2025

LAKE LANSING

WATER QUALITY & PLANT CONTROL SUMMARY

PREPARED FOR:
LAKE LANSING S.A.D. ADVISORY COMMITTEE
MERIDIAN TOWNSHIP, MI

PROGRESSIVE
COMPANIES

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PLM Lake and Land Management

MECHANICAL HARVESTER

PLM Lake and Land Management

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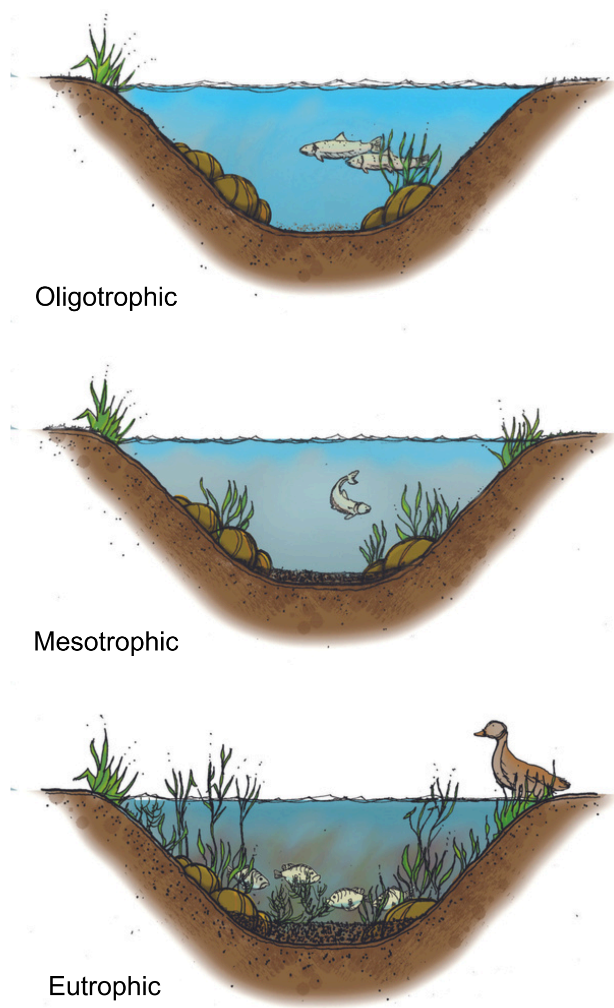
LAKE WATER QUALITY

Lake water quality is determined by a unique combination of processes that occur both within and outside of the lake. In order to make sound management decisions, it is necessary to have an understanding of the current physical, chemical, and biological condition of the lake, and the potential impact of drainage from the surrounding watershed. Lakes are commonly classified as oligotrophic, mesotrophic, or eutrophic. Oligotrophic lakes are generally deep and clear with little aquatic plant growth. These lakes maintain sufficient dissolved oxygen in the cool, deep bottom waters during late summer to support cold-water fish such as trout and whitefish. By contrast, eutrophic lakes are generally shallow, turbid, and support abundant aquatic plant growth. In deep eutrophic lakes, the cool bottom waters usually contain little or no dissolved oxygen. Therefore, these lakes can only support warmwater fish such as bass and pike. Lakes that fall between these two extremes are called mesotrophic lakes.



Lake classification.

Under natural conditions, most lakes will ultimately evolve to a eutrophic state as they gradually fill with sediment and organic matter transported to the lake from the surrounding watershed. As the lake becomes shallower, the process accelerates. When aquatic plants become abundant, the lake slowly begins to fill in as sediment and decaying plant matter accumulate on the lake bottom. Eventually, terrestrial plants become established and the lake is transformed to a marshland. The aging process in lakes is called "eutrophication" and may take anywhere from a few hundred to several thousand years, generally depending on the size of the lake and its watershed. The natural lake aging process can be greatly accelerated if excessive amounts of sediment and nutrients (which stimulate aquatic plant growth) enter the lake from the surrounding watershed. Because these added inputs are usually associated with human activity, this accelerated lake aging process is often referred to as "cultural eutrophication." The problem of cultural eutrophication can be managed by identifying sources of sediment and nutrient loading (i.e., inputs) to the lake and developing strategies to halt or slow the inputs. Key parameters used to evaluate a lake's productivity or trophic state include total phosphorus, chlorophyll-*a*, and Secchi transparency.

PHOSPHORUS

Phosphorus is the nutrient that most often controls aquatic plant growth and the rate at which a lake ages and becomes more eutrophic. In the presence of oxygen, lake sediments act as a phosphorus trap, making it unavailable for aquatic plant and algae growth. If bottom-water oxygen is depleted, phosphorus will be released from the sediments and may be available to promote aquatic plant and algae growth. In some lakes, the internal release of phosphorus from the bottom sediments is the primary source of phosphorus loading.

By reducing the amount of phosphorus in a lake, it may be possible to limit the amount of aquatic plant and algae growth. In general, lakes with a phosphorus concentration greater than 20 µg/L (micrograms per liter, or parts per billion) are able to support abundant growth and are classified as nutrient-enriched or eutrophic.

CHLOROPHYLL-*a*

Chlorophyll-*a* is a pigment that imparts the green color to plants and algae. A rough estimate of the quantity of algae present in lake water can be made by measuring the amount of chlorophyll-*a* in the water column. A chlorophyll-*a* concentration greater than 6 µg/L is considered characteristic of a eutrophic condition.

SECCHI TRANSPARENCY

A Secchi disk is often used to estimate water clarity. The measurement is made by fastening a round, black and white, 8-inch disk to a calibrated line. The disk is lowered over the deepest point of the lake until it is no longer visible, and the depth is noted. The disk is then raised until it reappears. The average between these two depths is the Secchi transparency. Generally, it has been found that aquatic plants can grow at a depth of approximately twice the Secchi transparency measurement. In eutrophic lakes, water clarity is often reduced by algae growth in the water column, and Secchi disk readings of 7.5 feet or less are common.

Generally, as phosphorus inputs (both internal and external) to a lake increase, the amount of algae the lake can support will also increase. Thus, the lake will exhibit increased chlorophyll-*a* levels and decreased transparency. A summary of lake classification criteria is shown in Table 1.

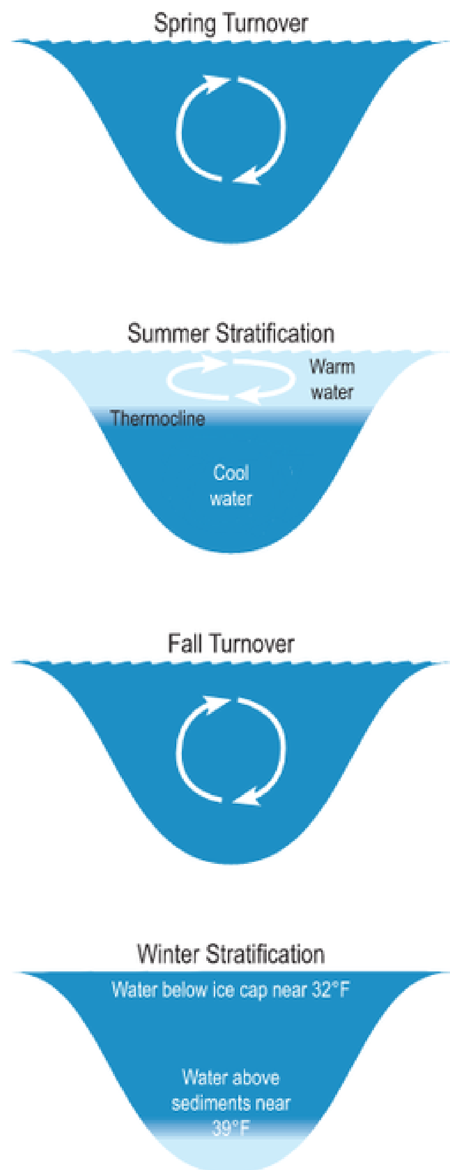
TABLE 1 - LAKE CLASSIFICATION CRITERIA

Lake Classification	Total Phosphorus (µg/L)*	Chlorophyll-*a* (µg/L)*	Secchi Transparency (feet)
Oligotrophic	Less than 10	Less than 2.2	Greater than 15.0
Mesotrophic	10 to 20	2.2 to 6.0	7.5 to 15.0
Eutrophic	Greater than 20	Greater than 6.0	Less than 7.5

* µg/L = micrograms per liter = parts per billion

TEMPERATURE

Temperature is important in determining the type of organisms which may live in a lake. For example, trout prefer temperatures below 68°F. Temperature also determines how water mixes in a lake. As the ice cover breaks up on a lake in the spring, the water temperature becomes uniform from the surface to the bottom. This period is referred to as "spring turnover" because water mixes throughout the entire water column. As the surface waters warm, they are underlain by a colder, more dense strata of water. This process is called thermal stratification. Once thermal stratification occurs, there is little mixing of the warm surface waters with the cooler bottom waters. The transition layer that separates these layers is referred to as the "thermocline." The thermocline is characterized as the zone where temperature drops rapidly with depth. As fall approaches, the warm surface waters begin to cool and become more dense. Eventually, the surface temperature drops to a point that allows the lake to undergo complete mixing. This period is referred to as "fall turnover." As the season progresses and ice begins to form on the lake, the lake may stratify again. However, during winter stratification, the surface waters (at or near 32°F) are underlain by slightly warmer water (about 39°F). This is sometimes referred to as "inverse stratification" and occurs because water is most dense at a temperature of about 39°F. As the lake ice melts in the spring, these stratification cycles are repeated.



Seasonal thermal stratification cycles.

DISSOLVED OXYGEN

An important factor influencing lake water quality is the quantity of dissolved oxygen in the water column. The major inputs of dissolved oxygen to lakes are the atmosphere and photosynthetic activity by aquatic plants. An oxygen level of about 5 mg/L (milligrams per liter, or parts per million) is required to support warmwater fish. In lakes deep enough to exhibit thermal stratification, oxygen levels are often reduced or depleted below the thermocline once the lake has stratified. This is because the oxygen has been consumed, in large part, by bacteria that use oxygen as they decompose organic matter (plant and animal remains) at the bottom of the lake. Bottom-water oxygen depletion is a common occurrence in eutrophic and some mesotrophic lakes. Thus, eutrophic and most mesotrophic lakes cannot support coldwater fish because the cool, deep water (that the fish require to live) does not contain sufficient oxygen.

pH and TOTAL ALKALINITY

pH is a measure of the amount of acid or base in the water. The pH scale ranges from 0 (acidic) to 14 (alkaline or basic) with neutrality at 7. The pH of most lakes in the Upper Midwest ranges from 6.5 to 9.0 (Michigan Department of Environmental Quality (MDEQ)* 2012; Table 2). In addition, according to the Michigan Department of Environment, Great Lakes, and Energy (EGLE 2021):

While there are natural variations in pH, many pH variations are due to human influences. Fossil fuel combustion products, especially automobile and coal-fired power plant emissions, contain nitrogen oxides and sulfur dioxide, which are converted to nitric acid and sulfuric acid in the atmosphere. When these acids combine with moisture in the atmosphere, they fall to earth as acid rain. In some parts of the United States, especially the Northeast, acid rain has resulted in lakes and streams becoming acidic, resulting in conditions which are harmful to aquatic life. The problems associated with acid rain are lessened if limestone is present, since it is alkaline and neutralizes the acidity of the water.

Most aquatic plants and animals are adapted to a specific pH range, and natural populations may be harmed by water that is too acidic or alkaline. Immature stages of aquatic insects and young fish are extremely sensitive to pH values below 5. Even microorganisms which live in the bottom sediment and decompose organic debris cannot live in conditions which are too acidic. In very acidic waters, metals which are normally bound to organic matter and sediment are released into the water. Many of these metals can be toxic to fish and humans. Below a pH of about 4.5, fish are unable to survive. The Michigan Water Quality Standard (Part 4 of Act 451) states that pH shall be maintained within the range of 6.5 to 9.0 in all waters of the state.

Alkalinity, also known as acid-neutralizing capacity or ANC, is the measure of the pH-buffering capacity of water in that it is the quantitative capacity of water to neutralize an acid. pH and alkalinity are closely linked and are greatly impacted by the geology and soil types that underlie a lake and its watershed. According to MDEQ (2012):

Michigan’s dominant limestone geology in the Lower Peninsula and the eastern Upper Peninsula contributes to the vast majority of Michigan lakes being carbonate-bicarbonate dominant [which increases alkalinity and moderates pH] and lakes in the western Upper Peninsula having lower alkalinity and thus lesser buffering capacity.

The alkalinity of most lakes in the Upper Midwest is within the range of 23 to 148 milligrams per liter, or parts per million, as calcium carbonate (MDEQ 2012; Table 2).

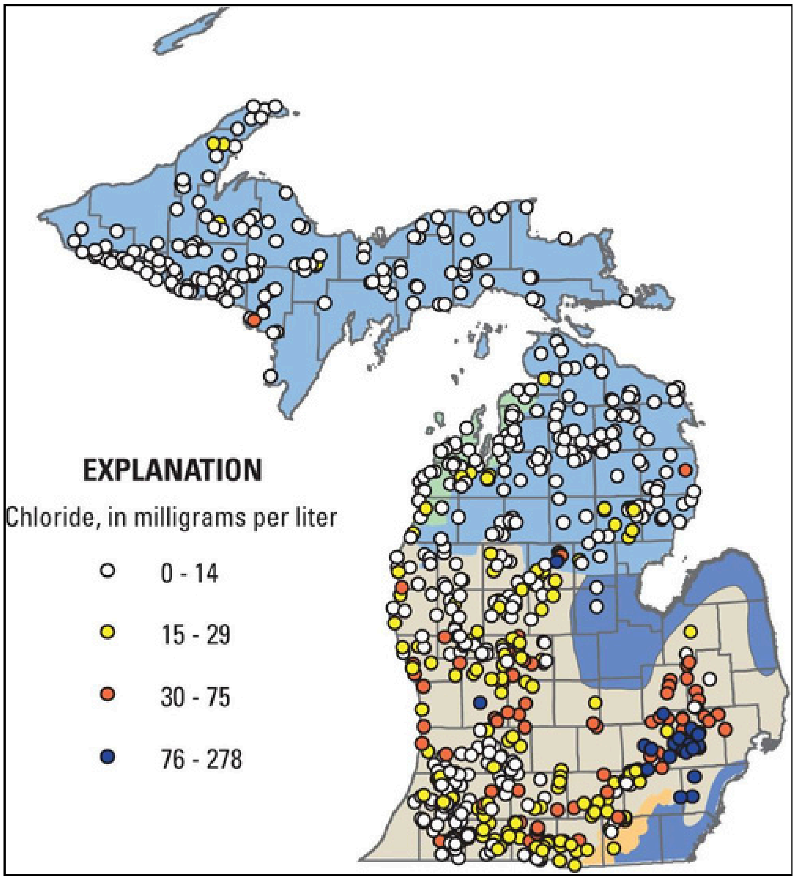
TABLE 2 - pH AND ALKALINITY OF UPPER MIDWEST LAKES

Measurement	Low	Moderate	High
pH (in standard units)	Less than 6.5	6.5 to 9.0	Greater than 9.0
Total Alkalinity or ANC (in mg/L as $CaCO_3$)*	Less than 23	23 to 148	Greater than 148

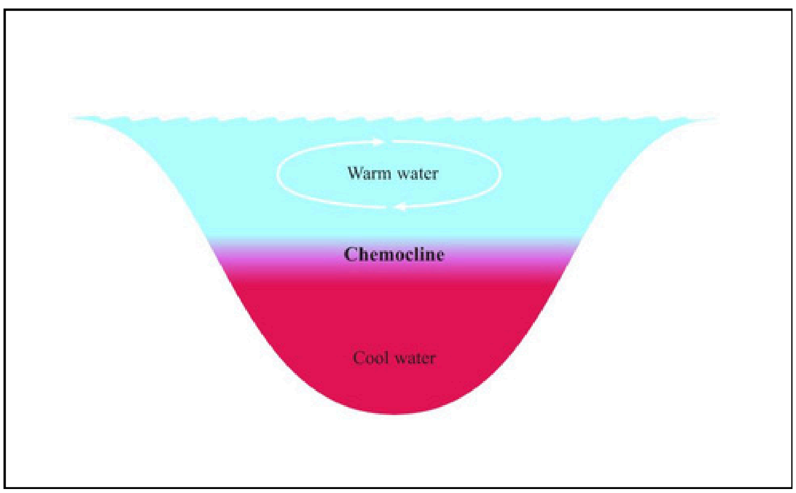
* mg/L as $CaCO_3$ = milligrams per liter as calcium carbonate

CHLORIDE

Normally, chloride is a very minor component of freshwater systems and background concentrations are generally less than about 10 milligrams per liter (Wetzel 2001; Fuller and Taricska 2012, Figure 5). However, chloride pollution from sources such as road salting, industrial or municipal wastewater, water softeners, and septic systems can increase chloride levels in lakes. Increased chloride levels can reduce biological diversity and, because chloride increases the density of water, elevated chloride levels can prevent a lake from completely mixing during spring and fall. The U.S. Environmental Protection Agency (EPA)'s acute and chronic standards for protection of freshwater aquatic life are 860 and 230 milligrams per liter of chloride, respectively (USEPA 2021). The EPA states that "[a]quatic life criteria for toxic chemicals are the highest concentration of specific pollutants or parameters in water that are not expected to pose a significant risk to the majority of species in a given environment or a narrative description of the desired conditions of a water body being 'free from' certain negative conditions."



Lake chloride levels (2001–10) in USEPA ecoregions. Fuller and Taricska 2012.



High chloride inputs can result in a chemocline, preventing lake mixing.

SAMPLING METHODS

Water quality sampling was conducted in the spring and summer of 2025 at the two deep basins within Lake Lansing. Temperature and dissolved oxygen were measured using a YSI Prosolo ODO/T probe. Samples were collected at the surface, mid-depth, and just above the lake bottom with a Van Dorn bottle to be analyzed for pH, total alkalinity, total phosphorus, and chloride. pH was measured in the field using a Hach Pocket Pro pH meter. Total alkalinity, chloride, and total phosphorus samples were placed on ice and transported to Progressive Companies and to Summit Laboratory* for analysis. Total alkalinity was titrated at Progressive Companies using Standard Methods procedure 2320 B. Total phosphorus and chloride were analyzed at Summit Laboratory using Standard Methods procedures 4500-PE and 4500-Cl, respectively. In addition to the depth-interval samples at each deep basin, Secchi transparency was measured and composite chlorophyll-*a* samples were collected from the surface to a depth equal to twice the Secchi transparency. Chlorophyll-*a* samples were analyzed by Prein and Newhof Laboratories* using Standard Methods procedure 10200 H.

Tributaries were monitored in spring and summer at the most significant storm drains and inlet streams. When flowing, velocity was measured with a Global FP111 Flow Probe and discharge was estimated. Samples were collected at sites with measurable flow to analyze total phosphorus and total suspended solids

SAMPLING RESULTS AND DISCUSSION

Sampling results are provided in Tables 3-5. In April of 2025, sampling was conducted during spring turnover when water temperatures were cool and dissolved oxygen concentrations were high. During the September sampling period, Lake Lansing was thermally stratified; the lake was warm and well-oxygenated at the surface, and was cool with low oxygen near the bottom. The thermocline was established between 14 and 24 feet below the surface at the time of sampling. Oxygen concentrations within the upper 20 feet of water were sufficient to support the lake's warm water fishery, and oxygen was depleted below 20 feet. In 2025, total phosphorus concentrations were generally low, with the exception of the deepest samples in late summer which were high. The elevated bottom-water phosphorus is likely due to internal release of phosphorus from the lake sediments. However, sediment phosphorus release occurs in only a very small portion of the lake and, therefore, it is unlikely to be a significant loading source to Lake Lansing. pH and total alkalinity were generally within the moderate range for Upper Midwest lakes. Chloride concentrations were well below the EPA's acute and chronic values for protection of aquatic life. Only two inlet sites exhibited flow during the spring and summer sampling events. Low sample concentrations and discharge suggest that these inlets were not a significant source of nutrient loading at the time of sampling.

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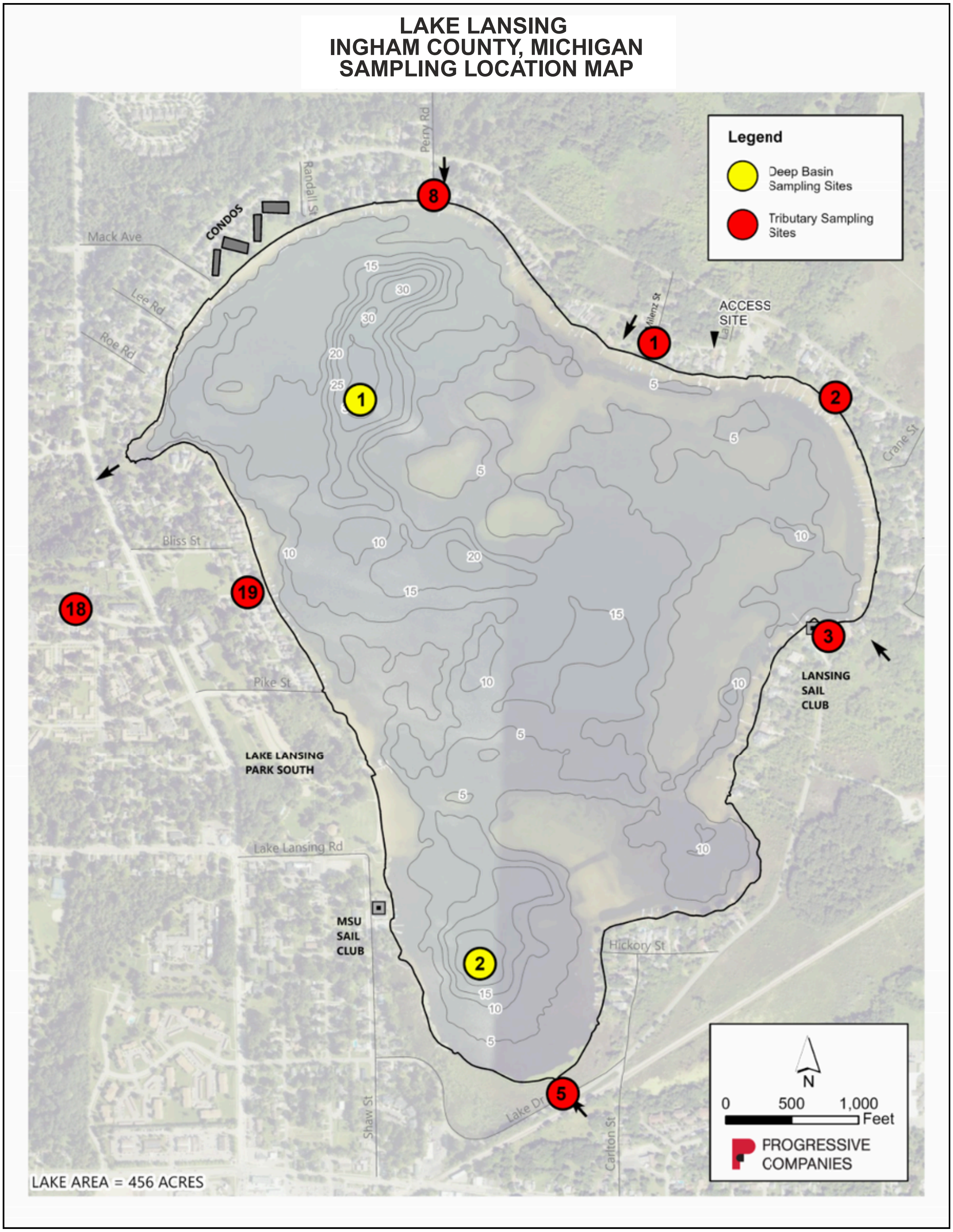
* Summit Laboratory, 900 Godfrey Ave SW, Grand Rapids, MI 49503
* Prein and Newhof Laboratories, 3260 Evergreen Dr NE, Grand Rapids, MI 49525



Lake Lansing Sampling Location Map.

TABLE 3 - LAKE LANSING 2025 DEEP BASIN WATER QUALITY DATA

Date	Station	Sample Depth (feet)	Temperature (F)	Dissolved Oxygen (mg/L)*	Total Phosphorus (µg/L)*	pH (S.U.)*	Total Alkalinity (mg/L CaCO3)*
22-Apr-25	1	1	53	10.0	<10	8.4	137
22-Apr-25	1	15	53	10.0	<10	8.4	135
22-Apr-25	1	31	53	10.0	<10	8.4	137
22-Apr-25	2	1	53	10.3	<10	8.4	136
22-Apr-25	2	12	53	10.2	<10	8.5	136
22-Apr-25	2	24	52	9.4	12	8.4	135
2-Sep-25	1	1	71	9.6	<10	8.6	102
2-Sep-25	1	16	69	8.6	12	8.2	105
2-Sep-25	1	31	56	0.3	137	7.3	172
2-Sep-25	2	1	72	9.6	10	8.4	102
2-Sep-25	2	16	68	6.3	<10	7.7	108
2-Sep-25	2	24	58	0.4	165	7.2	180

TABLE 4 - LAKE LANSING 2025 SURFACE WATER QUALITY DATA

Date	Station	Secchi Transparency (feet)	Chlorophyll-*a* (µg/L)*	Chloride (mg/L)*
22-Apr-25	1	6.5	1	33
22-Apr-25	2	7.5	1	33
2-Sep-25	1	7.0	2	47
2-Sep-25	2	8.0	2	48

TABLE 5 - LAKE LANSING 2025 TRIBUTARY WATER QUALITY DATA

Date	Station	Total Phosphorus (µg/L)*	TSS (mg/L)*	Discharge (cfs)*
22-Apr-25	1	<10	<4	0.4
22-Apr-25	3	<10	<4	0.4
2-Sep-25	3	54	4	0.1

Historical water quality trends for total phosphorus, secchi transparency, and chlorophyll-*a* can be found in Appendix A.

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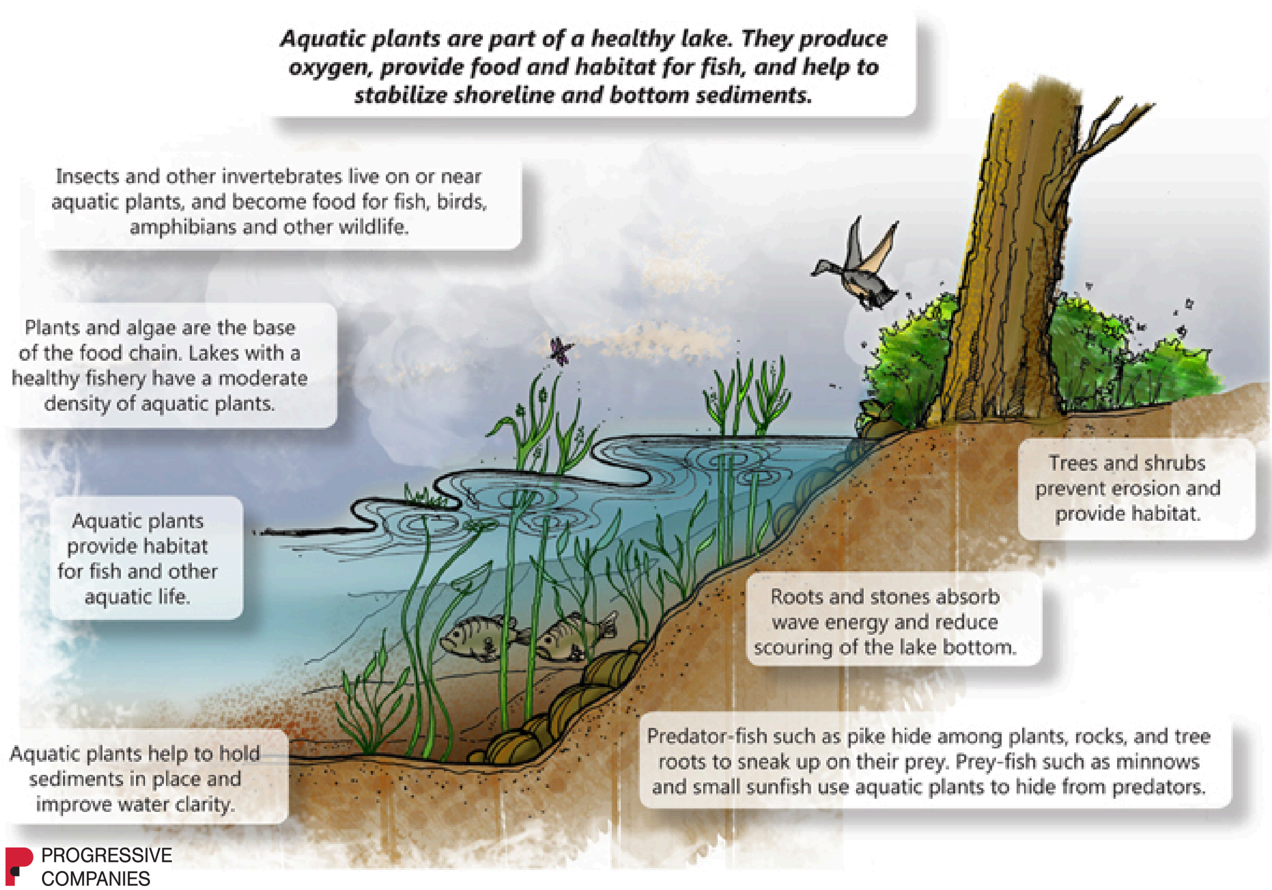
* mg/L = milligrams per liter = parts per million
* µg/L = micrograms per liter = parts per billion
* mg/L as CaCO3 = milligrams per liter as calcium carbonate
* cfs = cubic feet per second

PLANT CONTROL PROGRAM SUMMARY

A nuisance aquatic plant control program has been ongoing on Lake Lansing for many years. The primary objective of the program is to prevent the spread of invasive aquatic plants while preserving beneficial native plant species. This report contains an overview of plant control activities conducted on Lake Lansing in 2025.



Aquatic plants are an important component of lakes. They produce oxygen during photosynthesis, provide food, habitat and cover for fish, and help stabilize shoreline and bottom sediments. There are four main aquatic plant groups: submersed, floating-leaved, free-floating, and emergent. Each plant group provides important ecological functions. Maintaining a diversity of native aquatic plants is important to sustaining a healthy fishery and a healthy lake. Invasive aquatic plant species have negative impacts on the lake's ecosystem. It is important to maintain an active plant control program to reduce the establishment and spread of invasive species within Lake Lansing. Plant control efforts in 2025 consisted of five aquatic plant surveys, two herbicide treatments, and one mechanical harvesting event. Plant control maps outlining treatment and harvest areas can be found in Appendix A.

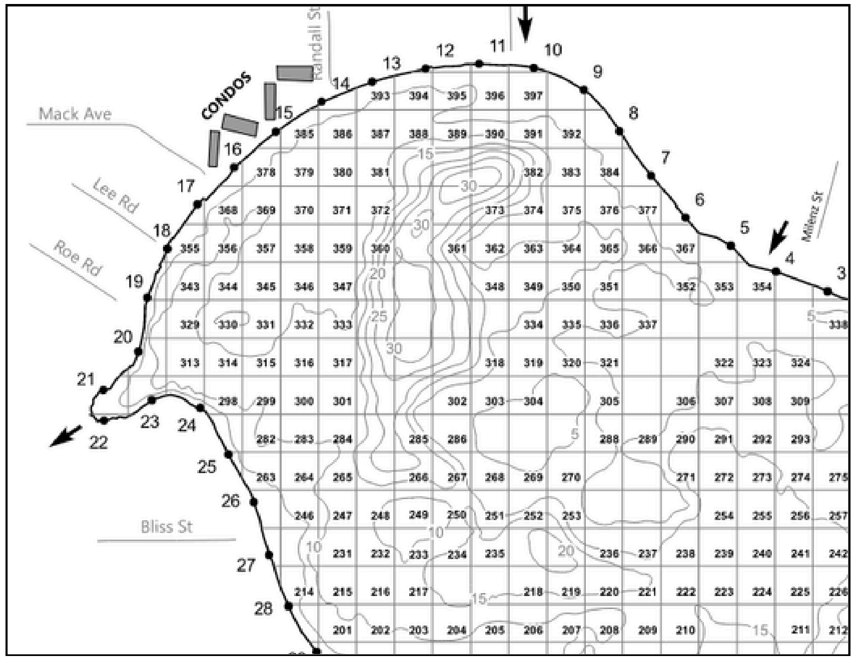
PLANT CONTROL SUMMARY

Plant control activities are coordinated under the direction of an environmental consultant, Progressive Companies. Scientists from Progressive conduct GPS-guided surveys of the lake to identify problem areas, and georeferenced plant control maps are provided to the plant control contractor. GPS reference points are established along the shoreline and shallow offshore areas of the lake. These waypoints are used to accurately identify the location of invasive and nuisance plant growth areas.

Eurasian milfoil
Myriophyllum spicatum

Curly-leaf pondweed
Potamogeton crispus

Starry stonewort
Nitellopsis obtusa



Primary plants targeted for control in Lake Lansing include Eurasian milfoil, curly-leaf pondweed, and starry stonewort. These plants are non-native (exotic) species that tend to be highly invasive and have the potential to spread quickly if left unchecked. Plant control activities conducted on the lake in 2025 are summarized in Table 6.

In Michigan, an Aquatic Nuisance Control (ANC) permit must be acquired from the Department of Environment, Great Lakes, and Energy (EGLE) before herbicides are applied to inland lakes. The permit lists the herbicides that are approved for use, maximum dose rates, use restrictions, and indicates specific areas of the lake where herbicides may be applied. Permit requirements are designed to protect public health and the environment. The contracted herbicide applicator on Lake Lansing, PLM Lake and Land Management, holds the ANC permit for the lake.

PLANT CONTROL SUMMARY

In 2025, 102.75 acres of Lake Lansing were treated with aquatic herbicides throughout the season. Non-native milfoil and curly-leaf pondweed were treated with a combination of two contact herbicides, flumioxazin and diquat dibromide, in the early growing season. A follow up non-native milfoil treatment was conducted in July, using the systemic herbicide, florpyrauxifen-benzyl (ProcellaCOR). A total of 35.5 acres of mechanical harvesting was performed on the lake in early September. Harvesting addressed nuisance native growth areas as well as some starry stonewort.

The initial use of contact herbicides to target the non-native milfoil was intentional as it is important to vary the herbicide mode of action to reduce the likelihood of the milfoil building a tolerance to any one herbicide. Contact herbicides were also utilized to conserve budget, as they are generally cheaper than systemic herbicides and can provide control of both the milfoil and curly-leaf population with one treatment.

During the next few years, systemic herbicides will be the first choice for non-native milfoil treatments to provide extended control. A large scale non-native milfoil treatment is anticipated in the spring or early summer of 2026 due to the use of contact herbicides this spring, which only provide short term control. The presence of nuisance wild celery (eel grass) within Lake Lansing may warrant two mechanical harvesting events in future seasons, dependent on growth timing and density. The first harvesting event would aim to improve navigability around the lake while the second event would target late season biomass removal. Following a harvest, plants absorb nutrients from the water column and sediments during subsequent regrowth. Late-season harvesting is particularly beneficial, as it limits regrowth and reduces sediment accumulation during the fall and winter die-off period.

TABLE 6 - LAKE LANSING 2025 PLANT CONTROL ACTIVITIES

Date	Plants Targeted	Acreage
May 19	non-native milfoil, curly-leaf	90.75
July 23	non-native milfoil	12.00
September 2	Harvesting: nuisance natives, starry stonewort	35.50
Total		**138.25**

PLANT INVENTORY SURVEY

In addition to the surveys of the lake to identify invasive plant locations, a detailed vegetation survey of Lake Lansing was conducted on September 2 to evaluate the type and abundance of all plants in the lake. The table below lists each plant species observed during the survey and the relative abundance of each. At the time of the survey, 14 submersed species, one floating-leaved species, and four emergent species were found in the lake. Lake Lansing maintains a good diversity of beneficial native plant species.

TABLE 7 - LAKE LANSING 2025 PLANT INVENTORY DATA

Common Name	Scientific Name	Group	2025 Percentage of sites where present	2024 Percentage of sites where present
Starry stonewort	*Nitellopsis obtusa*	Submersed	91	28
Chara	*Chara* sp.	Submersed	91	84
Wild celery	*Vallisneria americana*	Submersed	83	91
Sago pondweed	*Stuckenia pectinata*	Submersed	60	22
Eurasian milfoil	*Myriophyllum spicatum*	Submersed	39	12
Variable pondweed	*Potamogeton gramineus*	Submersed	34	15
Large-leaf pondweed	*Potamogeton amplifolius*	Submersed	29	47
Illinois pondweed	*Potamogeton illinoensis*	Submersed	19	1
Flat-stem pondweed	*Potamogeton zosteriformis*	Submersed	13	22
Brittle-leaf naiad	*Najas minor*	Submersed	1	18
Richardson's pondweed	*Potamogeton richardsonii*	Submersed	1	0
Whitestem pondweed	*Potamogeton praelongus*	Submersed	1	34
Thin-leaf pondweed	*Potamogeton* sp.	Submersed	1	1
Elodea	*Elodea canadensis*	Submersed	1	0
White waterlily	*Nymphaea odorata*	Floating-leaved	10	21
Cattail	*Typha* sp.	Emergent	6	18
Lake sedge	*Carex lacustris*	Emergent	1	0
Pickerelweed	*Pontederia cordata*	Emergent	1	3
Swamp loosestrife	*Decodon verticillatus*	Emergent	1	4

Exotic invasive species

Native plant diversity declined slightly from 2024. Sago pondweed, variable pondweed, Illinois pondweed, and Chara showed moderate increases. Although the native plant community varies annually, it has remained relatively stable over the long term. Historical survey trends for non-native milfoil, curly-leaf pondweed, and starry stonewort are provided in Appendix A.

INFORMATION AND EDUCATION

The Lake Lansing S.A.D Advisory Committee initiated several educational actions and improvements around the lake in 2025.

Newsletters: Newsletters were mailed to all SAD residents in the spring and summer, and included updates on treatment and harvesting schedules, stormwater, DNR fisheries survey, waterfowl, and updated navigational maps. Both newsletters from 2025 can be found in Appendix B.

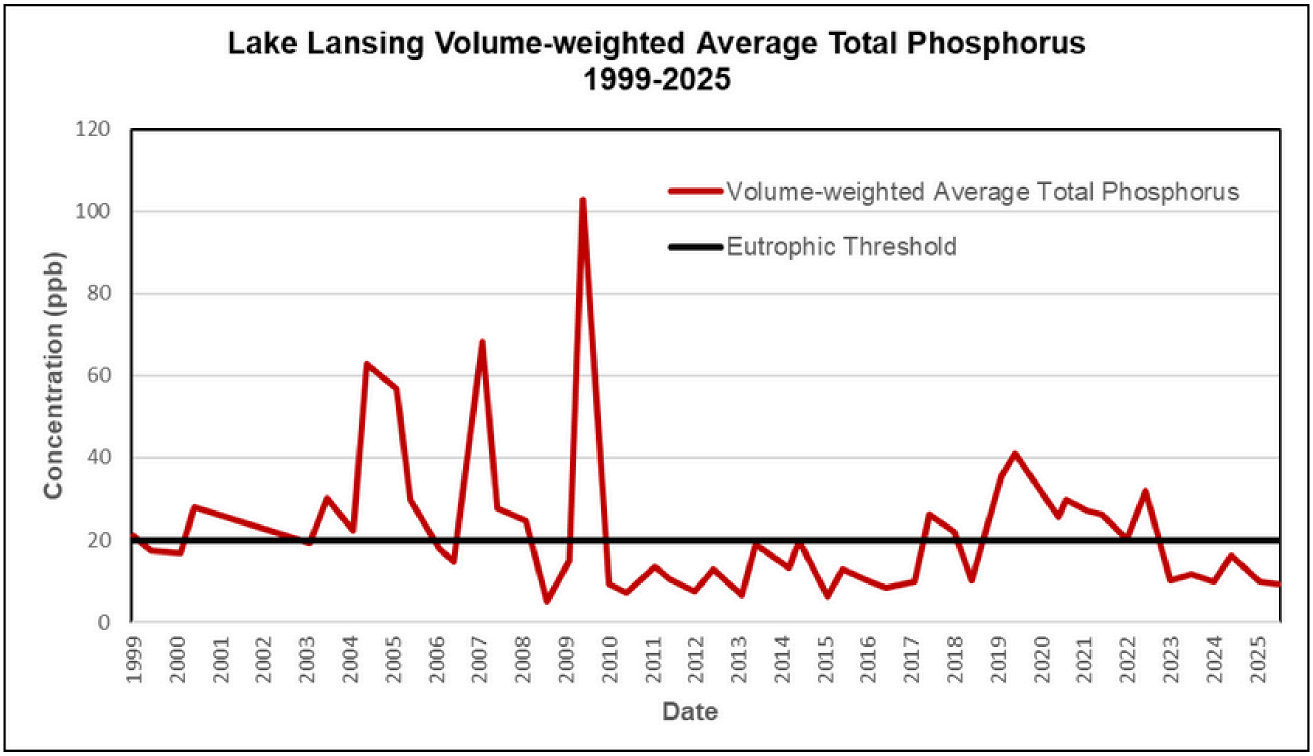
Landing Blitz: The annual aquatic invasive species “Landing Blitz” was held on July 6th at the Lake Lansing public boat launch, including members of the Lake Lansing S.A.D Advisory Committee and DNR. The Landing Blitz is a collaborative outreach campaign to raise awareness about preventing the spread of aquatic invasive species (AIS) through recreational boating and related activities.

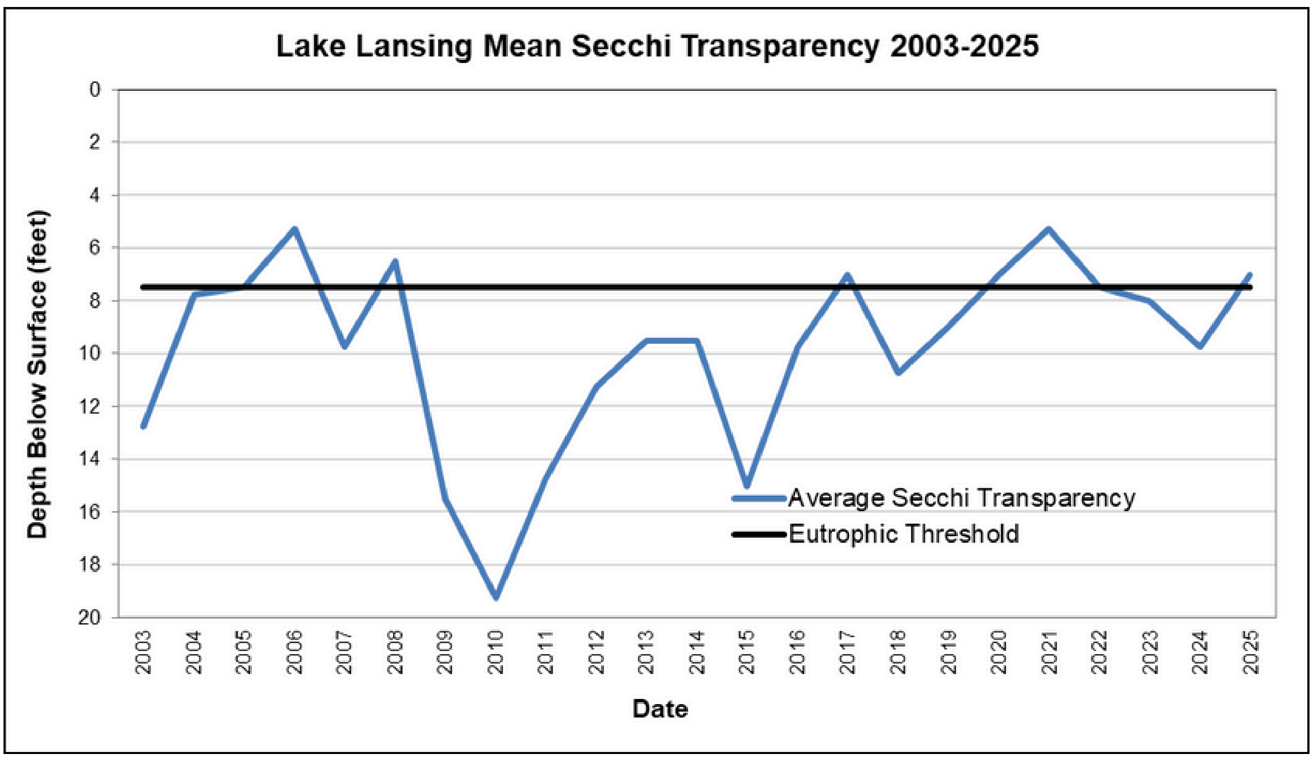
Dog Waste Stations: In October of 2025, the Lake Lansing S.A.D Advisory Committee received notice of increased dog waste along Lake Drive. It was approved by the Committee that funds could be used to install up to five dog waste stations along Lake Drive and adjacent roads surrounding the Lake.

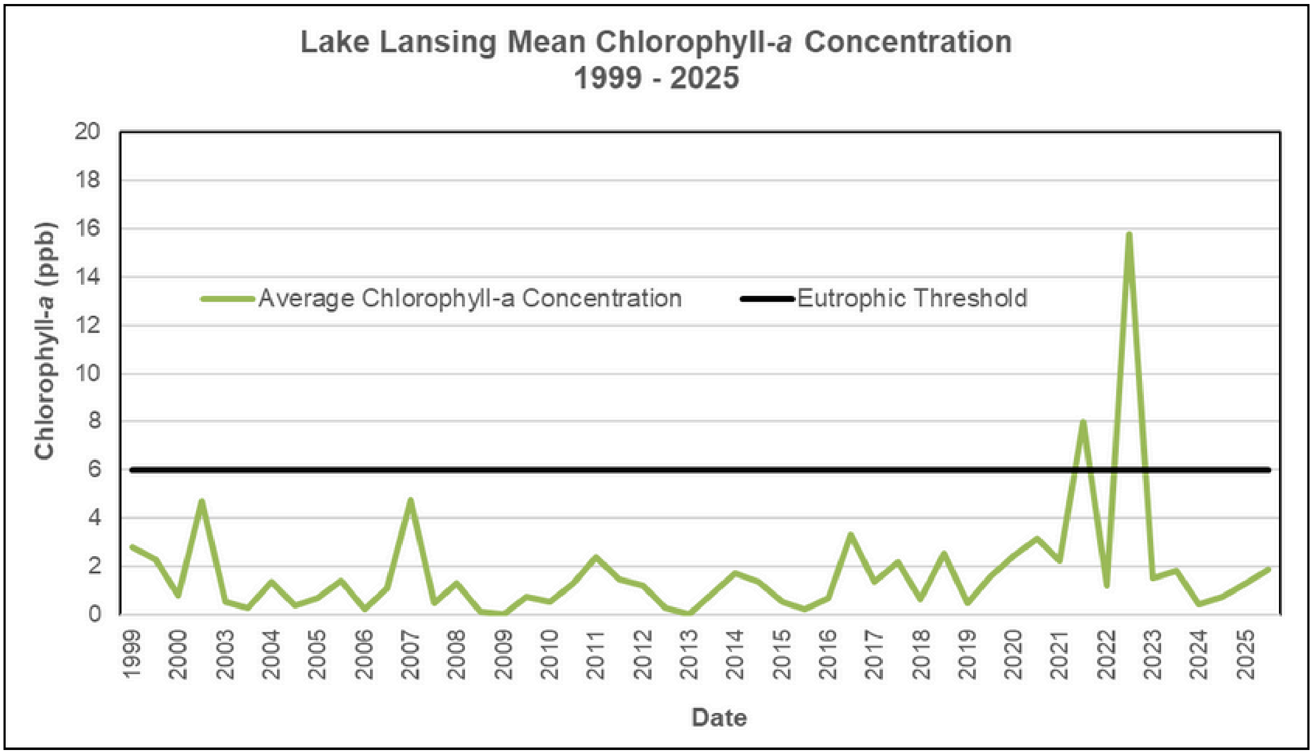
DNR Wake Boat Recommendations: In 2023, the Michigan Department of Natural Resources (DNR) fisheries division published a literature review of wake boat impacts to lake ecology. Recommendations for safe and environmentally friendly wake boat operation was presented in this review. Progressive Companies used these recommendations to create a wake boat operational map for Lake Lansing in 2024. This map was updated this year to include the shallow shole areas around the lake. Boaters should operate at no wake speed within these shallow sholes (Appendix A).

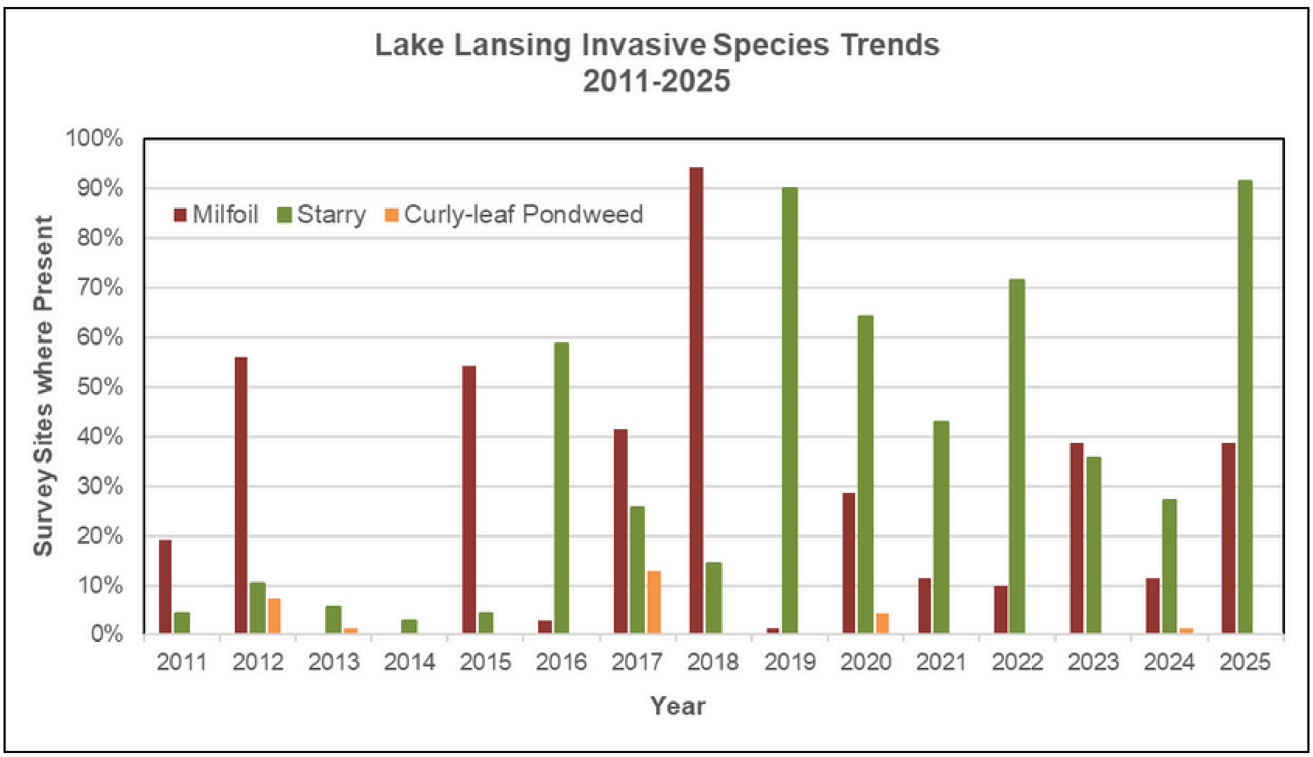
Township Sanitary Lift Station Project: The Lake Lansing S.A.D partially funded the installation of an oil & grit interceptor, which has 1,000-gallon capacity, located downstream of the boat wash bay at the county boat launch. The installation was completed in early spring of 2025 as part of the Township sanitary lift station replacement project.

APPENDIX A
MAPS AND FIGURES

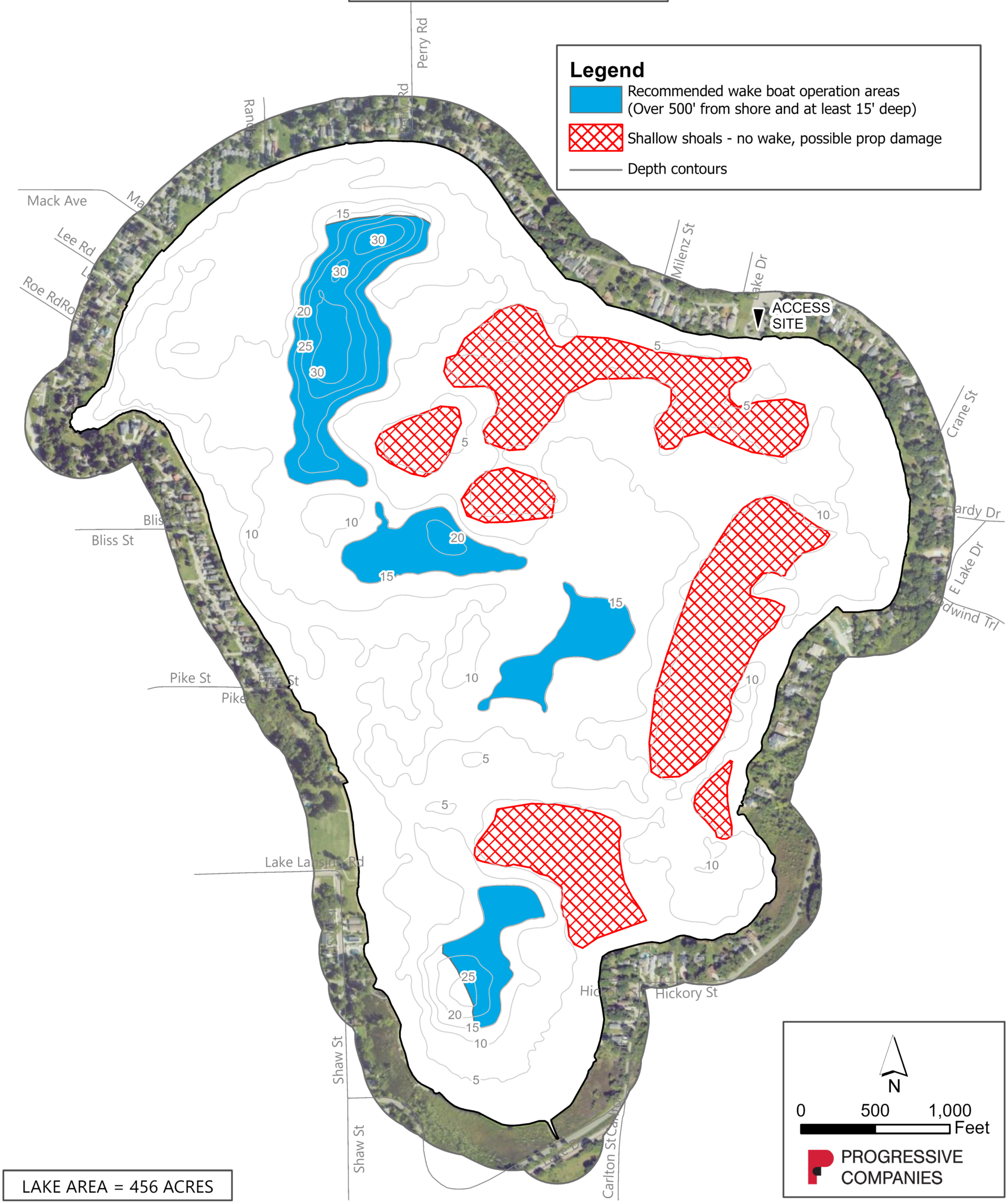

Lake Lansing Volume-weighted Average Total Phosphorus
1999-2025
Volume-weighted Average Total Phosphorus
Eutrophic Threshold
Concentration (ppb)
120
100
80
60
40
20
0
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Date


Lake Lansing Mean Secchi Transparency 2003-2025
Depth Below Surface (feet)
0
2
4
6
8
10
12
14
16
18
20
Average Secchi Transparency
Eutrophic Threshold
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Date


Lake Lansing Mean Chlorophyll-a Concentration
1999 - 2025
Chlorophyll-a (ppb)
Average Chlorophyll-a Concentration
Eutrophic Threshold
Date

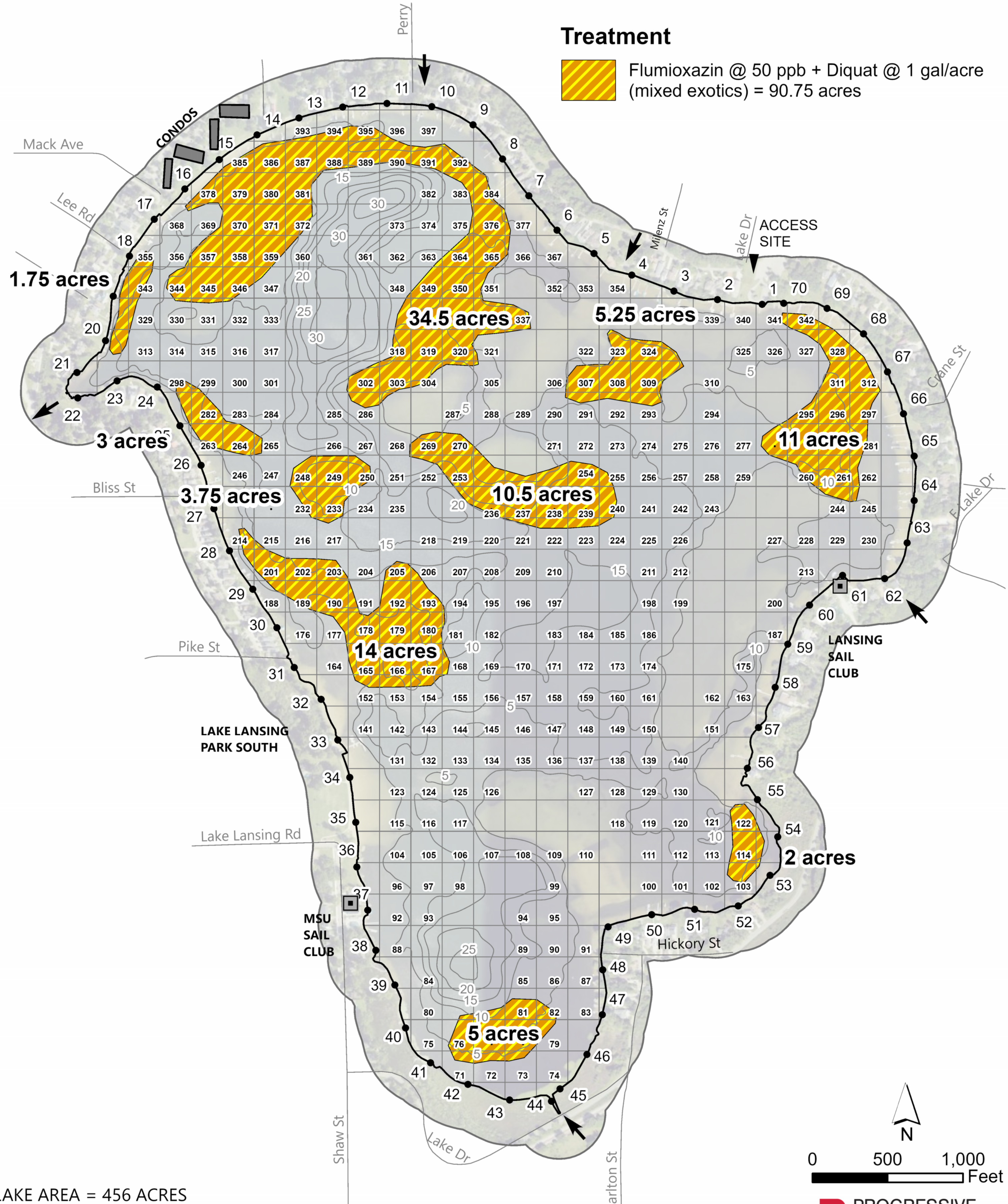

Lake Lansing Invasive Species Trends
2011-2025
Survey Sites where Present
Milfoil
Starry
Curly-leaf Pondweed
Year

LAKE LANSING
INGHAM COUNTY, MICHIGAN
DNR RECOMMENDED
WAKE BOAT ZONES



LAKE LANSING
INGHAM COUNTY, MICHIGAN
TREATMENT MAP
SURVEY DATE: MAY 06, 2025

= 1 ACRE GRID



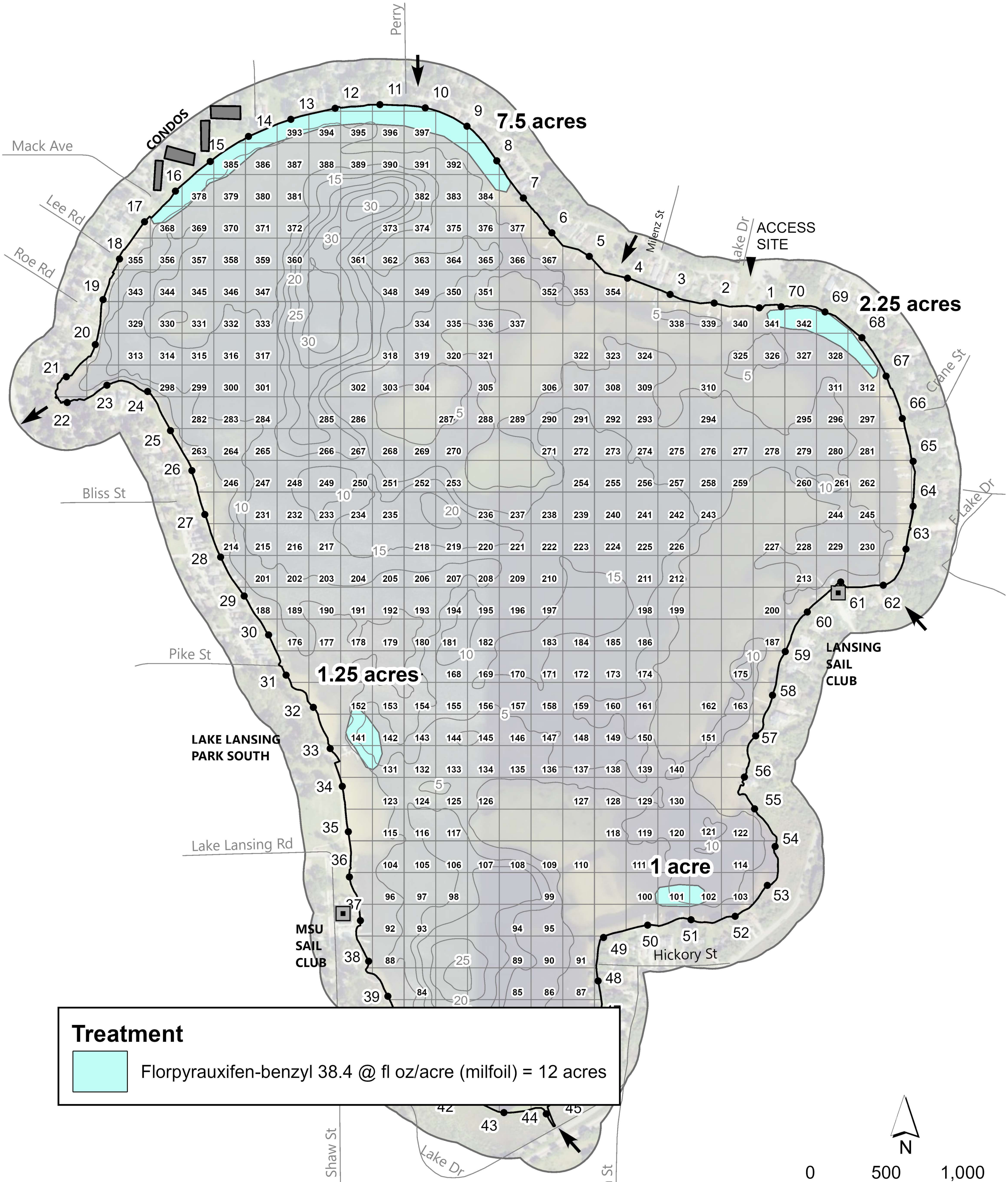
LAKE AREA = 456 ACRES

The applicator shall make adjustments, if needed, to comply with EGLE permit requirements.

PROGRESSIVE COMPANIES

= 1 ACRE GRID

LAKE LANSING
INGHAM COUNTY, MICHIGAN
TREATMENT MAP
SURVEY DATE: JULY 7, 2025



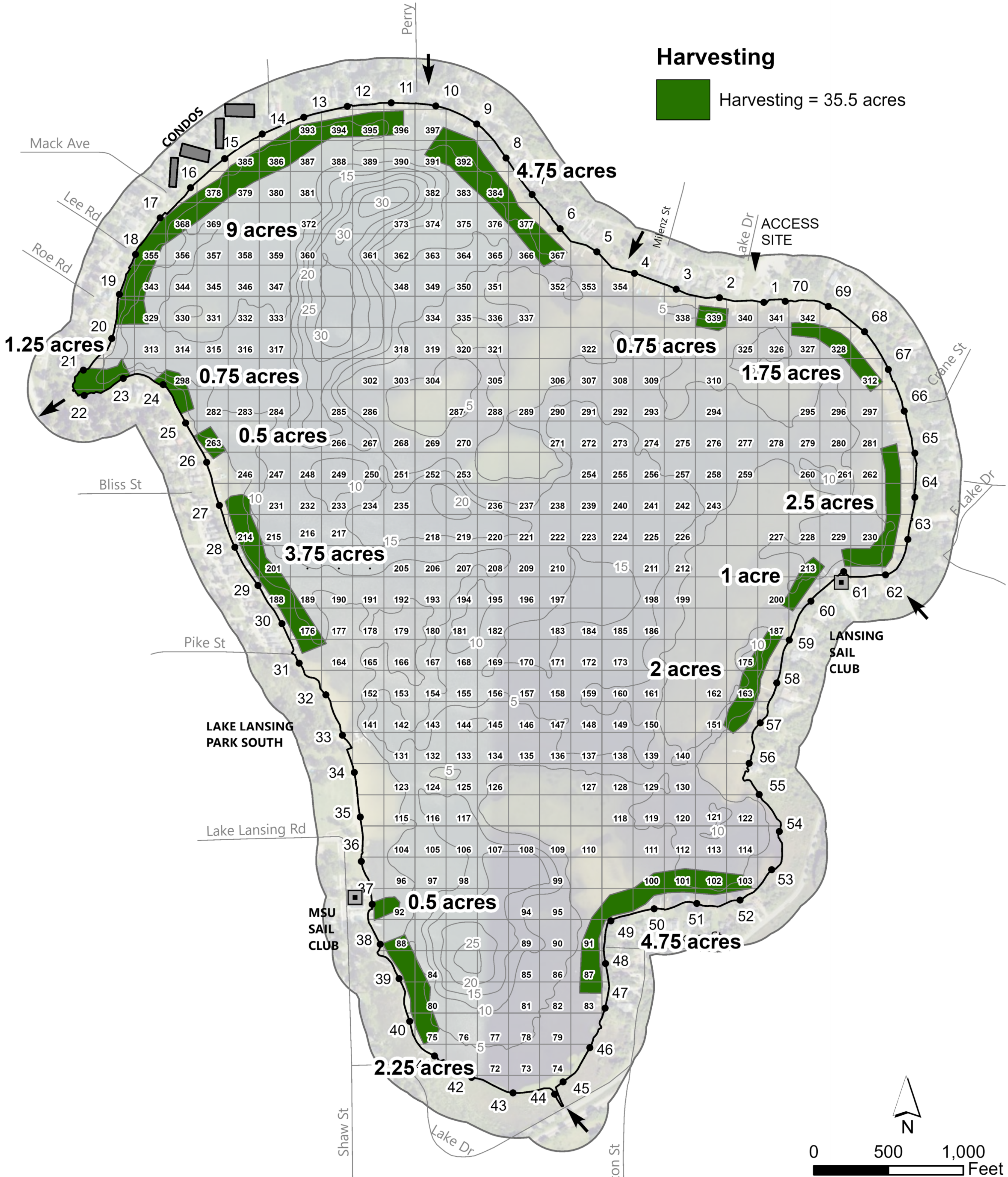
LAKE AREA = 456 ACRES

The applicator shall make adjustments, if needed, to comply with EGLE permit requirements.

PROGRESSIVE COMPANIES

= 1 ACRE GRID

LAKE LANSING
INGHAM COUNTY, MICHIGAN
HARVESTING MAP
SURVEY DATE: AUGUST 18, 2025



LAKE AREA = 456 ACRES

The applicator shall make adjustments, if needed, to comply with EGLE permit requirements.

PROGRESSIVE COMPANIES

APPENDIX B
NEWSLETTERS AND GUIDES

Lake Lansing Newsletter

Spring 2025

Stormwater

Stormwater runoff is one of the leading contributors to lake degradation and accelerated aging. As rainwater flows over urban and suburban landscapes, it can pick up a variety of pollutants, ultimately flowing into lakes and water bodies. Understanding the sources of these contaminants is crucial for mitigating their impact.

Lawn/Driveways:

- Fertilizers: Excess nutrients promote harmful algae blooms that deplete oxygen and disrupt aquatic life.
- Pet and Avian Waste: Animal waste carries bacteria and pathogens that threaten water quality.
- Pesticides: These chemicals can be toxic to aquatic organisms, disrupting ecosystems.
- Household Chemicals: Cleaning products and other chemicals may seep into water systems, harming both plants and animals.

Streets:

- Sediment: Soil runoff can cloud water, reducing light penetration and harming aquatic plants. As sediment accumulates, it can cover aquatic habitat and impact aquatic organisms. Sediment often is a transport vector for nutrients, especially finer sediments like clay and silt.
- Oils and Greases: Leaking from vehicles, these substances coat aquatic habitats and threaten wildlife.
- Cleaners/Detergents: These chemicals can be toxic to aquatic organisms and affect water quality.
- Increased Water Temperature: Stormwater flowing over pavement can raise water temperatures in lakes, harming species sensitive to heat.
- Salt: Used for road de-icing, salt can increase the salinity of freshwater bodies, damaging aquatic ecosystems.

Drains:

- Soil Erosion Sediment: Runoff of eroded soil can choke aquatic ecosystems, leading to decreased water clarity and fish habitats.
- All of the Above: These drainage systems often carry a mix of contaminants from lawns, streets, and other surfaces, exacerbating pollution levels

What Can We Do?

Mitigating the impact of stormwater requires collective action in reducing chemical use, improving drainage systems, and adopting green infrastructure solutions (i.e. rain gardens, rain barrels, natural shorelines, etc.). Every step we take to reduce stormwater pollution helps protect our lakes for future generations.

By staying informed and making small changes in our daily practices, we can help preserve Lake Lansing.

A reliable resource for information on Michigan's inland lakes.
michiganlakeinfo
michiganlakeinfo.com

Lake Lansing SAD Advisory Committee

Curt Armbruster, Chair
Tier 1

Susan Andrews
Tier 1

Ron Rowe
Tier 1

Roger Taylor
Tier 1

Steve Culling
Tier 2

Larry Wagenknecht
Tier 2

Younes Ishraidi
Charter Township of Meridian

Coe Emens
Lake Lansing County Park Supervisor

Paul Pratt
Ingham County Drain Commissioner's Office

PROGRESSIVE COMPANIES

Aquatic Plant Control

Extensive offshore aquatic herbicide treatments have historically been conducted in May to address the growth of invasive plant species, hybrid milfoil and curly-leaf pondweed. Since 2022, these treatments targeting hybrid milfoil were conducted using the systemic herbicides florpyrauxifen-benzyl (ProcellaCOR) and triclopyr. These herbicides have reduced regrowth of the hybrid milfoil year after year to a more manageable level. Curly-leaf pondweed can be controlled using low-dose contact herbicides or mechanical harvesting. Due to the cost of mechanical harvesting, using an herbicide to control curly-leaf pondweed is preferred. Mechanical harvesting around the shoreline will be conducted again in 2025, primarily targeting starry stonewort and dense native plant growth. A tentative plant control program schedule can be found below. Please note, these dates are subject to change dependent on weather and growth conditions within the lake.

Lake Lansing Tentative 2025 Aquatic Plant Control Program Schedule			
Tentative Survey	**Tentative Treatment**	**Harvest**	**Description**
Week of May 5	Week of May 19	No	Treatment of hybrid milfoil and curly-leaf pondweed. Potential algae treatment.
Week of June 23	Week of July 7	No	Spot treatments for hybrid milfoil.
Week of July 14	None	TBD	Potential harvesting for starry stonewort and nuisance natives.
Week of August 11	Week of August 18	TBD	No likely treatment unless hybrid milfoil and algae growth is significant. Harvesting may occur if plant growth is extensive.

Residents and the public are encouraged to utilize the boat washing stations at the public launch site both when entering and leaving Lake Lansing. Before launching into Lake Lansing, be sure to thoroughly inspect your watercraft for potential debris and material that can transport aquatic invasive species, especially if your watercraft has been in other waterbodies. All watercraft should be properly cleaned, drained, and dried prior to entering the lake.

PROGRESSIVE
COMPANIES

Lake Lansing Newsletter

Summer

2025

Fisheries Survey

This past April MDNR Fisheries Division's Southern Lake Michigan Management Unit conducted a fisheries survey on Lake Lansing, gathering data on fish populations, health, and invasive species. Data from the Lake Lansing survey will be analyzed over Winter 2025-2026 and a full report can be expected in 2027. MDNR conducts hundreds of lake and stream fisheries surveys every year.[1] The last Lake Lansing fisheries report was released in 1941, while a creel survey, which interviews local anglers on-site, was conducted in 1987.

Waterfowl News

Efforts to control nuisance Canada goose populations on Lake Lansing resulted in the removal of 79 eggs and the destruction of 18 nests this year. An article on the complex history of Canada geese, which were driven to near-extinction in the twentieth century, can be found in the latest edition of *The Michigan Riparian* magazine. Open turf lawns along the shoreline are favored habitat for geese. These landscapes offer plenty of food while also providing long sightlines to watch for predators. Natural shorelines, which feature long grasses, rushes, cattails, and shrubs, can ward geese away from property in addition to numerous ecological and erosion-halting benefits.

Additionally, this past spring Lake Lansing hosted a number of pelicans. Penelope ART Photography captured impressive photos of these visitors, as seen below. Pelican sightings in Michigan are historically rare but have been increasing in recent years. Traditionally, pelicans migrate along a path further west, however as of the mid-2010s they have been spotted along Western Lake Erie as well as the St. Clair and Detroit River basins.[2] The reason for this shift and the potential ecological implications are unknown at this time. That said, pelicans tend to hunt rougher fish such as carp and suckers, so anglers should not be overly concerned.

Pelicans skim the surface of Lake Lansing. Photo by Penelope ART Photography

References

1 Wardell, M. (2024). *DNR inland lake and stream surveys are critical to managing Michigan fisheries.* Michigan Lakes & Streams Association.

2 Fox 2 Detroit. (2024). *Pelicans increasingly migrating to Michigan, stumping aviary enthusiasts.* Fox 2 Detroit.

Lake Lansing SAD Advisory Committee

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Navigating Shallow Shoals

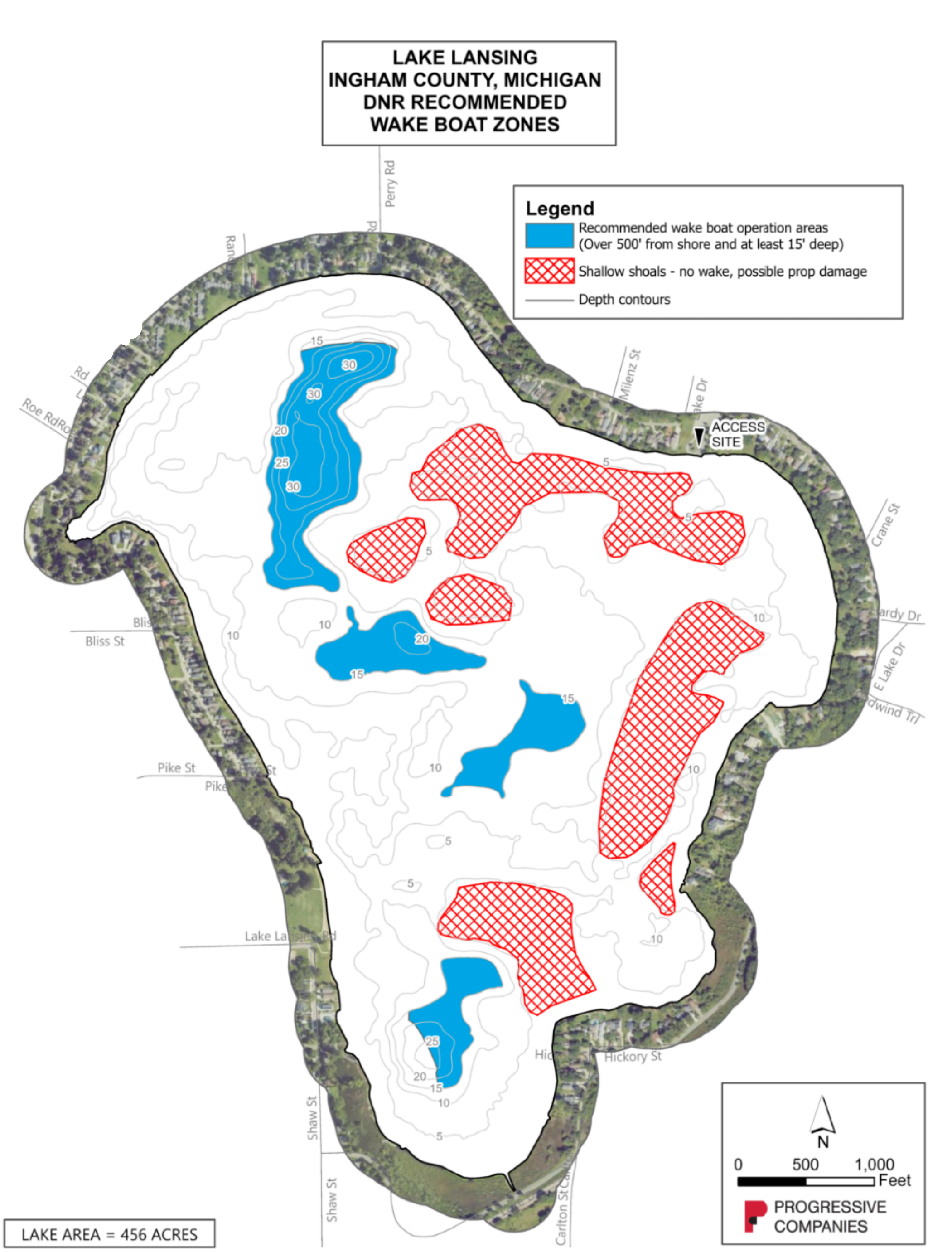
Last year a map was developed to outline recommended wake boat operation areas based on guidance from MDNR (blue areas on map). Limiting wake boating to these sufficiently deep (at least 15 feet deep) and far from shore (at least 500 feet from shore) areas minimizes lakeshore and lake bottom disturbance. These recommendations are not rule or law, but are meant to educate wake boat owners on how to most responsibly operate wake boats on Lake Lansing. This year the map has been updated to include shallow shoals, highlighted in red. These areas are difficult to navigate and may cause prop damage if not treated with caution. If you find yourself in one of these shallow shoal areas, follow these steps to ensure the safety of you and your boat:

1. Reduce Speed Immediately
Slow your speed to an idle. Higher speeds can damage your boat's hull or motor and increase the risk of running aground.

2. Trim the Motor Up
Raise (trim up) your motor to reduce draft and minimize the chance of hitting underwater obstacles.

3. Avoid Sudden Maneuvers
Quick maneuvers or abrupt throttle changes can destabilize your boat, especially in shallow waters. Stick to gentle movements to avoid further grounding or prop damage.

Plant Control Update
On May 19, approximately 90 acres of a mixture of non-native milfoil and curly-leaf pondweed (both invasive exotics) were treated. A much smaller follow-up treatment will be conducted in July to address select areas of non-native milfoil and mechanical harvesting will be conducted in late August.



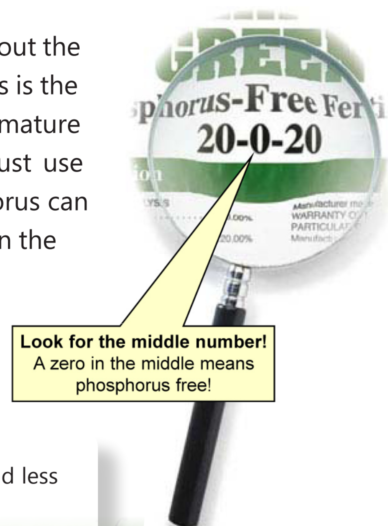
Shorelands Management
What lakefront property owners should know and do

By Progressive AE

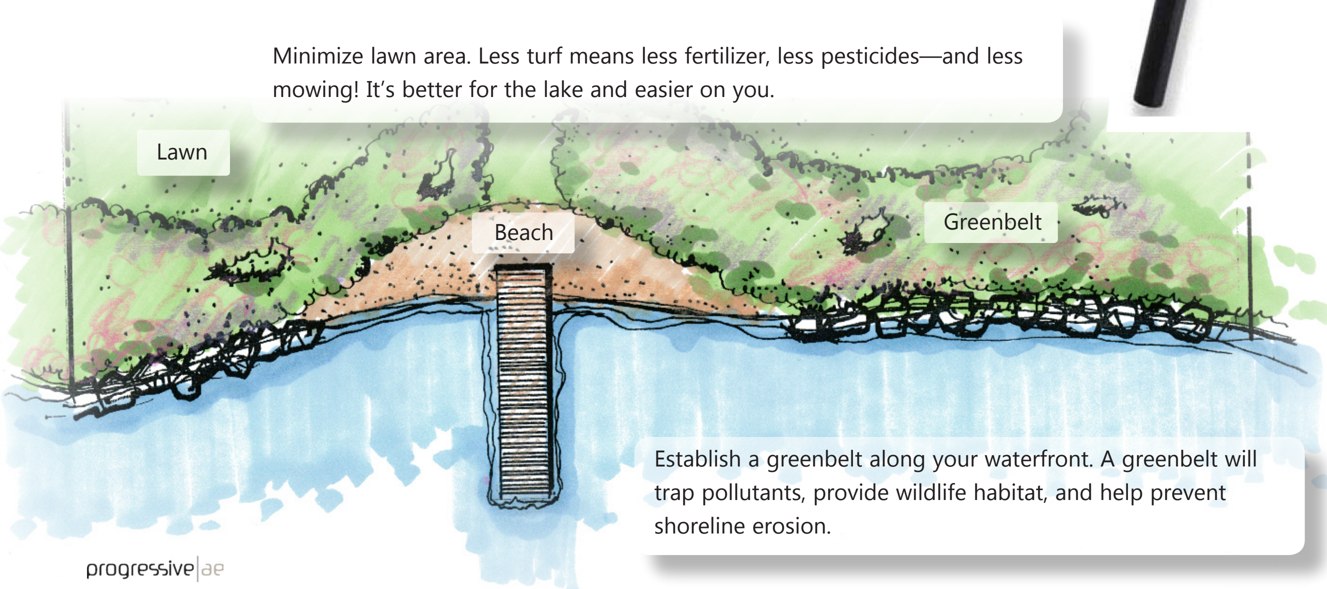
Proper shoreland management is vital to protect both water quality and fisheries. During pre-settlement days, much of the shoreland around lakes was forested, wetlands, or grassland. Natural habitat was abundant. Over time, as shorelands were developed, much changed. Shoreland vegetation was removed, and natural areas that allowed rain waters to infiltrate were replaced by rooftops, roads, driveways, and other hard surfaces. Now, rather than infiltrating, storm water runs off these hard surfaces, often carrying fertilizer, oil, and other pollutants to the lake. Problems associated with excessive shoreland development include increased aquatic plant growth, diminished fisheries, and poor water quality. How we manage our shorelands can have a direct and profound impact on the quality of our lakes.

Protecting shorelands is straightforward: Maintain or restore as much natural shoreland as possible. That is not to say that you can't—or shouldn't—have an area to swim, moor boats, fish or lounge by the shore. However, manicured lawn to the water's edge and boundless seawalls are not conducive to healthy lakes, nor is large-scale removal of aquatic vegetation.

In addition to protecting or restoring natural shoreland, you should also be careful about the application of lawn fertilizers, especially fertilizers containing phosphorus. Phosphorus is the nutrient that most often stimulates excessive growth of aquatic plants and causes premature lake aging. Fertilizers should only be used sparingly near lakes, if at all. If you must use fertilizer, only use a phosphorus-free fertilizer. Once in the lake, a pound of phosphorus can generate hundreds of pounds of aquatic vegetation. This vegetation is most evident in the near-shore areas of the lake where we swim and recreate.

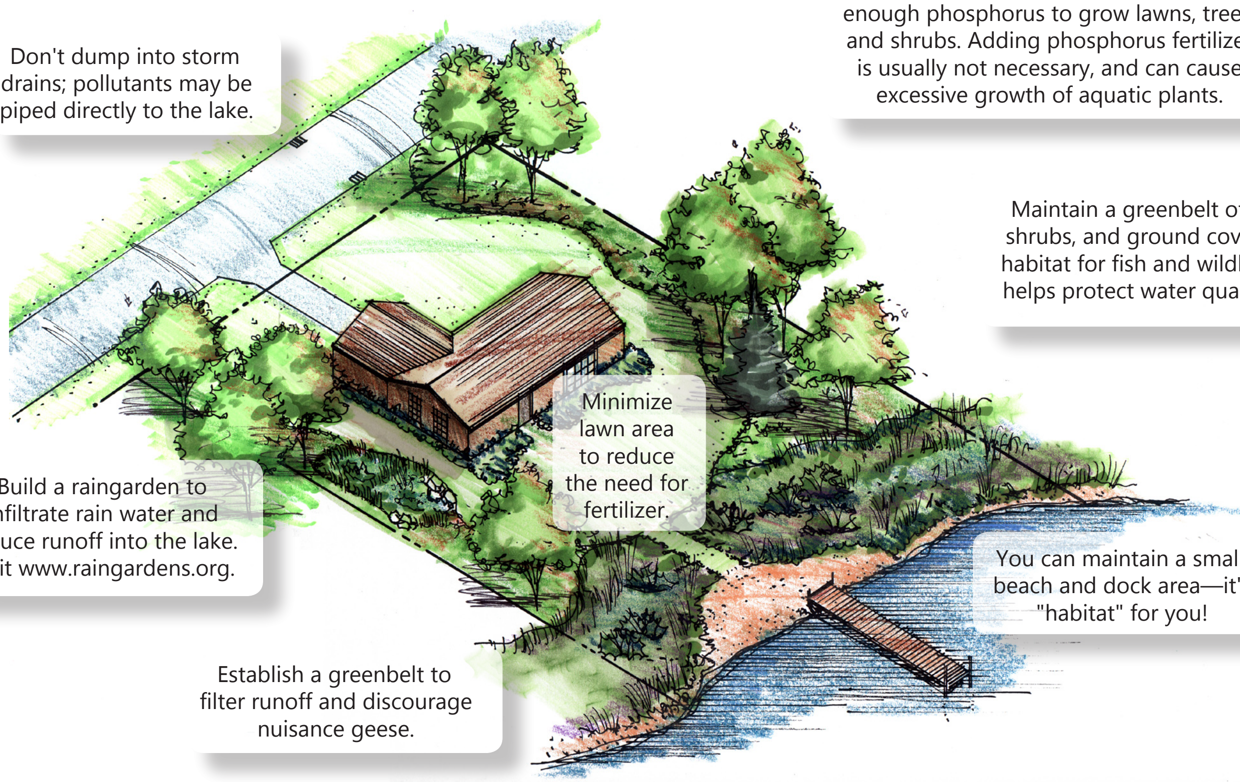


Take a look at the following illustrations. Then take a look at your shoreland and see what you can do to help preserve the natural features of your lake.

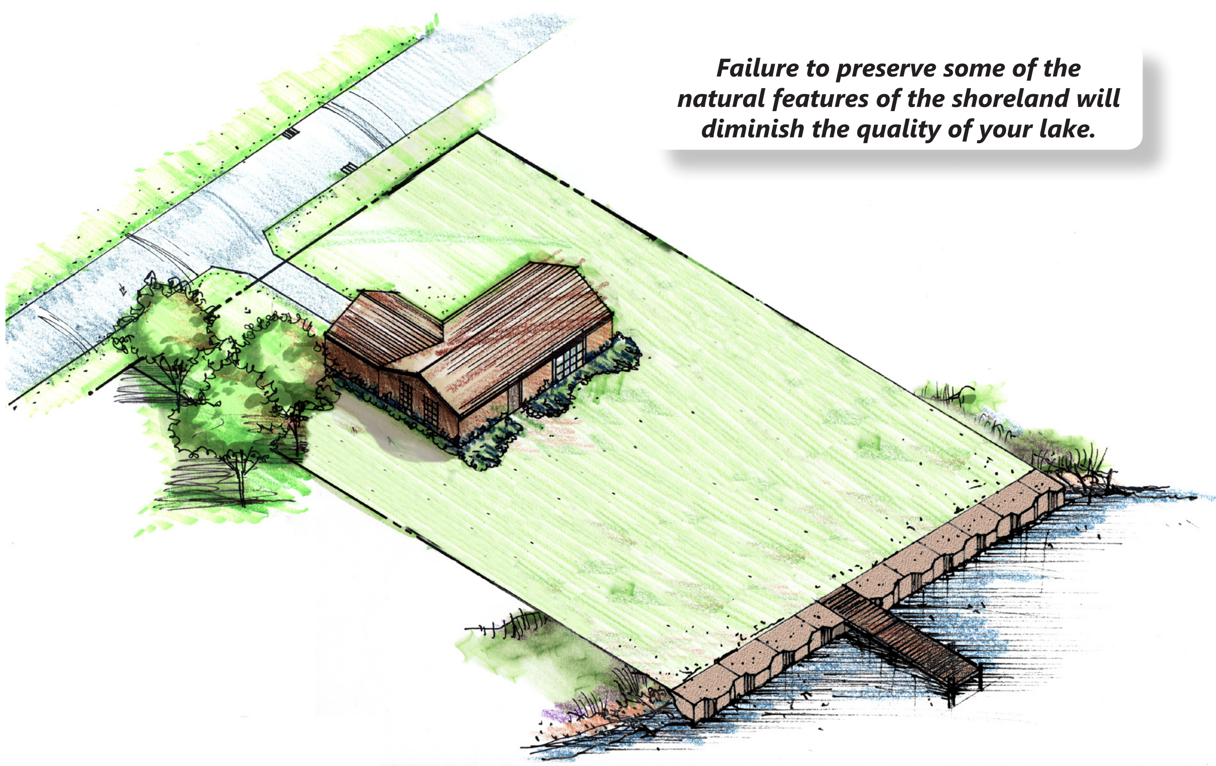


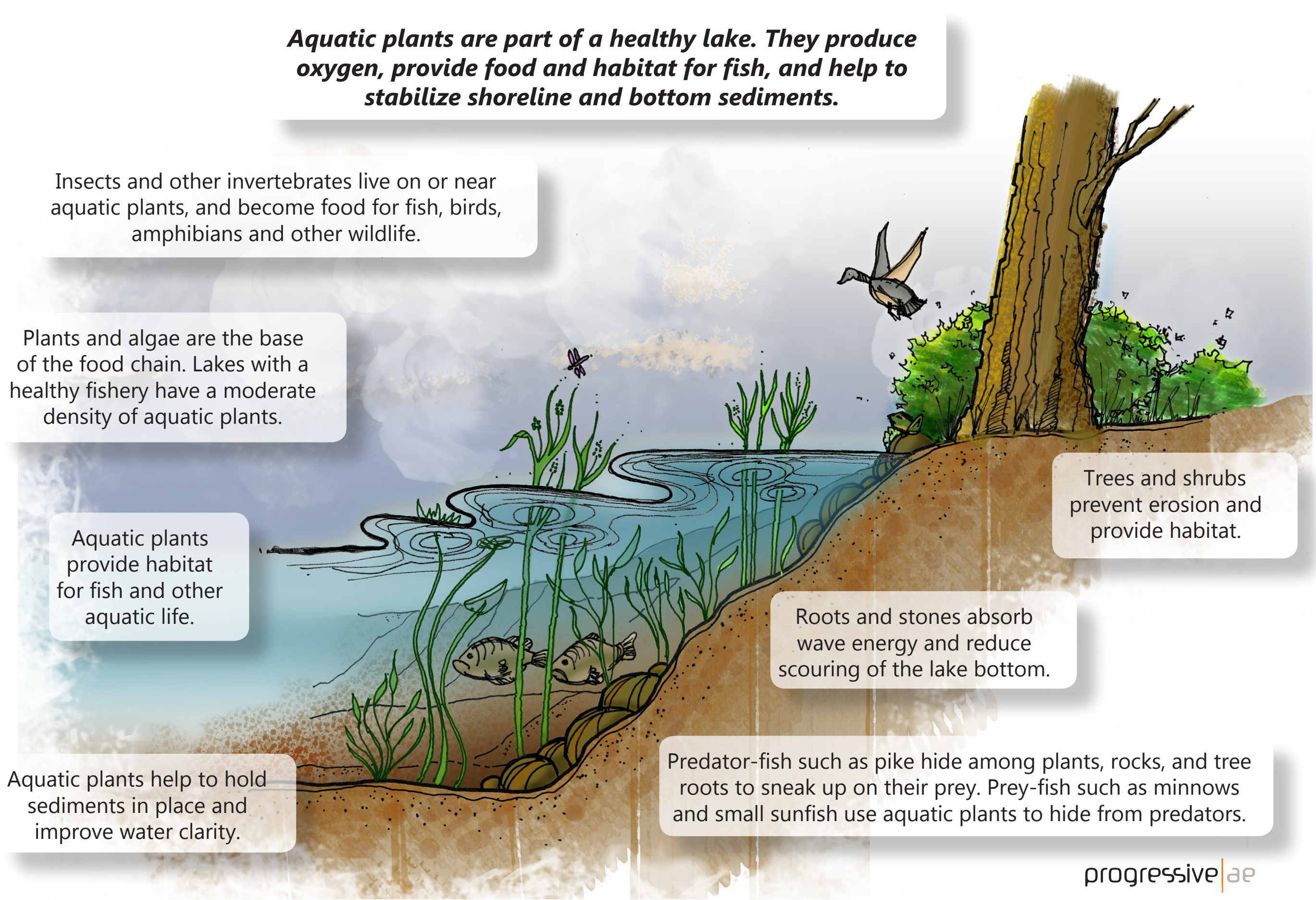
Caring for Your Shoreland

Your shoreland can be maintained to provide beach and boat access for you while maintaining habitat for fish and wildlife.



Failure to preserve some of the natural features of the shoreland will diminish the quality of your lake.




Aquatic plants are part of a healthy lake. They produce oxygen, provide food and habitat for fish, and help to stabilize shoreline and bottom sediments.
Insects and other invertebrates live on or near aquatic plants, and become food for fish, birds, amphibians and other wildlife.
Plants and algae are the base of the food chain. Lakes with a healthy fishery have a moderate density of aquatic plants.
Aquatic plants provide habitat for fish and other aquatic life.
Aquatic plants help to hold sediments in place and improve water clarity.
Trees and shrubs prevent erosion and provide habitat.
Roots and stones absorb wave energy and reduce scouring of the lake bottom.
Predator-fish such as pike hide among plants, rocks, and tree roots to sneak up on their prey. Prey-fish such as minnows and small sunfish use aquatic plants to hide from predators.
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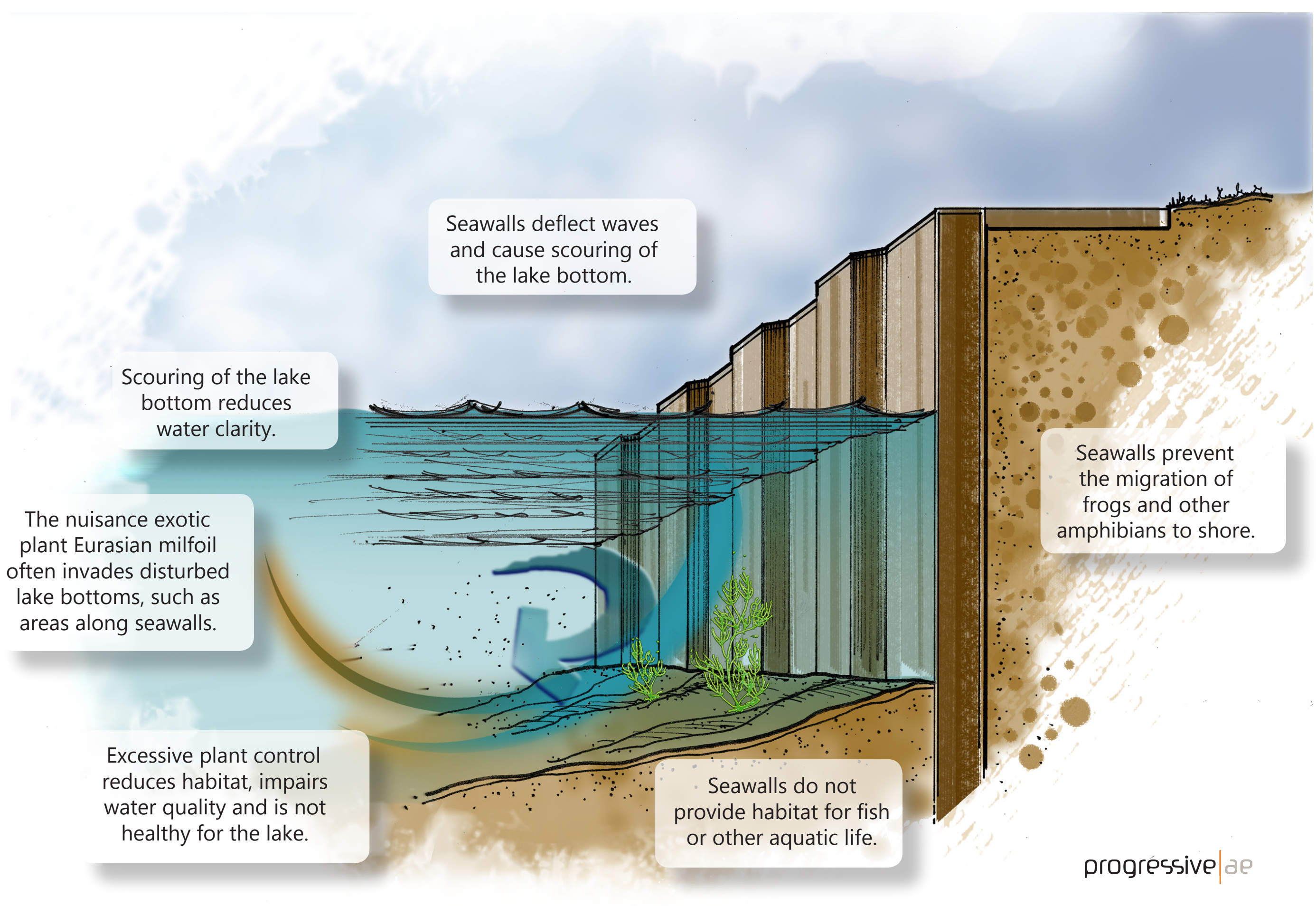
Seawalls deflect waves and cause scouring of the lake bottom.
Scouring of the lake bottom reduces water clarity.
The nuisance exotic plant Eurasian milfoil often invades disturbed lake bottoms, such as areas along seawalls.
Excessive plant control reduces habitat, impairs water quality and is not healthy for the lake.
Seawalls do not provide habitat for fish or other aquatic life.
Seawalls prevent the migration of frogs and other amphibians to shore.
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10 Ways To Protect Your Lake

1. Don't use lawn fertilizer that contains phosphorus. If you use a professional lawn care service, insist upon a fertilizer that does not contain phosphorus.

2. Use the minimum amount of fertilizer recommended on the label — more is not necessarily better!

3. Water the lawn sparingly to avoid washing nutrients and sediments into the lake.

4. Don't feed ducks and geese near the lake. Waterfowl droppings are high in nutrients and may cause swimmer's itch.

5. Don't burn leaves and grass clippings near the shoreline. Nutrients concentrate in the ash and can easily wash into the lake.

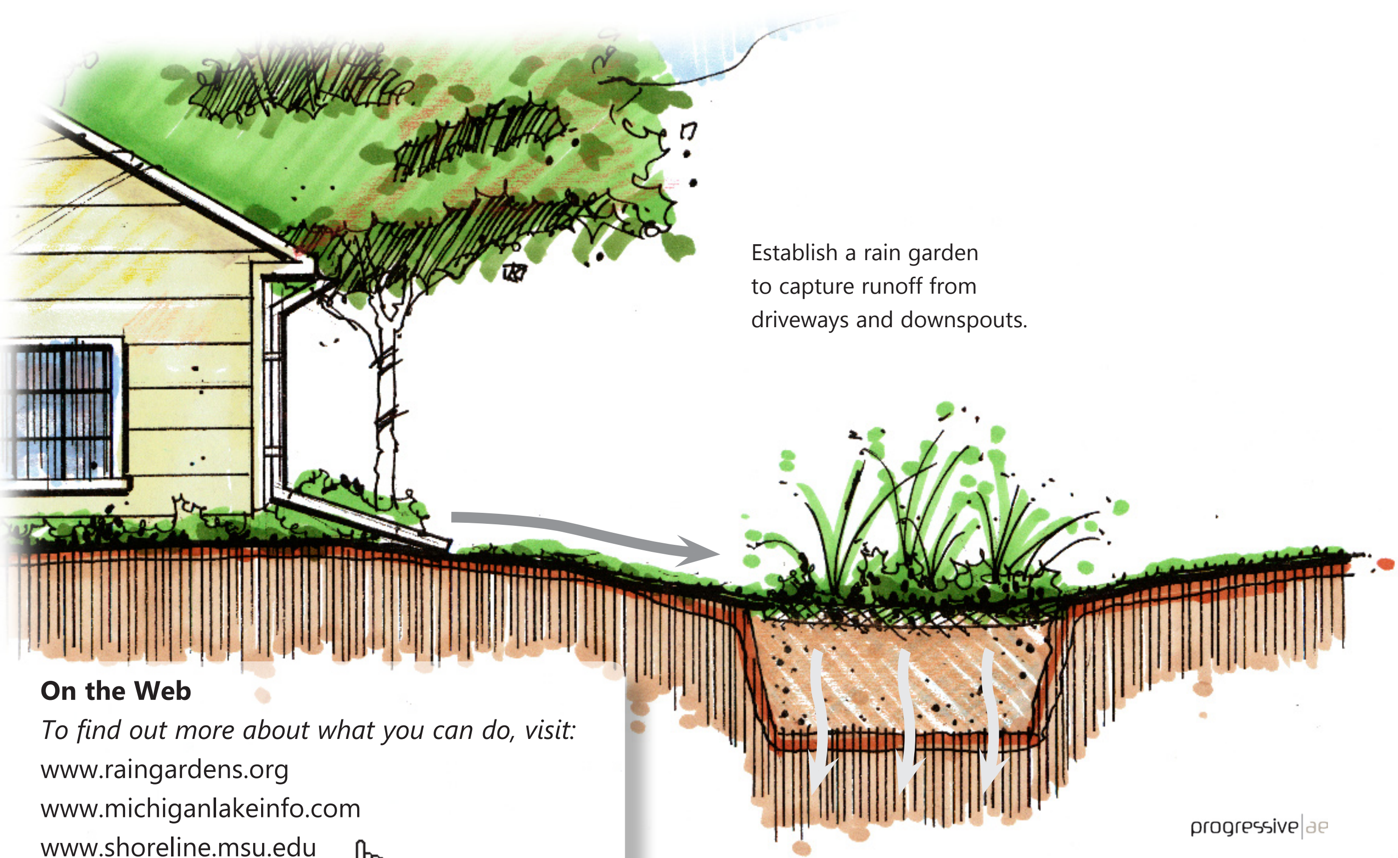
6. Don't mow to the water's edge. Instead, allow a strip of natural vegetation (i.e., a greenbelt) to become established along your waterfront. A greenbelt will trap pollutants and discourage nuisance geese from frequenting your property.

7. Where possible, promote infiltration of stormwater into the ground. Build a rain garden to capture runoff from driveways and downspouts.

8. Don't dump anything in area wetlands. Wetlands are natural purifiers.

9. If you have a septic system, have your septic tank pumped every 2 to 3 years.

10. Don't be complacent — your collective actions will make or break the lake!



Establish a rain garden
to capture runoff from
driveways and downspouts.

On the Web

To find out more about what you can do, visit:

www.raingardens.org

www.michiganlakeinfo.com

www.shoreline.msu.edu