



QUARTERLY

THREE LAKES ASSOCIATION

SERVING LAKE BELLAIRE, CLAM LAKE AND TORCH LAKE IN ANTRIM COUNTY, MICHIGAN

JANUARY 2017

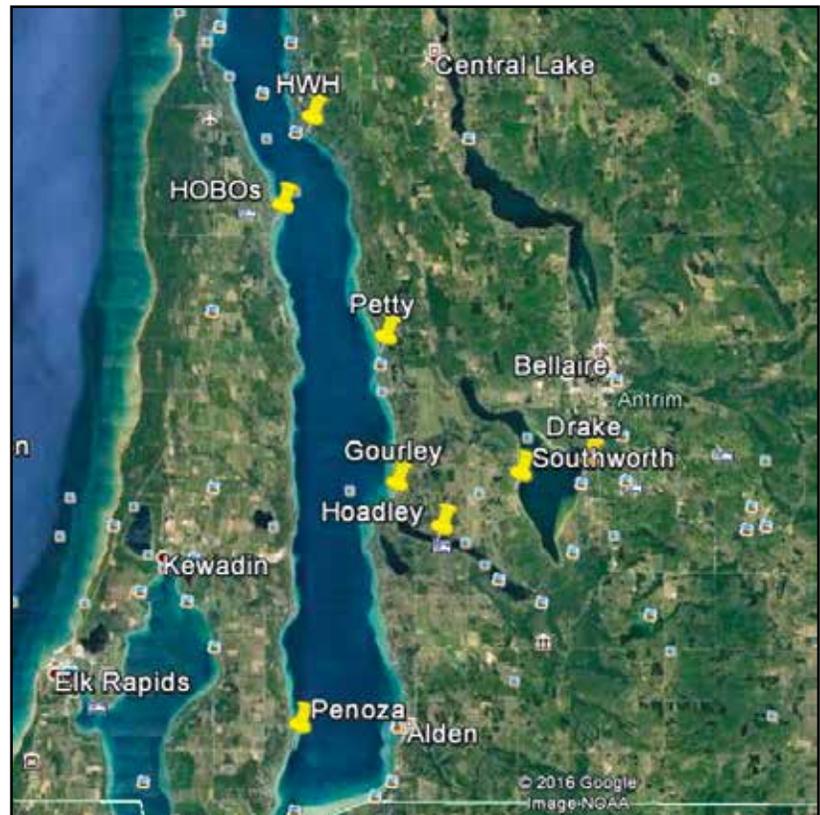
An Update on the Golden Brown Algae Study

By Becky Norris

During the summer of 2016 TLA water quality team members continued and expanded our study of golden brown algae, the orange-y crud that has been proliferating on the lake floor of the lakes in this region (and most likely elsewhere, too). Here is a map (right, above) showing the locations of our study sites, two on Lake Bellaire, one on Clam Lake, and five on Torch Lake. And here is an aerial view of Torch Lake at the mouth of Torch River (right, below) showing the orange crud; streaks show how easily the crud is disturbed by boat propeller action and how the lake floor appears without the crud.

We once again partnered with Professors Rex Lowe and Pat Kociolek for a nutrient diffusing substrate study to determine which nutrient – nitrogen or phosphorus – had the greater effect of stimulating algae growth and which types of algae were the most responsive to the nutrient supplies. Here is a picture showing the substrate experiment materials being positioned on the lake floor

See GBA page3



Sneak peek

PRESIDENT'S MESSAGE
WATER 101
THANKS, JIMMY ARGO
PROTECT YOUR LAKE

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The TLA Quarterly is published by the Three Lakes Association

Please direct comments or questions to:
Leslie Meyers, Executive Director
231-544-7221 - Please leave a message
P.O. Box 689
Bellaire, MI 49615
info@3lakes.com

www.3lakes.com

President's Message - Hands

Hands are amazing! Take a moment, now, and just look at your hands, and reflect on what they are capable of. You may be a graphic artist, an instrumentalist, a hand-crafter, a wood-worker, a mechanic, an engineer, a typist, an accountant, a chef, a poet, a photographer, a forensic scientist, or – oh, my goodness, the list is endless. Whatever your craft or trade or talent, the chances are really excellent that your hands play a part in what you do.

When it comes to taking care of our environment, and especially our beautiful lakes and streams, each of us becomes a pair of hands in service to nature. Have you ever thought of yourself that way? I remember clearly when I became aware of my own role in maintaining the health of our waters. It will come as no surprise to anyone who knew my dad, Jack Norris, that it was he who taught me the lesson. In particular, he was inventing a low cost, practical way to test whether the effluent from a septic system might be leaking into the groundwater and getting into the lake. His passion for protecting the lake water guided his response to any person who came to him with a perceived problem, such as abundant growth of Cladophora at the shoreline, and his approach was always one of personal responsibility. Although this was many years ago, the lesson has stayed fresh in my memory, and it routinely informs the choices I make as I go about my own daily living.

Having come to the end of a very active and productive year (2016), and beginning a new year (2017), it's worth taking a look at what we have done with our hands as mindful stewards of the water resources we have been given, and to consider why our work matters.

When somebody asks you "What's the point of TLA?" don't you stop for a moment and think "Gee, there's so much to tell, where the heck do I start"? I know I do. I also know that some people aren't concerned with taking care of our lakes; some people don't really believe there's anything humans can do, whether for good or for bad, that will have any real effect on the planet's health, and consequently they disregard any need for good stewardship of our lakes.

So, what do we tell those people? What do we point to? I hope we tell them that we are the hands of stewardship, taking care of the health and beauty of our lakes, and that we are taking personal responsibility to treat our water resources with respect and tenderness. I hope we point to the summer internship program we have carried on since 2003, giving young people some field experience to guide them in their future choices with regard to the environment. I hope we point to the scientific studies we've engaged in to uncover the causes of a number of threats to our waters. I hope we point to the grants we have made to local schools' science education programs, providing materials and experiences that are otherwise unavailable due to budgetary constraints. I hope we point to the decades of water quality data we have accumulated and willingly share with those who are interested. And, lastly, I hope that you will bring your hands into this effort by volunteering with TLA. Just call us (231-544-7221), or email us (info@3lakes.com); or visit our website (www.3lakes.com). There is room for you, no matter what your skill level is.

Tina



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GBA *continued from page 1*

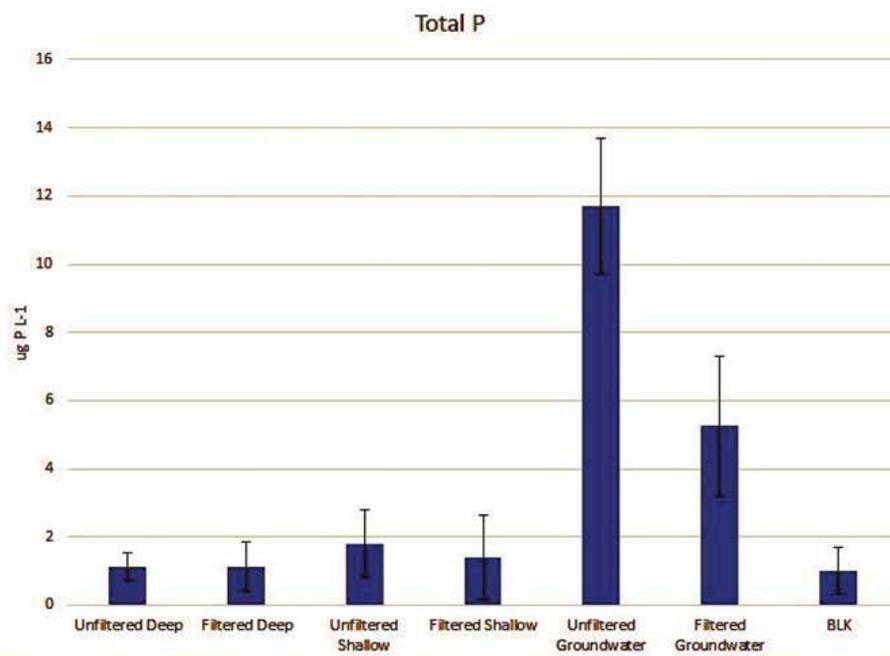
(right). As we would expect in low nutrient lakes such as ours, phosphorus was the nutrient most responsible for stimulating the algae to grow. A predominant variety of algae was not identified, however three types of diatoms merited comment. *Achnanthes minutissimum* was found in fair abundance as was *Nitzschia palea* and *Stigeoclonium tenue*. The *A. minutissimum* is known to be an early colonizer on substrates in lakes with low nutrient concentrations. The latter two are particularly responsive to phosphorus and are good indicators of non-point source phosphorus.

Our field work involved collection of algae samples from the lake floor as well as several inches below the lake floor with the purpose of comparing the composition of algae currently growing with what was present in years past. The analysis of these samples is underway at Michigan State University in Professor Jan Stevenson's laboratory.

In addition to algae, we collected water samples for nutrient concentrations. As in 2015, we collected lake water and shallow groundwater (the piezometer wells). Having learned in 2015 how important it was to do, these samples were filtered prior to analysis so as to be measuring only biologically available nutrients. We also collected water from deeper groundwater (household water wells) and the water contained in benthic sediment samples and had these also analyzed for nutrient levels; these samples were not filtered and may, therefore, have had phosphorus levels which included some non-bioavailable phosphorus. Here are pictures of our shallow groundwater collection apparatus (right) and our field filtration set-up (far right). And here is a comparison showing the effect of filtration on the phosphorus levels in lake water and shallow groundwater (right, below). Phosphorus was lowest in lake water away from shore, a bit higher near shore, and higher yet in shallow groundwater entering the lake floor. These results are supportive of the conclusion that groundwater is providing phosphorus to support the growth of the benthic golden brown algae.

In addition to the algae samples analysis, still pending are results of shallow groundwater analysis for human source substances such as caffeine. If found, they would support the possibility that some seepage from septic systems is reaching the shallow groundwater and contributing to the supply of food to support the growth of the golden brown algae.

We know that the algae are getting enough phosphorus to stimulate their growth and we know that there is a phosphorus supply in the groundwater capable of stimulating the growth of the algae. We do not as yet know if that phosphorus supply is due to human waste escaping from leaking or exhausted septic systems. Testing for DNA markers of human waste in the shallow groundwater entering the lakes is at the top of our wish list for 2017.





By TLA Intern Rachael Horn

I am excited to announce that beginning January 2017 TLA will be kicking off **Water 101**. Water 101 will consist of “posts” that we share several times a week on our website, Facebook page, and Twitter. These “posts” will actually be definitions (sometimes locally accepted definitions) of water related words, concepts, laws, agencies, etc., sometimes with pictures. Water 101 will become a Living Glossary on our website for all to use. Share our posts with your friends, coworkers, and family members! Through education and sharing we will expand our knowledge of local water related topics. The more we know about our beautiful waterways here in Northern Michigan, the better we will be able to protect our freshwater sources.



Sneak Peek:

Large Woody Debris (LWD):

Natural wooden structures (logs) placed along the banks of rivers/ creeks to improve aquatic habitat. Methods vary, but it means simply placing trees into a river.

Large Wood Debris (LWD)

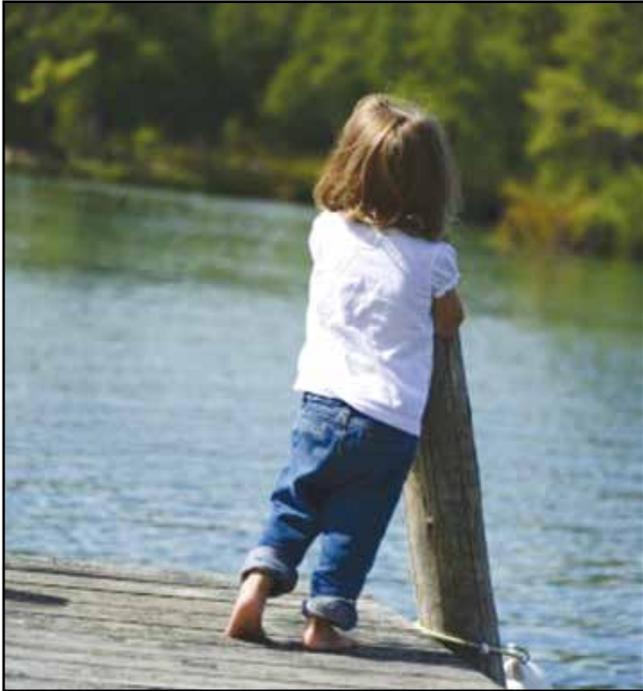
Application in Grass River:

Non-point sediment threatens the navigability of the River.

Hypothesis - log structures will reflect some of the flowing water and cause subtle shifts in water current direction and velocity, resulting in deeper pockets and channels forming as sediment is scoured from the riverbed around the structures.



TLA Planned Giving



While each of us reading this newsletter may have differing opinions, one thing that most of us can agree on is our love and concern for the waters. We have donated our time, resources and talents to keeping the Three Lakes (Bellaire, Clam and Torch) and their watersheds healthy into the future.

Our opportunity to do this doesn't end with our time on earth, we can create a legacy that will continue to provide beautiful northern Michigan lakes to future generations. Creating this legacy begins with an intentional goal of including TLA in your estate planning.

There are many ways that TLA and area waters can benefit your philanthropy. Understanding your options – and the advantages of each – can help you effectively advance your favorite cause while your around to witness the effects of strategic

giving. You may be surprised by how many options you have.

- Donor-advised fund
- Charitable remainder trust (CRT)
- Charitable lead trust (CLT)
- Charitable gift annuity
- Qualified charitable distribution
- Gifting of cash, appreciated stocks or mutual fund shares

Over the next few months, TLA will be preparing a Planned Giving Program. We will be sharing information on each of the above six options and their subsequent benefits through the newsletter, mailings and meetings.

You are already passionate about clean and healthy lakes, preserve your commitment through a legacy that lasts with a gift to TLA!

Debbie Craig, CFP®, MBA, CRPS® TLA Board - Milton Township

New Board Member

Meet our new TLA Board member **Mike Bertram**. Mike brings a vast array of experience in health care administration and has served on many boards in the past 30 years. Mike has developed/written many policies and procedures for the boards that he is served on. Mike has served as a Grand Traverse County Commissioner and Township Supervisor in the 80's. He retired as Director of Emergency Services' Health Care Administrator. He resides with his wife on the 80 acre family farm in Custer Township.



- Membership counts! -

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May we include your name in our newsletter donor list? Yes No

Are you interested in volunteering in any of the following areas?

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Three Lakes Association is a 501(c)(3) corporation. Your dues and other contributions are tax deductible. Call for further information.

* * * * *

To join Three Lakes Association, please visit our website 3lakes.com or return this form with your check to:
THREE LAKES ASSOCIATION
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The Septic Question Project

The Septic Question Project is a grant partnership between the Health Department of Northwest Michigan and Tip of the Mitt Watershed Council, funded by the Michigan Department of Environmental Quality. The goal of the project was to closely examine septic system policies for the entire Lake Charlevoix watershed, identify any problems, and examine potential ways to solve them.

Statement of the Problem: Most on-site septic systems in the state are never inspected again, once installed. Michigan is the only state in the nation without uniform standards for how on-site septic systems are designed, built, installed, and maintained. Public health officials in Michigan believe reported septic system failures represent only a fraction of the total number of failures statewide, and many go undetected or remain unreported for years. In most counties in Michigan, after a system is built, the counties do not follow up to make sure those systems are functioning properly. Only 11 counties out of 83 in Michigan have a requirement for septic inspections, and those are during the transfer or sale of property. Because this important follow up is non-existent in the other 72 counties, it creates a potential threat to public health and water resources. To further support this point, as recently as June 2015, brand new research was published in the Proceedings of the National Academy of Sciences of the United States of America. The study, conducted by Michigan State University, used microbial source-tracking tools to show that pollution arising from septic system discharges is likely much more severe than previously realized. Results suggest human fecal contamination is affecting 100% of the studied river systems in Michigan's Lower Peninsula (see diagram below).

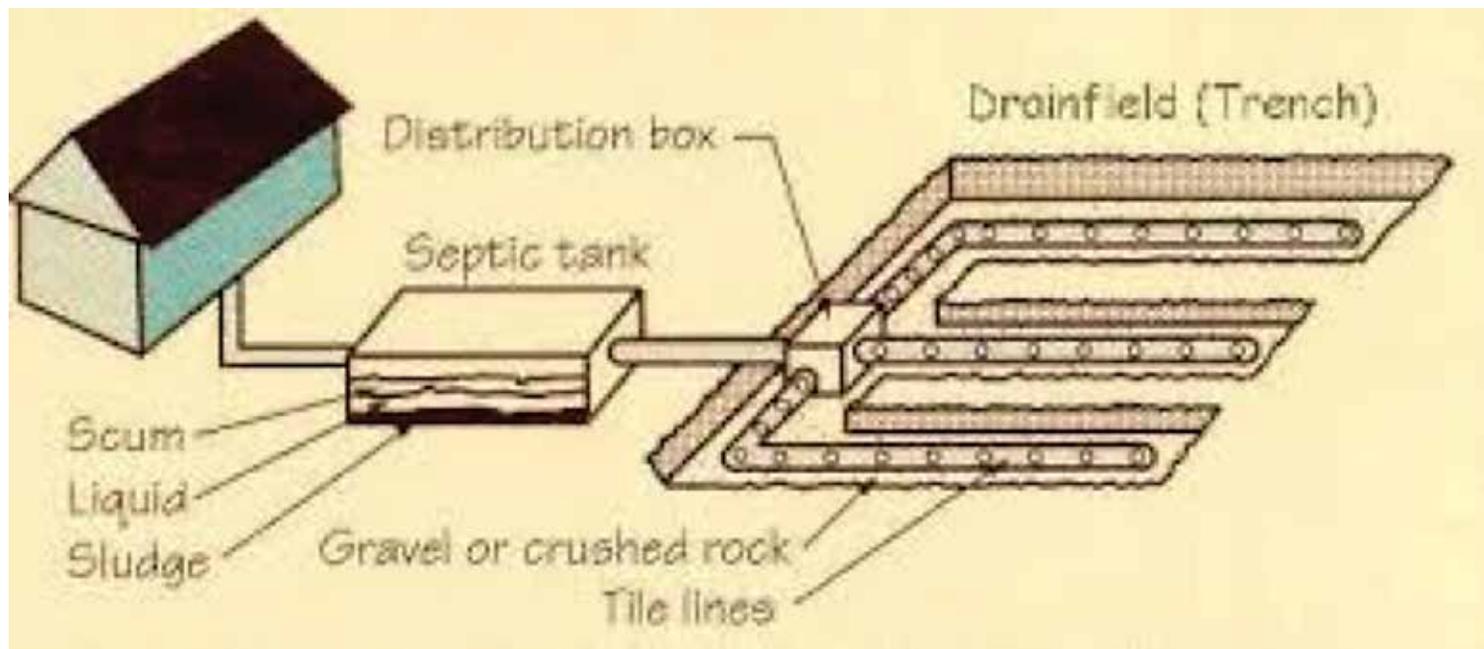
Key Findings: This Final Report includes a simple analysis that demonstrates potentially more than one third of the aging septic systems in Antrim County have not been replaced. Considering that typical septic systems usually have a lifespan of 25 to 30 years, those older systems still in use may have already failed, or could be on the verge of failing soon. We want to see changes that require additional oversight to ensure failing systems are discovered before they fail completely. Research and data collection point to warning signs that we can take into account, in support of making changes

to oversight requirements. Therefore, we created a menu of Policy Options for decision makers to consider and to help get the discussion started in the community. Our intent is to make positive change that is not punitive or burdensome for citizens, businesses, and local governments. We 2 Septic Question Project Report researched what is working in other areas of Michigan and the US and interviewed individuals in charge of implementing those policies. This report summarizes each policy option, provides interview responses, and outlines the Advantages and Disadvantages for each of the following:

- Maintain the Status Quo
 - Time of Transfer Inspection Ordinance
 - Mandatory Pumping Ordinance
 - Mandatory Inspection Ordinance
- We also address the use of a Pilot Program, where appropriate, and Overlay Districts. Finally, the Health Department is also currently seeking to update the Sanitary Code in a parallel effort, which the Watershed Council supports.

To read the full report, go to: <https://www.watershedcouncil.org/>

Plan to maintain your field in 2017!



Protect Your Lake



Improve Your Shoreline

ELK RIVER CHAIN OF LAKES GREENBELT INITIATIVE

Tip of the Mitt Watershed Council is looking to assist lakefront property owners with greenbelt and shoreline stabilization projects! Thanks to our grant with the Michigan Department of Environmental Quality, the Watershed Council may be able to help design and install natural shoreline projects. Better yet, eligible projects will have a portion of the project costs covered!

For More Information contact:

Tip of the Mitt Watershed Council

231-347-1181 or email jen@watershedcouncil.org

www.watershedcouncil.org

This project has been funded wholly or in part through Michigan Department of Environmental Quality's Nonpoint Source Program by the United States Environmental Protection Agency.

DO YOU HAVE
LAKEFRONT
PROPERTY ON
THE ELK RIVER
CHAIN OF LAKES?

WOULD YOU LIKE TO
PROTECT WATER
QUALITY AND
IMPROVE HABITAT?

DO YOU NEED HELP
UNDERSTANDING,
DESIGNING, AND
INSTALLING A
NATURAL
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The mission of the Association is to provide leadership to preserve, protect, and improve the environmental quality of the Elk River Chain of Lakes Watershed for all generations with emphasis on Lake Bellaire, Clam Lake, Torch Lake and their tributaries.



This newsletter printed on recycled paper

A Big Thanks to Jimmy Argo!

For over 10 years, Jimmy took the summer interns on the highlight of their summer up into the sky. From several thousand feet our interns saw firsthand the vast water resources we are all responsible for. He was also very generous taking up several non-interns too such as TLA members and staff, county employees, as well as other local water-based non-profits.

Jimmy retired from his pilot "job" this year. We cannot thank you enough for your years of volunteering and offering all an experience they will never forget. Fortunately for us, Jimmy found his own replacement. Scott Roggenbeck took over Jimmy's duties in the summer of 2016. How fortunate we are to have such great members!

