NWS FORM E-5	**U.S. Department of Commerce** NOAA, NATIONAL WEATHER SERVICE	**HSA OFFICE:** **Grand Rapids, MI**
MONTHLY REPORT OF RIVER AND FLOOD CONDITIONS		REPORT FOR (MONTH & YEAR): **May 2021**
TO:	NATIONAL WEATHER SERVICE (W/OS31) HYDROMETEOROLOGICAL INFO CENTER 1325 EAST-WEST HIGHWAY, RM 13468 SILVER SPRING, MD 20910	DATE: June 15, 2021
		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 flooding occurred within this hydrologic service area.

Summary

Overall it was a relatively cool and dry month across most of West Michigan. The one exception was in northern Lower Michigan where above-average rainfall actually occurred in some areas close around Houghton Lake. Meanwhile, the driest conditions were again over the far southwest portion of the state. Repeating thunderstorms over the same area did occur in parts of the Muskegon Basin on May 23, with flooded roads and parking lots occurring in the Reed City area as a result of 3-4 inches of rain. This was handled with an areal flood advisory, and the localized flooding dissipated soon after the heavy rain ended.

During the course of the month, drought continued to expand across Lower Michigan, and by the end of the month an area of D3 “Severe Drought” was being experienced across the southwest corner of the state. Drought in Michigan primarily affects the agricultural community, and many farmers were reporting having to irrigate earlier than they ever remember. For those farmers unable to irrigate, dry soils were limiting plant growth during this early season period.

The continued dry conditions also allowed Lake Michigan water levels to remain essentially unchanged since March, defying the typical increasing water levels this time of year as snowmelt and spring rains work their way through the Great Lakes waterways. Water levels are now more than 18 inches lower than this time last year, but still about 12 inches above the long-term average levels.

Flood Conditions

The major river systems continued to slip into lower and lower percentile categories with the ongoing drought. The Muskegon River fared slightly better due to rain totals closer to normal during the month, but still spent the bulk of the month below the 25th percentile of flow for this time of year. The Grand and Kalamazoo River basins spent most of the month around the 10th percentile.

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 May percentage of normal flow for selected rivers is listed below:

Location	River	% of Normal
Scottville	Pere Marquette	122
Whitehall	White	89
Evart	Muskegon	63
Mt. Pleasant	Chippewa	130
Lansing	Grand	N/A
Grand Rapids	Grand	64
East Lansing	Red Cedar	55
Hastings	Thornapple	63
Battle Creek	Battle Creek	50
Battle Creek	Kalamazoo	53

General Hydrologic Information

May precipitation amounts for Grand Rapids, Lansing, and Muskegon, Michigan, were 1.92, 1.20, and 2.05 inches, respectively (Figure 1). Monthly departures were -2.08, -2.46, and -1.33 inches, respectively. Yearly departures were -6.47, -5.48 and -6.28 inches for Grand Rapids, Lansing and Muskegon respectively. Percent of mean precipitation for May 2021 is shown in Figure 2.

Temperatures for the month of May at Grand Rapids, Lansing and Muskegon were slightly below average. The monthly average temperature departures for these sites were -1.7, -1.6, and -1.5 degrees Fahrenheit, respectively.

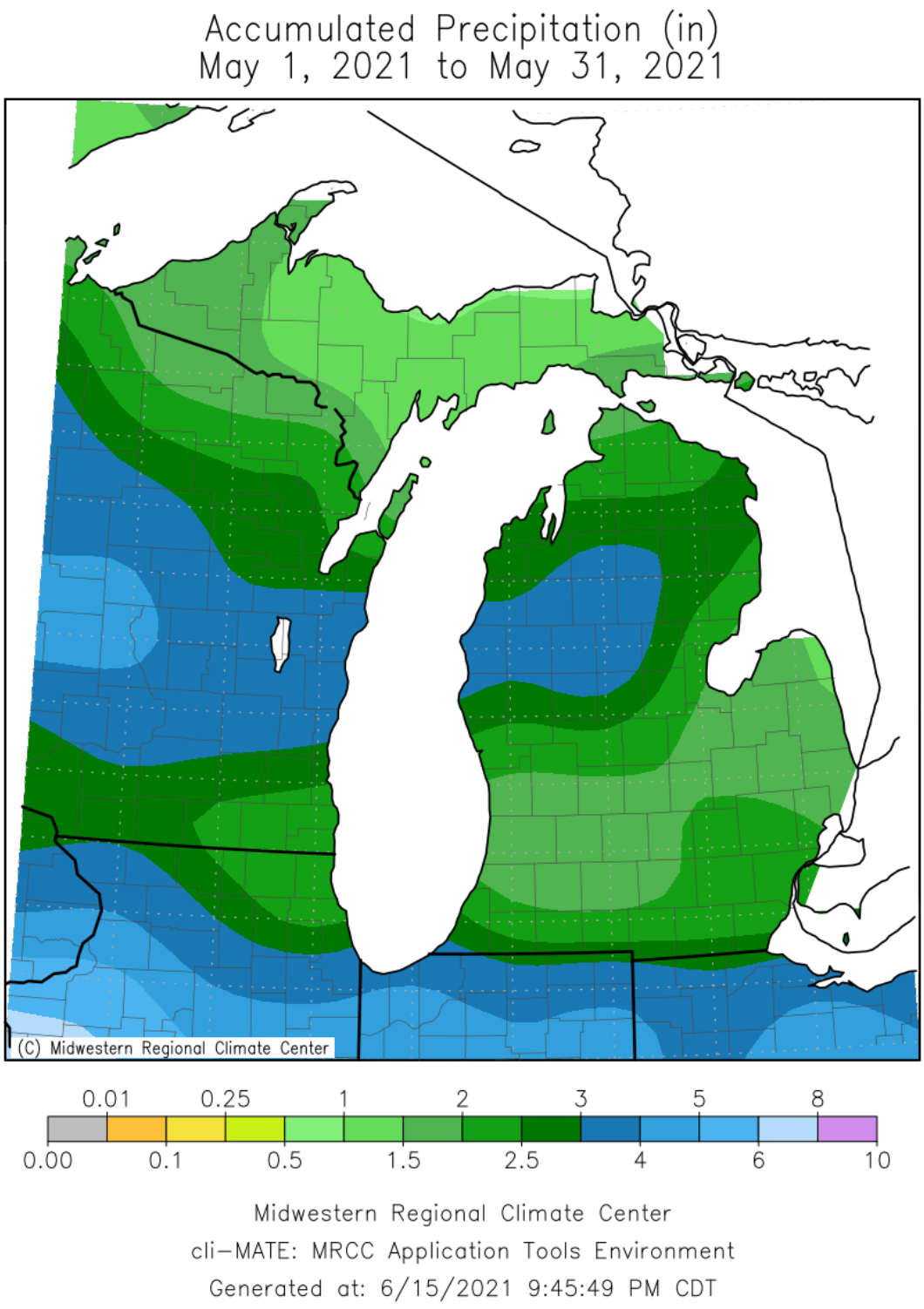

Figure 1. May 2021 Monthly Precipitation Totals.

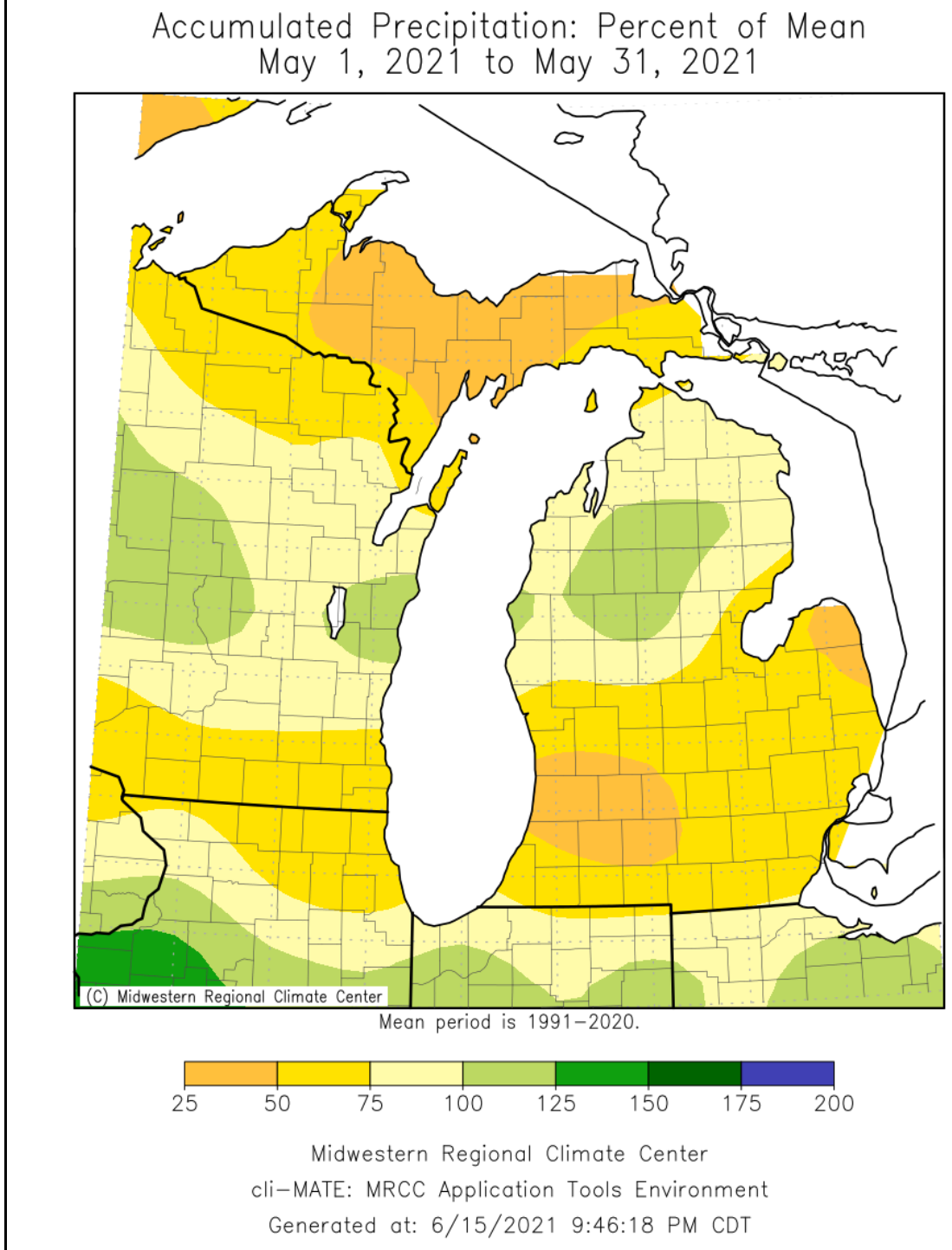

Figure 2. May 2021 Percent of Mean of Accumulated Precipitation.

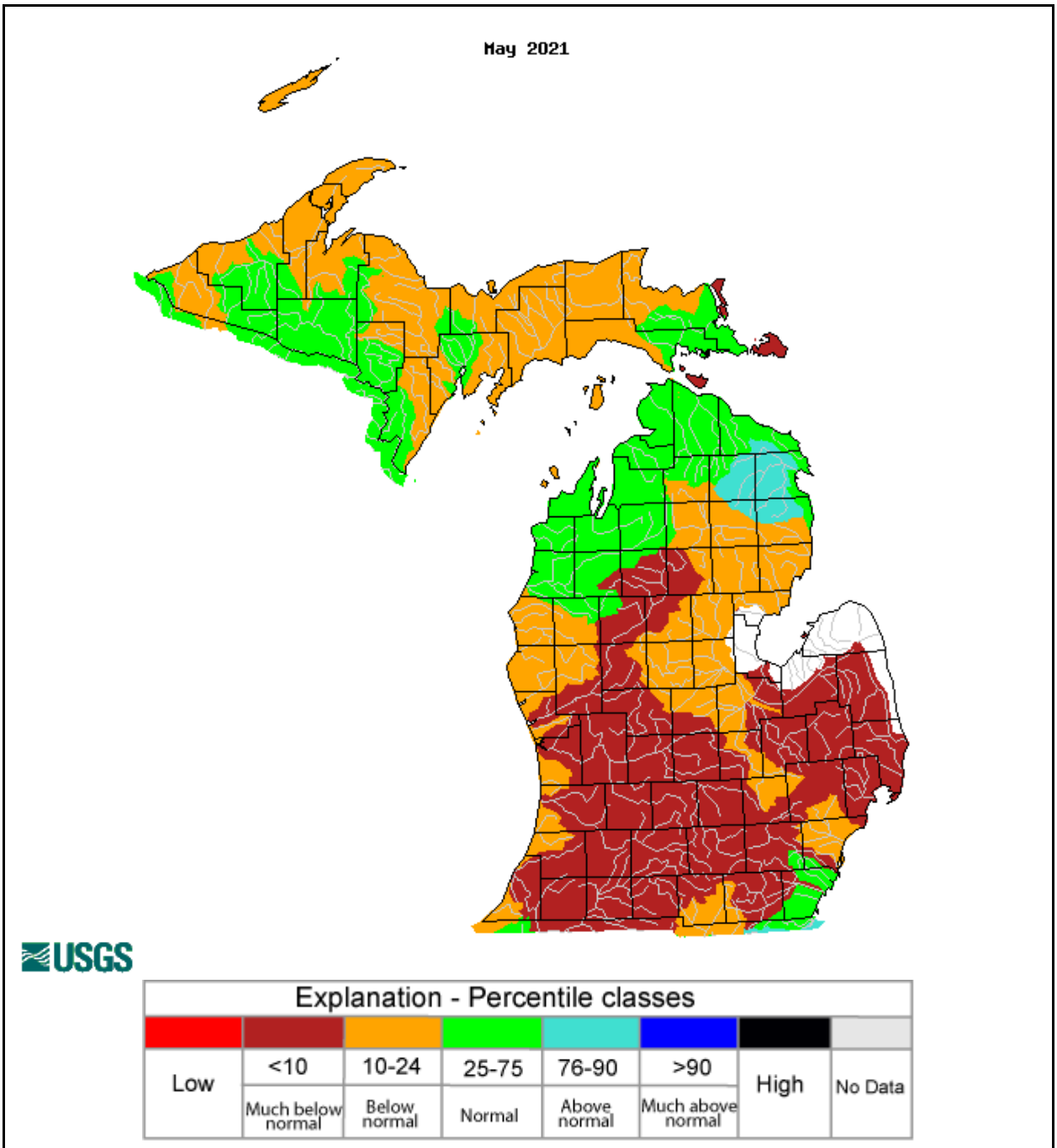

Figure 3. USGS monthly average streamflow for May, grouped by significant hydrologic units. Note streamflows across Lower Michigan significantly below-average, owing to several months of relatively dry conditions.

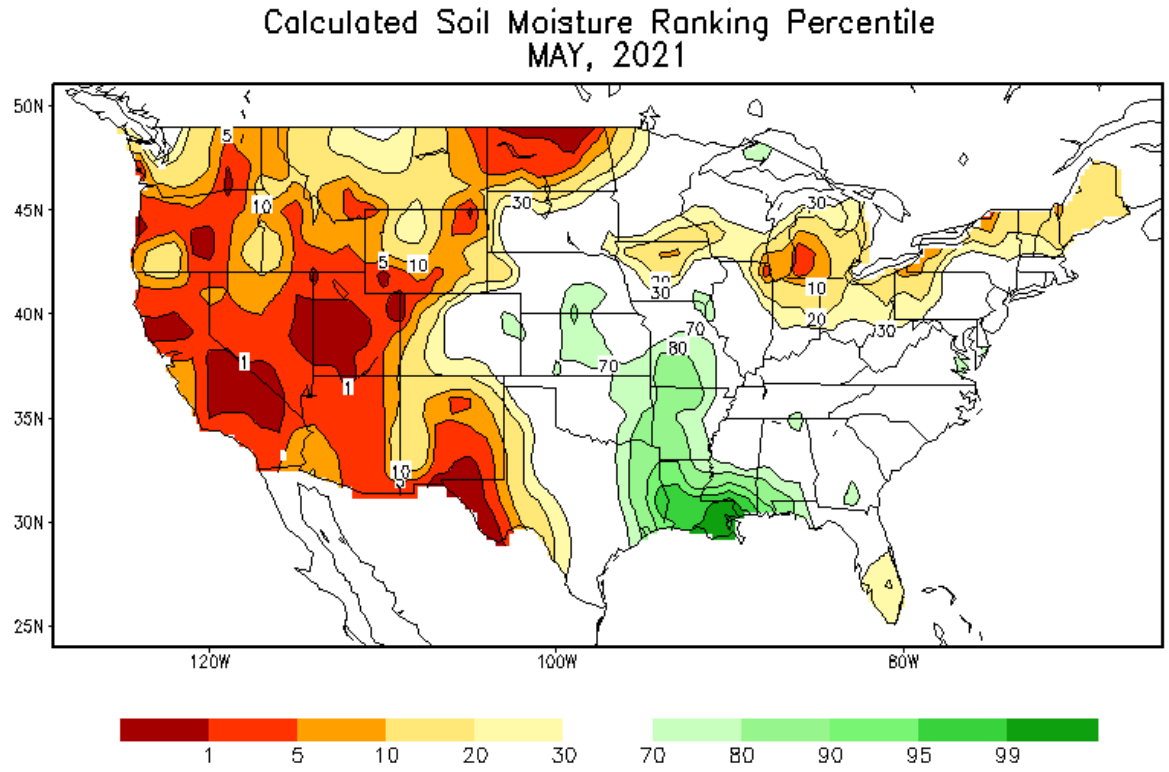

Figure 4. Chart of monthly values of soil moisture, by percentile ranking.

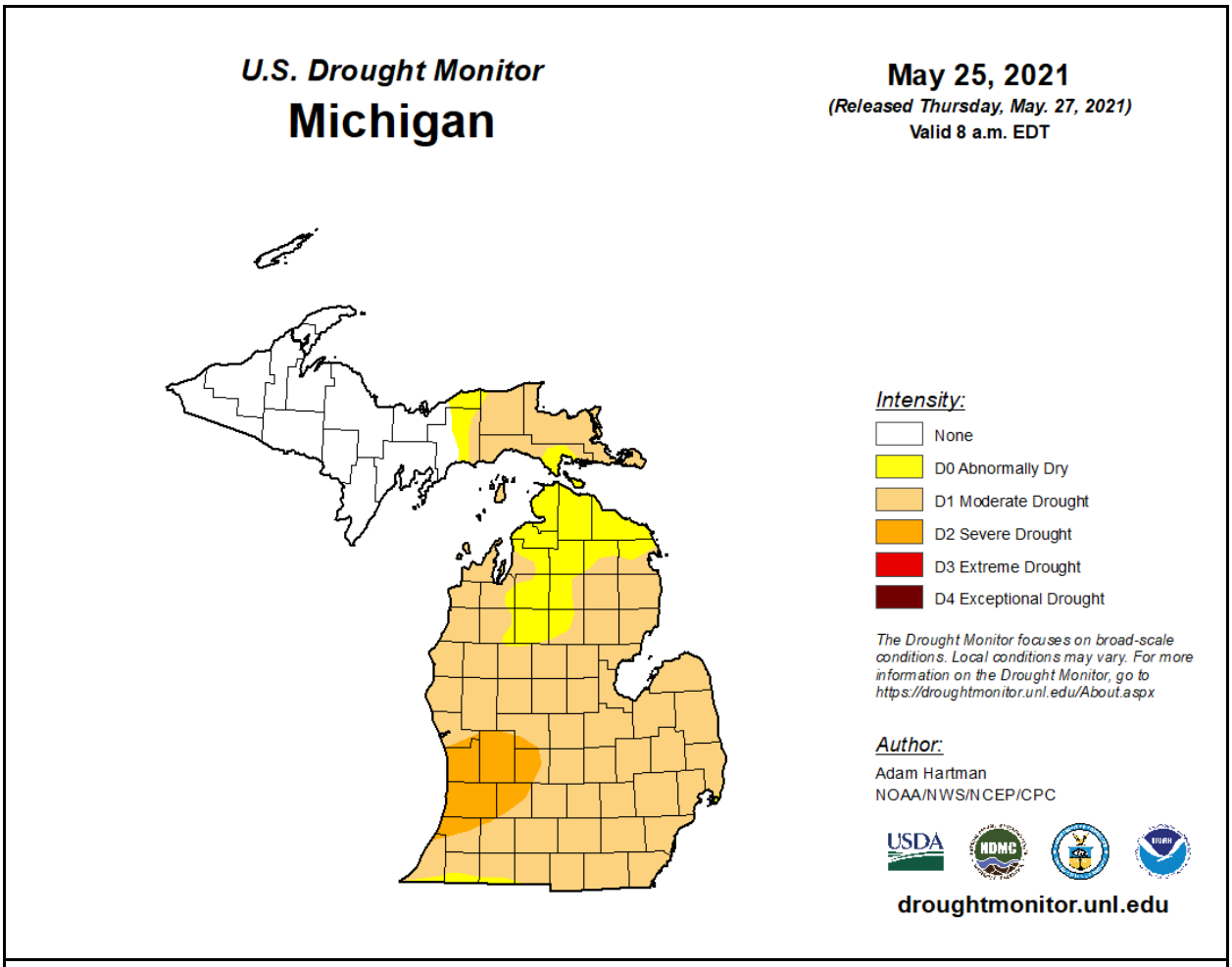

Figure 5. U.S. Drought Monitor analysis valid at the end of May, 2021

Hydrologic Products issued this month

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

News Articles and Related Documentation

https://www.mlive.com/weather/2021/06/severe-drought-rapidly-expands-over-michigan-now-one-third-in-severe-drought.html

https://www.woodtv.com/weather/weather-news/drought-continues-now-considered-severe-in-parts-of-west-michigan/