

Working together to protect the
**Little Traverse Bay
Watershed**



Watershed Protection Plan
2007-2012 and Beyond

The Little Traverse Bay Watershed

You may not realize it, but no matter where you live, you live in a watershed. A watershed is the area of land that catches rain and snow and then drains to a common point. The Little Traverse Bay Watershed is defined by the surrounding land that allows water to drain into the Bay and its overall health has played a vital role in our community.

For centuries, Native Americans made their home along the lakeshore of Little Traverse Bay. In 1847, L'Arbre Croche, later named Harbor Springs, had the largest recorded population of Native Americans in Michigan. The strategic location of the Bay on the Great Lakes and its abundant natural resources, not only made it desirable for Native Americans, but also for early European settlers. By the time Michigan became a state, well over 100 years of fur trading, resource extraction and development had already taken its toll on the watershed.

The abundance of natural resources, and ease of harvesting and transporting them, made the area's economy flourish. Lumbering and fur trading were extensive within the Watershed. The Bear River made it easy for transporting logs to the Bay where large ships waited to take them to points all along the Great Lakes. Fishermen harvested whitefish and lake trout from the Bay.



Photo courtesy EmmetCounty.org

Limestone and shale along the south shore of the Bay supported cement manufacturing. In addition to all of the industrial and extractive uses, the natural beauty of Little Traverse Bay also attracted visitors from across the country. By the 1880's, several resort communities were well established.

Ironically, the water resources that have enriched the area are still threatened; overdevelopment, invasive species, and pollution from stormwater runoff are just a few of the threats it faces today. The balance of supporting the local economy while preventing resource degradation is a constant battle.

It is clear that the biggest impact on Little Traverse Bay comes from those of us living in its Watershed. For more than two centuries we have altered the landscape to suit our needs and in the process, brought dramatic change. By bringing together our communities to implement the Little Traverse Bay Watershed Protection Plan, we have the opportunity to protect, restore, and enhance the Bay for future generations to enjoy.

Tannery Creek flowing into Little Traverse Bay.



What is a Watershed Management Plan and How is It Funded?

A watershed management plan identifies problems and threats to lakes, rivers, wetlands, and groundwater, and develops a framework to address these issues. It is useful both as a process and as a tool. The process is valuable because it creates partnerships that bring the community together to clarify and accomplish a common goal, such as protecting water quality in the Little Traverse Bay Watershed. The final document is also important since it presents research findings about the watershed, prioritizes what needs to be done, and serves to coordinate efforts from private and governmental sources to accomplish the plan's goals.

The Little Traverse Bay Watershed Protection Plan is the product of a collaborative effort among numerous local organizations, as well as state and local agencies, organized by Tip of the Mitt Watershed Council (TOMWC) from 2001-2005. The Plan was approved by the Michigan Department of Environmental Quality (MDEQ) and subsequently, by the U.S. Environmental Protection Agency (USEPA) in 2007. The Plan can be viewed on the Watershed Council's website at www.watershedcouncil.org.

This brochure highlights the progress made toward implementing the Plan during the last five years and includes completed projects as well as those that are currently in progress. Two large grants were recently awarded to protect and improve the health of the Watershed by implementing steps outlined in the Plan. An approved watershed plan was a prerequisite for these grants:

The Bear River Watershed Habitat Restoration Project from the USEPA (Great Lakes Restoration Initiative) was awarded to the Little Traverse Bay Bands of Odawa Indians (LTBB) in 2010.

Little Traverse Bay Stormwater Management Initiative from the USEPA (also Great Lakes Restoration Initiative) to TOMWC in 2011.

In 2011, the Petoskey-Harbor Springs Area Community Foundation (PHSACF) established the Little Traverse Bay Restoration and Protection Fund with a generous lead gift from CMS. Many organizations contribute to funding or initiate projects prioritized in the Watershed Plan. Private individuals and foundations have provided invaluable support as well.

Pollution Threats to the Little Traverse Bay Watershed

There are two major sources of water pollution: point source and nonpoint source. Point source pollution comes from an easily identifiable source, such as a discharge pipe from a factory. Nonpoint source pollution comes from sources that are not so obvious. Some examples:

- eroding lakeshores and streambanks;
- fertilizers and pesticides used in agriculture and on lawns and gardens;
- animal wastes from wild, farm, and pet sources;
- pharmaceuticals flushed down the toilet that are not removed by wastewater treatment facilities;
- grease, oil, dirt, gravel, automotive fluids, de-icing salts, and trash left on roads, parking lots, and other impervious surfaces that wash directly into surface waters or into stormwater systems;
- failing or leaking septic systems;

The Little Traverse Bay Watershed Protection Plan identifies nutrients and sediments as the most serious nonpoint source pollutant threat to the Watershed's surface waters. Nutrients, especially phosphorous, can cause nuisance plant growth and harmful algal blooms. Sediments reduce habitat, smother fish spawning beds, clog gills, and increase water temperatures. Other significant threats include mercury contamination from air deposition, wetland destruction, "hardening" of shorelines and stream banks with sea walls, and the proliferation of invasive species.



**STORMWATER
Pollution Monitoring**
Automated samplers are used
to monitor stormwater outfall.



Reduce use of de-icers



Use native plants in landscaping



Use rain barrels



Attend cleanups

What Measures Help Control Pollution?

The Little Traverse Bay Watershed Protection Plan addresses control of nonpoint source water pollution with specific recommendations for action. Many have already been accomplished or are in progress.

Wetlands, stormwater best management practices such as rain gardens, and greenbelts with deep rooted native plants and trees collect, filter, and clean water from nonpoint source pollution. Construction sites and new development can be designed to minimize runoff. Eroded road/stream crossings can be repaired, and stream banks and shorelines restored to minimize soil loss into lakes, rivers, and streams. Good septic system maintenance reduces pollution in shore areas. Storm sewer systems can be designed to minimize direct discharge of urban storm water into bodies of waters. Roof runoff can be collected in rain barrels. Builders can use alternative permeable pavements or direct runoff to retention basins. Businesses and residents can adopt behaviors to minimize oil, gas, pet waste, cleaning fluids, sediments, nutrients, and other contaminants from entering the Bay.

New problems arose during the first five years of the Plan, such as the overgrowth of algae washing up on the beaches, the outbreak of avian botulism in 2007, and the invasive *Phragmites* found on the shores of the Bay in 2009. Watershed Management Plans must be updated as new problems are recognized, and new solutions become possible.

The health of our waters depend on the actions we take today, and are best addressed by a comprehensive and coordinated plan to collect accurate data and outline sensible steps to restore and protect the waters of Little Traverse Bay.



Educate youth about the impacts of stormwater

Everyone lives in a watershed...

Protecting it is easy if we all do our part.

Install a rain garden. Compared to a conventional lawn, a rain garden allows about 30% more water to soak into the ground and studies show that **rain gardens can remove up to 90% of stormwater pollutants.**

According to the EPA, landscape irrigation is estimated to account for almost one-third of all residential water use nationally, totaling more than 7 billion gallons per day. Over-watering lawns not only wastes water, but can also increase the leaching of fertilizers into groundwater. Use slow watering technique such as **soaker hoses and drip irrigation, they are 20% more effective than sprinklers.**

Resource: www.nrdc.org/water

Keep curbs clean. The average vacuum-assisted street sweeper **costs \$150,000 to purchase and approximately \$15 per curb mile to operate and maintain.**

Resource: www.epa.gov

Use a rain barrel. One inch of rain on a 1,000 square foot roof will yield approximately **600 gallons of stormwater!** With an average annual rainfall of 32" in Emmet and Charlevoix Counties, that means **over 19,000 gallons** flow off each roof annually!

Don't pour waste oil into gutters or down storm drains, and resist the temptation to dump wastes onto the ground. **A single quart of motor oil that seeps into groundwater can pollute 250,000 gallons of drinking water.** Keep up with car maintenance to reduce leaking oil, coolant, antifreeze, and other hazardous fluids.

Resource: www.nrdc.org/water



Be an activist. Educate yourself about water issues within the Little Traverse Bay Watershed. Find out where and how decisions are made about water related projects and programs to protect your water. **Contact your public officials** and encourage them to support laws and programs to protect our water resources.

Volunteer for a beach or stream cleanup or assist with lake and stream monitoring projects. For a list of volunteer opportunities visit www.watershedcouncil.org/volunteer.

Little Traverse Bay Watershed Protection Project Advisory Committee

The successful development and implementation of a watershed protection plan depends upon the involvement of community members, local governments and organizations. Thank you to the following agencies, organizations, and businesses for their partnership:

Bay Township

www.charlevoixcounty.org/govern0283.asp

Bay Harbor Properties

www.bayharbor.com

Bear Creek Township

www.emmetcounty.org/townships

Chandler Township

www.charlevoixcounty.org/chandler

Charlevoix Conservation District

www.charlevoixcounty.org/cd.asp

Charlevoix County

www.charlevoixcounty.org

Charlevoix County Drain Commission

www.charlevoixcounty.org/govern0003.asp

Charlevoix County Farm Bureau

www.michfb.com/counties/index/15

Charlevoix County Road Commission

www.charlevoixcounty.org/ccrc.asp

City of Harbor Springs

www.cityofharborsprings.com

City of Petoskey

www.petoskey.us

Conservation Resource Alliance

www.rivercare.org

Emmet County

www.emmetcounty.org

Emmet Conservation District

www.emmetcd.org

Emmet County Farm Bureau

www.michfb.com/counties/index/24

Emmet County Lakeshore Association

www.emmetcountylakeshore.org

Emmet County Road Commission

www.emmetcounty.org/roadcommission

Evangeline Township

www.charlevoixcounty.org/evangeline.asp

Friendship Township

www.harborinc.org/ftwp.asp

Harbor Area Regional Board of Resources, Inc. (HARBOR Inc.)

www.harborinc.org

Harbor Point Association

www.harborpointassociation.com

Harbor Springs Chamber of Commerce

www.harborspringschamber.com

Harbor Springs Commission

www.cityofharborsprings.com/harbor-commission-22

Irish Boat Shop

www.irishboatshop.com

L'Arbre Croche Club

www.larbecroche.com

Little Traverse Bay Bands

of Odawa Indians

www.ltbbodawa.nsn.gov

Little Traverse Conservancy

www.landtrust.org

Little Traverse Township

www.harborinc.org/ltrwp.asp

Melrose Township

www.charlevoixcounty.org/melrose.asp

Menonaqua Beach Cottage

Owners Association

Website not available.

Michigan Department of

Environmental Quality

www.michigan.gov/deq

Natural Resources Conservation

Service

www.nrcs.usda.gov/wps/portal/nrcs/main/national/home

North Central Michigan College

www.ncmich.edu

Northwest Michigan Community

Health Agency

www.nwhealth.org

Northwest Michigan Council of Governments

www.nwm.org

Petoskey Chamber of Commerce

www.petoskey.com

Petoskey-Harbor Springs Area

Community Foundation

www.phsacf.org

Resort Township

www.resorttownship.org

Tip of the Mitt Watershed Council

www.watershedcouncil.org

Trout Unlimited

www.tu.org

Walloon Lake Association

www.walloon.org

Wequetonsing Association

www.harborinc.org/wequetonsing.asp

West Traverse Township

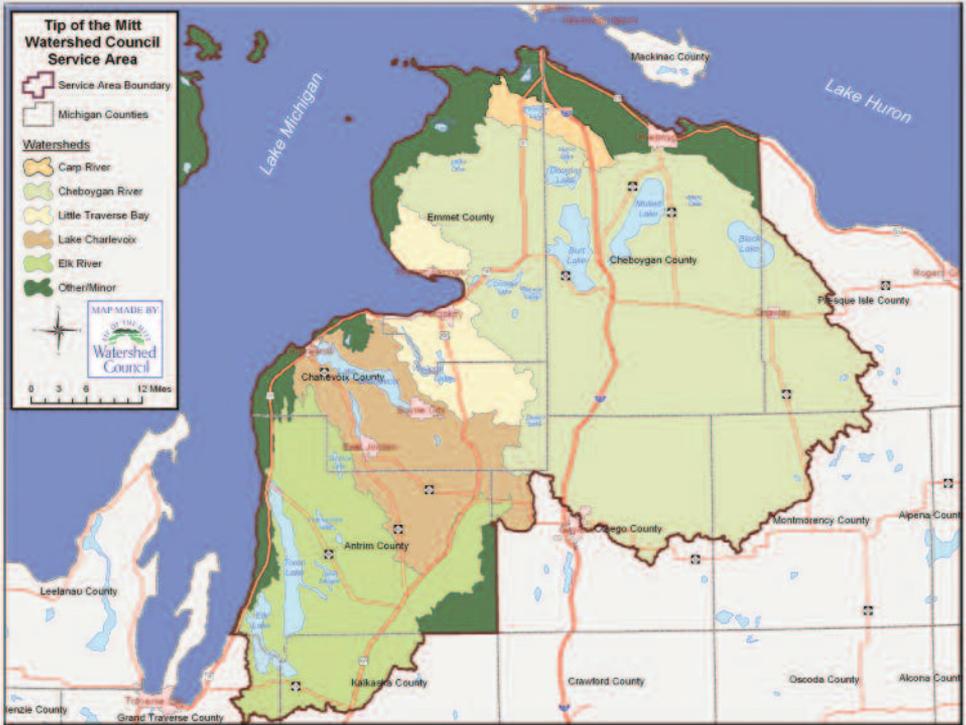
www.westtraversetownship.com

*This brochure was funded by the
Petoskey-Harbor Springs Area
Community Foundation.*



**Petoskey-Harbor Springs Area
community foundation**

Serving Antrim, Charlevoix, Cheboygan, and Emmet Counties



Start protecting what you love...

Become a member of the Watershed Council today. Visit watershedcouncil.org and click "Support"

Our service area includes:

- More than 2,500 miles of rivers and streams
- Multiple blue-ribbon trout streams
- 14 lakes larger than 1,000 acres (among the largest in the State)
- 38 lakes between 100 - 1,000 acres
- 184 lakes between 10 - 100 acres
- 1,600 lakes that are less than 10 acres
- 339,000 acres of wetlands (according to 2000 Landcover Statistics)



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www.watershedcouncil.org

LITTLE TRAVERSE BAY Watershed Protection Plan

Accomplishments 2007-2012



Stormwater Management

Tip of the Mitt Watershed Council monitored water quality of urban runoff at three stormwater outlets in Petoskey. The Watershed Council is working with the City of Petoskey to further assess stormwater pollution in order to develop a stormwater management plan.

Bay Harbor Cleanup

In 2012, the final agreement was signed between CMS Land Co. and the State of Michigan governing long term remedies for the cement kiln dust contamination at Bay Harbor and East Park. Little Traverse Bay Bands of Odawa Indians are studying mercury bioaccumulation in fish living in the Bay (2012-2015).

Gaps Analysis

In 2011, an analysis of Charlevoix County ordinances affecting water quality was completed. Emmet County regulations were reviewed in 2012 and results will be published and distributed in 2013. The analysis includes specific recommendations for model ordinances to help local governments clarify and improve water protection such as zoning, construction, and stormwater management.

Clean Marinas

By 2010, all five marinas on Little Traverse Bay were certified by the Michigan Clean Marina Program: Irish Boat Shop, Walstrom Marine, Harbor Springs Municipal Marina, Petoskey City Marina, and Bay Harbor Lake Marina.

Invasive Phragmites

Surveys in 2009 and 2010 revealed over 300 stands of invasive (non-native) *Phragmites* in Emmet County. The Emmet County Board of Commissioners, Emmet County Lakeshore Association, Little Traverse Bay Watershed Advisory Committee, and the Watershed Council developed a treatment and follow-up plan that has been very successful controlling the spread of *Phragmites* along Little Traverse Bay.

Shoreline and Streambank Surveys

During 2010 and 2011, the Watershed Council, Little Traverse Bay Bands of Odawa Indians, and Walloon Lake Association partnered to survey all properties on Walloon Lake and the main stem of the Bear River. These surveys documented nutrient pollution, erosion, hardened shorelines (e.g., seawalls and riprap), greenbelts conditions, and invasive plants. In addition to follow-up outreach and education efforts, partners are now working directly with riparian property owners to address problems and protect Walloon Lake and the Bear River, which comprise the largest source of water to Little Traverse Bay.



Little Traverse Bay has been a focal point of human activity in Northern Michigan for hundreds of years. The rich waters and land that comprise the Little Traverse Bay Watershed have provided sustenance, timber, mineral resources, fish, transportation, electricity...and are now the backbone of a thriving resort and tourism economy. The purpose of the Little Traverse Bay Watershed Protection Plan is to ensure that the Watershed will be protected, enhanced, and restored for generations to come.

Land and Wetland Protection

Little Traverse Conservancy and Walloon Lake Trust and Conservancy protect land in the Little Traverse Bay Watershed, both as public preserves and as private easements. The conservancies have permanently protected a combined 2,370 acres in preserves, 1,847 acres in easements, and an additional 485 acres in assist projects. This includes approximately 6,700' on Lake Michigan, 3,900' on Walloon Lake, and over 10 miles of rivers and streams.

Avian Botulism Monitoring

Watershed Council volunteers have documented dozens of dead loons and other waterfowl along the shore of Little Traverse Bay. Changes in the nutrient cycle and food chain of the Lake Michigan ecosystem caused by invasive quagga and zebra mussels are suspected in the recent avian botulism outbreaks. Low lake levels and warmer weather seem to exacerbate the problem.

Bay View Association Rain Garden Initiative

The Bay View Association is working with Tip of the Mitt Watershed Council to develop 25 rain gardens between 2012-2014 to help control stormwater runoff. Three were installed in 2012.

Education

Tip of the Mitt Watershed Council, Little Traverse Bay Bands of Odawa Indians, and several other partner organizations held workshops and classes to promote greenbelts, native plants, appropriate fertilizer use, septic maintenance, rain barrels, and waterwise practices. *Petoskey News Review* published many articles to help keep the public abreast of important watershed protection opportunities and issues.

Nutrient Pollution Prevention

In 2012, the State of Michigan banned phosphorus in lawn and garden fertilizers. Surveys, outreach, and education by advisory committee partners continue to focus on nutrient pollution prevention and control.

Tannery Creek Restoration

An undersized culvert will be replaced with a channel-spanning bridge for the Little Traverse Wheelway in 2013. University of Michigan graduate students and Tip of the Mitt Watershed Council, along with the participation of local businesses, are developing a Tannery Creek Watershed Plan under the umbrella of the Little Traverse Bay Watershed Protection Plan.

North Central Michigan College Stormwater Wetland

In the fall of 2012, construction began to replace a failing stormwater pond adjacent to the campus with a stormwater wetland that provides habitat and stormwater management.

Rain Barrels and Native Plants

To encourage water conservation and promote the use of native plants in landscaping projects, rain barrels and native plants were sold to the public at discounted prices to encourage their use.

Road/Stream Crossings

In 2012, the Watershed Council began updating the Bear River Watershed road/stream crossings inventory. Both the previous inventory, completed in 2000, and the current inventory assess road/stream crossing conditions and prioritize sites with the greatest need for culvert upgrades or clear-span bridges. Multiple culverts were replaced with a clear-span bridge at the Click Road/Bear River crossing in 2012. An undersized culvert will be replaced with a larger culvert at the Holms Road crossing over Hay Marsh Creek, a tributary to the Bear River, in 2013.

Pharmaceuticals in Our Waters

Between 2008 and 2012, nearly 5,000 lbs. of pharmaceuticals were collected within a four county area. Within those four years, Prescription and Over-the-counter Drug (POD) Drop-off collection events held at the Emmet County Drop-off Center and McLaren Northern Michigan Hospital collected over 1,700 lbs. of pharmaceuticals that otherwise could have been improperly disposed of, contaminating our waters. For added disposal convenience, permanent POD collection boxes were placed in Emmet and Charlevoix Counties in 2011 and 2012. For a complete list of POD collection events and POD box drop-off locations, visit www.watershedcouncil.org.

Bear River Improvements

Since 2000, the "Healing the Bear" Bear River Cleanup has been held biennially to remove trash from the river. The Bear River Recreation Valley was completed in 2011 by the City of Petoskey and included treatment of invasive plants within the river corridor.

Tributary Monitoring

Tip of the Mitt Watershed Council, Little Traverse Bay Bands of Odawa Indians, and Michigan Department of Environmental Quality continue to monitor water quality along the Bear River and its tributaries, as well as Tannery Creek. Most results show excellent water quality, with the exception of a few sites in more urbanized areas. These sites will be the focus of future projects.



Legend	
Little Traverse Bay Watershed	US Highway
Lakes	Michigan Roads
Streams	Major Roads
Wetlands	Urban Areas
	Counties
	Townships
	Nature Preserves
Projects	
Road/Stream Crossing Improvement	POD Program Pharmaceutical Collection Box
Lower Tannery Creek Restoration	Certified Clean Marina
Stormwater Management	Walloon Wetlands & Tributaries Study
Phragmites Survey	Tannery Creek Watershed Management Plan
Bear River Watershed Restoration	