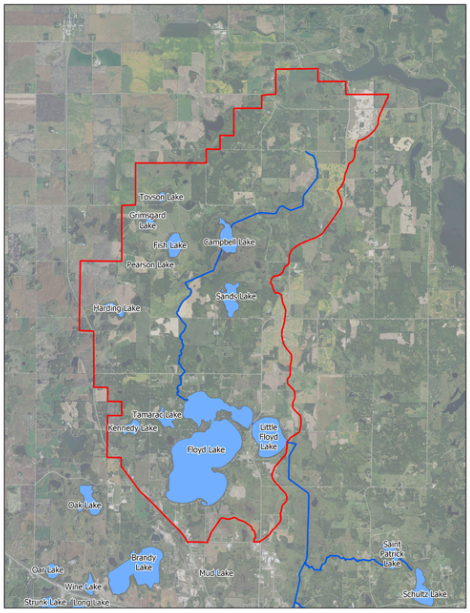
Pelican River watershed district

FLOYD/CAMPBELL WATER MANAGEMENT AREA

1
2023

>>> GENERAL INFORMATION



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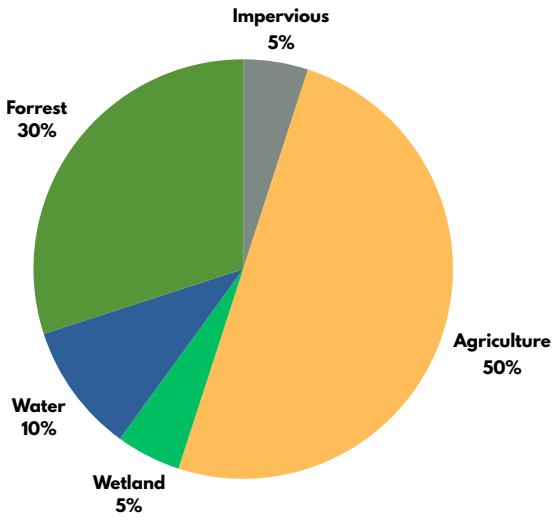


17,000 acres

MAJOR LAKES

- Big Floyd
- North Floyd
- Little Floyd

SHALLOW LAKES

- Campbell
- Sands
- Harding
- Pearson
- Tamarac
- Kennedy
- Tovson
- Grimsgard

STREAMS / DITCHES

- Campbell Creek (Ditch 11/12)

Water Body	Status	Summary
Little Floyd North Floyd	Enhance	Enhance condition to prevent future impairment. Nearly Impaired/Degrading trend.
Big Floyd	Protect	Maintain good condition and protect against future risks
Campbell Creek (Ditch 11/12)	Restore	Impaired for Sediment. 'Nearly impaired' for Phosphorus and Dissolved Oxygen.

>>> PRWD GOALS FOR THE WATER MANANGMENT AREA

- Floyd Lakes Protection - Adaptatively manage water quality.
- Restore stream water quality and ecosystem in Campbell Creek.
- Reduce sediment load in Campbell Creek by 67%.
- Monitor small/shallow lakes as opportunity arises.
- Promote shorelines practices that are resilient to fluctuating water levels.
- Ensure a sustainable groundwater supply.
- Prevent establishment of new invasive species and manage existing invasive species
- Protect and improve wildlife habitat in near shore areas & maintain healthy fish communities.

FLOYD/CAMPBELL WATER MANAGEMENT AREA

>>> DISTRICT HIGHLGHTS

>>> BEST MANAGMENT PRACTICES (BMPS)

The Watershed District offers a BMP program to reimburse homeowners a portion of the cost to install landscaping practices that:

- protect or restore the quality of our lakes and rivers
- protect or restore native plant communities and wildlife habitats
- innovative approaches to stormwater treatment at the source

BMP NIUMBERS

- **4** BMP projects Funded
- **$2,440.50** paid to homeowners as reimbursement.
- **3** Shoreline projects
- **1** Pollinator project

REGULATORY AND PERMITS NUMBERS

- **69** Shore Impact Zone Permits (sand blankets, riprap, shoreline vegetation)
- **2** Subdivisions/Planned Unit Developments
- **7** Commercial Stormwater Management
- **8** Residential Stormwater Management
- **4** Roads, Parking Lots, Bridges, Culverts, or Storm Sewer Projects
- **5** Underground Cable Projects

>>> REGULATORY AND PERMITTING PROGRAMS

Watershed Districts are mandated by the legislature to adopt rules. Regulation plays an important role in preventing and mitigating water resource issues. The regulatory program sets standards that must be met by entities that develop or otherwise disturb land within the District. The regulatory program is intended to provide for consistent application of resource protection from impacts related to land use change throughout the watershed.

PRWD works in cooperation with property owners, contractors and engineers, and local government units to maintain or increase the water quality in our district through the rules and permitting process. The largest number of permits are issued each year for Shore Impact Zone Alterations. However, our office also permits the stormwater management for Subdivisions, Planned Unit Developments, Commercial and Residential Construction, Roadways, and Underground Utilities.

>>> ENVIRONMENTAL EDUCATION

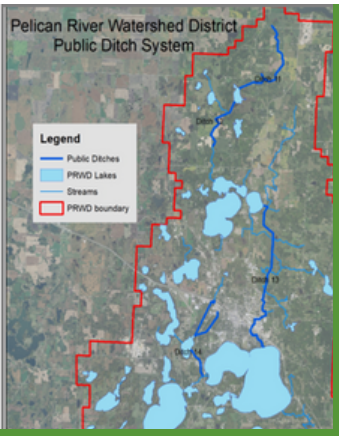
One of the great joys for our staff is sharing our knowledge and passion for our lakes and rivers with the young people in our community.

One of the most effective ways we have found is to make sure our local schools have the resources to get kids out into nature. Each year we fund transportation costs for field trips to Hamden Slough, Ike Fisher Farm, and Sucker Creek Preserve.

PRWD also administers a small grant programs to help educators purchase science supplies for their classrooms and we routinely give presentations to students in classrooms and on field trips.

EDUCATION NUMBERS

- **$571.75** for classroom supplies and event sponsorships
- **$3,428.45** for transportation costs for environmental field trips.
- **6 classes** of 5th, 7th, & 8th Grade received education on Aquatic Invasive Species
- **400** fourth grade students from Detroit Lakes, Frazee Vergas, and Lake Park Audubon attended Waterfest



DRAINAGE NUMBERS

- **7** Beaver Dams Removed
- **31** Beaver Trapped
- **0** Buffer Enforcement Actions

>>> DRAINAGE AUTHORITY

In the late 1990's, PRWD assumed drainage authority of Becker County Ditch 11/12 (Campbell Lake/Creek area), 13 (Floyd Lake, Rice Lake, City of Detroit Lakes area), and 14 (St. Clair Lake, City of Detroit Lakes area).

Most of the District's work as the Drainage Authority centers on beaver control and removing debris blockages from the drainage channel. In addition, these systems are governed by a MN Buffer Rule and the District is responsible for enforcement of the required buffers.

DISTRICT-WIDE PROJECTS

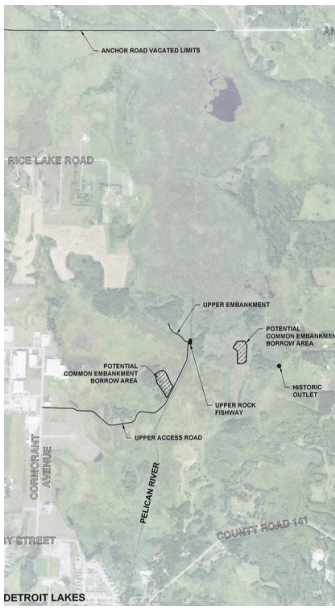
>>> RICE LAKE RESTORATION

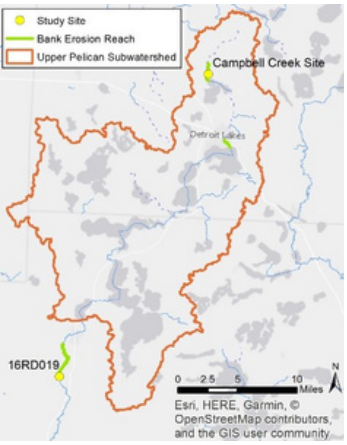
In the 1970's, the Rice Lake Wetland, was identified as the primary source and contributor of “legacy” phosphorus loading to Big Detroit.

The District collaborated with Houston Engineering Inc. on the design of the wetland restoration features including an upper embankment structure and a rock fishway water control structure (Phase 1) and the historic outlet design replaced the current outlet with a second rock control structure (Phase 2).

PRWD was awarded a grant in December 2020 for Phase 1 from the Board of Soil and Water Resources. The first phase of construction began in June 2021 and was completed in the summer of 2022.

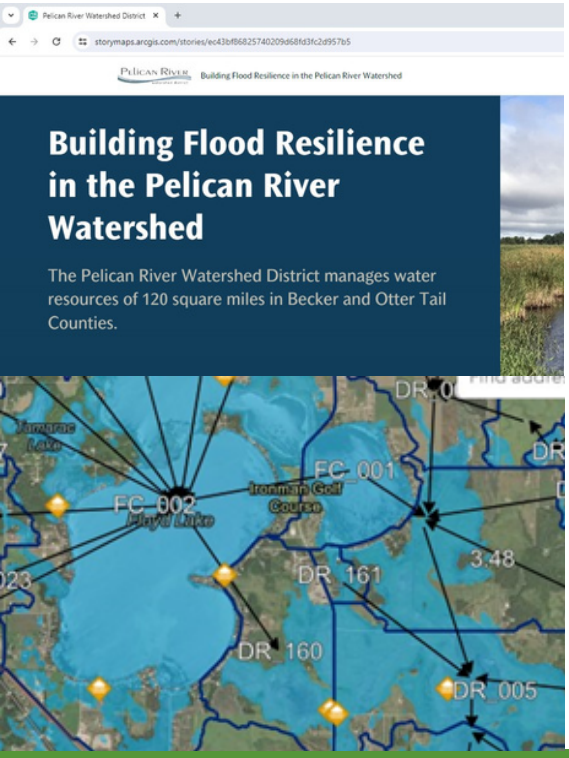
PRWD was granted funding for Phase 2 in December of 2022. This project will go out to bid in 2024.





CAMPBELL CREEK 319 PROJECT <<<

The District was awarded a federal 319 grant to address excessive sediment and phosphorus in the Campbell Creek sub-watershed area. In early 2024, the project area workplan was approved by the Environmental Protection Agency to construct: (1) 3,750 linear feet of streambank stabilization above and below Becker County HWY 149 using a variety of practices, (2) a multi-stage drainage and control structure near Campbell Lake, and (3) a grade stabilization project in a nearby farm field. The planning, design, and engineering work is starting this summer, with construction to occur in 2025 and 2026 for an estimated cost of $500,000. The grant will be matched using Otter Tail 1W1P grant and District funds.



>>> FEMA FLOOD MITIGATION GRANT

PRWD is completing the FEMA Flood Mitigation project in 2024. A Hydrologic & Hydraulic (H&H) model map was developed to identify flood prone areas. This information will assist with developing future projects to reduce flood risk.

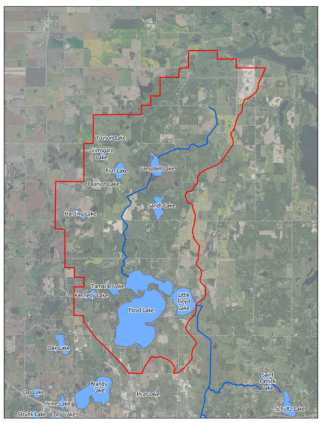
Four flood prone areas were identified.

- Highway 21 at Rice Lake Road
- Pelican River at North Shore Drive
- Sucker Creek at Mountain Road
- East Munson Drive

You can report observed flooding at the PRWD website under the resources tab under Special Studies.

https://prwd.org/resources/fema-flooding-study/

FLOYD/CAMPBELL WATER MANAGEMENT AREA



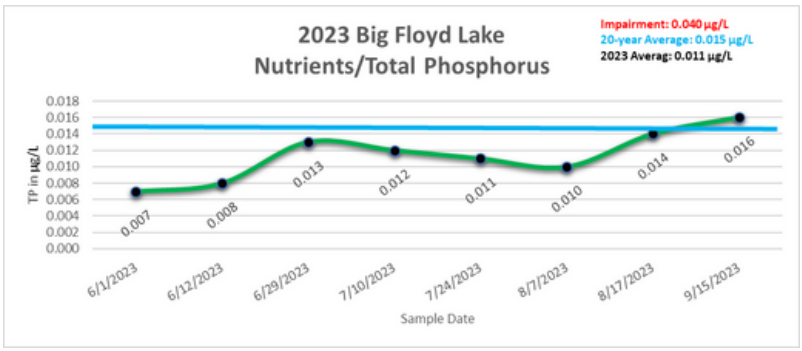
The Floyd/Campbell WMA is at the top of the watershed and is about 16,000 acres in size (Figure 5.1). Campbell Creek flows south from Campbell Lake to North Floyd Lake. Becker County Ditch 11 flows into Campbell Lake from the North. Several small “potholes” exist throughout the WMA, most of which are isolated basins with no surface connection to the rest of the watershed.

Water quality data for 2023 testing is included in the pages that follow. For more detailed information on historical water monitoring in this area, please see the ‘Our Water’ Section of our website at www.prwd.org.

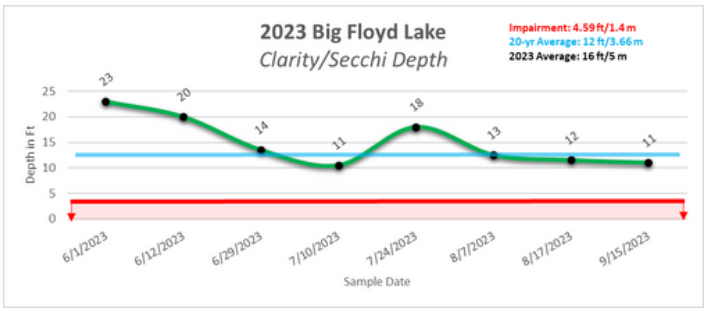
LAKE WATER QUALITY NUMBERS 2023

BIG FLOYD	2023 Average	20 Year Average	MNPCA Lake Standards
Total Phosphorus (TP)	0.011 ug/L	0.015 ug/L	> 0.040 ug/L
Chlorophyll-a (Chl-a)	3.62 ug/L	4.67 ug/L	> 14 ug/L
Secchi depth	16 feet	12 feet	< 4.6 feet

TOTAL PHOSPHORUS BY TEST DATE



SECCHI DEPTH BY TEST DATE

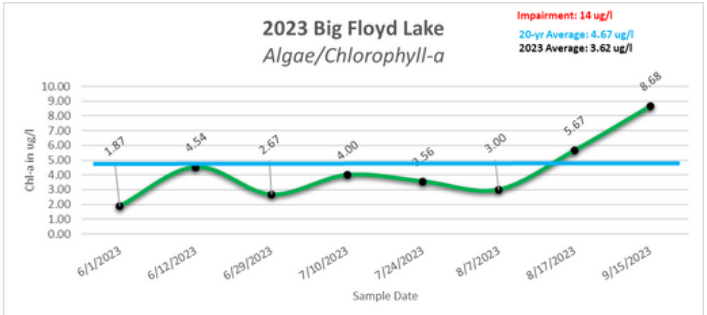


Phosphates are chemicals that enter waterways from both natural and human caused sources. Phosphates become detrimental when they over-fertilize aquatic plants and increase the rate of natural eutrophication. Eutrophication results in an increase in the carbon content and the amount of "mucky" or organic-laden sediments. This in turn leads to nuisance conditions such as algal grown.

Chlorophyll-a is a naturally occurring compound found in all algae. Measuring Chlorophyll-a concentration in lake water is a reasonable estimation of the presence or absence of algal growth in a lake system. An increase in the biomass of algae in a body of water can result in decreased levels of dissolved oxygen, which is needed by many aquatic animals to survive.

A **Secchi** depth measurement is a visual measure of water clarity through water column. Measuring clarity of the water is another test of eutrophication of a water body.

CHLOROPHYLL-A BY TEST DATE

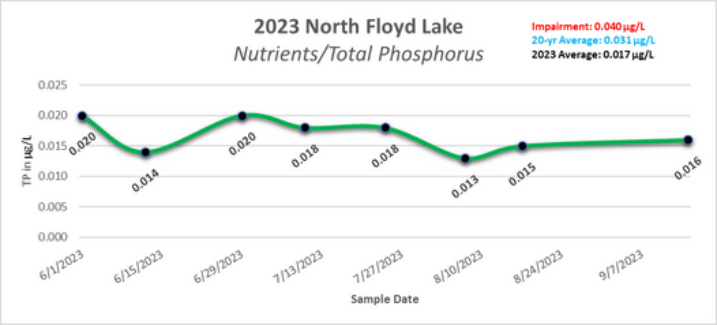


FLOYD/CAMPBELL WATER MANAGEMENT AREA

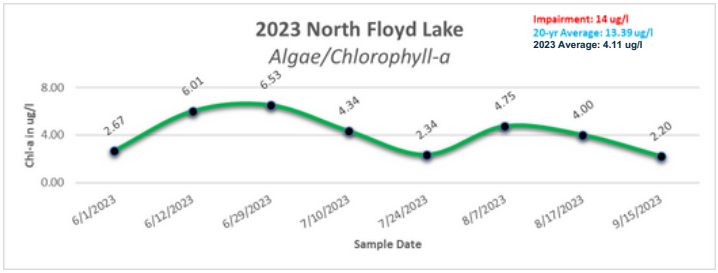
>>>LAKE WATER QUALITY NUMBERS 2023

NORTH FLOYD	2023 Average	20 Year Average	MNPCA Lake Standards
Total Phosphorus (TP)	0.017 ug/L	0.031 ug/L	> 0.040 ug/L
Chlorophyll-a (Chl-a)	4.11 ug/L	13.39 ug/L	> 14 ug/L
Secchi depth	15 feet	9 feet	< 4.6 feet

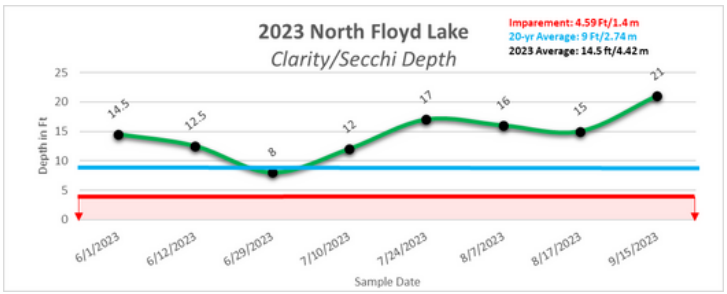
>>> TOTAL PHOSPHORUS BY TEST DATE



>>> CHLOROPHYLL-A BY TEST DATE



>>> SECCHI DEPTH BY TEST DATE

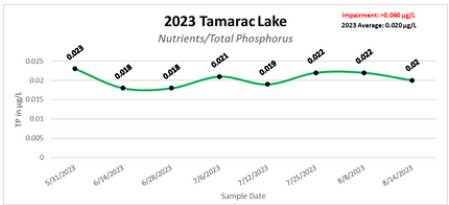


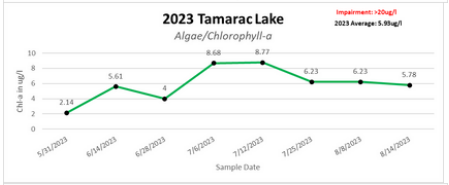
>>> SMALL LAKE WATER QUALITY

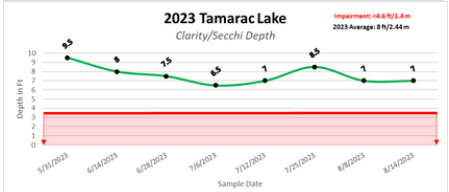
TAMARAC	2023 Average	MNPCA Lake Standards
Total Phosphorus (TP)	0.020 ug/L	> 0.040 ug/L
Chlorophyll-a (Chl-a)	5.93 ug/L	> 14 ug/L
Secchi depth	8 feet	< 4.6 feet

Tamarac lake is a 46 acres lake, with a max depth of 13.5 feet. There are six homes on the lake. It has 2 inlets and 1 outlet.

This is the first year that the PRWD conducted water quality testing on Tamarac Lake. Compared to the MPCA impairment standards Tamarac Lake appears to be overall healthy lake. We will continue to monitor this lake on a 5-year rotation.





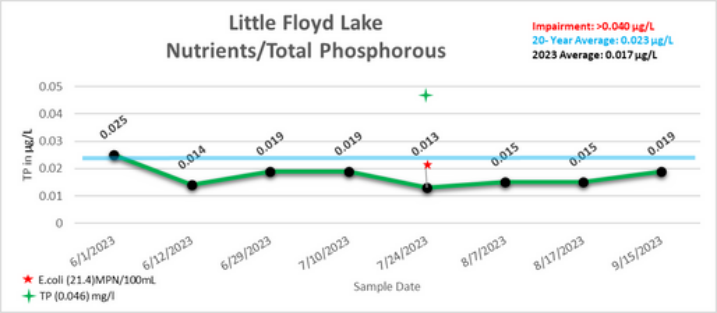


FLOYD/CAMPBELL WATER MANAGEMENT AREA

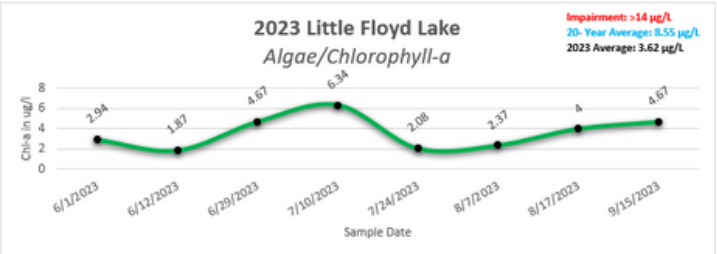
>>>LAKE WATER QUALITY NUMBERS 2023

LITTLE FLOYD	2023 Average	20 Year Average	MNPCA Lake Standards
Total Phosphorus (TP)	0.017 ug/L	0.023 ug/L	> 0.040 ug/L
Chlorophyll-a (Chl-a)	3.62 ug/L	8.55 ug/L	> 14 ug/L
Secchi depth	13.06 feet	9.1 feet	< 4.6 feet

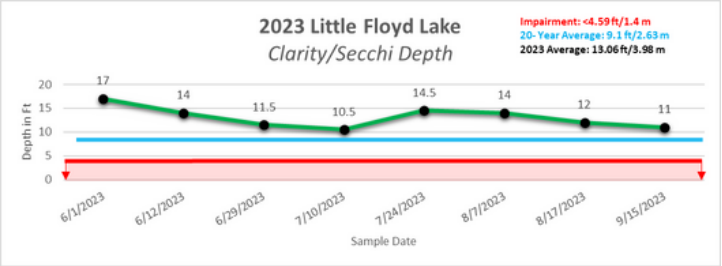
>>> TOTAL PHOSPHORUS BY TEST DATE



>>> CHLOROPHYLL-A BY TEST DATE



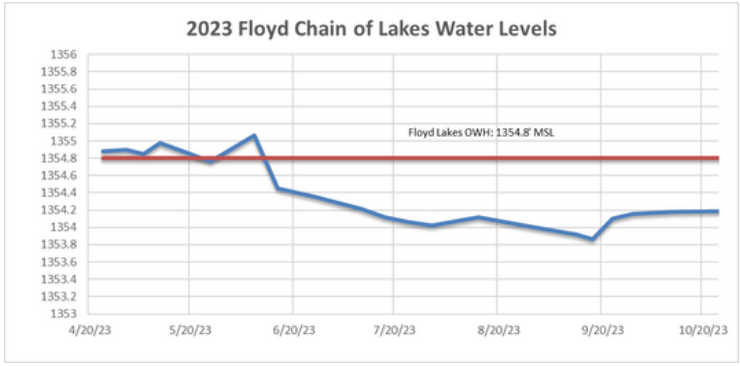
>>> SECCHI DEPTH BY TEST DATE



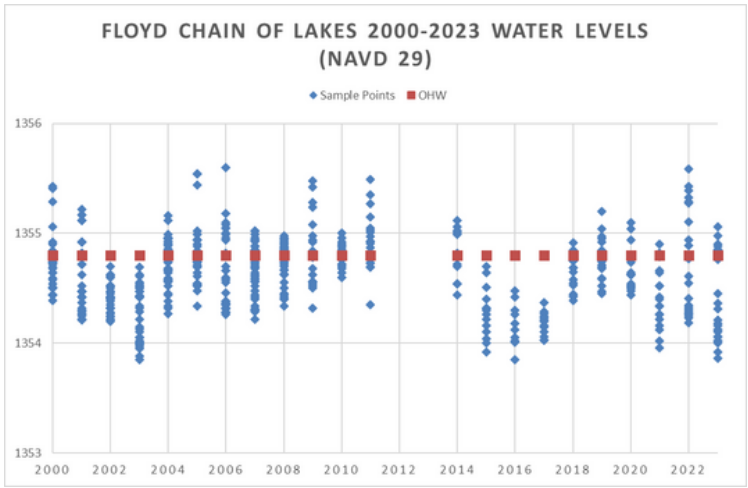
>>> WATER LEVELS

>>> WATER LEVELS 2023 BY TEST DATE

Big Floyd, Little Floyd, and North Floyd maintain similar water levels. The OHW for all 3 basins is set at the same elevation (1354.8' NVGD 29) by the MN DNR. There is a fixed crest weir (1354.8 NVGD 29) on the outlet of Little Floyd Lake.



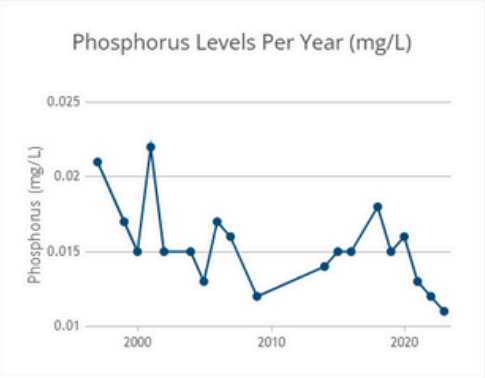
>>> WATER LEVELS 2000-2023

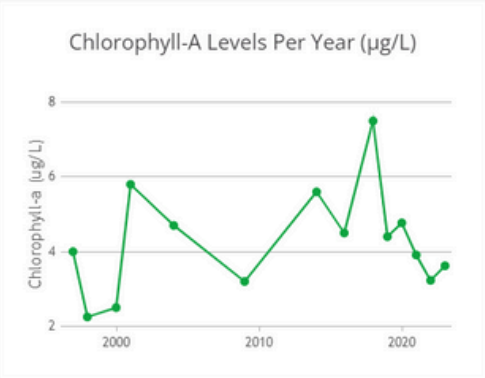


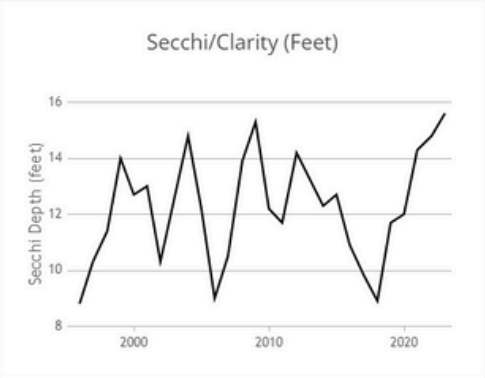
FLOYD/CAMPBELL WATER MANAGEMENT AREA

>>> LAKE WATER QUALITY ALL YEARS

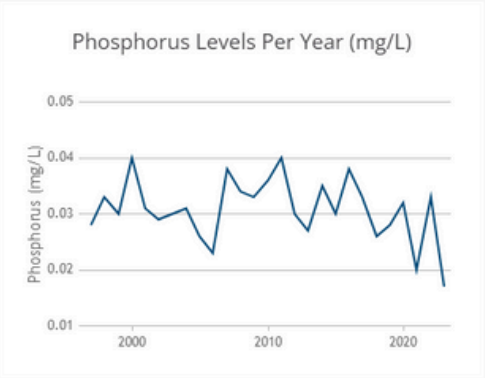
BIG FLOYD LAKE

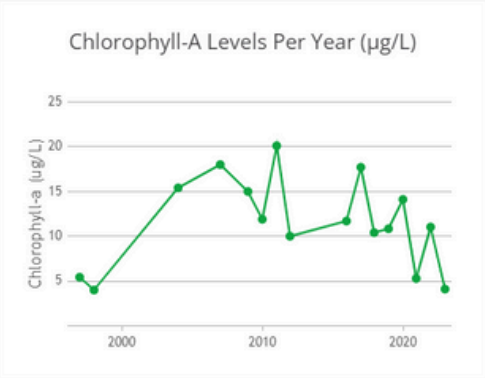


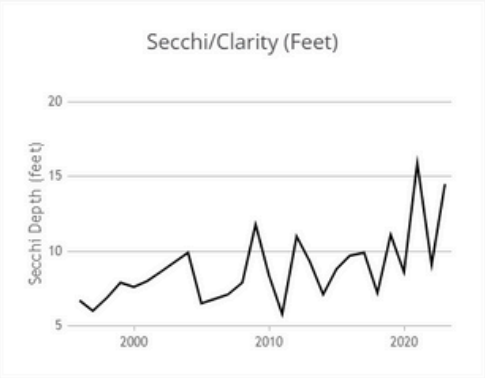




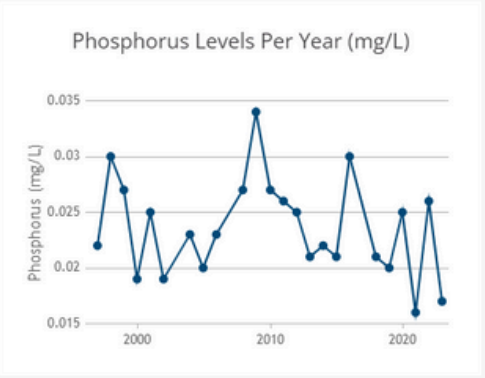
NORTH FLOYD LAKE

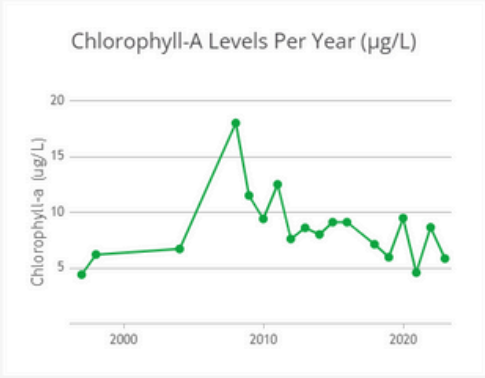


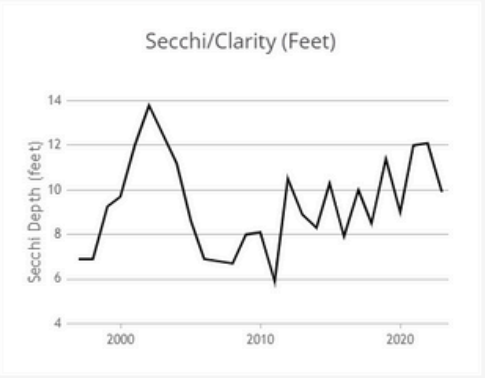




LITTLE FLOYD LAKE



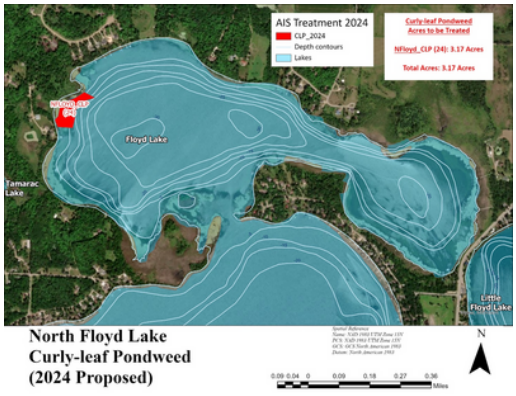




>>> AQUATIC INVASIVE SPECIES (AIS) MANAGEMENT 2023

In 2023, Curly-leaf Pondweed (CLP) was discovered in the Northwest bay of North Floyd Lake. It was delineated and 3.17 acres were treated on May 20, 2024.

Left photo: CLP on North Floyd. **Right Photo:** PRWD Board Manager Dennis Kral with grandson inspecting CLP on North Floyd Lake



North Floyd Lake
Curly-leaf Pondweed
(2024 Proposed)

FLOYD/CAMPBELL WATER MANAGEMENT AREA

STREAM WATER QUALITY

CAMPBELL CREEK - DITCH 11/12

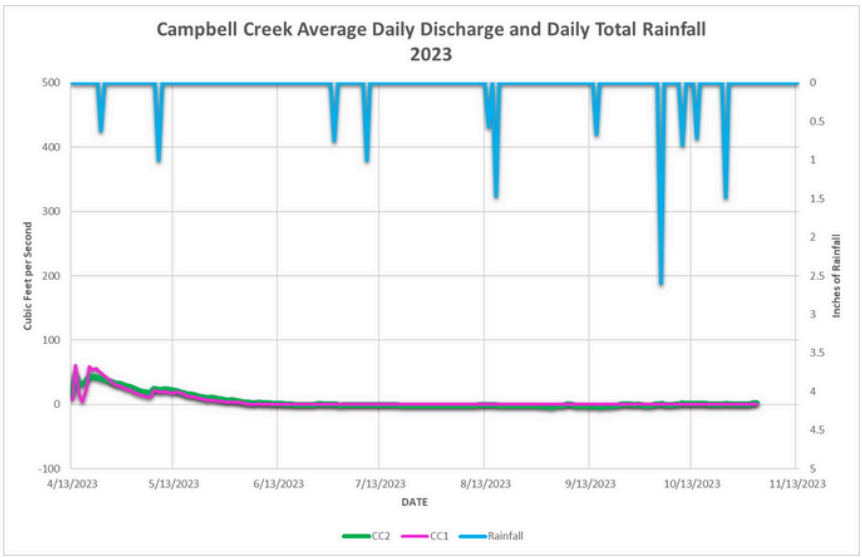
SAMPLING AND WATER LEVELS

Background: Campbell Creek is an intermittent, high gradient stream and is the major nutrient source to North Floyd Lake. Sections of Campbell Creek were ditched and straightened in the early 1900s for agricultural benefit and included partially drawing down Campbell Lake and draining surrounding wetland areas. Also known as Becker County Ditch 11-12, Campbell Creek drops almost 80 feet in 2 miles before reaching North Floyd. Through the lower reach, Campbell Creek flows through highly erodible soils, and carries a heavy sediment load to North Floyd.

Extensive conservation work has been completed in the agricultural areas between Campbell Lake and North Floyd Lake including ditch buffers and sedimentation basins. These practices have decreased loads of sediment and Phosphorus to Campbell Creek, but other issues still need to be addressed. (e.g., stream bank erosion and wetland restoration).

2023 Results: Due to the lack of snow melt and drought conditions in 2023, there was decreased rainfall runoff entering Campbell Creek. The good news is with low levels of sediment and nutrients washing into the creek, water quality remained good throughout the season. North Floyd lake water quality vastly improved in 2023 from the lack of sediment and nutrient loading in the summer.

2023 Phosphorus loads (1,314lbs/year) at CC2 (Campbell Creek at 230th St) decreased by 729 lbs/year from the 2022 nutrient loads of 2,043 lbs/yr. The sediment load for 2023 was 65 tons/yr a decrease of 135 tons/year from 2022 (200 tons/year). 2023 loads of Phosphorus and sediment decreased from 6,132 lbs/yr (Phosphorus) and 1032 tons/yr (sediment) in 2022 to 1,405 lbs/yr (Phosphorus) and 251 tons/yr in 2023 at station CC1 (Campbell Creek at CSAH 149).



SHORELAND PROJECTS

SPOTLIGHT RESTORATION

This property on Big Floyd was restored in 2022 utilizing Watershed Best Management Processes (BMP) funding. The homeowner removed the old railroad tie retaining wall and replaced with erosion controlling native plants and a small toe of riprap. PRWD reimbursed the homeowner $500 for plants, mulch and erosion control materials.

Reasons to love this:

- **Retaining wall fail.** Eventually all retaining walls will fail and when they do they will release sediment into the lake.
- **Plants hold,** especially native plants. Plants put down roots which will protect the shore against fluctuating water levels and ice push.

SHORELAND PERMITS ISSUED IN THE FLOYD/CAMPBELL WMA

Total Permits by Lake

- **12** on Big Floyd
- **2** on Little Floyd
- **0** on North Floyd

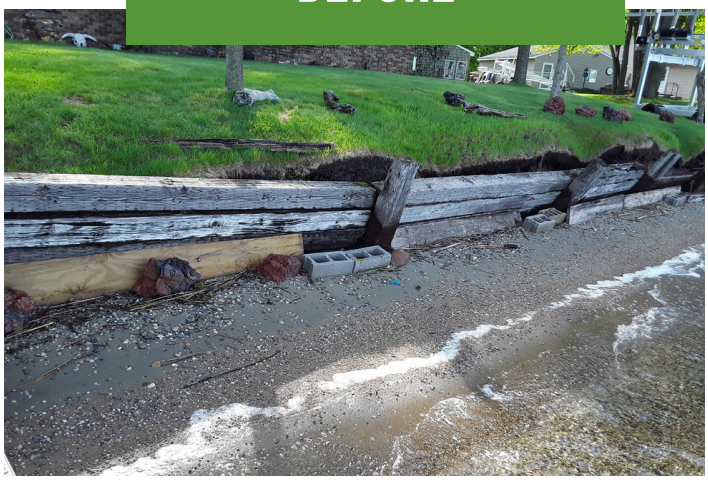
Permitted Actions (note, many permits include more than one action)

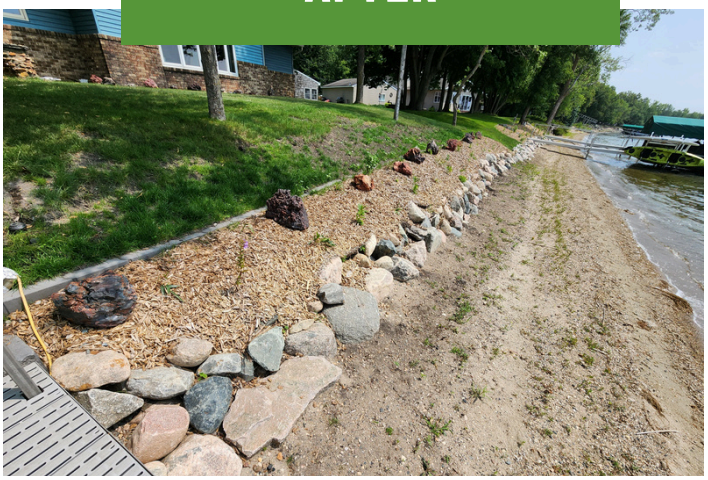
- **9** Permits for riprap - 7 install, 2 repair
- **3** Sand blanket - 2 install, 1 reduce
- **1** retaining wall removed
- **4** shoreline vegetation restorations
- **2** regrade of shoreline
- **1** tree removal and replacement.
- **2** lake access installs

BIG FLOYD LAKE

BEFORE

AFTER





CLIMATE

WINTER - JAN TO MAR

High Temp: **46** degrees F (2/8/2023)
Low Temp: **-24** degrees F (2/2/2023 & 2/3/2023)
Precipitation: **1.69** inches, Snowfall: **40.00** inches.
Days of precipitation greater than 0.5": **1**
Days of precipitation greater than 0.5" 5-yr average: **0.4** (2018-2022)
Drought status: Moderate Drought (D1) to Abnormally Dry (D0)

SPRING - APR TO JUN

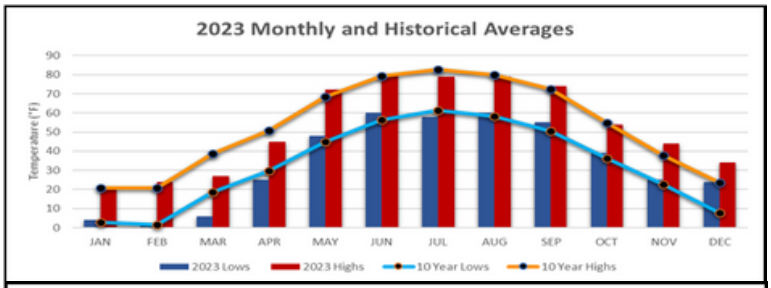
High Temp: **91** degrees F (6/20/2023)
Low Temp: **3** degrees F (4/7/2023)
Precipitation: **5.66** inches, Snowfall: **5.00** inches
Days of precipitation greater than 0.5": **4**
Days of precipitation greater than 0.5" 5-yr average: **6.4** (2018-2022)
Drought status: Abnormally Dry (D0) to Moderate Drought (D1)

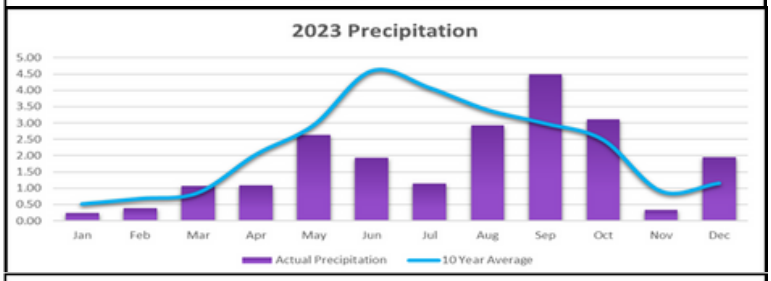
SUMMER - JUL TO SEPT

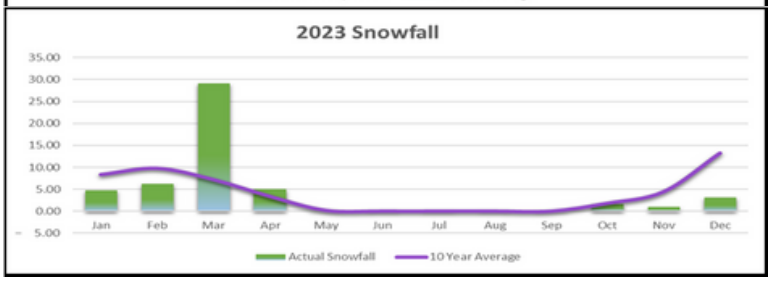
High Temp: **95** degrees F (9/2/2023)
Low Temp: **43** degrees F (9/17/2023)
Precipitation: **8.56** inches, Snowfall: **0.00** inches.
Days of precipitation greater than 0.5": **7**
Days of precipitation greater than 0.5" 5-yr average: **7.8** (2018-2022)
Drought status: Moderate Drought (D1) to Severe Drought (D2)

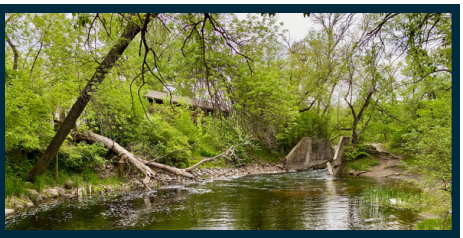
FALL - OCT TO DEC

High Temp: **88** degrees F (10/1/2023)
Low Temp: **2** degrees F (11/27/2023)
Precipitation: **5.41** inches, Snowfall: **5.86** inches.
Days of precipitation greater than 0.5": **1**
Days of precipitation greater than 0.5" 5-yr average: **3.4** (2018-2022)
Drought status: Moderate Drought (D1) to Abnormally Dry (D0)



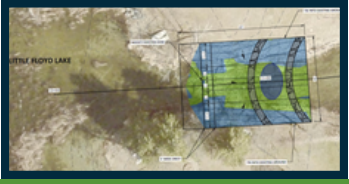






WHAT TO WATCH IN 2024

- **Little Floyd Lake Rock Arch Rapids -** In collaboration with the MN DNR, the current Little Floyd Lake dam will be constructed into a rock arch rapids to improve fish passage.
- **District Rules Revision -** PRWD will be updating and clarifying its Water Management Rules in 2024. Look out for stakeholder meetings in the summer of 2024 to add your input!
- **Willow Street Stormwater Management** - The feasibility study will provide measures to increase phosphorus removal of stormwater runoff to St. Clair Lake.
- **Bucks Mill Dam Modification** - in collaboration with the MN DNR, PRWD will undertake design and construction on the addition of a rock arch fishway to Buck's Mill Dam.



Pelican River watershed district

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