

MONTHLY REPORT OF RIVER AND FLOOD CONDITIONS

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

SIGNATURE:  
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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).

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

**Summary**

Flash flooding and advisory flooding occurred in our Hydrologic Service Area (HSA) during the month of May. Flash flood warnings were issued for Lake, Mason, and Osceola counties on May 3<sup>rd</sup>. During the May 3<sup>rd</sup> event, local emergency management officials reported multiple washouts and flowing water over secondary roads in all three counties. Initial flood damage to secondary roads for these 3 counties was estimated to be between \$200,000.00 to \$500,000.00 dollars.

**Flood Conditions**

Wednesday, May 2<sup>nd</sup>

At 12:10 PM EDT the hazardous weather outlook mentioned the possibility of heavy rainfall leading to minor flooding in urban and poor drainage areas.  
At 3:57 PM EDT the area forecast discussion, under the hydrology section, mentioned the increase in flash flood risk due to a very moist air mass moving into the area overnight and the possible need for a flash flood watch in the near future.

Thursday, May 3<sup>rd</sup>

At 5:42 AM EDT an areal flood advisory was issued for Lake, Mason, and Osceola Counties until 5:30 PM EDT. Over the past two hours, radar estimated rainfall amounts of 2 to 4 inches had fallen over the advisory area. Local law enforcement officials reported minor flooding across the advisory area.

At 8:50 AM EDT a flash flood warning was issued for northern Lake County until 1:00 PM EDT. Radar estimated rainfall amounts of 2 to 4 inches had fallen over the past 3 hours over the warned area.

At 10:22 AM EDT a flash flood watch was issued effective through Friday morning for our entire HSA. Thunderstorms with very heavy rain were forecast to move into the area Thursday afternoon and into Thursday night. The air mass was unusually moist for this time of year and had the potential for greater than an inch per hour rainfall rates over multiple hours.

At 10:56 AM EDT a river flood advisory was issued for the following creeks and rivers:

- Sycamore Creek near Holt, Michigan
- Pere Marquette River near Scottville, Michigan
- Muskegon River near Evart, Michigan

The forecast called for these rivers and creeks to rise out of their banks but remain below flood stage.

At 12:37 PM EDT a flash flood warning was issued for Mason County until 6:30 PM EDT. Radar estimated rainfall amounts of over 3 inches in less than 3 hours over the warned area. The rain fell over an area that had already received several inches of rain earlier this morning and was under a flood advisory. Reports gathered the following day (Friday) from local emergency management indicated multiple secondary roads washed out and 6 inches of moving water over a paved road (Angling Road) between 3 PM and 6 PM EDT Thursday.

At 12:50 PM EDT a flash flood warning was issued for all of Lake County until 7:00 PM EDT. The same thunderstorms with very heavy rain that moved over Mason County were now moving over Lake County. Reports gathered the following day (Friday) from local emergency management indicated multiple secondary roads flooded and/or washed out and water flowing over a small bridge on E 56<sup>th</sup> Street (at Baker Creek) at around 6 PM EDT Thursday.

At 2:13 PM EDT the areal flood advisory was updated to indicate that the flood advisory for Mason and Lake Counties had been replaced with flash flood warnings and the flood advisory for Osceola County remained in effect until 5:30 PM EDT.

At 3:01 PM EDT a flash flood warning was issued for Osceola County until 9:00 PM EDT. Slow moving thunderstorms with very heavy rain were moving across the warned area. Reports gathered the following day (Friday) from local emergency management indicated multiple secondary roads flooded and 7 secondary roads washed out between approximately 5 PM and 7 PM EDT Thursday.

At 3:14 PM EDT the areal flood advisory was cancelled for Osceola County. The cancellation statement mentioned that it was replaced by a flash flood warning.

At 6:59 PM EDT an areal flood advisory was issued for Clinton County until 1:00 AM EDT Friday. Radar estimated rainfall amounts of 1 to 2 inches over the past hour had occurred over the advisory area.

At 8:03 PM EDT an areal flood advisory was issued for Lake, Mason, and Osceola Counties until 2:00 PM EDT Friday. Flash flood warnings were downgraded to flood advisories to handle the lingering flooding. Local law enforcement officials reported several roads still closed due to continued flooding across the area.

At 8:06 PM EDT the flash flood warning for Osceola County was cancelled. The flash flood warning was replaced with an areal flood advisory to cover lingering flooding.

At 8:21 PM EDT the flood advisory continued for Clinton County until 1:00 AM EDT Friday.

At 8:32 PM EDT the flash flood watch was cancelled for the northern half of our HSA and continued for the southern half. Thunderstorms with very heavy rain were forecast to move into the watch area overnight.

At 9:50 PM EDT a river flood warning was issued for the Portage River near Vicksburg, Michigan. The flood forecast called for the river to crest near its flood stage of 5.0 feet Friday evening.

At 9:59 PM EDT the river flood advisory continued for the following creeks and rivers:

- Sycamore Creek near Holt, Michigan
- Pere Marquette River near Scottville, Michigan
- Muskegon River near Evart, Michigan

and was issued for the following rivers:

- Grand River near Ionia, Michigan
- Looking Glass River near Eagle, Michigan

- Thornapple River near Hastings, Michigan
- Muskegon River near Croton, Michigan

The forecast called for these rivers and creeks to rise out of their banks but remain below flood stage.

#### Friday, May 4<sup>th</sup>

At 12:48 AM EDT the areal flood advisory for Clinton County was extended until 1:00 PM EDT Friday. Local law enforcement officials indicated that minor flooding was still occurring across the advisory area.

At 4:58 AM EDT an areal flood advisory was issued for Allegan, Barry, Eaton, and Ingham Counties until 5:00 PM EDT Friday. Radar estimated rainfall amounts of 1 to 3 inches had fallen across the advisory area.

At 7:53 AM EDT the flash flood watch was allowed to expire.

At 10:17 AM EDT the river flood advisory was cancelled for the Thornapple River near Hastings, Michigan but continued for the following creeks and rivers:

- Sycamore Creek near Holt, Michigan
- Pere Marquette River near Scottville, Michigan
- Muskegon River near Evart, Michigan
- Grand River near Ionia, Michigan
- Looking Glass River near Eagle, Michigan
- Muskegon River near Croton, Michigan

At 10:39 AM EDT the river flood warning for the Portage River near Vicksburg, Michigan was cancelled when the river crested below flood stage.

At 10:53 AM EDT the areal flood advisory for Clinton County was cancelled.

At 11:11 AM EDT the areal flood advisory for Allegan, Ingham, Eaton, and Barry Counties was cancelled.

At 12:14 PM EDT the areal flood advisory for Mason County was cancelled and the flood advisory for Lake and Osceola Counties continued until 2:00 PM EDT.

At 12:50 PM EDT the areal flood advisory for Lake and Osceola Counties was extended until 2:00 PM EDT Saturday.

At 12:51 PM EDT the river flood advisory for the Looking Glass River near Eagle, Michigan was cancelled.

At 9:12 PM EDT the river flood advisory continued for the following creeks and rivers:

- Sycamore Creek near Holt, Michigan
- Pere Marquette River near Scottville, Michigan
- Muskegon River near Evart, Michigan
- Grand River near Ionia, Michigan
- Muskegon River near Croton, Michigan

#### Saturday, May 5<sup>th</sup>

At 9:52 AM EDT the river flood advisory continued for the following creeks and rivers:

- Sycamore Creek near Holt, Michigan
- Pere Marquette River near Scottville, Michigan
- Muskegon River near Evart, Michigan
- Grand River near Ionia, Michigan
- Muskegon River near Croton, Michigan

At 12:59 PM EDT the areal flood advisory for Lake and Osceola Counties was cancelled.

At 8:36 PM EDT the river flood advisory for Sycamore Creek near Holt, Michigan was cancelled and the following rivers continued in the flood advisory:

- Pere Marquette River near Scottville, Michigan
- Muskegon River near Evart, Michigan
- Grand River near Ionia, Michigan
- Muskegon River near Croton, Michigan

#### Sunday, May 6<sup>th</sup>

At 9:42 AM EDT the river flood advisory continued for the following rivers:

- Pere Marquette River near Scottville, Michigan
- Muskegon River near Evart, Michigan
- Grand River near Ionia, Michigan
- Muskegon River near Croton, Michigan

At 9:21 PM EDT the river flood advisory continued for the following rivers:

- Pere Marquette River near Scottville, Michigan
- Muskegon River near Evart, Michigan
- Grand River near Ionia, Michigan
- Muskegon River near Croton, Michigan

At 10:42 PM EDT a river flood advisory was issued for the Maple River near Maple Rapids, Michigan. The forecast was for the river to rise out of its banks but remain below flood stage.

#### Monday, May 7<sup>th</sup>

At 9:02 AM EDT the river flood advisory continued for the following rivers:

- Pere Marquette River near Scottville, Michigan
- Muskegon River near Evart, Michigan
- Grand River near Ionia, Michigan
- Muskegon River near Croton, Michigan
- Maple River near Maple Rapids, Michigan

At 8:37 PM EDT the river flood advisory was cancelled for the Muskegon River near Croton, Michigan.

At 8:45 PM EDT the river flood advisory continued for the following rivers:

- Pere Marquette River near Scottville, Michigan
- Muskegon River near Evart, Michigan
- Grand River near Ionia, Michigan
- Maple River near Maple Rapids, Michigan

#### Tuesday, May 8<sup>th</sup>

At 9:56 PM EDT the river flood advisory was cancelled for the Pere Marquette River near Scottville, Michigan.

At 10:04 PM EDT the river flood advisory continued for the following rivers:

- Muskegon River near Evart, Michigan
- Grand River near Ionia, Michigan
- Maple River near Maple Rapids, Michigan

#### Wednesday, May 9<sup>th</sup>

At 9:50 AM EDT the river flood advisory was cancelled for the Grand River near Ionia, Michigan, and the Muskegon River near Evart, Michigan. The river flood advisory for the Maple River near Maple Rapids, Michigan continued.

At 9:03 PM EDT the river flood advisory continued for the Maple River near Maple Rapids, Michigan.

Thursday, May 10<sup>th</sup>

At 10:29 AM EDT the river flood advisory for the Maple River near Maple Rapids, Michigan was cancelled.

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Saturday, May 12<sup>th</sup>

At 11:45 AM EDT a river flood advisory was issued for the Looking Glass River near Eagle, Michigan. The river was forecast to rise out of banks but remain below flood stage.

At 9:06 PM EDT the river flood advisory continued for the Looking Glass River near Eagle, Michigan.

Sunday, May 13<sup>th</sup>

At 10:22 AM EDT the river flood advisory for the Looking Glass River near Eagle, Michigan was cancelled and a river flood advisory was issued for the Grand River near Ionia, Michigan.

At 8:49 PM EDT the river flood advisory for the Grand River near Ionia, Michigan was cancelled.

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Sunday, May 27<sup>th</sup>

At 6:02 AM EDT an areal flood advisory was issued for northwestern Gratiot County until 9:00 AM EDT. Radar estimated rainfall amounts of over 3 inches had fallen across the advisory area.

At 6:28 AM EDT an areal flood advisory was issued for central Osceola County until 10:30 AM EDT. Radar estimated rainfall amounts of over 3 inches had fallen across the advisory area.

At 8:48 AM EDT an areal flood advisory for northwestern Gratiot County was extended until 3:00 PM EDT Sunday. Another line of thunderstorms producing heavy rain was forecast to move through the area mid-morning.

At 8:59 AM EDT the areal flood advisory for central Osceola County remained in effect until 10:30 AM EDT.

At 9:07 AM EDT an areal flood advisory was issued for southern Clare County until 3:00 PM EDT. Radar estimated rainfall amounts of over 2 inches had fallen across the advisory area.

At 9:50 AM EDT an areal flood advisory was issued for southern Clare County and Isabella County until 4:00 PM EDT Sunday. Thunderstorms with very heavy rain were moving through the advisory area.

At 10:11 AM EDT the areal flood advisory for central Osceola County was extended until 3:30 PM EDT Sunday.

At 12:37 PM EDT the areal flood advisory for northwest Gratiot County was cancelled.

At 12:42 PM EDT the areal flood advisory for southwestern Clare County and Isabella County was cancelled.

At 1:55 PM EDT the areal flood advisory for central Osceola County continued until 3:30 PM EDT Sunday.

At 1:57 PM EDT the areal flood advisory for southern Clare County continued until 3:00

PM EDT Sunday.

At 2:59 PM EDT the areal flood advisory for southern Clare County was allowed to expire.

At 3:25 PM EDT the areal flood advisory for central Osceola County was allowed to expire.

The following rivers rose out of their banks but did not exceed flood stage, during the month of May:

- Pere Marquette River near Scottville, Michigan (3 days above bankfull)
- Muskegon River near Ewart, Michigan (5 days above bankfull)
- Grand River near Ionia, Michigan (4 days above bankfull)
- Muskegon River near Croton, Michigan (3 days above bankfull)
- Looking Glass River near Eagle, Michigan (3 days above bankfull)
- Maple River near Maple Rapids, Michigan (3 days above bankfull)

### **Flood Stage Report**

No rivers exceeded flood stage during the month of May.

### **River Conditions**

River levels across the HSA were near to below normal at the end of the month. The end of the month percentage of normal flow for selected rivers is listed below:

<u>Location</u>	<u>River</u>	<u>% of Normal</u>
Scottville	Pere Marquette	86
Whitehall	White	86
Ewart	Muskegon	91
Mt. Pleasant	Chippewa	107
Lansing	Grand	72
Grand Rapids	Grand	71
East Lansing	Red Cedar	59
Hastings	Thornapple	61
Battle Creek	Battle Creek	58
Battle Creek	Kalamazoo	61

## General Hydrologic Information

For our HSA, May 2012 had above normal temperatures, and near to below normal precipitation, with the exception of Lake and Osceola Counties which had above normal precipitation (Figure 2).

May precipitation totals at Grand Rapids, Lansing, and Muskegon, Michigan, were 2.72, 2.28, and 2.24 inches, respectively (Figure 1). Precipitation totals for the month at these three sites were 1.26 inches below normal at Grand Rapids, 1.08 inches below normal at Lansing, and 1.01 inches below normal at Muskegon, Michigan (Figure 2). Yearly precipitation totals were 0.57 inches above normal for Grand Rapids, 0.35 of an inch below normal for Lansing, and 0.61 of an inch above normal for Muskegon, Michigan.

Temperatures for the month of May were above normal at Grand Rapids, Lansing, and Muskegon, Michigan, with average monthly departures of +4.5, +4.9 and +4.9 degrees Fahrenheit, respectively.

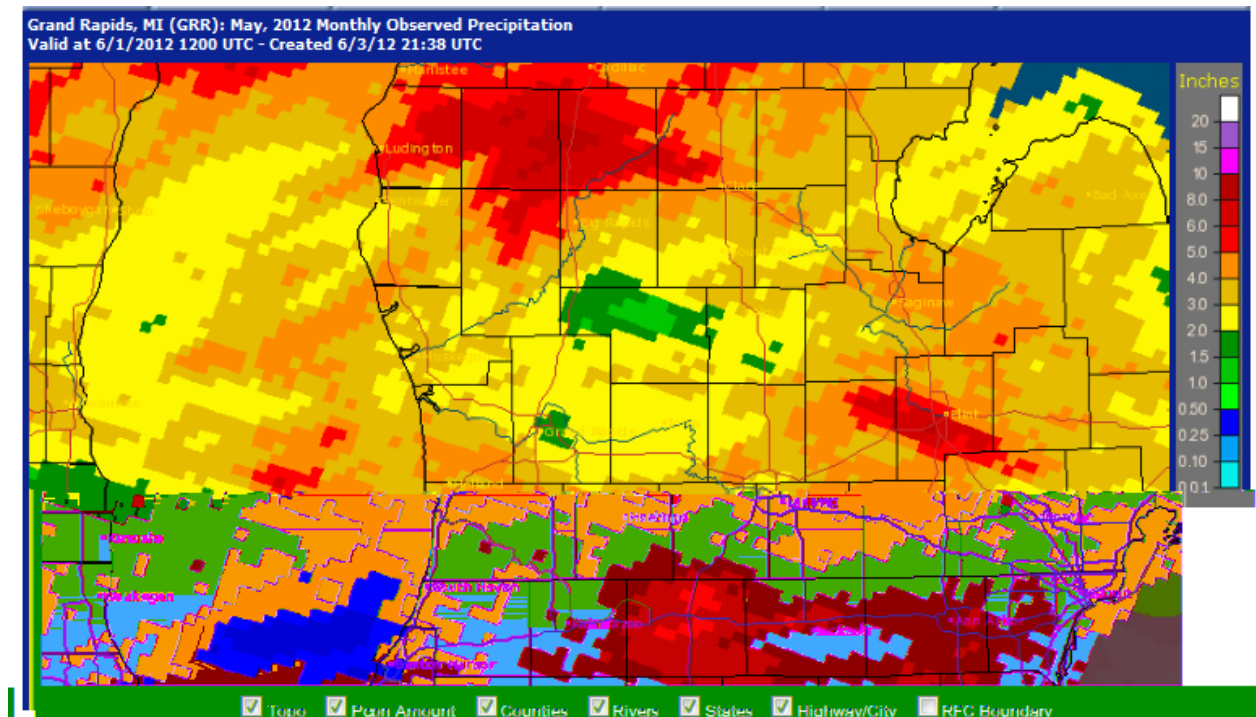


Figure 1. May 2012 Monthly Precipitation Totals

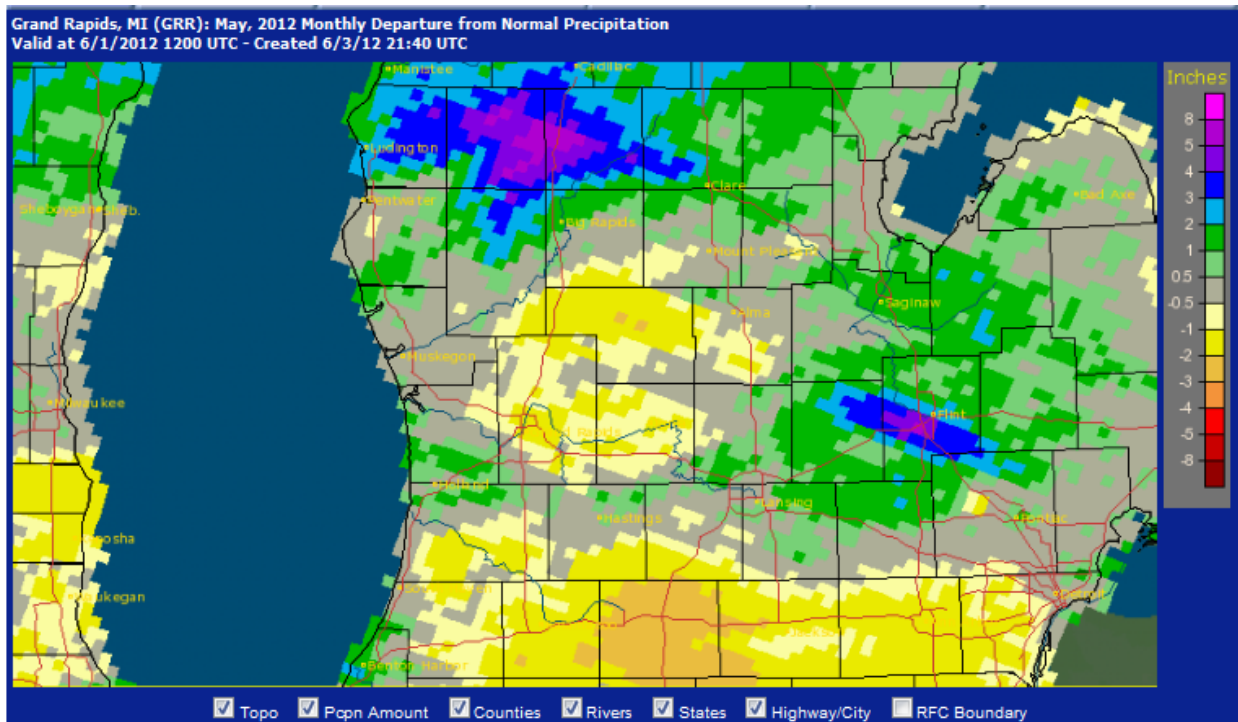


Figure 2. May 2012 Monthly Departure from Normal Precipitation Totals

**Hydrologic Products issued this month:**

- 3 Flood Watches (ARBFFAGRR)
- 4 Flash Flood Warnings (ARBFFWGRR)
- 1 Flash Flood Statement (ARBFFSGRR)
- 1 River Flood Warning (ARBFLWGRR)
- 1 River Flood Statement (ARBFLSGRR)
- 22 River Flood Advisories (ARBFLSGRR)
- 26 Areal Flood Advisories (ARBFLSGRR)
- 10 Hydrologic Statements (ARBRVSGRR)
- 1 Probabilistic Hydrologic Outlook (ARBESFGRR)
- 31 Daily River and Lake Summaries (ARBRVDGRR)
- 31 Hydrologic Summaries (ARBRVAGRR)