

**NWS**      **U.S. Department of Commerce**  
**FORM**    NOAA, NATIONAL WEATHER SERVICE  
**E-5**

**HSA OFFICE:**  
**Grand Rapids, MI**

**MONTHLY REPORT OF RIVER AND FLOOD CONDITIONS**

REPORT FOR  
(MONTH & YEAR):  
**September 2024**

TO:            NATIONAL WEATHER SERVICE (W/OS31)  
                  HYDROMETEOROLOGICAL INFO CENTER 1325 EAST-WEST  
                  HIGHWAY, RM 13468 SILVER SPRING, MD 20910

DATE:  
October 9th, 2024

SIGNATURE:  
Joe Ceru,  
Meteorologist

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When no flooding occurs, include miscellaneous river conditions, such as significant rises, record low stages, ice conditions, snow cover, droughts, and hydrologic products issued (WSOM E-41).

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An X inside this box indicates that no flooding occurred within this hydrologic service area.

**Summary**

The rivers began the month with above normal flows, however by the end of the month all but a few forecast points were below normal. While it was the beginning of fall, temperatures through most of the month were well above normal. There were very small rainfall events peppered through the month with one record setting rainfall event at Muskegon and along the lakeshore late in the month. That event caused rises along the northern rivers, especially the Muskegon, though no river flooding occurred. The record rainfall event did cause flooding in and around the Muskegon area.

**Flood Conditions**

The month began with flows at or above normal. However the month as a whole was very dry. High pressure with winds out of the east dominated much of the month. This allowed for central Michigan to be predominately dry. Most of central Michigan had less than 25% of normal precipitation. Looking at the accumulated precipitation map, (figure 1) you can see that west of US 131 received significant rainfall, though most of that occurred in one storm, September 24th. The highest reports from that system came from Muskegon with a report of 9.80 inches 1 south southwest of Whitehall. In (figure 1) you can see the bullseye of higher reports. This heavy rainfall caused flooding in and around Muskegon with some evacuations. While there were some rises and river response, due to the dry month, no river reached flood stage. Flows at all the rivers steadily dropped as the month went on for most points. Rainfall on September 24th allowed for many rivers, especially the White river, to recover some. The western portion of the lower peninsula was able to avoid drought. However, as you can see, (Figure 5), most of the lower peninsula ended the month in a D0 status of abnormally dry. Most flows ended the month between 25 to 25% quartile with a few locations in the 10 to 25% range.

### **Flood Stage Report**

No forecast points exceeded flood stage during the month. Thus, the NWS Form E-3 "Flood Stage Report" was not issued.

### **River Conditions**

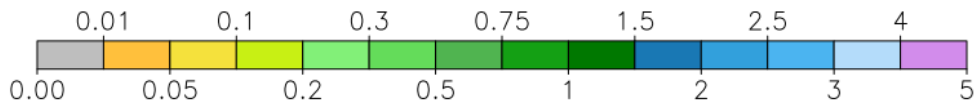
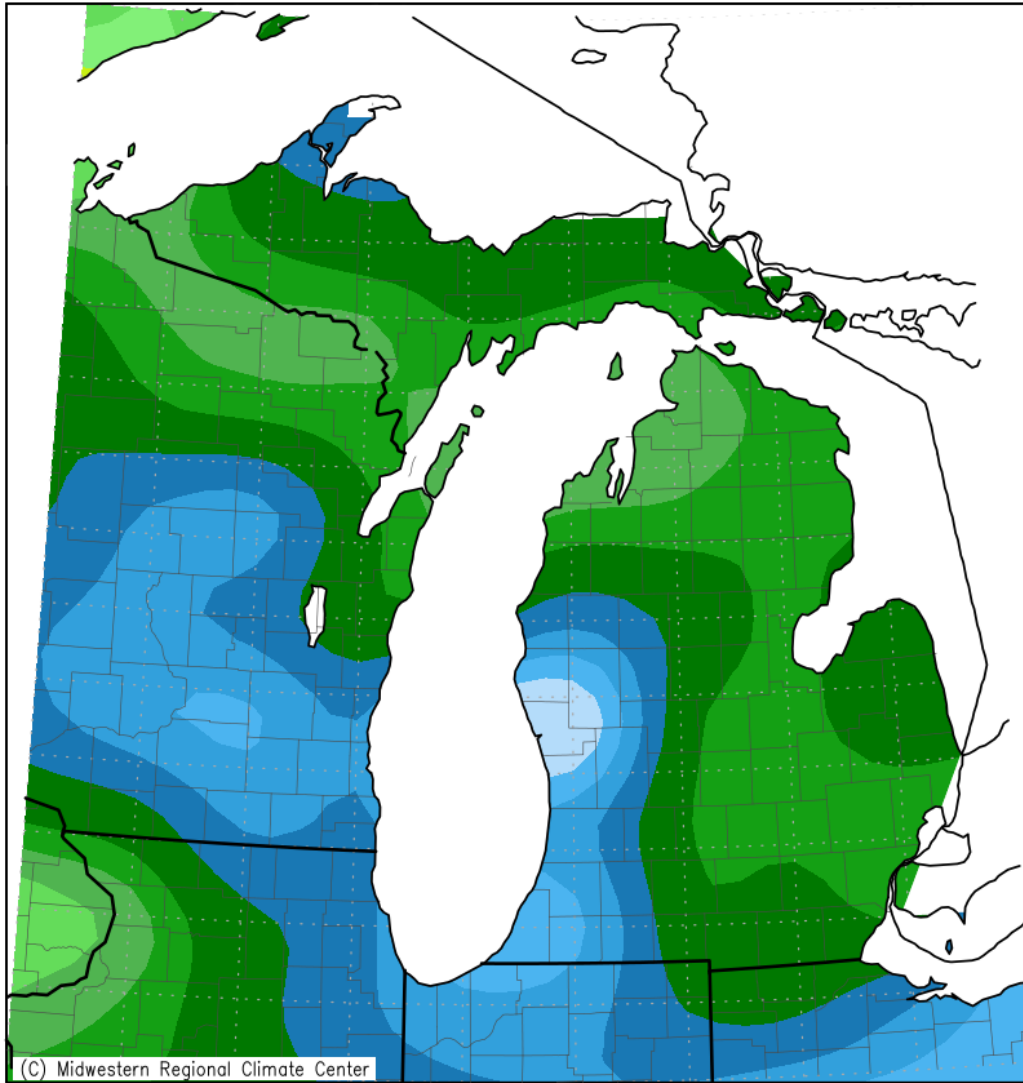
The end of September percentage of normal flow for selected rivers is listed below:

<u>Location</u>	<u>River</u>	<u>% of Normal</u>
Scottville	Pere Marquette	75
Whitehall	White	100
Ewart	Muskegon	75
Mt. Pleasant	Chippewa	51
Lansing	Grand	70
Grand Rapids	Grand	83
East Lansing	Red Cedar	132
Hastings	Thornapple	63
Battle Creek	Battle Creek	92
Battle Creek	Kalamazoo	141

### **General Hydrologic Information**

September precipitation amounts for Grand Rapids, Lansing, and Muskegon Michigan were 1.32, 0.65 and 4.89 inches, respectively (Figure 1). Monthly departures were -2.11, -2.16 and +1.63 inches respectively. Percent of mean precipitation for September 2024 is shown in Figure 2. Temperatures for the month of September were warmer than normal at Grand Rapids, Lansing and Muskegon. The monthly average temperature departures for these sites were +3.4, +3.5 and +3.5 Fahrenheit, respectively. Temperatures were in the top 10 for warmest Septembers on record for much of the area.

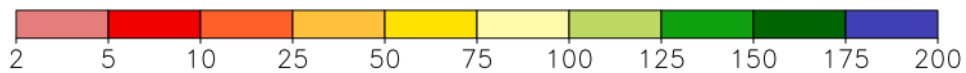
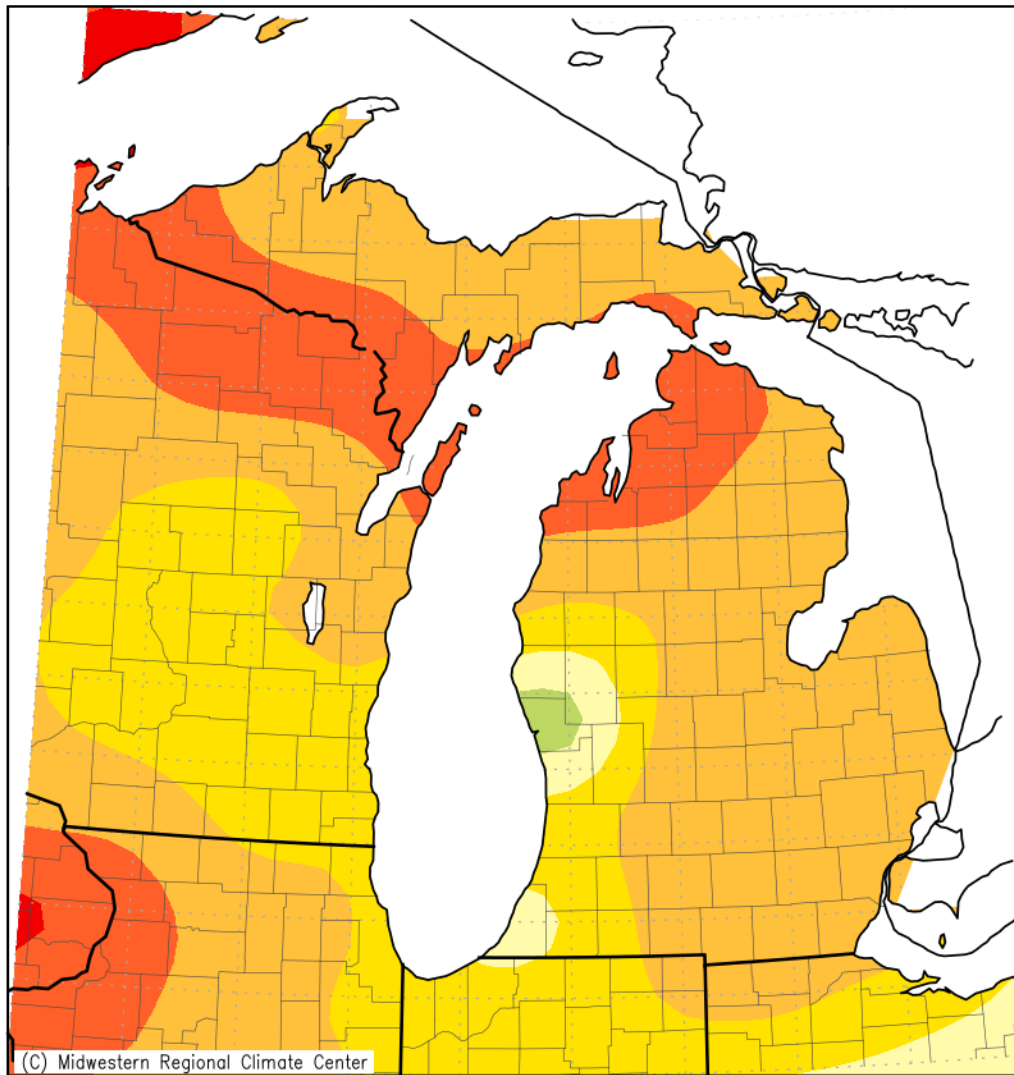
Accumulated Precipitation (in)  
September 1, 2024 to September 30, 2024



Midwestern Regional Climate Center  
cli-MATE: MRCC Application Tools Environment  
Generated at: 10/2/2024 5:04:28 AM EDT

Figure 1. September 2024 Monthly Precipitation Totals. A large concentration of rainfall along the lakeshore.

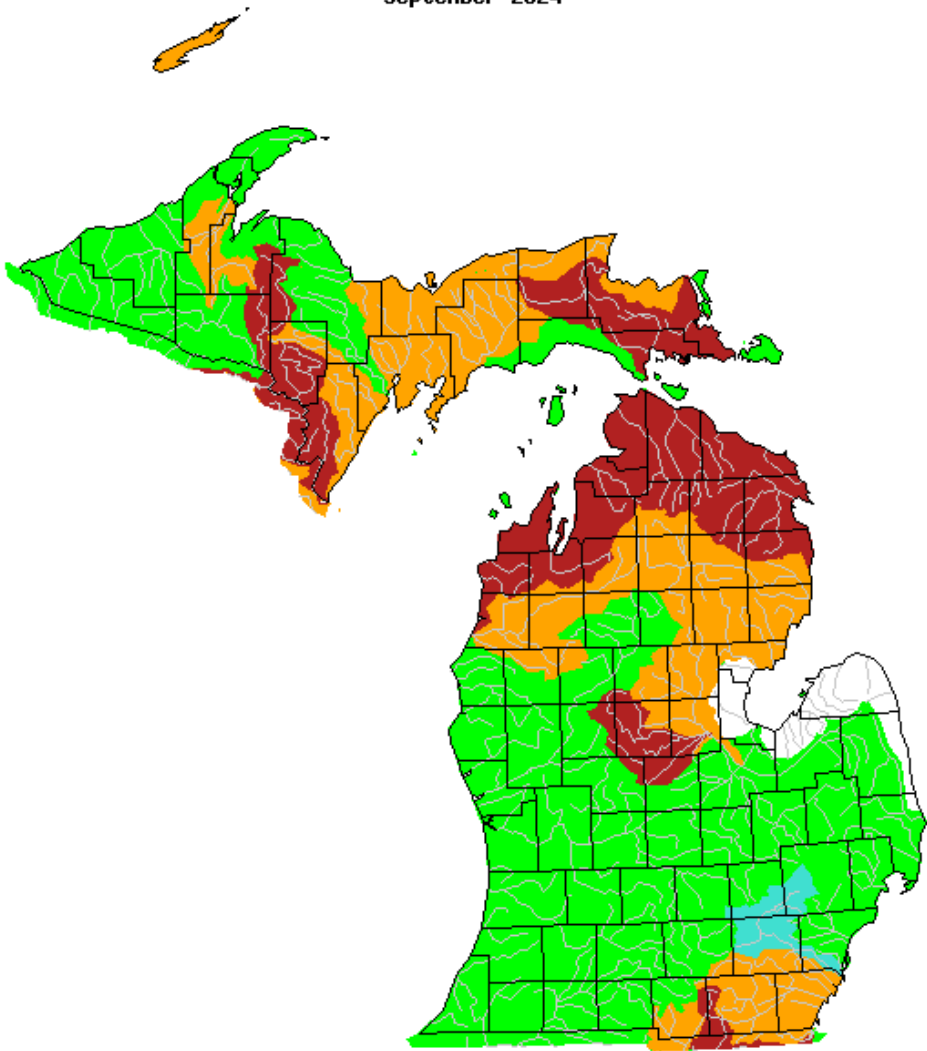
Accumulated Precipitation: Percent of Mean  
September 1, 2024 to September 30, 2024



Midwestern Regional Climate Center  
cli-MATE: MRCC Application Tools Environment  
Generated at: 10/2/2024 5:02:56 AM EDT

Figure 2. September 2024 Percent of Mean of Accumulated Precipitation.

September 2024



Explanation - Percentile classes							
Low	<10	10-24	25-75	76-90	>90	High	No Data
	Much below normal	Below normal	Normal	Above normal	Much above normal		

Figure 3. USGS monthly streamflow for September grouped by significant hydrologic units. Most river basins are normal, with the river basins through northern Lower and north central lower Michigan below normal.

Calculated Soil Moisture Ranking Percentile  
SEP, 2024

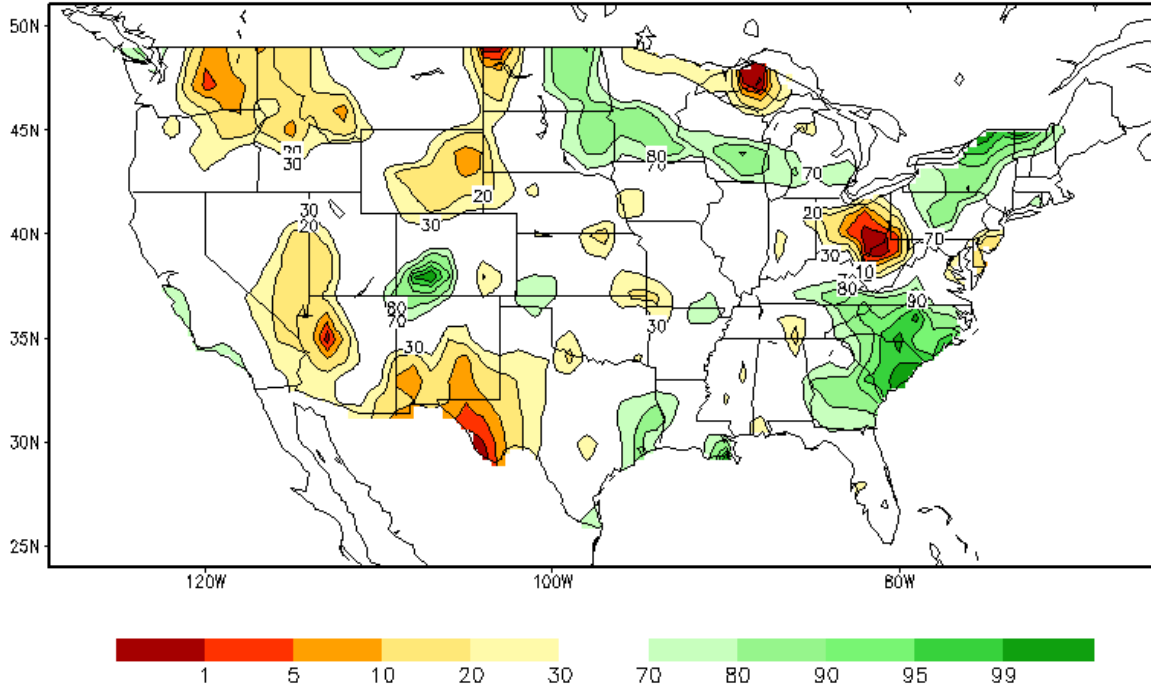
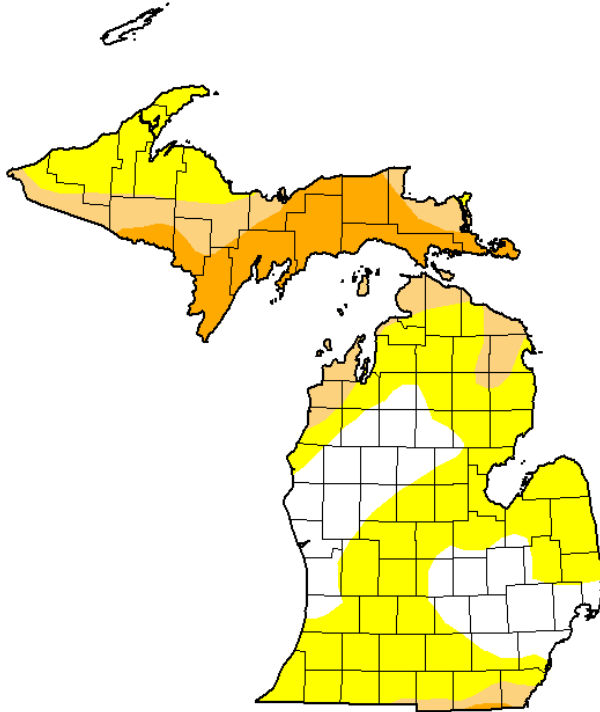


Figure 4. Calculated Soil Moisture Percentile for September, 2024. Soil moisture is above normal across southern lower Michigan.

## U.S. Drought Monitor Michigan

**October 1, 2024**  
(Released Thursday, Oct. 3, 2024)  
Valid 8 a.m. EDT



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	22.16	77.84	26.85	13.25	0.00	0.00
<b>Last Week</b> 09-24-2024	49.75	50.25	20.03	0.08	0.00	0.00
<b>3 Months Ago</b> 07-02-2024	94.29	5.71	0.00	0.00	0.00	0.00
<b>Start of Calendar Year</b> 01-02-2024	41.22	58.78	6.70	1.20	0.00	0.00
<b>Start of Water Year</b> 09-26-2023	65.01	34.99	4.96	1.31	0.00	0.00
<b>One Year Ago</b> 10-03-2023	62.34	37.66	4.97	1.31	0.00	0.00

### Intensity:

None	D2 Severe Drought
D0 Abnormally Dry	D3 Extreme Drought
D1 Moderate Drought	D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

### Author:

Richard Tinker  
CPC/NOAA/NWS/NCEP



[droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)

Figure 5. U.S. Drought Monitor effectively shows an expanding drought across the lower peninsula.

### Hydrologic Products issued this month

- 31 Hydrologic Summaries (ARBRVAGRR)
- 1 Probabilistic Hydrologic Outlook (ARBESFGRR)
- 0 Event-driven Hydrologic Outlook (ARBESFGRR1)
- 1 Areal Flood Advisory Statements (ARBFLSGRR)
- 1 Flood Warning Statements (ARBFLWGRR)
- 0 Flood Watch Statements (ARBFFAGRR)
- 0 River Statements (ARBRVSGRR)

### News Articles and Related Documentation

[Record Rainfall causes flooding in Muskegon County](#)  
[Flooding near Muskegon](#)