



## HOLY TOLEDO! *Are we the next blue-green algae crisis?!?*

In early August of 2014, our sense of fresh water security was undermined when the City of Toledo issued an urgent “Do Not Drink” water advisory. What led to the advisory that made the water supply for 400,000 people unsafe for consumption? Microscopic algae. Blue-green algae were sucked into Toledo’s water treatment system from Lake Erie, some species of which produce toxins that attack the liver (hepatotoxins) or the central nervous system (neurotoxins). The blue-green scare rippled throughout the entire Great Lakes Basin. Even in our area, far removed from the epicenter of this algal epidemic and where waters are profoundly more pristine, residents are asking “Are we next?”

Answering that question requires knowing more about the Lake Erie situation. At the root of the problem is nutrient pollution. Nutrients are necessary for aquatic life, including blue-green algae, but excess nutrients in lakes can lead to problematic algae growth. Runoff from extensive agricultural areas in the Lake Erie Watershed carries water laden with nutrients from fertilizers and manure into Lake Erie. The Maumee River, which flows into Lake Erie at Toledo, is the primary source of nutrients because it boasts the largest watershed in the Erie Basin, and is predominantly agricultural land cover. In addition, Lake Erie

has little buffering capacity because it is the smallest of the Great Lakes and is therefore, the most susceptible to pollution.

So are Upper Great Lakes prone to a similar crisis? Not likely for Lake Michigan, given its size, conclude experts from around the Great Lakes Basin. Lake Michigan contains 1,180 cubic miles of water compared

to Lake Erie’s 116 cubic miles. In 2010, agricultural land cover in the Lake Michigan Watershed was at 32%, versus over 70% in the Lake Erie Watershed. Lakes Huron and Superior also dwarf Erie in size, have considerably less agricultural land cover, and are, therefore, unlikely to experience the same problems.

And although far away, those of us in Northern Michigan are watching closely and supporting efforts to address problems in the Lake Erie Watershed. However unlikely, we want to prevent our waters from becoming the next blue-green algae crisis.

*This past summer, the City of Toledo issued an urgent “Do Not Drink” water advisory that affected over 400,000 people. Could Northern Michigan be next?*





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## Reflections From Our Executive Director

Once again this summer, the staff and volunteers at Tip of the Mitt Watershed Council were hard at work on a myriad of projects to protect and restore Northern Michigan's water resources. I say protect AND restore because these two actions go hand in hand. Our actions to protect resources include gathering data and information on the state of our lakes and streams so we can assess their health and respond to threats in a knowledgeable manner. We build on this knowledge to influence the policies that impact our resources. As an example, please read about our efforts to prevent a pipeline disaster from Line 5, the pipeline that runs across the Upper Peninsula, through the Straits, between Burt and Mullett Lakes and south to Port Huron.

You will also see in this newsletter that managing invasive species and restoring the ecology of our lakes and streams is a priority for us. I can't think of a greater threat to our lakes and streams than the continual introduction and proliferation of exotic invasive plants and animals. Through our surveys and management actions, we are monitoring and controlling the invaders. Through our policy efforts on the national level, we are working to prevent the introduction of new species.

One definition of "restore" is to bring back to health and vigor. Many question if lakes and streams can be fully restored after the ecological disturbance caused by invasive species. We believe that a great deal can be done to reverse these impacts. For example, many organizations have stepped up to the plate to address the growing threat of Eurasian watermilfoil. Surveys and control efforts are underway to stay ahead of the curve and keep this invasive from taking over our lakes.

As always, we find time to address emerging issues. You will read about the growing concern over microbeads and the presence of toxic algae in Lake Erie. These are two issues we will work hard to keep from impacting our Northern Michigan lakes. And don't miss the successful protection of 35 acres of coastal wetlands described on the Aquavist page!

We will continue with our multi-tier approach of protecting and restoring our resources to provide Northern Michigan with the tools we all need to keep our waters healthy now and in the future.

## Bargains That Benefit Clean Water

Love shopping on Amazon.com? **Smile!** It gets even better.

Now, you can enjoy the same wide selection of products, low prices, and convenience, plus donate 0.5 percent of your purchases to Tip of the Mitt Watershed Council.

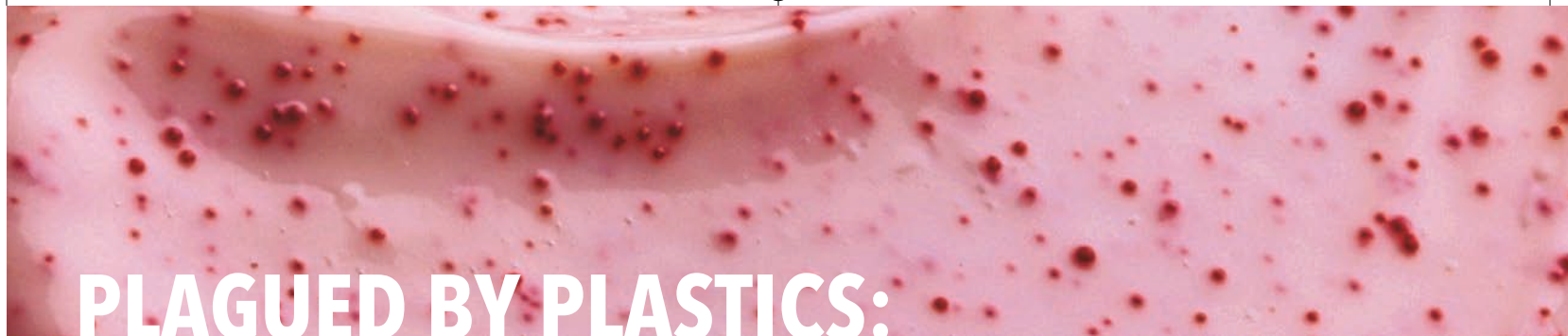
The AmazonSmile Foundation will make the contribution to the Watershed Council when you shop via AmazonSmile ([smile.amazon.com](http://smile.amazon.com)), a website operated by Amazon.

On your first visit, you will be prompted to select a charitable organization. Search for "Tip of the Mitt Watershed Council" and click select. It's that easy! Then, on each subsequent visit, the site will automatically remember your organization of choice and continue to donate a percentage of your eligible purchases.

*Just make sure to shop on [smile.amazon.com](http://smile.amazon.com) as opposed to the original website.*



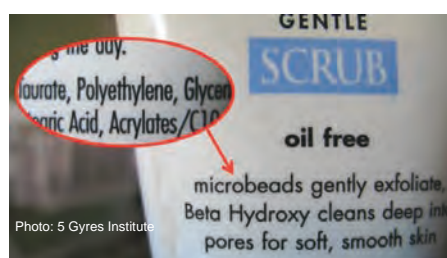




# PLAGUED BY PLASTICS:

## *Microbeads in the Great Lakes*

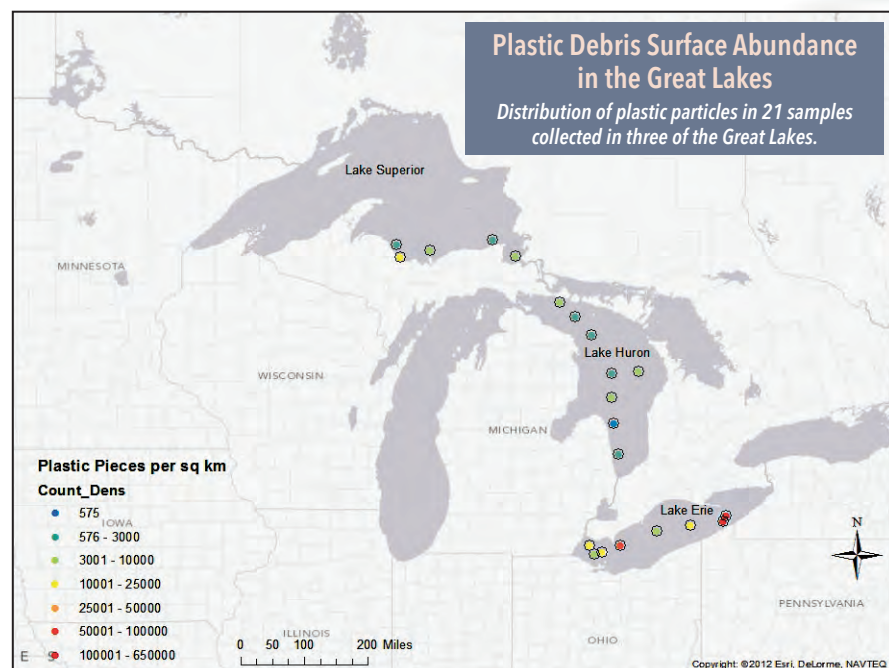
A tiny product is causing a big problem in the Great Lakes. "Microbeads" are tiny particles of plastic used in hundreds of cosmetics and personal care products such as facial scrubs, soaps, and toothpaste. These microbeads are flowing into the Great Lakes and other waterways by the billions. Because of their small size and buoyancy, they are not filtered out by wastewater treatment plants but instead discharge directly into our rivers and lakes. Once discharged, there are no known methods to effectively remove microplastics or microbeads from the environment.



These microbeads have the potential to cause harm to Great Lakes aquatic species. They can be about the same size as small fish eggs, which means that they look like food. Fish or birds that eat the beads, can be deprived of nutrients from real food or suffer from blocked digestive systems when beads become lodged in their stomachs or intestines.

The microbeads are not biodegradable. Additionally, the petroleum in the plastic serves as a magnet for other pollutants in the environment, like DDT, PCBs, and flame-retardants. Because these microbeads easily attract and absorb toxins, they are potentially toxic to wildlife. The toxins from the beads can also accumulate in fish and wildlife, even reaching humans who eat wildlife around the Great Lakes region.

The only way to stop the threat from microplastics is to prevent them from entering the ecosystem.



## What can you do?

- Avoid personal care products that contain microbeads by checking the product ingredient list for "polyethylene" or "polypropylene" microbeads. The 5 Gyres Institute created a free app, *Beat the Microbead*, which can scan a product's bar code and tell if it contains the beads. ([www.beatthemicrobead.org](http://www.beatthemicrobead.org))
- Look for products that are using readily available alternatives such as ground almonds, oatmeal, sea salt, and pumice.
- Support a ban on microplastics and microbeads in consumer products.
- Properly dispose of any unwanted personal care products, including those that contain plastic microbeads, at local POD Drop-off locations. Locations can be found at [www.pillsinthepod.com](http://www.pillsinthepod.com).



# Tip of the Mitt Watershed Council AQUAVIST

**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.

## SUCCESSFUL SETTLEMENT!!

We are pleased to tell you about a win-win solution to an issue we've worked on since 2009. You may recall in prior newsletters, we reported that 35 acres of Great Lakes coastal wetlands were threatened outside of the City of Cheboygan along Duncan Bay. The original proposal was to deposit over 10,000 cubic yards of fill, impacting nearly 4 acres, to build a luxury motor coach RV park.

This project was unsuitable for this site. Picture what it takes to accommodate 100 luxury RVs. Add to that the impact of creating lawns and landscaping, and the potential for gasoline and oil spills, plus the use of pesticides. This would all impact the functions and values of these valuable wetlands.

The permit was denied by the Michigan Department of Environmental Quality (MDEQ), but that decision was reversed during an appeal process for a modified proposal. We strongly disagreed with the reversal and, even though the U.S Army Corps of Engineers permit process was not yet complete, we formally contested the MDEQ decision.

For the past 40 years, advances in science have shown that protection of Great Lakes coastal wetlands is essential to the health of the Great Lakes. The studies are done and results are in. We could not sit by idly and watch the destruction of the same kind of wetlands.

Over the years we continued to work directly with the applicant to offer suggestions and alternatives. He also owned 45 acres across the street, so we suggested he build there and use the 35 coastal acres for lake access and recreational pursuits for the RV Park. We also encouraged permanent protection through the Little Traverse Conservancy (LTC). Unfortunately, his purchase occurred right before the economic crash. These circumstances made it difficult for him to consider such a move.

Following many calls with attorneys and the Administrative Law Judge assigned to our contested case, we were on the road to a trial date. Long story short – as the economy rebounded and circumstances changed, the applicant was willing to engage LTC. Recently, LTC purchased the 35 coastal acres. These Great Lakes coastal wetlands are now protected, and the applicant is getting the benefits related to this kind of sale. This is a win-win situation, and we are extremely grateful for this outcome!

Visit your Aquavist Website at: [www.watershedcouncil.org/aquavists](http://www.watershedcouncil.org/aquavists). For more information, contact Grenetta Thomassey, Policy Director at [grenetta@watershedcouncil.org](mailto:grenetta@watershedcouncil.org) or (231) 347-1181 ext. 118.



# SEALCOAT TOXINS Invade our Lakes



Thinking of sealcoating your driveway or parking lot of your home or business? If so, please consider the impact coal-tar sealcoating may have on water quality and human health.

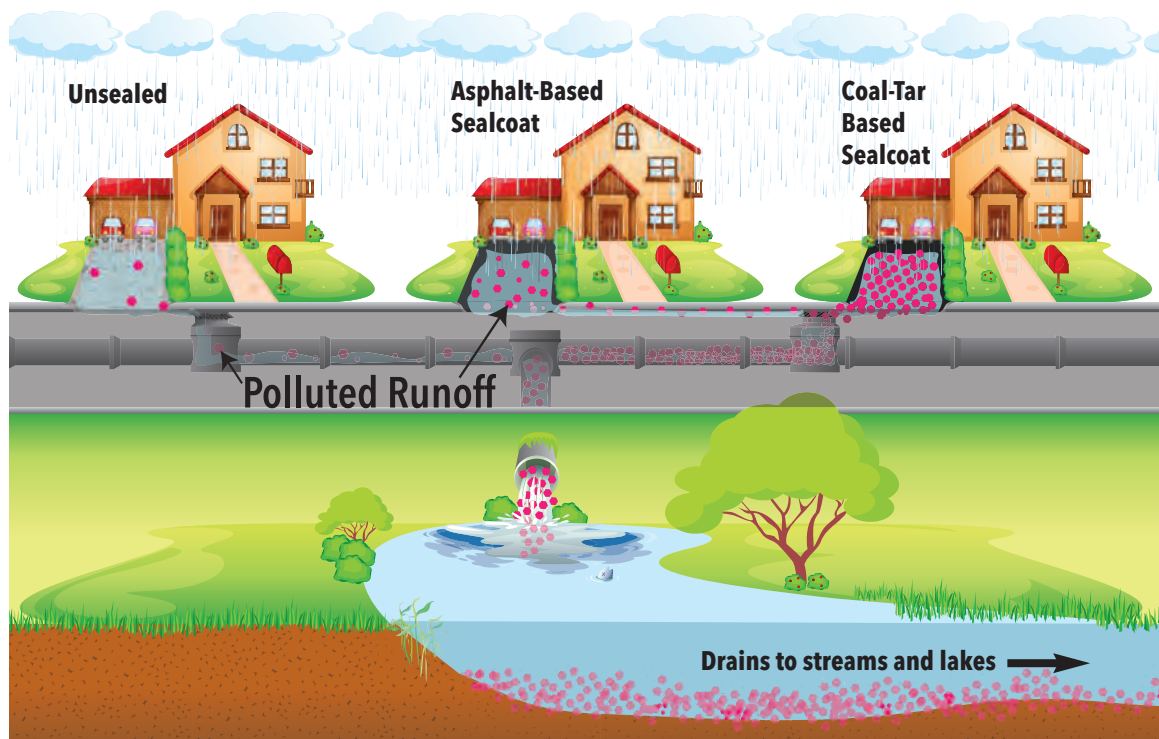
Coal-tar-based pavement sealant is the largest source of polycyclic aromatic hydrocarbons (PAHs) found in 40 urban lakes studied by the U.S. Geological Survey. There are serious environmental and public health concerns associated with PAHs. Several PAHs are suspected human carcinogens and are toxic to fish and other aquatic life. Alarming, PAH concentrations have been increasing in urban lakes in recent decades.

Coal-tar sealcoat contains coal-tar pitch, which is composed of at least 50 percent PAHs or up to 100,000 parts per million. This is about 1,000 times higher than PAH concentrations in asphalt-based sealcoat products. Over time, sunlight and vehicle traffic wear down sealcoat. Small particles of sealcoat are transported from parking lots and driveways to streams and lakes by stormwater runoff. One study found that the amount of PAHs in stormwater runoff from parking lots sealed with coal-tar sealants was 65 times higher than stormwater from unsealed parking lots.

When fish are exposed to PAHs, they exhibit chronic problems, including fin erosion, liver abnormalities, cataracts, skin tumors, and immune system impairments. Benthic macroinvertebrates and other aquatic organisms that are exposed to PAHs are susceptible to a number of detrimental effects, including inhibited reproduction, delayed emergence, and mortality.

As a result, states and cities across the nation have taken action to address PAHs from coal-tar sealant, many banning the sale and use of pavement sealants containing coal-tar. Several other states, including Michigan, Illinois, and New York, are also considering bans.

How can you help prevent the further contamination of PAHs in our lakes? By supporting a state ban in Michigan and making sure you are not using any coal-tar sealants. There are other pavement options, such as pervious concrete, permeable asphalt, and paver systems that do not require sealants. These types of pavements also allow stormwater to naturally infiltrate, resulting in decreased runoff. If you do choose to use a sealcoat, choose alternatives to coal-tar-based sealants, such as asphalt-based sealants or latex sealants. You can determine whether a product contains coal-tar by reading the label.



## What's the difference?

The amount of PAHs in stormwater runoff from driveways sealed with coal-tar sealants can be 65 times higher than stormwater from unsealed parking lots.

*Illustration by Tip of the Mitt Watershed Council*



# PIPELINES UPDATE

In the early morning hours of September 17th, Watershed Council staff joined over 200 people in Indian River for a live simulated pipeline exercise. Amid hundreds of government representatives and private companies, we were on hand to observe and participate in an oil spill simulation. We participated as staff in the Emergency Operations Center, which serves as a central location for officials to coordinate response efforts, make decisions, and gather and disseminate information. We also took part in a wildlife rescue training.

The gathering of stakeholders was impressive and included representatives from the Environmental Protection Agency, U.S. Coast Guard, U.S. Fish and Wildlife Service, Enbridge, Department of Environmental Quality (MDEQ), Cheboygan County, various law enforcement agencies, and many more. It brought together key people who will need to work in tandem, should a real life emergency occur. The exercise also provided an opportunity to identify deficiencies in the emergency response plan. As a result of the exercise, we have areas to focus on for improvement. The Watershed Council will continue to work with all of the involved parties to make sure we are as prepared as possible to respond to an oil spill.

The Watershed Council is also hard at work to prevent a pipeline spill from happening. As part of this effort, we are advocating for a Michigan pipeline water crossing survey. The survey would evaluate pipeline integrity, risk of ruptures and leaks at each water body crossing, and also outline what should be done to prevent future pipeline failures.

Over thirty conservation and environmental organizations joined our request for the study to the Pipeline and Hazardous Materials Safety Administration (PHMSA), the federal agency responsible for safe operation of pipelines. PHMSA replied that they do not have the resources available to conduct such a study. However, in the response, PHMSA indicated they would be glad to work with the State of Michigan if the State undertook the effort.

As a result, our focus shifted and we provided all of the information to the recently convened Great Lakes Petroleum Task Force. The Task Force was assembled by the MDEQ

and Attorney General for the purpose of reviewing pipeline safety to safeguard Michigan's natural resources and citizens. We requested that the Task Force undertake this effort and work with PHMSA to conduct a water crossing study to assess risks of existing pipelines running under Michigan's rivers, streams, and lakes.

In addition, Watershed Council staff, along with partner organizations, met with members of the Task Force in Lansing, including the MDEQ Director, Department of Natural Resources Director, and representatives for the Governor and Attorney General. During this meeting, we called upon the State to immediately open a public proceeding to evaluate pipeline threats to the Great Lakes and determine actions to prevent a catastrophe. Specifically, we urged the State to conduct a comprehensive analysis of likely impacts in the event of a release by requiring Enbridge to file a Great Lakes Submerged Lands Act conveyance application with the MDEQ for the Line 5 pipelines it operates in the Straits of Mackinac.

We are also in the process of obtaining specific information to evaluate the integrity of the Line 5 route in Northern Michigan. We have requested information from both the State and Federal government under the Freedom of Information Act. This information will help us determine how safe the pipeline is and how to protect our water resources from the risk of oil spills.

We have a full recap and summary from the Northern Michigan Pipeline Symposium we hosted this summer on our website, [www.watershedcouncil.org](http://www.watershedcouncil.org), including presentations and a Q&A section. In addition, a number of organizations are also working together on an Oil & Water Don't Mix campaign urging Gov. Snyder to protect the Great Lakes from a disastrous oil spill, which can be accessed at [www.oilandwaterdontmix.org](http://www.oilandwaterdontmix.org).



Above: Policy Specialist, Jennifer McKay (right) gathers information to assist with response efforts during the oil spill simulation in Indian River.



Hundreds of representatives, including staff from Tip of the Mitt Watershed Council, recently participated in an oil spill simulation held in Indian River.



## UNPREPARED FOR HEAVY OIL IN THE GREAT LAKES

At a recent international forum on heavy oils, the U.S. Coast Guard (USCG) announced that they and other responders are not adequately equipped or prepared for a "heavy oil" spill on the Great Lakes. Heavy oil (as opposed to light or medium crude) can sink below the surface making traditional recovery methods ineffective. Michigan experienced these difficulties first hand during the 2010 heavy oil spill in Marshall, Michigan, that contaminated almost 40 miles of the Kalamazoo River. The methods used were ultimately inadequate to find and recover the submerged oil.

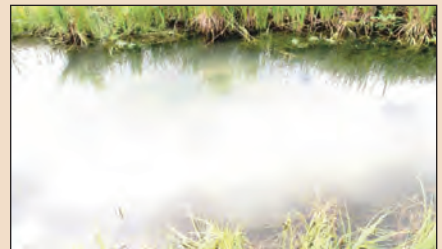
From the Marshall spill, as well as recent research, the USCG has determined that there is limited heavy/submerged oil clean up capability, particularly in deep water. This is a big concern since pipelines carry heavy oil under the St. Clair River and near Niagara Falls and Buffalo. Line 5 that runs under the Straits of Mackinac does not currently transport heavy oil.

In addition, it is possible that heavy oil will be transported on the Great Lakes in the future. Although vessel shipment of heavy crude oil is not yet occurring on the Great Lakes, there is interest by a company, Calumet Specialty Product Partners, and others to establish a dock to facilitate Great Lakes oil shipping by barges out of Lake Superior.

As demand continues to increase, we are likely to see more proposals for shipping these commodities on the Great Lakes. Given the limited capabilities to respond to spills, we need to consider prohibiting transport of heavy oils by vessel through the Great Lakes. The risks associated with transporting heavy oil on our Great Lakes, when we are unprepared to deal with a spill, are much too great.

## CROOKED RIVER SPILL: TAKE TWO

The Crooked River had a déjà vu moment this summer when an unknown milky-white substance entered a tributary to the river via a stormwater outfall located near US 31 in Alanson. It was just last summer when an over-turned semi-truck spilled approximately 12,000 - 13,000 gallons of used cooking oil into the very same storm drain. Fortunately, local, state, and federal agencies were able to minimize impacts with their quick and thorough cleanup efforts, and no long-term impacts are anticipated. Although last year's spill was accidental, this year's is thought to be intentional. The alleged perpetrator dumped the substance into a storm drain located on East Street.



A milky-white substance was found in the Crooked River stormwater outfall near US 31 in Alanson.

These spills call attention to the connectivity between storm sewers and water bodies. Storm sewers convey the rain and snow melt from our streets and infrastructure into a system of underground pipes where it eventually discharges into nearby surface waters. What goes down the drain will, sooner or later, end up in a lake, stream, or wetland.

If you happen upon a suspicious substance you suspect has been illegally or accidentally released into a storm sewer or waterbody, immediately call:

**LOCAL**  
**Authorities**

**Dial 9-1-1**

**STATE**  
**Authorities**

**800-292-4706 (PEAS)**

**FEDERAL**  
**Authorities**

**800-424-8802 (NRC)**

## 10TH ANNUAL GREAT LAKES RESTORATION CONFERENCE

Ten years ago, scientists were warning us that the most significant fresh water resource on the planet – our Great Lakes – was on the brink of a complete ecosystem breakdown. Faced with this threat, Peter Wege and other visionaries, including Watershed Council staff, gathered in Grand Rapids, Michigan, to start the Healing Our Waters-Great Lakes Coalition (HOW). The HOW Coalition consists of more than 115 environmental, conservation, and outdoor recreation organizations, zoos, aquariums, and museums, representing millions of people who share a common goal: restoring and protecting North America's greatest freshwater resource, the Great Lakes. This fall, Watershed Council staff returned to Grand Rapids to join other Great Lakes leaders in celebrating the 10th anniversary of the Healing Our Waters-Great Lakes Coalition.

It was an opportunity to celebrate some of our major victories for the Great Lakes, including our collective work to successfully implement more than 1.6 billion dollars in federal restoration projects to protect and restore this treasured resource. The hallmark of this effort is the creation of the Great Lakes Restoration Initiative (GLRI), which has supported over 2,000 restoration projects to restore habitat for fish and wildlife, clean up toxic pollution, and control invasive species. The conference also allowed for a touching tribute to Pete Wege, whose vision and support truly inspired and initiated the age of restoration for the Great Lakes.

Although the Great Lakes Restoration Conference has come to a close, the fight to protect and restore our Great Lakes continues. The Watershed Council is looking forward to what the Coalition will accomplish in the next decade.

# Stormwater Matters

UPDATE FOR 2015

In 2013, the Watershed Council initiated our Stormwater Matters campaign to bring greater stormwater awareness to the Little Traverse Bay Watershed community. Thanks to a grant through the Michigan Coastal Zone Management Program, Office of the Great Lakes, Department of Environmental Quality and the National Oceanic and Atmospheric Administration, we will expand upon our campaign in 2015. The project will include several new outreach and education components including production and distribution of a low-impact development (LID) brochure targeting the Little Traverse Bay residents and commercial property owners.

The grant will also support two rain garden workshops; one in Harbor Springs and the other in Petoskey. Participants will learn about rain gardens through the hands-on workshops. The locations of the rain gardens will be selected through a lottery process based on needs and interest of property owners. We will host a LID workshop featuring presentations from leading experts as a means to bring state-wide expertise and experience to our local stormwater management practitioners, including engineers, architects, and affiliated professions. A third watershed protection workshop will target local governments and will highlight high-quality coastal resources,

stormwater-impacted areas, and a local water quality ordinance review based on results found in the *Emmet County Local Ordinance Gaps Analysis: An Essential Guide for Water Protection*.

Lastly, the grant will support several community-wide communications including publishing the Watershed Council's Stormwater Matters advertisements in local newspapers. The ads feature various stormwater tips for property owners to reduce their potential stormwater impacts, from fixing leaky car engines to simply picking up your pet's waste. In addition, a "Be Stormwater Wise" insert will be included with the City of Petoskey tax bills. The insert will include helpful tips for ways to protect the water quality of Little Traverse Bay, as well as conserve water and save money on future water bills.

Look for future updates as we continue our Stormwater Matters efforts into 2015.



## LOGAN and the "Tail" of Two Cities

Logan, a rescue collie, is a hard-working and uniquely talented dog. Thanks to grants from both the Petoskey-Harbor Springs Area and Charlevoix County Community Foundations, Logan and his handler, Karen, lent their talents during an early August visit to Charlevoix and Petoskey. Logan and Karen are part of Environmental Canine Services (ECS), where dogs are trained to specifically identify human sewage through scent in storm sewer systems. Logan has a particularly acute sense of smell and can detect bacteria concentrations at 10 colonies of *E. coli* per 100 milliliter; that's 30 times lower than the State standard for full body contact (e.g. swimming) in our surface waters!

This cost-efficient method provides a rapid screening tool for illicit sewage discharge detection. ECS was joined by Watershed Council staff and Department of Public Works representatives on a tour of Petoskey and Charlevoix, checking dozens of locations to determine if there were any human fecal contamination problems in the municipal stormwater systems. Watershed Council staff will meet with both cities to discuss the findings and plan next steps for protecting our waters.



Left to Right: Kevin Cronk, Monitoring and Research Director for the Watershed Council; with Logan and his trainer, Karen, of Environmental Canine Services (ECS). For more information about the rapid screening services provided by ECS, visit [www.ecsk9s.com](http://www.ecsk9s.com).



## MICHIGAN NATURAL SHORELINE PROJECT UPDATE

Northern Michigan hosted two Certified Natural Shoreline Professional (CNSP) workshops this summer, as part of the Michigan Natural Shoreline Partnership's contractor training program. The Partnership, of which the Watershed Council is a member, works hard to promote natural shoreline landscaping to protect Michigan's inland lakes. The first workshop took place at Camp Pet-O-Se-Ga on Pickerel Lake in June and served as the field component for contractors seeking their state-wide natural shoreline certification. Watershed Council staff, along with Michigan State University Extension (MSUE) staff and Bill Schneider from Wildtype Native Plant Nursery, provided instruction. The contractor participants learned steps for installing a bioengineered shoreline project, including setting coir (coconut fiber) logs, placing fieldstone in a gradual slope waterward of the coir logs, securing erosion control blankets, and planting a native plant shoreline buffer (greenbelt) along the shoreline. A second workshop held in August served as a continuing education opportunity for contractors already certified through the CNSP program. Antrim Conservation District (ACD) hosted the workshop on the Jordan River and, once again, the Watershed Council shared instruction duties with MSUE and ACD. Participants learned to install BioD-Block™, a coir fiber block system designed for slope stabilization, and streambank and shoreline restoration projects. For more information on shoreline erosion and stabilization methods, refer to the Watershed Council's publication *Understanding, Living with, and Controlling Shoreline Erosion* at [www.watershedcouncil.org/resources](http://www.watershedcouncil.org/resources) and publications. For information on the Michigan Natural Shoreline Partnership, contractor training programs, and more, visit [www.mishorelinepartnership.org](http://www.mishorelinepartnership.org).



Participants enjoyed a hands-on learning experience during the first of two Certified Natural Shoreline Professional workshops.



Native plants from Wildtype Native Plant Nursery were planted by the participants.



*Shoreline installation  
at Camp Pet-O-Se-Ga.*



## COASTAL TRIBUTARIES

### Why Coastal Creeks ARE Important

Northern Michigan is blessed with legendary streams. Rivers like the Jordan and Boyne have left their marks in history and continue to shape our communities. Many of our beloved streams have membership-based groups whose sole purpose is to carry out programs that protect their respective stream. On the other hand, there are lesser known streams that rarely receive attention, being forever in the shadows of their larger, more popular, counterparts. For example, have you heard of either Inwood or McGeach Creeks? Unless you frequent Fisherman's Island State Park or live just south of Charlevoix, chances are you are unaware of these gems. Even Watershed Council staff are mostly unfamiliar with these small streams, but thanks to support from the Joyce Foundation, they were front and center during our 2014 field season as part of the Coastal Tributary Study.

The purpose of the tributary study was to better understand the impacts of small coastal tributaries on the water quality of Lake Michigan. These small coastal streams generally escape notice and are not typically included in large-scale watershed management plans or monitoring programs. Individually, these small streams are thought to contribute few pollutants and have minimal impacts on the greater Lake Michigan ecosystem. However, we suspected that, collectively, those small coastal tributaries are an important part of the Great Lakes water quality equation.

The Watershed Council evaluated Inwood and McGeach Creeks using a multi-faceted approach, typical of watershed management planning. We monitored physical and chemical water quality at three sites on each stream, including discharge

measurements for calculating pollutant loads. Biological monitoring, which consisted of assessing aquatic macroinvertebrate diversity, was conducted at four sites. We completed road-stream crossing inventories for major roads of both watersheds. Additionally, we assessed land cover change, wetlands, groundwater recharge areas, channelization, and slopes in a Geographical Information System.

When all was said and done, we found that our results ranged from comforting to concerning. Agricultural land use in the watersheds was reflected in relatively high phosphorous and nitrogen concentrations found in the streams. On the other hand, macroinvertebrate sampling revealed healthy communities of aquatic insects. Road-stream crossing inventory results were mixed, ranging from crossings with few, if any, problems to others with perched culverts, which limits the movement of fish and other aquatic species, and erosion, which pollutes streams with sediments.

What are the implications for Lake Michigan? Consider that Inwood and McGeach Creeks were found to contribute a combined 120 lbs/year of phosphorus to Lake Michigan. Extrapolate these figures to the entire Lake Michigan coastline in our service area and, collectively, coastal tributaries yield 1,175 lbs/year. Considering one pound of phosphorus can generate 500 pounds of algae growth, these tributaries generate nearly 600,000 pounds of algae growth each year! Although these streams are small in size, when taken in aggregate, the impact of our coastal tributaries is BIG when it comes to the health of Lake Michigan.



*The purpose of the tributary study was to better understand the impacts of small coastal tributaries on the water quality of Lake Michigan.*



## SURVEYING THE WATER'S EDGE In the Burt Lake Watershed



*Summer intern, Sara Vaughan, surveying the eroding streambank along the Sturgeon River.*

In preparation for developing a new watershed management plan for Burt Lake and the Sturgeon River, Watershed Council staff and interns surveyed multiple lakes and streams during the summer of 2014. Lake shoreline surveys were conducted on Lance, Round, Silver, and Wildwood Lakes to document riparian vegetation (greenbelts), erosion, alterations (e.g., seawalls), and algae, which is a biological indicator of nutrient pollution. Additionally, University of Michigan Biological Station students surveyed Munro Lake.

The banks of the Sturgeon River from Wolverine to Burt Lake, the Maple River from Woodland Road to Brutus Road, and the Crooked River from Crooked Lake to Burt Lake, were surveyed for erosion. In total, 532 lakeshore properties and 26 miles of river were surveyed. Results are being compiled and will be used as a foundational assessment of nonpoint source pollution in the Burt Lake – Sturgeon River Watershed Management Plan.

## MONITORING AQUATIC INVASIVE SPECIES in the Elk River Chain of Lakes

Thanks to a grant from the Michigan Department of Environmental Quality's Clean Water Fund, the Watershed Council is currently monitoring the Elk River Chain of Lakes (ERCOL) for five priority invasive species: curly-leaf pondweed, Eurasian watermilfoil, invasive *Phragmites*, purple loosestrife, and quagga mussels. During the spring and summer of 2014, monitoring was carried out in the Upper Chain from Beals Lake to Intermediate. Monitoring was accomplished through benthic tows and visual surveys. In addition, detailed vegetation surveys were conducted on Hanley and Intermediate Lakes.

Following 35 benthic tows along the bottom of lakes and interconnecting waterways of the Upper Chain, not a single quagga mussel was found. Only two patches of *Phragmites* were documented after combing over 50 miles of shoreline. Not unexpectedly, purple loosestrife was found throughout the Upper Chain, but generally in small isolated patches. No

curly-leaf pondweed was documented and Eurasian watermilfoil was found in small quantities in Six Mile and St. Clair Lakes only.

Next year, the monitoring continues in the Lower Chain from Lake Bellaire to Elk Lake, with detailed vegetation surveys scheduled for Lake Skegemog and Elk Lake. Upon completing all field work, we will develop maps and a report, share findings, and pursue control measures with lake associations and other partners. Furthermore, we are working with the Antrim Conservation District to hold workshops for partner organization members interested in learning more about the project and how to identify and document priority invasive species. Please contact Kevin Cronk, Monitoring and Research Director, if you are interested in attending a workshop (partners include Six Mile Lake Association, Intermediate Lake Association, Three Lakes Association, and Elk-Skegemog Association) at 231-347-1181, ext 109.



**Before****Before**

## TANNERY CREEK: Completed

The culvert is gone, the bridge is built, the lamprey weir is installed, the riffle and pool structures are constructed, and the native plants are rooting in. In other words, all of the pieces and parts to the Lower Tannery Creek restoration project are in place and the work is done. The project was a component of the Little Traverse Bay Stormwater Management Initiative funded by the Great Lakes Restoration Initiative with additional support from the Michigan Department of Natural Resources, U.S. Fish and Wildlife Service, and the Petoskey-Harbor Springs Area Community Foundation. Local property owner, Bob Koffman, also supported the effort. The project included removal of the existing, undersized culvert and replacement with a timber bridge. A permanent sea lamprey barrier constructed of sheet metal with a central notch for low stream flow was incorporated to prevent lamprey from migrating upstream, while allowing salmon and other spawners to pass.

Michigan native plants were incorporated into the landscape immediately around the new bridge and included grasses, shrubs, and perennials. Deep-rooting grasses, such as switch grass, little bluestem, and prairie dropseed, will help stabilize

the soils, absorb nutrients, and deter pedestrians from straying off the Little Traverse Wheelway and onto private property. Red-osier dogwood, bush honeysuckle, serviceberry, black chokeberry, shrubby cinquefoil, swamp rose, wild black currant, and 'Grow Lo' fragrant sumac will act as ground cover, provide habitat, and provide shade to the stream. Several herbaceous perennials, such as St. John's Wort, lance-leaf coreopsis, virgin's bower, and pussytoes will do the same.

Throughout dozens of visits to the site to check on construction progress, we have observed countless walkers, runners, and bikers slow down, pause, and even stop for a few minutes at the bridge. Many have remarked that they never knew there was a stream there, while others are thrilled to see the creek they played in as kids has been given much-needed attention. In the future, we hope to partner with other community stakeholders to address issues upstream of the bridge, including invasive species and more undersized culverts. In the meantime, we hope you'll have chance to enjoy the Little Traverse Wheelway, and while you're there, give pause for Tannery Creek.

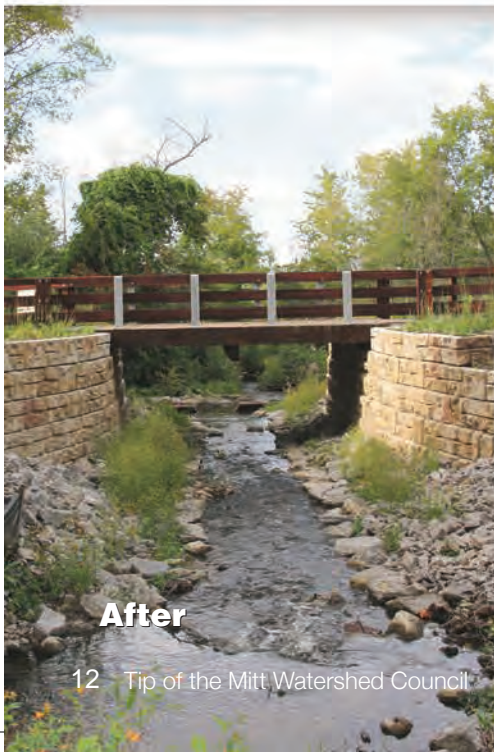
**After****After**



Photo courtesy of Lycott Environmental



ABOVE:  
Diver installing  
benthic mats



RIGHT:  
Milfoil Weevils

## WHAT'S THE WORD ON *Watermilfoil?*

Native watermilfoils, such as northern and variable-leaf, are integral components of natural plant communities in our lakes and streams. However, an invasive type, called Eurasian watermilfoil, has gradually gained a strong foothold in the Northern Lower Peninsula. After invading the Great Lakes, Eurasian watermilfoil steadily spread to our inland lakes and is now found in Burt, Charlevoix, Long, Mullett, Paradise, Six Mile, Skegemog, St. Clair, Thumb, Walloon, Wildwood, and Torch Lakes.

Thankfully, area lake associations have not been passive about this invader. Native aquatic weevils, which eat the exotic watermilfoil from the inside out, have been stocked in Burt, Long, Mullett, Paradise, Six Mile, Thumb, and Walloon Lakes. Benthic mats have been staked to the bottom of Thumb, Walloon, and Torch Lakes to control small infestations. Laminar flow aeration and bioaugmentation, which biodegrades the organic sediments and reduces the exotic watermilfoil growth, is currently being used in Paradise and Wildwood Lakes. Herbicides have been used in Paradise, Six Mile, Walloon, Wildwood, and Torch. And removal by hand has occurred, at least, in Torch Lake.

Although none of these approaches, or combinations thereof, have eradicated the invasive watermilfoil, they have made great strides in bringing it under control. Their efforts help preserve the natural ecosystems and recreational opportunities on our lakes.



*Each boat launch on Thumb Lake features a sign to alert boaters to the presence of Eurasian watermilfoil and how to prevent spreading it to other lakes.*



## Welcome New Members

6/26/14 - 9/29/14

Mr. Gary Abbott  
 Maria Affhalter  
 Mr. Robert Ashley  
 Mr and Mrs Bert D Barnes  
 Mr and Mrs Dale Bauer  
 Mr and Mrs George Beeler  
 Mr. Robert G. Bluhm  
 Dr. & Mrs. Nicholas Bosch  
 Mr and Mrs Daniel Brockman  
 Mr and Mrs Michael Butcher  
 Mr and Mrs David R. Butts  
 Mr and Mrs Russell Cecil  
 Mr. Larry R. Cooley  
 Ms. Brooke Courtade  
 Mr and Mrs Thomas C. DeGrow  
 Ms. Mary Lou Detar  
 Mr. Guy DiPlacido  
 Catherine and Kenneth Ehrenberger  
 Mr. Franklin L. Erickson  
 Ms. Mary L. Fischer  
 Mr and Mrs William P. Fisher  
 Mr and Mrs Terry Graessle  
 Great Lakes Reclaimed  
 Mr and Mrs Gary Green  
 Mr and Mrs Gregg Hartemayer  
 Dr. Hubert Hayes  
 Mr. Thomas J Heckert  
 Chris Ford and Ali Hill

Mr and Mrs David Hinz  
 Mr. and Mrs. Kurt Hochstein  
 Mr and Mrs William Holt  
 Mr. and Mrs. Anthony Huffman  
 Nathaniel and Jake Huffman  
 Ann Indingaro  
 Mrs. Michael Johnson  
 Lynn K. Kerber  
 Mr and Mrs John C. Klepach  
 Mr. and Mrs. Robert G. Koffman  
 Ms. Theresa Korneffel  
 Mr. and Mrs. Robert Leroy  
 Mr and Mrs Richard H. Lineback  
 Dr. Daniel Linnenberg  
 Mr and Mrs Basil Long, Jr.  
 Mr and Mrs Gunnar Lundteigen  
 James F. and Mary Kay Martin  
 Dr. & Mrs. Joseph Matievich  
 Lisa Marie Maxson  
 Ms. Bonnie Mayhew  
 Susan McGarry  
 Michigan Nursery and Landscape  
 Association  
 Mr and Mrs David Miller  
 Dr. and Mrs. Donald C. Moore  
 Mr. Mark E. Neithercut  
 Mr and Mrs Thomas C. Oelke  
 Mr. & Mrs. Shawna and Jay Owen

Mr. Owen Z. Perlman  
 Mr. James R Pitcher  
 Mr and Mrs Ray Randall  
 Dr. Raymond Reck  
 Mr and Mrs Adrian Rogier  
 Mr and Mrs Leo Rolfes, Jr.  
 Kristine A. Safford  
 Mr and Mrs John Schams  
 Mr and Mrs Richard A. Scott  
 Dr. and Ms Corey J Seitz  
 Shridhar, Katy and Lucy Shah  
 Mr and Mrs Robert Sherman  
 Mr and Mrs Christopher J. Shrader, Sr.  
 Linda M. Snyder  
 Mr. and Mrs. John C. Stanley  
 Mr and Mrs Mark Stevens  
 Deane Tierney  
 Mr and Mrs Michael G. Torakis  
 Mr and Mrs Paul Tuerck  
 Mrs. Marjorie Upton  
 Ms. Vicki N. Vassalo  
 Dr. Stephen Wilensky  
 Dr. & Mrs. Alan J. Wilhere  
 Ms. Mary Woodry  
 Mr and Mrs Steve Yauch  
 Mr. and Mrs. Scott Zimmerman



## Honorariums & Memorials

Memorials and Honorariums are a meaningful way to celebrate the memory of a loved one or pay tribute to someone who cares about the preservation of our beautiful water resources.

### In Honor of...

Donna and Jerry Klinfelter  
Virginia Mouch

Grenetta Thomassey  
Mr. and Mrs. Phil Porter

### In Memory of...

Elaine "Lainie" Altmaier  
Ms. Marilyn Kay Reichenberg

Catherine Monday  
Lois Graham

Dr. John A Sheets  
Mrs. Thomas Beatty

Lucmilla Spacs  
East Burt Lake Association

### Special contributions in honor of Horace "Huffy" Huffman were received by:

William and Pat Anton  
Mr. Thomas C. Bailey  
Kathy and Steve Biggs  
Ms. Brooke Courtade  
Mr. and Mrs. David G. Crouse  
Michael L. and Rhea A. Dow  
Michael J. and Marjorie K. FitzSimons  
Martha Lancaster and Doug Fuller  
Wil Cwikiel and Gail Gruenwald  
Mr and Mrs Gregg Hartemayer  
Mr. and Mrs. William Holmes  
Pam and George Houk  
Mr. and Mrs. Anthony Huffman  
Nathaniel and Jake Huffman  
Mr. and Mrs. David Irish  
Mr. and Mrs. Ric Loyd  
Mr. and Mrs. Joseph Lyons  
Mr. and Mrs. Neil Marzella  
Mr. & Mrs. Shawna and Jay Owen  
Mr. and Mrs. William A. Petzold  
Ham and Barb Schirmer  
Shridhar, Katy and Lucy Shah  
Mr and Mrs Christopher J. Shrader, Sr.  
Dr. and Mrs. Stanley R. Smith  
Mr. and Mrs. John C. Stanley  
Dr. and Mrs. John H. Tanton  
Mrs. Mary Jo Truog

## 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 Voluneers Sharon Brown and Gretchen Peck** for assisting with our mailings.

**Andrew Beyer** for painting our front room.

**Roast & Toast** for all the coffee you have supplied for our many meetings and workshops. We can always count on you for our fresh brew.

**Ryde Marine** for donating pontoon boats for the Oden Island tour and fixing our small boat motor.

**Irish Boat Shop** for donating safety whistles, helping us host our annual Whale of a Sale fundraiser, and storing and maintaining out boat.

**Steve Gall** for his assistance with stormwater mapping (Happy retirement!)

**Dale DeKraker** for rescuing Dan and Matt, providing a paddle, and more.

**All of our Volunteer Lake and Stream Monitors** for another successful year of monitoring.

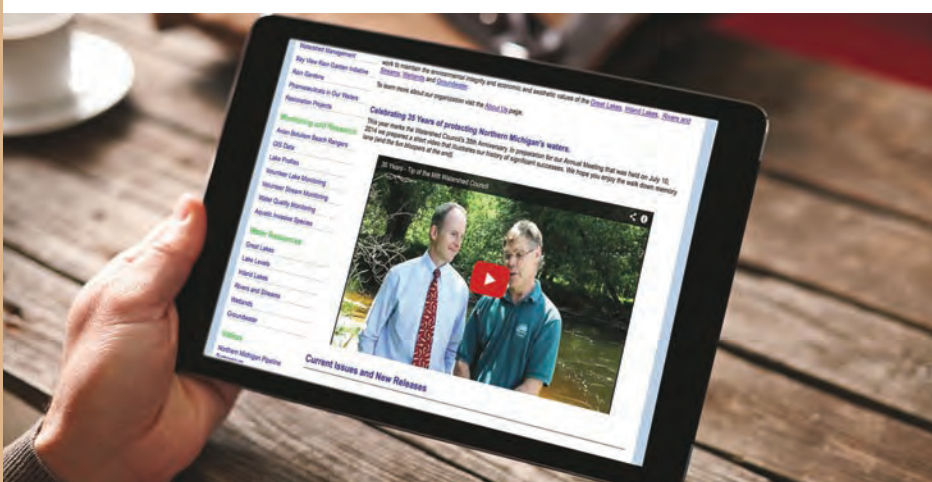
**Dick Segrist** on Douglas Lake and **Dan Sinclair** on Bass Lake for being lake monitors for the past two decades. (Best wishes on your retirement.)

**Black Lake Peeps (Sandviks, Pynnonens and Gowlands)** for allowing us to store our boat at the dock during our aquatic plant surveying.

**Lake Charlevoix Association** for assisting with transporting bacteria samples for tributary study.

**UMBS Limnology students** for assisting with Munro shore survey and wildlife corridors analysis.

Volunteers at the summer POD Collection Event: **Victoria Anderson, Barbara Stevenson, Ann Scott, Rebecca Morse, Sheryl Thayer, and Ed Strzelinski.**



## Did you miss our 35th Annual Meeting?

Now you can watch the 35th Anniversary video right from your computer, mobile phone, or tablet. Just go to **[www.watershedcouncil.org](http://www.watershedcouncil.org)** and click the link on our home page. Don't miss the entertaining bloopers at the end.

## Join Our Shutterbug Squad!

We are searching for a small group of volunteers that love our water resources and have a passion for taking digital photos. Two unique volunteer opportunities will start in January 2015: 1) **Specific assignments** that will include spending the day with a staff member in the field to capture our work or to cover a watershed related issue in your area, and 2) **Non-specific assignments** that will be emailed at the beginning of each month and provide a general topic or type of photo we want to capture. In April, we might request photos of melting snow, rain, or stormwater runoff. In October, we may focus on beautiful fall reflections. Photos will become property of the Watershed Council, but the photographer will always be fully credited.

If this sounds like an exciting volunteer opportunity, please consider being part of the Watershed Shutterbug Squad.

For more information, contact Kristy Beyer at [kristy@watershedcouncil.org](mailto:kristy@watershedcouncil.org) or call 231-330-4389.



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Additional sponsors of the 2014 Bear River Cleanup include the Michigan Volunteer River, Stream, and Creek Cleanup Program, Petoskey News Review, Northern Michigan Riversweep, and City of Petoskey. Many thanks to the volunteers and sponsors of the event for keeping the Bear River healthy!

Volunteers were rewarded with free Healing the Bear t-shirts sponsored by Petoskey Plastics, and a barbecue lunch courtesy of Meijer and Plath's Meats.

home by enthusiastic volunteers.

of at the Emmet County Transfer Station, though some items were taken make and model, but also same foot! Trash and recyclables were disposed an old Kentucky whiskey bottle, and two high-heel shoes of the same



## 10th "Healing the Bear" River Cleanup

As the Bear River meanders from Walloon Lake to Petoskey, it accumulates a lot of garbage from road crossings, urban areas, and illegal dumping. On the morning of August 23rd, 83 community volunteers set out to clean up the river and keep it healthy during the "Healing the Bear" Bear River Cleanup. Volunteers met at the Bear River Shelter, ate a delicious breakfast sponsored by the Grain Train Natural Foods Market, attended a safety introduction, and then split into teams to tackle different sections of the river. Although faced with slippery banks, fast flows, poison ivy, and two skunks, the volunteers prevailed. Over 7 cubic yards of trash and recyclables were removed from the river.

Volunteers cleaned the river by walking the banks with trash bags, wading, and filling canoes with trash. They even pulled a heavy piece of concrete and metal out with a big rope. This year, volunteers found at least five tires, a 1911 license plate, a "Send Your Telegraphs Here" sign,