

NWS FORM E-5

U.S. DEPARTMENT OF COMMERCE  
NOAA, NATIONAL WEATHER SERVICE

HSA OFFICE:

Grand Rapids, MI

REPORT FOR (MONTH & YEAR):

April 2019

MONTHLY REPORT OF RIVER AND FLOOD CONDITIONS

DATE:

May 15, 2019

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

SIGNATURE:

Daniel K. Cobb, MIC

Andrew Dixon, Service Hydrologist

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).

An X inside this box indicates that no significant flooding occurred within this Hydrologic Service Area.

### Summary

April 2019 was a fairly typical transitional month, with a mix of rain events and also some snow events. Overall, temperatures were near to slightly below normal. In terms of precipitation, the month was consistently wetter than normal. One of these storms was cold enough to result in a multi-inch swatch of snow across the central portions of the area, which also caused snowfall for the month to be above-average. A series of successive widespread rain events around the middle of the month pushed parts of the lower Muskegon River briefly above flood stage, but impacts were fairly minor.

### Flood Conditions

Continuing to recover from the March snowmelt and repetitive widespread rain events, most of the mainstem rivers started the month of April between the 75<sup>th</sup> and 90<sup>th</sup> percentile flows for this time of year, but trended down to near or slightly above median (50<sup>th</sup> percentile) values by the end of the first week of April. Successive rain events in the middle of the month caused a renewed rise, which was most pronounced on the Muskegon River, where flows returned to near the 90<sup>th</sup> percentile values and minor flood stage was passed at Bridgeton and Newaygo. Soil moisture conditions for the month remained around the 80<sup>th</sup> to 90<sup>th</sup> percentile for the 7<sup>th</sup> straight month (Figure 4), which continued to result in efficient runoff processes. By the end of the month, the majority of the rivers and streams across West Michigan were down near their typical (median) values for late April.

### Flood Stage Report

The forecast points on the Muskegon River at Bridgeton and Newaygo exceeded flood stage during the month. Thus, the NWS Form E-3 "Flood Stage Report" was issued.

### River Conditions

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

<u>Location</u>	<u>River</u>	<u>% of Normal</u>
Scottville	Pere Marquette	104
Whitehall	White	113
Ewart	Muskegon	116
Mt. Pleasant	Chippewa	128
Lansing	Grand	163
Grand Rapids	Grand	128
East Lansing	Red Cedar	217
Hastings	Thornapple	159
Battle Creek	Battle Creek	127
Battle Creek	Kalamazoo	141

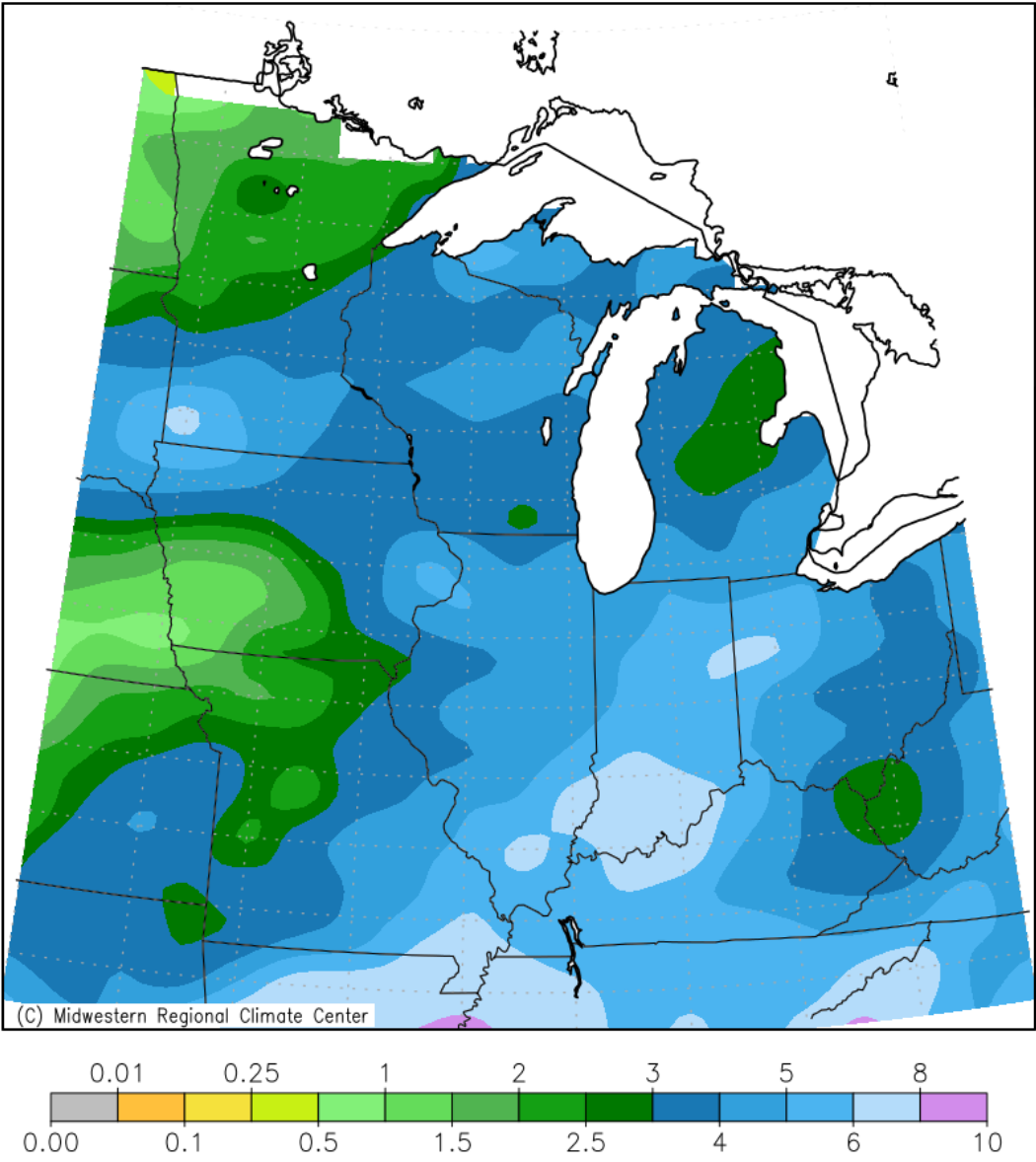
### **General Hydrologic Information**

The month of April featured above-average precipitation across most of the area.

April precipitation amounts for Grand Rapids, Lansing, and Muskegon, Michigan, were 4.05, 3.50, and 3.38 inches, respectively (Figure 1). Monthly departures were +0.70, +0.47 and +0.47 inches, respectively. Yearly departures were +3.01, +1.69 and +3.72 inches for Grand Rapids, Lansing and Muskegon respectively. Percent of mean precipitation for April 2019 is shown in Figure 2.

Temperatures for the month of April were near-average at Grand Rapids, Lansing and Muskegon. The average monthly temperature departures for these sites were -0.3, -0.2 and +0.5 degrees Fahrenheit, respectively.

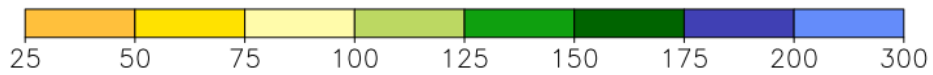
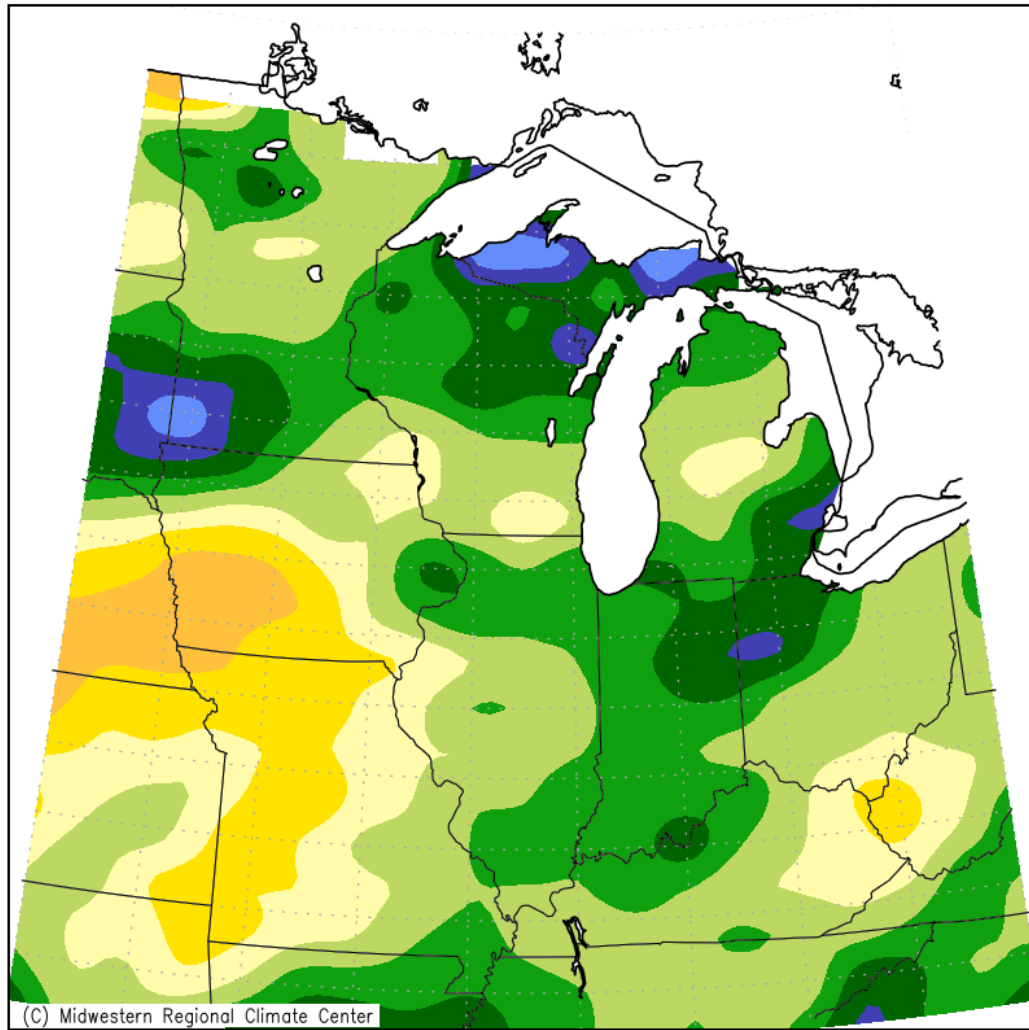
Accumulated Precipitation (in)  
April 1, 2019 to April 30, 2019



Midwestern Regional Climate Center  
Illinois State Water Survey, Prairie Research Institute  
University of Illinois at Urbana-Champaign

Figure 1. April 2019 Monthly Precipitation Totals

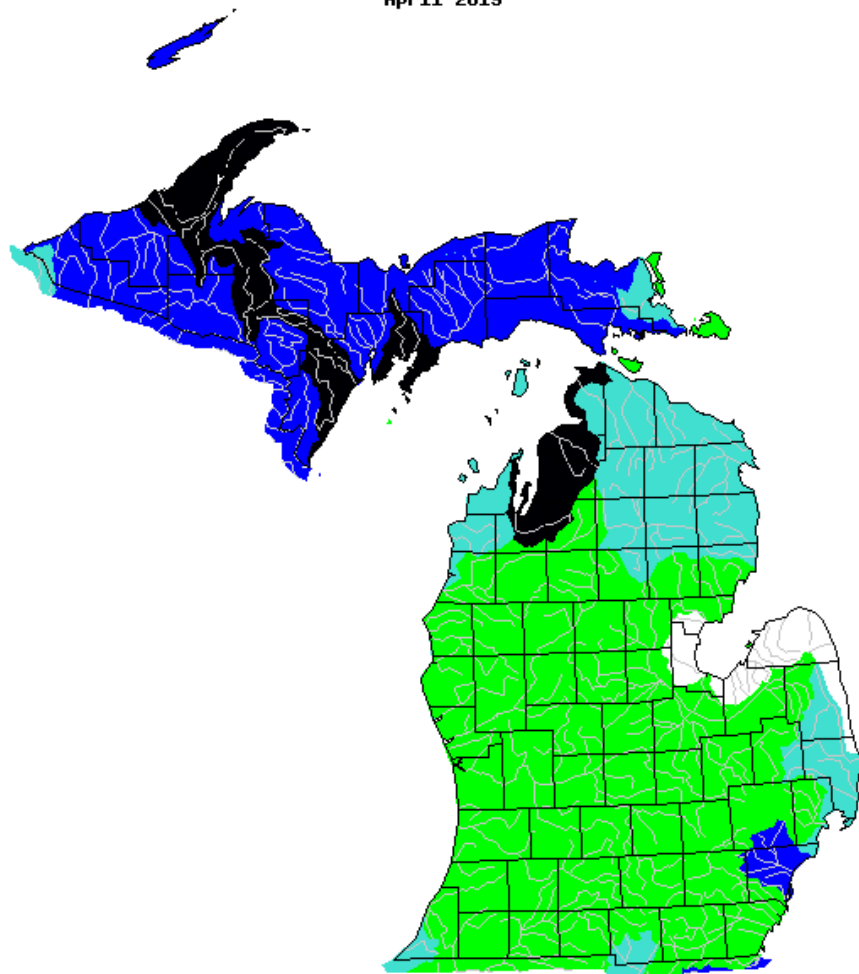
Accumulated Precipitation: Percent of Mean  
April 1, 2019 to April 30, 2019



Midwestern Regional Climate Center  
Illinois State Water Survey, Prairie Research Institute  
University of Illinois at Urbana-Champaign

Figure 2. April 2019 Percent of Mean of Accumulated Precipitation

April 2019







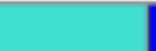



Explanation - Percentile classes								
								
Low	<10	10-24	25-75	76-90	>90	High	No Data	
	Much below normal	Below normal	Normal	Above normal	Much above normal			

Figure 3. USGS monthly average streamflow significant hydrologic units. Note generally near to above-average flows across most of Lower Michigan.

### Calculated Soil Moisture Ranking Percentile APR, 2019

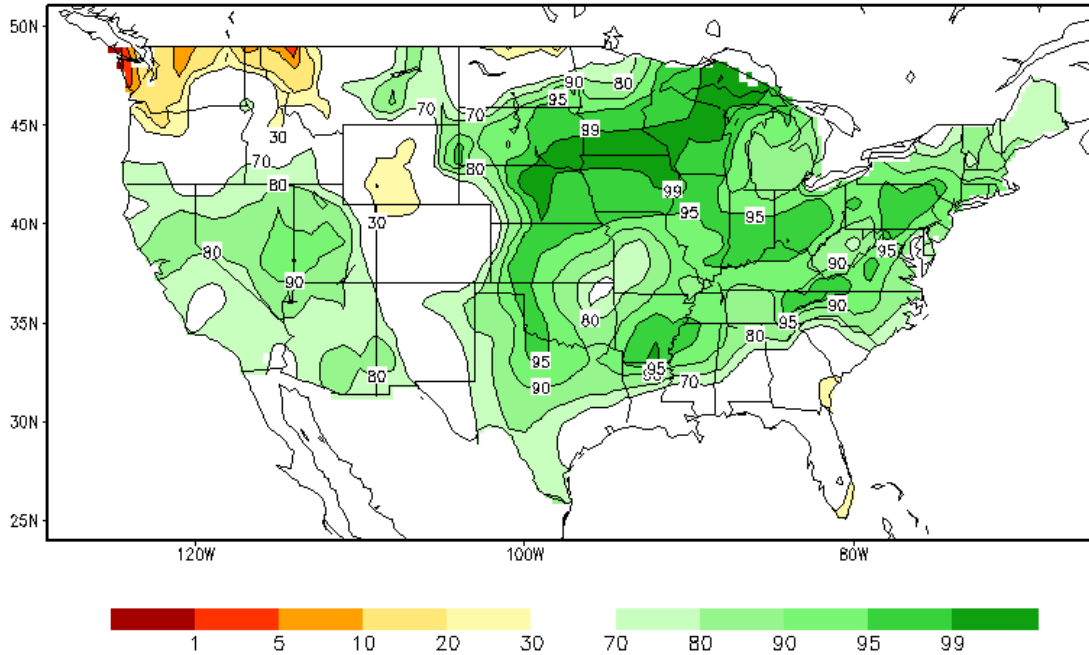


Figure 4. Chart of monthly values of soil moisture, by percentile ranking. This is the 7<sup>th</sup> consecutive month West Michigan has been at or above the 80<sup>th</sup>-90<sup>th</sup> percentile. This saturated ground leads to increased runoff efficiency of rainfall into rivers and streams.

#### **Hydrologic Products issued this month:**

- 29 Hydrologic Summaries (ARBRVAGRR)
- 1 Probabilistic Hydrologic Outlook (ARBESFGRR)
- 1 Event-driven Hydrologic Outlook (ARBESFGRR)
- 28 Daily River Forecasts (ARBRVDGRR)
- 6 Areal Flood Advisory Statements (ARBFLSGRR)
- 1 Flood Warning Statements (ARBFLWGRR)
- 0 Flood Watch Statements (ARBFFAGRR)
- 37 River Statements (ARBRVSGRR)

#### **News Articles and Related Documentation**

<https://www.wzzm13.com/article/weather/flood-warning-muskegon-river-may-rise-due-to-rainfall-through-saturday/69-f046c9c1-8e9b-4633-93c9-657beba0f3e4>

<https://fox17online.com/2019/04/18/flood-warning-issued-for-newaygo/>