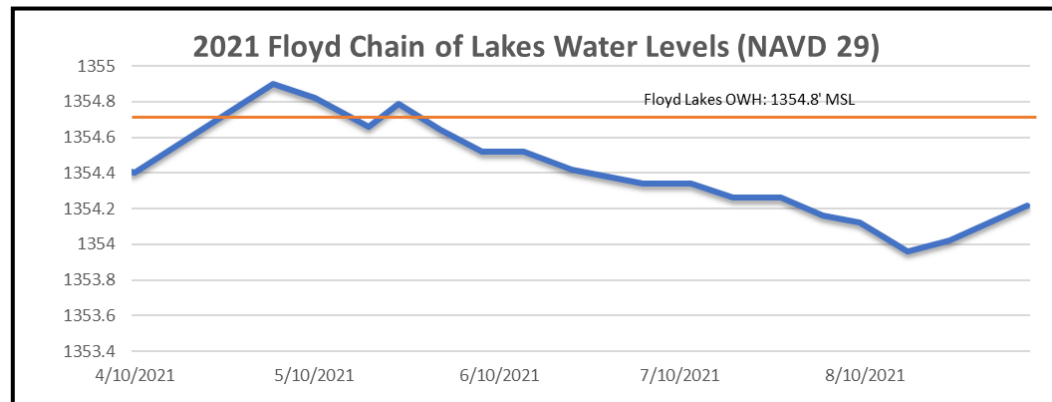


Zooplankton Survey – Floyd Chain of Lakes

District Staff have been involved in a cooperative project with the MN DNR and Concordia College in Moorhead to examine the effect of zebra mussels on the microscopic communities of zooplankton that form the base of the food web. Zebra mussels filter large amounts of water and strip the water column of resources. Through this study, District Staff collect monthly zooplankton samples and preserve them for later analysis. Analysis of these samples requires specialized identification knowledge. Staff from MN DNR and Concordia College will analyze the samples and report to the District once multiple years of population data has been collected. This project is on-going. In 2021 Samples were collected and sent into the MN DNR, however due to staffing issues they have not been analyzed to date (2022).

Water Quantity – Floyd Chain

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' NAVGD 29) by the MN DNR. There is a fixed crest weir (1354.1 NAVGD 29) on the outlet of Little Floyd Lake. Due to severe summer drought conditions water levels were below the OHWL and the dam at Little Floyd outlet was not flowing come mid-August.



District Rules & Permitting

Please check with us before doing any work on your property.

The Watershed District 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. PRWD has a Memorandum of Understanding with both the City of Detroit Lakes and Becker County to oversee permits.

Permit Type	2021 Issued
Shore Impact Zone Alterations (sand blanket, rip rap, vegetation changes)	35
Subdivisions/PUD	2
Stormwater Management	
Commercial	15
Residential	6
Roads, Parking Lot, Bridges, Culverts, Storm Sewer	5

Floyd-Campbell

Water Management Area

Spring 2022



Our Work: The Watershed District continues to move forward in many directions with water quality monitoring, capitol improvement projects, rules and permitting, education and One Watershed One Plan (1W1P) planning.

- ◆ July 2021: A new funding project, Data Collection and Monitoring (DCM-01), was established to better serve the District with water quality monitoring needs.
- ◆ Summer 2021: PRWD staff began actively collaborating with the City of Detroit Lakes, and various individuals and agencies, developing the South Shore Park planting plan, which will include a pollinator area with a handicap accessible path and educational signs, approximately 1 acre in size.
- ◆ Fall 2021: Phase I of the Rice Lake Capitol Improvement Project was completed, and barring any setbacks, our hope is to complete Phase II of the project in 2023.
- ◆ Fall 2021: Staff is collaborating with Becker, Hubbard and Ottertail County COLA groups to host a Minnesota Aquatic Invasive Research (MAISRC) update to be held at M State on June 9, 2022.
- ◆ Spring 2022: District resumed classroom education with local students for the first time since COVID-19 reared its ugly head.
- ◆ 1W1P: Administrator Guetter and Water Resource Coordinator, Kemper, have been involved in all aspects of planning including technical advisory, policy, and landscape stewardship.
- ◆ Grants: District staff continue to work with MPCA to develop the 319 Grant Work Plan for the Campbell Creek area. Grant Agreement documents have been submitted to the Minnesota Department of Public Safety, Homeland Security and Emergency Management for the FEMA Flood Hazard Grant. Grant documents were also completed for the MN DNR and Becker SWCD to help offset the cost of AIS treatments in District lakes.

Water Quality: The Pelican River Watershed District has maintained a comprehensive water quality monitoring program since 1995. The primary goal of the program is to identify areas of decreased and impaired water quality so nutrient reduction efforts can be focused on the locations with the most benefit.

This program maintains an emphasis on tracking phosphorous as it travels through the watershed. Additional water quality metrics including water clarity (secchi depth), chlorophyll-a (CHL-A), total suspended solids (TSS), Dissolved oxygen (DO), etc. are captured at sample points to maintain a robust data set.

In 2021, PRWD staff conducted water quality sampling on 14 lakes and 17 locations on 5 different stream systems. Stream bank assessments were performed in partnership with the Minnesota Department of Natural Resources at several locations on Campbell Creek. Diagnostic sampling of E. coli on the Pelican River between State Highway 34 and Detroit Lake occurred to locate the source of the pollutant.

The water quality was above average on lakes across the District, which may be attributed to zebra mussels, improved stormwater management, and shoreline restoration. Zooplankton sampling continued in 2021 on various District lakes, including Sallie and Melissa, with samples being sent into the MN DNR for analysis.

Two college interns are hired each summer to collect water samples from area lakes and streams, conduct shoreline and aquatic plant surveys, and update monitoring databases.

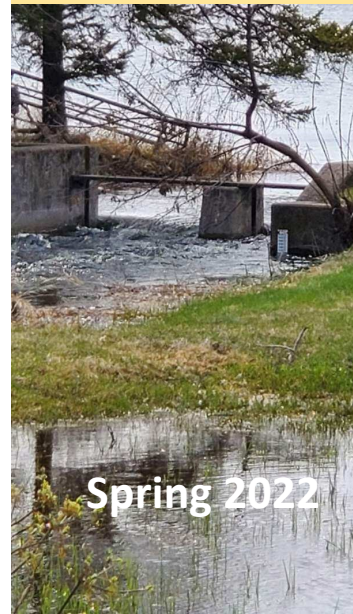
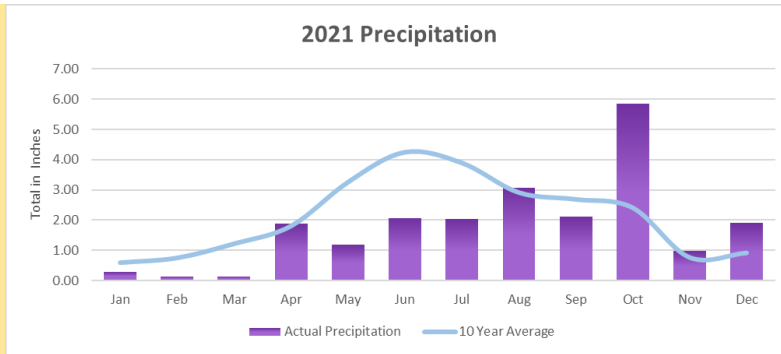


2021 Weather

Weather

The year 2021 will be remembered for widespread summer drought, the June Heat Wave, the two-week Arctic Cold Wave of February, the record number of air quality alerts during the summer (mostly due to smoke from wildfires in the west and in Canada), and the tornadoes in December.

2021 will go down as the 5th warmest year in state history. On a statewide basis, only one month was cooler than normal. February was 7 to 9°F below normal. In contrast June was 5°F warmer than normal, making it the 3rd warmest June in state history.



Precipitation was less than normal in 2021, but only the 31st driest year in state history. May, June, and July were all drier than normal, putting most of the state landscape into drought. Statewide average precipitation for 2021 was under 24 inches, marking the driest full year since 2006.

Precipitation finally came during the month of October with 5.84" of much needed rain, which was well above the historical average of 2.41". To end the year, we received 25.45" of snow. This was above the historical average of 13.29".

The photo on the left was taken during the spring of 2022. Record high waters were recorded on nearly all of the District lakes due to snow melt and heavy spring rains.

Water Quality - Big Floyd Lake

In 2021, Big Floyd's average Total Phosphorus (TP) was 0.013 mg/L, slightly better than the 20-year average of 0.015 mg/L. However, CHL-A (algae) was significantly lower at 3.91 ppb (20-year - 9.47 ppb) and water clarity (secchi depths) averaged 14.3 feet, almost 3 feet better than the 20-year average of 11.7 feet. The drought weather conditions had a positive water clarity impact due to the lack of nutrients entering the lake from rainfall events. Even after the mid-August water "turnover" event, water quality remained very good, with no algae blooms observed in late August and September.

Water Management Area	Lake	2021 Average			Historical Averages (2001-2020)			MNPCA Lake Standards		
		TP (ppb)	Chl-a (ppb)	Secchi (feet)	TP (ppb)	Chl-a (ppb)	Secchi (feet)	TP (ppb)	Chl-a (ppb)	Secchi (feet)
Floyd/Campbell	Big Floyd	13	3.91	14	15	5.24	12	<40	<14	>4.6
	North Floyd	20	5.29	16	31	13.98	8	<40	<14	>4.6
	Little Floyd	16	4.58	12	24	8.91	9	<40	<14	>4.6

Water Quality - Little Floyd Lake

Little Floyd Lake experienced an above average" water quality year. Average TP of 0.016 mg/L, a marked improvement over the 20-year average of 0.023 mg/L. The highest TP reading was in September after the North Floyd fall water turnover event. At 0.021 mg/L. CHL-A at 4.58 ppb, almost one-half the 20-year average of 8.58 ppb; water clarity reading (secchi) averaged 15.9 feet, 7.3 ft better than the 9.2 feet 20-year average.

Water Quality - North Floyd Lake

North Floyd Lake also had better than average water quality in 2021. The average TP was 0.020 mg/L, well below the 20-year average of 0.031 mg/L. Most TP results were well below 20 mg/L throughout the summer, but after the mid-August water "turnover" event, the TP readings were much higher, 22mg/L on August 31, up to 47mg/L on September 22nd. CHL-A (algae) levels were also low at 5.29 ppb, more than one-half the 20-year average of 13.26 ppb. The highest CHL-A measurement was also after the fall water turnover event with CHL-A reading at 15.1 ppb on September 22. Water clarity readings were better than average with secchi reading depths averaging 15.9 feet, almost 7-feet better than the 20-year average of 8.60 feet, with the worst water clarity reading occurring in September at 9-feet. These readings demonstrate the direct correlation of the negative impact Campbell Creek has on North Floyd's water quality. The lack of rainfall (summer drought conditions) prevented the normal nutrient loading discharges from Campbell Creek.

Shoreline Survey – Little Floyd Lake, 89 Parcels

- ◆ Little Floyd Lake's shoreline is:
 - 2% natural, 2 parcels (2021) down from 12 parcels (2016).
 - 2% minimally altered, 2 parcels (2021) down from 18 parcels (2016).
 - 18% moderately altered, 16 parcels (2021) down from 18 parcels (2016).
 - 78% greatly altered, 69 parcels (2021) up from 37 parcels (2016).
- ◆ 33 parcels have riprap along the shoreline as follows:
 - 22 of the parcels have riprap 100% along the shoreline;
 - 4 parcels have 75% - 99% rip-rap along the shoreline;
 - 4 parcels cover 50% -75% of shoreline with riprap;
 - 2 parcels with 25% - 49% shoreline in riprap;
 - and 1 parcel has less than 25% of shoreline in riprap.
- ◆ Sand blankets are on a total of 12 parcels:
 - 1 parcel has 100%, a sand blanket along the entire length of shoreline;
 - 2 parcels have 75% -99% of sand blanket along the shoreline;
 - 2 parcels with 50%-74% of sand blanket along the shoreline;
 - with the remaining 7 parcels covering 50% or less of their shoreline with sand blankets.
- ◆ There are 13 parcels with retaining walls;
 - 8 parcels have retaining walls along 100% of the shoreline
 - the remaining 5 parcels covering 75% or less of the shoreline area.

Shoreline Survey – North Floyd Lake, 58 Parcels

- ◆ North Floyd Lake's shoreline is:
 - 40% natural or 23 parcels (2021), down from 51 parcels (2016).
 - 24% minimally altered or 14 parcels (2021), up from 8 parcels (2016).
 - 17% moderately altered or 10 parcels (2021), up from 4 parcels (2016).
 - 19% greatly altered or 11 parcels (2021) up from 4 parcels (2016).
- ◆ 14 parcels have riprap along the shoreline as follows:
 - 5 of the parcels have riprap 100% along the shoreline;
 - 1 parcel has 75% - 99% rip-rap along the shoreline;
 - 2 parcels cover 50% -75% of shoreline with riprap;
 - 1 parcel with 25% - 49% shoreline in rip-rap;
 - and 5 parcels have less than 25% of shoreline in rip-rap.
- ◆ Sand blankets are on a total of 5 parcels:
 - 1 parcel has a sand blanket along the entire length of shoreline;
 - with the remaining 4 parcels covering 75% or less of their shoreline with sand blankets.

Shoreline Survey- Big Floyd Lake, 304 Parcels

Big Floyd Lake's shoreline is 1% natural, 1% minimally altered, 9% moderately altered, and 89% greatly altered.

- ◆ 131 parcels have riprap along the shoreline as follows:
 - 99 of the parcels have riprap 100% along the shoreline;
 - 11 parcels have 75% - 99% rip-rap along the shoreline;
 - 12 parcels cover 50% -75% of shoreline with rip-rap;
 - 3 parcels with 25% - 49% shoreline in rip-rap;
 - and 6 parcels have less than 25% of shoreline in rip-rap.
- ◆ Sand blankets are on a total of 162 parcels:
 - 140 parcels have a sand blanket along the entire length of shoreline;
 - 22 parcels have a sand blanket covering 75% or less of their shoreline.
- ◆ There are 81 parcels with retaining walls;
 - 63 parcels have >75% of the shoreline
 - 18 parcels have less than 50% of the shoreline area.