

The Lakesider.....Spring 2019

The Annual Newsletter of the Lake Mitchell Improvement Board.

Lake Mitchell Improvement Board
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Wexford County Drain
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City of Cadillac
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Dave Foley
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representing Lake
Mitchell

Lake Mitchell Property
Owners Association
Officers

Dave Stinger - President
Jackie Erway - VP
Ron Moelker - Secretary
Bob Sales - Treasurer
Dave Kuyers - Board
Member at large

Lake Mitchell Improvement Board Meeting Dates for 2019:

- * Saturday, April 27, 2019 @ 1:00 PM
- * Monday, June 24, 2019 @ 10:00 AM
- * Saturday, August 24, 2019 @ 10:00 AM
- * Monday, October 21, 2019 @ 10:00 AM

All meetings are held at the Cherry Grove township fire Hall on M-55. The public is invited to attend. Contact Lake Mitchell Improvement Board at: lakemitchellboard@gmail.com.

Lake Mitchell Property Owners' Association Meeting Dates for 2019:

- *Saturday, April 27, 2019 @ 11 A.M.
- *Saturday, August 24, 2019 @ 9 A.M.

Meetings held at the Cherry Grove Township Fire Hall on M-55.

If you received this newsletter, please consider saving the board the \$2 it costs to print and mail this newsletter by reading it online at www.lakemitchell.org. (We would rather use our money to fight milfoil than print and mail newsletters.) All the contents of the newsletter are available online plus photos, minutes of our meetings, and features about Lake Mitchell not found in our annual newsletter. Email us at lakemitchellboard@gmail.com and we will add your email to our list which has over 350 addresses. Benefits of being on the email list: notifications of lake treatments and reminders of upcoming meetings. If weather events such as floods, ice storms, or heavy snows occur, which could possibly damage property, emails may be sent. These are especially appreciated by Association members who are not lakeside residents. The email list will not be sold or offered to anyone and will only be used for Lake Mitchell Improvement Board and Association business.

Information ONLY on lakemitchell.org

- Photos of native and invasive vegetation
- Photos of Lake Mitchell activities and weather events in 2015-2019
- Years of archive photos (Your home might be a star.)
- Lake Mitchell Annual Progress Report (entire report)
- Lake Mitchell By-Laws
- Minutes of Improvement Board meetings
- Maps showing location of invasive vegetation

Website of the Lake Mitchell Improvement Board: www.lakemitchell.org
Scan this QR code with the QR Reader on your phone or tablet to get the Lake Mitchell mobile website: www.lakemitchell.org.



Lake Mitchell Property Owners Association News:

Your LMPOA board met on January 18th to further review our organization's mission, to review the lake property owners' focus going forward, and to do a preliminary review of the very successful survey. (We want to thank all of you who responded. It showed the interest the lake property owners have in our lake and the interest we have in the care that it is given.) This spring, the LMPOA will present a full summary of the survey and share it with all entities that have an interest on how the lake is cared for. We are looking forward to seeing you at our spring meeting.

Dave Stinger - President
Jackie Erway - Vice-President
Ron Moelker - Secretary
Bob Sayles - Treasurer
Dave Kuyers - Board Member at Large

Roadside pickup takes care of weeds

The Lake Mitchell Improvement Board will again provide roadside pickup of weeds. Roadside pickup will begin May 15. That first week, the weed hauler will check around the entire lake one day and collect weeds. Pick-up will begin May 13-15, 2019 and continue weekly through September.

Aquatic weeds need to be removed from the lakeshore by the property owners and put on the edge of the road. Do not leave sticks, brush, yard waste or sand by the roadside. Only aquatic vegetation will be picked up.

Weed compost, black peat and mulch available

The weeds picked up along the shore of Lake Mitchell are deposited and composted at Ron Klimp's residence on the south side of Lake Mitchell. (7288 S. 33 ½ Mile Road). Contact Ron at 616-295-8686. You can pick up the weeds at no cost or for a small fee Ron will load them for you. The weeds that were once a nuisance in the lake can now be helping enrich your garden.

The black peat from the Franke Cove dredging project is also available. In addition Klimp has horse manure/saw dust compost.

2018 Calendar Year Financial Record

2018 Income	Jan.1-June 30	July 1-Dec. 31	Total
Interest	\$198.77	\$172.07	370.84
US Forest Service Grant			
Assessment Income	\$5,074.55	\$32,299.55	37374.1
Selma Twp Grant			
Total	5273.32	32471.62	37744.94

2018 Expenditures	
Roadside Weed Pickup	\$10,125.00
RLS Administration	\$21,290.00
Chemical Treatment	\$64,834.85
Purple Loosestrife Beetles	
Legal Fees	
Insurance/Bond	\$712.00
Service (audit, inspection, permit fees)	\$2,245.00
Print (mailings, newsletter, website, supplies)	\$2,053.14
Total	\$101,259.99

Fund Balance Jan.1, 2018	406,543.78
2018 Revenue	37,744.94
 Total	444,288.72
2018 Expenditures	101,259.99
Fund Balance Dec.31, 2018	343,028.73

New boating rules for 2019

Michigan's legislature passed new boating laws during the lame duck session. The new rules specify that boaters have to remove all aquatic plants from boats and trailers before launching. In addition all water must be drained from live and bilges. Drain plugs need to be removed from wells, bilges, and ballast tanks. Boat trailers need to be checked as well. Plant material hanging off a trailer can be deposited in a lake when watercraft are launched.

Canoes or kayaks that are moved from lake to lake need to be washed off or allowed to dry in the air so invasive species can be rinsed off or allowed to die in the open air. Tiny New Zealand mud snails are found in mud that is left on boats.

These measures are designed to stop invasive species from being introduced into our lakes. That is likely how Eurasian watermilfoil and zebra mussels entered Lake Mitchell and Cadillac.

What's going on with the Lake Mitchell Sewer Authority? -- Dave Foley

Alarmed about the recent spike in sewer rate charges? There's an explanation. But first some background should be noted.

Prior to 1977, the Lake Mitchell property owners had no sewer system, and relied on septic tanks. The result was seepage into the lake from the drain fields, which increased the nitrogen and phosphorus levels.

By 1978 the new system was in place and the quarterly rate was \$48.00 dollars. The first rate increase of \$6.00 took place in April 1, 2008, which made the new quarterly rate \$54.00. Fast forward to April 1, 2018, 41 years later the quarterly sewer bill is \$211.56 per quarter. The agreement the Authority had with the City of Cadillac to treat its wastewater has more than tripled since the expiration of the 40-year old treatment contract. Since 1978, the City of Cadillac has provided sewer treatment services to these townships at a cost that had not been raised for several decades due to disagreements in how to calculate the increase. There is currently a lawsuit between the two parties.

In June Lake Mitchell Sewer Authority Chairman Bob Hilty in a letter to customers made the following observations: "Historically, the sewer rates were not incrementally increased over the years to support and sustain the aging sewer system," Hilty wrote. "Almost all this equipment is 41 years old and either requires major repair work or replacement which is very costly."

In the letter, Hilty outlines the various system upgrades that need to be made, including hundreds of grinder pumps, seven lift stations and three wastewater metering points, among other things. These projects are ongoing. Due to increased operation, maintenance, repair, and capital projects costs to the wastewater collection system, it is necessary for LMSA to budget additional funds in the 2018/2019 sewer operating budget. Several factors contributed to the increasing costs, including rehabilitation, operational expenditures, including the rising cost of electricity, wastewater treatment, and replacement/repair of pumps, generators, motors, and ongoing maintenance of infrastructure. Another key factor to increased costs is directly related to groundwater infiltration issues created from broken cleanouts, illegal sump pump connections, and roof/foundation drain connections. LMSA will be conducting home inspections throughout the spring and summer months looking for illegal connections to the sewer system. Homeowners will be given an opportunity to disconnect any illegal connections found, prior to LMSA imposing a mandatory fine.

The Lake Mitchell Sewer Authority took ownership in 2015 and faced escalating costs resulting from infrastructure needs. According to Project Manager Sheila Hill, "In the fall of 2018, LMSA took a positive step forward by hiring an engineering firm to assist them with the USDA loan/grant application process. The required improvements to the system cannot be supported on rates alone. LMSA has taken on the issue of a debilitated system, equipment, rates that did not support it, as well as planning for future needs. They are heading in the right direction and taking the necessary actions to solve the issue and be fiscally responsible for current and future generations."

When I asked if the bills were likely to show more dramatic increases, Sheila said, "It is difficult for LMSA to predict increases at this point. As LMSA moves forward with the USDA loan/grant process, they will provide more insight as it relates to future rates. Some of the key factors will be the loan amount, asset management, and a rate study."

How you can help reduce costs.

1. Please do not flush disposable wipes into the system. Wipes do not deteriorate and cause the grinder pumps to bind up which could lead to possible sewer backups. This increases maintenance activities, costly repairs, electricity usage, and after hour alarms, that increase the cost to LMSA and the users.
2. Connecting sump pumps and/or roof or foundation drains into the sewer system is illegal. The system was not designed to handle all of the infiltration from these connections. During heavy rain events, staff have documented increased flows at the metering points. This type of infiltration can cause sewer overflows and backups into the resident's homes and in the system. These types of connections increase costs and contribute to higher sewer rates. Users are paying for the treatment of clean water, increased electrical costs, and additional wear on the equipment.
3. Please do not obstruct the right of way/easement to and around the Grinder Pump & Lift Stations with snow banks, shrubs, trees, flower beds, fences, parked vehicles or trailers. It is extremely important these areas are accessible at all times for LMSA staff, vehicles, large portable generators, and other equipment/tools to make necessary repairs and perform preventative maintenance activities. If LMSA cannot access the station, this could cause sewer backups, not just in your residence, but anyone else connected to that station. You may also be liable for expenses associated with sewer cleanup efforts, costs to remove the obstruction, any other costs incurred by LMSA, and possible penalties.

If you have concerns or questions, call 231-775-0155, send an email to operationsoffice@lakemitchellsewer.com, or visit the Lake Mitchell website at www.lakemitchellsewer.com.

Summary of 2018 RLS aquatic vegetation and water quality program

Dave Foley

I have put together this summary of the annual report prepared by Dr. Jennifer Jermalowicz-Jones CEO of Restorative Lake Science. The full report can be found at www.lakemitchell.org.

The overall condition of Lake Mitchell in 2018 was very good. Water clarity is improving and the lake has enough nutrients (phosphorus and nitrogen) to support some algae. Nutrient levels are considered moderate with higher concentrations in the coves near the tributaries.

Protection of the 26 native aquatic plant species is vital for the health of the lake and should not be managed unless they are a nuisance to lakefront property owners and create navigational and recreational hazards (i.e. lily pads or nuisance pond weeds in the coves).

Invasive plants such as Eurasian Watermilfoil (EWM) are able to grow in moderate nutrient waters and thus are a challenge to the Lake Mitchell ecosystem. In 2018 approximately 60.8 acres of EWM was treated throughout the entire lake. The coves and Torenta Canal required contact herbicide for nuisance pond weeds with a total of 22.1 acres. Additionally 20 acres of nuisance Cladophora and nuisance pond weeds were harvested in the coves and canal. A small area of phragmites was treated on August 22, 2018.

The stocking of *Galerucella* beetles to control purple loosestrife is recommended to continue in 2019.

Lake Mitchell Water Quality

In late summer of 2018 water quality was measured in the deepest basins of Lake Mitchell. Parameters were measured for water temperature, dissolved oxygen, pH, conductivity, total alkalinity, total dissolved solids, Secchi transparency, total phosphorus, chlorophyll and algal species composition. The results of these studies are found in the full report on our website. Lake Mitchell would be considered eutrophic since it does contain ample phosphorus, nitrogen, and aquatic vegetation growth but also good water clarity and moderate algal growth.

Here are highlights of the water quality report:

Water clarity averaged around 6.0 feet which is lower than average due to the higher water temperatures persisting later into the season and as a result of the late season heavy rainfall events. Earlier season measurements ranged from 9-12 feet.

Phosphorus is primary nutrient necessary for abundant algae growth and aquatic plant growth. Even though phosphorus levels are moderate, the dissolved oxygen levels are good enough at the bottom to not cause release of phosphorus from the lake bed.

Total alkalinity - The alkalinity of Lake Mitchell is quite low and is indicative of a "soft water" aquatic system.

pH - Most Michigan lakes have pH values that range from 6.5 to 9.5. Lake Mitchell is considered "neutral" on the pH scale and ranges from 7.7 to 8.4.

Conductivity - Conductivity is a measure of the amount of mineral ions in the water, especially of those of salts and other dissolved inorganic substances. Lake Mitchell measured 161-163. Severe water impairments do not occur until values exceed 800 and are toxic to wildlife at around 1000.

Chlorophyll-a and algal species composition - Chlorophyll-a is a measure of the amount of green plant pigment present in the water, often in the form of planktonic algae. High concentrations (greater than 6) are found in eutrophic (nutrient rich lakes). Concentrations of less than 2.2 are found in oligotrophic (nutrient poor lakes). In 2009 Lake Mitchell was 5.2. Last fall it was 2, which is quite low for an inland lake. This decline may be resulting in increased transparency. Tests show Lake Mitchell has a good diversity of alga which indicates good water quality.

Toxic blue-green algae - Blue-green alga can be found in many lakes in Michigan, including the Great Lakes. When it is growing in high abundance, it can result in surface scums that produce a toxin that humans and animals should avoid contact with when swimming. The alga flourishes and may congregate near shore during periods when water temperatures are high. RLS is in the process of developing an immediate watershed plan for Lake Mitchell to help reduce runoff associated nutrients which could improve water quality in the lake.

Status of native aquatic vegetation in Lake Mitchell

The most recent survey determined there were 26 native aquatic plant species in Lake Mitchell. This is similar to recent years and means that the lake is maintaining its biodiversity. Biodiversity is key to maintaining a productive fishery in a lake. The overall % cover of the lakes by native plants is low relative to the lake size and

thus these plants should be protected and not treated unless they become a nuisance in shallow coves or the Torenta Canal. RLS may recommend the use of mechanical harvesting in some areas of Big and/or Little Cove and along the Torenta Canal.

Status of invasive aquatic plant species in Lake Mitchell

The amount of Eurasian Watermilfoil present in Lake Mitchell varies each year depending on climatic conditions and runoff associated nutrients. The whole lake June 6 survey determined there was 60.8 acres of milfoil. Both Franke South and the Torenta Canal were harvested in addition to chemical treatments.

Evaluation of *Galerucella* beetles on purple loosestrife reduction

Beetles have been stocked where loosestrife is growing in order to create a sustainable population around the lake that will manage the presence of this plant. While loosestrife is still commonly seen around the lake, the beetle population is making progress at controlling this invasive plant.

Management recommendations for 2018

Surveys of the lake will be done in May and/or June and from that a treatment plan will be developed. Treatments will occur in June and post-treatment surveys will determine if further treatment will be needed.

This year RLS is recommending that we treat large offshore areas with Sculpin@ (2, 4-D). Sculpin@ is recommended for a change from Navigate@(2, 4-D) since the latter was used in 2018 and so that plant tolerance does not become established. Near shore areas will continue to be treated with Renovate OTF@ (triclopyr). Diquat and/or Clipper will continue to be used in the cove areas for nuisance natives. The canal will be monitored for a possible harvest and scheduled if necessary.

Maintaining EWM at existing low levels will be the top priority to keeping a healthy balance and continuing to maintain a low assessment for the lakefront owners.

Water quality will continued to be monitored in the lake and tributaries. New water quality data from 2019 will be compared to historic data to establish any long-term trends.

Lake Mitchell is a healthy lake with excellent aquatic plant diversity. It has acceptable water clarity that is somewhat reduced by tannins and lignins coming from extensive wetland drainage. RLS is working on an immediate watershed plan to reduce future nutrient contributions. Temporary algal blooms occur during hot windless periods but do not tend to become established but may aggregate near shoreline if hot weather persists for an extended period of time. RLS will continue to monitor the lake for any problematic blooms.

Anglers face new bait regulations

Starting March 21 new regulations went into effect for the handling of bait. According to new laws passed by the Michigan legislature, fishermen can't use baitfish or cut bait in any waterway other than the one in which it was caught (or in a connecting waterway). The same is true for non-baitfish like crayfish or wigglers – you can't move them between waterways.

If you buy or collect baitfish, that which isn't used must be disposed of on land or in the trash, not released back into the water. Anglers, who practice catch and release, should only release the fish back into the same waters or connecting waters, that the fish could have reached on its own.

Baitfish and other aquatic organisms can carry fish diseases such as heterosporus. This parasite makes yellow perch fillets appear like they have already been cooked or have freezer burn.

How the new Michigan wetland law could effect lake Mitchell.

Dave Foley

Last December during the lame duck session of the Michigan legislature, a bill was proposed that would have greatly changed the current wetland law in Michigan. This concerned many living in areas near wetlands as these lands might more likely have been filled under the proposed law. Our state representative, Michele Hoytenga, found these changes troubling and worked hard to minimize effects of this law. The result was that the new law is virtually the same as the original law. The most likely effect will be that if the Federal standards for altering wetlands changes, Michigan will have to comply with those changes as no state will be allowed to have standards that are stricter than federal law.

If you're wondering why we, as property owners on Lake Mitchell should be concerned about wetland laws, the information in the following paragraphs may be helpful:

Nearly 35% of Lake Mitchell's watershed is wetland or open water. Along the shoreline of the lake, virtually the only areas that haven't been developed are wetland. Historically, wetlands were dismissed as useless land that should be filled in to build homes or drained for agricultural use. These bogs, swamps, or marshes perform vital functions such as flood control, filtering of pollutants, and providing critical habitat for many fish and wildlife species. Wetlands absorb water that would otherwise flood yards and crawlspaces. Lowlands in the Lake Mitchell watershed hold the water releasing it more slowly into the lakes over a period of time. During periods when there is little rain or snow melt, water seeping from wetlands helps keep the lake level from falling dramatically.

It is likely that filling wetlands would exacerbate the water level problems that have raised concerns among property owners on Lake Mitchell. Wetland acts like a sponge to soak up water from the melting of winter snow or the effects of a major rainstorm. If this water wasn't trapped in wetlands, it would saturate low lying properties, flooding lawns and wetting crawlspaces.

In the summer when evaporation and drought drops Lake Mitchell's water level, it is the gradual release of water from wetlands that helps that keeps the low lake level problem from getting even worse.

The presence of nitrogen and phosphorus in the water promotes weed growth. Scientists have estimated that wetlands may remove between 70% and 90% of entering nitrogen and reduce phosphate concentrations by 50%. The estimated mean retention of phosphorus by wetlands is 45%.

The marsh and swampland near Lake Mitchell provide essential wildlife habitat. When you hear the peepers and frogs calling in the spring, these sounds are coming from wetlands. These areas are also feeding grounds and provide cover for many forms of wildlife including migratory waterfowl and redwing blackbirds as well as wildlife species classified as rare, threatened, or endangered.

Wetlands within 500 feet of Lake Mitchell or within 500 feet of any stream or pond are regulated by the Department of Environmental Quality (DEQ). A wetland permit approved by the DEQ is required to do certain activities in wetlands.

According to a 1991 United States Fish and Wildlife Service Wetland Status and Trends report, over 50% of Michigan's original wetlands have been drained or filled, thereby making the protection of remaining wetlands that much more important.

Extinction on the local scene -- Dave Foley (Originally published in *Cadillac News*)

Our long winter may now finally be ending. The woods will soon be tinged with green, and the outdoors will come alive again. Birds, animals, insects, and all manner of aquatic organisms, like so many old friends, will fill our neighborhood. But some never return. Crayfish, leeches, mayflies, bullfrogs, June bugs, fireflies - creatures that inhabited the wetlands, woods, and Lake Mitchell by our house a quarter century ago have disappeared completely or are rarely seen. Reading Elizabeth Kolbert's book *The Sixth Extinction* helps put this in perspective. While cataclysmic events such as glaciation, volcanic eruptions, asteroid impacts and changes in ocean chemistry have caused mass extinctions in the past, Kolbert notes that, "Right now we are in the midst of the Sixth Extinction, this time caused solely by humanity's transformation of the ecological landscape." She goes on to recount incidences around the world where man has inadvertently or deliberately caused the decimation of living species at an alarming rate. As I read, I began to think about instances of this phenomena going on literally in my own backyard and the lake beyond our doorstep.

The annual hatch of mayflies used to be an event that was both loved and loathed. Loved because the flies were such a great food source for fish and loathed because when swarms of flies rose off the lake surface around the first week of June, homeowners had to deal with thousands of flies stuck in window screens and lying dead on their decks. Walleye fishing tanked. Our hooked offerings of night crawlers, minnows, and lures went untouched as gamefish gorged on the hatching insects. My journal shows the last big hatch was in 1988. Four years later my notes say, "No mayflies anywhere."

There was a time when I would see crayfish darting among the rocks along our lakeshore. On occasion I appropriated a few to use as enticers for smallmouth bass. They're gone now. I haven't seen a crustacean scooting through the shallows in years.

The leech population suffered as well. It used to be that whenever a group of kids were in the lake, invariably one would emerge, often screaming, with a black rubbery leech attached to a leg. We'd grab the box of *Morton Salt* that we kept on the deck, sprinkle the white grains on the tiny creature and watch as it curled up and let go. But then the leeches disappeared. I hadn't needed salt box in decades until last summer. Hearing a squeal, I looked up to see a toddler in tears rushing to his mom, his shin adorned with a small writhing leech. I felt sorry to see the child in distress but also happy. Maybe this is the first of a next generation of leeches. I sure hope so.

What happened to the mayflies, crayfish, and leeches? I am afraid we can blame their disappearance on copper sulfate that was sprayed on the lake to treat swimmer's itch. Each year in June a crop duster would fly low over the water dropping blue crystals into the water. At the same time, a boat moved along the shoreline carrying an individual shooting a stream of inky blue liquid into the rocks that lined our shore. These chemical treatments were supposed to kill the snails that carried the parasite that caused swimmer's itch. The treatments were stopped in the late 1980s, but the copper, that accumulated over the years on the lake bottom, likely reached a level that proved toxic to mayflies, leeches, and crayfish.

While there seems to be an explanation for the eradication of organisms that once resided in the lake, I can only speculate about what happened to the June bugs, that used to circle our porch light and smack into our living room windows. You didn't have to see them to know they were around. When airborne, their wings created a hum. If we stepped outside we'd find bronze back beetles scattered about on our deck. Not any more. Nowadays sightings are rare in our yard. "Google" with keywords "June bugs and declining numbers" and you'll see mention of pesticides. A chemically treated lawn probably does in the white grubs that become beetles.

Fireflies, that's another insect that is pretty much "MIA." Seeing the flickering tiny dots of yellow light dancing across our yard and through the woods, to me is the essence of a summer evening. As a kid I remember collecting them in a jar. We called them lightning bugs. Then my brother and I would take them to our bedroom to watch the little light show as we fell asleep. Once we were asleep, Mom would take them out and release them in the yard. Years later our kids captured fireflies and once they were asleep, I would become the liberator of the lightning bugs. Last summer I saw only a few. I hope there will be some here when my grandchildren come to visit this year.

In my research, studies I found pointed to the ever expanding number of yard lights as a possible cause of the decline of fireflies. Apparently these insects need darkness so that mates can find each other.

I'm sure that the creatures I've described aren't the only ones to disappear from our neighborhood. Although I've paid close attention to birds in recent years, I'll bet some species that were here a couple decades ago no longer inhabit the area. The same could be said for insects, trees, and plants. Kolbert indicates that at the current rate of extinction another 15% of the world's species will be gone by 2050. It's a sobering thought to realize what is happening. I would hope we can become better stewards of our environment.

Looking back, 16 months on Lake Mitchell –Jan. 2018 – Apr. 2019

2018

January 5 & 6 Low temperatures of -23 and -28.

February 18 - spring warmup – no snow and daytime highs not below freezing until March 6

February 26- Canada geese return, a sign of spring.

February 27 – Redwinged blackbirds return.

March 26 – Ice goes off Lake Mitchell

April 8 - Record low temperature -3 degrees, Lakes refreeze for 24 hours.

April 13- 17 - Stormy period – rain then 4-6” of snow.

April 20 – Lake Cadillac refreezes for one day.

April 21 – Spring arrives! 50 and 60 degree temps.

May 24-30 – Hot days - highs range from 85-90.

June 19 - 60.8 acres Eurasian watermilfoil treated in Main Lake/Big Cove

June 20 - Little and Frankes Coves treated.

July 18 - Algae harvested in Torenta Canal

June-July - Lots of hot days. Occasionally 90+ degrees.

August 27 – Big windstorm gusts to 60 mph. Lake Mitchell loses power for 25 hours. Major damage south of M55.

October – Generally a cold rainy month.

October 6-10 Peak fall color

October 20 - 1st ground cover of snow.

November 18 – Mitchell nearly completely frozen.

November 18 - Caberfae has 2nd earliest opening on record.

December 12 – Lake is officially frozen.

Mid- Dec. – Jan. 15 -Winter is no-show. No XC skiing/snowmobiling.

2019

January 19 – 31 – COLD!

January 28-30 – Polar Vortex extreme cold and wind. No mail delivery 1/30. State declares cold emergency.

Nightly lows -17 & -19.

February 24 – Blizzard – Many roads closed

This February was one of snowiest on record.

March 10 - 24" of snow on ground.

March 14 -Canada geese and red winged blackbirds return.

Cadillac Schools closed for 17 days this winter. A record. Usually about 5.

Lake Mitchell facts

Lake surface area – 2580 acres

Maximum depth – 25 feet

Mean depth of lake – 8.7 feet

Shoreline length – 11.4 miles

Watershed – 58,256 acres

Number of aquatic plant species in lake – 27

Elevation of Lake Mitchell – 1289 feet

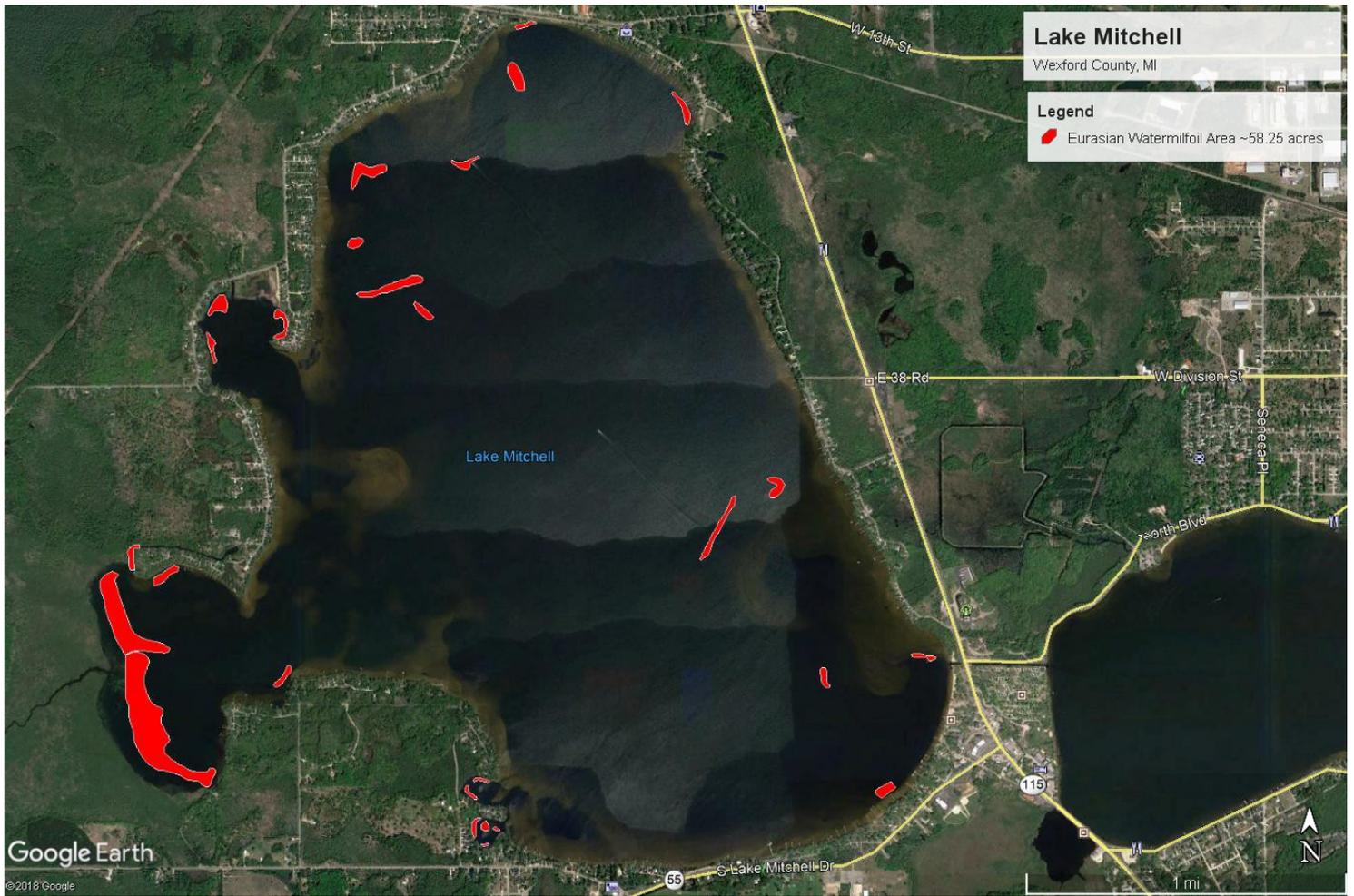
Average water clarity – 7.5 feet

Lake Mitchell is in the Muskegon River watershed.

Typical total freezing of the lake – last week of November

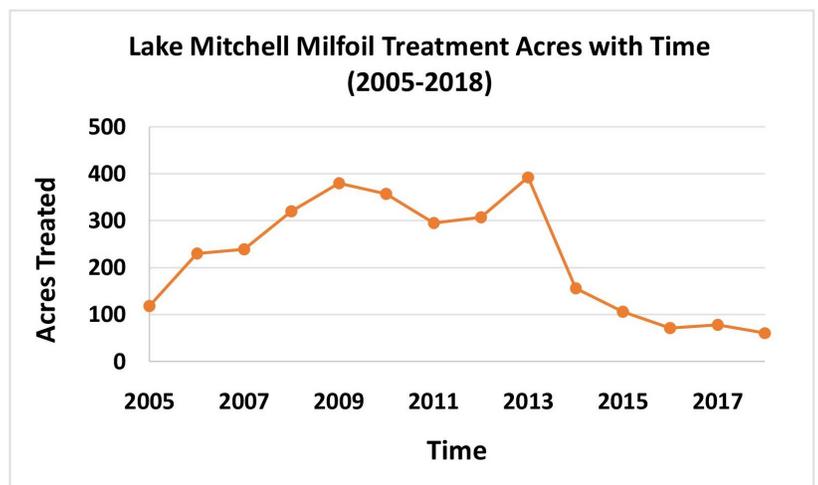
Typical ice out on the lake – second week of April

2018 Lake Mitchell Treatment Map



Milfoil Control History Graph

<u>Year</u>	<u>Treatment Acres</u>
2005	118
2006	230
2007	239
2008	320
2009	380
2010	357
2011	295
2012	307
2013	393
2014	156
2015	106
2016	71
2017	78
2018	61



NOTICE 2019

PLM Lake and Land Management Corp
 PO Box 424, Ewart, MI 49631
 (800) 382-4434(o) (231) 372-5900(f)
 www.plmcorp.net



IN 2019, SELECT AREAS OF MITCHELL LAKE WILL BE TREATED PERIODICALLY THROUGHOUT THE SUMMER BEGINNING IN APPROXIMATELY LATE MAY FOR THE CONTROL OF WEEDS AND/OR ALGAE. Below is a list of herbicides that may be applied to the lake and associated use restrictions. On day of treatment, signs will be posted along the shoreline within 100 feet of treatment areas that indicate what products were used and specific water use restrictions that apply:

Check all that apply	Chemical product/active ingredient	Chemical trade name	Do Not Use this water for swimming or bathing until	Do Not Use this water for ornamentals or turf irrigation until	Do Not Use this water for domestic purposes or agriculture irrigation until	Do Not Use this water for livestock watering or similar purposes until
X	Endothall	Aquathol K, Hydrothol 191	1 Day(s)	N/A	14 Day(s)	14 Day(s)
X	Flumioxazin	Clipper, Shooner	1 Day(s)	3 Day(s)	5 Day(s)	N/A
X	Imazapyr	Habitat	1 Day(s)	120 Day(s)	120 Day(s)	N/A
X	Chelated Copper Herbicide	Komeen Crystal, Nautique	1 Day(s)	N/A	N/A	N/A
X	2,4-D ester	Navigate 2,4-D	1 Day(s)	INDEF or until approved assay indicates a concentration of 100ppb or less for ornamentals; No restriction for established turf	INDEF or until approved assay indicates a concentration of 100ppb or less	INDEF or until approved assay indicates a concentration of 70ppb or less
X	Triclopyr liquid	Navitrol , Renovate 3	1 Day(s)	120 Day(s) or until approved assay indicates 1ppb or less; No restriction for established turf/grasses	120 Day(s) or until assay indicates 1ppb or less. N/A on domestic	See product label
X	Triclopyr granular	Navitrol DPF , Renovate OTF	1 Day(s)	Site-specific recommendation* No restriction for established turf/grasses	120 Day(s) or until assay indicates 1ppb or less. N/A on domestic	See product label
X	2,4-D amine	Sculpin G	1 Day(s)	Site-specific recommendation* No restriction for established turf/grasses	N/A on domestic; assay indicates levels under 100ppb at the water intake	See product label
X	Carfentrazone-Ethyl	Stingray	1 Day(s)	14 Day(s)	14 Day(s)	1 Day(s)
X	Diquat Dibromide	Tribune	1 Day(s)	3 Day(s)	5 Day(s)	1 Day(s)
X	Florpyrauxifen-Benzyl	ProcellaCOR	1 Day(s)	Site-specific recommendation* No restriction for established turf/grasses	N/A on domestic; assay indicates no detect at the water intake	N/A
X	PLM Blue, Cygnet Select: water dye (tracer), SeClear and SeClear G.; chelated copper, Cygnet Plus, PolyAn: Adjuvant,.; M.D. pellets: gram negative, naturally occurring bacteria.				No Restrictions on swimming, bathing, irrigation, domestic purposes or livestock watering.	

For a complete listing of all product labels, please see our website.

N/A= Not Applicable INDEF= Indefinite

***Site-Specific recommendations to limit ornamental irrigation with Renovate & Sculpin granular treated water will typically last 2-14 days. Contact PLM for further information.**

The chemicals used for Aquatic Nuisance Control are registered by the U.S. Environmental Protection Agency and the Michigan Department of Agriculture. The potential for damage to fish and other non-target organisms is minimal provided that the product is used as directed on the product label and the permit. To minimize the possible effects on health and the environment, the treated water is restricted for the above purposes.

PLM Lake & Land Management Corp. Certified Applicators: Salvatore Adams, Jason Broekstra, Jaimee Conroy, Bill D'Amico, Jeff Fischer, BreAnne Grabill, Dustin Grabill, Steve Hanson, Kyle Heath, Jake Hunt, Nate Karsten, Justin Krueger, Shannon Leifker, Blake Mallory, Michael Pichla, James Scherer, Ben Schermerhorn, Casey Shoaff, Lucas Slagel, Jeff Tolan, Andy Tomaszewski, Dennis Vangessel,

**Lake Mitchell Improvement Board
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