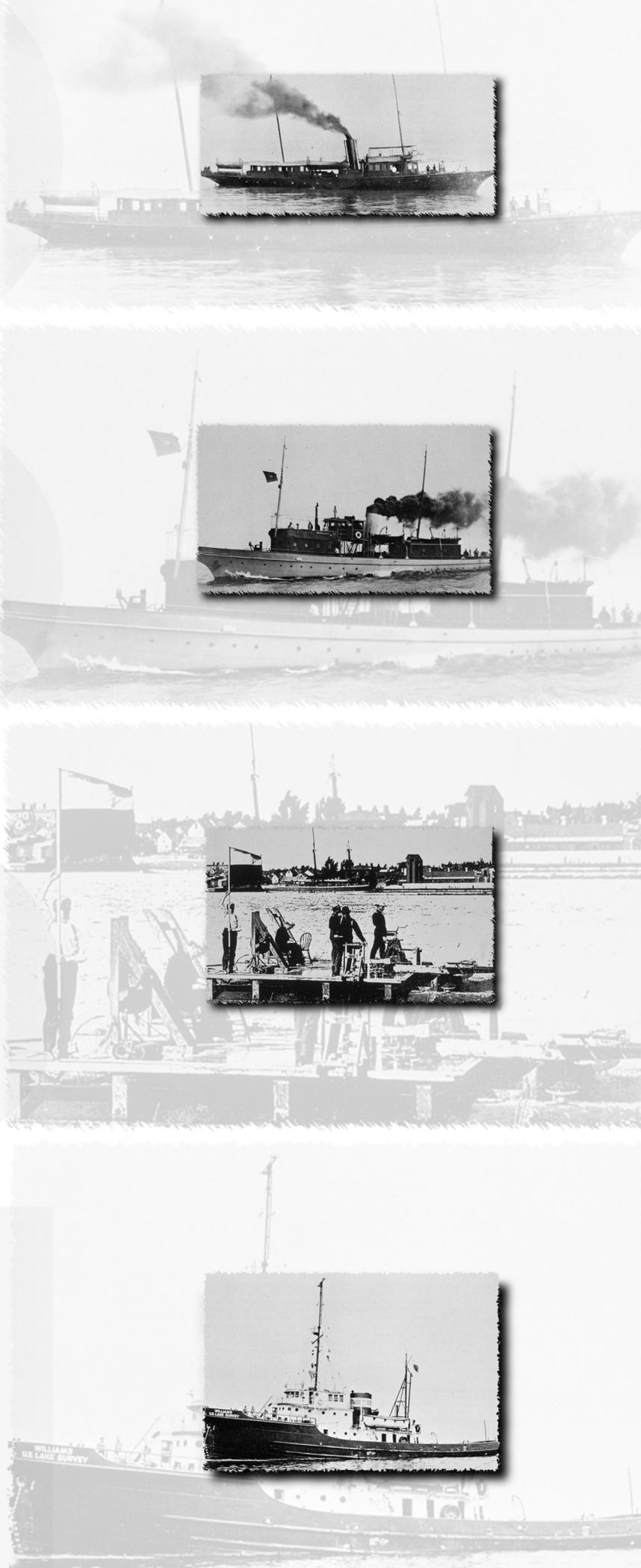


# State of the Great Lakes Annual Report



Cover photos top to bottom:

Army Corps of Engineers Lake Survey Ship SEARCH, 1899 - *NOAA Photo Library*

Army Corps of Engineers Lake Survey Ship, undated - *NOAA Photo Library*

Army Corps of Engineers Lake Survey Catamaran used to measure water flow on rivers - *NOAA Photo Library*

Army Corps of Engineers Lake Survey Ship, WILLIAMS, in service 1946-1960 - *NOAA Photo Library*

# Table of Contents

<b>A Message from the Governor .....</b>	<b>3</b>
<i>Jennifer M. Granholm, Governor of Michigan</i>	
<b>A Great Lakes Call to Action.....</b>	<b>4</b>
<i>Ken DeBeaussaert, Director, Office of the Great Lakes</i>	
<b>Great Lakes Legacy Act .....</b>	<b>5</b>
<i>Steven E. Chester, Director, Michigan Department of Environmental Quality</i>	
<b>The First of the Governors' Priorities: Annex 2001.....</b>	<b>6</b>
<i>David Naftzger, Executive Director, Council of Great Lakes Governors</i>	
<b>Great Lakes Protection a Critical Piece of Land Use Recommendations.....</b>	<b>8</b>
<i>Frank Kelley, former Michigan Attorney General, Kelley Cawthorne, PLLC</i>	
<i>William G. Milliken, former Governor of Michigan</i>	
<b>Fulfilling Congress' Commitment to Restoring the Greatness of the Great Lakes.....</b>	<b>11</b>
<i>Peter Hoekstra and Sander Levin, U.S. House of Representatives</i>	
<b>Open Water Disposal of Dredged Materials Further Contaminates the Great Lakes.....</b>	<b>13</b>
<i>Kathleen Law, Michigan House of Representatives</i>	
<b>The Importance of Protecting Isolated Wetlands.....</b>	<b>15</b>
<i>Wil Cwikiel, Tip of the Mitt Watershed Council</i>	
<b>Michigan's Wetlands Inventory .....</b>	<b>17</b>
<b>Public Involvement Fuels Restoration of Michigan's Great Lakes Areas of Concern.....</b>	<b>18</b>
<i>Kathy Evans, Chair, Public Advisory Council, Michigan Great Lakes</i>	
<i>Areas of Concern Program</i>	
<b>Michigan's Atmospheric Mercury Monitoring Study.....</b>	<b>21</b>
<i>Joy Taylor Morgan, Michigan Department of Environmental Quality</i>	

**Stewardship the Responsibility of All..... 23**  
Nancy M. White, Chair, *Macomb County Board of Commissioners*

**Michigan Clean Water Corps..... 25**  
John D. Cherry Jr., *Lt. Governor of Michigan*

**The Michigan Clean Marina Program –  
A Partnership Effort Improves the Environment..... 26**  
Steve Remias, Vice President, *MacRay Harbor, Inc.*

**Beetle Strikes Back at Wetland Invader ..... 28**

# Protecting Our Great Lakes

By: Governor Jennifer M. Granholm

The Great Lakes are Michigan's most vital resource. They fuel our economy, enrich our lives, and literally define the shape of our state. Their preservation and protection must be among our highest of priorities.

Our waters face many threats today, not just in regards to their quality, but in quantity as well. There are regions around the world, as well as in our own country, that look to the Great Lakes as a source of free, clean, fresh drinking water. Every day, the pressure for fresh water grows. Global consumption of water is doubling every 20 years, and today, one billion people lack adequate supplies of fresh water, with this number growing to three billion by 2035.

The Council of Great Lakes Governors is hard at work developing a region wide plan to address diversion of water from the Great Lakes, but it is also time for Michigan to step up and take action on our own. We must develop and enact a comprehensive plan - one that addresses our ground water, our lakes and our rivers, and our relationship with them - to protect and manage this most precious natural resource. The cornerstone of this plan is the Michigan Water Legacy Act, a comprehensive water withdrawal statute that will give Michigan the necessary regulatory framework to keep our waters protected for generations to come. The passage of this act would finally allow us to show that Michigan is ready and able to be the leader in protecting the Great Lakes.

In addition to protecting the quantity of the Great Lakes, we must also address the growing threats against its habitats. Aquatic invasive species such as the zebra mussel have already infiltrated our waters, and Asian Carp are known to be moving up the Chicago River toward the foot of Lake Michigan. The ecological and economic damage caused by these invasive species would be devastating to the many communities and businesses in the Great Lakes region.

Michigan has also led the charge across the nation to help protect wetlands in the past, but we must continue that effort. Over the years, Michigan has lost over 50 percent of its wetlands totaling over an estimated five million acres. Wetlands filter our water, provide wildlife habitats, and minimize flooding. They play a critical role in ensuring that our Great Lakes stay healthy.

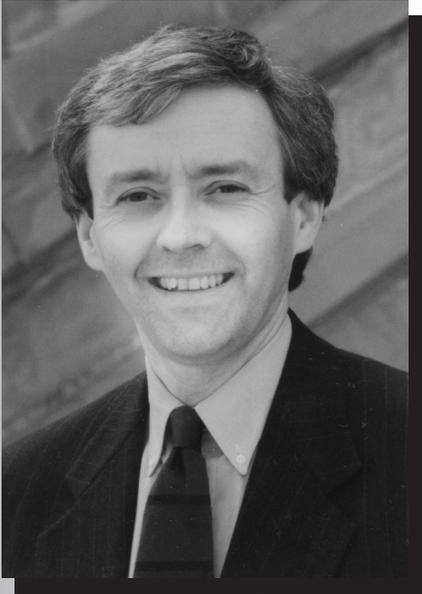
We are at a crossroads in determining the future of the Great Lakes. We must take action now to protect and preserve the Great Lakes not only for us to enjoy, but for the generations to come.



# A GREAT LAKES CALL TO ACTION

by Ken DeBeaussaert

There seems to be an invigorating breeze in the Great Lakes community. Perhaps powered by a growing national focus on protecting our freshwater treasure and combined with rededicated cooperative regional efforts, it's creating an air of excitement that we must harness to lift us to new levels of protection. For example:



- In our nation's Capitol, bi-partisan bills to provide billions of dollars in support of Great Lakes restoration have been introduced in both chambers. The Executive Office, while not yet supporting these funding measures has taken what may prove an important step, convening an inter-agency task force to coordinate Great Lakes efforts.
- In a policy atmosphere too often charged with heated partisanship, it's like a breath of fresh air to observe eight of ten Great Lakes states and provinces pass the baton to new leaders in the last two years. Without exception, jurisdictions are continuing and taking to new heights the work begun by predecessors to develop through Annex 2001 common approaches to protect our shared resource. And reaching out to local leaders, the Governors are working to broaden consensus on Great Lakes priorities and coordinate the development of an agenda for action.
- In a letter to Congress dated October 2003, the Council of Great Lakes Governors outlined nine priorities for Great Lakes restoration and protection:
  - Ensure the sustainable use of our water resources while confirming that the states retain authority over water use and diversions of Great Lakes waters.
  - Promote programs to protect human health against adverse effects of pollution in the Great Lakes ecosystem.
  - Control pollution from diffuse sources into water, land and air.
  - Continue to reduce the introduction of persistent bioaccumulative toxics into the Great Lakes ecosystem.
  - Stop the introduction and spread of non-native aquatic invasive species.
  - Enhance fish and wildlife by restoring and protecting coastal wetlands, fish and wildlife habitats.
  - Restore to environmental health the Areas of Concern identified by the International Joint Commission as needing remediation.

- Standardize and enhance the methods by which information is collected, recorded and shared within the region.
- Adopt sustainable use practices that protect environmental resources and may enhance the recreational and commercial value of our Great Lakes.
- Governor Jennifer Granholm highlighted the importance of the Great Lakes by sending the Michigan Legislature her first Special Message on Water Policy. The Governor’s Message, in keeping with the spirit of the earlier bi-partisan Senate Great Lakes Conservation Task Force Report, is a call to action to reclaim Michigan’s position as a leader in protecting the Great Lakes

These events helped shape this report. The Council of Great Lakes Governors’ priorities serve as the framework, with Governor Granholm’s legislative priorities appropriately highlighted under that umbrella. This report identifies some of the progress and challenges before us in our efforts to preserve, protect and restore the waters of the Great Lakes. As usual, we’ve asked for the insights of several authors and acknowledge with great appreciation their contributions to this report.

So, is this invigorating breeze that’s being felt the result of a window of opportunity being cracked open or illusory relief fanned by the mere shuffling of press releases. The skeptics will have their doubts and history too often bears out that skepticism.

Recognizing that, as we move forward, we should be mindful of Benjamin Franklin’s caution that we “never confuse motion for action.” The challenges are great, the threats are growing. The Great Lakes need and deserve real action to protect, preserve and restore our global freshwater treasure.

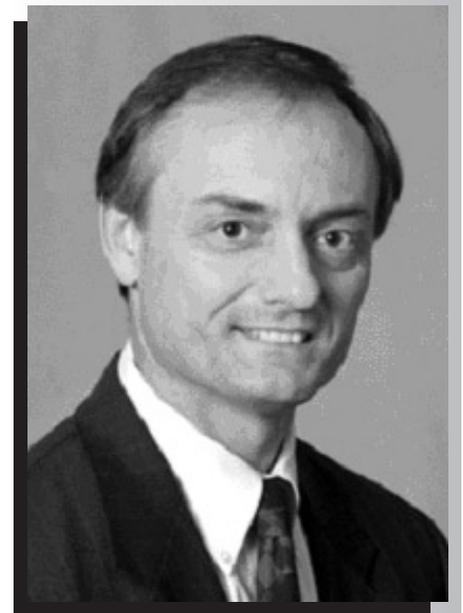
## Michigan’s Water Legacy Act

by *Steven E. Chester*

Michigan has had a rich history of conservation and natural resource protection. We are blessed by being surrounded by 20 percent of the world’s supply of fresh water, and we must take stewardship of this great resource to heart.

The 1985 Great Lakes Charter - which was signed by the 8 Great Lakes Governors and the Premiers of Quebec and Ontario - was intended to be an extension of Michigan’s legacy and commitment to protecting our precious water resources. In the almost 20 years that have passed since we signed the Charter, we have yet to implement policies that truly protect our water resources.

Early this year, Governor Granholm, in her Special Message to the Legislature, called on the Legislature to take action on a comprehensive



water withdrawal statute. In response, Senate Bill 1087 and House Bill 5634, the Water Legacy Act, were introduced.

This legislation provides us with the regulatory framework that allows Michigan the ability to protect our water resources, while also providing a predictable regulatory climate under which communities and businesses can thrive.

We must take this action to preserve what is truly an invaluable resource to Michigan, and all of its citizens. Today, we have the opportunity to live up to our commitment made almost 20 years ago to protect our waters for generations to come.

The Michigan Department of Environmental Quality stands ready to assist the Governor, and the members of our Legislature, in the development and implementation of this important legislation.

## **The First of the Governors' Priorities: Annex 2001**

*by David Naftzger*



The Great Lakes are one of the greatest natural resources in North America, representing 95 percent of our fresh surface water. It is critical that we use this valuable living resource wisely to ensure that the water remains at healthy levels. Doing so will not only protect the water of the Great Lakes but also our region's economic vitality, recreation and health now and into the future. This objective relates directly to the first of the nine priorities that the Great Lakes Governors have developed to protect and restore the Lakes.

Unfortunately, there are very real threats to the Great Lakes and these threats promise to increase over time. For this reason, the eight Great Lakes Governors and the Premiers of Ontario and Quebec are working to protect them by developing an updated regional water management system. The foundation for this system will be a collective decision-making process and a science-based standard.

Three years ago, the Great Lakes Governors and Premiers came together with a vision - to create unprecedented protections for the Great Lakes that would preserve and protect the water now and for future generations. The result of that vision was the Great Lakes Charter Annex of 2001. Annex 2001 is a good-faith agreement that provides a framework for updating the way that Great Lakes water is managed, protected, conserved, restored and improved.

After signing, the Governors and Premiers created a Working Group made up of their staff and departmental experts to develop a set of

draft agreements to put Annex 2001 into law. Dana Debel, Governor Granholm's Environmental Policy Advisor; Ken DeBeaussaert, Director of the Michigan Office of the Great Lakes, and his assistant Jim Bredin, have been integral to this effort.

On July 19, 2004, Governor Jim Doyle (D-WI) and Governor Bob Taft (R-OH), Co-Chairs of the Council of Great Lakes Governors, represented the eight Great Lakes Governors and the Premiers of Ontario and Quebec in announcing a 90-day public review period of those draft protections for the entire Great Lakes Basin.

The draft protective measures include a common standard for evaluating proposals to use Great Lakes Basin water and a framework for helping to improve the health of the Great Lakes ecosystem.

Once implemented, the agreements will:

- Establish a new standard with the principles outlined in Annex 2001 to review proposed withdrawals of Great Lakes Basin water.
- Include the eight Great Lakes Governors and the Premiers of Ontario and Quebec formally in reviewing proposed diversions of Great Lakes Basin water in the United States as well as in Canada.
- Strengthen the regional water management decision support system.
- Require water users to practice conservation measures.
- Promote sustainable economic development while making sure withdrawals do not damage the Great Lakes Basin.
- Commit to an ongoing process that involves the public.
- Retain decision-making authority in the Great Lakes Basin with the Governors and Premiers.

Following the review period, the public comments will be incorporated into final implementing agreements for the Governors and Premiers to review and ultimately sign. The final agreements will serve as the framework for legislation or regulations in each State and Province to protect and preserve the Great Lakes for years to come.

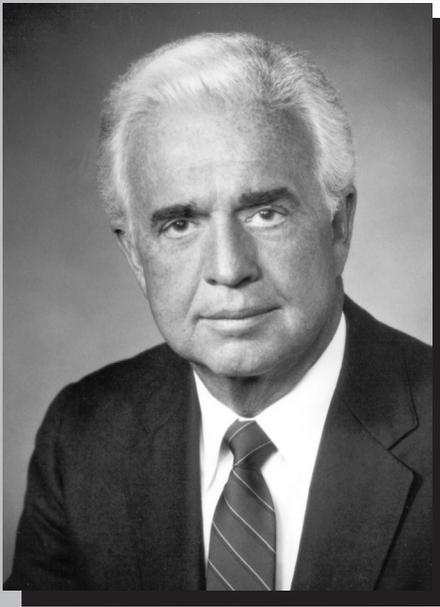
In addition to the Annex implementing agreements, the Governors are working to protect the Great Lakes in other ways. In 2002, the Governors launched the Great Lakes Governors' Priorities Task Force. The premise of the Task Force's work to date has been that coordinated planning is needed to achieve comprehensive restoration and protection of the Great Lakes while making efficient use of limited resources. As illustrated by Annex 2001 and ongoing efforts related to stopping the introduction and spread of aquatic invasive species, the Governors continue to work collectively through the Council of Great Lakes Governors toward this end.

We can only protect the Great Lakes through regional cooperation. The waters of the Great Lakes are the region's defining natural resource

***“We can only  
protect the Great  
Lakes through  
regional  
cooperation.”***

and the single largest source of fresh surface water in the world. While the Annex implementing agreements and the Governor's priorities are an important step in the right direction, we must become active participants to protect this critical resource. Our problems do not end at our State or national borders. We must continue to think regionally about the management of the Great Lakes.

***David Naftzger serves as the Executive Director of the Council of Great Lakes Governors. In this role, he coordinates the Governors' efforts to protect and restore the Lakes. Previously, he was the director of the agriculture and international trade committee of the National Conference of State Legislatures in Washington, D.C.***



## **Great Lakes Protection a Critical Piece of Land Use Recommendations**

*by Frank Kelley and William G. Milliken*

In February 2003 Governor Jennifer Granholm, supported by Senate Majority Leader Ken Sikkema and Speaker of the House Rick Johnson, created the bipartisan Michigan Land Use Leadership Council to minimize the negative effects of current and projected land use patterns on Michigan's environment and economy. The 26-member council represented a broad spectrum of stakeholders concerned and knowledgeable about government policies affecting future land use in Michigan. At the end of its deliberations in August 2003, the council issued a report containing 160 recommendations to reform land use decisions in Michigan.

In looking at land use, the council kept its eyes on Michigan's waters. Many of the council's recommendations will benefit the Great Lakes and advance one of the Council of Great Lakes Governors' priorities: to adopt sustainable land use practices that protect environmental resources and enhance the commercial and recreational value of our Great Lakes. Throughout its deliberations, the council recognized that the state's Great Lakes shoreline, rivers, inland lakes, and diverse land resource-based natural habitats support a complex array of interrelated plant and animal communities which contribute to the quality of life that attracts residents and millions of travelers who view our state as a many-faceted jewel for recreation.

The council also recognized the major stewardship role the state must play. Surrounded by 80 percent of the nation's (and one-fifth of the



world's) fresh water, Michigan has a major responsibility to preserve the ecological health of this unique national and international resource. With a broad vision, the council recognized that what happens on the land is a major factor in determining what happens to our state's waters. The council recognized the importance of maintaining all elements of this complex system in order to sustain Michigan's remarkable quality of life for present and future generations.

The council studied land use trends in Michigan over the last half-century and recognized how land use has had a major negative effect on biodiversity, primarily through the urbanization of land and the attendant destruction of habitats far beyond the need to support human population growth and a prosperous economy. The council agreed that new approaches are needed to better protect biodiversity in Michigan. The primary issues addressed by the council that relate to water quality include:

- **Providing new tools to local government** to encourage better land use decisions. For example, the council recommended that the state develop guidelines to help local governments implement effective storm water management and on-site waste disposal (septic) systems. Also, the council recommended that the state provide legal and financial tools to assist local governments in protecting headwater areas as well as reducing impervious surfaces and resulting non-point source pollution (by allowing more compact and mixed-use development and reducing street width).
- **Encouraging partnerships** between government and the private sector/landowners that identify and protect significant habitats and important biological processes while allowing productive uses of the land. For example, the council recommended that the governor better coordinate and ease accessibility to state and federal land management assistance programs, such as the Wetland Reserve Program and the Conservation Reserve Program, to increase landowner participation. The council also recommended expanding the Conservation Reserve Enhancement Program (CREP), which pays farmers to establish and maintain buffer strips along watercourses.
- **Conducting holistic ecological evaluations** to assure that long-term impacts associated with biological diversity are considered. For example, the council recommended that appropriate state agencies develop a statewide strategy for biodiversity conservation and integrate plans for biodiversity conservation, wildlife habitat protection, water quality, and other potential environmental impact considerations into their planning (e.g., the Michigan Department of Transportation should consider biodiversity conservation when developing its statewide transportation plans).
- **Creating incentives to encourage interagency and intergovernmental cooperation** in addressing land use issues

*“...what happens on the land is a major factor in determining what happens to our state’s waters.”*

and public investments that are greater than local concern. For example, to encourage environmental protection and the efficient use of infrastructure, the council recommended that multijurisdictional coordination occur on decisions that affect more than one jurisdiction, such as regional transportation, environmental protection, sewer and water service, and energy conservation plans. The council also recommended increasing the effectiveness of the state's 14 regional planning and development regions to facilitate multijurisdictional cooperation.

The council's report reflects an important milestone in the land use arena, a remarkable meeting of the minds after so many decades of stalemate. For the first time since the early 1970s, agreement has been reached on a wide range of recommendations to ease myriad land use problems. Many laws have been enacted in the past several months to implement the council's recommendations and address the outdated land use policies that threaten our landscapes, our ability to create and keep jobs, and our great places—including the Great Lakes.

We hope this progress continues. The 37 million acres that are Michigan is all the Michigan we will ever have. How well we use and manage our land base, how intelligently we protect and conserve it, and how wisely we husband it for passage to future generations will in large part determine the destiny and prosperity of those generations.

***Frank Kelley was Michigan's longest serving Attorney General. His tenure in that post spanned thirty-seven years, wherein he was elected ten times. He is now a founding partner in the law firm Kelley Cawthorne PLLC, Lansing, Michigan.***

***William G. Milliken was the longest serving governor in the state's history, occupying the office from 1969 to 1983. He previously served as lieutenant governor and was a member of the State Senate. Following Milliken's governorship, he has been committed to many public issues, especially environmental protection.***

# Fulfilling Congress' Commitment to Restoring the Greatness of the Great Lakes

by Congressmen Peter Hoekstra and Sander Levin

More than 30 years after the Clean Water Act was passed, the Great Lakes are much cleaner, but they still face critical challenges.

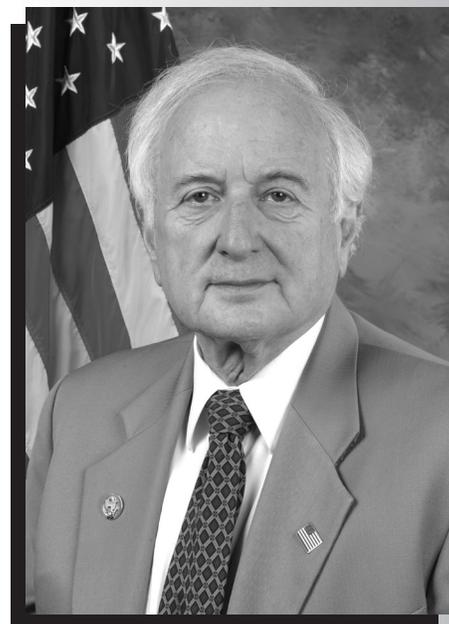
Over 170 invasive species plague the Lakes, and new non-native species - like the Asian Carp - are at the back door. Mercury deposition from coal-fired plants, and the accumulation of other toxic chemicals, has led to more than 1,500 fish consumption advisories. Non-point source pollution degrades water quality and impacts the critical habitat that is essential for thriving fish and wildlife populations. And it seems like every time there is a significant rain event, sewage is poured into the Lakes through combined sewer overflows.

Over the years, there have been a great number of initiatives and programs to deal with the numerous environmental challenges facing the Great Lakes. Rather than the piecemeal approach we have used in the past, we envision a more integrated, basin-wide approach. This approach is modeled on the Everglades restoration legislation approved by Congress in 2000. During the 1990s, it became clear that the Everglades were dying and that a comprehensive restoration plan was needed. Congress responded with a multi-year \$8 billion plan. No less than the Everglades, we need a similar restoration plan for the Great Lakes.

Our approach is titled the *Great Lakes Restoration Financing Act* (H.R. 2720), legislation we introduced last year with a broad bipartisan coalition.

The legislation authorizes \$4 billion over five years in block grants to deal with invasive species, toxic sediments, wetlands preservation and other problems confronting the Lakes. It would be up to the states and the U.S. Environmental Protection Agency (EPA) to determine how to spend the money. Each state has a unique set of programs, and the Great Lakes Restoration Financing Act allows the states to work with the EPA to develop and implement a tailored restoration strategy.

The same day that we introduced the *Great Lakes Restoration Financing Act* in the House, Congressman Carl Levin, D-Michigan, and Congressman Mike DeWine, R-Ohio, introduced similar legislation in the Senate.



***“From the beginning, there was a recognition that we would need to have strong bipartisan support from all eight Great Lakes states.”***

Today 106 members in the House – 61 Democrats, 44 Republicans and one independent – and 15 senators have co-sponsored the two restoration bills in Congress. All eight governors from states bordering the Great Lakes have endorsed the plan, and the Great Lakes Cities Initiative, a consortium of mayors from towns along the Great Lakes, has come on board as well.

Our legislation also has the support of 43 advocacy organizations including groups as diverse as the Lake Michigan Federation, the National Marine Manufacturers, and Ducks Unlimited. Even with this broad base of support, we cannot let up in our efforts to pass this legislation.

First, these efforts begin with the need to preserve and expand the coalition supporting these restoration bills in Congress. From the beginning, there was a recognition that we would need to have strong bipartisan support from all eight Great Lakes states. For example, of the 12 Michigan members co-sponsoring the bill in the House, six are Democrats and six are Republicans. Now we need to expand the outreach effort to Members of Congress who represent districts outside the Great Lakes region and urge them to join us in co-sponsoring the legislation.

Second, we need the active support of the Administration to pass the bill. The Great Lakes account for 18 percent of the surface freshwater on the planet and 90 percent of the surface freshwater in the United States. The Lakes are an invaluable resource and a national treasure. The federal government must be a full partner in the effort to set them on the path toward recovery.

It is encouraging to note that the White House is recognizing the need to meet these challenges. By executive order, earlier this year it created a task force that will establish a regional collaboration among the numerous state, tribal and local governments and federal programs to provide direction to Great Lakes restoration and management. Also, the President budgeted \$45 million in 2005 for the *Great Lakes Legacy Act*, a significant demonstration of support for the Great Lakes.

Funding the *Great Lakes Restoration Financing Act* will be the final hurdle. To receive congressional funding, Congress must first authorize a program. The *Great Lakes Restoration Financing Act* provides the authorization, but once passed, we need to ensure that it receives the necessary appropriations. It is the final stage in which good programs often fall short.

Great Lakes restoration ranks high among the several environmental challenges and opportunities facing Congress. No legislation of this significance passes overnight, but we will keep pressing this issue in Congress until restoration of the Great Lakes becomes reality.

The 108th Congress was significant because it saw the formation of a new, broad-based movement within the House and Senate to support comprehensive restoration of the Great Lakes. All of us must come together in the months and years ahead to finish the job of protecting and restoring the grandeur of this incredible treasure.

***Congressman Pete Hoekstra has served Michigan's Second Congressional District in the U.S. House of Representatives since 1993. He currently serves on the House Committee on Transportation and Infrastructure. He earned a bachelor's degree in political science from Hope College and an MBA from the University of Michigan. Before being elected to serve in Congress, he was Vice President of Marketing for office furniture manufacturer Herman Miller, a Fortune 500 company.***

***Congressman Sander Levin, D-Royal Oak, has represented the 12th District of Michigan in the U.S. House of Representatives since 1983. He is a senior member of the House Ways and Means Committee and serves as the Ranking Member on the Trade Subcommittee. For the past five years, he has worked to secure federal funding to curb sewer overflows into the Clinton River and Lakes St. Clair.***

## **Open Water Disposal of Dredged Materials Further Contaminates the Great Lakes**

*by Kathleen Law*

Recently the U.S. Army Corps of Engineers has proposed to dredge Lake Michigan to facilitate navigation, and then to dump the dredged materials elsewhere within the lake as a means for disposal of sediments. This disposal method is already being employed by the Army Corps in the Ohio waters of Lake Erie. Depending on the location, dredged materials are contaminated sediment. For example, Lake Erie bottomlands are covered with low-level Polychlorinated Biphenyls (PCBs). Stirring that material up, and then relocating it in open water is less costly than disposing the material in a landfill or other appropriate facility. However, this method of disposal is basically creating inappropriate landfills in our Great Lakes, as well as creating potential negative health impacts to indigenous fish, wildlife and humans.



***“Contaminated sediment....in our Great Lakes bottomlands continues to be one of the major challenges facing our Great Lakes.”***

Contaminated sediment containing such toxins as mercury, PCBs, or polycyclic aromatic hydrocarbons in our Great Lakes bottomlands continues to be one of the major challenges facing our Great Lakes. According to the International Joint Commission (IJC), contaminated sediment exists in all 41 of the Areas of Concern in the Great Lakes basin. These toxins often find their way into the food chain and are a major reason for fish consumption advisories. Besides the environmental challenge, contaminated sediment also poses a financial concern for an area. It can reduce tourism revenue and harm sport-fish industries. When the need to dredge an area of contaminated sediment arises for navigation purposes, the Army Corps is currently choosing the most harmful disposal option.

In order to open and operate a landfill in Michigan, one must follow stringent rules to protect the air and land from contamination. One must build liners to prevent seepage of toxins into our groundwater. To protect our health, there are many items prohibited from being landfilled including sewage, PCBs, and hazardous waste. These items must be carefully managed and properly disposed of in a facility designed to handle and monitor these contaminants. These rules do not currently apply to the Army Corps for the disposing of dredged materials in the Great Lakes. This is tantamount to creating a landfill with no liner, no protections for our water, no monitoring and continued threats to our health. Open water disposal of contaminated dredge materials must stop.

I have introduced legislation, House Bill 6079, which expressly prohibits the disposal of contaminated dredge materials into the open waters of the Great Lakes. This includes materials contaminated with substances that are included in various lists of toxic substances contained in specific state and federal administrative rules. It is hoped that other Great Lakes states will enact similar legislation so that we as a region will continue to move forward in the protection of our Great Lakes for generations to come. Further, in January 2002, the United States Congress passed the Great Lakes Legacy Act which authorized funding for the remediation of contaminated sediments. Allowing open water disposal of contaminated dredge material is incompatible with this act.

In addition to banning open water disposal of contaminated sediment, remediation options must be encouraged. According to the United States Policy Committee, Great Lakes agencies have completed or are currently addressing the remediation of more than 3 million cubic yards of contaminated sediment in the basin. This is a start. Increased monitoring, attention to funding sources and public awareness will aid in the restoration efforts.

We have inherited the awe inspiring gift of the Great Lakes as a fixed quantity of water. No new water is being made. Our waters are replenished by snow pack and rainfall on an average of only 1 percent each year. We must aim with a positive and clear focus to ban further

open water disposal of contaminated dredged materials, to remediate contaminated sediment within the Great Lakes basin, and to monitor our efforts. Together, we will restore many of the beneficial uses and gifts provided to us, and ensure the future of our Great Lakes.

***Representative Law is a retired research scientist with a degree in microbiology from Eastern Michigan University. She is a lifelong advocate for protecting the Great Lakes, working with such groups as the Detroit River Remedial Action Plan, the Statewide Public Advisory Council and the Friends of the Detroit River. Currently, she serves as Minority Vice-Chair on the House Great Lakes and Tourism Committee.***

## **The Importance of Protecting Isolated Wetlands**

*by Wilfred Cwikiel*

Michigan is graced with a fascinating array of wetlands that are not connected by surface water to a pond, lake, or stream. Bogs are perhaps the best-known example of Michigan's isolated wetlands. In addition, there is a broad range of small isolated wetlands, called ephemeral wetlands or vernal pools (since they are typically only wet during the spring), that are found in depressions that collect spring snowmelt and runoff in forests, prairies, lakeplains, and on limestone/dolomite bedrock.

In the wetland world, small can be very beautiful. Despite their size (ranging from a hundred square feet or less to several acres), these wetlands provide many important functions that are valuable to wildlife and the health of our watersheds.

From the watershed perspective, by collecting and storing water during heavy rains and spring runoff, these wetlands make a big contribution to flood control. Many ephemeral wetlands are critical to ground water recharge and contribute to maintaining stream flows. And, like other wetlands, isolated wetlands play an important role in nutrient retention and cycling.

Isolated wetlands provide critical habitat for a wide range of species that are uniquely adapted to the ephemeral nature of these ecosystems. Because most of these wetlands dry up during the summer, they are free of fish, which allows invertebrates and amphibians to breed in a relatively predator-free environment. In addition to frogs and salamanders, ephemeral wetlands provide habitat for many mammals



and birds such as the wood duck, blue-winged teal, and little green heron. These areas are also very important to protecting biodiversity. In a 1996 study conducted by the Michigan Natural Features Inventory, 113 species of plants and 37 species of animals considered special concern, threatened, or endangered were found to be associated with isolated wetlands.

Despite our current understanding of the importance of ephemeral wetlands, and the recreational opportunities they provide, the vast majority of them are afforded no legal protection at the state and federal level. However, Michigan's wetland law does allow the Department of Environmental Quality (DEQ) to regulate activities that could harm a particular isolated wetland if the DEQ determines that wetland is essential to the preservation of the natural resources of the state from pollution, impairment, or destruction, and the department notifies the landowner. However, this provision of Michigan's wetland law has not been systematically implemented since the act was passed 25 years ago.

That's about to change. In April 2004, Governor Jennifer Granholm signed Executive Directive 2004-4 authorizing the DEQ to develop a process to protect isolated wetlands on state land. This Executive Directive will ensure that isolated wetlands on state land will be subject to the same permitting criteria and procedures as other wetlands within the jurisdiction of Michigan's wetland law. The process includes confirming that each wetland meets the statutory definition of a wetland, that the wetland meets the statutory conditions to be determined essential to the preservation of natural resources, identifying and notifying the property owner, and creating a public database. Although the scope of this Executive Directive is limited to those wetlands on state land, the Directive may indeed bring about the development and implementation of a process that could be utilized to expand protection to select isolated wetlands on private property as well. By "testing" the process on state land, many "bugs" will be worked out prior to implementing the process on private lands.

Governor Granholm should be applauded for taking this first step in protecting Michigan's ephemeral wetlands. In addition to this effort, it is important to note that local governments are authorized to regulate wetlands of any size as part of a local wetland protection program. With a grant from the U.S. Environmental Protection Agency, the DEQ will be working with the East Michigan Environmental Action Council and the Tip of the Mitt Watershed Council to provide technical assistance to local governments interested in getting involved in wetland protection.

It's clear that protecting ephemeral wetlands is an integral part of maintaining the health of Michigan's water resources. By taking action now--both in terms of utilizing provisions in state law that have been around for 25 years, and by encouraging local governments to play a key role--we can ensure that these unique ecosystems will grace the



*Isolated wetlands are home to a wide variety of plant and animal species.*

landscape and that the chorus of frogs that usher in spring from isolated wetlands across Michigan will continue for generations to come.

**Wilfred Cwikiel is the Policy Director for Tip of the Mitt Watershed Council. He authored Living With Michigan's Wetlands: A Landowner's Guide and Michigan Wetlands-Yours to Protect: A Citizen's Guide. He received the National Wetland Award in 1997 and was named the 2004 Water Conservationist of the Year by the Michigan United Conservation Clubs.**

# Michigan's Wetlands Inventory

Part 303, Wetlands Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, includes requirements for the development of wetland inventories, including public hearings, filings with local offices and legislators, and tax bill notifications. To address the need for wetland inventories in Michigan, the Department of Environmental Quality developed a method for producing the inventories in Wayne County and has been using the same method to produce other county inventories throughout Michigan over the past three years. The inventories are produced by overlaying, in a Geographic Information System, the National Wetland Inventory, the Michigan Resource Information System land cover, and the U.S. Department of Agriculture, Natural Resource Conservation Service soil data.

The wetland inventories are not intended to be used to determine the specific locations and boundaries of wetland areas subject to regulation. The intent of the wetland inventory maps is to assist local governments and others in preserving, enhancing, and restoring wetlands through planning activities such as open space designations, zoning, watershed management programs, and wetland restoration projects. In addition, for counties with a population of less than 100,000, Part 303 provides for the regulation of non-contiguous wetlands greater than five acres only after a wetland inventory is complete.



*Rare Yellow Lady's-Slipper*

# Public Involvement Fuels Restoration of Michigan's Great Lakes Areas of Concern

by Kathy Evans



Ten years ago, the 1993 State of the Great Lakes report introduced the Areas of Concern Program, an effort, codified under the United States-Canada Great Lakes Water Quality Agreement, to restore severely degraded areas in the Great Lakes. Michigan has 14 designated Areas of Concern (AOC), more than any other state and almost half of the 31 United States and binational areas. Nearly two-thirds of Michigan's counties include a portion of an AOC watershed.

Substantial effort has been invested in Michigan's AOC program over the past decade. We have investigated pollution sources, outlined restoration needs, and tapped into a multitude of programs to implement cleanup projects in our communities. In recent years we've begun implementing costly, large-scale contaminated sediment cleanups with funding under the Clean Michigan Initiative (CMI), and are hopeful that additional cleanups will be funded under the new Great Lakes Legacy Act.

As the years have passed, we have come to understand that restoring the AOCs will take longer than originally anticipated. We've made slow, steady progress that often is not readily apparent to those looking for "quick fixes" or flashy results. Over the years the fuel that has sustained the AOC program is public involvement - both within our individual communities and at the state and regional level.

In my local area, public involvement in the Muskegon Lake and White Lake AOCs has played a vital role in advancing contaminated sediment cleanups, habitat restoration and nonpoint source pollution control. Public advisory councils (PACs) for both AOCs meet monthly and work diligently to protect valuable habitat, educate the public, and strengthen partnerships with local governments, state and federal agencies, universities, environmental organizations, recreational groups, business and industry, and elected officials. With strong partnerships and firm public support, we have secured funding from a variety of sources for important research and cleanup activities.

Some key successes have included:

***Contaminated sediment cleanups:*** Two major cleanups were completed on White Lake in 2003, with more than 85,000 cubic yards of sediments contaminated with chromium and other heavy metals removed from Tannery Bay, and another 11,000 cubic yards of PCB-contaminated sediments removed from the Oxy Chem site. Cleanup

plans for Ruddiman Creek, a tributary to Muskegon Lake, have been completed and will be implemented soon. The Tannery Bay and Ruddiman Creek cleanups are being funded under the Clean Michigan Initiative, and the Michigan Department of Environmental Quality hopes to leverage additional funding for Ruddiman Creek from the Great Lakes Legacy Act.

**Habitat restoration:** Fish and wildlife habitat has been improved in several areas along the Muskegon Lake shoreline, including shoreline softening, native plant buffer strips, and wild rice plantings. Many community partners and volunteers contributed to these efforts.

**Nonpoint source pollution control:** The White Lake AOC is working to reduce nutrient inputs to the lake by identifying key nonpoint sources of pollution. Communities around Muskegon Lake are engaged in the Phase II stormwater program to reduce polluted urban runoff entering the lake.

**Setting goals and monitoring progress:** PACs for both AOCs are partnering with Grand Valley State University's Annis Water Resources Institute to develop measurable, science-based restoration targets. This will help evaluate results from contaminated sediment cleanups and enable us to gage progress in restoring environmental quality in the two lakes.

To complement and support local efforts, the Statewide Public Advisory Council has provided a forceful, collective voice on behalf of the AOC program. Established in 1991 by the Department of Natural Resources, the Council has addressed common needs among Michigan's 14 AOCs and served as a forum for sharing ideas and providing guidance to federal and state agencies. The Council has achieved several notable successes over the years.

**Incubating and supporting local advisory councils:** The Council has helped form community-based advisory councils and has secured funding to support their work.

**Training and program coordination:** Council-sponsored workshops have provided training on important environmental challenges in the AOCs, such as contaminated sediments and habitat restoration. These and related activities have helped identify resources and direct programs toward key restoration priorities.

**Engaging Elected Officials and Building Partnerships:** Council members and their partners in the local PACs have engaged elected officials in the AOC program and built partnerships with a multitude of stakeholders to advance cleanup efforts.



***Funding advocacy:*** Perhaps most important, the Council has pressed Congress and the Michigan legislature to provide resources for the AOC program, both for technical support and for cleaning up toxic sediments. The Council helped secure passage of the Clean Michigan Initiative and the federal Great Lakes Legacy Act, which together are investing nearly \$300 million in restoring the AOCs.

After more than a decade of persistent – but low profile – work, the AOC program is maturing. Costly, large-scale contaminated sediment removals are being implemented, providing tangible results from many years of hard work. Recently, Michigan became the first state to tap into funding under the Great Lake Legacy Act, with more than \$4 million dollars in federal funds being matched with CMI monies to remove contaminated sediments from the Black Lagoon on the Detroit River. The state has also applied for Legacy Act funding for cleanups in the Muskegon Lake (at Ruddiman Creek) and River Raisin AOCs. We are hopeful that more such projects will follow as the Great Lakes Legacy Act continues to infuse federal funds for AOC restoration activities.

These sediment removals – “moving mud,” as we like to say – are only the most striking of a wide variety of cleanup efforts implemented in the AOCs. Ultimately, the collective effort under the AOC program represents an invaluable “infrastructure” for restoring environmental quality in our communities. Continued public involvement and community engagement, from the Statewide Public Advisory Council and local advisory councils, will continue to fuel progress toward this ultimate goal.

***Kathy Evans is Chair of the Statewide Public Advisory Council for Michigan’s Great Lakes Areas of Concern Program.***



***Bringing up sediment samples.***

# Michigan's Atmospheric Mercury Monitoring Study

by Joy Taylor Morgan

Protecting public health, especially the healthy development of children is the ultimate reason why Michigan is concerned with limiting the use and release of mercury. The link between the source of mercury and how one can be exposed, however, is often misunderstood. While inhaling mercury vapors can be toxic, concentrations of mercury in the ambient air are typically not elevated to levels of concern, unless a "hot spot" exists due to a mercury spill. The primary route of exposure that is of concern to the general public and certain species of wildlife is ingestion of freshwater fish, seafood and shellfish containing mercury. Methylmercury is the form in fish that is highly bioaccumulative and builds up in the fillet of the fish rather than the fat. Methylmercury is a potent neurotoxin with the most sensitive population for exposure being the unborn child. Methylmercury exposure in utero can increase the risk of adverse neurodevelopment effects. Recent studies have also shown the possible connection of methylmercury causing endocrine disruption in humans.

Because of elevated mercury levels in fish, the Michigan Department of Community Health issued a state-wide fish consumption advisory for all of Michigan's 11,000 inland lakes in 1988. Several of the Great Lakes are also under a fish consumers advisory due to the mercury levels in certain species of fish. While fish are an excellent source of omega-3 fatty acids, consumption should be alert to fish advisories, especially for expectant mothers.

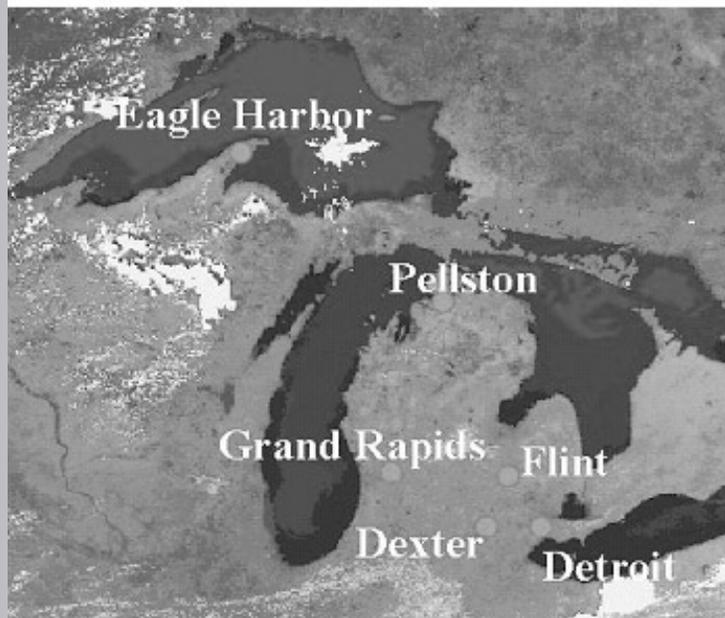
The atmosphere is the primary environmental pathway by which mercury enters water bodies. The Michigan Department of Environmental Quality (DEQ) continues to work toward better identification of atmospheric sources of mercury and reducing or eliminating these sources. One important tool used to identify atmospheric mercury sources is atmospheric monitoring and subsequent modeling. Sources that exist include fossil fuel combustion, incineration and waste processing facilities that handle mercury-containing materials, electric arc furnaces and others.

The DEQ-Air Quality Division (AQD) has partnered with the University of Michigan's Air Quality Laboratory to better understand the atmospheric levels of mercury in rural and urban Michigan. The objectives of this four year study are to track trends in the state. This study was initiated in 2001 with funding from the Michigan Great Lakes Protection Fund and the U. S. Environmental Protection Agency's (EPA's) Great Lakes Atmospheric Deposition program that established six sites



in Michigan. These sites include Eagle Harbor in the Upper Peninsula, Pellston, Grand Rapids, Flint, Dexter, and Detroit (see Figure 1).

**Site Locations for the Michigan Mercury Monitoring Network**



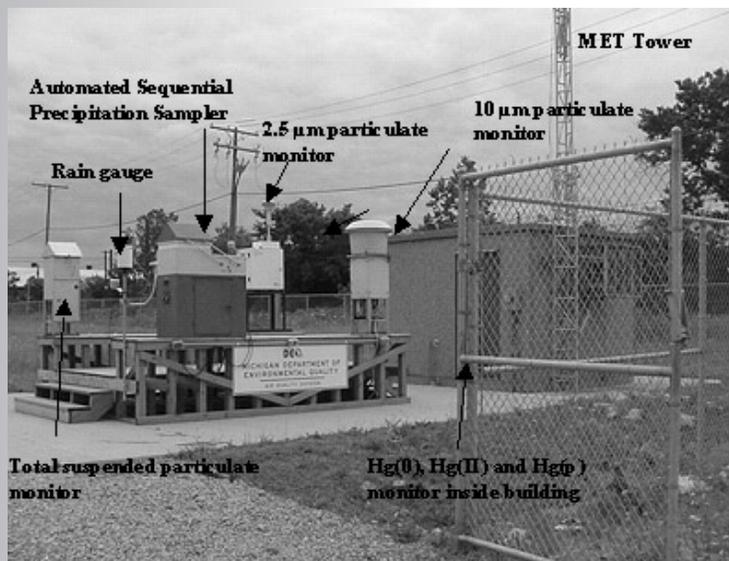
*Figure 1*

The study is examining mercury in precipitation utilizing a daily event precipitation sampling system at the six sites, and is also monitoring continuous gaseous elemental mercury, reactive gaseous mercury, particulate mercury and trace metals in Detroit and Dexter (see Figure 2). Understanding the various forms of mercury is important in determining total deposition and for modeling.

The measurements of the different types of mercury and trace metal analysis will help to better understand the importance of local, regional and global impacts.

Identifying source areas or categories of sources is the first step in reducing emissions of atmospheric mercury. This study will provide valuable information that will contribute to our understanding of these sources. Such information includes precipitation event data, trace metal data and meteorological information. Collecting event precipitation samples is critically important to determine source/receptor information and to identify the location of major sources.

Mercury can be elevated around certain atmospheric point sources. Precipitation strongly affects those levels. Preliminary data has shown that measurements of mercury revealed a diurnal pattern and they found that approximately 50 percent of mercury was removed during rainfall events. The average mercury values in Detroit are about twice as high as Dexter or other background sites in the state of Michigan, with peaks of elemental mercury going much higher. Levels of mercury in precipitation in Detroit have been found to be similar to other large urban areas like Chicago. The Eagle Harbor site, in Michigan's Upper Peninsula typically has lower deposition than the southern Michigan sites.



*Figure 2. Detroit – Southwest High School Site (MDEQ-AQD Monitoring Equipment and UofM/MDEQ-AQD Mercury Monitoring Equipment)*

Similar work has resulted in the identification of two-thirds of the sources of mercury that contribute to atmospheric deposition in Florida and have also

identified a large gold mine in Canada north of Lake Superior that is contributing mercury loadings to the Basin. Another study on the impacts of coal combustion emissions in Ohio on the Ohio River Valley and the Midwest states will also be of interest to Michigan.

While tracking the mercury released from a source directly back to the fish on your dinner table is not feasible; this study will contribute to our better understanding of atmospheric mercury sources in Michigan, allowing DEQ staff and other stakeholders to continue efforts on reducing the use and release of this unwanted pollutant in our environment.

***Joy Taylor Morgan has worked for the DEQ-AQD for 13 years where her work has focused on developing programs, regulations and policies that emphasize the reduction and elimination of the atmospheric release of persistent bioaccumulative toxic pollutants that include mercury, dioxins, PCBs and pesticides. She has served as project manager for several grants pertaining to the identification and reduction of these pollutants.***

## **Stewardship the Responsibility of All**

*by Nancy M. White*

Nature has blessed the State of Michigan with an abundance of fresh water and hundreds of miles of shoreline. These treasures have become proud hallmarks of Michigan's identity and priceless features of its heritage. To ensure the long term health and viability of the Great Lakes, it is important that public stewardship meet the challenge of protecting and preserving Michigan's unique natural resources.

During the 90s, Macomb County experienced frequent beach closings related to a variety of causes, but it was unusually heavy rains that provided the real "wake-up call." The health of the county's waterways was in serious decline. With 31 miles of shoreline, it became clear that we had a complex problem and remedies were not immediately apparent. One thing was apparent; we had to become better stewards.

A Blue Ribbon Commission of 32 community leaders and professionals was formed in 1997. Their work resulted in a broad plan of action to improve surface water quality. The strategic priorities became the responsibility of the Macomb County Board of Commissioners which authorized the County Health Department to draft a regulation creating greater government oversight of onsite sewage disposal systems. The Health Department worked with the real estate industry, the onsite sewage service industry and local officials to develop a regulation which resulted in the establishment of the "Property Transfer Evaluation Program." It was approved by the Board and became effective August 1, 2002.



The essential requirement of the Program is that homes and businesses that have onsite sewage systems (septic tanks) are required to have those systems evaluated prior to any property transfer. While not a 'quick fix', it is a long-term and sustainable approach to a major cause of pollution.

The evaluations are conducted by Health Department staff or certified evaluators registered with the Department. Time frames and assurance methods for remediating failures were also established.



*Inspection is key to the success of the program.*

During 2003, 741 Sewage Evaluation Reports were filed with the Macomb County Health Department. Of the 741 onsite sewage inspections conducted, a total of 94, or 12.7 percent, failed the evaluation. However, all required corrections for failing systems were completed within the time frame prescribed by the regulation.

Once the Program was in place and awareness was raised, many homeowners took the initiative to replace their malfunctioning sewage systems in anticipation of a future property transfer. The Program has also been instrumental in increasing the understanding of the need for appropriate preventative maintenance of onsite sewage systems, decreasing the incidents of contaminating discharges.

To further strengthen this initiative, in 1997 the Board of Commissioners passed a resolution establishing the Water Quality Unit of the Macomb County Prosecutor's Office. The resolution also authorized the creation of the Macomb County Health Department Surface Water Improvement Monitoring (SWIM) Team to investigate and monitor compliance with water quality laws in county waters and Lake St. Clair.

This created a coordinated approach between the County Health Department and the Prosecutor's Office, and that combination has produced results. The SWIM Team averages between 300-400 inspections per year and refers between 15 and 20 cases per year to the Prosecutor's Office for investigation or enforcement. The Health Department has

administrative authority to conduct searches of known or suspected sources of contamination under the State Public Health Code.



*Proper maintenance of septic systems assures water quality.*

To date, over 80 cases have been referred to the prosecutor by the SWIM Team. Excluding those pending, all cases referred to the water quality prosecutor have been resolved either voluntarily prior to suit or through judicial consent orders requiring abatement of the nuisance conditions under a defined timetable.

The Property Transfer Evaluation Program is but one tool that Macomb County uses to protect and improve surface water quality in the Clinton River Watershed and Lake St. Clair. Used along with other initiatives, the quality of our stewardship has been enhanced and strengthened by taking more proactive steps.

Lake St. Clair, the gem of Macomb County, is often called the “Heart of the Great Lakes.” Our dedication must be equal to the responsibility. Our commitment must be equal to the honor.

***Nancy M. White has served on the Macomb County Board of Commissioners since 1992 and as Chair of the Board since January, 2003. A long-time advocate of responsible stewardship of the county’s waterways, Ms. White believes strongly in the necessity of supporting and encouraging organizations such as the Macomb County Water Quality Board and the Clinton River Watershed Council.***

## **Michigan Clean Water Corps**

*by Lt. Governor John D. Cherry Jr.*

In honor of the state’s continuing commitment to protect the Great Lakes and the state’s water quality, Governor Jennifer M. Granholm proclaimed September 18 through October 18, 2003, as Water Monitoring Month in Michigan.

This coincided with the United States Environmental Protection Agency’s celebration of the 30th anniversary of the enactment of the federal Clean Water Act. Water Monitoring Month is an annual event sponsored by America’s Clean Water Foundation. In 2003, Water Monitoring Month was incorporated as a part of the “Year of Clean Water,” a global celebration for clean water that culminated in World Water Monitoring Day on October 18.

It was on that day that Michigan Department of Environmental Quality Director, Steven E. Chester and I announced the formation of the Michigan Clean Water Corps (MCWC). The MCWC is comprised of statewide volunteer networks to assist in water monitoring and testing programs. The Michigan Department of Environmental Quality solicits and organizes volunteers around the state to participate in water quality monitoring activities.



Michigan's water is not only one of our most prominent attributes, it is undoubtedly among the state's most valuable resources. Compared to the rest of the nation, our lakes and streams have been maintained well and are of exceptional quality. It is within the state's best interest to enable the citizens to keep the water clean and beautiful for many future generations to enjoy. That is the primary mission of the Clean Water Corps.

The volunteers sample the lakes for such things as clarity, temperature, dissolved oxygen, chlorophyll-a and phosphorus. These are indicators of water health.

Only by comprehensive monitoring efforts can we protect our waters from degradation, our beaches from contamination and our citizens from the health risks that cause disappointing beach closures. This is important not only to our own citizens, but as it relates to our thriving tourist industry.

Building upon the existing volunteer water monitoring programs already established in Michigan, the MCWC will work to advise and aid in educating the citizens of the state about water quality issues and promote the need for citizens to play an active role in protecting Michigan's water resources.

## **The Michigan Clean Marina Program – A Partnership Effort Improves the Environment**

*by Steve Remias*



Recreational boating is one of Michigan's most popular pastimes, with over 1 million registered boats and 750 marinas. A recent study from the Recreational Marine Research Center at Michigan State University estimated that boaters spent \$2.24 billion in boating related expenditures per year. Besides boating being a recreational activity for approximately 4 million Michiganders, it is a significant contributor to the economic strength of our state. In order to enhance the boating experience, boaters and the boating industry recognize the importance of being good environmental stewards. The quality of our water resources is critical to the boating experience.

The Michigan Clean Marina Program (CMP) was developed with a focus on protecting Michigan's water resources and wildlife habitat by promoting environmentally sound marina and boating practices. The

Michigan CMP was developed through collaborative efforts of a public-private partnership with the marine industry, academic institutions and state government. The primary committee structure included representatives from the Michigan Department of Environmental Quality, Michigan Boating Industries Association and the Michigan Sea Grant Program.

The Michigan CMP is a voluntary stewardship program open to all public, commercial and private marina facilities. The program includes Best Management Practices (BMP) voluntarily implemented by participating marinas. To be designated as a Michigan Clean Marina each facility must complete a ten-step process, which includes implementation of beneficial environmental procedures and passing a physical inspection to achieve CMP designation. The designation requires redesignation every three years.

The objectives of the program are forthright with intention of building awareness of environmental concern for Michigan's state waterways. They include:

- Foster communication among marina industry, state agencies, academic institutions and environmental groups.
- Promote voluntary implementation of pollution strategies, environmental risk reduction, and fish and wildlife habitat enhancement in the context of good business practice.
- Promote industry compliance with environmental laws and regulations impacting the marina industry thorough education and outreach.
- Develop recognition and economic incentives for environmentally proactive marina operations.

The leading sources of marine pollution are boat washing, runoff, fuel and oil spills, dirty bilge water, and garbage disposal. With a unified effort, marinas can become involved, educate their boaters and promote environmentally sound practices. The marinas of Michigan are more than parking lots for boats. They are educational centers and must set a positive example through internal policies and procedures that are emulated by boaters at their facilities. By adopting cost-effective best management practices, marinas will lead by example by encouraging sound and affordable approaches in preventing the release of hazardous substances and reduce the generation of waste.

Upon completion of the 10 - step program and approved designation, marinas may promote their achievement by using the CMP logos and fly the Michigan Clean Marina Flag at their facility. Boaters prefer to conduct business with facilities that they know are stewards of our environment. It is the objective of the Clean Marina Program Committee to see CMP flags raised with pride all over the great state of Michigan.



This program is a prime example of how government, industry and academia can make a difference by working together.

For information on the Michigan Clean Marina Program, contact any of the following organizations:

Michigan Department of Environmental Quality  
(800) 662 - 9278  
[www.michigan.gov/deq](http://www.michigan.gov/deq)

Michigan Boating Industries Association  
(800) 932-2628 or (734) 261 - 0123  
[www.mbia.org](http://www.mbia.org)

Michigan Sea Grant  
Clean Marina Program  
(616) 846 - 8250  
[www.miseagrant.umich.edu](http://www.miseagrant.umich.edu)

***Steve Remias is Vice President, MacRay Harbor, Inc., Harrison Township, MI; Michigan Boating Industries Association Board member & Chair of the Environmental Committee***

## **Beetle Strikes Back at Wetland Invader**

When dealing with aquatic invasive species, control efforts are rarely successful; however, a project started in 1998 demands attention for its ability to accomplish reductions in purple loosestrife populations consequently increasing native plant diversity. Purple loosestrife is a prolific, aquatic weed that has spread through much of the U.S. and Canada. Purple loosestrife, a native of Europe and Asia, migrated to this continent in ballast water on ships and has spread through human intervention as well as natural dispersal. It is a fierce competitor and eventually overtakes native vegetation, forming nearly impenetrable stands of this single species. As native plants are reduced, so are the wildlife that depend upon these plants. Conventional means of control have been difficult, expensive and largely unsuccessful. As often occurs with introduced species, purple loosestrife arrived without its natural enemies and was left unchecked in its new North American home.

The first effort to control purple loosestrife through biological control began in 1994 when Michigan Department of Natural Resources

released *Galerucella californiensis*, a small leaf eating beetle in three Michigan wetlands. In 1996, Michigan State University and Michigan Sea Grant joined forces to create the Purple Loosestrife Project. From 1997-1999, the project reared over 300,000 beetles and continues to monitor their impact in 24 research sites throughout lower Michigan. The project has since been turned over primarily to the U.S. Department of Agriculture, Niles, Michigan Laboratory. One hundred percent of the releases are sustaining beetle populations causing near defoliation of purple loosestrife.

Since purple loosestrife populations have been reduced, research has shown that wetland plant diversity has doubled. In 2003, Michigan State University, Michigan Sea Grant and several other contributors to the purple loosestrife project celebrated a successful control effort at Windmill Island, Holland, Michigan, where purple loosestrife populations have been reduced to an unnoticeable presence.

Further information can be obtained from the Office of Great Lakes at <http://www.michigan.gov/deqgreatlakes>



*Before: Windmill Island infested with purple loosestrife (1998).*



*After: Windmill Island after treatment with Galurecella beetles (2003).*



# Acknowledgements

## Guest Contributors

John D. Cherry Jr., *Lt. Governor of Michigan*

Wil Cwikiel, *Tip of the Mitt Watershed Council*

Kathy Evans, *Michigan Statewide Public Advisory Council, Great Lakes Areas of Concern*

Congressman Peter Hoekstra, *U.S. House of Representatives*

Frank Kelley, *Michigan Land Use Council*

Representative Kathleen Law, *Michigan House of Representatives*

Congressman Sander Levin, *U.S. House of Representatives*

William G. Milliken, *Michigan Land Use Council*

Joy Taylor Morgan, *Michigan Department of Environmental Quality*

David Naftzger, *Council of Great Lakes Governors*

Steve Remias, *MacRay Harbor, Inc.*

Nancy M. White, *Macomb County Board of Commissioners*

## Writers

Dr. Roger Eberhardt, *Office of the Great Lakes*

Emily Finnell, *Office of the Great Lakes*

## Editor

Martha Waszak, *Office of the Great Lakes*

## Layout and Graphic Design

Stephen Bolt, *Print and Mail Consulting Services, Michigan Department of Management and Budget*



*As a "Michigan Great Printer," Print and Mail Consulting Services is significantly committed to environmental stewardship by employing environmentally sound practices in the lithography industry.*



**Annual Report for 2003**

**December, 2004**

Prepared by the Office of the Great Lakes —  
Michigan Department of Environmental Quality

Steven E. Chester, Director



<http://www.michigan.gov/deq>

Pursuant to Public Act 451 of 1994 for Governor Jennifer M. Granholm

The Department of Environmental Quality provides equal opportunities for employment and participation in decision making processes. Both state and federal laws prohibit discrimination on the basis of race, color, national origin, religion, disability, age marital status, or sex under the Civil Rights Acts of 1964, as amended (MI PA 453 and MI PA 220, Title V of the Rehabilitation Act of 1973, as amended, and the Americans With Disabilities Act.) If you believe that you have been discriminated against in any program, activity, or facility, or if you desire additional information, please write the MDEQ Personnel Office, P.O. Box 30473, Lansing, MI 48909, or the Michigan Department of Civil Rights, State of Michigan, Plaza Building, 1200 6th Avenue, Detroit, MI 48226. For information or assistance on this publication, contact the Michigan Department of Environmental Quality, Office of the Great Lakes, P.O. Box 30473, Lansing MI 48909.



Total Number of Copies Printed: 500  
Total Cost: \$1,114.62 Cost Per Copy: \$2.23

