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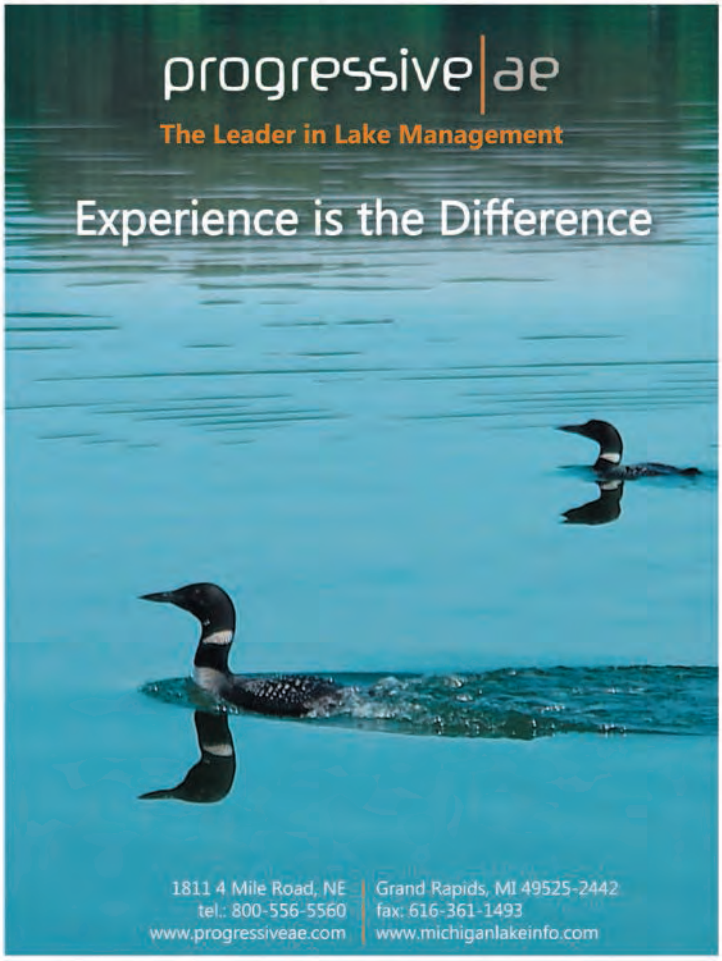
# THE MICHIGAN RIPARIAN

www.mi-riparian.org

RIPARIAN (ri-'pair-ee-en) adj. Relating to or living or located on the bank of a natural watercourse, such as a river, or of a lake or a tidewater.

DEVOTED TO THE MANAGEMENT AND WISE USE OF MICHIGAN'S LAKES AND STREAMS Published Quarterly

The Devils and Round Lakes Preservation League is located in the Irish Hills region of Lenawee County and consists of two lakes: Devils Lake is 1330 acres with a maximum depth of 63' and a shoreline of 10 miles, while Round Lake is smaller at 515 acres with a maximum depth of 67'. Both lakes are developed all season sports and recreational lakes with public access sites. Fish species include perch, bluegills, crappie, large and smallmouth bass, northern pike and walleye.

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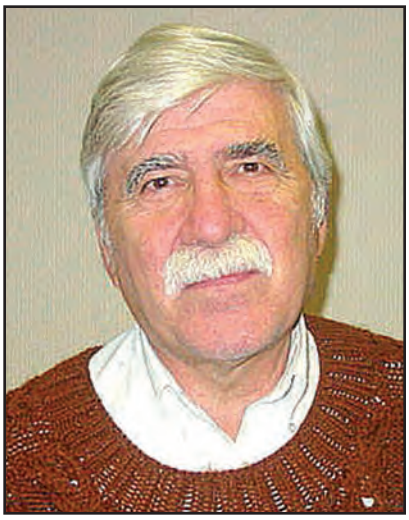
# FROM THE PUBLISHER

## Time Marches On!



I know it's said all the time, but can you believe another year has passed? We hope that 2011 was good to you and that 2012 will be even better! A number of issues and events in 2011 have had quite an impact on riparians—Michigan Lake and Stream Associations, one of the founder members, teamed up with Michigan Inland Lakes Partnership. Comprised of more than 20 like-minded organizations, the key to the partnership is citizen involvement and collaboration between single organizations that have chosen to combine their individual strengths, accomplishing so much more for Michigan's lakes than single organizations can do on their own.

Carp have managed to stay in the forefront of several of the past year's articles—remember the article in the spring issue about keeping up the fight against this invasive fish and the Carp's rebuttal? This past spring ML&SA celebrated its 50th Anniversary Conference, which was captured in words and pictures. (Inside this issue is information about the 51st Conference on April 27 and 28, 2012).

Keeping you aware of impending changes in riparian law equips us to fight for or against those issues having an impact on current and future inland waterfront property owners. Cliff Bloom's newest book, *Buying and Selling Waterfront Property in Michigan*, is an excellent resource for riparians and a must-have for anyone considering buying or selling waterfront property in Michigan (see page 13 for more details).

Keeping you informed about legal and environmental issues that affect your waterfront property and Michigan's inland waters is one of our goals. That's why it was so important to keep you informed about the 2000 Baum Family Trust vs Babel case. And let's not overlook the lighter side of things—*Love My Lake and Lake Happenings* are featured to bring on a smile or two as we remember how special it is to be living on a lake.

Thanks to all the contributors who keep us updated on matters of the environment, law and interesting people and events. Got a story you want to share? Send it to info@mi-riparian.org. The staff of The Michigan Riparian extends our best wishes to you for a happy and healthy 2012!

*– Publisher, Franz Mogdis*

*Sunset on Devils Lake*

# Lakes Preservation League - Devils & Round Lakes

*Foggy Morning, Round Lake*

Devils Lake, covering 1330 Acres and Round Lake at a little more than 515 Acres make up the Lakes Preservation League. It is located in Lenawee County in Rollin and Woodstock Townships

## Formation of the League

Whenever needs and problems have arisen around Devils and Round Lakes, residents, businesses and cottage owners have joined forces to cope with the situation. As early as 1923, the Manitou Beach Commercial Club with some 60 members worked toward public improvements such as street lights and fighting a raise in non-resident fishing licenses to $5.00.

Over the years, various organizations have been formed to work on projects such as control of the dam that allows water to flow from Devils Lake into the stream that furnishes water for the Addison Mill Pond. The height of the dam was eventually set by court order.

In August of 1977, the present Lakes Preservation League was formed to halt the pumping of water from Devils Lake for agricultural irrigation. In 1980, the League voiced concerns about a proposed Agri Power Alcohol Plant in the area because of pollution questions.

## Early Water Quality Monitoring

Water quality testing was started by a retired biology teacher and has become a permanent part of our program. The League has been a member of Michigan Lake and Stream Associations since 1980, and has been involved in Cooperative Lakes Monitoring Program (CLMP) for many years. Several members have served as regional officers.

## Response to Concerns

Throughout the years, one of the League's major concerns has been the preservation of the remaining wetlands adjacent to the lake. In 1988, Woodstock Township received a request to rezone 19 acres with wetlands fronting on the north end of Devils Lake from single-family to multiple family dwellings (two buildings of 16 townhouse condos of two-story construction in each). With the help of Dr. Clifford Humphrey, inland lakes consultant, and attorney Donald Reisig, arguments against the rezoning of the wetlands were presented, and the rezoning was denied. The League spent in excess of $8,000 to fight the rezoning.

However, in 1991 the development of the same area came up again under a "site condominium" plan for 13 residences that bypassed requirements for a regular planned development. All land was held in common, and the lots were" building envelopes."

In the1990's, a proposed large residential trailer park on Devils Lake Highway was adjudged a danger to the health of the lakes because of run-off drainage into the Horton Drain which empties directly into the north end of Devils Lake. The League again called on the expertise of Dr. Humphrey, and the application was denied until a proper system of holding ponds for the processing of the run-off was included. The Park did not attract residents and development stalled.

## Member/Community Support

The League supports the Christmas basket project for needy families and individuals in the lakes area, the winter tip up festival, the annual fireworks display and other community projects as needed. The organization also sends out a regular newsletter to keep its over 500 member families informed about the lakes, and compiles an annual Membership and Information Directory that is distributed throughout the lakes area.

*Margaret Brighton*
*Lakes Preservation League Board - Membership & Directory*

# Laminar Flow Aeration: A Sustainable Lake Improvement Option

By: Jennifer L. Jermalowicz-Jones,
Water Resources Director
Lakeshore Environmental, Inc.

## Introduction and Overview of Laminar Flow Aeration:

Historically, laminar flow aeration was used in sewage treatment lagoons to increase the degradation of waste while not overwhelming the overlying water with a high biochemical oxygen demand (BOD). Only in recent times has this technology been used as a lake improvement method for the betterment of water quality within aquatic ecosystems. The laminar flow aeration system has some limitations including the inability to degrade mineral sediments, the requirement of a constant Phase I electrical energy source to power the units, and unpredictable response by various species of rooted aquatic plants.

A laminar flow aeration system utilizes diffusers that are powered by onshore air compressors. The diffusers are connected via extensive self-sinking airlines that deliver air to the diffusers which then circulate air into the overlying water column and eventually into the lake sediments (Figure 1). Laminar flow aeration utilizes systems that are retrofitted to a particular site and account for variables such as water depth and volume, contours, water flow rates, and thickness and composition of lake sediment. The systems are designed to completely mix the surrounding waters and evenly distribute dissolved oxygen throughout the lake sediments for efficient microbial utilization. In addition to the placement of the diffuser units, the concomitant use of bacteria and enzymatic treatments to facilitate the microbial breakdown of organic sedimentary constituents is also used as a component of the treatment. Organic matter in lake sediments is necessary for rooted aquatic plant growth and to support lake metabolic activities. An excessive amount of organic matter, however, leads to a decrease in lake depth and in increased rooted aquatic plant growth. Thus, laminar flow aeration has many objectives which include: 1.) Increasing the dissolved oxygen levels in the lake and lake sediments, 2.) Decreasing the thickness of the organic matter layer in lake sediments, and 3.) purging of noxious gases from the sediment pore water to the water column and eventually to the atmosphere. In order to thoroughly understand how laminar flow aeration affects changes in biological and physical and chemical water quality parameters, we must first understand the importance and functions of lake sediments, the major microbial processes that occur in lake sediments, and how the laminar flow aeration technology can be applied as a lake improvement technology.

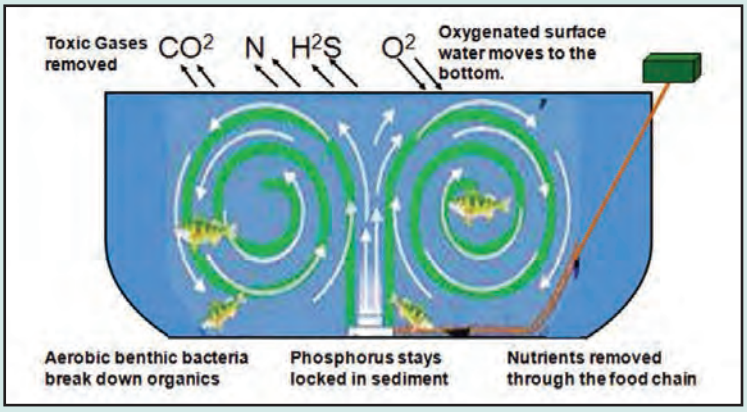



*Figure 1. A Conceptual Diagram of the Laminar Flow Aeration Process (used with permission from Clean-Flo, Inc.)*

## Sediments and Their Functions within Lakes:

The majority of inland lake sediment in Michigan originates from glacial material that was deposited in lake basins nearly 8,000 years ago (Straw et al., 1978). In general, sediments in lake systems are highly heterogeneous having been derived from glacial and anthropogenic (man-induced) activities over time. Lake circulation patterns ultimately dictate the distribution of sediments in an aquatic ecosystem. In general, lake sediments with coarse particle size are associated with higher water clarity, while those with smaller particle size such as silts and clays are usually correlated with increased turbidity. Sediments with large particle size may inhibit rooted aquatic plant growth through mechanical impedance, whereas sediments with smaller particle sizes tend to favor rooted vegetation growth unless those sediments are highly flocculent and rooting is not possible. Coarse sediment particles tend to appear near shore, whereas finer particles settle out in the deeper basins of a lake.

Lake sediments provide many functions for lakes, including nutrient supplementation to rooted aquatic plants, providing a sufficient rooting medium for aquatic plants, and in regulating metabolic processes for the lake. Odum (1971) showed that lake bottom sediments regulated the metabolism of aquatic ecosystems. Sediments may also be utilized as a large source of siliceous diatoms and other macrobiota which forms the base of the food chain for higher organisms that feed on benthic biota. In addition, lake sediments are active components of the biogeochemical cycles present in aquatic ecosystems in that they recycle nutrients and organic matter via microbial metabolism. In sediments that contain low oxygen (anoxic) conditions, some rooted aquatic plants have the ability to oxidize the rhizosphere (root zone) and overcome growth limitations present in the sediment conditions. A study by Bodelier et al. (1996) determined that the emergent macrophyte, *Glyceria maxima* utilized root aerenchymatous tissue to oxidize an anoxic portion of the lake sediment which encouraged ammonia-oxidizing bacteria. In a peculiar way, this emergent aquatic plant mimics the technology of laminar flow aeration with its sediment oxidation functions.

## Sediment Dynamics and Laminar Flow Aeration:

The laminar flow aeration process effectively purges noxious gases such as carbon dioxide ($CO_2$), hydrogen sulfide ($H_2S$), and nitrogen ($N_2$) from the lake sediments. Benthic $CO_2$ is a primary byproduct of microbial metabolism. Some studies have shown that particular species of aquatic plants obtain critical amounts of $CO_2$ from lake sediments. Hydrogen sulfide is produced from anaerobic bacteria and creates a pungent "rotten-egg" odor in the sediments. Beutel (2006) found that lake oxygenation eliminates release of ammonia ($NH_3^+$) from sediments through oxygenation of the sediment-water interface. Allen (2009) demonstrated that $NH_3^+$ oxidation in aerated sediments was significantly higher than that of control mesocosms with a relative mean

*Figure 2. Collins Lake, New York, USA, before implementation of laminar flow aeration. Photo used with permission from Lake Savers, Inc.*

*Figure 3. Collins Lake, New York, USA, after implementation of laminar flow aeration. Note the diffuser rings in the background (at upper right in photo). Photo used with permission from Lake Savers, Inc.*

of 2.6 ± 0.80 mg N g dry wt $day^{-1}$ for aerated mesocosms and 0.48 ± 0.20 mg N g dry wt $day^{-1}$ in controls.

In contrast to the gases which are purged out of sediments, phosphorus tends to remain in the sediment during the laminar flow aeration process. Phosphorus (P) is the primary nutrient necessary for abundant algae and aquatic plant growth. The total P concentrations in lake sediments are often up to several times higher than those in the water column since P tends to adsorb onto sediment particles and sediments thus act as a "sink" or reservoir of nutrients. Phosphorus concentrations are usually higher at increased depths due to higher release rates by lake sediments under low oxygen (anoxic) conditions. Thus, with an aerated sediment pore water layer, release of P into the water column is unlikely.

Many forms of nitrogen (N) are present in lake sediments and include ammonia ($NH_3^+$), nitrate ($NO_3^-$), nitrite ($NO_2^-$) and organic nitrogen. These values are usually highly variable in lake sediments due to high rates of microbial activity which rapidly converts the forms of N in sediments. Much N (amino acids and proteins) also comprises the bulk of living organisms in an aquatic ecosystem. Nitrogen originates from atmospheric inputs (i.e. burning of fossil fuels), wastewater sources from developed areas (i.e. runoff from fertilized lawns), agricultural lands, septic systems, and from waterfowl droppings. It also enters lakes through groundwater or surface drainage, drainage from marshes and wetlands, or from precipitation (Wetzel, 2001).

Organic matter (OM) contains a high amount of carbon which is derived from biota such as decayed plant and animal matter. Detritus is the term for all dead organic matter which is different than living organic and inorganic matter. OM may be autochthonous or allochthonous in nature where it originates from within the system or external to the system, respectively. Many factors affect the degradation of organic matter including basin size, water temperature, thermal stratification, dissolved oxygen concentrations, particle size, and quantity and type of organic matter present. There are two major biochemical pathways for the reduction of organic matter to forms which may be purged as waste. First, the conversion of carbohydrates and lipids via hydrolysis are converted to simple sugars or fatty acids and then ferment to alcohol, $CO_2$, or methane ($CH_4$). Second, proteins may be proteolyzed to amino acids, deaminated to $NH_3$+, nitrified to nitrite ($NO_2$-) or nitrate ($NO_3$-), and denitrified to $N_2$ gas.

## Laminar Flow Aeration in the Field:

Although this is a relatively new area of research, recent case studies have shown promise on the positive impacts of laminar flow aeration systems on aquatic ecosystem management with respect to organic matter degradation and resultant increase in water depth, and rooted aquatic plant management in eutrophic ecosystems (Lakeshore Environmental, Inc., 2010-2011, peer reviewed publication in progress).

There is also evidence that laminar flow aeration creates a favorable change in planktonic algal communities. Toetz (1981) found evidence of a decline in Microcystis algae (a toxin-producing blue-green algae) in Arbuckle Lake in Oklahoma. Other studies (Weiss and Breedlove, 1973; Malueg et al., 1973) have also shown declines in overall algal biomass.

Conversely, a study by Engstrom and Wright (2002) found no significant differences between aerated and non-aerated lakes with respect to reduction in organic sediments. This study was however limited to one sediment core per lake and given the high degree of heterogeneous sediments in inland lakes may not have accurately represented the conditions present throughout much of the lake bottom. The science behind the laminar flow aeration system encourages a measurable reduction in the organic matter layer of the sediment so that a significant amount of organic nutrient is removed from the sediments and excessive sediments are reduced to yield a greater water depth. This process also tends to cause a decline in some nuisance aquatic vegetation growth and leaves nutrients in the sediment which are unavailable for algae.

Ongoing research is being conducted on many lakes in Michigan, including Maple Lake (Van Buren County, MI), Sherman Lake (Kalamazoo County, MI), Chippewa Lake (Mecosta County, MI), Wing Lake (Oakland County, MI), Keeler Lake (Van Buren County, MI), and Indian Lake (Cass County, MI). Other states in the U.S. have also implemented the laminar flow technology with excellent results. Collins Lake in

*(continued on page 8)*

# Laminar Flow Aeration: A Sustainable Lake Improvement Option

*(continued from page 7)*

New York State discovered a substantial reduction in both nuisance rooted aquatic plant growth and dense filamentous algae growth in one season (Figures 2 and 3).

## Concluding Remarks:

What defines a "sustainable" lake improvement strategy? Ultimately, sustainability of an improvement program may be dependent upon the length of the program given the existing stock of useful resources (Munasinghe and Shearer, 1995). Laminar flow aeration provides a constant stock of supplied air to the lake bottom during a given season of operation. Efforts to increase sustainability through more ecologically friendly power sources are currently underway. Orr (2003) warns us that a program with excessive economic, technological, and financial complexities is unsustainable due to a limited capacity for management. The laminar flow system is affordable, typically declines in cost with time, is technologically simple, and usually requires little maintenance. While many of the lakes in Michigan are limited in their capacities to be managed, the laminar flow aeration technology offers a self-cleansing approach to holistic lake improvement without chemicals and mechanical methods. Laminar flow aeration is not a panacea but seems to be improving inland lakes in a consistent and sustainable manner.

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# "Buying and Selling Waterfront Property—The Pitfalls"

By Clifford H. Bloom, Esq.
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333 Bridge Street, N.W.
Grand Rapids, Michigan 49504-5320

Isn't buying or selling waterfront property the same as similar transactions for non-waterfront properties? No! There are many legal and practical differences for transactions involving waterfront properties than conventional properties.

Perhaps the most important component of any real estate transaction is the sale/purchase agreement. That document (signed by both the buyer and seller) "sets" all of the important matters for the ensuing real estate transaction. While some inexperienced buyers and sellers view the document as simply a preliminary informal agreement or something akin to a letter of intent, it is not. A signed sale/purchase agreement is fully binding, usually contains all of the important terms of the real estate transaction and cannot be changed or varied unless consented to by both parties in writing. Accordingly, if you are a prospective purchaser, it is important to make sure that every major issue is addressed in the sale/purchase agreement including any contingencies or "outs." Some of the major clauses in a sale/purchase agreement for waterfront property include the following:

Purchase price
Property legal description and address
Financing contingencies
Earnest money/deposit
Fixtures and items that are included in the sale
Type or quality of title to be given
Warranties or "as-is" clause
Remedies upon default
Title insurance
Closing costs and who pays what
Property tax proration
Proration of other items
Inspection clauses
Contingency/cancelation clauses
Survey
Real estate transfer taxes
Broker fees
Closing date
Seller's disclosure statement (if a dwelling is involved)
Private road disclosure
Type of deed or land contract
Arbitration clause
Notices

If a prospective purchaser is considering buying a waterfront property, it is essential to determine whether in fact the property is true waterfront property and if so, the extent of the rights associated with that property. Many properties that are advertised as "waterfront" property turn out not to be or the property's riparian rights could be very limited. An off-lake or off-water property is not riparian—a lot or parcel must actually have frontage on a body of water to be riparian. Furthermore, any water usage rights for an off-lake or back lot property is almost always extremely limited. Typically, any lake access rights involve access only (that is, travel), with no rights to have a dock, moor a boat or even lounge or sunbathe. It is also fairly common for a purported waterfront property to actually not run to the water itself ("land gaps" are quite common) or to have an easement, walkway, road or other recorded interest run along the waterfront. Quite often, it will take a skilled real estate attorney to advise the purchaser whether the property at issue is truly waterfront and if so, whether there are any restrictions or limitations.

Some of the other matters that a prospective purchaser should familiarize himself or herself with before making a binding decision regarding purchasing a waterfront property include the following:

- Are there any deed restrictions that limit use?
- How much waterfront does the lot actually have?
- Is there a voluntary or mandatory property owners association?
- What will the property taxes be after the transaction?
- Are there any lake access easements, private or public road right-of-ways, public or private walkways or similar items that bind the property or are located nearby?
- Is the property subject to any special assessments for aquatic weed controls, municipal services, or other matters?
- Are there any local municipal, zoning or other ordinance requirements that would impact buildability, dockage, the number of boats allowed, etc.?
- Has a recent survey been done for the property?
- Are there any negative uses nearby (for example, an expressway, prison, airport, or landfill) or are there nearby properties that could be heavily developed later?
- Is the body of water healthy or degraded?
- What are the bottomlands of the property like?
- Are there chronic disputes in the neighborhood?

It is simply not prudent for a prospective buyer or seller of waterfront property to assume that the closing transaction will be the same as with any other piece of property. Where a waterfront property is involved, it is normally wise to utilize an attorney who is skilled in the area.

* * *

A recently released book that I authored for the Michigan Lakes & Streams, Inc., *Buying and Selling Waterfront Property in Michigan*, delves into waterfront property real estate transactions in much more detail than this article. An order form for this new book can be found on page 13 of this magazine. In addition, the order form can also be found at ML&SA's website at www.mymlsa.org.

# Michigan Waterfront Alliance

## A unified voice to protect Michigan's Lakes and Streams.

Members Receive: Protection of their Riparian Rights by professional lobbyists in Lansing * MWA Newsletters sent by 1st class mail * Lobbyist Reports * Testimony at important legislative hearings on behalf of Riparians *Email Action Alerts * Amicus Briefs and much much more.

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Annual dues for individual membership in the Michigan Waterfront Alliance are $50.00 per year. Dues for Lake or Stream Associations are $100 per year. Commercial and individual donations are needed and appreciated.

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City _____ State _____ Zip_____

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☐ Check here if you would like to donate to the legal defense fund.

Make checks Payable to Michigan Waterfront Alliance

Send Dues and Contributions to: Michigan Waterfront Alliance, PO Box 369, Fenton MI 48430

☐ I am not ready to join yet. Please send me more information.

MICHIGAN WATERFRONT ALLIANCE
P.O. Box 369
Fenton, Michigan 48430-0369

Dear Michigan Riparians,

If ever there was a time and opportunity that you could make a difference, now is the time. The Michigan Senate is considering taking up SB 778, a bill introduced by Senator Mike Kowall, that will prohibit the mooring and anchoring of boats or obstructing ingress to or egress from the lake or stream at road ends unless platted for specific use. SB 778 if enacted will be beneficial to all residents who own lake front property around a lake and would be a vital law in protecting your investment. To date, the bill has passed out of the Senate Judiciary Committee with a bi-partisan vote of 3-0, yet more work needs to be done.

To ensure passage of this bill in the Senate and in the House, your membership and active participation in the Michigan Waterfront Alliance is vital. For those who have yet to become members, I urge you to join as soon as possible and make the investment not only for you, but for the future of our families enjoyment and pleasure and for the protection of our lakes from misuse.

Defining specific uses for road ends has been an issue that the Alliance has fought for many years. In years past, other interest groups were behind introduced legislation that were contrary to our interests (permitting anchoring and mooring of boats at road ends), and every year with the help of our lobbying team we've been successful in defeating such legislation. The passage of SB 778 will put an end to this issue.

The issue mentioned above is just one of many in which the Alliance is engaged. There are a plethora of others.

Please come and join us in our efforts in passing this most important legislation to ensure your investment is protected for the future. The Association has a Top 10 professional lobbyist on retainer and we have a board of directors that give their time to help preserve and protect our beautiful lakes in our great State of Michigan.

Thank you,

Bob

Bob Frye
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President
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Fax: 989 821 5868

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# Save the Dates !

# Michigan Lake and Stream Associations

## 2012 Annual Conference Highlights

Distinguished Speaker Presentations
51st Annual Banquet
Live Entertainment
Annual Recognition Awards Ceremony
Door Prizes / Silent Auction / 50-50 Raffle
MiCorps CLMP Volunteer Monitor Training
Riparian Services Exhibitors
Non-Profit Exhibitors
Free Stewardship Literature

## 2012 Conference Topics:

- Developing a First Order Lake Management Plan
- Inland Lakes Management
- Inland Lake Fisheries Assessment and Classification
- Lake Friendly Shoreline Management Techniques
- Annual Michigan Riparian Rights Review
- The Role of Townships in Inland Lake Management
- Lake Friendly Planning and Zoning Ordinances
- Cold Water Streams Habitat Management

## 51st Annual Conference

Boyne Mountain Resort
Boyne Falls, Michigan

***Friday & Saturday***

***April 27th & 28th, 2012***

## Save the dates !

Join us in Boyne Country as we celebrate 51 years of working to protect and preserve Michigan's inland waters. Your participation in our 51st Annual Conference will help make this a very special occasion !

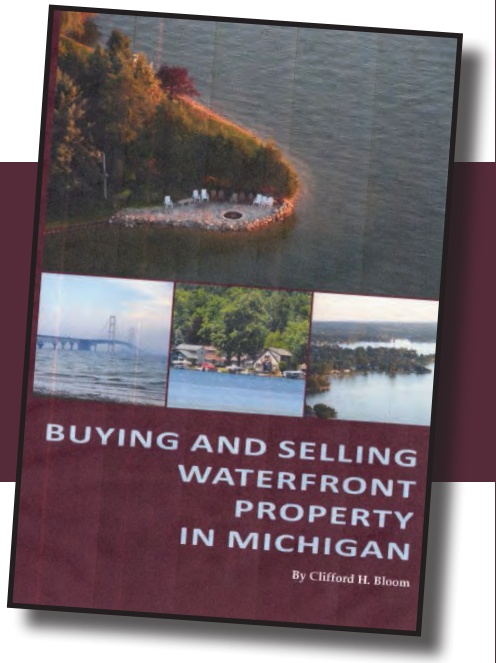

**For more info visit our web site:**

**www.mymlsa.org**

# A NEW BOOK FROM THE MICHIGAN LAKE & STREAM ASSOCIATIONS, INC.

## *BUYING AND SELLING WATERFRONT PROPERTY IN MICHIGAN*

### AUTHORED BY GRAND RAPIDS ATTORNEY CLIFFORD H. BLOOM




The Michigan Lake & Stream Associations, Inc. ("ML&SA") is pleased to announce its new book entitled *Buying and Selling Waterfront Property in Michigan* by Grand Rapids Attorney Clifford H. Bloom. This is the second book from ML&SA, the first being the 2009 book called *Michigan Lake Associations–The Nuts and Bolts* (also authored by Cliff Bloom).

This new book is a "must" for anyone who is interested in waterfront property in Michigan. The list of people who should purchase the book includes not only riparians (and would be riparians) but also realtors and real estate agents, attorneys, government officials, surveyors and teachers. This book is a "how to" publication that deals with numerous real estate and waterfront issues, including:

- Riparian issues
- Due diligence
- The purchase/sales agreement
- Contingencies
- Inspections and inspectors
- Financing
- Surveys
- The closing
- Title insurance
- Deeds and land contracts
- Buildability
- Real estate forms
- Zoning and local ordinances
- Property taxes
- Realtors, real estate agents and lawyers
- Lake access devices
- Easements
- Warranties
- Liability and flood insurance
- Useful definitions
- Lake associations
- Additional resources

The purchase price is $20.00 plus postage. Bulk rates are available. The following is an order form that you can use to purchase one or more copies of the new book. If you are interested in obtaining pricing for group or bulk purchase discounts, please use the form below or online at www.mymlsa.org.

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# ASK THE EXPERTS

*If you have a question about water related issues, riparian rights, and/or lakes and streams, etc., let us know by email or snail mail.*

*Email: info@mi-riparian.org*
*Mail: The Michigan Riparian*
*304 E. Main Street, Stanton, MI 48888*

One of the issues that comes up frequently with riparian property owners involves which permit or permits must be obtained to install a seawall along a lake. The simplest answer is to hire a qualified contractor who will normally handle the permitting requirements. However, in the end, the property owner is ultimately responsible (or co-responsible with the contractor) for complying with all applicable laws and obtaining all required permits.

In almost all cases in Michigan, if a new seawall is to be installed or an existing seawall modified and any portion of the structure (or any anchors or components of the structure) will be located at or lakeward of the ordinary high water mark of the lake involved, a permit must be obtained from the state of Michigan. If one of the Great Lakes is involved or the lake is directly tied into one of the Great Lakes (for example, Spring Lake, Muskegon Lake or Suttons Bay), a permit will also have to be obtained from the US Army Corp of Engineers (in addition to the state of Michigan). If in doubt, always apply for a permit or permits. If they are not needed, the government agency will normally so advise.

I am also frequently asked whether others can trespass or walk along the shoreline of a riparian property in Michigan without the permission of the landowner. There seems to be a common misperception that members of the public can always walk along the shoreline of a lakefront property owner without permission. In many cases, that assumption is erroneous. For purposes of this issue, one must draw a distinction between the Great Lakes and Michigan inland lakes. As to the Great Lakes, the Michigan Supreme Court ruled in 2005 that members of the public can walk along the shoreline up to the ordinary high water mark without the permission of the riparian landowner. See *Glass v Goeckel* 473 Mich 667 (2005). However, for most inland lakes in Michigan, that is not the case and one who walks on your shoreline without your permission is generally committing both a civil and a criminal trespass. The exception to that rule involves properties that have a platted or dedicated walkway, road right-of-way or similar way that runs along the shoreline. In those situations, members of the public (or at least property owners within the plat involved) can walk within the ways without the permission of the owner of the underlying property.

*Cliff Bloom, Attorney*

* * * * * *

Our experts include our riparian attorney, a biologist, a limnologist, an engineer, a college professor and a state agency official. They look forward to responding to your question.

# Congratulations to the winners of the Cooperative Lakes Monitoring Program's Data Entry Prize Drawing!

Each year, hundreds of volunteers monitor the health of their lakes by measuring water clarity, collecting water samples, and taking other measurements. Volunteers are encouraged to enter their monitoring data into the online database at www.micorps.net. As an incentive, every volunteer who enters their own data is entered into a random drawing to win free enrollment in the program for the following year.

**2011 Winners:**

Secchi Disk Transparency – volunteer Sheryl Hugger from Rifle Lake, Ogemaw County
Spring Total Phosphorus – volunteer Bonnie Kanitz from Crystal Lake, Montcalm County
Summer Total Phosphorus – volunteer Lois Maharg from Greenook Lake, Washtenaw County
Chlorophyll – volunteer Carolyn Zader from Clark Lake, Jackson County
Dissolved Oxygen and Temperature – volunteer Cary Hamann from Eagle Lake, Allegan County

Many thanks are due to all of the volunteers who participated in the 2011 Cooperative Lakes Monitoring Program! For more information on how you can get involved, visit www.micorps.net or contact Jean Roth with MLSA at 989-257-3715, jroth@mlswa.org.

Michigan Clean Water Corps

MiCorps

## Michigan's Inland Lakes, Ours to Protect

Cooperative Lakes Monitoring Program

- Providing baseline information and document trends in water quality for individual lakes.
- Educating lake residents, users and interested citizens in the collection of water quality data, lake ecology and lake management practices.
- Building a constituency of citizens to practice sound lake management at the local level and foster public support for lake quality protection.
- Providing a cost effective process for the MDEQ to increase baseline data for lakes state-wide.

**To enroll in the Cooperative Lakes Monitoring Program for the 2012 season, contact Program Administrator Jean Roth at 989-257-3715 or e-mail jroth@mlswa.org.**

**www.micorps.net**

# Michigan Lake & Stream Associations, Inc.
# ML&SA NEWSLETTER

Michigan Lake & Stream Associations, Inc.
304 East Main Street
Stanton, MI 48888
Phone 989-831-5100
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Web sites www.MyMLSA.org, www.micorps.net
William Scott Brown, Executive Director



## Michigan's "Highest Seniority" Volunteer Inland Lake Water Quality Monitor Retires

## Ralph Vogel of Corey Lake Hangs Up His Secchi Disk After 37 Years

**by Scott Brown**
**MLSA Executive Director**

Resourceful, practical, all-around-nice-guy, handy, a team player, generous, persistent and stewardship oriented - these are just a small sample of the superlatives that folks in the know have expressed in describing the Cooperative Lakes Monitoring Program's (CLMP) "highest seniority" volunteer inland lake water quality monitor – the affable Mr. Ralph Vogel of southwest Michigan's Corey Lake.

Following a long and fruitful career dedicated to enthusiastically monitoring the water quality in his favorite southwest Michigan inland lake as well as providing outstanding technical and material support to the Cooperative Lakes Monitoring Program, Ralph has decided to retire at the end of this season to spend more time with his family.

Ralph' steadfast dedication to closely monitoring Corey Lake has not only provided a useful benchmark for measuring long term water quality trends in his lake but has also served to inspire many others to participate in the unique state wide program.

On June 23rd, 1974, Ralph Vogel took his first water quality measurements on Corey Lake with a secchi depth measurement of nine feet. Ralph was one of the first participants in the fledgling Self-Help water quality monitoring program sponsored by the Department of Natural Resources and Michigan Lake and Stream Associations. He could not have known at that time that he would become an important part of what would later become the nation's second largest volunteer citizen water quality monitoring program – the Michigan Clean Water Corps (MiCorps) Cooperative Lakes Monitoring Program.

According to Dr. Paul Steen, aquatic biologist and MiCorps program manager with the Huron River Watershed Council, Ralph has collected the most complete and accurate data set of any inland lake in Michigan. Thanks to the considerable efforts of Ralph, Michigan Department of Environmental Quality water resource managers have accurate water quality data for Corey Lake spanning thirty seven.

Ralph also contributed to the program in other important ways. As a retired mechanical engineer, he relied upon his considerable mechanical skills to manufacture secchi disks for the program. The majority of the secchi disks used on lakes throughout the state by hundreds of volunteers over the decades were produced by Ralph Vogel. In a painstaking and time consuming manufacturing process, Ralph measured, cut, painted and assembled each secchi disk according to exacting professional and quality standards. Most of the secchi disks created by Ralph are still being used today.

*(Continued on page 17)*

MICHIGAN LAKE & STREAM ASSOCIATIONS, INC.
ML&SA NEWSLETTER

## Ralph Vogel Hangs Up His Secchi Disk

*(Continued from page 16)*

Ralph's steadfast dedication to the CLMP program has established a measure of long-term excellence for which we all strive. His steadfast commitment and exemplary to his lake, to his fellow water quality monitors and to the Cooperative Lakes Monitoring Program will not be soon forgotten.

The entire Michigan Lake and Stream Associations and Michigan Clean Water Corps extended statewide family wishes Ralph and his family all the best in retirement.

Ralph's final Corey Lake water quality measurement was taken on September 15th, 2011 where he measured a secchi depth of seven and a half feet in his beloved Corey Lake.

## MLSA Annual Conference

April 27 and 28, 2012
at Boyne Mountain Resort
www.mymlsa.org

## Live On A Lake?

### Concerned About the Future of Your Water Resources?

Membership dues of $35 entitles you to a year's membership and a subscription to The Michigan Riparian magazine as well as other benefits.

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## State Senate To Consider Legislation Restricting Activity at Public Road Ends

**Senate Bill 778 Seeks to Restore Safety and Order to Our Inland Lakes and Streams**

**by Scott Brown**
**MLSA Executive Director**

Following decades of well publicized legal wrangling and high profile court cases whose decisions are known to Michigan's legion of well informed riparians, the Michigan State Senate will soon consider legislation that, if passed and signed into law, would clearly define and restrict activity at the thousands of public road ends that terminate at inland lakes and streams. Senate Bill 778 cleared the Judiciary Committee and was reported to the full Senate on November 1st. A House of Representatives version of the legislation is expected to be introduced soon. The Senate and House are expected to take action on this legislation in January 2012.

As approved by the Senate Judiciary Committee, the language of the bill states that "a public road end shall not be used for any of the following unless a recorded deed, recorded easement, or other recorded dedication expressly provides otherwise:

- **construction, installation, maintenance, or use of boat hoist or boat anchorage devices;**
- **mooring or docking of a vessel between 12 midnight and sunrise;**
- **any activity that obstructs ingress to or egress from the inland lake or stream."**

In addition, the bill states that **"a public road end shall not be used for the construction, installation, maintenance, or use of a dock or wharf other than a single seasonal public dock or wharf that is authorized by the local unit of government."** Violators would be guilty of a misdemeanor punishable by imprisonment for not more than 90 days or a fine of not more than $500.00, or both.

Michigan Lake and Stream Associations enthusiastically supports the expedient passage and enactment of this long overdue legislation that seeks to provide a simple, pragmatic and equitable solution to the myriad of social, legal and resource management issues that frequently arise at heretofore unregulated public road ends. We strongly suggest that the riparian readers of this newsletter immediately contact their respective state senators and representatives to encourage their support for this important legislation - passage of Senate Bill 778 is by no means guaranteed, please add your voice to those of the Michigan Waterfront Alliance and Michigan Lake and Stream Associations now to help ensure that a modicum of responsibility, civility as well as law and order are re-established next summer on our priceless inland lakes and streams. We may not have a second opportunity to accomplish this important legislative goal - act now, pick-up the telephone or e-mail your senators and representatives today!

# HISTORY OF WALLOON LAKE

## Walloon Lake Association

The Walloon Lake Association mission is - to preserve, protect and defend the quality, safety and natural beauty of Walloon Lake and its watershed; to work with and exchange data with other environmental organizations and local and state governmental units whose interests are consistent with our goals; to provide timely information pertaining to the preceding, including educational information to our members and the public. To date, in 2011, there are 911 members of the Association.

**Walloon Lake Association History**

According to the September 10, 1960, edition of the Petoskey Evening News, the Walloon Lake Association first came into being in 1910.

First officers were Harry S. Jordan, president; J. H. Smith, vice-president; Paul M. Taylor, secretary; Julius Dick, treasurer. The other original trustees were John Baer, Alfred E. Hass, George G. McKercher, R. T. Merrill, Fred Shephard and Samuel D. Walden.

Records of the Association's activities during the next 50 years are skimpy, to say the least. As an item of interest, the first Association officers were principals in the early dam lawsuits. Perhaps that contributed to the founding of the Association.

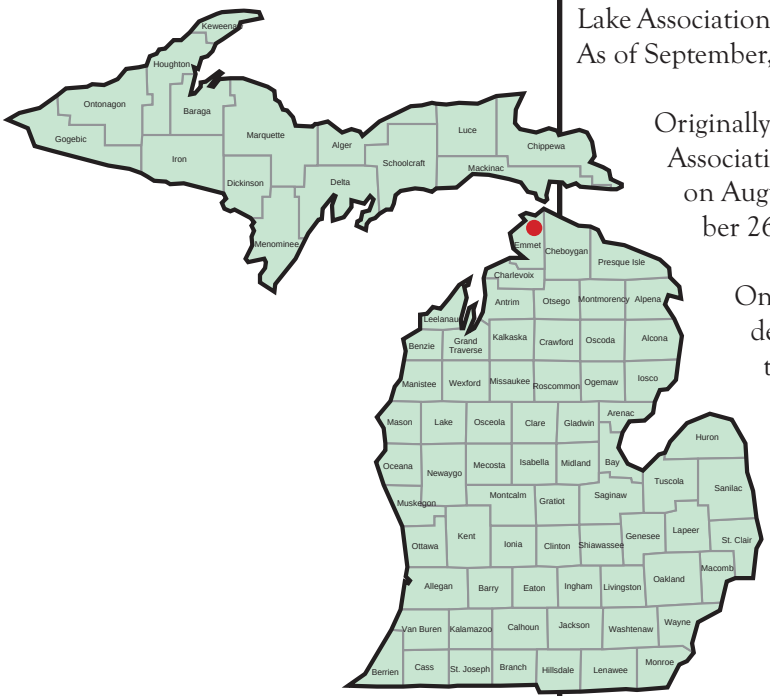
The new (and current) Walloon Lake Association was incorporated on September 30, 1960, with Henry A. Beadell its first president, Kingsley Brown vice-president and Roy G. Michell secretary and treasurer.

**Walloon Lake Trust and Conservancy**

The Walloon Lake Trust and Conservancy's mission is - to preserve and protect the quality of Walloon Lake and its watershed, to acquire qualified real property interests and to hold them for conservation purposes, to seek charitable contributions and manage and invest the Trust's financial assets, and to assist the Walloon Lake Association and other environmental organizations who share common goals. As of September, 2009, 1,913 acres in the Walloon Lake watershed are protected.

Originally, a Deed established the Trust, at the desire of the Walloon Lake Association, to create a fund which would be used for charitable purposes, on August 31, 1978. It was amended on August 26, 1983, and on November 26, 1996.

On October 27, 1998, Probate Judge Fredrick Mulhauser signed an order further amending the Deed of Trust, resulting in a name change to Walloon Lake Trust and Conservancy. During 2001, work was completed establishing a non-profit corporation, which has replaced the organization established with a Deed of Trust in 1978.



# DEVELOPING A LAKE MANAGEMENT PLAN

By: Tony Groves, Pam Tyning, and Paul Hausler
*Water Resources Group, Progressive AE*

While Michigan has a variety of laws that regulate activities in and around lakes, there is not a state-wide strategy that addresses lake-specific management issues. It is often the property owners around lakes who must take the initiative to get organized and make something happen.

There is no panacea or "one-size-fits-all" in lake management. Each lake is different and what works on one lake may not be appropriate or effective in another lake. For example, in a high-quality lake with few aquatic plants and good water clarity, reducing nutrient inputs to the lake may be the most effective way to preserve water quality. However, in a lake that naturally supports abundant aquatic plants, reducing nutrient inputs may not have much of an impact. That is not to say nutrient reduction is not important, but one must know how a lake may respond to management measures before embarking on a management plan. This allows for a more efficient use of time and often limited financial resources.

Ideally, a lake management plan should address both short-term improvements (e.g., aquatic plant control) and, to the extent practical, long-term pollution abatement issues (i.e., watershed management). However, in the context of this article, a lake management plan can encompass anything from a plan to control an invasive aquatic plant to watershed management. Regardless of the scope of the plan, the steps outlined below will probably apply.

**Get Organized:** The first order of business is for people to get together and decide they want to do something. Many lake management plans begin with a lake association or a group of property owners who share common concerns, and a desire to make something happen.

Get Help: Seek out and get input from someone with expertise in lake issues. This could be a university professor, a county or state agency or a lake management consultant. A lake management professional can help you with the following:

- Get the Facts: In devising a lake management plan, it is important to get the facts. An evaluation of the physical, chemical, and biological characteristics of the lake should be performed and an analysis of the watershed should be conducted to evaluate land uses, soils, and drainage features.
- Identify Problems: Identify specific problems that the lake management plan needs to address: Are invasive aquatic plants a problem? Is fertilizer runoff a problem? Are there too many boats on the lake? On many lakes, the management plan will need to address a variety of issues.
- Identify Solutions and Costs: Once problems have been identified, corrective actions and management strategies can be defined. The benefits can then be weighed against the costs.

**Build Consensus:** Effective communication is often the key to success in lake management. These days, people appear to be busier than ever. Make sure you make the most of people's limited time. Attempt to communicate in a clear, concise and factual matter. By disseminating information regarding the proposed scope and cost of a management plan, people are in a much better position to make an informed decision on moving forward with a particular management plan.

**Get Financing:** Obtaining financing is often one of the biggest challenges in implementing a lake management plan. Evaluating funding sources and fundraising can be a time-consuming (and sometimes thankless) endeavor. In some cases, sufficient funds can be acquired by increasing association dues or through voluntary contributions. While there are some grant programs, competition is generally keen and grant requirements can be narrowly focused and cumbersome. (You can't expect them to just give you the money.) Many grants have an extended time period between the grant application and actual award of funds which, in turn, complicates planning. Many communities have opted to establish special assessment districts to finance lake management plans. With this approach, all property owners who benefit from the project pay a fair share. With costs equitably distributed amongst benefitting property owners, individual costs can become much more reasonable. A special assessment district can enable projects to be tackled that would otherwise be financially out-of-reach.

**Get Going:** Implement the plan and take comfort in knowing you have taken action to protect one of your most valued assets — your lake.

Send us your lake association newsletter or special announcements electronically. We love hearing from your lake. We will continue to use and spread the interesting and informative things happening on your lake in the Michigan Riparian. Please send your lake association newsletter to: swagner@mlswa.org.

# 2011 Sunrise Tour

By Dick Bachelor

Our Fall Bicycle Trip this year is different from ones we have taken in the past. So let me begin this article with this year's adopted resolution:

1. Whereas the participants are older
2. Whereas the hills seem steeper
3. Whereas the miles seem longer
4. Whereas the ground we sleep on seems harder
5. Whereas the tent space seems smaller
6. Whereas the load (tents, sleeping bags, etc. seem heavier)

Therefore be it resolved that the 2011 "Sunrise Tour" be daily rides from Hubbard Lake allowing us the comfort of our own beds.

The morning of our first ride, tour director Nick Roupas, presented us each with a neon green t-shirt lettered with HLICC (Hubbard Lake International Cycling club) SUNRISE TOUR to commemorate our 2011 trip. We rode around beautiful Hubbard Lake reminding us of how fortunate we are to live here. While the temperature was only 49 degrees when we started, the beautiful lake view and country vistas make us soon forget the cold. We stopped at Kathy's Family Kitchen for breakfast and visited with Donna Cornelius.

Our second day's ride took us to Harrisville via Black River. The ride on Lakeshore Drive along the Lake Huron shoreline was enjoyable with great views and little traffic. We had breakfast ath the restaurant on Main Street (used to be The Coffee Talk) and while there visited with Lucille Gillard and Joyce Mahalak. They had come into Harrisville to purchase tickets for the October Fall Color Bus Trip.

Our third day's ride pointed north to Alpena. We left Don's house and biked N. Spruce and Werth roads into town. It was a beautiful day for ride with nice temperatures and NE wind which would help push us back home. We rode part of the Alpena bike path to the Thunder Bay Marine Sanctuary. The previous evening (September 7th) the Santuary unveiled the first local public screening of Project Shiphunt. It stars five high school students from Saginaw Arthur Hill H.S. who were selected to participate with a team of NOAA (National Oceanic and Atmospheric Administration) researchers to map out and ultimately film a ship hunt in Thunder Bay. We had read about the debut of the Project Shiphunt showing so we asked and they showed it to us as the "second screening". They even served us popcorn during the showing that was left over from the previous night's showing. It is a very interesting documentary which resulted in the finding of two new ships that sunk in Thunder Bay. If you get an opportunity, we suggest you see it.

On our way back from Alpena, Anne Nave and Jean Stewart passed on their way into Alpena. Don was so enthralled by Jean waving at him; he ran into Nick's bike and took a fall. After some nursing help from Anne and a few bandages we were on our way again. Jean said that she would never wave again at Don when he is on a bike.

Our last day's ride took us to Oscoda where we stopped at the Old Wurtsmith AFB to visit the Melvin Motorcycle Museum. The Melvin Museum houses over 3,000 original artifacts, prints, drawings, motorcycles, tools, books, photos and historic materials. One can view early vintage Indian Motorcycles to modern day machines. We had also planned to visit the Yankee Air Force Museum, but it was closed.

Nick and Betty Roupas hosted the Stewarts and Bachelors to an outdoor dinner with campfire and wine which provided a very pleasant ending to our 2011 bike trip. As a little history, our cycling club started taking trips in 1996, and we have ridden every year with the exceptions of 2005, 2008 and 2010. Over the years we have ridden a total of 3,724 miles on our various trips.


*Sunrise Tour Riders are left to right Nick Roupas, Don Stewart and Dick Bachelor*

Send us your lake association newsletter or special announcements electronically. We love hearing from your lake. We will continue to use and spread the interesting and informative things happening on your lake in the Michigan Riparian. Please send your lake association newsletter to: swagner@mlswa.org.

*Here's a great salmon recipe that was printed in Alcona-Iosco Cedar Lake Association's August 2011 newsletter, Whispering Waters.*

# SMOKED CEDAR PLANK SALMON— a rustic way to **cook fish**

By Mark Laszlo

*Cedar Plank Salmon*

Here is a recipe for a rustic way to cook fish—on top of a cedar plank. I use one about 6"x14"x1/2" to 3/4" thick. If you buy cedar from a lumber store, be sure that it is untreated.

Rinse plank. Fill a container with water—one large enough to fit the plank—a pan, sink or heavy plastic bag will work. Submerge for at least 20 minutes and as long as four hours. Prepare your grill. It is ready to use when the temperature is about medium high or 425° F. The grilling planks should give off a medium smoke.

Place the soaked plant on the grill and close the lid. Within a few minutes, the plank will begin to smoke and crackle. Raise the lid, place the fish on the plank and close the lid. Cooking time can vary between 8 and 20 minutes. Use a meat thermometer if you have any doubts. (Planks can be reused if they are not exceedingly charred or cracked. Simply brush clean with warm, soapy water set up to dry and store in a paper bag. Just soak the board before you reuse it.

**Ingredients:**

4T vegetable oil
1 t ground ginger
Fresh ground pepper to taste
2# salmon fillet
2T soy sauce
2T brown sugar
1 t lemon juice

Combine all liquid and dry ingredients in a bowl; reserve lemon juice, blend and set marinade aside. Remove any pin bones from salmon. Leave whole or cut into individual servings. Place salmon in a shallow dish, add marinade and turn to coat. Cover and let sit 20 minutes.

**Preheat plank:** Carefully lift grill lid and place salmon, skin side down on plank. Return the lid and let hot-smoke for 8-10 minutes until done.

**Glaze:** Transfer marinade to a small sauce pan. Gently simmer on stovetop until reduced by half. Remove from heat and add lemon juice. Brush or drizzle on the salmon before serving.

Serve it on the table, on the plank, with smoke coming from it. Do this outside, and protect all surfaces from the charred plank.

## New Subscriptions Rates

Can you imagine no increase in subscription rates for more than 10 years? That's right! In 1993, it cost $2.00 to produce one issue of *The Michigan Riparian*. We know you love your magazine, and we do, too. We are pleased to have been able to deliver such a great magazine all these years, but the jig is up! To keep up with the increased costs of publishing, printing and mailing *The Michigan Riparian*, the annual rate will increase to $14.00 for individuals starting with your next renewal. That works out to an additional $1.00 per issue. We hope you agree with us that *The Riparian* is worth it! The new individual subscription rates are currently in effect. The new lake association bulk rates will begin with your 2012 renewal date. The graduated rate scale for lake associations will be posted on the website and included with your renewal letter.

Wondering when your *Michigan Riparian* subscription expires? Check the mailing label on the back cover. It's that easy.

# FW Spotlight


www.fw.msu.edu/magazines/spotlight

FW SPOTLIGHT is a biannual publication written, edited, designed and distributed by graduate students in the Department of Fisheries and Wildlife at Michigan State University.

Our hope is that this will introduce some of the students and the work they are doing to our readers. Jared Myers and Carson Prichard are among the future leaders and caretakers of our precious waters. We also hope it will introduce the Michigan population to these same students and alert them to some of the issues that concern us the most.

If you have any questions about FW SPOTLIGHT, please contact the magazine coordinator, Abigale Lynch, at lynchabi@msu.edu or fwspotlight@gmail.com

## Tackling the decline in Recreational Fishing

*by Jared Myers & Carson Prichard*

Call it an addiction. Call it an obsession. Call it whatever you want. As kids, we wanted nothing more than to be outside fishing. We spent countless hours rigging tackle, exploring shorelines, and casting toward spots that were sure to hold the next big fish. This love for fishing gave us a deep appreciation for natural places and ultimately steered us towards careers in fisheries.

Research shows that fewer people are spending time outdoors. This means fewer kids get the opportunity to know that same joy we had on the water when we were young. We recognize our passion for fishing and other outdoor activities did not happen by accident. Important figures in our lives took the time to introduce us to the sport of fishing and teach us the importance of conservation.

Mentors can be integral in breaking down barriers that might otherwise deter youth from fishing, camping, hunting, hiking, and other outdoor activities. Because a lack of knowledge about these activities is often one of the barriers to participation, we organized an event with the Capital Region Big Brothers Big Sisters (BBBS) to teach local youths and their mentors some introductory fishing skills. Other important collaborators included Project F.I.S.H. (Friends Involved in Sportfishing Heritage - an MSU affiliated program) and the Mid-Michigan Steelheaders (a local chapter of the Michigan Steelhead and Salmon Fisherman's Association). The event was generously supported by the Youth Education and Stewardship Legacy Fund, an endowment administered by the MSU Department of Fisheries & Wildlife.

The Capital Region BBBS invited participants who were interested in learning to build their own fishing lures. In March 2011, 15 youths and their mentors (i.e., "Littles" and "Bigs") met at MSU for the workshop. We kicked things off with a pizza party, which allowed us to spend time with the participants, learn their names, and get them excited about the day. Lunch was followed by an ice-breaking event where each participant was given either the head or tail of a Michigan fish and asked to find the volunteer holding the other half of his or her fish. The teams then identified their fish and shared information with the whole group about each fish's characteristics.

Once the Bigs and Littles had a better understanding of fish they can catch in Michigan, we walked them through the process of building their own in-line spinners and crawler harnesses, which are versatile lures that can be used to catch many different fish. The participants caught on quickly to the process of lure-building and decorated their lures with colorful beads, tubing, and stickers. We shared advice about what colors or style of lures might work best in different fishing conditions, which was a nice opportunity to help participants connect their new skill with fishing more generally. We also talked with the participants

*Participants learn that lure building requires focus and creativity. Photo Credit: Jason Bals*

*A workshop participant proudly displays a new lure.*

*Volunteer Jim Bedford instructs participants on the finer arts of lure building.*

about the collective responsibility of sportsmen and women to protect and conserve our natural resources for future generations.

As lure builders ourselves, we know the gratification of catching fish with handmade lures and we hoped to convey this feeling to the participants. Although no fish were caught that day, the participants glowed as they showed off their favorite customized lures. They left with a tackle box full of their own handmade lures and an invitation to the Dr. Bill Earl Youth Fishing Program.

Spearheaded by the Mid-Michigan Steelheaders with support from the MSU Department of Fisheries & Wildlife and many other groups, the Dr. Bill Earl Youth Fishing Program also strived to introduce kids from the Lansing area to the sport of fishing. Three different events were held during the first three weeks of May, each at a different location in the greater Lansing area. The events were organized so that students visited three different learning stations: tackle rigging, casting, and regulations/etiquette. Each event culminated with a chance for participants to put their new knowledge, plus a brand new rod and reel (provided free of charge), into action.

We hope the experience the Bigs and Littles shared building lures will lead to even more memorable experiences on the water. By partnering with BBBS, Project F.I.S.H., and the Mid-Michigan Steelheaders, we believe both mentors and mentees gained the confidence to get out and explore Michigan's lakes and streams together.

*The authors thank John Hesse for his contributions to this article.*

# The Cedar Lake Watershed Study – An In-Depth (and Underground) Look at Complex Lake Management Issues

By Patty Hoch-Melluish, Brian Boyer, Jamie McCarthy and Mark Kieser,
Kieser & Associates, LLC,
536 E. Michigan Ave., Suite 300,
Kalamazoo, MI 49007
www.kieser-associates.com

## Defining the Problem

A comprehensive series of Cedar Lake watershed studies proves there is more to lake management than initially meets the eye. A multi-year evaluation of Cedar Lake yielded some surprising findings that would not have been evident without a comprehensive look at the entire watershed picture. In 2004, the Alcona-Iosco Cedar Lake Association (AICLA) retained Kieser & Associates, LLC (K&A), an environmental science and engineering firm in Kalamazoo, Michigan to investigate local factors influencing lake levels, particularly during dry summers. This naturally shallow lake with average depths of five and a half feet has experienced water level drops during dry summers of more than two feet. This extreme drop in lake level grabbed the attention of lakefront property owners and prompted questions of what is happening in and around Cedar Lake.


**Figure 1**

It is important to understand the unique watershed setting at Cedar Lake. The watershed straddles the southeast corner of Alcona County and the northeast corner of Iosco County near Oscoda, Michigan (Figure 1). This 1,075-acre, high-quality lake is situated about a half mile west of Lake Huron and one mile north of Oscoda. Cedar Lake is nearly six miles long averaging less than a quarter mile in width and only a limited area reaching depths of 14 feet. The lake is used for boating, fishing, swimming, hunting and wildlife viewing.

Low lake levels can radically affect these uses of the lake and the aquatic ecosystem. The AICLA was particularly interested in determining the causes of these substantial drops in lake level. Moreover, they wanted to know what could be done to reduce the drop in lake level in the future, or mitigate the problem during particularly dry summers. With technical assistance from K&A, the AICLA started on a step-wise course of action to investigate, plan and address the big picture problems that lead to low water levels in a lake with a very unusual watershed (see red watershed outline in Figure 1).

## What is causing the water level problem?

**Step 1. Initially Investigating Local and Regional Hydrology and Land Uses**

In 2004, K&A began a Phase I study investigating the hydrology of the area potentially influencing Cedar Lake water levels. Many local lake residents suspected an adjacent 36-hole golf resort to the southwest of the lake (and outside of the watershed boundary) as a major reason for the drop in lake levels. The golf resort has historically pumped substantial volumes of both surface and groundwater for irrigation.

To preliminarily investigate what was happening with the local hydrology, K&A began compiling historic rainfall data, lake level information, and installing staff gages, rain gages and piezometers (shallow groundwater monitoring wells) in strategic areas around the lake. These efforts were necessary to initially discern potential sources of water to the lake, and losses where water was exiting the lake...using sound science versus speculation. The first set of piezometers were installed at Sites 1-3 (Figure 2) to determine whether groundwater was flowing into or out of Cedar Lake in areas generally representative of the watershed. Historic and newly collected field data were used in a preliminary Cedar Lake "mass balance" for water (which can be thought of as a checkbook ledger where one tracks what goes into and out of the account...in this case, water versus money). This analysis suggested several key findings (K&A, 2005):

- The critical timeframe for falling lake levels occurs from about June to September.
- Direct precipitation to the lake during the critical summer months cannot compensate for the losses (e.g., lake is losing more water than it receives in the form of direct rainfall).
- All infiltrating water to the shallow groundwater table on the entire east side of the lake discharges directly toward Lake Huron.
- The wetlands to the northwest (a remnant of a pre-settlement cedar swamp) are the only areas of the lakeshore and watershed observed to contribute water (both surface and groundwater) to the lake.
- All infiltrating water on the southwest side of the lake is not contributing to the lake but rather flows west toward the golf resort and Phelan Creek, a coldwater trout stream flowing south to VanEtten Lake, eventually discharging to the Au Sable River.

These findings resulted in an updated watershed boundary for Cedar Lake which differed somewhat from a 1959 Michigan DNR boundary that suggested drainage from 2,989 acres. The updated watershed boundary does not include any lakeshore areas to the east, south or southwest of the

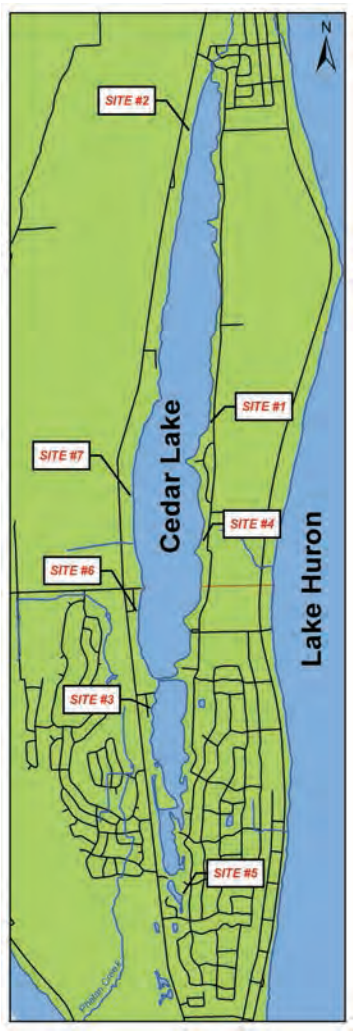



Figure 2

lake, but does include a larger area in the northwest wetland, totaling 3,613 acres (Figure 1). Throughout the year, groundwater moves from the northwest cedar swamp to the lake. Two creeks (Sherman and Jones) in this area typically flow for about six weeks in the spring and deliver surface water to the lake from this cedar swamp.

## What are the critical factors affecting water levels in the summer?

### Step 2. Further Investigation of Summer Water Losses

The initial study determined that Cedar Lake is gaining water only from the wetland complex to its northwest and losing water from all other areas of the lake. So the question still remained: **"Knowing what we know now, what are the specific factors affecting lake levels that the AICLA can address during the summer recreation season?"**

To answer this question, it was necessary for K&A to further investigate watershed hydrology over all seasons. K&A re-installed the lake and rain gages along with four additional sets of piezometers (Sites 4-7) around the lake (Figure 2) to build on Phase I information.

K&A also used the U.S. Environmental Protection Agency (USEPA) groundwater modeling program Wellhead Analytical Element Model (WhAEM) to analyze various groundwater pumping/recharge scenarios. This was done to assess whether withdrawals from the golf course were actually impacting lake levels. Historic precipitation and evaporation data for Cedar Lake were also analyzed. Field reconnaissance surveys revealed that the residential development along and adjacent to the southeast shoreline had been stormsewered in such a way that there was actually groundwater flowing in the sewers away from Cedar Lake to their discharge into Lake Huron even during dry weather conditions. Open-bottom storm-sewer manholes were acting as sub-surface underdrains, much like drain tiles do for croplands. This helped keep residential basements and crawl spaces dry in this area, but served like a plug pulled from the drain in a full bathtub. In addition, a road culvert (installed in the 1980s) on the west side of the lake artificially diverts water away from Sherman Creek and out of the northwest cedar swamp into Phelan Creek resulting in even more water lost from Cedar Lake.

Based on new data, a refined hydrologic mass balance for Cedar Lake was developed. A graphic illustration of the mass balance is presented in Figure 3 (K&A, 2006). This hydrologic mass balance of the water inputs and outputs to the lake system provided the following conclusions:

- Summer precipitation was estimated to account for almost 70% of the net gains to the lake.
- Groundwater inputs from the northwest cedar swamp accounted for approximately 30% of the gains.
- Estimated water withdrawal for lawn watering accounted for over 9% of the losses (remember that any infiltrating water on lawns along the majority of the shoreline is lost to groundwater that flows away from the lake).
- Summer evaporation accounted for almost 16% of the losses.
- In the Phase I study, southwest Cedar Lake losses were previously combined with assumed losses to the golf resort irrigation pumping. Due to the negligible impacts associated with irrigation pumping, and the measured dry weather flows in Phelan Creek, this estimate was only about 4% of the losses.
- The northeast groundwater losses to Lake Huron were estimated to be approximately 27%.

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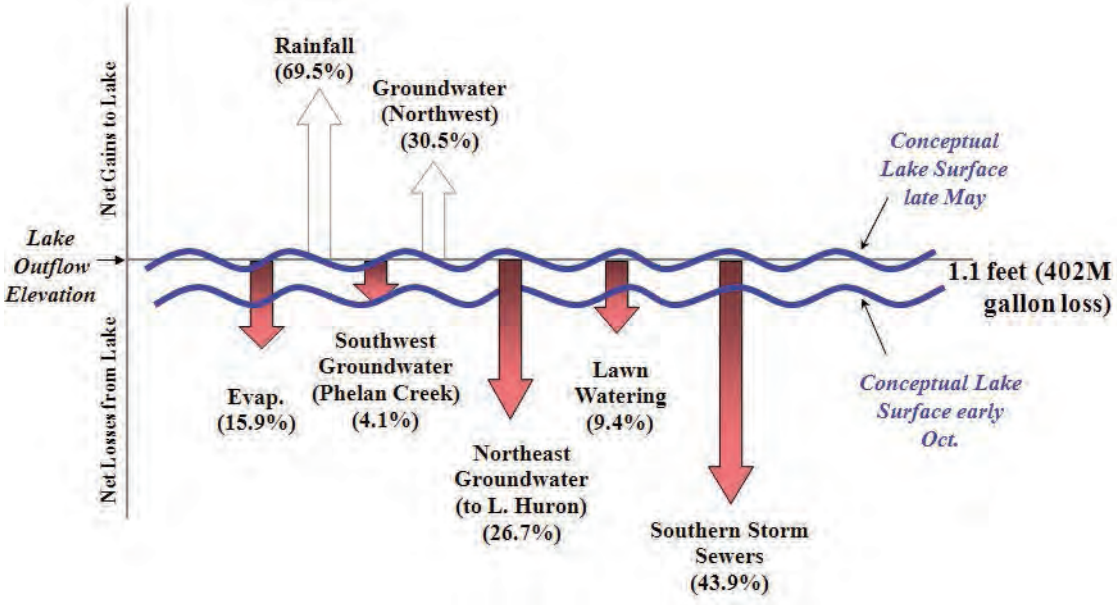


Figure 3

# The Cedar Lake Watershed Study *(Continued from page 25)*

Stormsewers in the residential area in the southeastern portion of the lake account for an estimated 44% of the losses!

This second phase of the study served to clear up several important misconceptions concerning lake hydrology. Most notably was the fact that the golf resort irrigation pumping has a negligible effect on Cedar Lake water levels, while the stormsewers for the residential area to the southeast have substantial impacts. K&A also identified strong statistical correlations between summer precipitation and rates of water loss from the lake. With such a small contributing watershed, water levels become alarmingly low in dry summers. Lastly, the evidence that the cedar swamp to the northwest is the only source of groundwater and surface water input magnified the importance of protecting this groundwater recharge area for the continued health of Cedar Lake.


**Figure 4**

## The need for a strategy.

**Step 3. Development of a Watershed Management Plan**

The AICLA recognized the urgency in trying to find solutions to the water level issues in Cedar Lake. They also recognized the need to integrate potential lake level solutions with other concerns such as water quality, aquatic plant management, wildlife habitat, recreation and aesthetics into a comprehensive plan for the lake. *(During Phase I and II of the watershed hydrology study, monitoring of fish spawning activities also identified an important spawning run for northern pike in Sherman Creek!)* The AICLA petitioned their Cedar Lake Improvement Board (Lake Board) to retain K&A for developing a watershed management plan (WMP) funded through a tax assessment.

A preliminary step in the WMP process was to assemble a steering committee (SC) to lead the WMP planning process. This had a broad-based representation of the local townships, county agencies, natural resource experts, riparians and state representatives. Watershed resident input was also a key part of the plan formation. The SC used surveys, AICLA meetings, a project website, and articles published in local papers to disseminate information and solicit this public input.

With input from stakeholders, the SC identified high priority, critical areas of the Cedar Lake Watershed for protection and restoration. Critical areas are presented in Figure 4 (K&A, 2011a). The SC selected many of these as critical to both lake level and ecosystem protection and restoration. These areas include:

1. Sherman Creek and its corridor (seasonal water inflows and spawning habitat)
2. Jones Creek and its corridor (seasonal water inflows and spawning habitat)
3. Sherman Creek drainage area (wetland complex adjacent to the creek)
4. Kings corner culvert (storm drain diverting water from Cedar Lake watershed)
5. Lakewood Shores drainage district (storm sewers diverting groundwater away from lake resulting in largest water loss during summer months)

6. In-lake habitat
7. Cedar Lake outlet (structures are aging; may need modification)
8. Developed areas along shoreline (target for education and natural shoreline restoration)

Objectives for selecting these areas included protecting critical wetlands in the northwest, preventing additional groundwater losses in the southeast, pursing a lake level augmentation feasibility study, improving the sport fishery, stopping the spread of invasive species, seeking ways to improve lake bottom sediments, continuing to monitor water quality, educating lake residents about good land and housekeeping practices and exploring conservation easements. The USEPA-approved WMP, completed by K&A and the SC in the summer of 2011, outlines a number of approaches to protect and restore these critical areas. This WMP serves as the guidance for prioritizing future Cedar Lake Watershed projects. One of the early priorities identified in the planning process was initiating a lake level augmentation feasibility study. This study was separately approved by the Lake Board in 2009 and undertaken concurrently with WMP development by K&A.

**Table 1. Augmentation Options**

| Sources | Implementation Capital Costs | Annual O&M Costs | Capacity (MG) | Unit Cost ($/MG) |
|---|---|---|---|---|
| 1. Phelan Creek Diversion | $ 129,435 | $ 3,500 | 46.5 | $ 2,784 |
| 2. Kings Corner Culvert Modifications | $ 18,728 | $ 1,500 | 18.9 | $ 991 |
| 3. Sherman/Jones Creeks Modifications | $ 68,900 | $ 5,000 | 150 | $ 459 |
| 4. Harvest Wet Weather Lake Outflows | $ 172,242 | $ 15,020 | 2.16 | $ 79,742 |
| 5. Augmentation Wells: Discharge to wetland | $ 414,591 | $ 62,600 | 101.4 | $ 4,089 |
| 6. Augmentation Wells: Direct pipe to lake | $ 476,861 | $ 62,600 | 101.4 | $ 4,703 |
| 7. Lake Huron Pumping to Cedar Lake | $ 461,198 | $ 41,560 | 364 | $ 1,267 |

**Notes:**
O&M = Operation and Maintenance
MG = Million Gallons

## So what can be done about Cedar Lake Water levels?

**Step 4. Lake Level Augmentation Feasibility Study**
The Michigan Department of Environmental Quality (DEQ) defines a lake augmentation project as one that, *"seeks to supplement the existing water in a lake by pumping water from another surface water source or by extracting groundwater, via a well or a series of wells, and pumping it into the lake for the purpose of increasing its water level or maintaining a water level higher than would typically result under natural circumstances"* (DEQ, 2006). The feasibility study looked at all source water options for summer augmentation and their associated costs. K&A used a comprehensive approach to investigate both natural water sources (using hydrologic data from Phase I and Phase II studies) and aquifer testing to explore groundwater pumping options.

The study began with a meeting of the Lake Board, the Gaylord DEQ field office staff and K&A to solicit feedback on proposed options. This meeting clarified options DEQ could endorse or might likely reject considering their permitting authority.

As part of the feasibility study, automated data loggers, which record water levels at frequent intervals, were installed in the network of piezometers around the lake. These replaced the need for AICLA volunteer data collection and provided a much more robust dataset by measuring groundwater levels every hour from December 2009 through May 2011.

During this phase of the study, water quality data were also collected from Cedar Lake, the two surface water inlets and the two outlets. Finally, a 12-inch diameter test well was installed to determine site-specific groundwater yield within the wetland complex to the northwest. Observation wells provided data to assess potential impacts of large groundwater withdrawals on nearby residential water wells, wetland water levels and surface streams flowing into the lake.

Using the legally established lake level as the goal, K&A determined that a total of **364 million gallons** would need to be added to Cedar Lake from June through September to offset the expected summer water level losses during average summer precipitation (about 2.75 inches per month from June-September). Seven potential augmentation options to possibly meet these needs were evaluated. These considered initial project costs, annual operation and maintenance and project complexity (including location constraints, potential regulatory concerns, volume limitations and impacts to natural resources) (see Table 1 for results).

Findings were provided to the Lake Board in a comprehensive report calling out several key conclusions and recommendations (K&A, 2011b). From this evaluation, three options were considered the most desirable: Option 2 - modification of storm drain culvert; Option 3 - modification of Sherman and Jones Creeks; and, Option 6 - groundwater augmentation wells. This study demonstrated that: 1) lake level augmentation is feasible; and 2) strategies to protect and restore Sherman and Jones Creeks provide the most cost-effective solutions for maintaining both biologically and recreationally appropriate lake levels. The Lake Board is now considering next steps to proceed with implementing these recommendations.

## What has been achieved with all these "studies"?

The multi-year lake level and augmentation study offers a new outlook for Cedar Lake residents suffering diminished summer use of their lake in dry years. Whereas the only solution prior to these efforts was 'suing the golf course', sound science and engineering has now shown the way to naturally address as well as correct problems stemming from past 'great ideas'. The regulatorily-approved WMP provides a roadmap with backbone for long-term watershed improvements. Prioritized efforts to protect or restore critical areas of the watershed affecting water quantity and quality have been identified, vetted and can now be used as the future vision of the lake association. This approved plan also opens a window of opportunity for state-funded implementation grants under the Clean Michigan Initiative or other grant sources.

Fundamentally, these detailed studies were necessary for visioning sound management options for Cedar Lake...well beyond simple solutions that might be suggested at first glance or with just the traditional seasonal lake monitoring and data reporting.

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*(Continued on page 26)*

# The Cedar Lake Watershed Study

*(Continued from page 27)*

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# A New Road End Bill

By Clifford H. Bloom, Esq.

Over a decade ago, the Michigan Lake & Stream Associations, Inc. ("ML&SA"), the Higgins Lake Property Owners Association ("HLPOA"), the Michigan Waterfront Alliance ("MWA") and several other state-wide groups believed that it would be prudent to codify into state statute the long-existing common law indicating that public road ends at lakes can be used for travel purposes only, and not for sedentary purposes such as private docks, overnight boat mooring, boat hoists, lounging, sunbathing, picnicking or camping. Michigan common law on the subject is well laid out in the Michigan Court of Appeals decisions Jacobs v Lyon Twp (After Remand), 199 Mich App 667; 502 NW2d 382 (1993) and Higgins Lake Property Owners Assn v Gerrish Twp, 255 Mich App 83; 662 NW2d 387 (2003). However, without either a state statute or a local municipal ordinance verifying what activities are prohibited at public road ends and providing a ticketing or police enforcement mechanism, the common law can only be enforced by expensive and time consuming private civil lawsuits.

Riparian and other stakeholder groups were able to persuade some legislators to introduce statewide legislation which would allow police officers to issue tickets to enforce public road end regulations. Unfortunately, when the pro-riparian legislation was introduced, it prompted a fierce backlash by many backlot property owners. Backlotters formed their own groups which not only opposed all common sense road end legislation but actually urged some legislators to introduce legislation in an attempt to overturn the common law, unlawfully alter plat dedications and allow private dockage, boat moorage, sunbathing and other prohibited activities at road ends.

The pro-riparian and pro-backlotter competing bills seesawed back and forth for the better part of a decade. In fact, a few years ago, backlotters were able to convince the then-Democratic majority in the Michigan House of Representatives (and even a few Republican members via horse trading) to pass a bill that would allow private dockage and boat moorage at public road ends on certain larger lakes in Michigan. Luckily, the Michigan Senate refused to pass a similar bill and the proposed backlotter legislation died.

This fall, the MWA and HLPOA helped spearhead a new bill in the Michigan Senate (SB 778) that would prohibit private dockage, boat hoists and overnight boat mooring at public road ends. The proposed legislation would allow police officers to write simple criminal misdemeanor appearance tickets for violations (but would not prohibit a person from bringing a civil lawsuit stemming from a violation). The bill was introduced on October 26, 2011 and was referred to the Senate Committee of the Whole on November 3, 2011. As of the writing of this article, no further action had been taken on the bill.

ML&SA, MWA and HLPOA hope that this common sense legislation will be enacted and become law in Michigan. The legislation will simply codify existing common law rules regarding public road ends at lakes and provide police officers with an easy ticketing mechanism for enforcement. For more information regarding the public road end controversy in Michigan, please visit the ML&SA website at www.mymlsa.org and click on Position Paper of the ML&SA Regarding Proposed Public Road Ends at Lakes Legislation under "Recent News." In addition, a January 30, 2008 opinion by the Michigan Attorney General (Opinion No. 7211) discusses the legal aspects of activities at public road ends.

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