Lake Augusta

2021 Water Monitoring Report

LMRWMO
LOWER MISSISSIPPI RIVER
WATERSHED MANAGEMENT ORGANIZATION

Lake Summary

Lake Augusta is located in the City of Mendota Heights, within the Lower Mississippi River Watershed Management Organization (LMRWMO). Land use within the watershed is primarily institutional (cemetery), commercial, and residential (low and high density). Lake Augusta was placed on Minnesota's 303(d) List of Impaired Waters in 2010 for aquatic recreation due to excess nutrients (phosphorus).

Lake Details

Max Depth: 33 feet
Watershed Size (shown): 420 acres
Major Watershed: Minnesota River
MPCA Lake Classification: Deep
Met Council 2021 Lake Grade: F (2020)

Water Quality Monitoring Need

Lake Augusta is monitored on an annual basis as part of the LMRWMO's participation in the Metropolitan Council's Citizen Assisted Monitoring Program (CAMP) volunteer water monitoring program. The lake continues to not meet the deep lake water quality criteria from the Minnesota Pollution Control Agency. Further study of the lake is needed to understand the poor water quality causes. The LMRWMO is undertaking an intensive study in 2022 to identify long term action items to improve lake water quality.

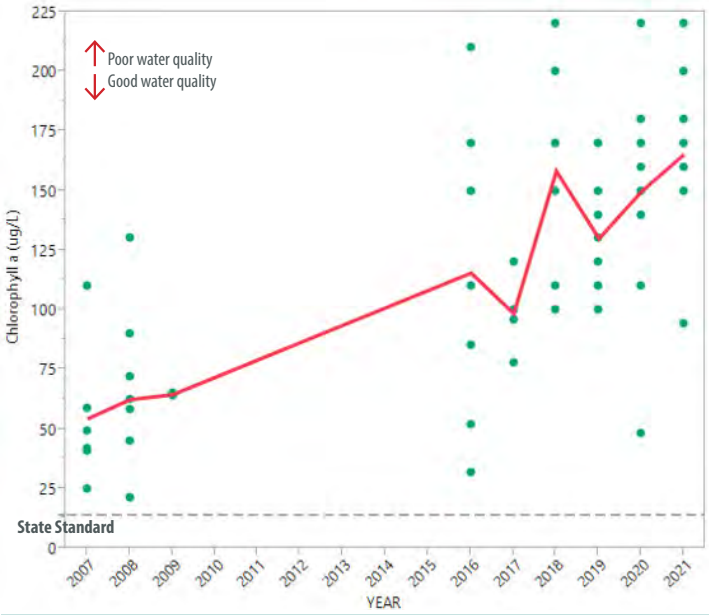
2021 Monitoring Summary

Following an aluminum sulfate (alum) treatment in 2017, there were improvements for all three water quality parameters compared to data collected pre-treatment. Monitoring data from 2021 showed an increase in chlorophyll-a and total phorphosus averages, but not the maximum value, in comparison to data collected in previous years. The 2021 Secchi reading remained consistent with previous data. The below table shows the 2021 data.

Water Quality Parameters	MPCA Standard	Minimum	Maximum	Average
Chlorophyll-a (ug/L)	14	94	220	165.40
Total Phosphorus (ug/L)	40	90	219	148.60
Secchi Depth (m)	1.4	0.025	0.25	0.17

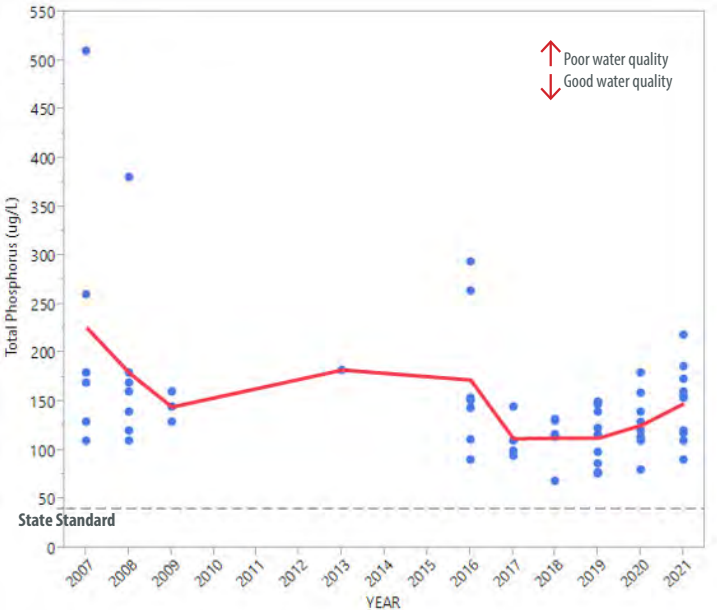
Water Quality Data 2007-2021

micrograms per liter (ug/L) = 1,000 mg/L (milligrams per liter)



Chlorophyll-a*

Chlorophyll-a is the pigment that gives plants their green color. High levels indicate excessive algae from high nutrient levels in the lake. Low chlorphophyll-a levels indicate good water quality. State standard is 14 ug/L (dashed line).



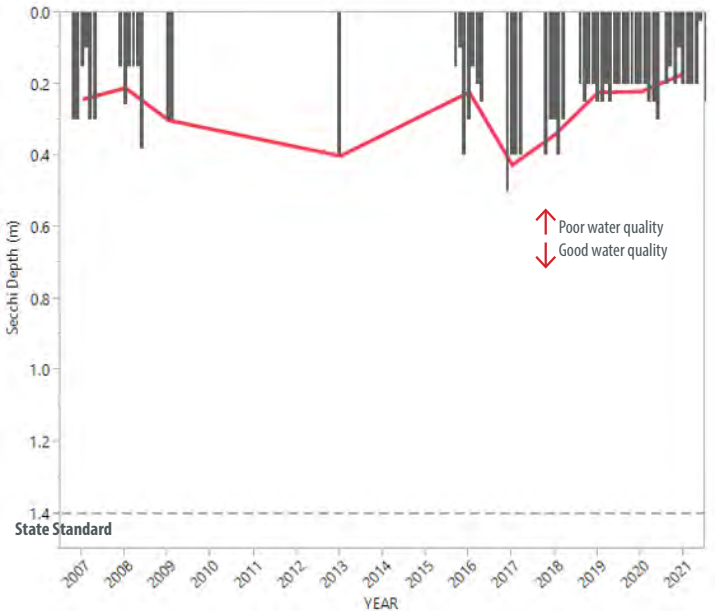
Phosphorus*

Phosphorus is a nutrient required for plant growth. High phosphorus levels can lead to algae blooms, turning water green. Low phosphorus levels indicate good water quality. State standard is 40 ug/L (dashed line).

Watershed Projects

A 2012 study conducted by the LMRWMO identified internal phosphorus from the lake bottom sediment as the primary source of phosphorus in Lake Augusta.

In 2017, the LMRWMO implemented an in-lake aluminum sulfate (alum) treatment to improve water quality. Upon application, the alum binds with phosphorus as aluminum phosphate and settles to the lake bottom. It is believed that long term high water levels impacted the effectiveness of the alum treatment.



Secchi Depth

A black and white secchi disc is lowered into the water until no longer visible and measures water clarity. High secchi disc depths indicate good water quality. State standard is 1.4 m (dashed line).

How can you get involved?

You don't have to live on a lake to help improve water quality, **anyone can be part of the solution!** Installing a raingarden **increases water infiltration,** decreases lawn maintenance, and reduces pollution runoff that can negatively impact local water quality. The LMRWMO offers grants to residents to install raingardens or native shoreline plantings as part of the Dakota County Soil and Water Conservation District's **Landscaping for Clean Water** program.

Additional Information:

MN Impaired Waters Map: https://www.pca.state.mn.us/water/impaired-waters-viewer-iwav
DNR Lake Finder: https://www.dnr.state.mn.us/lakefind/index.html
LMRWMO Contact: Joe Barten - joe.barten@co.dakota.mn.us 651-480-7784
LMRWMO Website: www.lmrwmo.org

DAKOTA COUNTY SOIL & WATER CONSERVATION DISTRICT

Seidls Lake

2021 Water Monitoring Report

LMRWMO
LOWER MISSISSIPPI RIVER
WATERSHED MANAGEMENT ORGANIZATION

Lake Summary

Seidls Lake is located in the Cities of Inver Grove Heights and South Saint Paul, within the Lower Mississippi River Watershed Management Organization (LMRWMO). Land use within the watershed is primarily residential with a portion of the west watershed covered by a golf course and a portion of Highway 52. The lake is not currently listed on Minnesota's 303(d) List of Impaired Waters.

Lake Details

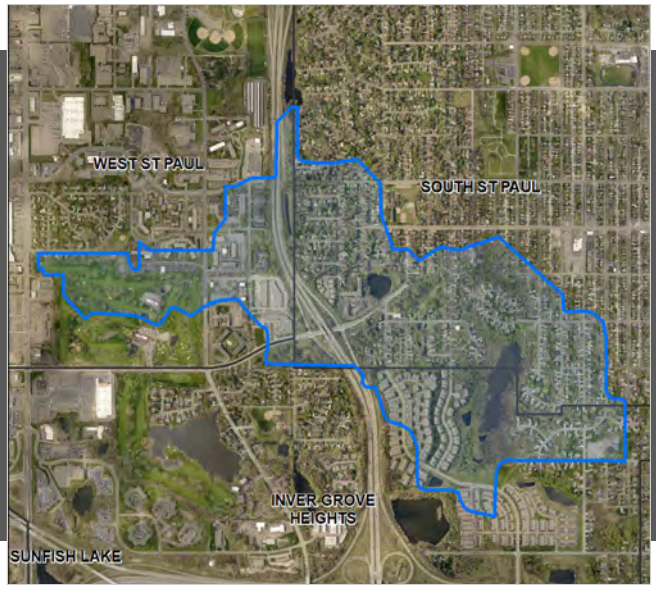
Max Depth: 17 feet

Watershed Size (shown): 420 acres

Major Watershed: Mississippi River

MPCA Lake Classification: Shallow

Met Council 2021 Lake Grade: C (2020)



Water Quality Monitoring Need

Seidls Lake is monitored as part of the LMRWMO's participation in the Metropolitan Council's Citizen Assisted Monitoring Program (CAMP) volunteer water monitoring program. The lake is surrounded by parkland and is identified as a priority waterbody by the Cities and LMRWMO. High lake water levels compared to historic levels have been observed in the last 15 years; due to the lack of a natural lake outlet. A lake outlet project is nearly complete to maintain more consistent water levels and a vegetative shoreline restoration project is planned for 2023.

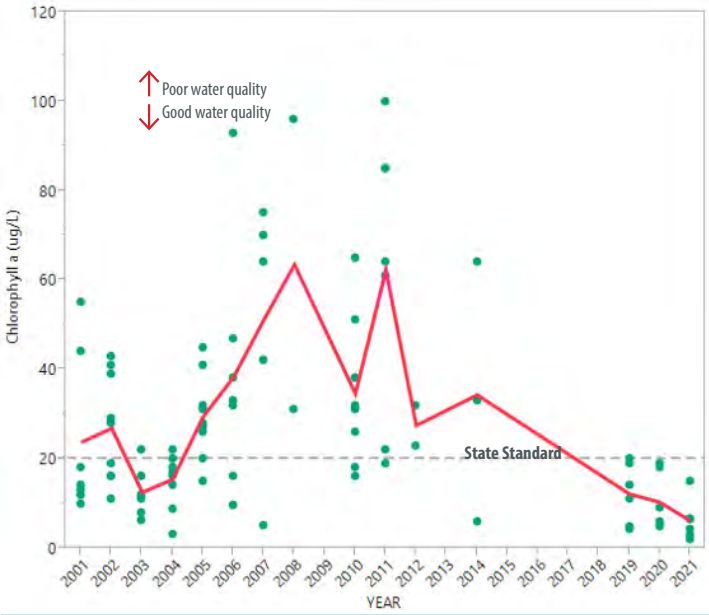
2021 Monitoring Summary

Following the 2018 water quality project, there are marked improvements for all three water quality parameters when comparing 2021 data to past results. Total phosphous and chlorphyll-a both saw a drastic reduction from 2020 to 2021. Secchi reading improved, but minimally. The below table shows the 2021 data.

Water Quality Parameters	MPCA Standard	Minimum	Maximum	Average
Chlorophyll-a (ug/L)	20	2.1	15	6.15
Total Phosphorus (ug/L)	60	27	41	31.83
Secchi Depth (m)	1	1.3	2.6	1.95

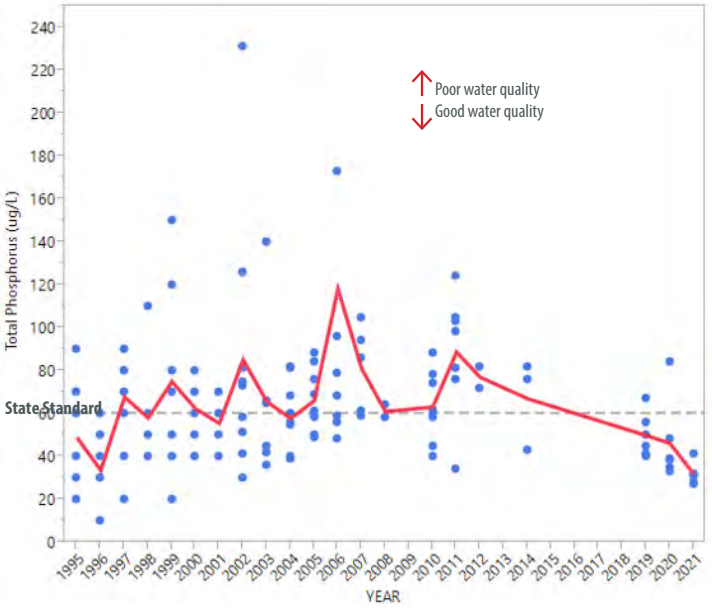
Water Quality Data 1995-2021

*micrograms per liter (ug/L) = 1,000 mg/L (milligrams per liter)



Chlorophyll-a*

Chlorophyll-a is the pigment that gives plants their green color. High levels indicate excessive algae from high nutrient levels in the lake. Low chlorphophyll-a levels indicate good water quality. State standard is 20 ug/L (dashed line).



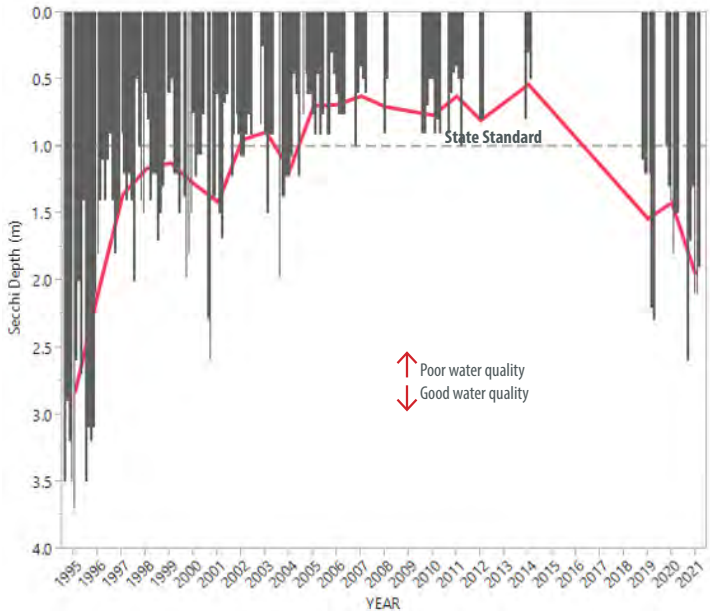
Phosphorus*

Phosphorus is a nutrient required for plant growth. High phosphorus levels can lead to algae blooms, turning water green. Low phosphorus levels indicate good water quality. State standard is 60 ug/L (dashed line).

Watershed Projects

The LMRWMO partnered with the City of South St. Paul to install large underground pipe chambers (shown below) in 2018 to clean and infiltrate stormwater before it enters Seidls Lake.

The lake will continue to be monitored to track further water quality improvements and the impact of the newly installed lake outlet.



Secchi Depth

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How can you get involved?

You don't have to live on a lake to help improve water quality, **anyone can be part of the solution!** Installing a raingarden **increases water infiltration,** decreases lawn maintenance, and reduces pollution runoff that can negatively impact local water quality. The LMRWMO offers grants to residents to install raingardens or native shoreline plantings as part of the Dakota County Soil and Water Conservation District's **Landscaping for Clean Water** program.

Additional Information:

MN Impaired Waters Map: https://www.pca.state.mn.us/water/impaired-waters-viewer-iwav
DNR Lake Finder: https://www.dnr.state.mn.us/lakefind/index.html
LMRWMO Contact: Joe Barten - joe.barten@co.dakota.mn.us 651-480-7784
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DAKOTA COUNTY SOIL & WATER CONSERVATION DISTRICT

Sunfish Lake

2021 Water Monitoring Report

LMRWMO
LOWER MISSISSIPPI RIVER
WATERSHED MANAGEMENT ORGANIZATION

Lake Summary

Sunfish Lake is located in the City of Sunfish Lake, within the Lower Mississippi River Watershed Management Organization (LMRWMO). Land use within the watershed is primarily low density residential. Sunfish Lake was placed on Minnesota's 303(d) List of Impaired Waters in 2010 for aquatic recreation due to excess nutrients (phosphorus).

Lake Details

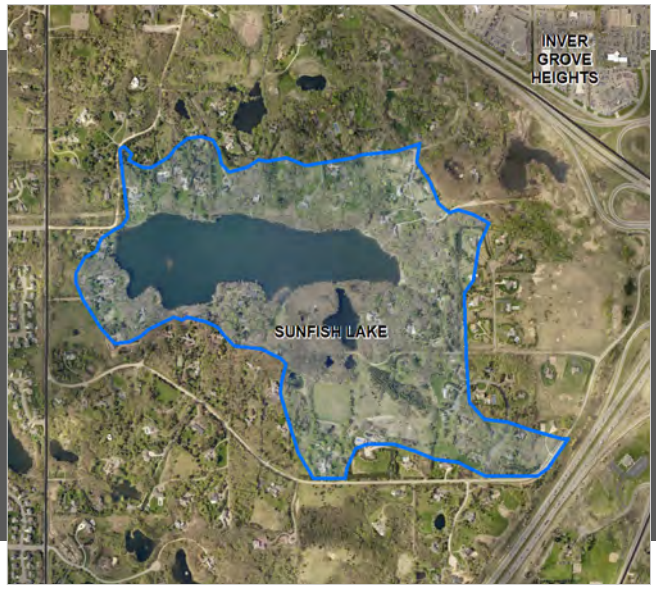
Max Depth: 32 feet

Watershed Size (shown): 235 acres

Major Watershed: Mississippi River

MPCA Lake Classification: Deep

Met Council 2021 Lake Grade: A (2020)



Water Quality Monitoring Need

Sunfish Lake is monitored on an annual basis as part of the City of Sunfish Lake's participation in the Metropolitan Council's Citizen Assisted Monitoring Program (CAMP) volunteer water monitoring program. The lake has been meeting the deep lake water quality criteria set forth by the Minnesota Pollution Control Agency since 2017 when an aluminum sulfate treatment was implemented by the LMRWMO.

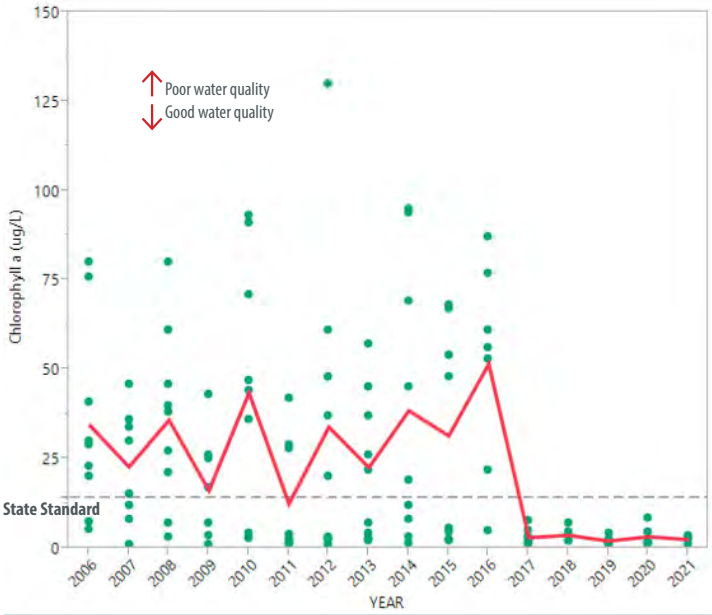
2021 Monitoring Summary

Following the 2017 alum treatment, there were improvements for all three eutrophication parameters when compared to data collected pre-treatment. Lake water quality continues to improve when considering the total phosphorus and chlorophyll-a levels in comparison to historical levels. The secchi readings in 2021 are slightly lower than in 2020, but much more consistent from one month to the next and are considerably better than 2019. The below table shows the 2021 data.

Water Quality Parameters	MPCA Standard	Minimum	Maximum	Average
Chlorophyll-a (ug/L)	14	1	2.7	2.43
Total Phosphorus (ug/L)	40	10	27	17.75
Secchi Depth (m)	2.6	2.6	6.3	3.73

Water Quality Data 2006-2021

micrograms per liter (ug/L) = 1,000 mg/L (milligrams per liter)



Chlorophyll-a*

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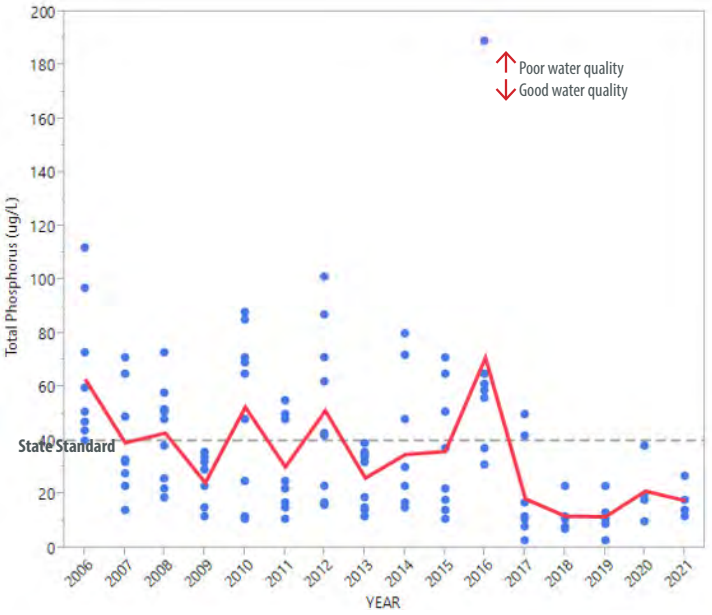


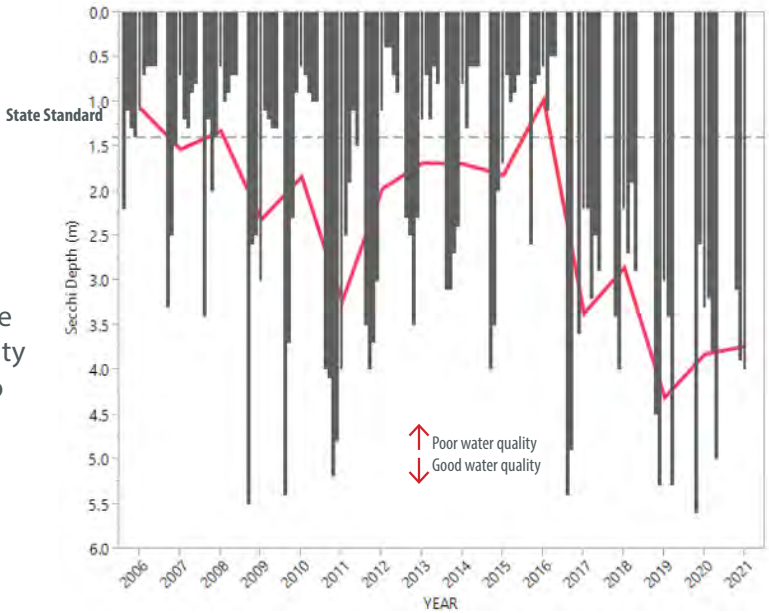
Phosphorus*

Phosphorus is a nutrient required for plant growth. High phosphorus levels can lead to algae blooms, turning water green. Low phosphorus levels indicate good water quality. State standard is 40 ug/L (dashed line).

Watershed Projects

A 2012 study conducted by the LMRWMO identified internal phosphorus from the lake bottom as the primary source of phosphorus in Sunfish Lake.

In 2017, the LMRWMO implemented an in-lake aluminum sulfate (alum) treatment to improve water quality. Upon application, the alum binds with phosphorus as aluminum phosphate and settles to the lake bottom. A significant improvement in water quality has been realized from this treatment, with the lake to be removed from the impaired waters list in 2023.



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Additional Information:

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DAKOTA COUNTY SOIL & WATER CONSERVATION DISTRICT

Thompson Lake

2021 Water Monitoring Report

LMRWMO
LOWER MISSISSIPPI RIVER
WATERSHED MANAGEMENT ORGANIZATION

Lake Summary

Thompson Lake is located in the City of West Saint Paul within the Lower Mississippi River Watershed Management Organization (LMRWMO). Land use within the watershed is primarily commercial, institutional, low density residential, and parkland. Thompson Lake was placed on Minnesota's 303(d) List of Impaired Waters in 2014 for aquatic recreation due to excess nutrients (phosphorus).

Lake Details

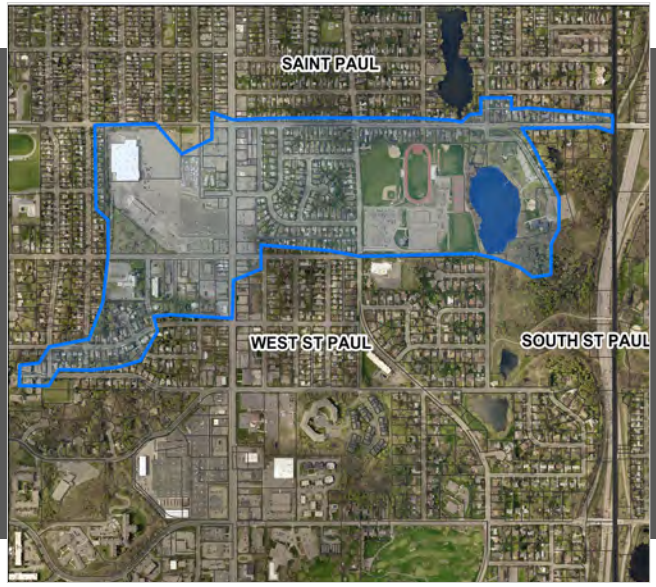
Max Depth: 8 feet

Watershed Size (shown): 180 acres

Major Watershed: Mississippi River

MPCA Lake Classification: Shallow

Met Council 2021 Lake Grade: C (2020)



Water Quality Monitoring Need

Thompson Lake is monitored on an annual basis as part of the LMRWMO's participation in the Metropolitan Council's Citizen Assisted Monitoring Program volunteer water monitoring program. The lake is the center of Dakota County's highly used Thompson Lake Regional Park. Currently, the lake does not meet the shallow lake water quality criteria set forth by the Minnesota Pollution Control Agency (MPCA).

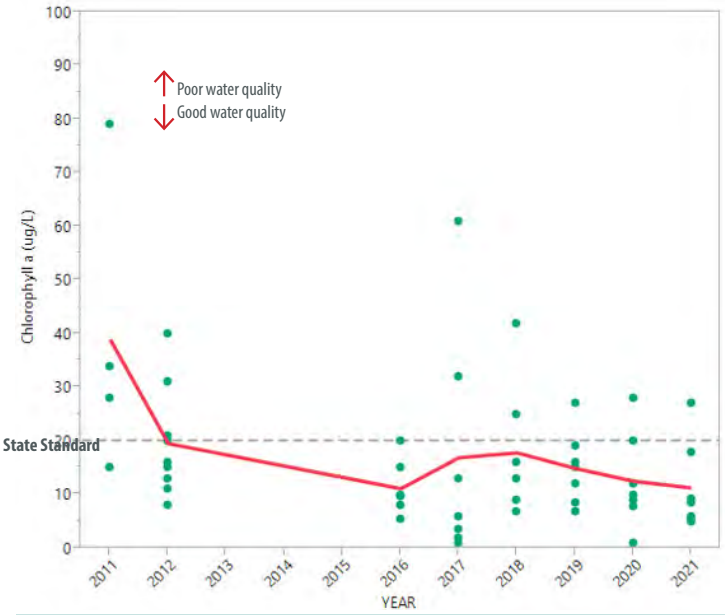
2021 Monitoring Summary

In 2018 and 2019, the LMRWMO led the installation of a comprehensive "treatment train" stormwater improvement project. This included installation of two underground sediment capture chambers, a stormwater settling treatment pond, a stormwater treatment wetland, and raingarden. In 2021, slight improvements in the chlorophyll-a level and the secchi disc readings were observed. Phosphorous levels increased substantially in 2021 in comparison to historical values. The below table shows the 2021 data.

Water Quality Parameters	MPCA Standard	Minimum	Maximum	Average
Chlorophyll-a (ug/L)	20	5	27	11.26
Total Phosphorus (ug/L)	60	49	103	71.29
Secchi Depth (m)	1	0.5	1.8	1.24

Water Quality Data 2011-2021

*micrograms per liter (ug/L) = 1,000 mg/L (milligrams per liter)



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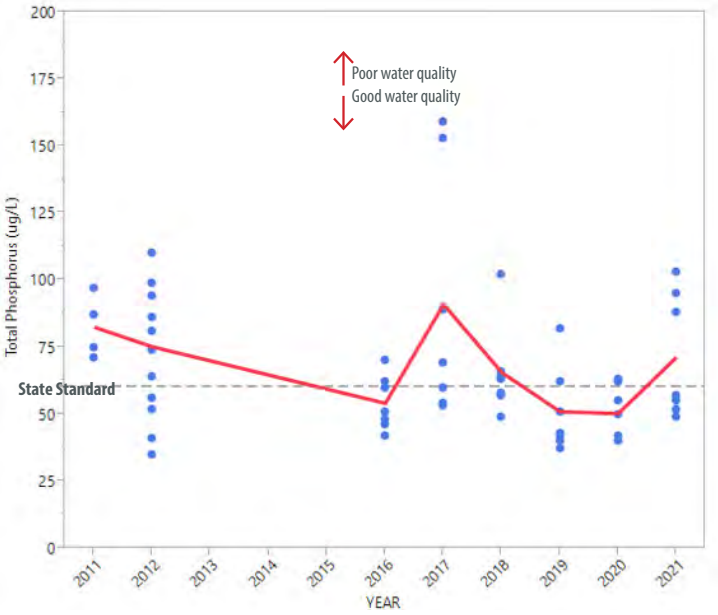

Phosphorus*

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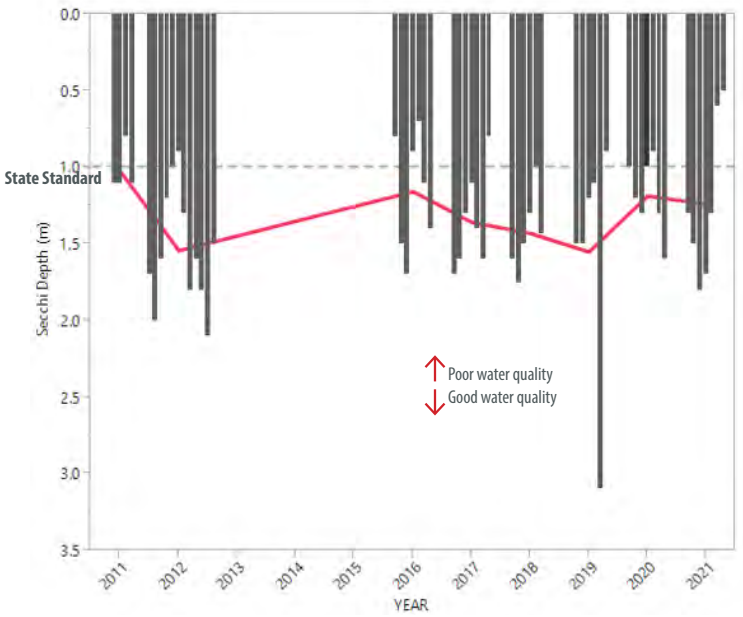
Watershed Projects

The LMRWMO partnered with Dakota County and the City of West St. Paul on the 2018-2019 installation of stormwater projects at Thompson Lake. These projects are expected to provide long term, incremental water quality improvements which will be tracked with continued water monitoring.

Additional opportunities for stormwater treatment and infiltration of stormwater in the watershed of Thompson Lake will be sought out and implemented as they arise.



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