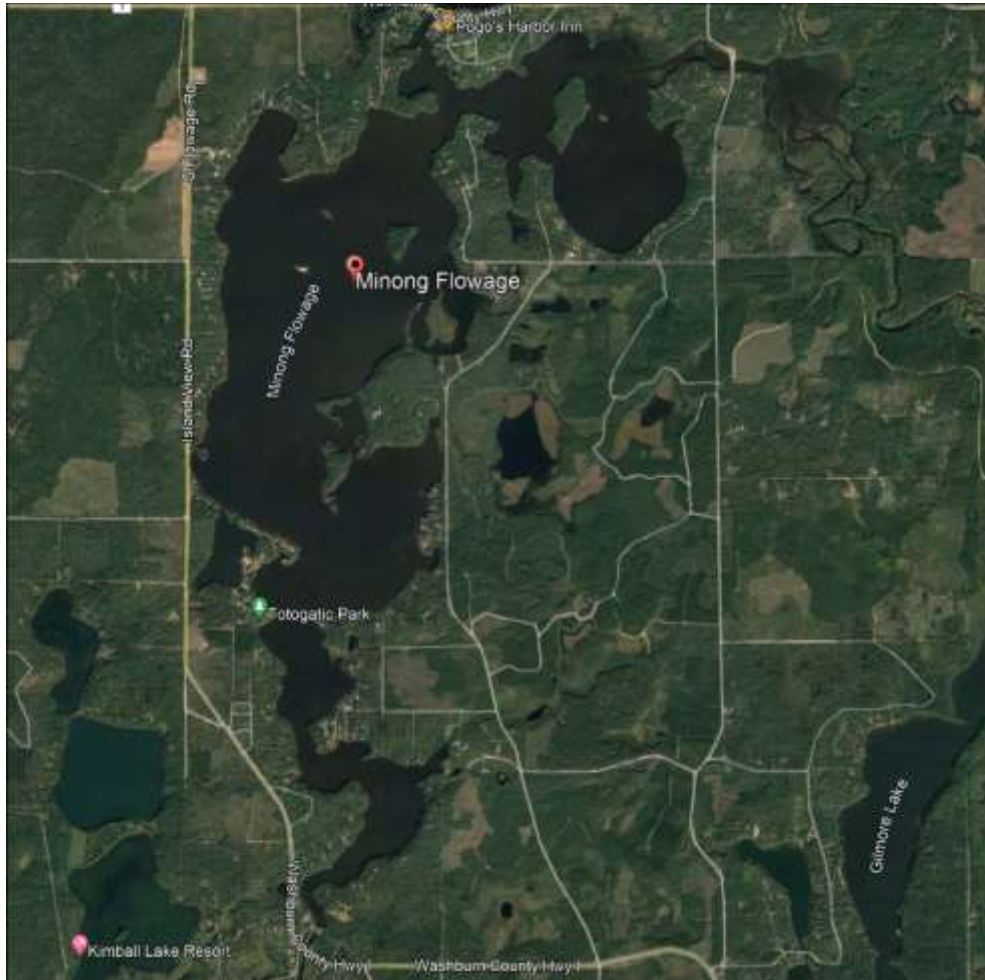


# MINONG FLOWAGE WASHBURN COUNTY

---

## 2022 MANAGEMENT SUMMARY REPORT WBIC: 2692900

Prepared by: Dave Blumer, Lake Educator



MINONG FLOWAGE ASSOCIATION

## Table of Contents

INTRODUCTION.....	4
2021-22 WINTER DRAWDOWN INFORMATION AND IMPLEMENTATION - RECAP.....	4
END OF THE DRAWDOWN – FILLING UP THE MINONG FLOWAGE.....	5
2022 EWM MANAGEMENT PLANNING .....	5
2022 EWM SURVEYS.....	6
CONSTITUENT AND STAKEHOLDER COMMUNICATION.....	9
AIS PREVENTION AND MONITORING.....	10
WILD RICE MONITORING .....	13
LAKE LEVEL MONITORING .....	14
WATER QUALITY MONITORING.....	17
ISLAND PROTECTION AND HEALTHY LAKES SHORELAND IMPROVEMENT PROMOTION.....	18
AQUATIC PLANT MANAGEMENT PLAN.....	20
2023 AIS PRELIMINARY MANAGEMENT PLANNING .....	20

## Figures

Figure 1: June 27, 2022 EWM meandering bed mapping survey - LEAPS.....	6
Figure 2: September 24, 2022 meandering EWM bed mapping survey – ERS (red polygons) Black hash polygons – June 27 LEAPS survey results) .....	7
Figure 3: 2021 bed mapping results (tan polygons) and 2022 bed mapping results (red polygons) .....	8
Figure 4: 2021 bed mapping (tan), 2022 bed mapping (red), and water <5-ft deep (black points) .....	9
Figure 5: CBCW numbers from the WDNR landing on the Minong Flowage .....	11
Figure 6: CBCW numbers from the public landing at the Washburn County Campground .....	12
Figure 7: Swift Nature Camp students and counselors helping with 2022 purple loosestrife beetle release on the Flowage.....	13
Figure 8: 2022 aerial wild rice survey results. Left – Serenity Bay, Right – East Basin past Smith’s Bridge (GLIFWC).....	14
Figure 9: Site locations for the pressure transducers recording lake level changes .....	15
Figure 10: Lake level changes in Cranberry Lake .....	15
Figure 11: Lake level changes at Pogos.....	16
Figure 12: Lake level changes at Smith’s Bridge.....	16
Figure 13: Lake level changes at the Dam.....	16
Figure 14: Photos from the Central Basin – August 2022 – photo credit Ron and Jeanne Brown.....	17
Figure 15: Historic TSI values from the Central Basin of the Minong Flowage - CLMN.....	17

Figure 16: Historic TSI values from the Deep Hole of the Minong Flowage - CLMN ..... 18  
Figure 17: Sand Island “fabricated slip-n-slide” over the 4<sup>th</sup> of July holiday 2022 – photo credit – Steve  
Johnson ..... 19

---

## INTRODUCTION

---

This report discusses lake management activities completed by the Minong Flowage Association (MFA) and Lake Education and Planning Services (LEAPS) throughout 2022. A majority of these activities were completed as a part of a WI Department of Natural Resources (WDNR) Aquatic Invasive Species (AIS) Large-scale Population Control Grant (ACEI 26521) that was awarded to the MFA in early 2021. The main goal of the grant funded project is to plan and implement a winter drawdown of the Minong Flowage to control Eurasian watermilfoil (EWM). This project extends through December 31, 2023. The year 2022 was the second year of implementation, high-lighted by the completion of a 5-ft winter drawdown between November 2021 and May 2022. The first Stakeholders Discussion and the first steps toward updating the last Aquatic Plant Management (APM) Plan for the Minong Flowage also high-lighted 2022. The following actions were completed by LEAPS, private contractors, and/or the MFA in relation to this grant funded project.

- Winter drawdown information and implementation
- End of drawdown – fill up
- 2022 EWM management planning
- 2022 EWM surveys
- Constituent and stakeholders communication
- AIS monitoring and prevention
- Wild rice Monitoring
- Water level monitoring (EIS)
- Water quality monitoring
- Island and shoreland protection
- Aquatic Plant Management Plan
- 2023 AIS/EWM management planning

---

## 2021-22 WINTER DRAWDOWN INFORMATION AND IMPLEMENTATION - RECAP

---

The year 2021 saw planning efforts to finalize and then implement a winter drawdown over the 2021-22 winter season. Two documents, first developed when attempting to implement a winter drawdown in 2018, were updated in 2021. Both the “Frequently Asked Questions” document and the “2021-22 Winter Drawdown Plan” were updated by LEAPS with input from the MFA, WDNR, Renewable World Energies (RWE), and other stakeholders. These documents were shared with the constituency, general public, and stakeholders. They are available on the MFA website as well.

With a WDNR permit in hand and the cooperation of Washburn County and RWE, the drawdown was implemented starting on September 20, 2021 and reached the 5-ft goal in early November 2021. As of March 1, 2022 the water level remained at 5-ft below normal elevation. Updates were sent regularly to the MFA Board, Stakeholders, and LEAPS. The following is a bullet summary of those updates.

3/1/2022 – MFA Rep attends the Douglas County Surface Waters Meeting

3/20/2022 – Update on conditions and expected results from the drawdown shared with stakeholders.

3/20/2022 – During the weeks a spring rain event and issues at the dam (inoperable mud gate) causes water levels to increase 2.5-ft. RWE was able to resolve the issues and began lowering the water level 6-12 inches daily.

3/26/2022 – Steve Schieffer (Ecological Integrity Services and Cranberry Lake resident) shares information and thoughts about drawdown impacts to Cranberry Lake.

4/24/2022 – Official Ice Out on the Flowage, refill begins in earnest.

5/6/2022 – Minong Flowage reaches full pool, drawdown is officially complete.

6/7/2022 – Report of some EWM fragments floating around and woody debris washed up on some shorelines due to high water levels.

6/27/2022 – The 1<sup>st</sup> official survey of the Minong Flowage was completed by LEAPS. Way too much EWM was found!

7/3/2022 – Photo taken of a large slip-n-slide set up on Sand Island – total disregard for protection efforts.

7/7/2022 – Missing water level transducer found.

9/9/2022 – EIS shares point-intercept aquatic plant survey and EWM survey results from Cranberry Lake in 2021 & 2022. EIS shares water level monitoring data from transducer data in place during the drawdown.

9/24/2022 – Official fall EWM bed mapping survey on the Minong Flowage completed by ERS. EWM mostly gone in water <5-ft deep, but thick and spreading in deeper water.

10/13/2022 – GLIFWC shares 2022 wild rice aerial survey results.

10/27/2022 – Stakeholder Discussion held at the WDNR office in Spooner.

12/19/2022 – MFA commits to presenting their “story” during the 2023 NW Lakes Conference in June.

---

## **END OF THE DRAWDOWN – FILLING UP THE MINONG FLOWAGE**

---

As shown, the drawdown and refill was officially completed as of May 6, 2022, only 12 days after the official ice out date of April 24, 2022. There were only a couple minor issues with the refill. In mid-March a large rain event caused the water level in the Flowage to rise up to 2.5 ft above the official drawdown level. This happened at a time when there was still a lot of ice in the Flowage. The problem was exacerbated by a mechanical issue with the mudgate of the dam, delaying how fast RWE could open gates and pass more water through. There were a couple of comments shared with the MFA about debris in the water and washing up on shore. There was even a report of a minor fishkill, but this could not be substantiated.

RWE sent invoices through Washburn County for “lost power generation” during the drawdown. The final tally of the expense for lost power generation was \$28,588.70, only 71% of what was included in the grant to cover that cost (\$40,000.00).

---

## **2022 EWM MANAGEMENT PLANNING**

---

No management of EWM was expected to be completed in 2022. Instead, 2022 served as an evaluation year as it pertains to the results of the winter drawdown.

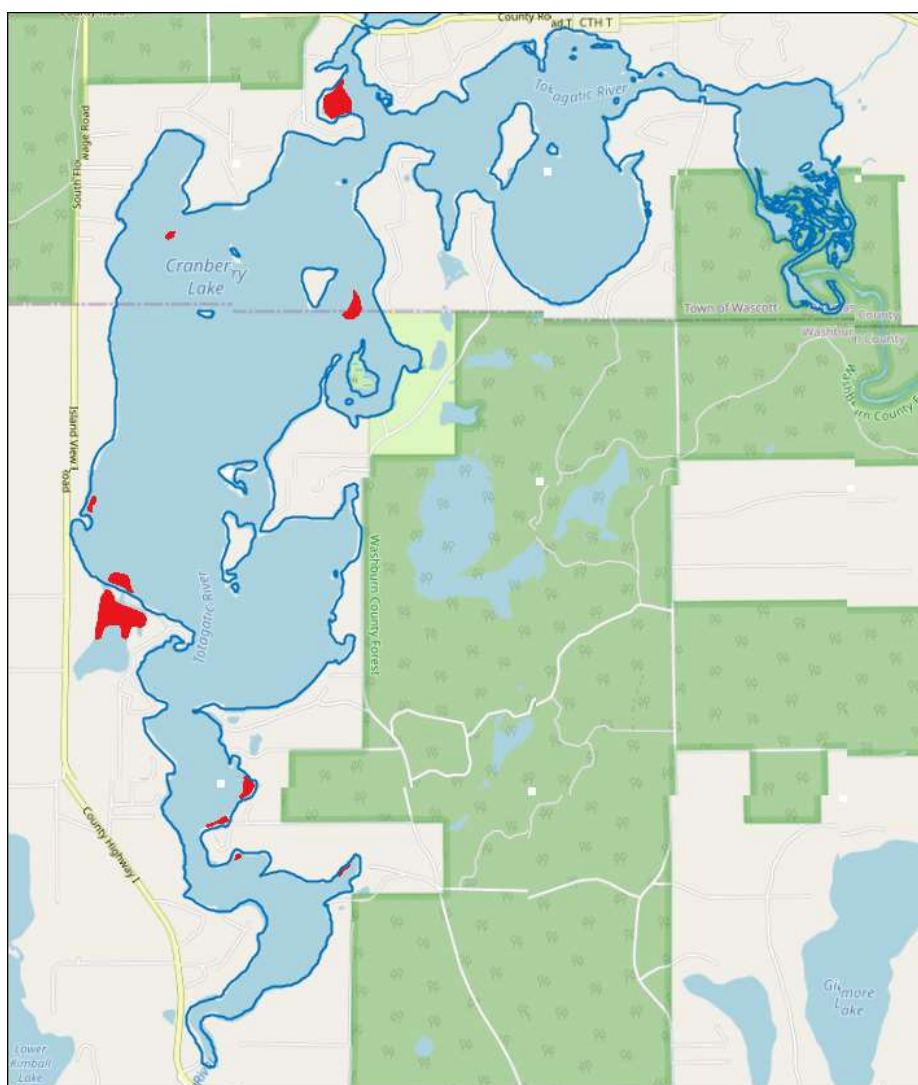
---

## 2022 EWM SURVEYS

---

In early June there were reports of EWM fragments moving around in the Flowage. This led to the first summer meandering survey to evaluate the effectiveness of the winter drawdown. On June 27, 2022 LEAPS completed the first EWM survey. The meandering survey began at the WDNR landing on the east side of the Flowage and moved clockwise around the lake. After several hours on the lake LEAPS made it all the way to the bridge under Cty Hwy T. At that point the LEAPS surveyor headed down the east shore of the Flowage. He did not have the time to get into the North Basin, Serenity Bay, or the East Basin past Smith's Bridge, primarily due to finding a lot more EWM than expected.

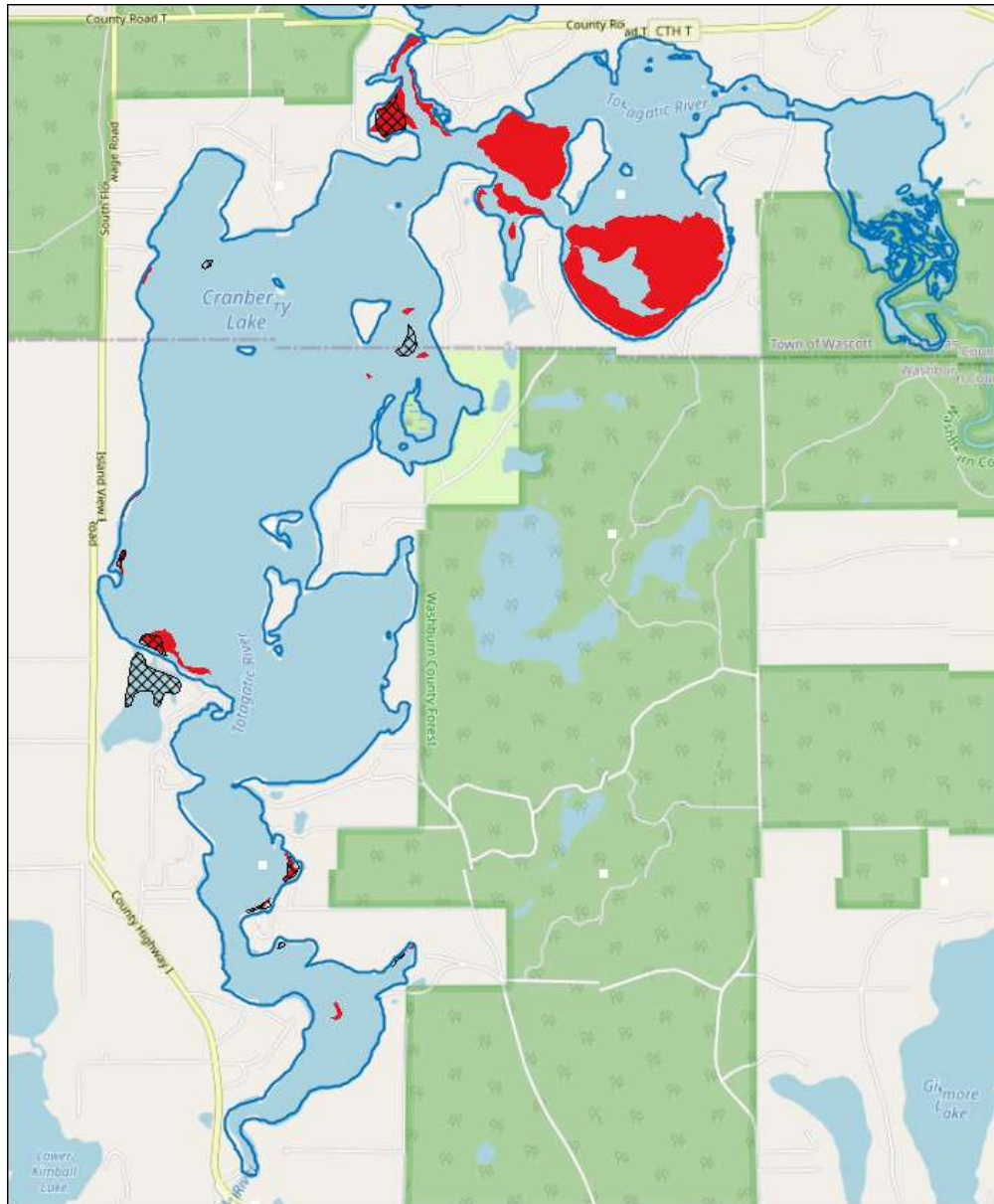
The LEAPS survey identified 10 beds of dense growth EWM totaling more than 20 acres, mostly in water deeper than 5-ft (Figure 1). This was a major disappointment and as mentioned did not even include what is usually the three worst areas for EWM. The good news was that there was almost no EWM in water <5-ft deep, strongly suggesting that the 5-ft winter drawdown effectively controlled EWM in shallow water, but not in deeper water.



**Figure 1: June 27, 2022 EWM meandering bed mapping survey - LEAPS**

Endangered Resource Services completed a whole-lake, meandering survey on September 24, 2022. The ERS survey basically found the same thing that LEAPS did in late June. EWM was under control in water <5-ft, but growing aggressively in water deeper than that. In total, ERS mapped 19 beds totaling 116.9 acres. Nearly all of the areas mapped in June had expanded, and the North Basin and Serenity Bay had a lot of EWM. EWM was also found

in the East Basin past Smith’s Bridge, but it was not considered a “bed” at the time of the survey. This survey showed a reduction in the total acreage of EWM in the 2021 survey of 44% (89.61 acres). The 2021 fall bed mapping survey identified 205.7 acres (Figure 3). All of the reduction was seen in areas of the Flowage that had water depths <5-ft (Figure 4).



**Figure 2: September 24, 2022 meandering EWM bed mapping survey – ERS (red polygons) Black hash polygons – June 27 LEAPS survey results)**



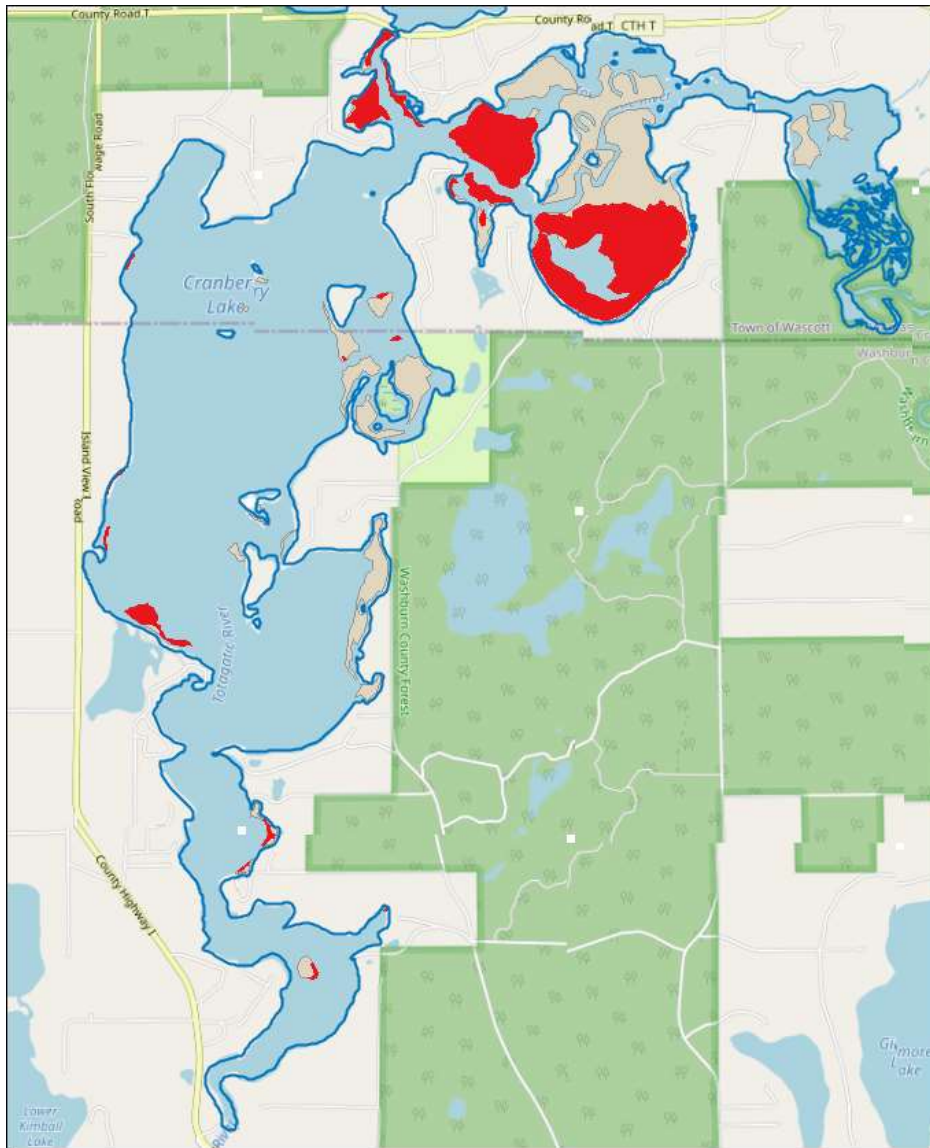


Figure 3: 2021 bed mapping results (tan polygons) and 2022 bed mapping results (red polygons)



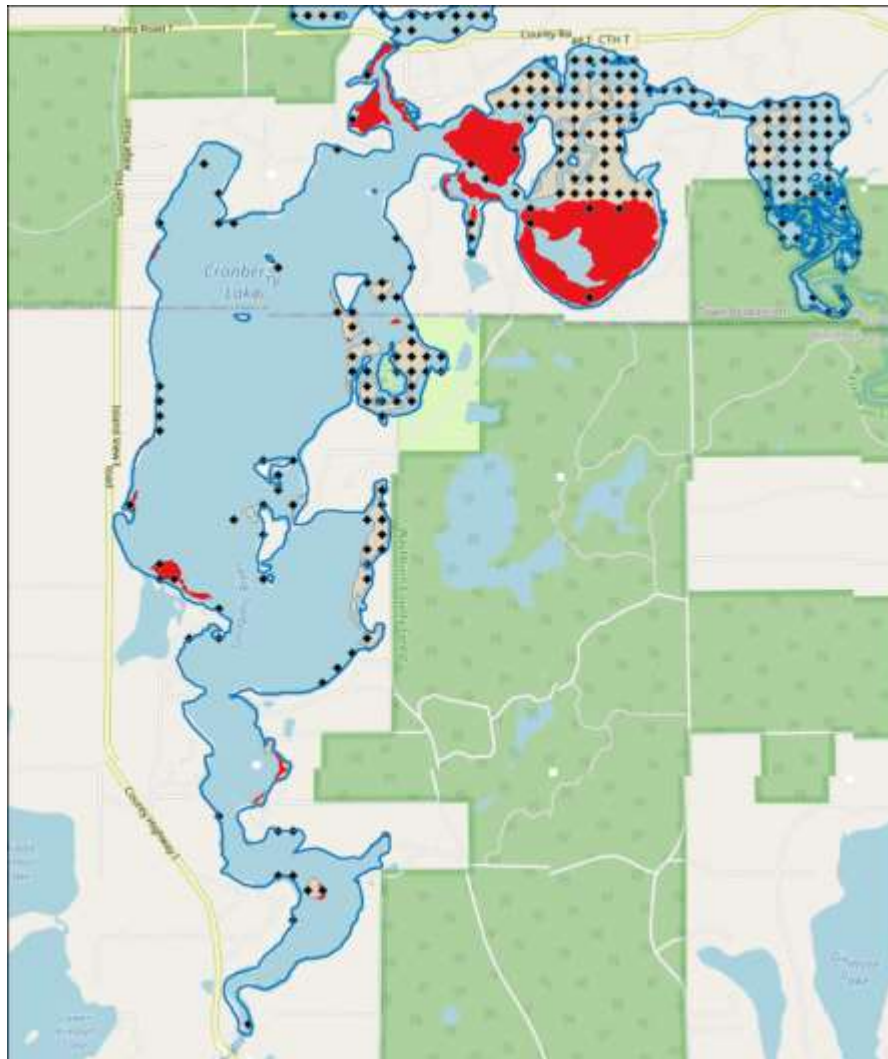


Figure 4: 2021 bed mapping (tan), 2022 bed mapping (red), and water <5-ft deep (black points)

---

## CONSTITUENT AND STAKEHOLDER COMMUNICATION

---

It has been the goal of the MFA to keep its constituency and the stakeholders involved in the winter drawdown informed as to the process and the progress leading up to, through, and after the winter drawdown. The following is a list of actions taken related to communication since the implementation of the 2021-22 winter drawdown. Constituent and Stakeholder communication was high-lighted by a Stakeholders In-person Discussion meeting held at the WDNR office in Spooner, WI on October 27, 2022.

- January 2022
  - MFA Board Meeting 1/15/2022
- March 2022
  - MFA attendance at a Douglas County Surface Water meeting 3/1/2022
- April 2022
  - MFA Board Meeting 4/9/2022
  - Communications with Washburn Co and RWE
- May 2022
  - 2022 Spring Newsletter
  - Communications with Washburn Co and RWE
- June 2022

- MFA Annual Meeting 6/11/2022
- July 2022
  - MFA Board Meeting 7/30/2022
- October
  - Stakeholders Discussion 10/27/2022
  - MFA Board Meeting 10/29/2022

The October Stakeholders Discussion meeting was held at the Spooner headquarters of the WDNR. Nineteen people representing multiple stakeholders (Washburn Co., Douglas Co., WDNR, Cranberry Lake Association, Renewable World Energies, Great Lakes Indian Fish and Wildlife Commission, and the Minong Flowage Association) either attended the meeting in person or join via online connection. The agenda for the meeting was generated by Dan Maxwell (MFA) and Dave Blumer (LEAPS). Prior notice for the meeting was sent out in electronic form on three different dates: 8/15, 9/20, and 10/20.

During the meeting, Dan Maxwell completed an introduction a general history of EWM management on the Flowage. This was followed by a PowerPoint presentation with a review of past and current management planning and implementation, and the results of the EWM bed mapping survey completed in September. Craig Roberts, WDNR Fisheries Manager for Washburn County gave an update on what was known about the fishery and how it may have been impacted by the drawdown. GLIFWC commented on the status of wild rice in 2022. Information shared by Steve Schieffer (Ecological Integrity Services and the Cranberry Lake Association) about EWM, native aquatic plants, and water quality impacts was presented to the assembled group.

Following the presentation, a comment and question session was moderated by Maxwell. Each organization in attendance shared comments, perspectives, and asked questions. Questions were addressed as best they could be, by the people present at the meeting. In the end, Pamela Toshner, WDNR Regional Coordinator suggested that the story told by the Minong Flowage Association and its efforts to control EWM is one that should be shared with others.

Minutes from the 2022 Stakeholders Meeting are available on the MFA website, as is the presentation given by LEAPS. They are also available on the LEAPS webpage at <https://leapsllc.com/index.php/minong-flowage-association/>.

---

## AIS PREVENTION AND MONITORING

---

Several AIS prevention and monitoring activities were completed by the MFA in 2022. Watercraft inspection through the Clean Boats Clean Waters program was supported by the MFA at the WDNR Landing. Watercraft inspectors contacted 395 boats, 786 people, and spent 282 hours, paid and volunteer covering the landing (Figure 5).

Another landing on the Minong Flowage at the County Campground was covered by the Town of Minong in 2022. An additional 486 hours of watercraft inspection time was completed there. Watercraft inspectors contacted 1,213 boats and 2,741 people (Figure 6).

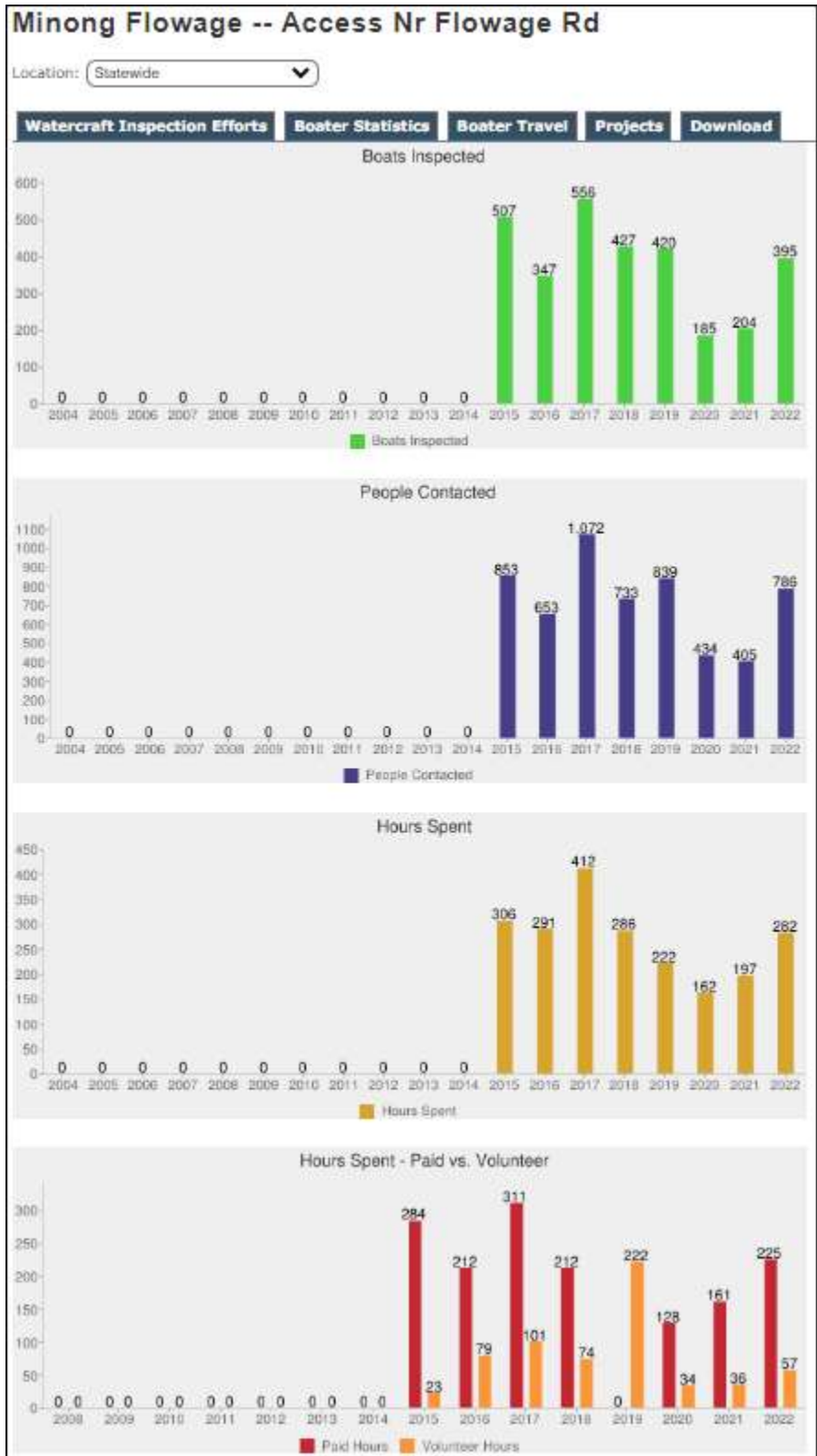


Figure 5: CBCW numbers from the WDNR landing on the Minong Flowage

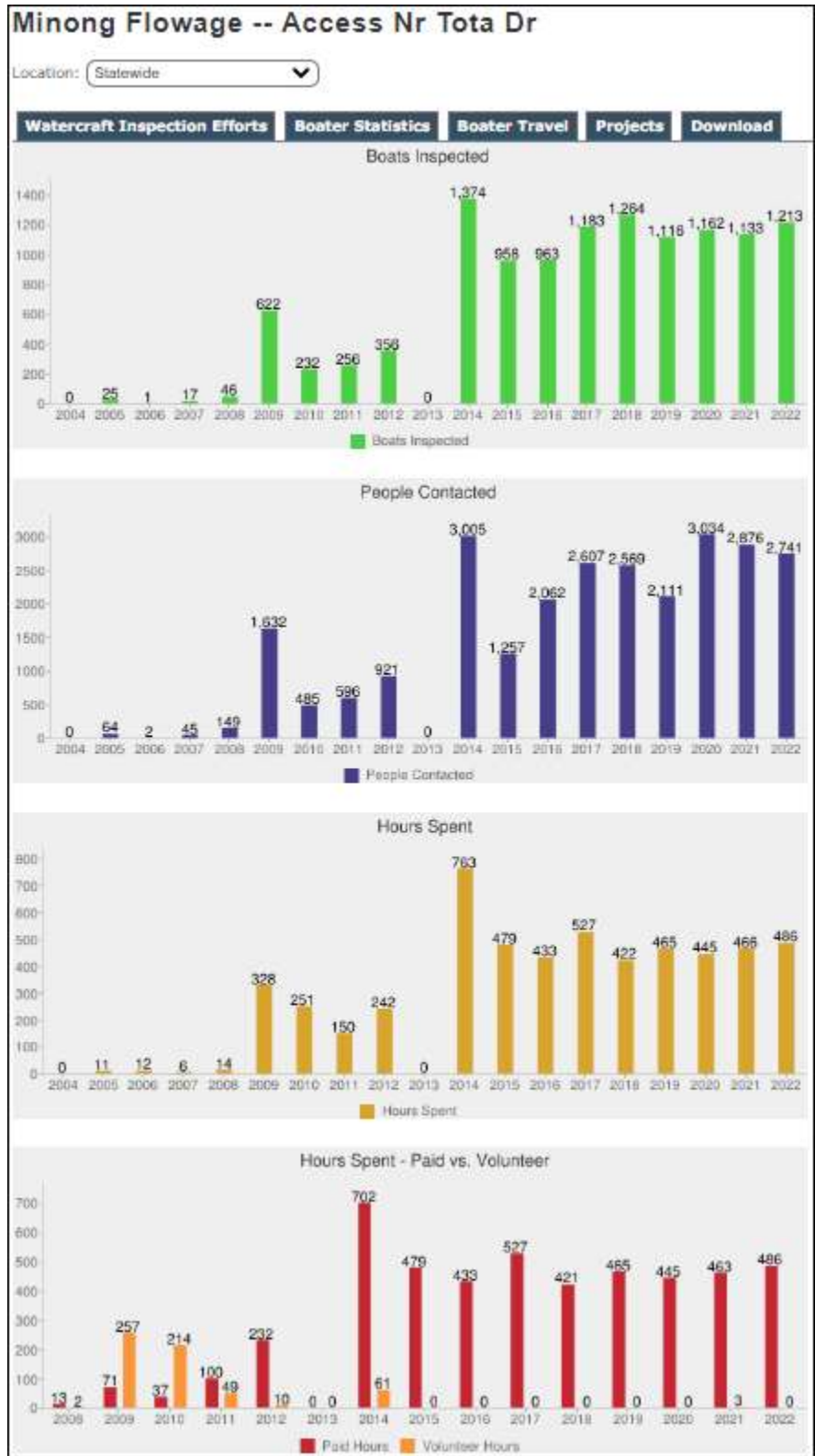


Figure 6: CBCW numbers from the public landing at the Washburn County Campground

Over the course of this project, the MFA has been and will continue to work with Washburn County to discuss the possible installation of a Decontamination Station built at the public access at the County Campground. Initial talks and plans were completed early in 2021. Additional talks were had as late as July. At that time, a location to install the Decontamination Station at the County Park had still not been determined. This project is on-going with more detail to be worked out in 2023.



Several MFA volunteers spent time looking for AIS including purple loosestrife, curly-leaf pondweed, Japanese knotweed (which was first identified on the Minong Flowage in 2020 by Endangered Resource Services, Inc), and others. No new AIS were discovered.

In 2021, the ability of the Minong Flowage to support the growth of zebra mussels was changed from “can’t sustain” to “possibly suitable” by Washburn County. Washburn County completed several zebra mussel tows in the lake in 2021. No zebra mussels were identified. Several MFA volunteers in coordination with Washburn County installed and monitored zebra mussel plate samples in the lake. An email was sent through Constant Contact to remind property owners to check their boat lifts and docks for zebra mussels when they are pulled out for the year.

Under the guidance of LEAPS, Swift Nature Camp set up and tended a purple loosestrife *Galerucella Beetle* rearing station. The station consisted of 12 potted plants in a wading pool. Purple loosestrife rootstock was collected by LEAPS and potted in 5-gallon buckets. The supplies needed to set up the rearing station (pool, nets, fence posts, and wire) were brought to Swift by LEAPS in mid-May. Working with Swift Nature Camp Staff and a small group of student volunteers (Figure 7), the beetles raised were taken to several locations on the Minong Flowage, including the Sawdust Island adjacent to the DNR Boat Landing, Sand Island, and on the river channel between Serenity Bay and Smith Bridge. Not all 12 buckets were released on the Minong Flowage, simply because there did not appear to be enough purple loosestrife to support the large number of beetles that came out of the rearing station. Washburn County was asked to provide additional release sites for beetles. Permits and release forms were completed by LEAPS.



**Figure 7: Swift Nature Camp students and counselors helping with 2022 purple loosestrife beetle release on the Flowage**

---

## WILD RICE MONITORING

---

While no active/on-the-water mapping of wild rice was completed in 2022, the MFA partnered with GLIFWC in an effort to get them to share results from their aerial assessment of wild rice. According to GLIFWC rice experts, the wild rice in the Minong Flowage was considered average in its 2022 aerial assessment (Figure 8). Comments made by locals suggested that wild rice was more abundant in 2022 than it has been in many years.



**Figure 8: 2022 aerial wild rice survey results. Left – Serenity Bay, Right – East Basin past Smith's Bridge (GLIFWC)**

---

### LAKE LEVEL MONITORING

---

Due to concerns about changes in water level brought about by the winter drawdown and just every day weather events, Ecological Integrity Services (EIS) was contracted with to install staff gauges and pressure transducers at three different sites on the Minong Flowage: near the dam, near Pogos and the inlet from the Cranberry Flowage, at Smith Bridge between the east basin and Serenity Bay, and in Cranberry Lake. Steve Schieffer installed the hardware in mid-June 2021 and they remained in place until after the winter drawdown and refill was completed in early 2022. The purpose of the transducers was to document changes in water level prior to, during, and after the winter drawdown. A summary report of the findings was completed by EIS in 2022.

The following figures (9-13) represent the fluctuations in water level at the four sites monitored by the pressure transducers. For a while, immediately following ice out in 2022, the transducer put in place by Smith's Bridge disappeared. The buoy holding it was later found by a MFA volunteer and retrieved by EIS. These figures are from the EIS report on the results. For the most part, water levels throughout the drawdown fluctuated between 4 and 5 feet. It is easy to see the increase in water level in late March due to the heavy rain and snowmelt event. The same increase is not noticeable in Cranberry Lake, primarily because it does not receive water from the Totogatic River.





Figure 9: Site locations for the pressure transducers recording lake level changes

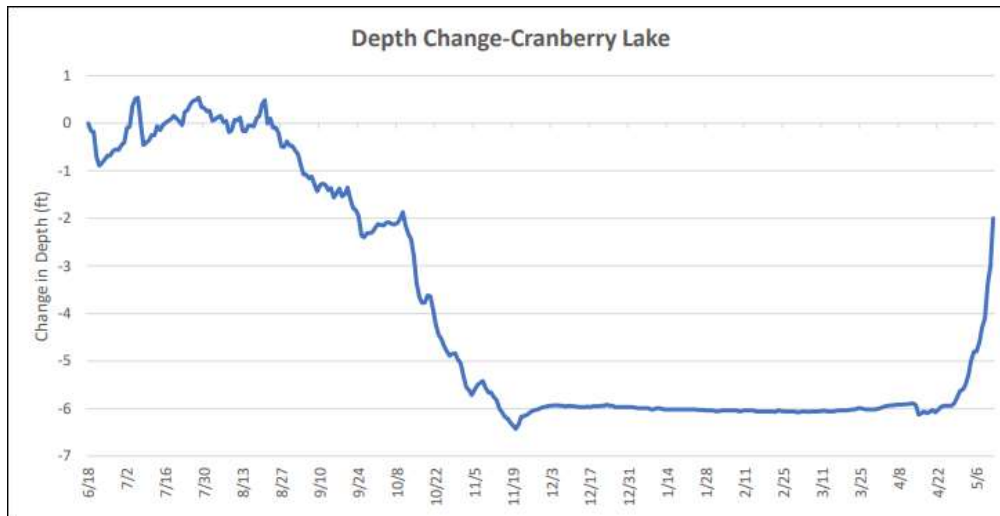


Figure 10: Lake level changes in Cranberry Lake



Figure 11: Lake level changes at Pogos Pier



Figure 12: Lake level changes at Smith's Bridge

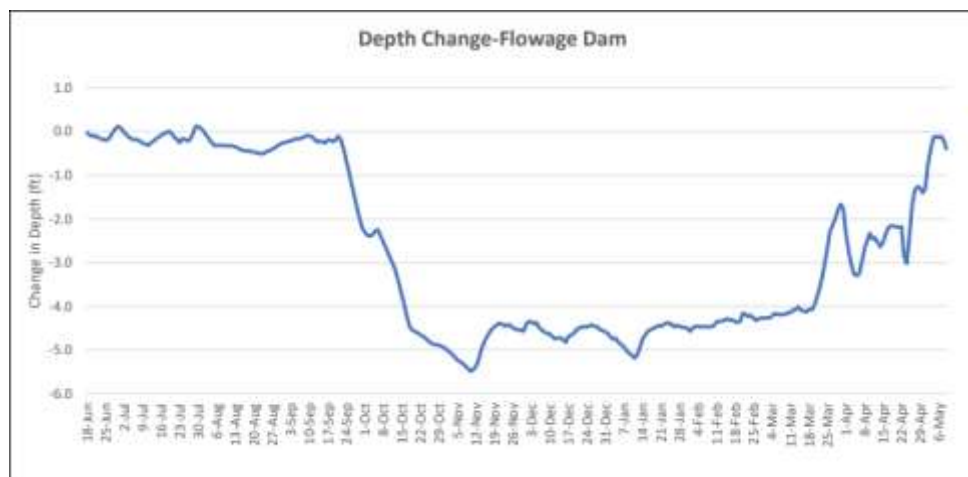


Figure 13: Lake level changes at the Dam

The MFA measured precipitation in 2022 using rain gauges purchased from the Community Collaborative Rain, Hail, and Snow network (CoCoRaHS). Volunteers were supposed to log daily rainfall into the CoCoRaHS webpage. It is not known if this happened or not. Daily logs of precipitation may be available from volunteers even if it was not entered in CoCoRaHS.

---

## WATER QUALITY MONITORING

---

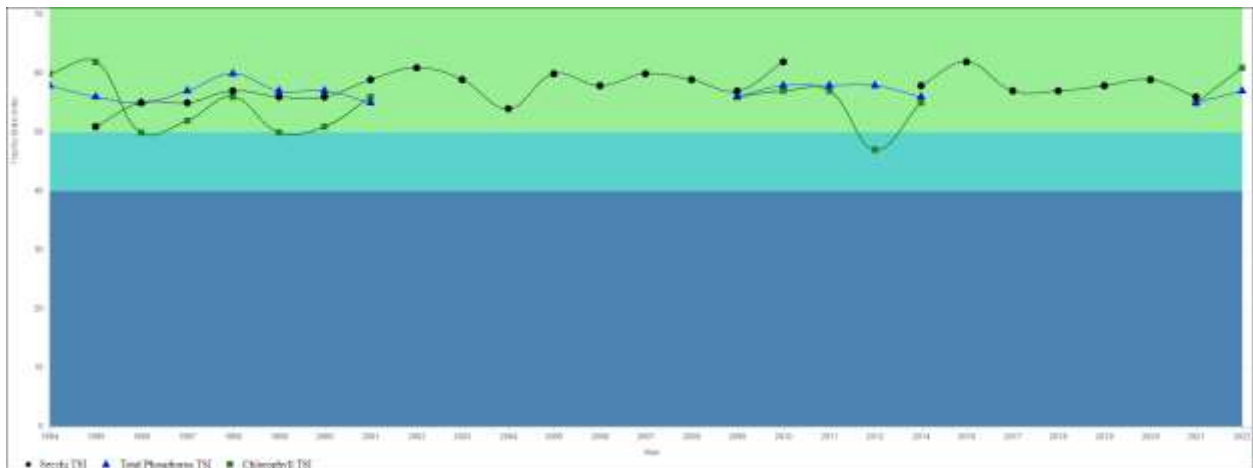
Water quality data was collected by volunteers in 2022 from two different sites in the Minong Flowage: the Central Basin (Total Phosphorus (TP), & Chlorophyll-a (Chl)), and the Deep Hole Near the Dam (TP, & Chl). Water sampling from the Deep Hole near the dam is covered under the Citizen Lake Monitoring Network program. Water sampling in the Central Basin is covered under the current AIS Control grant.

Minong Flowage - Site A-Central Basin - NW Of Youth Camp was sampled 4 different days during the 2022 season. Parameters sampled included TP and Chl. Sampling to collect water chemistry data includes TP collected over four months, and Chl over three months. In the Central Basin, the average summer Chl was 31.5µg/l. The average summer TP was 39.1µg/l. Impoundments like the Minong Flowage that have more than 30µg/l of TP may experience noticeable algae blooms. This was definitely the case in the Central Basin. Figure 14 shows photos of water quality in August in the Central Basin.



**Figure 14: Photos from the Central Basin – August 2022 – photo credit Ron and Jeanne Brown**

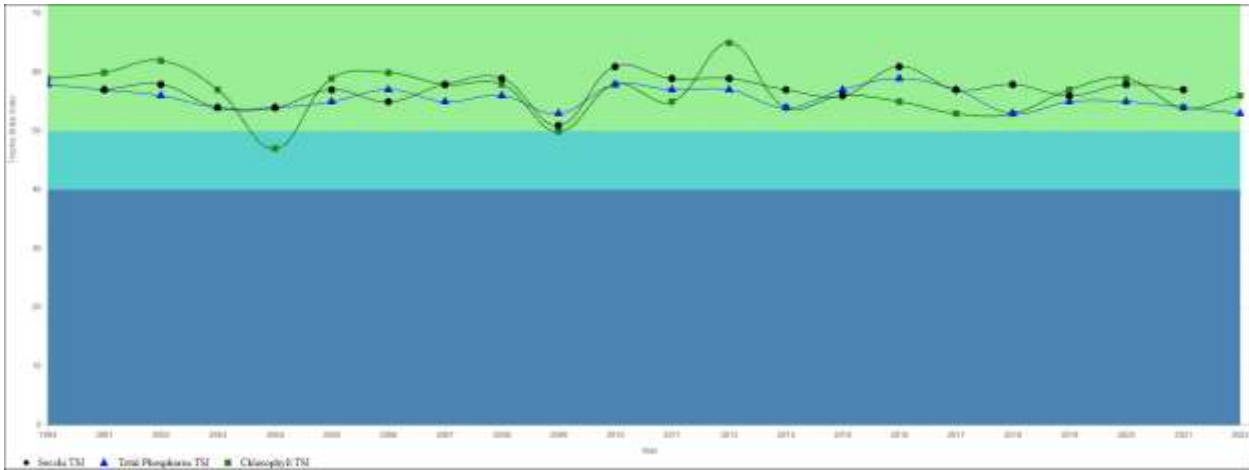
The overall Trophic State Index (based on chlorophyll) for Minong Flowage - Central Basin was 61. This TSI suggests that Minong Flowage - Central Basin was eutrophic. This TSI usually suggests blue-green algae become dominant and algal scums are possible, extensive plant overgrowth problems possible. Figure 15 reflects long-term trend monitoring TSI values for all parameters monitored in the Central Basin. All of the values fall in the light green, or eutrophic part of the spectrum.



**Figure 15: Historic TSI values from the Central Basin of the Minong Flowage - CLMN**

Minong Flowage - Deep Hole 1/3 miles above dam was sampled 4 different days during the 2022 season. Parameters sampled included TP and Chl. Sampling to collect water chemistry data includes TP collected over four months, and Chl over three months. In the Deep Hole, the average summer Chl was 16.1µg/l. The average summer TP was 25.9µg/l. Impoundments like the Minong Flowage that have more than 30µg/l of TP may experience noticeable algae blooms. Severe algae blooms were present in the Central Basin, but conditions at the Deep Hole near the dam were not as bad.

The overall Trophic State Index (based on chlorophyll) for Minong Flowage - Central Basin was 56. This TSI suggests that Minong Flowage – Deep Hole was eutrophic. This TSI usually suggests decreased clarity, fewer algal species, oxygen-depleted bottom waters during the summer, plant overgrowth evident, warm-water fisheries (pike, perch, bass, etc.) only. Figure 16 reflects long-term trend monitoring TSI values for all parameters monitored in the Deep Hole. All of the values fall in the light green, or eutrophic part of the spectrum.



**Figure 16: Historic TSI values from the Deep Hole of the Minong Flowage - CLMN**

At the current time, there are no Secchi disk readings of water clarity from 2022 entered into the WDNR SWIMS database from either of these sites or the North Basin site.

Water quality data from these two sites strongly indicate that the Minong Flowage is a nutrient rich, eutrophic body of water. On a TSI scale from 0-100, values in the Minong Flowage are consistently in the mid-50s or higher. In the figures below, dark blue is considered oligotrophic (TSI value 0-40); light blue is considered mesotrophic (TSI value 40-50); and green is considered eutrophic (TSI value >50).

As in 2021, it appears that the Minong Flowage experienced a significant algae bloom in mid to late August 2022. The reason for the bloom can only be speculated, but could include changes in the plant community caused by the drawdown, nutrients carried into the Minong Flowage by the Totogatic River and shoreland runoff, or even by a lack of rainfall earlier in the summer.

---

**ISLAND PROTECTION AND HEALTHY LAKES SHORELAND IMPROVEMENT PROMOTION**

---

One of the concerns voiced by the MFA constituency and board is how rapidly the sand islands within the Minong Flowage are disappearing. Essentially, they are being “loved” to death by lake users and visitors to the lake. During the hot summers, it is not unusual to see a dozen boats anchored off the main island in the Central Basin with swimmers and picnickers utilizing the shores. The MFA began a signing campaign in 2021 whereby informative signs were placed on the island in an effort to get lake users to become more aware of the problem and take measures to minimize their impacts. Unfortunately, signage is not apparently successfully spreading the message about island protection from misuse. The photo in Figure 17 shows a large slip-n-slide that was set up on Sand Island



by visitors to the lake. It does not take a water scientist to know that this type of behavior on a delicate sand island is detrimental to its health. More needs to be done.



**Figure 17: Sand Island “fabricated slip-n-slide” over the 4<sup>th</sup> of July holiday 2022 – photo credit – Steve Johnson**

Promotion of the WDNR Healthy Lakes and Rivers shoreland improvement program has been made in the newsletter, webpage, and during the annual meeting.

Fishsticks provide habitat for fish and wildlife in the Minong Flowage. One property owner, Dan Maxwell, has used Healthy Lakes grant funding to install several fishsticks along his property on the south end of the Minong Flowage. The most recent installation was completed in February 2022. It is his goal to get other property owners interested in installing fishsticks on their own properties.

---

## **AQUATIC PLANT MANAGEMENT PLAN**

---

As mentioned, the existing APM Plan written in 2016 was extended through the end of 2023. Once all the PI survey data has been received and the Minong Flowage winter drawdown completed, the existing APM Plan will be updated. This process will be started in January 2023 and should be complete by mid-year 2023. The new APM Plan is expected to guide AIS management from 2024-2028.

---

### **2023 AIS PRELIMINARY MANAGEMENT PLANNING**

---

Expected AIS management planning for 2023 includes purple loosestrife and EWM. Failure of the 2021-22 winter drawdown to control EWM in water deeper than 5-ft may open the door for management of certain areas of EWM using aquatic herbicides. Preliminary plans for this management action have not been made yet, but the option was discussed during the October Stakeholders Meeting. A year post-drawdown point-intercept aquatic plant survey is scheduled to be completed in 2023 to compare larger changes in the aquatic plant community from before the winter drawdown to after it.

Drafted and respectfully submitted by Dave Blumer, Lake Education and Planning Services, LLC 01/06/2022