



Quaggas Drift Inland From the Freshwater Seas

Adrift in the freshwater seas, an unfathomable number of microscopic veligers (invasive mussel larvae) move through the Great Lakes at the mercy of wind, waves, and currents. Within a few days of inception, veligers develop new organs and a minute shell. Between 20 to 90 days, they begin to attach to rocks, wood, or even to other mussels on the lake bottom. Their reproductive and colonization strategies have given quagga (and zebra) mussels a competitive edge that has resulted in their spread to freshwater lakes and streams across the entire planet. Of course, humans and our global economy have greatly accelerated their spread with mussels hitching rides on boats and trailers.

While conducting an aquatic vegetation survey on Crooked Lake in early July, a handful of tiny mussels on the stems of aquatic plants caught the attention of AmeriCorps volunteer Matt Claucherty. Watershed Council field staff are accustomed to finding zebra mussels clinging to aquatic plants, which is why we strongly encourage removing weeds from boats and trailers, and why state law requires it. But these were different. Matt noticed slightly different coloration and patterns, but the clincher was the hinge side of the shell – it was rounded, not flat like that of the zebra mussel. Suspecting quagga mussels, specimens were sent to Ann Arbor where mussel researcher Ashley Baldridge, PhD, confirmed that there was a new invasive mussel in Crooked Lake.

Practicing due diligence, Matt immediately reported the infestation to the Midwest Invasive Species Information Network (MISIN), where he found this was the first report of quagga mussels in an inland lake in Michigan. Upon learning this, the Watershed Council shared the discovery with partner organizations, State and

Federal agencies, and the media. This breaking news reverberated throughout the State, picked up by newspapers from Petoskey to Detroit.

Quagga mussels were first discovered in Lake Erie in 1989, just three years after the discovery of zebra mussels, but they did not spread and proliferate as quickly as the zebras. Mussel studies in Lake Michigan showed an explosion in quagga mussel populations in the early 2000s, reaching an estimated 950 trillion by 2011 – that's well over 100,000 mussels for every human on earth, and just in Lake Michigan! It seemed inevitable that they would spread to our inland lakes.

Although Matt only found quaggas at three locations near the Little Traverse Boat Launch on US31, subsequent surveys by the Pickerel-Crooked Lake Association determined they are present in other areas of the Lake. In addition, we learned that quagga mussels were found in Mullett Lake in 2012, but never reported on MISIN. Therefore, these invasive mussels will invariably spread to other lakes and streams throughout the Inland Water Route, if they haven't done so already.

What are the implications to the lake and stream ecosystems of the Inland Water Route? The answer is that we are unsure. Little research has been conducted on quagga mussel infestations in inland waterways. However, if changes brought on by quagga mussels in the Great Lakes are any indication, there may be serious and perhaps dire ecosystem changes on the horizon. Nutrient cycles and food webs could be significantly disrupted, which could lead to problems such as excessive algae growth and reductions in top predator (sports fish) populations.

Continued on page 2



Although quagga mussels were only recorded at three locations on Crooked Lake near the boat launch on US31, subsequent surveys by the Pickerel-Crooked Lakes Association determined quaggas are present in other areas of the Lake as well.



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Reflections From Our Executive Director

One of the challenges for any organization is to communicate accomplishments and information with their audience. This is a particularly difficult task for an organization like the Watershed Council. The mission of protecting water may sound simple enough, but the work we do to accomplish this mission is diverse and, well, let's just say it's complicated. As you can see, this newsletter is packed with articles retelling our work from this summer and fall. This work varies from extensive restoration work, lake-wide surveys, pipeline research and outreach, and a season of events and policy initiatives. What do they all have in common? Collectively, these in-

dividual programs combine to further our purpose – to protect the environmental quality of Northern Michigan for current and future generations.

Our hope is that this newsletter conveys to you as our members the value of our work. We write about activities and topics that we feel are important to those of you that value Northern Michigan's waters. We hope we convey how our work benefits our waters and your interests, and we try to direct you to ways that you can get involved.

Because your lives are likely as complicated as ours, we realize that absorbing, understanding, and then engaging in our work may be a challenge. Our hope is that we tell our story in a way that is meaningful for you and helps you understand these sometimes complicated issues. We also hope that you take advantage of our other communication tools – particularly our newly remodeled website, and call us if you have questions or concerns.

Why is this important? Because you, as Watershed Council members, become the messengers of this information to others. You become the ambassadors for the Watershed Council, helping to further our mission and protect the waters we all care about.

We value your input on this newsletter and any other information you see from the Watershed Council. And as always, if something within these pages catches your attention and you want to engage further, give us a call. We'd love to hear from you!

Quaggas Drift Inland From the Freshwater Seas *(continued)*

In spite of this setback, the Watershed Council has not lost hope and is taking action. We hope to work with a consulting company on a trial open-water application of Zequanox in Crooked Lake, which is an environmentally-safe quagga and zebra mussel control product. An aquatic vegetation survey scheduled next year will help determine if quaggas are present in Burt Lake.

And most importantly, the Watershed Council is intent upon reducing the spread to other lakes and streams by redoubling invasive species outreach and education efforts to the boating community.

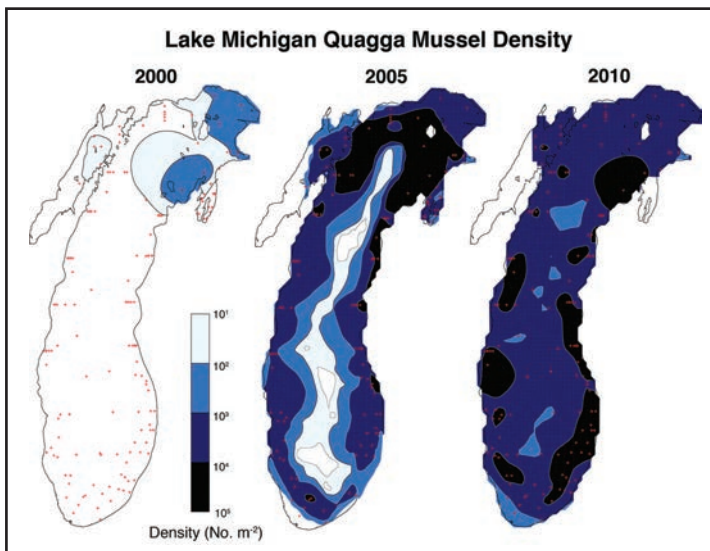


Illustration: Tom Nalepa, National Oceanic and Atmospheric Administration

Worries about Waukesha's Plan for Lake Michigan Water

The Great Lakes – St. Lawrence River Basin Water Resources Compact (Compact) bans water diversions outside of the Great Lakes Basin. The Compact allows for “straddling communities and communities within straddling counties” not currently using Great Lakes water to be granted an exception to its ban on diversions, but only if the community meets stringent requirements.

The city of Waukesha, Wisconsin, located a few miles west of Milwaukee, lies outside the Great Lakes Basin and is requesting an exception to the ban on diversions of Great Lakes water under the Compact. The city asserts that it needs water from the Great Lakes to address water quantity and quality concerns. The city has long relied on a deep aquifer groundwater supply that has high levels of radium, a naturally occurring radioactive carcinogen, that exceed federal health standards. Waukesha is under a court order to bring its water supply into compliance with maximum contaminant levels for drinking water.

The proposed Waukesha diversion application is the first since the Compact was adopted in 2008. This application is a test for the Compact. It will establish its effectiveness and serve as a precedent for future diversion requests.

After a five-year review of Waukesha's application, the Wisconsin Department of Natural Resources (WDNR) announced that the city's request to tap Lake Michigan should be approved under the Compact. This preliminary decision was made in June 2015.

Because the outcome of the Waukesha Diversion Application will set a precedent for future diversion applicants and determine the threshold for conditions that warrant a Great Lakes diversion, the Watershed Council participated in the recent public comment period. We provided testimony before the WDNR in Waukesha and expressed our concern that the City of Waukesha has not met the legal and technical requirements set forth in the Great Lakes Compact.

Specifically, Waukesha has not adequately demonstrated the need for a diversion. The application is for an “extended service area” that includes towns in Waukesha County (Pewaukee and the Towns of Delafield and Waukesha, among others) that may not need water from Lake Michigan. To date, none of the communities in this “extended service area” have demonstrated that they are without adequate supplies of safe drinking water.

Additionally, Waukesha has a feasible alternative to meet its water needs. An independent analysis has shown that Waukesha can provide clean drinking water to its residents without diverting water from Lake Michigan. The report concludes that Waukesha can continue to use its existing sources – shallow and deep water wells – if radium treatment is added to three of its wells.

A final decision on the diversion application is expected from WDNR in December of 2015. Wisconsin will then forward the diversion application to the regional Compact Council for review. Any of the eight Great Lakes states may veto the diversion application at that point, thereby preventing Wisconsin from moving forward. As the diversion application moves through this process, we will work with the State of Michigan to ensure the City of Waukesha's diversion application meets every standard and requirement of the Compact.

For more information, visit:
www.protectourgreatlakes.org

The proposed Waukesha diversion application will establish the effectiveness of the Compact and serve as a precedent for future diversion requests.

Pipeline Improvement and Preventing Spills Act

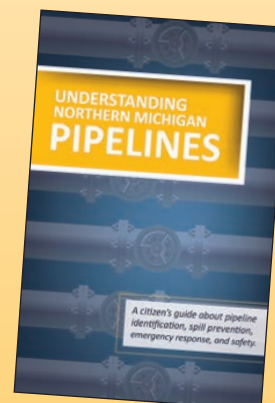
Recognizing that oil transportation can threaten our water resources and economic viability, U.S. Senators Gary Peters and Debbie Stabenow introduced the Pipeline Improvement and Preventing Spills Act. The bill represents decisive action that will help safeguard the Great Lakes and Michigan's inland waters from oil spills. The bill will give the public greater access to pipeline information, ensure the integrity of pipelines at major water crossings, and strengthen spill response measures. Taken together, the bill will move us toward the comprehensive approach to oil transportation and pipeline policy we need to protect our Great Lakes, inland waters, and public health.

Specifically, the bill would:

- Ban the shipment of crude oil on tanker vessels and barges on the Great Lakes.
- Mandate federal studies on the risks associated with pipelines that run through the Great Lakes and other waterways in the region. The studies must include recommendations related to reducing spill risks, including an assessment of alternatives to Line 5, and a comprehensive map of pipelines crossing waterways in the Great Lakes Basin.
- Improve oil spill response plans by requiring the U.S. Coast Guard and other agencies to independently assess the current status of oil spill response and cleanup activities and techniques.
- Increase public information and transparency about pipeline risks by ensuring residents are notified about pipelines near their property and requiring operators to maintain publicly available information.
- Expand the criteria for the designation of High Consequence Areas to include the age of the pipeline, type of oil being transported, whether the pipeline can be inspected using the most modern technology, and whether the pipeline crosses open waters of the Great Lakes. Additional safety measures are required for hazardous liquid pipelines in High Consequence Areas.

The Watershed Council fully supports the Pipeline Improvement and Preventing Spills Act of 2015 and urges Congress to move swiftly to pass the legislation. Watershed Council staff worked with the Senators to identify what should be included in the bill. We applaud Senators Peters and Stabenow for introducing a bill that will help protect the ecological and economic future of Michigan, as well as health and safety of our citizens.

NEW RESOURCE



Understanding Northern Michigan Pipelines: A citizen's guide about pipeline identification, spill prevention, emergency response, and safety

Tip of the Mitt Watershed Council designed this brief booklet to answer many of the questions about Northern Michigan pipelines. Learn about different types of pipelines, how to prevent a spill, and emergency response and safety steps you should take if a spill does occur.

Printed copies are available at the Watershed Council office while supplies last or the booklet can be viewed and downloaded from our website at www.watershedcouncil.org.

Funding for this publication provided by the United States Department of Transportation, Pipeline and Hazardous Materials Safety Administration.

Senator Gary Peters visited the Watershed Council to discuss pipelines



In early October, Senator Gary Peters met with Tip of the Mitt Watershed Council staff and representatives of the U.S. Coast Guard, U.S. Environmental Protection Agency, Michigan Department of Environmental Quality, and the Charlevoix, Cheboygan, Emmet County Office of Emergency Management regarding pipeline safety and preparedness.

Northern Michigan Pipeline Education Project

On August 27th, approximately 100 community members gathered at North Central Michigan College to spend the day discussing pipelines. The Watershed Council hosted the Michigan Pipeline Workshop to provide the public with accurate information about pipelines in our area. The workshop was also intended to foster open communication by providing the opportunity for dialogue and direct communication between community members, pipeline operators, and federal agencies.

Representatives from Enbridge Energy, U.S. Environmental Protection Agency, U.S. Coast Guard, National Oceanic and Atmospheric Administration, and more were on hand to present detailed information on aspects of pipeline operation, safety, and spill response. In addition, Peter Manning with the Michigan Department of Attorney General provided a keynote presentation on recent recommendations made by the Michigan Petroleum Task Force (see article on page 6). The workshop was extremely successful, leaving attendees with an improved understanding of pipeline operations and safety within our community.

Some key messages that emerged include:

- It is ultimately the responsibility of pipeline operators to understand and manage the risks associated with their pipelines. Pipeline operators are also generally responsible for cleanup of any spill, including full costs and environmental remediation.
- How oil behaves in the event of a spill is dependent upon many factors including temperature, suspended sediment, and weathering (changes in the physical and chemical properties of oil due to exposure to the environment).
- All oil can sink under certain conditions. In the event of a release, it is vital to get organized and respond assertively to recover as much oil as quickly as possible.
- According to Enbridge, a realistic worst case rupture in the Straits of Mackinac is calculated to be 4,500 barrels or 189,000 gallons.
- The flow in the Straits of Mackinac changes over approximately a 3-day period and the area that could be impacted in the event of a spill is dependent on the time of release. In general, the impact of a release in Lake Michigan would most likely be to open water, whereas islands and coastlines would be most impacted if a spill flowed into Lake Huron.
- At this time, we do not have the equipment and response capabilities to quickly and adequately respond to an oil spill in Northern Michigan, particularly the Straits of Mackinac.

The workshop was just one part of our Northern Michigan Pipeline Education Project, which is funded by the Pipeline and Hazardous Materials Safety Administration. The Pipeline Education Project also includes development of a publication, *Understanding Northern Michigan Pipelines*, which is a citizen's guide to pipeline identification, spill prevention, emergency response, and safety. The citizen's guide is available online, at our office, or by calling 231-347-1181.

In addition, we have developed a comprehensive and in-depth webpage covering a variety of information on pipeline risks, safety, regulations, spill response, and how you can help minimize the risks associated with pipelines in our area. This information and a recording of the workshop are available at www.watershedcouncil.org/pipelines.

Below: Peter Manning with the Michigan Department of Attorney General provided a keynote presentation on recent recommendations made by the Michigan Petroleum Task Force.



Did you miss the Pipeline Workshop?

Watch the speaker presentations on our  Channel.

Go to www.watershedcouncil.org/pipelines and click on the "View Video Playlist" button at the bottom of the page.

Michigan Petroleum Pipeline Task Force Recommendations and Moving Forward

In June of 2014, Michigan Attorney General Bill Schuette and Dan Wyant, Director of the Michigan Department of Environmental Quality, announced the creation of a Michigan Petroleum Pipeline Task Force. The goal of the Task Force was to identify and recommend actions within state government to protect the public health, safety, and welfare of Michigan citizens and the environment, related to the transportation of liquid petroleum products through major pipelines within the State.

After nearly a year of closed-door deliberations, the Task Force issued a report outlining their recommendations. The Watershed Council believes the recommendations will go a long way toward safeguarding the Great Lakes and Michigan's inland waters from oil spills, but only if they are implemented with a sense of urgency and accountability.

The recommendations include both statewide actions, as well as specific recommendations for the segment of Enbridge Energy's Line 5 pipeline that runs along the bottom of the Straits of Mackinac.

The Line 5-specific recommendations are:

- Prevent the transportation of heavy crude oil through the Straits Pipelines.
- Require an independent risk analysis and adequate financial assurance for the Straits Pipelines.
- Require an independent analysis of alternatives to the existing Straits Pipelines.
- Obtain additional information from Enbridge relating to the Straits Pipelines.

On September 3, 2015, the State of Michigan and Enbridge entered into an agreement pursuant to the first item above regarding the transportation of heavy crude through the pipelines in the Straits of Mackinac. Unfortunately, the agreement is weak, containing loopholes that could allow heavy crude to be transported through Line 5, in the future, under certain circumstances.

In implementing the other three recommendations listed above for Line 5 in the Straits, it's important that State leaders set a clear and aggressive timeline, establish strong enforcement mechanisms to ensure Enbridge follows through with the required actions, and include the public in a transparent process.

The other nine task force recommendations not specific to Line 5 call for policies to guide the siting of pipelines, improve spill reporting, and require more robust civil fines. They also call for better coordination with federal pipeline regulators and better coordination on emergency planning and spill response, including exercises and drills. If implemented, they will give the public greater access to pipeline information, improve oversight of Michigan pipelines, and strengthen spill response plans.

One of the recommendations was for Governor Snyder to issue an Executive Order to create a pipeline safety advisory committee. The Governor did so on September 3rd. According to a press release from the Governor's office, the 15 member panel will "ensure safety, upkeep and transparency of issues related to the state's network of pipelines. It will also be charged with advising state agencies on matters related to pipeline routing, construction, operation, and maintenance." Watershed Council Policy Specialist, Jennifer McKay, was one of the individuals appointed by the Governor to serve on the Advisory Board. The Board will provide an important forum for state leaders, water-protection advocates, and industry to work toward a solution that keeps oil out of our Great Lakes and inland waters.

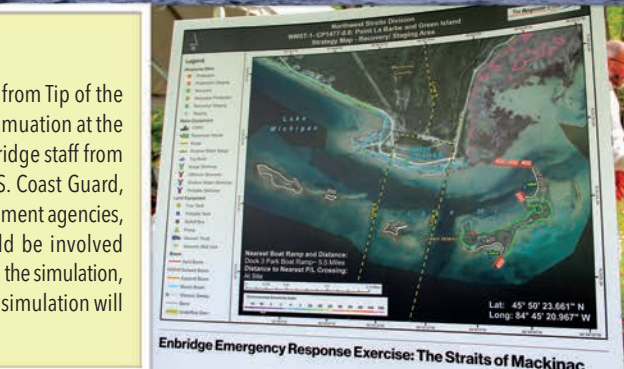
We are pleased to be part of the Pipeline Safety Advisory Board and we will be sure to keep you updated on our efforts and the progress of the Board.

The Task Force report and more information on pipelines can be found on the Watershed Council website at www.watershedcouncil.org/pipelines.



Boom deployment near the Mackinac Bridge

The US Coast Guard trained with open water skimmers like the one shown here.

**Line 5 Oil Spill Response Simulation**

On September 24, 2015, over 700 people, including staff from Tip of the Mitt Watershed Council, were involved in a pipeline spill simulation at the Straits of Mackinac. That number included numerous Enbridge staff from around the U.S. and Canada, representatives from the U.S. Coast Guard, U.S. Environmental Protection Agency, state and local government agencies, first responders, and spill contractors, all of which would be involved should an actual spill was to occur. Although no oil was used in the simulation, actual techniques and equipment were deployed. The next simulation will take place in Manistique, Michigan, in 2016.



Boom deployed at Mackinac Island



Volunteers were trained how to clean animals that may have come in contact with the product spilled.



Boom being deployed around Green Island



Trailers full of absorbent materials were deployed to the scene.

AQUAVIST

NETWORK

Aquavist ('ä-kw-vist) noun: A member of Tip of the Mitt Watershed Council's Local Activist Network; from Aqua - water, and Activist - one who seeks change through action.

O'Neal Lake Update

In the fall of 2014, the dam failed at O'Neal Lake in Bliss Township, Emmet County. The local community was devastated. This summer, the Watershed Council held a series of meetings to organize the local community around this issue and bring together stakeholders to talk about options for moving forward. The meetings identified numerous questions from the community and brought together representatives to answer them from the Michigan Department of Natural Resources (DNR), Michigan Department of Environmental Quality (DEQ), Bliss Township, Emmet County, and the Little Traverse Bay Bands of Odawa Indians (LTBB). Funding was committed by the DNR Wildlife Division, LTBB, and the DNR Parks & Recreation Division to repair the dam. At the last meeting on August 31, the community shared their visions and values for O'Neal Lake. From this point forward, DNR will take over the process and we will remain engaged as a stakeholder.

Piece of CAKE!!

The Watershed Council is participating in a new group: the Charlevoix-Antrim-Kalkaska-Emmet Cooperative Invasive Species Management Area (CAKE)! CAKE was funded through

the Michigan Invasive Species Grants Program (MISGP) to develop a cooperative network of partners to combat invasive species on a local and regional scale using inventories, treatment and assessment, and education and outreach.

A formal steering committee was convened and partners, including the Watershed Council, are finalizing a Memorandum of Understanding to guide our efforts. Emmet Conservation District is the Area Coordinator for Emmet and Charlevoix counties, and Kalkaska Conservation District will coordinate Antrim and Kalkaska county activities.

Next steps include developing technological capabilities, standardizing collection protocols, prioritizing species and best management recommendations, and compiling inventories to prioritize treatments. We will keep you posted on CAKE's progress!

Visit your Aquavist Website at: <http://www.watershedcouncil.org/aquavists/>. For more information, contact Grenetta Thomassey, policy director, at grenetta@watershedcouncil.org or 231.347.1181 ext. 118.



Staff and interns monitoring the Maple River this spring



Dan enjoys the sunrise before a calm, sunny day of aquatic plant fieldwork on Elk Lake



Interns Kate and Dylan conducting a quagga mussel survey on the Elk River Chain of Lakes this past May

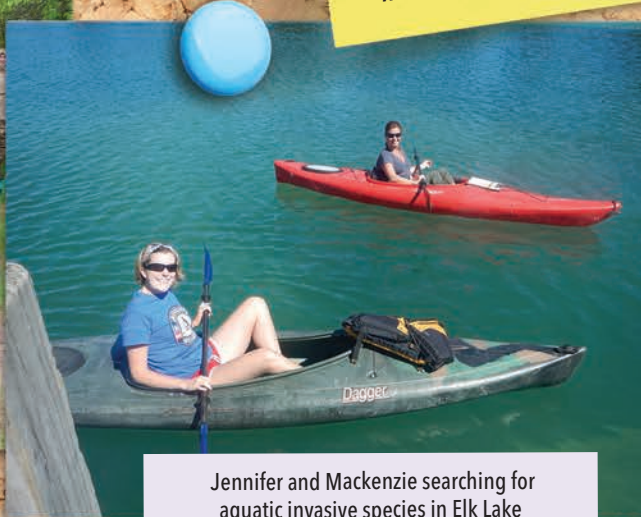
The Joys of Field Work

A pictorial overview of our very productive summer of collecting data, conducting research, and doing inventories. Watch for data and reports coming in spring 2016.

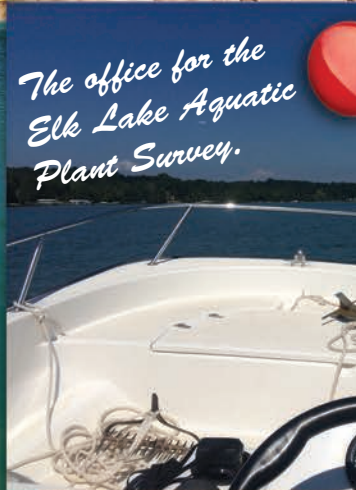
Special thanks to our many volunteers and summer interns. We couldn't have done it without you



Staff, interns, and students from University of Michigan School of Natural Resources and Environment pause for a quick pic during the Road Stream Crossing Survey training along Deer Creek



Jennifer and Mackenzie searching for aquatic invasive species in Elk Lake



The office for the Elk Lake Aquatic Plant Survey.



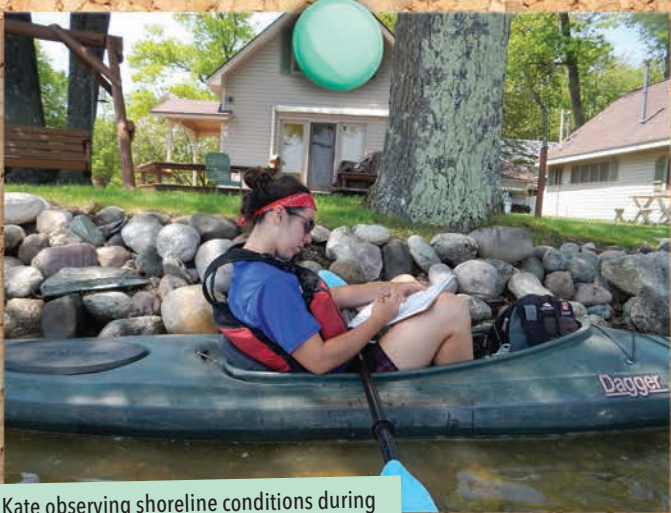
Matt and Tuscarora Township Supervisor, Mike Ridley participating in a storm sewer inventory as part of cooperative watershed management



Matt observes erosion during the Sturgeon River Streambank Erosion and Alterations Survey



Share your favorite water related pics with us
@tipofthemittwatershed



Kate observing shoreline conditions during Douglas Lake Shore Survey



Volunteer Darrell Schwalm surveying aquatic plants in Mullett Lake



Lex digging holes for the Little Traverse Bay Watershed Sign on Pleasantview Road



Matt inventorying the stormwater system of Indian River

Michigan Water Strategy

In August, the Michigan Department of Environmental Quality, Office of the Great Lakes (OGL) set a deadline for public comment on a draft document called, “Sustaining Michigan’s Water Heritage: A Strategy for the Next Generation.” Known simply as “the Water Strategy,” the Watershed Council submitted comments and we want to share our thoughts about this work.

You can find the Water Strategy online: <http://michigan.gov/deq>. (On the left side of the page, click Water; you will see a live link to the strategy from there.) As stated in the Water Strategy, the vision for Michigan in 30 years is: “Michigan’s water resources support a healthy environment, healthy citizens, vibrant communities and sustainable economies.”

We commend the Governor and OGL for developing the Water Strategy. If the recommendations are implemented, we believe they would result in substantial improvements to the Great Lakes ecosystem. However, we also identified instances where it could be strengthened. For example, the Great Lakes are actually a global treasure and, therefore, protection and restoration must be considered in that context. While the Water Strategy is Michigan-specific, coordination with other Great Lakes states, Canadian provinces, and Native American Tribes and First Nations is necessary to sustain our water heritage.

Additionally, we believe it is necessary to identify a central leadership position. We worry that no plan step identifies a leader in charge of implementing the entire plan. An agency or office should be assigned and articulated as such. We understand the challenges of writing and implementing a 30-year plan, as numerous governors, legislatures, and agency personnel will ultimately take part. However, let us note lessons learned

from similar efforts. The Comprehensive Everglades Restoration Program is a 30-year program, signed into law by President Bill Clinton and Florida Governor Jeb Bush. This program, started in 2000, is still going strong at 15 years old. One key reason is that specific agencies were identified as leaders, making sure the plan did not sit on a shelf.

In terms of funding, substantial financial resources are required to implement the Strategy. Therefore, it should include specific funding levels for each recommendation. Additionally, it should encourage full allocation of appropriated funding for existing programs. We also think transparency is critical. We recommend requiring Annual Reports, in addition to a “taking stock” exercise every 5 years. Annual reports should include information on progress and challenges. This will keep the document in the public’s eye, and show decision makers important accomplishments.

Finally, as we continue to lose wetlands in Michigan, it is increasingly important to protect and wisely manage wetland resources. This must be reflected and emphasized within the Strategy.

The Great Lakes are critical to Michigan’s future. We depend on them for drinking water, recreation, and to support our economy. They define our State and our lives. That is why we commend the Administration for taking on the charge of developing a Water Strategy.

Grenetta Thomassey, PhD, is Program Director at Tip of the Mitt Watershed Council. She can be reached at (231) 347-1181 ext. 118, or grenetta@watershedcouncil.org



The Michigan Water Strategy draft document is available online at www.michigan.gov/waterstrategy

Golden Brown Algae or Brown Crud?

This summer, the Watershed Council received calls from residents throughout the tip of the mitt about mysterious orange to brown colored algae growing along the bottom of several lakes. This algae growth, which forms a crust generally less than a half inch thick, has been reported from Elk, Torch, Walloon, and Burt Lakes. Its sudden appearance has shoreline property owners concerned and experts perplexed.

We first became aware of this phenomenon in 2010 when the Elk Skegemog Lake Association (ESLA) contacted the Watershed Council about algae spreading throughout the bottom of Elk Lake. This "brown crud," as residents dubbed it, turned out to largely be a proliferation of harmless diatoms, which are an important energy (food) source in the lake. The Watershed Council added nitrogen to our list of monitoring parameters for Elk and Skegemog Lakes to determine if nutrient enrichment was causing the spread of the brown crud. Monitoring results in the open water showed no indication of nutrient pollution.

When the same algae growth began to spread through and worry the residents of Torch Lake a few years later, the Three Lakes Association (TLA) took another step in trying to solve the puzzle. Taking on a more positive connotation, the "golden brown algae" became the focus of study when TLA enlisted the help of researchers from Michigan State University and the University of Michigan Biological Station. Suspecting elevated nutrient inputs at the lake bottom, researchers monitored groundwater flowing into Torch Lake using a creative variety of devices. They also deployed nutrient defusing substrates to determine if nutrients released by organisms at the lake bottom, such as zebra mussels, could be contributing to the proliferation of golden brown algae. The results of this study have not yet been released. Stay tuned to our website and future newsletters to learn if the researchers are able to solve this mystery.

This photo of golden brown algae was taken during our 2015 monitoring season on Elk Lake.



Our road/stream crossing inventory in the Elk River Chain of Lakes Watershed was conducted by University of Michigan School of Natural Resources interns, shown above left to right, Stephanie Miller, Brandon List, Elliot Nelson, Kevin Peterson, Lauren Silver.

SNRE TEAM: Road Stream Crossing Inventory Update

As reported in a prior issue, the Watershed Council recruited a team of University of Michigan School of Natural Resources and Environment (SNRE) Master's students to work with us to create a comprehensive first draft of a stand-alone watershed plan for the Elk River Chain of Lakes (ERCOL) in Antrim County. This new plan will come under the umbrella of the larger Grand Traverse Bay Watershed Plan, which will be updated by our friends at The Watershed Center Grand Traverse Bay starting next year.

This summer the SNRE team surveyed 101 road/stream crossings (RSX) and performed "spot checks" on 37 additional crossings in the Elk River Chain of Lakes Watershed. This inventory work is essential to identify water quality and fish passage problem areas.

Field work will be wrapped up this fall. Once completed, all the documents will be scanned to create digital forms and put into a database for future reference.



Bay View Rain Garden Initiative Update

Now that the ground has been excavated and the plants have been planted, we are awaiting the next big rain to test the four community rain gardens installed in Bay View. The rain gardens are part of the Bay View Rain Garden Initiative, which promotes the use of rain gardens throughout the community to handle stormwater runoff. Rain gardens, also known as bioretention areas, are strategically located in the landscape to capture runoff from impervious surfaces. They help protect water quality by both reducing the volume of runoff that enters nearby surface waters or stormwater systems and by absorbing and filtering pollutants in the runoff. The Bay View Rain Garden Initiative is the final component of the Little Traverse Bay Stormwater Management Initiative, a project funded through the Great Lakes Restoration Initiative.

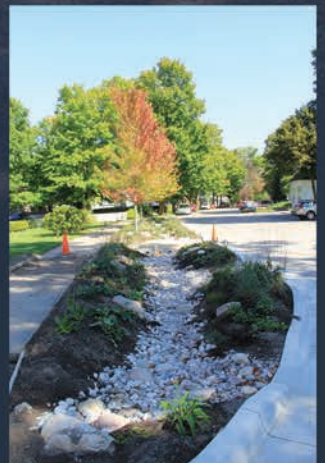
The community rain gardens are located at the end of Encampment Avenue near the tennis courts; in front of the library on Park Avenue; behind the library on Encampment Avenue; and alongside Lakeview Avenue between Glendale and Fairview Avenues. The backbone of the rain gardens are

the deep-rooting native plants, which were selected based not only on their ability to infiltrate stormwater and absorb nutrients, but also their aesthetic qualities. In addition to the four community rain gardens, six smaller rain gardens were installed at cottages throughout Bay View in 2012 and 2013. Although the completion of the community rain gardens concludes this grant-funded Initiative, the Watershed Council looks forward to collaborating with Bay View Association on future rain garden projects to achieve even greater water quality protection of Little Traverse Bay.

Thank you to the Bay View Association for their support with this important endeavor. In addition, we thank the skilled contractors who performed the work, including Matthews Nursery of Harbor Springs, Snowapple Landscapes of Petoskey, and Five Elements Fine Gardening and Water Features of Harbor Springs. And thank you to the Petoskey Harbor Springs Area Community Foundation for their support.



These strategically located rain gardens will capture stormwater runoff and prevent pollutants from reaching Little Traverse Bay.





The Power of Resilient Shorelines

On August 2nd, a cluster of severe storms battered the Watershed Council's service area. Especially hard hit was the southern end, from Antrim County towards Kalkaska, including Elk-Skegemog Lakes. Shoreline damage was extensive on many west-facing properties, primarily due to the uprooting of trees from high winds. This storm flattened beautiful stands of shoreline cedars and damaged quite a few homes. Events like this highlight the need for resilient shorelines. As climate changes result in more extreme weather, shoreline protection is more important than ever.

Energy absorption is the name of the game. Be it wind, waves, or ice, a healthy greenbelt consisting of a diverse community of deep-rooted native plants has a greater capacity to withstand these forces. Their roots help to knit together soils and their

stems and foliage buffer shorelines from harsh winds and waves. It's true that a robust greenbelt will not stop the next "F5" twister, but it will help prevent your shoreline from slumping, eroding, and succumbing to the elements.



Shoreline damage on Elk Lake after a major storm this past August.

POD UPDATE: 2015 a Record Collection Year!



This year marked the most successful year yet for the seven-year-old Prescription and Over-the-Counter Pharmaceutical Drop-off (POD) Program.

The POD Program is a multi-county medication drug take back initiative to provide a convenient and environmentally sound way for residents to properly dispose of medications. The POD Program includes community collection events in Antrim, Charlevoix, Cheboygan, and Emmet Counties. The POD Program also includes over 20 permanent collection drop boxes at law enforcement agencies throughout Northern Michigan. Residents may safely dispose of prescription, over-the-counter pharmaceuticals, and personal care products for free, keeping our rivers and drinking water clean and our communities and families safe.

In 2015, we disposed of over 7,000 pounds of unwanted and expired medicines and personal care products. This is over 2,500 pounds more than the POD Program disposed of in

2014! That is a remarkable volume of drugs that we prevented from contaminating our water resources or falling into the wrong hands. Impressively, over 20,000 pounds of unused and unwanted medicines and personal care products have been collected and disposed of properly since the inception of the program in 2008. This includes approximately 300 pounds of controlled substances, such as OxyContin, Morphine, Hydrocodone, and other drugs that are regulated by the federal government due to high risk for abuse and addiction.

This program would not be as successful without the support of funders, local partners, and community members who use the program. Thanks to everyone who has helped make the POD Program an extraordinary accomplishment for Tip of the Mitt Watershed Council and Northern Michigan!

Learn more about the POD Program, drop-off locations, and collection events at www.PillsInThePOD.com

Welcome New Members

6/19/15 - 10/18/15

Ms. Linda Adams
 Frances Bauch
 Ms. Ruth Bay
 Mr. and Mrs. Fred Becker
 Howard and Roberta Bergman
 Mr. and Mrs. Steven Biewer
 Gary and Gail Blaskowski
 Ms. Eleanor Bookwalter
 Janet and Tim Borden
 Mr. and Mrs. Douglas E. Campbell
 Mr. and Mrs. Glen C. Clark
 Mr. Michael Cleary
 Mrs. Ann McKee Coffin
 Mr. Thomas E. Crook
 Mr. and Mrs. Roymo Dallavecchia Jr.
 Ms. Susan L. Dickow
 Ms. Ann Durbin
 Mr. Richard Emrich
 Enbridge Energy
 Mr. and Mrs. Francis Esch
 Mr. and Mrs. Charles R. Fain
 Mr. and Mrs. Leo Forster

Mr. and Mrs. Robert Frye
 Ms. Gretchen Gregory
 Dr. and Mrs. Joseph Hance
 Mr. and Mrs. Lawrence J. Hipschen
 Mr. and Mrs. Rick Johnson
 Drs. Jerome D. and Sally Johnson
 Mr. and Mrs. John J. Karkosak
 Ms. Courtland T. Kelley
 Mr. and Mrs. Peter E. Kepic
 Mrs. William Labadie
 Ms. Stephanie Lockman
 Ms. Jill Lynch
 Mrs. Lewis McLouth
 Ms. Barbara Menear
 Mr. and Mrs. Keith Miller
 Mr. and Mrs. Robert H. Milne
 Scott Monthei
 Mr. and Mrs. James Paczesny
 Mr. and Mrs. Edward Plawecki Jr.

Mr. and Mrs. Michael Posner
 Mr. and Mrs. Robert O. Pritchard Jr.
 Mr. and Mrs. Henry M. Ramseur
 Mr. and Mrs. William A. Renis
 Nancy Rickard
 Mr. and Mrs. Gary Salowich
 Ms. Harriette Schach
 Mr. Heinz Schwartz
 Mrs. William Stapp
 Ms. Carolyn Corbin and David Stebbins
 Janice Stephens
 Mr. David Templin
 Mr. and Mrs. Paul D. Thomas
 Roman and Caroline Typkiewicz
 Mr. and Mrs. William D. VanEvery
 Marcia Waara
 Walloon Writers Review
 Mrs. Erma Wells
 Mr. and Mrs. Stanley Yoder



Thank You

*We could not accomplish the many tasks and projects that need to be done without the help of our volunteers. **We are truly grateful** for everyone that pitches in to support our organization.*

RSVP Volunteer Sharon Brown for assisting with our numerous mailings this summer. She's a super star!

Roast & Toast for supplying coffee for our meetings and workshops. We can always count on you for our fresh brew.

Roger Drinkall for continually assisting the Policy Team.

Cheboygan Tribune, Petoskey-News Review, and the **Straitsland Resorter** for promotion of the Michigan Pipeline Workshop.

Ed Strzelinski for being our POD volunteer extraordinaire.
Larry Levensgood for his assistance at the POD Community Collection event in Boyne City

Inland Route Fly Fishing and **Stafford's Hospitality** for generously donating prizes for our POD survey drawing.

Snowapple Landscapes for fall cleanup of the landscaping at our Freshwater Center.

Watershed Academy Update

The Tip of the Mitt Watershed Academy hit the ground running in 2015! The Watershed Academy is a place-based, environmental education program that engages local high school students in watershed protection efforts. Now in its second semester, the fall program includes five teams: Team McPhee Creek from Alanson High School, Team Maple River from Pellston High School, Team Five Mile Creek from Harbor Springs High School, Team Boyne River from Boyne City High School, and Team Jordan River from East Jordan High School. With a slightly modified structure this semester, the program now has fewer, but longer, classroom sessions, and expanded field sessions. Classroom sessions include lessons about point and nonpoint source pollution, water chemistry, and macroinvertebrate identification.

Field sessions were held in two parts this semester. In the morning, teams will gather comprehensive water quality monitoring data. In the afternoon, teams will participate in a navigation exercise with Little Traverse Conservancy that will help solidify the connection between land use and water quality protection. The Watershed Academy Summit will take place on November 7th at North Central Michigan College where each team will be presenting a project on a topic of their choosing. Next spring we will be recruiting seven additional Watershed Academy teams from within Tip of the Mitt Watershed Council's service area. We are excited to watch this program grow!

To learn more about the Watershed Academy, visit www.watershedcouncil.org/watershed-academy



Bear River Cleanup

On the sunny morning of August 22nd, 126 volunteers participated in the 11th "Healing the Bear" Bear River Cleanup. These volunteers cleaned 10.5 river miles and 21 road crossings of the Bear River and its tributaries, removing approximately 10 cubic yards of trash and recyclables. Volunteers were treated to breakfast, lunch, and t-shirts donated by local businesses in return for participation in the family-friendly event.

Many thanks to the Michigan Volunteer River, Stream and Creek Cleanup Program, Michigan Department of Environmental Quality, Great Lakes Commission, Petoskey Plastics, Meijer, BC Pizza of Petoskey, Plath's Meats, Emmet County Recycling Center, Rotary Club of Petoskey Sunrise, D&W Fresh Market, the Grain Train, McLaren Northern Michigan, City of Petoskey, Bearcub Outfitters, Michigan Maple Block, Northern Michigan RiverSweep, and Petoskey News-Review for sponsoring this year's Cleanup.

We are like a
snowflake, all different
in our own beautiful way,
but when we stick together
we become a powerful force.

Encourage your friends and family to
become members of the Watershed
Council with a **Gift Membership** this
holiday season. It's just one simple
way you can help strengthen our
organization and protect our
fragile water resources.

For more information
call 231-347-1181.

Happy Holidays!



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Rain Garden Workshop a Success!

On Saturday, September 26th, volunteers joined Tip of the Mitt Watershed Council and homeowners Jane and Cliff Denay to learn about and install a rain garden at the Denay's residence in Petoskey. Attendees heard a short presentation about the benefits and design of rain gardens, and then got to work planting a variety of Michigan native plants. Thank you to Jane and Cliff for hosting the workshop. Support for the rain garden workshop was provided by the Frey Foundation and the Michigan Coastal Zone Management Program, Office of the Great Lakes, Department of Environmental Quality, the National Oceanic and Atmospheric Administration, and Jane and Cliff Denay.

