October 2024

LAKE OAKLAND

PLANT CONTROL SUMMARY

PREPARED FOR:
LAKE OAKLAND IMPROVEMENT BOARD
OAKLAND COUNTY, MI

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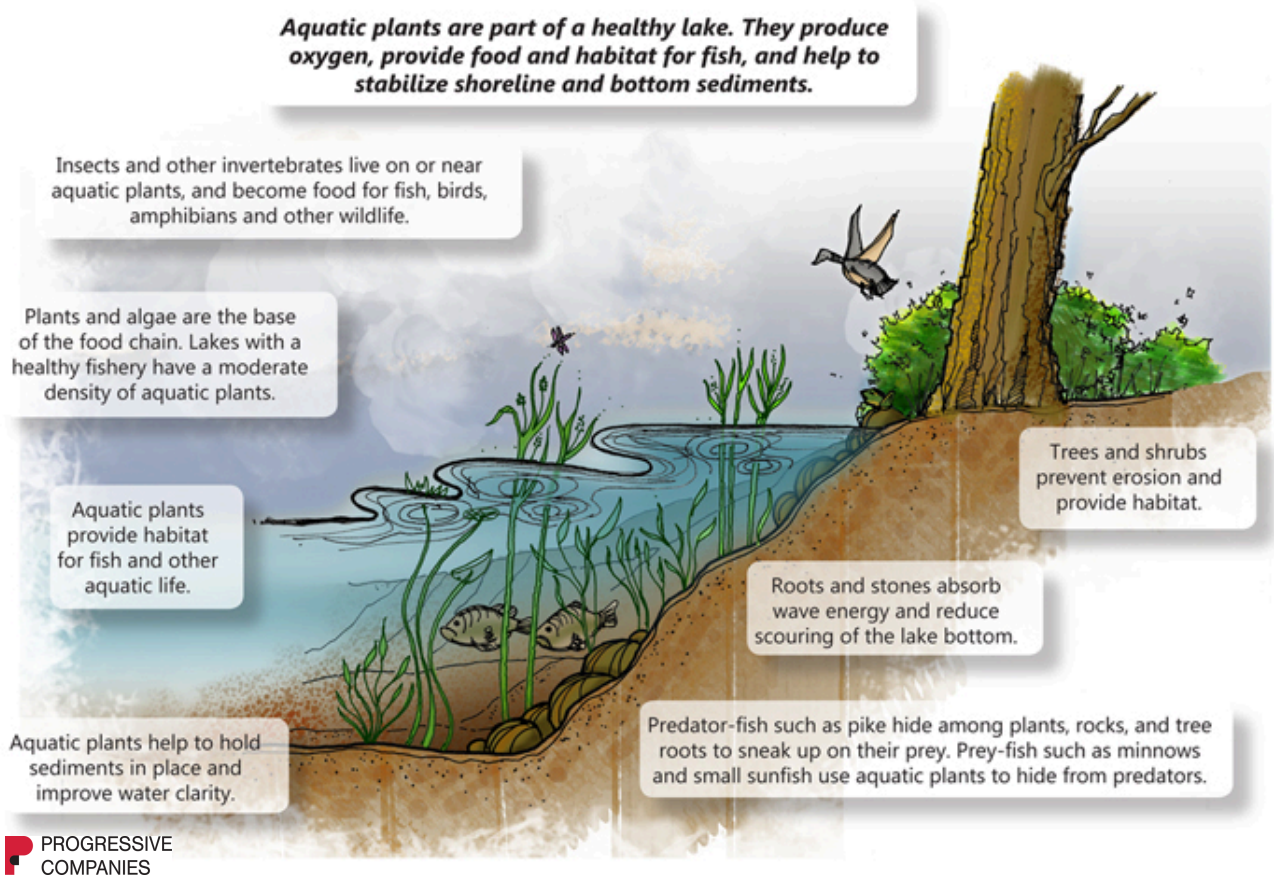
Aqua-Weed Control, Inc.

MECHANICAL HARVESTER

Oakland Harvesters, LLC.

PROGRAM SUMMARY

A nuisance aquatic plant control program has been ongoing on Lake Oakland 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 Oakland in 2024.



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 to the lake's ecosystem. It is important to maintain an active plant control program to reduce the introduction and spread of invasive species within Lake Oakland. Plant control efforts in 2024 consisted of three aquatic herbicide treatments and two mechanical harvests.

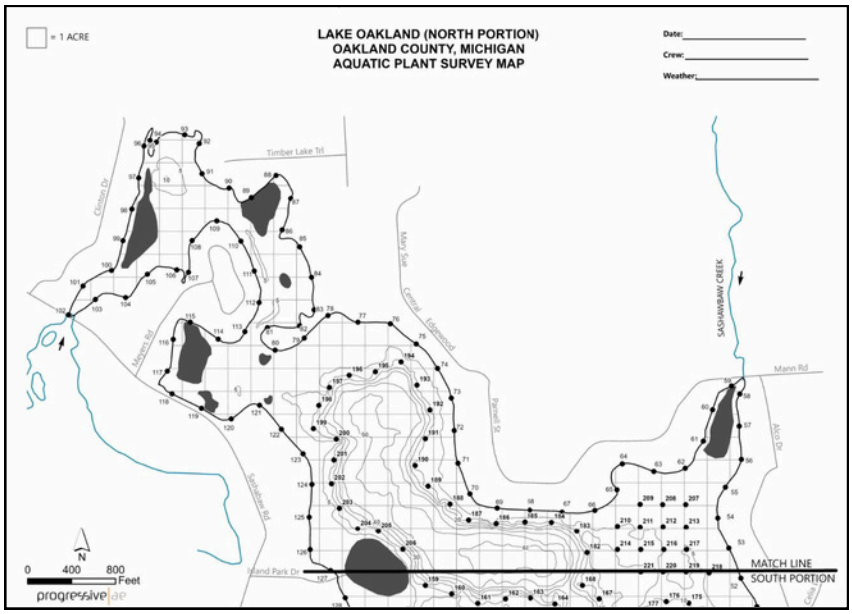
PLANT CONTROL

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 contractors. GPS reference points are established along the shoreline, drop-off areas, and shallow offshore portions of the lake that support plant growth. These waypoints are used to accurately identify the location of invasive and nuisance plant growth areas.

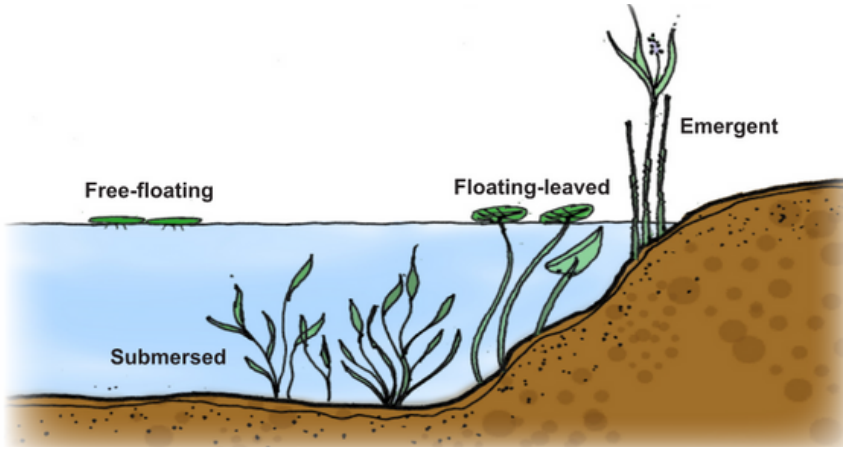
Eurasian milfoil
Myriophyllum spicatum

Curly-leaf pondweed
Potamogeton crispus

Starry stonewort
Nitellopsis obtusa



Primary plants targeted for control in Lake Oakland 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 2024 are summarized in Table 1.



PLANT CONTROL

TABLE 1. LAKE OAKLAND 2024 PLANT CONTROL ACTIVITIES

Date	Plants Targeted	Acreage
May 15	E. milfoil, curly-leaf, algae	56.25
June 11	Starry stonewort, nuisance natives	33.25
July 15	Harvesting	39.00
August 21	E. milfoil, starry stonewort, nuisance natives	17.50
September 2	Harvesting	21.00
Total		**167.00**

In 2024, a total of 107 acres of Lake Oakland was treated with aquatic herbicides. Eurasian milfoil was treated with systemic herbicides, ProcellaCOR and triclopyr. Curly-leaf pondweed was treated on May 15 using contact herbicides, which provided season-long control. Starry stonewort and nuisance algae were treated with copper products. A total of 60 acres of mechanical harvesting was performed on the lake. Harvesting targeted nuisance native growth and some plants mats floating around the lake. A total of 1,191 cubic yards of aquatic plant material was removed from the lake, equivalent to approximately 35.75 tons. Historical load reports for harvesting efforts on Lake Oakland can be found in Table 3.

Continued treatment and monitoring of invasive species such as Eurasian milfoil and starry stonewort is recommended. A moderate abundance of native aquatic plants should be preserved to provide ample habitat, food, and cover for the fishery as well as stabilize bottom sediments in the lake.

An over abundance of wild celery growth was observed in late summer on Lake Oakland. This overabundance caused navigational issues as well as excess floating mats on the northern and eastern shorelines of the lake. In 2025, management strategies will focus on reducing the wild celery population with aquatic herbicides near shore, as permitted. Mechanical harvesting will be scheduled prior to Labor Day to accommodate late season growth and target offshore areas where boat traffic is impeded and wild celery is at risk of being uprooted.

PLANT INVENTORY SURVEY

In addition to the surveys of the lake to identify invasive plant locations, a detailed vegetation survey of Lake Oakland was conducted on August 15 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, 20 submersed species, two floating-leaved species, one free-floating species, and eight emergent species were found in the lake. Lake Oakland maintains a good diversity of beneficial, native plant species.

TABLE 2. LAKE OAKLAND 2024 PLANT INVENTORY DATA

Common Name	Scientific Name	Group	Percentage of sites where present
Wild celery	*Vallisneria americana*	Submersed	64
Chara	*Chara* sp.	Submersed	51
Richardson's pondweed	*Potamogeton richardsonii*	Submersed	38
Illinois pondweed	*Potamogeton illinoensis*	Submersed	36
Starry stonewort	*Nitellopsis obtusa*	Submersed	35
Large-leaf pondweed	*Potamogeton amplifolius*	Submersed	35
Sago pondweed	*Stuckenia pectinata*	Submersed	31
Eurasian milfoil	*Myriophyllum spicatum*	Submersed	28
Slender naiad	*Najas flexilis*	Submersed	22
Bladderwort	*Utricularia vulgaris*	Submersed	16
Thin-leaf pondweed	*Potamogeton* sp.	Submersed	12
Brittle-leaf naiad	*Najas minor*	Submersed	5
Variable pondweed	*Potamogeton gramineus*	Submersed	4
Flat-stem pondweed	*Potamogeton zosteriformis*	Submersed	4
Whitestem pondweed	*Potamogeton praelongus*	Submersed	3
Water stargrass	*Heteranthera dubia*	Submersed	2
Curly-leaf pondweed	*Potamogeton crispus*	Submersed	1
Coontail	*Ceratophyllum demersum*	Submersed	1
Robbins pondweed	*Potamogeton robbinsii*	Submersed	1
American pondweed	*Potamogeton americanus*	Submersed	1
Watermeal	*Wolffia punctata*	Free-floating	1
White waterlily	*Nymphaea odorata*	Floating-leaved	53
Yellow waterlily	*Nuphar* sp.	Floating-leaved	6
Purple loosestrife	*Lythrum salicaria*	Emergent	12
Swamp loosestrife	*Decodon verticillatus*	Emergent	10
Cattail	*Typha* sp.	Emergent	8
Pickerelweed	*Pontederia cordata*	Emergent	3
Bulrush	*Schoenoplectus* sp.	Emergent	2
Phragmites	*Phragmites australis*	Emergent	1
Arrowhead	*Sagittaria latifolia*	Emergent	1
Iris	*Iris* sp.	Emergent	1

Exotic invasive species

Late season Eurasian milfoil growth increased from previous years. Targeted systemic herbicide treatments should be conducted in the spring of 2025.

HARVEST REPORT

TABLE 3. LAKE OAKLAND HARVESTING LOAD REPORTS 2018-2024

Year	Date(s)	Total Area (Acres)	Yield (cu yds)	Yield (tons)	Cubic yards/ Acre
2018	June 11-18	39.00	30	1.2	0.75
2019	July 19-26	35.00	350	14	10
2020*	July 5-12, Spetmeber 6-14	72.25	370	14.8	5
2021	June 28-July 8, August 25-31	54.00	510	20.4	9.5
2023+	July 10-14, August 28-31	37.75	680	28	18
2024	July 15-19, September 2-6	60.00	1,191	35.75	19.75

**Start of second harvest*
+No second load report (yield total for first harvest)

Mechanical harvesting is used to help reduce biomass within lakes and allow access to navigable waters. When a management program reduces invasive plant populations, a shift in plant distribution occurs. The littoral zone that once was dominated by invasives such as Eurasian milfoil and curly-leaf pondweed is replaced by a diverse community of native plant groups. These native species, under favorable conditions, can become a nuisance to recreational activities around the lake.

Nuisance levels of plant growth can accelerate the lake's aging process known as eutrophication. Therefore, harvesting is recommended to remove excess plant mass from the lake. Aquatic herbicides for native plant control is limited to 100 feet from shore and a depth of 5 feet of water (whichever comes first). Therefore, harvesting is implemented on Lake Oakland at offshore areas, as appropriate. This year, the first harvest targeted nearshore nuisance native areas and the second harvest targeted some nearshore and offshore nuisance areas for floating plant mats. Funds available at the end of the season limited the second harvest on Lake Oakland. Late season growth of wild celery overtook a majority of the northeast portion of the lake which was extended into the fall months as water temperatures remained higher than normal. Wild celery is a shallow rooted plant and the base portion of the plant is favored by water fowl because of its high carbohydrate content. These factors often contribute to the plant breaking loose from the sediments and forming large floating "mats" that may cause localized nuisance conditions for recreational use of the lake. One goal of next year's program is to monitor and reduce wild celery growth around the lake through a larger offshore harvest and nearshore herbicide treatment. Harvesting next season should be consolidated into one event in August.