

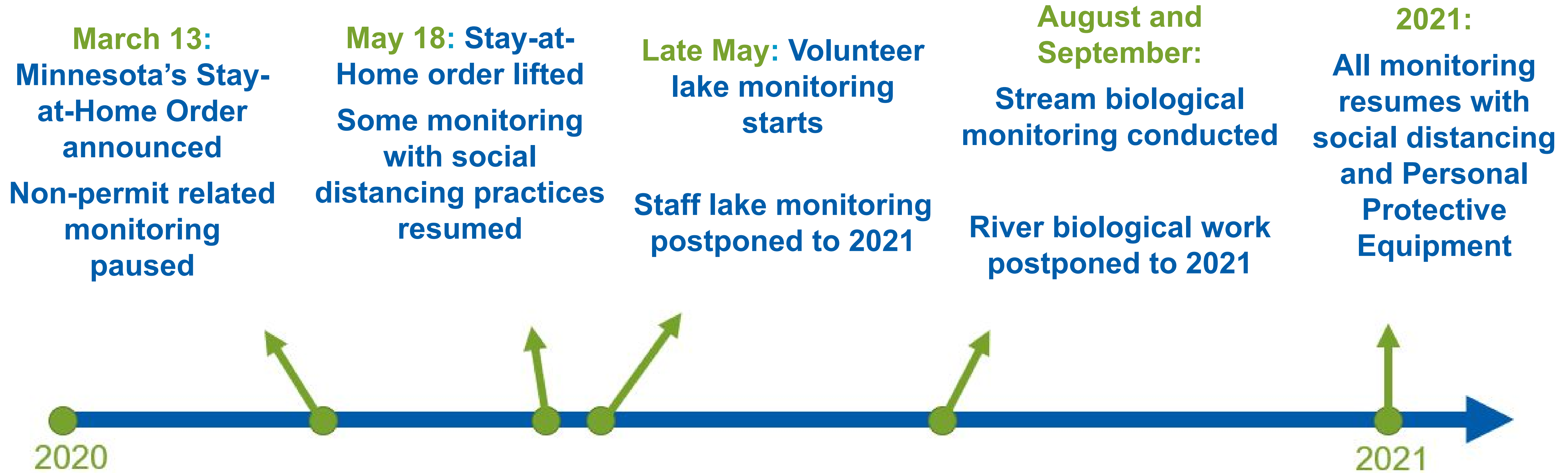
Information Item: **2020-2021 Water Resources Monitoring Update**

Daniel Henely, Assistant Manager, Water Resources

Environment Committee: December 14, 2021



2020-2021 Monitoring: Pandemic Impacts



Lake Monitoring Overview

- Staff monitoring was put on hold in 2020 but resumed in 2021
- Citizen Assisted Monitoring Program (CAMP) was able to continue volunteer monitoring 2020 and 2021
- 2021 Environmental Services staff lake monitoring included 7 lakes
 - 3 in partnership with Minnesota Pollution Control Agency

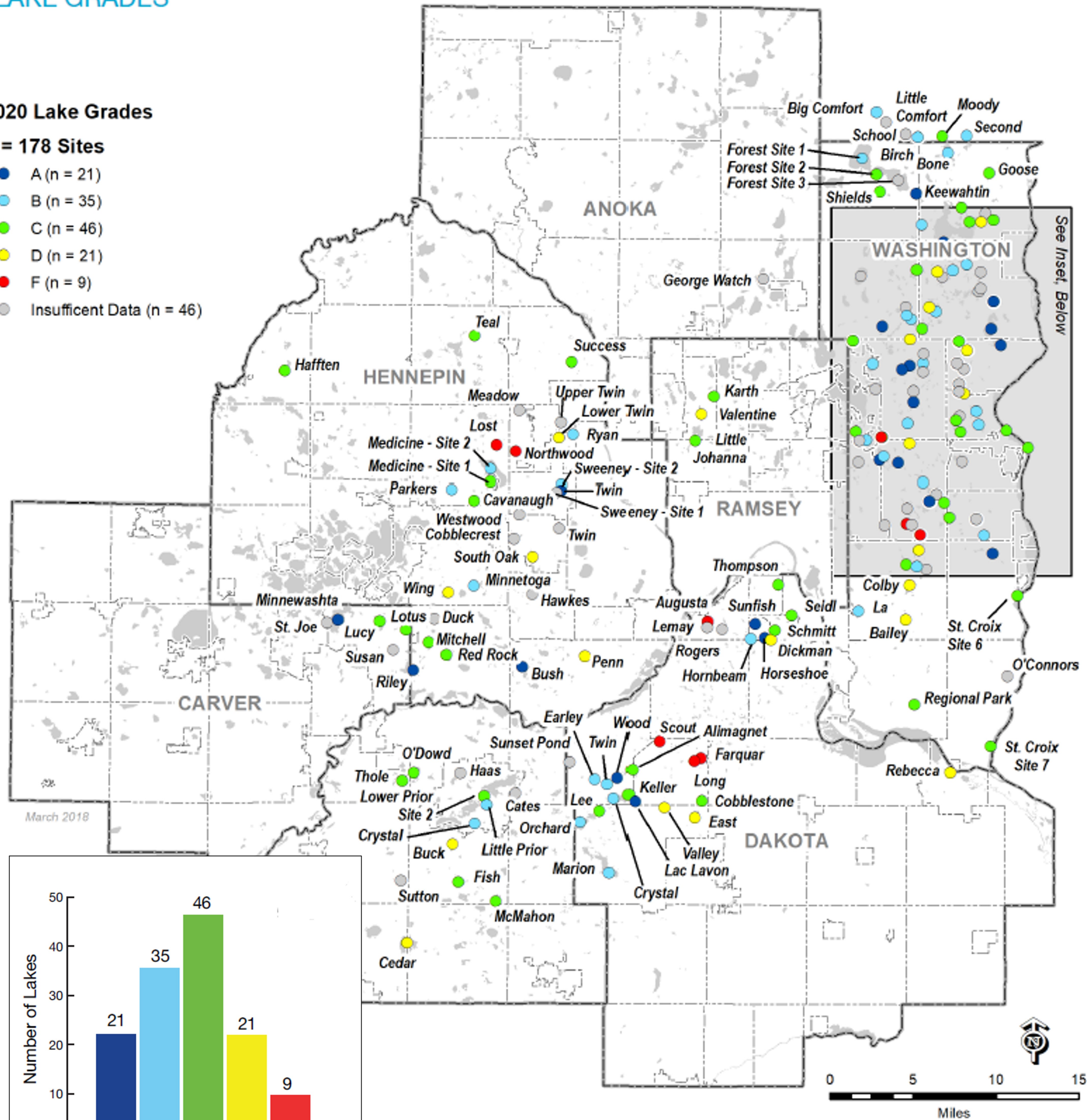


Lake Grades

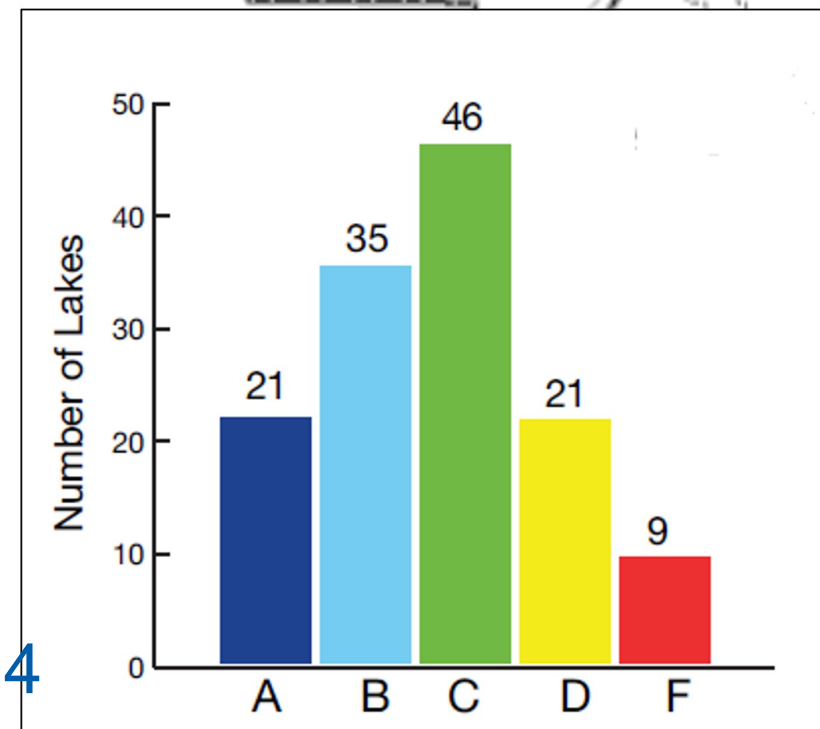
2020 Lake Grades

n = 178 Sites

- A (n = 21)
- B (n = 35)
- C (n = 46)
- D (n = 21)
- F (n = 9)
- Insufficient Data (n = 46)



CAMP participation is based on enrollment from local partners and some areas have their own monitoring programs



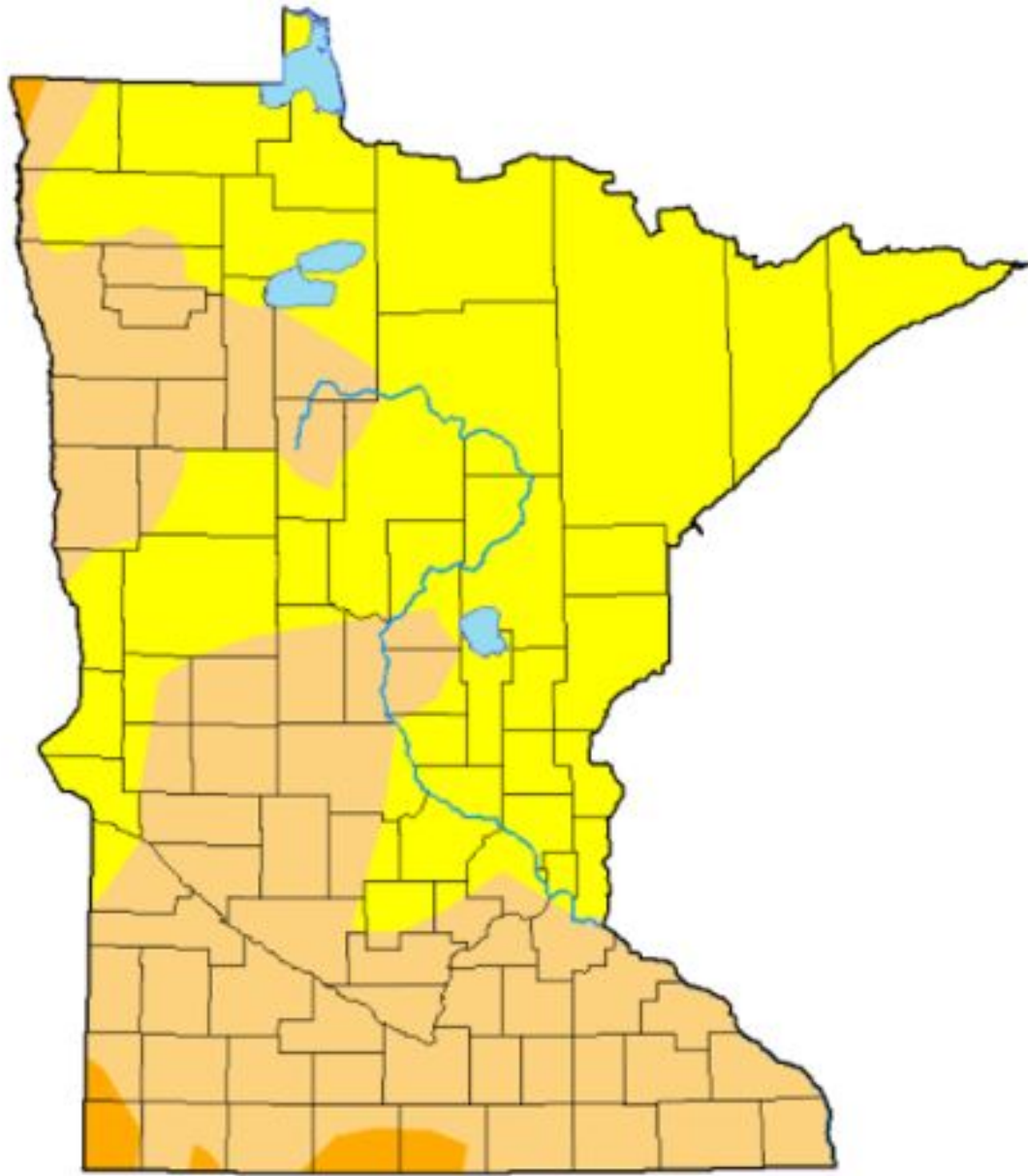
River Monitoring Overview

- Year-round large river monitoring had minimal pandemic disruption
- Creative solutions included calibration of field meters at home to alleviate onsite limitations during stay-at-home order
- Includes conventional water quality grab sampling, continuous sensor monitoring, and 2021 biological monitoring

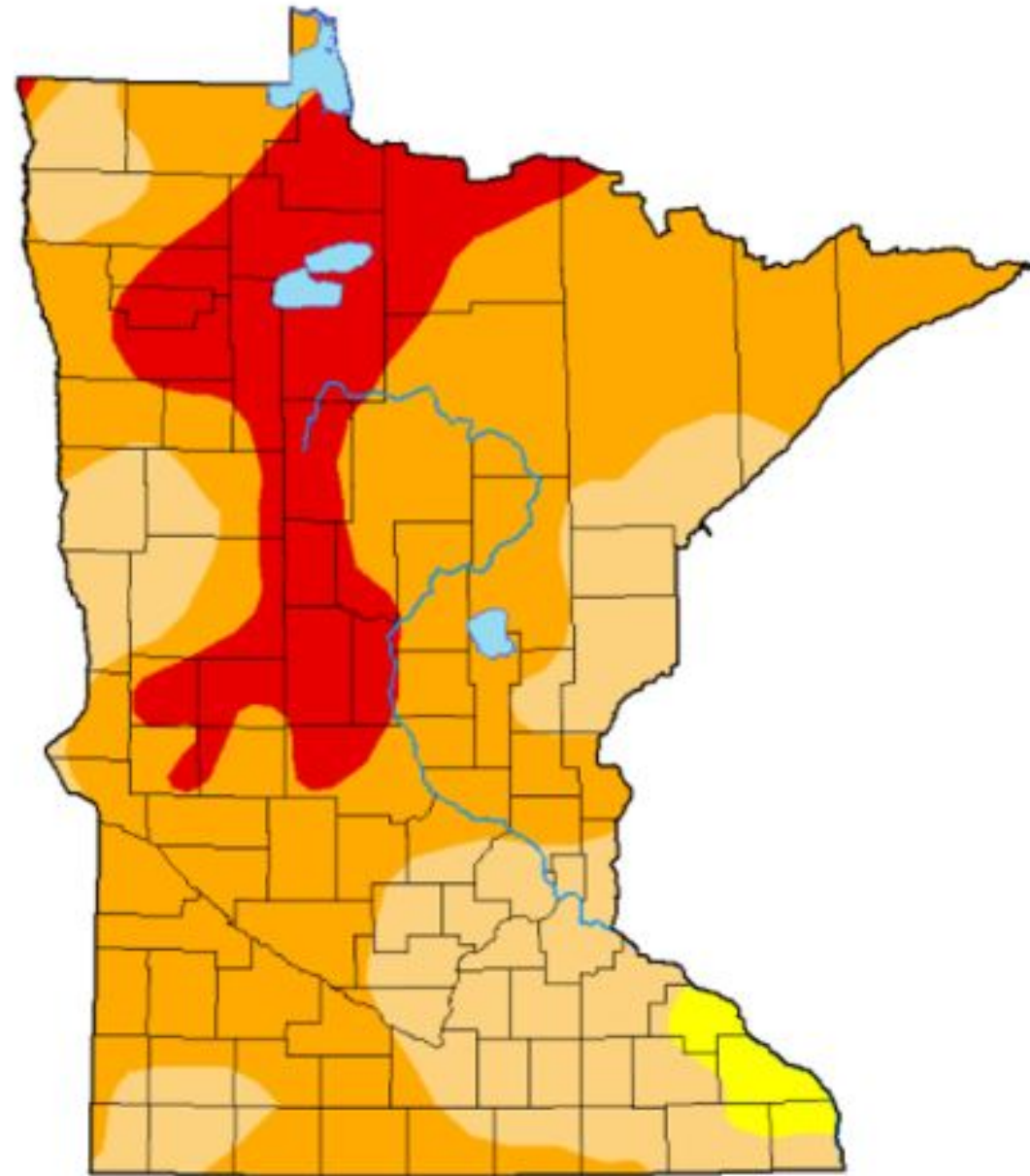


2021 Drought Conditions

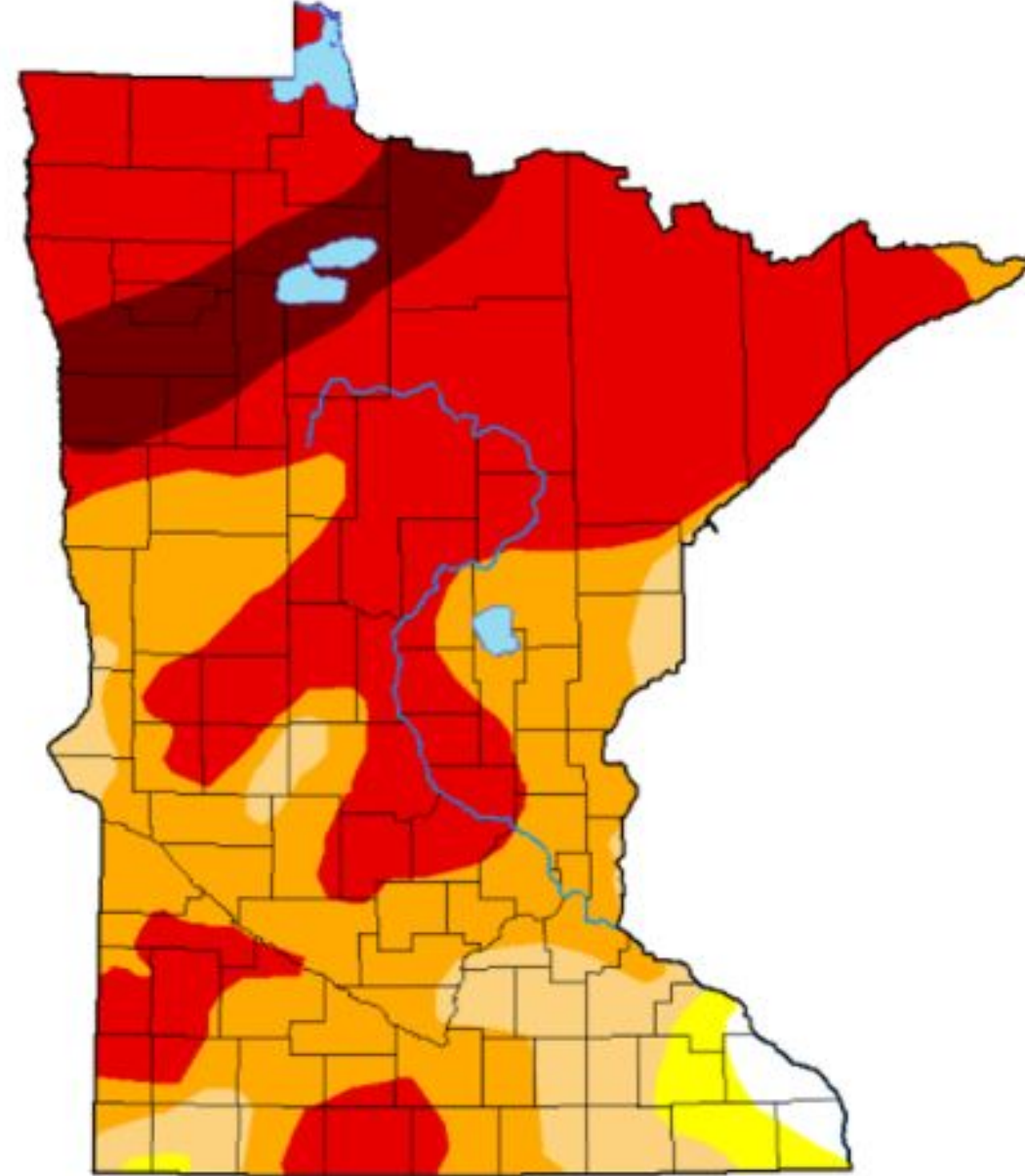
June 8



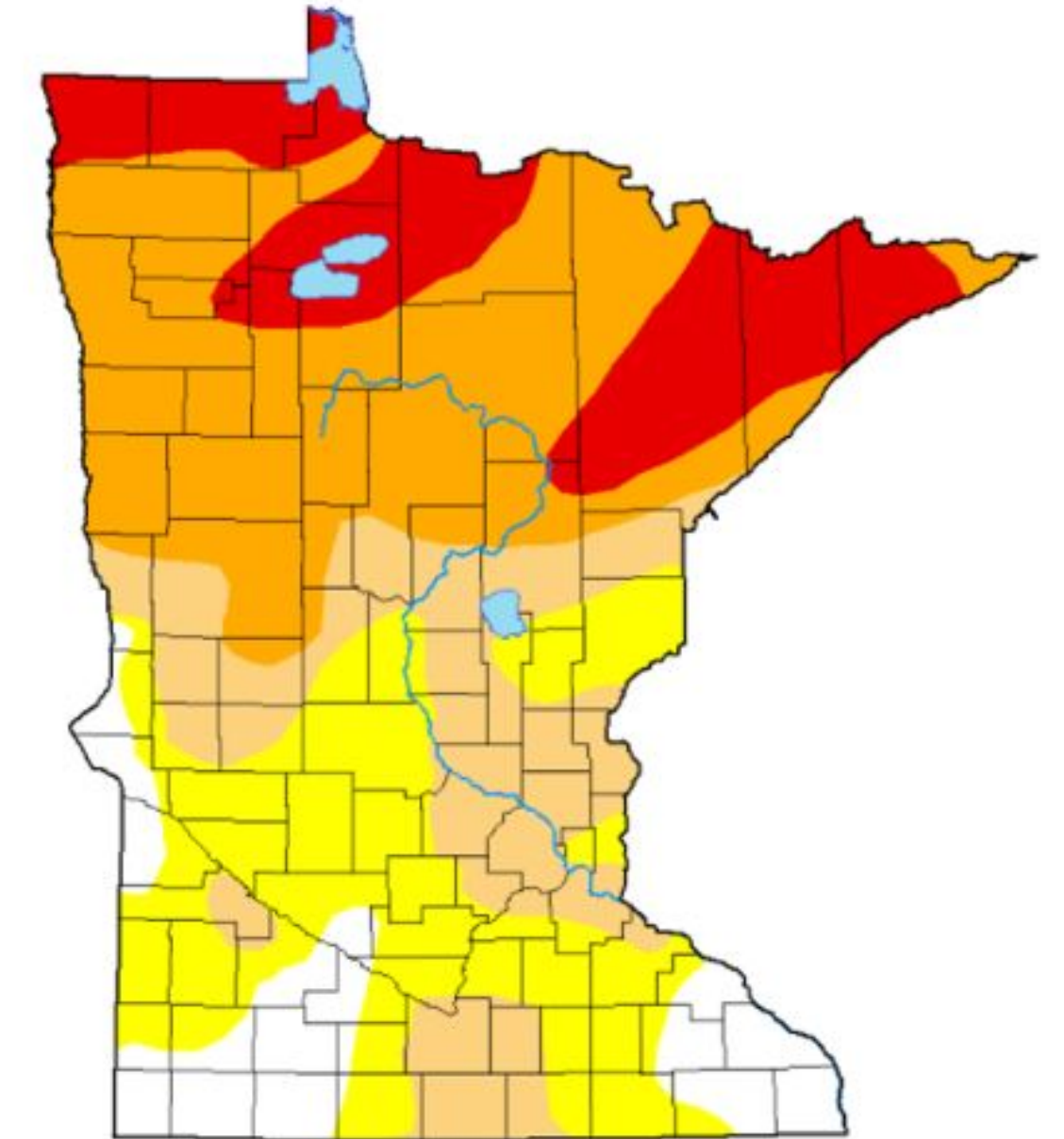
July 20



August 24



October 5



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:

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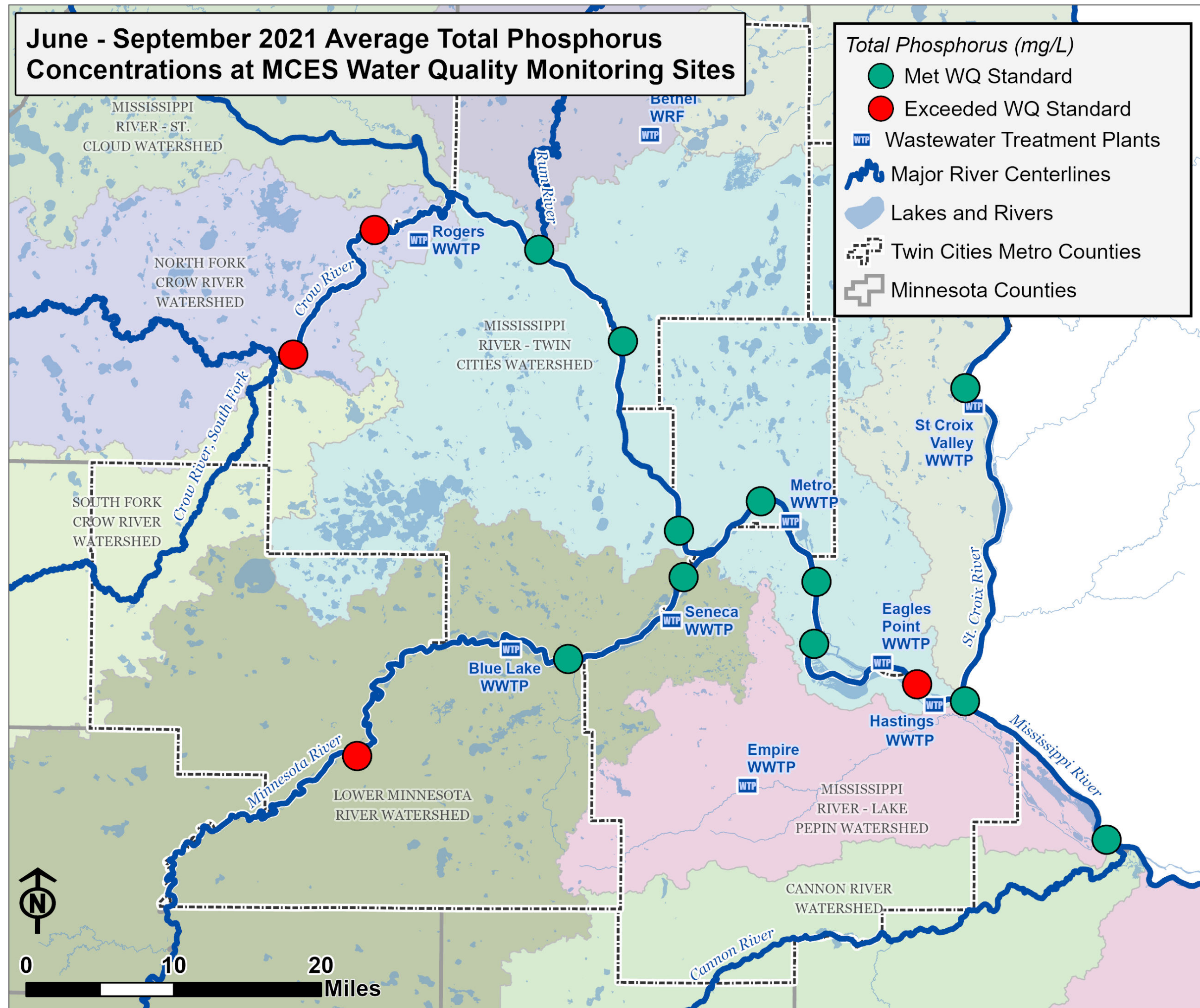
droughtmonitor.unl.edu

Drought Classification

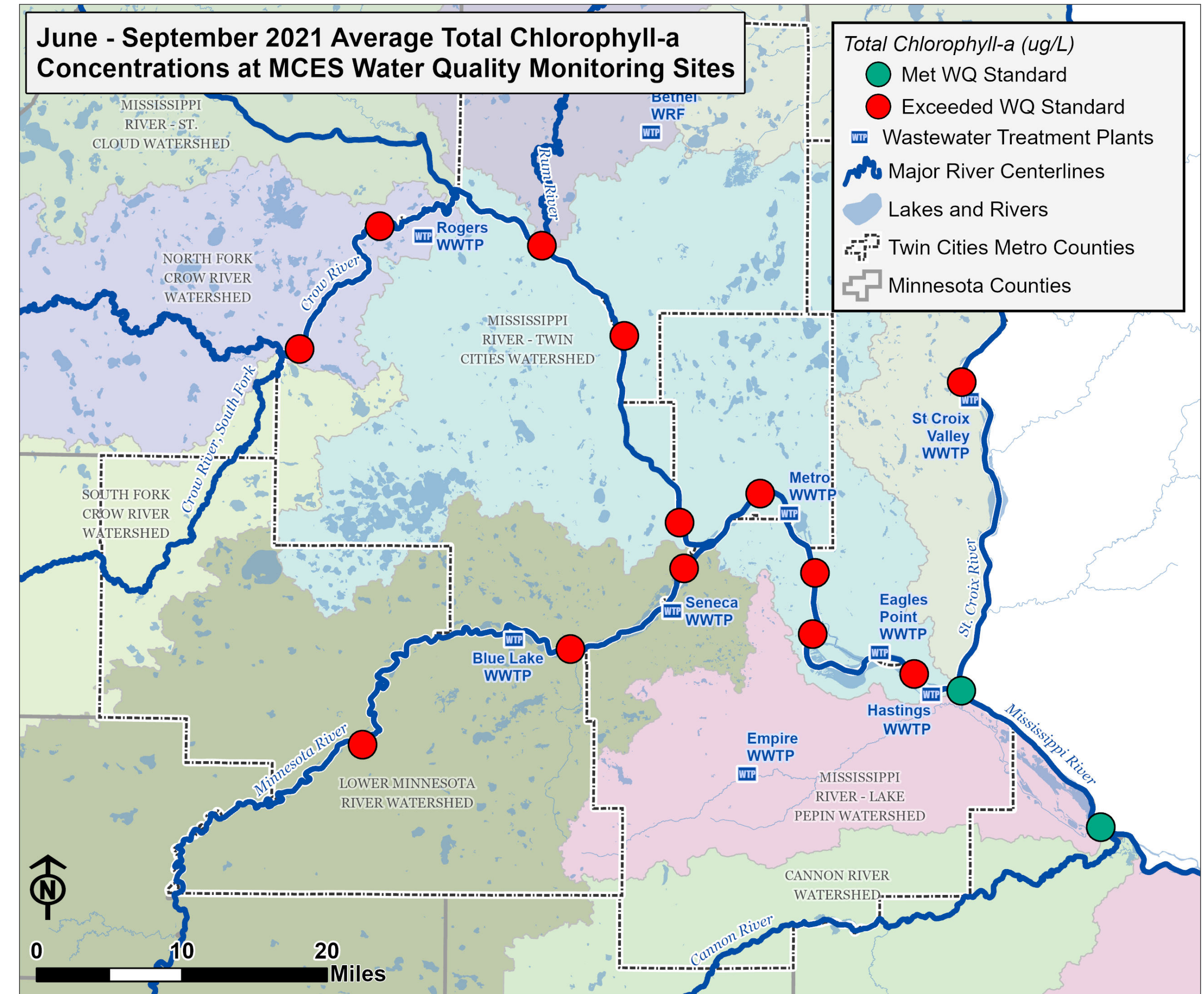
- None
- D0 (Abnormally Dry)
- D1 (Moderate Drought)
- D2 (Severe Drought)
- D3 (Extreme Drought)
- D4 (Exceptional Drought)
- No Data

River Monitoring: 2021 Drought Impacts

Nutrient Levels (Phosphorus)

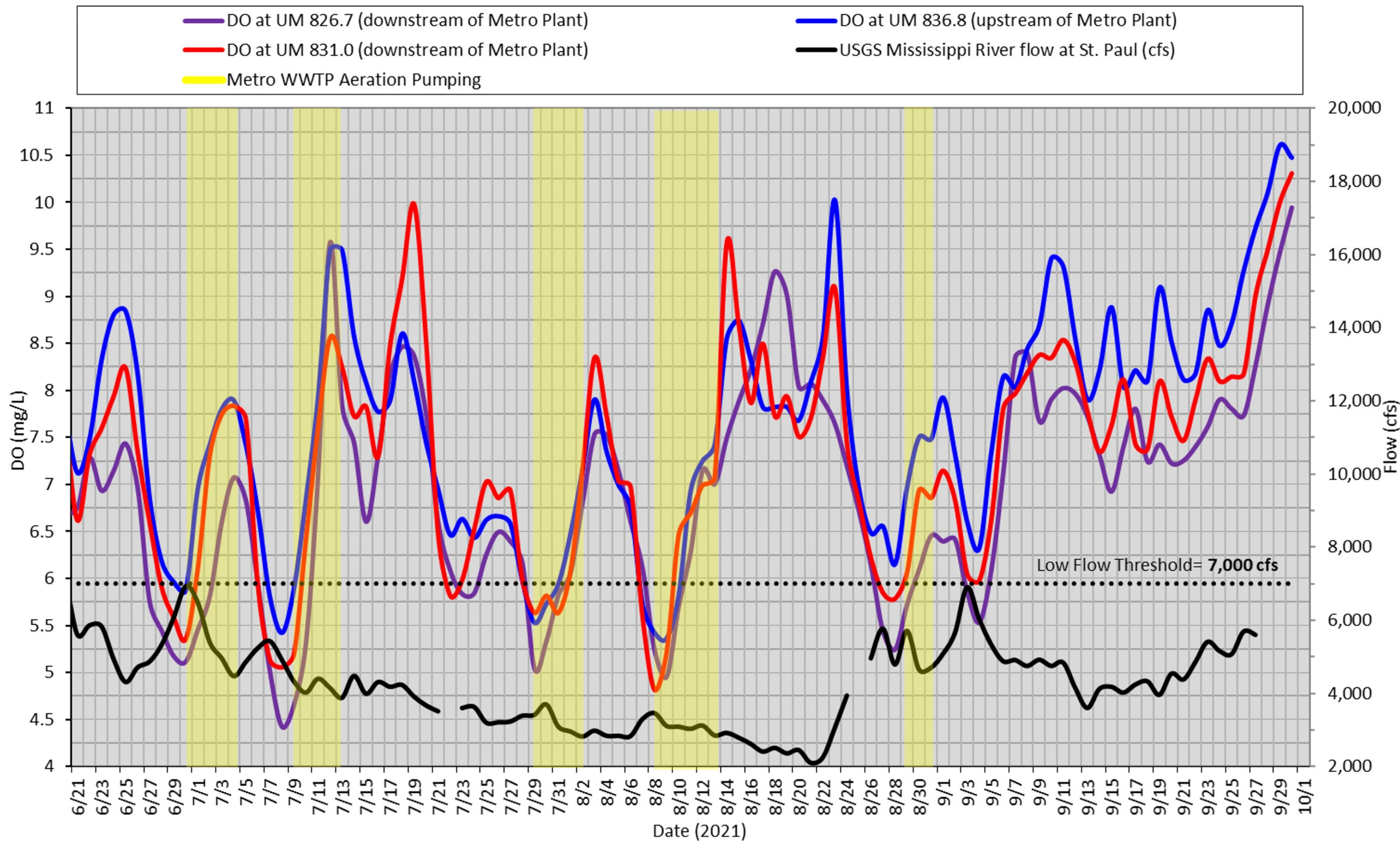


Algal Growth (Chlorophyll-a)



River Monitoring: Metro Plant Aeration

2021 Daily Mean Dissolved Oxygen Concentrations in Mississippi River and Metro Plant Effluent



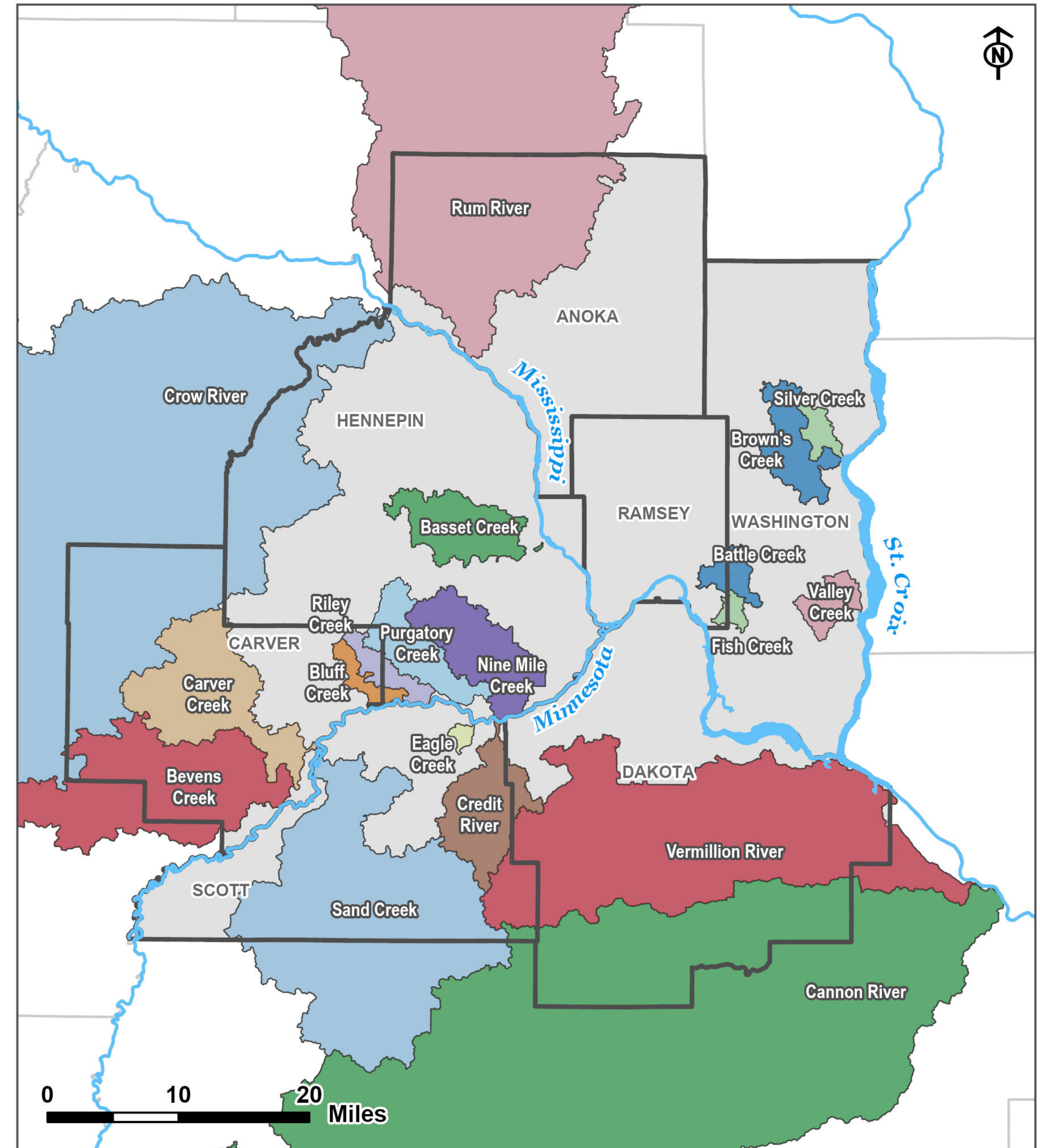
- Worked closely with Environmental Services Environmental Health and Safety, Laboratory, and Metro Plant Operations
- Often required daily and weekend field work to validate and calibrate sensors

Minimum Flows
 2021: ~2,000 cfs
 1988: 1,060 cfs



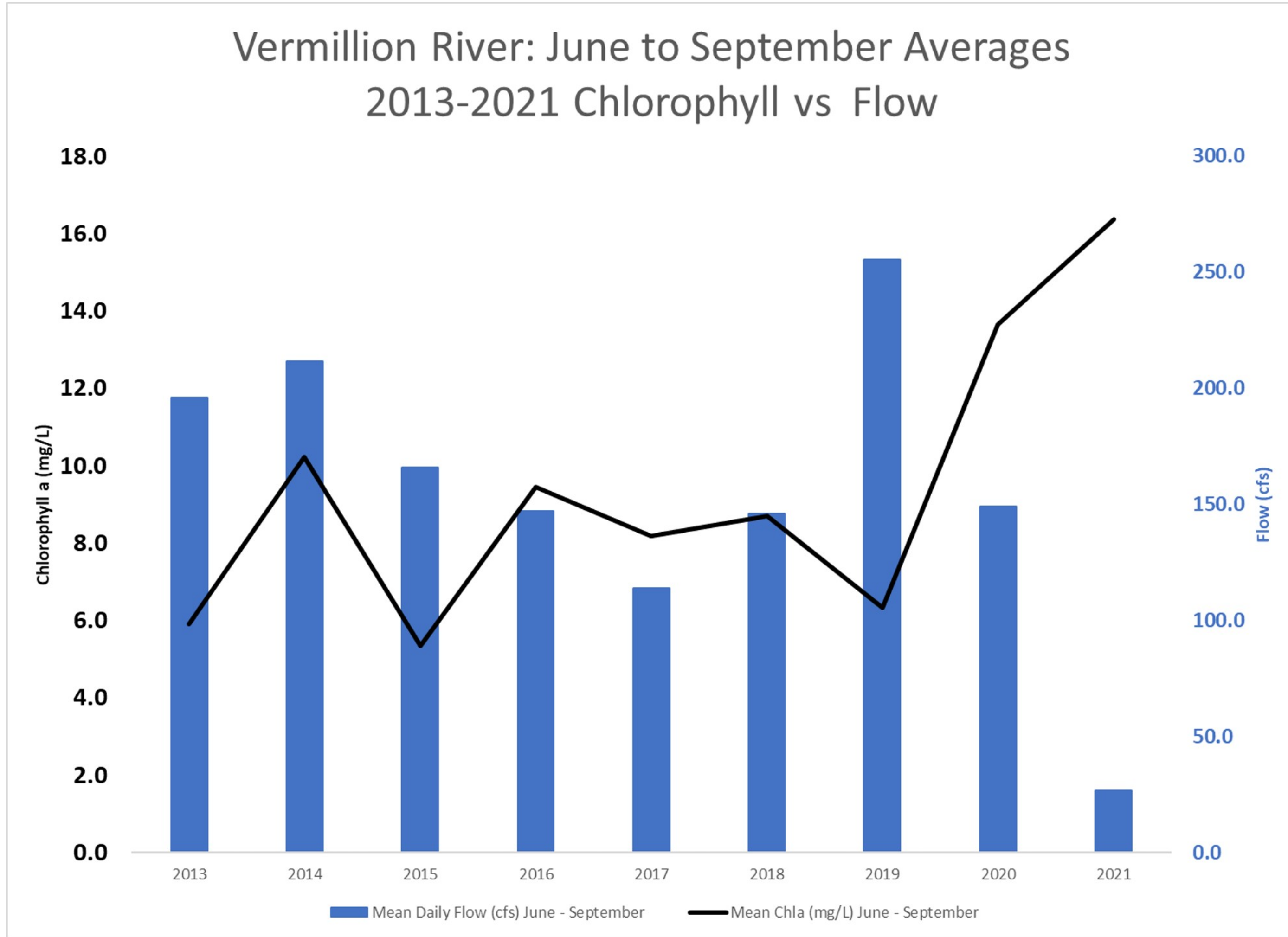
Tributary Monitoring Overview

- Year-round sampling with 2020 delays only during lockdown
 - Delays also applied to Watershed Outlet Monitoring Program cooperator monitoring.
- Stream aquatic insect biological monitoring continued in 2021



Vermillion River 2021 Example

Vermillion River at Hastings



July



August



Questions

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