

Cochran Lake

Aquatic Plant Committee

January, 2022

Overview and Goals

For the past several years, Cochran Lake has experienced an increase volume in aquatic plants. An adhoc committee was formed in Fall, 2021 to investigate this issue. The committee's goals were:

- Determine the cause(s) of the increase in aquatic plants
- Determine what legally could be done to reduce the volume of aquatic plants.

Committee Plan

The committee plan was 2 steps. First, the committee would collect and review all data that has been collected for the lake and prepare a summary of the data. Second, the committee would contact and meet with "experts" to review the data and determine cause(s) and legal steps to reduce aquatic plant volume.

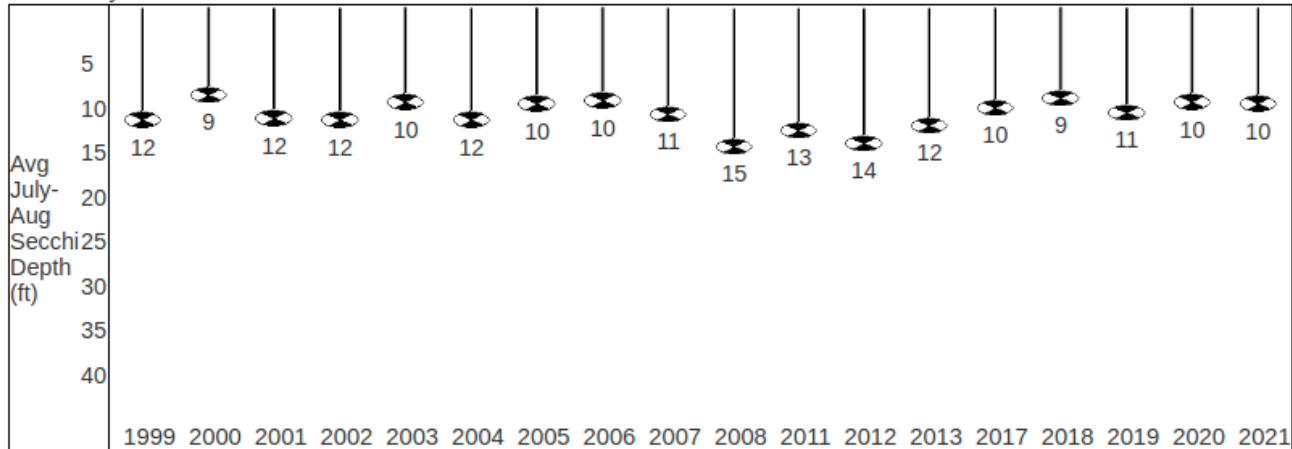
Cochran Lake Overview

Cochran Lake is a 113 acre seepage lake located in the Northeast corner of Price County. The deepest hole of the lake is approximately 16 feet. Up until 1994, the lake was privately owned by one person. Since then, the lake shore was developed such that 50 owners share the lake property with approximately 40 homes built on site. All except 2 homes were built after 1994 and construction followed current lake development guidelines. The lake is controlled by a Lake District consisting of lake owners. The land owners take a very positive approach to preserving the quality of the lake. The lake joined the CLMN data collection program in July, 2017. The following is a summary of 2021 and previous year recordings.

Cochran Lake

Price County

Waterbody Number: 2264000



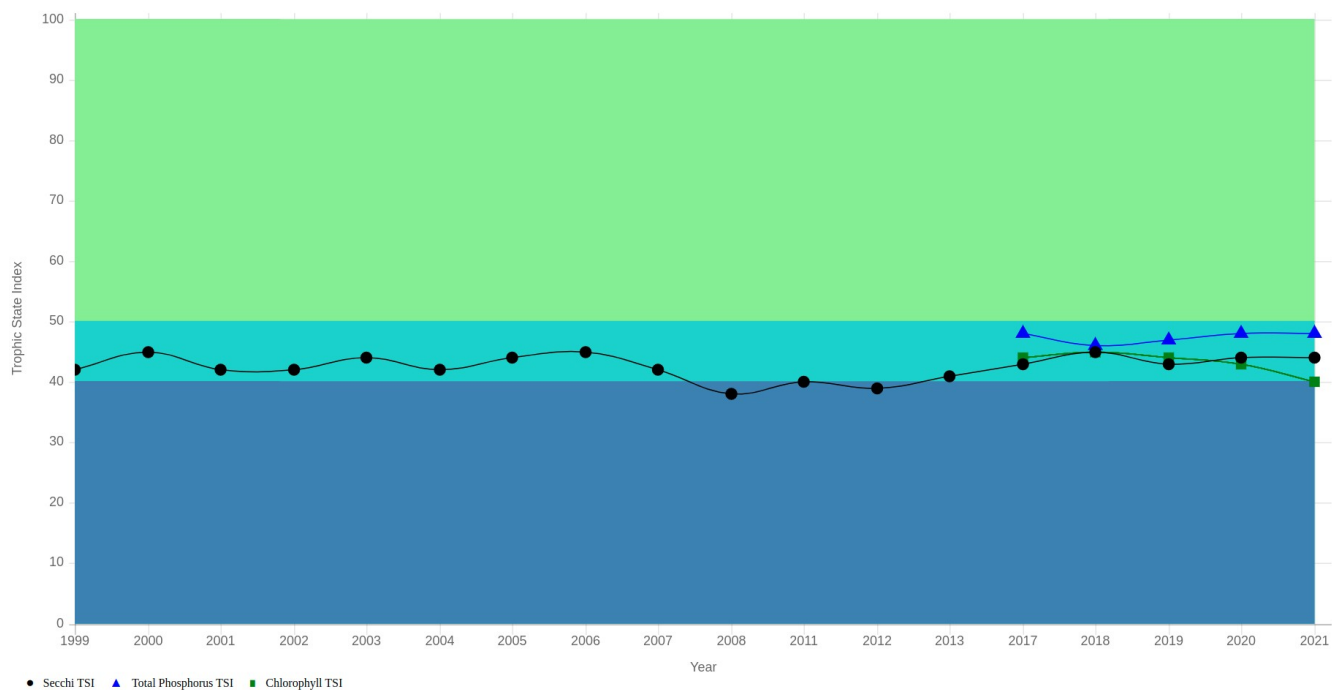
Past secchi averages in feet (July and August only).

The average summer (July-Aug) secchi disk reading for Cochran Lake - Deep Hole (Price County, WBIC: 2264000) was 9.94 feet. The average for the Northwest Georegion was 9 feet. Typically the summer (July-Aug) water was reported as CLEAR and GREEN. The green normally suggests a lake impacted by algae. However, since recent summer chlorophyll readings average less than 9 µg/l, this lake may have been impacted by another factor, such as suspended marl. An example of this is Clark Lake in Door County.

Chemistry data was collected on Cochran Lake - Deep Hole. The average summer Chlorophyll was 1.9 µg/l (compared to a Northwest Georegion summer average of 13.2 µg/l). The summer Total Phosphorus average was 13.8 µg/l. Lakes that have more than 20 µg/l and impoundments that have more than 30 µg/l of total phosphorus may experience noticeable algae blooms.

The overall Trophic State Index (based on chlorophyll) for Cochran Lake - Deep Hole was 40. The TSI suggests that Cochran Lake - Deep Hole was oligotrophic. This TSI suggests deeper lakes still oligotrophic, but bottom water of some shallower lakes will become oxygen-depleted during the summer.

Trophic State Index



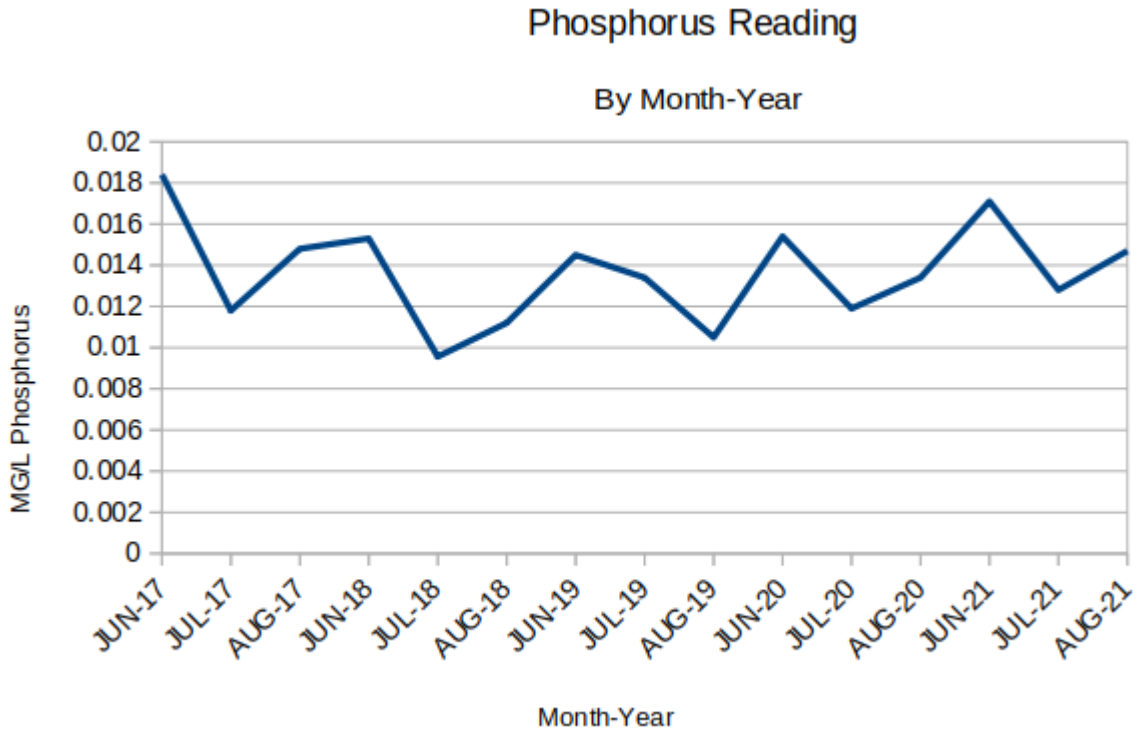
Cochran Lake Data

The following is a more detailed view of the Cochran Lake data.

Phosphorus

As part of the CLMN program, phosphorus samples have been taken since July 2017. The following are the recordings taken in June, July, and August from 2017 to 2021.

Month-Year	Result Value	Result Units
JUN-17	0.0184	MG/L
JUL-17	0.0118	MG/L
AUG-17	0.0148	MG/L
JUN-18	0.0153	MG/L
JUL-18	0.00956	MG/L
AUG-18	0.0112	MG/L
JUN-19	0.0145	MG/L
JUL-19	0.0134	MG/L
AUG-19	0.0105	MG/L
JUN-20	0.0154	MG/L
JUL-20	0.0119	MG/L
AUG-20	0.0134	MG/L
JUN-21	0.0171	MG/L
JUL-21	0.0128	MG/L
AUG-21	0.0147	MG/L



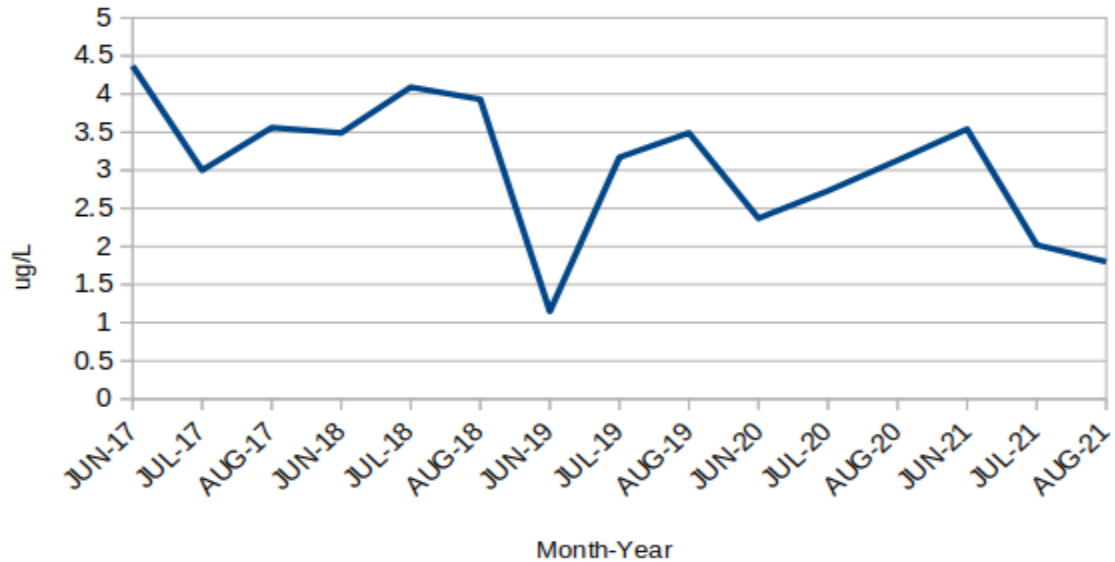
Chlorophyll

As part of the CLMN program, chlorophyll samples have been taken since July 2017. The following are the recordings taken in June, July, and August from 2017 to 2021.

Month-Year	Result Value	Result Units
JUN-17	4.37	ug/L
JUL-17	3	ug/L
AUG-17	3.56	ug/L
JUN-18	3.49	ug/L
JUL-18	4.09	ug/L
AUG-18	3.93	ug/L
JUN-19	1.15	ug/L
JUL-19	3.17	ug/L
AUG-19	3.49	ug/L
JUN-20	2.37	ug/L
JUL-20	2.73	ug/L
AUG-20	3.13	ug/L
JUN-21	3.54	ug/L
JUL-21	2.02	ug/L
AUG-21	1.8	ug/L

Chlorophyll Readings

By Month-Year



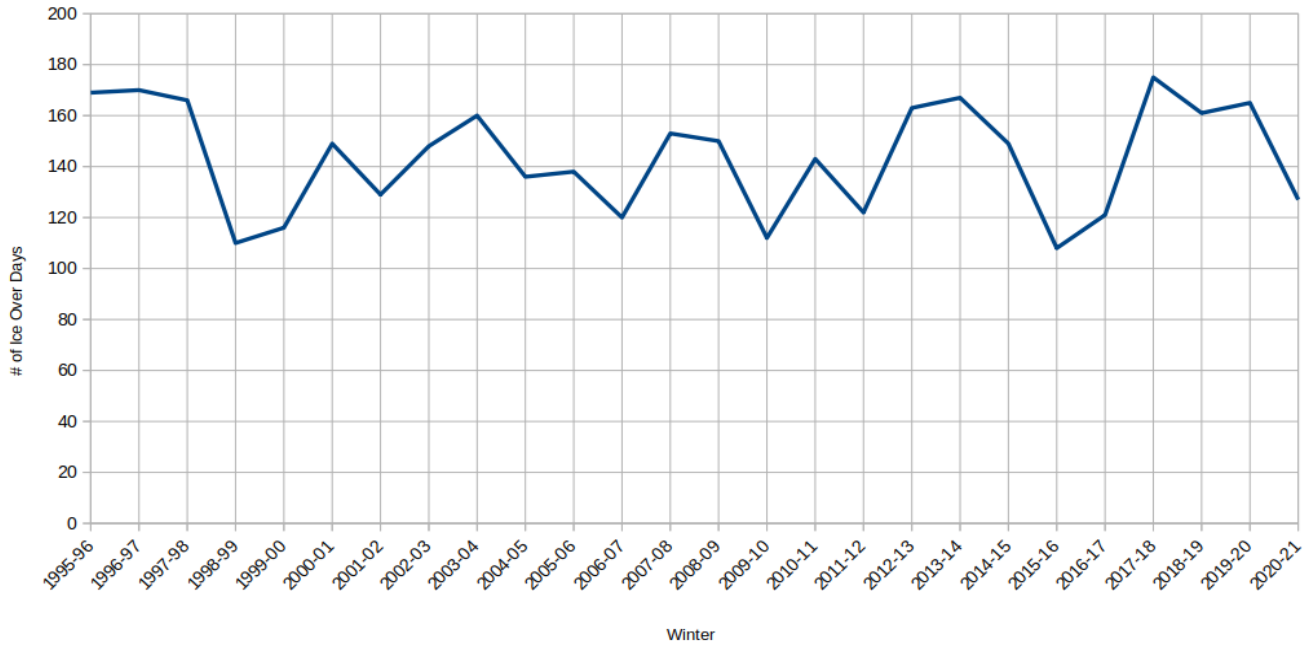
Ice Over/Ice Out

As part of the original lake data collection program, Ice Over and Ice Out dates have been recorded since the winter of 1995-96.

Winter Of	Ice Days	Ice Over	Ice Out	Ice Days
1995-96	169	11/18/22	05/05/22	169
1996-97	170	11/12/22	05/01/22	170
1997-98	166	11/16/22	04/27/22	166
1998-99	110	12/21/22	04/10/22	110
1999-00	116	11/30/22	03/25/22	116
2000-01	149	11/21/22	04/19/22	149
2001-02	129	12/09/22	04/17/22	129
2002-03	148	11/18/22	04/15/22	148
2003-04	160	11/08/22	04/16/22	160
2004-05	136	11/25/22	04/10/22	136
2005-06	138	11/24/22	04/11/22	138
2006-07	120	12/01/22	03/31 04/12	120
2007-08	153	11/22/22	04/24/22	153
2008-09	150	11/18/22	04/17/22	150
2009-10	112	12/05/22	03/27/22	112
2010-11	143	11/24/22	04/17/22	143
2011-12	122	11/18/22	03/19/22	122
2012-13	163	11/26/22	05/07/22	163
2013-14	167	11/19/22	05/05/22	167
2014-15	149	11/13/22	04/11/22	149
2015-16	108	12/28/22	04/14/22	108
2016-17	121	12/08/22	04/08/22	121
2017-18	175	11/10/22	05/03/22	175
2018-19	161	11/14/22	04/24/22	161
2019-20	165	11/06/22	04/18/22	165
2020-21	127	11/22/22	03/30/22	127

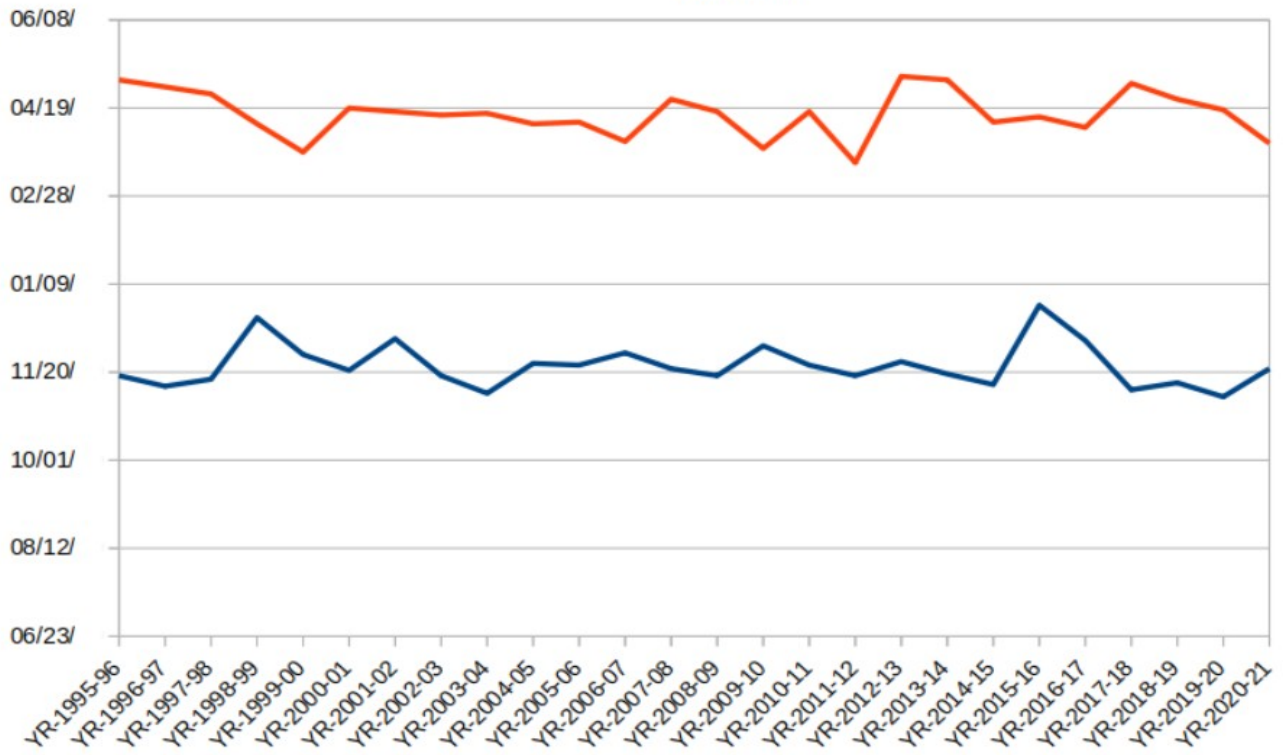
of Ice Over Days

By Winter



Ice Over/Ice Out

By Winter



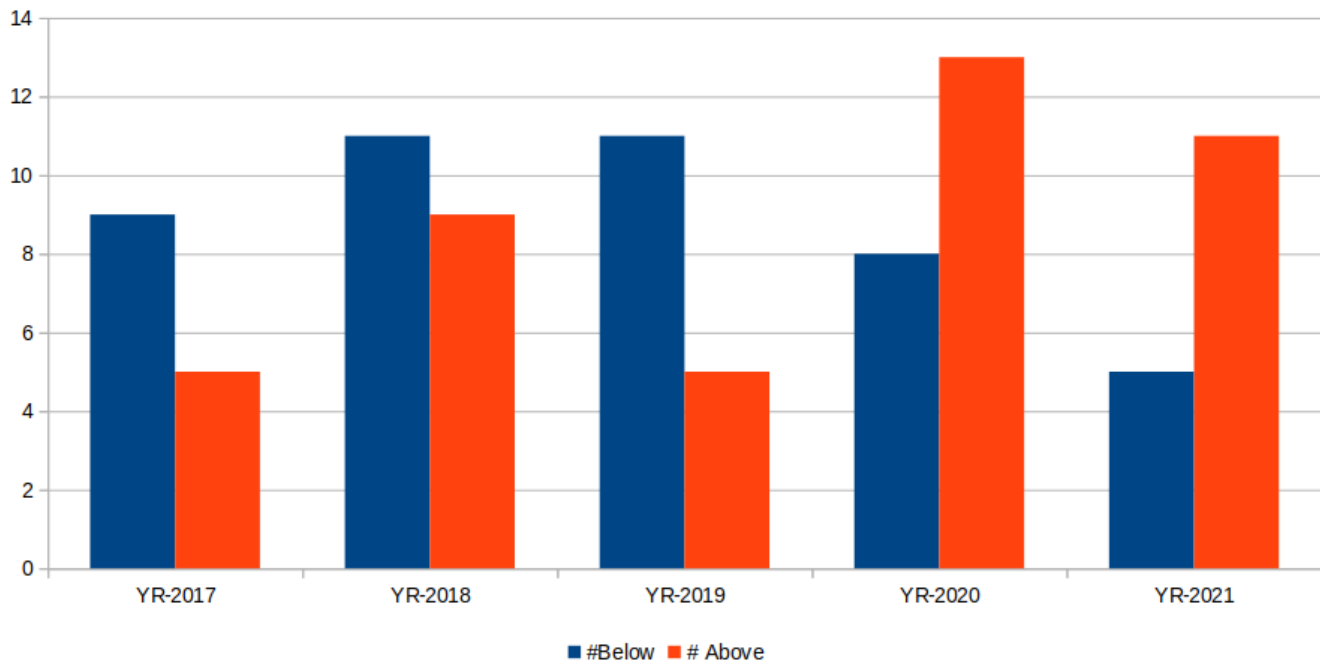
Weather Journal

As part of the CLMN program, a Weather Journal has been taken since July 2017. The following are a count of the number of weeks either above or below normal temperatures.

Year	#Below	# Above
YR-2017	9	5
YR-2018	11	9
YR-2019	11	5
YR-2020	8	13
YR-2021	5	11

Weeks Below/Above AVG Temperature

By Year



Summary of Interview with Scott Van Egeren 02/03/2022

On 2/3/2022, I discussed our Aquatic Plant issue with Scott Van Egeren, DNR Water Resources Management Specialist. First, we reviewed the Cochran Lake Aquatic Plant Committee Report dated January, 2022. Second, we discussed legal ways to reduce aquatic plant growth. The following is a summary of the discussion.

Within the Cochran Lake Aquatic Plant Committee Report, we reviewed the Phosphorous and Chlorophyll readings. Scott commented that Phosphorous readings are an indicator of aquatic plant problems. Our lake Phosphorous readings were quite low and showed no concerns on his part. The Chlorophyll readings are an indicator of water clarity and again our lake showed very low readings that also caused no concern to him.

Next we reviewed the weather related data including Ice Over and # Weeks Above/Below Average Temperature. He commented that our increase in Aquatic Plants was probably caused by the low number of days of Ice Over in 2020-2021. This low number of days was also accompanied by less snow coverage for that winter period. Ice Over days with a snow cover prevents sunlight from reaching aquatic plants and thus limits growth. He also cited the warmer temperatures during 2020 and 2021 as another probable cause.

Scott then mentioned that the Great Lakes Water Basin level is decreasing. This is consistent with Cochran lake level readings in 2021. From Ice Out in Spring to Ice Over in Fall, the lake level dropped over 4 inches.

In summary, Scott believed our increase in aquatic plants was due to weather related :

- Fewer days of Ice Over
- Less snow coverage in 2020-2021
- Warmer temperatures in 2020 and 2021
- Lower lake level.

He did not believe it was caused by an increase in phosphorous.

Scott brought up one additional factor about our lake. With a lake as shallow as ours there is very little difference in depth between our thermal level and the bottom of the lake. Therefore, when organic materials like aquatic plants and algae die and rot on the bottom of the lake, the chemicals that are created mix readily with the rest of the lake and are not isolated like on a deeper lake.

Next we discussed removal of Aquatic Plants. The DNR recognizes 3 ways to remove aquatic plants. They are:

- Removal by manual means like a rake, cutter, or by hand
- Removal by mechanical means like a harvester machine
- Removal by chemicals.

Lake property owners may remove aquatic plants to create a 30' wide corridor from shore. The removal process must be done by manual means and does not require a permit from the DNR. A popular aquatic plant cutter is the **Weed Razer**. It is available online but does require caution when used.

Removal of aquatic plants by mechanical means or chemicals requires a DNR permit issued to the Lake District. The DNR would review any permit request by multiple departments including Fishery and Water Quality. The permit request would have to be part of a Lake Restoration Plan developed by the Lake District. It is illegal for individuals to use mechanical or chemical means to remove aquatic plants and individuals doing so would be subject to fines. If a chemical treatment was approved by the DNR, signage would have to be posted when the chemicals were added to the lake.

Scott commented about commercially available chemicals. They do not impact the roots of aquatic plants but only temporarily injure the leaves. The chemicals are also distributed to the remainder of the lake within hours of their release even if only applied in a small area.

For future inquiries about Aquatic Plants, Scott recommended contacting Ty Krajewski or Kevin Gauthier located in the Woodruff office because they are assigned to Price County.

Lastly, Scott sent me a spreadsheet containing the results of the Aquatic Plant Survey done in 2019 by Mark Luoma and Rich Halfpap. I have included it with this report.