



Northwest Florida Water Management District

Hydrologic Conditions Report

October 2024

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Summary

October 2024 was characterized by much below normal precipitation and slightly above normal temperatures (averaging around 70.3 degrees Fahrenheit) that contributed to generally normal or below normal aquifer levels and normal spring flow across most of the Panhandle. Residual impacts from the rain received during Hurricane Helene in late September 2024 in the eastern portion of the District continued to divide the Panhandle regarding streamflow with mostly below normal flow towards the west and above normal or normal flow to the east. The lack of rain throughout October 2024 allowed moderate drought conditions to form in the northern portion of the western counties and abnormally dry conditions to encompass the entire panhandle by the end of the month.

Rainfall

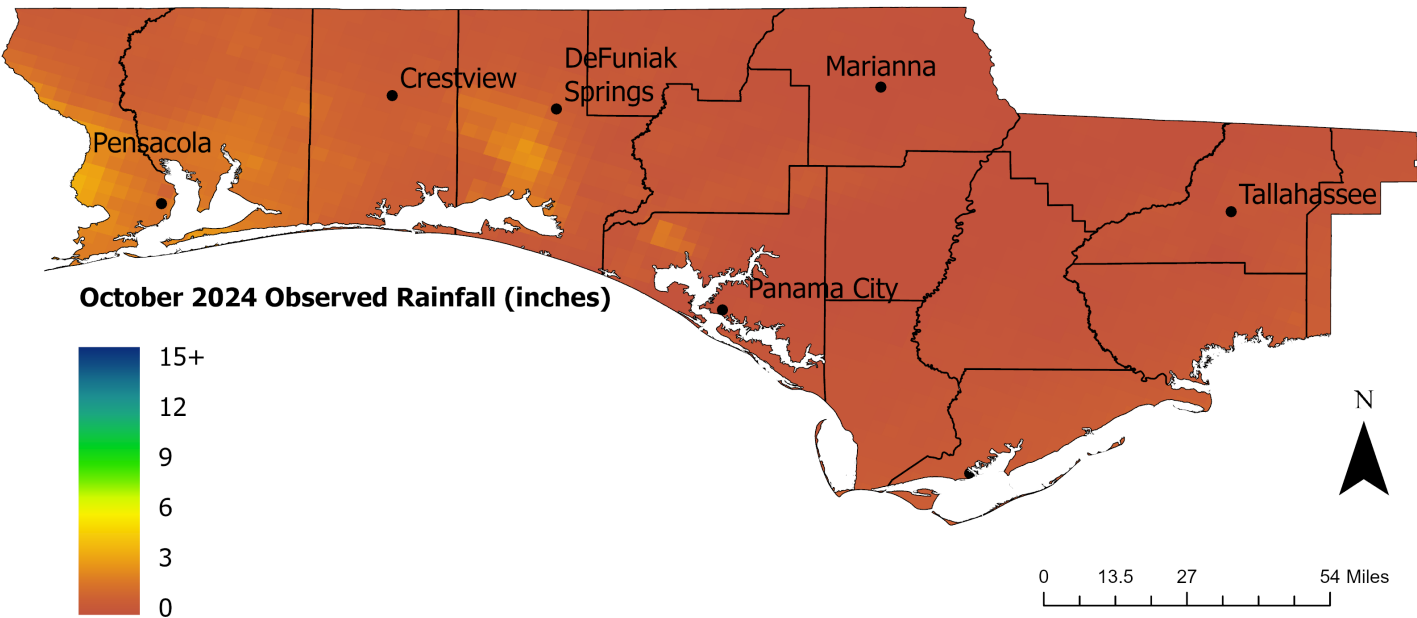
The District in October 2024 recorded an average of 0.49 inches of rain across the Panhandle. This was 3.13 inches (152%) below the District normal rainfall amount for the month of October, 3.62 inches. Normal rainfall is defined as average monthly rainfall for the 1991 to 2020 reference period. Most of the District received less than 1.00 inch of rain during October 2024 (**Table 1; Figures 1 - 7**), a result of persistent high pressure over the eastern United States for the majority of the month. The most significant rain event occurred on October 3 and 4, 2024, in the Pensacola area. Pensacola received their entire October 2024 precipitation sum of 1.29 inches as a result of the rain event.

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

Station	October Normal Rainfall (1991 to 2020)	October 2024 Observed Rainfall	Percent Difference
Tallahassee Regional Airport	3.24	0.22	-174.6%
Marianna Regional Airport	3.06	0.01	-198.7%
Niceville, FL	4.60	0.46	-163.6%
Pensacola Regional Airport	4.70	1.29	-113.9%

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

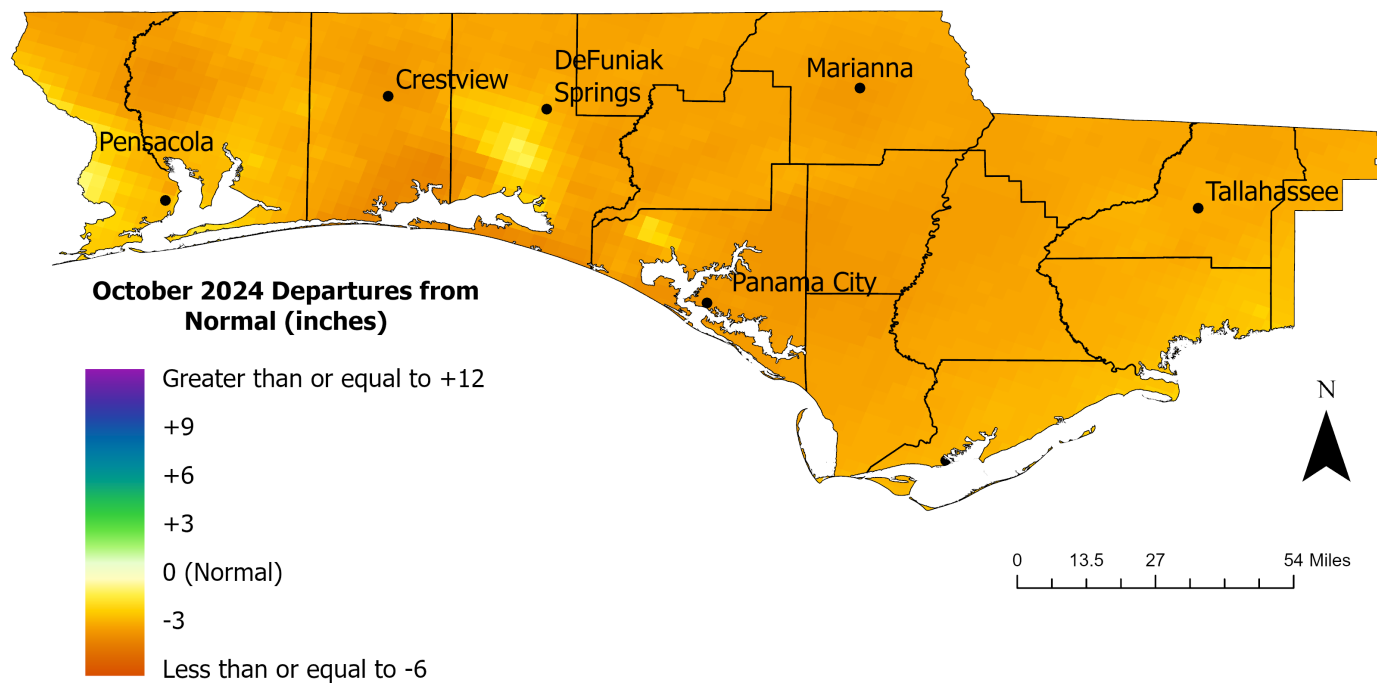
Figure 1: District-wide October 2024 observed rainfall



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

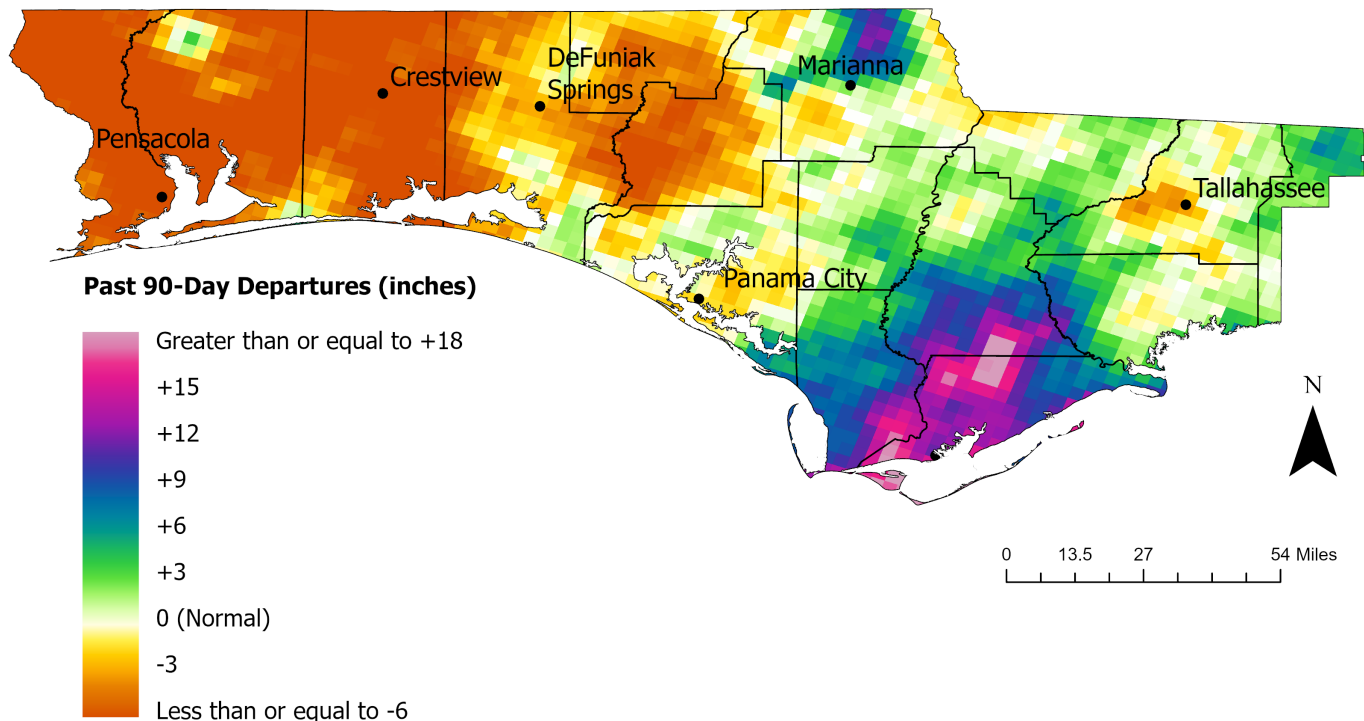


Figure 2: District-wide October 2024 precipitation departure from normal



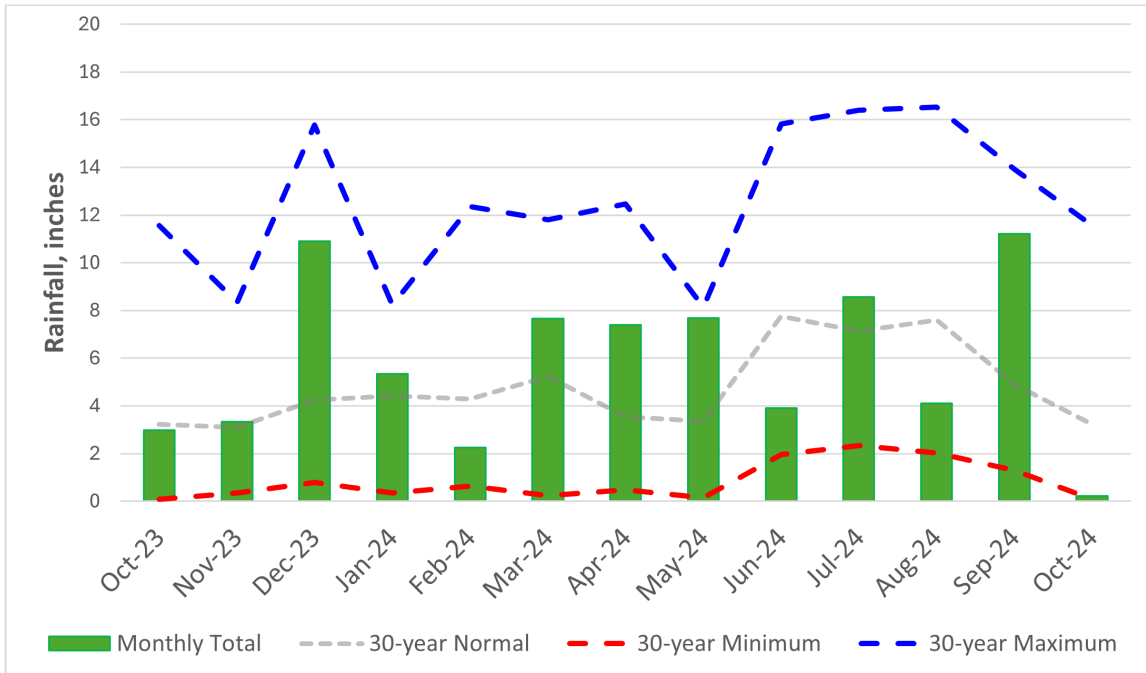
Source: <https://water.weather.gov/precip/download.php>

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



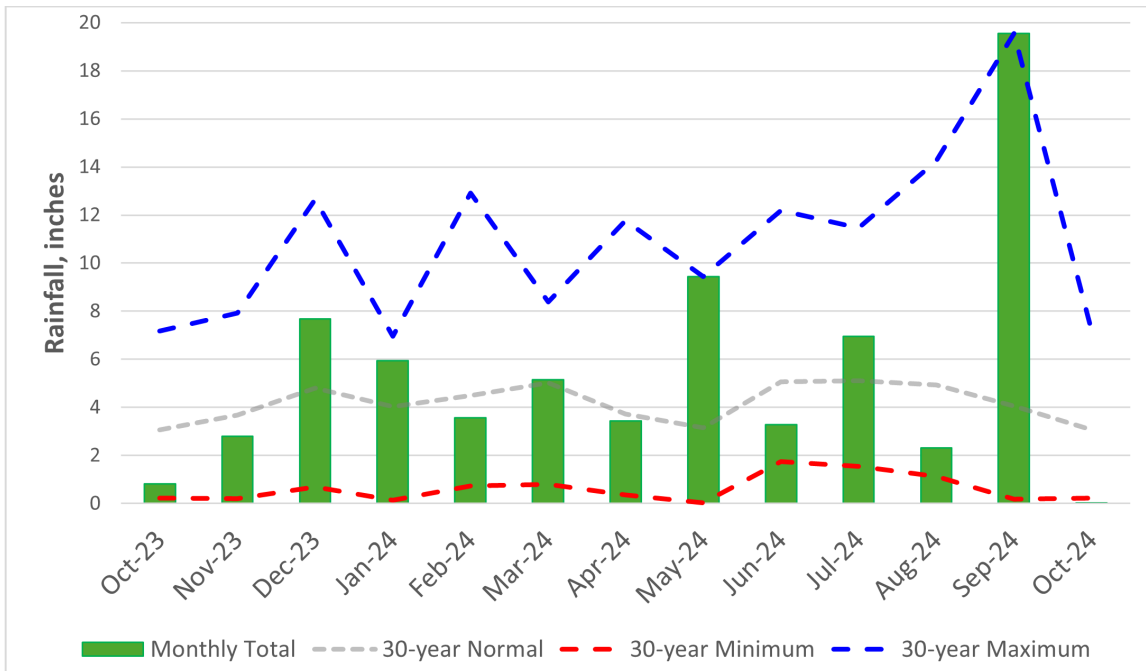
Source: <https://water.weather.gov/precip/download.php>

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



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

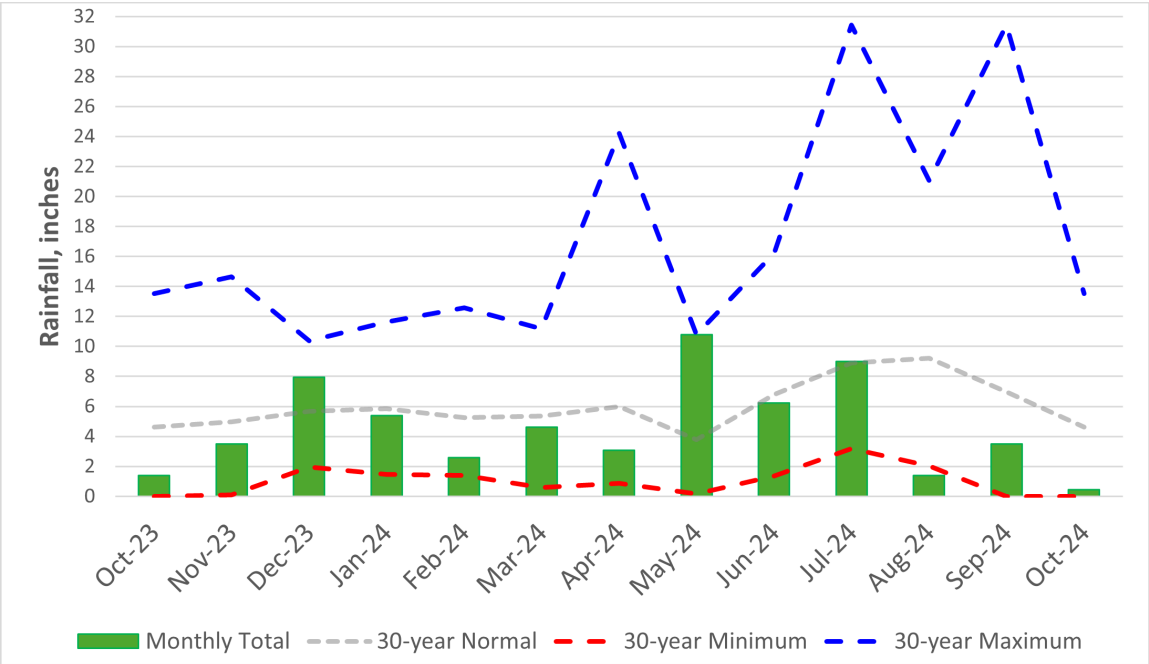
Figure 5: Observed rainfall at Marianna Regional Airport for October 2023 to October 2024 compared to the 30-year normal, minimum, and maximum precipitation for each month



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

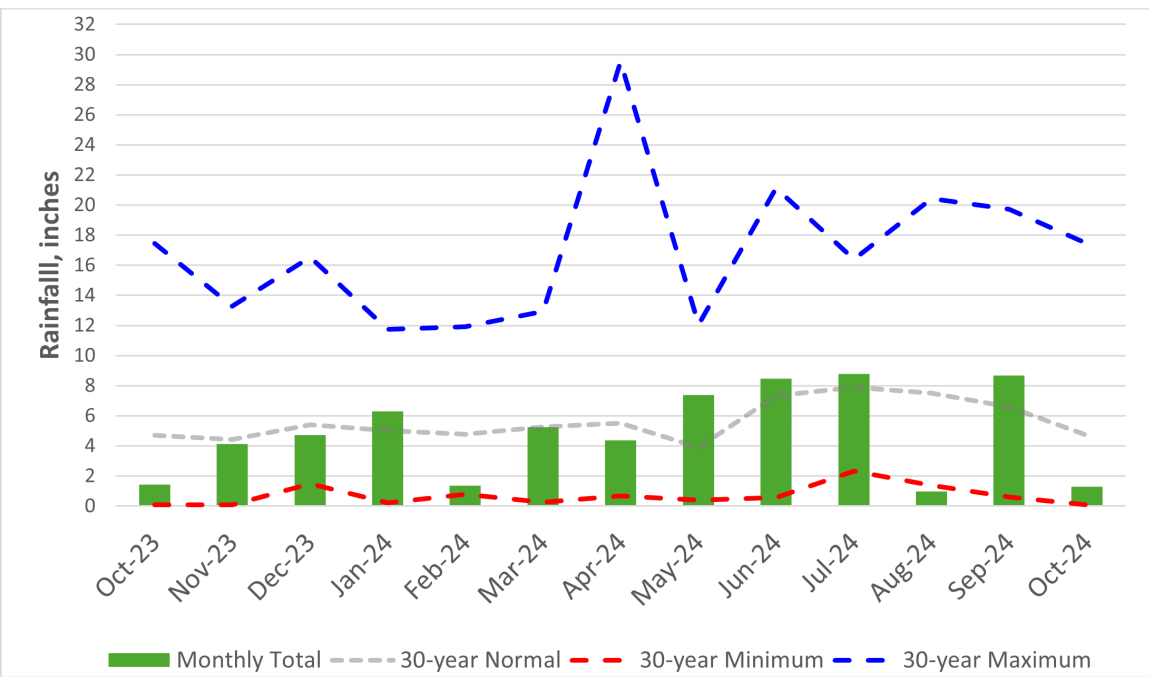


Figure 6: Observed rainfall in Niceville for October 2023 to October 2024 compared to the 30-year normal, minimum, and maximum precipitation for each month



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

Figure 7: Observed rainfall at Pensacola Regional Airport for October 2023 to October 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 November 4, 2024, for November 2024 shows a slight chance for warmer than average temperatures and equal chances of above or below normal rainfall amounts across the District.

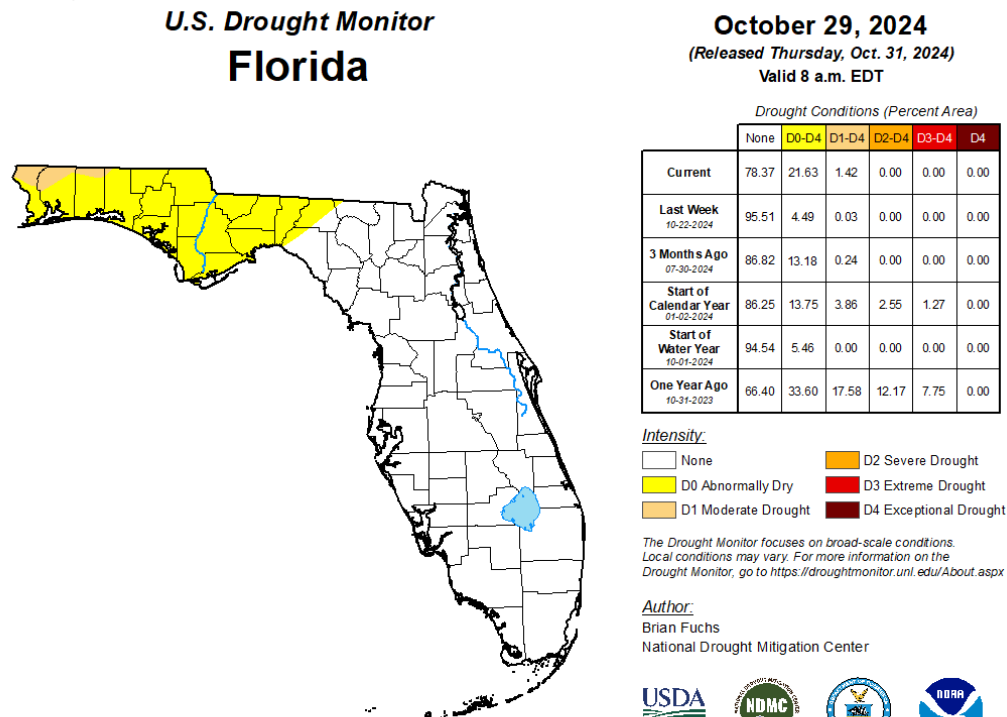
As of November 4, 2024, ENSO-neutral conditions are present and a La Niña Watch has been advised. La Niña conditions are favored to develop during November (60% chance) and are forecast to persist through January-March 2025. A La Niña pattern during hurricane season creates ideal conditions for the development 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-november-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 October 31, 2024, showed the entire panhandle under at least abnormally dry conditions with northern Escambia, Santa Rosa, and Okaloosa Counties under moderate drought conditions (**Figure 8**). This is a result of the lack of precipitation throughout the month (**Figures 1 & 2**). According to the U.S. Monthly Drought Outlook valid for November 2024, drought conditions in the Southeast are expected to persist or develop further. However, confidence in this forecast is diminished due to an elevated chance of a tropical cyclone emerging from the Caribbean Sea and moving into the Gulf of Mexico during November 2024.

Figure 8. Florida Drought Conditions on October 29, 2024

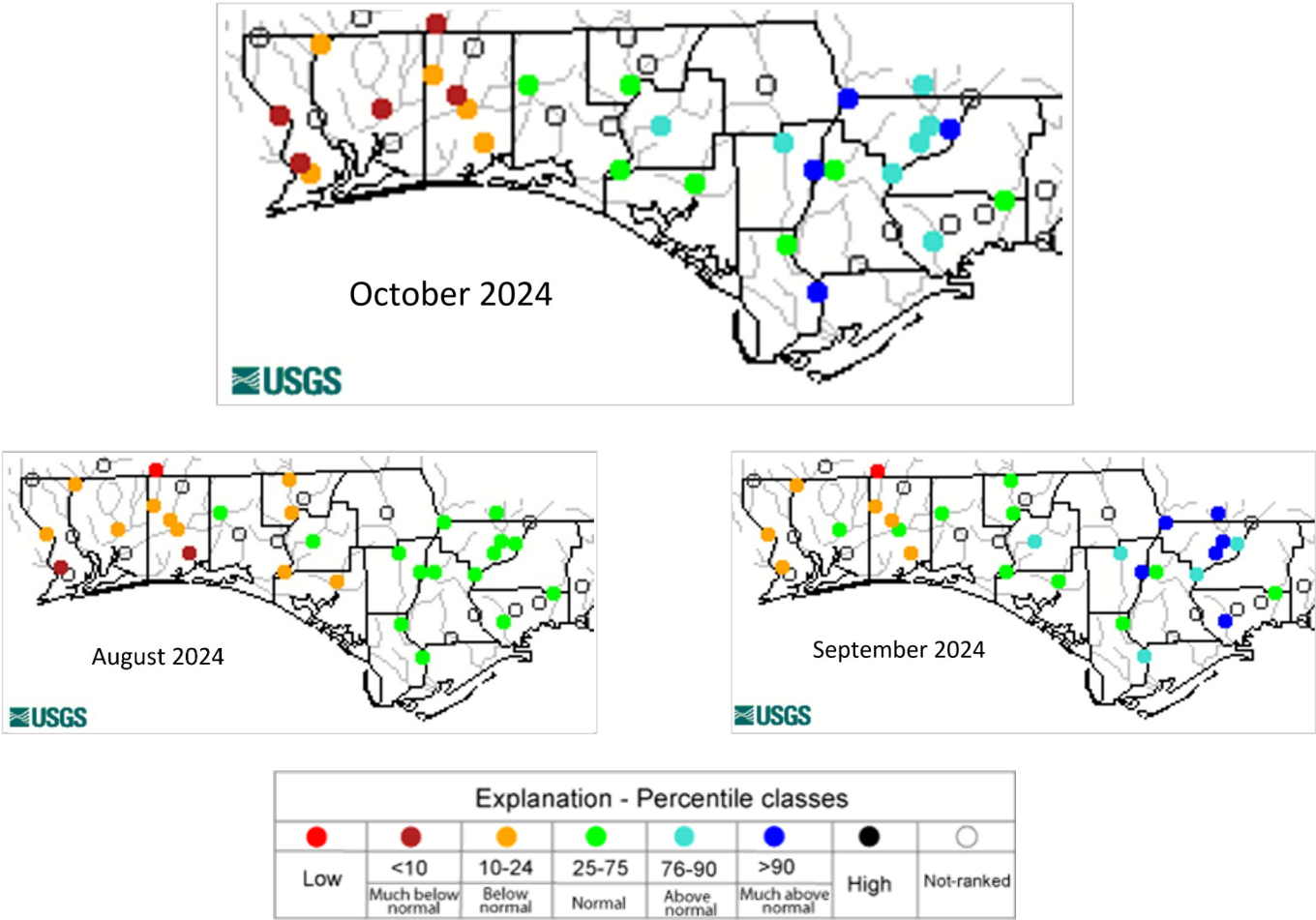


Source: <https://droughtmonitor.unl.edu/CurrentMap/StateDroughtMonitor.aspx?FL>

Surface Water

Streamflows. Decreased rainfall amounts throughout October 2024 across the District (**Figures 1 & 2**) contributed to a continuation or a decrease in streamflow percentiles compared to mid-September 2024 conditions (**Figures 9 – 15**). Stations located in areas under moderate drought or abnormally dry conditions (**Figure 8**) including stations in Escambia, Santa Rosa, and Okaloosa Counties continued to have flow percentiles classified as below normal with some stations decreasing further into much below normal classifications. Stations towards the eastern portion of the District also recorded decreasing flow, but remain classified as normal, above normal, or much above normal due to residual impacts from the rainfall received during Hurricane Helene in late September 2024. Though there was very little change in the pattern of streamflow percentiles across the Panhandle between September and October 2024, the time-series plots all show a decrease in flow throughout October (**Figures 10 - 15**).

Figure 9: Northwest Florida August 2024 to October 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

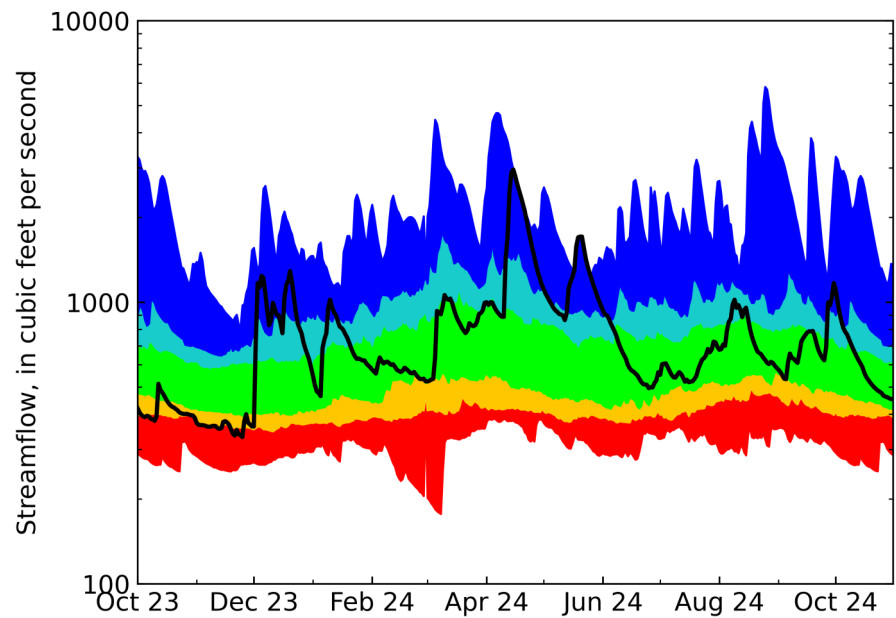
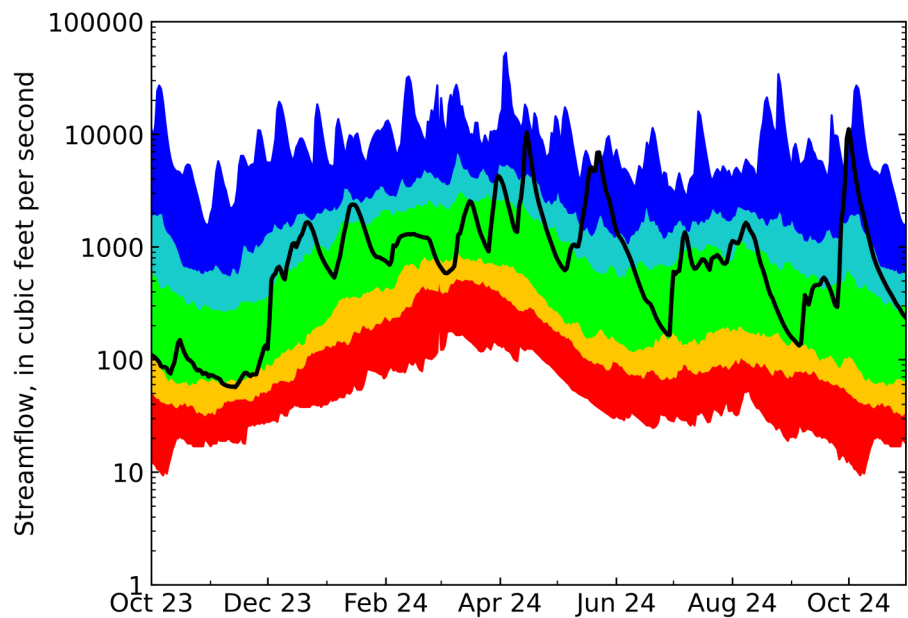


Figure 11: Daily streamflows and percentile ranges for USGS Station 02329000 Ochlockonee River Near Havana, Florida



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

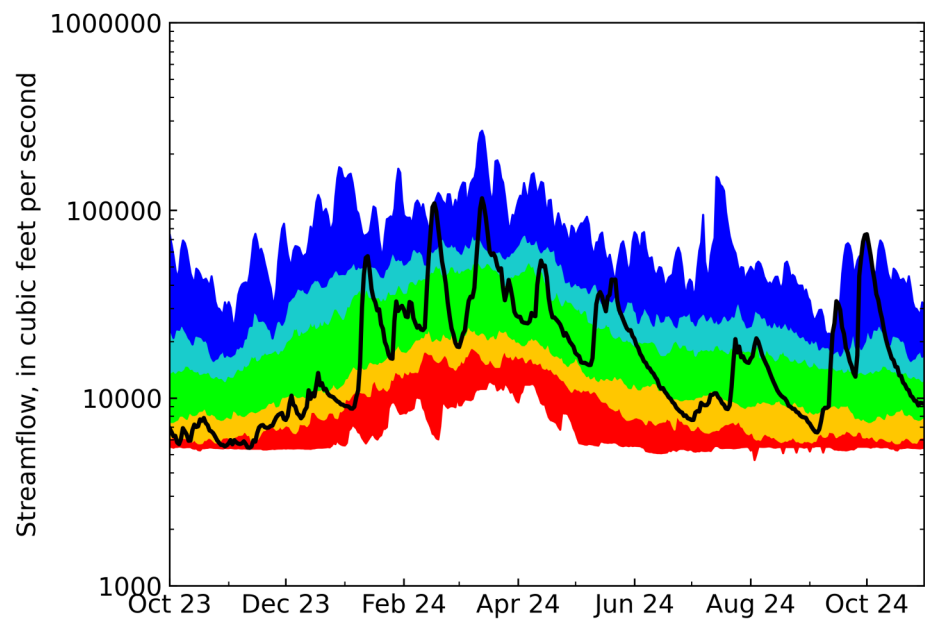
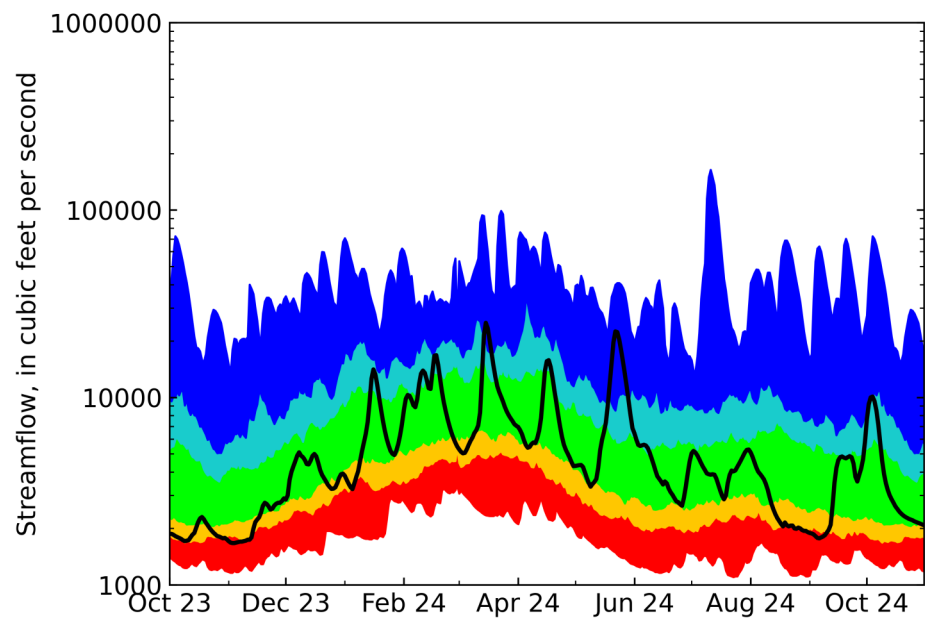


Figure 13: Daily streamflows and percentile ranges for USGS Station 02366500 Choctawhatchee River Near Bruce, Florida



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

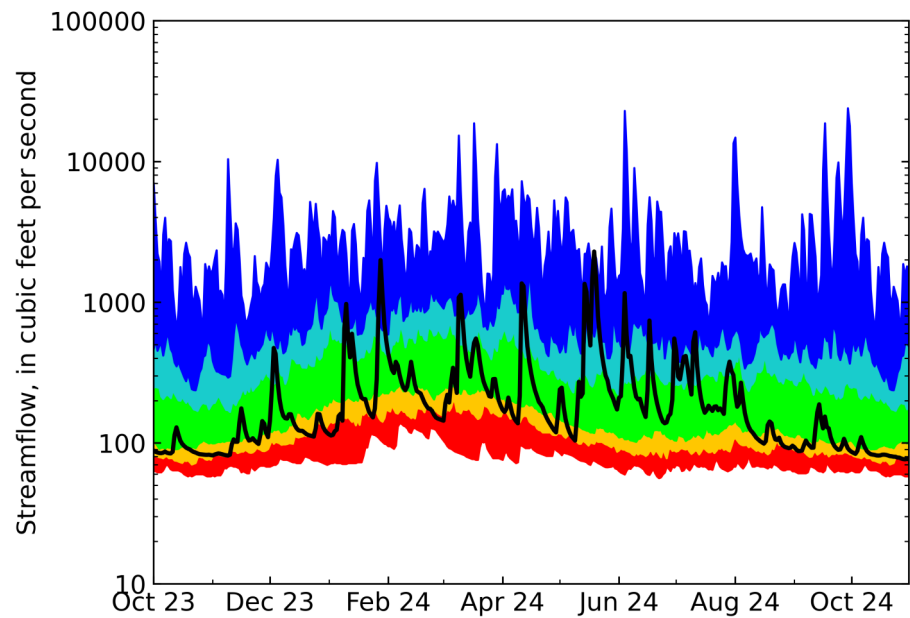
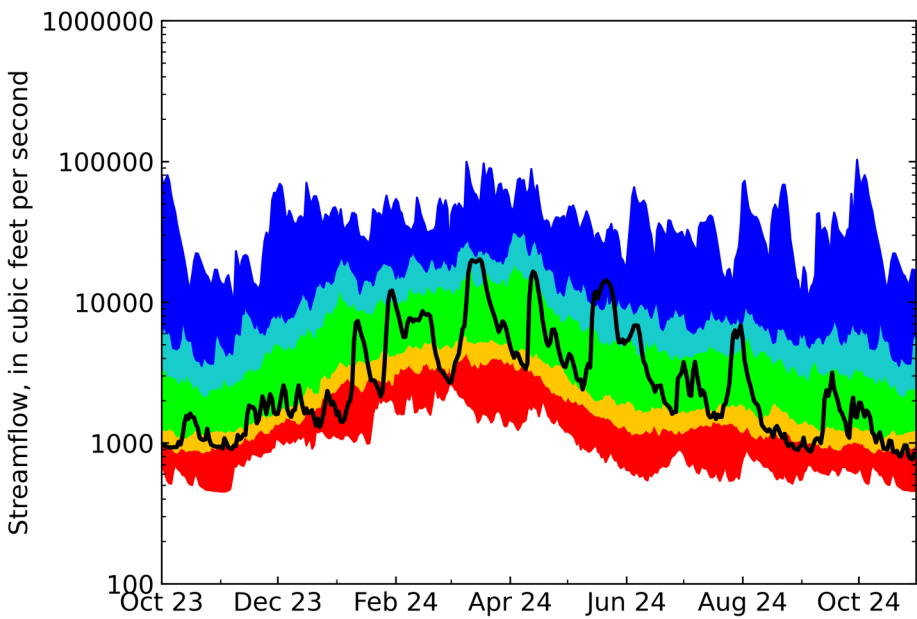


Figure 15: Daily streamflows and percentile ranges for USGS Station 02375500 Escambia River Near Century, Florida



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



Lake Levels. Water levels at Lake Jackson in Leon County decreased by 0.48 feet throughout October 2024, ending the month with a stage level of 81.65 feet, NAVD 1988 ([Figure 16](#)). The long-term (January 29, 2003 to October 31, 2024) average stage level for Lake Jackson is 80.88 feet, NAVD 1988, and the full pool level is 85.74 feet, NAVD 1988.

Water levels at Piney Lake in southern Washington County decreased by 0.44 feet throughout October 2024, ending the month with a stage level of 49.12 feet, NAVD 1988 ([Figure 17](#)).

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

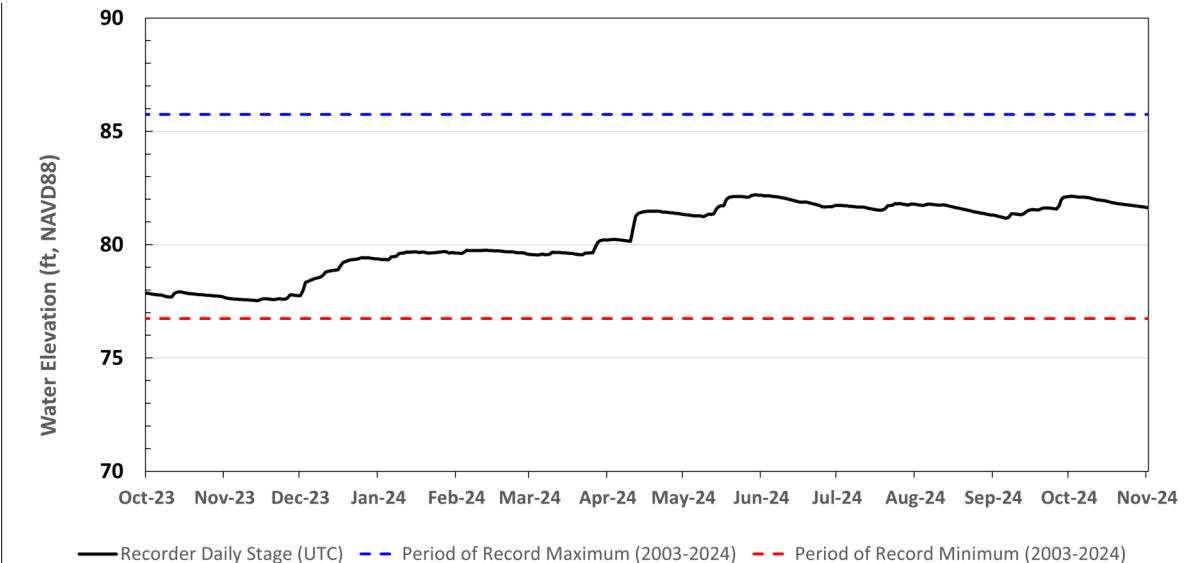
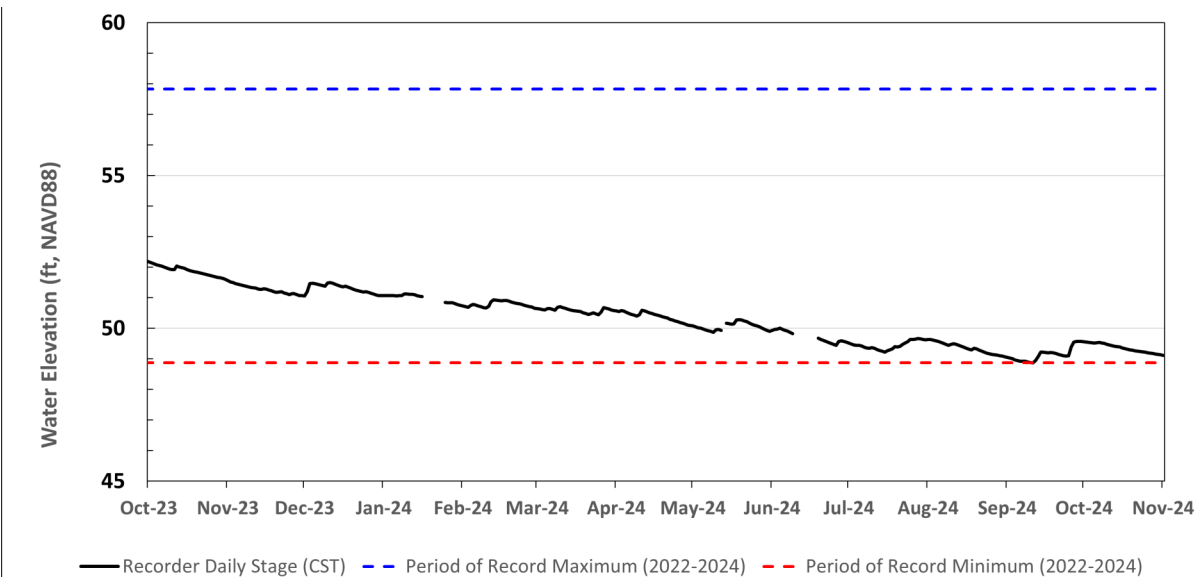


Figure 17: Daily water levels at Piney Lake, Washington County



Spring Flows

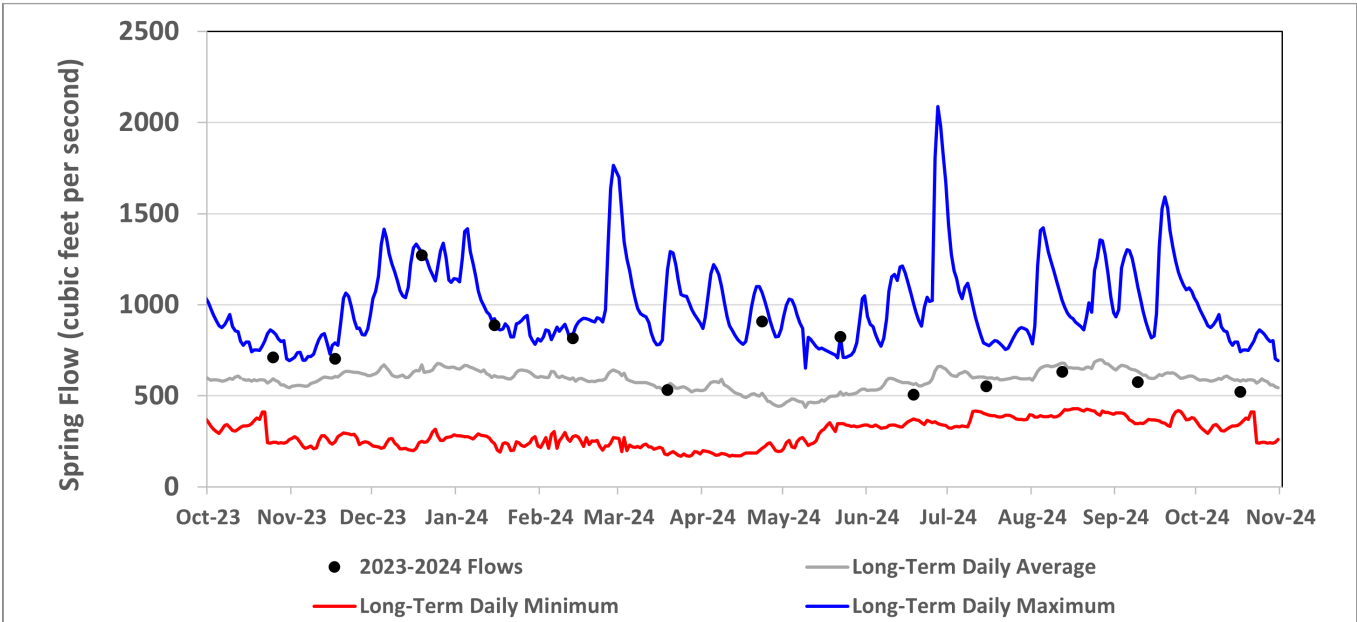
Wakulla and Sally Ward Spring System. Flows at Wakulla Spring decreased slightly between the measurements taken in September and October 2024, continuing to remain slightly below the long-term average flow. The most recent flow measurement for Wakulla Spring was 522 cubic feet per second (cfs), which was conducted on October 17, 2024 (Figure 18). The long-term (November 2004 to October 2024) average flow for the month of October is 583 cfs.

Flow at Sally Ward Spring increased by 1.5 cfs between the measurements taken in September and October. The most recent flow measurement for Sally Ward was 24.4 cfs on October 17, 2024. This measurement was 2.4 cfs higher than the long-term average flow for the month of October of 22.0 cfs. The long-term average flow is based on the November 1, 2004, to October 17, 2024, period of record.

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 October 17, 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

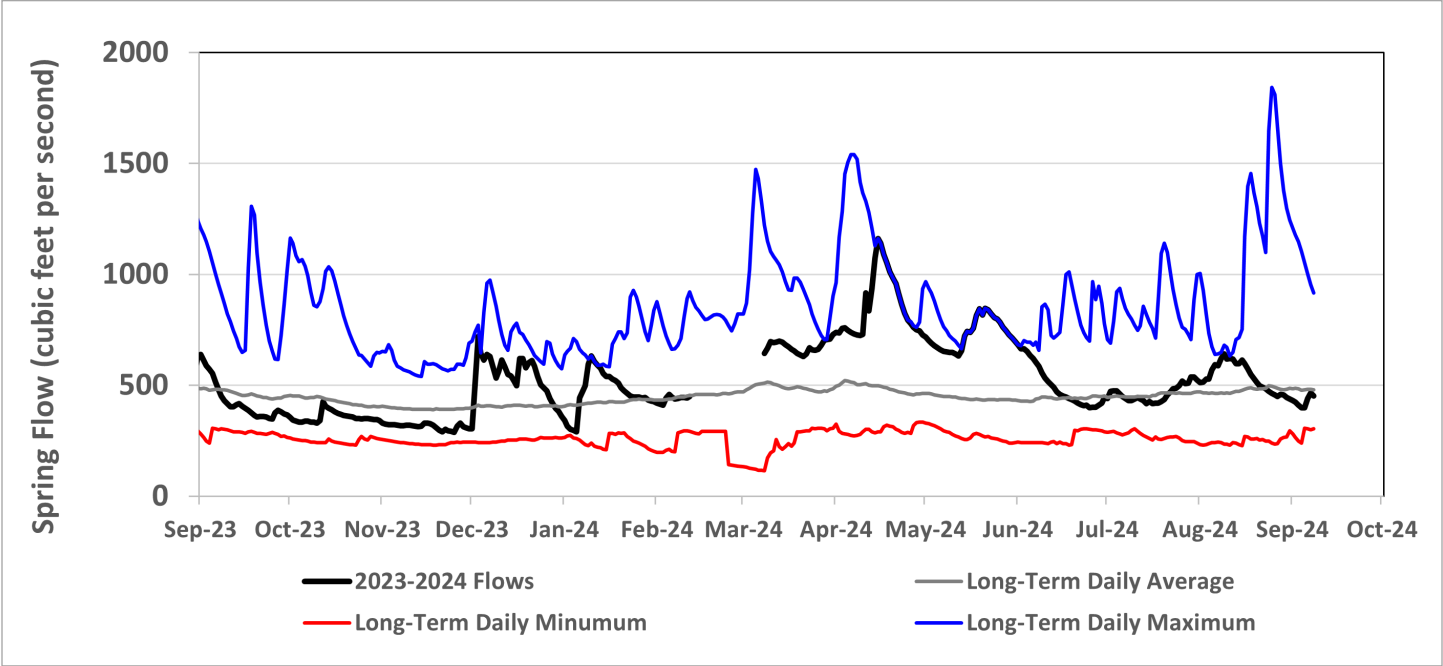
Data from September 1, 2023, through October 31, 2024, represent discrete measurements. Daily statistics are based on the October 23, 2004, through October 17, 2024, period of record.



St. Marks River Rise. The mean daily spring flow for October 2024 at the St. Marks River Rise was 356 cfs, based on the available USGS provisional data which extends through October 31, 2024 (Figure 19). At the beginning of October 2024, a spike followed by a steep drop in flow can be seen in the time-series caused by the precipitation received during Hurricane Helene. The steep drop occurred because the rain increased the stage of the St. Marks River, exerting extra pressure and lowering the flow from the spring. Flow from the spring then increased in the following days as the stage of the St. Marks River dropped.

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 October 31, 2024, are included, the 30-year moving average spring flow for the St. Marks River Rise is 426 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 and 7 cfs, respectively.

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

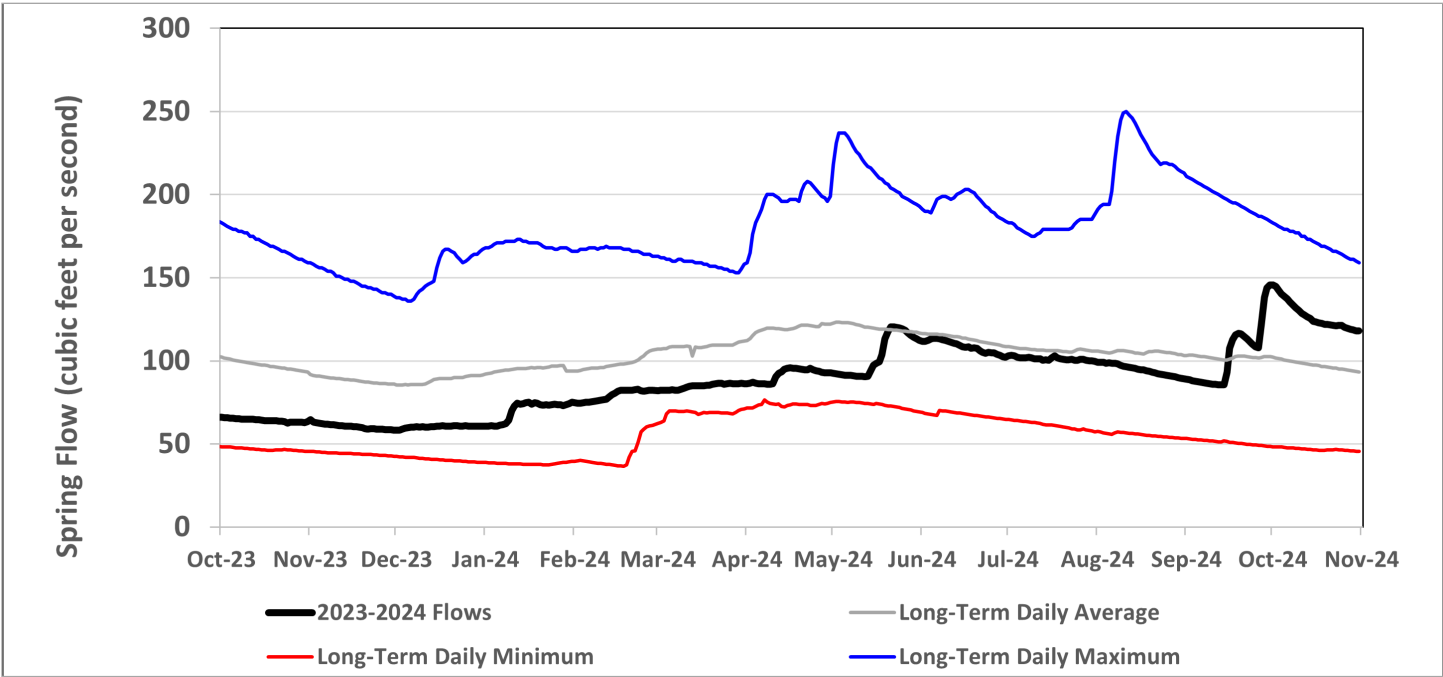


Jackson Blue Spring. Daily average flows at Jackson Blue Spring for the month of October 2024 averaged 127 cfs. This was above the long-term (December 21, 2004, through October 31, 2024) average flow for the month of October of 97.4 cfs ([Figure 20](#)).

During the beginning of October 2024, flows at Jackson Blue Spring decreased from the elevated flows recorded after Hurricane Helene passed through the area in late September 2024. Flow from the spring then generally stabilized around 125 cfs in mid-October 2024.

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 September 30, 2024.

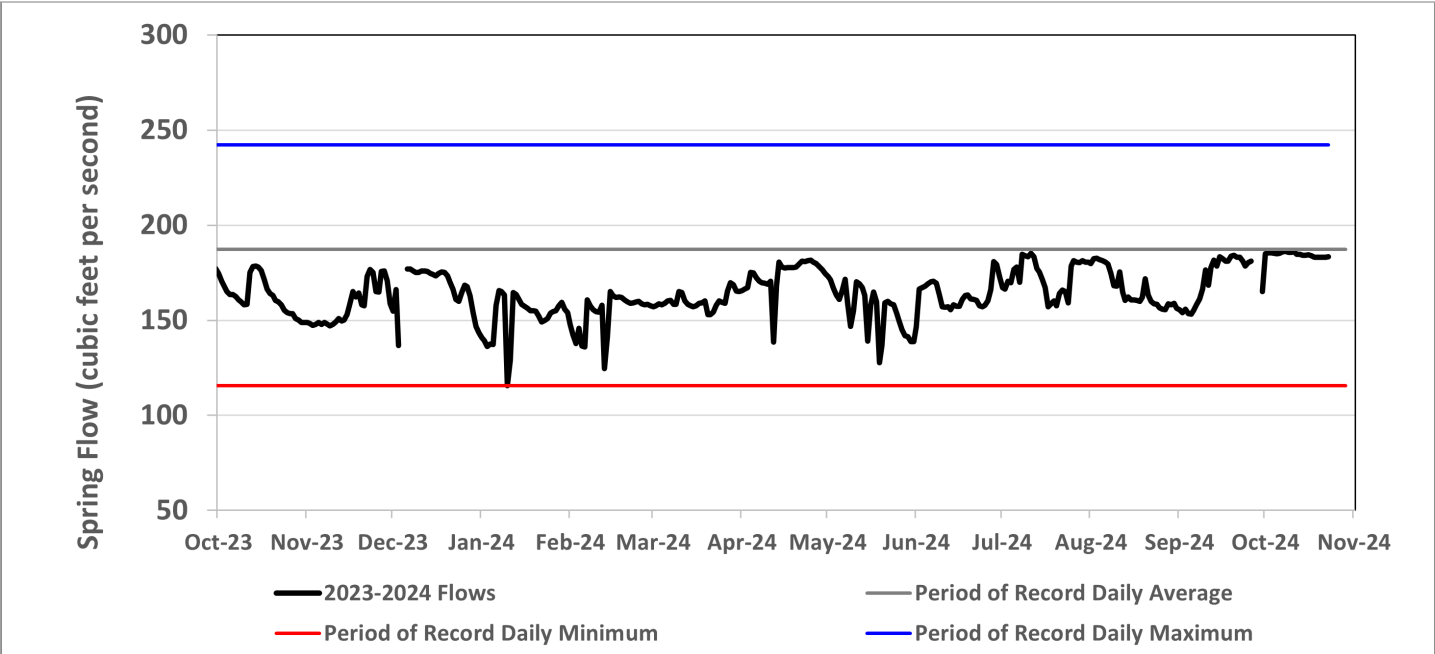


Gainer Spring Group. During October 2024 (October 1 through October 29, 2024), flow at the Gainer Spring Group was 184 cfs (**Figure 21**). The period of record (October 28, 2019, through October 29, 2024) average monthly spring flow for October is 177 cfs. It should be noted that there is a relatively brief period of record for this system, and spring flows among the highest and lowest on record are to be expected.

Throughout the timeseries, there are several drops and recoveries in the spring flow. This is caused by Econfinia Creek spiking in stage adjacent to the spring group after rain events. The extra pressure exerted on the groundwater by the surface water in the stream slows flow from the spring group. Since Econfinia 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 since there is less pressure from the stream.

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

There was very little change in pattern of aquifer level percentiles between September and October 2024. Classifications of Floridan aquifer monitor wells remained generally within normal ranges in the eastern portion of the District while Floridan monitor wells to the west recorded generally below normal levels in the middle of October 2024 (Figures 22 - 28). The only difference in Floridan percentile classifications were at Pittman VISA monitor well (NWFID 5266) in northeastern Jackson County (Figure 25) and at Lake Jackson Floridan monitor well in northwestern Leon County (Figure 23) where both increased into above normal ranges as a result of the excessive rain received from Hurricane Helene in late September 2024.

All sand-and-gravel aquifer wells recorded below normal ranges except for NFWMD-Weller Ave Deep monitor well (NWFID 1382) in southern Escambia County, which has remained within normal ranges for most of 2024 (Figures 22 & 28).

Figure 22: Floridan aquifer monitor wells and aquifer level percentiles for mid-October 2024

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

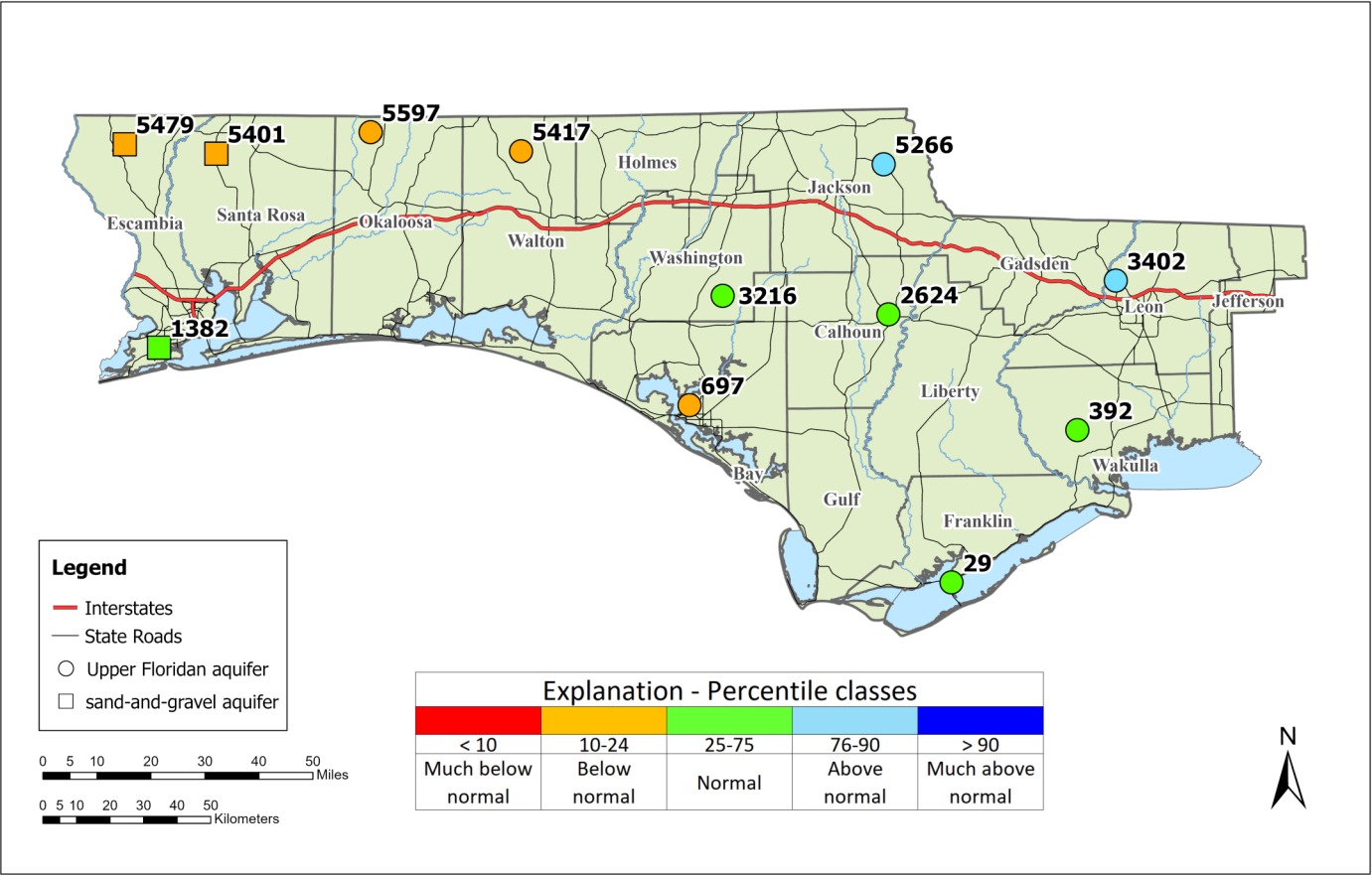


Figure 23: Daily Upper Floridan aquifer levels at USGS-Lake Jackson well (NWFID 3402), Leon County

Land surface elevation is 121.40 ft, NAVD 88

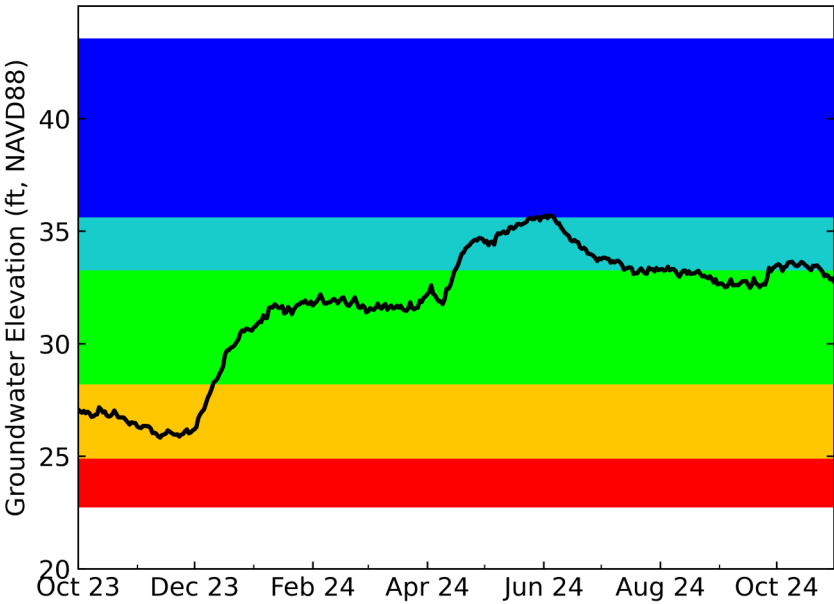
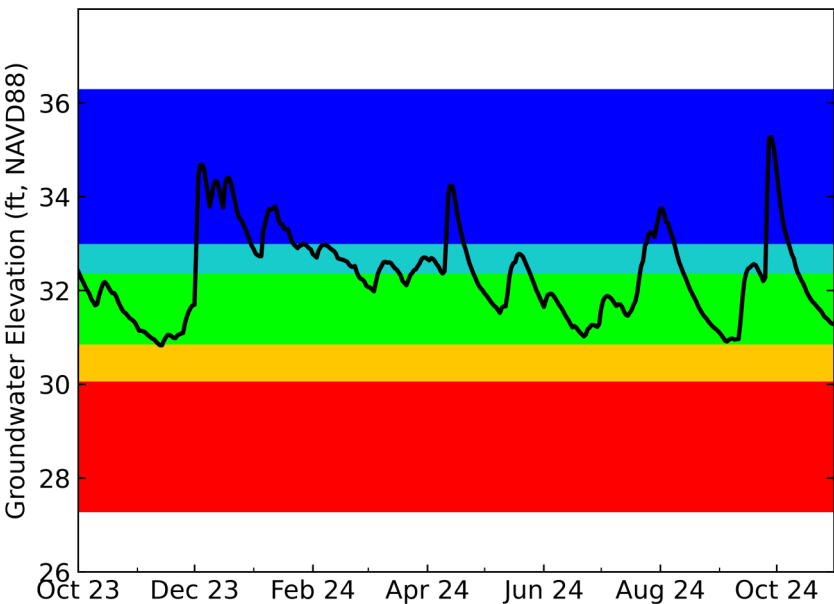


Figure 24: Daily Upper Floridan aquifer levels at USGS Benchmark well (NWFID 392), Wakulla County

Land surface elevation is 46.27 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 NFWFMD Pittman Visa well (NWFID 5266), Jackson County
Land surface elevation is 127.31 ft, NAVD 88

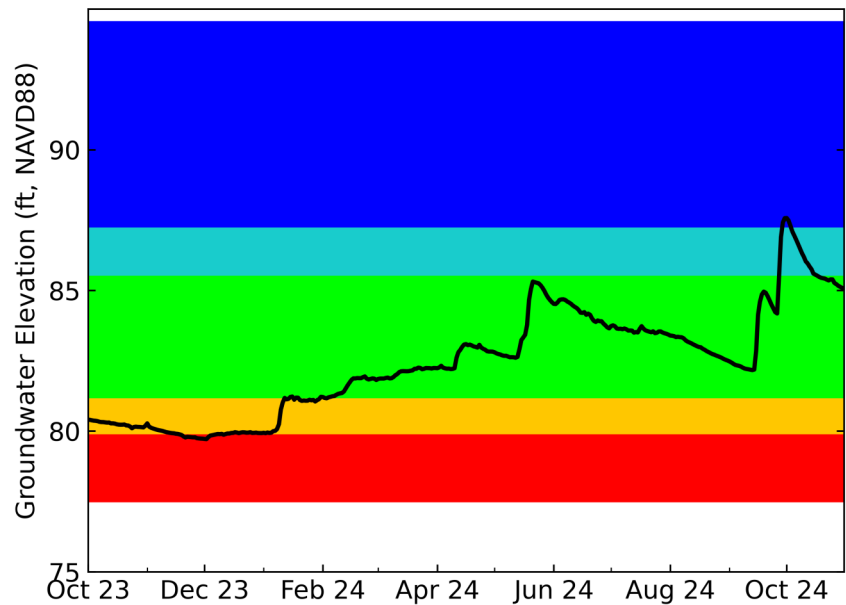


Figure 26: Daily Upper Floridan aquifer levels at USGS-422A Near Greenhead well (NWFID 3216), Washington County
Land surface elevation is 66.75 ft, NAVD 88

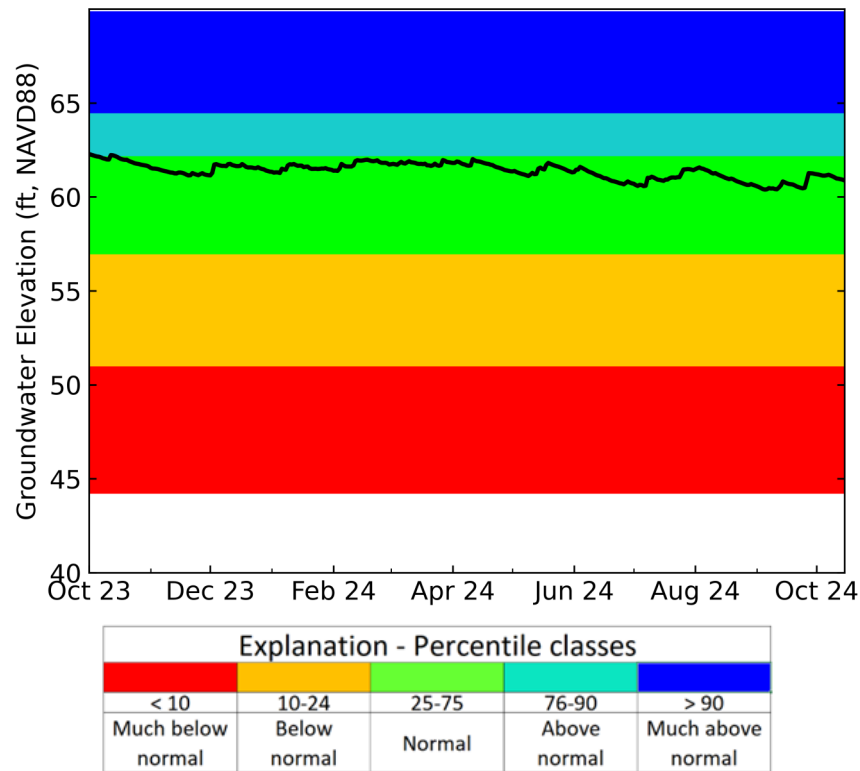


Figure 27: Daily Upper Floridan aquifer levels at Fannin Airport well (NWFID 697), Washington County

Land surface elevation is 4.05 ft, NAVD 88

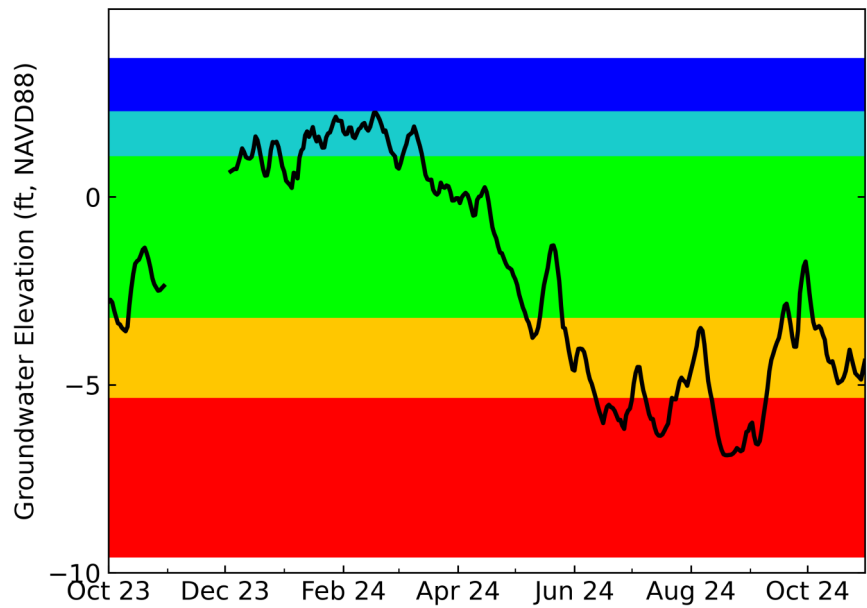
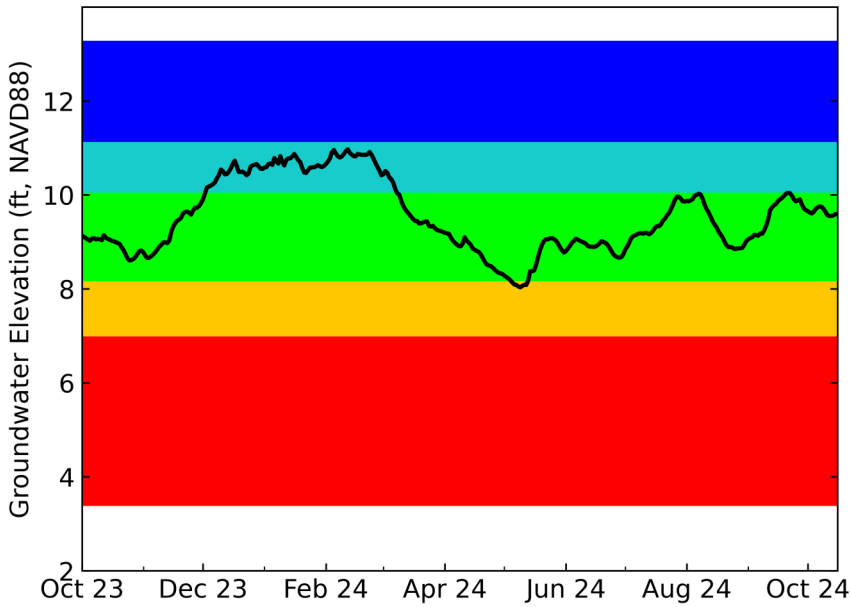


Figure 28: Daily sand-and-gravel aquifer levels at NFWFMD Weller Ave Deep well (NWFID 1382), Escambia County

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

