



Minnesota Department of Natural Resources  
Division of Ecological and Water Resources



## Hydrologic Conditions Report

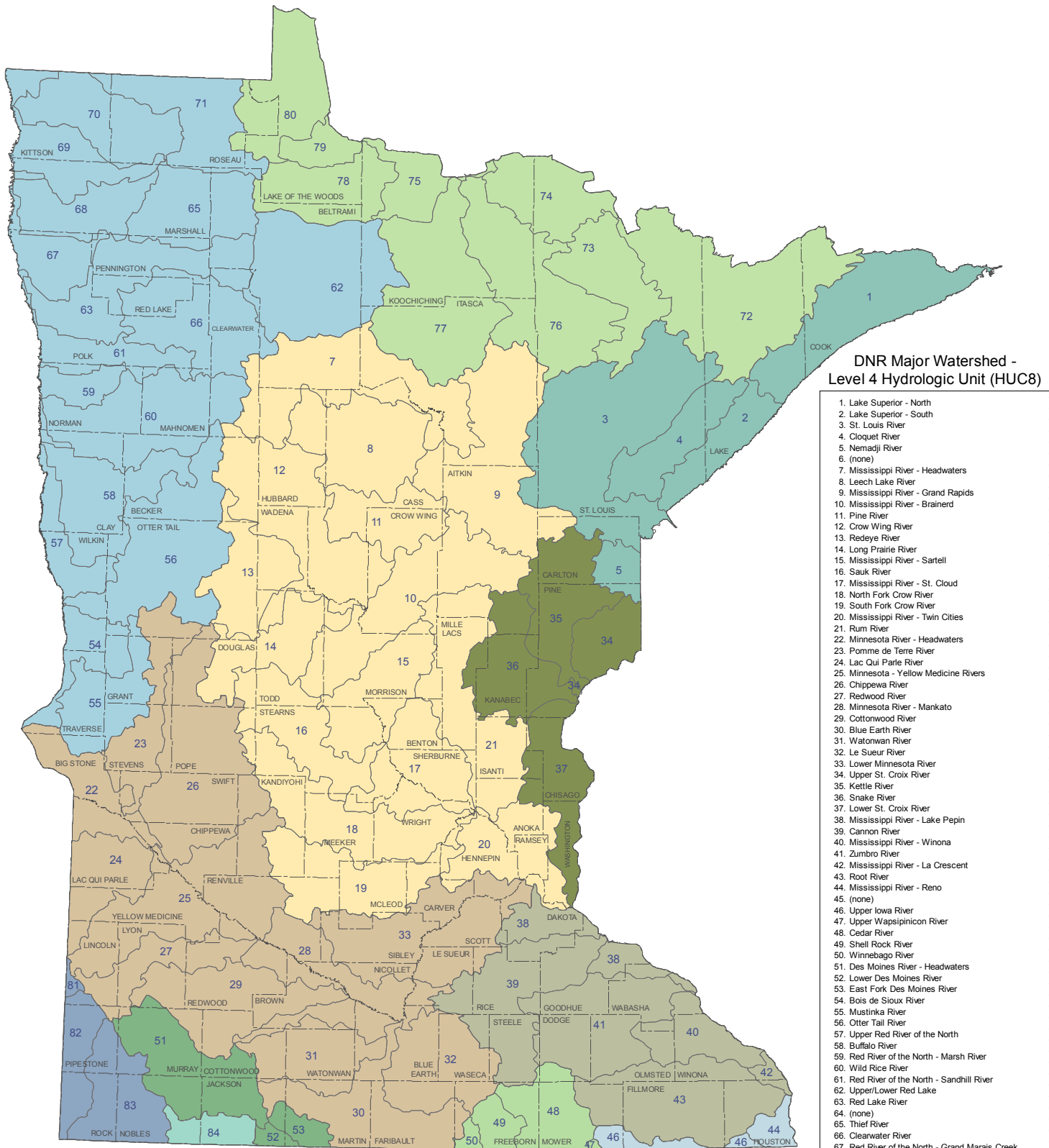
April 2021

Previous reports at: [https://www.dnr.state.mn.us/current\\_conditions/hydro\\_conditions.html](https://www.dnr.state.mn.us/current_conditions/hydro_conditions.html)

- The rain returned to the north half of the state in April 2021, while the southeast was left mostly dry. A wide swath of two to four inches fell during the month from Browns Valley through Grand Rapids and Duluth. The main precipitation event of April was a 10-day period of seemingly-endless clouds and precipitation from April 5th-14th that took a bite out of ongoing drought, which had been escalating through the winter and spring in Minnesota. The highest total with this event was 5.94 inches by a CoCoRaHS observer in the Sartell area, just north of St. Cloud. The lowest April monthly precipitation total found was in Caledonia with .62 inches or 3.27 inches below normal. The preliminary statewide average for Minnesota was 2.22 inches or .55 inches below normal. The May 4, 2021 U. S. Drought Monitor map depicted 37% of the state with some level of drought designation. About 21% of the state was Abnormally Dry, and 15% of the state in Moderate Drought conditions. A small area in Kittson and Marshall County in northwest Minnesota had Severe Drought conditions. The U.S. Drought Monitor index is a blend of science and subjectivity where drought categories (Moderate, Severe, etc.) are based on several indicators.
- Most of the stream gages throughout the state used in this report were ranked Normal (25-75<sup>th</sup> percentile) for April of this year. A few gages in the northwest corner and one gage in the southeast ranked Below Normal (10 – 25<sup>th</sup> percentile). The indicator gages for watersheds 56 and 72 ranked Above Normal (75 – 90<sup>th</sup> percentile).
- Only three of the 15 lakes surveyed in the Lake Level Status map showed High or Above Normal percentiles in May with the majority of those presented in the Normal percentile. Two lakes in SW Minnesota showed Low and Below Normal percentiles for this month. For the network of statewide gaged lakes, about half had surveyed lake levels in April. Sixty percent of the surveyed lakes were at a Normal percentile when comparing April 2021 lake levels to their entire historic record, with 30% at High or Above Normal percentiles and 10% at Low or Below Normal. From this group with available data, 58% were above their average lake level for the entire historic record, while 25% were below their average.
- 14% of the 130 total groundwater observation well measurements available for April were ranked at High water level (>90<sup>th</sup> percentile). 15% of wells ranked Above Normal water level (75<sup>th</sup> to 90<sup>th</sup> percentile), 48% of wells ranked Normal water level (25<sup>th</sup> to 75<sup>th</sup> percentile), 15% of wells were ranked Below Normal (10<sup>th</sup> – 25<sup>th</sup> percentile), and 8% of wells were ranked Low water level (≤10<sup>th</sup> percentile). A cluster of wells in Marshall and Pennington counties ranked Below Normal and Low water levels. This area is classified as a moderate drought zone in the May 4 U.S Drought Monitor index (mentioned above).

*The information in this report is provided by DNR through long term programs committed to recording and tracking the long term status of our water resources. The current conditions of precipitation, stream flows, lake levels, and groundwater levels in this report provide valuable information for natural and economic resource management on a state, county, and watershed level. If you have questions on the content of this report please contact DNR Climatology Office: [climate@umn.edu](mailto:climate@umn.edu)*













# Minnesota Counties and Major Watershed Index



## DNR Major Watershed - Level 4 Hydrologic Unit (HUC8)

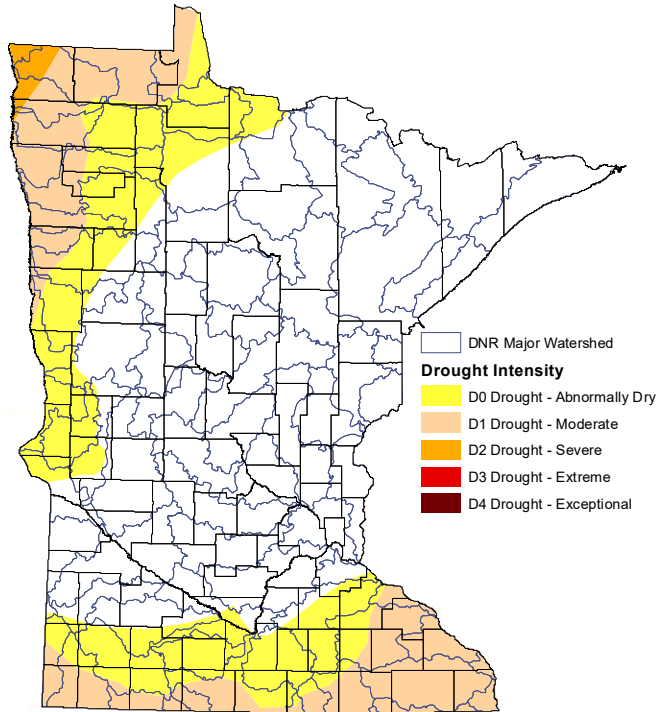
1. Lake Superior - North
2. Lake Superior - South
3. St. Louis River
4. Cloquet River
5. Nemadji River
6. (none)
7. Mississippi River - Headwaters
8. Leech Lake River
9. Mississippi River - Grand Rapids
10. Mississippi River - Brainerd
11. Pine River
12. Crow Wing River
13. Redeye River
14. Long Prairie River
15. Mississippi River - Sartell
16. Sauk River
17. Mississippi River - St. Cloud
18. North Fork Crow River
19. South Fork Crow River
20. Mississippi River - Twin Cities
21. Rum River
22. Minnesota River - Headwaters
23. Pomme de Terre River
24. Lac Qui Parle River
25. Minnesota - Yellow Medicine Rivers
26. Chippewa River
27. Redwood River
28. Minnesota River - Mankato
29. Cottonwood River
30. Blue Earth River
31. Watonwan River
32. Le Sueur River
33. Lower Minnesota River
34. Upper St. Croix River
35. Kettle River
36. Snake River
37. Lower St. Croix River
38. Mississippi River - Lake Pepin
39. Cannon River
40. Mississippi River - Winona
41. Zumbro River
42. Mississippi River - La Crescent
43. Root River
44. Mississippi River - Reno
45. (none)
46. Upper Iowa River
47. Upper Wapsipinicon River
48. Cedar River
49. Shell Rock River
50. Winnebago River
51. Des Moines River - Headwaters
52. Lower Des Moines River
53. East Fork Des Moines River
54. Bois de Sioux River
55. Mustinka River
56. Otter Tail River
57. Upper Red River of the North
58. Buffalo River
59. Red River of the North - Marsh River
60. Wild Rice River
61. Red River of the North - Sandhill River
62. Upper/Lower Red Lake
63. Red Lake River
64. (none)
65. Thief River
66. Clearwater River
67. Red River of the North - Grand Marais Creek
68. Snake River
69. Red River of the North - Tamarac River
70. Two Rivers
71. Roseau River
72. Rainy River - Headwaters
73. Vermilion River
74. Rainy River - Rainy Lake
75. Rainy River - Black River
76. Little Fork River
77. Big Fork River
78. Rapid River
79. Rainy River - Baudette
80. Lake of the Woods
81. Upper Big Sioux River
82. Lower Big Sioux River
83. Rock River
84. Little Sioux River

## Level 2 Hydrologic Unit (HUC4)

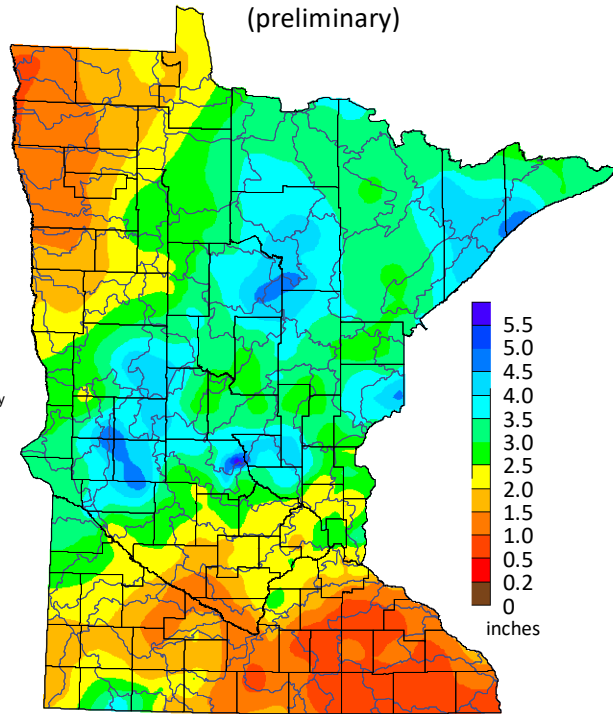
- |                                                                                                                     |                                                                                                                    |
|---------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
|  Cedar River                     |  Missouri - Big Sioux Rivers    |
|  Des Moines River                |  Missouri - Little Sioux Rivers |
|  Lower Mississippi River         |  Rainy River                    |
|  Minnesota River                 |  Red River of the North         |
|  Mississippi - Upper Iowa Rivers |  St. Croix River                |
|  Mississippi River - Headwaters  |  Western Lake Superior          |

# Climatology

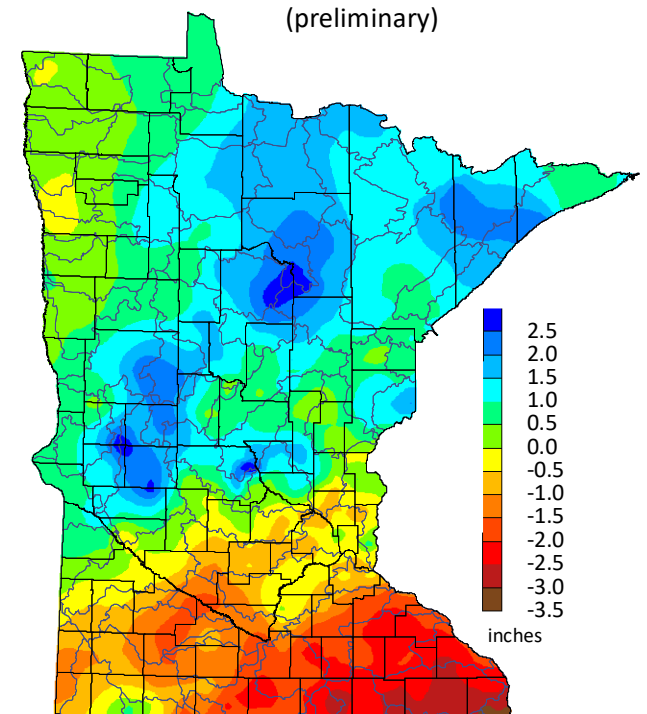
U.S. Drought Monitor  
May 4, 2021



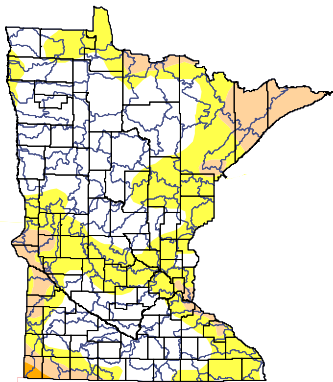
Total Precipitation  
April 2021



Total Precipitation  
Departure from Normal:  
April 2021



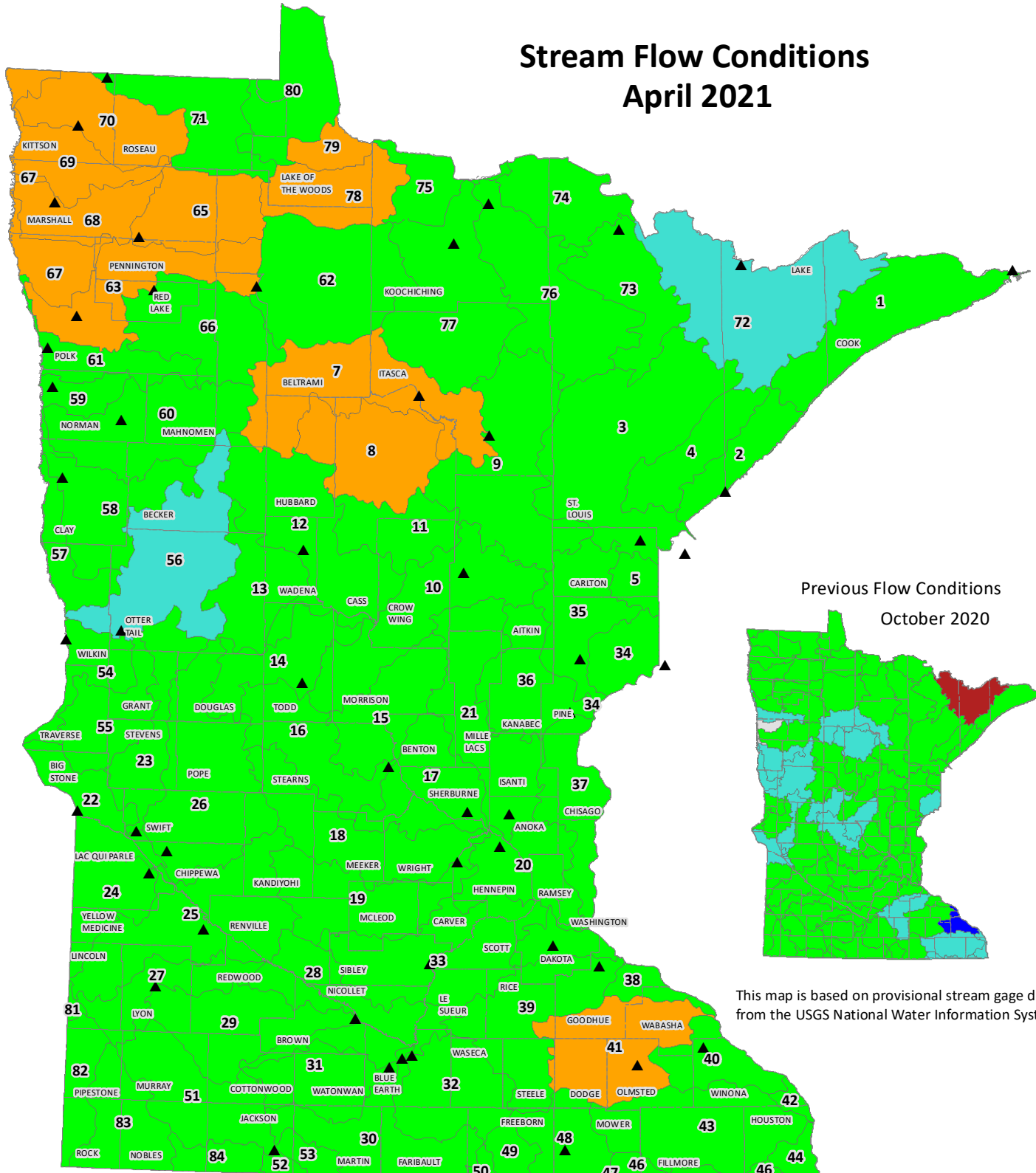
November 3, 2020



The rain returned to the north half of the state in April 2021, while the southeast was left mostly dry. A wide swath of two to four inches fell during the month from Browns Valley through Grand Rapids and Duluth. The main precipitation event of April was a 10-day period of seemingly-endless clouds and precipitation from April 5th-14th that took a bite out of ongoing drought, which had been escalating through the winter and spring in Minnesota. The highest total with this event was 5.94 inches by a CoCoRaHS observer in the Sartell area, just north of St. Cloud. The lowest April monthly precipitation total found was in Caledonia with .62 inches or 3.27 inches below normal. The preliminary statewide average for Minnesota was 2.22 inches or .55 inches below normal. The May 4, 2021 U. S. Drought Monitor map depicted 37% of the state with some level of drought designation. About 21% of the state was Abnormally Dry, and 15% of the state in Moderate Drought conditions. A small area in Kittson and Marshall County in northwest Minnesota had Severe Drought conditions. The U.S. Drought Monitor index is a blend of science and subjectivity where drought categories (Moderate, Severe, etc.) are based on several indicators.

# Surface Water: Stream Flow

## Stream Flow Conditions April 2021



Previous Flow Conditions  
October 2020

This map is based on provisional stream gage data from the USGS National Water Information System

▲ Designated major watershed gage

\* Percentile ranking based on mean daily flows for the current month averaged and ranked with all historical mean daily flows for that month.

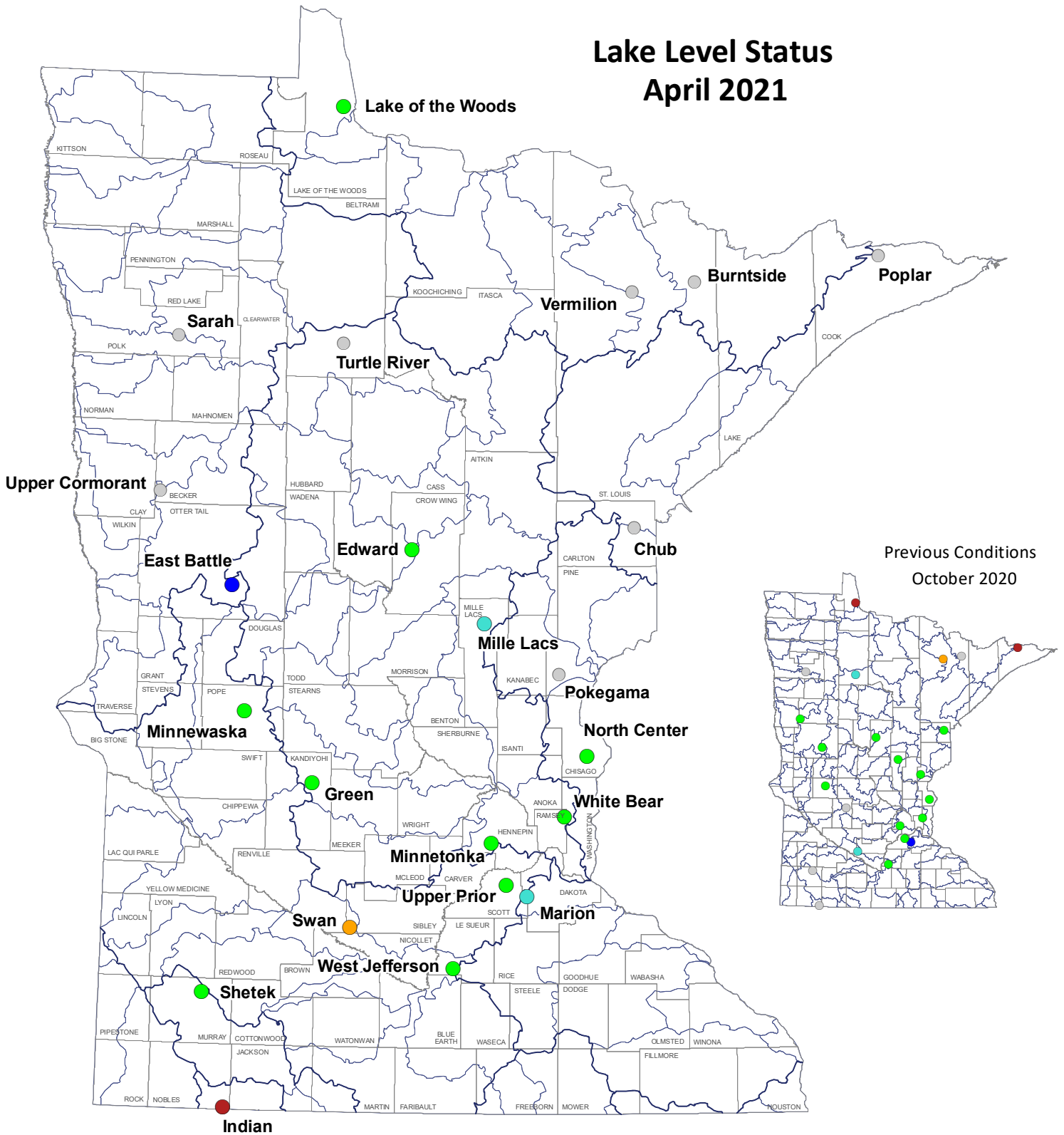
A watershed ranked at zero means that the present month flow is the lowest in the period of record; a ranking of 100 indicates the highest in the period of record.

A ranking at the 50th percentile (median) specifies that the present-month flow is in the middle of the historical distribution.

- High Flows (>90th percentile)
- Above Normal Flows (75 - 90th percentile)
- Normal Flows (25 - 75th percentile)
- Below Normal Flows (10 - 25th percentile)
- Low Flows (<= 10th percentile)
- Flow affected by ice
- Flow affected by backwater
- Rating being developed or revised
- No Data

# Surface Water: Lake Levels

## Lake Level Status April 2021



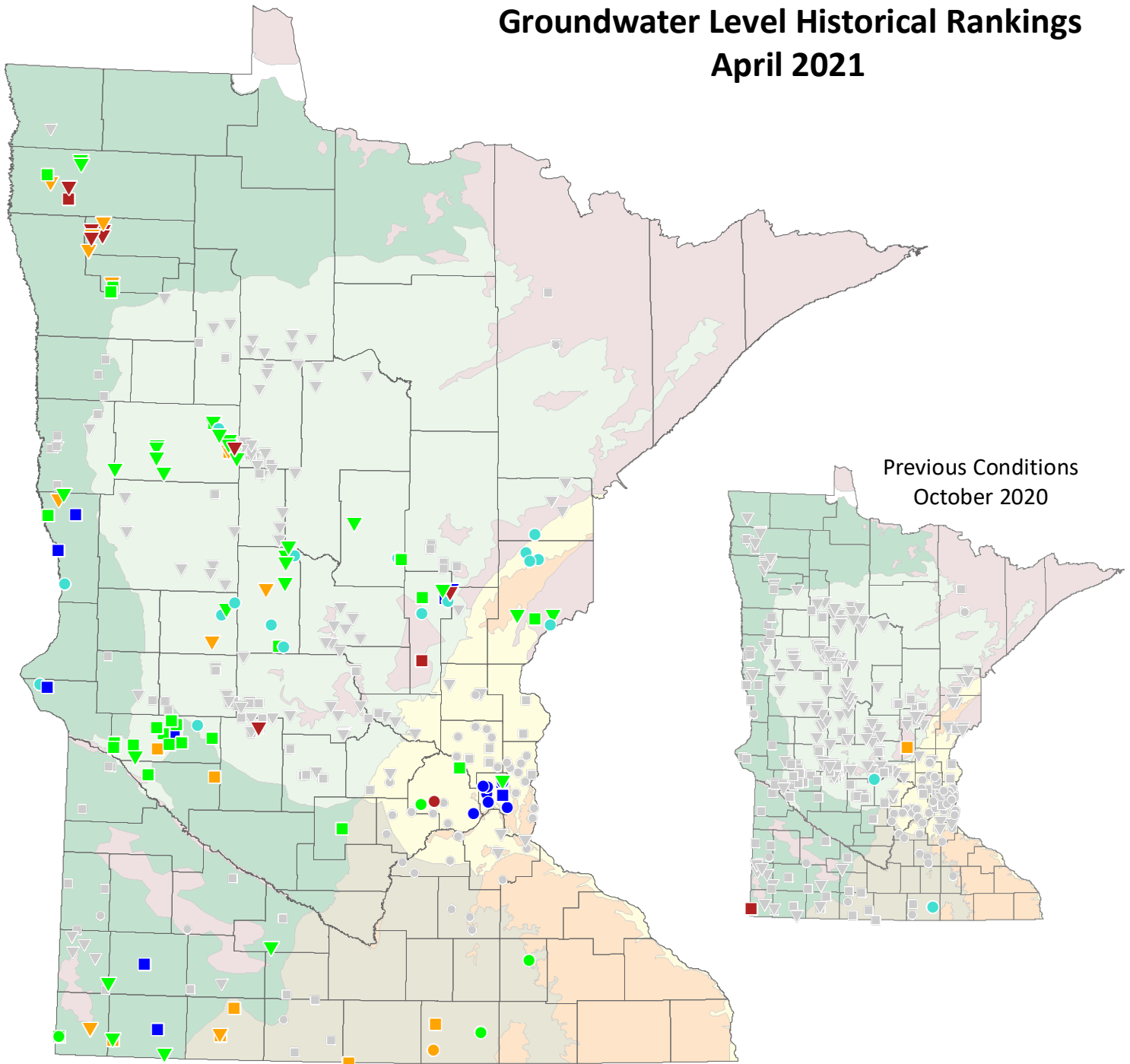
### Percentile \*

- High Water Levels (>90th percentile)
- Above Normal Water Levels (75 - 90th percentile)
- Normal Water Levels (25 - 75th percentile)
- Below Normal Water Levels (10 - 25th percentile)
- Low Water Levels (<= 10th percentile)
- No reading available
- Level 2 Hydrologic Unit
- DNR Major Watershed

\* Percentile ranking based on last reported reading for the current month compared to all historical reported levels for that month. A lake ranked at zero means that the present reported level is the lowest in the period of record; a ranking of 100 indicates the highest in the period of record. A ranking at the 50th percentile (median) specifies that the present-month reported lake level is in the middle of the historical distribution.



## Groundwater Level Historical Rankings April 2021



### Minnesota Groundwater Provinces 2021

- East-central
- South-central
- Karst
- Central
- Western
- Arrowhead-shallow bedrock

### Percentile \*

- High Water Levels (>90th percentile)
- Above Normal Water Levels (75 - 90th percentile)
- Normal Water Levels (25 - 75th percentile)
- Below Normal Water Levels (10 - 25th percentile)
- Low Water Levels (<= 10th percentile)
- No reading available

### Aquifer Type

- Water Table
- Bedrock
- Buried Artesian

\* Percentile ranking based on last reported reading for the current month compared to all historical reported levels for that month. A water level ranked at zero means that the present reported level is the lowest in the period of record; a ranking of 100 indicates the highest in the period of record. A ranking at the 50th percentile (median) specifies that the present month reported water level is in the middle of the historical distribution.

Source data from: MN DNR Groundwater Level Monitoring Program