

## MEMORANDUM

TO: Governing Board

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

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

DATE: October 7, 2009

RE: September 2009 Hydrologic Conditions Report for the District

### RAINFALL

- Average District rainfall in September was 4.58", which is 82% of the long-term monthly average of 5.58" (Table 1, Figure 1). Rainfall was generally above average in coastal areas and below average inland. On September 1, the gage at Snead's Smokehouse Lake in Jefferson County recorded 7.4" in 8 hours, exceeding the 1% (100-year) storm. On the 17<sup>th</sup>, more than 6" fell in 8 hours near High Springs, equaling the 10% (10-year) storm. Figure 2 shows the estimated rainfall accumulation across the District, and Figure 3 shows the rainfall totals as a percent of normal September precipitation.
- Rainfall for the past twelve months was 50.75", 93% of the long-term average of 54.68". The twelve-month deficit was 3.93". Figure 4 depicts the 12-month surplus/deficit across the District. Figure 5 shows the change in annual deficits beginning in 1998.

### SURFACEWATER

- **Rivers:** Discharge statistics for six river stations are presented in Figure 6. Most stations in the Suwannee River basin began the month with near-average flows, but declined steadily. Withlacoochee River, lower Santa Fe River, and lower Suwannee River gages ended the month with below-normal conditions. Other Suwannee and Santa Fe stations ended with flows slightly above the 25<sup>th</sup> percentile (Figure 7). (The percentile is the percentage of historic levels that are equal to or below the observed value.) Coastal rivers fared better, with end-of-month flows near normal. Locally intense storms over the lower Waccasassa basin increased flows to near average, the highest flows since 2007.
- **Lakes:** Levels at Hampton, Sampson, Crosby, Altho, and Santa Fe lakes remained above average. Levels at other monitored lakes generally showed little change since August, although Lake Butler rose 0.6 feet to its highest level since April 2007, but still well below average. Ten of the

sixteen monitored lakes remained below their long-term average levels. 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 5 spring systems in Figure 11.

## GROUNDWATER

- Groundwater levels decreased in half of the District's monitored wells, but 78% were in a range considered normal for September (Figure 9). Average groundwater levels remained near the 37<sup>th</sup> percentile for the second month in a row. Areas of below-normal groundwater levels occurred around the lower Santa Fe and Suwannee basins 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 conditions throughout the District. The 3-month SPI, which better describes soil moisture deficits, also indicated below-normal conditions.
- The U.S. Geological Survey categorized streamflow in the Suwannee and Santa Fe basins as below normal, and other basins as normal.

## 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 (112 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.

/dd

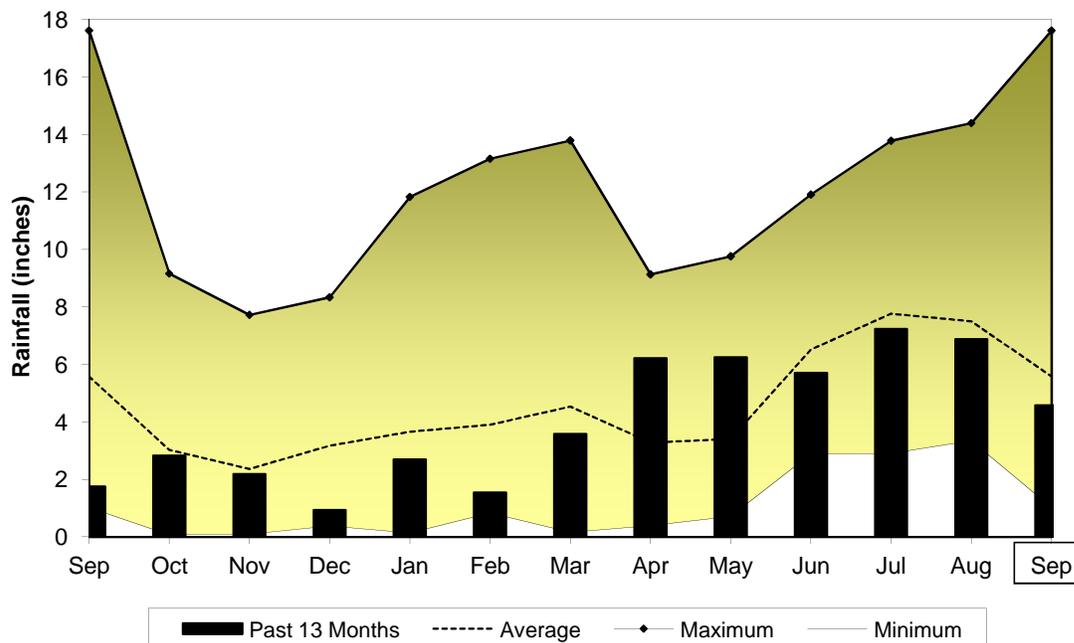
**Table 1. Estimated Rainfall Totals**

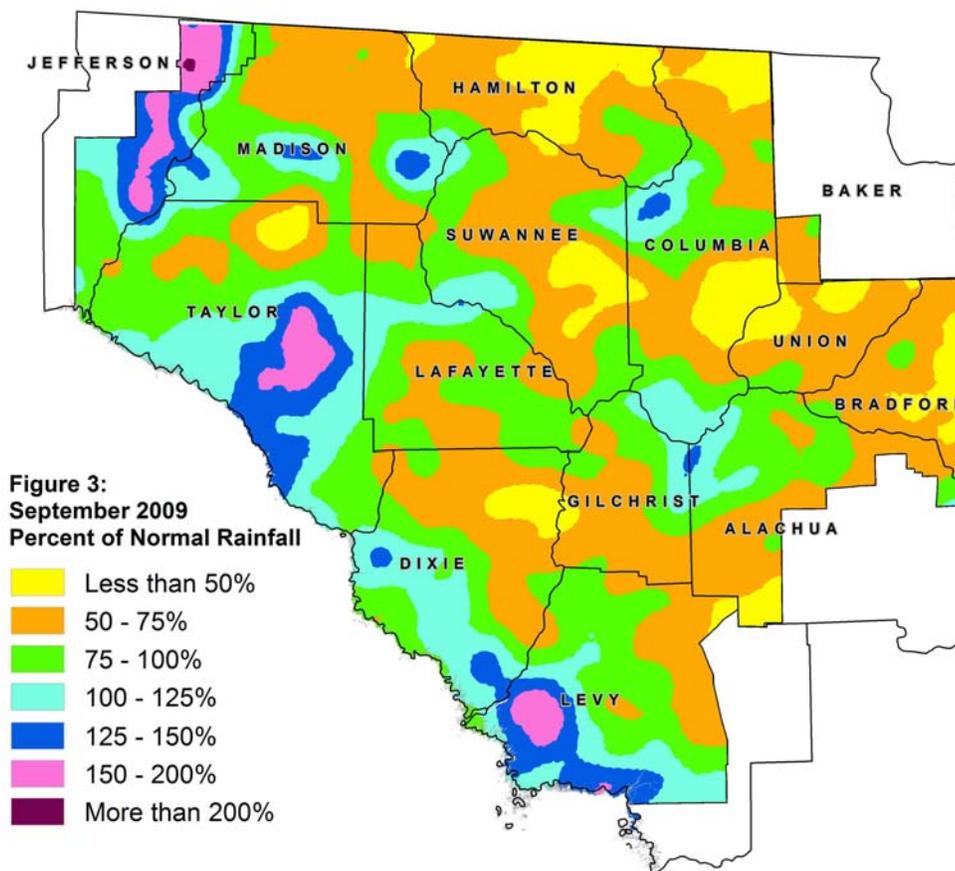
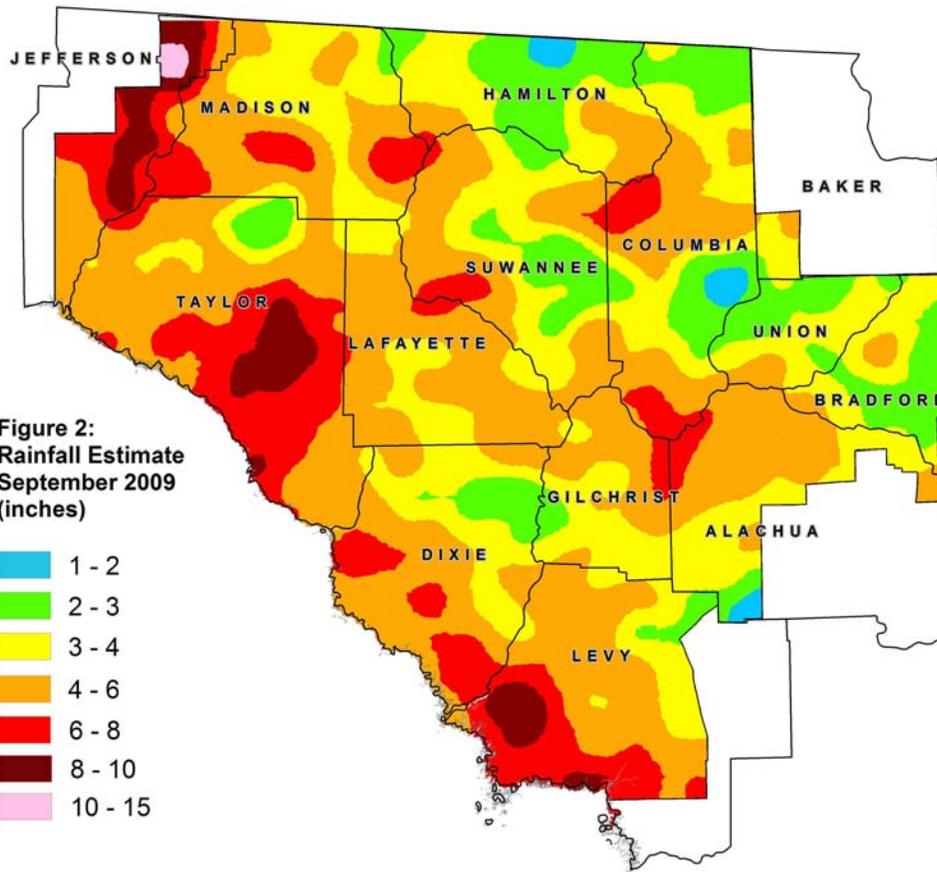
County	Sept-2009	Sept-2008	Last 12 Months	Sept. Average
Alachua	4.22	2.41	49.60	5.36
Baker	3.58	1.98	50.98	5.44
Bradford	3.22	2.29	49.13	6.13
Columbia	4.01	1.59	48.49	4.85
Dixie	4.64	1.85	51.89	6.58
Gilchrist	4.13	1.89	49.28	5.75
Hamilton	3.32	1.51	49.68	4.63
Jefferson	7.06	1.45	54.82	5.31
Lafayette	4.47	1.84	53.27	5.46
Levy	5.42	1.86	49.73	6.70
Madison	4.67	1.57	54.99	4.62
Suwannee	4.03	1.57	48.36	5.08
Taylor	5.68	1.48	52.05	5.61
Union	3.15	1.93	45.36	4.94

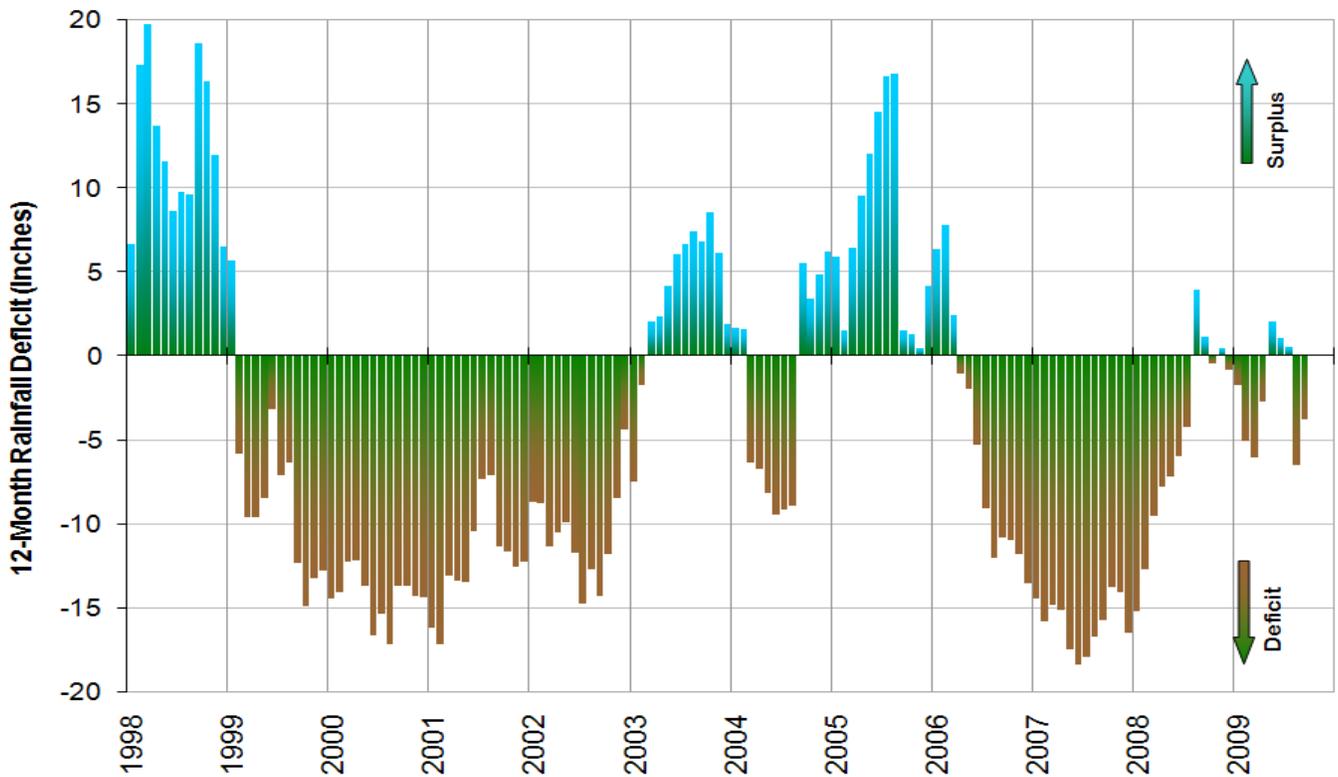
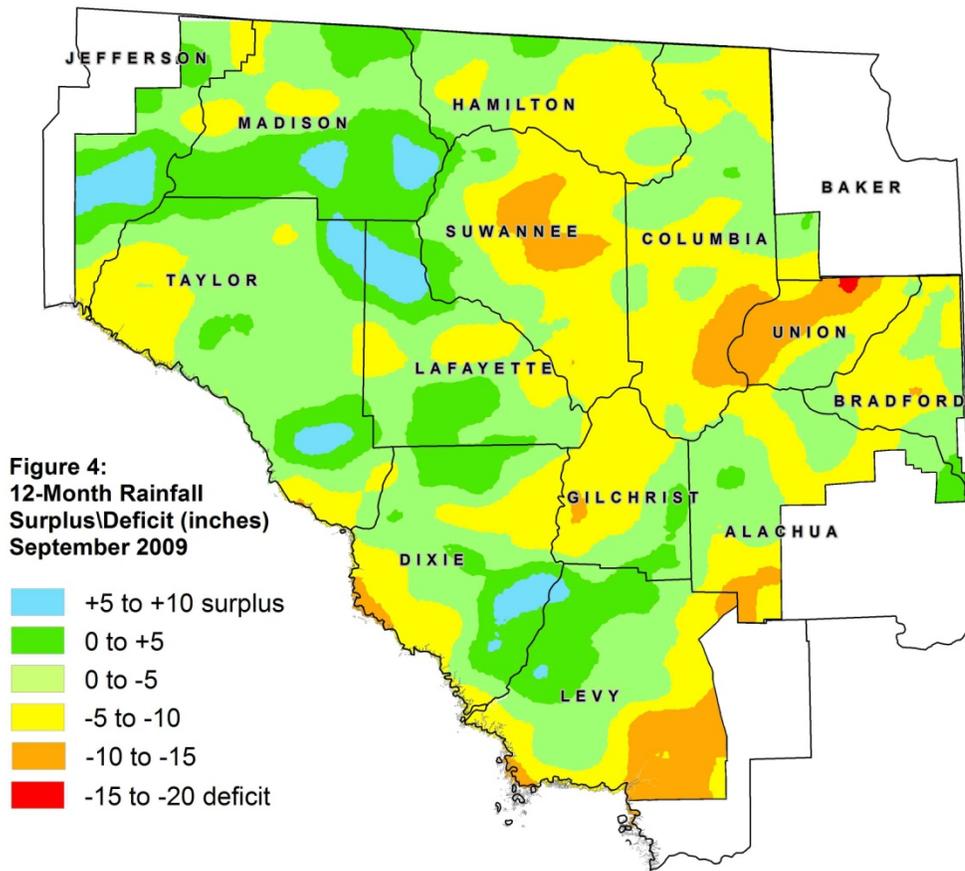
September 2009 Average: 4.58  
 Historical September Average (since 1932): 5.58  
 Historical 12-month Average (since 1932): 54.68  
 Past 12-Month Total: 50.75  
 12-month Rainfall Deficit: -3.93

(Rainfall reported in inches)

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



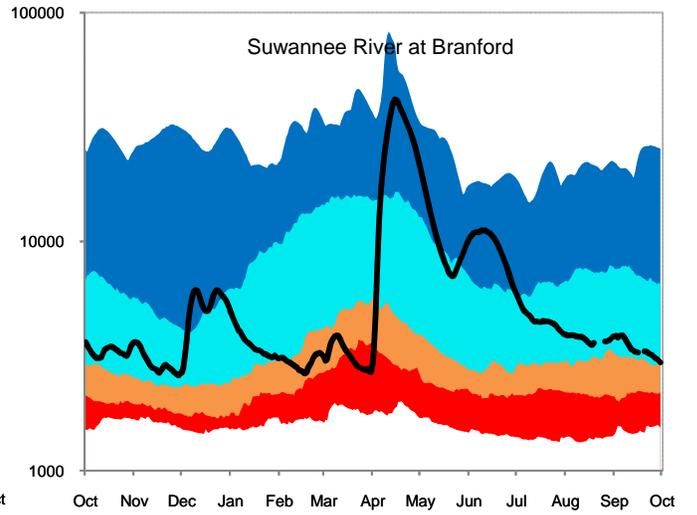
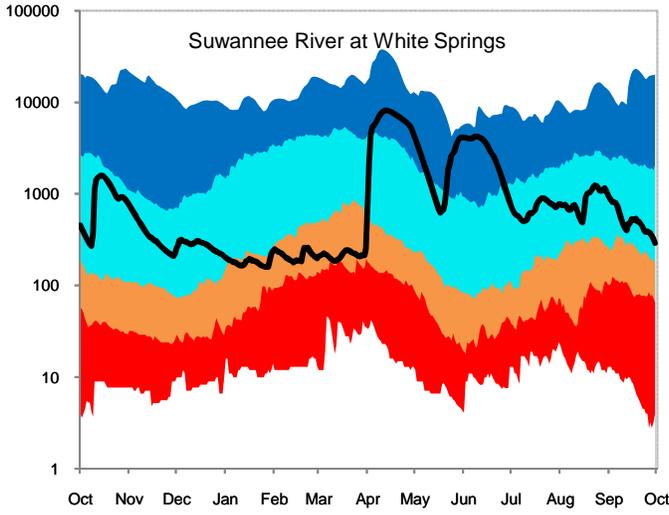
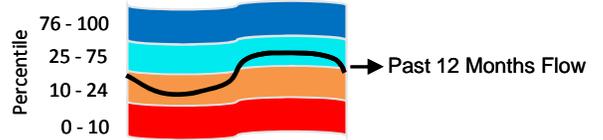




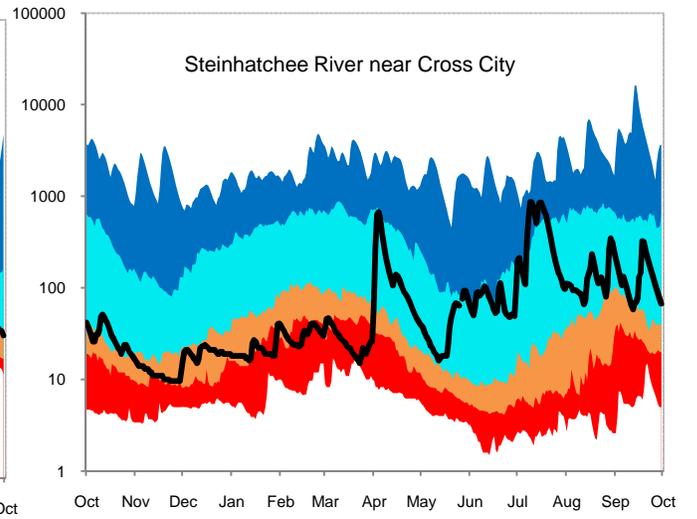
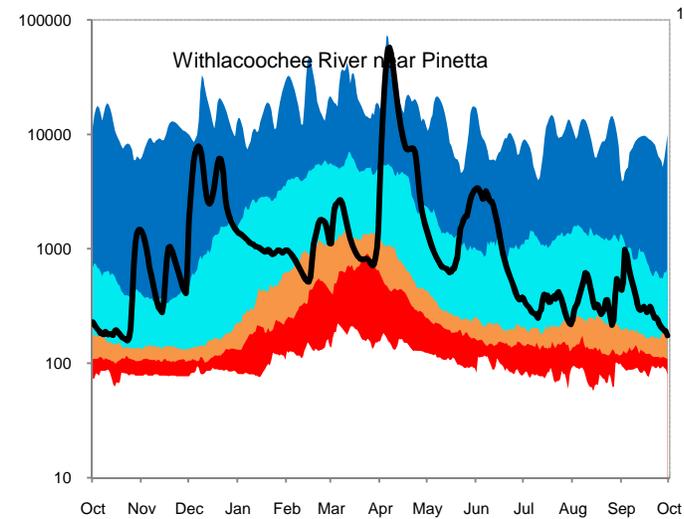
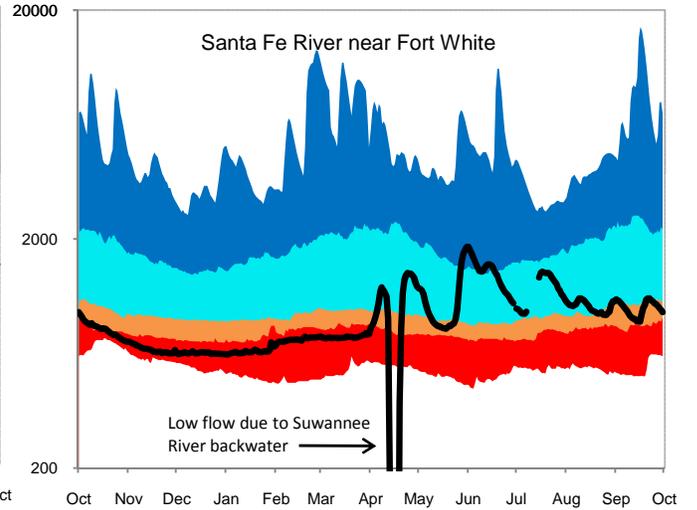
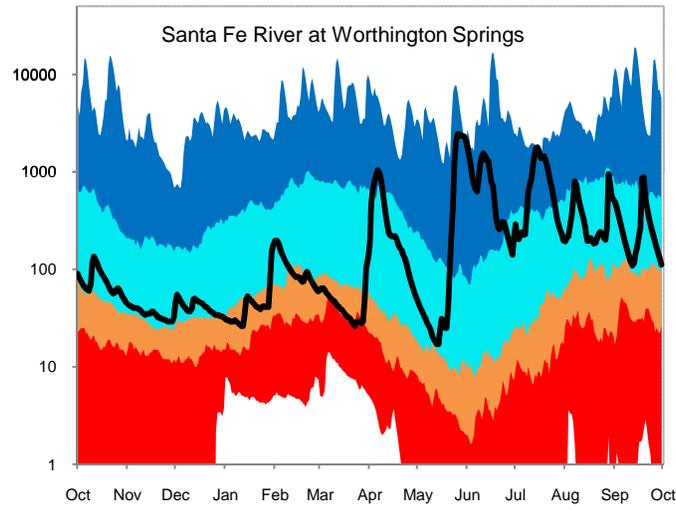
**Figure 5: 12-month rolling rainfall deficit (difference between the rainfall that fell during any 12-month period and the long-term average expected over the same period, January 1998-September 2009)**

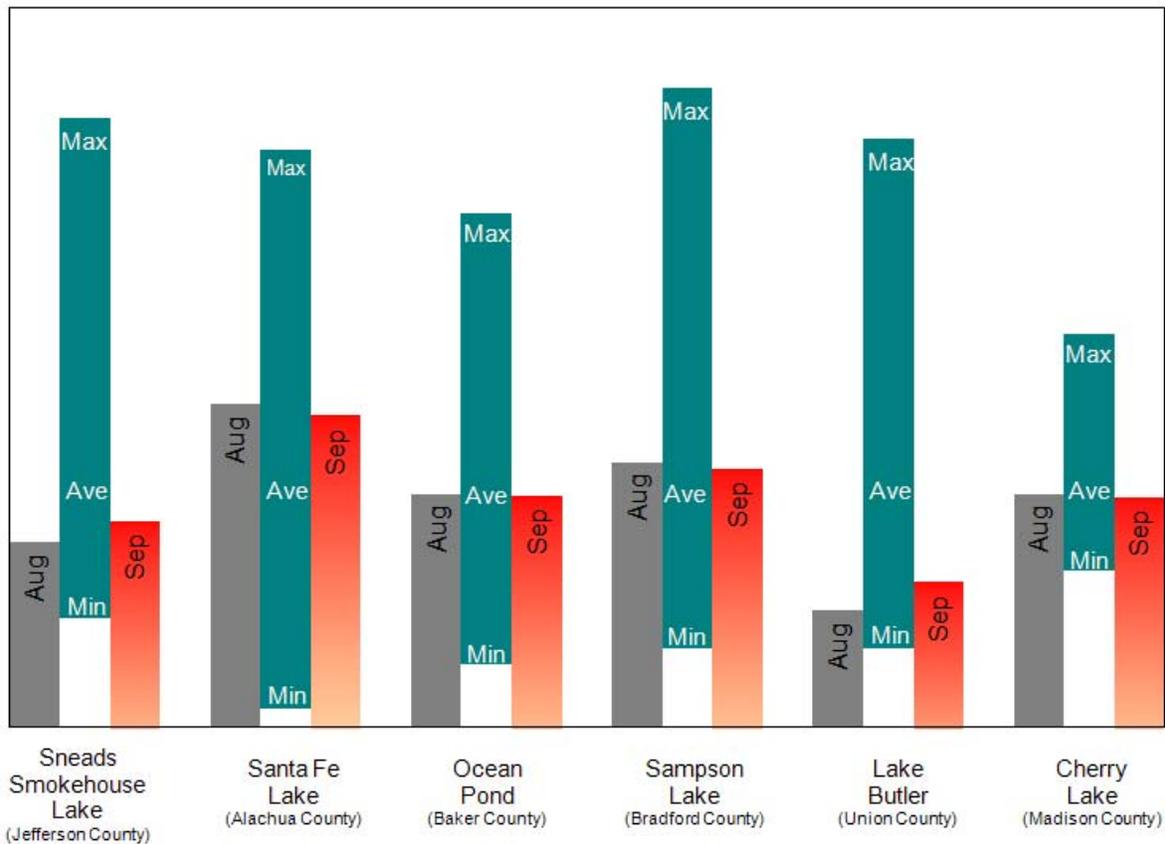
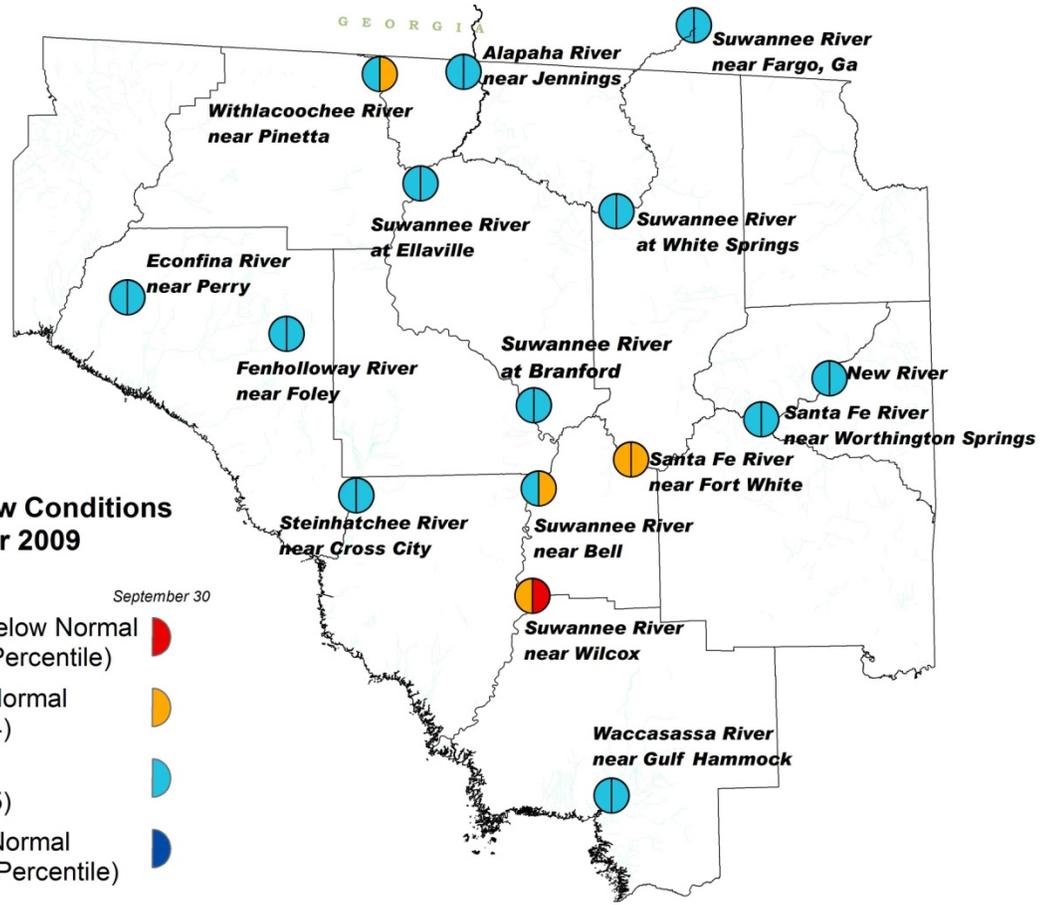
# Figure 6: Daily River Flow Statistics

October 1, 2008 through September 30, 2009

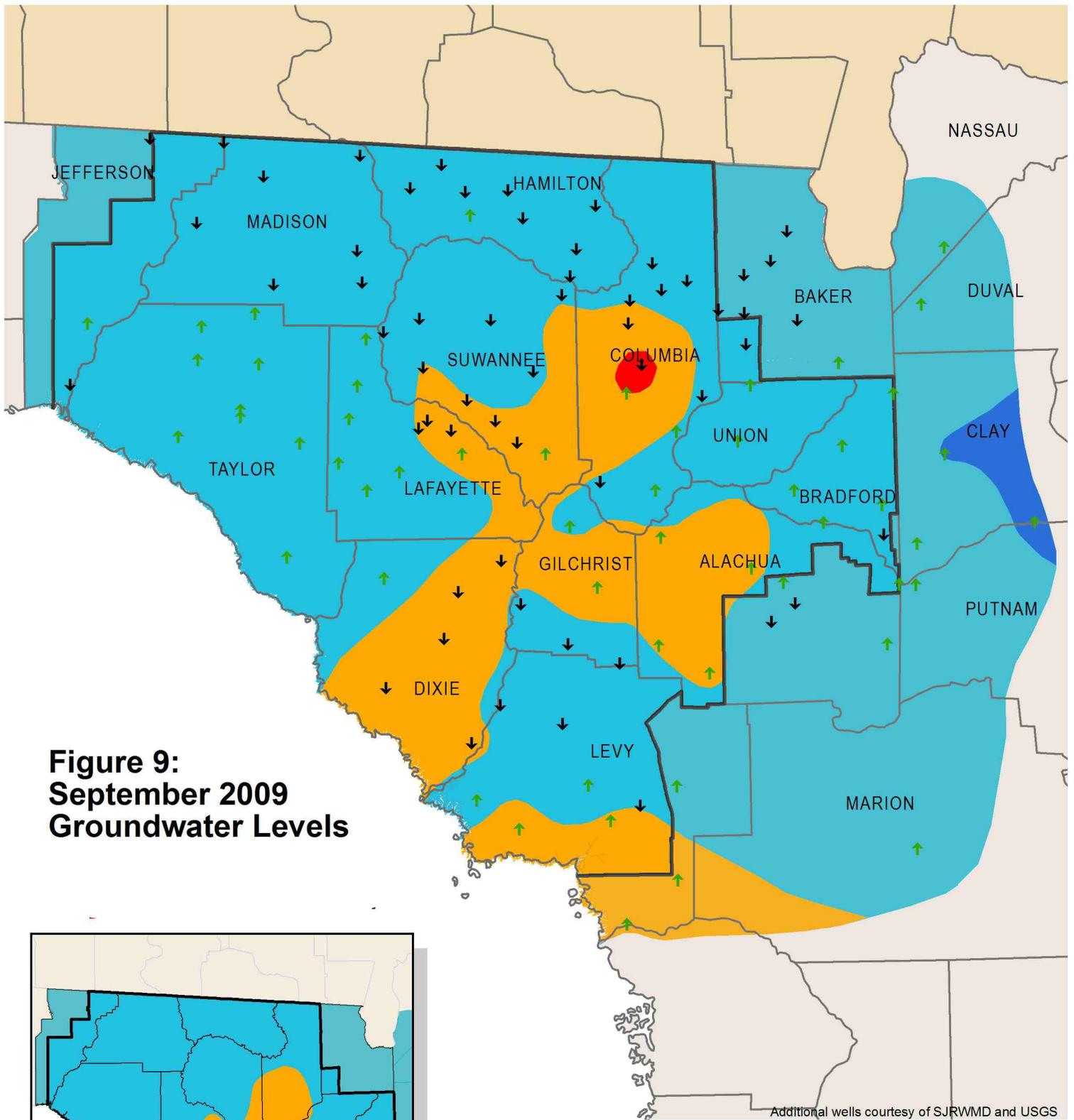


RIVER FLOW, CUBIC FEET PER SECOND



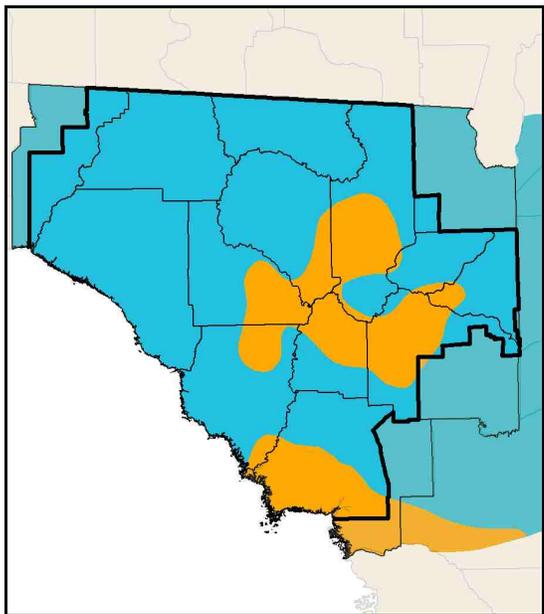


**Figure 8: Lake levels, relative to historic maximum, minimum, and average levels.**



Additional wells courtesy of SJRWMD and USGS

**Figure 9:  
September 2009  
Groundwater Levels**

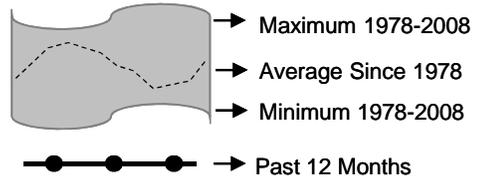


Inset: August 2009 Groundwater Levels

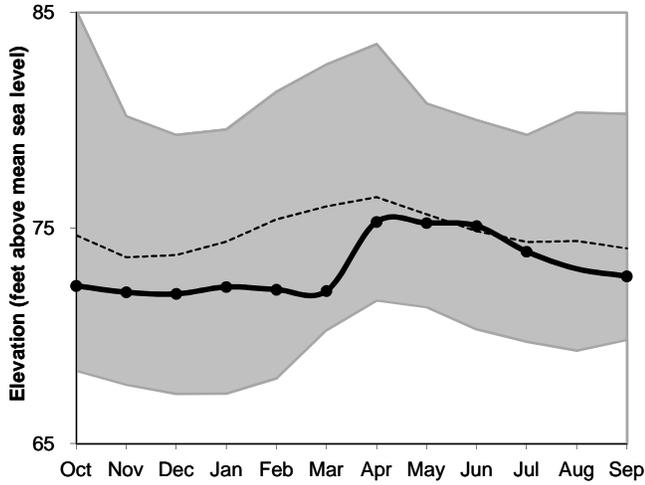
- High  
(Greater than 75th Percentile)
- Normal  
(25th to 75th Percentile)
- Low  
(10th to 25th Percentile)
- Extremely Low  
(Less than 10th Percentile)
- Increase/decrease in level since last month
- District Boundary

# Figure 10: Monthly Groundwater Level Statistics

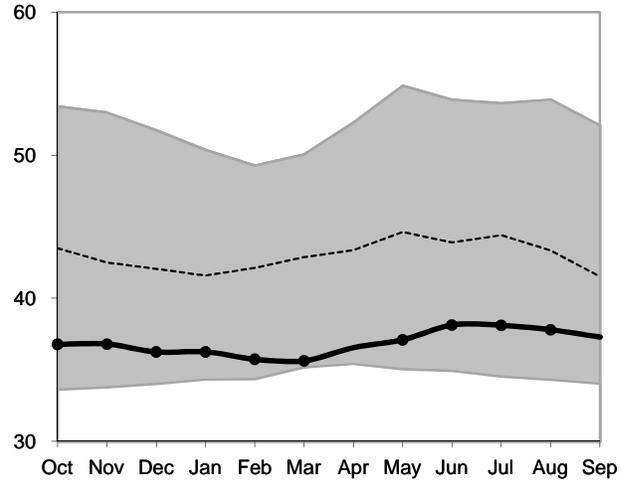
Levels October 1, 2008 through September 30, 2009  
 Period of Record Beginning 1978



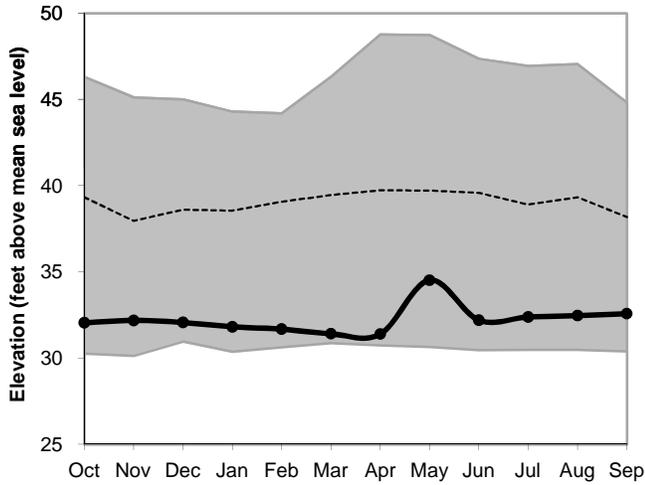
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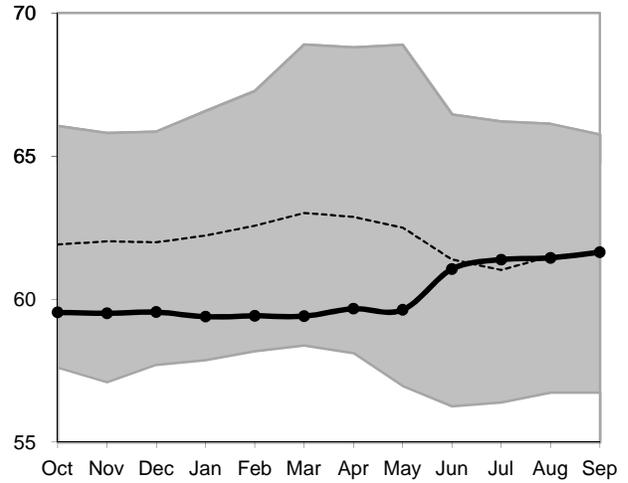
**Suwannee County S021335001**



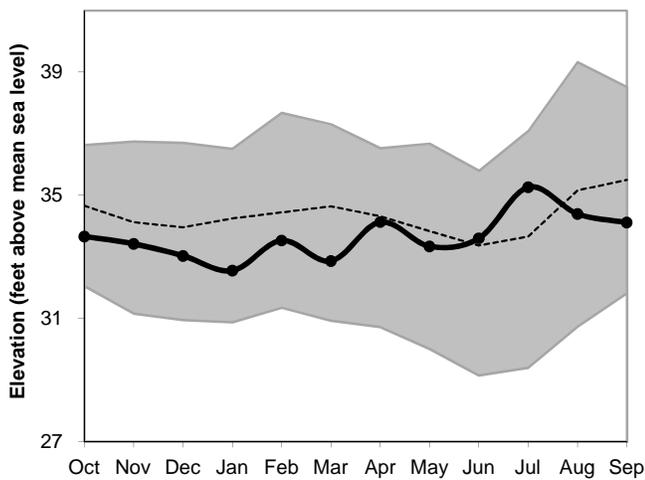
**Columbia County S041625001**



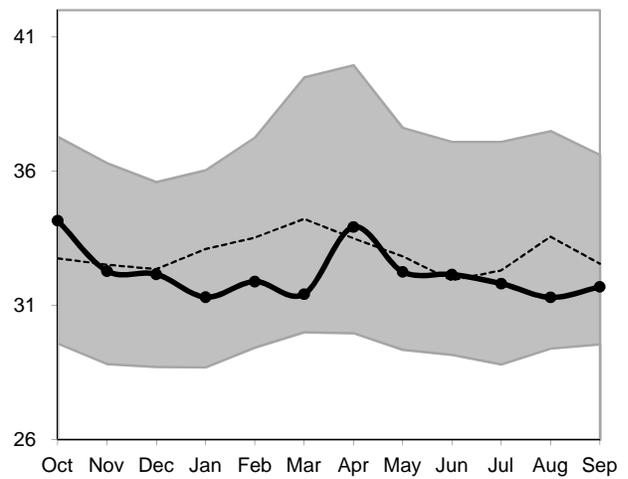
**Bradford County S072132001**



**Dixie County S101210001**

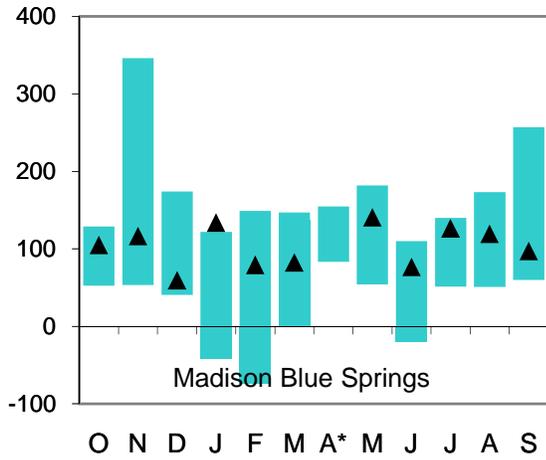
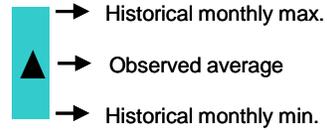


**Taylor County S050701001**



### Figure 11: Monthly Springflow Statistics

Flows October 1, 2008 through September 30, 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.

