2024

Lake Water Quality Summary

Lakes add to the quality of life and economic stability of the region

INTRODUCTION

The Twin Cities metropolitan region is fortunate to have a large number of lakes. These lakes are important recreational, aesthetic, and ecological resources that add considerably to the quality of life and economic stability of the region. Residents of the region care deeply about protecting the quality of water in our lakes.

Many state and local agencies have a role in managing and monitoring lake water quality. The Metropolitan Council operates the most extensive lake monitoring program in the region, and has been monitoring metro region lakes since 1980. During the 1980s, the Met Council typically monitored about 10 to 30 lakes per year.

In 1993, the Met Council initiated a monitoring program to expand coverage of lakes in the region, supported through a corps of dedicated volunteers. Originally called the Citizen-Assisted Monitoring Program, we changed the name in 2024 to the Community-Assisted Monitoring Program (CAMP) to better reflect the community partnerships that make the program possible. The program brings together different levels of the community that support the monitoring of our area lakes: volunteers (local residents), sponsors (cities, watershed districts, watershed management organizations, counties), and the Met Council. Pulling together as a community, across many levels, we are able to collect more water data and then use that data to make better lake management decisions.

This highly successful program collects data on the lakes each year through the efforts of trained, dedicated volunteers and their local sponsors. The volunteers were sponsored by local partners, including 12 cities, 15 watershed management organizations and watershed districts, one county, and one conservation district. CAMP marked its 32nd year in 2024, with 124 volunteers and 170 lake-sites on 158 lakes. Met Council staff monitored an additional nine lake-sites on six lakes in 2024. Together, Met Council staff and CAMP volunteers monitored 179 lake-sites on 164 lakes, including seven lakes added to the monitoring program in 2024. Since 1980, the lake monitoring program has monitored 464 lake-sites on 418 lakes.

WHY WE MONITOR

The Met Council is charged with creating a comprehensive regional development guide that minimizes the adverse impacts of growth, including adverse impacts on the environment. The monitoring data collected by the Met Council, its partners, and volunteers are used to identify pollution problems, support regional planning efforts, and meet federal and state regulations. This

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Lake Water Quality Summary provides an annual summary assessment of the water quality of many of the metro region's lakes. Also, the Met Council monitors rivers and streams in the metropolitan area and prepares reports on data collected by those programs.

Most of the lake monitoring efforts focus on the assessment of eutrophication, which is the process of nutrient enrichment. Eutrophication increases the biological productivity of a lake by enhancing the growth of algae and other plants. Human activities in the watersheds of lakes (for example, nonpoint sources) increase the delivery of nutrients to lakes beyond what occurs naturally. This acceleration of nutrient enrichment by humans is called cultural eutrophication. During cultural eutrophication, the population of algae increases and water clarity decreases. A variety of other problems may develop, including increases in nuisance algal blooms, odor problems, decreased desirability for recreation, decreased dissolved oxygen, fish kills, changes in the structure of fish and invertebrate communities toward low-oxygen tolerant species, and reductions in biodiversity. Furthermore, eutrophic lakes can develop blooms of toxic blue-green algae (cyanobacteria), which can be a serious health concern for humans and animals (domesticated and wild). Cultural eutrophication is one of the leading water quality concerns facing the region.

METHODS

Lakes monitored by Met Council staff and volunteers are typically sampled at two-week intervals from mid-April through mid-October. Most lakes are sampled at one station located over the deepest spot in the lake. Field measurements taken during each monitoring event typically include temperature and water clarity (measured with a Secchi disk). In addition, surface water samples are collected for lab analyses, which include total phosphorus, total Kjeldahl nitrogen, and chlorophyll-a. The routine chemical analyses are performed at the Met Council Environmental Services laboratory following U.S. EPA-approved methods.

Each lake is assigned a lake grade using an A through F grading system as originally developed by Met Council staff in 1989. The objective of the lake grade system is to provide a tool for assessing lakes on a regional basis. The grading system allows comparisons of lake water quality across the metro area, yet is understandable to the public and nontechnical audiences. The grading system uses percentile ranges of the summertime (May-September) average values for three water quality indicators: total phosphorus, chlorophyll-a, and Secchi depth. Total phosphorus is a key nutrient measure; chlorophyll-a is a measure of algal abundance; and Secchi depth is a measure of water clarity. The lake's water quality grade is calculated as the average grade for the three individual parameter grades. Only lakes with a sufficient quantity of data are assigned a lake grade.

RESULTS

In 2024, 40% of the lake sites received a grade of "A" or "B", meaning that they had relatively good water quality. Another 31% of lake sites received a water quality grade of "C". The remaining 29% of lake sites received a water quality grade of "D" or "F", meaning that they had relatively poor water quality. Similar to that of past years, there was no distinct pattern within the metro region as to where lakes with specific water quality are located.

As noted in the 2023 Lake Water Quality Summary Report, the 2021 and 2023 lake grade distributions showed a shift towards higher grades (A's and B's) as compared to year 2022 and years previous to 2021. For analysis and discussion of the shift refer to the Metropolitan Council's 2023 Study of the Water Quality of 159 Metropolitan Area Lakes. For 2024, the lake grade distribution showed a return to a similar pattern typically observed in years prior to 2021, with C grades being the dominant grade, the quantity of B grades greater than A grades, and the quantity of D grades greater than the F grades. The Annual Lake Water Quality Summary Report, in addition to other lake, stream, and river reports can be accessed online at:

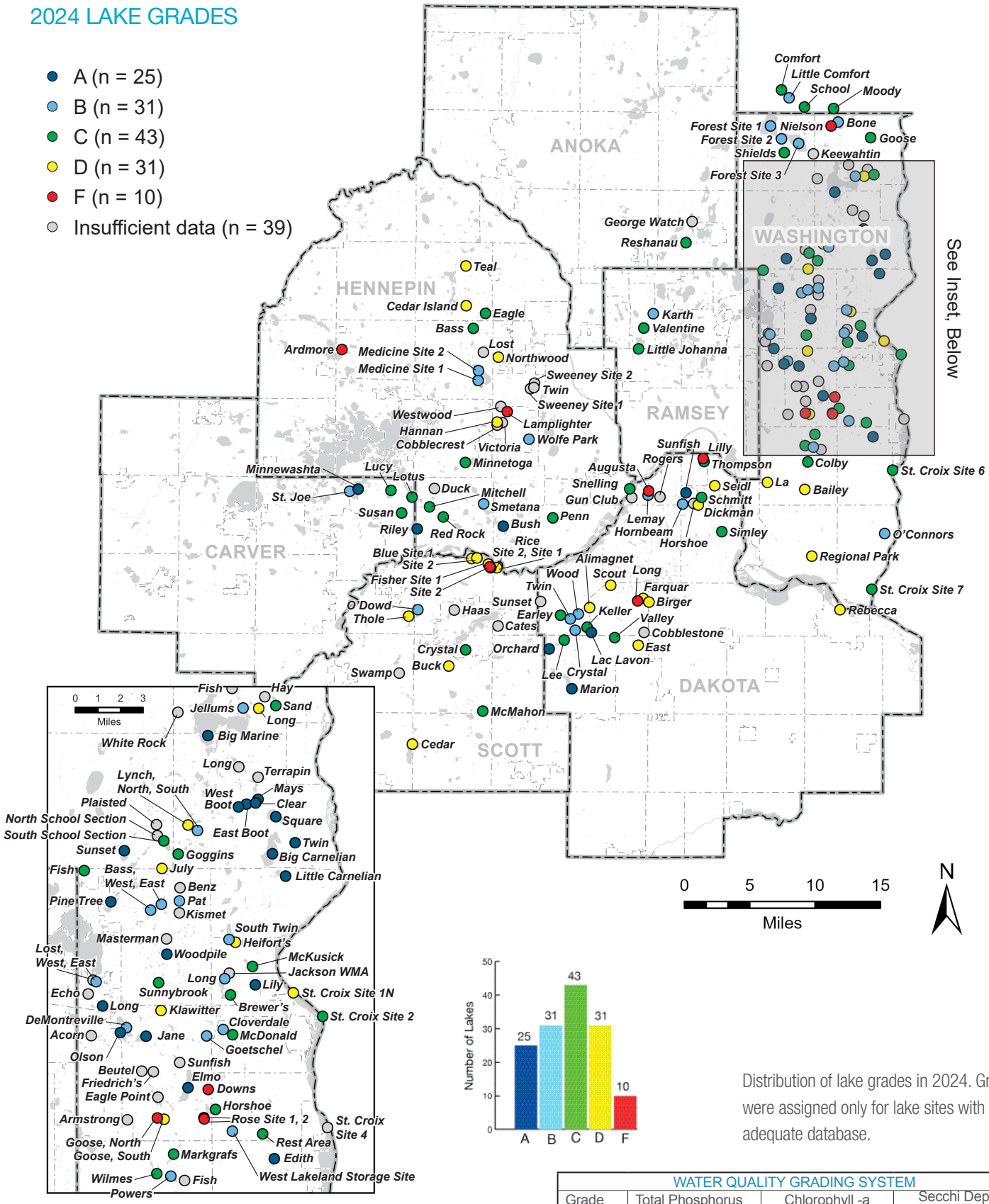
https://eims.metc.state.mn.us/Documents

All of the Met Council's lake, stream, and river monitoring data can be accessed online using the Environmental Information Management System at:

https://eims.metc.state.mn.us

2024 LAKE GRADES

- A (n = 25)
- B (n = 31)
- C (n = 43)
- D (n = 31)
- F (n = 10)
- Insufficient data (n = 39)



Distribution of lake grades in 2024. Grades were assigned only for lake sites with an adequate database.

WATER QUALITY GRADING SYSTEM				
Grade	Total Phosphorus (ug/l)	Chlorophyll -a (ug/l)	Secchi Depth (m)	(ft)
A	<23	<10	>3	>9.8
B	23-32	10-20	2.2-3.0	7.2-9.8
C	32-68	20-48	1.2-2.2	3.9-7.2
D	68-152	48-77	0.7-1.2	2.3-3.9
F	>152	>77	<0.7	<2.3

(ug/L) is an abbreviation for microgram per liter