



Platte Lake Improvement Association

Keeping Platte Lake Clean for 41 Years

**ANNUAL
REPORT
2019**

We are a grassroots, non-profit association of individuals committed to insuring that Platte Lake is a healthy and beautiful body of water to be enjoyed now and in the future.

Forty-one years ago, the Platte Lake Improvement Association (PLIA) was formed in response to homeowners who were panicked over the dramatic deterioration of the water quality of Platte Lake. Our beautiful lake, which had been exceptionally clear and had supported a diverse plant and animal species typical of a healthy lake, had rapidly become green and cloudy. Most native plant and animal species began to disappear. The fishing, historically very good, was literally dying. Property values were falling.

It was no mystery that the root cause of this degradation was the discharge of by-products of the recently-expanded state-owned and operated Platte River State Fish Hatchery into the Upper Platte River. The river below the hatchery and the lake were being chemically polluted by phosphates. Discussions with the MDNR proved to be protracted and ineffective.

Homeowners, like you, banded together to reverse the destruction of Platte Lake. In September, 1986, the PLIA, on behalf of Platte Lake, filed an environmental protection lawsuit against the MDNR in Ingham County Circuit Court. In October, 1986, the Court issued a preliminary injunction which sought to minimize any potential adverse environmental impact by limiting hatchery activities. In July, 1988, the Court found in favor of the PLIA in all respect and established a maximum permissible



phosphate concentration for the lake. Platte Lake was placed under the guardianship of the Court and appointed a Court Master to oversee the lake.

Today, homeowners are unaware of the serious threats Platte Lake faced in the past. They may be unaware that it will take decades to reverse damage done to Platte Lake. Ongoing vigilance is critical to the health of the lake.

Any type of contamination upstream in the Platte River will end up in Platte Lake. If the Fish Hatchery falls out of compliance it will be up to PLIA to discover it. As the population increases and development occurs, history shows that the lake can change very quickly.

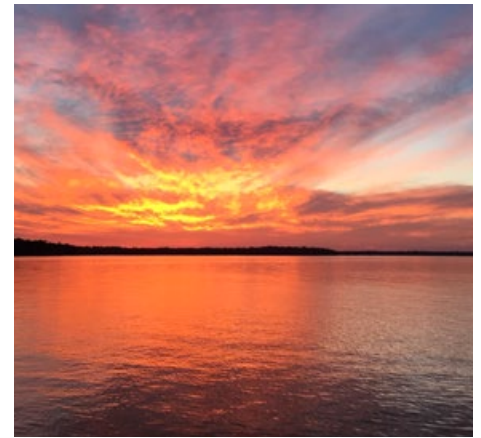
It is your neighbors who are continually analyzing the water quality to ensure that Platte Lake, and the value of your property, does not decline again.

PLIA is grassroots, non-profit, association of homeowners. PLIA is the only entity paying for monitoring the lake. Not the State, not the County. PLIA is responsible for 100% of the cost of lake and river sampling. We know that, without close observation and monitoring, Platte Lake will regress to what it was, a grey-green lake ridden with ugly algae blooms.

We need your help. You must understand the link between the water quality of the lake and the value of your property. If you are not a member of the PLIA, join and support your neighbors who have made this lake as beautiful as it is today

**The lake cannot speak for itself.
Join PLIA and help us speak for it.**

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What we've been doing this year.

- Continued our lake and river sampling plan—sampling 8 upstream river locations and the Lake at 8 depths every two weeks. This data helps determine our compliance with the Platte Lake Phosphorus Standard (see page X). This data is available on our website (under For Members/Databases). PLIA is responsible for 100% of the cost of lake and river sampling.
- Investigated unusual data we were getting from the north branch of the Platte river, and determined the probable cause: an intermittent interruption of the flow causing a temporary flooding with the uptake of surface phosphorus.
- Continued to monitor the Hatchery's discharge of Phosphorus. As of June, the discharge YTD is ___ lbs P and is on target to comply with its 150 lb/per year limit.
- Expanded our efforts to understand/control/limit incidents of swimmers itch. The PLIA Board authorized approximately \$9000.00 for a 2019 study to determine the root cause of swimmers itch in Platte Lake via DNA analysis of snails, bird droppings, swimmer's itch parasites, etc. That study is being performed by Ron Reimink of Freshwater Solutions working with Dr. Patrick Hannington of the University of Alberta. Ron will be presenting his findings to date at the August 3, 2019 PLIA Annual Meeting.
- Followed up on our 2018 Aerial drone survey of lake to quantify impact of eurasian milfoil by participating with the Benzie Conservation District in physically sampling plants identified by the survey.
- Continued to meet regularly with Hatchery and MDNR personnel to monitor operations and lake phosphorus levels



Understanding Swimmers Itch in Platte Lake

Your children just spent the day swimming on your beach. They now are covered in dozens of red, raised bumps on their legs and feet. You and your family were the unintended target of a small parasite called a schistosome. It wasn't looking for you. It was trying to find a key host in its life cycle, a bird and most likely a merganser. The rash is called a cercarial dermatitis, commonly known as Swimmers Itch.

Although the medical problem caused by Swimmers Itch in humans is only skin deep, it can be a real nuisance and even affect your property values.



That is why the PLIA has contracted with Freshwater Solutions to study the prevalence of the culprit, a schistosome, in Platte Lake.

The schistosome that causes swimmers itch has two hosts that it cycles between, birds and snails. Parasite eggs are released from the birds in their feces. The eggs hatch within an hour in the water and liberate a miracidium. That miracidium has about 24 hours to find and attach to the proper snail host before it runs out of energy and dies.

Once inside the snail, it develops further into a cercariae. Cercariae are released, often by multiple snails at the same time and are designed like a microscopic torpedo, 1/80th of an inch long, with a singular objective: Find a host bird and penetrate their skin so it can continue its life cycle.

Because cercariae do not have any way to feed, they rarely live longer than a day. Most of them are released in the early morning and the number of them actively swimming drops as the day progresses. They are not very strong swimmers and are pretty fragile. Their head can be easily disrupted from their forked tail. In spite of these limitations, they still manage to get the job done.

Understanding this lifecycle is critical to developing

effective strategies to eliminate Swimmers Itch from lakes. Freshwater Solutions will be employing new tools, such as qPCR to identify if there is Swimmers Itch in a lake, and even how much.

Numerous species of schistosome are capable of causing swimmer's itch in Michigan. qPCR is a method used to look for DNA and it is so sensitive that it can even distinguish between different species of schistosomes that cause Swimmers Itch. Freshwater Solutions has studied Walloon Lake, Lake Charlevoix, Elk Lake, Skegemog Lake, Long Lake, Lake Leelanau, Lime Lake, and Glen Lake for the past two years using qPCR analysis to measure schistosome cercariae levels in the water.

Using this tool, nearby lake associations, such as Glen Lake, were able to apply for a permit to remove mergansers and interrupt the life cycle of the parasite. The Michigan Department of Natural Resources began providing nuisance control permits in 2018 to trap and relocate summer resident common mergansers if a lake association can demonstrate there is a swimmer's itch problem caused, at least in part, by common mergansers. This proved to be an effective Swimmer's Itch control method on Glen Lake. Other lakes have also used this strategy.



This strategy sounds like a simple solution to the problem. The problem? These parasites are very adaptable and are not limited to just mergansers. They

can infect other bird species such as Canadian geese, Mallards, Red winged blackbirds, even canaries.

Mergansers are almost 100% infected and have the highest parasite load in their feces than any other bird. These birds are extremely mobile and can cover several miles of shoreline in a single day. Another problem? Not all the mergansers are summer residents. It is possible that migratory mergansers can infect a lake in the spring and be on their way leaving behind infected snails who may not release the cercaria for months. That may be one reason that despite extensive control efforts on a number of lakes in Northern Michigan, some relocation programs have not been effective at reducing the snail infection prevalence or the number of schistosome cercariae in the water.

PLIA partnered with researchers from Oakland University in 2017 who studied the cercarial release

from the snails and what triggered that release. Looking at that one component of the lifecycle was important, but it did not give PLIA a broader sense of the problem.

To advance our understanding of the problem Swimmer Itch poses for Platte Lake, PLIA feels it is important to establish a baseline of parasites present in 2019, using the most advanced technology available. This will also add to our understanding of the Platte Lake ecosystem.

PLIA knows that the ecosystem of Platte Lake is very complex with many factors contributing to its overall health. That is why we have partnered with Freshwater Solutions.

Dealing with Swimmers Itch

Swimmer's itch usually occurs in early summer, when the water is its warmest. The usual season is relatively short - usually four to six weeks, depending on the weather. Some of the most beautiful lakes in Michigan experience swimmer's itch annually, whereas other lakes may have an occasional outbreak or none at all. An outbreak may be severe, but last for only a few days, or minor and last much of the season.

If a lake has swimmers itch, it does not mean that lake is polluted. In fact, the opposite is true. A healthy lake promotes a high diversity of species, including the birds and snails that are the hosts for the causative agents of swimmer's itch.

First, don't feed the ducks, geese or swans. Attracting these birds

increases their fecal droppings and you know what that means.

The cercariae swim on the surface of the water; after all, that's where the birds are. They can float a long way on the surface so you probably want to avoid swimming in areas where swimmer's itch is a problem and when there is an onshore wind.

Children are particularly sensitive to swimmers itch. They usually spend more time in the water, have more sensitive skin, and have a greater tendency to play in shallower water where cercariae most often concentrate.

Towel off with vigor when you come out of the water. It takes time for cercariae to penetrate the skin and you can crush their tiny bodies. Showering shortly after leaving the water may also help.

People have also noted that waterproof sunscreens and lotions reduce the infections by discouraging the cercariae from penetrating the skin.

If you decide to go in the water when and where swimmer's itch larvae are present, stay clear of plants growing in the lake. Swimming rather than playing or wading in shallow water will reduce exposure. Swim offshore if possible.

Monitoring the Quality of Platte Lake is a Year Long Project.

Every two weeks, Benzie Conservation District specialists are out gathering water samples from Platte Lake and the rivers and streams that flow into it. Even in the dead of winter they are out there plunging sample bottles into the frigid flowing water. In the winter we do it through the lake ice. When the ice becomes unsafe, we use the sheriff's airboat to safely get on the lake to sample. If that seems like a lot of work, well, it is. But it is critical to constantly monitor what is flowing into our beautiful lake all year long.

Eight different sites have been carefully selected for the sampling process on the rivers and streams that flow into Platte Lake. On the lake itself, samples are taken in the deepest area of the lake using a specialized instrument that measures temperature, depth, dissolved oxygen, conductivity, oxygen reduction potential and pH readings at various depths down to the bottom, 90 feet below.

Monitoring also occurs upstream, at the Platte River State Fish Hatchery in Honor, where about 2.1 million salmon (Atlantic, Coho and Chinook) and 4 million Walleye hatchlings are produced every year. Years ago, the hatchery was the single worst contributor of



the phosphorus that polluted Platte Lake and turned it an ugly color green, loaded with algae.

Today, the Hatchery monitoring process provides nearly real-time information on their performance, and gives them the ability

can take corrective action before troublesome trends become real trouble. With its sophisticated monitoring processes; the Hatchery has evolved into a fish production facility with an attached water treatment plant. During some times of the year the water discharged from the hatchery has less phosphorus in it than the water coming in.

All of the water samples obtained from these sites are carefully analyzed at the Platte River State Fish Hatchery in Honor. The main element we are interested in is phosphorus. The challenge is that elemental phosphorus never occurs by itself in water, but

always as some type of compound that needs to be broken down.

Since phosphorus containing compounds don't breakdown without a fight, acid reagents and heat are used in a device called the "Digester" to complete the task. After the Digester does its job, a spectrophotometer



calculates the phosphorus concentration. This data is uploaded directly to our database, eliminating potential data entry errors.

The information obtained now needs to be studied. Platte Lake Improvement Association members rely on their years of experience to identify review the data and look for short term fluctuations or long-term trends that indicate new or potential danger for the water quality of Platte Lake.

This ongoing partnership, between the Fish Hatchery, the Benzie Conservation District and the Platte Lake Improvement Association, has resulted in a beautiful lake with excellent water quality and provides a surveillance model for watersheds across the country.

The 2001 Settlement agreement between the Platte Lake Improvement Association (PLIA) and the Michigan Department of Natural Resources (MDNR) established tight controls on the Platte River Fish Hatchery's operation. It allowed the MDNR to proceed with an upgrade of the hatchery that would dramatically reduce its environmental impact on Big Platte Lake and improve the quality of our water. This original agreement and subsequent amendments are significant in that they define a legally-binding management path forward that will insure the long-term health and preservation of Platte Lake and the Platte River. As long as the Platte Lake Improvement Association exists this agreement will remain in force and Big Platte Lake will not have downstream contamination from the Hatchery. If the PLIA disappears, so does the settlement agreement.

The Platte Lake Phosphorus Standard.

Where did it come from?

The 8.0 ug/l liter standard was litigated as part of the ongoing court battle after the Judge Brown 1988 Opinion and Order that indicated the MDNR was convicted of the pollution, impairment and destruct of the water quality and aquatic life of Platte Lake through the introduction of phosphorus. A court master was appointed and the litigation continued until the March 2000 consent Judgment was signed. Prior to the Consent Judgment, the court ruled that the phosphorus standard was 8.0 microgram per liter. The number was arrived at by a review of the lakes in the region and their respective phosphorus levels based on available data. (See lake comparison chart). The PLIA and DNR argued the point for many hours before the Judge. We came to the consensus that we should ask for a reasonable number and then have that standard achieved 95% of the time.

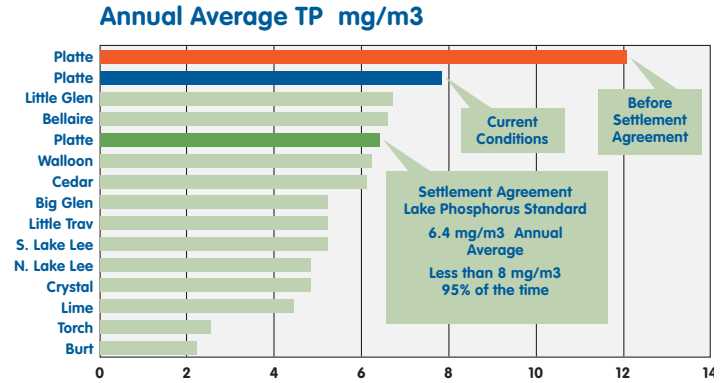
How is the standard applied?

It is a volume weighted standard and based on the amount of water at each of the depths we sampled. We split the lake up into depth layers and calculated the volume of water at each depth. This set the nominal volume of Platte Lake as 83 million cubic meters and then calculated the factors of each of the eight layers and that became the calculation methodology for determining the volume weighted phosphorus concentration of the lake and is used to determine compliance with the 8.0 microgram per liter standard.

With the March 2000 Consent Judgment, all parties agreed that the phosphorus standard for Platte Lake would be 8.0 microgram per liter and it would be achieved 95% of the time. The 8.0 microgram per liter volume weighted phosphorus standard is the law in the State of Michigan. Per the Consent Judgment and related amendments, the MDNR and by inference the present MDEGLE (formerly MDEQ), which was not separate from the MDNR when these court documents were signed, are responsible for considering the impact on the 8.0 microgram per liter phosphorus standard when issuing any and all surface and ground water discharge permits in the Platte River watershed.

How are we doing on meeting the standard?

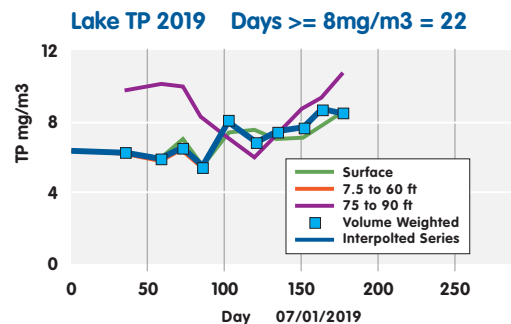
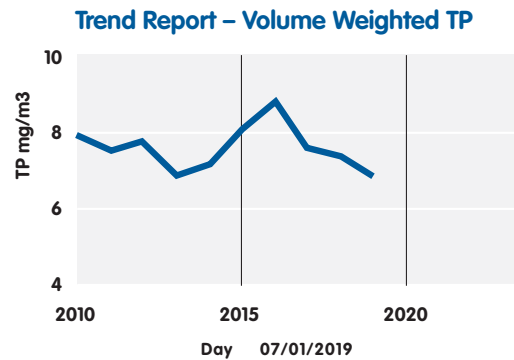
Here's the data from the database as of July 1, 2019:



How big is a microgram?

A microgram is one millionth of a gram. For comparison, a paper clip and a raisin are familiar objects that weigh about a gram. Another comparison, if you dissolved one adult aspirin in a liter of water, the water would have 300,000 micrograms (ug) per liter. Our lake standard is only 8 ug/l 95% of the time.

And the trends over the years:



From Edgewater to the Water Wheel



One of the most fascinating things about the study of local history is the discovery of unexpected connections between seemingly unrelated incidents. One such story involves the Waterwheel Resort, the town of Edgewater, and the Amidon family. To begin, here is a quote from the Grand Traverse Herald, written in 1885 right when Edgewater (of which we've written before in these pages) was getting started:

“The question was asked in the HERALD, where is Edgewater? A visit to the place four or five days ago revealed a little town at the lower end of Platte Lake, overlooking it, and only two miles from Lake Michigan. One year ago it was a wilderness, but since then a saw mill has been erected that cuts thirty-five thousand feet of lumber per day, and a large company store built and well filled with goods. There are quite a number of comfortable dwellings scattered

about that accommodate twenty families. A railroad has been built to Lake Michigan, where the company has a dock and boarding house. About fifty men are employed. The firm started under the name of the McDonald sLumber Co., but changed it April 1st to the Platte River Co. They have a drive of logs in Platte River en route to their mill. Chas. Sultz is manager for the company”

The mill burned in 1903 and was not rebuilt since most of the nearby timber was gone. The town disappeared soon thereafter. While researching pictures of Edgewater at the Benzie Area Historical Museum, the picture below of some of the employees and families in Edgewater was found. The lady in the middle holding the washtub was identified as “Mrs. Amidon, Ralph Amidon’s mother”. Her husband was probably an employee and she was also, doing domestic chores. We

don’t know what the family did after the mill closed but they must have stayed in the area because some years later Ralph “Hap” Amidon built and ran the well-known Amidon’s Waterwheel Resort on the north side of the river just upstream of the M-22 bridge. This started in the late 1920’s or early 1930’s and had tourist cabins, gas station/general store, and boat rentals. The distinguishing feature was a large wooden decorative waterwheel turned by the river current. Hap Amidon is best remembered for his business of renting wooden rowboats to families for day trips down the river to Lake Michigan and at the end of the day he would bring his gasoline-powered launch down, hook up all the boats and occupants in a line, and tow them back up to the resort.



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plattelake.org

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