

**From:** [Joseph B. Barrett](#)  
**To:** [mi-waterstrategy](#)  
**Subject:** Lower Great Lakes biggest threat  
**Date:** Tuesday, June 09, 2015 12:25:59 PM

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Please google Joe Barrett ice boom. The lower Great Lakes cannot heal until the natural conveyor is restored. These scientists are treating the symptoms and not the cause. Thx, JBB  
Joseph B. Barrett

**From:** Rippe, Molly (DEQ)  
**To:** mi-waterstrategy  
**Subject:** Comments on Water Strategy  
**Date:** Wednesday, June 10, 2015 10:39:21 AM

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Clearly, our theme of “Pure Michigan” relies on clean water, and clean beaches are important to our citizens and visitors. However, in 2013, the MDEQ estimated that 48 percent of the rivers and streams exceed the Total Body Contact Recreation (swimming) designated use and 20 percent of monitored beaches have had closures due to bacterial pollution. Keeping the people of Michigan and our visitors safe while recreating in Michigan’s waters is an MDEQ priority. To help attain the goal of enhancing recreational waters and tie together the efforts that Michigan continues to expend on reducing *E. coli* contamination of surface waters, the MDEQ has made it a priority to develop a statewide pathogen (*E. coli*) Total Maximum Daily Load (TMDL) for all waters in Michigan that are not swimmable due to bacteria. The TMDL is a document required by the Federal Clean Water Act that will define the sources of *E. coli*, and provide a plan to limit bacterial pollution from point and nonpoint sources.

Goal 1 – In addition to the recommendations listed, I would making it a priority to reduce agricultural runoff into our lakes and streams by limiting or regulating manure and fertilizer application near surface water. While focusing on Lake Erie makes sense because of recent issues there with algae, it would be proactive of us to focus on reducing nutrients to all waters. Maybe rephrasing the recommendation in goal 1 to say “Achieve phosphorus reduction loading to the Great Lakes, including a 40% reduction in the western Lake Erie Basin”.

Goal 2 and 4- Goal 4 is to create water trails to support water-based recreation and Goal 2 is to ensure clean and safe waters. I am very happy to see the sanitary code listed here! This will be very helpful for making progress on our statewide *E. coli* TMDL.

The success of achieving both of these goals rely heavily on reducing bacterial pollution of our rivers, streams and even “drains”.

While expanding beach monitoring is a helpful and good thing, it will not entirely address the sources of bacterial pollution. If the DEQ wishes to increase the use of our rivers through the creation of water trails, reducing bacterial pollution to the rivers should be a priority (see my comment above about Goal #1).

One of the measures of success in Goal 4 is to have 90% of all Michiganders have access to a swimmable and fishable water body. We currently estimate that about half of our rivers don't meet the swimmable standard, so we should use some caution in encouraging people to recreate in them, particularly following rain events. For example, the Grand River does not meet the swimmable standard following rain. Only 20% of Michigans streams and rivers have been assessed fully for bacteria, we have little to no *E. coli* data for lakes that have no beach. Without this data, we cannot determine if a water body is swimmable. I would recommend adding increased *E. coli* monitoring of rivers and inland lakes as a key recommendation for Goal 4. The very same equipment that will be used for beach monitoring, can also serve this purpose. Water Quality Monitoring funding mentioned as part of Goal 7, could also be directed to serve this recreationally and economically valuable purpose.

Goal 9: Increasing environmental stewardship.

Our beaches that are closed due to bacteria are often polluted because of inland activities that affect our rivers, which then flow to the beaches and lakes. I believe it is important to recognize that pollution minimization activities that occur very far from beaches, still can have an effect on them. It often seems that even in the DEQ, we focus on beaches (because we love them and they are visible and economically valuable), but often forget about the rivers. Consider the Grand River, for example, which outlets near Grand Haven beach. The Grand River flows through Jackson, Lansing, Portland, and Grand Rapids and vast rural/agricultural areas before it pours into Lake Michigan near the beach, which is often closed due to high bacteria. During wet weather events, agricultural and other nonpoint source pollution, as well as combined sewer overflows from Lansing, travel all the way down to that beach. I would recommend that part of our educational campaign for goal 9 should be to increase awareness of the connections between our actions at home (far from the beach) and the quality of water downstream. "Agricultural Drains" are often thought of only as a way to flush out water and even sewage, while the water and pollutants in them flows all the way to our precious great lakes beaches.

Thanks for allowing me to comment,  
Molly Rippke

Molly Rippke  
Senior Aquatic Biologist  
Department of Environmental Quality, Water Resources Division  
Phone: 517-284-5547

**From:** [Tim Ott](#)  
**To:** [mi-waterstrategy](#)  
**Subject:** MiWaters Draft Water Strategy comments  
**Date:** Monday, June 15, 2015 12:50:00 PM

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To whom it concerns,

-Page 53 under heading "Align Resources, Tools and Regulatory Framework to Achieve Outcomes", first paragraph, 3<sup>rd</sup> sentence – "Great Lakes region-level regulations manage water diversions and flows and help prevent evasive species introductions such as Asian Carp through the Chicago Area Waterways System." I believe this should read invasive.

-Page 63, #9- Is this only regarding residential use products such as cosmetics? Or would this also include regulated industrial use of ion exchange resins (which are basically microbeads) as well?

Thank you for you time.

Respectfully,

Timothy J. Ott

**AEP/ D.C. Cook Nuclear Plant**

Environmental Specialist

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**"The Power is Yours!"**

**From:** Steve Hamilton  
**To:** Allan, Jon (DEQ); Finnell, Emily (DEQ); mi-waterstrategy  
**Cc:** [REDACTED]  
**Subject:** Re: Water Strategy Regional Roundtable Invitation  
**Date:** Tuesday, June 30, 2015 5:57:53 PM

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Hello Jon, Emily,

A few quick comments to follow up on today's meeting:

1) Thanks for developing a comprehensive and insightful report, and taking the time to come explain it to us; it is clearly an important initiative.

2) The Kalamazoo River Watershed Council serves as the umbrella group for the watershed and is interested in and enthusiastic about all of the areas addressed in the report. However it is worth noting that we are particularly experienced in some of the most challenging (and costly) problems of the main river channels—dam removals, contaminated sediment remediation, waterfront redevelopment, and urban non-point-source (storm water) runoff. We work a lot with state and feral agencies. We have also worked with the Southwest Michigan Land Conservancy on watershed conservation planning with emphasis on aquatic resources. More on KRWC is at [kalamazooriver.org](http://kalamazooriver.org)

3) In spite of the reassurances that it was thoroughly contemplated, I would still like to know that there has been an independent, expert assessment of the pros and cons of some kind of water user fee system. Sure it's politically complicated, but so are the problems we face without funds to deal with them, and an ounce of prevention is worth a pound of cure! Had we instituted something like this 50 years ago, we might not be facing all these costly problems we have today. I imagine a study could be commissioned for a modest investment, and who knows, it might surprise us!

4) A little detail - the NPDES is misidentified on page 44 (Nonpoint Source should be National).

5) As an aside, I'd like to mention something in light of a comment from someone else about acid pollution. In fact the acidity in Michigan precipitation has been markedly reduced, by more than 10 fold, since the 1980s. We can credit the Clean Air Act and its amendments for that. The mean pH is almost at natural pre-industrial levels now. This is one of the great unsung environmental success stories of our time, yet most people are unaware because acid precipitation was an invisible yet serious threat in the first place.

Best regards,

Steve Hamilton  
(President of the Kalamazoo River Watershed Council)

On Jun 16, 2015, at 1:41 PM, Allan, Jon (DEQ) <[AllanJ@michigan.gov](mailto:AllanJ@michigan.gov)> wrote:

Dear Water Strategy Roundtable Participant:

More than two years ago, the Governor called upon the Office of the Great

Lakes to lead an effort to develop a comprehensive water strategy for Michigan. On June 9, 2015, the OGL released the draft Water Strategy for public review.

The draft Strategy provides a roadmap to achieve a 30-year vision for the future of water use that enhances our economic opportunities around water while sustaining the ecological integrity of the resource and ensures that water resources are protected, valued and cared for by present and future generations.

The draft Strategy was developed in collaboration with an interagency steering committee and an external ad hoc advisory group that helped to inform the development of the draft through ongoing participation. The Strategy was also shaped by input received through an extensive engagement process involving community and regionally based conversations across the state, some of which you may have been a part of.

This release kicks off the beginning of an outreach process focused around further refinement of the draft and opportunities to collaborate on key recommendations. The OGL and its partner agencies are reconvening economic roundtable discussions in the ten prosperity regions across the state to discuss the draft and implementation of the Strategy. In addition, up to five Water Strategy Community Conversations will be hosted across Michigan to invite comment and discussion on the draft Strategy.

We would like to invite you, as one of a select and diverse group of interested parties, to participate in a Water Strategy Roundtable discussion in Kalamazoo, Michigan on Tuesday, June 30, from 1:00 p.m. to 4:00 p.m., at Western Michigan University, Fetzer Center, 2350 Business Ct., Kalamazoo, Michigan 49008. Similar meetings will be held in other regions of the state over the next six weeks. The purpose of the meeting is to discuss the draft Water Strategy and opportunities for local and regional leadership and to accomplish key recommendations in the Strategy. In addition, participants will be asked to provide feedback on the draft Water Strategy and discuss connections to future issues and needs for your region related to water.

We have attached the Draft Water Strategy for your review and preparation for the meeting. Additional meeting materials will be provided prior to the meeting. Information about the development of the Strategy is available at [www.michigan.gov/waterstrategy](http://www.michigan.gov/waterstrategy).

Please contact Ms. Kari Vaughn at 517-284-5035, or at [vaughnk3@michigan.gov](mailto:vaughnk3@michigan.gov) to indicate your interest in participating in this Roundtable discussion. If you have any questions, please feel free to contact me or Ms. Emily Finnell, OGL, at 517-284-5036, or at [finnelle@michigan.gov](mailto:finnelle@michigan.gov).

We look forward to your participation in these important discussions and working with you to realize a positive future for Michigan and its water resources.

Thank you.

Jon W. Allan, Director  
Office of the Great Lakes

<Draft Water Strategy and Appendices 06-04-2015.pdf><Invite letter - Region 8  
- Kzoo.pdf>

Stephen K. Hamilton, Professor, Kellogg Biological Station, Michigan State University,  
3700 E. Gull Lake Dr., Hickory Corners, MI 49060. Tel. 269/671-2231.  
<http://kbs.msu.edu/people/faculty/hamilton>

**From:** [Jim MacInnes](#)  
**To:** [mi-waterstrategy](#)  
**Subject:** Aquifer Assessment  
**Date:** Tuesday, July 07, 2015 1:45:11 PM

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An aquifer status assessment would be very useful. Will you be including this in your report?

Thank you,  
Jim MacInnes



**Jim MacInnes** | President  
p: 231.378.2000 x2201  
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**From:** Chris Boyle  
**To:** ml-waterstrategy  
**Subject:** Comment on Water Strategy Document  
**Date:** Tuesday, July 14, 2015 6:23:07 PM

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I would like to make a comment regarding the water based recreation section of the strategy. I own a kayak rental business in Port Austin. I have been open for 9 years. My mission is to get people on the water so they will have a good experience and want to protect the Great Lakes. I have kayakers that drive to Port Austin from all over the state and Midwest for the day just to kayak. My business has been doubling the past three years. I have made significant investments in Port Austin and am opening another business next year because of water based recreation. I have been featured in the Pure Michigan Magazine several years. I have been featured on Under the Radar. We invite people to Port Austin to Kayak to Turnip Rock and they have come in masses. I cannot keep up this year with the number of people that want to kayak.

My customers kayak 3.5 miles out to Turnip Rock. Turnip Rock is in the water. However, the area around it is surrounded by a private gated community. The community has hired guards to chase kayakers that rest at Turnip Rock off the shore. We invite all these tourist to visit the area and a few residents in a gated community ruin the experience by being rude.

If you are going to promote recreation on the Great Lakes you have to address the issues with the Public Trust. Michigan's shoreline should be available for all residents to use and enjoy--not just the people that can afford waterfront property. Tourist should be allowed to pull their kayaks on shore to take a break, eat a snack and take some pictures. The residents of the gated community are not allowing this and are intimidating the tourist with guards. If you allow more access points to the great lakes this is going to become a bigger issue in the future. The fight over beach rights is already heated. Shore line rights have to be straightened out. It should be straightened out to allow more access to more people. This will make Michigan a destination for more people. The more people that get to enjoy the beauty of our shoreline the more they will want to protect it.

Chris Boyle  
Owner, Port Austin Kayak  
  
[www.portaustinkayak.com](http://www.portaustinkayak.com)

**From:** Patrick Jacuzzo  
**To:** [mi-waterstrategy](#)  
**Subject:** Comments - Goal 2 Statewide Sanitary Code  
**Date:** Thursday, July 16, 2015 9:29:22 AM

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Hello:

I have not read the water strategy in it's entirety. However, as a local Environmental Public Health Official, I strongly recommend that the proposed Statewide Sanitary Code listed under Goal 2 include a robust "point of sale" inspection program.

A "point of sale" program will enable local Environmental Health Divisions within Public Health Departments to identify all existing on-site wastewater systems that are failing, or improperly functioning, at the time of a real estate transaction. This will significantly reduce contaminant additions to the surface waters and ground waters of the State. This ordinance should also address water supply construction inspections at the time of a real estate transaction. Improperly constructed and maintained water supply wells can contribute significant risk to the groundwater resource. Local Public Health officials should be involved in drafting this language.

Currently, the majority of local health departments do not possess the legal framework to conduct these inspections and are limited to permitting activities as voluntarily requested by property owners.

Another benefit would be to mandate 100% final inspection on newly permitted water supply wells to ensure that they are properly located and constructed... This will provide additional protections to the groundwater resource.

And as always....Adequate funding for Public health will ensure continued protection of our ground water and surface water resources.



Patrick L. Jacuzzo, MS, REHS  
Director of Environmental Health  
Marquette County Health Department  
184 US 41 East  
Negaunee, MI 49866  
(906) 475-4195  
(906) 475-6500 Fax  
[www.mqthealth.org](http://www.mqthealth.org)

**From:** [Barbara Spring](#)  
**To:** [mi-waterstrategy](#)  
**Subject:** Lets keep the Great Lakes water in the watershed  
**Date:** Sunday, July 19, 2015 5:02:38 PM

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Water bottling companies should not be allowed to ship Great Lakes water out of the watershed bottle by bottle.

It is time to phase out nuclear power plants in the Great Lakes watershed and on their shores.

Oil pipelines under the Great Lakes should be closed and no new ones built.

Barbara Spring, author of *The Dynamic Great Lakes*.  
<http://bjspring.wordpress.com>  
<http://barbara-spring.blogspot.com>  
<http://spring4it.blogspot.com/>

**From:** Tom Rayburn  
**To:** mi-waterstrategy  
**Cc:** James H. I. Weakley; Glen Nekvasil  
**Subject:** Comments on the 4 June 2015 "Sustaining Michigan's Water Heritage" Strategy Document  
**Date:** Tuesday, July 21, 2015 3:53:25 PM  
**Attachments:** Sustaining Michigan-Lake Carriers Association Review-21 July 2015.docx

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Ms. Finnell,

Please find attached the comments from the Lake Carriers' Association's (LCA's) review of the 4 June 2015 draft "Sustaining Michigan's Water Heritage, a Strategy for the Next Generation". We greatly appreciate the opportunity to review and comment on this important document. Overall, we found it well written, comprehensive, detailed, thoughtfully presented, and implementable. LCA did have some comments related to commercial shipping, the supporting infrastructure, investment priorities, and related discussions on policy.

If you have any questions or require further clarification on our comments, please contact us at your convenience.

Regards,

Thomas Rayburn  
Director of Environmental and Regulatory Affairs  
Lake Carriers' Association  
440.333.9994 (office)  


Lake Carriers' Association  
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Suite 720  
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## Sustaining Michigan's Water Heritage, A Strategy for the Next Generation

DRAFT

4 June 2015

Lake Carriers' Association Review

21 July 2015

Lake Carriers' Association (LCA) appreciates the opportunity to review and comment on the document, "Sustaining Michigan's Water Heritage." Overall, the document is well written, comprehensive, detailed, thoughtfully presented, and implementable. LCA does have specific comments as they relate to commercial shipping, the supporting infrastructure, investment priorities, and related discussions on policy. They are as follows:

1. Page 7, Create Vibrant Waterfronts, Goal 3, "Michigan communities use water as a strategic asset for community and economic development." Key recommendation, "Support investments in commercial harbors and ports and address long-term maritime infrastructure needs."

*LCA fully supports commercial harbor and port investments as a key component in the economic vitality of the State of Michigan and local communities. Maintaining existing harbors keeps products flowing such as iron ore to Detroit and coal to Monroe with significant reductions in transportation costs over other modes of transportation, minimizes the environmental impacts, and alleviates major impacts to the state's aging roads and bridges. Improving harbors such as Escanaba, including deepening its channels, increases its economic efficiency and viability for growth. Our only caution is that development must always recognize that commercial vessels can only navigate in waters free of obstructions, so docks, floating finger piers, and the like must not interfere with waterborne commerce.*

2. Pages 14 and 15, last paragraph, reference to riparian erosion and sedimentation problems due to, among others, the lack of riparian buffers and deforestation.

*LCA believes that upstream riparian management of soils is an essential tool not only to the quantitative reduction of sediments downstream impacting commercial and recreational navigation interests, but also in the environmental quality of the sediment that if managed properly can reduce and eventually eliminate the need for the costly option for storage of dredged materials in confined disposal facilities, and open the door to more environmentally sound beneficial uses of the dredged material.*

3. Page 15, second paragraph, "Taking a broad approach starting upstream and working downstream to the mouth of the river can have comprehensive impacts on aquatic ecosystems, international shipping, and river recreation."

*Initiatives that begin as high up in the watershed as possible and continue downstream focusing on minimizing stream bank erosion due to anthropogenic modifications to the watershed and that seek to restore to the greatest extent possible the environmental integrity of ecosystems are paramount to healthy streams, rivers, harbors, and lakes. This approach not only facilitates environmental healing, but also minimizes downstream degradation where pollutants concentrate when sediments drop out of suspension. It reduces overall sediment loads, thus decreasing the frequency of dredging of waterways and harbors and the very costly construction, with a large local partner financial cost share, of new confined disposal facilities. Also, the positive impacts are not just limited to "international shipping" but to all shipping, foreign and domestic, on the Great Lakes.*

4. Page 27, first paragraph, "Michigan's waterfronts supported industries such as shipbuilding, power production, lumber yards, tanneries and chemical production . . . As industries abandoned the waterfront . . ."

*In our opinion, it was not a question of industries "abandoning" the waterfront, it was that many were driven out of business by unfair trade. Still, many remain as integral drivers of local economies. A 2011 study by Michigan Sea Grant showed that the Great Lakes shipping industry is a key factor in directly supporting over 525,000 Michigan jobs, including those in manufacturing, construction, power production, and mining. It should be stressed that vibrant waterfronts can and do include commercial ports and operations such as in Detroit, Sault Ste. Marie, and Marquette.*

5. Page 28, Create Sustainable Commercial Ports and Harbors, last sentence, "However, the maintenance of channels, ports and harbors is only partially the responsibility of the state and federal government and therefore needs to be incorporated into the business models of maritime companies."

*It is in fact the responsibility of the United States Army Corps of Engineers (the Corps) to provide safe, reliable, efficient, and environmentally sustainable waterborne transportation systems (channels, harbors, and waterways) for movement of commerce, national security needs, and recreation in federally authorized projects. What is lacking is the dedication of sufficient funds by the Corps to Great Lakes ports' dredging and maintenance. The Harbor Maintenance Tax (HMT) is a federal tax already imposed on shippers based on the value of the goods being shipped through ports. The tax is placed in the Harbor Maintenance Trust Fund (HMTF) which is used for projects such as maintenance dredging of federal navigational channels. HMT revenues are about \$1.6 billion per year with expenditures from the HMTF averaging only \$850-900 million per year. Currently the HMTF has nearly \$10 billion in unexpended funds. In the Great Lakes, there is a \$220 million backlog in dredging. The real issue is to get the funds already paid by the shippers to the outstanding projects in the harbors and waterways of the Great Lakes. The Water Resources Reform and Development Act (WRRDA) of 2014 directs the federal government to incrementally increase expenditures from the HMTF until they reach 100 percent of receipts by 2025.*

6. Page 29, last section, Recommendation, "Prioritize investments around strategic economic assets of commercial harbors and long-term sustainable infrastructure."

*LCA wholeheartedly supports this recommendation as it promotes asset stewardship, a balance of the economic gains with the environmental benefits of waterborne transportation, and a compatibility with the regional approach of the Great Lakes Navigation System (GLNS).*

7. Page 42, first paragraph, first sentence, "The state's infrastructure – roads, commercial ports, drinking water systems, sewer systems, energy plants, transmission systems and recreational facilities – form the backbone of the economy."

*In addition to "commercial ports" and the rest of the list should be added "waterways" as these include the connecting channels of the St. Marys, St. Clair, and Detroit rivers as vital components of the State of Michigan's infrastructure, for instance.*

8. Page 64, Goal 3, Number 3, Recommendation, "Prioritize investments around strategic economic assets of commercial harbors and long-term, sustainable infrastructure." Implementation Metric, "By 2020, increase the percentage of commercial traffic and other economic activity at Michigan's commercial ports over a baseline established in 2015." Lead Actor, "MDOT, MDNR, MDEQ's Office of the Great Lakes, Governor's Office of Public-Private Partnerships, commercial maritime interests, local planning professionals."

*LCA agrees wholeheartedly with the recommendation, but believes the implementation metric should define the baseline by some quantitative measure such as tonnage. The lead actor list should also include industry as they are responsible for the products brought into and shipped from each port and how the cargo is moved (i.e., water, rail, or road).*

9. Page 71, Goal 4, Number 3, "Invest in innovative and technological advancements to lower the cost and frequency of dredging."

*"Best practices" and "proven technology and methods" should be added. For instance, in Cleveland, Ohio, the port authority has installed on a trial basis bed-load interceptors upstream of the navigation channel. The port is intending to sell the captured material, mostly sands and larger grained silts, for beneficial reuse in construction and composting. In Green Bay, Wisconsin, the port authority has worked with the Corps to rebuild the Cat Islands, which will take significant amounts of dredged material through the next 30-50 years and will also minimize the movement of sediment in the outer harbor, minimizing dredging in the channel. For the lead actor, the state and local communities should be added because the Corps dredging mission does not mandate anything*

*beyond traditional removal from the navigation channel. Also add the Technical Committee of the Great Lakes Dredging Team (GLDT). Michigan is represented on the GLDT by the Michigan Department of Transportation and Michigan Department of Environmental Quality.*

10. Page 72, Goal 5, Recommendation 6, fourth bullet, "Researching treatment technologies to prevent introduction and spread of invasive species by ballast water."

*Ballast water treatment technologies are currently mandated and regulated by the International Maritime Organization, United States Coast Guard, and United States Environmental Protection Agency. The commercial maritime industry has established best management practices that since 2006 have halted the introduction of new aquatic invasive species into the Great Lakes. Spreading of invasive species throughout the GLNS by the domestic fleet, which is mostly confined upstream of the Welland Canal, has not been shown in this time period. Prevention efforts are extremely important at the state and local level and should focus on recreational boaters, fishers, and the other 62 vectors of introduction and spread identified by the U.S. Geological Survey.*

11. Page 148, fourth paragraph, Inland Lakes and Streams.

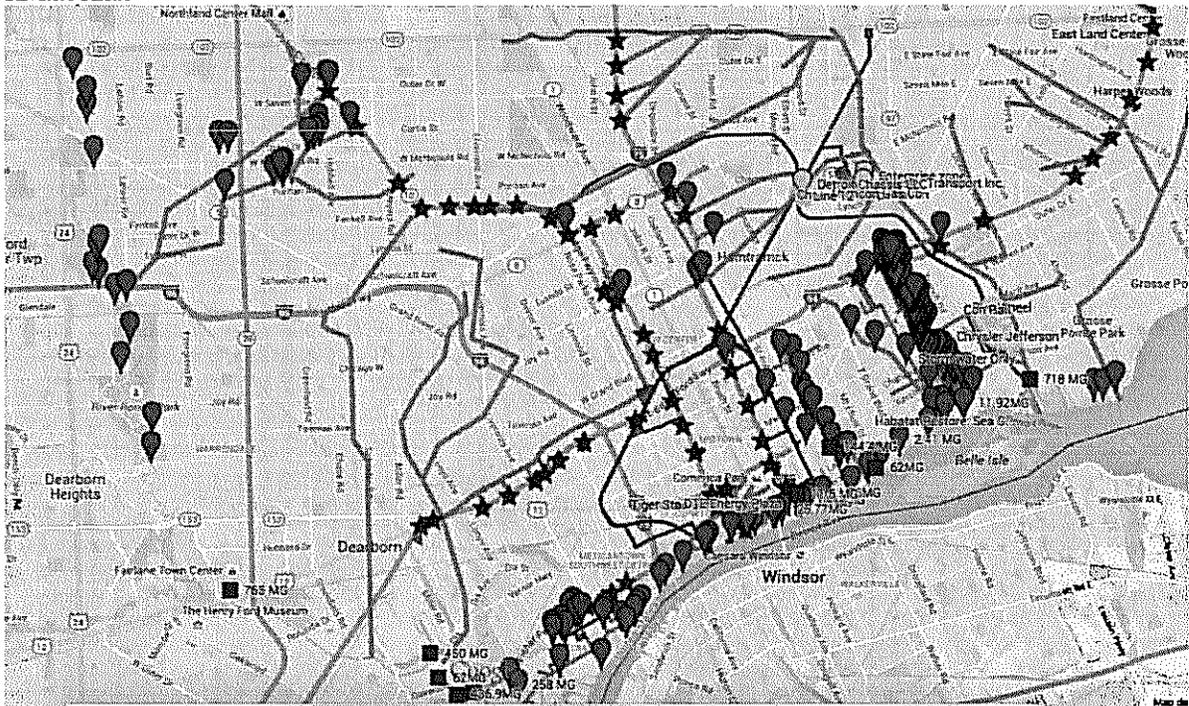
*Please include in the definition, for clarification, that Part 301 includes "the St. Marys, St. Clair, and Detroit rivers. Inland lake or stream does not include the Great Lakes, Lake St. Clair, or a lake or pond that has a surface area of less than 5 acres."*

From: [Shade\\_Sol](mailto:Shade_Sol)  
To: [mlv@dmwmi.com](mailto:mlv@dmwmi.com)  
Cc: [info@detroitmunicipality.com](mailto:info@detroitmunicipality.com); [Office of Councilman Scott Benson](mailto:Office of Councilman Scott Benson); [steve@dmwmi.com](mailto:steve@dmwmi.com); [ron@dmwmi.com](mailto:ron@dmwmi.com); [Schultz\\_James@MDOT](mailto:Schultz_James@MDOT)  
Subject: Recharge Urban Streams in Detroit / Flood Plan  
Date: Monday, July 27, 2015 3:54:50 PM  
Attachments: [Screen Shot 2015-07-27 at 3:29:31 PM.png](#)

Office of the Great Lakes  
Fred A. and Barbara M. Erb Family Foundation.

Do you remember the storm last year August 11, 2014? The one that closed our freeways for three days. With your help and community support and Federal Transportation funding I have found, we can in time make that not happen again. I have put together a plan for the city of Detroit that will take all of the freeway stormwater and remove it from the DWSD sewerage treatment grid. The stormwater would be managed in place. I have had a meeting with MDOT to develop a test of my concept for demonstration on the I94 rebuild project. If the concept is proven it could be eligible for federal funding. I will be at the

Salvatore Stabile



Stormwater Recharge Systems.  
Together we can protect our waters  
100 Riverfront Dr. Suite 2501  
Detroit, MI 48226

**From:** [Barbara Stevenson](#)  
**To:** [mi-waterstrategy](#)  
**Subject:** Water afford ability plan  
**Date:** Thursday, July 30, 2015 12:18:47 AM

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Detroit and other cities such as Flint have conducted water shut offs that jeopardize the lives of citizens! There are many people whose incomes are less than \$10,000 a year and these people are disabled or elderly and they will not see an increase in their income . There is a well thought out Water Affordability plan that can offer alternatives to those low income consumers . In addition the city of Philadelphia is in the process of adopting such a plan . We urge the State of Michigan to respect peoples right to water to survive, and to adjust this plan for the future to address the needs of all citizens to have clean water! Barbara Stevenson , Detroit 48214

Sent from my iPhone

**From:** Arthur  
**To:** mi-waterstrategy  
**Subject:** Water for all  
**Date:** Thursday, July 30, 2015 2:45:56 PM

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Please make sure your water plan includes provisions for Water For ALL regardless of income level!

Thank you,

Arthur Liebhaber  
Royal Oak, MI

**From:** [John](#)  
**To:** [mi-waterstrategy](#)  
**Cc:** [Wayne Kiefer](#); [Fred Levantrosser](#)  
**Subject:** Comments on Draft Sustaining Mi water  
**Date:** Friday, July 31, 2015 10:21:42 AM

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I am John W Smith, who along with Wayne Kiefer, we are writing a book entitled Michigan 21st Century Geography, and are well under way on the water and transportation chapters.

I attended the Detroit public hearing in late July, 2015 and herewith are my comments on the well-written and well-researched draft.

Page 21 Abandoned wells estimated at two million must be seen in the context of other abandonments, such as whole ghost towns, mines, collector natural gas lines and unlicensed garbage pits. Together they constitute a category that needs state legislation on their registration and systematic remediation. This turns out to be one of the themes of our volume.

Page 29 Port infrastructure is a major category in water management> It also should include underwater transfer points from land under water and back to land. In addition to the well-publicized Mackinac Enbridge pipeline, there is a major pipeline transfer in East China Township under the St Clair River that is best viewed not on a state-sponsored map, but on the Michcon Michigan Gas Transmission map, 2003 edition. In addition, there are more miles of water pipeline than oil; and gas combined, notable the under-construction Flint and Saginaw County supply line with an inlet separate from the Detroit Water and Sewer system.

Page 72 Item 6. The chemical industry led by Dow and the pharma industry collectively should be permitted or mandated to identify their products that are toxic or health hazards if concentrated beyond parts per million or billion and such data supplied to DEQ or DNR as a precondition for all state tax incentives and loans. As you know a majority of all patented chemicals in the United States have not had their toxicity tested prior to commercial manufacture or distribution nationally.

Pages 15 and 59 discuss dams. I place more importance on these infrastructure projects than the authors of this report because they constitute one of the major non permitted land use categories in the state and a majority have never been reviewed for engineering safety nor and criteria of need. Their listing should be made part of the public record and not kept as a state secret as a threat to public safety by potential terrorists. A complete review of unknown owners ought to be a priority and all such orphans be scheduled for decommissioning. Also, the dam creates backflows that are euphemistically called lakes, many located on property not owned by the constructor of the dam. In some Michigan counties they consist of a majority of all lakes. This needs systematic review.

Page 42 Chapter 6 needs to have dams listed as infrastructure.

Pages 33 and 64. My major suggested modification relates to the concept as we would use it in Political Science of access. As a matter of justice or right, all citizens of Michigan ought to have a fundamental right to access of water for purposes of personal use, that is to say consumption, and for recreation. The key term is access. The Detroit City water cut-offs for nonpayment of bills denies many citizens to water, which like air, cannot be made a commodity. It is not a matter of affordability but of access pe4 se.

Page 44. Water Infrastructure included pipelines carrying water. There are so many more miles of pipes carrying water than oil and gas that geographers have missed the basic fact that of the five major modes of transportation, pipes carrying water measured by weight, not volume, are not the least of the big five!

Page 66. The major issue with calculating the impact of water end users is that in Michigan we have no metric for irrigation consumption. California does in so far as it is transported by surface and not from wells. This report fudges on the percentage of water use by farmers because we have no idea within a magnitude of what it might be, dry or wet years. The variability by season, crop, climatic condition, and leakage all must be calibrated.

Finally, generally, I wish to end with the wise advice given me by a Jordanian Bedouin, who observed that the major consumption of water in that Middle Eastern nation was the sand, through leakage. Welding pipe without flux with a low flame is not conducive to sustainable water consumption. It is a matter of better trained plumbers, or addressing the Michigan case, of conducting vigilant inspections of pipe connectors that would most improve our water stewardship.

Thank you for producing a well-reasoned document. You are to be commended for seeing the big picture, internationally, by watershed, and over time. John W Smith

[Redacted signature block]

**From:** [Mark Cornwell](#)  
**To:** [mi-waterstrategy](#)  
**Subject:** Public comment "Protecting Michigan Water Heritage...." report/strategy  
**Date:** Sunday, August 02, 2015 2:37:18 PM  
**Attachments:** [Draft Review Comments Water report REVISED.072715.docx](#)  
[FY2015 County Garage salt Usage \(1\).pdf](#)  
[r-wd-15-7 nh NON POINT.pdf](#)

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Hello,

I mailed a paper copy of my comments for the draft last week but thought I would send my comments and supporting docs via email as well.

They are attached.

Thank you for this opportunity and for bringing this important effort forward.

Sincerely yours,

--

Mark Cornwell  
Sustainable Salting Solutions, LLC  
12415 North Holly Road  
Holly, Michigan 48442

Phone: 248/895-2888 (mobile)  
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LinkedIn--Mark Cornwell

"Helping Winter Maintenance Professionals Achieve the Balance between; Public Safety, Budgets, and Infrastructure and Environmental Protection"

Public Comment

**"Sustaining Michigan Water Heritage, A Strategy for the Next Generation"** draft, dated June 4, 2015

Submitted by;  
Mark Cornwell  
12415 North Holly Road  
Holly, MI 48442

July 22, 2015

I commend our state government agencies and those individuals behind the effort for bringing this very important issue forward to craft a proactive plan to preserve and protect our state's most valuable resource...water.

The report's vision statement, "Michigan's water resources support a healthy environment, healthy citizens, vibrant communities and sustainable economies" articulates the critical, but often overlooked, need to protect this vital resource. As indicated in the report title, it is crucial that we take action now to protect and enhance those water resources, not only for current users, but as responsible stewards for future generations. The action plan outlined in the nine comprehensive goals, defines a set of priorities and details that support the vision statement.

While there are a few other potential water threats that may not be identified in the report, I suggest that another threat exists that has both direct and indirect negative impacts on our water resources, both surface and groundwater. The pollutant is road salt.

As a senior horticulturist at the University of Michigan I had the opportunity to chair a salt use reduction team from 1995 until I left in 2002. Our team had identified multiple problems associated with our existing salting program and were tasked with finding solutions to change these practices. Problems associated with road salt, at that time, were just beginning to surface and there were no clear solutions to strike the balance between public safety, existing budgets, and salt reduction goals that preserved the infrastructure and environment. Through research, extensive visits to other innovators, and our own trial and error efforts, we were ultimately able to obtain a 50% reduction of our ten year average salt use during the winter of 2001/2002.

Sadly, there continues to be enormous annual, and hence cumulative, contributions of road salt that are degrading environmental resources and are clearly implicated in the premature destruction of vital and costly infrastructure. In the winter of 2014/15 agencies responsible for state road maintenance used nearly 500,000 tons of salt on state roads alone. Additional salt used by counties, cities, and other public and private concerns, would increase that total to between 1.5 and 2 million tons per season. These quantities are down from years ago when state roads reached a high of 800,000 tons.

That said, there is still much work that could be done. Could a fifty percent reduction goal be attainable within the 30 year time frame in the report? With some effort and minimal investment, that goal might be achievable by 2020.

In 1991, Michigan State University hosted, perhaps the first of its kind, Road Salt Symposium which brought researchers together from all over the world to discuss the concerns being posed for

increasing road salt use. An outstanding compilation of that symposium was produced by Frank D'Itri. Following up on this problem recognition, in the early 90's, the late State Representative/Senator William Van Regenmortor proposed an environmental safety act that focused on identifying the problems associated with excess salt use and then sought alternative strategies by which both public safety, environmental and infrastructure interests could be served. In an attempt to gain unanimous support in his bill that failed, the approach sought input from multiple stakeholders who would be impacted by the effort. This model became the guide for a salt reduction process we undertook at the University of Michigan back in 1995. Michigan likely would be leading the nation in winter maintenance best practices and also not facing some of the burgeoning costs associated with transportation infrastructure failure had we heeded the advice of the late Senator. Compounding savings in future annual winter maintenance budgets could be redirected for more beneficial community needs.

Today, the knowledge base of problems associated with excess salt use has broadened significantly. Countless research reports have emerged in the last decade, shedding new light on how road salt either directly or indirectly has significant hidden costs, many of which are perhaps incalculable.

As a suggestion for an additional component of this draft report, a comprehensive road salt reduction strategy could be added to serve the vision and the goals identified in this report.

For the sake of rationale, a set of "what ifs" are outlined below:

What if.....

- Increasing Chloride concentrations were associated or connected with aquatic invasive species proliferation, particularly algae?
- Increasing chloride concentrations, particularly in harbors receiving storm water runoff are the breeding ground and area for adaptation for aquatic invasive species?
- Increased salt concentration in both ground and surface water were contributing to the release of higher levels of heavy metals?
- Salts were damaging road side vegetation, impacting both its esthetic value (tourism) and its functional values (protecting soil from erosion, sequestering carbon and other air pollutants, aiding the water cycle, etc.)?
- Sodium levels in drinking water rise in drinking water? How might that affect human health?
- Excessive salt was destroying the natural bio swales and rain garden efforts installed to help clean and control storm water?
- High levels of sodium were impacting the sodium absorption ratio in cation exchange capacity in soils leading to compaction, negative plant impacts, and resulting inability of soils to function as intended?
- Salt contributed to complete lack of vegetation (soil too saline to grow anything) thereby leading to erosion and increased turbidity in streams and lakes?
- Excessive salt in fresh water is impacting the natural turning over process in lakes and smaller water bodies thereby affecting oxygen levels?
- Greater density saline water is accumulating at the bottom of water bodies impacting the entire food chain..bottom up.
- Salt concentration in wetlands and other amphibian breeding areas are so great that they are limiting amphibian populations? If so, how might this affect mosquitoes?
- Salt in ground water is accumulative? At what point might we reach EPA thresholds for both chlorides and sodium? How does this affect drinking water infrastructure?
- We could extend the useful life of our road and bridge investments thereby reducing the impact of construction processes and the need to raise taxes?

- Underground utility and energy conveyance system failures caused by road salt corrosion could be minimized?

These are examples of the potential problems that could be associated with road salting practices.

The men and women responsible for snow removal deserve our utmost respect. Public safety and mobility benefits which results from their efforts are an essential service. Enhanced road salt reduction efforts could actually improve this vital service and could be integrated in to this report. Such an effort could be incorporated into nearly all the nine goals outlined in the report.

As with every effort to create change there is a cost. Those entities responsible for winter maintenance are currently financially challenged and already face stiff regulatory demand. If this effort is to be successful, it will require investment in appropriate staffing levels, training, and new tools and new best practices. On a positive note, investment would quickly be offset as salt reduction goals are achieved. Future savings would continue to expand on many different fronts.

Having immersed myself in the research and field experience over the last 20 years, it has become clear that these goals are achievable. A recent June 2015 New Hampshire Department of Environmental Services published a report (<http://des.nh.gov/organization/commissioner/pip/publications/ard/documents/r-wd-15-7.pdf>) that highlights the nation's first Commercial Salt Applicators Certification program. I had the good fortune of being involved in the initial effort.

I welcome the opportunity to become a part of this process.

If you would like resources and references that support these concerns, they could be made available.

Thanks again for the opportunity to provide input to this important document.

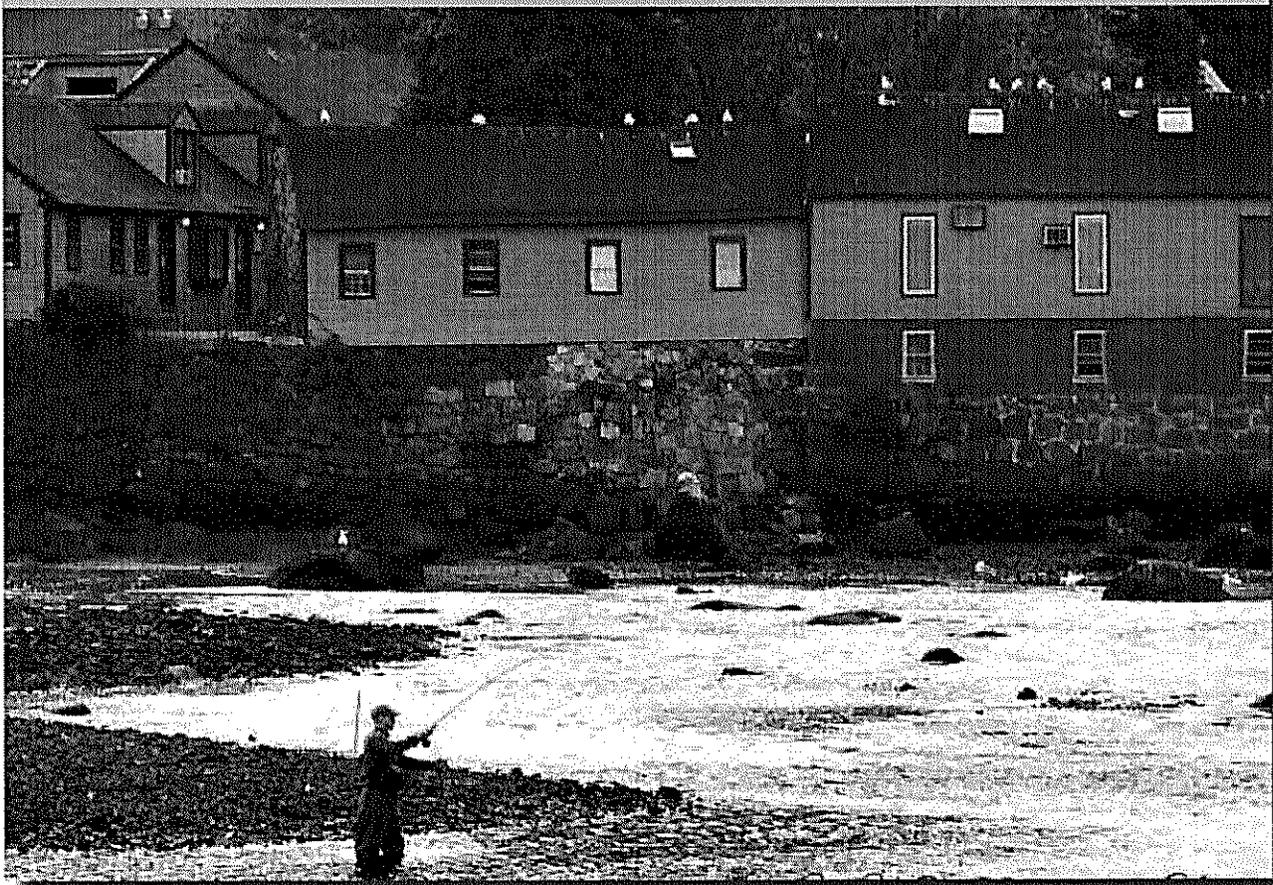
Sincerely yours,

Mark Cornwell  
12415 North Holly Road  
Holly, MI 48442

Holly Township Trustee and Planning Commissioner, Oakland County  
Principal, Sustainable Salting Solutions, LLC

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Phone: 248-634-0820

# Nonpoint Source Management 2014 Annual Report



New Hampshire  
Department of Environmental Services  
June 2015



# Nonpoint Source Management 2014 Annual Report

Prepared by  
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New Hampshire Department of Environmental Services  
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Concord, NH 03302-0095

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Thomas S. Burack  
Commissioner

Eugene J. Forbes, P.E.  
Director, Water Division

June 2015



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# New Hampshire's NPS Program At a Glance - 2014

## Projects Completed in FFY 2014

319 dollars invested: \$507,121

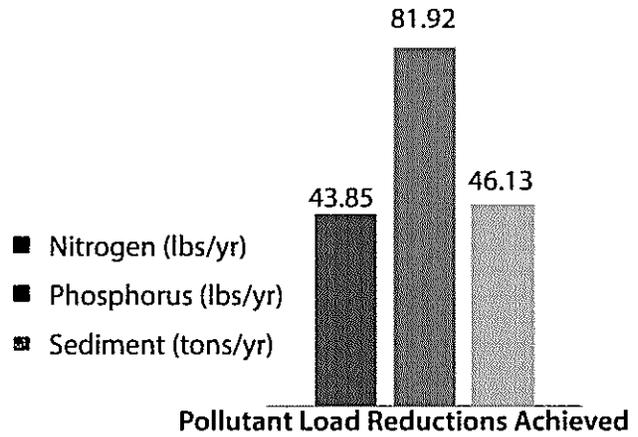
Total cost (including match): \$1,017,025

### Base Projects: 4

- 1 Coastal Watershed
- 2 Merrimack Watershed
- 1 Statewide Initiative

### Restoration Projects: 8

- 5 Coastal Watershed
- 1 Connecticut Watershed
- 2 Merrimack Watershed



## Projects Awarded in FFY 2014

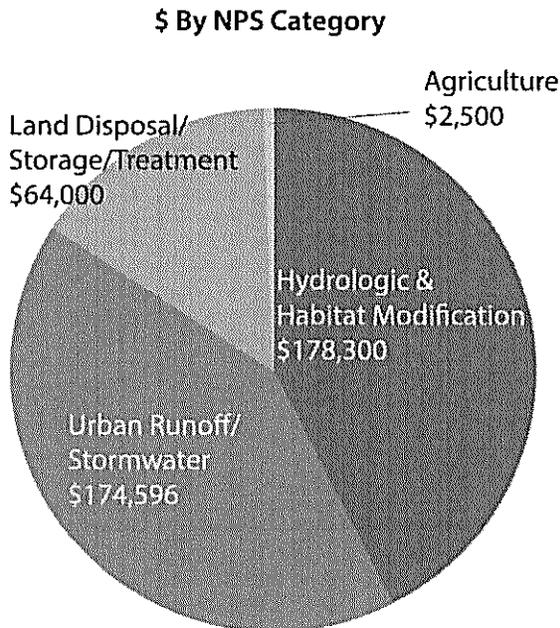
319 dollars awarded: \$419,396

### Program/Planning Projects: 2

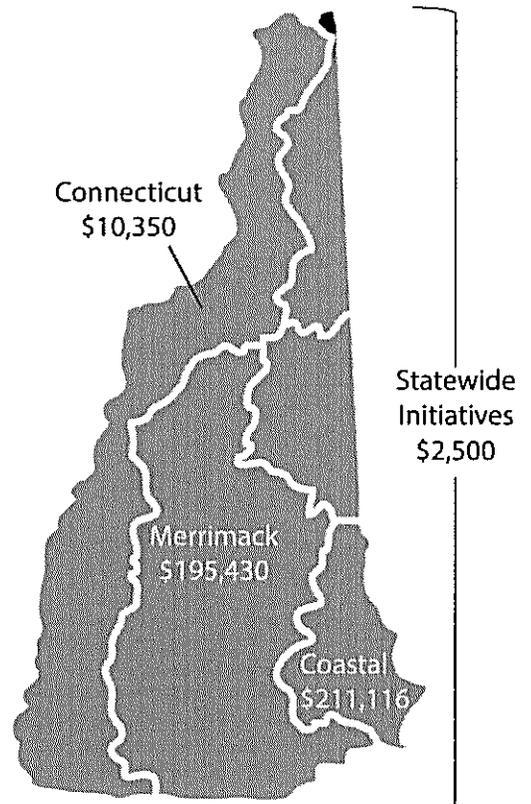
- 1 Merrimack Watershed
- 1 Statewide Initiative

### Implementation Projects: 7

- 4 Coastal Watershed
- 2 Merrimack Watershed
- 1 Connecticut Watershed



### \$ By Watershed



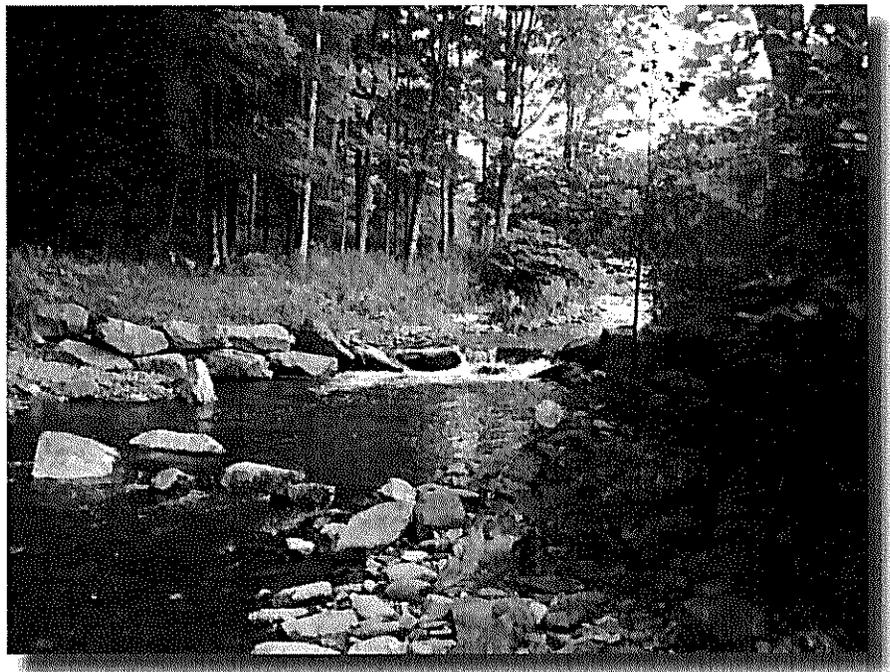
# Introduction

Reflecting in an annual report on a year of work with partners that number in the hundreds is always challenging. In 2014, the New Hampshire Nonpoint Source Program set the bar high, continued the launch of two major new programs, and made real progress addressing stormwater issues, particularly in the Great Bay watershed.

As required by the federal Clean Water Act, this report describes the activities and accomplishments achieved in New Hampshire to protect and restore waterbodies with funding appropriated under Section 319 of the Act during the time period October 1, 2013 thru September 30, 2014 (FFY 2014.) In FFY 2014, the New Hampshire Department of Environmental Services (NHDES) was awarded \$1,150,387 by the U.S. Environmental Protection Agency (EPA), a 2% increase over the prior year. Funding was distributed via our Performance Partnership Grant and a separate categorical grant.

During the year, nine grants totaling \$419,396 were awarded to watershed organizations and municipalities to develop and implement watershed-based plans. These partnerships are integral to the success of the New Hampshire Nonpoint Source Program.

The report also highlights the ten projects that were completed during FFY 2014 with the assistance of Section 319 funds awarded by NHDES to local organizations. Of special note are two projects in the Coastal Watershed: Phase 2 implementation of the Berry Brook Watershed Restoration Plan and Phase 2 implementation of the



*Warren Brook in-stream restoration, Alstead, NH*

Cocheco River Watershed Restoration Plan which demonstrate how urban retrofits can be done almost anywhere in the urbanized seacoast; and, that it is possible to achieve seemingly unreachable goals. In Berry Brook, the effective impervious cover exceeded 30% prior to the project, which is significantly higher than the 10% target, above which aquatic life use support begins to deteriorate. Completed in 2014, the project disconnected more than 21 acres of impervious area, bringing the effective impervious area in the watershed down to 18% and making significant progress toward the 10% goal.

Developing watershed-based plans can be quite costly for watershed organizations and funding for plan development has become more limited under changes to Section 319 guidance in 2013. In spite of this, plans were completed in the Mad River (Farmington), McQuesten Brook, and Rust Pond watersheds. To provide more resources for watershed-based plan development, NHDES made such work a top priority for funding in the Section 604(b) water quality planning grants program RFP issued in 2014. In 2012, this biennial RFP resulted in a soon-to-be-released plan for Pearly Pond in Rindge; and in 2014, 604(b) will fund

two additional plans – one for the Mad River in Campton, and one for Pleasant Lake in Deerfield.

NHDES is pleased to report that in 2014, New Hampshire’s updated Nonpoint Source Management Program Plan was approved by EPA. The Program Plan contains specific milestones over the next five years that cover six major NPS pollutant categories. Progress on these milestones will be reported to EPA as part of our NPS Management Annual Report.

There is a lot to digest in this year’s Annual Report, and much more is behind each and every highlight, particularly the contributions by watershed organizations, municipal officials and our state and federal agency partners. We cannot properly describe our gratitude to all of these people for the work they do on a daily basis, without which the progress described in this report could not have been made.

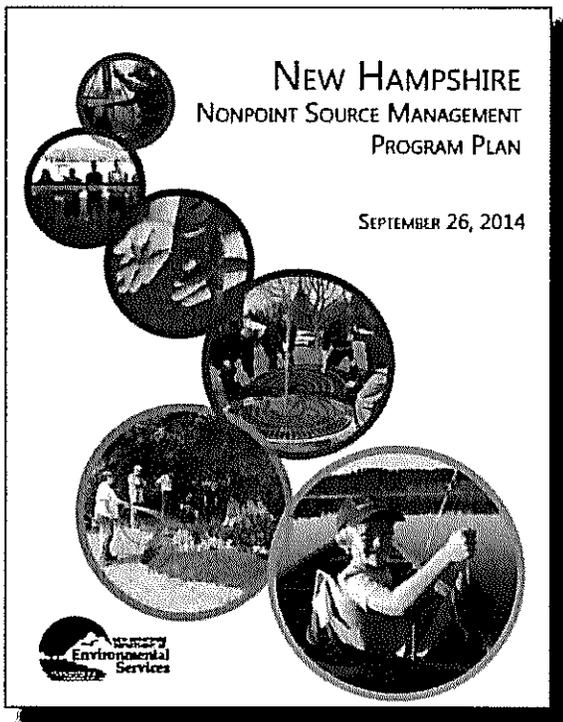
**New Hampshire Nonpoint Source Section 319 Grant Expenditures thru 09/30/14\***

Grant	Award Amount	Project Period	Expenditures	319 Project Obligations
C9-98132411-FY10	\$754,295	3/1/10 – 9/30/15	\$446,972	\$302,041
C9-98132412-FY11	\$752,940	8/22/11 – 9/30/16	\$474,451	\$238,299
C9-98132413-FY12	\$449,356 <sup>1</sup>	7/1/12 – 9/30/17	\$331,563	\$107,031
C9-98132414-FY13	\$531,049	3/1/13 – 9/30/18	\$122,663	\$287,819
C9-98132415-FY14	\$575,194	10/1/13 – 9/30/18	\$ 3,340	\$496,363

<sup>1</sup>Reduction in outside projects in 319 grant was offset by increase in PPG funded projects

\*Source NHDES Ledger System

## Nonpoint Source Management Program Plan Approval



On September 30, 2014, EPA approved the New Hampshire Nonpoint Source Management Program Plan dated September 26, 2014. The updated plan reflects the input of over 450 stakeholders and serves as the Program’s road map for communication, outreach, planning and implementation projects during years 2015 through 2019. The Program Plan establishes a schedule to complete specific, short-term objectives with measureable milestones that help in attaining long-term goals for protecting and restoring New Hampshire’s waters and watersheds from NPS pollution. Progress on implementing these objectives will be reported annually.

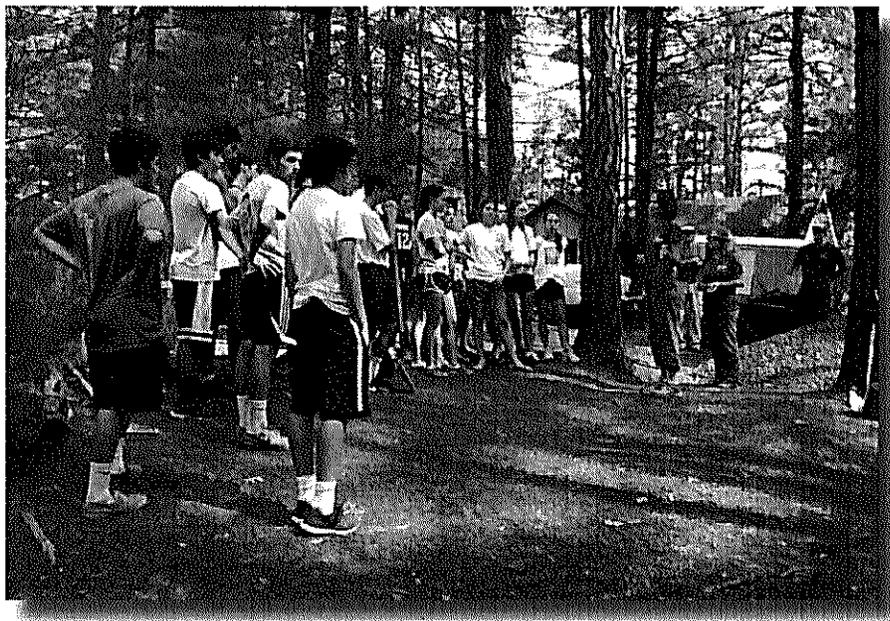
New Hampshire’s 2014 Nonpoint Source Management Program Plan can be viewed on the NHDES website at <http://des.nh.gov/organization/divisions/water/wmb/was/nps-plan.htm>.

## Soak Up the Rain

The Soak Up the Rain (SOAK) program completed a successful field season in 2014. True to its name, the program and its partners literally soaked up nearly 115,000 gallons of stormwater, preventing an estimated 11,000 pounds of sediment, 3 pounds of phosphorus, and 6 pounds of nitrogen from washing into the state's lakes, streams and coastal waters.

The SOAK program partnered with the Great Bay Stewards, Silver Lake Land Trust, Green Mountain Conservation Group, Massabesic Audubon and the Towns of Washington and Hampton to complete five projects, including the installation of water bars, infiltration trenches, dry wells and rain gardens. In addition, dozens of site visits were conducted in the Great Bay watershed and around the Silver Lake shoreline in Harrisville and Nelson to determine candidate sites for future projects.

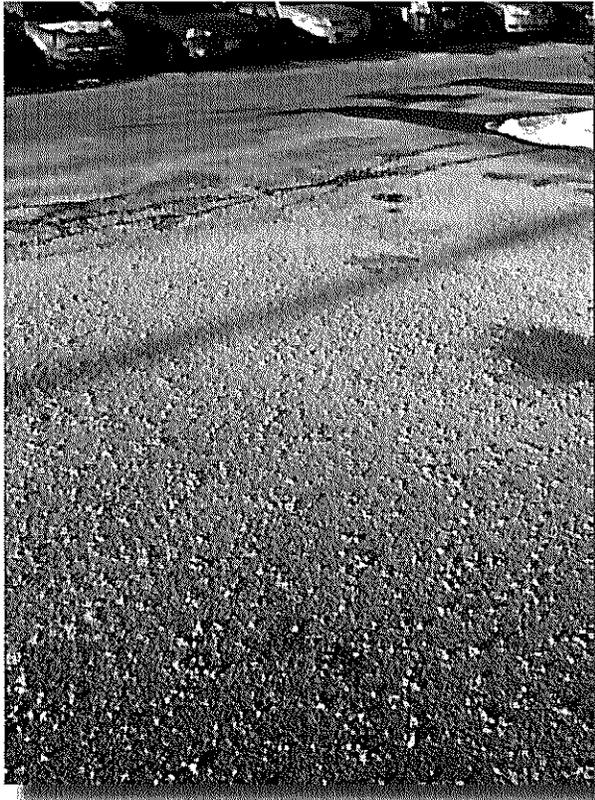
In the spring, the SOAK program website and Soak NH Facebook page were launched. The website serves as a central location for program information and resources. As projects are completed, the website is updated with stories and photos. A rain barrel on the home page fills up as projects are installed and begin to soak up stormwater. A map shows the locations of installations. Since the launch in May, the website has had over 1,000 users and over 8,300 page views.



*Campers at Camp Robin Hood on Lake Ossipee receive instructions from Jillian McCarthy and Lisa Loosigian, SOAK program staff before beginning installation of water bars and infiltration steps to address erosion problems.*

In the summer, NHDES was awarded a Project of Special Merit grant from the National Oceanic and Atmospheric Administration (NOAA) to enhance the SOAK program in New Hampshire's coastal zone communities. The grant includes working with the Great Bay Stewards to develop a sustainability plan for their local program to help build organizational capacity, evaluate program barriers and successes, and develop strategies to solicit future program participation, partners and funding. The plan can serve as a resource for other communities and organizations considering starting a Soak Up the Rain program. The grant also includes working with UNH Cooperative Extension to develop a Soak Up the Rain training program for professional landscapers to learn how to incorporate water quality practices, such as rain garden and dry wells, into their landscaping services.

## New Hampshire Launches First-in-the-Nation Commercial Salt Applicator Certification Program



*DES hopes to reduce excess salt application, as in the photo above, through the "Green SnowPro" training and the Certified Applicator program.*

The need for NHDES to look more closely at commercial contributions to road salt from winter parking lot applications at stores, businesses and schools arose from four impaired watersheds in the southern part of the state, along the Interstate 93 corridor, where salt reduction in the range of 25% to 45% is needed to meet water quality standards. Road salt, or sodium chloride, is toxic to aquatic life in fresh water when concentrations average 230 mg/l over a four-day period or 860 mg/l over a one-hour period. After a detailed study, NHDES found that as much as 50% of salt loading in impaired urban watersheds comes from commercial parking lots and driveways.

It is also known that chloride impairments are not limited to the I-93 corridor. Currently, there are 47 documented chloride impairments in New Hampshire. Since there is not sufficient chloride data to determine the impairment status of all waters, NHDES performed a statistical analysis of impaired watersheds to determine thresholds above which waters are likely to be impaired. Based on the analysis, a salt loading rate of 200 tons/square mile/year will likely cause violations of water quality standards at some time during the year. Analysis of land cover data showed that this threshold was likely to be met in watersheds where greater than 15% of the land cover is impervious. From this, it can be inferred that there are chloride impairments in New Hampshire

that have not yet been documented with water quality data, and that these impairments are most likely in the southeastern portion of the state which is more highly urbanized. In less urbanized areas, chloride impairments are more likely to be found in the watersheds of smaller streams with limited dilution capacity and a high proportion of roads, driveways and parking lots.

Working with the New Hampshire Department of Transportation (NHDOT), EPA, and the Federal Highway Administration, the NHDES Nonpoint Source Program established the I-93 Salt Reduction Working Group in 2006. The work group included representatives from the towns of Derry, Londonderry, Salem, and Windham; two regional planning commissions; environmental groups; and private sector salt applicators. One of the first issues raised by both public and private sector winter maintenance professionals was the need to address liability concerns for commercial salt applicators. For many years, municipal public works departments and NHDOT have trained their employees on proper salt application, have adopted winter maintenance policies and been exempt from liability under state law if they follow those policies. However, this same level of protection did not exist for those operators who maintain commercial and institutional parking lots and driveways. Stakeholders felt that commercial applicators were induced to use more salt, rather than less, due to concerns over liability for slip and fall claims. NHDES heard this message and conveyed the details to the Legislature. This resulted in the passage of a commercial salt applicator certification program with limited liability protection for claims arising from winter conditions.

This first law of its kind in the nation became effective for the 2013/2014 winter, during which 230 commercial salt applicators became certified by NHDES. Certification requirements entail completing a full day “Green SnowPro” salt applicator training and passing an exam. The training is provided by the University of New Hampshire Technology Transfer Center. The goal of the training is to teach salt applicators how to maintain safe surfaces while using salt efficiently to avoid excess applications that can run off and pollute nearby water bodies. The course focuses on the chemical properties of salt, application rates and techniques, environmental impacts, and the proper calibration of equipment. Certified applicators are required to keep event-based records of salt use, which are kept for their own benefit in case of damage claims, and must report annually on salt use and pavement treated. Over time, NPS Program staff will use this data to measure the effectiveness of the program. In addition to protecting salt applicators, the new law also provides limited liability protection to property owners who hire certified salt applicators to maintain their parking lots. To date, 384 salt applicators have been certified through Green SnowPro.

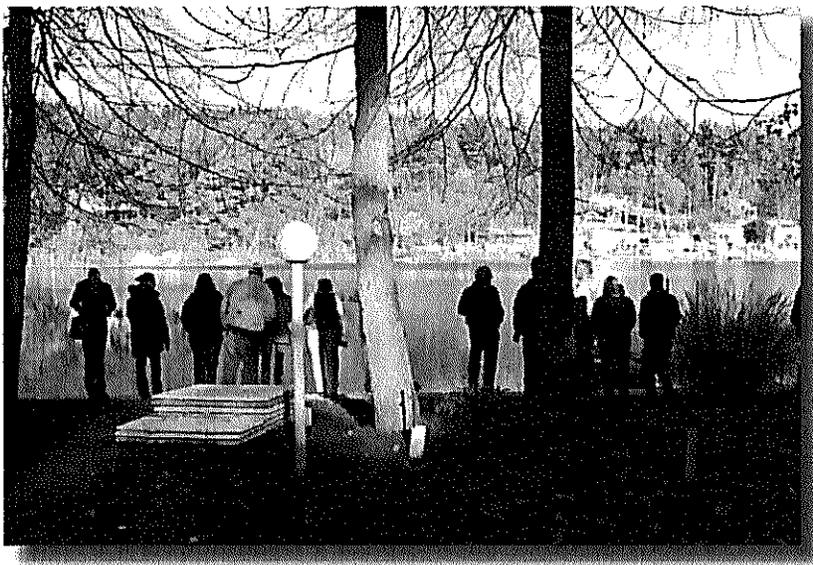
In addition, the NHDES NPS Program Identified Chlorides and Road Maintenance as a distinct chapter in the 2014 Nonpoint Source Management Program Plan. This chapter includes specific milestones associated with the new certification program and the development of watershed based plans in priority watersheds with known chloride impairments.

## Education and Outreach

In 2014, NHDES was involved in numerous efforts with partners to educate others on nonpoint source pollution causes and impacts and to promote the Watershed Assistance Grants program.

### **BMPalooza Tour**

In October, NHDES, and its Nonpoint Source project partners from four different watersheds, hosted representatives from EPA in the biennial BMPalooza Tour. Attendees were provided with an opportunity to inspect installed Best Management Practices (BMPs), discuss future implementation projects and, most importantly, meet our valued project partners who provided tours at the following project sites:



**Cobbetts Pond, Cobbetts Pond Improvement Association** – attendees were provided with an overview of residential scale stormwater BMPs in the Cobbetts Pond watershed. Attendees inspect the Cobbetts Pond shoreline.

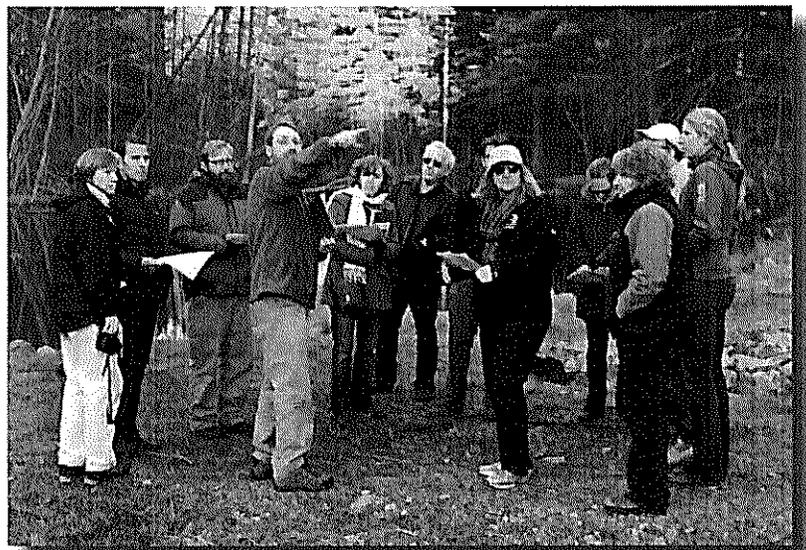
**Furnace Brook Watershed,  
Town of New Ipswich and FB  
Environmental** - attendees were  
shown several BMP installations  
in the Furnace Brook Watershed.  
Whitney Baker from FB Environmental  
describes a BMP that was installed  
along Appleton Road.



**Warren Brook Watershed,  
Town of Alstead, Cold River  
Local Advisory Committee and  
Headwaters Hydrology** – Post-  
flooding restoration work for Warren  
Brook that included a newly created  
floodplain, floodplain culvert and  
creative in-stream restoration features.  
Sean Sweeney from Headwaters  
Hydrology describes the work  
completed along a restored section of  
Warren Brook.



**Holt, Bowers and Harris Ponds,  
Pennichuck Corporation and  
Comprehensive Environmental,  
Inc. (CEI)** – A tour of BMP practices  
that are helping protect the drinking  
water supply for the Nashua area. CEI  
Engineer, Ben Lundsted, points out the  
improvements surrounding the water  
supply ponds on Pennichuck Brook.



In addition to informing state and EPA staff on the details of highlighted projects, this biennial event provided recognition to project partners for all of the significant work they do. The attendees came away from the tour feeling energized, rejuvenated and highly encouraged by the tremendous successes achieved in New Hampshire watersheds through the strong partnerships forged with the Section 319 Watershed Assistance Grants program.

## **Natural Resources Outreach Coalition 2.0**

In 2014, NHDES continued working with the Natural Resource Outreach Coalition (NROC), a collaboration of natural resource and planning professionals which assists coastal communities with protecting natural resources while accommodating growth. NROC's current approach provides tools for adapting to climate change and addressing the Great Bay nitrogen impairment. New efforts included using existing resources to provide hands-on responses to community requests for assistance. NHDES assisted with the general coordination of NROC efforts as well as provided assistance with special programs. This included the development of and presentation at a workshop for Newmarket town staff, boards and residents. NHDES presented on what it means to be a new MS4 municipality and how to prepare for the new permit requirements. NHDES and UNH Cooperative Extension staff also provided assistance to the Newington Conservation Commission to help them develop a proposal to apply for future Section 319 funding to reduce nitrogen impacts to Great Bay from septic systems.

## **MS4 Stormwater Coalitions**

NHDES supported the MS4 Regional Stormwater Coalitions in Manchester, Nashua, and the Seacoast regions as they prepared for the release of the new MS4 permit. Scheduled meetings in all three regions provided an excellent opportunity to convey valuable stormwater and Section 319 grant-related information to a broad municipal audience. NHDES addressed numerous topics including the state revolving loan and grant funds, draft Nonpoint Source Management Plan, Soak up the Rain program, Green SnowPro program and voluntary salt application certification, Coastal Resilience Technical Assistance Grant, and the new law regarding nitrogen and phosphorus content in fertilizer.

In addition to providing information at the regional meetings, NHDES piloted a confirmation water quality monitoring approach for impaired waters in the town of Goffstown. The Volunteer Lake Assessment Program (VLAP) then provided instructions, recommendations and hands-on training in Goffstown, Derry, Amherst, Plaistow and Bedford. NHDES plans to conduct annual confirmation monitoring throughout the state, rotating through the HUC 12s over the next ten years.



*NHDES staff instructs Goffstown employees and interns on how to use water quality monitoring equipment*

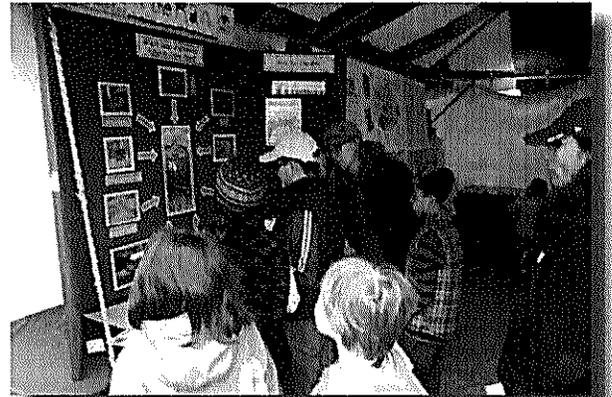
## General Events, Project Assistance, and Outreach Efforts

In addition to the above activities, DES provided general outreach assistance to grantees and participated in several events to educate the public on nonpoint source pollution and to promote Watershed Assistance Grants. These included:

- Speaking at the 2014 NH Water and Watershed Conference: Sustainability of New Hampshire's Water Resources, Plymouth State University;
- Providing a display at Discover Wild NH Day sponsored by NH Fish and Game;
- Hands-on activity with the Enviroscope watershed model at the Drinking Water Festival, Manchester Water Works, Milford Conservation Commission, and the Newmarket schools;
- Presentation on "Working with Government on Natural Resource Protection" and facilitating "The Watershed Game" at UNH Cooperative Extension and Great Bay Community College;
- Promoting the Soak up the Rain program at Science Café, Portsmouth Brewery; and
- Giving an hour long interview on Portsmouth Community Radio explaining how DES addresses stormwater through outreach and education.



*UNH Cooperative Extension and NHDES facilitate the Watershed Game with Natural Resource Stewards class.*



*DES staff, Lisa Loosigian, describes the concept of stormwater runoff to children at Discover Wild NH day.*

## 604(b) Water Quality Planning

The biennial RFP for Clean Water Act Section 604(b) projects was revamped in 2012 to better align with the Clean Water Act language, which requires funds to be allocated to regional planning entities for water quality planning activities including:

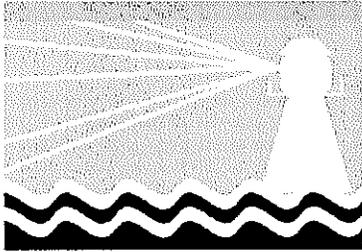
1. Identifying the most cost effective and locally acceptable facility and nonpoint source measures to meet and maintain water quality standards;
2. Developing an implementation plan to obtain State and local financial and regulatory commitments to implement water quality plans;
3. Determining the nature, extent and causes of water quality problems in the state; and
4. Determining those publicly owned treatment works which should be constructed, taking into account the relative degree of effluent reduction attained and the consideration of alternatives to such construction.

With the change in Section 319 guidelines limiting funding available for the development of watershed-based plans, NHDES prioritized number 2 above to better align our programs and support the development of watershed-based plans.

The biennial RFP for Clean Water Act Section 604(b) water quality planning projects was released in 2014. Two of the five projects selected will result in the development of watershed-based plans, while the other three funded projects will further water quality planning in the Great Bay watershed. See table below for a list of the specific projects and funding amounts.

**Clean Water Act Section 604(b) water quality planning projects**

<b>Organization</b>	<b>Project Name</b>	<b>604(b) Funding Amount</b>
Southern NH Planning Commission	Pleasant Lake Watershed Restoration Plan	\$50,000
Rockingham Planning Commission	Regional Stormwater Tracking and Accounting Tool for Municipal AOC and MS4 Programs	\$12,000
North Country Council	Mad River Fluvial Geomorphic Assessment and Restoration Plan	\$30,000
Rockingham Planning Commission	Implementation of WQ Improvement Tasks in the Lamprey and Piscassic River Watersheds	\$7,500
Strafford Regional Planning Commission	Septic System Database for Durham	\$43,183
Total FY14 and FY15		\$141,883



## Highlights and Overview of Completed Projects

Coastal Watershed

Berry Brook  
Watershed  
Restoration, Phase  
2 - Low Impact  
Development  
retrofits in an Urban  
Environment

City of Dover

2007/2008/2010/  
2011 Restoration

Grant Amount:  
\$172,315

Local Match:  
\$235,440

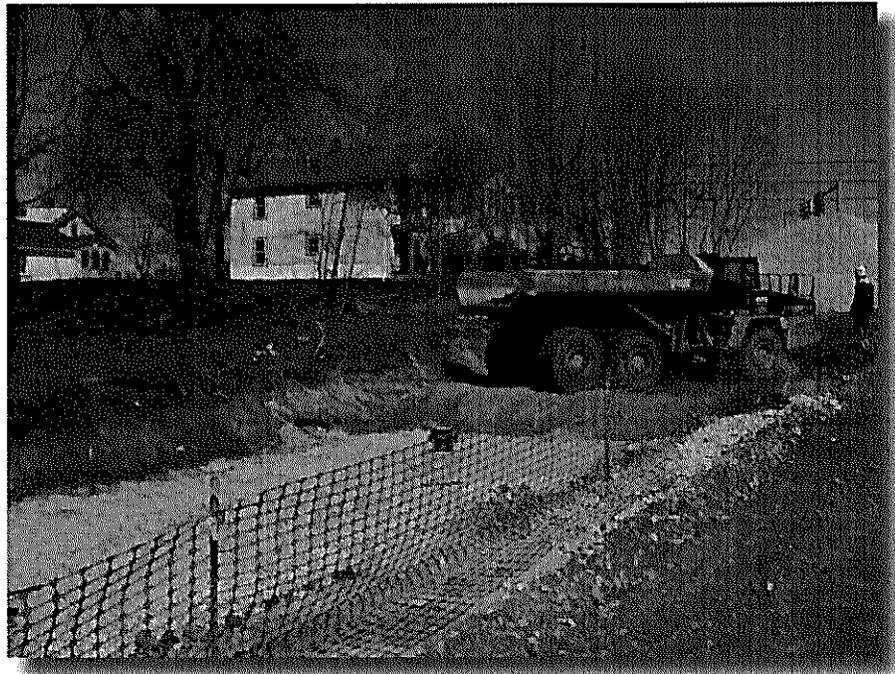
Sediment Reduction:  
6.82 tons/yr

Phosphorus  
Reduction:  
49.7 lbs/yr

Nitrogen Reduction:  
332.5 lbs/yr

### Berry Brook Watershed Restoration, Phase 2 - Low Impact Development Retrofits in an Urban Environment

**Project Background:** For many years, Berry Brook, a tributary to the Cocheco River, located in the City of Dover, was neglected. Historically, portions of its headwaters were piped underground and in its lower reaches, stormwater runoff resulted in flooding and habitat loss. Committed to addressing these problems, the City of Dover completed the Berry Brook Watershed Management Plan in 2008. Restoration goals include stream continuity and habitat improvements, treatment of stormwater runoff to remove pollutants, and reduction of stormwater volume discharged to the brook. This project is the second phase of a multi-year effort to implement the Berry Brook Watershed Management Plan. Previously, in Phase 1, five stormwater BMP installations were implemented, leading to a reduction in 0.5 acres of impervious cover (IC). In addition to the City, project partners include the Cocheco River Watershed Coalition (CRWC), UNH Stormwater Center, NH Fish and Game and American Rivers.



*Construction crews build a gravel wetland to treat nine acres of impervious cover in the Berry Brook headwaters.*

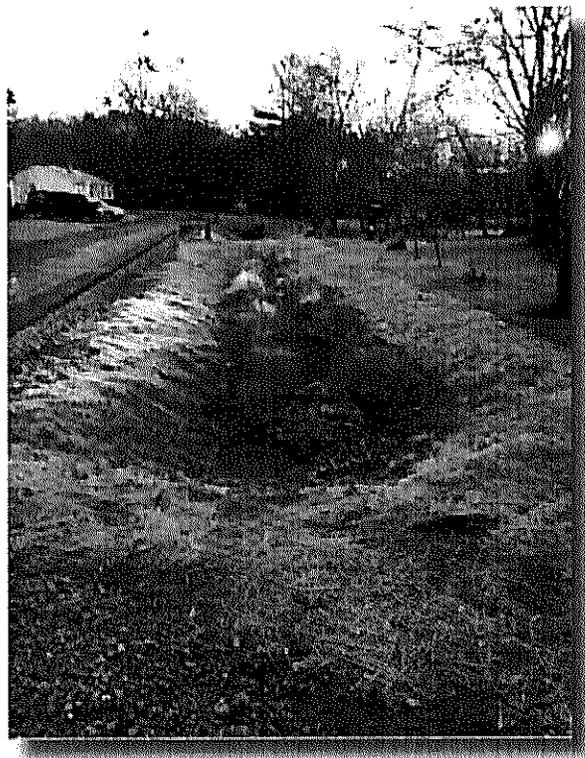
**Problem:** The Berry Brook watershed is nearly built-out with 29.7% impervious cover. Berry Brook is listed on the state's 303(d) List as impaired for Aquatic Life Use and Primary Contact Recreation as a result of urbanization and stormwater runoff.

**Project Objectives:** In setting a restoration goal and measuring progress on the plan, the IC approach is being applied. Under this approach, IC disconnection goals are used as a surrogate for specific pollutant load-reduction targets. Disconnection of IC refers to the practice of directing runoff from IC such that it does not flow directly into the stormwater system, but instead is diverted to stormwater treatment practices where the runoff is filtered and infiltrated into the native soils. This management approach will decrease pollutant loads and stormwater volumes being discharged to the brook. The goal under the Berry Brook Watershed Management Plan is to reduce the overall IC to 10% or 18.6 acres. To achieve this, approximately 66% or 36.6 acres of the existing IC needs to be disconnected.

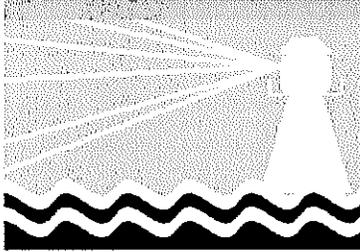
For Phase 2, project objectives included construction of Low Impact Development (LID) stormwater management strategies at several locations spanning almost the entire upper watershed. In addition to calculation of disconnected IC, verification of success will include pre- and post-BMP installation water quality monitoring for load reduction.

**Project Outcomes:** Seven BMPs were constructed: five bioretention or bioswale systems, a subsurface gravel wetland, and a swale connecting to a surface wetland detention area. Combined, these installations effectively resulted in an IC reduction of 21.4 acres and reduced annual pollutant loading of sediment by 6.82 tons, phosphorous by 49.7 pounds and total nitrogen by 332.5 pounds. The project also involved significant outreach through volunteer planting days, brook cleanups, school programs and working with the Department of Public Works staff to illustrate the importance of LID in controlling water quality and quantity. Additionally, with funding from the NH Aquatic Resource Mitigation Fund, over one thousand feet of Berry Brook's headwaters were day-lighted, with stream flows released to a constructed, natural design stream channel.

**Next Steps:** The overall watershed IC is now 33.2 acres (17.8%). In order to reach the 10% IC goal, it is estimated that a further reduction of 14.7 acres is needed. Phase 3 of the project is currently underway with Section 319 FFY 2013 funds. It is anticipated that following the completion of Phase 3, the IC reduction target will be met and Berry Brook will be able to meet water quality standards, resulting in another Section 319 Nonpoint Source Success Story.



*This bioretention unit uses natural processes to filter pollutants and infiltrate stormwater from road runoff.*



## Cocheco River Watershed Restoration, Phase 2 - Rochester LID

**Project Background:** The Cocheco River - Willow Brook restoration work conducted through this project emerged from goals set in the 2006 Cocheco River Watershed Restoration & Implementation Plan that include:

Coastal Watershed

Cocheco River  
Watershed  
Restoration, Phase  
2 - Rochester LID

Cocheco River  
Watershed Coalition

2011 Restoration

Grant Amount:  
\$51,500

Local Match:  
\$35,240

Sediment Reduction:  
0.07 tons/year

Phosphorus  
Reduction:  
0.6 pounds/year

Nitrogen Reduction:  
5.3 pounds/year

- Restore Willow Brook to its natural stream functions;
- Reduce volume of stormwater discharge;
- Improve treatment of stormwater discharge to remove pollutants;
- Promote Low Impact Development (LID); and
- Education and assistance to encourage civic engagement to meet these goals.

Restoration of the impaired brook to meet New Hampshire water quality standards is the long-term goal for the Cocheco River - Willow Brook initiative. This was the second phase in a multi-phase project to achieve the goal. For this phase of the project, the Cocheco River Watershed Coalition (CRWC) partnered with the City of Rochester Department of Public Works (DPW) and the University of New Hampshire Stormwater Center (UNHSC) to identify and implement stormwater solutions to attain project goals.

**Problem:** The Cocheco River, part of the Piscataqua watershed, flows from northwest to southeast, diagonally across the City of Rochester. Willow Brook drains approximately one third of Rochester's land area and joins the Cocheco River downstream of the city. The 2,515 acre watershed of Willow Brook is densely developed with pockets of undeveloped wetland.

Rochester grew dramatically during the nineteenth century when manufacturing and textile mills lined the Cocheco River. As a result of an increasing population, densely developed residential neighborhoods grew around the mills. Along with the development, drainage systems were installed to carry away stormwater. The older systems used the "pipe it straight into the stream" approach, carrying with it polluted runoff. Since that time, the public has learned about the adverse impacts of stormwater runoff and Rochester city officials have realized that there are better ways to approach stormwater management that will reduce runoff and improve water quality.

Willow Brook is on the New Hampshire State 303(d) list as impaired for Aquatic Life Use (low dissolved oxygen) and Primary and Secondary Contact Recreation (bacteria). Its direct receiving water, the Cocheco River, is impaired for Aquatic Life Use and Primary Contact Recreation. Sources are listed as unknown, but are likely to be nonpoint source pollutants from stormwater runoff as a result of being a highly impervious urban watershed.

**Project Objectives:** The main project objectives include stormwater management through construction of innovative practices, public education, and progress toward city-wide adoption of LID stormwater management.

This project uses the IC method to address water quality impairments. The IC method uses impervious cover reduction as a surrogate for pollutant load reductions. The IC method is helpful in addressing stormwater impact in impaired streams where no specific pollutant can be identified as the cause of the impairment. The Willow Brook watershed encompasses 2,515 acres of mixed land use including residential, commercial and institutional. Impervious surfaces cover approximately 16% of the watershed or 402 acres. The overall restoration goal for Willow Brook is to reduce the watershed IC to 10% or 252 acres. To reach this goal, a reduction of 150 acres of IC is needed.

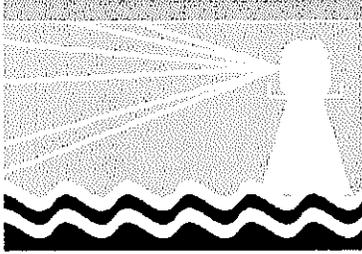


*Lori Chase (on left), CRWC, and volunteers install plantings for the Congress Street bioretention area.*

**Project Outcomes:** The results of this project built on successes achieved during Phase 1. The following three LID stormwater best management practices were installed on residential, municipal and institutional properties. Construction design and oversight was provided by the UNHSC.

- **Residential:** In order to demonstrate stormwater management in an urban residential setting, two bioretention systems were installed to treat runoff at a duplex residence on a small lot built by Southeast NH Habitat for Humanity, two city blocks from Willow Brook. The UNHSC developed the plans and provided construction oversight. The new homeowners chose the plantings and volunteers helped build and plant the BMPs.
- **Municipal:** The City DPW retrofitted an old municipal parking lot located two hundred yards from the Cocheco River at the intersection of Charles, Congress and Portland Streets to drain into a bioretention system. The site is highly visible as this broad intersection borders an urban residential neighborhood and the central business district.
- **Institutional:** An additional opportunity arose to demonstrate LID in an institutional setting. Two 550-gallon cisterns were installed at the Monarch School of New England, a private school for significantly disabled children, on Eastern Avenue that had recently installed other BMPs to protect Willow Brook. The school provided new rain gutters and diverters. Existing gardens, greenhouse and drip irrigation connect readily to the systems.

Education events were held, including a residential rain garden workshop at a local garden center and a presentation of the Piscataqua Region Estuaries Project, 2013 State of Our Estuaries report. To encourage commitment to ongoing and future implementation of LID BMPs, the project partners prepared and distributed an attractive LID technical memo. The purpose and opportunities of the stormwater initiative were presented in a 4-page graphic brochure with clear understandable language for residents at all levels of community decision-making. There have been many individual tours of the site by key community members, the crowning of which being local resident and U.S Congresswoman, Carol Shea Porter. This project resulted in the disconnection of an additional 0.30 acres of IC, bringing the total to date to 1.1 acres, with 148.9 acres remaining.



## Exeter River - Evaluating the Impacts of Dam Removal for the Great Dam

Coastal Watershed

Exeter River -  
Evaluating the  
Impacts of Dam  
Removal for the  
Great Dam

Town of Exeter

2008/2010  
Restoration

Grant Amount:  
\$69,500

Local Match:  
\$82,956

**Project Background:** The lower Exeter River from the Great Dam and upstream 7.5 miles has been listed on the state's 303(d) list since 2006 as impaired for Aquatic Life Use due to low dissolved oxygen levels. A previous Section 319 project, 2009 Exeter River Geomorphic Assessment and Watershed-Based Plan, identified the Great Dam as a potential contributor to water quality impairments upstream of the dam. A recommendation was made to evaluate dam removal as a way to improve water quality as well as fish passage. In addition to concerns related to the water quality impairment, the Great Dam does not meet state dam safety standards. As a result of these issues, the Town of Exeter, which owns and operates the dam, received this grant, along with funding from the Gulf of Maine Council on the Marine Environment through NOAA, to evaluate the impacts of dam removal and alternative actions.

**Problem:** The Lower Exeter River is impaired for Aquatic Life Use due to low dissolved oxygen and dam safety issues.

**Project Objectives:** To evaluate the potential impacts of dam removal, and other alternatives, to water quality, safety, fish passage, historic resources, recreation, sediment transport, adjacent infrastructure and other related issues.

**Project Outcomes:** This project included significant public participation from many local stakeholders including municipal officials, local volunteers, representatives from state and federal agencies, consulting engineers and natural resource professionals, local businesses, and residents. The project resulted in the creation of the Exeter River Great Dam Removal Feasibility and Impact Study (Feasibility Study). In addition to complete dam removal, the Feasibility Study looked at eight alternatives. The results demonstrated that full dam removal would result in improved flushing rates and lower residence times in the river which would likely improve dissolved oxygen levels upstream of the dam. The study also found that removal of the dam would benefit migratory fish populations by allowing unimpeded passage of fish going upstream to spawn. The town of Exeter will take the results of this study and work with the project partners to develop and implement a process for making a decision about the dam's future.



*Great Dam in Exeter.*

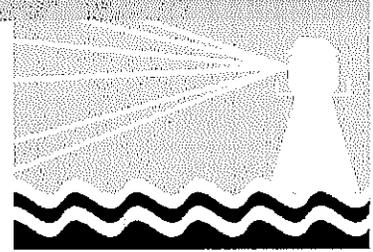
## Mad River Restoration, Phase I - Implementation of Preliminary Assessment and Conceptual Restoration Plan

**Project Background:** A 2009 evaluation by the Cocheco River Watershed Coalition and Headwaters Hydrology titled "Preliminary Assessment and Conceptual River Restoration Plans for the Mad River between NH Route 11 and Tappan Street" (the Assessment) documented that the Mad River at this location is experiencing severe geomorphic instability due to hydromodification. This instability in the river corridor is resulting in mass bank failures, high powered erosive river flows, property damage and destruction of aquatic habitat. According to the assessment, the river has experienced direct and indirect human impacts including channel dredging and straightening, removal of riparian vegetation, construction of riverbank revetments, flow constrictions and impediments to aquatic organism passage (the last two issues are the result of an abandoned water main across the river). The Town of Farmington is partnering with the Cocheco River Watershed Coalition and local landowners to address issues identified in the assessment. This project implements the first phase, Design and Permitting, of the assessment's recommendations. Another Section 319 grant funded project to complete Phase 2 construction is underway.



*Bank erosion at the Mad River Restoration Site in the vicinity of  
St. Peter Church, Farmington*

**Problem:** The project site is located just west of the Tappan Street Bridge in the vicinity of St. Peter Church where there is significant erosion along 250 feet of riverbank. The erosion causes sediment loading to the river during high flows and bank loss at the site threatens safety and private property.



Coastal Watershed

Mad River  
Restoration, Phase  
I - Implementation  
of Preliminary  
Assessment  
and Conceptual  
Restoration Plan

Town of Farmington

2012/2013  
Restoration

Grant Amount:  
\$22,280

Local Match: \$0  
\*total required match  
will be obtained  
from over-match  
of other projects

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Stormwater runoff from the church parking lot exacerbates the bank erosion as it flows unmanaged over the paved surfaces and down the unstable embankment.

Additionally, aquatic organism passage and river flow are compromised at this site as a result of an abandoned municipal water main. The water main is exposed on the riverbed and is encased in concrete. The pipe and concrete control the riverbed elevation and have created an artificial pool with backwater extending about 150 feet upstream during low flow conditions. The low flow water level drops approximately 22 inches from the pool above the water main to a scour pool immediately below the water main. The height of this drop likely prevents the passage of most Eastern Brook Trout, especially the smaller size classes. Further, backwater created by the water main may be contributing to bedload deposition along the right bank above the crossing where a gravel point bar has formed.

**Project Objectives:** The goal of the project is to restore and stabilize approximately 250 feet of severely eroding river bank and remove a fish passage and river flow barrier from the river (an abandoned water main). Two phases are planned: This project implements Phase 1 - design and permitting. Phase 2 will implement restoration construction at the site including stabilization of the riverbank at St. Peter Church, stormwater management for the church parking lot, and removal of the abandoned water main.

**Project Outcomes:** The project outcomes for Phase 1 have been met which include the development of construction ready designs, approval of NHDES Wetlands permit, landowner permissions and selection of a consulting and engineer team of Headwaters Hydrology, LLC and Pathways Consulting, LLC.

## Middle Exeter River Watershed Management Plan Implementation, Phase I - Rowell Road West

**Project Background:** The Brentwood Conservation Commission and the Rockingham County Conservation District teamed up to partner on a water quality improvement project along the Exeter River. This project targeted two site specific restoration actions that were identified in the Exeter River Geomorphic Assessment and Watershed-Based Plan: Middle Exeter River (2010) to address stormwater runoff.

**Problem:** Rowell Road-West runs along the Exeter River. The unpaved, public road had become over-widened due to road management practices, recreational access, and public parking patterns. Impacts to the river from the road and unmanaged foot traffic to the river, included bank erosion and damage, sediment inputs from erosion and concentrated stormwater runoff at opposite ends of the unpaved road.

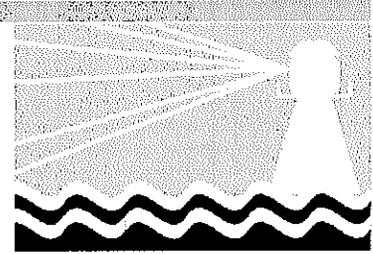
**Project Objectives:** The main goal of this project was to reduce sediment loads to the river, thereby improving the aquatic habitat and water quality for this reach of the Exeter River that is popular with anglers and other recreationalists.

To achieve this goal, the project focused on the following objectives:

- Reduce stormwater runoff from the road;
- Prevent riverbank erosion by providing focused river access;
- Stabilize severely eroding riverbank; and
- Conduct outreach to landowners.



*Volunteers install 300 plantings to stabilize 75 feet of the eroding riverbank.*



Coastal Watershed

Middle Exeter  
River Watershed  
Management Plan  
Implementat, Phase  
I - Rowell Road West

Town of Brentwood

2008/2009/2010  
Restoration

Grant Amount:  
\$49,152

Local Match:  
\$48,481

Phosphorus  
Reduction:  
11.2 pounds/year

Nitrogen Reduction:  
45.62 pounds/year

Sediment Reduction:  
8.67 tons/year

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**Project Outcomes:** With labor from the Brentwood Department of Public Works as well as volunteers, the following accomplishments were achieved:

- Installation of vegetated treatment swales, a stormwater treatment wetland and improved stormwater collection including two catch basins;
- Installation of a grassed filter strip and buffer plantings along approximately 700 feet of the shoulder of Rowell Road;
- Repairs and stabilization to damaged portions of the riverbank;
- Repairs to culverts;
- Construction of a canoe launch with infiltration stairs for foot traffic; and
- Distribution of approximately 1,500 educational brochures. The brochures, titled Help Our River: Save Our Bay, provided practical measures for residents to reduce nutrient loads in stormwater runoff.

The town was also able to secure a conservation easement under a separate grant to ensure connectivity of the riparian buffer as well as to protect the project improvements.

## Hodgson Brook Watershed Restoration, Phase 2 - Pease Tradeport Retrofit Survey and BMPs

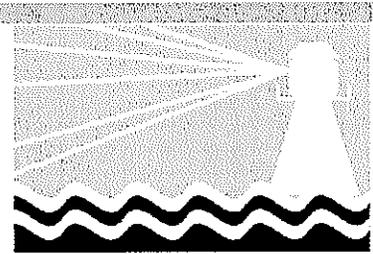
**Project Background:** This project is the second phase of implementation for a multi-year restoration approach to reduce impervious cover (IC) in the Hodgson Brook watershed. Because of the highly urbanized nature of the watershed and the number of impairments, IC reduction is being used as a surrogate for individual pollutant load reduction goals. During Phase 1, IC was delineated and quantified and an IC reduction goal was set at ten percent for the lower portion of the watershed. It is anticipated that once the IC goal is met, the brook will meet water quality standards. IC reduction in the Upper Hodgson Brook watershed will be looked at in future phases of the project.

Phase 2 builds on highly successful first round implementation efforts where local partnerships were established and multiple BMPs were installed to disconnect IC in the Coakley Road area. For this project, IC reduction efforts targeted the Pannaway Manor section of the lower watershed. Additionally, because the brook is also impaired for chloride, efforts were made to identify and implement local approaches for achieving chloride reductions.

**Problem:** Hodgson Brook is a seven-mile stream that flows through the heart of Portsmouth. Impervious surfaces cover 32% of the total watershed area. Stormwater flows across these surfaces, picking up sediment and pollutants, which then discharge directly into Hodgson Brook. This has led to high levels of pollutants and sediments and increased streamflows in the



*Volunteers install a residential rain garden to treat roof and driveway runoff in the Pannaway Manor neighborhood in Portsmouth*



Coastal Watershed

Hodgson Brook  
Watershed  
Restoration,  
Phase 2 - Pease  
Tradeport Retrofit  
Survey and BMPs

Blue Ocean  
Society for Marine  
Conservation

2009/2010  
Restoration

Grant Amount:  
\$104,574

Local Match:  
\$87,826

Phosphorus  
Reduction:  
3.44 pounds/year

Nitrogen Reduction:  
28.85 pounds/year

Sediment Reduction:  
1.7 tons/year

brook. As a result, the brook was listed on the NHDES 2008 305(b)/303(d) Surface Water Quality Assessment as failing to meet the Aquatic Life Designated Use (benthic macroinvertebrates and dissolved oxygen), Secondary Contact Recreation (pathogens—E.coli) and chloride.

**Project Objectives:** The main project objective is to manage stormwater and reduce effective IC by promoting understanding and capacity building and implementing best management practices to reduce stormwater flows and contaminated runoff to Hodgson Brook.

<b>Impervious Cover (IC) Target (acres)</b>	
Hodgson Brook - Lower Watershed	649.9
Impervious Cover Beginning	183.4
10% IC Target	65.0
Total IC to be Reduced	118.4

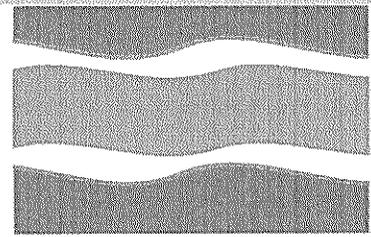
**Project Outcomes:**

- Installation of three bioretention units to treat road and parking lot runoff. Provided training in residential rain garden design and construction. Installed five residential rain gardens in the Pannaway Manor neighborhood and distributed 74 rain barrels. As a result of these activities, IC was reduced by 2.09 acres;
- Trained over 35 winter maintenance professionals in salt application BMP methods through the Green SnoPro program;
- Conducted outreach through radio interviews, newspaper articles and press events;
- Held eight Hodgson Brook Advisory Board meetings to develop strategies for future projects;
- Held two trash day cleanups in and around the brook;
- Developed a stormwater flow approach to promote better understanding of existing stormwater management and identified locations for future BMP installations;
- Continued Volunteer River Assessment Monitoring to measure in-stream conditions;
- Used tracking spreadsheet to quantify IC and pollutant load reductions; and
- Communicated project results to stakeholders including the City of Portsmouth, Pease Development Authority and University of New Hampshire.

## Lower Warren Brook Restoration, Phase 2 - Design, Permitting, and Bidding

**Project Background:** On October 9, 2005, heavy rain caused water and mobile debris carried within Warren Brook to build up behind culverts under Route 123 until it washed away Cooper Hill Road, sending a destructive wall of water downstream into Alstead and the Cold River. Seven people died in the flooding and several homes and other buildings were swept into the raging waters. The emergency repairs and stabilization of Warren Brook in 2006 under the NRCS Emergency Watershed Protection Program only included the reshaping of the channel and lining the banks with riprap. The stabilization work completed by NRCS did not reduce the degree of channel incision, nor did it reconnect Warren Brook with its floodplains as recommended in the 2007 Restoration Master Plan for the Cold River, Warren Brook, and Bowers Brook (Restoration Plan.) In 2010, an approximately 900-foot section of Warren Brook was restored using natural channel design techniques recommended in the Restoration Plan. Phase 2 is to continue with restoration efforts in the watershed.

**Problem:** The Lower Warren Brook project reach has experienced significant bank erosion, channel incision, and a nearly complete disconnection from floodplain habitat, resulting in significant threats to property, stream quality and the biota that exist within the brook. Warren Brook fails to support the Aquatic Life Designated Use due to hydromodification changes that occurred as a result of the 2005 flooding and the emergency repair methods that were constructed. Another negative impact to Warren Brook, resulting from the catastrophic flooding in 2005, was the rapid incision and straightening of the channel that effectively shortened the



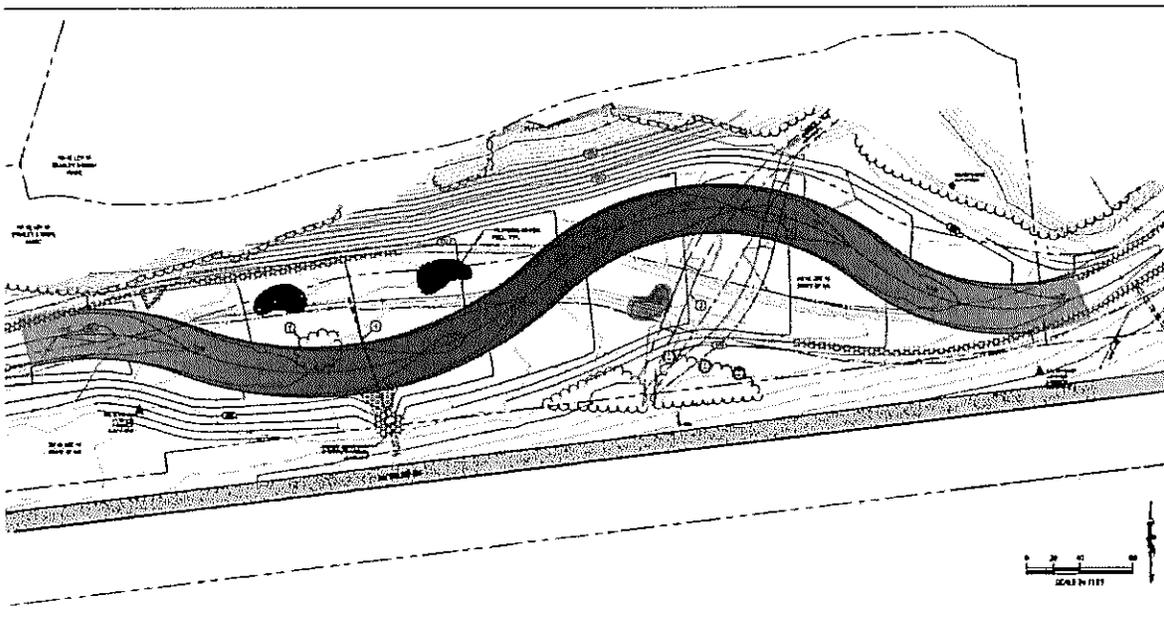
Connecticut River  
Watershed

Lower Warren Brook  
Restoration, Phase 2  
- Design, Permitting,  
and Bidding

Town of Alstead  
2008 Restoration

Grant Amount:  
\$20,000 (original  
award \$87,400)

Local Match:  
\$20,970



*Lower Warren Brook Restoration Project Design illustrating the former, straightened channel overlaid with the proposed, longer, and more meandering stream channel (blue) with floodplain and vernal pools (green).*

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length of Warren Brook and increased its slope. This has caused the channel of Warren Brook to carry more sediment, trigger bank erosion from what were once stable and well vegetated stream banks, and has eliminated the ability of the brook to deposit sediment upon its floodplains due to the lack of meanders or bends.

**Project Objectives:** The ultimate goal in implementing the Restoration Plan is to restore form and function to Warren Brook with access to floodplain. The continuing erosion, channel widening and encroachment through private properties threatens safety and the structural integrity of adjacent businesses and homes. The objectives and associated tasks for this project entailed design and permitting (data review, landowner coordination, wetland delineation, hydraulic modeling and construction design), bidding, construction, oversight and reporting for the Lower Warren Brook reach identified in the Restoration Plan.

**Project Outcomes:** After approval of this project in 2012, a significant rainfall event occurred in June of the following year. Approximately six inches of rain fell in five hours which resulted in flash flooding and damage to the previously restored section of the brook. The flooding in 2013 triggered channel incision and floodplain scour and revealed a buried concrete structure (old dam) within the project area that the Restoration Plan had not taken into account. The discovery of this structure resulted in elevated construction bids that were beyond the available budget secured by project partners. As a result, this project needed to be redesigned to incorporate removal of the buried dam remnants.

Headwaters Hydrology, professional land and water resources consultant, was selected by the Town of Alstead to manage the project. The tasks of existing data review, landowner coordination, wetland delineation, field survey, base map creation, hydraulic modeling, final designs and construction plan preparations, permitting, bidding and drafting of contract documents have all been completed to date. Permission letters from the two private land owners within the project area have also been secured and the New Hampshire legislature passed Senate Bill 57 in the 2013 session which specifically approves the project on the state-owned properties in the project area.

Although this project was closed, prior to completion, the \$20,000 expended under this phase funded all of the project tasks, except for actual construction. The unspent balance will be applied toward a future Section 319 grant that will restore long-term stability and high quality aquatic and riparian habitats by realigning 810 linear feet of the brook to a meandering channel, constructing terraces bordering the brook, installing rock and wood in-stream structures, removing riprap and planting willow and dogwood live stakes. The floodplain habitat will also be diversified through the creation of vernal pools where the former channel existed. Project partners expect that within five to ten years after construction has been completed, visitors to this restored reach of Warren Brook will not be able to distinguish this restored reach from an undisturbed stream habitat in New Hampshire. The NHDES Watershed Assistance Section looks forward to the construction phase of this project and our continued partnership with the Town of Alstead, the Local River Advisory Committee and Headwaters Hydrology.

## Lake Winnepesaukee Watershed Management Plan Phase I - Center Harbor

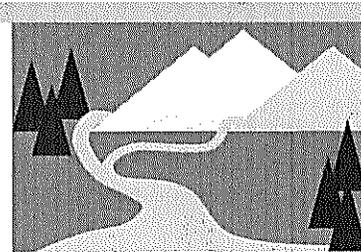
**Project Background:** The completion of a watershed management plan for the Center Harbor Bay subwatershed is an essential next step in the process of creating a public, web-based watershed management plan for Lake Winnepesaukee. Following the completion of the subwatershed management plan for Meredith, Paugus and Saunders Bays in the fall of 2010, Center Harbor was the next subwatershed targeted for development of a watershed management plan.

**Problem:** Center Harbor shares the declining trend in water quality as a result of in-lake phosphorus concentrations, similar to those in all of Lake Winnepesaukee, that have increased from a summer median value of 4.9 ppb to 6.0 ppb over the last 25 years. Specific nonpoint source pollutants of concern in the Center Harbor Bay subwatershed are associated with stormwater runoff and the sediments and nutrients transported with it. Sources for these pollutants have been identified by local officials and watershed stakeholders as local and state roads, commercial and residential properties, application of fertilizers, sand and salt during the winter months, and aging septic systems along First Neck and NH Route 25.

**Project Objectives:** As with all Watershed Assistance Grant projects, it takes a dedicated, organized and consistent grant recipient and/or

project team to develop and implement a watershed-based plan. At the time of entering into this agreement, the Lakes Region Planning Commission had committed to the project schedule and secured a commitment from the Lake Winnepesaukee Watershed Association for the technical support required for watershed modeling, water quality goal setting and assimilative capacity determinations. The following ten objectives, and 31 associated tasks, were committed to as part of this grant project:

1. Site Specific Project Plan development and approval;
2. Tier 2 high quality water criteria attainment determination for Center



Merrimack River  
Watershed

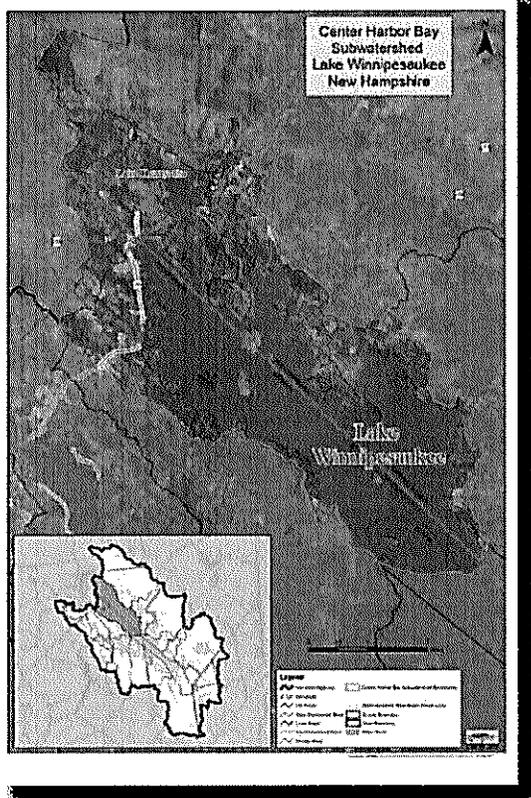
Lake Winnepesaukee  
Watershed  
Management  
Plan Phase I -  
Center Harbor

Lakes Region  
Planning  
Commission

2010 Restoration  
2011 PPG Base

Grant Amount:  
\$55,000  
(project incomplete  
- \$15,300 spent)

Local Match:  
\$18,891



Map of Center Harbor subwatershed.

Harbor;

3. Establish water quality goal for phosphorus within Center Harbor;
4. Identify current and future pollution sources;
5. Estimate pollution reductions needed to maintain the water quality goal under projected future build-out;
6. Determine actions needed to reduce pollution source loads in order to maintain the water quality goal;
7. Post Center Harbor Watershed Management Plan at [www.winnepesaukeegateway.org](http://www.winnepesaukeegateway.org);
8. Provide opportunities for participatory involvement for watershed residents as plan is developed;
9. Education and outreach of watershed stakeholders; and
10. Project administration and reporting.

**Project Outcomes:** Unfortunately, just under half of the 31 tasks were completed between 2011 and 2014. Significant and timely progress was made at the outset of the project once the Grant Agreement was approved and the following outcomes were achieved:

1. Approved Site Specific Project Plan;
2. Calculation of the current water quality criteria for phosphorus and Tier 2 confirmation;
3. A water quality goal for phosphorus was developed and approved by the water quality advisory and project steering committees;
4. STEPL modeling results and modeling report for Center Harbor Bay Subwatershed; and
5. Various outreach efforts including a riparian buffer workshop, expansion of the Wi-CAN network blog and integration of the residential runoff tool on [www.winnepesaukeegateway.org](http://www.winnepesaukeegateway.org).

However, the momentum achieved during the first year slowed over time due to personnel changes, resignations of key team members at critical junctures, and the eventual absence of a project manager.

In 2013, an extension of the project end date from December 31, 2013 to December 31, 2014 was granted in order to provide new staff time to get acquainted with the project and the scope of work yet to be completed. In February, 2014 and shortly after the STEPL modeling report was delivered by the Lake Winnepesaukee Watershed Association (LWWA), the new project manager at the LRPC resigned. One month later, a key technical project member resigned from the LWWA Board of Directors and the project team. With that resignation, the ability to conduct the on-the-ground survey work for BMP identification and prioritization was lost. Concurrent with this setback, the Director of the LRPC retired and, with that, support for completing remaining tasks dissolved. In April 2014, NHDES closed out the project with \$39,700 of the grant award unspent.

Although this project did not deliver the results anticipated, it did complete a large portion of the water quality criteria determination, goal setting and STEPL modeling required for the development of a watershed-based plan. Future efforts to develop a plan for Center Harbor will benefit greatly from these work products and NHDES looks forward to an opportunity to collaborate on this effort in the future.

## McQuesten Brook Watershed Restoration Phase 1, Geomorphic Assessment and Development of Restoration Plan

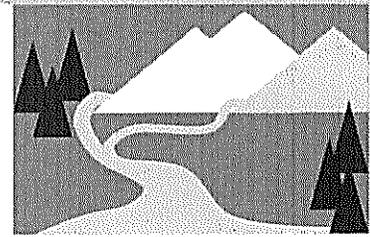
**Project Background:** The McQuesten Brook headwaters emerge from a culvert under South Main Street in Manchester. The waters then merge with the outlet of McQuesten Pond before flowing under Second Street, Eastman Ave, and Wathen Road in the Town of Bedford, eventually emptying into the Merrimack River. McQuesten Brook represents a unique water resource located within a highly-developed watershed. Despite more than a third of the 563-acre watershed being covered with impervious surfaces, the brook's base flow conditions and favorable in-stream temperatures have sustained a robust population of rare eastern native brook trout.

Recognizing the importance of this unique urban natural resource, the New Hampshire Rivers Council (NHRC) engaged partners and sought financial support to protect and restore the McQuesten Brook watershed. This project completed the first phase by conducting a geomorphic assessment of the brook and developing a Watershed Restoration Plan. The plan will serve as the guide for future protection and restoration efforts. In addition to a Section 319 grant, funding was provided by the New Hampshire Fish and Game Department, the New Hampshire Rivers Council and the Samuel P. Hunt Foundation.

**Problem:** McQuesten Brook is on the list of impaired waters for failing to meet the designated uses of aquatic life support due to low dissolved oxygen concentration and saturation, and elevated concentrations of Chlorides. McQuesten Pond, a dammed tributary to McQuesten Brook, has low dissolved oxygen levels, elevated concentrations of Chlorophyll-a and is listed as impaired for failure to meet the designated uses of Aquatic Life and Primary Contact Recreation.

McQuesten Brook and its eastern native brook trout population face several significant challenges including:

- Warm stormwater runoff and pollutants from the surrounding impervious surfaces that contribute to low dissolved oxygen levels in the brook;
- Multiple roadway crossings, undersized culverts and stream constrictions affecting aquatic species movement through the watershed; and
- Several dams that promote warm waters and serve as barriers to fish.



Merrimack River  
Watershed

McQuesten  
Brook Watershed  
Restoration  
Phase I, Geomorphic  
Assessment and  
Development of  
Restoration Plan

New Hampshire  
Rivers Council

2011 Restoration

Grant  
Amount:  
\$17,000

Local Match:  
\$46,031



*McQuesten Brook, Manchester faces various threats to aquatic life, including undersized culverts and unregistered dams.*

**Project Objectives:** Restore the McQuesten Brook watershed to a healthy and fully-functioning system capable of supporting aquatic life, including the eastern native brook trout, while providing floodwater storage and recreational uses. Creating a geomorphic assessment and watershed restoration plan for McQuesten Brook is a major stepping stone for achieving that goal.

**Project Outcomes:** One of the first steps that NHRC took was to create a steering committee comprised of multiple interests in the watershed. Known as the “McTeam,” its initial members included the NHRC, NHDES, New Hampshire Fish and Game Department, Manchester Urban Ponds Restoration Program, City of Manchester, Town of Bedford, River Network, Trout Unlimited Merrimack Valley Chapter, Manchester Fly Fishers Association, business owners and private residents. Through the combination of efforts put forth by the project stakeholder team, along with the technical expertise provided by Comprehensive Environmental Inc. (CEI) and Headwaters Hydrology, the McQuesten Brook Geomorphic Assessment and Watershed Restoration Plan was published in October 2013. The plan can be viewed and downloaded here: <http://nhrivers.org/mcquesten-brook/>.

The completed “a-i” plan identifies the actions and resources needed to restore the brook and lays out a foundation for obtaining future grant funds to complete the work. Other phases of the project utilizing Section 319 funding are already underway, including culvert replacements (project number RI-14-M-06) and dam removals (project number RI-13-M-03). Subsequent phases of watershed restoration plan implementation will focus on reduction and/or disconnection of impervious cover, installation of stormwater BMPs and continued education and outreach.

Success to date has been a result of the partnership’s approach of beginning implementation while in the planning process. Annual watershed cleanup days have created visibility and public awareness, which have begun to foster a sense of community. Since its inception, the McTeam has expanded to include Anheuser-Busch and Ducks Unlimited. Working in a hidden urban watershed area can be challenging. Many people were not aware of the Brook’s existence or did not perceive its value. NHRC has worked to build awareness and will continue to do so through social media, e-newsletters, meetings, door-to-door campaigns, cleanup days and other public events. The McTeam believes that when the stream barriers are removed and the culverts project is completed, there will be more physical evidence of progress in the area and that future phases of the plan’s implementation will begin with more citizen and business support ultimately generating another Nonpoint Source Success Story.



*McQuesten Pond and one of the three unregistered dams slated for removal and subsequent stream restoration.*



*Volunteers show off the results of their efforts following the annual McQuesten Brook Cleanup Day.*

## **Rust Pond, North Inlet and Route 28 Boat Launch, Phase I - Watershed Management Plan and Stormwater BMPs**

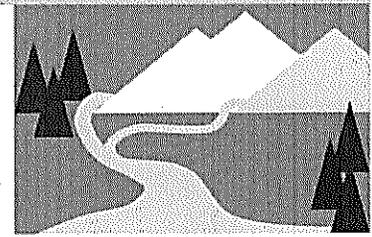
**Project Background:** Rust Pond is a 210-acre waterbody located in Wolfeboro. The pond's 1,651-acre watershed is situated in portions of Wolfeboro and New Durham. The Rust Pond Association has been an active participant in the New Hampshire Volunteer Lake Assessment Program (VLAP) for many years. Sediment loads from the North Inlet subwatershed have reduced water depths at the north end of the pond to the point where recreational use of some docks has become either impossible or significantly impaired. In 2007, NHDES completed the Rust Pond and Watershed Diagnostic Study (Study) to assess in-lake conditions and watershed characteristics influencing water quality trends within the pond.

**Problem:** The Study identified two locations, the North Inlet and the Route 28 boat launch, as contributors of excess sediment to the pond. Sediment loads from North Inlet subwatershed have reduced water depths at the north end of the pond to the point where recreational use for navigation of surface waters has become impaired, which resulted in the placement of Rust Pond on the 2012 303(d) List. The Study determined that the primary factors causing the impairment were sediment loads from land uses, channel erosion and incision from upstream hydromodification, and associated streambank destabilization. The sediment delta at this location is estimated to contain 740 to 1,100 cubic yards of deposited material that has been transported into the pond from North Inlet. As a result of the bank instability and incision that is ongoing within North Inlet, the rate of deposition within Rust Pond in recent years is estimated to be two orders of magnitude greater than what would be expected under current land use conditions. In addition, runoff from Route 28 onto the unstabilized boat launch surface results in additional erosion and sediment to the pond.

**Project Objectives:** Provide subwatershed assessments for the North Inlet and the Route 28 boat launch. Outline necessary actions to reduce impacts of hydromodification including reducing sediment loading, and stormwater runoff rates and volumes to acceptable levels so that Rust Pond can be used for secondary contact recreation and is removed from the impaired waterbody list.

**Project Outcomes:** The subwatershed-based plan developed by Geosyntec, and titled North Inlet and Route 28 Boat Launch Subwatershed Assessment, included modeled sediment loading budgets under several watershed development scenarios. The model also estimated additional sediment loads due to erosion in portions of the North Inlet tributary streambank itself.

Based upon the modeling results, a water quality goal for North Inlet of Rust Pond was determined by the consulting team and the project stakeholders, including NHDES, the Rust Pond Association and the Town of Wolfeboro. The water quality goal established for sediment loading in North Inlet is to maintain the current loading estimate of 10.0 tons/year. This goal assumes



Merrimack River  
Watershed

Rust Pond, North  
Inlet and Route  
28 Boat Launch,  
Phase I - Watershed  
Management Plan  
and Stormwater  
BMPs

Rust Pond  
Association

2010 Restoration

Grant Amount:  
\$50,000

Local Match:  
\$37,995

TSS Reduction:  
0.43 tons/yr

that projected sediment loading increases due to future development will be prevented or offset via the implementation of recommended stormwater BMPs outlined in the subwatershed-based plan.

Conceptual designs and supporting hydrologic calculations were developed for selected BMP options in the North Inlet subwatershed. These BMPs were designed with sediment load reductions in mind and stormwater infiltration that would reduce the flashy nature of runoff directed into the North Inlet tributary. Property owner permission for construction of several stormwater management BMPs could not be obtained in time to allow for permitting and construction within the grant timeframe. As a result, the Town and NHDES agreed that final design, permitting and construction would focus on stabilization of the eroding portion of the North Inlet streambank and the removal of an abandoned beaver dam that had exacerbated lateral migration of the channel and accelerated erosion of the outside bank. Construction in this area was successfully completed in November, 2013 by the Town of Wolfeboro Department of Public Works. This is predicted to create equilibrium over time within the North Inlet tributary relative to sediment transport, stream flows and channel dimension.



*Beginning Construction at North Inlet tributary to Rust Pond.*

Public education and outreach activities associated with this project included the development of an educational brochure and a Field Guide to the Aquatic Plants of Rust Pond. In addition, a public workshop was held to present the watershed-based plan and information relative to siting, designing and installation of Low Impact Development techniques for residential properties.

The ultimate measure of success and long-term goal for Rust Pond and North Inlet will be verification that the sediment loading goal is being met, and that the North Inlet tributary is functioning in a manner appropriate to existing land use conditions within the

watershed as a result of the implementation of recommended BMPs. Once verified, project partners will seek additional funding to assist with the dredging of the sediment delta within North Inlet, and thus return the pond to conditions that fully support recreational boating.

## Lake Wentworth and Crescent Lake Watershed Management Plan

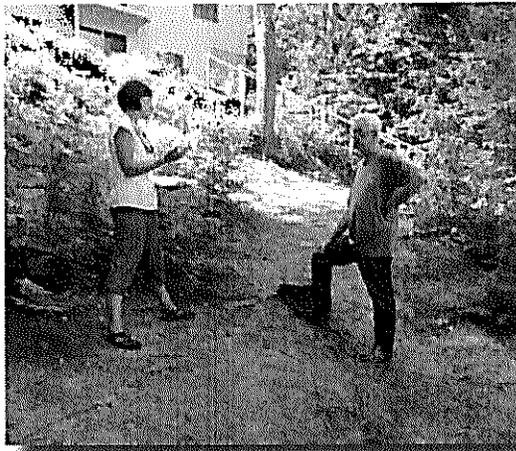
**Project Background:** The Lake Wentworth and Crescent Lake watershed is located in the towns of Wolfeboro (86.1%), Brookfield (11.3%), Ossipee (0.3%) and New Durham (2.3%). The watershed is over 35 square miles with fourteen streams draining directly into Lake Wentworth. These tributaries account for 76% of the water entering the lake, which means that land use and other factors impacting the health of the tributaries are critical to the overall water quality of Lake Wentworth and ultimately Crescent Lake. Yearly water quality monitoring by the Lakes Lay Monitoring Program, as well as private testing, have documented declining water quality trends for chlorophyll-a, increasing total phosphorus concentrations, and decreasing transparency.

The idea to develop a watershed based plan was initiated in 2009 by two members of the Lake Wentworth Foundation who saw the need to develop a scientifically-based plan to protect these lakes for future generations. Since then, many enthusiastic individuals and organizations have stepped up to support this effort through the formation of a steering committee and an active outreach campaign. Participants include the Town of Wolfeboro, Lake Wentworth Association, University of New Hampshire, and the Lake Wentworth Foundation (LWF).

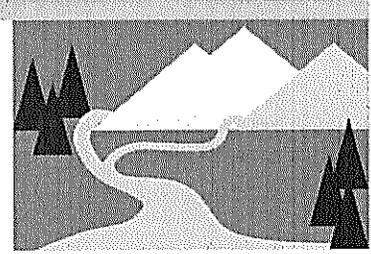
**Problem:** Over the past several years, there has been an increase in the amount of algae in both Lake Wentworth and Crescent Lake, and low levels of oxygen at depths greater than 40 feet. Threats to water quality include excess sediment and nutrients from existing and future development, aging septic systems, and stormwater runoff from roads throughout the watershed, and general lack of environmental awareness.

**Project Objectives:** The primary goal of the project is to develop a comprehensive management plan for the watershed of Lake Wentworth and Crescent Lake. The final watershed plan explores the connection between identified threats in the watershed and signs of stress in the lakes. The plan includes:

- Quantified primary sources of phosphorus loading using existing data and a watershed and lake response model;
- Prioritized sources for further action;



*A door-to-door septic survey was conducted in 2011. (photo credit : FB Environmental)*



Merrimack River Watershed

Lake Wentworth and Crescent Lake Watershed Management Plan

Town of Wolfeboro

2009/2011 PPG Base

Grant Amount:  
\$67,800

Local Match:  
\$73,907

- 
- An educational effort to make property owners and lake users aware of the sources and consequences of non-point source pollution;
  - Preliminary BMP designs to address sources;
  - Review of planning and zoning ordinances with an eye towards water quality protection; and,
  - Methods for tracking progress during implementation of the plan recommendations.

**Project Outcomes:** A comprehensive watershed plan has been created with short and long-term goals for improving the water quality of Lake Wentworth and Crescent Lake over the next ten years (2013-2023). The long-term goal is to protect the water quality of Lake Wentworth and Crescent Lake through a 15% reduction in median in-lake total phosphorus (TP). The plan provides a roadmap for improving the water quality of Lake Wentworth and Crescent Lake, and provides a mechanism for acquiring grants and other funding to pay for the actions needed to achieve the water quality goal. In addition, it sets the stage for ongoing dialogue among key stakeholders in many facets of the community, and promotes coordinated municipal land use changes to address stormwater runoff. The success of this plan is dependent upon ongoing leadership, group commitment, and a concerted effort of volunteers.

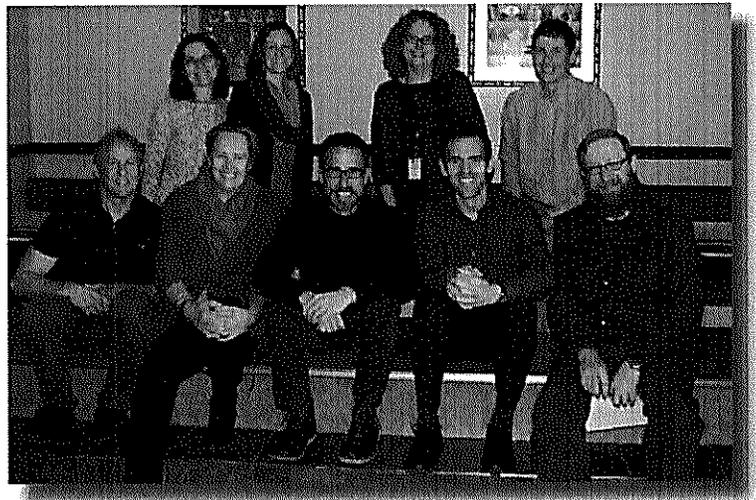
## Looking Ahead

At the time of writing this report, the longtime supervisor of the Watershed Assistance Section, Eric Williams, has left New Hampshire to start a new journey with the State of Oregon Watershed Enhancement Board. After over 20 years managing New Hampshire's Nonpoint Source Program, Eric's guidance, ingenuity, and friendship will be greatly missed. We anticipate that 2015 will be a year of transition as the program settles in to new leadership; however, the 2014 Nonpoint Source Management Program Plan articulates well the specific actions, outcomes, and measurable results we will be working on over the next five years.

We look forward to a greatly expanded Soak Up the Rain program, with a presence in more watersheds and many more homeowners engaged in stormwater management as part of a broader recognition that sustainability begins at home. During the off-season, the SOAK program will be working on program and process improvements as well as designs for new project installations scheduled for the spring of 2015.

Pollutant tracking and accounting will take center stage in the Great Bay watershed as we work with communities to find common methods to measure change, both increases and decreases, to pollutant loading over time. With more attention on wastewater and stormwater discharge permits, there will continue to be a need to document and account for changes in pollutant loading from nonpoint sources as well.

New Hampshire's revised MS4 permit is likely to become effective in 2015, further incenting municipalities to invest in green infrastructure. The multiple benefits of pollutant load reduction, flood prevention and aesthetic improvement will become clearer. The Nonpoint Source Program will continue to provide leadership through assistance to municipal stormwater coalitions, implementing demonstration projects through the Great Bay Municipal Bioretention Program, aka "Biopalooza," and methodically implementing watershed-based plans, such as the one for Berry Brook in Dover.



*The NHDES Watershed Assistance Section staff pause for a photo during their last strategy meeting with Eric.*

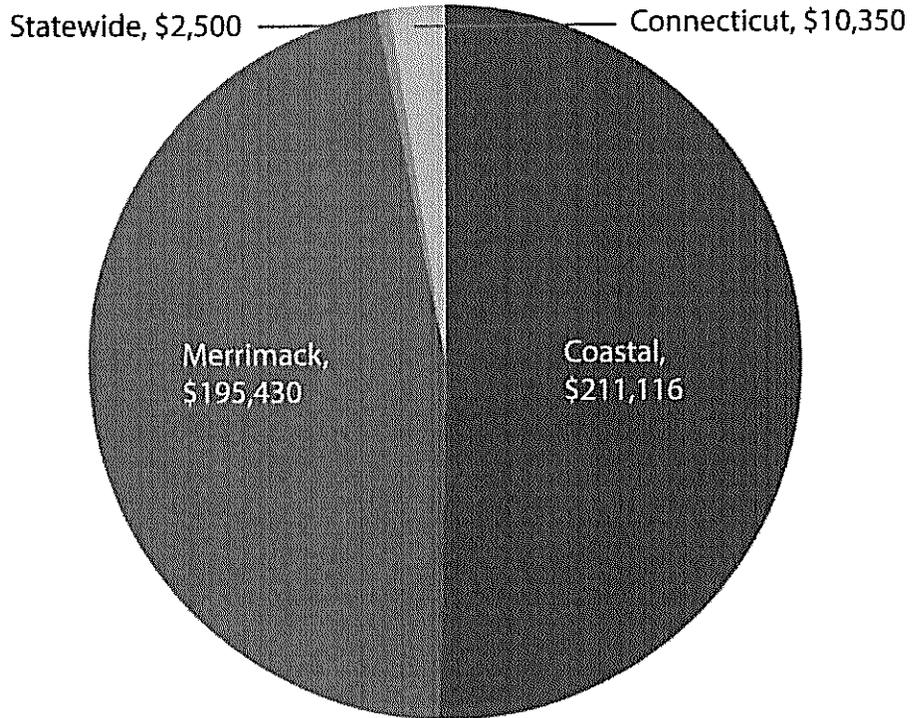
In 2015, it is expected that Berry Brook will have the distinction of being the first urban watershed in the state to reduce effective impervious cover from around 30% to below 10%. With further documentation of water quality improvement, we expect another New Hampshire watershed restoration success story. Similar progress in urban watershed restoration has been made and will continue in the Cobbetts Pond and Nutt Pond watersheds, both of which are showing water quality improvement as a result of sustained, long-term BMP implementation.

More progress toward addressing chloride impairments will be made through the Green SnowPro program by continuing efforts to boost the professional status of salt applicators through training, certifications, annual symposia and extended outreach to local Chambers of Commerce and businesses. Finally, we will continue to address hydromodification impairments through barrier removal projects as well as geomorphic restoration projects along New Hampshire's rivers.

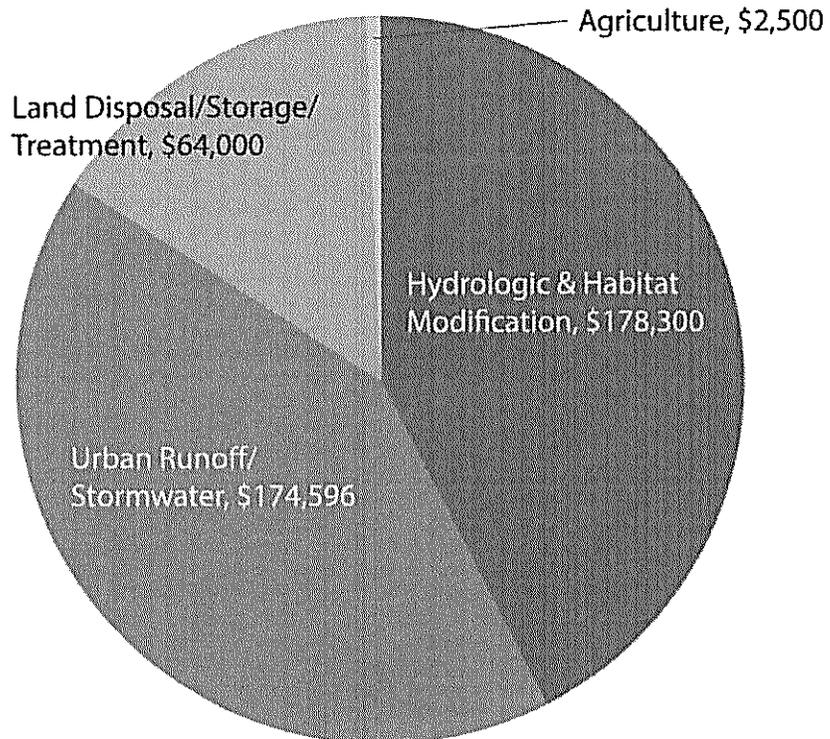
## Appendix A. DES Section 319 Watershed Assistance Grants Awarded in FFY 2014

DES Section 319 Watershed Assistance Grants Awarded in FFY 2014						
Grantee	Project Name	Project No.	NPS Category	Watershed	Source of Funds (FFY)	Grant Award
Town of Farmington	Mad River Restoration, Phase 2	HI-13-C-06	Hydro-modification	Coastal	2014 Sec. 319 Project Implementation	\$38,500
University of New Hampshire	Updating the Best Management Practices for Biosolids Applications	P-14-SW-12	Agriculture	Statewide	2014 Sec. 319 Program	\$2,500
Silver Lake Land Trust	Silver Lake Watershed Management Plan Implementation, Phase 2, Soak up the Rain Silver Lake	HI-14-CT-11	Urban Runoff/ Stormwater	Connecticut	2014 Sec. 319 Program	\$10,350
Lake Winnepesaukee Watershed Association	Moultonborough Bay Inlet Watershed Restoration Plan Development and Phase 1 Implementation	RP-14-M-04	Urban Runoff/ Stormwater	Merrimack	2014 Sec 319 Program/2010 Sec. 319 Restoration	\$55,630
Belknap County Conservation District	Gunstock Brook MPSB Watershed Management Plan Implementation, Phase 1, Geomorphology-based restoration at Route 11B	RI-14-M-08	Hydro-modification	Merrimack	2014 Sec. 319 Project Implementation	\$69,800
Rockingham Country Conservation District	Great Bay Watershed Management Plan Implementation, Phase 1, Permeable Reactive Barrier Demonstration Project	RI-14-C-09	On-Site Wastewater Treatment	Coastal	2014 Sec. 319 Project Implementation	\$64,000
UNH - Office of Sponsored Research	Great Bay Waterbody/ Watershed Nonpoint Source Study, Phase 1, UNH BMPs to Reduce Nitrogen	RI-14-C-05	Urban Runoff/ Stormwater	Coastal	2014 Sec. 319 Project Implementation	\$93,616
New Hampshire Rivers Council	McQuesten Brook Geomorphic and Watershed Restoration Plan, Phase 3, Culvert Replacement and Removal.	RI-14-M-06	Hydro-modification	Merrimack	2010 Sec. 319 Restoration	\$70,000
Great Bay Stewards, Inc.	Soak up the Rain Great Bay	RI-14-C-10	Urban Runoff/ Stormwater	Coastal	2014 Sec. 319 Project Implementation	\$15,000
<b>Total Awarded:</b>						<b>\$419,396</b>

Appendix B. Distribution of Section 319 Grant Dollars Awarded in FFY 2014 by Watershed



Appendix C. Distribution of Section 319 Grant Dollars Awarded in FFY 2014 by NPS Category



## Appendix D. DES Section 319 Projects Completed in FFY 2014

DES Section 319 Projects Completed in FFY 2014							
Grantee	Project Name	FFY Source of Funds	Grant #	Date Completed	Watershed	319 Funds	Total Cost Inc. Match
UNH Stormwater Center	On-Call Consulting Engineers for small-scale BMP designs	2010 Incremental	B-11-OC-01	7/24/2014	Statewide	\$25,000	\$25,000
Town of Wolfeboro	Rust Pond Watershed Mgt. Plan Implementation, Phase 1	2010 Incremental	R-10-M-07	7/9/2014	Merrimack	\$50,000	\$87,995
Town of Farmington	Mad River Restoration - Phase 1	2012/2013 Incremental	HI-13-C-05	7/2/2014	Coastal	\$22,280	\$22,280
Lakes Region Planning Commission	Lake Winnepesaukee Watershed Mgt. Plan - Center Harbor (project terminated before completion)	2010/2011 Incremental and Base	B-11-M-02	4/17/2014	Merrimack	\$15,300	\$34,191
NH Rivers Council	McQuesten Brook Watershed Restoration Plan, Phase 1	2011 Incremental	R-11-M-01	4/14/2014	Merrimack	\$17,000	\$63,031
Cochecho River Watershed Coalition	Cochecho River Watershed Restoration Plan Implementation - Phase 2	2011 Incremental	R-11-C-04	2/20/2014	Coastal	\$51,500	\$86,740
City of Dover	Berry Brook Watershed Restoration Plan Implementation - Phase 2	2007/2008/2010/2011 Incremental	R-11-C-02	2/14/2014	Coastal	\$172,315	\$407,755
Town of Brentwood	Middle Exeter River Watershed Mgt. Plan Implementation, Phase 1	2008/2009/2010 Incremental	B-11-C-04	1/28/2014	Coastal	\$49,152	\$97,633
Blue Ocean Society for Marine Conservation	Watershed Restoration Plan Implementation, Hodgson Brook, Phase 2	2009/2010 Incremental	R-11-C-05	1/6/2014	Coastal	\$104,574	\$192,400
Town of Alstead	Lower Warren Brook Restoration (project terminated before completion)	2008 Incremental	R-08-CT-05	12/9/2013	Connecticut	\$20,000	\$40,970
Town of Wolfeboro	Lake Wentworth and Crescent Lake Watershed Management Plan	2009/2011 Base	B-11-M-03	12/9/2013	Merrimack	\$67,800	\$141,707
Town of Exeter	Exeter River Restoration-Great Dam Removal Evaluation	2008/2009 Incremental	R-06-C-09	11/14/2013	Coastal	\$69,500	\$152,456
Total						\$507,121	\$1,017,025

## Appendix E. 2014 Estimated Pollutant Load Reductions Achieved

2014 Estimated Pollutant Load Reductions Achieved									
Grantee	Project Name	FFY Source of Funds	319 Funds	Total Cost	N (lbs/yr)	P (lbs/yr)	Sediment (tons/yr)	Model/ Method	Notes
Acton Wakefield Watersheds Alliance	Salmon Falls Headwaters Watershed - Watershed Based Plan Implementation Project - Phase 2	2009, 2010, and 2012 Base	\$87,026	\$209,893	0	75.28	44.54	Region 5 Model and Simple Method	More reductions completed and reported last year
Blue Ocean Society for Marine Conservation	Watershed Restoration Plan for Hodgson Brook Phase 2 - Pease Tradeport Retrofit Survey and Pannaway Manor and Great Bay Community College Best Management Practices	2009 and 2010 Restoration	\$104,574	\$174,325	0.95	0.04	0.01	Simple Method	More reductions completed and reported last year
UNH Stormwater Center	Great Bay Municipal Bioretention Program	2012 Base	\$134,000	\$223,378	38	5.8	1.16	Simple Method	Project still in progress
Cocheco River Watershed Coalition	Cocheco River Watershed Restoration Plan Implementation, Phase 2 - Rochester LID Projects	2011 Restoration	\$51,500	\$86,740	4.9	0.8	0.07	Simple Method	
Town of Wolfeboro	Rust Pond, North Inlet and Route 28 Boat Launch Watershed Management Plan and Stormwater BMP Projects, Phase 1	2010 Restoration	\$50,000	\$87,994	0	0	0.35	Region 5 Model	
Totals:					43.85	81.92	46.13		

Superior Region - FY 2015 Season

Salt Use															
County / Garage	Nov 1-15 Report 1	Nov 16-30 Report 2	Dec 1-15 Report 3	Dec 16-31 Report 4	Jan 1-15 Report 5	Jan 16-31 Report 6	Feb 1-15 Report 7	Feb 16-28 Report 8	Mar 1-15 Report 9	Mar 16-31 Report 10	Apr 1-15 Report 11	Apr 16-30 Report 12	May 1-15 Report 13	YE Adj.	YTD
Alger	43.0	988.4	483.7	1,296.5	787.8	1,722.3	872.4	925.9	269.3	528.2	123.5	218.0	0.0		8,259.0
Chippewa	1,139.0	1,027.6	511.2	1,173.0	587.6	968.0	654.0	155.0	1,125.0	1,358.0	100.0	13.0	0.0		8,811.4
Delta	598.0	667.0	396.0	1,190.0	470.0	574.0	576.0	195.0	297.0	335.0	162.0	0.0	0.0		5,460.0
Dickinson	556.5	569.0	300.0	900.5	211.5	257.0	173.0	110.0	50.0	150.0	141.0	17.5	0.0	1,266.0	4,702.0
Gogebic	773.0	846.5	174.5	723.5	486.5	592.0	240.0	226.0	103.0	224.0	91.0	169.0	0.0		4,649.0
Houghton Garage	648.0	790.0	210.0	1,388.6	402.0	450.0	934.0	350.0	118.0	259.0	261.0	214.0	0.0		6,024.6
Iron	1,361.0	553.0	407.0	1,186.0	286.0	765.0	327.0	0.0	202.0	443.0	315.0	111.0	0.0		5,956.0
Keweenaw	0.0	254.2	178.0	232.7	189.2	315.6	388.2	154.9	26.4	150.0	49.6	70.7	0.0		2,009.5
L'Anse Garage	593.0	601.0	546.0	858.0	1,498.0	506.0	803.0	175.0	201.0	106.0	159.0	84.0	0.0		6,130.0
Luce	217.0	321.9	205.0	452.0	194.0	368.0	246.0	96.0	135.0	515.0	21.0	4.0	0.0		2,774.9
Engadine Garage	324.0	265.0	161.5	288.8	224.2	190.3	85.3	70.4	211.1	40.0	77.1	0.0	0.0		1,937.7
St. Ignace Garage	804.0	364.7	448.3	378.1	396.7	514.2	321.0	215.0	160.8	0.0	204.2	6.3	0.0		3,813.3
Marquette	1,235.0	807.0	1,272.0	2,652.0	693.0	2,188.0	1,679.0	2,807.0	507.0	724.0	309.0	123.0	0.0		14,998.0
Menominee	320.0	648.0	426.0	857.0	520.0	541.0	484.0	106.0	161.0	200.0	312.0	0.0	0.0		4,575.0
Ontonagon	527.0	779.0	288.0	1,387.0	689.0	630.0	473.0	1,148.0	475.0	503.0	159.0	210.0	107.0		7,375.0
Schoolcraft	702.5	1,125.0	543.0	1,163.0	888.0	1,142.0	695.0	507.0	335.0	452.3	106.0	48.0	0.0		7,706.8
<b>Total Tons Used</b>	<b>9,841.0</b>	<b>10,607.3</b>	<b>6,550.2</b>	<b>16,126.7</b>	<b>8,523.5</b>	<b>11,723.4</b>	<b>8,950.9</b>	<b>7,241.2</b>	<b>4,376.6</b>	<b>5,987.5</b>	<b>2,590.6</b>	<b>1,288.5</b>	<b>107.0</b>	<b>1,266.0</b>	<b>95,180.2</b>

North Region - FY 2015 Season

Salt Use															
County / Garage	Nov 1-15 Report 1	Nov 16-30 Report 2	Dec 1-15 Report 3	Dec 16-31 Report 4	Jan 1-15 Report 5	Jan 16-31 Report 6	Feb 1-15 Report 7	Feb 16-28 Report 8	Mar 1-15 Report 9	Mar 16-31 Report 10	Apr 1-15 Report 11	Apr 15-30 Report 12	May 1-15 Report 13	YE Adj.	YTD
Alcona	0.0	200.5	39.0	140.0	252.0	188.0	252.5	42.0	89.0	61.0	0.0	0.0			1,264.0
Alpena	63.0	466.0	81.0	127.0	447.0	315.0	470.0	86.0	180.0	63.0	11.0	0.0			2,309.0
Antrim	257.0	543.0	90.0	386.0	609.0	335.0	342.0	293.0	203.0	272.0	3.0	9.0			3,342.0
Atlanta Garage	83.5	257.0	60.0	256.0	173.0	158.0	187.0	39.0	110.0	72.0	19.0	0.0			1,414.5
Benzie	140.0	486.0	118.0	200.0	452.0	181.0	241.0	655.0	152.0	90.0	0.0	3.5			2,718.5
Charlevoix	231.7	477.8	95.9	310.8	440.2	249.6	286.2	107.2	119.7	134.5	35.3	12.8			2,501.7
Cheboygan	426.0	1,507.0	367.0	655.0	1,138.0	580.0	875.0	250.0	305.0	495.0	69.0	0.0			6,667.0
Crawford	493.3	887.0	184.0	726.0	1,579.0	1,019.0	735.0	217.5	263.0	243.0	3.0	22.0			6,371.8
Emmet	547.0	607.0	212.0	360.0	770.0	745.0	863.0	407.0	249.0	225.0	62.0	0.0			5,047.0
Grand Traverse	207.0	513.5	110.0	207.0	465.0	239.0	316.3	282.8	235.1	98.7	6.2	15.5			2,696.1
Iosco	0.0	257.5	63.0	128.5	306.0	137.0	291.8	40.0	65.3	26.8	0.0	0.0			1,315.8
Kalkaska Garage	189.6	403.4	115.4	264.2	693.3	359.5	365.2	192.5	203.8	112.2	0.0	3.2			2,902.3
Lake	110.0	348.8	124.0	129.4	331.8	293.5	239.0	183.5	161.5	74.0	0.0	24.0			2,019.4
Leelanau	138.5	442.5	60.5	230.5	344.5	212.0	287.5	244.5	148.0	100.0		0.0			2,208.5
Manistee	94.0	548.5	140.0	279.0	524.5	353.0	1,290.0	500.0	245.0	51.0	2.0	0.0			4,027.0
Marion Garage	24.0	187.0	73.0	194.0	147.0	131.0	81.0	25.0	107.0	77.0	7.0	0.0			1,053.0
Mio Garage	25.0	186.0	40.0	148.5	149.8	146.7	229.1	101.8	93.9	38.9	1.0	0.0			1,160.7
Mason	95.3	599.0	106.0	195.2	554.5	533.0	486.6	407.0	235.4	103.7	0.0	0.0			3,315.7
Missaukee	27.0	259.5	54.5	132.0	193.5	180.3	90.5	71.0	102.0	28.8	14.0	0.0			1,153.1
Ogemaw	46.0	345.0	50.0	86.0	131.0	136.0	159.0	81.0	161.0	66.0	31.0	0.0			1,292.0
Otsego	558.0	915.0	334.0	717.0	1,240.0	556.0	697.0	252.0	310.0	68.0	24.0	117.0			5,788.0
Presque Isle	198.0	429.0	126.0	231.0	374.0	272.0	323.0	153.0	150.0	173.0	61.0	0.0			2,490.0
Reed City Garage	46.0	392.0	105.0	280.0	381.0	245.0	184.0	409.0	106.0	106.0	28.0	0.0			2,282.0
Roscommon	93.5	692.5	114.0	255.0	132.0	250.5	98.5	183.0	407.0	207.5	41.5	1.0			2,476.0
Wexford	285.1	922.0	272.0	290.2	578.6	470.0	390.7	314.3	266.5	234.7	39.7	55.9			4,119.6
<b>Total Tons Used</b>	<b>4,378.3</b>	<b>12,872.4</b>	<b>3,134.3</b>	<b>6,928.3</b>	<b>12,406.6</b>	<b>8,285.1</b>	<b>9,780.9</b>	<b>5,537.1</b>	<b>4,668.1</b>	<b>3,221.7</b>	<b>457.7</b>	<b>263.9</b>	<b>0.0</b>	<b>0.0</b>	<b>71,934.5</b>

Grand Region - 2015 Season

Salt Use															
County / Garage	Nov 1-15 Report 1	Nov 16-30 Report 2	Dec 1-15 Report 3	Dec 16-31 Report 4	Jan 1-15 Report 5	Jan 16-31 Report 6	Feb 1-15 Report 7	Feb 16-28 Report 8	Mar 1-15 Report 9	Mar 16-31 Report 10	Apr 1-15 Report 11	Apr 15-30 Report 12	May 1-15 Report 13	YE Adj.	YTD
Ionia	56.0	1,947.0	4.2	145.2	1,046.0	708.0	523.0	287.0	315.0	0.0	0.0	0.0	0.0		5,031.4
Kent	129.0	2,513.0	3,496.0	296.0	5,684.0	2,504.0	2,429.0	3,178.0	1,594.0	487.0	0.0	0.0	0.0		22,310.0
Mecosta	73.1	844.4	302.3	343.3	618.6	802.4	507.1	239.9	307.1	68.3	33.2	45.9	0.0		4,185.5
Montcalm	0.0	487.5	71.0	67.0	297.3	275.5	228.4	186.7	77.9	3.8	0.0	0.0	0.0		1,695.0
Muskegon	456.3	1,939.4	344.0	176.5	923.9	1,043.9	688.9	729.9	466.9	38.6	0.0	0.0	0.0		6,808.1
Newaygo	34.5	833.5	246.8	205.0	620.0	788.3	522.0	131.3	286.0	36.0	0.0	0.0	0.0		3,703.2
Oceana	270.0	1,474.0	730.0	273.0	1,936.0	1,218.0	1,032.5	1,354.0	648.0	64.0	0.0	0.0	0.0		8,999.5
Ottawa	550.4	1,931.5	116.0	102.7	1,771.7	701.6	1,035.2	1,377.0	421.1	0.0	0.0	0.0	0.0		8,007.1
<b>Total Tons Used</b>	<b>1,569.3</b>	<b>11,970.2</b>	<b>5,310.2</b>	<b>1,608.6</b>	<b>12,897.5</b>	<b>8,041.7</b>	<b>6,966.0</b>	<b>7,483.8</b>	<b>4,116.0</b>	<b>697.6</b>	<b>33.2</b>	<b>45.9</b>	<b>0.0</b>	<b>0.0</b>	<b>60,739.9</b>

Bay Region - 2015 Season

Salt Use															
County / Garage	Nov 1-15 Report 1	Nov 16-30 Report 2	Dec 1-15 Report 3	Dec 16-31 Report 4	Jan 1-15 Report 5	Jan 16-31 Report 6	Feb 1-15 Report 7	Feb 16-28 Report 8	Mar 1-15 Report 9	Mar 16-31 Report 10	Apr 1-15 Report 11	Apr 15-30 Report 12	May 1-15 Report 13	YE Adj.	YTD
Arenac	0.0	281.9	50.0	186.0	240.7	135.9	122.4	0.0	237.4	42.0	0.0	0.0	0.0		1,296.3
Bay	10.0	443.4	42.9	80.6	568.8	333.7	703.5	225.7	262.8	104.1	0.0	3.0	0.0		2,778.6
Clare	51.2	592.7	121.0	304.8	487.5	360.6	293.3	219.7	241.1	103.1	63.0	4.0	0.0		2,841.9
Genesee	26.3	1,345.5	78.0	136.0	2,109.0	1,237.0	1,530.0	628.0	561.0	77.0	0.0	0.0	0.0		7,727.8
Gladwin	37.5	137.7	25.0	83.4	63.0	65.6	173.3	76.9	104.8	17.2	6.1	0.0	0.0		790.5
Gratiot	0.0	374.0	93.8	33.0	435.4	285.9	361.4	23.0	93.6	0.0	0.0	0.0	0.0		1,700.1
Huron	45.0	181.0	118.0	144.0	414.0	171.0	296.0	115.0	179.0	82.0	31.0	0.0	0.0		1,776.0
Lapeer	0.0	466.1	45.0	70.0	730.0	663.0	433.0	131.0	226.0	110.0	0.0	30.0	0.0		2,904.1
Midland	5.0	316.0	87.0	40.0	628.0	555.0	547.0	144.0	217.0	29.0	0.0	4.0	0.0		2,572.0
Mt. P Garage	0.0	392.0	81.0	96.0	254.0	307.0	258.0	108.0	177.0	53.0	63.0	5.0	0.0		1,794.0
Saginaw East	0.0	224.0	39.0	27.0	671.0	542.5	476.0	68.0	372.0	20.5	4.0	0.0	0.0		2,444.0
Saginaw West	0.0	180.0	0.0	4.0	341.5	238.0	241.0	16.0	58.0	6.0	0.0	0.0	0.0		1,084.5
Sanilac	0.0	322.0	44.0	76.0	428.0	482.0	713.0	119.0	281.0	124.0	127.0	24.0	0.0		2,740.0
Tuscola	0.0	122.0	50.0	35.0	190.0	188.0	153.5	32.0	144.9	33.0	0.0	0.0	0.0		948.4
<b>Total Tons Used</b>	<b>174.9</b>	<b>5,378.2</b>	<b>874.7</b>	<b>1,315.8</b>	<b>7,560.9</b>	<b>5,565.2</b>	<b>6,301.4</b>	<b>1,906.3</b>	<b>3,155.6</b>	<b>801.0</b>	<b>294.1</b>	<b>70.0</b>	<b>0.0</b>	<b>0.0</b>	<b>33,398.1</b>

Southwest Region - 2015 Season

Salt Use															
County / Garage	Nov 1-15 Report 1	Nov 16-30 Report 2	Dec 1-15 Report 3	Dec 16-31 Report 4	Jan 1-15 Report 5	Jan 16-31 Report 6	Feb 1-15 Report 7	Feb 16-28 Report 8	Mar 1-15 Report 9	Mar 16-31 Report 10	Apr 1-15 Report 11	Apr 15-30 Report 12	May 1-15 Report 13	YE Adj.	YTD
Berrien															0.0
Branch	66.8	322.0	14.3	73.9	801.4	602.2	769.2	348.2	143.1	0.0	0.0	0.0	1,241.2		4,382.2
Calhoun	285.0	742.9	41.1	56.6	1,155.3	789.7	1,197.3	492.9	278.3	63.1	0.0	0.0	0.0		5,102.3
Coloma Garage	214.6	847.9	10.2	288.9	2,438.1	1,750.4	1,750.4	617.8	118.5	74.2	0.0	0.0	0.0		8,111.0
Fennville Garage	328.6	847.3	10.8	105.8	982.3	659.3	1,091.9	1,252.9	90.9	125.8	0.0	0.0	0.0		5,495.6
Hastings Garage	96.9	366.9	46.2	130.9	714.3	645.5	562.1	207.2	127.7	0.8	0.0	0.0	0.0		2,898.4
Jones Garage	243.7	273.4	41.2	481.5	763.1	1,374.3	408.3	213.3	0.0	198.0	0.0	0.0	0.0		3,996.8
Kalamazoo Garage	372.7	1,016.5	0.0	246.8	1,396.9	878.1	1,674.4	899.9	197.8	11.7	0.0	0.0	0.0		6,694.8
Marshall Garage	23.7	136.0	3.4	228.1	154.8	658.2	219.3	163.0	60.5	0.0	0.0	0.0	0.0		1,647.0
Niles Garage	248.1	671.5	18.1	15.7	1,417.5	649.2	1,231.9	727.8	77.7	44.7	0.0	0.0	0.0		5,102.2
Plainwell Garage	498.6	397.0	39.7	300.5	687.6	569.5	480.3	521.9	123.4	0.2	0.0	0.0	0.0		3,618.8
Sawyer Garage	171.8	166.8	39.1	82.7	825.7	106.0	886.5	531.4	138.0	70.0	0.0	0.0	0.0		3,018.0
South Haven Garage	287.7	304.7	1.6	15.1	707.8	211.4	615.3	614.9	87.2	3.7	0.0	0.0	0.0		2,849.3
<b>Total Tons Used</b>	<b>2,838.2</b>	<b>6,092.9</b>	<b>265.7</b>	<b>2,026.6</b>	<b>12,044.6</b>	<b>8,893.9</b>	<b>10,886.9</b>	<b>6,591.2</b>	<b>1,443.0</b>	<b>592.2</b>	<b>0.0</b>	<b>0.0</b>	<b>1,241.2</b>	<b>0.0</b>	<b>52,916.3</b>

University Region 2015 Season

Salt Use															
County / Garage	Nov 1-15 Report 1	Nov 16-30 Report 2	Dec 1-15 Report 3	Dec 16-31 Report 4	Jan 1-15 Report 5	Jan 16-31 Report 6	Feb 1-15 Report 7	Feb 16-28 Report 8	Mar 1-15 Report 9	Mar 16-31 Report 10	Apr 1-15 Report 11	Apr 15-30 Report 12	May 1-15 Report 13	YE Adj.	YTD
Adrian Garage	9.0	340.5	0.0	0.0	699.5	534.0	782.0	247.0	240.5	0.0	0.0	0.0	0.0		2,852.5
Brighton Garage	14.0	684.0	117.5	152.4	1,710.0	750.0	1,820.0	560.0	495.0	0.0	115.3	0.0	0.0		6,418.3
Charlotte Garage	64.0	586.0	82.0	233.0	778.0	573.0	912.0	313.0	258.0	0.0	0.0	0.0	0.0		3,799.0
Clinton	0.0	503.0	74.0	59.0	399.0	876.0	478.0	315.0	292.0	0.0	0.0	0.0	0.0		2,996.0
Grand Ledge Garage	0.0	1,505.5	152.0	538.0	2,111.0	1,227.5	1,208.5	895.0	686.0	0.0	0.0	0.0	0.0		8,323.5
Hillsdale	56.0	146.5	11.0	35.0	352.0	388.0	300.0	88.0	80.0	0.0	0.0	0.0	0.0		1,456.5
Jackson	121.0	1,080.0	0.0	197.0	2,500.0	1,093.0	1,891.0	499.0	527.0	3.0	0.0	0.0	0.0		7,911.0
Mason Garage	11.0	473.0	63.0	174.0	933.0	384.0	609.0	338.0	168.0	8.0	0.0	0.0	0.0		3,161.0
Monroe	20.0	1,110.0	6.5	79.0	3,722.0	1,693.0	2,914.0	1,336.0	882.0	0.0	0.0	0.0	0.0		11,762.5
Shiawassee	2.0	858.0	47.0	171.0	1,173.0	864.0	785.0	271.0	409.0	0.0	0.0	0.0	0.0		4,580.0
Washtenaw	11.5	865.0	12.0	201.0	2,216.0	858.0	1,771.0	446.0	481.0	0.0	0.0	0.0	0.0		6,861.5
Williamston Garage	0.0	661.0	63.0	254.0	1,250.0	752.9	1,045.0	506.3	231.0	0.0	0.0	0.0	0.0		4,763.2
<b>Total Tons Used</b>	<b>308.5</b>	<b>8,812.5</b>	<b>628.0</b>	<b>2,093.4</b>	<b>17,843.5</b>	<b>9,993.4</b>	<b>14,515.5</b>	<b>5,814.3</b>	<b>4,749.5</b>	<b>11.0</b>	<b>115.3</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>64,885.0</b>

Metro Region - 2015 Season

Salt Use															
County / Garage	Nov 1-15 Report 1	Nov 16-30 Report 2	Dec 1-15 Report 3	Dec 16-31 Report 4	Jan 1-15 Report 5	Jan 16-31 Report 6	Feb 1-15 Report 7	Feb 16-28 Report 8	Mar 1-15 Report 9	Mar 16-31 Report 10	Apr 1-15 Report 11	Apr 15-30 Report 12	May 1-15 Report 13	YE Adj.	YTD
Detroit Garage	3.2	413.3	0.0	9.6	952.4	814.9	773.0	443.0	133.0	76.0	0.0	0.0	0.0		3,618.4
Macomb	0.0	2,004.0	0.0	124.0	4,211.1	2,601.9	5,923.0	745.9	1,283.2	190.2	0.0	0.0	0.0		17,083.3
Oakland	3.8	4,625.0	7.0	236.0	7,334.0	4,033.5	7,703.5	2,120.5	2,245.5	93.0	0.0	0.0	0.0	916.2	29,318.0
St. Clair	17.0	1,364.0	61.5	120.5	2,273.0	1,563.0	2,467.3	921.5	553.0	209.0	153.0	0.0	0.0		9,702.8
Wayne	51.0	4,283.0	64.0	193.0	11,714.0	5,154.0	11,384.0	3,015.0	3,401.0	0.0	0.0	0.0	0.0		39,239.0
<b>Total Tons Used</b>	<b>75.0</b>	<b>12,669.3</b>	<b>132.5</b>	<b>683.1</b>	<b>26,484.5</b>	<b>14,167.3</b>	<b>28,250.8</b>	<b>7,245.9</b>	<b>7,615.7</b>	<b>568.2</b>	<b>153.0</b>	<b>0.0</b>	<b>0.0</b>	<b>916.2</b>	<b>98,961.4</b>

**From:** Mike Cluney  
**To:** mi-waterstrategy  
**Cc:** [REDACTED]  
**Subject:** water strategy for great lakes freep sunday july 26, 2015 page 6A  
**Date:** Sunday, August 02, 2015 8:37:42 PM

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Regretfully I could not attend the Detroit area meetings, however, that in no way lessens my concern for the great lakes. My primary concern for the great lakes and rivers leading to the great lakes is Muskegon river and the oil pipe line leak there.

Obviously we need energy but we need it to be made available in a fully comprehensive safe and responsible manner and having millions of gallons of crude oil sand leaking into the Muskegon river is not acceptable.

Of even greater concern is the same antique oil pipeline traveling the length of the upper peninsula along the southern coast line of lake superior down under the mackinaw bridge to the lower peninsula is more than worrisome given the past major, major oil leaks that have plagued the O & G companies not the least of which was the gulf of mexico leak (GROSS NEGLIGENCE) on the part of (BRITISH PETROLEUM) who recently applied to the EPA to allow the BP refinery (whiting Indiana) to increase its pollution of the south tip of lake Michigan.

Fracking has also raised its ugly head in a number of incidents not only in Michigan but other states as well. It not only permanently destroys large quantities of fresh water in its dislodging natural gas 12 miles down but has polluted the air and land around the well sites.

And the only reason the O & G industries frack is to harvest and export nat gas off shore to Europe where natural gas brings \$11.00 per cubic foot where in the U S we only pay \$2.00 to \$3.00 per cubic foot.

If you ask me where the emphases should be placed when it comes to water strategy for the Great Lakes O & G industry regulation should receive high priority. I am for a complete and comprehensive ban on fracking in and around the great lakes !

Michael Cluney  
[REDACTED]

**From:** [Margaret Weber](#)  
**To:** [mi-waterstrategy](#)  
**Subject:** comment on Draft Sustaining Michigan's Water Heritage  
**Date:** Monday, August 03, 2015 4:52:28 PM

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Aug 3, 2015

Thank you for the draft document Sustaining Michigan's Water Heritage, and the work to craft a 30-year strategy for protecting the Michigan's water resources.

I respectfully submit the following suggestions for strengthening the "moral/social imperative" of this endeavor:

1. As others commented at the Detroit hearing, the importance of "Inspire Stewardship for Clean Water" is key. Thus, placing it at the TOP of the list of the list under "strategic action," page 3-4 draft. Placing the inspiration piece first makes it clear that energy and inspiration will underpin all the other commitments.
2. Related to the above point, I urge that the Vision and Introduction connect to the global recognition of the importance of water, i.e., the UN's Human Right to Water, and affirm Michigan's commitment to the Human Right to Water. The World Economic Forum is cited, but not the United Nations.
3. I did not see noted that the Great Lakes is one fifth of the Earth's surface fresh water. That lends great social and moral need for leadership in stewardship.

In short, please build the case for this strategy from the social and human, not solely the business and economic perspective. All important, but it feels "light" on the social contract side.

Thank you for your work.

Margaret

Margaret Weber  
Convener, Zero Waste Detroit

Coordinator  
Rosedale Recycles  
15015 Piedmont  
Detroit, Mi 48223  
[weber@igc.org](mailto:weber@igc.org)  
313-938-1133

**From:** [Bair, Michael \(DEQ\)](#)  
**To:** [mi-waterstrategy](#)  
**Subject:** Water Strategy Comments - Michael Bair  
**Date:** Tuesday, August 04, 2015 9:25:34 AM

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Dear Water Strategy Editors,

After reviewing the strategy draft, I have come up with a few comments and suggestions. These ideas are fairly broad, but they include some of my main concerns with the draft. I hope you take the following into consideration:

Increase Access to Great Lakes by providing public access to every five miles on shorelines.

- I find this to be a good intention, but it has a high risk of failure. There are too many people that would get upset by public access being added in areas that are natural and have been untouched for generations.

Promoting Water Based Economies

- This seems risky, as marketing Michigan's advantages based off of an abundance of water would mean a possible depletion of the great lakes natural fresh water and beauty

This whole water strategy seems really great for the state! However, there is so much business/economic strategy that it is hard to see a healthy balance between conservancy and economic growth here. In the strategy, Michigan seems to be used as a bargaining chip, displaying its natural resource advantages on the forefront as a means to economic success. Both sides, economic and conservation, are presented well; but when put into action, will both be able to coexist simultaneously?

Thank you,

-Mike

**From:** [Spratling, Diamond \(DEQ\)](#)  
**To:** [mi-waterstrategy](#)  
**Subject:** The Water Strategy Review  
**Date:** Tuesday, August 04, 2015 9:55:44 AM

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Hello, my name is Diamond Spratling. I am currently a sophomore at Bowling Green State University. I am also finishing up my internship at the Michigan Department of Environmental Quality. I would just like to say that I really enjoyed reading The Water Strategy Report. This report really opened my eyes to what could potentially be a new Michigan. Prior to reading this report, I hadn't even had an interest in water conservation, let alone the numerous ways Michigan could benefit from it. Throughout my time at the DEQ, I got to work on a project that pertained to both The Water Strategy and The Blue Economy. I must say, that was by far the most exciting and interesting project I worked on all summer. I am excited to see what Michigan will do next and I would love to be a part of the next steps.

Diamond Spratling  
Office of Environmental Assistance, Intern  
Michigan Department of Environmental Quality  
[SpratlingD@michigan.gov](mailto:SpratlingD@michigan.gov)  
Ph: (517)-284-6886  
Mon- Tues. 8 a.m- 5 p.m

**From:** [REDACTED]  
**To:** [The Water Strategy](#)  
**Subject:** Water for Detroit Residents  
**Date:** Friday, August 07, 2015 10:04:48 AM

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Please make sure all Detroit residents, rich and poor, have water. It's a basic need for all.

Jean Klarich

**From:** [Patricia Becker](#)  
**To:** [ml-waterstrategy](#)  
**Subject:** Water for all  
**Date:** Friday, August 07, 2015 10:45:31 AM

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Water should be infrastructure. It should be paid for out of tax money and not billed to individual customers. That's the long-term solution to this problem.

Patty Becker

Patricia C. (Patty) Becker  
APB Associates/Southeast Michigan Census Council (SEMCC)  
28300 Franklin Rd, Southfield, MI 48034  
office: 248-354-6520  
  
[pbecker@umich.edu](mailto:pbecker@umich.edu)

**From:** [Linda Jennette](#)  
**To:** [mi-waterstrategy](#)  
**Subject:** water strategy  
**Date:** Monday, August 10, 2015 8:35:26 AM

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Antecdotal evidence/problem to address:

It's not just the Great Lakes which are at risk. Many of the small to mid-sized lakes have wells and septic systems. The high water table around a lake makes it difficult to site a septic system far enough away from the lake to make it safe for the lake water. The lakes are filling with water plants since they are being well fertilized from the septic tanks circling the lake. Persons living besides streams feeding these smaller lakes also contribute, through the groundwater, to the problem. The home owners DO NOT want sewers put in because of the expense. Some of these lakes are far from a treatment plant so, what can be done with the untreated sewer water if sewers were installed around the lake?

I'm certain your group has thought through this problem but it needs to be addressed as well.

**From:** [khaya davidson](#)  
**To:** [mi-waterstrategy](#)  
**Subject:** Right to water  
**Date:** Tuesday, August 11, 2015 8:09:56 AM

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People have a right to quality, affordable water. I urge you to expand your State water plan to include a REAL PLAN to make water more affordable to the residents of ALL of Michigan's communities as soon as possible.

Thank you,

Khaya Davidson, Farmington Hills 48336

**From:** [Alexi Chapin-Smith](#)  
**To:** [mi-waterstrategy](#)  
**Cc:** [james@environmentalcouncil.org](mailto:james@environmentalcouncil.org); [pratte@ewashtenaw.org](mailto:pratte@ewashtenaw.org)  
**Subject:** Comment from Rep Irwin on draft Water Strategy  
**Date:** Tuesday, August 11, 2015 5:40:01 PM  
**Attachments:** [Office of the Great Lakes Water Strategy comment.pdf](#)

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Hello,

Please find attached a comment from Rep Jeff Irwin on the draft Water Strategy, "Sustaining Michigan Water Heritage, A Strategy for the Next Generation." I have also copied the text of the letter below my signature.

Sincerely,

Alexi Chapin-Smith

---

Alexi Chapin-Smith

Legislative Aide

District 53 (Rep. Jeff Irwin)

Michigan House of Representatives

517-373-2577

[achapin-smith@house.mi.gov](mailto:achapin-smith@house.mi.gov)

August 11, 2015

Office of the Great Lakes  
Michigan Department of Environmental Quality  
P.O. Box 30473-7973  
Lansing, Michigan 48909

To whom it may concern:

I congratulate the Office of the Great Lakes for your admirable work in drafting a comprehensive water strategy plan. Such forward thinking is particularly necessary in Michigan because of our extraordinary fresh water resources and Great Lakes shorelines. I am grateful for the opportunity to offer constructive comments on the draft on behalf of my constituents. There are three main areas that should be expanded in the final strategy: dealing with climate change, providing for increased stormwater infrastructure, and implementing Michigan's mercury emissions rule.

Climate change is already having an impact on water quality, systematically influencing everything from invasive species to toxic cyanobacteria blooms to catastrophic precipitation. Because the water strategy is meant to be an accurate guide for future action and decision making, it must include an analysis of how climate change will affect water-related environmental outcomes and the methods we plan to use to achieve better outcomes. This

analysis should not be confined to a single area of the strategy. The effects of climate change pervade almost all the areas discussed in the draft strategy, so every chapter should include a discussion of climate trends as they relate to each topic. We cannot plan for the future without considering the best scientific predictions of what will happen in that future.

I also believe the draft strategy would benefit from an explicit commitment to address the challenges and opportunities around stormwater management in our state. As recent events have demonstrated, the Atlas 2 statistical model for 100-year storm events was a gross underestimate for Michigan. Climate change will only make these instances of extreme precipitation more frequent, exacerbating contamination from runoff and overloading antiquated municipal stormwater systems. Many municipalities, including my own district of Ann Arbor, are struggling to accommodate record amounts of runoff and to separate storm and sanitary sewers. Municipalities are very limited in their ability to raise the revenue needed for overhauling stormwater infrastructure, due to a Michigan Supreme Court decision requiring voter approval of stormwater fees. This water strategy should include a strategic path for communities to satisfy their stormwater management needs, coupled with a call for the Legislature to authorize tools such as improved stormwater utilities.

Runoff is a major source of pollution by phosphorus, nitrogen, and pathogenic bacteria in surface water. In order to reduce runoff contamination, the state water strategy should include a recommendation for funds to enable local governments to improve stormwater infrastructure. These funds, in the form of grants or revolving loans, should be available not just for conventional stormwater management but also for bioswales, permeable surfaces, downspout disconnection programs, and other green infrastructure initiatives to mitigate flooding and runoff.

Finally, it is vital that the water strategy include plans to enforce a state rule to protect Michiganders from mercury, in the wake of the Supreme Court decision vitiating the federal mercury emissions rule. The draft strategy recognizes that mercury emitted from power plants is the major contributor to making fish unsafe to eat in our state. The final version of the water strategy should include a strong recommendation that MDEQ fully implement and enforce its Part 15, Air Quality Rules, MAC R.336.2501-2513, to timely reduce mercury emissions from coal-fired power plants. This state rule was in abeyance while the federal Mercury and Air Toxics Standards (MATS) rule was in effect, but the state rule has a clause reinstating it now that the MATS rule is no longer applicable. If the federal government cannot act to save lives and prevent disability in Michigan, our state government must step up to protect our citizens from the deadly effects of mercury.

Thank you again for your work on this strategy to safeguard the people of Michigan and the water resources on which we all depend. I appreciate your careful consideration of the areas of potential improvement I have identified for our state's strategy.

Sincerely,

Jeff Irwin

Representative, 53<sup>rd</sup> District

CC:

Evan Pratt, Washtenaw County Water Resources Commissioner  
P.O. Box 8645

Ann Arbor, MI 48107-8645

James Clift  
Michigan Environmental Council  
602 W. Ionia Street  
Lansing, MI 48933

**From:** Myra MacDonald  
**To:** mh-waterstrategy  
**Subject:** Water for all  
**Date:** Wednesday, August 12, 2015 12:55:00 PM

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Dear Strategists,

Potable, quality water in a country like the United States should be the right of every citizen. We are each other's keepers and we will all eventually suffer if we deprive low income people of their right to water. It is unacceptable that people who cannot afford to pay for water are deprived of it. Please find ways to fund the water supply so that everyone has access to water!

Myra S. MacDonald



Darkness cannot drive out darkness, only light can do that. Hate cannot drive out hate, only love can do that.

**From:** [Bobby Litwin](#)  
**To:** [mi-waterstrategy](#)  
**Subject:** Water  
**Date:** Thursday, August 13, 2015 9:08:33 AM

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Please do not deny water due to people who cannot afford the outrageous prices. The last time this happened there was a big scandal in the Water department. Don't let that happen again!

**From:** [Finnell, Emily \(DEQ\)](#)  
**To:** [mi-waterstrategy](#)  
**Subject:** FW: Water Strategy comments  
**Date:** Thursday, August 13, 2015 3:40:16 PM  
**Attachments:** [Water Strategy Summary Items.docx](#)

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Emily Finnell  
Office of the Great Lakes | MI Department of Environmental Quality  
PO Box 30473  
Lansing, MI 48909  
[finnelle@michigan.gov](mailto:finnelle@michigan.gov)  
517-284-5036

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**From:** Evan Pratt [<mailto:pratte@ewashtenaw.org>]  
**Sent:** Tuesday, August 11, 2015 12:02 PM  
**To:** Finnell, Emily (DEQ); Allan, Jon (DEQ)  
**Subject:** Water Strategy comments

Dear Jon and Emily

Thank you for your stewardship over the development of the draft Water Strategy, along with the recent outreach in July and August. Along with many other stakeholders I have spoken with from diverse segments of our economy and demographics, I agree that water is an economic engine that Michigan would do well to harness and manage sustainably.

My understanding from the July public meetings around the state is that while feedback on the positives is always appreciated, the type of input you are currently seeking is constructive, detailed and specific feedback on where we might be able to increase our collective chance of success in implementation. With those instructions in mind, I am attaching a document that is longer than I might have submitted if the goal was brevity vs detail, and offer this over-arching summary of the areas of greatest concern to this office, falling into these five main areas:

1. The Strategy calls for implementation via local leadership. Through the MS4 process, dozens of local leaders, mainly in urbanized areas, have been doing everything in their power for cleaner water, particularly in urbanized areas where problems are worst. Progress has been substantial, but many obstacles prevent locals from doing what we know is needed. These obstacles require state leadership and commitment of resources if any different outcome is expected. Three specific examples include enabling more local funding tools, providing high-level public engagement and economic development effort, and providing tools to incent compliance with voluntary Recommendations.

In short, the Strategy does not provide much new that one would expect to result in a greater commitment or change in local effort levels in the Grand Traverse, Tri-County, SEMCOG, or GVMC regions. Only about 5% of Michigan's population lives outside those regions, so it would be difficult to expect a change in results if these obstacles, repeatedly identified by local leaders all over the state, are not addressed.

2. The outcomes, or Measures of Success are not specific enough in many areas for people to agree in the future that the goal has been accomplished or that significant progress has been made. It appears that most of the

Measures that have a specific, measurable outcome are from other plans or initiatives. There is a need for the Measures of Success to be measurable and timebound if the Water Strategy is intended to achieve more than other existing plans and initiatives.

3. The most important Measure of Success would be to improve on existing state efforts to manage water budgets in each aquifer and stream. The current tool falls short of establishing a connection between permitted water use and historic and current groundwater elevations and/or stream flows that is easily understood by the public. Additionally, with respect to cold water fisheries, temperature should be monitored and correlated with withdrawals and stream flows.
4. The Strategy is mute on many developing issues, yet talks about Asset Management, sustainability, and the need to apply these principles to our water resources in order to take full advantage of the economic advantages offered by our abundant resources. By definition, Asset Management is a process of prioritizing needs by multiplying risk factors times failure impacts. Ignoring developing, low-risk, high impact issues such as hydrocarbon transport, fracking, or invasives that are near but not here (yet) is inconsistent with language like Asset Management and sustainability, and subtract from the document's credibility.
5. It may be counter-intuitive, but perhaps worth considering that recruiting sustainable water intensive industries might be more viable economically than the suggestions to foster innovative new water technologies. The latter is normally a strategy of water-poor regions or countries. Two examples of sustainable water intensive industries are renewable energy from wave action and semiconductor fabrication.

This office is committed to continuing over 40 years of local leadership as suggested in the document, through implementation of the most progressive stormwater management regulations in the state while meeting with individual developers on every project to identify ways in which these regulations can save costs. We are also committed to a long list of best practices and educational outreach, including continued implementation and monitoring of green infrastructure in road Rights-of-Way for water quality improvement, a robust residential raingarden development program, and ongoing outreach and efforts to address agricultural soil and water conservation. Any areas where the State of Michigan is able to provide our office with additional support in the future as a result of the Water Strategy or other means will be greatly appreciated.

Thank you again for your efforts on the Strategy and for seeking feedback.

Evan

*Evan N. Pratt, P.E.*

**Water Resources Commissioner  
Director of Public Works**

Office of the Water Resources Commissioner  
Washtenaw County  
P.O. Box 8645  
Ann Arbor, MI 48107

<http://drain.ewashtenaw.org>

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**(734) 222 6860**

[pratte@ewashtenaw.org](mailto:pratte@ewashtenaw.org)

*Please consider the environment before printing or copying.  
I'm using Century Gothic font because it uses 30% less ink or toner.*



## EVAN N. PRATT, P.E.

WATER RESOURCES COMMISSIONER  
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email: [drains@ewashtenaw.org](mailto:drains@ewashtenaw.org)  
<http://drain.ewashtenaw.org>

MEGHAN BONFIGLIO  
Chief Deputy Water Resources  
Commissioner

Telephone 734.222.6860  
Fax 734.222.6803

August 11, 2015

TO: Mr. Jon Allan, Office of the Great Lakes

FROM: Evan Pratt, Washtenaw County Water Resources Commissioner, Director of Public Works

RE: Water Strategy document

Dear Water Strategy Team:

Thank you for your comprehensive and challenging work to develop the Water Strategy document. There is a lot in the document, and a lot to like! In particular, I and many of the people I have spent a career working with agree that the concept of water as a sustainable economic engine is an excellent strategy on which to focus. And of course we appreciate the formal acknowledgement of the symbiotic relationship between a cleaner environment and a successful economy.

My understanding from the July public meetings around the state is that while feedback on the positives is always appreciated, the type of feedback you are currently seeking is honest, detailed, and specific feedback on where we might be able to increase our collective chance of success in implementation. With that in mind, the format of my remaining correspondence will be to first identify specific areas of greatest concern to this office, secondly to identify specific areas of greatest concern to this office identify general areas that may not have been specifically addressed in the Strategy, then third to provide feedback on other specific items in the document, by Chapter.

The areas of greatest concern to this office fall into these five main areas:

1. The Strategy calls for implementation via local leadership. Through the MS4 process, dozens of local leaders, mainly in urbanized areas, have been doing everything in their power for cleaner water, particularly in urbanized areas where problems are worst. Progress has been substantial, but many obstacles prevent locals from doing what we know is needed. These obstacles require state leadership and commitment of resources if any different outcome is expected. Three specific examples include enabling more local funding tools, providing high-level public engagement and economic development effort, and providing tools to incent compliance with voluntary Recommendations.

In short, the Strategy does not provide much new that one would expect to result in a greater commitment or change in local effort levels in the Grand Traverse, Tri-County, SEMCOG, or GVMC regions. Only about 5% of Michigan's population lives outside those regions, so it would be difficult to expect a change in results if these obstacles, repeatedly identified by local leaders all over the state, are not addressed.

2. The outcomes, or Measures of Success are not specific enough in many areas for people to agree in the future that the goal has been accomplished or that significant progress has been made. It appears that most of the Measures that have a specific, measurable outcome are from other plans or initiatives. There is a need for the Measures of Success to be measureable and timebound if the Water Strategy is intended to achieve more than other existing plans and initiatives.
3. The most important Measure of Success would be to improve on existing state efforts to manage water budgets in each aquifer and stream. The current tool falls short of establishing a connection between permitted water use and historic and current groundwater elevations and/or stream flows that is easily understood by the public. Additionally, with respect to cold water fisheries, temperature should be monitored and correlated with withdrawals and stream flows.

4. The Strategy is mute on many developing issues, yet talks about Asset Management, sustainability, and the need to apply these principles to our water resources in order to take full advantage of the economic advantages offered by our abundant resources. By definition, Asset Management is a process of prioritizing needs by multiplying risk factors times failure impacts. Ignoring developing, low-risk, high impact issues such as hydrocarbon transport, fracking, or invasives that are near but not here (yet) is inconsistent with language like Asset Management and sustainability, and subtract from the document's credibility.
5. It may be counter-intuitive, but perhaps worth considering that recruiting sustainable water intensive industries might be more viable economically than the suggestions to foster innovative new water technologies. The latter is normally a strategy of water-poor regions or countries. Two examples of sustainable water intensive industries are renewable energy from wave action and semiconductor fabrication.

**Areas not specifically addressed in “Table 1: Priority Recommendations and Measures of Success”**

- It is unclear why Table 1 (p. 6) does not include all of the Recommendations in the full text document (Table 2, pp. 58-73), and/or why some of the 9 Goal sections included more or less of the Recommendations. The concern is that Table 1 is the “ones that matter”, or the “ones that matter more”. We do understand that Table 2 is intended to be aiming for 5 years.
- There is a real opportunity (see comments on Goal 5) to find synergy between a more targeted business development strategy and our harbor towns and cities. Some of those communities are not financially equipped to recruit target businesses, and more importantly, there is a small subset of businesses that are particularly well-suited to the transportation advantages of our harbor and port towns or the advantages of our abundant water. It makes no sense for those communities to each have an individual economic development director on a shoestring budget. This is a specific area where the strategy will underperform – why sink the kind of infrastructure money it takes to jump start our harbor towns on their third or fourth life without providing the state's economic development horsepower as a shared resource targeting 3-4 industries on behalf of all of these communities? The Strategy acknowledges a current concern with the ability of small communities to maximize their development potential in this regard.
- Dozens if not hundreds of local agencies have already been leading to the maximum extent possible – some prior to regulatory requirements, some with enthusiastic commitment after adoption of regulatory requirements, and some to the best extent possible given municipal finance constraints. It is a point of fact that many of us are doing this at our current pace ONLY because of state commitment to grant and loan programs that we tap each and every year. For this we are thankful. However, we cannot do anything more, lead any better, or move any faster until the following items (summarized in this bulleted list, expanded on in the comments elsewhere in this document). If the message is that a successful Water Strategy will be through local leadership, our response is that local agencies have made huge contributions in the past 15-25 years but can do no more until the following issues we have repeatedly raised in this and other similar forums are addressed:
  - Continued and expanded funding mechanisms for stormwater management and monitoring
  - Funding for environmental clean-up
  - The State must recognize areas that would be redundant and unproductive if locally led (high-level public messaging, economic development support to name two)
  - Enable local Land Use policy decisions to include authority to discourage the past several decades of inefficient use of resources and added infrastructure burden (60% increase in infrastructure over the past 2-3 decades with no increase in the number of people to pay for it – sprawl costs us all).
- It would be helpful for the Strategy to acknowledge the above issue about expanding infrastructure paid for (or being underfunded) by a stagnant population base, particularly the negative impact if the trend continues.

- Relative to plan elements identified as voluntary, I understand and agree with the policy of the Governor's office that innovation must be market driven, not subsidized by incentives. But there is a different kind of incentive to foster behavior change. The following comment pertains to behavior change of businesses regardless of whether they are innovative with respect to what they sell. Several critical aspects of the Recommendations and Outcomes have neither a carrot nor a stick. History is very informative in painting a CLEAR picture that economically sustainable businesses must behave in a way that first makes economic sense, and history shows that protecting the environment and improving water quality is not normal business behavior, sometimes even when there are clearly established laws. I submit to the reader that behavior will not change without a carrot or a stick. Recognizing that adding rules and requirements might compromise the economic goals of the Strategy, this leads us to the carrot.

The word "incentive" is absent in the Water Strategy. Incentives do impact the economic math done by businesses and related economic activity, and are also a proven driver toward providing a value proposition for the environment, which is often an abstract that is undervalued or not considered at all in a business' financial planning. Success will be more likely with a thoughtful application of the word "incentive" in the Recommendations and Outcomes. *If even a large minority of those affected by the Water Strategy were naturally inclined to move in the direction of the Recommendations and Outcomes, we would not need a Water Strategy.* So again, I only suggest that incentives are applied in a limited way as the only option for meaningful behavior change, not to subsidize any specific industry or product development. An example of the kind of carrot intended would be to have 5 to 15% of any economic development funding to be scored based on the applicant's commitment to the voluntary activities identified in the Strategy – re-use, site clean-up, public-private partnerships on issues in the Strategy, etc. This concept could apply to public or private applicants, depending on the funding source.

- On a somewhat related note, it would seem that brownfield funding helps address two problems – first the sprawl vs. redevelopment dynamics, and secondly the stated need to clean up contaminated sites more quickly. While I understand the Governor's office was a primary driver in removing brownfield funding legislation, at a bare minimum, this report should provide a paragraph comparing the impact on the amount of annual sites cleaned up before and after the brownfield funding programs were changed, and/or recommend a specific longer term analysis if current information is not statistically significant.
- It is a scientifically documented fact (Schuler, 1979-2012) that stormwater drains in road rights-of-way are the greatest collectors of non-point source pollution. Yet road agencies have some of the lowest percentages of stormwater that receives pre-treatment or any other type of treatment, and are not historically structured or funded to provide roads with high performance stormwater goals. The failure to adequately fund road infrastructure is well documented in Michigan. Based on foundational science dating back to the 1970s, over half the stormwater volume (and therefore pollutant loading) in urbanized areas comes from public ROW. All pollutants from vehicles (primarily heavy metals) of course end up on roadways, whether in urban or non-urbanized areas. Phosphorous from residential, agricultural, and other areas also tends to be transported through stormwater infrastructure within public ROW. Thus, road agencies' assets now produce the largest share of pollutant loading of stormwater, but no Recommendations or Outcomes identify what type of progress is anticipated.

Road agencies have not historically been early adopters of water quality best management practices, as one can see from simply driving around or from talking with progressive agencies about their own departments or neighboring road jurisdictions. While there are legitimate funding and space issues that have resulted in road agencies lagging behind in water quality performance, the fact remains that a 40% phosphorous reduction is impossible without improvement by road agencies. Because this component of water quality is so impactful, it would be unreasonable to expect success without identifying meaningful targets for improvement of water quality treatment for roadways. A phased approach as roads are reconstructed seems logical. In Southeast Michigan, this was once also true of sewer systems and treatment plants, but in the past 20 years, sewage overflows have been reduced by more than 85%, as reported in 2012 by SEMCOG. It is notable that the progress in sewer overflows has only been made due to federal court action setting specific targets – in this case the stick that changed how communities prioritized known problems given limited funds.

- The balance of agriculture-related outcomes vs. tourism/Pure Michigan related outcomes is disproportionate to their relative economic and environmental impacts. Our harbors are important, but 9 of the 62 listed Key Recommendations relate to water recreation (harbors, ports, parks, etc) while there are no recommendations relative to agriculture. We absolutely need to ensure sustainable supplies of clean groundwater for agriculture as the #2 segment of our economy. There is also room in the strategy to add recommendations for funding to incent water conservation on agricultural land, particularly lands that have field tile.

It is useful to note that water conservation often results in soil conservation as well as improved nutrient retention for a variety of reasons. A relevant Recommendation might be something like *“Add water conservation incentives to voluntary agricultural programs, and provide mechanisms for local ‘matching funds’ to allow local agencies to ‘sweeten the pot’ (local funding over and above Farm Bill payments) for farmers when there is a local motivation”*. And a relevant Outcome might be *“20% of stakeholder-targeted Michigan tilled acreage participates in water conservation measures by 2025”*. Stakeholders in the agricultural industry could assist with identifying target lands for water conservation. And stakeholders are likely better suited to construct the Recommendations and Outcomes we need to be aiming for, but the above two ideas are a start.

- The need for behavior change and the commensurate effort required for education and public outreach is not reflected in the Water Strategy. It is good that there is a Recommendation to incorporate water literacy into the state curriculum, but the majority of people in the state are not in the k-12 environment suggested in the Recommendation. It is relevant to note that Public Outreach the most substantial component of regulatory compliance and documentation for current stormwater regulations (through the Municipal Separated Storm Sewer System or MS4 permit process) managed by MDEQ since 1998. In 17 years, despite this requirement and honest efforts by many affected agencies to engage and educate people, surveys repeatedly show that while awareness of this subset of water issues has improved, public awareness of the cause and effect the public has as individuals is still poor at best (barely over 50% in high-performing areas, with awareness improving less than a 1% gain per year). And the individual citizen has less financial barriers to behavior change than most businesses.

To be blunt, it is unreasonable to expect that the somewhat more abstract ideas of the Water Strategy will take hold with individuals and businesses without a public engagement and education effort on at least the scale of the *Pure Michigan* campaign, and a longer, possibly permanent effort is also needed. As noted above in the bulleted areas for state leadership on page 2, it is not efficient or effective to have this as a locally lead effort, this is the most reasonable and fundamental area in which the State of Michigan MUST lead and allocate budget.

- Many of the Goals (especially 3-5) could be supplemented with a stated private investment outcome(s). Much of the historic investment in successful harbor towns (and any built environment) was heavily weighted toward private investment, with government a key partner for certain aspects such as shipping channels, lighthouses, public docks, public buildings, etc. The government could weight investment decisions for public funding in any of these areas by favoring (slightly or more) those that include a private investment component, with additional ‘points’ for public local match funding or other multi-jurisdictional support, similar to criteria for EPA Economic Development funding. This is a particularly logical analogy since the 10 regions of the Water Strategy are the same Regions established by EPA for Economic Development Assistance (EDA) funding.

A Recommendation might be to re-organize or create a niche at MEDC to target public-private partnerships for the types of investments specifically recommended in the Water Strategy. Another MEDC niche or role would also be relevant for the suggestion in my comments herein on Goal 5 related to targeting water-intensive industries and seeking to site clusters near harbor towns and cities that would benefit from development.

Finally, if all 10 Regions are not currently eligible for EPA EDA funding, ensuring eligibility or providing state support for establishing eligibility would be a logical Outcome to include. Our region was not eligible until within the last 5-10 years, when the required Plan was finally developed. EDA funds are normally 50% match.

- We have received a pretty clear message in multiple public presentations of the plan that the Water Strategy Team was directed to make clear that the state has a limited ability to lead. We have heard that local leadership commitment is a primary goal and the state is not likely to make substantial budget allocations or legislative efforts to providing more leadership on removing obstacles that have impeded local agencies. Let me make clear that there is virtually NOTHING in the water strategy that agencies capable of demonstrating leadership are not already doing. We are doing as much as we can, as quickly as we can. In the three public sessions I attended, the main thing I heard that is a concern was the idea that the Strategy does not recommend that the state address the major obstacles or newer threats emphatically mentioned by local agencies that are well known for their environmental and water quality leadership (Ann Arbor, Oakland County Water Resources, SEMCOG, Washtenaw County Water Resources, Ypsilanti Township, etc in our Region alone). I would ask for your understanding of my inability to see value in the Water Strategy for the hundreds of agencies across that state who at the very least have been working for 15 years (the above communities for more like 40) on the exact Recommendations and Outcomes listed in the plan to our maximum ability. Please accept the reality that these leaders cannot lead any better or work any harder until the State of Michigan commits to addressing the obstacles pointed out by your most experienced local leaders. When the front line report is “we’re out of bullets”, there is no way to expect success without more bullets.
- Land preservation is not mentioned anywhere. Several studies have demonstrated that even minor land uses (as low as 10% impervious) in a watershed start to impair waters. Not only does land preservation help with this factor, but programs related to agricultural land preservation typically prioritize prime soils for agriculture. This should be acknowledged, particularly in light of the notion that because prime soils are the best, prime farmland also requires less of the inputs that are the primary concern of the Water Strategy – fertilizer and water. And as noted elsewhere in this document, the economic reality that sprawl is cheaper than sustainable development suggests that land preservation has a role.
- Also, for my department as well as other long-term performers, the Strategy describes the same things about the same old issues (challenges of wellhead protection, septic ordinance, groundwater monitoring, site remediation, etc). At the public meetings we heard that the new issues like hydrocarbon transportation (pipelines, rail, etc), fracking, and Asian carp do not warrant addressing in the Strategy. These are not Malcolm Gladwell’s Black Swans; these developing threats are issues that will require much less resources to prevent than to fix. If they are not part of the plan, costs will skyrocket just like CSO’s have caused tens of billions of retrofit work.

The same kind of deaf ears refused to listen to public works experts (the sergeants on the front lines), and instead listened to the economic song of the homebuilding lobby relative to footing drains in the 1960s. Footing drains were known then and are known today to be the SINGLE BIGGEST CONTRIBUTOR to sewer overflows, and tens of billions has been spent to remediate sewer overflows in Michigan.

I am unable to understand the value of a document that includes no Outcomes associated with issues that, while they may have a low risk of failure, have an astronomical negative impact of failure. This ability to ignore an elephant in the room is particularly disappointing in a document that mentions Asset Management as a valued concept. Asset Management is clearly defined as a prioritization system based on the *risk times the impact of failure*, to maximize efficiency of resource allocation. Any independent third party conversant in Asset Management would say it is inconsistent with the principles of asset management to ignore low-risk, high-impact issues such as hydrocarbon transport and fracking or at least fracking waste and permanent removal of water from the water cycle.

- Overall, it is encouraging that Table 2 is an ambitious set of goals, and even more encouraging to see that a role is envisioned for numerous related state agencies. The flip side of this is that those agencies have seen repeated staffing and budget cuts over the past 15 years, and it is well known that staff workloads are challenging at best – including in regulatory roles related to business activity. Permits typically take the maximum review time allowed by law, often to the day in a 90 day or 180 day period. While it is difficult to understand what workload from the Strategy is already being performed by staff and what additional effort is envisioned, it is more clear that existing staff is already over capacity, and even if the Water Strategy only requires re-prioritization, there will at best be more work than staff for at

least a 2 year period. While we grasp the point that there is not a huge pot of money at the state for implementation, it would be logical to expect a more successful change initiative if there is some clarity on how the Strategy recommends funding the necessary change for state agencies to be able to assume any new roles implied by the assignment of various Recommendations or Outcomes to their agency.

And further, perhaps there are suggestions for how to fund these new or restructuring activities, such as identifying what would fit within the reasonable range of existing fee adjustments. In short, the concern is that the Strategy shows some measure of extra work and leadership in certain specific areas (groundwater monitoring or a statewide public education campaign as examples), but this extra work is proposed with no budgetary changes, to be done by people who already have full plates.

#### Comments related to *Table 1: Priority Recommendations and Measures of Success*

##### Goal 1:

1. Toxic algae is related to phosphorous, but also related to nitrogen and seasonal weather patterns. Therefore other Recommendations might be needed to reduce blooms and/or nutrient loading. Overall, it is good there is a Measure of Success for harmful algal blooms but it is vague, especially whether the 40% is total phosphorous including that in the lake bed sediment, or just the phosphorous in the water. This is particularly relevant given the scientifically documented impact of embedded or sequestered phosphorous directly tied to toxic algae blooms.
2. There needs to be a Measure of Success/Outcome for our aquifers, something like *“the average groundwater table for all aquifers is measured, and maintained in a sustainable, stable range”*. This is critical to many aspects of our state, especially our #2 economic driver, Agriculture.
3. Related to the above, a Recommendation should address the further development of the Water Withdrawal Tool, stating something like *“Leverage the water withdrawal tool to create publicly (and easily) accessible streamflow and groundwater elevation data, along with the total quantity of permitted withdrawals”*. The first listed Outcome in Table 1 is difficult to assess (“...no net loss of cold water habitat due to water withdrawal...”) without a tool that can demonstrate the relationship between stream flow (and temperature) and withdrawal(s).
4. There needs to be much greater public transparency about water use, withdrawals, and impacts, and this transparency can also meet education and outreach needs. To promote public awareness of water budgeting, there should be a recommendation to not only improve the user-friendliness of the water withdrawal tool, but any agency that receives funding for certain defined water-related projects should be required to include a link to the tool on their website, along with a paragraph briefly explaining the tool’s purpose. *It should be easy to understand whether any aquifer or stream is being impacted more than it can handle – a dashboard-type dial or reading for each one to keep it simple, before accessing the reams of data and tables that are not as easy for the public to interpret.*

##### Goal 2:

1. This document would have been the ideal vehicle for recommending a return to brownfield funding and/or other incentives, given the need for contaminated site clean-up funding, and the stated overarching objective of balancing economic and environmental goals. One major (and related) reason that Michigan’s infrastructure gets a “D” from the American Society of Civil Engineers is sprawl. We have about the same population (10 million) as 2-3 decades ago, but 60% more pipe and road infrastructure for those same people to support financially. Greenfields are cheapest to develop, so brownfield funding and other incentives, especially in urban areas, make sense not only with the stated economic and environmental goals of the Water Strategy, but also from a long-term infrastructure funding perspective. While it may not be appropriate for this document, it is relevant to note that our state will not be sustainable until the economics of greenfield development vs re-development are more competitive.
2. Fracking is not addressed, nor is transportation of hydrocarbons (pipeline, rail, etc). Nor is radioactive waste storage (low or high level). Some fracking waste is radioactive, and fracking currently PERMANENTLY removes water from

the water cycle in very large quantities. If we are going to allow fracking, we need to recover the water that is used in fracking, not inject it into rock fissures that are disconnected from the water cycle.

Major accidents due to transportation of hydrocarbons are a real and serious threat with measurable (historic) probability. Fracking and hydrocarbon transport must be more soundly addressed if the Water Strategy is to be taken seriously. Recommendations and measurements should include safety, emergency response, and tough operator accountability. Most disinterested geologists would not recommend storage of high level radioactive waste in the Great Lakes Basin, and most would want to see a lot of information before making a professional statement about the safety of our water resources relative to storage of low level radioactive waste in the Great Lakes Basin.

3. There is no stated goal for clean-up of contaminated sites, other than to “accelerate” if more funding is found. It may be difficult for people to take the environmental side of the strategy seriously without stating the number of contaminated sites, total acreage, and what we envision those numbers becoming in the next 5, 10, 20, and 30 years. While brownfield funding is one option, a commitment to a more aggressive legal strategy is another. Either way, a meaningful Outcome would sound something like *“Reduce the number and acreage of contaminated sites in Michigan xx% in 10 years and yy% in 30 years”*. In my County, it is a great source of frustration that a site identified by MDEQ as “...the 2<sup>nd</sup> most contaminated site in Michigan...” in 1986 is larger now than it was in 1986, as well as larger now than in 2000 when the judge on the case ordered the clean-up to be completed by 2005. In this situation, originally discovered in the 1960s, “faster” is a pretty low bar.

We appreciate a stated desire to “find funding to accelerate clean-up”, but the reality of “that which is measured will improve” is more important given how long many of these sites have languished. One Recommendation might be *“Establish a division of the Attorney General’s office focused on the technical and legal complexities of contaminated site clean-up, with quarterly update meetings on progress with MDEQ and the Governor’s office resulting in a publicly reported ‘Dashboard’ on the number of sites and acres cleaned up vs remaining”*. Most contaminated sites are the result of economics and business being favored over water. It would be consistent with the stated goals of the Water Strategy to be known as a state that is willing to make the tough choices needed to accelerate the clean-up of contaminated sites. On a related note, the contaminated site mentioned above is owned by a business that has 0 jobs in Michigan, with the exception of their lawyers and lobbyists.

4. The idea of a statewide sanitary code would be beneficial, particularly if it includes something as simple as a “point of sale” inspection requirement for septic fields. Many places that randomly test septics average about a 25% failure rate. Agencies with a “point of sale” requirement typically average about 5-10% failure rates.

Goals 3 and 4:

1. Our harbors, ports, and other maritime infrastructure are important, and these are very expensive assets. There should be a Measure of Success related to Return on Investment, as the state’s limited funds also need to incent economic drivers. Harbors should only be “...prioritized...” as stated in the goals if it can be demonstrated that they provide the best return on investment. It should be noted (and is acknowledged on p.33 relative to Water Trails) that a much larger quantity of our state’s population will benefit from smaller investments in river corridors and lake access areas, and therefore more likely that the 30% increase in water-based recreation and tourism is achieved through river corridor and lake access than harbors. Even more so for the Measure “...90%... access to swimmable and fishable water.”
2. It is possible that urban river corridors and lakefronts have a sound rate of return when compared to investments in our state’s harbors/ports. Developing a “Riverwalk” or “Lakefront” district seems similar to the goals of the harbor and port funding, and should perhaps be measured the same way, although maybe would be a “minor” category to the “major” of harbors and ports. The similar goal is having a community “front door” toward the water, which has a major benefit of a greater local commitment to BOTH the environment and the economy. Every one of our major ports has a river that drains into it, so there is a strong relationship, especially on the environmental side, as a dirty river will ruin investment in a clean harbor. This concept is recognized on p. 33 of the Strategy in mentioning upstream sediment management.

3. Adding an Outcome/Measure of Success seeking a “*Water Quality Plan by 2020 for 100% of the state’s (recreation) harbors*” would be more consistent with the stated goal of balancing the economy and the environment, and would fit with and balance the Recommendation seeking an infrastructure asset management plan for 100% of the state’s harbors.

#### Goal 5

1. It might be useful to observe other areas of innovation in the world and consider a Recommendation and Measure that relates to identifying water-intensive business sectors, then prioritizing State-supported business development funding to target business recruitment for those sectors. While this report is general and not the place to list specifics, one specific example to illustrate this point is that semiconductor fabrication is not only water intensive but also requires precision manufacturing, both strengths of our state. Likewise with the market segment devoted to harnessing offshore wave energy. There are no doubt several other key market sectors that have similar needs that are well suited to Michigan’s strengths.
2. It is useful to note that one might want to consider our harbors/ports as potential areas to site these manufacturing sectors, as a synergistic strategy that would improve the ROI of harbor investments. The synergy comes in at least five (5) ways. First, the water would be close to water-intensive industries. Second, these harbors/ports are all in areas with relatively low-cost development – ports like Frankfort and Oscoda are surrounded by inexpensive open land, and ports like Detroit or Benton Harbor are surrounded by underutilized land that already has full infrastructure in place. Even without brownfield funds these would likely make economic sense for target industries. Third, many contaminated sites are situated in or near these harbors/ports due to their long history as economic drivers, so redevelopment would have the greatest impact on the stated goal of accelerating clean-up of contaminated sites. Fourth, critical multi-modal transportation access is best at these major ports, offering the best multi-modal access of any development sites in the state with shipping, rail, and trucking serving these ports longer than any other locations in the state. Fifth and finally, the above concern about ROI on harbor and port infrastructure would improve simply by more people living in the area as a result of siting target industries nearby. And as suggested in comments elsewhere, our harbors and ports have reinvented themselves by taking advantage of these synergies through 3 or 4 macro-economic cycles. First the fur trade, then timber, then manufacturing, and some for the complex ore/steel/automotive economic cycle.
3. Relative to the first Recommendation, it may be counter-intuitive but important to be fully aware that water-rich areas are historically poorly suited to developing “...water technologies to solve water problems...” Spain, Australia, and Singapore are world leaders in desalination because they lack water. Israel is a leader in many other water technologies for the same reason. The suggestion of targeting water-intensive industries (above) will be a more successful strategic approach. One example where Michigan is currently a leader is in the automotive Research and Design sector. Dynamometers are devices used to test long-term vehicle wear & tear, and are very intensive in water use. Michigan has the densest concentration of dynamometers in the world.
4. The Recommendation for voluntary water efficiency targets might be more successful if a recognition program was also a stated objective. While awards are a one form of recognition, a form of recognition with even better proven results would be including water efficiency as one of the scoring criteria for economic development, tax incentives, or other funding that goes to businesses. It would not have to be heavily weighted; even a 10-15% factor is enough to get a grant applicant’s attention in our current world of highly competitive grants.
5. Relative to the water conservation and re-use strategy, we find another example of a water-rich state being poorly equipped and poorly motivated for water conservation success. This is mainly because some forms of water re-use are simply illegal according to the state’s Building Code, while other forms of water re-use require local building officials to make case-by-case decisions that take a long time and are unfamiliar to local officials. And situations where water re-use have been permitted are prohibitively expensive – those who have obtained approvals have done so for personal reasons, as the costs ruin any business case for re-use. Where re-use is allowed, a separate, parallel plumbing system is

required, and multiple redundant measures ending with installation of an expensive ultraviolet light filtration device may be required to ensure water purity.

Just take a look at the very short list of buildings in Michigan that have been permitted for water re-use. Less than 10 cases in the entire state have been approved!! States like Oregon, Georgia, California, and Arizona have already addressed a regulatory framework that protects public health while providing a clear path to water re-use. A Measure of Success that would help would be something like *“Plumbing and building codes are adopted and building official training provided by 2018, to allow for gray and black water re-use along with rainwater harvesting for both potable and non-potable purposes”*. While the code may not be able to address costs, currently 99% of local building officials will simply not issue a permit for water re-use because they are not required to, and are have not had adequate training to determine what would be appropriate without code guidance.

#### Goal 6

1. The outcome of people supporting investment might be a more likely success with a recommendation that includes a robust public education strategy, similar to the energy put into the Pure Michigan campaign. Human behavior is very difficult to change, particularly when it comes to money. As noted elsewhere, general public understanding of their own impacts on the environment has been measured at less than 1% growth per year in the Huron River Watershed since 1998. Again, this does not include businesses that might still have an economic disincentive to change behavior once the understanding is there.
2. It might be beneficial to specifically mention enabling stormwater utilities so that some local agencies can move forward on the type of local leadership envisioned in the Strategy. Enabling legislation is permissive, but only if there is already public support. A utility is different than a millage because the latter is inherently unfair – the value of someone’s property has no direct relationship to the extent to which that property owner uses the utility. This is why water, sewer, electricity, cable, gas, and other utilities are based on use, not property value. Local leadership would be greatly enhanced by providing the fairest tool for those who want to voluntarily use it.

Some 85% of the water quality projects (nearly \$25M of improvements) performed by my office in partnership with the City of Ann Arbor in the past 8 years would NOT have happened without the City’s stormwater utility. Dozens of other communities have repeatedly asked for a clearer path to a stormwater utility, and support by the Governor’s office would make a difference – imagine dozens of communities doing 85% MORE than what they have been doing.

**As suggested elsewhere, it is unrealistic to expect any impactful change at the local level without providing enabling changes at the state level. If those who are already leading hard could be doing more, they would.**

#### Goal 7

1. As suggested elsewhere, success is more likely with greater transparency to the public of whatever method is used to determine that groundwater depths and stream flows are stable, and long-term monitoring is effective. In addition to making information publicly accessible in both the raw data form as well as a very simple graphic interface (like the Dashboard idea), it might help promote the value add of monitoring if agencies that receive water related funding are required to post a link (to the monitoring tool and results for local groundwater and/or a stream) and a short paragraph about the monitoring tool on their website.

#### Goal 8

This may be a more appropriate location for the comment above about the state building and plumbing code providing a clear and reasonable regulatory path for water re-use.

#### Goal 9

1. The recommendation on water literacy as a curriculum component is excellent. However, it only touches those in the k-12 demographic.
2. As noted above, if success is the goal, public outreach must be much more robust and on par with the Pure Michigan campaign. Public outreach must include the business sector, and public outreach must include one or more Measures of Success.
3. Public education, understanding, and agreement would also be greatly facilitated by a simple "Governor's Dashboard", identifying if general progress is being made on each of the 9 goals, with the ability for the public to then drill down for some basic annual reporting statistics. I would further recommend that agencies be required to include this "Governor's Dashboard" on their website if they received grants or loans related to the Strategy.

Sincerely,

A handwritten signature in cursive script that reads "Evan Pratt".

Evan Pratt  
Washtenaw County Water Resources Commissioner

**From:** [Sierra Club](#) on behalf of [Michael Berkowitz](#)  
**To:** [mi-waterstrategy](#)  
**Subject:** Public Comments on Draft Water Strategy  
**Date:** Thursday, August 13, 2015 9:47:09 PM

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Aug 13, 2015

Director of the Office of the Great Lakes Jon Allan

Dear Director of the Office of the Great Lakes Allan,

Thank you for this opportunity to submit my comments on the Department of Environmental Quality's Office of the Great Lakes draft Water Strategy. I'm glad to see the agency understands the need to take a comprehensive, long-term look at stewarding our state's most precious resource. The draft Water Strategy is a good start and contains important initiatives such as a push for water conservation, but it needs clearer, enforceable measures to achieve its goals.

The Water Strategy relies too heavily on voluntary efforts and actions that "should" be taken rather than "will" be taken to protect our water resources. The OGL needs to develop a stronger vision statement and to put forth specific actions, verifiable goals and data-based solutions to get where we need to be in 30 years.

This is especially true regarding the goal of achieving a 40% phosphorus reduction in the western Lake Erie basin. The Water Strategy relies on voluntary measures to address agriculture's role in the problem, an approach that's been in place for years and hasn't worked, and promotes Michigan Agricultural Environmental Assurance Program practices that will not address the phosphorus problem. The state's approach needs to include much stronger actions, including a complete ban on the application of waste on frozen or snow-covered ground.

The Water Strategy recommendation for legislation to phase out microbeads is an example of a bold, specific and concrete action that would lead to an important improvement in our water quality and public health. The state's plan for Great Lakes protection needs more recommendations like this.

Finally, promoting water as "a strategic asset for community and economic development" is important, but it needs to be balanced with the basic human right of everyone to have access to clean water. A Water Strategy for Michigan needs to underscore this point by ensuring our water systems remain publicly owned and affordable to families for basic needs.

I look forward to your response about the changes you will be making in the Water Strategy to make it a strong document that will truly serve its stated mission of serving as "a roadmap to achieve a 30-year vision to ensure Michigan's water resources support healthy ecosystems, citizens, communities and economies." Again, thank you for this opportunity to share my input.

Sincerely,

Michael Berkowitz



**From:** [Christine Kosmowski](#)  
**To:** [mi-waterstrategy](#)  
**Cc:** [bhannon@mbce.com](#); [jerry@mi-wea.org](#)  
**Subject:** MWEA Water Strategy Comments  
**Date:** Friday, August 14, 2015 3:02:32 PM  
**Attachments:** [MWEA Water Strategy Complete Comments.pdf](#)

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To Whom It May Concern:

The Michigan Water Environment Association (MWEA), established in 1925, is one of Michigan's oldest organizations. MWEA represents more than 2,000 water quality professionals statewide who are dedicated to preserving, restoring and enhancing Michigan's water resources. MWEA is a member association of the Water Environment Federation (WEF), an international organization with more than 40,000 members worldwide. The MWEA brings together a diverse group of individuals whose careers involve the water environment and who have similar objectives from a variety of backgrounds.

Because of the expertise of members of the MWEA, we were invited to review the recently released draft water strategy developed by the Office of the Great Lakes entitled, **"Sustaining Michigan's Water Heritage, A Strategy for the Next Generation."** Overall, we applaud the State for its efforts to put together a strategy related to the waters of the state, and their many uses. The natural water resources – including the Great Lakes, inland lakes, groundwater, wetlands, and rivers and streams – make Michigan a unique place in the world. Putting together this plan to protect and restore the natural aquatic systems while continuing to use them for recreation, drinking water sources, and as a tool for economic growth is exceptionally forward thinking. This strategy document substantiates Michigan's role in the Great Lakes region and nationwide as a thought leader in environmental stewardship and a state that understands the complexities and interdependence of environmental, social and economic objectives. The document's goals, measures of success, implementation steps and metrics provide an effective framework that insures that the state intends to realize its plans. This strategy is unique in its scope and structure. Well done!

A task force was convened with subject matter experts of various water environment backgrounds from our membership and attached are their comments for your review and consideration. In addition to the comments made by the Task Force, our Association is interested in helping to champion elements of the strategy where applicable. We look forward to working with the Office of the Great Lakes on the Implementation of **"Sustaining Michigan's Water Heritage; A Strategy for the Next Generation."**

Sincerely,

Brian Hannon, PE  
MWEA President

Christine Kosmowski  
MWEA Water Strategy Task Force Chair



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August 12, 2015

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A task force was convened with subject matter experts of various water environment backgrounds from our membership. The Task Force reviewed the full document and also devoted concentrated effort on specific chapters where the team had expertise. We are pleased to submit the enclosed comments. Below is a summary of main points observed and attached are the detailed assessments of them. Reviews are kept in the format used by each team, which reflects their own thoughts and style.

#### Chapter 1

- Generally well thought out; there are many areas where MWEA may be able to contribute to implementation.
- Measures of success in Table 1 associated with the goal of healthy and functional aquatic ecosystems should be better connected to the narratives in the chapter relating to this goal; for example, fish and wet weather impacts are presented in Table 1 but receive little or no discussion in Chapter 1.
- The strategy should include detailed discussion and recommendations for habitat preservation and restoration, and of specifics for Lake Erie nutrient load reductions.

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We Recycle

- Research opportunities and multistate collaboration should be emphasized more.
- Discussions of HAbs, water levels, and invasive species in the water strategy document should be more accurate.

#### Chapter 6

- The proper operation and maintenance of infrastructure is an important element in safeguarding the waters of our state which we all enjoy. Two key challenges need to be addressed in order to provide the critical funding necessary to perform adequate operation and maintenance. The Water Strategy Report touches on these topics but we feel an expansion of the subject is warranted:
- The promotion of utility asset management is rightfully included in the Report. We feel that a program similar to the current Stormwater, Asset Management and Wastewater (SAW) should be continued which is a modest investment that ultimately will result in more local responsibility for infrastructure investment and less reliance on state funding for such activities.
- We must continue to discuss the unique challenge of stormwater funding and explore alternatives in order to enable communities to address the growing need for managing their stormwater systems and controlling pollutants contained in runoff. The current limitations of the Headlee Amendment and the Supreme Court's Bolt Decision have made it close to impossible for communities to move forward in this area. A resolution will be extremely difficult, but alternative (ideally, local) funding mechanisms are nevertheless absolutely necessary.

#### Chapter 7

- Several terms are used which make the first recommendation confusing. Terms such as systems-based monitoring; integrated water-based monitoring; integrated outcome-based monitoring systems; and integrated system of monitoring aren't defined, making it confusing for the reader on exactly what is being proposed.

#### Chapter 8

- This recommendation talks mostly about surface water. The second recommendation focuses on surface water, but groundwater is an important component to this section could apply to both (all water).

#### Chapter 9

- Agree that water literacy principles be incorporated into place-based education and state of Michigan curriculum.
- Professional development for teachers required to teach water literacy principles.
- Statewide public education campaign for all Michigan residents.
- Inclusion of local water infrastructure assets on the survey tool.

#### Groundwater Review

- Include the volume of calculated groundwater in the introductory paragraph.
- Strongly support the need for coordinated and comprehensive GW monitoring--the second paragraph on page 50 is key
- Continued support of wellhead protection should be promoted and expanded
- Statewide education and marketing of water education utilizing existing materials. It should be a coordinated effort not a fragmented recreating of the wheel by local units of government who lack expertise and motivation
- Outreach and education to include water in land use planning and decisions

#### General Comments

- Reference should be made to the U.S. DOE's Water Energy Nexus, and the importance that energy has to water use in the state of Michigan.
- The strategy should include provision for Michigan's continued and expanded role in national and international forum. Michigan is fortunate to have access to an abundance of clean water. There are many areas of this country and the world that do not. Having an abundance of water, Michigan will have unique opportunities for economic and social development. It also has a responsibility to be aware of national and global needs. The Vision for Michigan's Water Strategy should have a chapter dedicated to the outward looking strategy.
- Those responsible for conceiving and preparing the plan should be complimented for the comprehensive plan prepared in the short span of time available. Of note is the focus on collaboration.
- The Summary of Current Michigan Water Protection Activities in Appendix 3 is an impressive and a testimony to the importance that Michigan has placed on the environment in general, and water in particular.

In addition to the comments made by the Task Force, our Association is interested in helping to champion elements of the strategy where applicable. We look forward to working with the Office of the Great Lakes on the Implementation of *Sustaining Michigan's Water Heritage; A Strategy for the Next Generation*.

Sincerely,



Brian Hannon, PE  
MWEA President



Christine Kosmowski  
MWEA Water Strategy Task Force Chair

# Memorandum

**From:** Paul Freedman, P.E., B.C.E.E  
Brendan Cousino, P.E.  
Tad Slawecki  
John F. Bratton, Ph.D.

**Date:** August 5, 2015

**To:** Christine Kosmowski

**SUBJECT:** Sustaining Michigan's Water Heritage – A Strategy for the Next Generation  
Protect & Restore Aquatic Ecosystem Section  
DRAFT Review Comments

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## Scope & Format

Our scope in the MWEA review of Michigan's draft Water Strategy was to focus Chapter 1: Protect and Restore Aquatic Ecosystems and the related information in Tables 1 and 2. Our substantive comments are given in the first sections below, and are followed by minor comments related to the grammar and language used in the document.

***This document is a draft of our comments and not intended for any use other than internal use by the MWEA committee which is preparing an overall submittal of comments on the Michigan draft Strategy. It should not be distributed to others or cited. In the next phase of the process to develop MWEA overall comments we expect to provide more input.***

## General Review Comments

Overall, we applaud the State for its efforts to put together a strategy related to the waters of the state, and their many uses. The natural water resources – including the Great Lakes, inland lakes, groundwater, wetlands, and rivers and streams – make Michigan a unique place in the world. Putting together this plan to protect and restore the natural aquatic systems while continuing to use them for recreation, drinking water sources, and as a tool for economic growth is exceptionally forward thinking.

This strategy document substantiates Michigan's role in the Great Lakes region and nationwide as a thought leader in environmental stewardship and a state that understands the complexities and interdependence of environmental, social and economic objectives. The document's goals, measures of success, implementation steps and metrics provide an effective framework that insures that the state intends to realize its plans. This strategy is unique in its scope and structure. Well done!

Our review of Chapter 1 includes four sections:

- Areas where MWEA can contribute
- Additions and recommendations
- Scientific and technical improvements
- Minor textual revisions

## Areas that MWEA Can Contribute

Many of the goals of this plan align very closely with the goals of MWEA and our knowledge base. Therefore we want to highlight the areas where MWEA can contribute to and support the implementation of this plan. Here are five areas where MWEA could assist in implementation and/or plan improvements:

1. **Training:** The strategy calls for extensive training in several topic areas, including as an example green infrastructure. MWEA has decades of experience in providing this exact kind of training for water professionals, public officials, and school groups, and would look forward to collaborating on training.
2. **Regulatory flexibility:** Achieving the goals of the strategy in hard economic times will likely require regulatory flexibility to accomplish objectives at lower cost using innovative approaches. MWEA and its members have extensive experience developing programs that balance complex water quality objectives against limited resources. We would look forward to collaborate on the development of flexible regulatory programs, where the outcomes or improved water quality and habitat are of higher importance than the prescriptive methods to achieve them.
3. **Innovative programs:** Implementation of innovative approaches will be important to achieving the strategies long term objectives of 40% reduction in Lake Erie nutrient loads. Examples include watershed management, adaptive management, trading, credit exchanges, nutrient reduction BMP practices, etc. MWEA members have nationwide experience and intimate understanding of Michigan conditions. MWEA would look forward to working with the State to develop new approaches that allow us to achieve more for less.
4. **Prioritization:** In all situations, investments in programs can never be done all at once and must be staged. MWEA would look forward to working with the State to develop strategies to prioritize efforts to those deemed most important and cost effective.
5. **Measures and Metrics:** MWEA would like to work with the State in refining the list of measures of success and implementation metrics. What we measure we accomplish, so this is a key element of the strategy that needs close attention. It is important that we have useful measures of success and that the implementation plan have metrics that we are comfortable help us move towards achieving those measures of success.

## Additions / Recommendations

Although the strategy document is quite comprehensive, we feel there are several elements that need more emphasis and/or addition. These are:

1. **Habitat:** We recommend that the State expand the discussion of habitat loss and restoration in this chapter. Habitat loss is as big an issue in degradation of state waters as

nutrients and AIS. Restoration of habitat and ecosystems is barely mentioned in the Chapter and does not include a direct recommendation or measure of success. The river and stream restoration measures recommended in the implementation plan (Table 2) are limited to dam removal and hydrological impediments such as culverts. We recommend additional focus on restoration of aquatic ecosystems, including identifying funding sources, be included in this chapter.

2. **Wet weather impacts:** The specific measures of success in Table 1 associated with wet weather discharges are generally not related to aquatic ecosystem considerations (the focus of Chapter 1), except as may relate to agricultural loads of sediments, nutrients, and pesticides/herbicides. Further, there is no discussion in Chapter 1 of untreated sewage or wet weather discharges, even though reductions to those sources are included as Chapter 1 Aquatic Life measures of success in Table 1. In general, CSO/SSO discharges are not aquatic life issues, but when of concern more related to impairments in full contact recreational uses. We recommend if this remains an ongoing measures of success in the final Strategy that it be included under Goal 6 as measures of adequate funding for water infrastructure rather than in the Aquatic Life Chapter in the strategy.
3. **Measures of success:** There is no discussion in the Chapter of why brook trout, sturgeon, or lake trout should be the selected measures of success. Although declines in brook trout populations are linked to coldwater habitat loss, there may be other species in other areas that are equally relevant and not all waters fall into this classification. While those species are certainly indicators of health in some ecosystems, there are many other types of ecosystems in Michigan that are in need of protection and restoration where other species may be more appropriate, such as warm water fish species or amphibians. We recommend that the report be modified to include either more discussion on why these measures were chosen, or better additional measures of success for other types of habitat, and that the report include further discussion on the links between the measures of success and the recommendations contained in the report.
4. **Nutrient reductions:** There are no specific recommendations on how the 40% phosphorous reductions in Lake Erie are to be achieved. Further details are needed to understand whether those reductions will be achieved through point-source reductions (NPDES programs) or non-point sources (primarily through agriculture). Consideration should be given to the implementation of trading programs or a nutrient exchange, a municipality (or industry) can pay into a fund that nonregulated parties (such as agriculture) could use to implement nutrient reduction projects. In any case a flexible program is needed that allows all parties to prioritize where to act, not just tighten up on very small loads from WWTPs. In addition, we feel it would be useful to outline a prioritization for actions where each additional investment has the most effective reduction.
5. **Decision support tools and research:** The strategy goals are laudable but challenging, especially when faced with limited resources, an impatient public, difficult legislative, regulatory and budgeting choices, and competing demands. It is therefore very important that the state invest more in development of tools, models and frameworks that help us identify critical casual factors, and highest priority needs. Water resource decision frameworks are mentioned in the strategy implementation, but more discussion is needed. Research may very well be a critical component to developing these tools.

6. **Research:** The strategy mentions the needed for more research on technology, and this is important. However, much more research is needed to understand the causes and stresses that impact our aquatic health so that we can better quantify and prioritize our efforts to improve conditions focused on those that will make the most difference. Additional research is probably warranted on topics including lake levels, lake evaporation and ice cover, climate change impacts and adaptations, causes and consequences of HABS, nutrient enrichment of inland lakes and reservoirs, and agricultural controls as examples.
7. **Multistate collaboration:** Michigan shares four of the Great Lakes with other states (and Canadian provinces). To ensure success protecting and restoring the Great Lakes we need a unified effort among all governments involved. The document calls for this related to AIS but not elsewhere. We therefore recommend that the strategy include a stronger emphasis that calls out for inter-state and US-Canadian cooperation on strategies, regulations and funding.

## Scientific & Technical Improvements

The Strategy document is generally a high level document that is not intended to be a scientific examination of issues, and such issues are generally only mentioned to give the Strategy context. None the less, it is important that all discussions, even if limited, are scientifically accurate. There are several places that need improvement or correction.

1. **Water levels:** The comments on Great Lakes water levels on page 11 may be outdated given the resurgence in lake levels over the past few years and should be reviewed. Additional discussion on the impact of evaporation – especially the ice cover over the lakes (and subsequent lower water temperatures) – being an influential factor in the lake levels in addition to the average annual precipitation would be useful. Increasing our understanding of the factors that control the lake levels and the impact of lake levels on the aquatic ecosystems and near-shore land based ecosystems will help to improve our ability to protect and restore those ecosystems. Additional recommendations may include increase monitoring, more measurements of evaporation, data collection, habitat and ecosystem assessments, and model development to further our understanding of those critical natural systems.
2. **Excess nutrients:** the focus of discussion on nutrients in the Strategy seems to be on Lake Erie. However, excess nutrients and sediments is an issue in not only Lake Erie. For example, there are nutrient issues in Saginaw Bay and also nearshore Lake Michigan. There may be other areas impacted by excess nutrients as well, including inland lakes. This needs to be highlighted. Further research is needed to understand nutrient impacts in other waters to inform sound policy decisions in the future. Also, we suggest citing draft guidance from Annex 4 of the Great Lakes Water Quality Agreement as the basis for the 40% reduction.
3. **HABs:** The relationship between HABs, invasives like Dreissenids, and nutrient cycling needs to be better understood and hence the comments on this refined. Cladophora is another related issue that needs mention. While actions to reduce the phosphorous loadings can and should be taken immediately, an adaptive management approach should be used where policies can be adapted as our understanding of the science and natural processes improves over time.

New guidance has been released by EPA on microcystins that supersede some of the statements in this document: see

<http://www2.epa.gov/sites/production/files/2015-06/documents/microcystins-report-2015.pdf>

Also, the characterization of the Toledo response to the 2014 HAB is not precisely accurate. The water system was not shut down – a drinking ban was issued. The presence of the HAB did not cause the ban, but rather issues with the utility’s ability to treat raw water sufficiently to remove the toxin produced by the HAB, microcystin. Maybe minor distinction, but not all blooms, even if obnoxious, cause problems with microcystin. Also, note that the definition of a HAB is not linked directly to drinking water standards.

Agreed that algal bloom factors are controlled by both phosphorus and nitrogen. Phosphorus limits blooms early in the season, and nitrogen later, but nitrogen also controls toxin production. The particulars depend on the water body, climate, temperature, rainfall, and land use, so it may be better to avoid getting into the complexities of this. Lots of variety in inland lakes.

4. Invasive species: this topic may require some review of the statements.

Dreissenids consume good (green) algae and provide advantages for blue-green algae which they do not eat, and enhance nutrient cycling and availability of ortho P, which also makes blue-green algae and cladophora more prevalent.

Round goby dominate the shallow lake floor, outcompete native fish for food, eat fish eggs—especially a concern with lake trout and salmon eggs; possible link to botulism outbreaks and deaths of fish-eating birds (mentioned later, but without linking to goby); note that gobies eat mussels and have also become prey fish for some species

Spiny and fish hook water fleas are not just problems for fish lines but also compete with plankton-eating fish for food, like alewives (also invasive but now a major prey fish), which disrupts the lower food web, leading to declining gamefish populations.

Consider specifically mentioning ballast water and inland movement of boats from lake to lake as major vectors; perhaps also mention more regulation of plants and animals in trade (e.g., aquariums and water gardens), and include consideration of climate change, which is allowing expansion of subtropical species from the south into the Great Lakes (e.g., water hyacinth)

5. Overall goal: The stated Goal (Goal: Michigan’s aquatic ecosystems are healthy and functional.) and outcome (Outcome: Aquatic ecosystems are resilient and diverse.) are both very general. Goals express intended outcomes in general terms and objectives express them in more specific terms. There are many more outcomes of healthy and functional ecosystems beyond being “resilient and diverse”. Michigan may want to reevaluate how they express the outcomes and what terminology they use. Maybe this is minor but worth consideration.

## Minor Text Revisions

The document is in general well written. That said, there are still places in the document where the text is awkward or unclear, something small is missing and/or there are typos. Below are a few specific examples.

- p 11 - para 5 – change to active tense..."sea lampreys devastating fish communities" instead to match grammatical construction of other impact examples.
- p 15 - First full paragraph "are used" should be "is used";
- p15 - voluntary programs aren't defined.
- p 18 - Natural Resource Working Group feels like there should be a reference or footnote.
- In Table 1, the measure of success for Goal 8 calls for "reduction in number of designated uses". This should be a reduction in "nonattainment of water quality standards in designated uses" or "reduction in number waters not meeting designated uses".

## Chapter 6: Invest in Water Infrastructure

**GOAL:** Michigan invests in infrastructure and supports dedicated state and local funding mechanisms to maintain clean water and healthy aquatic ecosystems.

**OUTCOME:** People support investment of both public and private funding in Michigan's water resources.

The state's infrastructure – roads, commercial ports, drinking water systems, ~~sewer wastewater~~ systems, drainage systems, energy plants, transmission systems and recreational facilities – form the backbone of the economy. All water withdrawn from the Great Lakes, groundwater, rivers, and lakes for any purpose passes through some form of water infrastructure; it is a complex system. Additionally, rainwater becomes runoff and must be conveyed through our infrastructure. A functioning water infrastructure system keeps the state running.

### Improve Understanding of the True Cost of Water

Most people think of their monthly water bill as the cost they pay for water. But in reality, water, as a natural resource, is actually free for any purpose and for any amount used by any entity requires additional investment by public and/or private entities, as long as its use does in order to keep us from further not-degrading the resource. Water may come at a very low marginal cost free to those who want water to drink, to businesses that use it in industrial processes, to those that bottle it for consumption and to homeowners who water their lawn; however, the cost to maintain the quality of that water and deliver it is significant. Put simply, the economic value of water is nearly infinite, as it drives Michigan's economy, but for Michiganders it is a free, shared resource to use for all kinds of human purposes. While water as a resource may be free, there are costs associated with managing Michigan's water resources to ensure that water is of high quality and available for human uses.

**Comment [gpk1]:** Referring to water as "free" is not really accurate. The point we need to be making is that it is NOT free, thereby requiring investment.

Through their water and sewer bills, Michiganders instead pay for the infrastructure to deliver safe drinking water and carry away and treat waste, and for the operating costs, like energy, to treat and condition water/~~wastewater~~ and maintain infrastructure. Those outside the area of a municipal water supply system pay for well construction, treatment if necessary, the pump and the energy used to supply water to the tap. In addition, the cost of infrastructure to supply water is contained in the final price of all commodities and services.

Michiganders also pay for the safe transport and discharge of water caused by rainfall (also known as stormwater), which is a component of infrastructure wholly separate from water and wastewater. Although several Michigan communities charge a stormwater fee to handle this infrastructure component, most communities have no dedicated funding source for stormwater.

~~Water's~~ The cost for water, wastewater, and stormwater is determined by volume-based pricing that allows the collection of revenues to pay for infrastructure and operations used to deliver water or safely dispose of wastewater and stormwater. Under this scenario, there is often a lower per-unit, usually gallons, fee on unit charge for water/wastewater for higher volume users and amounts. Water and

wastewater rates are commonly skewed in such a way that users pay lower rates less as volumes-total consumption rises, because the price is pegged to infrastructure costs and not to the value of water itself. In some instances, this can act as a complicating factor when trying to achieve water use reduction or conservation, as conservation equates to lower revenues for municipalities.

A customer's use of less water does not necessarily or directly equate to lower operational costs of infrastructure. There is still a substantial cost to have safe drinking water delivered maintain the distribution systems to deliver at adequate quantities and pressures whenever the tap is opened and to have fire protection available at the curb within the reach of a standard fire hose in event of an emergency. Similarly, the wastewater collection system requires a base investment that does not necessarily decrease when system demand is lower. Stormwater collection systems must function no matter how much water demand there is, as their function is dictated by the amount of rain that falls on a community.

Michigan has a long experience and legal history of not putting a commodity price on water, thus keeping water a free resource, and an important element of the state's economic and social well-being and stability. During public outreach for the Water Strategy, many residents suggested either putting a fee on water for all or some groups of water users – in its simplest form, a per gallon charge for water as it comes from the environment. Some suggested that only some types of water users, like agriculture, water bottlers or industrial users should pay a per gallon fee for withdrawing water. Others suggested all users should pay a surcharge or a per gallon fee for the use of water, regardless of user or purpose. Given that Michigan's citizens and businesses withdraw more than 4.2 trillion gallons per year, equivalent to the amount of precipitation that falls on the U.S. per day, even a tiny surcharge or access charge would add up quickly. The economic logic may make sense in the abstract, but it does not currently fit the culture and history of water and water use in the state.

Conversely, some argued that adding a price to water, even as an access charge versus a price on water per se, would commodify the resource, when it has historically been a public good or a public trust resource. Maintaining the ability to manage and ensure the sustainability of the water resources of Michigan and the Great Lakes is of utmost value to the state and the region, and even though a revenue stream could be created from a volume or access charge on water, the values potentially compromised under this scenario are too great to lose. However, there is still a compelling and growing need for investments in water and water infrastructure and for administrative and programmatic support in order for the state to meet its long-term vision for healthy, functional systems and prosperity.

To address the gap between actual investment need and public perception of that need, Michigan should launch a public education campaign to improve residents' understanding of the economic, environmental and social benefits of clean water, linking the investments necessary to achieve the benefits. If the public wants clean beaches and good water quality – and they say they do – public support of water infrastructure investments is critical. While we do not seek to facilitate a volumetric surcharge on water access, if that is something the public would ultimately support, then it would add to the options for funding long-term infrastructure and desired outcomes.

Given the state's recent \$450 million dollar commitment in the Stormwater, Asset Management and Wastewater (SAW) Grant program (asset management plans for wastewater and stormwater systems), there is a unique opportunity to highlight the plans that emerge from these asset management efforts in order to demonstrate the actual funding gap that exists for typical wastewater and stormwater systems. These plans will identify the impacts of aging infrastructure and the associated decreases in federal funding for water infrastructure.

Water rates have historically been low and water both plentiful and affordable in most Michigan communities. Detroit's recent water shutoffs, the loss of urban population in other communities, and an overall increase in domestic water conservation has put a sharper focus on water rates, affordability, and the ability to continue to fund aging infrastructure costs. There is currently no statewide assessment of shut-off practices or policies that relate to affordability and water access for human use.

#### Recommendations

- Implement a communication strategy focused on messages that link the relationship between investments in water infrastructure and clean water as well as the benefits infrastructure provides for drinking water, recreation, cultural and economic opportunity.
- ~~Utilize pricing and funding strategies to support infrastructure improvements while allowing for water conservation.~~ Using the SAW Grant asset management plans that emerge during the next several years, highlight the actual funding gap between current revenues and investment needs for wastewater and stormwater infrastructure. The magnitude of this funding gap will reveal the economic realities of maintaining our aging infrastructure.
- Evaluate current community practices regarding providing water to financially distressed customers to ensure all citizens have affordable access to water for drinking and sanitation.

#### Invest in Water Infrastructure

One of the biggest challenges facing communities is aging, deteriorating infrastructure systems with more operational needs than financial resources to meet them. Poor infrastructure degrades the value of water, results in costly efforts to mitigate impacts, and creates or increases drag on the economy.

Given that much of our water and sewer infrastructure was funded through the federal government in the 1970s and 1980s (grant programs stemming from the 1972 Clean Water Act), and that much of our remaining infrastructure was financed and constructed by private land developers, we are currently enjoying the subsidies of that investment, which is why sewer rates have been so low during the last 20 years. Now that these assets are nearing the end of their useful lives, it will be up to municipalities to maintain and replace them. This will require significant changes to local fee structures.

In a perfect world, users of the system would pay for the cost of service. Rates would consider operation and maintenance costs as well as long-term capital investment needs. Unfortunately, rates in Michigan are typically set by elected officials who have political difficulty charging rates necessary to maintain infrastructures.

Asset management planning is critical to allow communities, performed properly, would support municipalities' efforts to optimize future costs and collect revenues sufficient to operate and maintain the system. The current SAW Grant program will help to facilitate this process for hundreds of Michigan cities. Since 2013, some large municipal wastewater treatment plants have been required to develop an asset management plan as part of their nonpoint source discharge elimination standard (NPDES) permit; however, this requirement doesn't apply to all water utilities. Outcome-based asset management planning that includes more efficient use of resources can result in cost efficiencies that can be used to address capital costs while keeping rates affordable.

Communities can realize cost efficiencies to manage water infrastructure systems and to meet the needs of the future by increasing efficiencies in the delivery and treatment of water through implementation of energy efficiency measures, the use of technologies and a combination of grey and green infrastructure. A more integrated systems approach can improve water management, reduce energy costs and result in savings for communities as opposed to investing in traditional methods which typically have higher capital investment costs.

If communities continue to use traditional methods to manage infrastructure, conservative estimates range in the billions to will cost billions of dollars to rehabilitate and improve stormwater, drinking water and wastewater management systems in Michigan during over the next 20 years, largely to address those assets previously built by developers or through federal grant programs. Although a large majority of these costs is are not the responsibility of federal or state government, the state needs to implement a long-term strategy to sustain state water programs, including funding to maintain critical regulatory oversight programs, water quality monitoring and provide assistance to communities to local water infrastructure. In addition, the state should explore a variety of options to close the widening gap between existing funding sources and future revenues needs, including incentivizing asset management planning, creating legislation that allows communities to develop stormwater enterprise funds, state bonding and borrowing options, dedicated capital and trust funds, public-private partnerships, insurance and leveraging, private equity, and service area consolidation. Without adequate funding, Michigan's economy, aquatic ecosystems and quality of life will be diminished.

The unique challenge of funding stormwater improvements and facilities needs to be specifically acknowledged and ultimately addressed. In addition to the same problem of an aging infrastructure network experienced in drinking water and wastewater systems, the state and federal regulatory agencies are on the verge of enacting new legislation and requirements aimed at eliminating some of the pollutants generated by stormwater runoff. This will require significant investments in new facilities and technologies beyond the basic needs of maintaining current services. As stormwater activities are funded through general fund taxes which are limited by the Headlee Amendment, communities are functionally unable to raise revenues in a way not faced by water and wastewater utilities. Communities have attempted to create stormwater utilities but the Supreme Court decision, commonly referred to as the "Bolt Decision," has made it extremely difficult to defend such utilities in a legal challenge. Resolving this dilemma will be difficult, but Michigan must develop a workable solution if communities are expected to comply with future environmental requirements and maintain their stormwater systems in a sustainable manner.

## Recommendations

- Incentivize and require outcome-based asset management planning for all public water, wastewater, and stormwater utilities that includes more efficient use of resources and identifies revenue levels necessary to maintain an adequate Level of Service for all users.
- Continue the SAW Grant program beyond its current budget horizon to allow for asset management planning for additional Michigan communities and to include drinking water assets.
- Develop legislation that enables communities to legally establish stormwater user fees (a/k/a stormwater utilities). This helps to address an existing serious gap in funding for this critical water infrastructure component. Due to recent judicial precedent, additional stormwater utilities will not likely be possible without specific enabling legislation.
- Establish sustainable funding mechanisms to achieve Water Strategy goals including water infrastructure management.

## Develop an Enterprise Budget for Water

The state needs to complete an enterprise budget to more fully understand the complex relationships between water/wastewater/stormwater, infrastructure needs and funding across all entities, including state agencies, federal agencies, local municipalities, drain commissioners and inter-county drain boards. An enterprise budget is a theoretical budget – not a responsibility budget – that portrays revenue and expenditures regardless of agency or governmental unit. The four principle revenue sources related to water in the state – federal, state and local revenues and fees, and private revenues – should be included in the enterprise budget as shown in Figure 2. This budget will also assist in understanding how to maximize the sustainability of the funds used to support water infrastructure and state programs.

## COMMENTS ON FIGURE 2 (CONCEPTUAL STATEWIDE ENTERPRISE BUDGET FOR STORMWATER, DRINKING WATER AND WASTEWATER)

- In the “Local Fees and Taxes”, this should be broken out into three primary categories
  - Dedicated/Perpetual Enterprise Funding
    - Water
    - Wastewater
    - Stormwater
  - Non-Dedicated Funding
    - Local taxes / General Fund
  - Project-Specific, non-perpetual funding
    - Drain Assessments
    - Tax millage for specific use
    - Other Assessments

## Recommendation

- Develop an “enterprise budget” to better understand the complex relationships between managing water/wastewater/stormwater, infrastructure, long-term needs, and funding.

EXCERPT FROM TABLE 2 (Goal 6 only) WITH SUGGESTED CHANGES

Goal 6: Michigan invests in infrastructure and supports funding to maintain clean water and healthy aquatic ecosystems.			
Outcome: People support investment of both public and private funding of Michigan water resources.			
#	Recommendation	Implementation Metric	Lead Actor
1	Implement a communication strategy focused on messages that link the relationship between investments in water infrastructure and clean water and the benefits infrastructure provides for drinking water, recreation, and cultural and economic opportunity.	By 2017, implement a communication strategy focused on connecting economic, environmental, social and cultural values to Water Strategy outcomes.	NGOs, MDEQ, MDCH
2	<u>Using the SAW Grant asset management plans that emerge during the next several years, highlight the actual funding gap between current revenues and investment needs for wastewater and stormwater infrastructure. The magnitude of this funding gap will reveal the economic realities of maintaining our aging infrastructure. Utilize pricing and funding strategies to support infrastructure improvements while allowing for water conservation.</u>	By 2020, increase the number of communities that have pricing and funding strategies as part of their asset management plans to support infrastructure improvements over a baseline established in 2015.	Local units of government, water utilities
3	Evaluate current community practices regarding providing water to financially distressed customers to ensure all citizens have affordable access to water for	By 2017, increase the number of communities that have practices in place to ensure financially distressed customers have access to water for drinking and sanitation over a	Local units of government, water utilities

	drinking and sanitation.	baseline established in 2015.	
4	Incentivize and require outcome-based asset management planning for all public water, wastewater, and stormwater utilities that includes more efficient use of resources and identifies revenue levels necessary to maintain an adequate Level of Service for all users.	By 2020, require all major NPDES-permitted dischargers to develop and implement asset management planning for each system (including collection and treatment systems). By 2020, require all municipal community water suppliers serving more than 1,000 people to develop and implement asset management planning for each system (including treatment and distribution systems). By 2020, require all MS4-permitted dischargers to develop and implement asset management planning for their stormwater collection systems.	MDEQ
5	Continue the SAW Grant program beyond its current budget horizon to allow for asset management planning for additional Michigan communities and to include drinking water assets.		MDEQ
6	Develop legislation that enables communities to legally establish stormwater user fees (a/k/a stormwater utilities).	By 2017, pass referenced legislation with Governor's signature.	Legislature
75	Establish sustainable funding mechanisms to achieve the Water Strategy goals including water infrastructure management.	By 2020, implement a long-term funding strategy to achieve goals of the Water Strategy and support existing Quality of Life Agency programs and policies.	State agencies, Legislature
86	Develop an "enterprise budget" in order to better understand the complex relationships between managing water/wastewater/stormwater, infrastructure, long-term needs, and funding.	By 2016, develop an enterprise budget for water to inform the long-term funding strategy.	MDEQ

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Michigan Water Strategy – MWEA Comments  
Chapter 7 & 8 – Erin Campbell & Laura Gruzowski

Chapter 7 – Monitor Water Quality

- Several terms are used which make the first recommendation confusing. Terms such as systems-based monitoring; integrated water-based monitoring; integrated outcome-based monitoring systems; and integrated system of monitoring aren't defined, making it confusing for the reader on exactly what is being proposed.
- This chapter states the integrated system should include quality and quantity monitoring, condition assessment, modeling and forecasting tools for the entire water cycle. The "entire water cycle" should be defined as surface and groundwater are directly addressed. Wetlands should be specially listed.
- More explanation is needed about the pilot decision-support framework; it is unclear who will be using the framework. It states local and regional watershed scales. This is unclear, what about groundwater or source water scales. These may be different than watershed scales or boundaries.
- The need for monitoring funding could be more specific. The first recommendation discussed the need for integrated system monitoring but then addresses funding for only surface/ground water monitoring.
- An additional goal should be added: research/identify new technologies to enhance monitoring strategies (Page 49).

Chapter 8- Build Governance Tools

- On page 53 they say "county drain commissions", it should read by "County Drain Commissioners or Water Resource Commissioners".
- Again, this recommendation also talks mostly about surface water. The second recommendation focuses on surface water, but groundwater is an important component to this section...could apply to both (all water).

Table 2:

- Overall, we thought wastewater/groundwater or wetlands were not addressed nearly enough throughout the Implementation table. They mentioned infrastructure funding a bit, but effluent monitoring for emerging pollutants could be included (and in Chapter 7).
- The Implementation Metric schedules are a bit unrealistic, considering current MDEQ and MDNR workloads and state and local government budgets. Particularly for Goal 7 & 8 – schedules should be spanned out 2 years.

# **MICHIGAN WATER ENVIRONMENT ASSOCIATION**

## **Comments on Chapter 9: Inspire Stewardship for Clean Water**

Cheryl Vosburg and Christine Kosmowski

### **General Review Comments**

Chapter 9 of Sustaining Michigan's Water Heritage; A Strategy for the Next Generation details the importance of Michigan's citizens becoming stewards of clean water and healthy aquatic ecosystems. One of the Critical Objectives of the MWEA's Strategic Plan is to increase the awareness of the value of water and to expand MWEA's commitment to public advocacy for clean water and public health and inspire respect for water and water professionals. As reviewers, we were pleased that the need to inspire stewardship was considered an important element of the document and we support its inclusion.

### **Additions / Recommendations**

We fully agree that water literacy principles be incorporated into place-based education and state of Michigan curriculum as a necessary step to help better inform our citizens. We also agree that increasing volunteerism and community engagement will help inspire stewardship. We have additional recommendations, however.

- We urge that on-going professional development for teachers be a mandatory requirement for the teaching of water literacy principles. Teachers must be well trained in order to teacher their students.
- We suggest a statewide public education campaign be launched. For example, it could be patterned after the Pure Michigan campaign with a slight variation, such as a Pure Michigan Water slogan. The benefit of a statewide public education campaign would augment current public education efforts in urbanized areas and would also target all citizens, not only K-12 students, to help instill the importance and value of water.
- The implementation table for Goal 9 discusses the development of a survey tool. We suggest the inclusion of questions that would assess the knowledge of local infrastructure assets, including sanitary systems, drinking water systems, storm sewers systems, and county drainage systems. Our experience indicates that quite often the public is not fully aware of the functioning of its infrastructure, and therefore, is not fully aware of its value and importance.

### **Areas that MWEA Can Contribute**

The MWEA strives to engage its members in advocacy programs to support and enhance the impact of their efforts and to instill the value of water and underscore the importance of the water profession. In those two areas, especially, we feel we can assist with the effort to inspire stewardship of clean water and healthy ecosystems.

## Groundwater Review Team:

Christine Spitzley and Wayne Kukuk

### Introduction:

- Include the volume of calculated groundwater in the introductory paragraph. For example:  
*With more than 11,000 inland lakes, 76,000 miles of rivers, 6.5 million acres of wetlands, 550 trillion ( $5.5 \times 10^{14}$ ) gallons of groundwater, and more than 3,200 miles of freshwater coastline—the longest in the world—leveraging the power and presence of this treasured natural resource and ensuring its long-term sustainability are critical to advancing Michigan’s prosperity*

### Chapter 2:

- Strongly support the need for **coordinated** and comprehensive GW monitoring--the second paragraph on page 50 is key
  - Agencies that have relevant information (MSU, MDARD, MDNR, MDEQ, USDA, USGS, EPA, et al.) need to be in intrinsic communication with each other on water-related issues in Michigan
  - Increased stream gauging and GW analyticals across the State
  - Make all monitoring results easily accessible to the general public
- Continued support of wellhead protection should be promoted and expanded
  - Including ALL public water supplies that use groundwater and/or surface water as their source of water

### Chapter 9:

- Statewide education and marketing of water education utilizing existing materials. It should be a coordinated effort not a fragmented recreating of the wheel by local units of government who lack expertise and motivation
  - Something like the Groundwater Education in Michigan (GEM) project of days gone by...
- Outreach and education to include water in land use planning and decisions
  - There should be more emphasis on agricultural issues, i.e. location of Concentrated Animal Feeding Operations (CAFOs), manure management, fertilizer & pesticide application, soil erosion. There doesn't seem to be a great emphasis on agricultural operations in the Strategy.

## MWEA Water Strategy Task Force Meeting

Date: July 25, 2015  
To: Christine Kosmowski, Chair MWEA Water Strategy Task Force  
From: Pete Cavagnaro, MWEA Member  
Subject: Overall Review of Michigan's Water Strategy

The following are observations on the document titled "DRAFT, Sustaining Michigan's Water Heritage, A Strategy for the Next Generation" dated June 4, 2015 (Michigan's Water Strategy). Comments, Observations, and Requests associated with specific parts of the strategy are identified in a Table below. The following speaks to a subject that does not appear to be included in the current draft.

### Water – Energy Nexus

In 2014, the US DOE published a report titled *The Water-Energy Nexus: Challenges and Opportunities, Overview and Summary*<sup>1</sup> (which updated a previous report from a US DOE lab regarding the Energy-Water Nexus).

Present day water and energy systems are interdependent. Water is used in all phases of energy production and electricity generation. Energy is required to extract, convey, and deliver water of appropriate quality for diverse human uses, and then again to treat wastewaters prior to their return to the environment. Historically, interaction between energy and water have been considered on a regional or technology-by-technology basis. At the national and international levels, energy and water systems have been developed, managed, and regulated independently.

The US DOE has identified Six Strategic Pillars (listed below) to address the Water-Energy Nexus. Many of these are identified as issues in the Michigan Water Strategy. Michigan's Water Strategy should be expanded to describe how Michigan will interact and collaborate with neighboring states, states across the union, the national government, and other outside agencies, to achieving integrated solutions.

1. Optimize the freshwater efficiency of energy production, electricity generation, and end use systems
2. Optimize the energy efficiency of water management, treatment, distribution, and end use systems
3. Enhance the reliability and resilience of energy and water systems

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<sup>1</sup> <http://www.energy.gov/downloads/water-energy-nexus-challenges-and-opportunities>

4. Increase safe and productive use of nontraditional water sources
5. Promote responsible energy operations with respect to water quality, ecosystem, and seismic impacts
6. Exploit productive synergies among water and energy systems

**Acknowledgement**

Those responsible for conceiving and preparing the plan should be complimented for the comprehensive plan prepared in the short span of time available. Of note is the focus on collaboration. The Summary of Current Michigan Water Protection Activities in Appendix 3 is an impressive and a testimony to the importance that Michigan has placed on the environment in general, and water in particular.

Thank you for the opportunity to comment. Please contact me at 734-255-5523 if there are any questions or requests.

Page	Chap	Chapter Title	Topic	Text	Recommendation	Request
1	-	Introduction		At the beginning of 2015, the World Economic Forum in its global risk report identified water crisis as the number one risk influencing the global economy. <sup>1</sup>		<p>This statement is followed by a number of other references to the “world”, each of which makes reference to the recognition that the world has on Michigan’s water.</p> <p>Michigan is fortunate to have access to an abundance of clean water. There are many areas of this country,</p>

Page	Chap	Chapter Title	Topic	Text	Recommendation	Request
						<p>and the world who do not. Water has been described as the “oil” of the coming century. Having an abundance of water, Michigan will have unique opportunities for economic and social development. It also has a responsibility to be aware of national and global needs. The Vision for Michigan’s Water Strategy should be outward looking as well as inward looking. There should be a chapter dedicated to the outward looking strategy.</p>
11	1	Protect and Restore Aquatic Ecosystems	Prevent Introduction of and Manage Aquatic Invasive Species	<p>Since the 1800s, more than 182 nonindigenous aquatic organisms, including animals, plants, bacteria and viruses, have colonized the Great Lakes ecosystem, forever altering its ecology. The introduction of AIS into the Great Lakes and inland waters has caused significant damage to the state’s natural resources and many human uses.</p> <p>Of particular note, invasive mussels</p>	<p><i>Work with other Great Lakes states and provinces to harmonize aquatic invasive species prevention, early detection processes, and response actions across the Great Lakes region.</i></p>	<p>That this most excellent recommendation be expanded to include the Great Lakes states use their influence to lobby the USEPA in particular, and MARPOL in general, to develop new standards for discharge from ships entering the Great Lakes basin.</p>

Page	Chap	Chapter Title	Topic	Text	Recommendation	Request
				have disrupted the energy flow,		
	35	Promote Water Based Economies	Market Michigan's Strategic Advantages	Michigan and other places across the globe face complex challenges in addressing water quality and quantity concerns. The state is well-positioned to be a powerhouse for solving these complex problems and grow its economic opportunities around water in a manner that ensures good stewardship of the resource. Collaboration among industry, regulators, economic developers and academia directing water research and development is the right place to start.	<i>Market the state's competitive advantage as a highly attractive place for business creation and investment because of our abundant natural water assets, water research capabilities, highly skilled talent, economic development expertise, and powerful tourism and business-marketing brand.</i>	In addition to the abundance of natural water assets, is the excess capacity of water and wastewater treatment plants throughout the state, that provide capacity to those people and industries that would be interested in moving to Michigan to live and do business.
	36	Promote Water Based Economies	Optimize Efficient Use of Water in Business, Utilities and Municipalities	In addition, cleaning and purifying water for drinking water, manufacturing and discharge is very costly. Nationally, between 4 percent and 13 percent of all energy is used to pump and treat water, for waste management, or for industrial and commercial processes.	<i>Promote innovative technologies that reduce cost and water loss or convert waste products to usable materials.</i>	Nationally, approximately half of a local government's electric bill goes to pumping and treating water and wastewater.  The Water Strategy should speak to the fact that regulatory changes may be required to allow and facilitate the type of innovation that will be needed to achieve this goal.  Suggest expanding the

Page	Chap	Chapter Title	Topic	Text	Recommendation	Request
						importance of energy efficiency in water and wastewater utilities. Doing so will reduce local operating costs.
	36	Promote Water Based Economies	Optimize Efficient Use of Water in Business, Utilities and Municipalities	In addition, cleaning and purifying water for drinking water, manufacturing and discharge is very costly. Nationally, between 4 percent and 13 percent of all energy is used to pump and treat water, for waste management, or for industrial and commercial processes.	<i>Fund a pilot project, through a competitive bid process, for the initiation and evaluation of a new model for wastewater management. This pilot program will assess the opportunities and barriers to creating a "Water Resources Utility of the Future" focused on: ...</i>	<p>Suggest that this section be expanded and that a permanent initiative to promote effective energy use.</p> <p>The New York State Research and Development Authority (NYSERDA) has been a leader in research and development in this area. Wisconsin's Focus on Energy's wastewater program has been recognized nationally. The California Energy Commission has also made important contributions.</p> <p>Suggest that Michigan's energy program needs to include an energy component focused on water and wastewater facilities (treatment and pumping)</p>
	36	Promote Water	Optimize Efficient	Agriculture is another example of a	<i>Establish voluntary water</i>	Suggest including reference

Page	Chap	Chapter Title	Topic	Text	Recommendation	Request
		Based Economies	Use of Water for Agriculture	major water user in Michigan that has made significant advancements to improve efficiency. Water, energy and food are inextricably linked.	<i>efficiency targets for agriculture in areas of existing or potential water stress.</i>	to the Energy/Water Nexus (which some think is the Energy/Water/Agric Nexus).  The interrelation of Energy and Water should be addressed in the Chapter on Economics.
42	6	Invest in Water Infrastructure		The state's infrastructure – roads, commercial ports, drinking water systems, sewer systems, energy plants, transmission systems and recreational facilities – form the backbone of the economy. All water withdrawn from the Great Lakes, groundwater, rivers, and lakes for any purpose passes through some form of water infrastructure; it is a complex system. A functioning water infrastructure system keeps the state running.		Experience has shown that investing in water and wastewater infrastructure stimulates local economies.  Investment in water and wastewater infrastructure should be viewed as a contributor to economic development.
42	6	Invest in Water Infrastructure	Improve Understanding of the True Cost of Water	Through their water bills, Michiganders instead pay for the infrastructure to deliver safe drinking water and carry away and treat waste, and for the operating costs, like energy, to treat and condition water and maintain infrastructure. Those outside the area of a municipal water supply system pay for well	<i>Implement a communication strategy focused on messages that link the relationship between investments in water infrastructure and clean water as well as the benefits infrastructure provides for drinking water, recreation,</i>	Recommend determining the amount of embedded energy in water supply (example of California) to inform people on the amount invested in delivering clear clean water.

Page	Chap	Chapter Title	Topic	Text	Recommendation	Request
				construction, treatment if necessary, the pump and the energy used to supply water to the tap. In addition, the cost of infrastructure to supply water is contained in the final price of all commodities and services.	<i>cultural and economic opportunity.</i>	
44	6	Invest in Water Infrastructure	Invest in Water Infrastructure	<p>One of the biggest challenges facing communities is aging, deteriorating infrastructure systems with more operational needs than financial resources to meet them. Poor infrastructure degrades the value of water, results in costly efforts to mitigate impacts, and creates or increases drag on the economy.</p> <p>Communities can realize cost efficiencies to manage water infrastructure systems and to meet the needs of the future by increasing efficiencies in the delivery and treatment of water through implementation of energy efficiency measures, the use of technologies and a combination of grey and green infrastructure.</p>	<i>Incentivize and require outcome-based asset management planning for all public water utilities that includes more efficient use of resources.</i>	Suggesting including that energy savings can be a source of funding of improvements using delivery methods such as Energy Savings Performance Contracting.
52	8	Build Governance Tools	Align Resources, Tools and Regulatory	Water resources are managed at various scales and by many levels of government. State-level regulations		A Recommendation is needed to communicate the local resources that facilitate

Page	Chap	Chapter Title	Topic	Text	Recommendation	Request
			Framework to Achieve Outcomes	and policies establish performance expectations for managing important water and water-related resources.		<p>the Water Resources Facility of the Future.</p> <p>Tools such as the Michigan Waste Biomass Inventory need to be expanded.</p>

DRAFT

## MWEA Water Strategy Task Force

Date: July 31, 2015  
To: Christine Kosmowski, Chair MWEA Water Strategy Task Force  
From: Joe Goergen, Chair MIWARN  
Subject: Overall Review of Michigan's Water Strategy  
Comments on the document titled "DRAFT, Sustaining Michigan's Water Heritage,  
A Strategy for the Next Generation"

My comments are from someone affected by the document as well as from a member of the MWEA.

The document is a good "vision" for the waters of the state of Michigan. As a 30 year vision it is much larger, ambitious plan. It is necessary and the MDEQ needs to be applauded for generating such a documented strategic plan. The document is a Michigan "inward" perspective. This perspective takes ownership and responsibility much beyond the state boundaries. The plan needs to add "outward" perspective to include all the Great Lake states and Canada. A true watershed approach. The success of this plan hinges on the "buy-in" and commitment of the Federal Government, all the Great Lake States, Canada and the shipping community with ballast water exchange and treatment along with the Asian carp prevention measures, etc.

The Goals and strategies are broad and far-reaching. They impact MWEA members in many ways across the spectrum, Surface water, watershed management, Wet weather extremes, aquatic pollution, storm water, ground water, etc. Certainly not all the impacts are negative. We are in an industry that prides itself in recognizing, measuring, treating, protecting health and environment as well as renewing the water resources of the state of Michigan.

MDEQ and the state needs to understand most of these goals and strategies cannot be addressed with a "one size fits all" approach. Site specific strategy was not mentioned though is very real in achieving the CWA goals. Revising sanitary code, infrastructure needs and funding, banning micro-beads, aquaculture, waste streams, and non-point source water stress locations all are areas that MWEA members are intricately woven into this strategy. Ideally the plan will come with the needed funding To "invest" in the infrastructure and protection of water quality.

Mercury reductions cannot be achieved with a Michigan only strategy since well over 90% of the source Hg to the Great lakes is from air deposition from outside the state borders.

Goal #5 looks to have been excerpted from NACWA's "Utility of the Future" publication.

Understanding the water energy and quality of life interconnections is essential to the plan. As is the return on investment cited as 3:1 & 6.6:1 for water resource assets.

The references to technical and financial support and seek and secure long term funding are code for more fees and taxes. Which translate to increased user fees and debt in a slow economy with many areas of the state struggling to recover economically.

**From:** [Sierra Club](#) on behalf of [Linda Lipkin](#)  
**To:** [mi-waterstrategy](#)  
**Subject:** Public Comments on Draft Water Strategy  
**Date:** Saturday, August 15, 2015 9:09:31 AM

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Aug 15, 2015

Director of the Office of the Great Lakes Jon Allan

Dear Director of the Office of the Great Lakes Allan,

Thank you for this opportunity to submit my comments on the Department of Environmental Quality's Office of the Great Lakes draft Water Strategy. I'm glad to see the agency understands the need to take a comprehensive, long-term look at stewarding our state's most precious resource. The draft Water Strategy is a good start and contains important initiatives such as a push for water conservation, but it needs clearer, enforceable measures to achieve its goals.

The Water Strategy relies too heavily on voluntary efforts and actions that "should" be taken rather than "will" be taken to protect our water resources. The OGL needs to develop a stronger vision statement and to put forth specific actions, verifiable goals and data-based solutions to get where we need to be in 30 years.

This is especially true regarding the goal of achieving a 40% phosphorus reduction in the western Lake Erie basin. The Water Strategy relies on voluntary measures to address agriculture's role in the problem, an approach that's been in place for years and hasn't worked, and promotes Michigan Agricultural Environmental Assurance Program practices that will not address the phosphorus problem. The state's approach needs to include much stronger actions, including a complete ban on the application of waste on frozen or snow-covered ground.

The Water Strategy recommendation for legislation to phase out microbeads is an example of a bold, specific and concrete action that would lead to an important improvement in our water quality and public health. The state's plan for Great Lakes protection needs more recommendations like this.

Finally, promoting water as "a strategic asset for community and economic development" is important, but it needs to be balanced with the basic human right of everyone to have access to clean water. A Water Strategy for Michigan needs to underscore this point by ensuring our water systems remain publicly owned and affordable to families for basic needs.

I look forward to your response about the changes you will be making in the Water Strategy to make it a strong document that will truly serve its stated mission of serving as "a roadmap to achieve a 30-year vision to ensure Michigan's water resources support healthy ecosystems, citizens, communities and economies." Again, thank you for this opportunity to share my input.

Sincerely,

Linda Lipkin



**From:** [Sierra Club](#) on behalf of [Ralph Tuscher](#)  
**To:** [mi-waterstrategy](#)  
**Subject:** Public Comments on Draft Water Strategy  
**Date:** Saturday, August 15, 2015 9:09:32 AM

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Aug 15, 2015

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Sincerely,

Ralph Tuscher



**From:** [Sierra Club](#) on behalf of [Gerald Vande Velde](#)  
**To:** [mi-waterstrategy](#)  
**Subject:** Public Comments on Draft Water Strategy  
**Date:** Saturday, August 15, 2015 10:42:48 AM

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Aug 15, 2015

Director of the Office of the Great Lakes Jon Allan

Dear Director of the Office of the Great Lakes Allan,

Thank you for this opportunity to submit my comments on the Department of Environmental Quality's Office of the Great Lakes draft Water Strategy. I'm glad to see the agency understands the need to take a comprehensive, long-term look at stewarding our state's most precious resource. The draft Water Strategy is a good start and contains important initiatives such as a push for water conservation, but it needs clearer, enforceable measures to achieve its goals.

Best wishes as you proceed in work to protect our water.

I look forward to your response about the changes you will be making in the Water Strategy to make it a strong document that will truly serve its stated mission of serving as "a roadmap to achieve a 30-year vision to ensure Michigan's water resources support healthy ecosystems, citizens, communities and economies." Again, thank you for this opportunity to share my input.

Sincerely,

Gerald Vande Velde

A large black rectangular redaction box covering the signature area of the email.

**From:** [Sierra Club](#) on behalf of [Eric Stordahl](#)  
**To:** [mi-waterstrategy](#)  
**Subject:** Public Comments on Draft Water Strategy  
**Date:** Saturday, August 15, 2015 11:09:42 AM

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Aug 15, 2015

Director of the Office of the Great Lakes Jon Allan

Dear Director of the Office of the Great Lakes Allan,

Thank you for this opportunity to submit my comments on the Department of Environmental Quality's Office of the Great Lakes draft Water Strategy. I'm glad to see the agency understands the need to take a comprehensive, long-term look at stewarding our state's most precious resource. The draft Water Strategy is a good start and contains important initiatives such as a push for water conservation, but it needs clearer, enforceable measures to achieve its goals.

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Sincerely,

Eric Stordahl



**From:** [Sierra Club](#) on behalf of [Maureen Hicks](#)  
**To:** [mi-waterstrategy](#)  
**Subject:** Public Comments on Draft Water Strategy  
**Date:** Saturday, August 15, 2015 11:42:50 AM

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Aug 15, 2015

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Sincerely,

Maureen Hicks



**From:** [Sierra Club](#) on behalf of [Kristen Howard](#)  
**To:** [mi-waterstrategy](#)  
**Subject:** Public Comments on Draft Water Strategy  
**Date:** Saturday, August 15, 2015 12:41:18 PM

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Aug 15, 2015

Director of the Office of the Great Lakes Jon Allan

Dear Director of the Office of the Great Lakes Allan,

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Sincerely,

Kristen Howard



**From:** [Sierra Club](#) on behalf of [James Howard](#)  
**To:** [mi-waterstrategy](#)  
**Subject:** Public Comments on Draft Water Strategy  
**Date:** Saturday, August 15, 2015 12:41:44 PM

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Aug 15, 2015

Director of the Office of the Great Lakes Jon Allan

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Sincerely,

James Howard



**From:** [Sierra Club](#) on behalf of [Ruth Mutchler](#)  
**To:** [mi-waterstrategy](#)  
**Subject:** Public Comments on Draft Water Strategy  
**Date:** Saturday, August 15, 2015 1:12:53 PM

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Aug 15, 2015

Director of the Office of the Great Lakes Jon Allan

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Sincerely,

Ruth Mutchler



**From:** [Sierra Club](#) on behalf of [Dr. Virginia Jones](#)  
**To:** [mi-waterstrategy](#)  
**Subject:** Public Comments on Draft Water Strategy  
**Date:** Saturday, August 15, 2015 1:40:42 PM

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Aug 15, 2015

Director of the Office of the Great Lakes Jon Allan

Dear Director of the Office of the Great Lakes Allan,

Thank you for this opportunity to submit my comments on the Department of Environmental Quality's Office of the Great Lakes draft Water Strategy. I'm glad to see the agency understands the need to take a comprehensive, long-term look at stewarding our state's most precious resource. The draft Water Strategy is a good start and contains important initiatives such as a push for water conservation, but it needs clearer, enforceable measures to achieve its goals.

The Water Strategy relies too heavily on voluntary efforts and actions that "should" be taken rather than "will" be taken to protect our water resources. The OGL needs to develop a stronger vision statement and to put forth specific actions, verifiable goals and data-based solutions to get where we need to be in 30 years.

This is especially true regarding the goal of achieving a 40% phosphorus reduction in the western Lake Erie basin. The Water Strategy relies on voluntary measures to address agriculture's role in the problem, an approach that's been in place for years and hasn't worked, and promotes Michigan Agricultural Environmental Assurance Program practices that will not address the phosphorus problem. The state's approach needs to include much stronger actions, including a complete ban on the application of waste on frozen or snow-covered ground.

The Water Strategy recommendation for legislation to phase out microbeads is an example of a bold, specific and concrete action that would lead to an important improvement in our water quality and public health. The state's plan for Great Lakes protection needs more recommendations like this.

Finally, promoting water as "a strategic asset for community and economic development" is important, but it needs to be balanced with the basic human right of everyone to have access to clean water. A Water Strategy for Michigan needs to underscore this point by ensuring our water systems remain publicly owned and affordable to families for basic needs.

We, who live near the Great Lakes, have added responsibility to take care of 1/5 of the world's freshwater resources !

I look forward to your response about the changes you will be making in the Water Strategy to make it a strong document that will truly serve its stated mission of serving as "a roadmap to achieve a 30-year vision to ensure Michigan's water resources support healthy ecosystems,

citizens, communities and economies." Again, thank you for this opportunity to share my input.

Sincerely,

Dr. Virginia Jones



**From:** [Sierra Club](#) on behalf of [Marie Kopin](#)  
**To:** [mi-waterstrategy](#)  
**Subject:** Public Comments on Draft Water Strategy  
**Date:** Saturday, August 15, 2015 2:11:06 PM

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Aug 15, 2015

Director of the Office of the Great Lakes Jon Allan

Dear Director of the Office of the Great Lakes Allan,

Thank you for this opportunity to submit my comments on the Department of Environmental Quality's Office of the Great Lakes draft Water Strategy. I'm glad to see the agency understands the need to take a comprehensive, long-term look at stewarding our state's most precious resource. The draft Water Strategy is a good start and contains important initiatives such as a push for water conservation, but it needs clearer, enforceable measures to achieve its goals.

I want the Water Strategy to have mandatory rules. I have seen over and over again that big companies ignore most 'voluntary' things about emissions, toxic waste, GMO labelling, etc. etc. I understand that the Water Strategy relies too heavily on voluntary efforts and actions that "should" be taken rather than "will" be taken to protect our water resources. The OGL needs to develop a stronger vision statement and to put forth specific actions, verifiable goals and data-based solutions to get where we need to be in 30 years.

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I am very fearful about the continuing use of microbeads which are beginning to coat our lake bottoms. I also understand that the Water Strategy recommendation for legislation to phase out microbeads is an example of a bold, specific and concrete action that would lead to an important improvement in our water quality and public health. The state's plan for Great Lakes protection needs more recommendations like this.

Finally, promoting water as "a strategic asset for community and economic development" is important, but it needs to be balanced with the basic human right of everyone to have access to clean water. A Water Strategy for Michigan needs to underscore this point by ensuring our water systems remain publicly owned and affordable to families for basic needs.

We need your help desperately to keep our great lakes waters clean. Do it now, while it is still possible.

I look forward to your response about the changes you will be making in the Water Strategy to make it a strong document that will truly serve its stated mission of serving as "a roadmap to achieve a 30-year vision to ensure Michigan's water resources support healthy ecosystems, citizens, communities and economies." Again, thank you for this opportunity to share my input.

Sincerely,

Marie Kopin



**From:** [Sierra Club](#) on behalf of [Charles Dineen](#)  
**To:** [mi-waterstrategy](#)  
**Subject:** Public Comments on Draft Water Strategy  
**Date:** Saturday, August 15, 2015 5:39:50 PM

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Aug 15, 2015

Director of the Office of the Great Lakes Jon Allan

Dear Director of the Office of the Great Lakes Allan,

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Sincerely,

Charles Dineen



**From:** [Sierra Club](#) on behalf of [Mary Roobol](#)  
**To:** [mi-waterstrategy](#)  
**Subject:** Public Comments on Draft Water Strategy  
**Date:** Saturday, August 15, 2015 6:10:16 PM

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Aug 15, 2015

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Sincerely,

Mary Roobol



**From:** [Sierra Club](#) on behalf of [James and Dr. Diana Wright](#)  
**To:** [mi-waterstrategy](#)  
**Subject:** Public Comments on Draft Water Strategy  
**Date:** Saturday, August 15, 2015 8:10:04 PM

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Aug 15, 2015

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Sincerely,

James and Dr. Diana Wright



**From:** [Sierra Club](#) on behalf of [Larry O'Connor](#)  
**To:** [mi-waterstrategy](#)  
**Subject:** Public Comments on Draft Water Strategy  
**Date:** Saturday, August 15, 2015 11:10:25 PM

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Aug 15, 2015

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Sincerely,

Larry O'Connor



**From:** [Sierra Club](#) on behalf of [Daniel Ferrier](#)  
**To:** [mi-waterstrategy](#)  
**Subject:** Public Comments on Draft Water Strategy  
**Date:** Saturday, August 15, 2015 11:40:41 PM

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Aug 15, 2015

Director of the Office of the Great Lakes Jon Allan

Dear Director of the Office of the Great Lakes Allan,

Thank you for this opportunity to submit my comments on the Department of Environmental Quality's Office of the Great Lakes draft Water Strategy. I'm glad to see the agency understands the need to take a comprehensive, long-term look at stewarding our state's most precious resource. The draft Water Strategy is a good start and contains important initiatives such as a push for water conservation, but it needs clearer, enforceable measures to achieve its goals.

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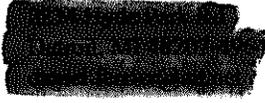
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Sincerely,

Daniel Ferrier



**From:** [Sierra Club](#) on behalf of [Bobby Belknap](#)  
**To:** [mi-waterstrategy](#)  
**Subject:** Public Comments on Draft Water Strategy  
**Date:** Sunday, August 16, 2015 10:12:03 AM

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Aug 16, 2015

Director of the Office of the Great Lakes Jon Allan

Dear Director of the Office of the Great Lakes Allan,

Thank you for this opportunity to submit my comments on the Department of Environmental Quality's Office of the Great Lakes draft Water Strategy. I'm glad to see the agency understands the need to take a comprehensive, long-term look at stewarding our state's most precious resource. The draft Water Strategy is a good start and contains important initiatives such as a push for water conservation, but it needs clearer, enforceable measures to achieve its goals.

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Sincerely,

Bobby Belknap



**From:** [Sierra Club](#) on behalf of [Karen Redden](#)  
**To:** [mi-waterstrategy](#)  
**Subject:** Public Comments on Draft Water Strategy  
**Date:** Sunday, August 16, 2015 10:12:59 AM

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Aug 16, 2015

Director of the Office of the Great Lakes Jon Allan

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Sincerely,

Karen Redden



**From:** [Sierra Club](#) on behalf of [Helena Coleman](#)  
**To:** [mi-waterstrategy](#)  
**Subject:** Public Comments on Draft Water Strategy  
**Date:** Sunday, August 16, 2015 1:44:07 PM

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Aug 16, 2015

Director of the Office of the Great Lakes Jon Allan

Dear Director of the Office of the Great Lakes Allan,

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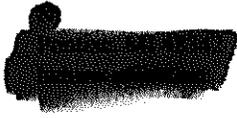
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Sincerely,

Helena Coleman



**From:** [Sierra Club](#) on behalf of [Thomas Cannon](#)  
**To:** [mi-waterstrategy](#)  
**Subject:** Public Comments on Draft Water Strategy  
**Date:** Sunday, August 16, 2015 5:12:59 PM

---

Aug 16, 2015

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Sincerely,

Thomas Cannon



**From:** [Sierra Club](#) on behalf of [Kelly Cormier](#)  
**To:** [mi-waterstrategy](#)  
**Subject:** Public Comments on Draft Water Strategy  
**Date:** Sunday, August 16, 2015 9:42:50 PM

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Aug 16, 2015

Director of the Office of the Great Lakes Jon Allan

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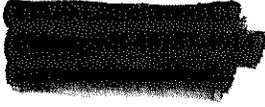
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Sincerely,

Kelly Cormier



**From:** [Sierra Club](#) on behalf of [Mishia Hunwick](#)  
**To:** [mi-waterstrategy](#)  
**Subject:** Public Comments on Draft Water Strategy  
**Date:** Monday, August 17, 2015 12:14:22 PM

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Aug 17, 2015

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Sincerely,

Mishia Hunwick



**From:** [Sierra Club](#) on behalf of [Thomas Howard](#)  
**To:** [mi-waterstrategy](#)  
**Subject:** Public Comments on Draft Water Strategy  
**Date:** Monday, August 17, 2015 1:44:22 PM

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Aug 17, 2015

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Sincerely,

Thomas Howard

[REDACTED] 58  
[REDACTED] n

**From:** [Sierra Club](#) on behalf of [Adam Williams](#)  
**To:** [mi-waterstrategy](#)  
**Subject:** Public Comments on Draft Water Strategy  
**Date:** Tuesday, August 18, 2015 1:54:17 AM

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Aug 18, 2015

Director of the Office of the Great Lakes Jon Allan

Dear Director of the Office of the Great Lakes Allan,

Thank you for this opportunity to submit my comments on the Department of Environmental Quality's Office of the Great Lakes draft Water Strategy. I'm glad to see the agency understands the need to take a comprehensive, long-term look at stewarding our state's most precious resource. The draft Water Strategy is a good start and contains important initiatives such as a push for water conservation, but it needs clearer, enforceable measures to achieve its goals.

The Water Strategy relies too heavily on voluntary efforts and actions that "should" be taken rather than "will" be taken to protect our water resources. The OGL needs to develop a stronger vision statement and to put forth specific actions, verifiable goals and data-based solutions to get where we need to be in 30 years.

This is especially true regarding the goal of achieving a 40% phosphorus reduction in the western Lake Erie basin. The Water Strategy relies on voluntary measures to address agriculture's role in the problem, an approach that's been in place for years and hasn't worked, and promotes Michigan Agricultural Environmental Assurance Program practices that will not address the phosphorus problem. The state's approach needs to include much stronger actions, including a complete ban on the application of waste on frozen or snow-covered ground.

The Water Strategy recommendation for legislation to phase out microbeads is an example of a bold, specific and concrete action that would lead to an important improvement in our water quality and public health. The state's plan for Great Lakes protection needs more recommendations like this.

Finally, promoting water as "a strategic asset for community and economic development" is important, but it needs to be balanced with the basic human right of everyone to have access to clean water. A Water Strategy for Michigan needs to underscore this point by ensuring our water systems remain publicly owned and affordable to families for basic needs.

I look forward to your response about the changes you will be making in the Water Strategy to make it a strong document that will truly serve its stated mission of serving as "a roadmap to achieve a 30-year vision to ensure Michigan's water resources support healthy ecosystems, citizens, communities and economies." Again, thank you for this opportunity to share my input.

Sincerely,

Adam Williams



**From:** Julie Jim  
**To:** mi-waterstrategy  
**Cc:** Patty Troy; Lori Eschenburg; Kristen Lyons; Donna Strang  
**Subject:** Michigan Water Strategy draft -- suggested revisions  
**Date:** Tuesday, August 18, 2015 2:01:20 PM

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My name is F. James Clatworthy and I serve on the St. Clair River Bi-National Public Advisory Committee.

I have two suggested revisions for the Michigan Water Strategy draft document:

1.) Goal 1, p. 11 "Prevent Introduction of and Manage Aquatic Invasive Species" second paragraph the devastating effects of sea lamprey communities ---- insert before sea lamprey **rainbow smelt and**

**Rationale:** The DNR needs to recognize they were responsible for the accidental release in 1912 and then intentional releases in 1919 and mid-1920's of our "voracious fish of prey" [Ryck Lydecker, Feb. 10, 1973, University of Wisconsin Sea Grant Project] Little Ozzie, or *Osmerus Mordax*. Smelt spawn in the spring and Lake Trout spawn in the fall so as the smelt population expanded the Lake Trout population started to decline even before the arrival of the sea lamprey in the 30's. And when the lamprey applications started to reduce lamprey populations the Lake Trout population continued to decline. The most notable example for Lake Trout population increase was after the smelt die off of 1947-49. Improved populations of Whitefish and Walleye were also apparent after the die off.

A good source for the pro and con for the destructive nature of the Rainbow Smelt can be found in Clifford R. Gerhart's book, Pity The Poor Fish Then Man, 1987, ISBN 0-932212-52-2.

2.) Goal 8 p. 22 " Develop a Spill and Communication Strategy" Edit this line to read: Develop a Spill Prevention Strategy and in case of a Spill then a Communication Strategy.

**Rationale:** It is one thing to have a spill or leak strategy, but **why not have a prevention strategy?** The two 20 inch pipes across the Straights of Mackinac carrying twenty million gallons of light crude ( do we know for sure) in pipes that are 63 years old is a disaster waiting to happen. *Must the State wait until the pipes leak before it has a strategy?* The State needs to be PRO ACTIVE when it comes to protecting the Great Lakes and the connecting channels. The St. Clair River has numerous pipes crossing the river that have the potential to leak.

The State needs to act with all do diligence to prevent leaks from oil and chemical pipes under the Straights of Mackinac and the St. Clair and Detroit Rivers. All pipes crossing any portion of the Great Lakes or connecting Channels must be required to have automatic closing valves in response to pressure drops. Whenever possible, pipes should be routed through abandoned tunnels[ St. Clair River] and under bridges[ Mackinac Bridge] and placed within a larger pipe like the Alaskan

Pipe Line in the Artic.

**From:** [Bruce Noble](#)  
**To:** [ml-waterstrategy](#)  
**Subject:** Fwd: Review and Comments, draft "Sustaining Michigan's Water Heritage" document.  
**Date:** Wednesday, August 19, 2015 12:03:37 AM

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>

> Here are my comments on the draft, "Sustaining Michigan's Water Heritage, A Strategy for Next Generation" document.

> 1. The Introduction fails to give a reason on why it was written. The web page link gives a very good introduction on why it was written.

> 2. The Introduction and 1st paragraph fails to mention groundwater. But the body of document covers many groundwater issues.

> 3. Table 1, Goal 1, define the acronym AIT.

> 4. Chapter 1, you need to add an entire chapter on impacts of global warming. The chapter makes a flippant remark about, "While Michigan future climate is unclear", puts doubt on the scientific legitimacy of the document, or was it written to appease politicians? Are you serious about if global warming is occurring? The document should be clear on the fact that global warming is occurring and will have adverse impacts on Michigan's water quality.

> 5. While the document had goals, there is no mention on how these goals will be measured and published for public review over the life of the 30 year document. This needs to be clarified. Let's see a grading system from A to E for each goal beginning with some current grades would be a good start. The grades would be given by a panel of organizations, government, individuals and academic to reduce bias.

> 6. The Water Efficiency and Conservation State Scorecard in 2012 gave Michigan a grade of a "D". This independent grade conflicts with the document's statement in the Introduction, "Today, the state is slowly returning to a level of health of aquatic health..."

7. You could easily add a chapter on "Protecting Small Seasonal Streams and Wetlands".

8. The document needs to include a goal to properly map the glacial deposits of Michigan. The data and decisions from the Water Withdrawal Assessment Tool will continue to be inaccurate and result in poor decisions, because the data on hydraulic conductivity is in grossly inaccurate.

9. You could remove the Chamber of Commerce's chapter 3, Create Vibrant Waterfronts. You could transfer this chapter to Michigan's business plans.

10. I would recommend that one of the goals include qualifications for individuals that work on water issues. For instance groundwater issues would be done by geologists certified by the State of Michigan. After all you need a State of Michigan license to cut hair, but no license to work on water issues.

11. Finally I would also strongly encourage that the State of Michigan have qualifications and college degrees in water management to be a County Drain Commissioners. One only has to look at the recent fiasco in Barry County and the Coldwater river and how unqualified individuals can quickly ruin water quality for the residents of the great state of Michigan.

Sincerely,  
Bruce Noble



>

> Sent from my iPad

**From:** [Bruneau, Michelle \(DCH\)](#)  
**To:** [mi-waterstrategy](#)  
**Cc:** [Groetsch, Kory J. \(DCH\)](#); [Gray, Jennifer \(DCH\)](#); [Bohr, Joseph \(DEQ\)](#)  
**Subject:** Public Comment - Water Strategy MDHHS TARS  
**Date:** Wednesday, August 19, 2015 2:04:23 PM  
**Attachments:** [2015-08-19 - PUBLIC COMMENT DEQ WS - FINAL.pdf](#)

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Hello Emily, et al:

Thank you for the opportunity to further comment on the Water Strategy. Our input is attached.  
Good luck and thank you for your awesome work on this major endeavor!

- Michelle

><{{{'> [www.michigan.gov/eatsafefish](http://www.michigan.gov/eatsafefish) <'}}}><

Michelle Bruneau, MA  
Project Manager & Health Educator  
Michigan Department of Health & Human Services  
201 Townsend, 4th Fl  
Lansing, MI 48913  
Direct: (517) 335-8984  
Toll free: 1-800-648-6942  
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[bruneaum@michigan.gov](mailto:bruneaum@michigan.gov)



STATE OF MICHIGAN  
DEPARTMENT OF HEALTH AND HUMAN SERVICES  
LANSING

RICK SNYDER  
GOVERNOR

NICK LYON  
DIRECTOR

The MDHHS Toxicology and Response Section supports the thoughtful work of the Michigan Department of Environmental Quality on their progressive efforts to protect the waters of Michigan and ensure a vibrant and healthy future for our state.

We appreciate the opportunity to provide further comment on the Water Strategy Draft dated June 4, 2015 and submit the following requested changes:

- Page 32, 2<sup>nd</sup> paragraph:
  - “Although atmospheric deposition of Hg, PCBs and other PBTs cause most of the fish consumption advisories in Michigan, the **most restrict advisories** are caused by site specific legacy issues.”
    - Grammatical and technical issue. Please update to:
      - “most restrictive consumption guidelines.”
  - Velsicol is not a great example as a worst case scenario because extensive remediation and natural attenuation has greatly improved the environmental status of the Pine River.
    - Pending future data, MDHHS suspects that the fish consumption guidelines will be relaxed and limited fish consumption will be possible within the timeline presented in the Water Strategy.
    - One location that will not likely change within the scope of the Water Strategy’s vision is St Clair Shores’ Lange-Revere Canal. A “Do Not Eat” consumption advisory currently exists on all fish in the canal due to extremely elevated levels of PCBs.
  - “Some restriction advisories have been successfully removed in Michigan’s AOCs due to restoration efforts over the last several decades.”
    - Sadly, this is untrue. Fish consumption guidelines are and will continue to be in place in Areas of Concern even after the Restrictions on Fish and Wildlife Consumption Beneficial Use Impairment is removed and the site is eventually delisted. Please update to:
      - “The fish consumption beneficial use impairment (BUI) designation has been removed in several Areas of Concern (AOC) due to restoration efforts over the last several decades. Although improved, fish consumption guidelines will continue to be in place for the undetermined future in these sites – even after BUI removal and AOC delisting – due to lingering (albeit lessened) contamination in the sediment, as well as ongoing air deposition.”

Additional Recommendations:

1. MDHHS would like to see the State prioritize and institutionalize the continued monitoring of fish for legacy and emerging contaminants in order to ensure that Michigan maintains its status within the Great Lakes as a leader in the adoption and implementation of best available science to protect public health.
2. MDHHS also recommends the inclusion of perfluorooctane sulfonate (PFOS) in the list of PBTs. PFOS first appeared in MDHHS's *Eat Safe Fish Guide* as a chemical of concern for fish consumption in 2014 for the Au Sable River near the decommissioned Wurtsmith Air Force Base in Oscoda. In 2015, PFOS guidelines were also included for the Flint River, Rogue River, and St Joseph River. MDHHS expects this emerging contaminant to be found in fish throughout the state as additional testing occurs. MDHHS will issue fish consumption guidelines for PFOS as needed.

If you have further questions or would like clarification, please feel free to contact Kory Groetsch, Jennifer Gray, or Michelle Bruneau within the Toxicology and Response Section at MDHHS at 1-800-648-6942.

Thank you!

**From:** Finnell, Emily (DEQ)  
**To:** [mi-waterstrategy](mailto:mi-waterstrategy)  
**Subject:** FW: Draft Water Strategy  
**Date:** Thursday, August 20, 2015 8:54:12 AM  
**Attachments:** [Cargo Ports 2014.pdf](#)

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Emily Finnell  
Office of the Great Lakes | MI Department of Environmental Quality  
PO Box 30473  
Lansing, MI 48909  
[finnelle@michigan.gov](mailto:finnelle@michigan.gov)  
517-284-5036

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**From:** Karnes, Larry (MDOT)  
**Sent:** Tuesday, August 18, 2015 11:14 AM  
**To:** Finnell, Emily (DEQ)  
**Cc:** DeFrain, Elisha (MDOT)  
**Subject:** Draft Water Strategy

Hi Emily,

I have reviewed the Draft Water Strategy and offer the following comments:

1. Create Sustainable Commercial Ports and Harbors (pp. 28-29) – It seems there should be a general introduction (1-2 paragraphs) to our commercial ports which describes the number of ports, types and volumes of cargo handled, and public vs. private responsibilities. We also have concerns with the final paragraph on p. 29, and would like to discuss them with you.
2. Figure 1: Cargo ports and tonnage (p. 29) – the attached map provides more current information and should replace the existing map. The source should be identified as MDOT.
3. Table 2. Water Strategy Implementation Plan; Goal 3, No. 4: Prioritize investments... (p. 64) – The Implementation Metric is “By 2020, increase the percentage of commercial traffic...over a baseline established in 2015.” Percentage of what? Do you mean simply increase the tonnage handled? While this could be a metric, volumes of commercial port traffic are determined by the market place and private shippers and are not under the control of (or significantly influenced by) government. An argument could be made that because of government environmental regulations, there may be a significant *decrease* in port traffic in future years.
4. *Ibid.*, Goal 4. No. 3: Prioritize infrastructure needs for repair and upgrade of public recreational harbors and their landside access. (p. 64) – MDOT is listed as a lead actor, but has no responsibility for recreational harbors. Landside access to a few of the harbors may be via state trunklines, but most often is provided by local road agencies (cities, villages, counties). Local governments should at least be added as an actor.

Recommendations regarding stormwater management related to roads have been forwarded to other parts of MDOT for review and comment.

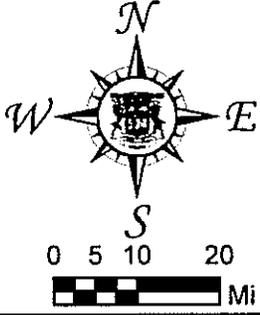
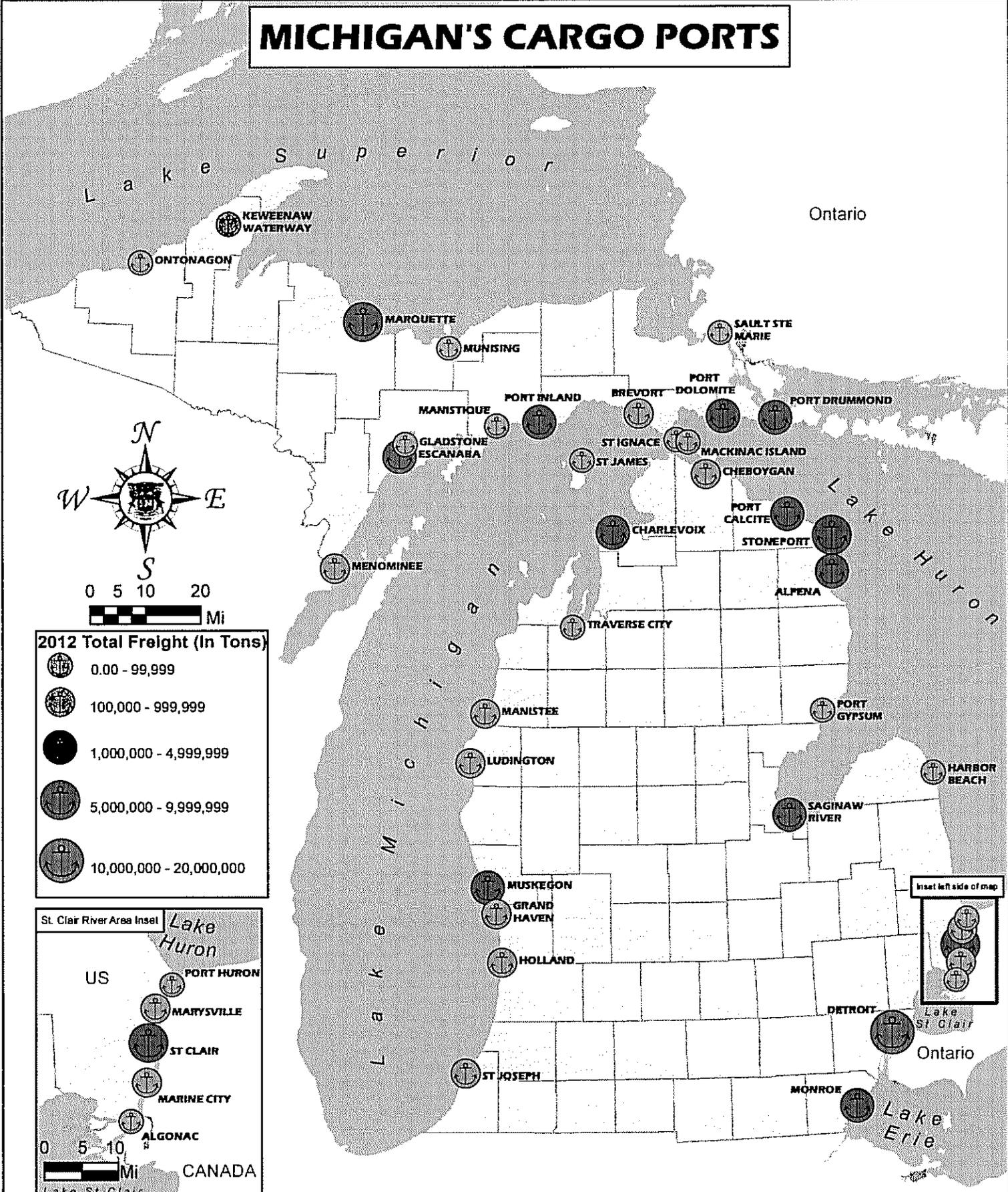
Please let me know if you would like to meet to discuss these comments.

Thanks.

Larry Karnes  
Freight Policy Specialist  
Michigan Department of Transportation

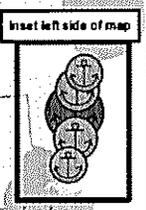
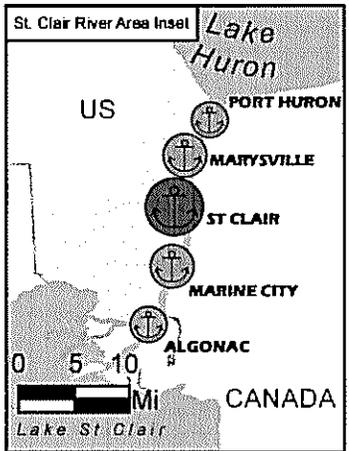
517-373-9058

# MICHIGAN'S CARGO PORTS



**2012 Total Freight (In Tons)**

	0.00 - 99,999
	100,000 - 999,999
	1,000,000 - 4,999,999
	5,000,000 - 9,999,999
	10,000,000 - 20,000,000



**From:** Finnell, Emily (DEQ)  
**To:** [mi-waterstrategy](mailto:mi-waterstrategy)  
**Subject:** FW: Water Strategy  
**Date:** Thursday, August 20, 2015 12:58:02 PM

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Emily Finnell  
Office of the Great Lakes | MI Department of Environmental Quality  
PO Box 30473  
Lansing, MI 48909  
[finnelle@michigan.gov](mailto:finnelle@michigan.gov)  
517-284-5036

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**From:** Taylor Morgan, Joy (DEQ)  
**Sent:** Tuesday, August 18, 2015 11:16 AM  
**To:** Finnell, Emily (DEQ)  
**Cc:** Sills, Robert (DEQ)  
**Subject:** Water Strategy

Hi Emily,

I wanted to send you a couple of comments before your deadline of 8/28/15 for the Water Strategy. I listened to the webinar on the Strategy yesterday and have a couple of comments.

When the Director of OGL talked about the hydrological connectivity with all water and that one of the goals is to monitor water quality with one of the specific recommendations being supporting surface and groundwater monitoring. What about rain water monitoring? That should be included as well.

On page 24 of the Strategy it states, "preventing environmental impacts from emerging contaminants " and gives a few examples and has the specific recommendation to "adapt monitoring protocols to detect concentrations, fate and transport." Would this also include air monitoring? (wet and dry deposition) as many of these emerging compounds can be transported via atmospheric transport.

Also on page 32. There is a recommendation, "Continue national & regional coordination of mercury reduction activities, such as implementation of the Great Lakes Mercury in Products Phase-Down Strategy & the Great Lakes Emissions Reduction Strategy."

While this is fine to include it seems like we should also include something specific to Michigan, such as "continue to implement Michigan's DEQ Mercury Reduction Strategy" or it doesn't have to be that specific just "continue to implement DEQ's mercury reduction and pollution prevention activities".

Language similar to this is recommended because such general language could also encompass the MI DEQ mercury TMDL reduction goals, when completed. I'm concerned that

there is nothing specific to Michigan and the Regional Strategies do not have much leadership or support currently at EPA.

Please contact me with any questions.

Best regards,  
Joy

Joy Taylor Morgan  
MDEQ  
AQD - Toxics  
517-284-6765

**From:** [Sierra Club](#) on behalf of [Judith Lowe](#)  
**To:** [mi-waterstrategy](#)  
**Subject:** Public Comments on Draft Water Strategy  
**Date:** Thursday, August 20, 2015 8:47:42 PM

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Aug 20, 2015

Director of the Office of the Great Lakes Jon Allan

Dear Director of the Office of the Great Lakes Allan,

Thank you for this opportunity to submit my comments on the Department of Environmental Quality's Office of the Great Lakes draft Water Strategy. I'm glad to see the agency understands the need to take a comprehensive, long-term look at stewarding our state's most precious resource. The draft Water Strategy is a good start and contains important initiatives such as a push for water conservation, but it needs clearer, enforceable measures to achieve its goals.

The Water Strategy relies too heavily on voluntary efforts and actions that "should" be taken rather than "will" be taken to protect our water resources. The OGL needs to develop a stronger vision statement and to put forth specific actions, verifiable goals and data-based solutions to get where we need to be in 30 years.

This is especially true regarding the goal of achieving a 40% phosphorus reduction in the western Lake Erie basin. The Water Strategy relies on voluntary measures to address agriculture's role in the problem, an approach that's been in place for years and hasn't worked, and promotes Michigan Agricultural Environmental Assurance Program practices that will not address the phosphorus problem. The state's approach needs to include much stronger actions, including a complete ban on the application of waste on frozen or snow-covered ground.

The Water Strategy recommendation for legislation to phase out microbeads is an example of a bold, specific and concrete action that would lead to an important improvement in our water quality and public health. The state's plan for Great Lakes protection needs more recommendations like this.

Finally, promoting water as "a strategic asset for community and economic development" is important, but it needs to be balanced with the basic human right of everyone to have access to clean water. A Water Strategy for Michigan needs to underscore this point by ensuring our water systems remain publicly owned and affordable to families for basic needs.

I look forward to your response about the changes you will be making in the Water Strategy to make it a strong document that will truly serve its stated mission of serving as "a roadmap to achieve a 30-year vision to ensure Michigan's water resources support healthy ecosystems, citizens, communities and economies." Again, thank you for this opportunity to share my input.

Sincerely,

Judith Lowe



**From:** Bill Hickey  
**To:** mi-waterstrategy  
**Subject:** Water Strategy Draft  
**Date:** Friday, August 21, 2015 6:17:36 AM

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Dear Sir or Madame,

I live in Detroit. My neighbors cannot pay their water bills. Their water is being turned off. They are forced to borrow water from neighbors or move. There is not enough money in plans to aid such families. Payment plans are unaffordable. I believe that water is a human right. No one should be without it because they can't afford to pay for it. Our State's water strategy must include this principle, as well as establish a strong mandate for water affordability plans. The poor pay a higher percentage of their meager income for water than do our richer citizens and businesses whose water rates go down the more they use. This is not fair or right. We need a commitment to water affordability plans in our State Water Strategy.

Thank you.

William Hickey



**From:** [Sierra Club](#) on behalf of [Cynthia Sherman-Jones](#)  
**To:** [mi-waterstrategy](#)  
**Subject:** Public Comments on Draft Water Strategy  
**Date:** Friday, August 21, 2015 11:57:45 AM

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Aug 21, 2015

Director of the Office of the Great Lakes Jon Allan

Dear Director of the Office of the Great Lakes Allan,

Thank you for this opportunity to submit my comments on the Department of Environmental Quality's Office of the Great Lakes draft Water Strategy. I'm glad to see the agency understands the need to take a comprehensive, long-term look at stewarding our state's most precious resource. The draft Water Strategy is a good start and contains important initiatives such as a push for water conservation, but it needs clearer, enforceable measures to achieve its goals.

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Sincerely,

Cynthia Sherman-Jones



**From:** [Gosen, Craig R.](#)  
**To:** [mi-waterstrategy](#)  
**Subject:** Michigan's Water Strategy  
**Date:** Friday, August 21, 2015 3:03:25 PM

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Comments regarding Michigan's Water Strategy:

As the Township Supervisor of a rural township (Midland County) I do not support Recommendation numbers 5 and 6 for Goal #2 on page 62. Requiring every County Health Department to assess all single-family septic systems will be a significant burden on County Health Department resources. Even if funding for such a requirement is initially identified, the likelihood of that funding being sufficient to cover the long-term costs is very low. This cost will ultimately be borne by the rural residents of this state. Mandatory periodic on-site performance inspections will be even more burdensome for our residents. This will cost most rural home owners several hundred dollars periodically and the state or local units of government will have to pay for or subsidize inspections and upgrades for the lower income home-owners.

No one can argue with the overall goal of clean and safe water resources but as government officials it is incumbent upon us to find cost effective ways to achieve this goal. Implementing a monstrous new statewide inspection program to identify a few underperforming residential septic systems is far from efficient. A thorough cost/benefit analysis must be conducted before a large-scale program such as this is implemented. Once the cost/benefit analysis is complete this program should be evaluated against other statewide priorities. Couldn't these funds be used for roads, additional policing efforts, education, or a host of other high priority programs? Please keep in mind that millions of animals use our lakes, woods, fields, yards, and streams as their restroom every single day. Should we also implement an animal diaper requirement or animal porta-jon program? How did the human race ever survive the outhouse days?

Craig R. Gosen  
Edenville Twp Supervisor

**From:** [Sierra Club](#) on behalf of [Sherry Knoppers](#)  
**To:** [mi-waterstrategy](#)  
**Subject:** Public Comments on Draft Water Strategy  
**Date:** Saturday, August 22, 2015 9:38:34 PM

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Aug 22, 2015

Director of the Office of the Great Lakes Jon Allan

Dear Director of the Office of the Great Lakes Allan,

Thank you for this opportunity to submit my comments on the Department of Environmental Quality's Office of the Great Lakes draft Water Strategy. I'm glad to see the agency understands the need to take a comprehensive, long-term look at stewarding our state's most precious resource. The draft Water Strategy is a good start and contains important initiatives such as a push for water conservation, but it needs clearer, enforceable measures to achieve its goals.

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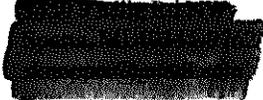
The Water Strategy recommendation for legislation to phase out microbeads is an example of a bold, specific and concrete action that would lead to an important improvement in our water quality and public health. The state's plan for Great Lakes protection needs more recommendations like this.

Finally, promoting water as "a strategic asset for community and economic development" is important, but it needs to be balanced with the basic human right of everyone to have access to clean water. A Water Strategy for Michigan needs to underscore this point by ensuring our water systems remain publicly owned and affordable to families for basic needs.

I look forward to your response about the changes you will be making in the Water Strategy to make it a strong document that will truly serve its stated mission of serving as "a roadmap to achieve a 30-year vision to ensure Michigan's water resources support healthy ecosystems, citizens, communities and economies." Again, thank you for this opportunity to share my input.

Sincerely,

Sherry Knoppers



**From:** [Charter.net](#)  
**To:** [mi-waterstrategy](#)  
**Subject:** Comment  
**Date:** Sunday, August 23, 2015 7:25:37 AM

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Please do not forget to account for the severe drop in lake levels forecast due to global warming!

**From:** [Ken Kuszpit](#)  
**To:** [mi-waterstrategy](#)  
**Subject:** Lets use less water for making electricity  
**Date:** Sunday, August 23, 2015 8:29:54 AM

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The USGS says that 5% of the water we use in Michigan is to make ekectricity. If you go to wind and solar energy (which use no water) we can reduce this amount.

We need to encourage aquaculture. At today's fish prices I have to believe that there is a tremendous potential for profit in this industry.

**From:** [REDACTED]  
**To:** [ml-waterstrategy](#)  
**Subject:** NOT NEEDED  
**Date:** Sunday, August 23, 2015 8:53:35 AM

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Sent from Windows Mail

**From:** Thomas Stephens  
**To:** mi-waterstrategy  
**Cc:** D-REM Communications List; D-REM; PMA Group; Detroit Warriors  
**Subject:** Final Comments on Draft State Water Strategy  
**Date:** Sunday, August 23, 2015 9:44:13 AM  
**Attachments:** FINAL TWS Comments on State Water Strategy.docx

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*“... access to safe drinkable water is a basic and universal human right, since it is essential to human survival and, as such, is a condition for the exercise of other human rights.”*

–Pope Francis, *Laudato Si’* (P. 23 ¶ 30)

The State of Michigan’s attempt to formulate a water strategy suitable for the times we live in – and the context of water riches that define our state[1] – must reckon with some brutal realities. Broadly, these include the following conditions and obstacles to water justice:

1. Exploding **economic inequality**
2. Innovative policies **undermining democracy** – especially in Michigan’s urban communities – like Governor Snyder’s “**emergency management**” statutes
3. Our evil heritage of **racism**, as well as other forms of unjust **domination**
4. Our planetary **climate emergency**, and our related contemporary **energy crisis**
5. Powerful governments and corporate special interests exploiting **wars** as means of increasing their power and wealth

The existing draft strategy’s minimalist treatment – or rather avoidance – of such realities leads it to pin hopes for reasonable access to affordable water on a “communication strategy”. [2] This undermines any confidence that might otherwise be placed in this draft policy document. We need strategies that face the real world, not disengaged rhetorical guides to management best practices.

As noted above, the document begins with the words: “*Water defines Michigan.*” **Tragically what currently defines water issues in southeastern Michigan’s predominantly People of Color cities is lack of reasonable access to safe and affordable water.** No state water strategy worthy of its stated intent to “*support a healthy environment, healthy citizens, vibrant communities and sustainable economies*” can ignore either this unjust situation, or its deep systemic roots in the brutal realities of our times and leading institutions.

The draft document aspires to “*leveraging the power and presence of*” water. (P. 1) Its crucial test will be reconciling that intent with “*providing water to financially distressed customers to ensure all citizens have affordable access to water for drinking and sanitation.*” (P. 44) To date the state has failed this test. Indeed, the separation in the draft document between Chapter 5 (“*Promote Water-Based Economies*”) and Chapter 6 (“*Invest in Water Infrastructure*”), with the former emphasizing leverage via entrepreneurial and management perspectives, and the latter focused on funding – particularly its repeated, bizarre references to “free” water – is troubling. Among other concerns, it seems to reinforce the decidedly non-holistic, non-transparent, biased and unaccountable policies that have done so much to create the current problems with water access and affordability.

In Detroit tens of thousands of poor families have been cut off from water, regardless of their

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We know the reasons for this obtuse refusal to grasp the depth and seriousness of our current water crisis: The same hidden realities omitted from the current draft, like: economic inequality; undermining democracy; racism and other forms of domination; the climate emergency linked to energy crisis; and our country's embroilment in the ultimate "pricing and funding strategies" for distribution of resources and power: a seemingly endless series of pointless, unwinnable foreign wars of aggression. These systemic realities ultimately connect in decisive ways to the potential implementation of a successful water strategy in Michigan.[4]

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The primary obstacle to a state water strategy that could serve communities' health, sustainability and quality of life is an entrenched and dominant, Wall Street-driven politics of austerity that on principle negates the public trust, the commons and the fundamental human right to water, in favor of wars of aggression, racist austerity and other products of corporate corruption and domination. The current draft document's total silence regarding this 21<sup>st</sup> century elephant in the Great Lakes - a system run amok - is absolutely unacceptable.

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The social, legal and political economic significance of our world's contemporary water crises go far beyond the issue of affordability. Professor Wood in "Nature's Trust" says "*Recognizing its role of vindicating basic human rights, Maude Barlow and Tony Clarke urge a new global water "ethic" premised on trust principles: Water must be declared and understood for all time to be the common property of all.*" (P. 267)

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The intention to develop and "*optimize*" (P. 44) a state water strategy should offer a tremendous opportunity for beneficial change in the ways we see our relationships to ecology and each other. One of Pope Francis' deepest insights applies: A "*true ecological approach always becomes a social approach; it must integrate questions of justice in debates on the environment, so as to hear both the cry of the earth and the cry of the poor.*" (P. 35 ¶ 49) If the implications of that powerful statement for water affordability and justice in Michigan cities are not clear to the reader of these comments, then they have been wasted. The state water strategy would benefit enormously from a return to the drawing board, and reboot from this profound and timely premise: social and ecological approaches are not only both necessary, they are in fact the same.

In conclusion, we demand as an absolute minimum first step that the state's water strategy must include an adequate, mandatory water affordability plan, which provides reasonable access to all People based on their income and ability to pay for it.

*"In the present condition of global society, where injustices abound and growing numbers of people are deprived of basic human rights and considered expendable, the principle of the common good immediately becomes, logically and inevitably, a summons to solidarity and a preferential option for the poorest of our brothers and sisters. ... We need only look around us to see that, today, this option is in fact an ethical imperative essential for effectively attaining the common good."*

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Tom Stephens  
[REDACTED]  
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August 23, 2015

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“evaluation” is merely a prelude to strategy; it is not a strategy at all. “Pricing and funding strategies” of those who have the power to make and implement them are at the root of the very brutal realities that plague our relationships to our water; they are not serious solutions.

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Tom Stephens  


*"Hopefully, we can learn from the sixties that we cannot afford to do our enemies' work by destroying each other."* - Audre Lorde <http://www.blackpast.org/1982-audre-lorde-learning-60s>

*"Society cannot be changed by people who live in a state of fear, but only by those who have the courage to take the risks that are always involved when you challenge the status quo or seek alternatives."* - Matt Carr <http://infernalmachine.co.uk/the-uses-of-fear/>

## COMMENTS ON DRAFT STATE WATER STRATEGY

*“... access to safe drinkable water is a basic and universal human right, since it is essential to human survival and, as such, is a condition for the exercise of other human rights.”*

–Pope Francis, *Laudato Si’* (P. 23 ¶ 30)

The State of Michigan’s attempt to formulate a water strategy suitable for the times we live in – and the context of water riches that define our state<sup>[1]</sup> – must reckon with some brutal realities. Broadly, these include the following conditions and obstacles to water justice:

1. Exploding **economic inequality**
2. Innovative policies **undermining democracy** – especially in Michigan’s urban communities – like Governor Snyder’s “**emergency management**” statutes
3. Our evil heritage of **racism**, as well as other forms of unjust **domination**
4. Our planetary **climate emergency**, and our related contemporary **energy crisis**
5. Powerful governments and corporate special interests exploiting **wars** as means of increasing their power and wealth

The existing draft strategy’s minimalist treatment – or rather avoidance – of such realities leads it to pin hopes for reasonable access to affordable water on a “communication strategy”.<sup>[2]</sup> This undermines any confidence that might otherwise be placed in this draft policy document. We need strategies that face the real world, not disengaged rhetorical guides to management best practices.

As noted above, the document begins with the words: “*Water defines Michigan.*” **Tragically what currently defines water issues in southeastern Michigan’s predominantly People of Color cities is lack of reasonable access to safe and affordable water.** No state water strategy worthy of its stated intent to “*support a healthy environment, healthy citizens, vibrant communities and sustainable economies*” can ignore either this unjust situation, or its deep systemic roots in the brutal realities of our times and leading institutions.

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**From:** R A  
**To:** [mi-waterstrategy](mailto:mi-waterstrategy)  
**Subject:** Proposal: Brav: an Online Dispute Resolution for water strategy.  
**Date:** Sunday, August 23, 2015 10:33:11 AM  
**Attachments:** [Brav Grant Proposal1.docx](#)

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Hello,

Along with my JD, I am a Psychology graduate of the University of Michigan -- Ann Arbor. I also hold a Master's Degree in Health Law and Policy.

A new study came out last week that discussed talk therapy as a solution to disputes including labor law issues. I have spent much research on alternative dispute resolution as a remedy for those in conflict, and seek to cultivate the largest online network, training ordinary people in conflict management who in turn resolve the conflicts of others on the website's face to face platform ([brav.org](http://brav.org)).

We have knowledge on how Brav helps victims cope with trauma, but we seek much more support to determine long term effects. Coming together with groups including task forces and police departments provides an effective alternative for those survivors who seek to have a conflict managed. Further, these groups help provide accountability by ensuring that all necessary parties appear for an online conflict resolution session(s).

I would like to speak to you about Brav.

Please find information on Brav attached. Please do not hesitate to contact me at 

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Thanks,  
Remi

Make it a favorite: [Brav.org](http://Brav.org)



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CONFIDENTIALITY NOTICE: This message is intended only for the person or entity to which it is addressed and may contain confidential and/or legally privileged material. Any unauthorized review, use, disclosure or distribution is prohibited. If you are not the intended recipient, please contact the sender and destroy all copies of the original message.



## **Proposal**

### **The Brāv Mission**

*Making Conflict Resolution without Violence a Reality*

#### **Introduction**

Brāv is a 24/7 dispute resolution website that through egames, trains anyone in conflict resolution and management. In turn, these trained Brāv Ones aid in the conflicts of others on the site's face-to-face platforms.

#### **Platform**

Secure online conflict resolution through face-to-face video chats, messaging, email, and more with trained community members utilized as conflict managers. Integration of trainers (Brāv Ones) into schools, organizations, workplaces, and more will expand the reach into most corners of society.

#### **Why?**

Our world is plagued with conflict and devastating violence everywhere you look: bullying in schools from elementary age to college, workplace bullying from blue collar to white collar, violence in our homes, on the streets, across borders, everywhere.

#### **Connected learning**

Brāv ultimately prepares anyone in learning and utilizing a healthy coping and resolution skill set and cultivates the art of conflict resolution by providing a work and learning environment where they feel challenged, respected, and accountable as they strive to meet the demands of adulthood.

Brāv is the first of its kind in online dispute resolution with a focus on anyone on the global planet learning conflict management and/or seeking someone to resolve a conflict - personal, professional or otherwise.

Brāv involves global Brāv Ones in such diverse areas as dispute resolution, mental health, juvenile justice, positive youth and adult development, education and work readiness. We intend to broaden globally to include as many languages as possible, promoting these essential skills worldwide. The virtual training game will be fun, efficient and educational.

Once a user successfully completes training, they have the option of entering into the membership algorithm in order for others to find someone to help manage their conflict(s). Data access and data integrity are important to consider. Our data will be accessed and modified on a



regular basis and therefore should be stored on a hard drive or flash media because these types of media provide quick access and allow the data to be moved or changed.

The information exchanged between parties in dispute during an online session must have top protection. As a result, we have researched top SSL protection. In addition, we must include a firewall to prevent unauthorized access to computers and encrypt personal data that is submitted online or shared with other users. It is also important to backup our data.

### **How?**

Technology and the human heart. We are communicating differently now. Mobile devices and computers are everywhere. Brāv capitalizes on this reality to facilitate a new way to solve problems, large and small. At our root, an online source of caring individuals for those in need- a resource for support, maintaining the utmost values to uphold privacy concerns while focusing on one goal: nonviolent conflict resolution.

### **Who could use Brāv?**

Students, employees of workplaces small and large, civic organizations, religious organizations, sports leagues, families, trafficking victims and more. The human experience is met daily with difficult situations- the potential for good is unlimited.

### **Brāv as a Preventative Resource**

Brāv is also utilized as a preventative resource; for example, the Department of Justice estimates that between 200, 000 to 300, 000 of those aged 12 – 18 are targeted for trafficking each year\*. More, many traffickers and pimps are using the Internet for exploitation purposes. Brāv's online presence can serve as a resource for those targeted and seeking information and/or advice on a questionable and/or new online interaction.

### **...as a Crisis Resource**

For those victims currently in a crisis, Brāv can be used as a present resource to potentially help resolve an immediate situation.

### **...as a Post Trauma Therapy**

A new study came out last month that discussed talk therapy as a conflict resolution alternative. Cultivating Brāv to be the largest online network, training ordinary people in conflict management who in turn resolve the conflicts of others on the website's face to face platform through talk therapy and debriefing provides psycho social resolution.

### **Technology**

Brāv intends to be on the cutting edge with games, visuals, and communication through our platform. Games will be utilized for training community members to become Brāv Ones, and



also for any individual desiring to learn conflict resolution skills. Privacy concerns will be addressed with the latest in graphics. Multiple types of online communication will be utilized in our program to facilitate the best experience and the individual's need.

### **Objectives**

- Through incentives, train and certify millions to resolve the conflicts of others (Brāv Ones).
- Build Brāv video-to-video face, Skype-like chat online platform.
- Incorporate digital masks that simulate users' actual facial expressions in real time for those who wish not to show their faces during a session.
- Provide volunteer or credit recovery toward a high school diploma and enhance the career. Program diversion/ alternative to those who have been penalized, suspended, expelled, etc.
- Match Brāv Ones with disputing parties through Brāv database.
- Brāv is used as the first option to a conflict, followed by regular organizational policies as a second/ last option.

### **Potential**

International reach = changing the world, one resolution at a time. We hope to integrate nonviolent conflict resolution as a common core throughout many facets of society worldwide, taking advantage of the latest in technology to make Brāv accessible, desirable, and effective.

### **The Challenge**

To market the benefits to individuals and organizations, to be at the forefront of technological advances, and to integrate the online platform into "real-life" programs for all ages.

### **The Benefits of Brāv**

- The improvement of the individual's conflict resolution skill set
- Individuals are empowered through direct compromise
- Individuals can use this skill set for future issues that arise
- Brāv Ones serve as neutral third parties providing non-bias information
- Early intervention is possible prior to escalation and potential legal action
- Provides accountability that is crucial for maintaining peace, and preventing future conflict
- Problem solving through Brāv Ones can save money for potential legal costs
- Greater potential for long lasting personal and professional relationships



- Use of latest technology improves engagement= greater possibility of nonviolent conflict resolution.

### **Why we need you:**

#### **Funding:**

- For the implementation of the full Brāv online platform
- For marketing to schools, businesses, organizations, and people in need around the world
- For physical integration into all aspects of society that could benefit from Brāv
- For branding Brāv as a cohesive network of Brāv Ones, individuals, and groups focused on the resolution of personal and professional issues through dialogue and compromise.
- For the purchase of a building for headquarters and onsite sessions.
- For the employment of staff to teach or answer questions.
- For the hiring of User Acquisition, Membership and Outreach Coordinator(s)
- For cultivating an identity (brand) for Brāv as an organization in the global community. Includes shirts for 'Brāv Ones – those who train to help manage conflicts - wear during sessions.
- For expanding our user base in one United States geographical market, then to key United States cities and ultimately internationally.
- For hiring a year-round business manager for on-site sessions, thereby providing possible member employment twelve months of the year.
- For expanding the donor/ corporate partner base and corporate contributions that add to the financial resources of programs.
- For providing member incentives including the entrepreneurial job skill set that can open doors to future employment opportunities and membership gear.
- For acquiring additional software to support future growth and offer greater flexibility, leading to expanded services offered by Brāv that will further the goal of providing valuable work opportunities for youth and adults.
- For providing certificates to graduates upon successful completion of conflict resolution and leadership games designed to strengthen the arts of negotiation through speaking, listening, and thinking. These graduates in turn help resolve the conflicts of others through Brāv's face to face online video chat platform.

#### **Scalability and Impact**

As an online service, we are able to have people all over the globe gain access to a website dedicated to managing their conflicts or training ordinary people to resolve them. As such, while the first of its kind platform and algorithm must be fully developed and launched, marketing would also help to implement Brāv much more efficiently.

#### **Technical**



Brāv desires for people to be more open about the issues that we all experience and often hinder us emotionally, professional and personally. Our innovative and secure face-to-face platforms encourages us to look at the faces of those we have disagreements with while speaking to a neutral third party who intends to bring about a resolution. We also will employ an encrypted, algorithm database whereby those parties seeking a neutral can seek one at random.

### **Implementation Plan**

Brāv-trained and certified members work and help shape the major aspects of the organization that impact young people and adults in our global community. Brāv will involve Brāv Ones in such diverse areas as dispute resolution, mental health, juvenile justice, positive youth and adult development, education and work readiness.

### **Implementation into Programs**

- Brāv logo use on any and all websites and promotional materials.
- Use of Brāv programs.
- Work together to secure available funding from any and all sources.
- Advertise and hold weekly education and user acquisition presentations and/or conferences.
- Recommend attendees to bring friends to continue the conversation to the next presentation w them.

### **Budget Spreadsheet**

Please contact [info@brav.org](mailto:info@brav.org) for the budget.

### **Budget Narrative**

- Fund the program, including possible expansion of the online platform or purchase of a building for headquarters and onsite sessions.
- Employ staff to teach or answer questions.
- Purchase the additional developers required to launch t he virtual training platform.
- Cultivate an identity (brand) for Brāv business in t he global community. Includes shirt that Brāv Ones – those who train to help manage conflicts - must wear during every session.
- Expand customer base in 1 United States geographical market, then to key United States cities and ultimately internationally.
- Hire a year-round business manager for on-site sessions, thereby providing possible member employment twelve months of the year.
- Expand the donor/ corporate partner base and corporate contributions that add to the financial resources of programs.
- Provide members with entrepreneurial job skills that can open doors to future employment opportunities.

**Brāv**  
P.O. Box 36081  
Detroit, MI 48236  
*www.brav.org*



- Acquire additional software to support future growth and offer greater flexibility, leading to expanded services offered by Brāv that will further the goal of providing valuable work opportunities for youth and adults.
- Provide quality certificates to graduates upon successful completion of conflict resolution and leadership games designed to strengthen the arts of negotiation who in turn help resolve the conflicts of others through Brāv's face to face online video chat platform.

**Thank you.**

**Source**

\* [ojp.gov/newsroom/factsheets/ojpfs\\_humantrafficking.html](http://ojp.gov/newsroom/factsheets/ojpfs_humantrafficking.html)  
(Estes & Weiner, 2002a, p.11)

**From:** [REDACTED]  
**To:** [ml-waterstrategy](#)  
**Subject:** Water Strategy  
**Date:** Sunday, August 23, 2015 12:41:09 PM

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Persons desiring input respecting the proposed Water Strategy for Michigan:

The proposed Water strategy is a bold strike against private property rights and should be viewed as a "cash cow" mechanism for self-aggrandizing state agencies and special interest organizations seeking ever-expanding authority to unlawfully constrain the activities of their neighbors. While it is certainly in the best interests of residents of the State of Michigan to protect the state's water resources, this wide-ranging proposal is not the vehicle for doing so and should be resisted.

I am a fourth generation Michigan farmer and I can assure you that my family have successfully, comfortably, and willingly utilized the water resources available to us by wise purchases, sound investments, and hard work since 1868. In doing so, we have never harmed, degraded, squandered, or in any other way adversely affected the use of those water resources for our neighbors and other state residents "down stream", so to speak. We are not alone in this regard. "Good Stewards" abound in Michigan and are not confined to the ranks of those seeking ever-greater regulatory authority over their neighbors.

The Clean Water Act provided the statutory tools sufficient to the task. Michigan is one of two states (New Jersey the other) who found it desirable to create its own statewide network for CWA enforcement. This distinction should not create an opportunity for self-serving state agencies and special interest organizations to carve out employment security and questionable agenda fulfillment. The list of "stakeholders" identifying themselves as agents of this strategy clearly indicate reasons for caution respecting the proposal. Every perusal of regulatory authority of all stripes in the State of Michigan quickly devolves into pleas for more rigor on the part of regulatory authority while those regulated cry out as their arms are twisted beyond the breaking point. Increased regulatory authority in the hands of state agencies and expanded use of zoning and regulatory authority by municipalities at the expense of private property rights will become ever more counter productive.

Especially troublesome is the notion that Canadian Provincial governments, tribal sovereign nations, NGO's, and special interest organizations, considered as "stakeholders", will assume to acquire decision making authority over the interests of their neighbors. Doing so will clearly violate the guarantees afforded citizens by Natural Law, the Constitutions of the United States and the State of Michigan; and will, in fact, stand those guarantees "on their heads".

I have worked in the area of public policy making for decades at the township, county, and (through my legislators) the state level. I urge anyone within the sound of my voice or the

influence of my words here written to oppose this strategy and to urge others to do the same.

Respectfully submitted as public comment. James Gurr resident, [REDACTED]

**From:** [Jean Seim](#)  
**To:** [mi-waterstrategy](#)  
**Subject:** MI Water Strategy  
**Date:** Sunday, August 23, 2015 2:52:26 PM

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Governor and Water Strategy Council:

We need a Michigan Government continual independent audit on the Enbridge oil pipes under the Straits of Mackinac. These pipes are too old to ignore. If problems are found, Michigan must take action to fix the problems. We cannot lose our water.

If this audit must be placed on the ballot, I volunteer to take signatures; please contact me to do it.

Sincerely,  
Jean Seim

Sent from Yahoo Mail for iPad

**From:** JEAN SEIM  
**To:** mi-waterstrategy  
**Subject:** MI Water Strategy  
**Date:** Sunday, August 23, 2015 3:03:59 PM

---

Governor and Council:

Michigan needs to immediately start an ongoing independent audit of the Enbridge oil pipes under the Mackinac Straits. These pipes are ancient. We cannot lose our water.

If Michigan needs to put this audit on the ballot, I volunteer to take signatures; please email me with info on how to start doing it.

Sincerely,

Jean Seim



**From:** Priscilla Miller  
**To:** [mi-waterstrategy](#)  
**Subject:** Public Comment  
**Date:** Sunday, August 23, 2015 4:14:47 PM

---

The proposed Water strategy is a bold affront against private property rights. While it is certainly in the best interests of residents of the State of Michigan to protect the state's water resources, this wide-ranging proposal is not the vehicle for doing so and should be resisted.

The Clean Water Act provided the statutory tools sufficient to the task. Michigan is one of two states (New Jersey the other) who found it desirable to create its own statewide network for CWA enforcement. This distinction should not create an opportunity for self-serving state agencies and special interest organizations to carve out employment security and questionable agenda fulfillment. The list of "stakeholders" identifying themselves as agents of this strategy clearly indicate reasons for caution respecting the proposal. Every regulatory authority in the State of Michigan quickly evolves into more pleas for increasing regulatory authority. Increased regulatory authority in the hands of state agencies and expanded use of zoning and regulatory authority by municipalities at the expense of private property rights is becoming counter productive. Especially troublesome is the notion that Canadian Provincial governments, tribal sovereign nations, NGO's, and special interest organizations, will assume to acquire decision making authority over the interests of their neighbors. Doing so, clearly violate the guarantees afforded citizens by Natural Law, the Constitutions of the United States and the State of Michigan.

Submitted as a public comment; Bill & Priscilla Miller  
Alden, Mich.

**From:** [Frances E Johnson](#)  
**To:** [mi-waterstrategy](#)  
**Subject:** 30-Year Water & Recreation Plan Top Suggestions  
**Date:** Sunday, August 23, 2015 4:36:19 PM

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## **Chalkboards & Flags with Colors showing the danger level on the Lakes for the State Park & City Beaches as done in Florida!!**

### **Keep OUT the ASIAN Carp!!**

Keeping out Asian Carp is the Main Issue! Asian Carp will ruin Michigan's food sources and massive revenue from the lake fish... Force the Chicago Lock to open only Southbound or Inland not allowing water into Lake Michigan. Put extra high barriers along the river system in Illinois to keep these invasive and dangerous fish out.

### **Rivers and Navigable Waters Open to ALL Boaters!!**

Make all the river waterways like the Grand River available to motor boats as well as the other boats! These are navigable waters! All navigable waters should be open to all!

The motorists should go at slow speed near anyone in a canoe... likewise, the slow kayakers & boarders .... should learn manners on the water & how to stay in areas appropriate for them on the water. This is extremely exciting for all motorists to see and use. It could even replace driving to this area if wanted or necessary.

### **Safety & Boating Classes for ALL regardless of water craft!!!**

Each person who buys a board to stand on & paddle or kayaker or canoeist or personal watercraft or sailor or motor boat person should ALL be forced to take a Safety class on the water, therefore learning safety manners and what they need to always carry even if on a board. All of these classes of water people do stupid things including kayakers & boarders. They need to know the rules of the water. Designated water drivers if over drinking. This should be mandatory of each whatever their age when purchasing a water craft or planning to use one. They need to carry their water license which could go on their drivers license. This is important. Too many idiots are out there.

**From:** [Matt's Hotmail](#)  
**To:** [mi-waterstrategy](#)  
**Subject:** Comments on Michigan's Water Strategy  
**Date:** Monday, August 24, 2015 8:44:45 AM

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Thank you for the thoughtful, inclusive draft report. I found the information contained in the report useful to understanding what a comprehensive strategy should entail. One element that I found specifically lacking was a means to address plant based invasive species. The report cited Aquatic Invasive Species (zebra mussels for example) and Wetlands Management (riparian management) but did not specifically call out a plan to address Phragmites. As a lakefront homeowner in the Thumb, I would very much like to see a plan to eliminate Phragmites completely. The impact of this invasive species to the waterfront is significant and entirely negative.

Potential solutions (in the spirit of offering suggestions in addition to highlight the problem) might include:

- Require treatment/removal by responsible land/home owner
- Coordinated state level activities to remove Phragmites
- Community level (municipality) activities to remove Phragmites

We actively manage Phragmites on our lakefront properly (generally in accordance with guidelines the MiDEQ has provided). There is both a cost and a benefit to our investment. However, each lakefront property owner has the leeway to leave their shoreline untreated for Phragmites. The lack of a coordinated approach to management (removal) of the plant has in my opinion a negative effect that is felt ball all, not just by the unengaged lakefront property owners. I understand and am in full support of natural transition zones form land to water, but the ecosystem has been severely disrupted by the introduction of the Phragmites.

Thank you for including my feedback in the study.

Matt Davis

**From:** R DuBois  
**To:** mi-waterstrategy  
**Subject:** Input on water strategy  
**Date:** Monday, August 24, 2015 12:06:28 PM

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Short and simple here is my input.

I live on a lake who's lake level drops in the late summer from lack of rain. I've talked with our local Kent County Drain Commission about water hold back in the spring when we have to much water slowly release it in the fall when we need it.

The drain commissioner is all about draining, get the water to the rivers as fast as he can, not about conserving water. His answer to the water shortage is to install pumps and suck the water from the from the ground, how short sighted and stupid can you get. Water hold back is the smart and sustainable solution.

I observed several wetland areas that have really good drainage from the drain commissions work. These wetland water levels need to be raised, just a few inches here and there can make a big difference in overall water for the state and the people. We need a plan that holds back more water to be absorbed in the ground, not what the DRAIN COMMISSION does, drain,drain,drain.

Put an end to the department of county Drain Commission and replace it with Water Conservation Commission with a whole different mandate, to save water not drain it away.

Randy DuBois



**From:** [cheryl.fwf@gmail.com](mailto:cheryl.fwf@gmail.com) on behalf of Cheryl Kallio  
**To:** [mi-waterstrategy](mailto:mi-waterstrategy)  
**Subject:** 30-Year Vision for Water comments  
**Date:** Monday, August 24, 2015 1:02:11 PM  
**Attachments:** [Michigan\\_30\\_year\\_vision\\_Freshwater\\_Future\\_comments.pdf](#)

---

Thank you for the opportunity to submit the attached comments with regard to the DEQ's 30-Year Vision for Water.

Sincerely,

--

Cheryl Kallio  
Associate Director, Freshwater Future  
P: 231-571-5001  
W: [www.freshwaterfuture.org](http://www.freshwaterfuture.org)

Follow Us - [Facebook](#) | [Twitter](#)

August 24, 2015

Department of Environmental Quality  
Office of the Great Lakes  
P.O. Box 30473  
Lansing, Michigan 48909

Dear Mr. Alan and Ms. Tommasulo,

We support efforts within the Water Strategy Initiative to protect and restore Michigan's aquatic ecosystems and waters, increase stewardship of Michigan's waters, and utilize our waters in a responsible and protective manner. However, to result in real, on-the-ground-impacts, we believe the following additions should be included.

**Expand and Strengthen Governance Tools in Goal 8**

While we respect the intent of protection and restoration recommendations in this initiative, we are skeptical such an effort will result in real, on the ground, protective and restorative impacts to our aquatic ecosystems and waters without inclusion of the development of legally binding and scientifically based mechanisms to ensure these recommendations are implemented. While voluntary measures can help support the accomplishment of these recommendations and benchmarks, historically they have proven themselves to not be effective as a standalone option. For example, voluntary measures have been the tools of choice for decades in an effort to reduce phosphorus pollution that feeds harmful algal blooms. These tools have not been effective to accomplish this goal and significant phosphorous pollution continues to feed harmful algal blooms. We believe history has demonstrated that without mandatory measures in place, the recommendation of a 40% phosphorus reduction goal will not be met.

As the only state in the nation without a statewide septic code, we were thrilled to see the Water Strategy recommends enacting one. However, Michigan's governors and state agencies have recommended for well over a decade that such a policy is desperately needed. This finding was supported by the Granholm administration's visioning and public engagement initiative similar to this, which resulted in "MI Great Lakes Plan: Our Path to Protect, Restore, and Sustain Michigan's National Treasures." Often as Governors, legislators, and leadership in state agencies change, initiatives from previous administrations are not carried forward unless there is a legally binding obligation to do so. We

seriously question how making recommendations under this initiative is different enough that it will result in real, on the ground impacts when it comes time for agencies, businesses, and citizens to take actions now and with future administrations. Again, we recommend expanding Goal 8 to include the development of legally binding and scientifically based mechanisms that will ensure key recommendations are implemented and benchmarks are met.

#### **Apply Protection and Restoration Recommendations to all of Michigan's Waters**

It is noteworthy that the key recommendations and measures of success are largely based on economic opportunities. However, waters within a watershed are all connected and therefore linked to a healthy ecosystem. As such, restoration and protection of Michigan's ecosystems and waters should extend to all the waters of the state throughout the Water Strategy. For example, under Goal 2 only source water and drinking water are recommended for protection from contamination and spills. However, contamination or spills to surface waters are equally catastrophic to ecosystem health.

#### **Build Momentum by Collaborating with the Great Lakes Restoration Initiative**

Recommendations under the Vision's goals to ensure aquatic ecosystems are healthy and functional and that Michigan's water resources are clean and safe support efforts underway that are part of the federal Great Lakes Restoration Initiative. Rather than working on separate, independent projects, collaborating on projects and adding additional investment into GLRI dollars and projects already happening or slated for Michigan could enhance on-the-ground restoration impacts. As this initiative moves forward, we recommend you seek opportunities to collaborate with the Great Lakes Restoration Initiative.

Thank you for your consideration of these comments. Should you have any questions, feel free to contact Cheryl Kallio with Freshwater Future at 231-571-5001 or Cheryl@freshwaterfuture.org.

Sincerely yours,



Cheryl Kallio, Associate Director  
Freshwater Future

**From:** [RSpencer](#)  
**To:** [mi-waterstrategy](#)  
**Cc:** [ogarl@baycounty.net](#)  
**Subject:** Comment on DRAFT Sustaining Michigan Water Heritage, A Strategy for the Next Generation  
**Date:** Monday, August 24, 2015 2:15:09 PM  
**Attachments:** [20150824 - ltr to DEQ - Comment on Sustaining Michigan Water Heritage.pdf](#)

---

Good day -

Attached are Comments on the Draft Sustaining Michigan Water Heritage, A Strategy for the Next Generation from Richard M. Finn, City Manager, City of Bay City.

Thank you for the opportunity review and comment.

Kind regards,

Roberta Spencer  
Executive Assistant  
City Manager's Office  
989-894-8246

**PRIDE\_Professionalism\_Responsibility & Respect\_Integrity & Ideals\_Dedication to Duty\_Employee Excellence\_CITY OF BAY CITY**



August 24, 2015

Office of the Great Lakes  
Department of Environmental Quality  
PO Box 30473-7973  
Lansing, MI 48909

Re: Sustaining Michigan Water Heritage, A Strategy for the Next Generation

The City of Bay City has reviewed the draft Water Strategy "Sustaining Michigan Water Heritage, A Strategy for the Next Generation." The City strongly supports the recommendations identified in the report and commends your Agency's efforts in undertaking this critical project for the future of our Bay Area Region and the entire State of Michigan.

The draft report is extremely thorough and provides an excellent long term plan for the State. The City wishes to highlight the following recommendations which we believe are essential elements of the overall plan.

- The City strongly supports all efforts to increase public access to the Saginaw Bay including a commitment to clean up the beaches and restore them to useable condition as they were once many years ago.
- The City strongly supports the proposal to restore the pier that once extended into the Saginaw Bay. Such restoration would have a significant economic impact on the region including our City.
- It is of critical importance that a long term funding source be identified and secured to aggressively accelerate the clean-up of contaminated sites located along various waterways.
- The City supports the establishment of a long term Water Fund which would assist in implementing Water Strategy goals including water infrastructure management.

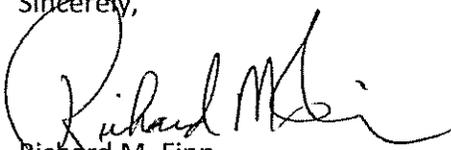
- The City supports the recommendation for the State to, “prioritize investments around strategic economic assets of commercial harbors and long term sustainable infrastructure.”

We appreciate the tremendous time and effort that has gone into the preparation of this long term plan. The City supports the final adoption and approve of this plan especially the recommendations sited above. However, it is critical to the success of this plan that a comprehensive implementation plan be incorporated into this long term State Water Strategy. Right now the plan does not provide for how it will be implemented nor does it identify a preferred time line for accomplishing its many important recommendations. Furthermore, it is of critical importance to identify who will lead and oversee this plan and how it will be funded as well as assigning appropriate authority to the entity that is charged with implementing the Strategy.

If these critical plan elements are not addressed then it is our fear that the Water Strategy as written and recommended will not be successfully implemented and the many excellent recommendations will not be pursued.

Thank you for the opportunity to comment on this Water Strategy Plan.

Sincerely,



Richard M. Finn  
City Manager

C: Laura Ogar, Director  
Bay County Environmental Affairs & Community Development

**From:** Eric Harrington  
**To:** [mi-waterstrategy](mailto:mi-waterstrategy)  
**Subject:** Comments on Draft Water Strategy  
**Date:** Monday, August 24, 2015 3:03:47 PM

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Table 1: Goal 1: Isn't the phosphorus load in the western Lake Erie basin primarily influenced by agricultural runoff from the Maumee River watershed? If so, how much influence can Michigan have?

General: All goals should have measurable criteria. "Appropriate", "Reduction in..." are not measurable, at least not in a meaningful way. I can meet a goal that says "reduction" by a 0.00000001% reduction, but that does not accomplish anything.

Table 1, Goal 3: Shouldn't shipping channels be included in the second bullet?

P. 11, 2nd paragraph: Add discussion of the intensity of extreme weather events in terms of what the changes have been and what they are forecasted to be.

P. 15, last paragraph: I don't think focus is the right word in this recommendation.

P. 18: What about recommendations to employ soil-building techniques that can help retain water in the soil, and cropping techniques like no-till that can minimize runoff?

P. 25, 1st recommendation: Add "and/or products containing microbeads". It's not really sale of the microbeads that is the problem, but rather products containing microbeads.

P. 25, last bullet: Add something about developing technologies to remove such pollutants in treatment works, although removing them upstream (pollution prevention and green chemistry) is definitely more desirable.

P. 28, last paragraph: What are the predicted impacts of effects of climate change on water levels and the potential need for additional dredging due to lower wter levels (if any)?

P. 42, last paragraph: Rates should be the other way around to encourage conservation. There are other municipalities that have figured this out so as to not significantly impact the utilities.

P. 43, 1st paragraph: Should consider whether lower water use can lead to lower wastewater velocities in sewers and result in sedimentation of solids in the pipes.

P. 43, 2nd paragraph: What about a fee for "embodied water" in products? This would also address the issue of exporting our water in plastic bottles.

P. 43, 3rd paragraph: Should discuss the ASCE grading of water and wastewater systems.

P. 43, last paragraph: Need to find a way to get around water shutoffs. Water is essential to life and people should not be deprived of it due to inability to pay for it. On the other hand, we should not be encouraging freeloaders.

P. 45: Should discuss impacts of inflow/infiltration, leaking systems, trends in catastrophic maintenance and restoration as opposed to routine maintenance.

P. 54: Consider establishing drain commissioner authority on a watershed basis, not by human political units such as counties.

P. 57: "Pure Michigan - Let's Keep It That Way!"

General: Address threats to water resources from pipeline failures or marine accidents.

General: Consider addressing issue of embodied water in products.

Thank you for the opportunity to provide comments on this strategy.

--

**Eric Harrington**  
Sustainability Consultant

**Green Advantage Consultants**  
19976 Ivey Rd  
Chelsea, MI 48118 USA

Mobile: [REDACTED]  
Email: [REDACTED]  
[REDACTED]  
[The Green Advantage Blog](#)

Sustainability is smart...  
business smart!

**From:** Paul Drevnick  
**To:** [mi-waterstrategy](mailto:mi-waterstrategy)  
**Subject:** water strategy  
**Date:** Tuesday, August 25, 2015 6:38:29 AM

---

Dear good people at MI DEQ,

A leading cause of impairment of Michigan's waterways is mercury contamination. Currently, 789 lakes and rivers in Michigan contain fish with mercury concentrations above US EPA's fish tissue criterion (0.3 ppm ww). The Clean Water Act requires that for each of these waterbodies, a TMDL be written by the State and approved by US EPA, to begin the process of fixing the problem (too much mercury in fish). So far as I am aware, most of these waterbodies are affected entirely or primarily by atmospheric deposition of mercury, and the DEQ has drafted one state-wide TMDL, which is appropriate for the problem, but also details the daunting task of reducing the non-point source load by 82%, both for in-state and out-of-state sources.

My comment, regarding the Water Strategy, is that comprehensive research and monitoring, as called for in the statewide mercury TMDL document, is necessary to understand how waterbodies respond to changes in mercury deposition rates. Monitoring of mercury should involve measurements of wet and dry deposition, outputs from watersheds to lakes, and mercury concentrations in fish.

Thanks for your interest,

Paul Drevnick  
Assistant Research Scientist  
University of Michigan  
Biological Station, 2541 Chemistry Building, 930 North University Ave.  
School of Natural Resources and Environment, G168 Dana Building, 440 Church St.  
Ann Arbor, MI 48109 USA  
telephone: +1 734 763 6280; email: [drevnick@umich.edu](mailto:drevnick@umich.edu)

**From:** [Haefner, Ralph](#)  
**To:** [mi-waterstrategy](#)  
**Cc:** [Allan, Jon \(DEQ\)](#); [Creal, William \(DEQ\)](#); [Jim Morris](#)  
**Subject:** USGS comments on Michigan's Draft Water Strategy  
**Date:** Tuesday, August 25, 2015 10:51:19 AM  
**Attachments:** [USGS MI Response to Draft Water Strategy-signed.pdf](#)

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Thanks for the opportunity to comment on Michigan's Draft Water Strategy. Please find our comments in the attached letter.

I look forward to seeing how USGS and MDEQ can work together on these important water issues.

Ralph.

~~~~~  
Ralph J. Haefner, Deputy Center Director  
U.S. Geological Survey  
Michigan-Ohio Water Science Center  
6520 Mercantile Way, Suite 5  
Lansing, MI 48911-5991  
Office: (517) 887-8927  
Mobile: (517) 599-4954  
Fax: (517) 887-8937  
<http://mi.water.usgs.gov/>  
~~~~~



United States Department of the Interior  
U.S. GEOLOGICAL SURVEY  
Michigan-Ohio Water Science Center  
6520 Mercantile Way, Suite 5  
Lansing, MI 48911

August 25, 2015

Office of the Great Lakes, DEQ  
P.O. Box 30473-7973  
Lansing, Michigan 48909

Thank you for the opportunity to comment on Michigan's Draft Water Strategy "*Sustaining Michigan's Water Heritage: A Strategy for the Next Generation*." A few of our staff members reviewed the document and two of us attended one of the Water Strategy Community Conversations hosted by Jon Allen. We offered some limited input at the meeting, and this letter provides some additional comments.

As you may know, the U.S. Geological Survey Water Mission Area has many overlapping goals with the State of Michigan related to water resources and the Draft Water Strategy. Specifically, our mission is to serve the Nation by providing reliable scientific information to describe and understand the Earth; minimize loss of life and property from natural disasters; manage water, biological, energy, and mineral resources; and enhance and protect our quality of life.

During our recent strategic science planning process, our staff and partners (including the MDEQ and other state agencies) identified several water-related focus areas for the Michigan-Ohio Water Science Center. These include the myriad of Great Lakes issues related to water use and availability; surface-water flows; surface-water and groundwater quality (including water-quality issues related to nutrients and sediment, HABs, green infrastructure and urban best management practices, and agricultural best management practices); environment and human health; mining; and oil and gas development. Clearly, we should take this opportunity to further coordinate our work with regards to the Water Strategy and the mission and strategic science planning of the U.S. Geological Survey.

That being said, we would like to offer the following comments:

1. We like how the strategy puts the onus on all Michiganders to be the stewards of their water resources (for example, Chapter 9 "Inspire Stewardship for Clean Water" and "Improve Water literacy").
2. Throughout the nine chapters, the U.S. Geological Survey recognizes many opportunities for collaboration with MDEQ and other state agencies. Our data-collection and research efforts have touched on almost all of the topics within the Water Strategy and we would welcome discussion on how we could lead or otherwise be involved in future efforts, including

Chapter 1: HABs, restoring hydrologic connectivity, WWAT, and the WUAC.

Chapter 2: Mapping of local groundwater resources, evaluation of on-site wastewater treatment systems, and research with contaminants of emerging concern.

Chapter 4: Beaches.

Chapter 5: Water-research capabilities and green infrastructure.

Chapter 6: Funding. Although our funding model includes some appropriated funds for work related to the National Streamflow Information Program, the National Groundwater Monitoring Network, and other programs, the U.S. Geological Survey also can provide matching funds from our Cooperative Water Program to leverage state funding.

Chapter 7: Monitor water quality including natural and man-made contaminants, nutrients, and microbial health. Monitor water quantity including stocks and flows of surface water and groundwater. Some key strengths of the U.S. Geological Survey related to monitoring include quality assurance and quality control, archiving, and providing access to the data through our National Water Information System (NWIS) database available on the Internet at <http://waterdata.usgs.gov/nwis>.

Chapter 8: The Interdepartmental Water Team described on the bottom of page 54 could include scientists from the U.S. Geological Survey plus other water managers, professionals, and trade groups.

Chapter 9: Stewardship, outreach, and education.

And throughout Table 2 (starting page 58), we recognize many data-collection and research topics that we are uniquely qualified to undertake and (or) partner with the MDEQ.

3. Some specific recommendations...
  - a. On page 4, you list “Monitor Water Quality.” Could that be expanded to “Monitor Water Quantity and Quality?” Seems like Chapter 7 should include quantity since quantity is an outcome of the chapter.
  - b. Under Recommendations on page 14, consider adding something about droughts, as in “Incorporate planning for wet-weather extremes, droughts, and increased variability...”
  - c. On page 31, perhaps you could include something about predictive beach models to complement real-time monitoring and source tracking in the Recommendation. The USGS has successfully developed predictive models in other areas of the country.
  - d. In Chapter 6, you might include “Cooperative Programs” and (or) “Federal match” in the “Federal” box on line 2 of Figure 2 on page 46.
  - e. As noted on page 50, Clean Michigan Initiative (CMI) funds are not adequate to support monitoring efforts and are scheduled to end in 2017. We need to plan to make other funding source(s) available for stream-flow monitoring and microbial health.

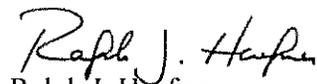
On a side note, U.S. Geological Survey hydrologists are working on a document summarizing our water-quality data collection at Michigan streams that was funded through CMI.

- f. We feel that there should be mention of the Great Lakes Compact in Chapter 8 to state something like... *"The state should vigorously support the Great Lakes Compact and Agreement by active participation in the Great Lakes-St. Lawrence River Regional Body and Great Lakes- St. Lawrence River Compact Council including financial support of these entities entrusted to govern the Compact and Agreement."*
4. In a few instances, the Strategy focuses specifically on Michigan's waters without regards to neighboring states or Canada. For example, on page 48, the term "Michigan's water" is used. We all recognize that the Great Lakes (and water in general) are a shared resource and we cannot take on this responsibility or this water strategy alone. Our recommendation is to expand Michigan's waters to include those waters shared by Great Lakes states and Canada.
5. Similarly, the Water Strategy (and the State of Michigan) should look to adjoining states and Federal agencies to help accomplish the stated goals. We agree that, as described on page 35, *"Collaboration among industry, regulators, economic developers and academia directing water research and development is the right place to start;"* however, we also recommend including entities in neighboring states, Federal agencies, and Canada.
6. In several instances, you emphasize that research should be done by academia (for example, under "Recommendations" on pages 25, 35, 39, and several instances in table 2), but we feel that you are missing an opportunity to involve internationally recognized researchers employed by federal agencies such as the U.S. Geological Survey and others.

In closing, we welcome existing and future opportunities to collaborate with the State of Michigan. The Water Strategy is an impressive vision for the future of the State of Michigan and of the Great Lakes.

You and your staff should feel free to contact us if there are any questions or discussions related to the Water Strategy or water-resources issues in general. We look forward to seeing how the U.S. Geological Survey can be an integral part of Michigan's Water Strategy as it is implemented.

Sincerely,

  
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