

SUWANNEE RIVER WATER MANAGEMENT DISTRICT

MEMORANDUM

TO: Governing Board

FROM: Robbie McKinney, Hydrologic Program Manager, Office of Water Resources

THRU: Hugh Thomas, Executive Director

DATE: April 30, 2024

RE: April 2024 Hydrologic Conditions Report

RAINFALL

- Districtwide average rainfall for the month was 4.17", which is about 23 percent higher than the 1932-2023 average of 3.39" (Table 1, Figure 1). The 12-month period ending April 30 reflected a Districtwide rainfall surplus of 6.50", which was an increase in the 5.29" surplus seen at the end of March. Most District counties received anywhere between 2" and 7" of rainfall on average, with areas of Jefferson, Madison, and Hamilton counties receiving more than 7" of rainfall (Figure 2).
- Overall, a 12-month rainfall surplus was present for each basin except the Santa Fe Basin, which had neutral conditions by the end of April (Figure 3). Areas of twelve-month surpluses greater than 14" were represented in 4 of the basins, while portions with deficits of greater than 2" were also seen in four of the river basins. Both the Suwannee and Aucilla basins showed 3-month rainfall surpluses, with the other 3 basins increasing their respective deficits at the end of the month (Figure 4). Deficits of greater than 3 inches occurred in sections of the Santa Fe, Coastal, Suwannee, and Waccasassa basins for the past 3 months ending in April.

SURFACE WATER

- **Rivers:** Most of the river stations presented in Figure 5 finished the month in the normal (25th – 75th percentile) or above normal (75th – 100th percentile) flow ranges. However, the Ichetucknee River had some below normal (10th – 25th percentile) flows this month due to backwater effects of the Santa Fe River. Some rivers to the north began the month with above normal flows but ended in the normal flow range (Figure 6). The Alapaha River near Alapaha gage began the month with high (>90th percentile) flows and ended in the normal flow range. Due to above average rainfall in April, seven of the District river gages still showed above normal flows to end the month.
- **Lakes:** Water levels decreased slightly at most of the monitored lakes in the District this month (Figure 7). The median decrease in stage across all measured lakes was around 0.2', with 6 of the lakes ending the month below their respective long-term average. Lake Crosby represented the largest water level decrease among lakes this month with a drop of about 0.4'.
- **Springs:** Flow measurements were made during April at 17 springs by the U.S. Geological Survey (USGS), District staff, and contractors. The Wacissa River began and ended the month with normal flows but spent a small window of April in the below normal flow range (Figure 8). Conversely, Madison Blue Springs ranged from flow reversals due to high water in the Withlacoochee River to extremely high flows during the recession of the river (Figure 9).

GROUNDWATER

Upper Floridan Aquifer (UFA) levels across the District reflected normal groundwater levels or higher in April (Figure 10). Wells in most District counties showed >90th percentile levels this month with some wells trending upward due to recent above average rainfall. Overall, groundwater levels increased by a median of 0.5' since the end of March and ended April with a Districtwide average around the 83rd percentile.

Each index well was higher than its respective historical monthly average level at the end of the month (Figure 11). Long-term District UFA well levels ended the month in the very high, high, or normal categories (Figure 12a). Long-term wells with records that extend back to at least 1964 showed mostly increasing water levels this month relative to last month (Figure 12b).

CLIMATE AND DROUGHT OUTLOOK

A transition from El Niño to ENSO-neutral is likely next month with a 49% chance of a La Niña developing from June to August and a 69% chance of development from July to September 2024.

The NOAA three-month seasonal outlook suggests above normal temperatures along with above-normal precipitation throughout the District from May through July 2024.

The U.S. Drought Monitor report released on May 9, 2024, shows no areas of the District with any drought characteristics.

CONSERVATION

Water conservation continues to be necessary to sustain healthy groundwater levels and flows in District springs and rivers. All users are urged to eliminate unnecessary uses. Landscape irrigation during Daylight Saving Time (March 10, 2024, to November 3, 2024) is limited to twice per week based on a District water conservation rule that applies to residential landscaping, public or commercial recreation areas, and businesses that are not regulated by a District-issued water use permit. Information about SRWMD's year-round conservation measures is available at <http://www.srwmd.org/index.aspx?NID=337>.

ACKNOWLEDGMENTS

The Hydrologic Conditions Report is a monthly combined effort between the Offices of Water Resources and Hydrologic Data Services data collection and review programs. Acknowledgment is made to the following staff for their contributions to the timely production of this report:

- Data Collection: Jamie Gaylord, Matthew Jordan, Dylan Mock, Gene Page, Kevin Posada, and Vince Robinson
- QA/QC and Reporting: Stephanie Armstrong, Susie Hetrick, Robbie McKinney, and Brandi Sistrunk
- Administrative Support/Document Preparation/IT: Paul Buchanan, Bo Cameron, Tyler Jordan, Andrew Neel, and April Olive

This report is compiled in compliance with Chapter 40B-21.211, Florida Administrative Code, using rainfall (gage-adjusted radar-derived estimates), groundwater (121 wells), surface water (35 stations), and general information such as drought indices and forecasts. Data are provisional and updated as revised data become available. Data are available at <http://www.mysuwanneeriver.com/507/Water-Data-Portal> or upon request.

Table 1: Nexrad Monthly Rainfall Totals by County (inches)

County	April 2024	April Average*	Month % of Normal	Total Last 12 Months	Annual % of Normal*
Alachua	3.17	3.15	101%	54.00	103%
Baker	3.56	3.38	105%	59.24	112%
Bradford	2.90	2.97	98%	56.29	108%
Columbia	4.18	3.46	121%	58.68	111%
Dixie	2.80	3.37	83%	59.68	103%
Gilchrist	2.81	3.30	85%	55.38	101%
Hamilton	6.33	3.68	172%	63.31	122%
Jefferson	6.83	4.04	169%	62.81	112%
Lafayette	3.57	3.53	101%	64.50	117%
Levy	2.18	3.07	71%	57.24	102%
Madison	6.66	3.84	173%	68.57	128%
Suwannee	4.49	3.65	123%	62.38	117%
Taylor	4.76	3.62	131%	65.54	115%
Union	2.83	3.23	88%	56.47	107%

*Based on PRISM LT81 monthly rainfall averages by county (1927-2022)

April 2024 District Average 4.17
 April Long-Term Average (1932-2023) 3.39
 Historical 12-month Average (1932-2023) 54.71
 Past 12-Month Total 61.21
 12-Month Rainfall **Surplus/Deficit** **6.50**

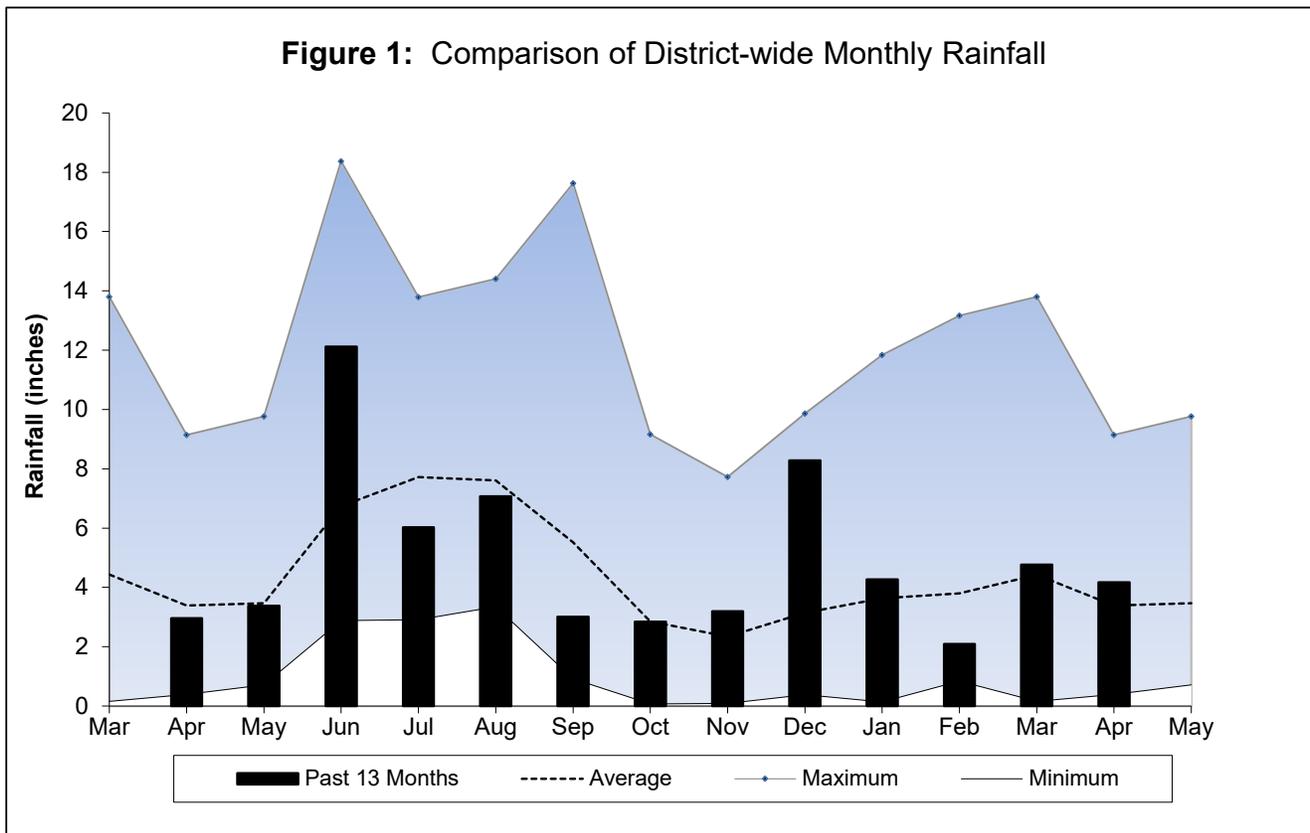


Figure 2: April 2024 SRWMD Gage-adjusted Radar Rainfall

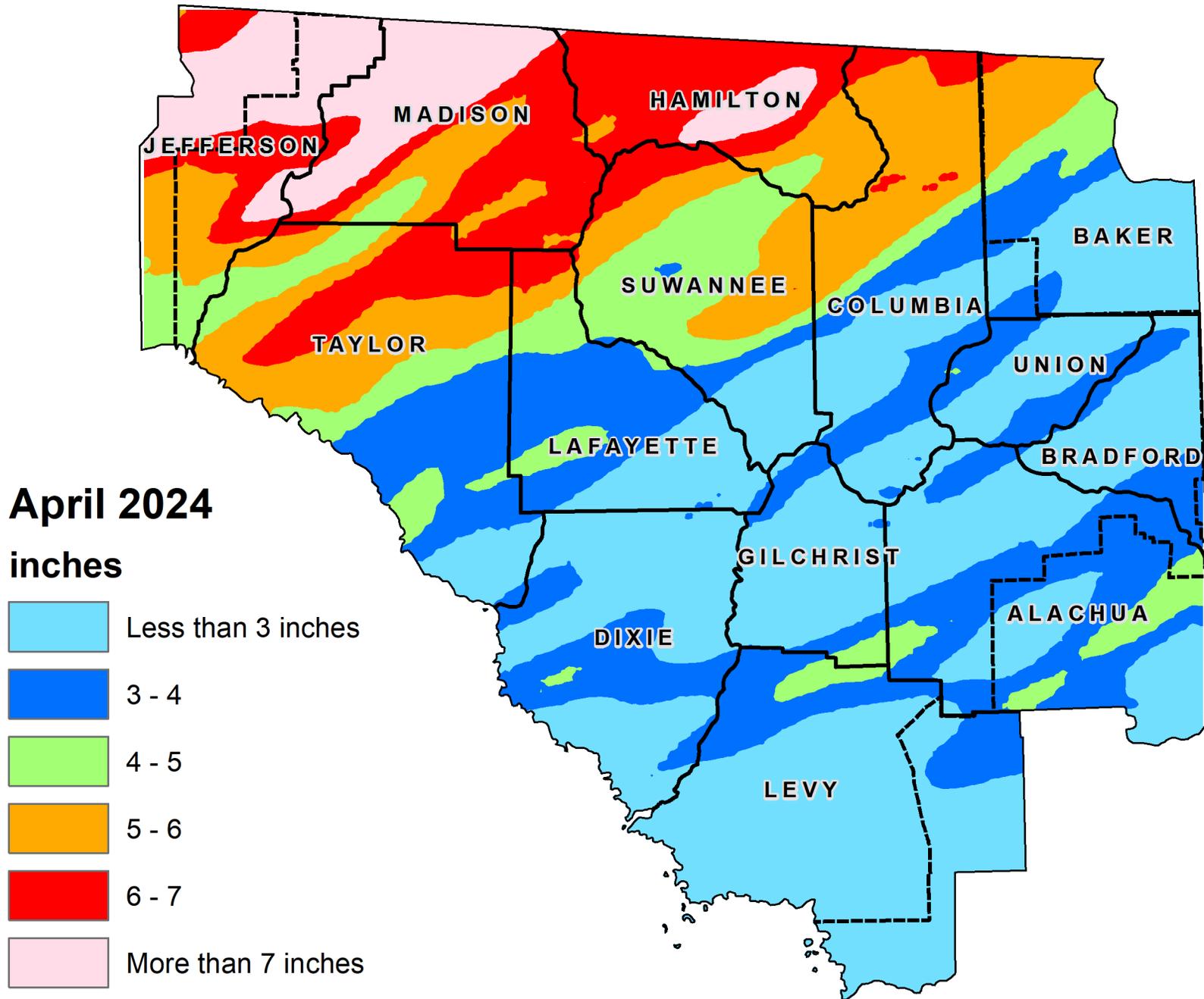


Figure 3: 12 - Month Rainfall Surplus/Deficit by River Basin through April 30, 2024

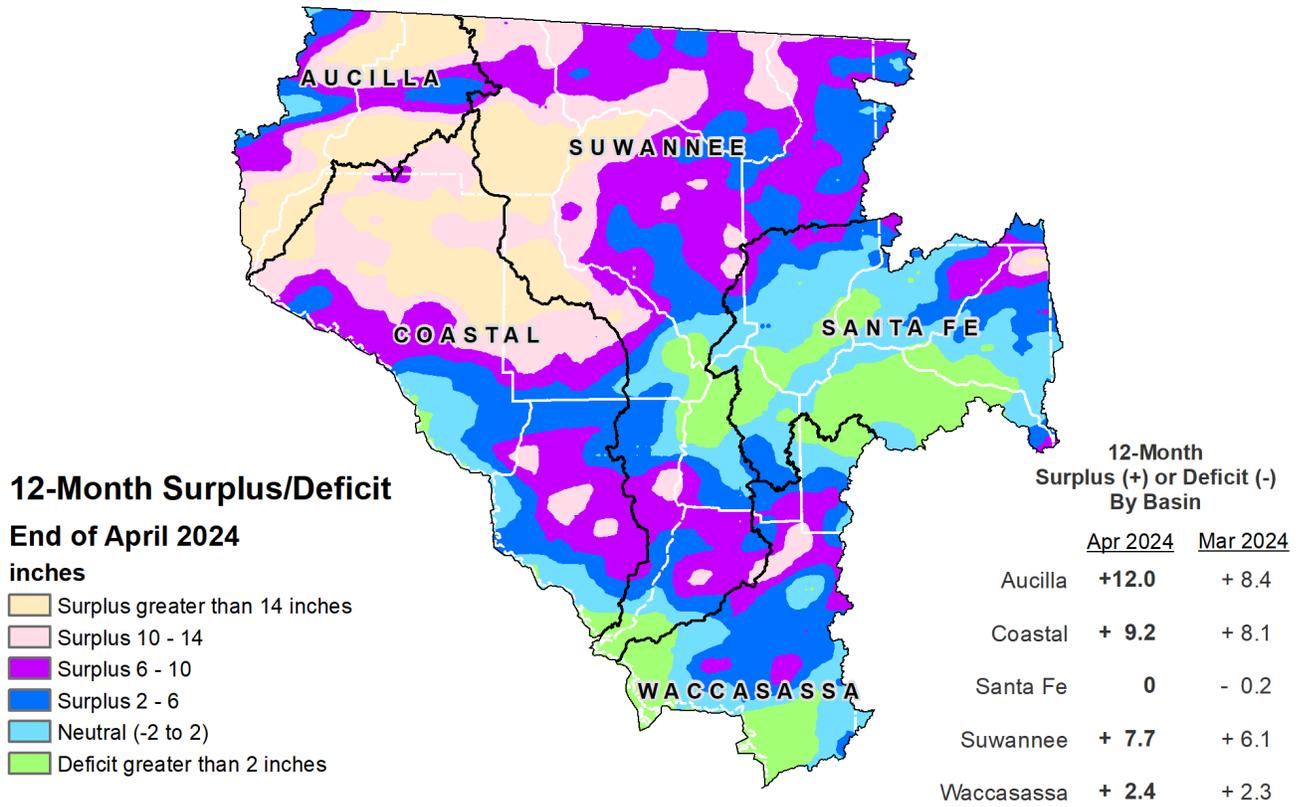


Figure 4: 3 - Month Rainfall Surplus/Deficit by River Basin through April 30, 2024

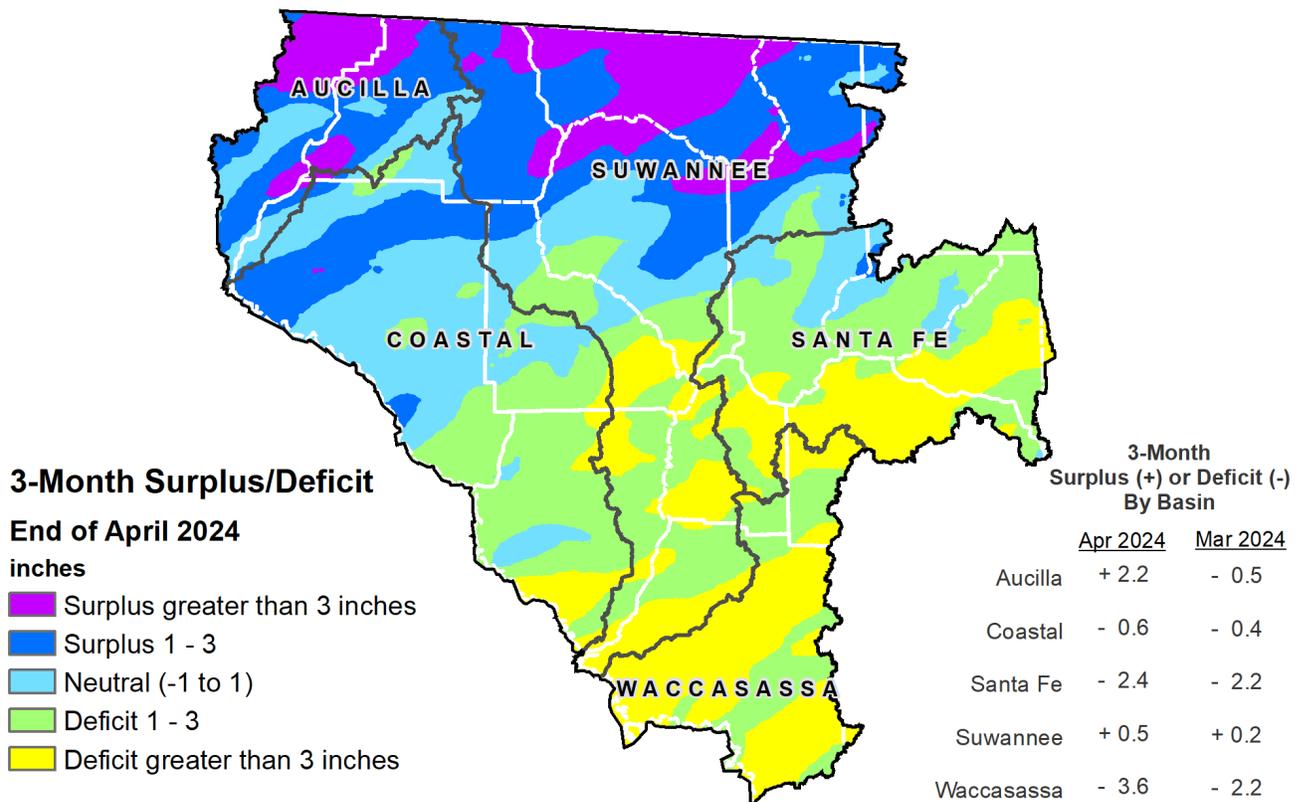


Figure 5: Daily River Flow Statistics

May 1, 2023 through April 30, 2024

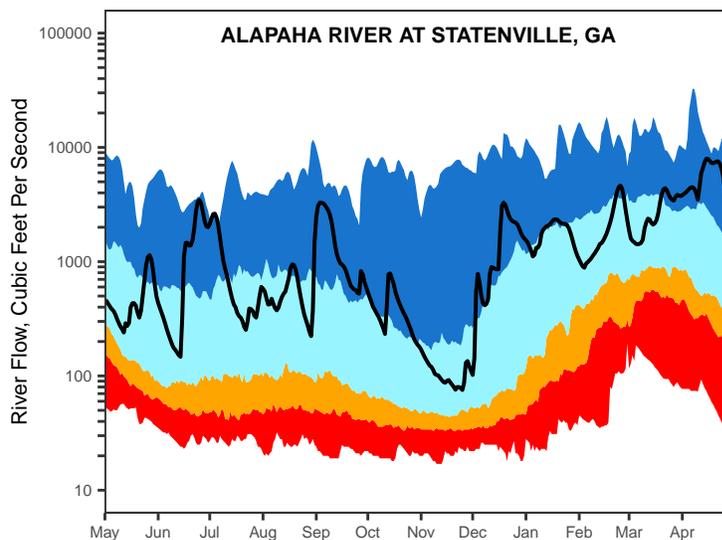
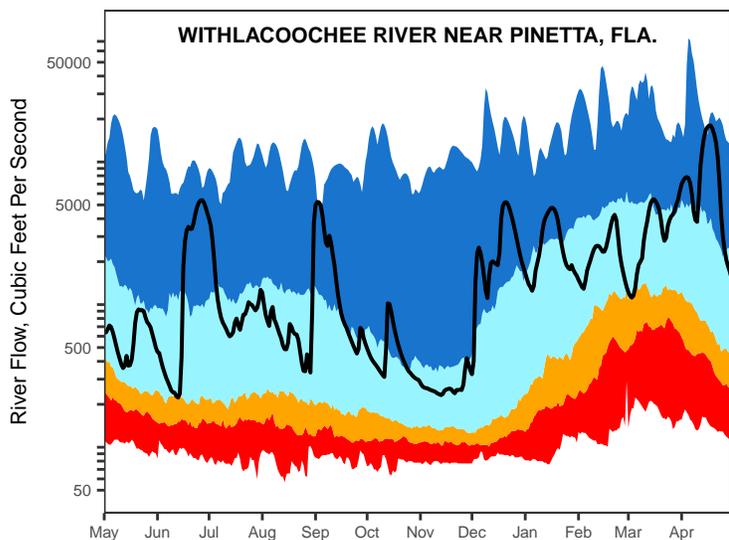
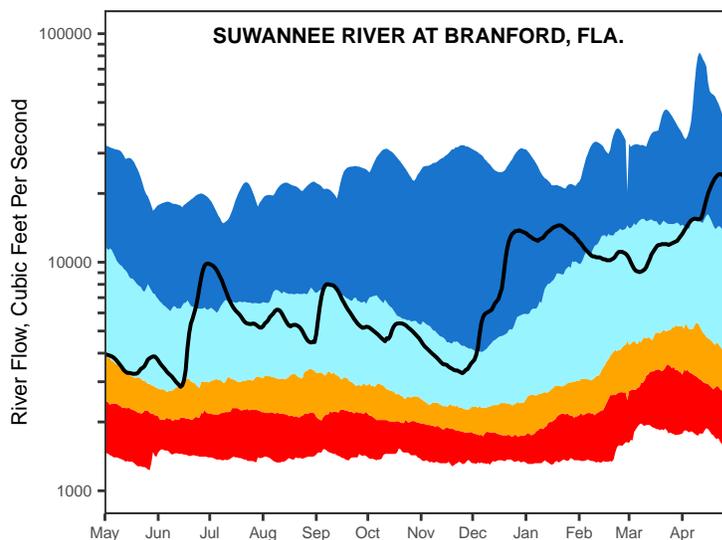
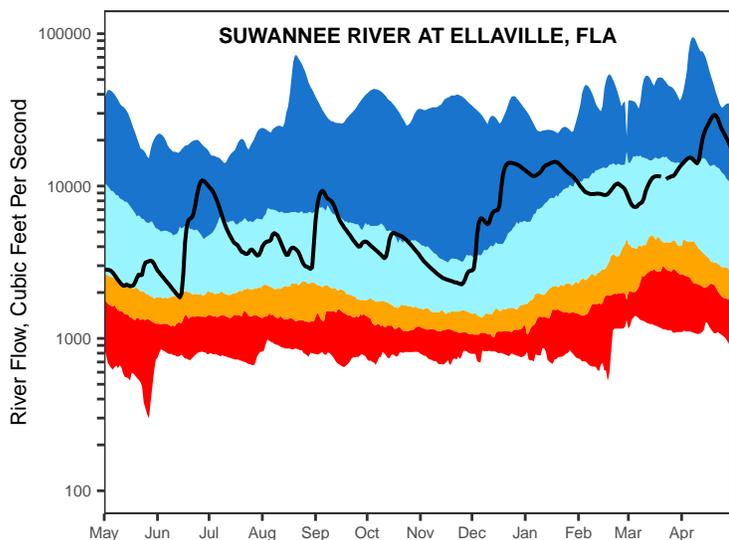
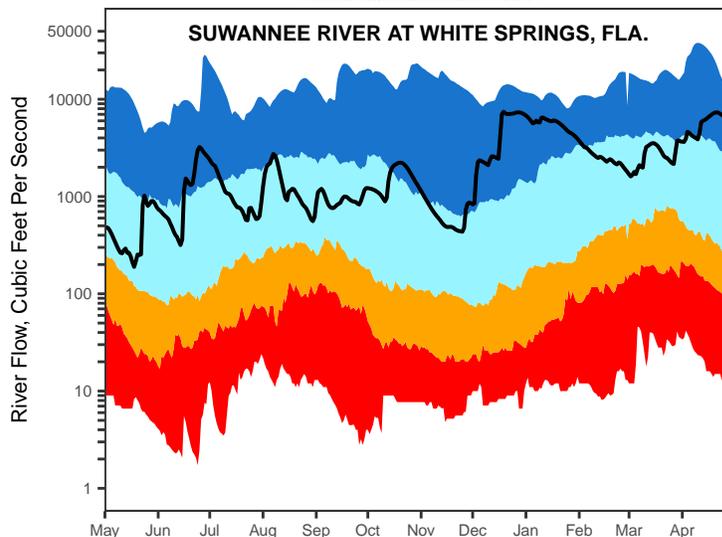
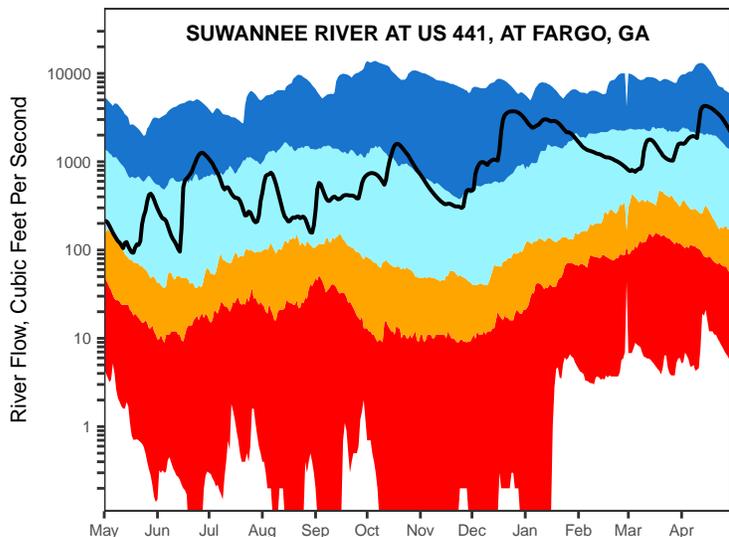
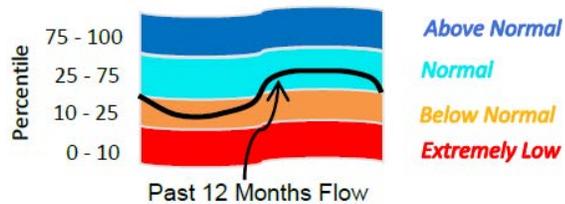
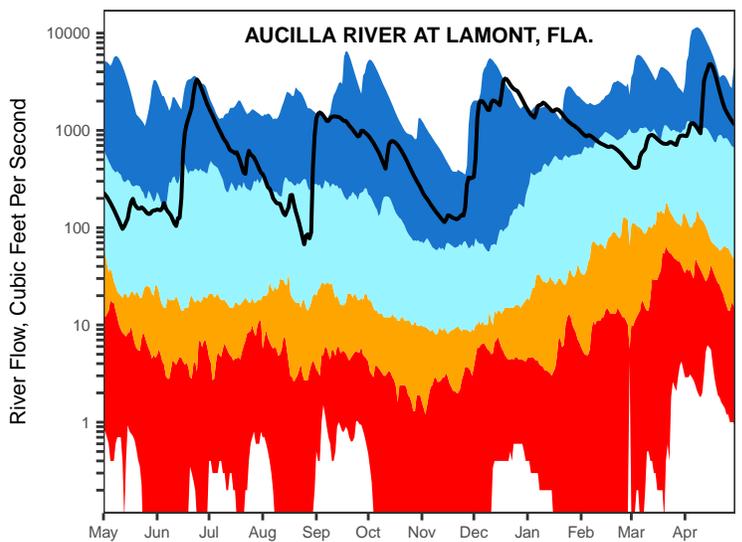
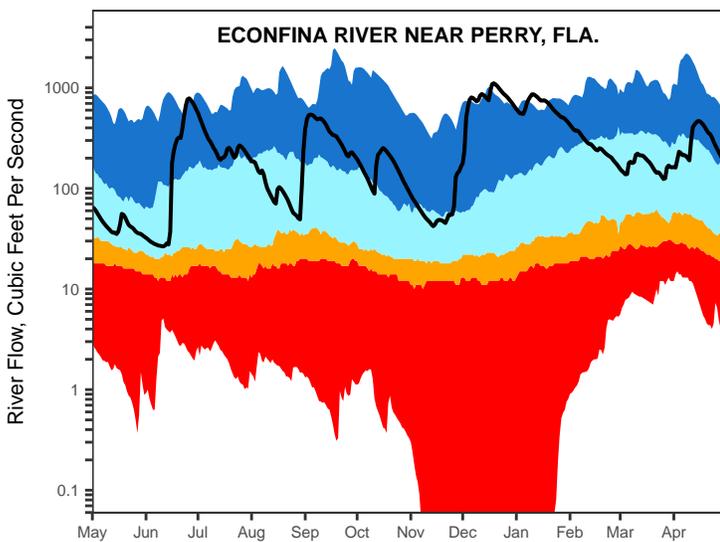
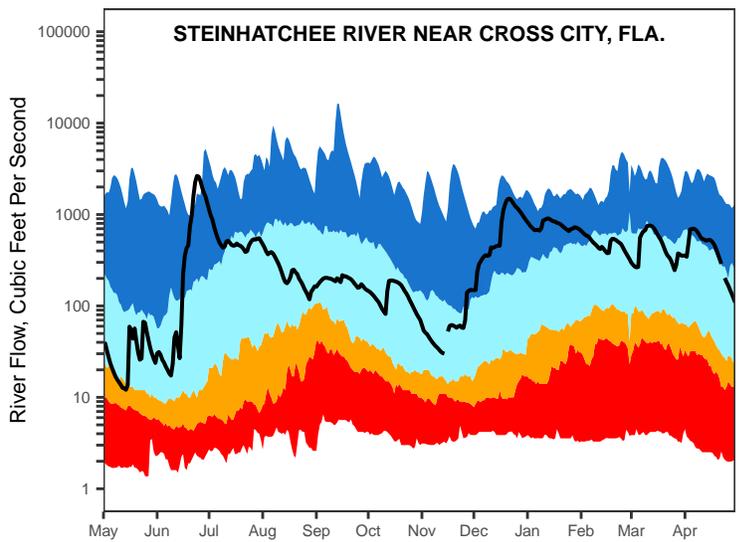
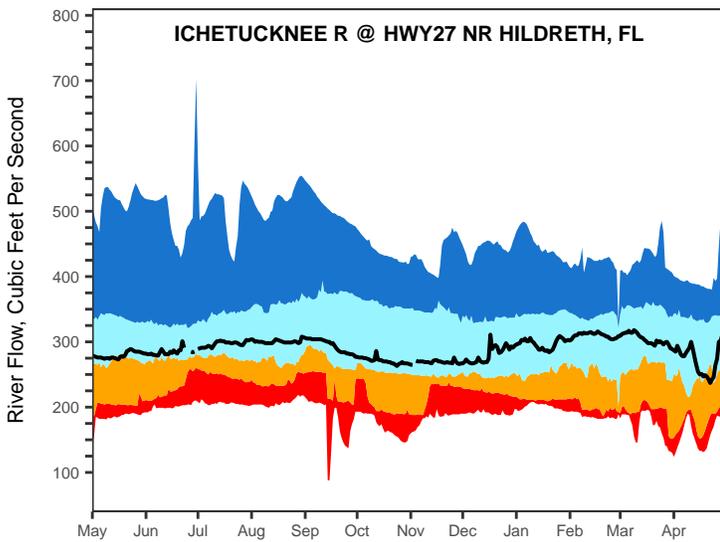
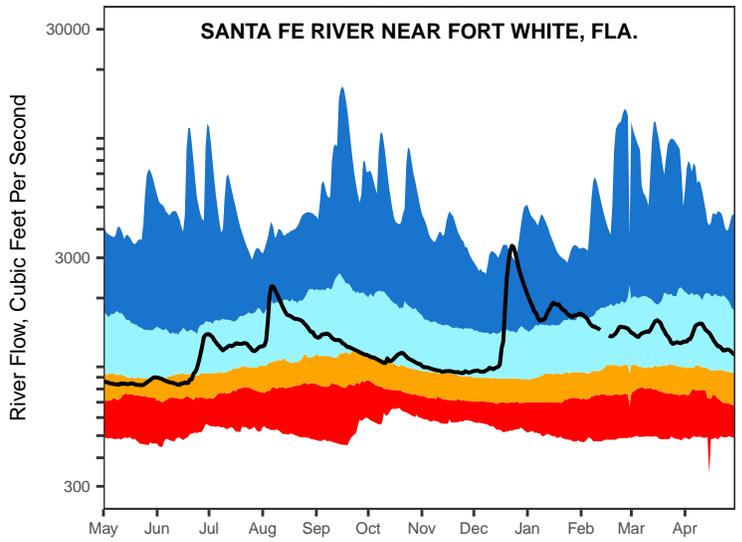
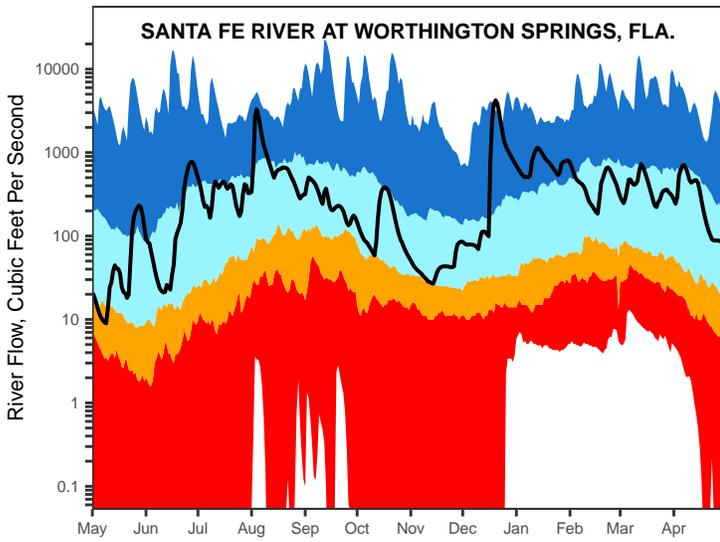
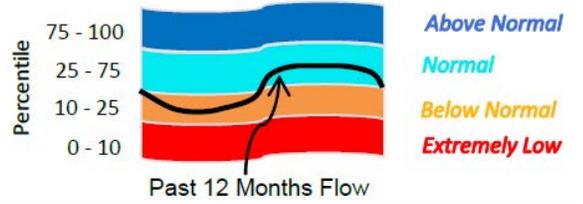


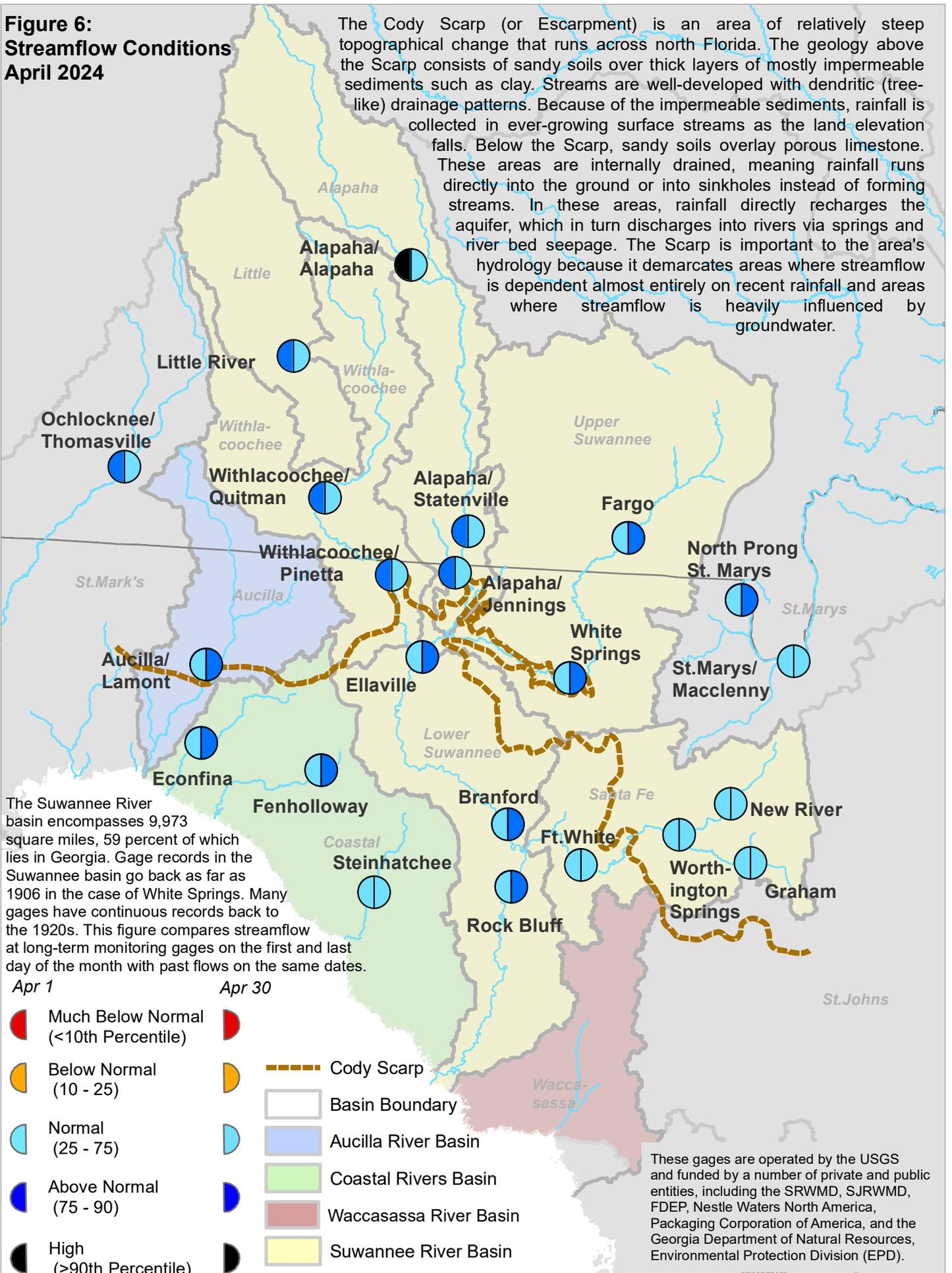
Figure 5, cont.: Daily River Flow Statistics

May 1, 2023 through April 30, 2024



**Figure 6:
Streamflow Conditions
April 2024**

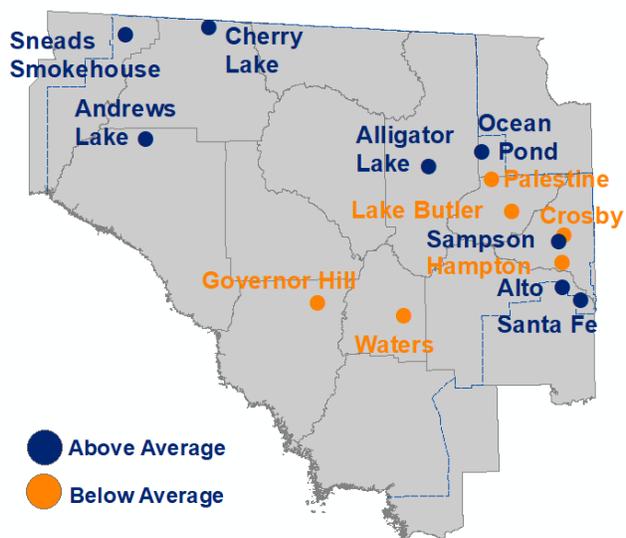
The Cody Scarp (or Escarpment) is an area of relatively steep topographical change that runs across north Florida. The geology above the Scarp consists of sandy soils over thick layers of mostly impermeable sediments such as clay. Streams are well-developed with dendritic (tree-like) drainage patterns. Because of the impermeable sediments, rainfall is collected in ever-growing surface streams as the land elevation falls. Below the Scarp, sandy soils overlay porous limestone. These areas are internally drained, meaning rainfall runs directly into the ground or into sinkholes instead of forming streams. In these areas, rainfall directly recharges the aquifer, which in turn discharges into rivers via springs and river bed seepage. The Scarp is important to the area's hydrology because it demarcates areas where streamflow is dependent almost entirely on recent rainfall and areas where streamflow is heavily influenced by groundwater.



The Suwannee River basin encompasses 9,973 square miles, 59 percent of which lies in Georgia. Gage records in the Suwannee basin go back as far as 1906 in the case of White Springs. Many gages have continuous records back to the 1920s. This figure compares streamflow at long-term monitoring gages on the first and last day of the month with past flows on the same dates.

These gages are operated by the USGS and funded by a number of private and public entities, including the SRWMD, SJRWMD, FDEP, Nestle Waters North America, Packaging Corporation of America, and the Georgia Department of Natural Resources, Environmental Protection Division (EPD).

Figure 7: April 2024 Lake Levels



SRWMD lakes react differently to climatic changes depending on their location in the landscape. Some lakes, in particular in the eastern part of the District, are embedded in a surficial or intermediate aquifer over relatively impermeable clay deposits. These lakes rise and fall according to local rainfall and surface runoff. They retain water during severe droughts since most losses occur from evaporation. Other lakes, such as Governor Hill and Waters Lake, have porous or “leaky” bottoms that interact with the Floridan aquifer. These lakes depend on groundwater levels to stay high. If aquifer levels are low, these lakes go dry even if rainfall is normal.

The District currently monitors 14 lakes on a long-term basis; much of the data was originally provided by volunteer observers. Monitoring records began in the 1970s, except for Lakes Butler, Sampson, and Santa Fe, which started in 1957.

Feet Above or Below Historic Average

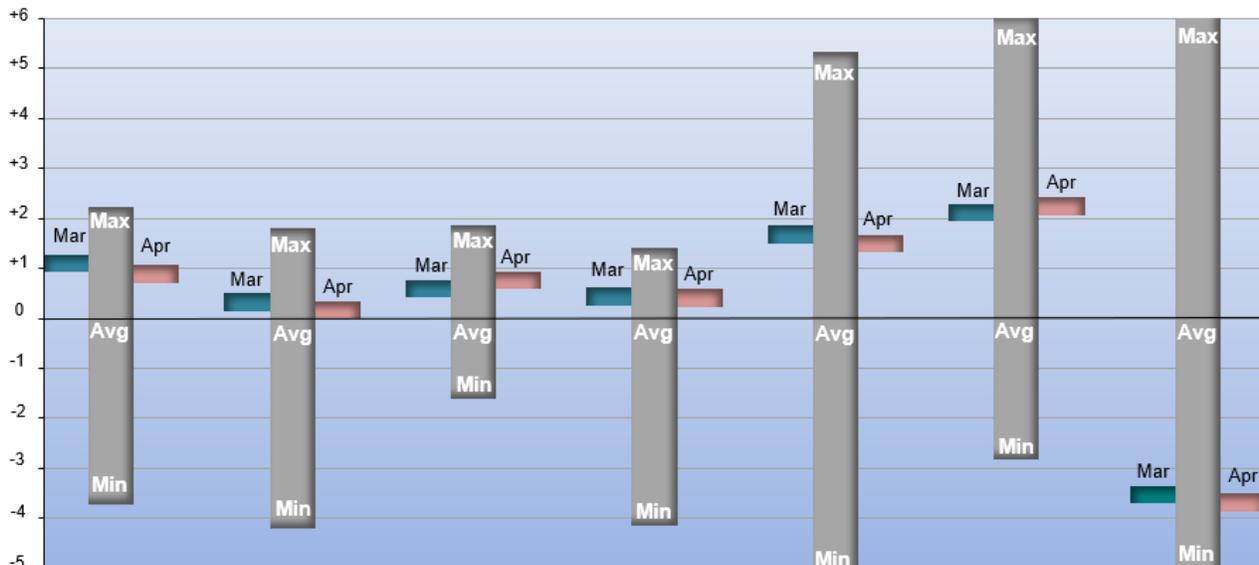
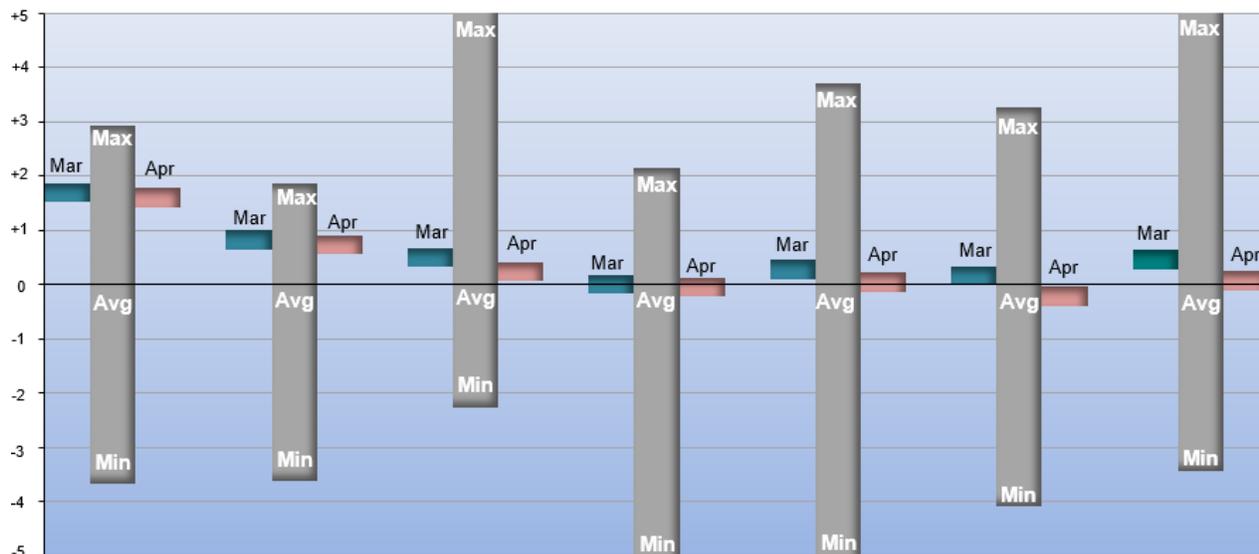


Figure 8: Flow Over the Past 12 Months, Wacissa River (cubic feet per second)

Note: This graph is based on provisional data that are subject to revision

Period 12 Month 05/01/2023 to 05/01/2024

2023-24

Percentile statistics are calculated using data from 06/04/1971 to 09/30/2022

Wacissa

- Max-Q75
- Q75-Q25
- Q25-Q10
- Q10-Min
- Archived Data
- Provisional Data

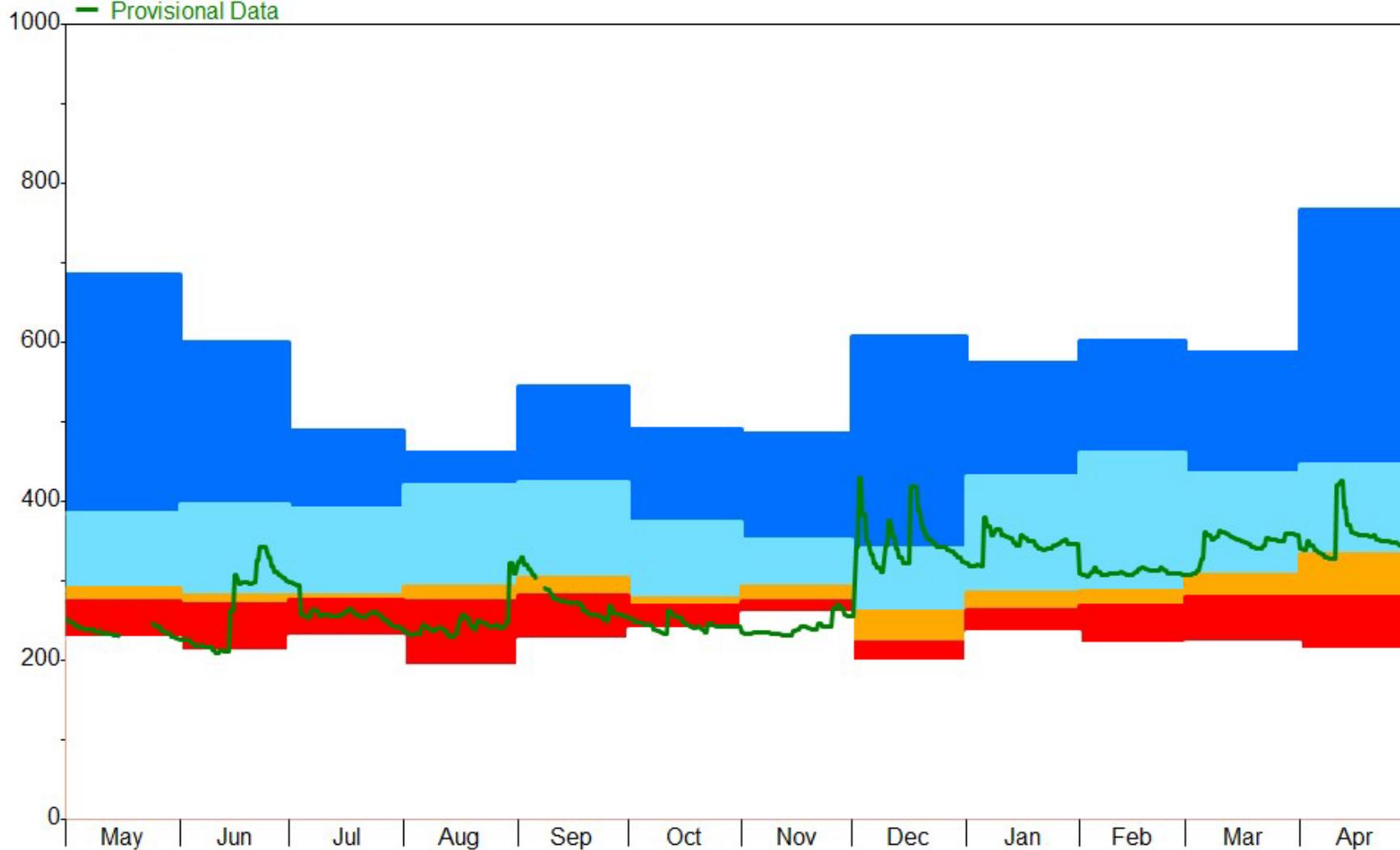


Figure 9: Flow Over the Past 12 Months, Madison Blue Springs (cubic feet per second)

Note: This graph is based on provisional data that are subject to revision

Period 12 Month 05/01/2023 to 05/01/2024

2023-24

Percentile statistics are calculated using data from 03/01/1932 to 09/30/2022

Madison_Blue_Spg

■ Max-Q75

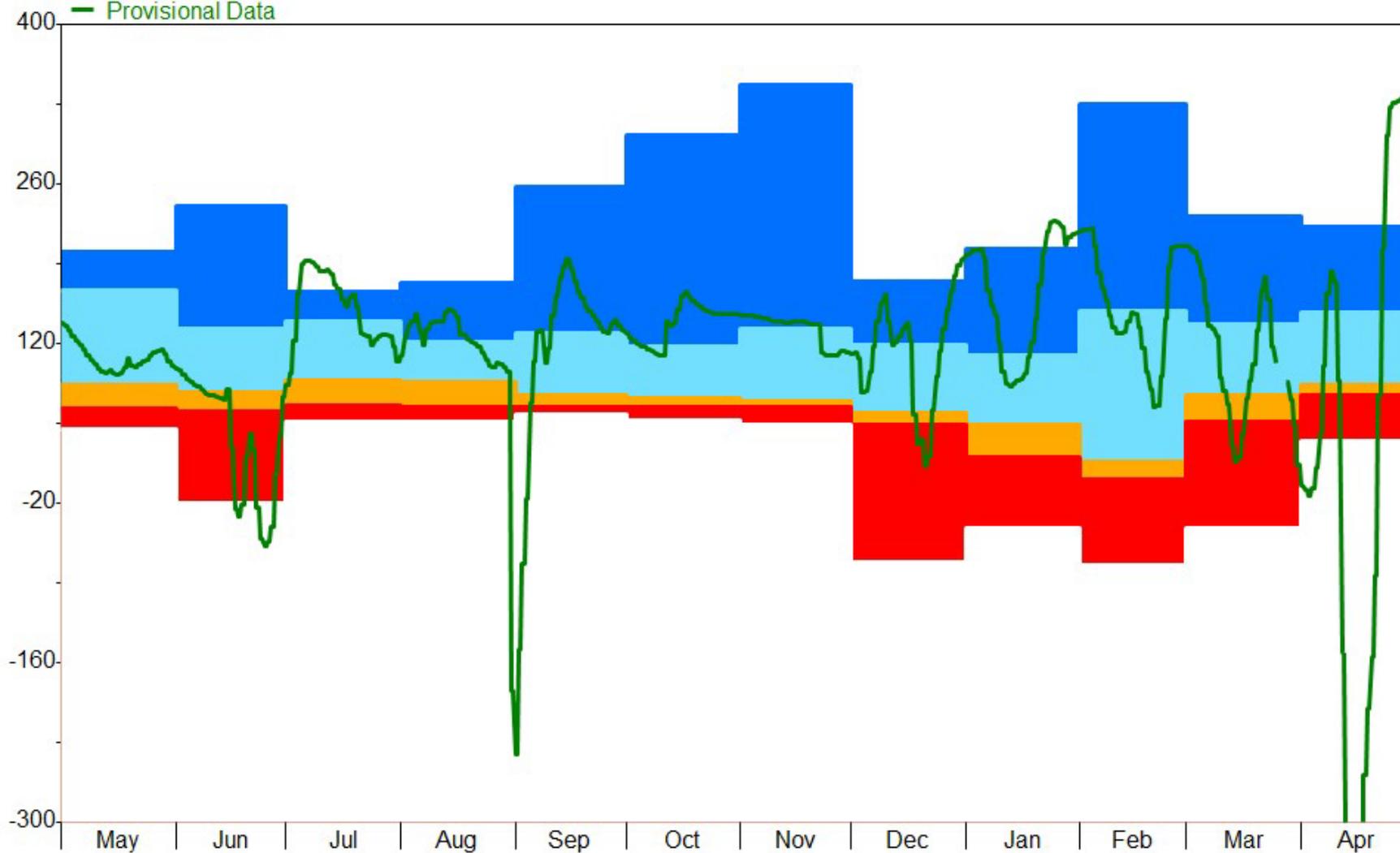
■ Q75-Q25

■ Q25-Q10

■ Q10-Min

— Archived Data

— Provisional Data



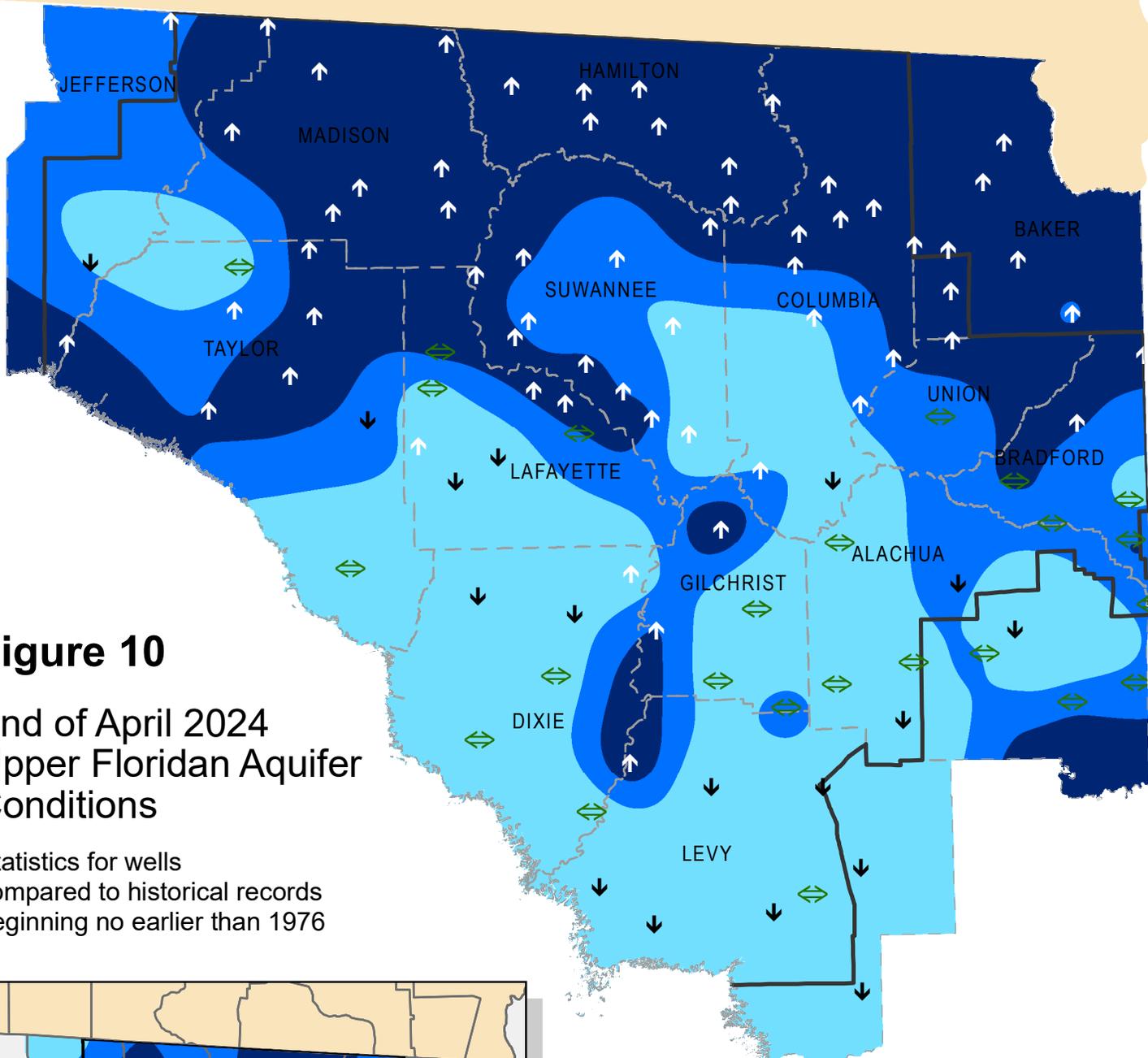
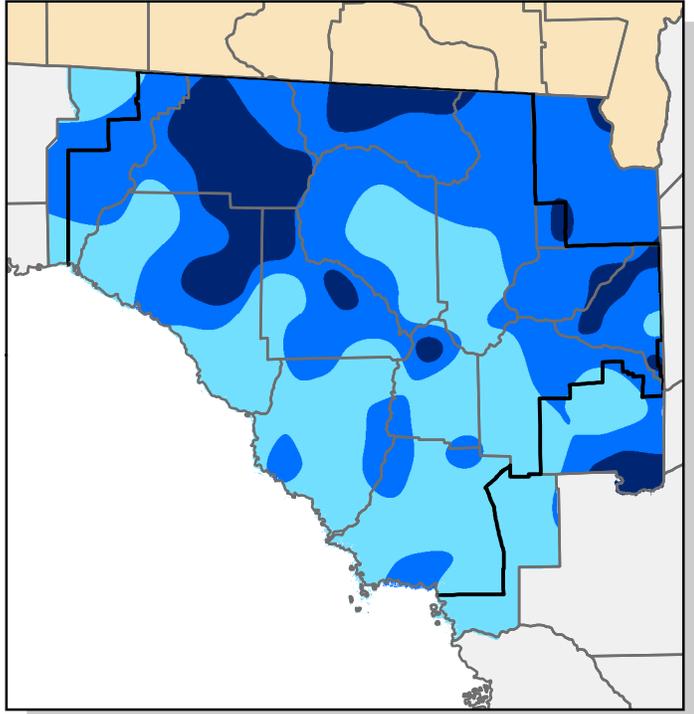


Figure 10

**End of April 2024
Upper Floridan Aquifer
Conditions**

Statistics for wells compared to historical records beginning no earlier than 1976



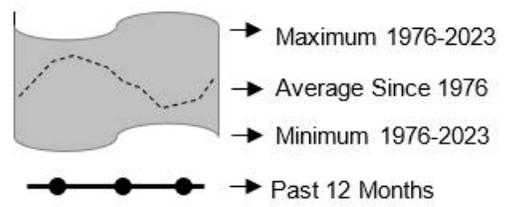
Inset: March Groundwater Percentiles

Additional wells courtesy of SJRWMD, SWFWMD and USGS

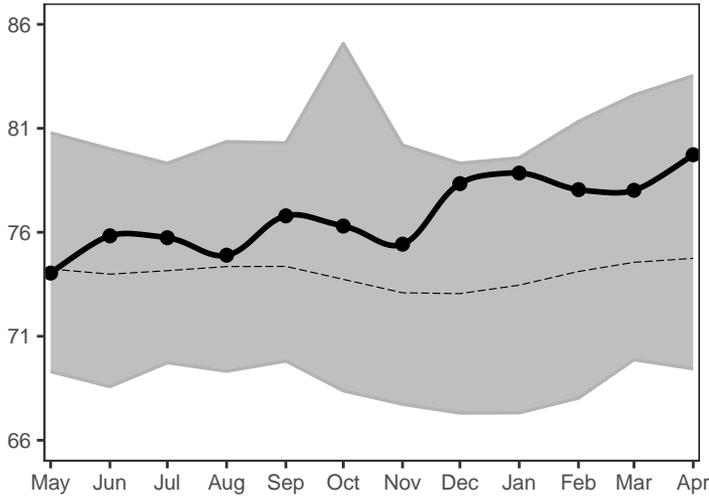
- Extremely High
(Greater than 90th Percentile)
- High
(75th to 90th Percentile)
- Normal
(25th to 75th Percentile)
- Low
(10th to 25th Percentile)
- Extremely Low
(Less than 10th Percentile)
- ↑ ↓ Increase/decrease in level since last month
- ↔ Increase/decrease since last month less than one percent of historic range
- District Boundary

Figure 11: Monthly Groundwater Statistics

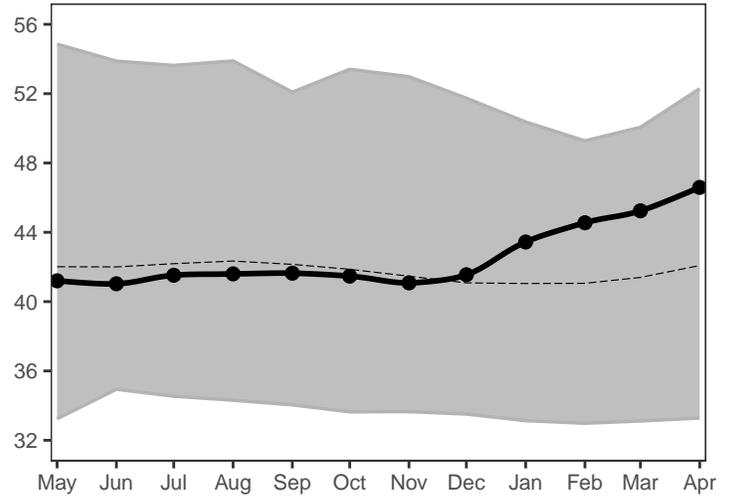
Levels May 2023 through April 2024
 Period of Record Beginning 1976



Madison County N010719001
near Greenville

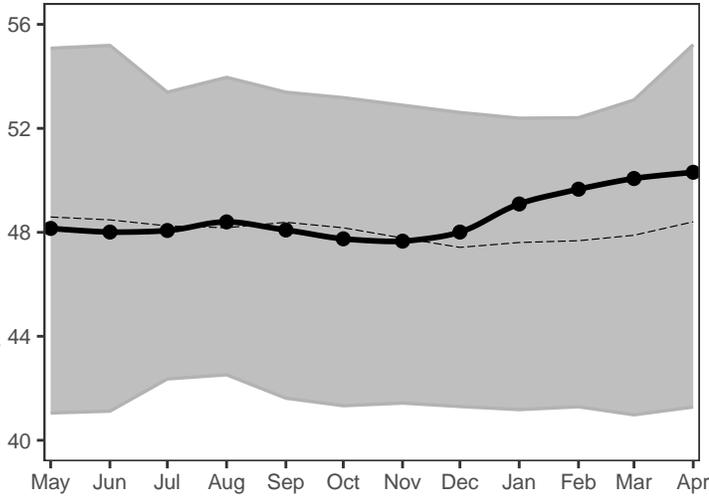


Suwannee County S021335001
near Live Oak

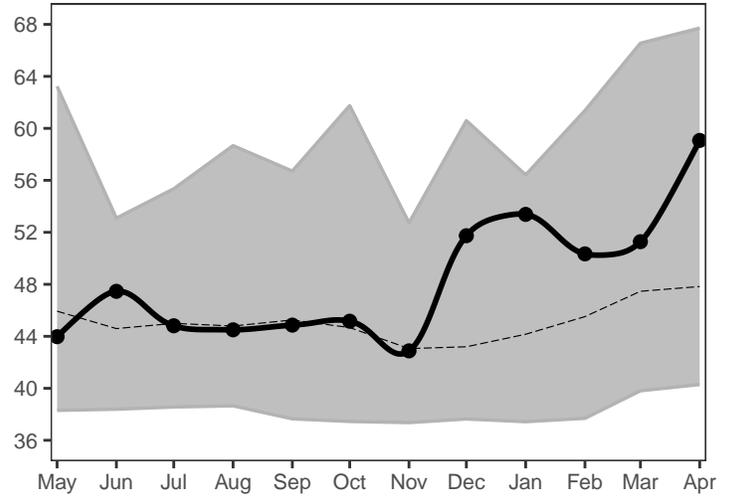


Upper Floridan Aquifer Elevation above NGVD 1929, Feet

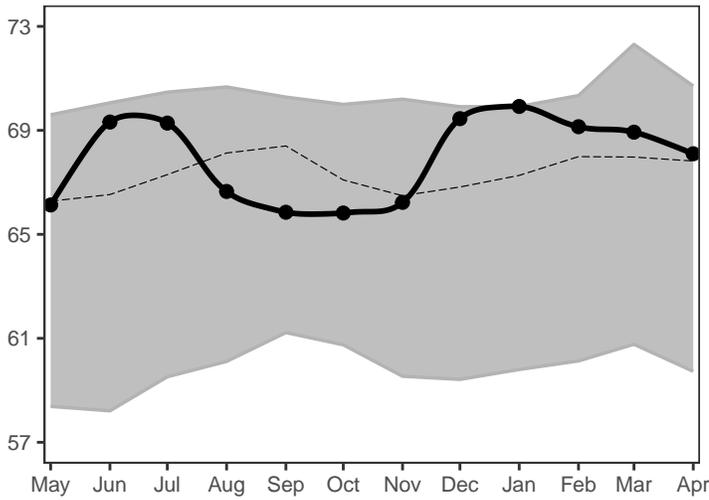
Columbia County S041705001
Lake City



Hamilton County N011422007
near Jasper



Lafayette County S061114001
near Mayo



Taylor County S040736005
Perry

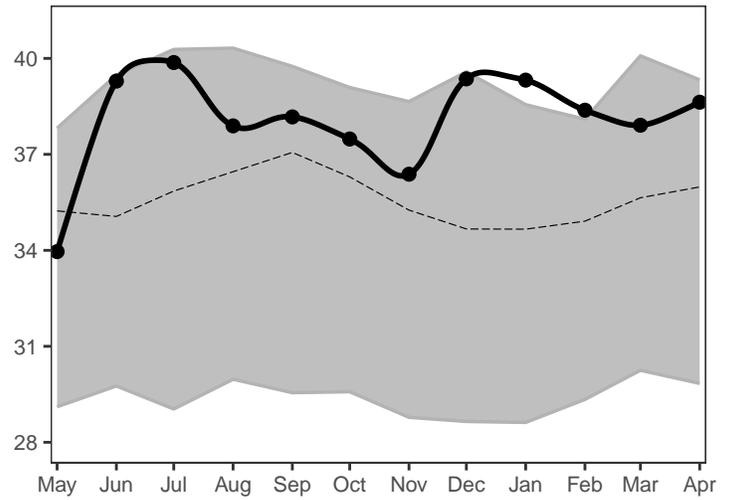
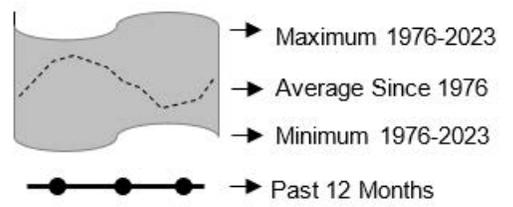
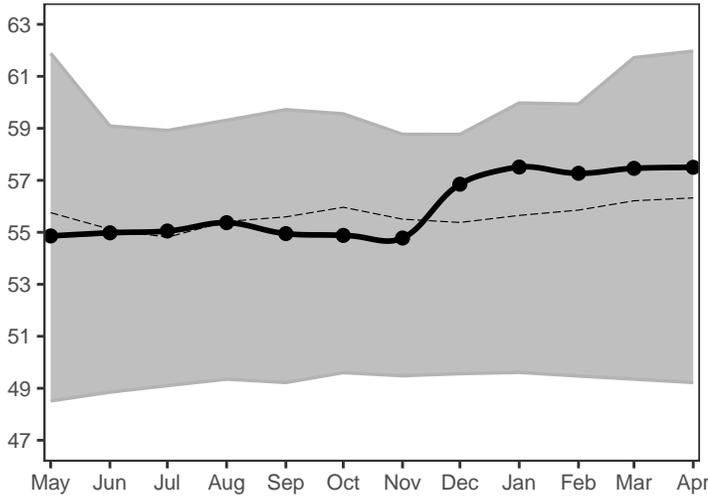


Figure 11, cont.: Monthly Groundwater Statistics

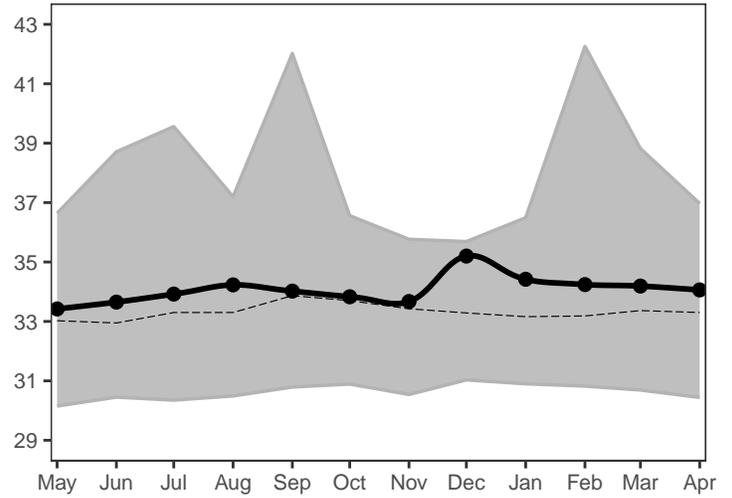
Levels May 2023 through April 2024
 Period of Record Beginning 1976



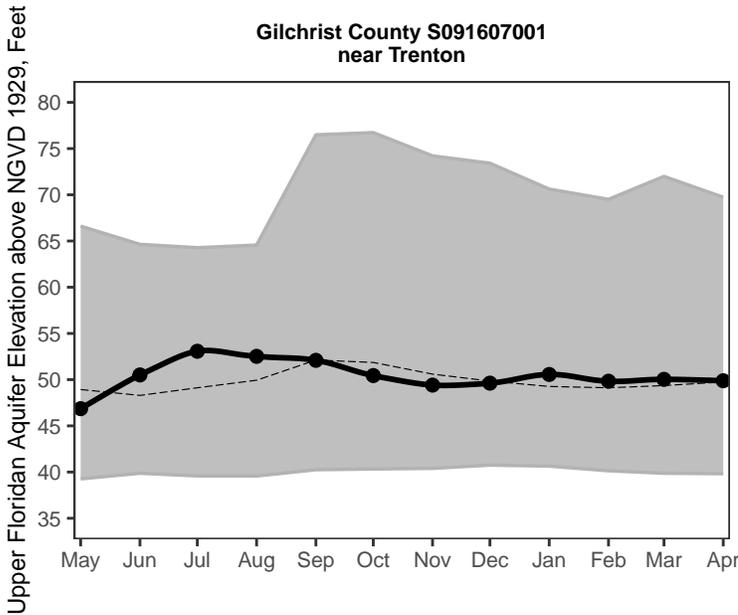
Union County S051933001
near Lake Butler



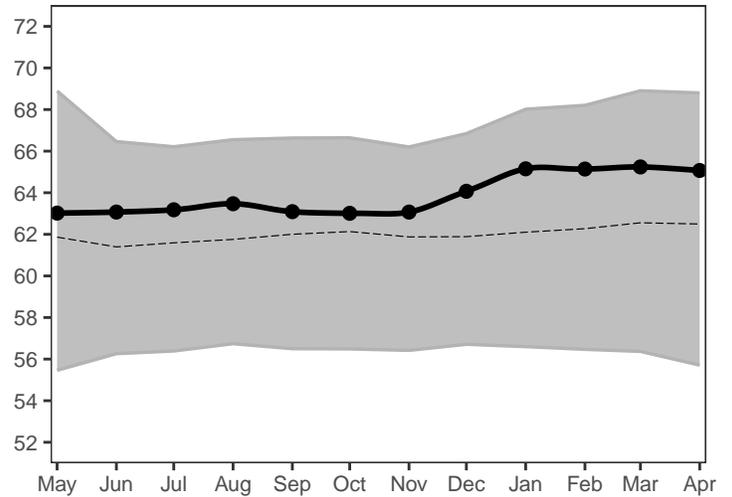
Alachua County S081703001
at High Springs



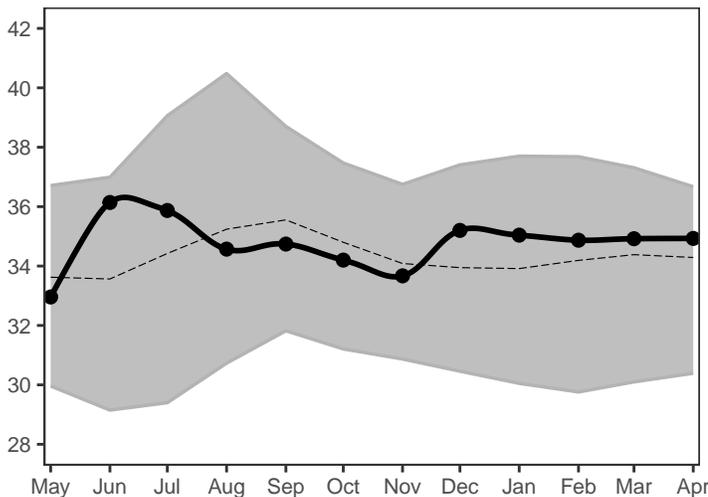
Gilchrist County S091607001
near Trenton



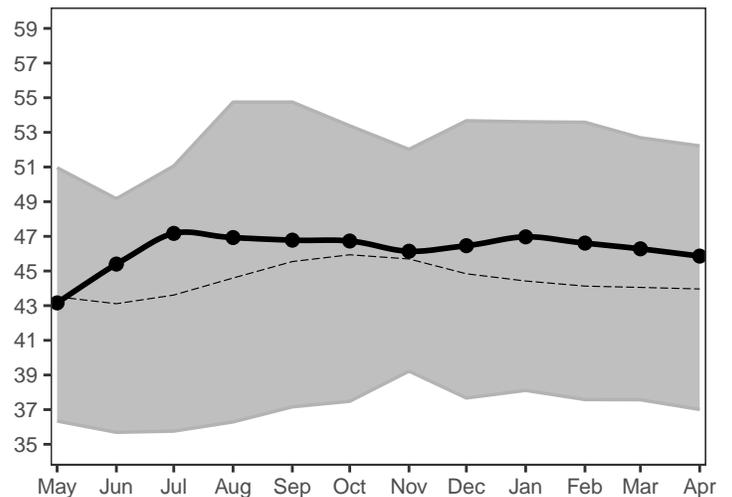
Bradford County S072132001
near Graham

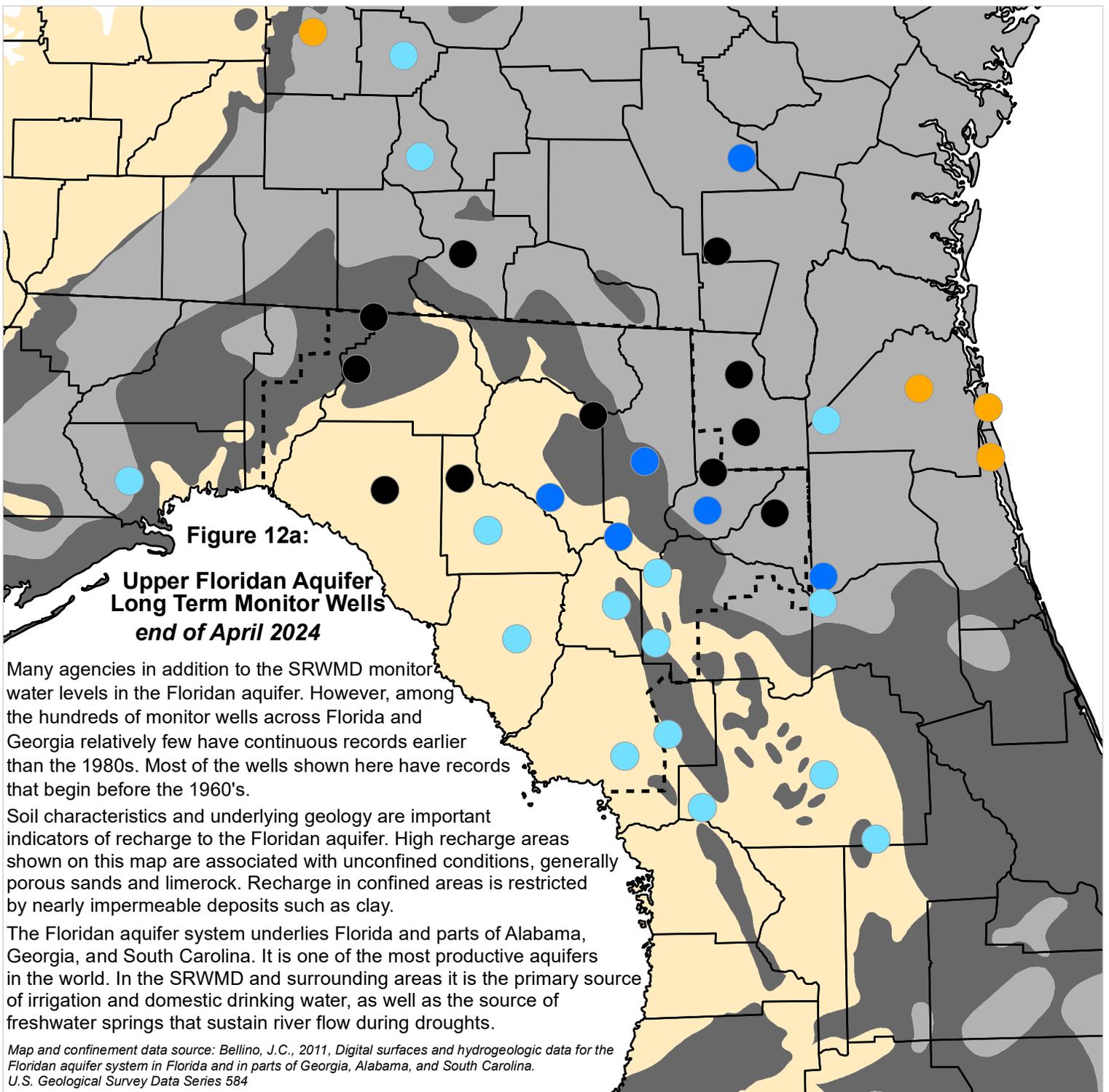


Dixie County S101210001
at Cross City



Levy County S131736001
near Bronson





Occurrence of Confined and Unconfined Conditions in the Upper Floridan Aquifer

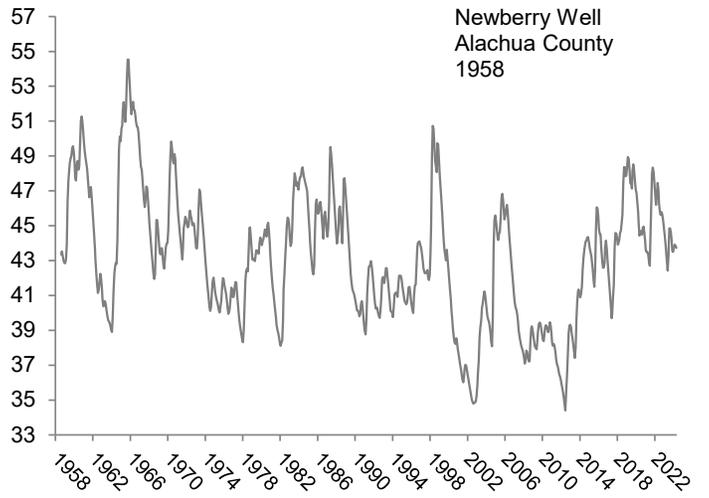
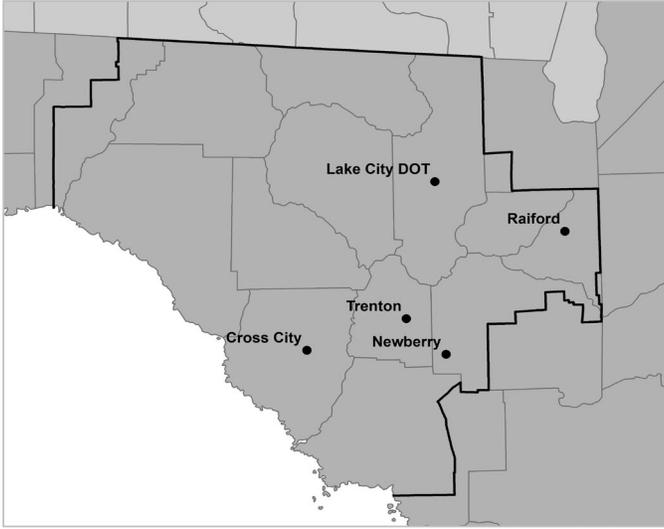
-  Confined: Upper confining unit is generally greater than 100 feet thick and unbreached. Recharge is low.
-  Semi-confined: Upper confining unit is generally less than 100 feet thick, breached, or both. Recharge is moderate.
-  Unconfined: Upper confining unit is absent or very thin. Recharge is high.
-  SRWMD Boundary

Percentile of Most Recent Water Level Relative to Entire Record

-  Very High (Greater than 90th Percentile)
-  High (75th to 90th Percentile)
-  Normal (25th to 75th Percentile)
-  Low (10th to 25th Percentile)
-  Very Low (Less than 10th Percentile)
-  Data Not Available

Figure 12b: Regional Long Term Upper Floridan Aquifer Levels

Data through April 2024



Upper Floridan Aquifer Elevation above NGVD 1929, Feet

