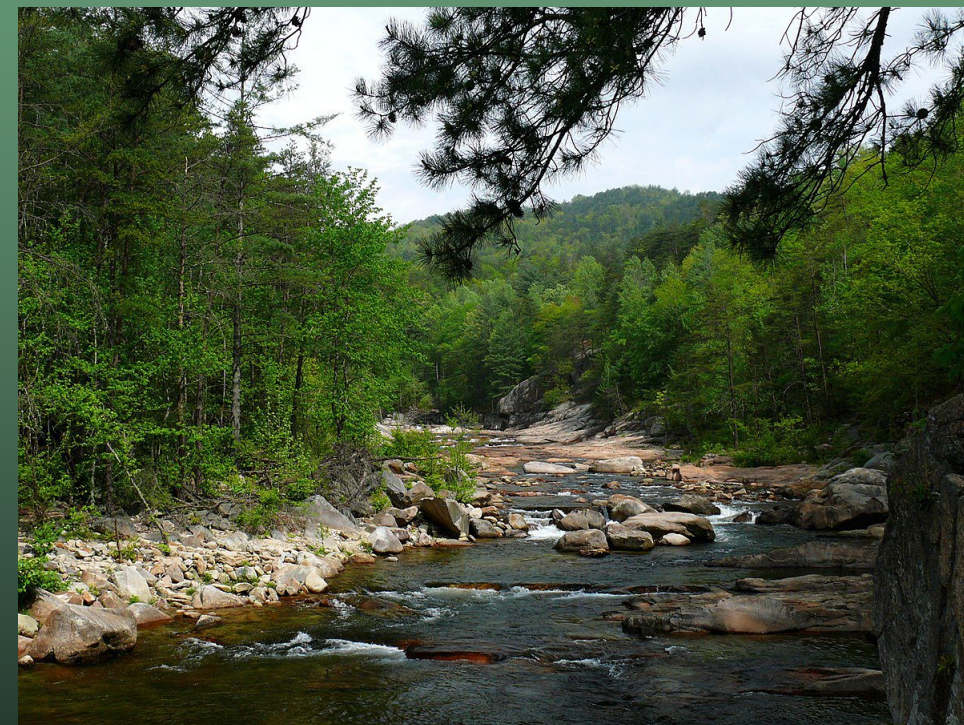


# Streamflow conditions across North Carolina

*Assessment of hydrologic conditions  
observed since July 2023...*

J. Curtis Weaver  
USGS South Atlantic Water Science Center (Raleigh)  
<http://nc.water.usgs.gov>



*Presented to:*  
North Carolina Drought Management Advisory Council (annual meeting)  
Steve Troxler Agricultural Sciences Center, Raleigh, NC  
September 11, 2024

*Wilson Creek, western North Carolina*  
[\(Source URL\)](#)

# Visualizing the components of streamflow

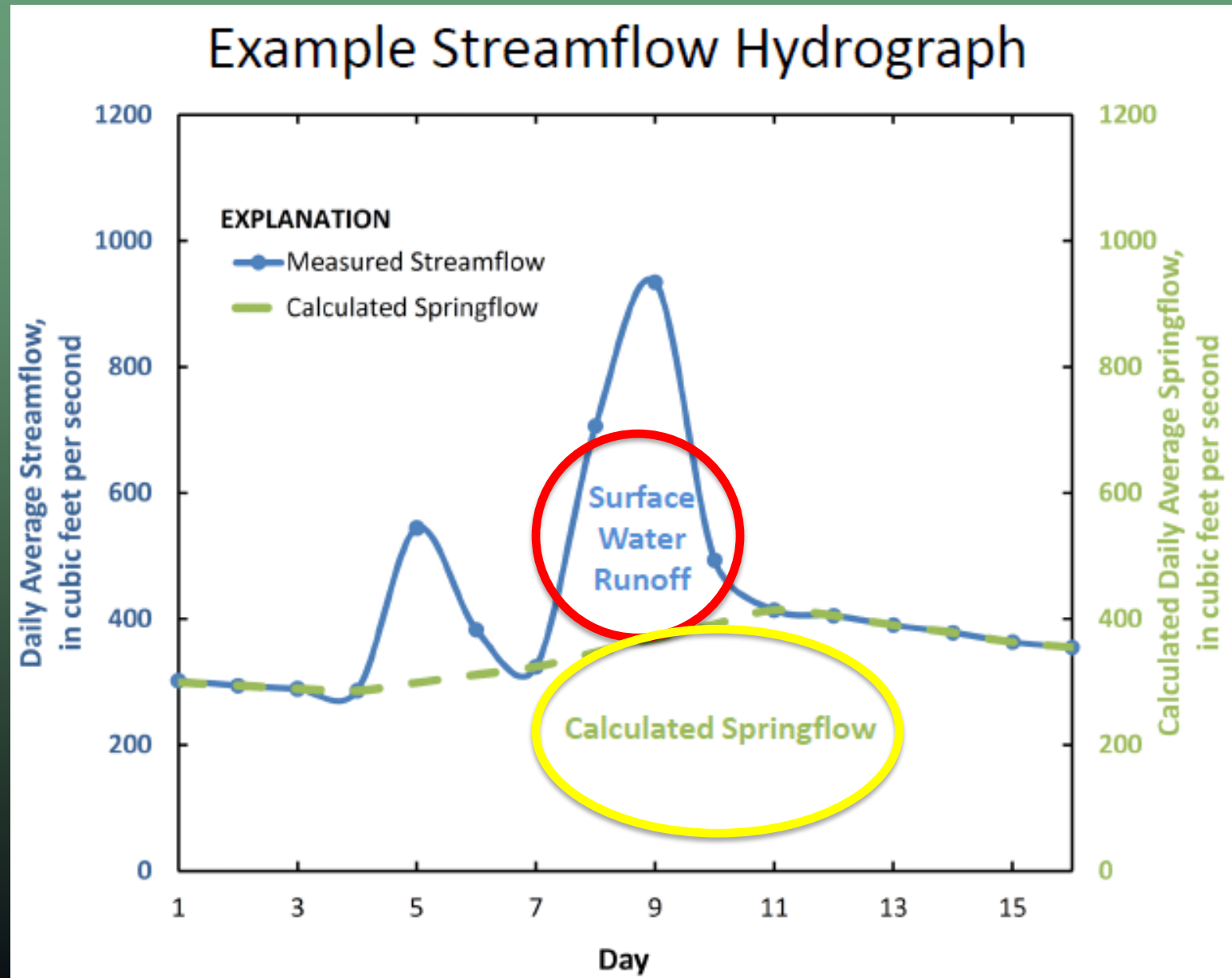


*Initial source: Selected stock images associated with Google search using term “North Carolina streams rivers”*



*Brooks Creek, above Eddie Perry Road, Chatham County  
Source: Flickrriver: Photoset 'Rivers And Streams, North Carolina' by Alan Cressler*

# Visualizing the components of streamflow

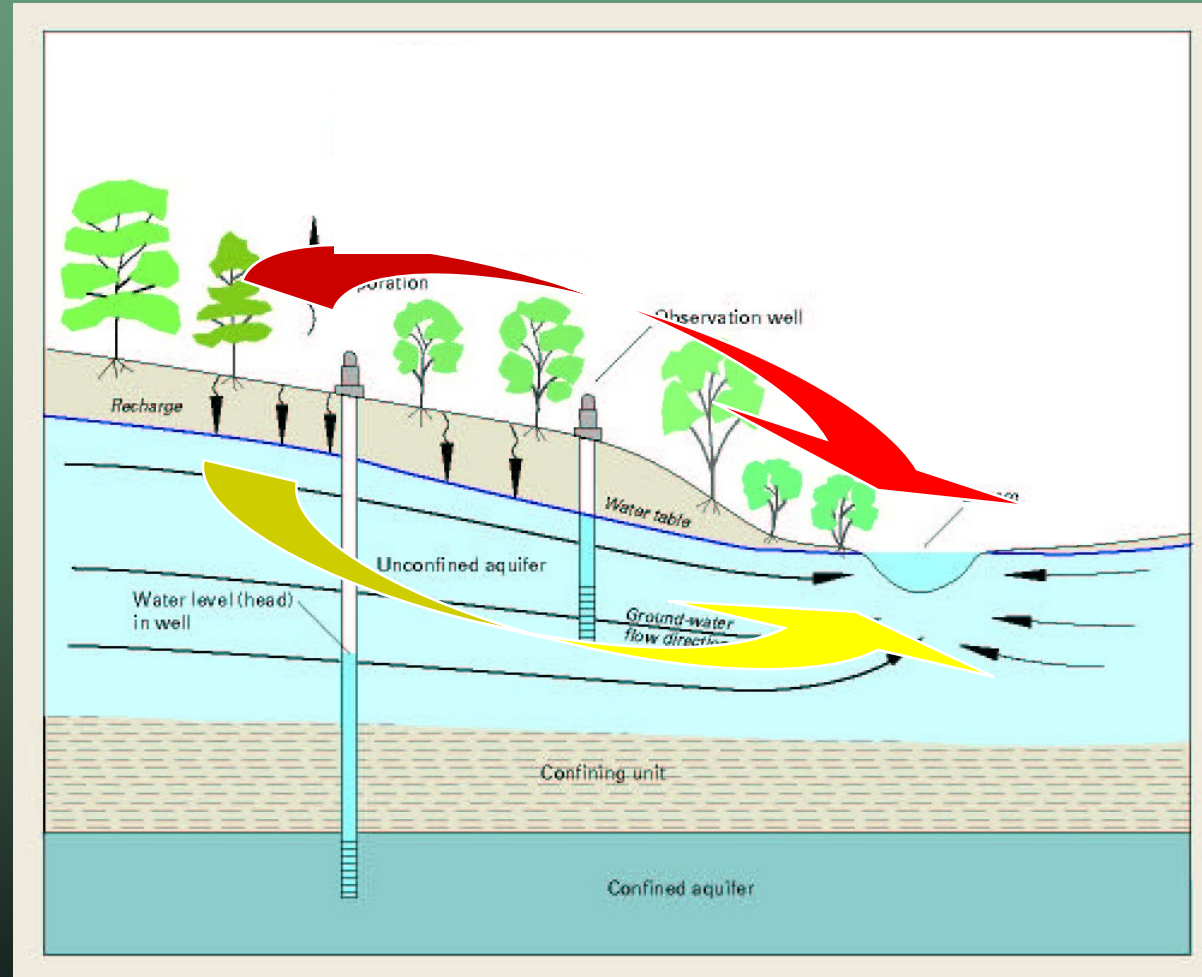




# Visualizing the components of streamflow

Overland  
runoff

Base flow  
(ground-  
water  
discharge  
to  
streams)





# Access to USGS real-time records for NC



*Ararat River, Mount Airy, Surry County*  
*Source: Selected stock images associated with Google search using term "North Carolina streams rivers"*



Access to

Streamflow (

<https://waterdata.usgs.gov/nc/nwis/rt>

Groundwater

<https://waterdata.usgs.gov/nc/nwis/rt>

Water quality

<https://waterdata.usgs.gov/nc/nwis/rt>

Precipitation

<https://waterdata.usgs.gov/nc/nwis/rt>



USGS Current Water Data for North Carolina

<https://waterdata.usgs.gov/nc/nwis/rt>

**USGS Home**  
Contact USGS  
Search USGS

**National Water Information System: Web Interface**  
USGS Water Resources (District Access)

Click to hide News Bulletins

- Introducing The Next Generation of USGS Water Data for the Nation
- Full News

**USGS Current Water Data for North Carolina**

Click to hide state-specific text

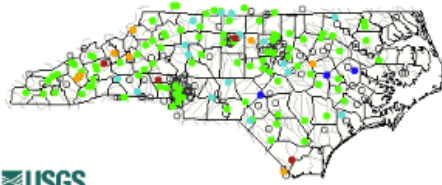
**\*\*\*PLEASE BOOKMARK THIS PAGE FOR EASE OF ACCESS\*\*\***

- USGS Water Resources of the South Atlantic Water Science Center: the place to start for all USGS water information in the SAWSC.
- Real-time data [Streamflow](#) || [Water-Quality](#) || [Groundwater Levels](#) || [Precipitation](#)
- Statewide Rainfall Map
- Live Streaming RiverCams
- StreamStats - online tool for basin and flow characteristics
- USGS Flood Event Viewer
- Sign up for [custom Water Alerts by text or email](#)

Questions about data? [Click here.](#)

--- Predefined displays ---  
Introduction go

**Daily Streamflow Conditions**  
Select a site to retrieve data and station information.  
Wednesday, April 03, 2019 10:30ET



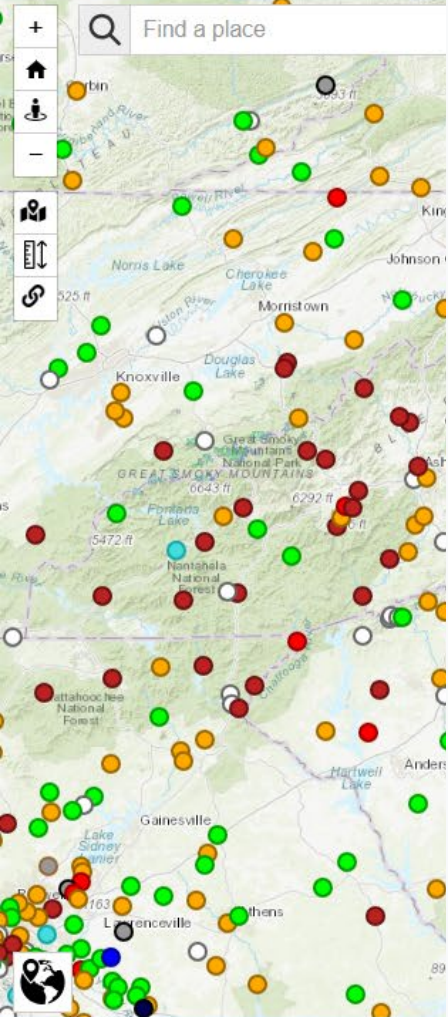
USGS  
Explanation

**Statewide Streamflow Table**

Current data typically are recorded at 15- to 60-minute intervals, stored onsite, and then transmitted to USGS offices every 1 to 4 hours, depending on the data relay technique used. Recording and transmission times may be more frequent during critical events. Data from current sites are relayed to USGS offices via satellite, telephone, and/or radio telemetry and are available for viewing within minutes of arrival.

All real-time data are [provisional and subject to revision](#).

<a href="#">Build Current Conditions Table</a>	Show a custom current conditions summary table for one or more stations.
	Show custom graphs or tables for a series of



Show map

Show plots

Site page

Data

WaterAlert

NWS forecast

▼ Discharge, cubic feet per second

132 @ 12:30 PM EDT  
67 minutes ago



Past 1 day 2 days 3 days 1 week

☐ Logscale

► Gage height, feet

1.76 @ 12:30 PM EDT  
67 minutes ago

► Stream water level elevation above NAVD 1988, in feet

2,658.56 @ 12:30 PM EDT  
67 minutes ago

[DOI Privacy Policy](#) | [Legal](#) | [Accessibility](#) | [Site Map](#) | [Contact USGS](#)

[U.S. Department of the Interior](#) | [DOI Inspector General](#) | [White House](#) | [E-gov](#) | [No Fear Act](#) | [FOIA](#)

view Layers 2 Legend 3 Tools

Layers

USGS Stations

STREAMFLOW 8,858

SURFACE-WATER LEVELS

GROUNDWATER LEVELS

SPRING WATER LEVELS

WATER QUALITY

PRECIPITATION

ATMOSPHERIC

Weather Conditions

Hydrology

Base Map

Clear Layers

Scale 2,773,395 Lat 36.3955 Lon -81.4064

100 km  
50 mi



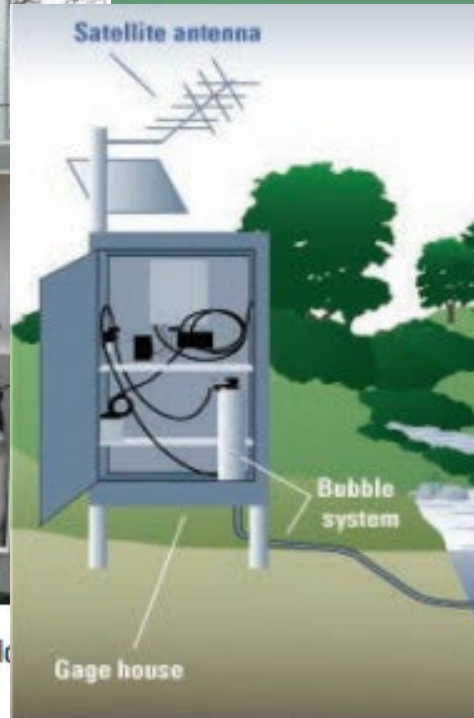
FAQ Feedback



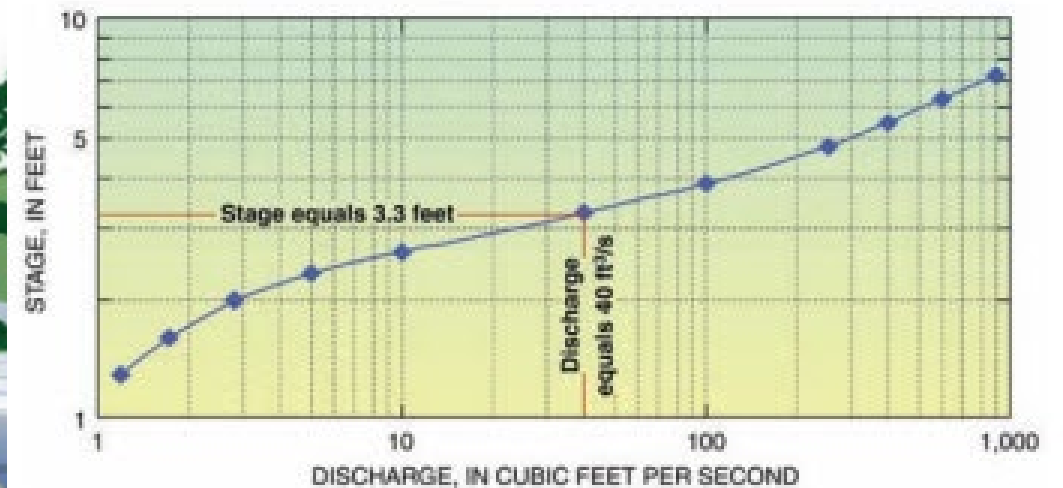
# Quick Reminder: How a USGS streamgage works



**Figure 1.** Examples of gage structures located at U.S. Geological Survey streamgaging stations.



**Figure 2.** Diagram of a typical streamgage installation with equipment used to measure stream stage (by L.S. Coplin, U.S. Geological Survey).



**Figure 3.** Example of a typical stage-discharge relation or rating curve (Nielsen and Norris, 2007, fig. 2).







# Assessing str

ies

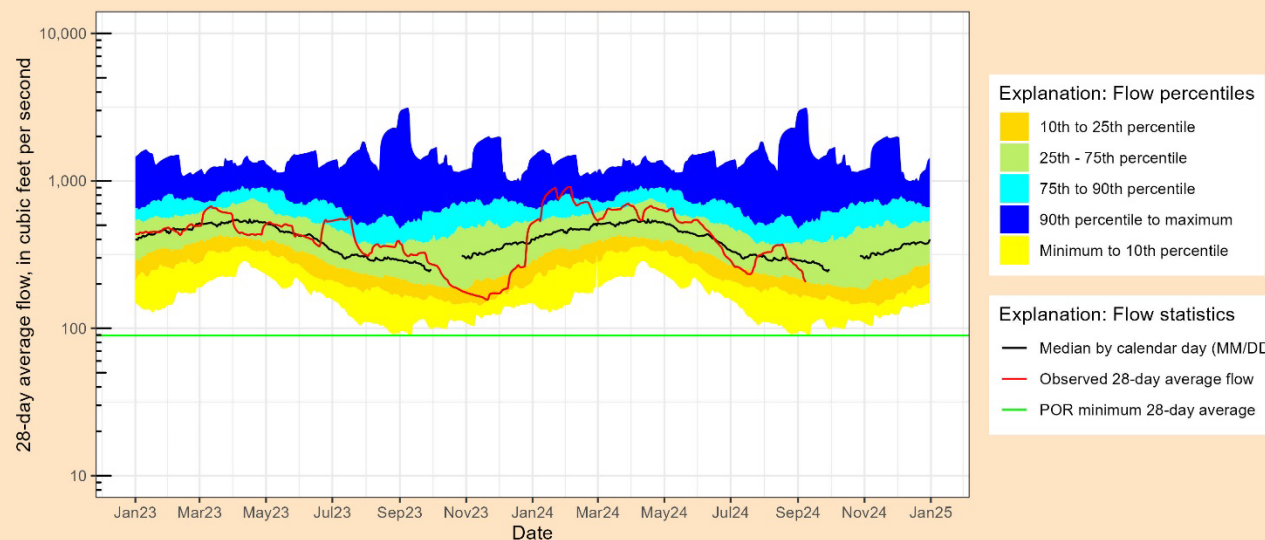
USGS Sta. 03161000

South Fork New River  
near Jefferson  
in Ashe County

POR since October 1924  
DA = 205 sqmi



USGS Sta. 03161000 SOUTH FORK NEW RIVER NEAR JEFFERSON, NC  
Drainage Area: 205 sq mi, available POR for daily mean discharge: 1924-10-01 to 2024-09-08  
Flow conditions at this site are known or considered to be Unregulated



Period of record minimum 28-day average flow: 89.357 cfs ending on 1925-09-10  
Observed data through: September 08, 2024  
Data are provisional after 2024-06-11  
Flow percentile statistics calculated using POR from 1924-10-01 to 2023-09-30  
Plot generated: 2024-09-09 15:58:32 EDT





☐ 7 days ☐ 30 days ☒ 1 y

# Flat R



IMPORTANT [Legacy real-time page](#)

☐ 7 days ☐ 30 days ☒ 1 year

Scale  Linear  Log

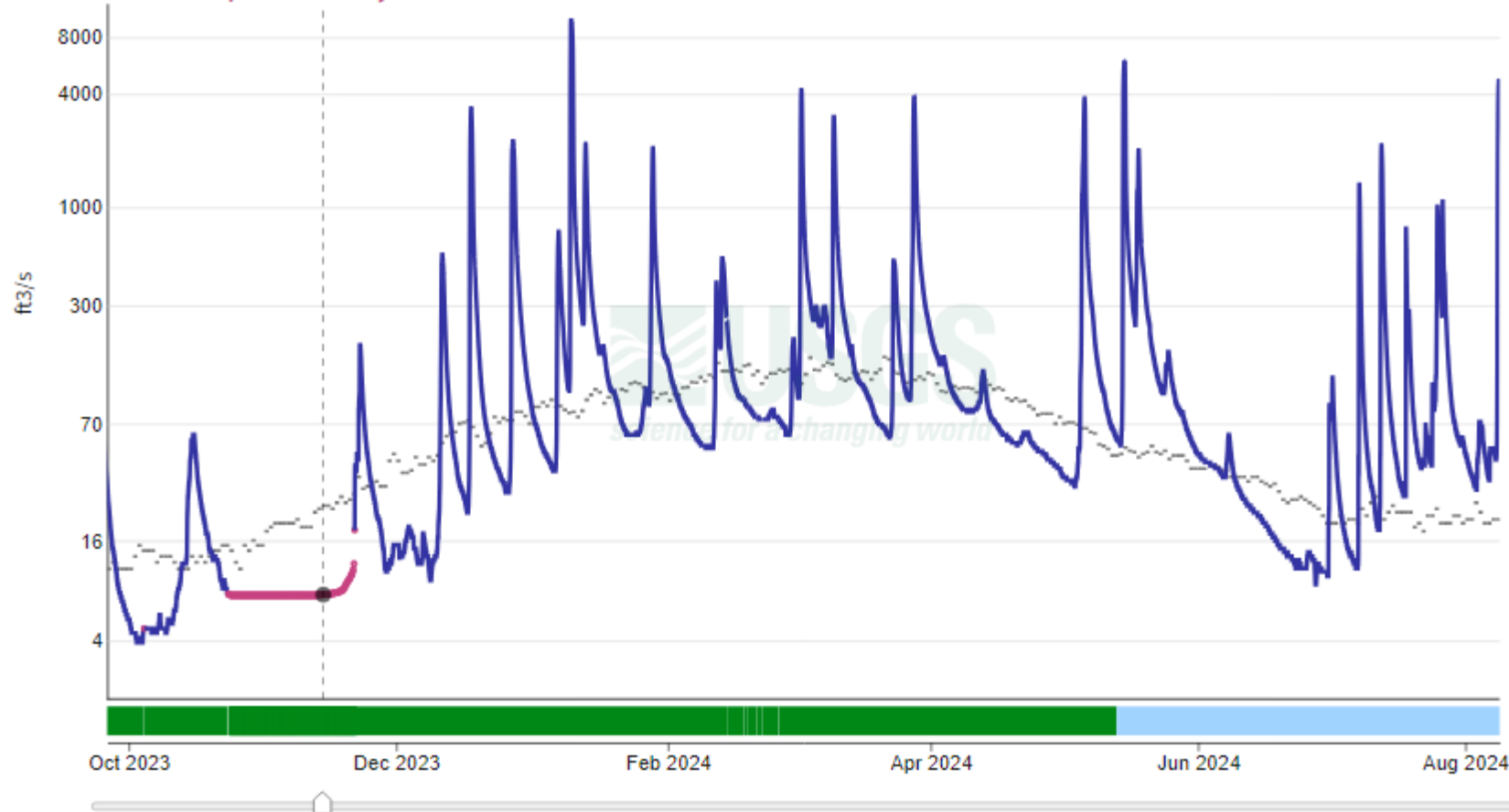
- using graph zoom -

## Flat River at Bahama, NC - 02085500

September 11, 2023 - September 10, 2024

Discharge, cubic feet per second

7.77 ft<sup>3</sup>/s - Nov 14, 2023 09:15:00 AM EST



IMPORTANT Data may be [provisional](#)

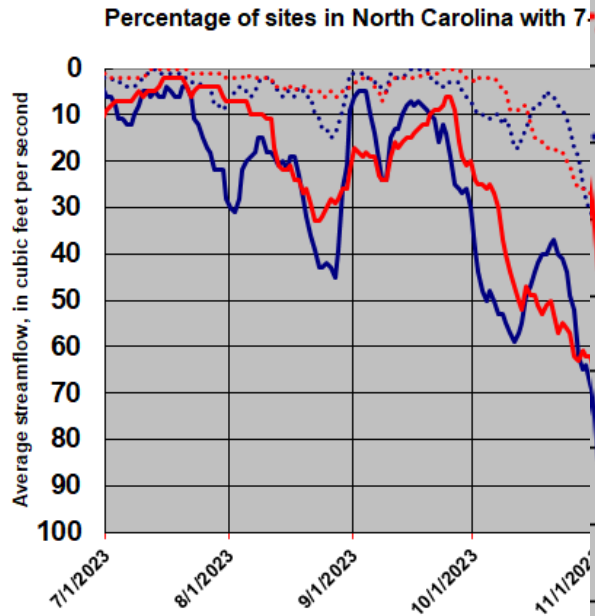
# USGS 7-day average streamflows



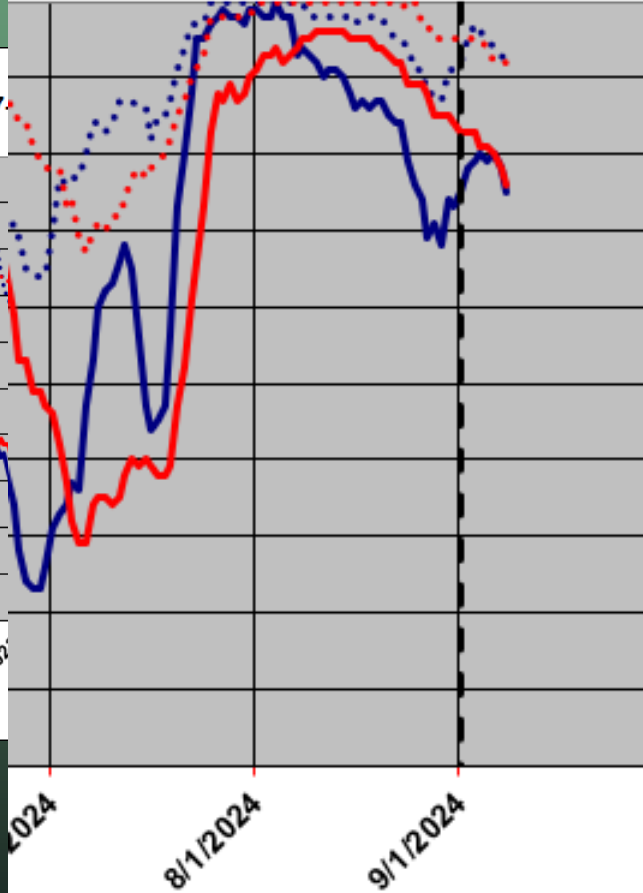
*Trent River, vicinity of Pollocksville, Jones County*

*Initial source: Selected stock images associated with Google search using term "North Carolina Trent River"*

# Percentage of sites with 7-day and 28-day average streamflows below the 25<sup>th</sup> percentile (solid) and 10<sup>th</sup> percentile (dotted)



10th percentile (dotted)



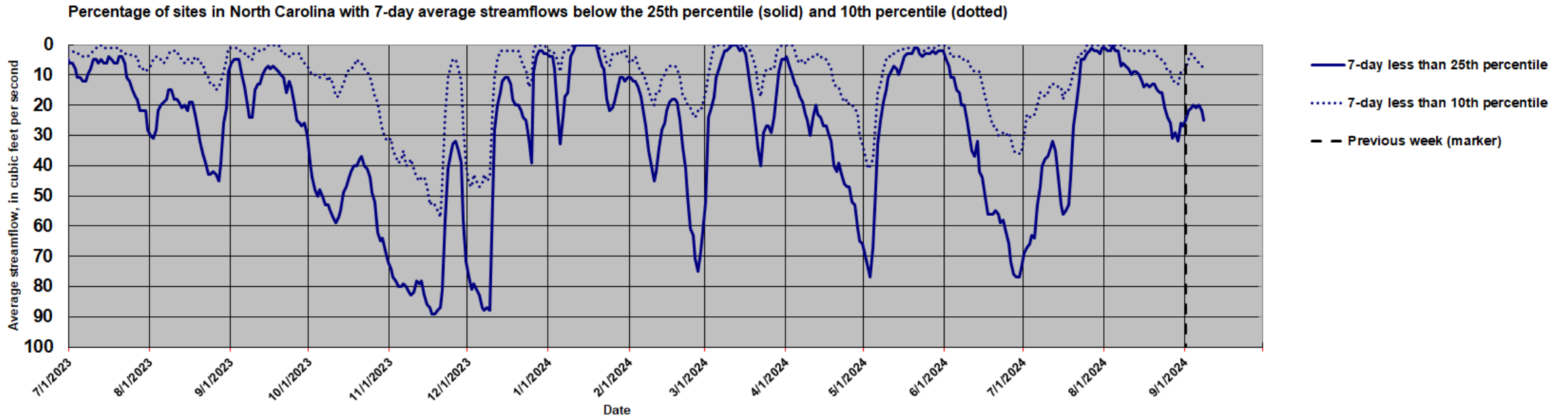
- 7-day less than 25th percentile
- ..... 7-day less than 10th percentile
- 28-day less than 25th percentile
- ..... 28-day less than 10th percentile
- - Previous week (marker)

- 7-day less than 25th percentile
- ..... 7-day less than 10th percentile
- 28-day less than 25th percentile
- ..... 28-day less than 10th percentile
- - Previous week (marker)

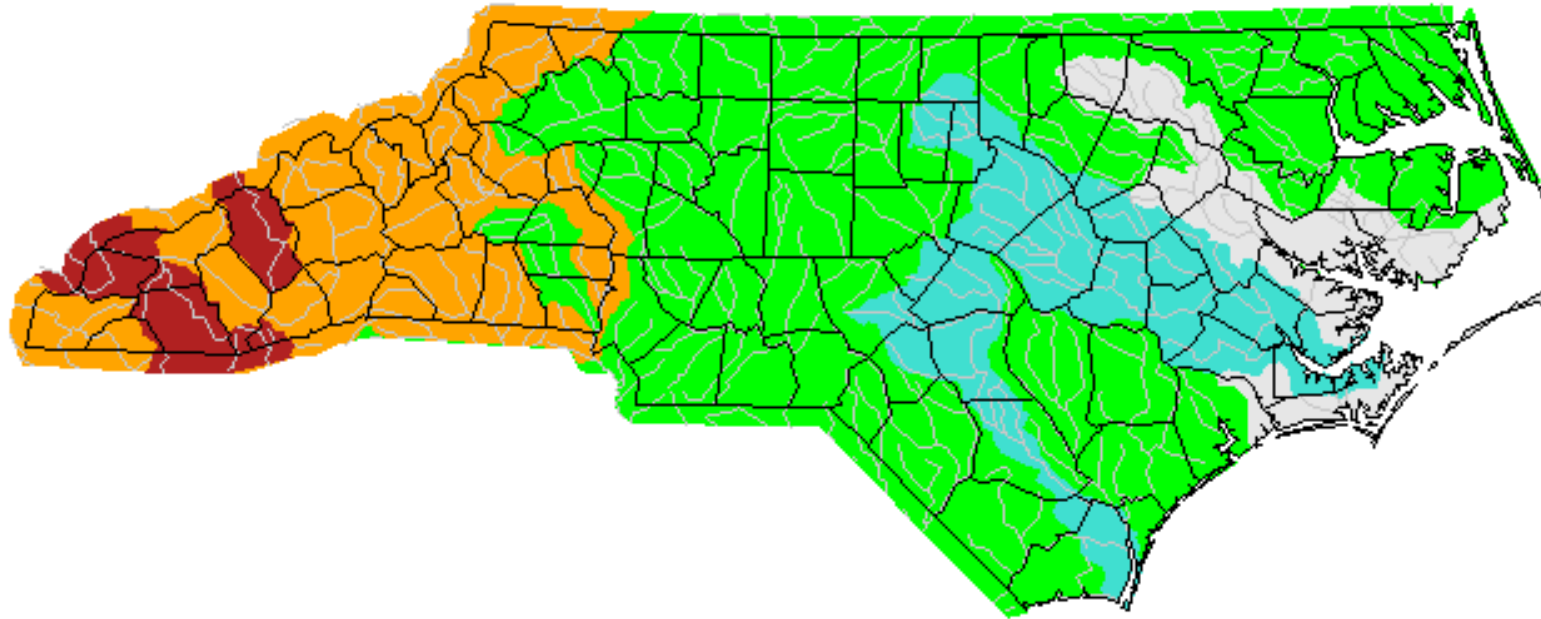
	Previous	Current
7-day average streamflow	9/1/2024	9/8/2024
< 25th percentile	25	25
< 10th percentile	8	8
28-day average streamflow		
< 25th percentile	17	24
< 10th percentile	5	8



# Percentage of sites with 7-day average streamflows below the 25<sup>th</sup> percentile (solid) and 10<sup>th</sup> percentile (dotted)



Monday, September 09, 2024



*...as of  
Sept 09*

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



Available at URL <http://waterwatch.usgs.gov/index.php>

# USGS 28-day average streamflows

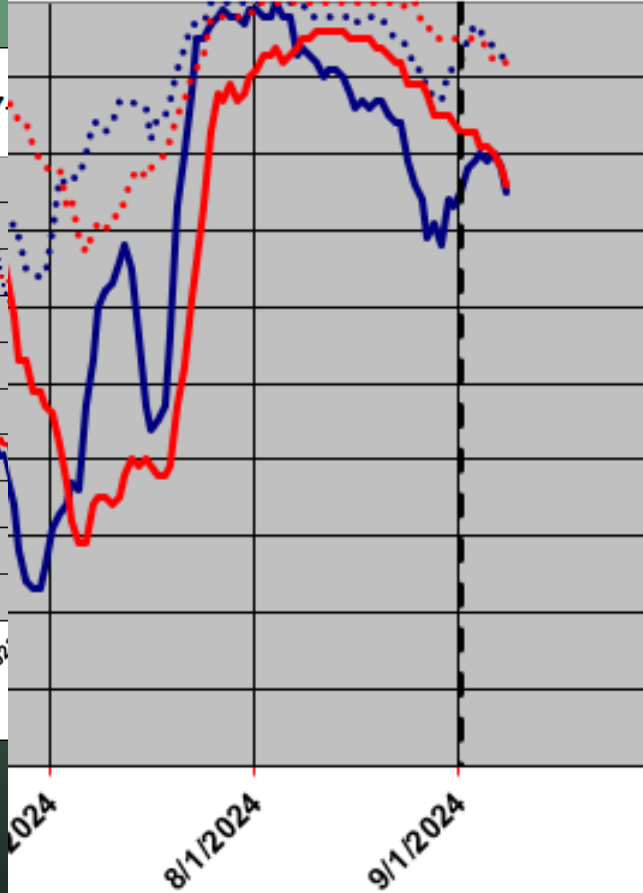
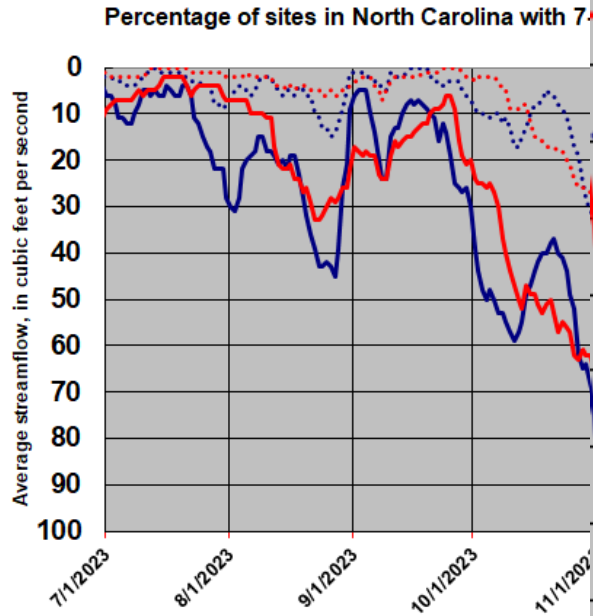


*South Fork of the New River, northwestern North Carolina  
Initial source: Selected stock images associated with Google search using term "North Carolina streams rivers"*



# Percentage of sites with 7-day and 28-day average streamflows below the 25<sup>th</sup> percentile (solid) and 10<sup>th</sup> percentile (dotted)

10th percentile (dotted)

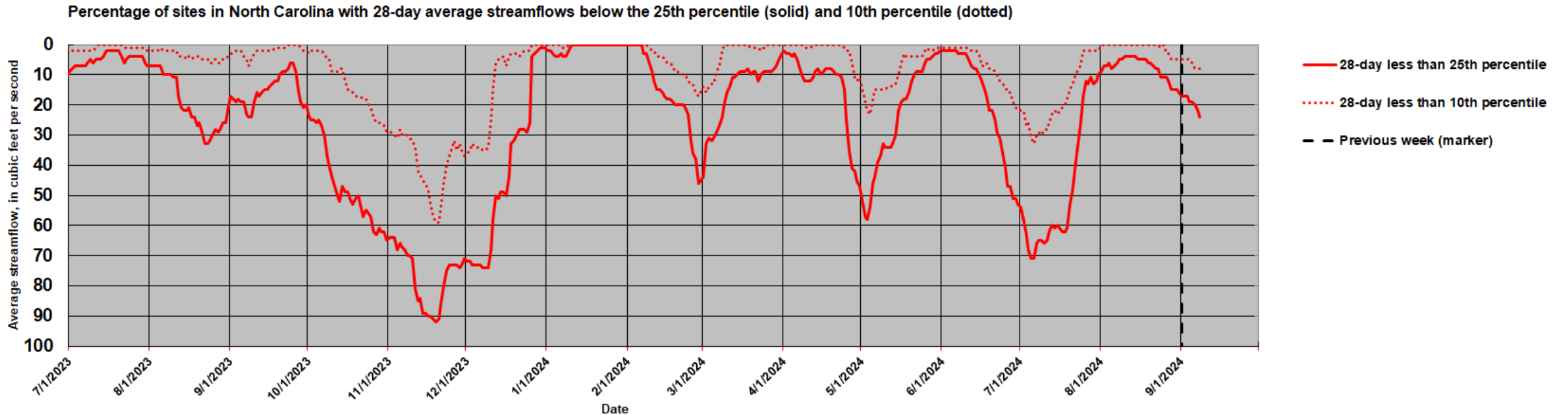


- 7-day less than 25th percentile
- ..... 7-day less than 10th percentile
- 28-day less than 25th percentile
- ..... 28-day less than 10th percentile
- - Previous week (marker)

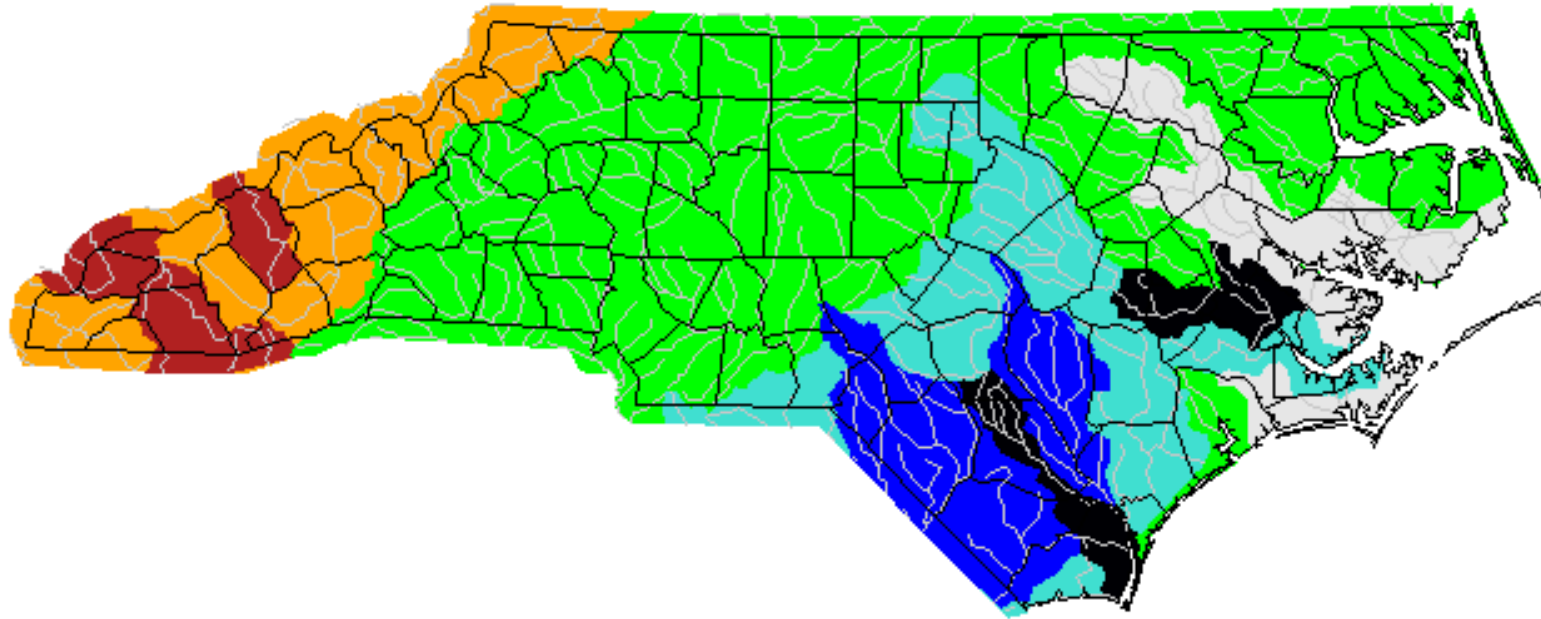
- 7-day less than 25th percentile
- ..... 7-day less than 10th percentile
- 28-day less than 25th percentile
- ..... 28-day less than 10th percentile
- - Previous week (marker)

	Previous	Current
7-day average streamflow	9/1/2024	9/8/2024
< 25th percentile	25	25
< 10th percentile	8	8
28-day average streamflow		
< 25th percentile	17	24
< 10th percentile	5	8

# Percentage of sites with 28-day average streamflows below the 25<sup>th</sup> percentile (solid) and 10<sup>th</sup> percentile (dotted)



Monday, September 09, 2024



*...as of  
Sept 09*

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



Available at URL <http://waterwatch.usgs.gov/index.php>

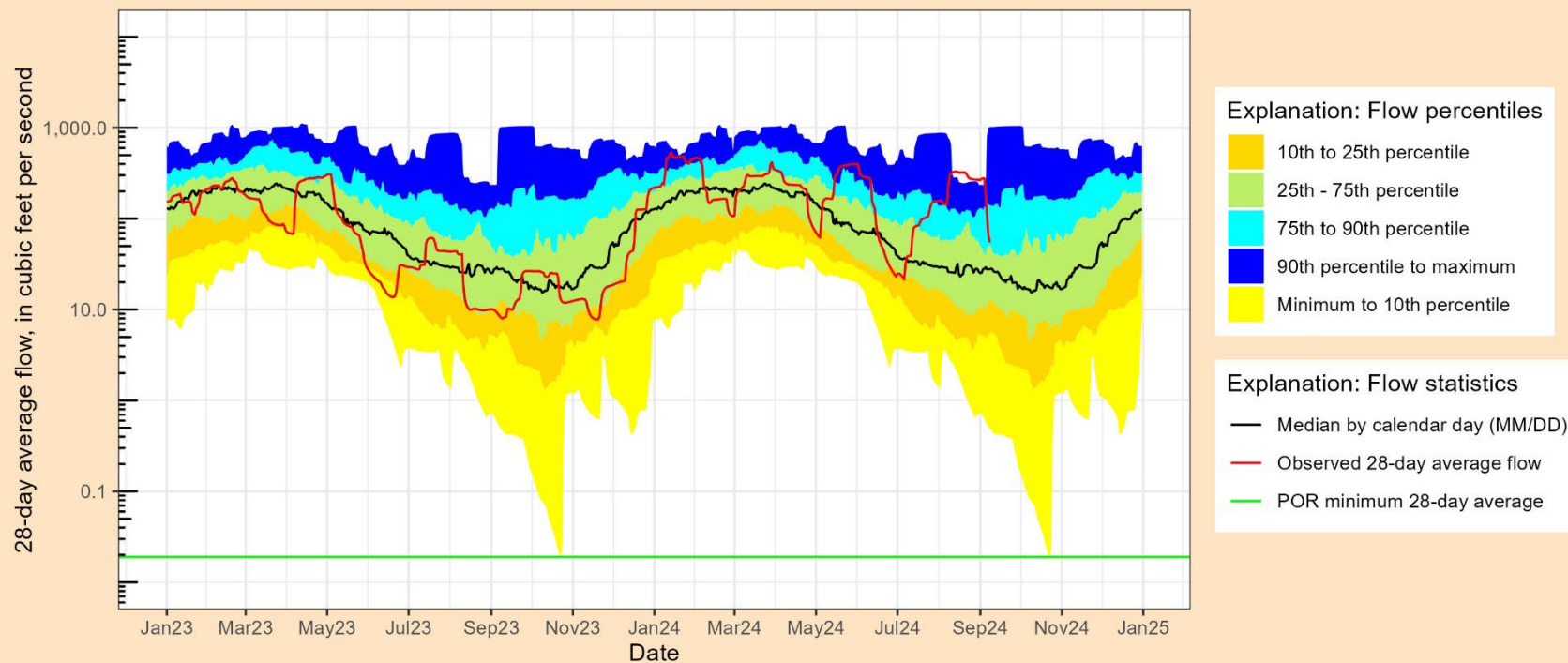




## USGS Sta. 02085500 FLAT RIVER AT BAHAMA, NC

Drainage Area: 149 sq mi, available POR for daily mean discharge: 1925-08-01 to 2024-09-08

Flow conditions at this site are known or considered to be Unregulated



Period of record minimum 28-day average flow: 0.019 cfs ending on 2007-10-23

Observed data through: September 08, 2024

Data are provisional after 2024-05-12

Flow percentile statistics calculated using POR from 1962-10-01 to 2023-09-30

Plot generated: 2024-09-09 15:55:34 EDT

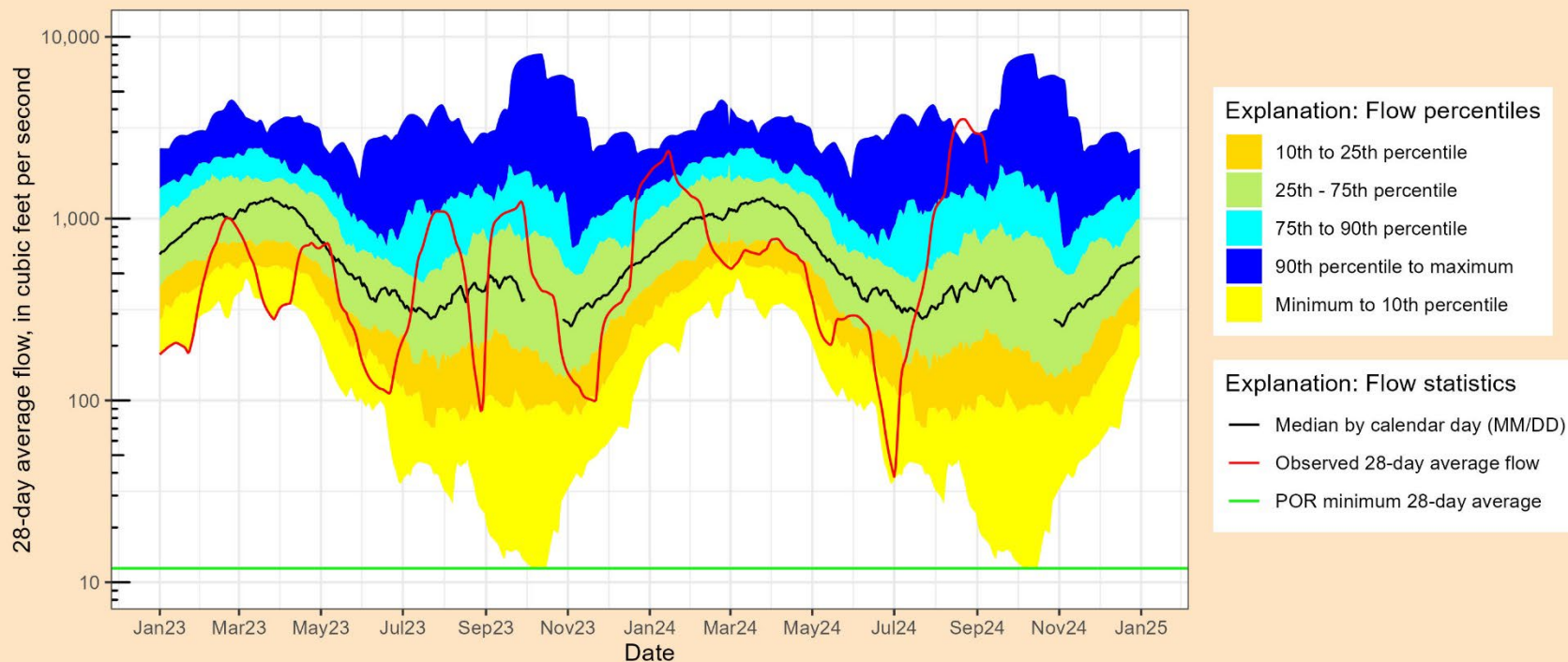




## USGS Sta. 02106500 BLACK RIVER NEAR TOMAHAWK, NC

Drainage Area: 676 sq mi, available POR for daily mean discharge: 1951-10-01 to 2024-09-08

Flow conditions at this site are known or considered to be Unregulated



Period of record minimum 28-day average flow: 11.925 cfs ending on 1954-10-15

Observed data through: September 08, 2024

Data are provisional after 2024-07-17

Flow percentile statistics calculated using POR from 1951-10-01 to 2023-09-30

Plot generated: 2024-09-09 15:56:52 EDT

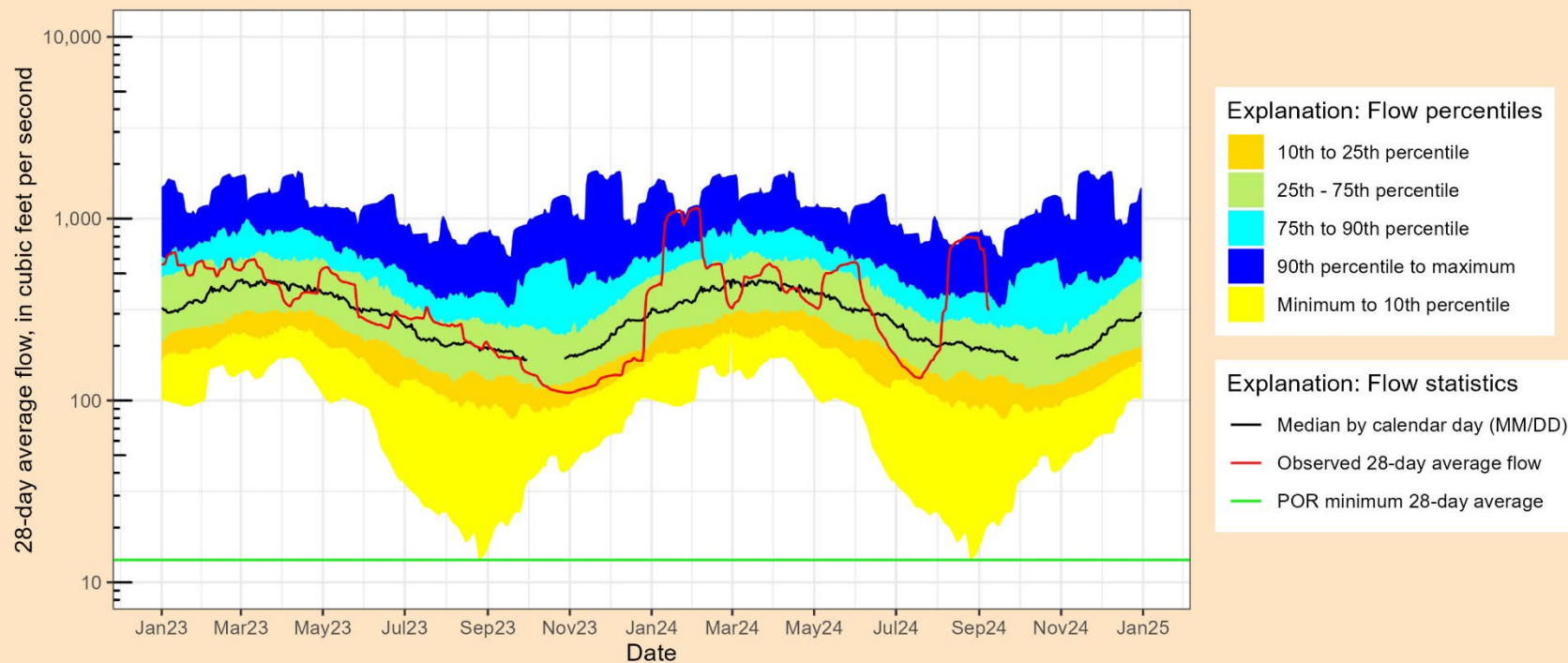




## USGS Sta. 02118000 SOUTH YADKIN RIVER NEAR MOCKSVILLE, NC

Drainage Area: 306 sq mi, available POR for daily mean discharge: 1938-10-01 to 2024-09-08

Flow conditions at this site are known or considered to be affected by Diversion(s)



Period of record minimum 28-day average flow: 13.271 cfs ending on 2002-08-26

Observed data through: September 08, 2024

Data are provisional after 2023-11-27

Flow percentile statistics calculated using POR from 1938-10-01 to 2023-09-30

Plot generated: 2024-09-09 15:57:22 EDT



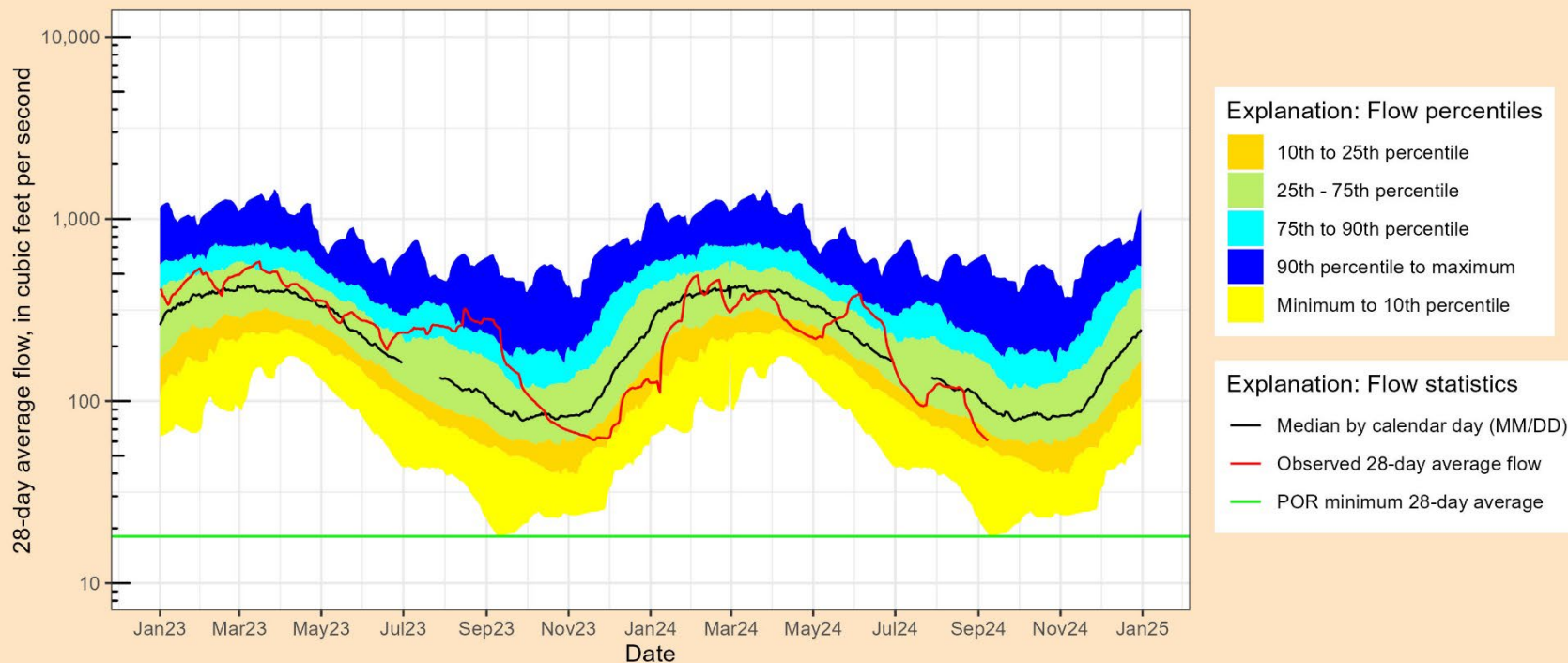




# USGS Sta. 03550000 VALLEY RIVER AT TOMOTLA, NC

Drainage Area: 104 sq mi, available POR for daily mean discharge: 1904-07-01 to 2024-09-08

Flow conditions at this site are known or considered to be Unregulated



Period of record minimum 28-day average flow: 18.071 cfs ending on 1925-09-12

Observed data through: September 08, 2024

Data are provisional after 2024-05-15

Flow percentile statistics calculated using POR from 1903-10-01 to 2023-09-30

Plot generated: 2024-09-09 15:59:33 EDT





# New streamflow records this past year

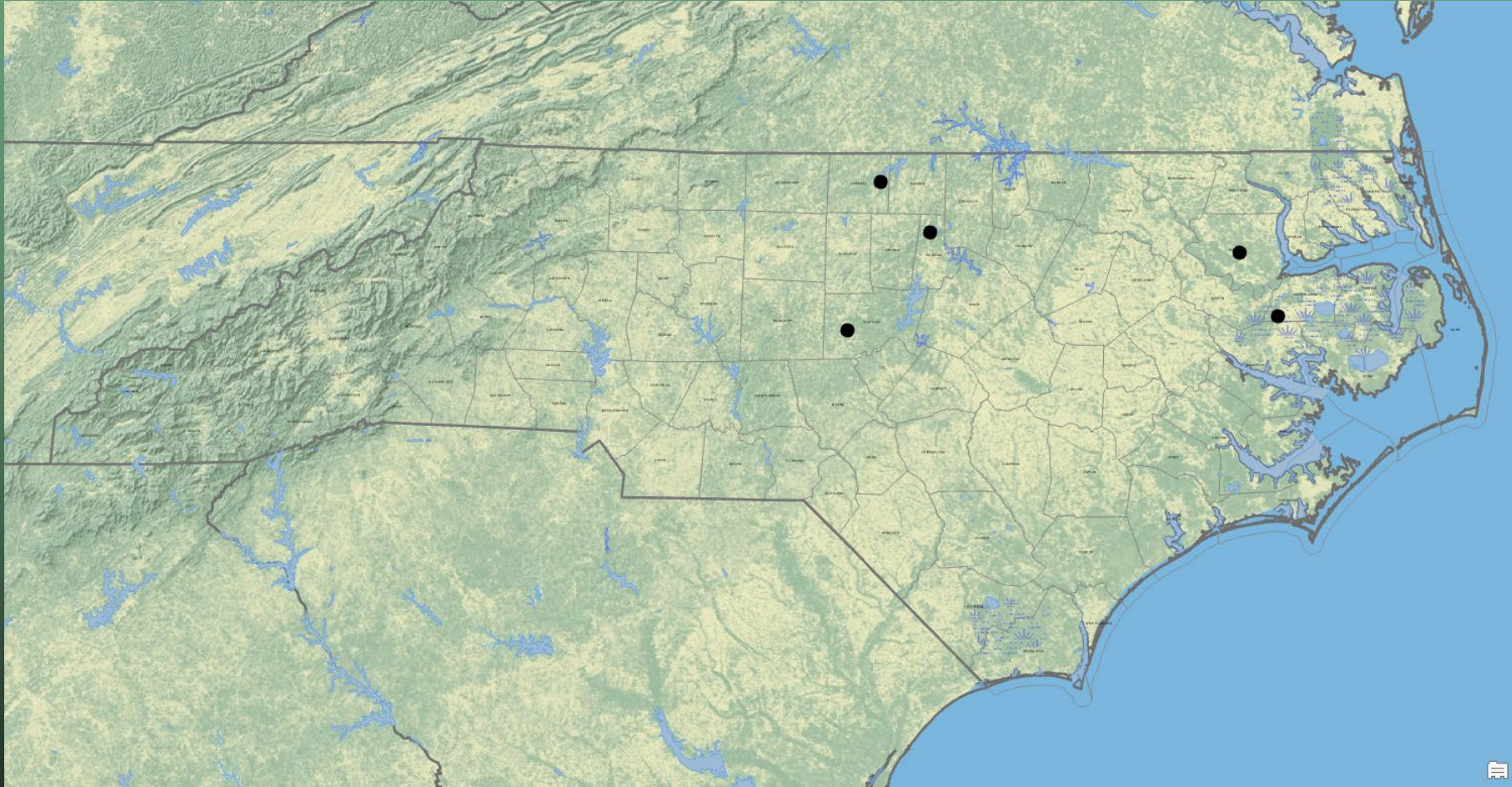


*Low water bridge, Uwharrie River, near Eldorado, Montgomery County*

*Initial source: Selected stock images associated with Google search using term "North Carolina streams rivers"*

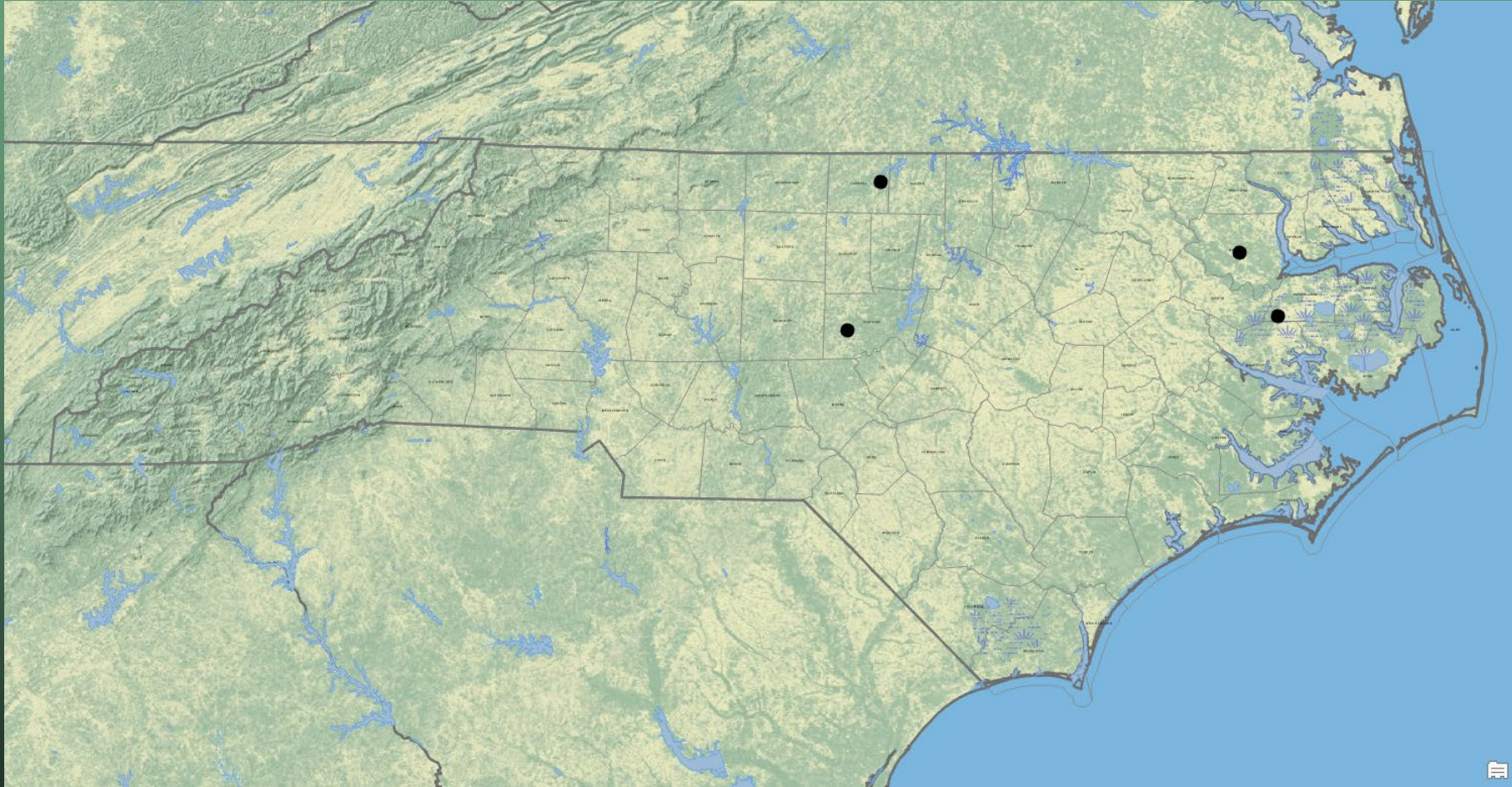


No new record POR minimum daily discharge, but...





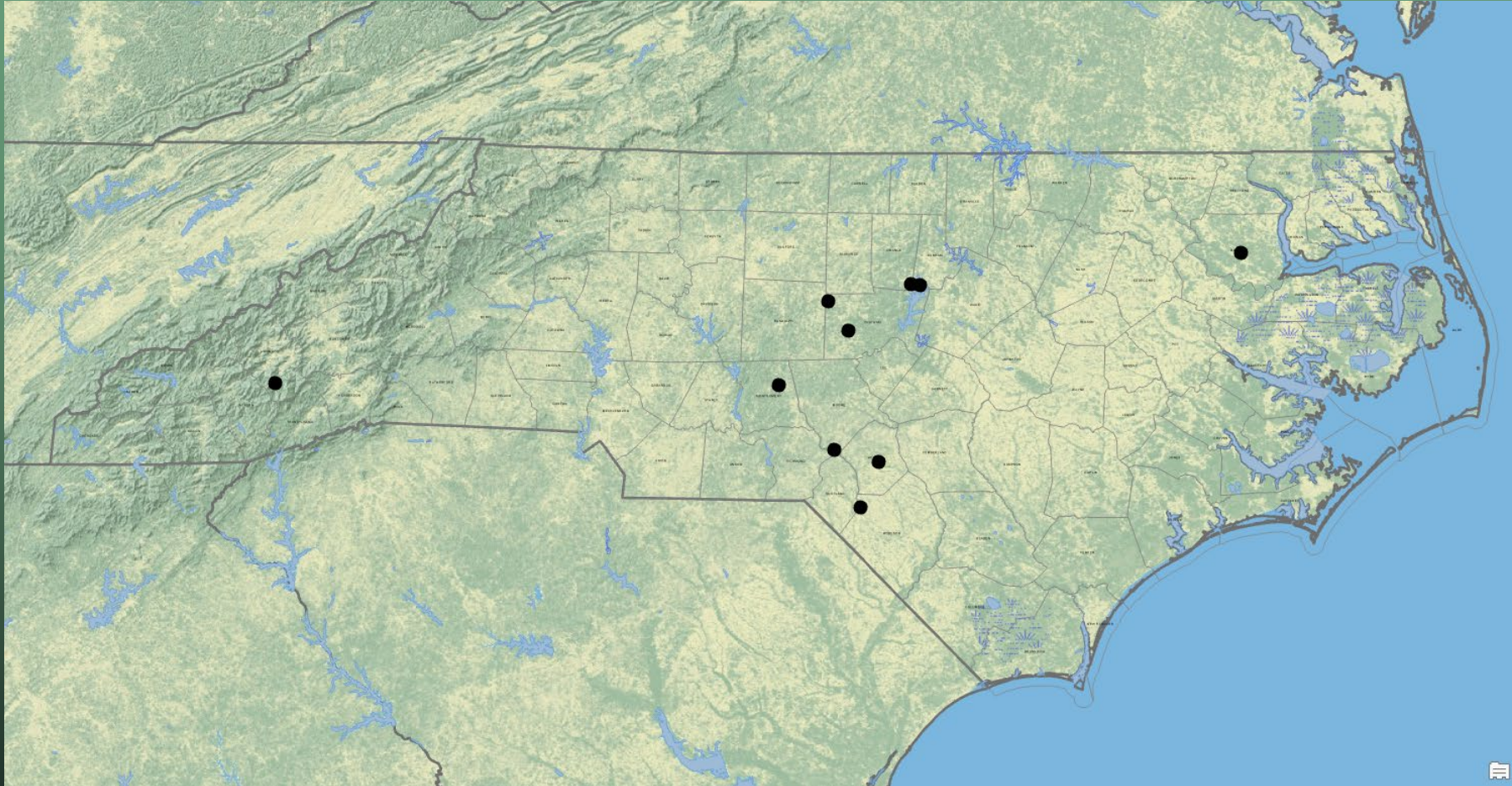
No new record POR minimum 7-day average streamflow, but...



*4 “zero-flow” sites during July 2023 through mid-September 2024  
(all meeting previous records of zero flow)*



# Monthly minimum monthly average streamflow at 10 sites, but...



*1 “zero-flow” site during July 2023 through mid-September 2024  
(meeting previous record of zero flow)*



# In closing...questions...comments...complaints

*Contact info:*

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*Assistant Director for Data - North Carolina*

*Mobile: (984) 220-5849*

*Email: [jcweaver@usgs.gov](mailto:jcweaver@usgs.gov)*



**USGS South Atlantic Water Science Center**

**<https://www.usgs.gov/centers/sa-water>**

