

# THE AUSTIN LAKE RIPARIAN



Fall, 2008

P.O. Box 44  
Portage, MI 49081

## Aeration Project Informational Meeting

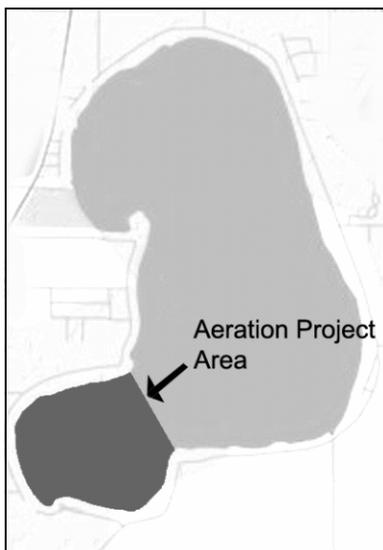
**When: Tuesday, Oct 21, 2008**

**Time: 7:00 PM**

**Where: Lake Center School**

A special informational meeting will be held to discuss the *proposed* aeration project in the South Bay of Austin Lake (see map below). At our last annual meeting (May 8, 2008) John Tucci from Clean-Flo described their lake aeration techniques and the potential benefits to Austin Lake. The presentation was very well received by the audience and John has since developed a project proposal for aerating the South Bay. The rest of this newsletter presents a summary of the project.

See our web site at [www.austinklakeriparians.org](http://www.austinklakeriparians.org)



### The Aeration Project Summary

#### The Problem

Our lake has been identified by experts as what's called a "eutrophic" lake. This means it can not fully process the nutrient and/or organic sediment load that is produced each year. At this phase of a lakes life, it loses its natural ability to purify and oxygenate its own water; which leads to several lake quality issues.

The main symptoms of a eutrophic lake are the buildup and accumulation of organic sediment, also known as muck; the generation and expansion of various forms of aquatic weeds; and the overall decrease in the water quality as measured by particulates, color and odor.

Muck takes over our beaches and reduces water depth. The weeds take away portions of our lake and make them unusable for boating and swimming. The water begins to smell, especially if the bottom is disturbed.

#### How Healthy Lakes Handle the Problem

A healthy lake uses aerobic bacteria to consume the muck, and oxygen to eliminate phosphorous, nitrogen and odors. This not only depletes the muck but also keeps the weeds in check. Aerobic bacteria require oxygen to live; thus, the oxygen must be present at the bottom of the lake where the muck is located.

A healthy lake normally "turns over" at least twice a year (spring and fall); that is the oxygenated top water sinks to the bottom, and the non-oxygenated bottom water rises to the top. It is the temperature difference between the top water and the bottom water which drives this turnover; thus, providing oxygen for the aerobic bacteria and elimination of phosphorous and nitrogen. Because Austin Lake is so shallow, its temperature difference is not large enough to generate sufficient turn over; thus, it lacks oxygen at the bottom to feed the aerobic bacteria and is also unable to efficiently eliminate the phosphorous, nitrogen and odors.

#### A Solution to the Problem

Aeration is a potential solution to the problems discussed above. It is the process by which water is physically moved from the bottom of the lake to the surface of the lake. Once the water from the bottom is brought to the surface, the water becomes oxygenated by the atmosphere and then is returned to the bottom level, rich in dissolved oxygen. This dissolved oxygen can combat every one of the issues mentioned previously.

By ensuring the lake water is oxygenated at the bottom, middle and top, aerobic bacteria flourish throughout the entire water level. More importantly it allows the bacteria to live at the bottom of the water level where the muck resides. This thriving aerobic bacterium uses the organic sediment as their food source.

Oxygenation also removes the elemental phosphorous and nitrogen that are present in the lake from fertilizer, animal waste, plant decay, etc. By eliminating these elements it inhibits the growth of aquatic plants. This process essentially starves weeds like E.Milfoil, Coontail, etc.

In addition, oxygenation eliminates the noxious

gases like hydrogen sulfide and carbon monoxide. These gases produce the odor you smell when the sediment bed is disturbed.

### **The Lake Savers and Clean-Flo Solution**

The Austin Lake Riparian Board, led by Don Mordas, worked with a company called Lake Savers. This company uses Clean-Flo technology which has been used throughout the world to clean up lakes and oceans. Lake Savers produced an engineering study that employs about 24 diffusers (aerators) spaced throughout Austin Lake's south bay. These diffusers are designed to sit on top of the muck layer, but at the bottom of the water, and produce bubbles that flow to the surface. While floating to the surface the bubbles pull large amounts of water to the surface with them. At the surface, the water that was deoxygenated is now exposed to the atmosphere and becomes oxygenated. As more water is brought to the top, the oxygenated water is returned to the bottom producing what is called a laminar flow cell. This continual process allows constant dissolved oxygen to be present throughout the entire water level (top to bottom) and allows the bacteria to flourish and perform its natural act of eliminating organic sediment.

The study estimates 6 inches to 1 foot of muck can be removed from the bottom layer per year. This translates to having the muck recess from the beach line by about 8-10

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feet per year! Past studies (radiographs) of the lake found a point in the south bay which had 10 feet of water on top of 40+ feet of muck!

### Who will be Effectuated

Our strategy at this point is to only oxygenate water in the south bay thus limit the financial impact of this project to the residents of the south bay (see map on the first page). Even though this project affects the overall lake water quality, we believe that these residents would get the most to benefit and would be most likely to approve the project. It will require at least a 50% approval from all the south bay residences before this project can go forward. Note that the Informational Meeting is to discuss the project, and describe the process for approval. The project will *not* be formally approved at the meeting.

### What about Past Aeration Projects

In the past, aeration has been evaluated on Austin Lake and has never been found to be a reasonable alternative for reasons that are not entirely clear. Be it cost or other reasons, those projects have never progressed. A team of Austin Lake Riparian Board members reviewed each aeration project proposal that was generated in the past and the closest thing that we could find was that there was one or two diffusers placed randomly in the lake for a small scale study. Our engineering study has shown that for the south bay alone we would need 24 large scale diffusers to produce maximum muck and nutrient elimination. This is a drastic difference from what was studied and evaluated in the past, so that is something to keep in mind if you have a historical perspective with a previous aeration project.

### Aeration Project Informational Meeting

This aeration process is much more technical and we are sure that you will have many questions, such as potential implementation dates and costs. At the Aeration Project Informational Meeting a lake reclamation specialist will be on hand to speak to all of us about the benefits of aeration and also provide success stories and testimonials along with answering any questions that you might have.

### For Further Study

Don Mordas, a lake resident, has personally done a lot of research on the Clean Flo process, visited their website, reviewed all of their testimonials and even viewed their process on U-TUBE. They have even done a project recently in our area at Willow Lake located off of Parkview (the lake that the Black Swan is situated on). In one year, they have managed to eliminate almost all of the aquatic weeds and organic sediment by using

their diffusers to aerate that lake. The water quality seems to have increased dramatically in 12 months. If you get any free time, we encourage you to take a trip to Willow Lake and see the diffusers in action. View the lake surface and the lake bottom and then walk across the road to the same lake on the other side, which is not being aerated and see first hand the 'before' and 'after' difference. Also note that the Willow Lake project is a three year project that was started in June, 2007 so keep that in mind relative to the entire project timing.

If you would like to study this further, please see the Clean Flo web site at [www.clean-flo.com](http://www.clean-flo.com) (note the testimonials of the Clean-Flo process). Also, feel free to contact Don Mordas or other Board Members for questions. For up-to-date information see our web site at [www.austinklakeriparians.org](http://www.austinklakeriparians.org).

## Renting a Pontoon Trailer?

When renting a Pontoon Trailer, please keep in mind that our Austin Lake Riparian Association has an agreement with Right-Way Rentals. If you ask for this trailer, they will make a use-contribution to the Association.

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<b>Norm Young - Newsletter Editor and Website</b>	<b>324-6199</b>
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Website: [www.austinlakeriparians.org](http://www.austinlakeriparians.org)

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