

# AUSTIN LAKE GOVERNMENTAL LAKE BOARD NEWSLETTER



Summer 2012

## NEW AUSTIN LAKE IMPROVEMENT PROGRAM

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### Contact Info:

#### Austin Lake Governmental Lake Board Members:

Brian Johnson, Austin Lake  
Property Owner

Ed Sackley, Chair, Portage  
City Council

Elizabeth Campbell, Portage  
City Council

John Zull, Kalamazoo County  
Commissioner

Patricia Crowley, Kalamazoo  
County Drain Commissioner

The Austin Lake Governmental Lake Board was formed through the Inland Lake Improvements Statute (Part 309 of the Natural Resources and Environmental Protection Act, P.A. 451 of 1994). In 2011 and 2012, public hearings were held and the proposed improvement plan for the South Basin of Austin Lake was deemed practical.

The South Basin was determined through a lake improvement feasibility study to have substantially impaired sediments that are high in organic matter, toxic ammonia, and are greatly limiting recreational activities such as swimming and boating. Over time, these conditions can adversely affect waterfront property values.

The organic "muck" layer on the lake bottom of the South Basin consists of high sediment nutrients that fuel aquatic plant growth. By applying supplemental microbes and enzymes in conjunction with the aeration, we hope to encourage the microbes to break down the muck layer and consume excess sediment nutrients in the process. Less sediment nutrients means less invasive, rooted aquatic plant growth. Many other lakes in the state of Michigan have used laminar flow aeration and have noted measurable declines in Eurasian Watermilfoil with the system. A newsletter will be sent to all residents in the Special Assessment District each spring or early summer to provide

information on the project's progress.

Scientists from Lakeshore Environmental, Inc. will be studying the lake and monitoring the laminar flow aeration system to scientifically determine its usefulness in breaking down the muck-laden sediments in the South Basin.

If the results of the laminar flow aeration system are favorable, the technology could be applied to other sediment-impaired areas of the lake if desirable by the lake property owners.

***The Austin Lake Governmental Lake Board has partnered with your local lake Association to allow use of their website as a collection point for relevant information such as meeting minutes, studies, etc..***

***Visit the website at:***

***<http://www.austinlakeportage.com>***

***Regular updates on lake board meetings, minutes, project findings, and other helpful information may be found on the website.***



# A PRIMER ON LAMINAR FLOW AERATION

***“The Austin Lake Governmental Lake Board is leading the way to innovative, long-term lake management by using this sustainable technology.”***

Laminar flow aeration relies on the use of ceramic diffusers that transport air to the lake sediments and when combined with beneficial microbes (bacteria), results in a reduction of “muck” which consists of organic matter and other inorganic debris.

Laminar Flow systems have been placed in lakes and canals throughout Michigan and have shown benefits such as increased dissolved oxygen, reduced muck, reduced blue-green algae and even some reductions in EWM and other nuisance aquatic plants.

The technology is far from perfect though, in that it will cost money to install and operate and may give varying results in different parts of the lakes. Lakes are very complex systems that are highly different in various areas and thus respond differently to management technologies and methods.

The sediment of many lakes, especially those with a prominent deep basin usually lack oxygen. This lack of oxygen causes the sediment to release phosphorus into the water column, which results in nuisance algal blooms and increased weed growth. A healthy lake will have ample dissolved oxygen both in the water column and in the sediments. The sediments are where beneficial bacteria (microbes) break down the organic matter and release CO2 gas in the process (similar to our respiration).

The laminar flow aeration systems are powered by onshore compressors that supply air to the ceramic diffusers that lie on the lake bottom. The self-sinking hoses are heavy and will not be disruptive to recreational lake activities.

Laminar flow aeration is far different from fountain aeration or hypolimnetic aeration. Both of these forms of aeration do not drive dissolved oxygen into the lake sediments, which is needed to break down organic matter.

In general, the higher the concentration of organic matter, the better the observed results will be with a laminar flow aeration system. The long-term goal of the laminar flow aeration system in Austin Lake is to effectively reduce the sediment organic layer to improve water depth and also improve overall water quality.

The Austin Lake Governmental Lake Board is leading the way to innovative, long-term lake management by using this sustainable technology.

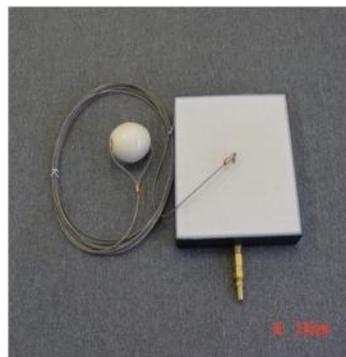


Photo of ceramic diffuser head. Photo courtesy of John Tucci



Photo of a diffuser boil created from a single diffuser head. Photo courtesy of LEI.

## IT IS NOW ILLEGAL TO FERTILIZE YOUR LAWN WITH PHOSPHORUS!

As of January 1, 2012, Public Act 299 of 2010 became an official law. Under this law, all fertilizers that contain phosphorus (P) cannot be used by either homeowners or commercial applicators on residential and commercial lawns, golf courses, and athletic fields, UNLESS the soil meets an exemption.

Here are the basic highlights of the new law as it applies to riparians:

- No fertilizer with available phosphate (P205) can be applied on lawns except for on soils that prove deficient, new turf, or compost at a rate of 0.25 lbs of P per 1,000 square feet.
- Fertilizer cannot be applied to frozen soil or soil saturated with water

- Any fertilizer released onto a hard surface MUST be cleaned up immediately.



Algal blooms such as this one are primarily caused by too much P in the water.

*“Phosphorus is the key nutrient for both algae and nuisance aquatic plant growth”*

## WANT TO BE MORE ACTIVE IN LAKE CARE? JOIN MICHIGAN LAKE AND STREAM ASSOCIATIONS!

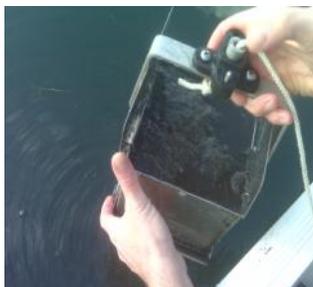
The Michigan Lake and Stream Associations (MLSA) is a non-profit organization dedicated to helping riparians on lakes all over the great state of Michigan. The overall goals of MLSA are to provide assistance with the formation of lake associations, provide educational tools and references for riparians, and facilitate an annual conference where hundreds of lake owners gather to share their lake stories, problems, and successes.

The MLSA Board of Directors meets several times a year to make sure that riparian needs are met. They are a group of dedicated individuals that are always seeking input from riparians like you!

Links to the membership for MLSA is available on their website. Be sure to subscribe to the Michigan Riparian magazine that is full of educational lake materials.

To learn more about this great non-profit organization, and how you can get involved, visit the MLSA website at:

[www.mymlsa.org](http://www.mymlsa.org)



A sampler for lake sediment sampling



## ABOUT ORGANIC MATTER “MUCK”

Organic Matter is basically decayed vegetation or other matter that is high in carbon and accumulates on the bottoms of lakes. It is usually referred to as “muck” and may be from a few inches to several meters thick in most inland lakes.

Lake sediments are usually comprised of organic matter, sands, silts, clays, or other minerals. Under warm water conditions with adequate oxygen, the organic matter is usually broken down by microbes and results in less “muck” accumulation. However, many lakes throughout Michigan have little oxygen at the bottom

and cooler temperatures there. As a result, the organic layer accumulates heavily and can impede swimming or boating activities.

The majority of the “muck” present in Austin Lake consists of some organic matter and sand and silt. Some of this originated from the external watershed (mainly wetlands) or was introduced into the lake years ago from storm events that carried sediments from the land into the lake.

The use of laminar flow technology that has proven quite successful in other Michigan lake, actually

increases the ability of bacteria to thrive in the lake sediments and biodegrade the muck. Some lakes have seen more than a foot of reduction in muck during the first year of use.

This would mean greater water depths and improved recreation for humans and wildlife. This technology will be given careful review this season.

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Visit Our Website:  
[www.lakeshoreenvironmental.com](http://www.lakeshoreenvironmental.com)