



Hydrologic Conditions Report

July 2024

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Summary

July 2024 was characterized by above normal precipitation and above normal temperatures (averaging around 83.4 degrees Fahrenheit) that contributed to generally normal or below normal aquifer levels, normal streamflow, and normal spring flow across most of the Panhandle. Drought conditions that were present in the eastern portion of the District were eradicated by the end of July, a result of frequent rain events throughout the month.

Rainfall

The District in July 2024 recorded an average of 9.10 inches of rain across the Panhandle. This was 1.93 inches (23.7%) above the District normal rainfall amount for the month of July, 7.17 inches. Normal rainfall is defined as average monthly rainfall for the 1991 to 2020 reference period. Though the overall average observed rainfall across the District was classified as above normal, precipitation amounts varied spatially. The highest rainfall amounts of around 15 inches occurred in areas slightly inland from the Gulf of Mexico in Santa Rosa, Okaloosa, Walton, Gulf, and Liberty counties while the lowest rainfall amounts of around 4 inches occurred on the coast between Choctawhatchee Bay and West Bay (**Table 1; Figures 1 – 7**). Many of the rain events that occurred in July 2024 in the District were smaller, localized convection or sea breeze-based systems rather than larger scale systems.



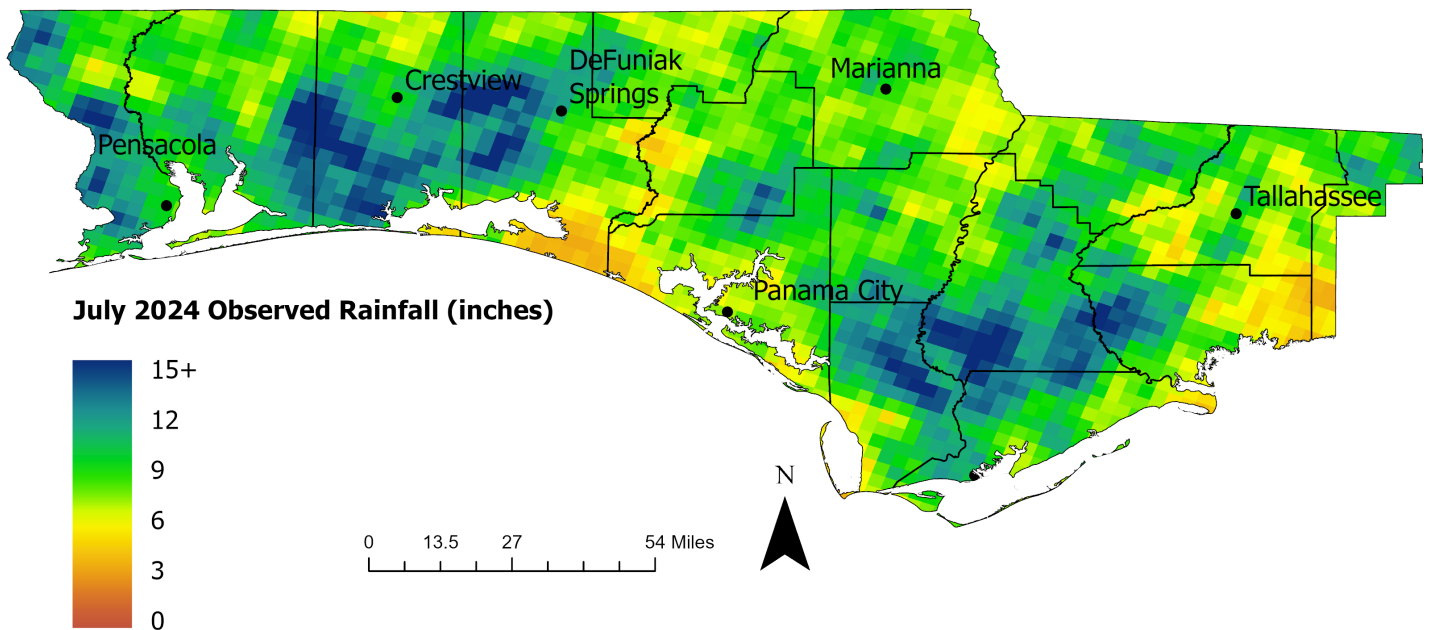
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Northwest Florida Water Management District
81 Water Management Drive
Havana, FL 32333-4712
(850) 539-5999
www.nwfwater.com

Table 1: July 2024 rainfall compared to 30-year normal monthly rainfall for Tallahassee, Marianna, Niceville, and Pensacola

Station	July Normal Rainfall (1991 to 2020)	July 2024 Observed Rainfall	Percent Difference
Tallahassee Regional Airport	7.14	8.57	18.2%
Marianna Regional Airport	5.10	6.95	30.7%
Niceville, FL	8.91	9.01	1.1%
Pensacola Regional Airport	7.89	8.79	10.8%

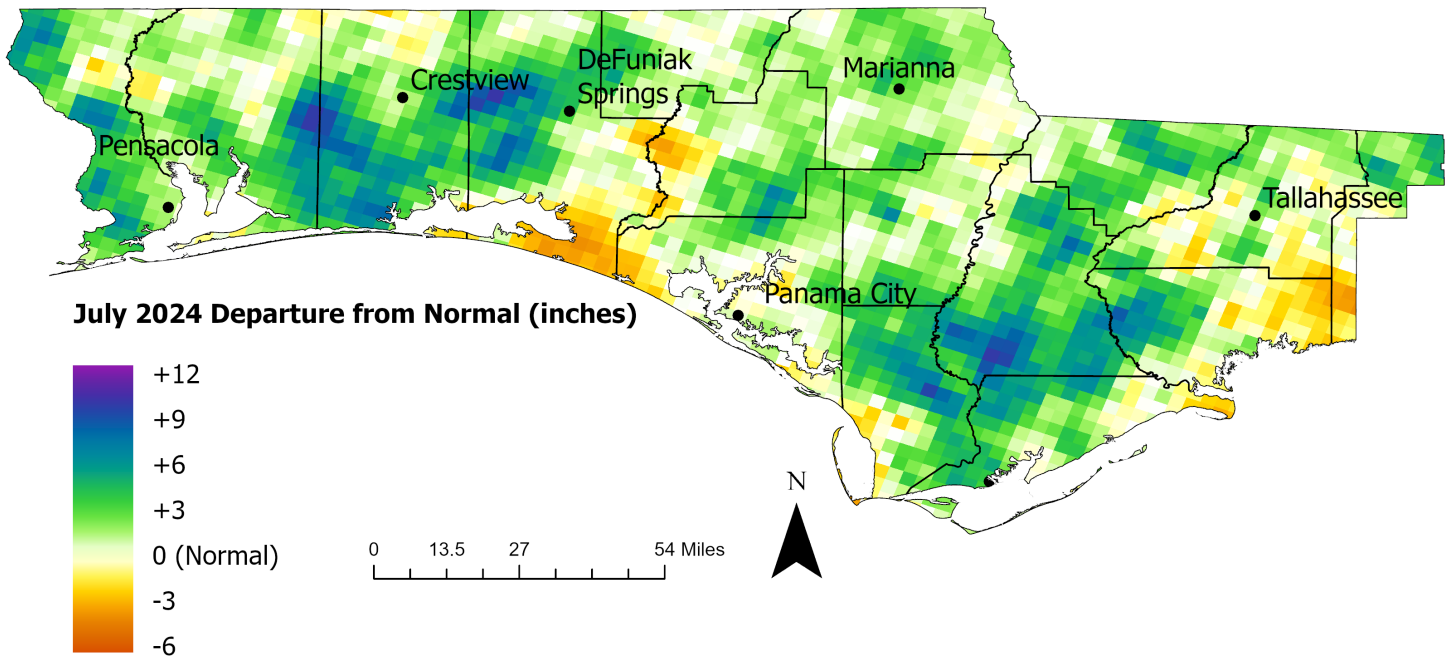
Source: <https://www.weather.gov/wrh/Climate?wfo=tae>
<https://www.weather.gov/wrh/Climate?wfo=mob>

Figure 1: District-wide July 2024 observed rainfall



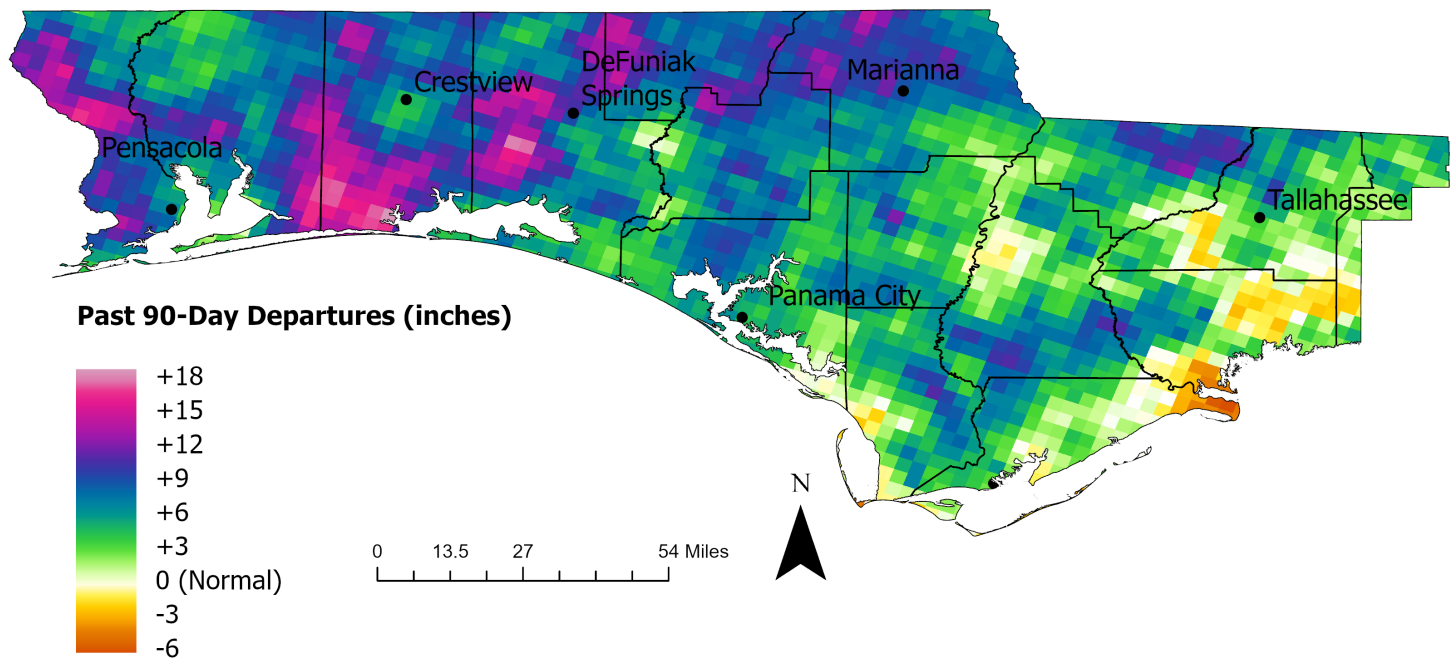
Source: <https://water.weather.gov/precip/download.php>

Figure 2: District-wide July 2024 precipitation departure from normal



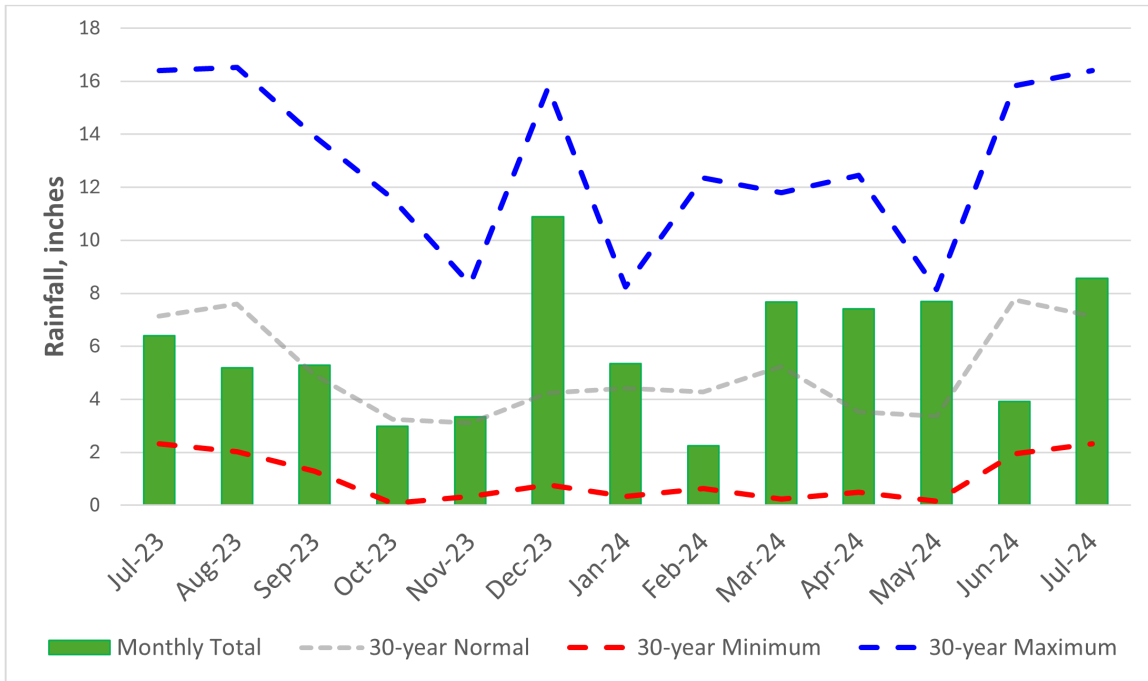
Source: <https://water.weather.gov/precip/download.php>

Figure 3: District-wide precipitation departure from normal precipitation for the previous 90 days



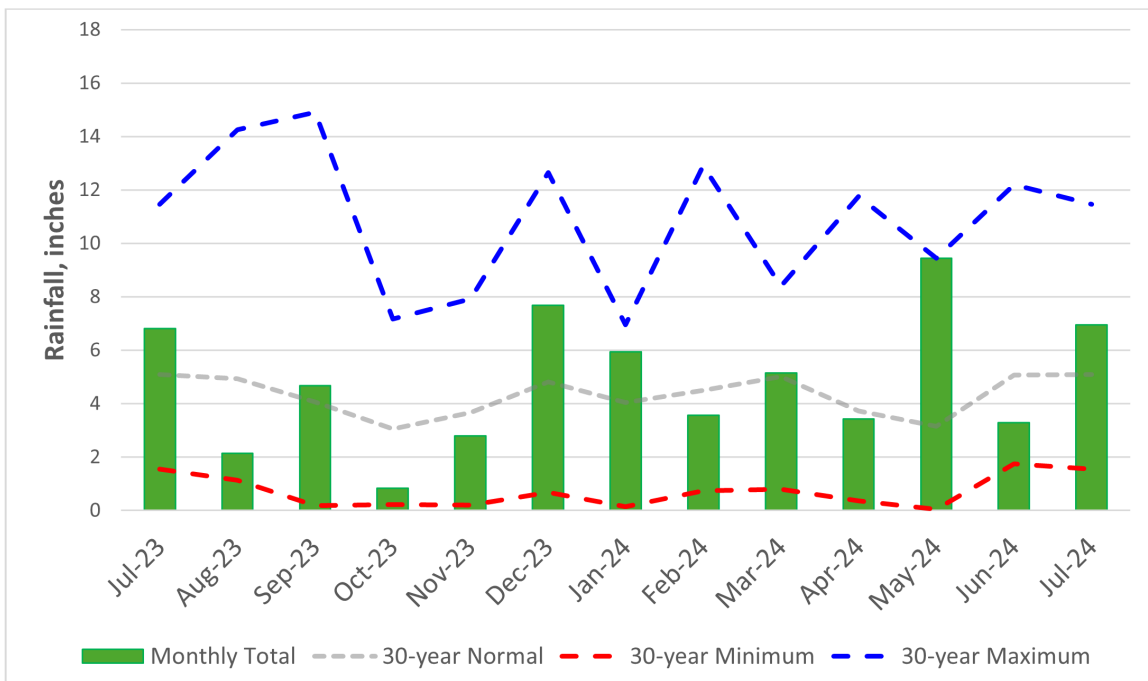
Source: <https://water.weather.gov/precip/download.php>

Figure 4: Observed rainfall at Tallahassee Regional Airport for July 2023 to July 2024 compared to the 30-year normal, minimum, and maximum precipitation for each month



Source: <https://www.weather.gov/wrh/Climate?wfo=tae>

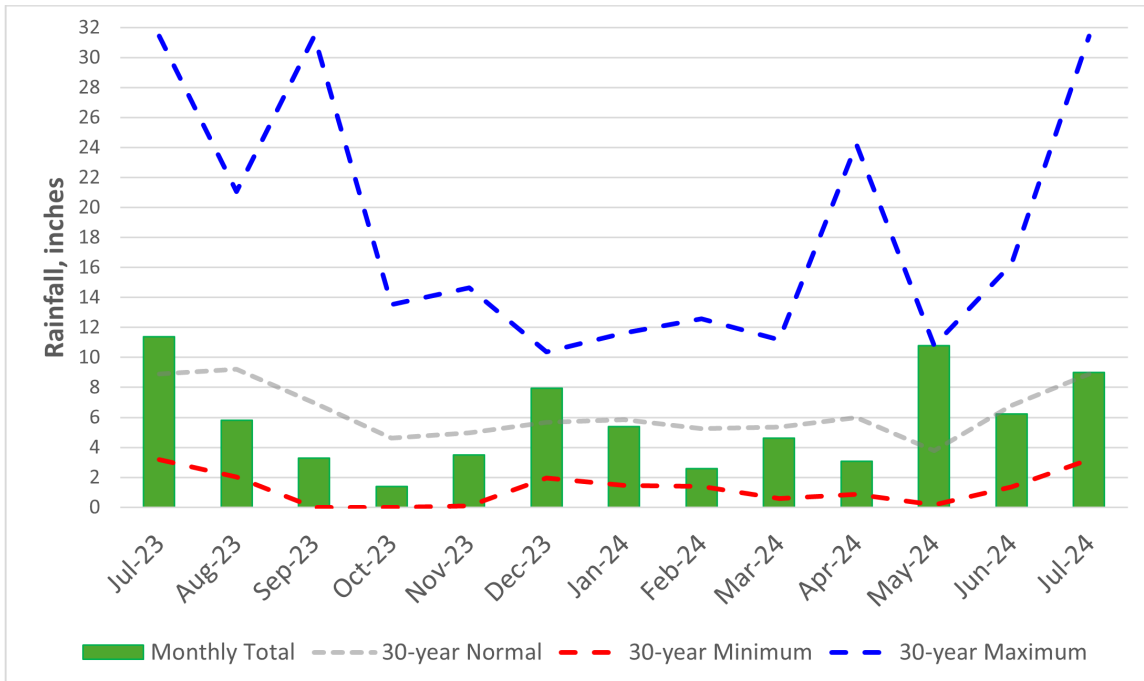
Figure 5: Observed rainfall at Marianna Regional Airport for July 2023 to July 2024 compared to the 30-year normal, minimum, and maximum precipitation for each month



Source: <https://www.weather.gov/wrh/Climate?wfo=tae>

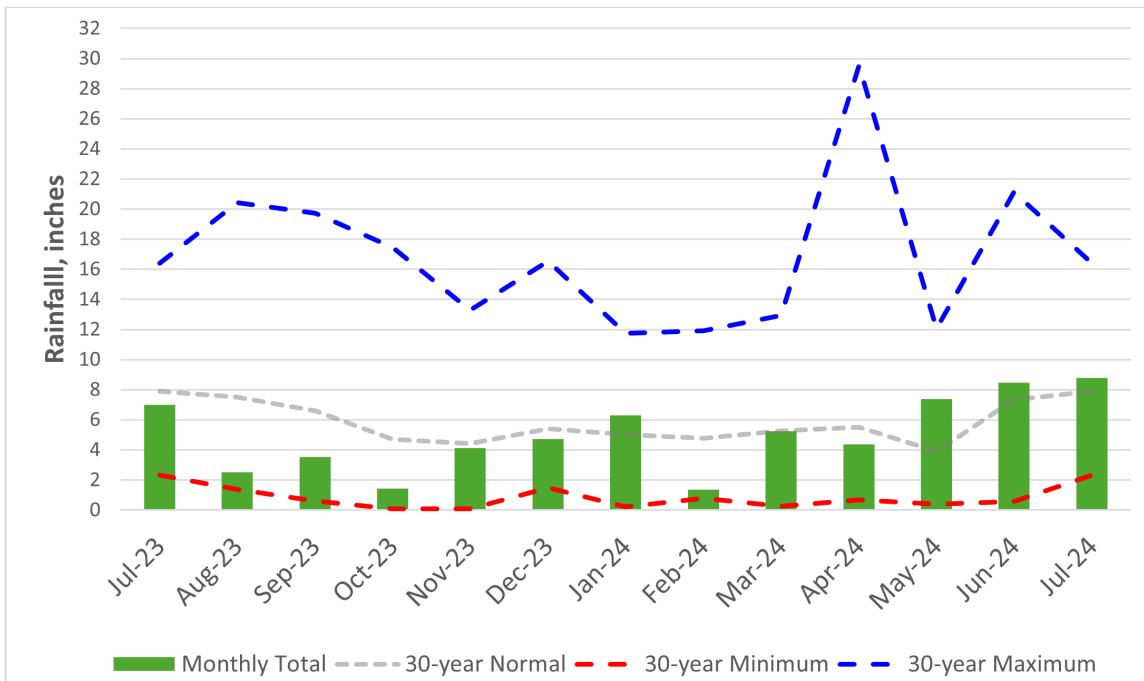


Figure 6: Observed rainfall in Niceville for July 2023 to July 2024 compared to the 30-year normal, minimum, and maximum precipitation for each month



Source: <https://www.weather.gov/wrh/Climate?wfo=mob>

Figure 7: Observed rainfall at Pensacola Regional Airport for July 2023 to July 2024 compared to the 30-year normal, minimum, and maximum precipitation for each month



Source: <https://www.weather.gov/wrh/Climate?wfo=mob>



Climate Outlook

According to NOAA’s climate prediction center, the forecast issued August 2, 2024, for August 2024 shows a likely probability for above normal temperatures and a slight probability of above normal rainfall amounts across the District.

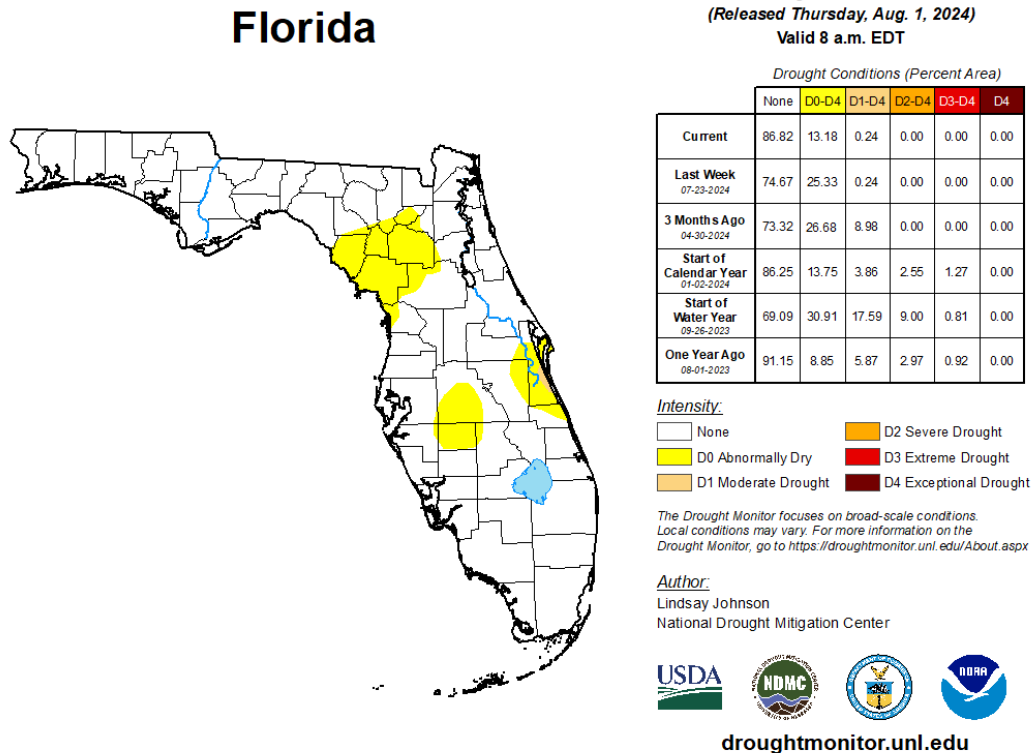
As of July 29, 2024, ENSO-neutral conditions are present and a La Niña Watch has been advised. La Niña conditions are favored to develop during August through October (70% chance) and are forecast to persist into the upcoming winter season. A La Niña pattern during hurricane season creates ideal conditions for the development of tropical cyclones in the Atlantic basin. In the winter, La Niña is associated with warmer and drier conditions than usual for the southern United States.

Source: <https://www.climate.gov/news-features/understanding-climate/us-climate-outlook-august-2024>
https://www.cpc.ncep.noaa.gov/products/analysis_monitoring/lanina/enso_evolution-status-fcsts-web.pdf

Drought Conditions

The U.S. Drought Monitor report released August 1, 2024, showed that no drought conditions were present in the District at the end of July 2024 (Figure 8), a result of frequent rain events throughout the month of July. According to the U.S. Monthly Drought Outlook valid for August 2024, no drought conditions are expected to develop during the month.

Figure 8. Florida Drought Conditions on July 30, 2024
U.S. Drought Monitor



Source: <https://droughtmonitor.unl.edu/CurrentMap/StateDroughtMonitor.aspx?FL>

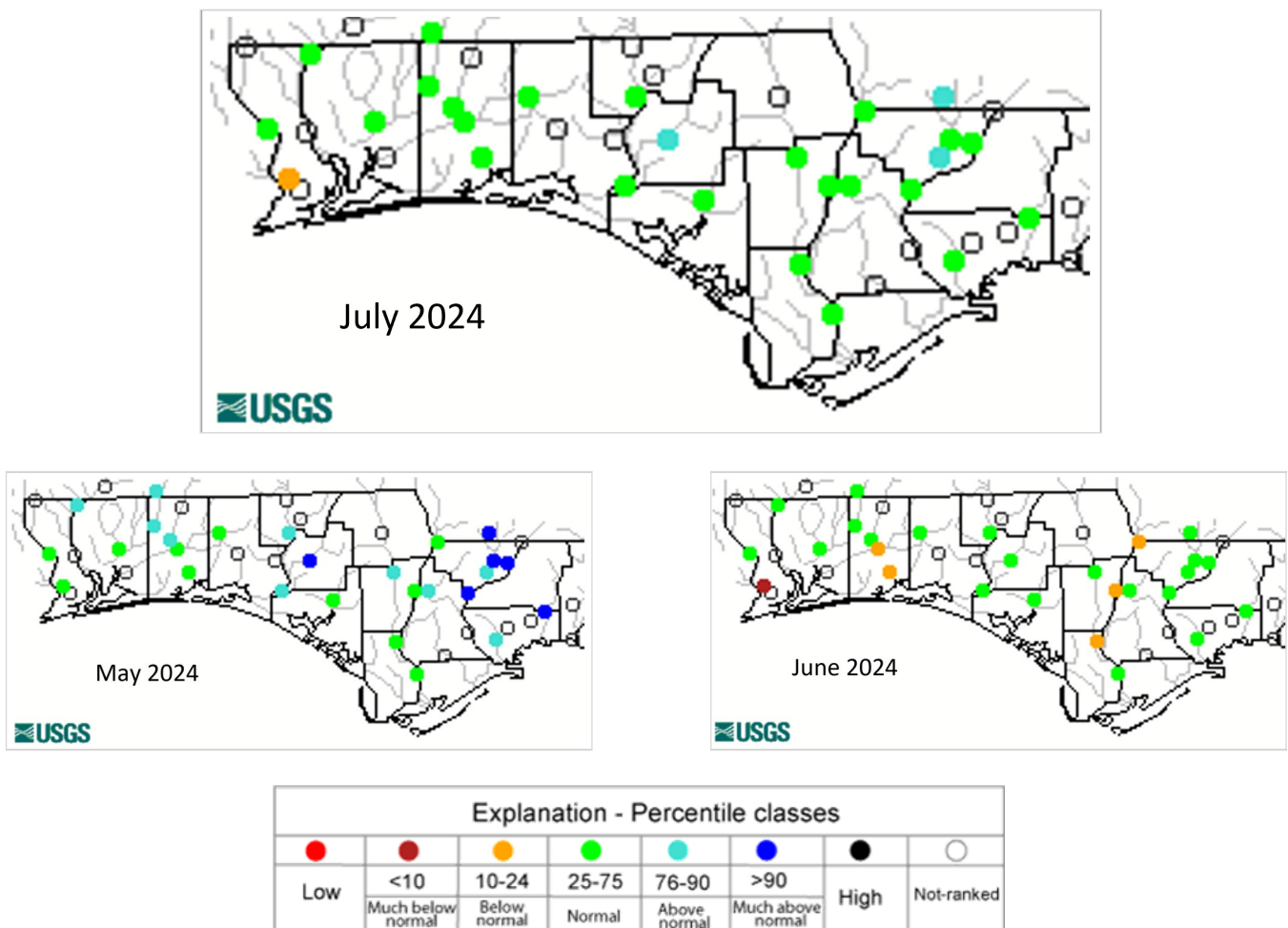


Surface Water

Streamflows. Increased rainfall amounts throughout July 2024 (Figures 1 & 2) contributed to a continuation of normal flow classifications or an increase in percentile class compared to June 2024 (Figures 9 – 15). In southern Escambia County, a station increased from much below normal in June 2024 to below normal this month. Stations along the Apalachicola River classified as below normal increased to normal ranges and three stations, one in Washington County and two in Gadsden County, increased from normal ranges to above normal.

Looking at the time-series plots for the USGS streamflow stations, most recorded flows were within normal ranges during July 2024. Sometime after the middle of the month, many stations recorded a steep increase in flow (Figures 12 – 15), likely a reflection of increased rainfall amounts as the frequency of summertime afternoon showers rose.

Figure 9: Northwest Florida May 2024 to July 2024 monthly streamflow percentiles



Source: <http://waterwatch.usgs.gov/index.php>



Figure 10: Daily streamflows and percentile ranges for USGS station 02326900 St. Marks River Near Newport, Florida

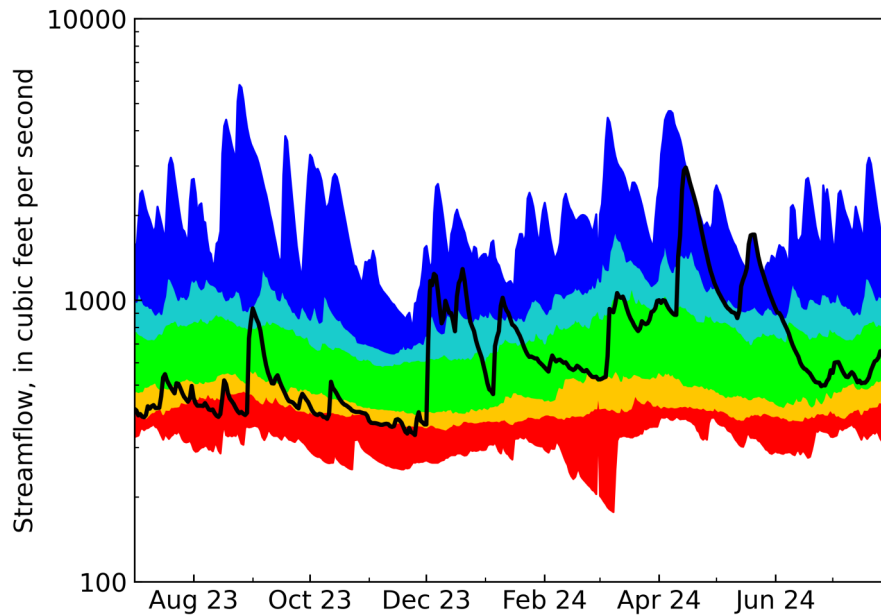
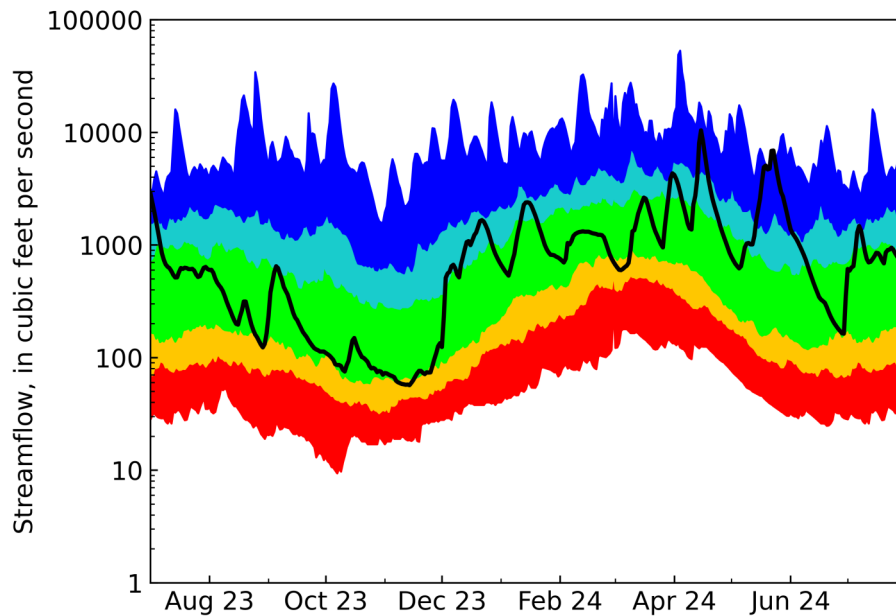


Figure 11: Daily streamflows and percentile ranges for USGS Station 02329000 Ochlockonee River Near Havana, Florida



Explanation - Percentile classes				
< 10	10-24	25-75	76-90	> 90
Much below normal	Below normal	Normal	Above normal	Much above normal



Figure 12: Daily streamflows and percentile ranges for USGS Station 02358700 Apalachicola River Near Blountstown, Florida

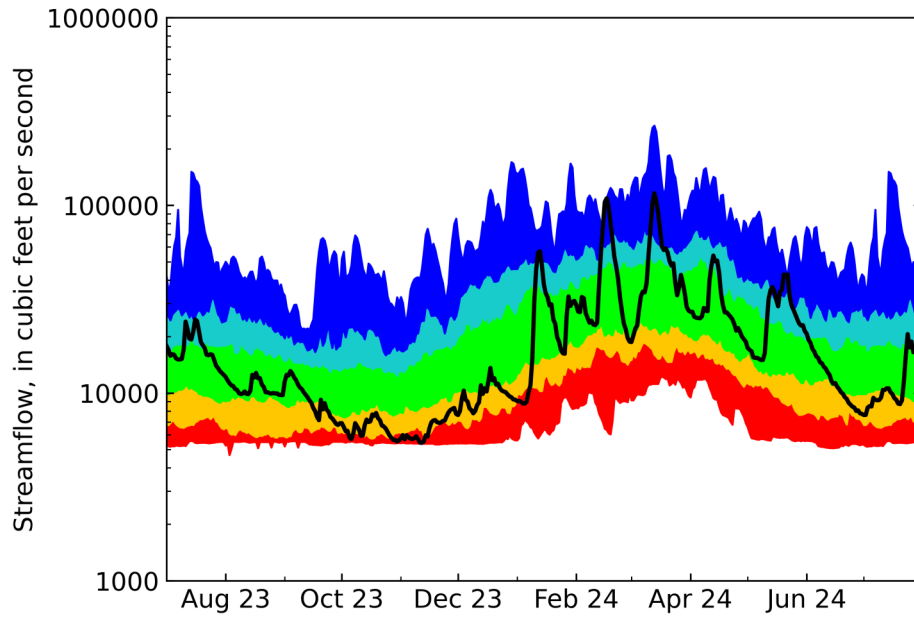
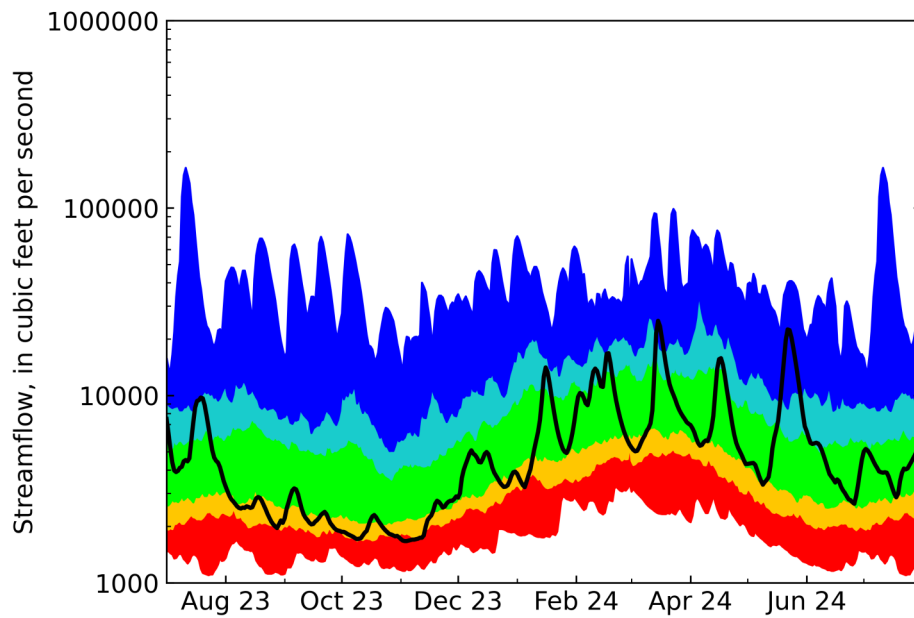


Figure 13: Daily streamflows and percentile ranges for USGS Station 02366500 Choctawhatchee River Near Bruce, Florida



Explanation - Percentile classes				
< 10	10-24	25-75	76-90	> 90
Much below normal	Below normal	Normal	Above normal	Much above normal



Figure 14: Daily streamflows and percentile ranges for USGS Station 02370000 Blackwater River Near Baker, Florida

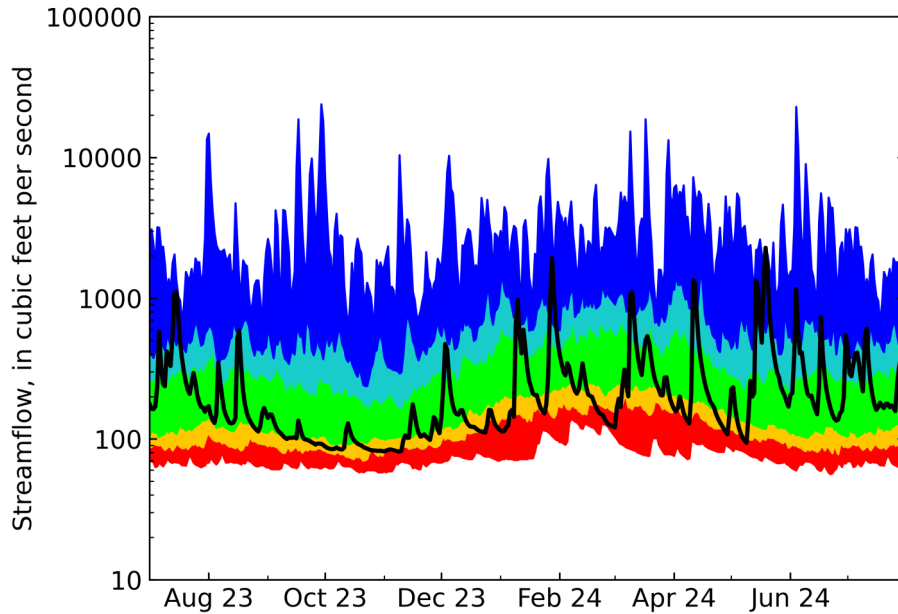
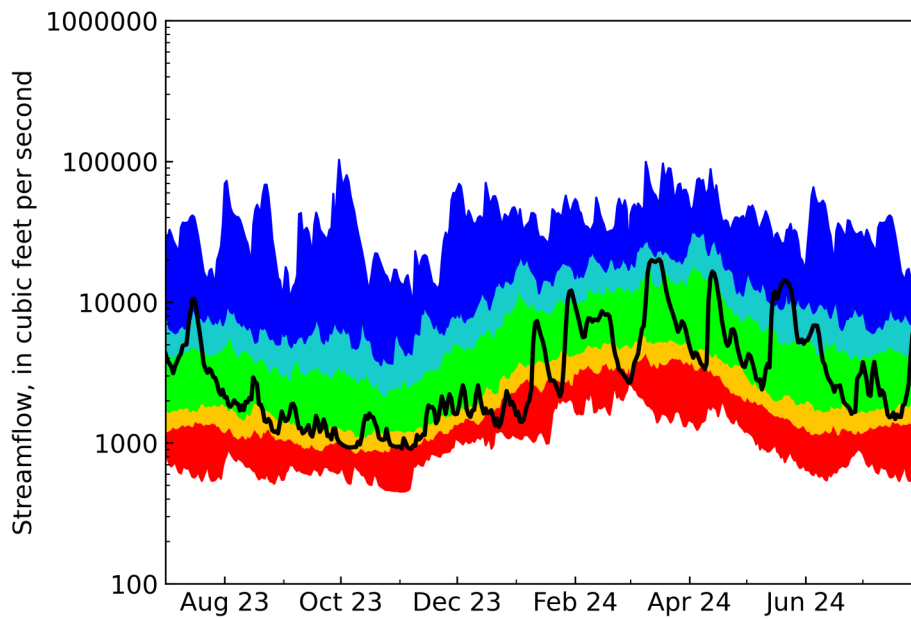


Figure 15: Daily streamflows and percentile ranges for USGS Station 02375500 Escambia River Near Century, Florida



Explanation - Percentile classes				
< 10	10-24	25-75	76-90	> 90
Much below normal	Below normal	Normal	Above normal	Much above normal



Lake Levels. After reducing by 0.51 feet during June 2024, water levels at Lake Jackson in Leon County remained generally stable around 81.68 feet, NAVD 1988, through July 2024 (Figure 16). The long-term (January 29, 2003 to July 31, 2024) average stage level for Lake Jackson is 80.87 feet, NAVD 1988, and the full pool level is 85.74 feet, NAVD 1988.

In the first half of July 2024, water levels at Piney Lake in southern Washington County decreased 0.30 feet, reaching the lowest level since monitoring began during the 2022 flooding event. In the second half of the month, the water level steadily rose 0.42 feet, ending the month with a stage that was 0.12 feet higher than at the start of the month (Figure 17). Piney Lake ended the month with a stage level of 49.64 feet, NAVD 1988.

Figure 16: Daily water levels at Lake Jackson at Miller Landing, Leon County

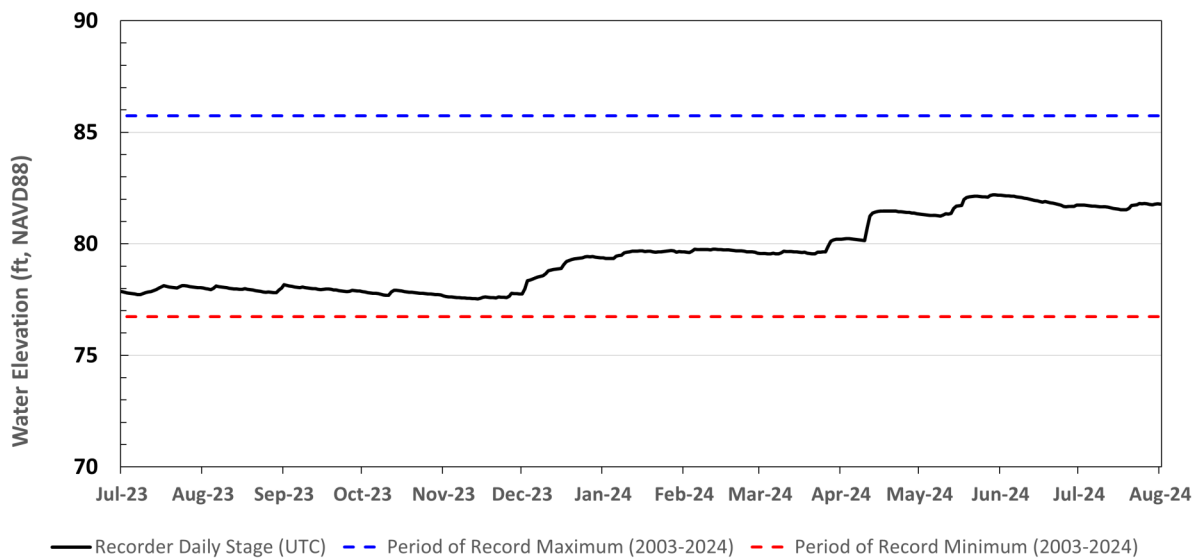
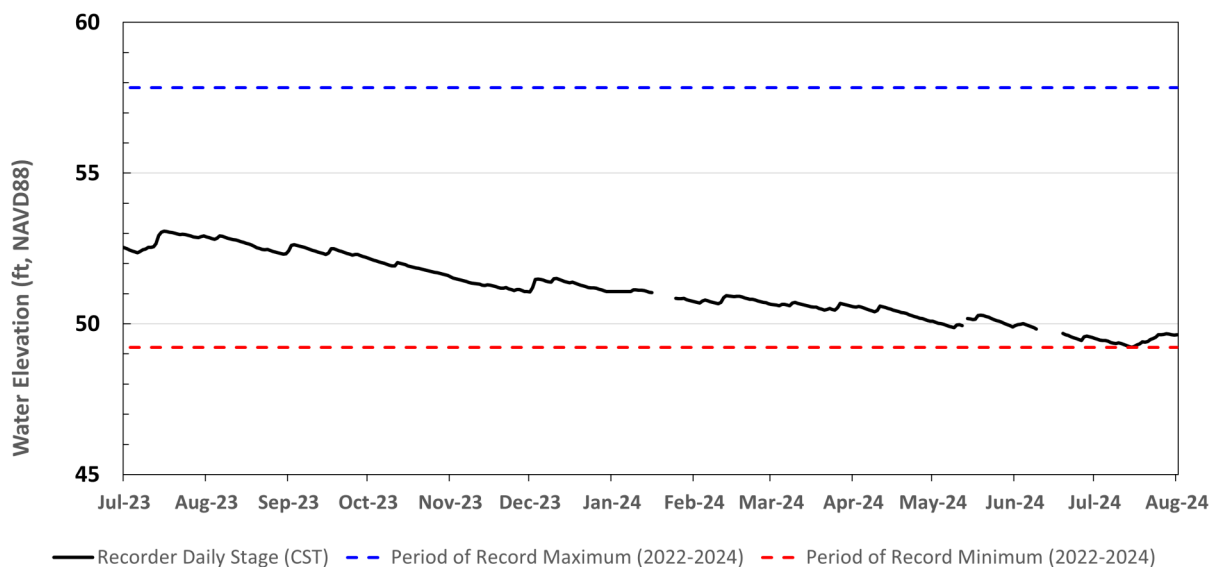


Figure 17: Daily water levels at Piney Lake, Washington County



Spring Flows

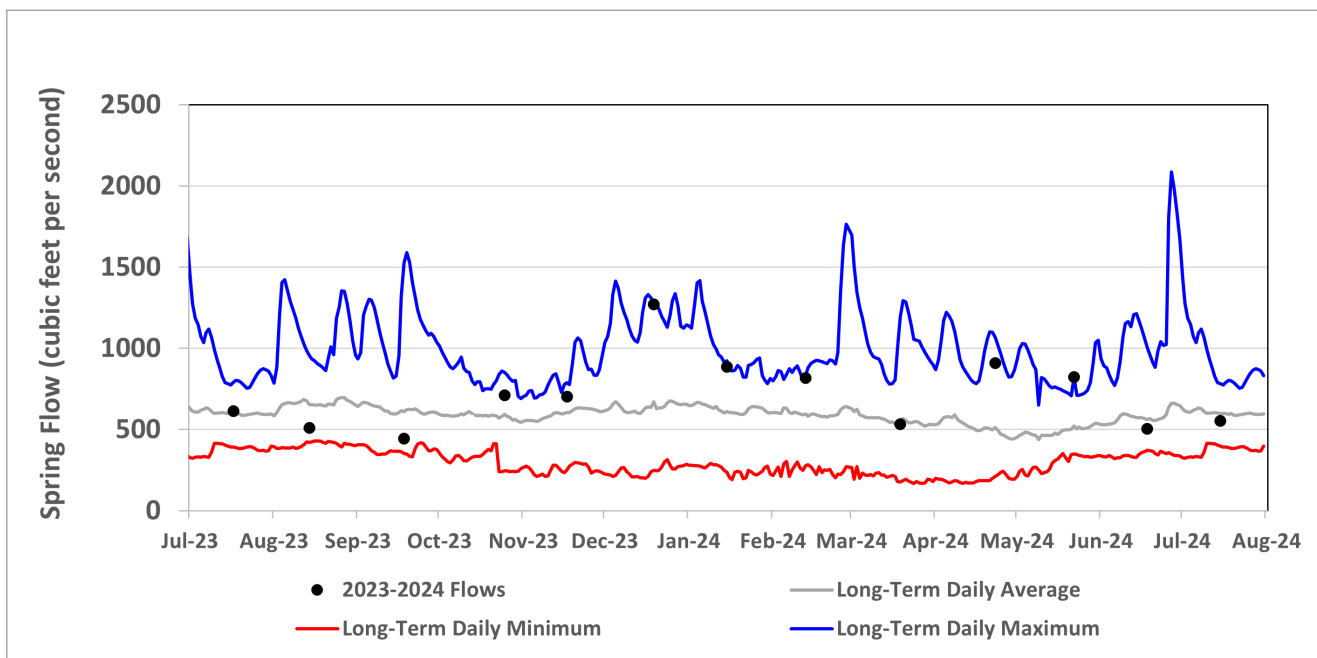
Wakulla and Sally Ward Spring System. After flows decreased below the long-term average flow in June 2023, flow at Wakulla Spring increased slightly but remained below the long-term average flow during July 2024. The most recent flow measurement for Wakulla Spring was 553 cubic feet per second (cfs), which was conducted on July 15, 2024 (**Figure 18**). The long-term (November 2004 to July 2024) average flow for the month of July is 603 cfs.

Flow at Sally Ward Spring decreased slightly between the measurements taken in June and July. The most recent flow measurement for Sally Ward was 20.7 cfs on July 15, 2024. The July average Sally Ward Spring flow, based on the November 1, 2004, to July 15, 2024, period of record, is 21.4 cfs.

The Minimum Flow established for the combined Wakulla and Sally Ward Spring System under Florida Administrative Code chapter 40A-8.041 continues to be met. The long-term (October 23, 2004, through June 2024) average flows for Wakulla and Sally Ward Springs are 588 cfs and 24.2 cfs, respectively. The combined long-term spring flow for both systems is 612 cfs, which exceeds the established Minimum Flow of 539 cfs by 73 cfs.

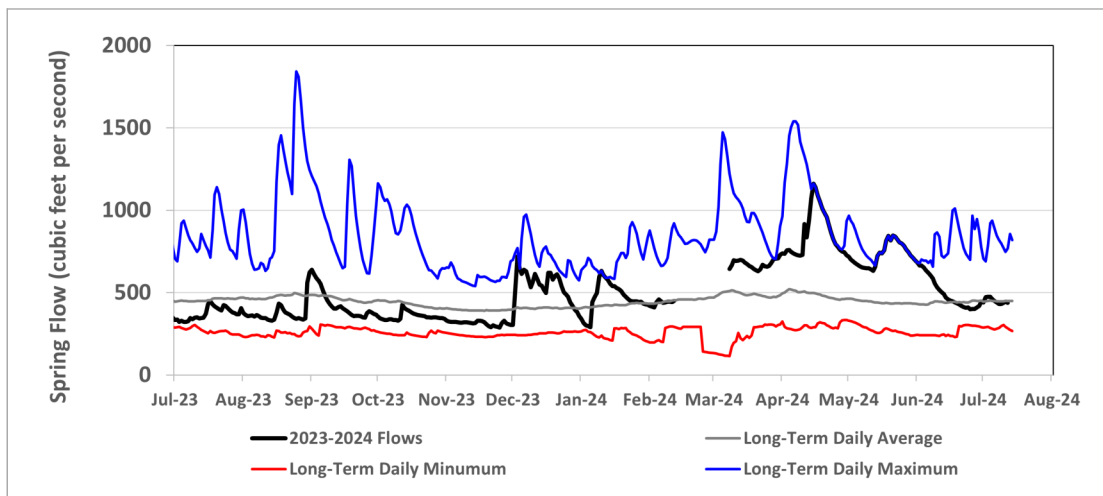
Figure 18: Daily Wakulla Spring flows

Data from July 1, 2023, through July 31, 2024, represent discrete measurements. Daily statistics are based on the October 23, 2004, through July 15, 2024, period of record.



St. Marks River Rise. The mean daily spring flow for July 2024 (July 1 through 14, 2024) at the St. Marks River Rise was 557 cfs, based on the available USGS provisional data which extends through July 14, 2024 (Figure 19). The current 30-year moving average spring flow for the St. Marks River Rise based on the most recent approved USGS data (November 15, 1993, through November 14, 2023) is 429 cfs. If the provisional data from November 15, 2023, through July 14, 2024, are included, the 30-year moving average spring flow for the St. Marks River Rise is 429 cfs. The established Minimum Flow for the St. Marks River Rise is 419 cfs. Whether using the approved or provisional data, the 30-year moving average flow exceeded the established Minimum Flow for the St. Marks River Rise by 10 cfs.

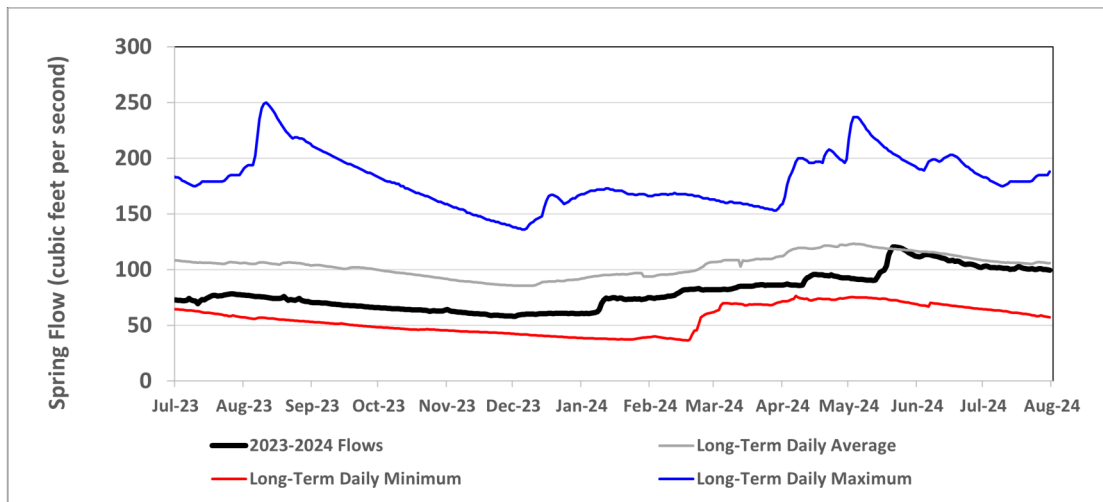
Figure 19: Daily spring flows for the St. Marks River Rise



Jackson Blue Spring. Daily average flows at Jackson Blue Spring for the month of July 2024 averaged 101 cfs, which is below the July monthly average of 107 cfs (Figure 20).

Figure 20: Daily spring flows for Jackson Blue Spring

Data represents daily averages. Long-term flows represent the daily average between December 21, 2004, and June 30, 2024.

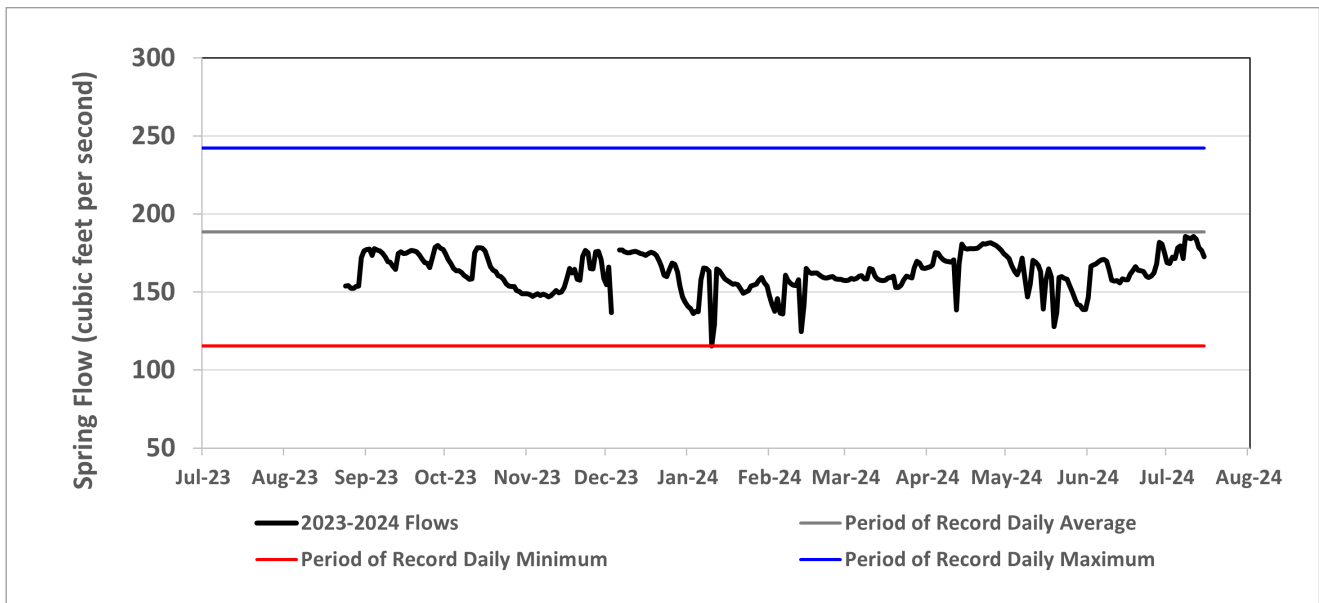


Gainer Spring Group. The average daily flow at the Gainer Spring Group was 189 cfs during July 2024 (July 1 through July 15, 2024). This represents the lowest recorded monthly average for July for the period of continuous flow data, which extends from October 28, 2019, through July 15, 2024 (Figure 21). The long-term average monthly spring flow for July is 192 cfs.

Throughout the timeseries, there are several drops and recoveries in the spring flow. This is caused by Econfina Creek spiking in stage adjacent to the spring group during rain events. The extra pressure exerted on the groundwater by the surface water in the stream slows the flow from the spring group. Since Econfina Creek does not tend to stay high for long after the conclusion of a rain event, as the stage level quickly drops, the flow from the spring group recovers just as quick since there is less pressure from the stream. It should be noted that there is a relatively brief period of record for this system, and spring flows among the highest and lowest on record are to be expected.

Figure 21: Gainer Spring Group flows

Data represents daily averages. Streamflow statistics are not shown due to the relatively short period of daily data.



Aquifer Levels

Classifications of Floridan aquifer monitor wells across the District were mostly below normal or within normal ranges in the middle of July 2024 (Figures 22 – 27). There were two stations where the groundwater levels were classified outside of the majority. In northwest Leon County, groundwater levels at the USGS-Lake Jackson Upper Floridan monitor well (NWFID 3402) continue to be elevated above normal ranges (Figure 23). In central Bay County, groundwater levels at the Fannin Airport Monitor well (NWFID 697) continued to decrease until just after the middle of the month when levels began to increase, ending the month classified as below normal (Figure 26). All sand-and-gravel aquifer wells depicted were within normal ranges except for NFWMD- Allen Tower Deep monitor well (NWFID 5401) in northern Santa Rosa County, which continues to be classified as below normal (Figure 22).

Figure 22: Floridan aquifer monitor wells and aquifer level percentiles for July 2024

Percentile class rankings are based on each well’s period of record. All wells have a minimum of 20 years of data.

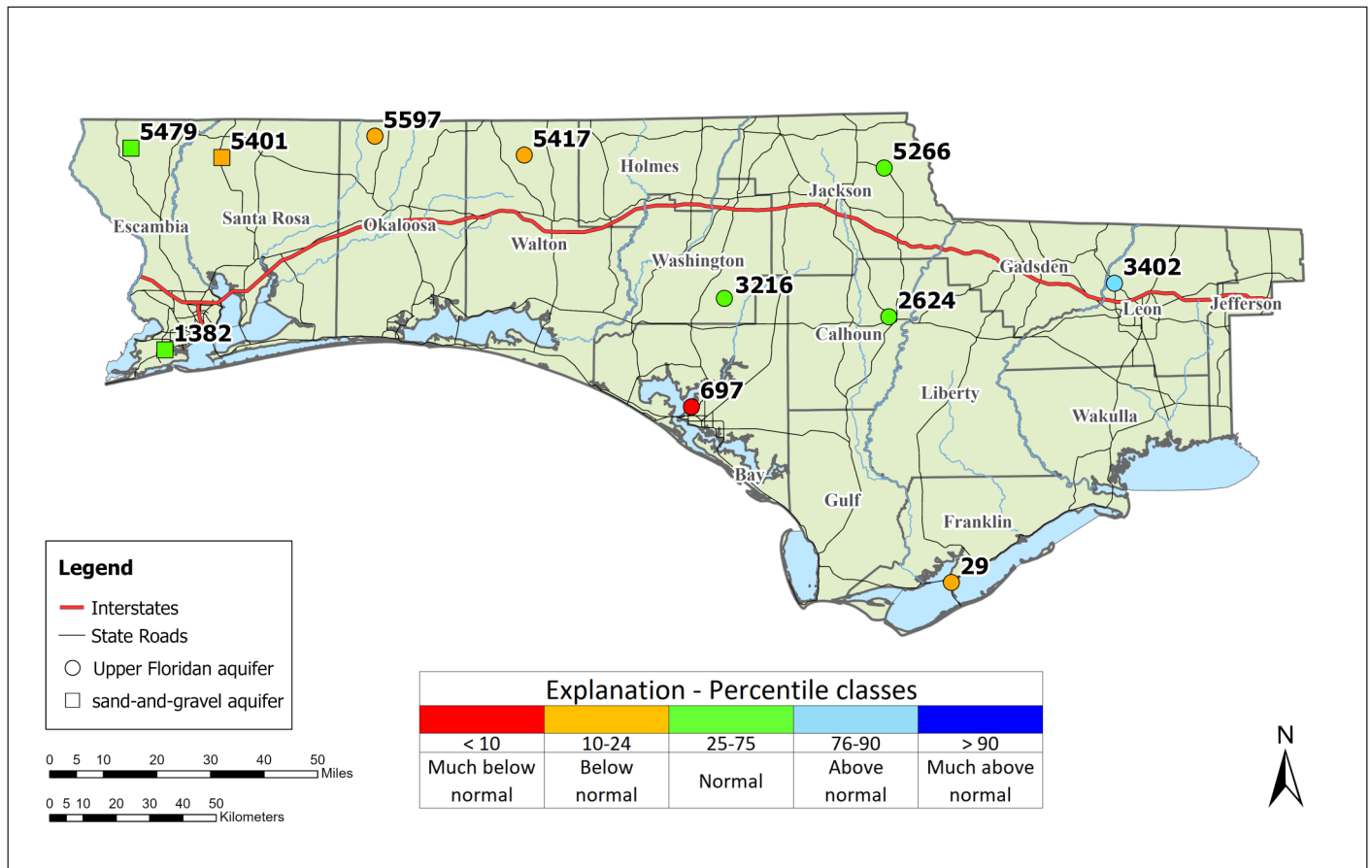


Figure 23: Daily Upper Floridan aquifer levels at USGS-Lake Jackson well (NWFID 3402), Leon County

Land surface elevation is 121.40 ft, NAVD 88

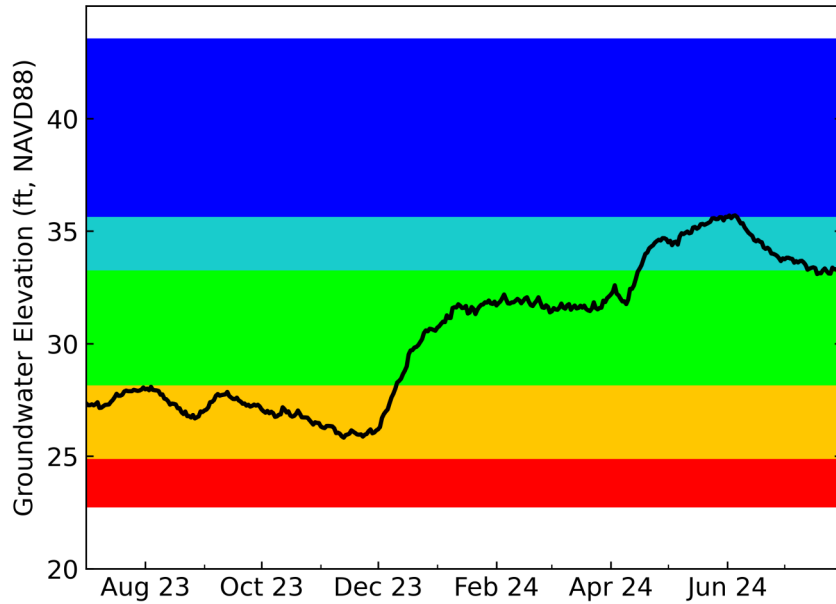
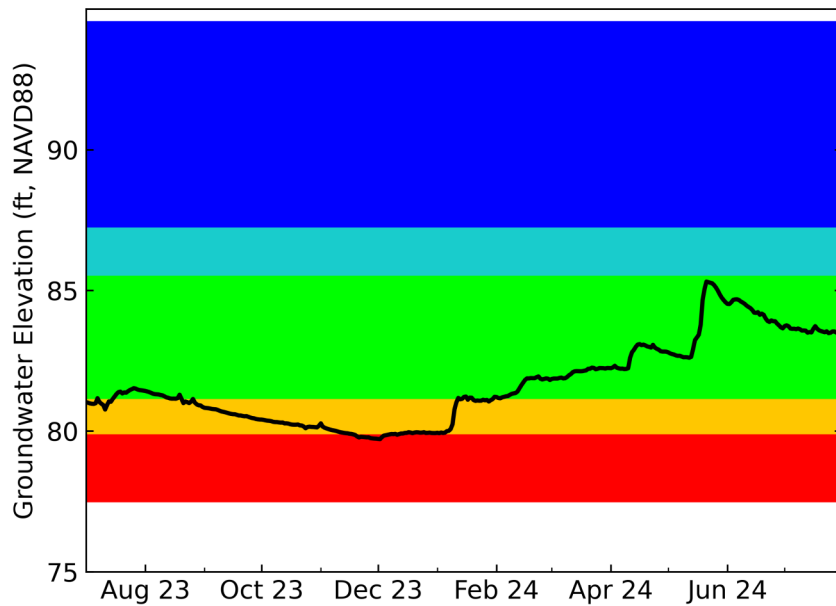


Figure 24: Daily Upper Floridan aquifer levels at NFWFMD Pittman Visa well (NWFID 5266), Jackson County

Land surface elevation is 127.31 ft, NAVD 88



Explanation - Percentile classes				
< 10	10-24	25-75	76-90	> 90
Much below normal	Below normal	Normal	Above normal	Much above normal



Figure 25: Daily Upper Floridan aquifer levels at USGS-422A Near Greenhead well (NWFID 3216), Washington County

Land surface elevation is 66.75 ft, NAVD 88

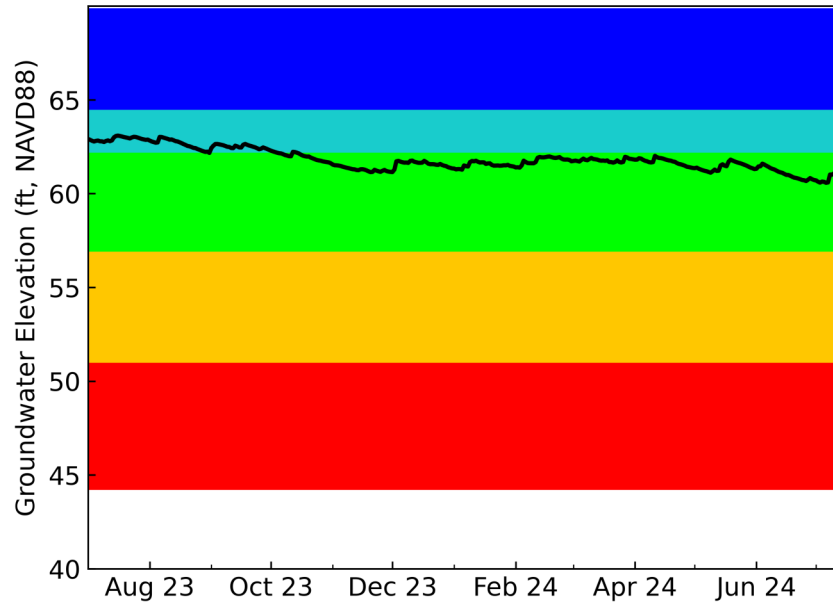
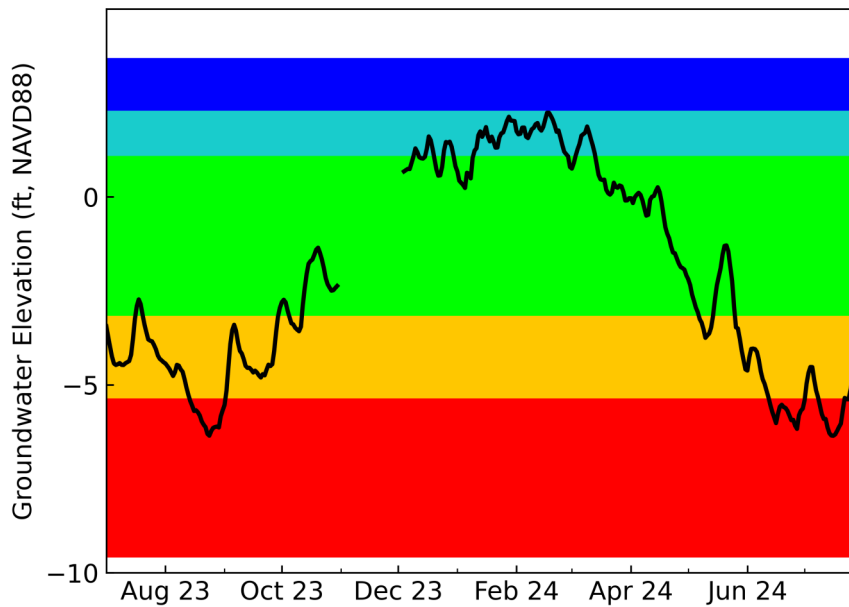


Figure 26: Daily Upper Floridan aquifer levels at Fannin Airport well (NWFID 697), Bay County

Land surface elevation is 4.05 ft, NAVD 88

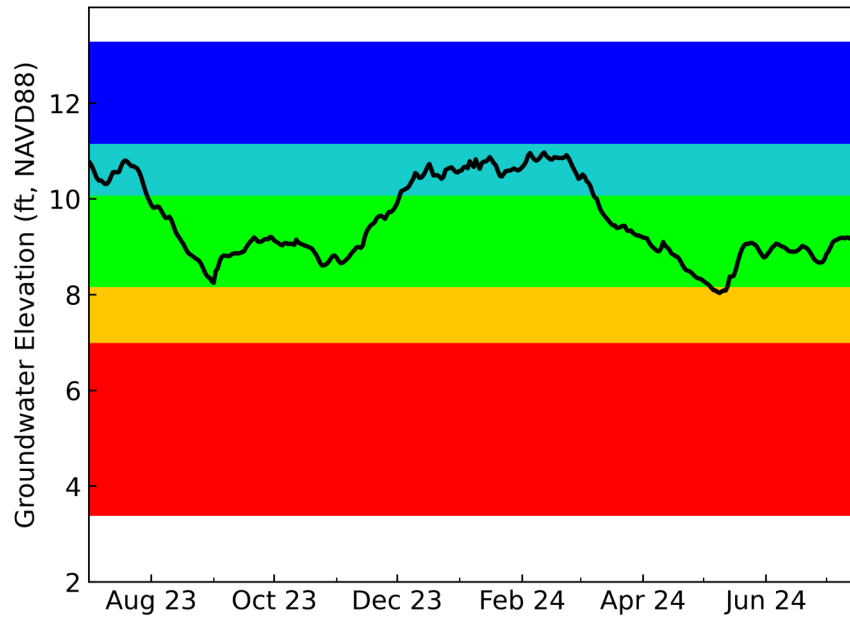


Explanation - Percentile classes				
< 10	10-24	25-75	76-90	> 90
Much below normal	Below normal	Normal	Above normal	Much above normal



Figure 27: Daily sand-and-gravel aquifer levels at Weller Ave Deep well (NWFID 1382), Escambia County

Land surface elevation is 25.09 ft, NAVD 88



Explanation - Percentile classes				
< 10	10-24	25-75	76-90	> 90
Much below normal	Below normal	Normal	Above normal	Much above normal

