MEMORANDUM

TO: Governing Board

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

THRU: David Still, Executive Director DS
Jon Dinges, Department Director JWD

DATE: November 2, 2010

RE: October 2010 Hydrologic Conditions Report for the District

RAINFALL

- Average rainfall in October was 0.29", the ninth driest month since 1932 (Table 1, Figure 1). More than half the District received less than a quarter-inch (Figure 2), which is less than 10% of the average October total of 3.02" (Figure 3). Only parts of Jefferson and Madison counties received any significant rain, although their monthly totals were less than average. Gages at Usher Tower (near Chiefland) and Starke, with records beginning in 1956 and 1958, respectively, reported no rain, making it the driest October on record at those gages. The long-term gage in Lake City reported 0.02", making it the driest October since 1943 and the third driest since 1893.
- The average twelve-month surplus was 4.35". Departures from normal ranged from more than 25" of surplus in coastal Levy and Dixie counties to more than 15" of deficit in the upper Santa Fe River Basin. Figure 4 depicts the 12-month surplus/deficit across the District. Figure 5 shows the change in annual deficits beginning in 1998.

SURFACEWATER

- **Rivers**: Flows at most Suwannee River and tributary gages remained below the 10th percentile, meaning more than 90% of daily mean flow records have been higher for this time of year. Long-term Suwannee gages fell to near or below their 7-day, 10-year low flows. Upper Suwannee gages neared record low stages set in 2007. Coastal river flows fell below median, with the Steinhatchee and Waccasassa finishing the month below the 25th percentile. 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 all monitored lakes continued to fall. Levels at 14 of 16 lakes were below their long-term average. The exceptions, Lake Francis in Madison and Andrews Lake in Taylor County, were near average.

Levels at Alligator Lake, Waters Lake and Governor Hill Lake were below the minimum measurable stage. Figure 8 shows levels relative to the long-term average, minimum, and maximum levels for six lakes.

- **Springs:** Average October flow relative to historical flows is shown for five spring systems in Figure 12.

GROUNDWATER

Levels in 84% of monitored upper Floridan Aquifer wells dropped in October, with an average decline of 6" (Figure 9). Conditions averaged across the District fell to the 38th percentile from the 50th percentile in September, based on records beginning in 1978. Levels in Taylor County were near the 65th percentile, while levels in Alachua, Columbia, Gilchrist, and Hamilton counties were below the 25th percentile. Three wells near the confluence of the Santa Fe and Suwannee rivers fell below the 10th percentile. Statistics for a representative sample of wells are shown in Figure 10. Figure 11 shows statistics for 5 wells in or near the District with continuous records that predate the mid-1970's.

HYDROLOGICAL/METEOROLOGICAL INFORMATION

- The Palmer Drought Severity Index (PDSI), a climatological tool produced by the National Weather Service, evaluates the scope, severity, and frequency of prolonged periods of abnormally dry or wet weather using precipitation, temperature, and soil moisture data. The PDSI indicated moderate drought during the last week of October.
- The U.S. Geological Survey categorized the Suwannee River Basin as experiencing moderate hydrological drought.

CONSERVATION

Homeowners and others within the District are required to limit landscape irrigation to one day per week, based on a year-round 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. 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 data collected from the following: rainfall (radar-derived estimate), groundwater levels (112 wells), surfacewater levels (6 lakes and 11 rivers), river flows (15 stations), spring flows (5 stations), and general information such as drought indices and forecasts. Data are provisional, and statistics are updated as revised data become available.

MW/dd

Table 1: Estimated Rainfall Totals

County	Oct-2010	Oct-2009	Last 12 Months	Oct Average
Alachua	0.05	1.97	49.18	3.05
Baker	0.01	1.55	47.19	3.31
Bradford	0.02	1.81	43.51	2.76
Columbia	0.11	1.54	51.96	3.06
Dixie	0.01	2.90	66.93	3.07
Gilchrist	0.12	2.61	52.08	2.98
Hamilton	0.35	1.32	55.83	3.01
Jefferson	1.38	3.69	60.85	3.07
Lafayette	0.26	1.77	61.68	3.09
Levy	0.00	2.20	69.50	3.14
Madison	0.87	2.75	61.04	3.24
Suwannee	0.22	1.50	57.77	3.22
Taylor	0.43	2.70	65.07	3.17
Union	0.03	2.15	48.59	3.27

October 2010 Average:	0.29
Historical October Average (since 1932):	3.02
Historical 12-month Average (since 1932):	54.68
Past 12-Month Total:	59.03
12-month Rainfall Surplus:	4.35

(Rainfall reported in inches)

Figure 1: Comparison of District Monthly Rainfall

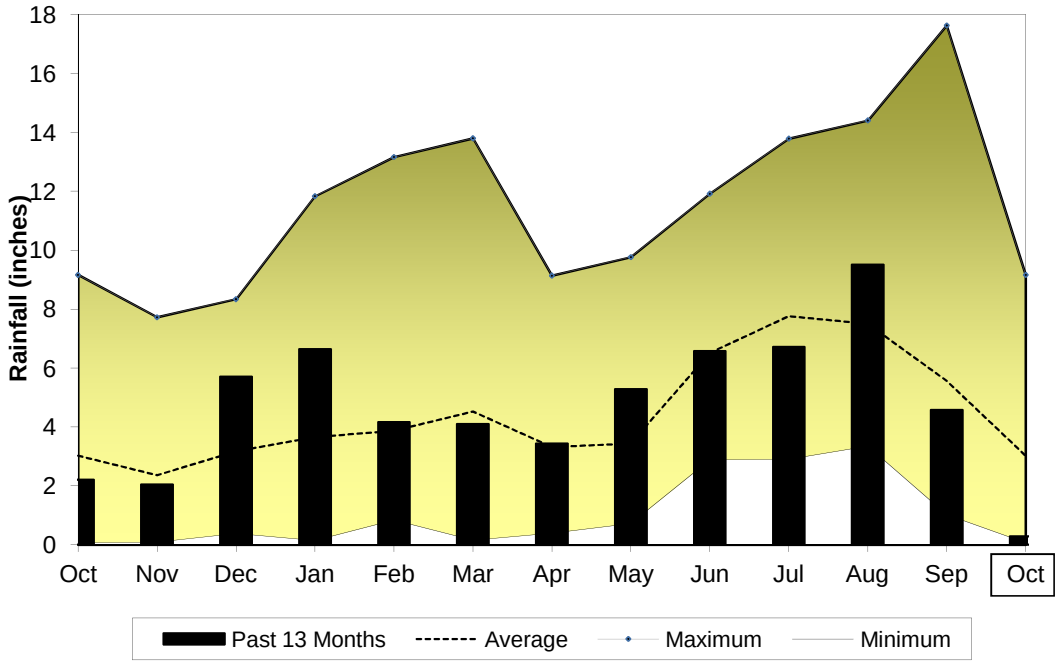


Figure 2: October 2010 Rainfall Estimate

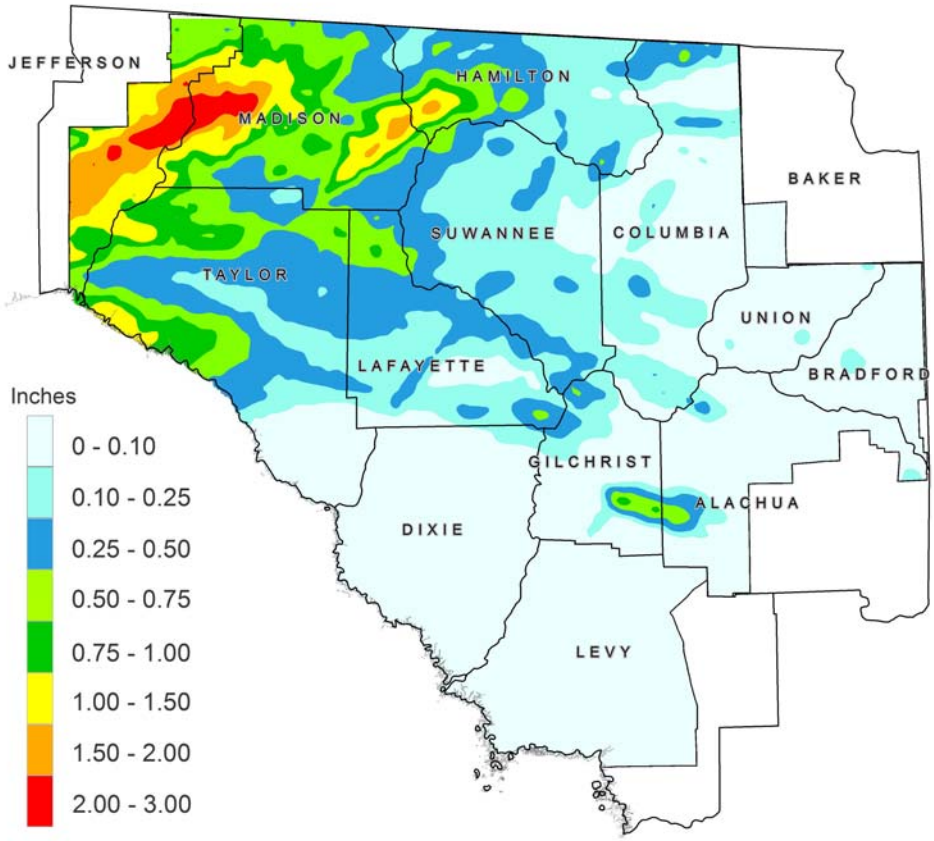


Figure 3: October 2010 Percent of Normal Rainfall

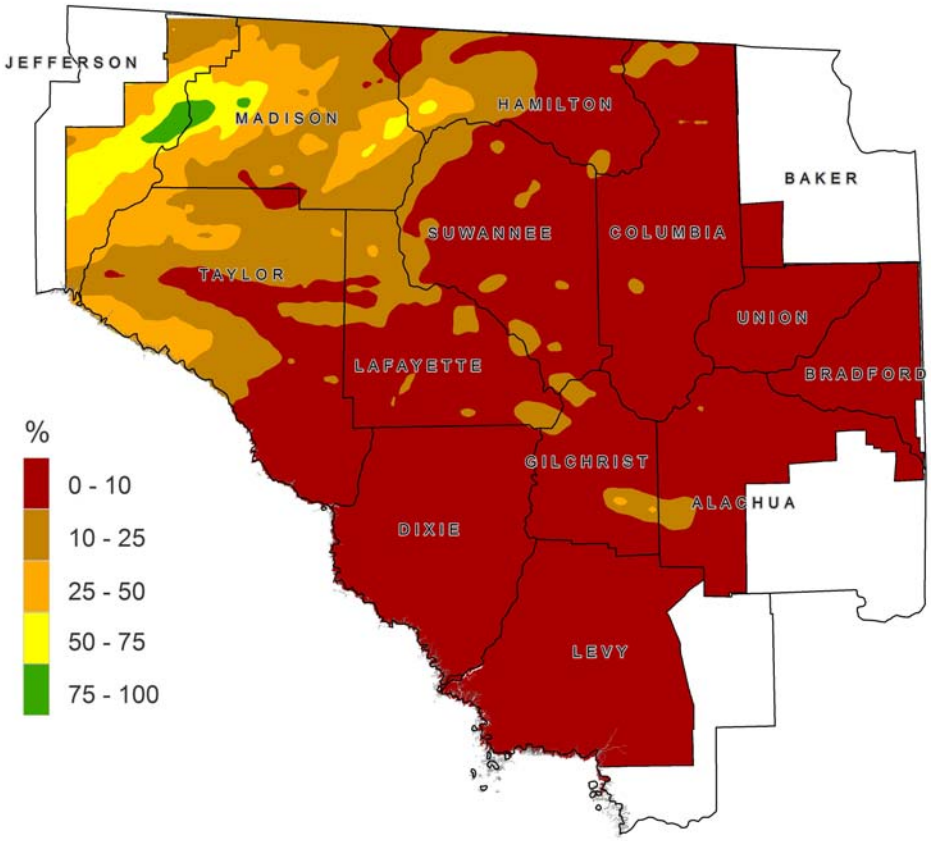


Figure 4: October 2010 Rainfall Surplus/Deficit

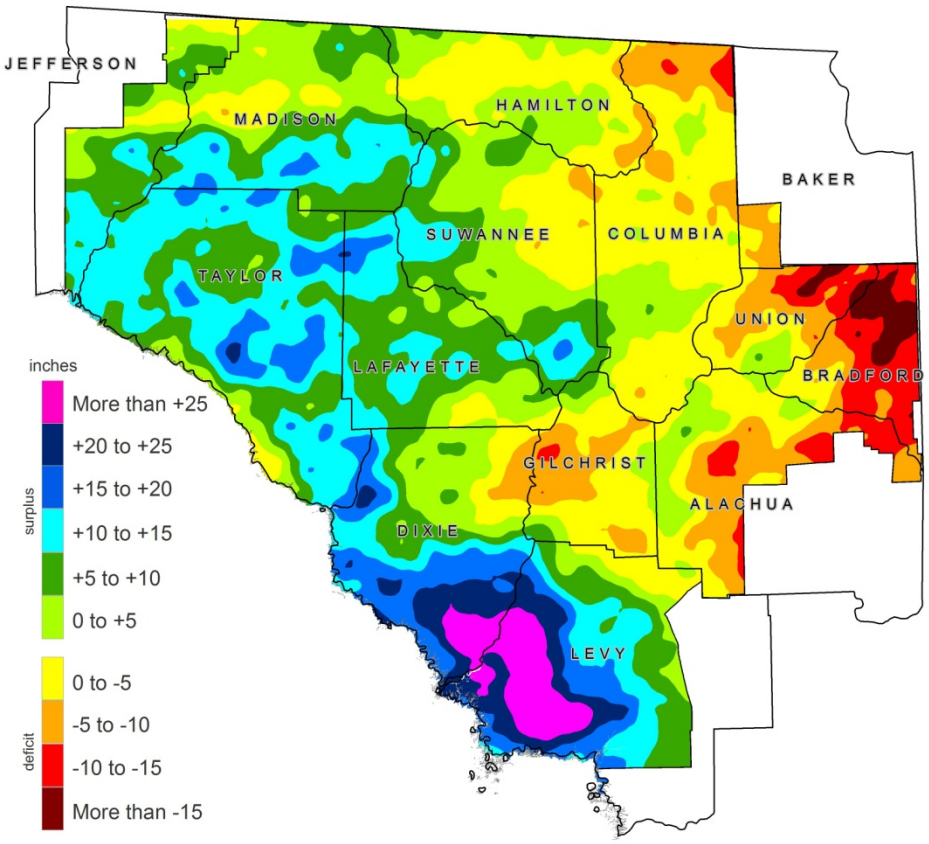


Figure 5: 12-month Rolling Rainfall Deficit Since 1998

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

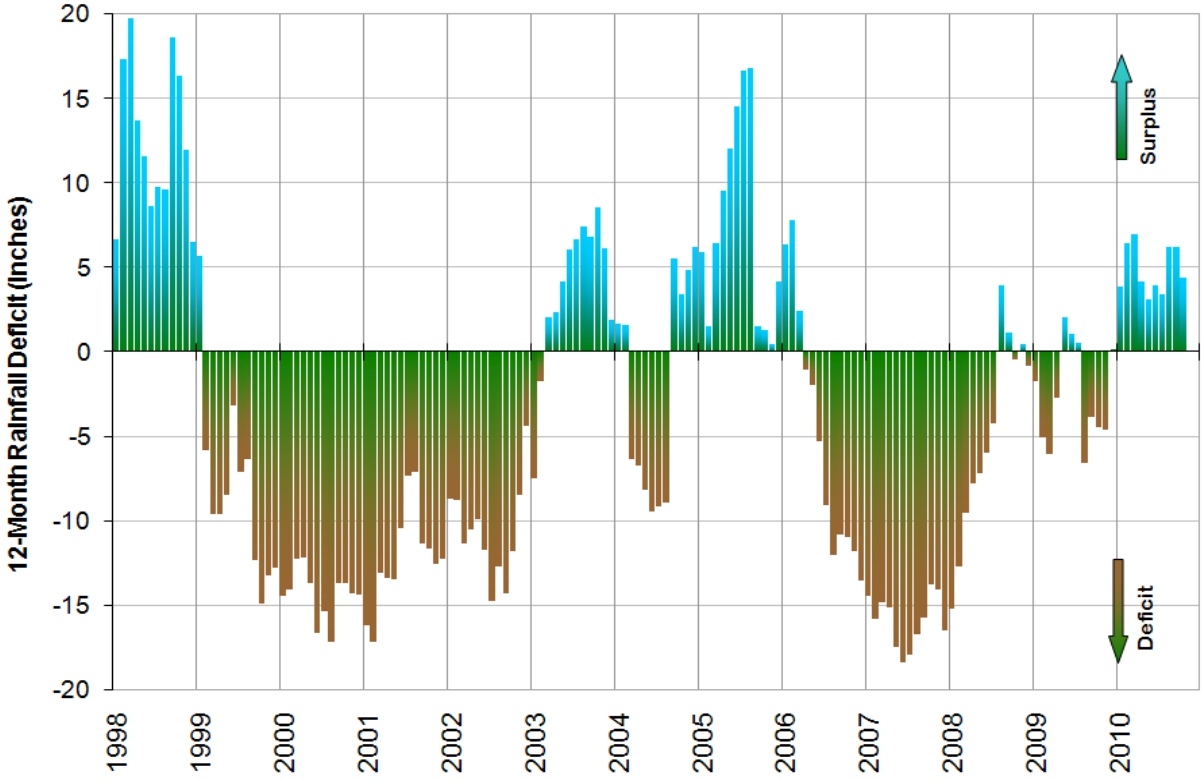
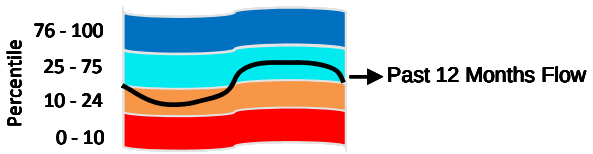
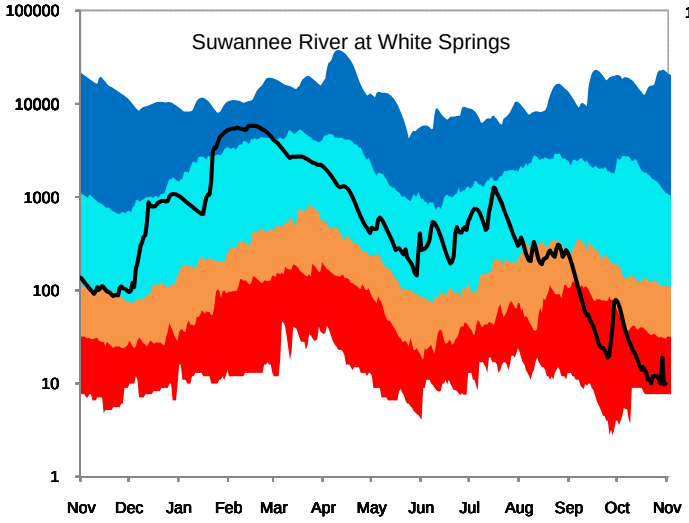


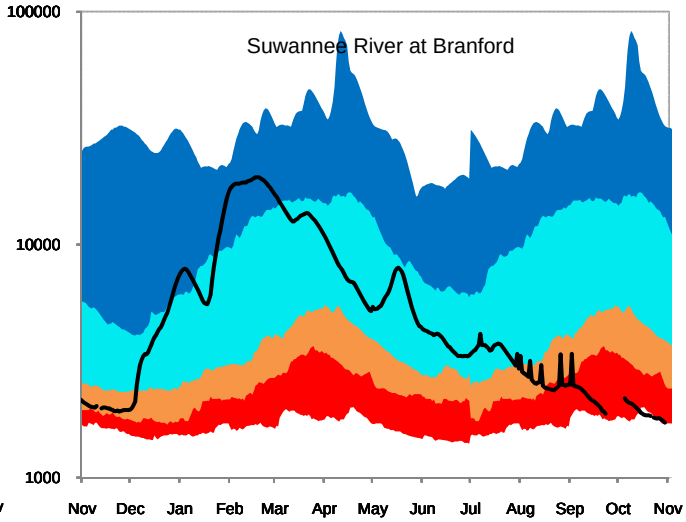
Figure 6: Daily River Flow Statistics

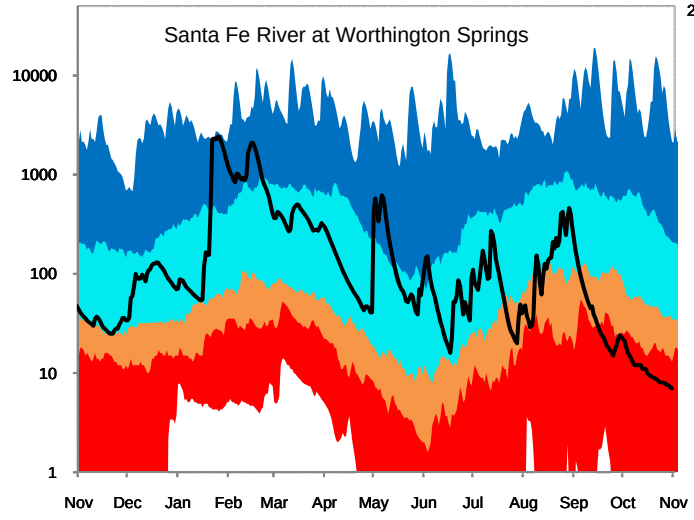
November 1, 2009 through October 31, 2010

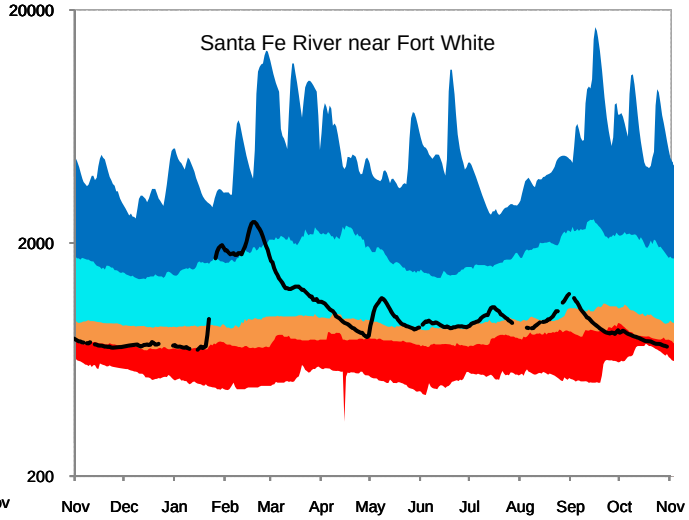


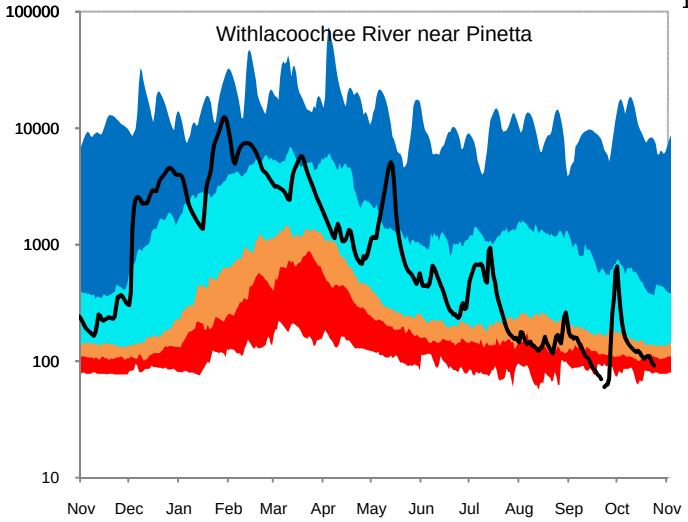
RIVER FLOW, CUBIC FEET PER SECOND











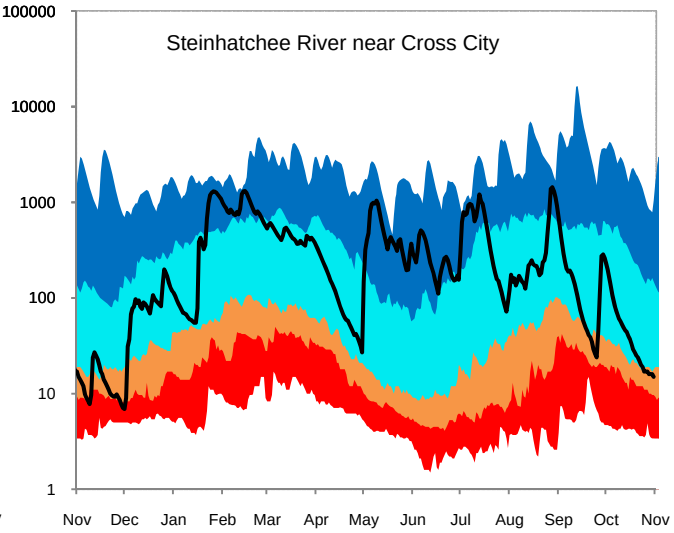


Figure 7: October 2010 Streamflow Conditions

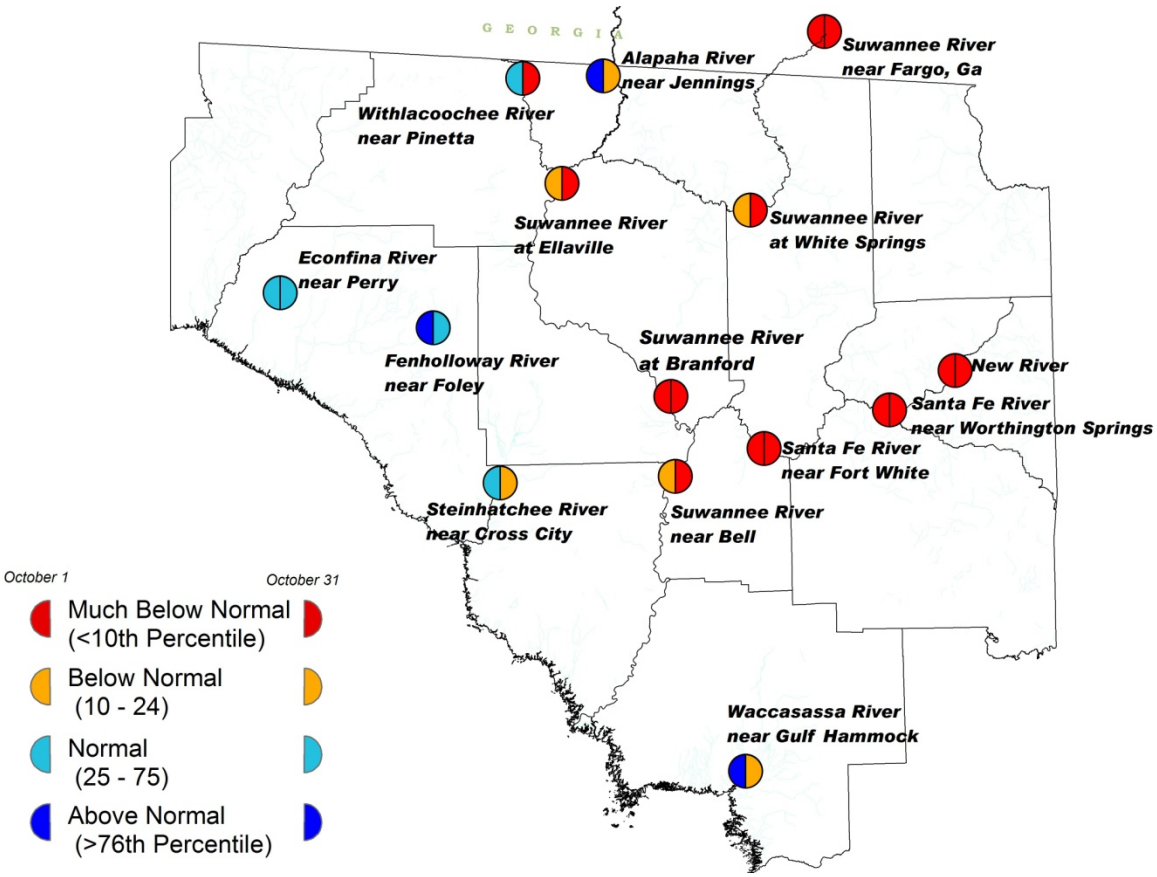
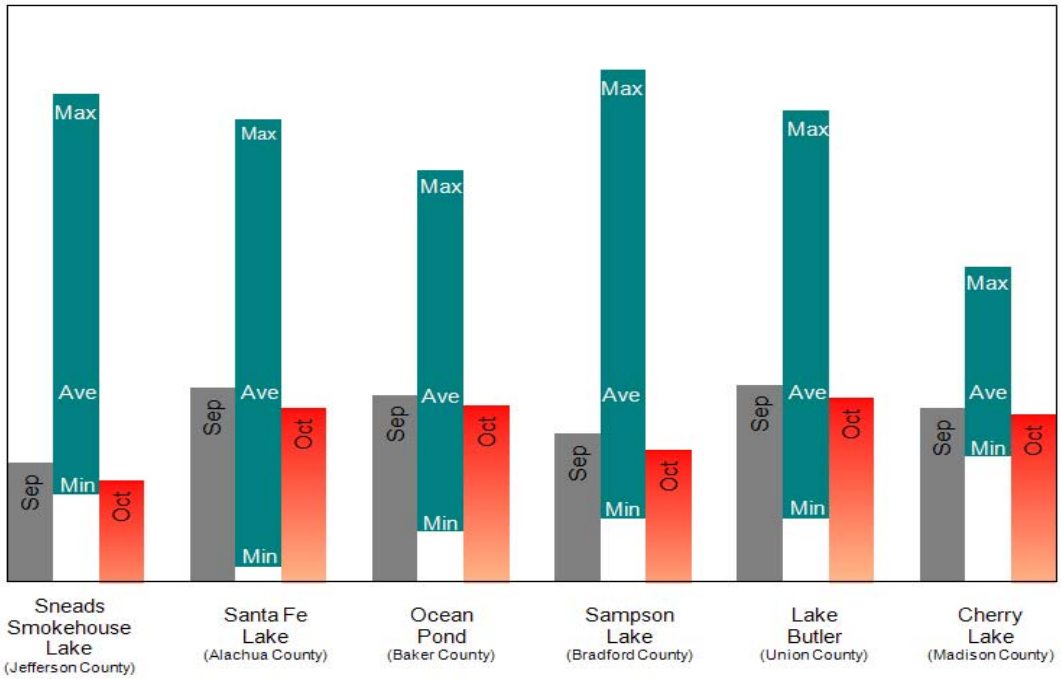


Figure 8: Lake levels, relative to historic maximum, minimum, and average levels.



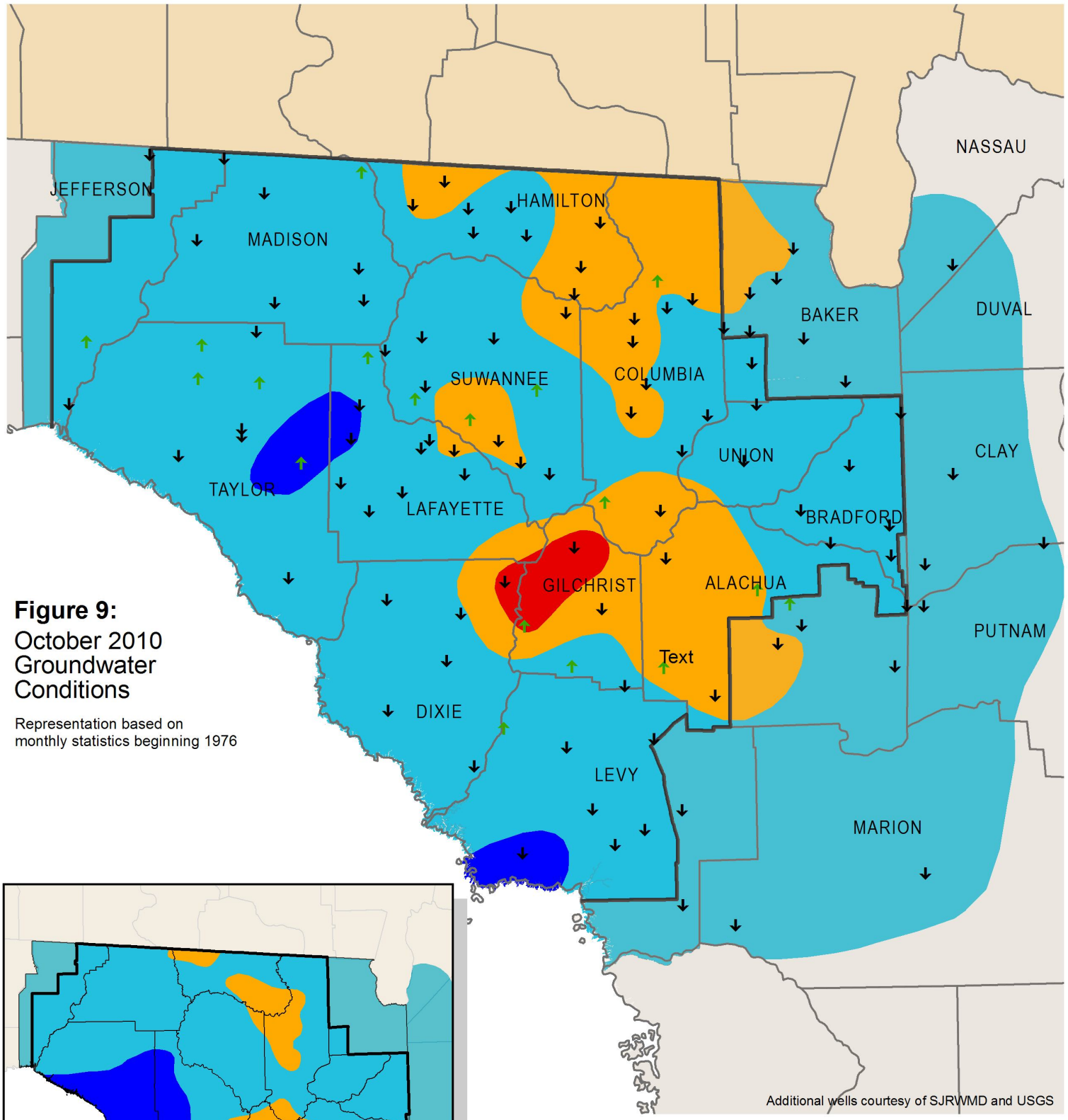
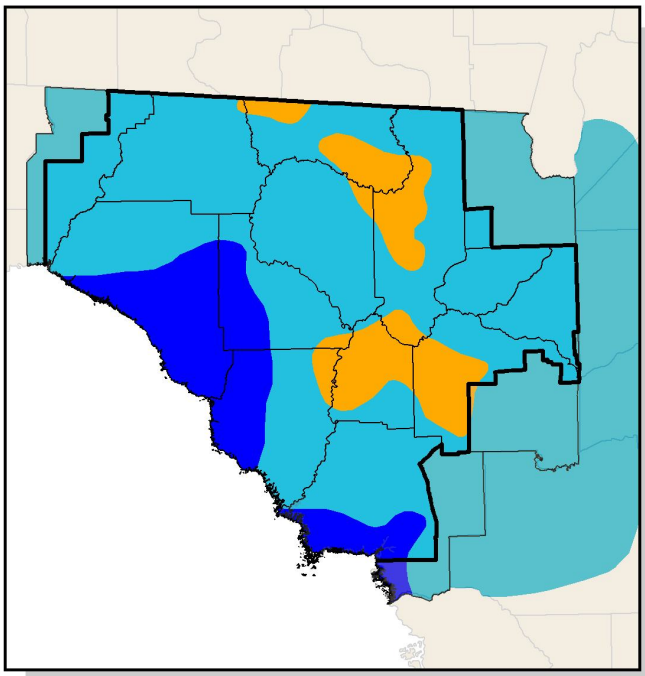


Figure 9:
October 2010
Groundwater
Conditions

Representation based on
monthly statistics beginning 1976



Inset: September 2010 Groundwater Levels

High
(Greater than 75th Percentile)

Normal
(25th to 75th Percentile)

Low
(10th to 25th Percentile)

Extremely Low
(Less than 10th Percentile)

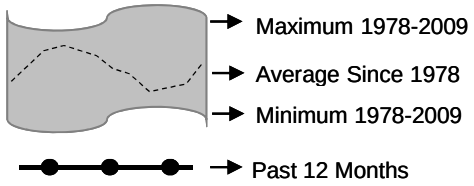
Increase/decrease in level since last month

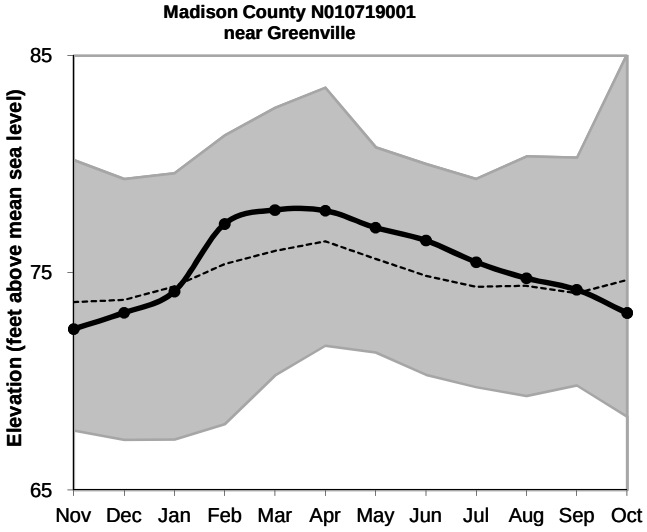
District Boundary

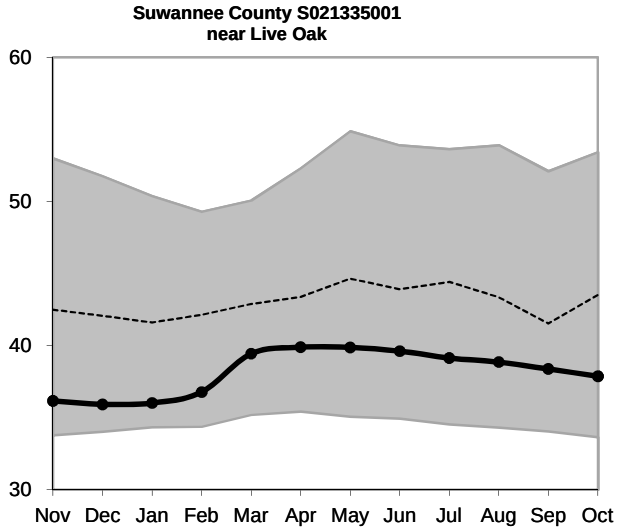
Figure 10: Monthly Groundwater Level Statistics

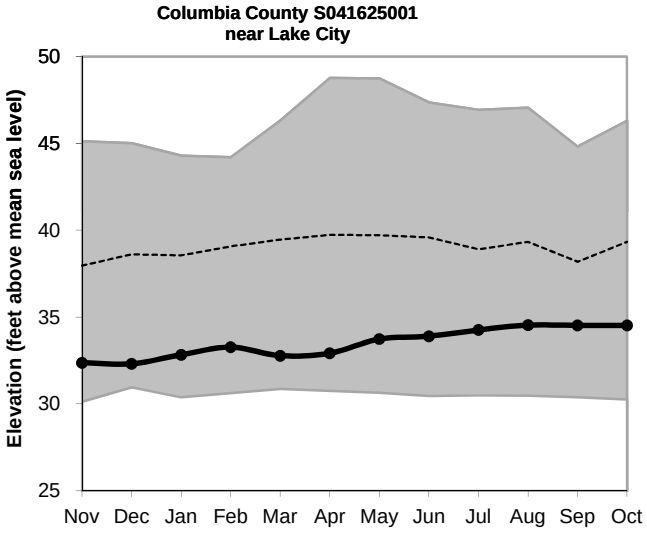
Levels November 1, 2009 through October 31, 2010

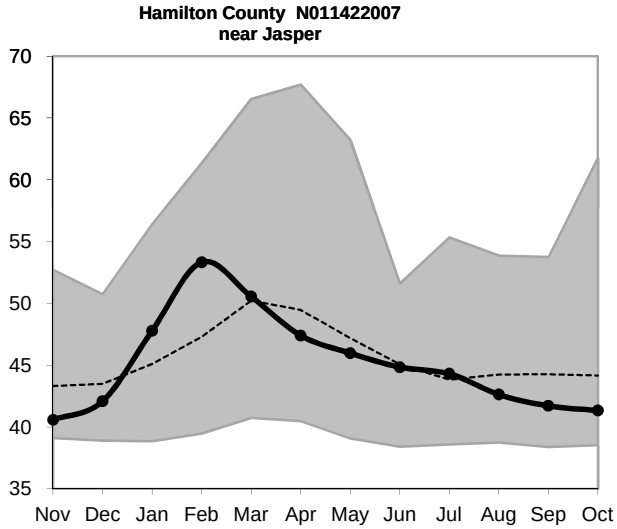
Period of Record Beginning 1978

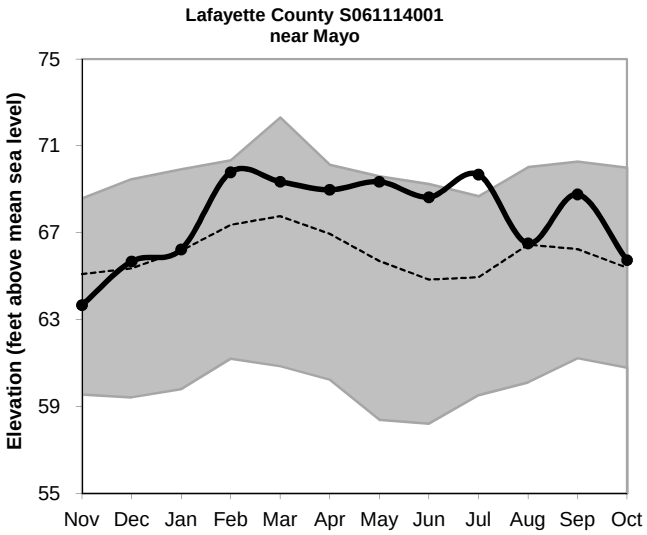












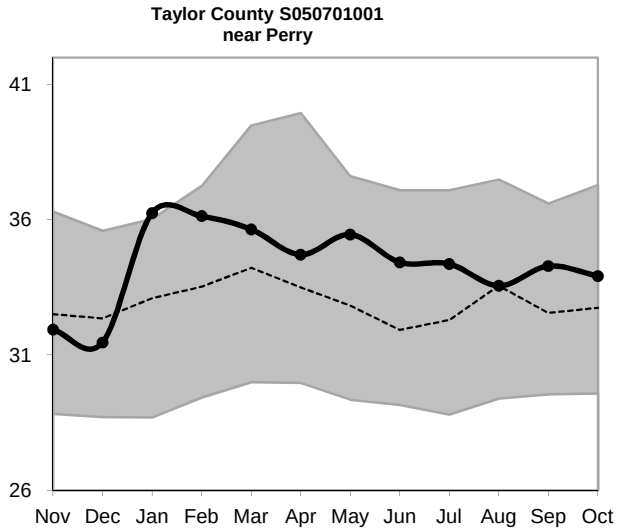
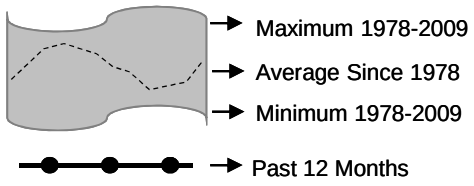
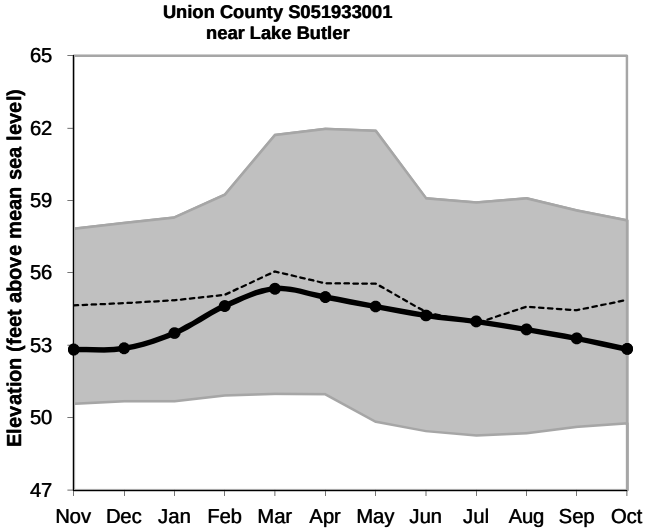
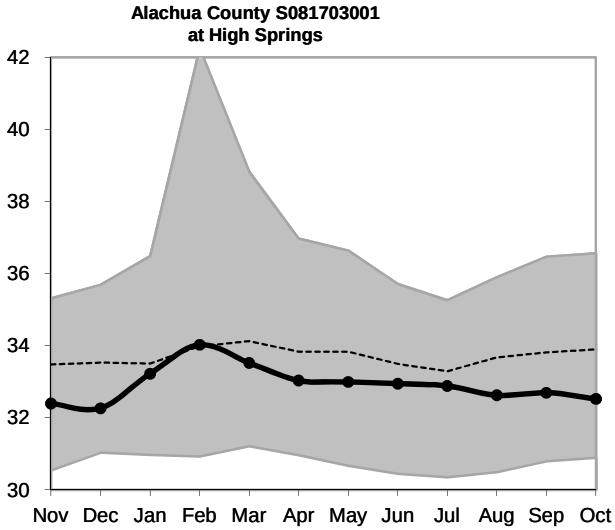
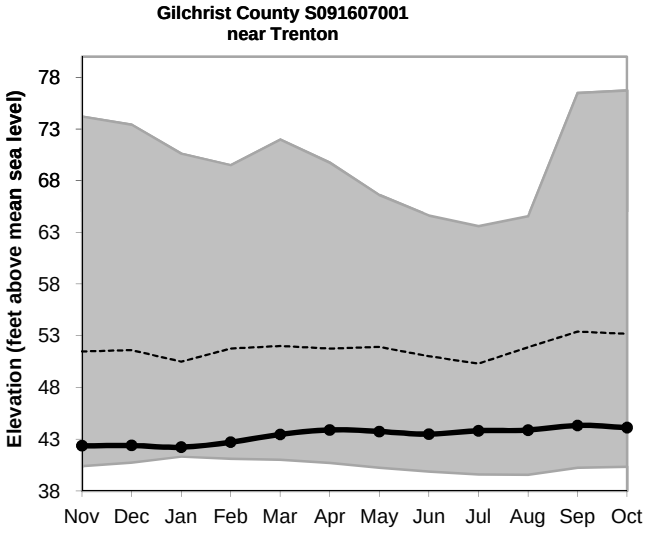


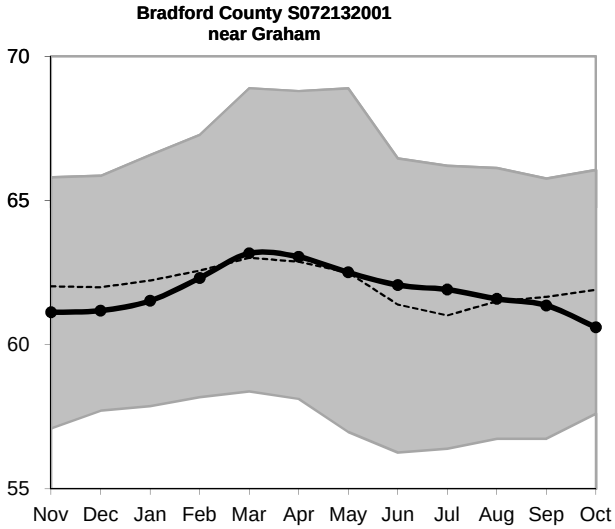
Figure 10, cont.: Monthly Groundwater Level Statistics
Levels November 1, 2009 through October 31, 2010
Period of Record Beginning 1978

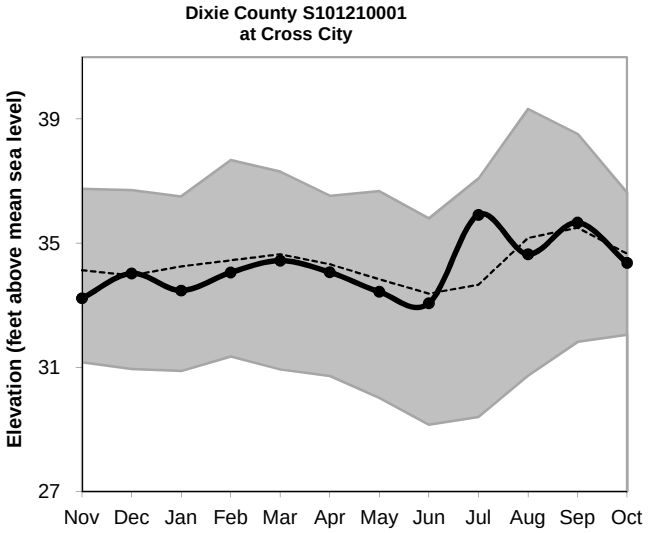












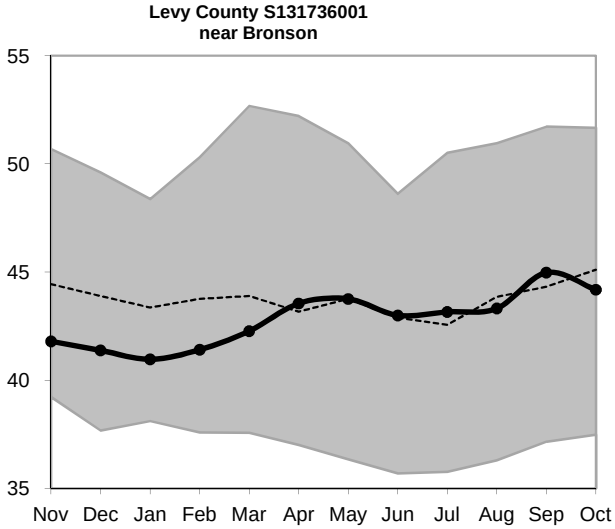
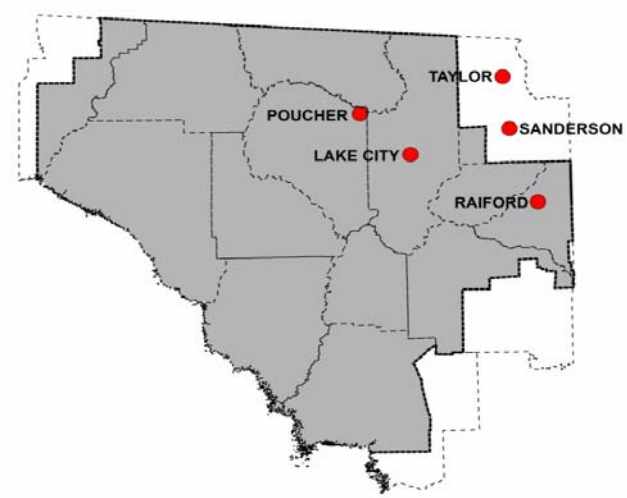
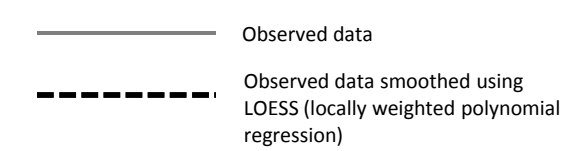
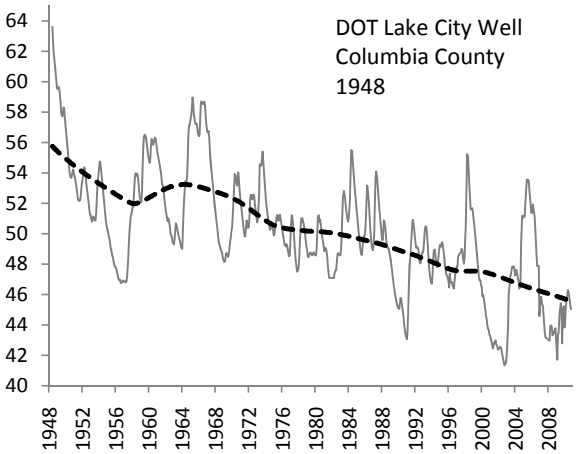
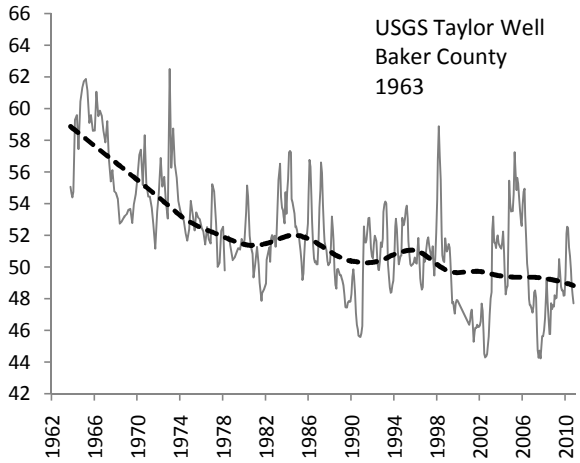


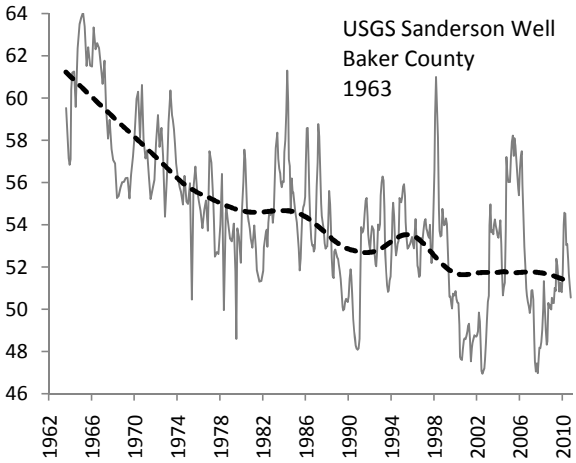
Figure 11: Long-Term Groundwater Levels
Ending October 2010
Levels in feet above mean sea level

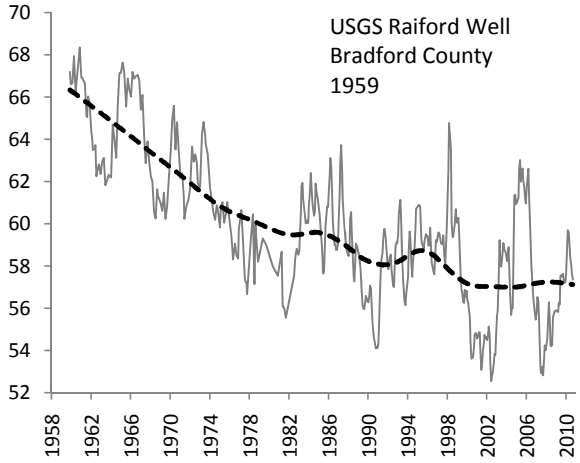












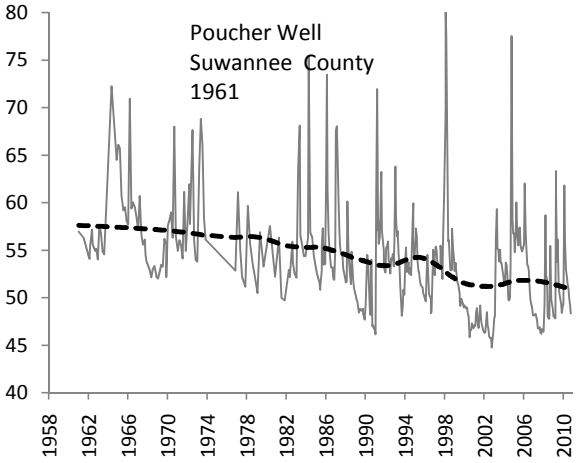
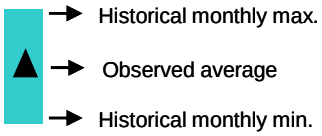
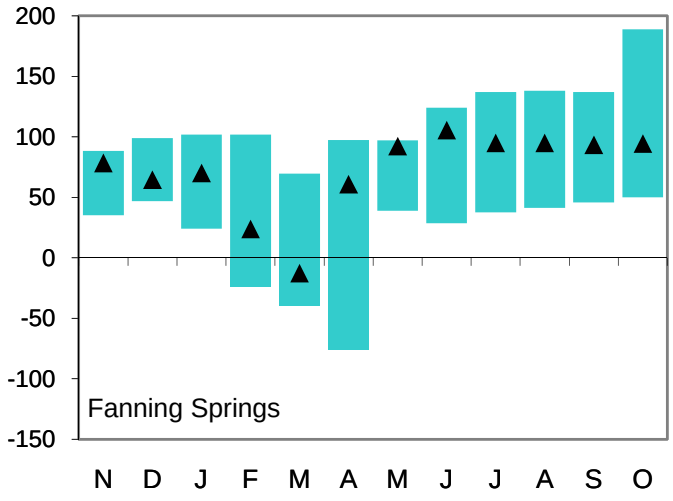
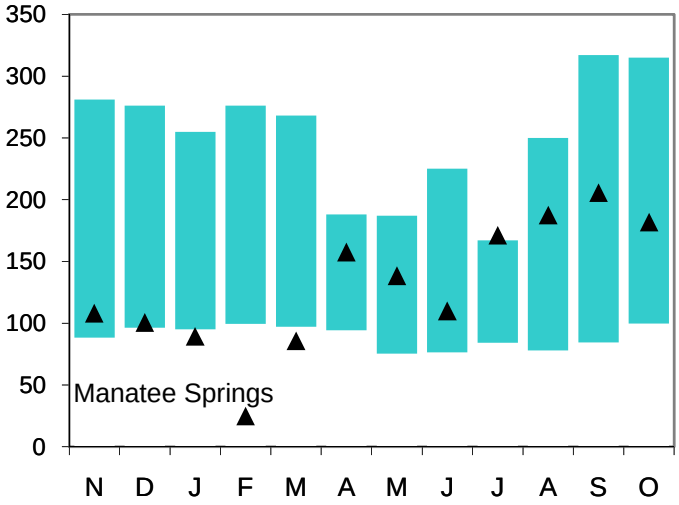


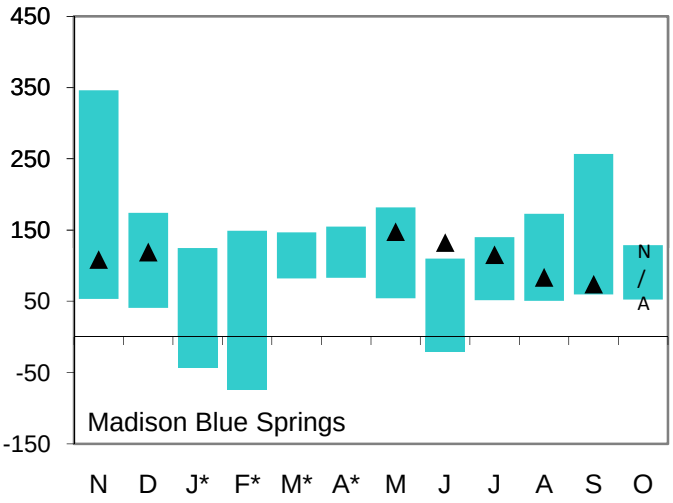
Figure 12: Monthly Springflow Statistics

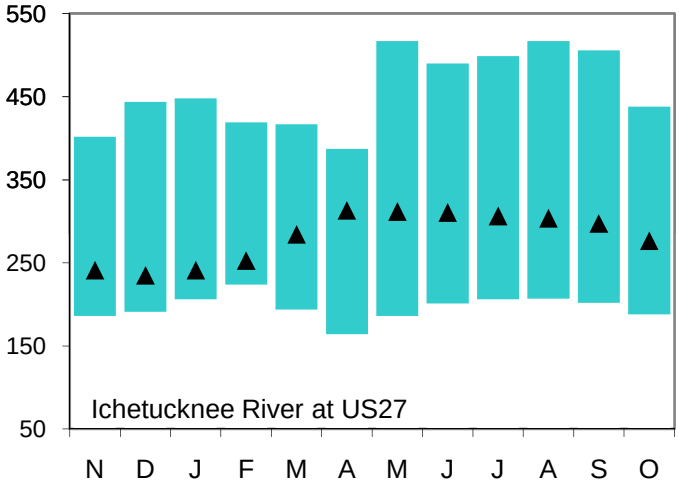
Flows November 1, 2009 through October 31, 2010
Springflow data are given in cubic feet per second.
Period of record beginning 2002. Data are provisional.

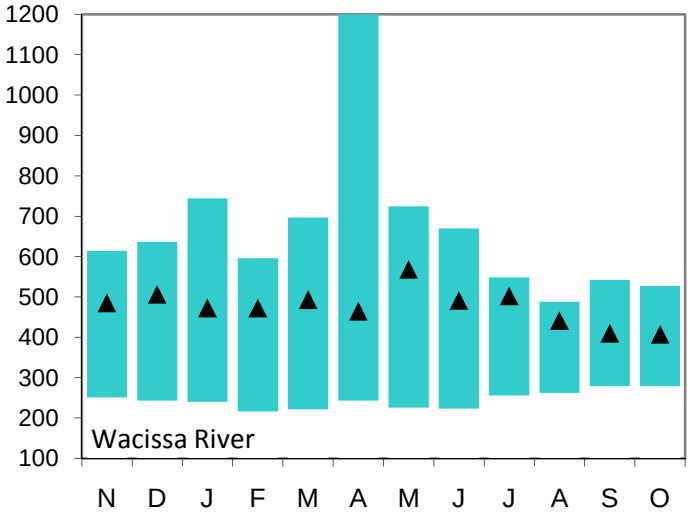












Note: Rising river levels caused by high tides or flooding can cause springflow to slow or reverse.

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.