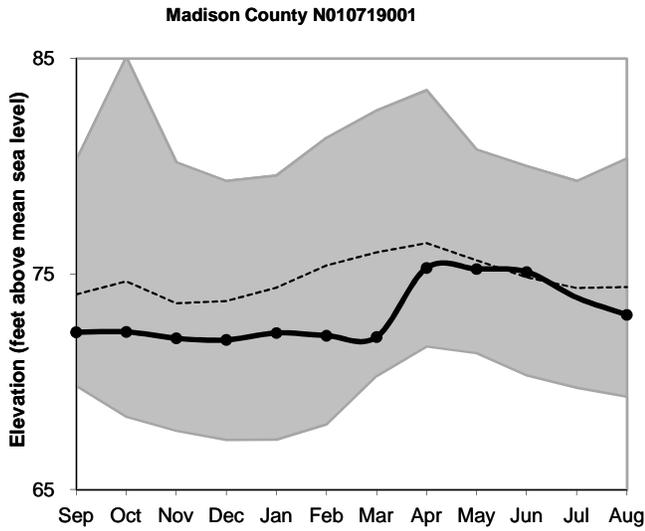
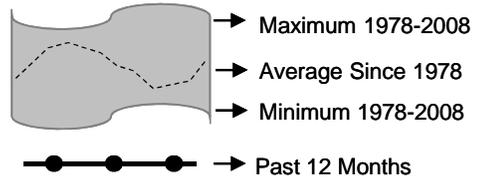
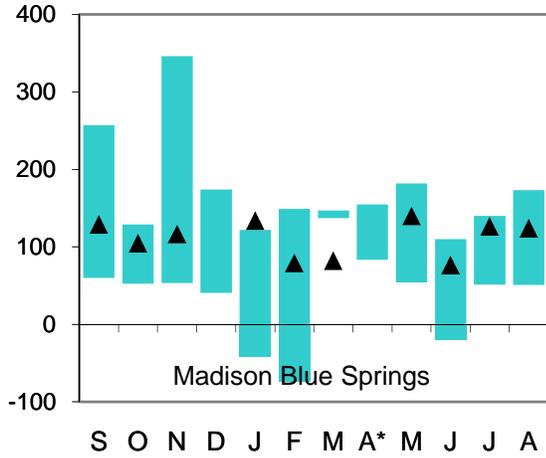
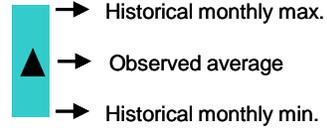


Figure 11: Monthly Springflow Statistics

Flows September 1, 2008 through August 31, 2009
 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 for these months will be revised once approved and published by the U.S. Geological Survey.

