

Conference Proceedings

Actions Toward a Sustainable Great Lakes



May 4-6, 2004
Cleveland, Ohio

Sponsored by the Great Lakes Commission and the U.S. Army Corps of Engineers-Buffalo District in cooperation with 25 partner agencies and organizations.



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Preface

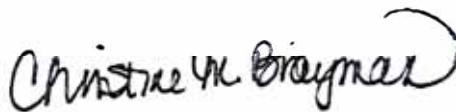
By any measure, the “Actions Toward a Sustainable Great Lakes” conference was an extraordinary event. In May of 2004, over 200 policymakers, opinion leaders and stakeholders throughout the binational Great Lakes-St. Lawrence region convened for a common purpose: to move the notion of “sustainability” from concept to application. Through plenary sessions, breakout groups, social events and hallway conversations, a philosophy emerged to guide restoration, protection and sustainable use efforts. This philosophy recognizes our responsibility to ensure that future generations have access to a well-managed, quality resource that will meet long term needs for a clean environment, a prosperous economy, and a high quality of life.

This conference was a collaborative effort in every sense of the word. Twenty-seven agencies and organizations served as partners, collectively contributing to conference design, conduct, speaker selection, publicity and session summaries. As co-conveners, we were privileged to work with such a large, capable and committed group. (See appendix for listing.)

Conference outcomes will be of interest to all with a role or responsibility in the restoration, protection and sustainable use of our great resource. In particular, they will be relevant to the many priority setting and strategy development efforts underway at the agency, jurisdictional, regional, national and binational levels at this time. Toward that end, we invite your consideration – and application – of the findings and recommendations presented within.



Michael J. Donahue, Ph.D.
President/CEO
Great Lakes Commission



Christine M. Brayman
Acting Deputy District Engineer
Programs and Project Management
Buffalo District, U.S. Army Corps of Engineers

Conference Proceedings

Actions Toward a Sustainable Great Lakes

I. Introduction

In May 2004, over 200 stakeholders convened in Cleveland, Ohio to share thoughts, ideas and actions on how to achieve a sustainable Great Lakes. Recognizing their responsibility as stewards of the greatest system of freshwater on the face of the earth, they focused their efforts on means to ensure that future generations have access to a well-managed, quality resource that will meet long term needs for a clean environment, a prosperous economy, and a high quality of life. The conference was titled “Actions Toward a Sustainable Great Lakes,” and was organized by 27 partner agencies and organizations drawn from public, private and nongovernmental sectors in the United States and Canada. Conveners included the Great Lakes Commission and the Buffalo District of the U.S. Army Corps of Engineers.

The sustainability conference was motivated by a growing interest in the Great Lakes St. Lawrence region for a large scale, consensus-based ecosystem restoration and protection strategy that embraces and applies the notion of sustainability. This notion entails the integration of environmental, economic, social and cultural considerations in actions that will allow the present generation, and all future generations, to benefit from this great resource and its varied attributes. In so doing, the conference built upon the success of a related event the year before in Sault Ste. Marie, Mich.; an event titled “Moving Toward a Sustainable Great Lakes.” Involving many of the same partners but on a smaller scale, that event focused on developing a vision for the lakes and identifying associated unmet needs. The 2004 conference took the initiative to the next level, focusing more specifically on actions that are, and will be taken in search of sustainability.

The conference focused specifically on two key questions identified by the many partners:

- What is being done to advance the notion of sustainability in the Great Lakes-St. Lawrence region?
- How can we, as a community of diverse interests, work together effectively to achieve sustainability?

These questions were addressed via keynote presentations, plenary session panels, breakout groups and open discussion among the many participants – a process that involved over 70 experts serving as speakers, facilitators and resource people. Conference partners selected a series of ecosystem restoration and protection themes as the basis for the conference and the breakout group discussion. These themes, drawn from the work of the Great Lakes Commission, Council of Great Lakes Governors and a number of other regional interests, included water use and management; water quality; toxic hot spots; aquatic invasive species; human health; habitat/ wetlands; sustainable waterways (commercial and recreational); and research and decision support.

Conference organizers and participants recognized that Great Lakes protection and restoration, in its broadest sense, is enjoying renewed interest at the regional, national and binational levels. Numerous initiatives, ranging from small scale, site-specific restoration plans to large scale federal legislative initiatives, are under consideration. The intent of the conference, therefore, was to document and discuss these initiatives, explore and pursue collaborative relationships and, most importantly, to emphasize the fact that sustainability of the resource is the ultimate goal and must be accommodated in all such initiatives.

II Key Findings and Recommendations

Presented below is a summary listing of key findings and recommendations elicited from eight breakout sessions, each focusing on one of the protection and restoration priorities identified above. This summary is drawn directly from the notes of session facilitators and recorders. While formal consensus was not sought,

the statements do reflect the general views expressed by participants in each session, either individually or collectively. This information is presented to the community of Great Lakes-St. Lawrence interests for the purpose of informing discussions and actions toward ecosystem protection and restoration and, in so doing, advancing the development and application of sustainability principles.

The reader is referred to the Appendix for additional background on the conference, including partners, program and attendees list.

A. Water Use and Management

The ways in which the water resources of the binational Great Lake-St. Lawrence system are used and managed have profound implications for ecosystem sustainability and its environmental, economic, social and cultural dimensions. Initiatives of recent years, principally the development and implementation of Annex 2001 of the Great Lakes Charter, led by the Council of Great Lakes Governors, have placed an unprecedented level of attention on water quantity considerations. Session participants identified, as an overriding need, the development of a formal, science-based binational water management program that provides fair and equitable guidance for water use to ensure long term access to sustainable supplies of high quality water to meet ecological and social needs. They also recognized that our ability to manage water resources for sustainable use is compromised by an inadequate understanding of some hydrologic processes and dynamics such as the role of groundwater; current and projected uses; and the ecological and economic impacts of water withdrawal, diversion and consumptive use activity. Toward that end, the following recommendations were offered:

Research, Data and Information:

- Enhance understanding of groundwater resources and dynamics, including groundwater/ surface water interactions.
- Identify current and prospective areas of vulnerability/ ecological stress through more comprehensive water use reporting.
- Develop hydrologic/ flow models to help establish water budgets and determine water use limits to safeguard sustainability of the resource.
- Undertake research to link hydrologic changes with biological and water quality effects.
- Participate fully in the region's geologic mapping coalition to better understand the geologic attributes of the system.
- Address the water resource management implications of various climate change/ variability scenarios.
- Develop a decision support tool for water management activities, including scientific models, monitoring programs, water withdrawal reporting and analysis, and related research.

Planning and Policy:

- Ensure that the Annex 2001 process results in enhanced intergovernmental cooperation; embraces a watershed-based approach; incorporates science (including flow models) into all aspects of the decision-making process; recognizes and provides a process for incorporating the research from other entities into that process; fully addresses diversion issues involving communities in close proximity to the basin divide; and provides for market-based mechanisms that will encourage sustainable use.
- Incorporate water use and sustainability considerations in the agreements and decision processes of the International Joint Commission. Protection of natural flow regimes should be considered a prospective element of a revised Canada- United States Great Lakes Water Quality Agreement. The International Joint Commission should exercise a leadership role in establishing goals and priorities for enhanced binational water management, and consider a binational agreement(s) for flow regulation, and development and implementation of best management practices.

- Support and integrate relevant recommendations of the U.S. Commission on Ocean Policy with regard to research, policy and institutional requirements to promote more efficient and effective resource management. Also, consider recommendations of National Research Council, the U.S. Geological Survey and other policy/ research institutions.
- Engage in national/ international policy dialogues to fully understand and accommodate the implications of major agreements (e.g., GATT) and U.S. federal court and Supreme Court decisions affecting the legal standing of water resources and the ability of basin jurisdictions to exercise management oversight.
- Ensure that water management remains a matter of highest priority in the region for ecosystem protection and restoration, and, toward that end, ensure that the Great Lakes Commission and Council of Great Lakes Governors work together to provide a strong and unified voice for the region.
- Link land use issues with water resource management, particularly with regard to practices (e.g., waste disposal, hazardous waste management) that may adversely affect sources and supplies of water.
- Develop contingency plans to accommodate alternate climate change/ variability scenarios in policy and decisionmaking processes.
- Think creatively about, and apply new mechanisms that can advance sustainability, such as water resource trading systems (i.e., water bank).
- Include public awareness campaigns as an integral part of water use sustainability efforts, focusing on out-of-basin populations as well as in-basin populations.

B. Water Quality

Water quality is the centerpiece of ecosystem protection and restoration efforts and, in many ways, is the bellwether of success (or failure) in achieving sustainable use of the resource. The condition of other natural resources, including land and air, is ultimately reflected in the quality of our water. Session participants therefore recognized development, funding and implementation of water quality programs- at all levels of government- as the key to larger scale progress in ecosystem improvement and in achieving a state of sustainability that meets environmental, economic and social needs.

The Great Lakes-St. Lawrence system is home to a rich fabric of public agencies and institutions (and associated programs) focused on water quality improvement and protection. Session participants recognized that this foundation needs to be adequately funded, augmented by additional legislation and appropriations, properly monitored, and pursued as key component of a larger effort to achieve sustainability. Toward this end, the following recommendations were offered:

Existing Programs and Appropriations Needs:

- Call upon Congress to fully fund the Great Lakes Legacy Act of 2002 at the authorized level.
- Ensure that all water quality programs with a regional focus are well-coordinated, adequately funded, and consistent with sustainability goals.
- Enhance or establish monitoring programs, as well as modeling initiatives, that produce consistent and high quality data needed to assess progress and make informed decisions.

Planning and Policy:

- Develop modeling programs on an ecosystem scale that link current models and yield a decision support tool to better target water quality improvement programs.
- Reassess current methods of decisionmaking, and consider enhanced use of adaptive management techniques and a “weight-of-evidence” approach, given the dynamic nature of the resource and associated data and information limitations.

- Incorporate sustainable use management practices (e.g., precision agricultural techniques) into water quality programs and strengthen linkages with other resource management and use initiatives that impact water quality.
- Initiate a campaign to recognize the national and international significance of the Great Lakes, and ensure the programmatic focus (and associated funding) required.

New Legislation:

- Urge Congress to pass large scale ecosystem restoration legislation, and subsequently appropriate funds on a multi-billion dollar scale for relevant projects.
- Advocate for funds under such legislation to be available for multiple restoration-related activities including remediation of contaminated areas; purchase/ protection of sensitive areas; public access; and monitoring programs.

C. Toxic Hotspots

The Areas of Concern program established under the Canada-United States Great Lakes Water Quality Agreement of 1972 (as amended by Protocol in 1987), is generally considered the “flagship” initiative in ecosystem protection and restoration efforts. These 42 sites, all characterized by significant contaminated sediment problems and a host of other impaired beneficial uses, are a legacy of past use and abuse of the resource, and a focal point for current cleanup efforts. Session participants recognized that accelerated progress in cleaning up and delisting such sites is of paramount importance in ecosystem protection and restoration and, more generally, in efforts to achieve a sustainable Great Lakes. Recommendations included the following:

Approaches to Cleaning Up Toxic Hotspots:

- Recognize that each Area of Concern is unique and, consequently, should be allowed to pursue an individualized approach to cleanup and the reinstatement of beneficial uses.
- Characterize cleanup expenditures as an investment rather than a cost, given that reinstatement of beneficial uses will attract private sector investment.
- Recognize that a watershed based approach is essential from a sustainability standpoint to ensure that remediated sites are not recontaminated by improper actions in neighboring areas of that same watershed.
- Benefit from “lessons learned” from past successes and failures, particularly with regard to staffing and regulatory requirements; data and information gathering/ processing needs for decision support; sustainable funding for law enforcement, cleanup and pollution prevention; and permitting/ regulatory procedures.
- Identify end points and associated metrics for measuring success of individual cleanup initiatives, as well as associated strategies (e.g., best available technology vs. best practicable technology).
- Ensure efficient use of resources and gain the “buy-in” of the affected community by treating environmental “greening” programs as a business.

Decision Support Tools:

- Employ a science-based risk assessment methodology to prioritize and pursue cleanup efforts, and ensure that limited funds are targeted at the most significant problems.
- Articulate a desired “end point” for cleanup efforts to ensure a common understanding of what “restoration” means and determine when a state of sustainability has been achieved.

Sharing Responsibility:

- Cultivate leadership by nongovernmental organizations as a means to maintain cleanup progress and sustain financial support.
- Cultivate the support and active involvement of the impacted community to ensure that remedial action goals are achieved and the requisite level of political support is maintained.
- Provide funding support to nongovernmental organizations when they are best positioned to facilitate the partnerships, public involvement and political will needed to realize progress.
- Educate future generations about past environmental abuses and their consequences as a means to sustain the quality of remediated sites.

D. Aquatic Invasive Species

The introduction and spread of aquatic invasive species is considered by many to be the most pressing environmental issue of our day and the primary impediment to ecosystem protection and restoration efforts. This problem is an overriding concern from a sustainability perspective because it entails a fundamental disruption of, and permanent change to ecological processes that have profound environmental, economic, social and cultural implications. Addressing the problem in a manner that prevents further introductions and slows the spread of established populations has multiple and complex dimensions- and unmet needs- that include basic and applied research; monitoring and surveillance needs; development and testing of alternative technologies; early detection and rapid response needs; mechanisms for intergovernmental coordination; public education; and legislation, authorities and appropriations, among others. Harmonizing these efforts across jurisdictions and throughout the Great Lakes-St. Lawrence system is essential. Session participants offered a number of recommendations touching upon these various challenges and opportunities:

Federal Legislation/ International Agreements:

- Work toward enactment, funding and implementation of the National Aquatic Invasive Species Act (NAISA).
- Ensure that other relevant legislation – at the federal, state and provincial levels – provides requisite authorities and is also adequately funded and fully implemented.
- Use the recent International Maritime Organization treaty as a basis for further global progress and as an impetus for accelerated progress in the Great Lakes-St. Lawrence system.
- Ensure that the U.S. Coast Guard has the necessary authorizations and associated funding to effectively implement prevention and control programs.
- Incorporate aquatic invasive species requirements into trade agreements, and encourage “end consumers” to pressure shippers to alter practices.
- Levy a surcharge on vessels involved in commercial navigation, with the proceeds directed at prevention and control programs.
- Identify and employ emergency response legislation and programs that may help address the introduction threat posed by the Asian Carp.

Maritime Industry Initiatives:

- Establish incentives for ship owners to invest in ballast management technologies, and to meet/ exceed standards.
- Acknowledge ship owners and captains that are voluntarily placing ballast management technology on board.
- Consider “short sea shipping” arrangements whereby cargo is transferred from sea going to fresh water vessels.
- Strengthen regulatory approaches to ensure that all non-compliant vessels are denied access to the Great Lakes St. Lawrence Seaway system.

- Encourage industry to take a leadership role in problem resolution, including development and implementation of best management practices.

Consistency Across Jurisdictions:

- A binational agreement is needed to ensure that the United States and Canada adopt the same criteria and standards, and implement prevention and control programs in a consistent and coordinated manner.
- Ensure that all prevention and control plans are developed with the regional nature of the problem in mind, and are consistent and complementary.
- Increase the membership of the Great Lakes Panel on Aquatic Nuisance Species, and ensure that the Panel's authority is being fully exercised.
- Establish relationships with other regions in North America to strengthen efforts calling for federal actions.

Research Needs:

- Invest in ship design that avoids use of water as ballast or otherwise eliminates ballast water as a vector for invasive species.
- Encourage technology transfer within research, marine architecture and other communities to facilitate development of advanced ballast management measures.
- Study the issue of pathogens in ballast water to determine their viability, source area, and likelihood of outbreak.
- Undertake a comprehensive study of the range of aquatic invasive species in the system to develop a risk-based assessment focused on environmental and economic impacts.
- Document and examine, in detail, the full array of ballast management options including effectiveness, cost, transportation impacts, environmental implications and related considerations.
- Examine the issue from an economic perspective to help determine the most efficient and cost-effective approach (e.g., prevention, control, regulatory compliance, education).
- Document the economic cost of aquatic invasive species with greater precision to develop compelling arguments for prevention and control measures.
- Document the benefits of preventive measures (i.e., environmental and economic costs avoided).
- Develop an acceptable standard for concentration of invasive species in ballast water if zero discharge is not possible.
- Address current and prospective vectors of introduction and spread (beyond ballast water).
- Assess the risk associated with, and the implication of lakers spreading aquatic invasive species within the Great Lakes system.

Planning and Management Initiatives:

- Work aggressively to secure the funds/ authorizations needed to install a second, permanent dispersal barrier in the Chicago Sanitary and Ship Canal to prevent the introduction of the Asian Carp.
- Characterize the aquatic invasive species problem as one of biological pollution and water quality degradation to ensure a broader focus on prevention and control efforts.
- Establish monitoring programs sufficient to provide for early detection of aquatic invasive species and allow for an effective response before populations are established.
- Develop a rapid response program with consistent application basin-wide, with an associated public information and education component.
- Expand the role of the Federal Emergency Management Agency (FEMA) to help ensure a prompt and aggressive response to a new introduction.
- Integrate prevention and control efforts into the design of emerging observation networks.

- Collect data and information while policy initiatives are under consideration to ensure that decision support tools are in place when policies are established.

E. Human Health

A sustainable Great Lakes will be achieved only when science-based technologies, policies and programs are in place that protect and advance the health of all who live in the region. The challenges are formidable, but must be met. A legacy of resource use and abuse has compromised environmental quality in many areas of the basin, exposing residents to contaminants that have increasingly well-documented causal relationships with a range of diseases and other health problems. In recent years, beach closures, fish advisories, toxic air emissions and drinking water quality have been leading human health concerns in the region.

Efforts to reduce contaminant loads and effects must be complemented by monitoring programs; research into human health impacts; and a risk-based approach to communicating with the public. Session participants offered a number of recommendations concerning these and other dimensions of the human health challenge:

Research and Monitoring

- Undertake additional research on indicators of human health (e.g., E. coli) to ensure that they adequately represent health risks, and are reflected in associated policies.
- Develop and implement rapid assessment tools, for issues such as beach closures, to ensure that public health is protected.
- Embrace an ecosystem approach in human health research, examining multiple contaminants and their interactions as opposed to focusing on individual contaminants and their human health implications.
- Recognize the threat of methylmercury contamination via air deposition, and examine the human health implications of the U.S Environmental Protection Agency's "cap and trade" regulation for mercury emissions.

Communicating with the Public

- Enhance outreach and education concerning beach health and closures to better educate the public on risks and associated implications of exposure to contaminants.
- Place fish advisories in perspective when communicating with the public: benefits as well as risks need to be identified, and compared with the benefits/risks associated with other foods.
- Avoid an "alarmist" approach in communicating with the public on health implications of exposure to contaminants: focus on the facts and avoid politically-driven messages.
- Enhance online resources for reporting beach closures by adding inland water bodies and including more detail on potential health risks.

Consistency Among Jurisdictions

- Establish a regional clearinghouse for beach closure/ advisory information that includes all jurisdictions in the region and recognizes the range of procedures used for making and reporting closure information.
- Standardize fish consumption advisories throughout the Great Lakes region and improve the way in which such advisories are targeted to high-risk populations.

F. Habitat/ Wetlands

Coastal and near shore areas are the most biologically productive and ecologically sensitive areas of the binational Great Lakes- St. Lawrence region. They are also the locus of development pressures, population

increases and associated stresses that have compromised, or threaten to compromise, the integrity of the resource. Wetlands and other natural habitat features, whether in coastal areas or inland, are an integral part of the ecosystem and their functions are essential to a sustainable Great Lakes.

Session participants spoke to the importance of protecting existing wetlands through tools that include inventories, monitoring programs, conservation strategies, land use planning, and education. They also emphasized the need to set – and achieve – specific targets for preservation. Numerous recommendations were offered in several areas:

Wetland Inventories and Mapping:

- Develop and maintain a comprehensive, basinwide inventory of wetlands that includes data and information on wetland loss; trends; conditions; functional services; social values; threatened habitats; and restoration priorities.
- Organize an annual event at which the status and trends of Great Lakes wetlands are addressed, and the work of a range of agencies and organizations is showcased and coordinated.
- Identify local areas of high quality habitat and preservation needs.
- Broaden studies that address nearshore habitat, and establish and apply criteria for selecting priority areas; multiple initiatives are underway to build upon.
- Compile all existing programs into a data base readily available to the public.
- Develop and implement a basinwide strategic plan for wetlands conservation.
- Increase support for the National Wetland Inventory.

Regulations and Incentives for Wetland/ Habitat Protection:

- Establish incentives for private landowners to undertake projects that include shoreline erosion control and wetlands creation.
- Establish incentives for municipalities to establish/ enhance zoning and planning programs that protect wetlands and habitat.
- Strengthen regulations to address stream/ wetland impacts in rapidly developing areas in the interest of protecting remaining habitat.
- Enhance the regulatory emphasis within the NPDES Phase II storm water program, including enforcement.
- Enact and enforce zoning ordinances to prevent habitat destruction, as well as state and federal permit programs.
- Eliminate undue political influence over regulatory decisions by ensuring that science is the driving force in appointments to public bodies.
- Preserve natural functions of coastal wetlands (e.g., fish spawning, flood control) by avoiding infrastructure that compromises natural water level fluctuations.

Planning and Research:

- Ensure that local level planning is undertaken to identify high quality areas for protection and restoration, and to identify/ pursue opportunities to connect natural areas via corridors.
- Ensure that aquatic habitat and wetland conservation programs are driven by large scale, multi-agency planning programs that engage the support and involvement of the public.
- Build upon the considerable amount of work already being accomplished via the State of the Lakes Ecosystem Conference (SOLEC) process; Lakewide Management Plans; Remedial Action Plans; Farm Bill conservation programs; U. S Army Corps of Engineers programs; U.S. Geological Survey studies; U.S Fish and Wildlife Service efforts; National Oceanic and Atmospheric Administration restoration programs; Bird Studies Canada efforts; various state programs; Ducks Unlimited wetland conservation programs; numerous projects of The Nature Conservancy; local land conservancy efforts; and related initiatives.

- Focus on urban areas to prevent destruction of habitat in non-pristine areas and to create wildlife habitat as well.
- Enhance emphasis on upland habitat and its importance from a downstream water quality perspective.
- Initiate studies that improve understanding of hydrology and its impacts on the long-term viability of wetlands, and develop measures of viability for certain species, communities and ecosystems.
- Develop additional “greenspace” plans for use by local officials, using state bonding capabilities to generate necessary funds.
- Initiate a “balanced growth initiative” in key areas, such as that pursued by the Ohio Lake Erie Commission, and featuring identification of priority conservation areas and priority development areas.
- Integrate planning efforts across all basin jurisdictions and at the local/ state/ regional levels.
- Develop the wetlands/ habitat component of the SOLEC Indicator Initiative, and establish a monitoring/ reporting program for the Great Lakes.
- Establish clear targets for habitat protection/ creation, particularly in urbanized areas.

Citizen/ Nongovernmental Role:

- Expand the role of citizen groups by encouraging their involvement in monitoring, protection and “adoption” of species or habitat (e.g., Ohio’s eagle nest watchers; Wisconsin’s sturgeon habitat citizens groups).
- Advance local “grassroots” initiatives to alter zoning regimes and prevent habitat destruction at the urban fringe and beyond.
- Fund local nongovernmental organizations to work on watershed-based land use, wetlands mitigation and riparian best management practices initiatives.
- Use land trusts as a vehicle for enhanced outreach and partnering on wetlands/ habitat issues, and ensure that they are involved in the Lakewide Management Plan process for each lake.
- Develop public information programs that target, in addition to shoreline property owners, those that benefit from coastal wetlands/ habitat resources but do not live on the water.
- Focus on the economic, as well as environmental benefits of wetlands/ habitat protection when seeking support for programs.

Legislative and Appropriations Needs:

- Educate state legislators on wetlands sustainability and the dangers of legislative initiatives concerning “beach grooming” that can result in the destruction of coastal wetlands.
- Raise the cap on the Corps’ Water Resources Development Act funds.
- Work with legislators at all levels (local to federal) to highlight the need for Great Lakes ecosystem restoration and the importance of connecting political, social and economic needs to realize environmental, economic and social benefits.

Developing and Advancing Priorities:

- Influence local-level decisionmaking to develop and implement a range of watershed protection techniques that include zoning; development guidelines; technical assistance for best management practices; and monitoring to document benefits and costs.
- Collectively assess fish and wildlife restoration priorities on a basinwide basis, and follow with a consortium of interests that can advance those priorities.
- Develop a shared vision and mechanism to ensure a coordinated, unified approach to identifying and addressing priorities for wetlands and habitat protection and, more generally, for ecosystem restoration.

- Develop and maintain a regional “wish list” of sites for restoration and protection to ensure that all parties are aware of the respective interests of their partners.
- Consider partnering, rather than competing, with other regions in the interest of advancing individual and collective funding needs.

G. Sustainable Waterways (Commercial and Recreational)

The Great Lakes-St. Lawrence region enjoys a rich maritime heritage that factors into all aspects of ecosystem protection, restoration and sustainable use. As a primary mode of commercial transport and factor of production through much of the region’s history, the Great Lakes and St. Lawrence River have had a tremendous- and lasting- impact on how and where the region was settled, the nature and location of business and industry, and the strength and diversity of its economic base. Such an impact is equally profound with respect to recreational uses of the region’s waterways, including boating and other water-based sports and leisure activities.

Session participants recognized the challenge of maintaining the region’s waterways for commercial and recreational benefit while, at the same time, ensuring that such uses are environmentally sound and sustainable. Enhanced understanding – and quantification – of the environmental, economic and social benefits of these uses was identified as a necessary precursor to any future decisions concerning resource development and protection. Recommended actions included the following:

Quantifying Benefits and Costs:

- Generate the data and information needed to quantify the economic, environmental and social impacts of all maritime transportation activity – both commercial and recreational – as a basis for decisionmaking.
- Using relevant data and information, identify areas of the region that warrant further development for commercial and recreational purposes, and those areas that should be protected from such development.
- Generate the data and information needed to justify an investment in dredging of shallow draft recreational harbors.
- Address the needs of the recreational boating community for dredging, infrastructure and related services; use results from the ongoing economic impacts study under the John Glenn Great Lakes Basin Program (Water Resources Development Act-1999).
- Incorporate commercial and recreational boating considerations in sustainable growth initiatives; include economists in such initiatives to provide an important dimension.

Education and Information:

- Document and educate the public about the contributions of commercial and recreational navigation to the region’s economy, environment and quality of life.
- Develop and/or strengthen alliances within and among the commercial and recreational navigation sectors in the interest of more effectively informing legislators of the benefits and importance of waterways use and maintenance.
- Improve tourism opportunities within the region by creating and marketing an image that celebrates the region’s maritime heritage.

H. Research and Decision Support

Data and information are the lifeblood of well-informed resource management decisions. Further, they provide the basis for identifying sustainability goals and determining progress in meeting them. Generating, sharing, interpreting and applying data and information are daunting tasks in the expansive Great Lakes- St.

Lawrence region; tasks complicated by the complexity of the ecosystem, the diversity of uses, the number of entities charged with management responsibilities, and the costs associated with developing and maintaining data and information management systems.

Session participants took a decided “application-oriented” approach to this issue, focusing on the need to develop decision support tools that respond to the pressing policy needs of the day. Inter-jurisdictional coordination – particularly between United States and Canadian governmental agencies – was of particular interest. It was noted that public and political interest in large scale observing systems and other decision support tools has been increasing, suggesting that a “window of opportunity” may be available over the near term to advance various initiatives. Recommendations included the following:

Decision Support Systems:

- Build upon numerous current initiatives coordinated by the Great Lakes Commission, including the Great Lakes Observing System; Biohydrological Inventory; Great Lakes Monitoring Inventory; and Great Lakes Information and Data Exchange.
- Build upon the Council of Great Lakes Governors’ Annex 2001 implementation initiative for development of a decision support system, including Great Lakes Commission coordination of the initial information gathering phase of a Water Resources Management Decision Support System for the Great Lakes.
- Conduct the research and data collection needed to develop and implement an ecosystem forecasting system for each lake.
- Expand the existing Great Lakes Commission data base into a basinwide GIS-related data base that can be used to inform sustainability decisions.
- Fulfill the commitments of the Great Lakes Charter and Annex 2001, and focus on developing/ applying risk assessment tools; integrated watershed management; consistency in data collection; adaptive management; and effective use of indicators.
- Develop decision tools that address probabilistic outcomes such as risk and uncertainty; incorporate competing objectives; and go beyond traditional decision models that have failed to address the complexity of the Great Lakes St. Lawrence system.
- Develop/ enhance capability for real time satellite download of data in the event of an emergency response situation.
- Pursue opportunities to employ a multi-objective consensus-building tool, such as the “Shared Vision” model used in the Lake Ontario-St. Lawrence Study, to address and achieve sustainability goals.
- Ensure that decision models account for uncertainty: they must be matched with the data/ information available.
- Ensure that all decision support systems are based upon best available science.

Data Generation and Availability:

- Resolve difficulties in accessing Canadian data to ensure timely receipt and use in research and management initiatives.
- Update coastal wetlands maps and develop associated tools for forecasting land use/ land cover changes.
- Develop a reliable data source that tracks patterns of coastal erosion, severity, and property at risk.
- Employ tools such as the National Oceanic and Atmospheric Administration’s Query Manager- a database management tool that allows multiple data sets to be searched using common queries.
- Strive for consistency in data development to maximize use and application.

Research Needs:

- Support development of a Great Lakes Research Coordination Strategy, as initiated by the International Joint Commission's Council of Great Lakes Research Managers.
- Support studies to enhance understanding of hydrology and its impacts on the long term viability of wetlands.
- Support physical environmental studies that include the implications of shoreline "hardening" for nearshore habitat, and explore infrastructure alternatives that are ecologically compatible.
- Improve understanding of relationship between water withdrawals and ecosystem needs through mapping, better data and models.
- Pursue opportunities to link various models (e.g., physical, biological, demographic) to accommodate and integrate large amounts of complex information.
- Improve understanding of sediment sources and their impact on coastal areas.
- Develop indicators and criteria for the lakes – both near shore and open waters – that address items such as historical conditions; shoreline habitat; and ecosystem stresses within watersheds, nearshore and open water areas.
- Identify outcomes and performance measures for Great Lakes research to ensure that it is properly targeted, efficiently conducted, and fully applied.
- Undertake watershed-based studies that integrate the "art and science" of watershed management and integrate modeling, monitoring and implementation components of the management process.

Monitoring Programs and Networks:

- Enhance support for monitoring programs and develop a regional repository to ensure ready access to associated data from multiple sources.
- Using tools for measuring hydrologic change due to water withdrawals and returns (as developed by The Nature Conservancy), characterize coastal processes and restore them in priority areas.
- Integrate and standardize monitoring networks to improve data availability and discovery; enhance public outreach; and link monitoring and research activities with decision support systems.
- Establish tributary monitoring programs (such as that underway in Ohio) to provide current and historical data on total loading of sediments, nutrients and pesticides.
- Establish citizen monitoring networks as vehicle for education, awareness, and extending research monitoring capability.
- Develop clear objectives and desired outcomes for monitoring programs in the interest of gaining public support.
- Encourage use of best management practices by providing local officials with ready access to research results and applications.

Outreach, Coordination and Advocacy:

- Enhance coordination of research vessels and related equipment to maximize efficiency.
- Establish a well-coordinated communications program with a single web site linked to all others, and an online newsletter that addresses current research, monitoring activities and new products.
- Develop data sharing agreements between United States and Canadian public agencies to ensure that GIS data bases, metadata and related information are consistent and seamless.
- Designate a "data steward" with primary responsibility for coordinating data/ information holdings; developing a communications protocol; implementing a Quality Assurance/ Quality Control program; and promoting comprehensiveness, consistency and ready access.
- Expand services/ features of the Great Lakes Information Network, using it as a clearinghouse and tool to integrate data holdings and access.
- Ensure improved coordination and collaboration among major research agencies and institutions through development of Memoranda of Understanding.

- Pursue cooperative arrangements with other regions and countries where data sharing and collaborative research will have mutual benefits.
- Undertake a unified advocacy effort (public and private sector interests) to urge Congress to invest in key initiatives relating to ecosystem protection, restoration and sustainable use.

III. Conclusions and Next Steps

The many partner agencies and organizations hosting the “Actions Toward a Sustainable Great Lakes” conference had a single objective in mind: to ensure that sustainability is the foundation of ecosystem protection and restoration efforts in the binational Great Lakes-St. Lawrence basin. Whether the initiative is a modest sub-watershed activity or a basinwide program on a grand scale, it is essential that environmental, economic, social and cultural dimensions are recognized in the planning, design and implementation stages. It is for this reason that a diverse group of individuals convened to initiate a dialogue and help foster an evolution of thought that embraces sustainability as a guiding force.

Recent years have seen a re-birth of interest in large-scale ecosystem protection and restoration in the binational Great Lakes-St. Lawrence basin. Ambitious legislative initiatives have been proffered by Great Lakes leadership in Congress, implementation of a presidential Executive Order on the Great Lakes is moving forward, a multiplicity of restoration-related plans and strategies has been produced by stakeholder agencies and organizations within and outside of government and, more generally, public consciousness has been raised. Additional initiatives will undoubtedly follow as the region’s leadership and stakeholders help shape the evolution of basin governance and associated protection and restoration initiatives. As this evolution moves forward, we urge all parties to carefully consider, and incorporate where possible, the many recommendations resulting from the “Actions Toward a Sustainable Great Lakes” conference. Only through such action, and only by engaging *all* stakeholders with a commitment to this region, can we hope to move the notion of sustainability from concept to application.

APPENDIX

- A. Partner Agencies and Organizations
- B. Conference Program
- C. Attendees

APPENDIX A

Conference Partners Actions Toward A Sustainable Great Lakes

American Great Lakes Ports Association	Ohio Dept. of Natural Resources
Baird and Associates	Ohio Sea Grant
Canadian Consulate, Detroit	SAIC
Chippewa Ottawa Resource Authority	The Nature Conservancy
Cuyahoga River RAP	The Ohio State University
Ducks Unlimited	U.S. Army Corps of Engineers
Great Lakes Commission	U.S. Coast Guard
Great Lakes Fishery Commission	U.S. Department of Agriculture, Natural Resources Conservation Service
Illinois/Indiana Sea Grant	U.S. Environmental Protection Agency
Lake Carriers- Association	U.S. Fish and Wildlife Service
Lake Erie Marine Trades Association	U.S. Geological Survey
Limno-Tech, Inc.	Weston Solutions, Inc.
Michigan Department of Environmental Quality	
Michigan Sea Grant	
National Oceanic and Atmospheric Administration	

APPENDIX B



Actions Toward A Sustainable Great Lakes

CONFERENCE

May 4B6, 2004

Sheraton Cleveland City Centre Hotel, 777 St. Clair Avenue, Cleveland, Ohio

Final Program

Tuesday, May 4

5:00 pm B 7:00 pm

Opening Reception (Fuldheim Room)

Sponsored by SAIC

Wednesday, May 5

7:00 am B 5:00 pm

Registration (East Ballroom)

7:30 am B 10:00 am

Continental Breakfast

Sponsored by Weston Solutions, Inc.

8:00 am – 8:05 am

Binational Color Guard

8:05 am – 8:15 am

Conference Welcome

Brigadier General (P) Steven R. Hawkins, Commander, Great Lakes and Ohio River Division; U.S. Army Corps of Engineers (USACE)

Lieutenant Colonel Jeffrey M. Hall, Commander, Buffalo District, U.S. Army Corps of Engineers

Dr. Michael J. Donahue, President/CEO, Great Lakes Commission

8:15 am – 8:25 am

Canadian Welcome

Rocco Delvecchio, Consul General, Canadian Consulate General, Detroit

8:25 am – 8:35 am

Welcome to Cleveland

The Honorable Jane L. Campbell, Mayor, City of Cleveland

8:35 am – 9:05 am

Opening Keynote

The Honorable Bob Taft, Governor of Ohio and Chair, Council of Great Lakes Governors

9:05 am B 10:00 am

Toward A Shared Vision for a Sustainable Great Lakes

Moderator: Craig Czarnecki, Michigan Field Supervisor, U.S. Fish and Wildlife Service

– *Senator Mike DeWine (OH)-via video*

– *Senator George Voinovich (OH)-via video*

– *Thomas Skinner, Administrator, Region V, U.S. Environmental Protection Agency*

– *Representative, Canadian federal government (invited)*

– *Robyn Thorson, Regional Director, U.S. Fish and Wildlife Service*

10:00 am B 10:15 am

Break

10:15 am B Noon

Toward A Shared Vision for a Sustainable Great Lakes (cont-d)

Moderator: *Paul Freedman, President, Limno-Tech, Inc.*

– *Chris Jones, Chair, Restoration Priorities Task Force, Council of Great Lakes Governors*

– *Dennis Schornack, Chair, United States Section, International Joint Commission*

– *George Kuper, President/CEO, Council of Great Lakes Industries*

– *John A. Andersen, Jr., Great Lakes Director, The Nature Conservancy*

Noon B 1:15 pm

Lunch (Fuldheim Room)

Keynote Presentation: *Binational Efforts to Achieve Sustainability: The Canada-U.S. Great Lakes Water Quality Agreement*

The Right Honorable Herb Gray, Chair, Canadian Section, International Joint Commission

1:15 pm B1:30 pm

Charge to Breakout Groups: *Dr. Michael J. Donahue, Great Lakes Commission*

1:30 pm B 3:00 pm

Concurrent Sessions

Session A: Water Use and Management (Ritz Room)

– *Session Sponsors: Great Lakes Commission; Ohio Department of Natural Resources; U.S. Geological Survey*

– *Facilitator: Tom Crane, Great Lakes Commission*

– *Speakers: Sam Speck, Ohio Department of Natural Resources; Jim Nicholas, U.S. Geological Survey*

– *Resource Person: Michele Hoffer, Ohio Department of Natural Resources*

Session B: Water Quality (Hassler Room)

– *Session Sponsors: Natural Resources Conservation Service; Ohio Sea Grant/OSU B Stone Laboratory*

– *Facilitator: Paul DeArman, Natural Resources Conservation Service*

– *Speakers: Jeff Reutter, Ohio Sea Grant; Steve Davis, Natural Resources Conservation Service*

– *Resource People: Joe DePinto, Limno-Tech, Inc.; Roger Thomas, Ohio EPA; David Baker, Heidelberg College*

Session C: Toxic Hotspots (Dolder Room)

– *Session Sponsors: International Joint Commission, Cuyahoga River (RAP), SAIC*

– *Facilitator: Sam Insalaco, SAIC*

– *Speakers: Bruce Kirschner, International Joint Commission; Jim White, Cuyahoga River Remedial Action Plan*

– *Resource People: Paul Alsenas, Cuyahoga County Planning Commission; Richard Menozzi, U.S. Steel Corporation; David Nash, Sustainable Cleveland; Mark Madras, Gowling LLP, Toronto; Mark Elster, USEPA-Great Lakes National Program Office*

Session D: Aquatic Invasive Species (Allen Room - 7th Floor)

– *Session Sponsors: Great Lakes Fishery Commission; Lake Carriers= Association; Ohio Sea Grant/OSU B Stone Laboratory; USACE, Chicago*

– *Facilitator: Marc Gaden, Great Lakes Fishery Commission*

– *Speakers: Jim Weakley, Lake Carriers= Association; Dr. Hugh MacIsaac, University of Windsor*

– *Resource People: Chuck Shea, USACE, Chicago, Captain Randy Helland, U.S. Coast Guard*

3:00 pm B 3:15 pm	Break
3:15 pm B 5:00 pm	Repeat Concurrent Sessions
5:00 pm	Adjourn for Evening Activities at Great Lakes Science Center
6:00 pm B 7:00 pm	Reception
7:00 pm B 8:30 pm	Dinner Sponsored by SAIC <i>Emceed by Lieutenant Colonel Thomas Magness, USACE, Detroit. Remarks by Maury Walsh, Corporate Vice President, SAIC and, representative, Great Lakes Science Center.</i>

Thursday, May 6

7:30 am B 10:00 am	Registration and Continental Breakfast (East Ballroom)
8:00 am B 8:15 am	Day One Review and Day Two Activities <i>enant Colonel Jeffrey M. Hall, USACE, Buffalo</i>
8:15 am B 10:00 am	Concurrent Sessions
	Session E: Human Health (Allen Room - 7th Floor)
	– <i>Session Sponsors: Limno-Tech, Inc.; USACE, Buffalo</i>
	– <i>Facilitator: Paul Freedman, Limno-Tech;</i>
	– <i>Speakers: James Pendergast, Chief, Health Protection and Modeling Branch U.S. Environmental Protection Agency; Dr. Chris DeRosa, Agency for Toxic Substances Disease Registry</i>
	– <i>Resource People: Lester Stumpe, Northeast Ohio Regional Sewer District; Karen Kiel, USACE, Buffalo</i>
	Session F: Habitat/Wetlands (Hassler Room)
	– <i>Session Sponsors: Ducks Unlimited; U.S. Fish and Wildlife Service</i>
	– <i>Facilitator: Mary Knapp, Supervisor, USFWS, Ohio; David Stilwell, Supervisor, USFWS, New York (next concurrent session)</i>
	– <i>Speakers: Steven A. Gray, Chief Ohio Department of Natural Resources Division of Wildlife; Mike Donofrio, Director of Natural Resources, Keweenaw Bay Indian Community</i>
	– <i>Resource People: Gildo Tori, Ducks Unlimited; Doug Wilcox, U.S. Geological Survey, Great Lakes Science Center; Jerry McClain, USFWS; Sandie Doran, USACE, Buffalo; Dennis McKee, Consumers Energy</i>
	Session G: Sustainable Waterways: Commercial and Recreational (Dolder Room)
	– <i>Session Sponsors: Lake Carriers=Association, Weston Solutions, Inc.</i>
	– <i>Facilitator: Pat Kelly, Weston Solutions, Inc</i>
	– <i>Speakers: Norm Schultz, Lake Erie Marine Trades Association; Glen G. Nekvasil, Lake Carriers=Association</i>
	– <i>Resource People: Gary Failor, Cleveland-Cuyahoga County Port Authority; Bill McGarry, Ohio Department of Natural Resources; Stephen Burnett, Great Lakes Cruising Coalition; Melinda Huntley, Lake Erie Coastal Ohio, Inc.</i>

Session H: Research and Decision Support (White Room - 7th Floor)

– *Session Sponsors: Great Lakes Commission; US Geological Survey*

– *Facilitator: Roger Gauthier, Great Lakes Commission*

– *Speakers: Norm Grannemann, US Geological Survey; Thomas Rayburn, Great Lakes Commission*

– *Resource Person: Pete Zuzek, Baird and Associates*

10:00 - 10:15

Break

10:15 B Noon

Repeat Concurrent Sessions

Noon B 1:15 pm

Lunch (Box Lunch - East Ballroom)

Keynote Presentation: "Value of a Sustainable Great Lakes"

David Ullrich, Director, Great Lakes Cities Initiative

1:15 pm B 2:30 pm

Reporting Out and Discussion

Facilitators: Lieutenant Colonel Jeffrey M. Hall and Tony Friona, USACE, Buffalo

2:30 pm B 3:15 pm

Putting Ideas into Action

Facilitator: Lieutenant Colonel Jeffrey M. Hall, USACE, Buffalo

Speakers: Bonnie Kranzer, South Florida Water Management District; Joe Miller, Weston Solutions, Inc.

3:15 B 3:30 pm

Closing Remarks: Next Steps

Dr. Michael J. Donahue, Great Lakes Commission

Lieutenant Colonel Jeffrey M. Hall, USACE, Buffalo

Colonel Gary E. Johnston, USACE, Chicago

3:30 pm

Adjourn

APPENDIX C

Registrants "Actions Toward a Sustainable Great Lakes" Conference May 4-6, 2004 Sheraton Cleveland City Centre Hotel

Bob Adair
Great Lakes Fishery Program
U.S. Fish & Wildlife Service

Matt Adkins
Coastal NPS Coordinator
Division of Soil and Water
Conservation
Ohio Dept. of Natural Resources

Kofi Fynn Aikins
U.S. Fish and Wildlife Service

Jon W. Allan
Director of Environmental Services
Consumers Energy Company

Paul Alsenas, Director
Cuyahoga County Planning
Commission

Lesta Ammons, Biologist
U.S. Army Corps of Engineers

John A. Andersen Jr.
Great Lakes Director
Great Lakes Program
The Nature Conservancy

Don Arcuri
Great Lakes Fishery Commission

Rebecca Arenson
Marine Resources Specialist
Office of Response and Restoration
NOAA

David Baker
Heidelberg College

Joseph B. Baker Jr.
Public Affairs
Buffalo District
U.S. Army Corps of Engineers

Gerald W. Barnes
Director of Programs
U.S. Army Corps of Engineers

Arthur M. Barnett
Weston Solutions

Erin Battison, Project Manager
Center for Humans and Nature

Mary Lynn Becker
Public Affairs Officer
Canadian Consulate General

Dale Bergeron
Information Specialist
Duluth Seaway Port Authority

J. Michael Betteker
Environmental Engineer
Tetra Tech

Terry Black, Chief
Regulatory & Development Section
PA Dept of Environmental
Protection

Lori Boughton
Director
Office of the Great Lakes
PA Dept of Environmental
Protection

Keith Bowers, President
Biohabitats, Inc.

Margaret M. Brady
Habitat Restoration Coordinator
NOAA

David Brakhage
Director of Conservation Programs
Ducks Unlimited, Inc.

Christine M. Brayman
Chief Planning Branch
Buffalo District
U.S. Army Corps of Engineers

Irene Brooks
Commissioner
International Joint Commission

Jonathan W. Brown
Regional Economist
Buffalo District
U.S. Army Corps of Engineers

Theodore A. Brown
Chief, Planning and Policy
U.S. Army Corps of Engineers

Stephen Burnett
Great Lakes Cruising Coalition

Dan Button
Specialist
U.S. Geological Survey

Jim Cantrill
U.S. Committee Chair
Lake Superior Binational Program

Leon M. Carl
Director
Great Lakes Science Center
USGS

Kay Carlson
Program Director
Lake Erie Watershed
The Nature Conservancy

Steve Carpenter
Sr. Program Manager
Petro Environmental Technologies

Bill Carr
Team Leader, Western Hemisphere
Ontario Ministry of
Intergovernmental Affairs

Edith Chase, President
OCRMP

Donna Childs
Sanitarian
Cuyahoga County Board of Health

Gavin Christie
Great Lakes Fishery Commission

Tom Crane
Program Manager
Resource Management
Great Lakes Commission

Craig A. Czarnecki
Field Supervisor
U.S. Fish and Wildlife Service

Thuy Dao
Assistant District Counsel
U.S. Army Corps of Engineers

Michael R. Darrow
Deputy Commander
U.S. Army Corps of Engineers

Marquietta Davis
Public Outreach Specialist
Tetra Tech, Inc.

Steve Davis
Resource Conservationist
Natural Resources Conservation
Service

Paul DeArman
State Resource Conservationist
Natural Resources Conservation
Service

Ken DeBeaussaert
Director
Office of the Great Lakes
MI Dept. of Environmental Quality

John P. Debo Jr.
Superintendent
Cuyahoga Valley National Park

Roy J. Deda
Deputy for Project Management
U.S. Army Corps of Engineers

Rocco Delvecchio
Consul General
Canadian Consulate General

Joseph V. DePinto
Senior Scientist
Limno-Tech, Inc

Christopher T. De Rosa
Director
ATSDR

Jon W. Dettling
Great Lakes Commission -
Sea Grant Fellow

Jeffrey M. Dick
Vice President/Division Manager
SAIC

Michael J. Donahue
President/CEO
Great Lakes Commission

Michael Donofrio
Natural Resources Director
Keweenaw Bay Indian Comm.

Sandra L. Doran
Biologist
U.S. Army Corps of Engineers

Delfina Duarte
Real Estate Manger
Hamilton Port Authority

Mark Elster
Senior Program Analyst
Great Lakes National Program
Office
U.S. EPA

Gary L. Failor
Executive Director
Port of Cleveland

Jerome Faivre
Adviser
Ministry of Environment Quebec

Neal Feeken
Assistant Regional Director
National Fish and Wildlife
Foundation

Andrew Ferguson
Superintendent
NPS - Perry's Victory Memorial

Michael J. Fischer, Policy Advisor
Office of Lieutenant Governor
Pat Quinn
State of Illinois

Kimberly J. Fisher
U.S. Army Corps of Engineers

Gene Fleming
Chicago District
U.S. Army Corps of Engineers

Gordon S. Fraser
Director
Great Lakes Center

Paul L. Freedman
President
Limno-Tech, Inc.

Anthony Friona
Buffalo District
U.S. Army Corps of Engineers

Mike B. Fulford
Deputy, Project Management
Detroit District
U.S. Army Corps of Engineers

Marc Gaden
Great Lakes Fishery Commission

Lynn Garrity

Roger Gauthier
Program Manager
Data and Information Management
Great Lakes Commission

Dean Geers
Sr. Client Service Manager
Weston Solutions, Inc.

Neal A. Gehring, P.E.
Sr. Project Consultant
NTH Consultants, Ltd.

Joe Genovese
U.S. Fish and Wildlife Service

Patrick Giammarco
Marketing Representative
Toledo-Lucas County Port Authority

Christopher Glanz
Acting Planning Chief
Detroit District
U.S. Army Corps of Engineers

John Goss, Director
IN Dept. of Natural Resources

Norm Grannemann
Hydrologist
Water Resources Division
U.S. Geological Survey

Herb Gray, Chair
Canadian Section
International Joint Commission

Steven A. Gray, Chief
Division of Wildlife
Ohio Dept. of Natural Resources

Richard Greenwood, Team Leader
Great Lakes Ecosystem
U.S. Fish and Wildlife Service

Andy Guy
Director
Great Lakes Project
Michigan Land Use Institute

Jeffrey M. Hall
Commander
Buffalo District
U.S. Army Corps of Engineers

Colleen Haney
Executive Assistant
U.S. Army Corps of Engineers

David Hanselmann, Chief
Division of Soil and Water
Ohio Dept. of Natural Resources

William Harder
Programs Manager
Great Lakes and Ohio River Div.
U.S. Army Corps of Engineers

Richard W. Harkins
Vice President - Operations
Lake Carriers' Association

Steven R. Hawkins
Commander
Great Lakes and Ohio River Div.
U.S. Army Corps of Engineers

Chris Helgeson
Sales Manager
Vortechincs

Randy Helland, Chief
Marine Safety Division
Ninth Coast Guard District

Heather Henneman
U.S. Army Corps of Engineers

Wilhelmenia Chris Hinton-Lee
Director
Great Lakes and Ohio River Div.
U.S. Army Corps of Engineers

Nick Heisler
Senior Adviser to the Chair
International Joint Commission

Michele Hoffer,
Assistant to the Director
Ohio Dept. of Natural Resources

Steve Holland
Consistency Coordinator
Office of Coastal Management
Ohio DNR

Michele Hope, Project Manager
Buffalo District
U.S. Army Corps of Engineers

Matthew Horvat
Maumee River Coordinator
TMACOG

George Host
Senior Research Associate
University of Minnesota

Brian Huberty
NWI Coordinator
U.S. Fish and Wildlife Service

C. Jeannie Hull
Executive Liaison Officer
Great Lakes and Ohio River Div.
U.S. Army Corps of Engineers

Melinda Huntley
Lake Erie Coastal Ohio

Adele M. Hurley, Director
Program on Water Issues
Munk Centre

Samuel E. Insalaco
Vice President/Program Manager
SAIC

Donna Johnston
Research Associate
UT Urban Affairs Center
University of Toledo

Gary E. Johnston
Commander/District Engineer
Chicago District
U.S. Army Corps of Engineers

Christopher Jones, Director
OH EPA

Patrick Jones
Chief, Public Affairs
Buffalo District
U.S. Army Corps of Engineers

Karen Keil
U.S. Army Corps of Engineers

Pamela Kelly
TestAmerica

Pat Kelly
Weston Solutions, Inc.

Samantha Kemp-Welch
Policy Advisor - Great Lakes
Environment Canada

John K. Kerr
Economic Development Specialist
Detroit Wayne County Port
Authority

Varden Kheroyan
Lecturer
Financial Academy

Stephen G. Kilper
Senior Consultant
ENTRIX

Bruce Kirschner
Environmental Scientist
International Joint Commission

Michael Klepinger
Environmental Specialist
Michigan State University

Mary Lynn Knapp, Field Supervisor
U.S. Fish & Wildlife Service

David Knight, Project Manager
Transportation and Sustainable
Development
Great Lakes Commission

Roger L. Knight
Fisheries Administrator
Division of Wildlife
Ohio Dept. of Natural Resources

Bonnie Kranzer
Weston Solutions, Inc.

Kevin Kratt, Project Manager
Tetra Tech

Marleen Kromer
Director of Conservation
Operations
The Nature Conservancy

George H. Kuper
President
Council of Great Lakes Industries

Michele Lafleur
Charge d'affaires
Quebec Delegation - Chicago
Government of Québec

Lisa M. Lange
Business Development Specialist
Weston Solutions, Inc.

David Lanzola
Severn Trent Laboratories

Paul C. Larsen
Office Director/Principal Engineer
NTH Consultants, Ltd.

Wendy Larson
Environmental Scientist
Limno-Tech. Inc.

Jen Lawton
Coastal Resource Coordinator
NOAA

Frank Lichtkoppler
District Specialist
Ohio Sea Grant
Ohio State University

Barbara Liukkonen
Water Resources Education
Coordinator
Water Resources Center
University of Minnesota

Constance J. Livchak
Geologist Supervisor
OH DNR

Jennifer Loerch
Environmental Scientist
SAIC

David Mackey, Chief
Office of Coastal Management
OH DNR
Mark Madras, Partner
Gowling, Lafleur, Henderson, LLP

Thomas H. Magness
District Commander – Detroit
U.S. Army Corps of Engineers

Jon MacDonagh-Dumler
Program Manager
Regional Coordination
Great Lakes Commission

Hugh MacIsaac
University of Windsor

Angela Marsh
Biologist
Allegheny Ecological Consulting

Mike Matta, Advisor
Great Lakes Fishery Commission

Jerry McClain, Project Leader
U.S. Fish and Wildlife Service

Bill McGarry
OH Dept. of Natural Resources

Dennis McKee
Consumers Energy

Richard Menozzi
Director, Environmental
Remediation
U.S. Steel Corporation

Frank S. Merritt, Chair
Legal Institute of the Great Lakes
University of Toledo, College of Law

William Merte
Engineering Manager
U.S. Army Corps of Engineers

Steve Metzger, Manager
Planning and Ecological Services
DLZ

Jan Miller
Environmental Engineer
U.S. Army Corps of Engineers

Joe R. Miller
Senior Client Service Manager
Weston Solutions

John Mills
Regional Director General
Environment Canada

Mike Molnar
Program Manger
Indiana DNR

Kelly Montgomery
Jr. Scientist
International Joint Commission

David Moore
Senior Toxicologist
MEC Analytical Systems, Inc.

Joy Mulinex
Director
Great Lakes Task Force

Kasia Mullett, Biologist
U.S. Fish and Wildlife Service

Cathy Curran Myers
Deputy Secretary
Water Management
PA Dept. of Environmental
Protection

David Naftzger
Executive Director
Council of Great Lakes Governors

Roger Nanney
Resource Conservationist
USDA-NRCS

David Nash, Partner
Thompson Hine LLP

Glen G. Nekvasil
Vice President - Corporate
Communications
Lake Carriers' Association

John Nevin
Senior Policy Advisor
International Joint Commission

Jim Nicholas, District Chief
U.S. Geological Survey

Andrew Nikiforod
Munk Centre

Ralph Norman, Partner
Woolpert LLP

Michael K. O'Bryan, Chief
Engineering and Technical
Services
U.S. Army Corps of Engineers

Margart O'Dell, Program Manager
Environment
Joyce Foundation

Diana Olinger
Program Specialist
NOAA Coastal Programs

Edward Oliver, Commissioner
Great Lakes Commission

Rusti Owens, Vice President
DLZ

Corey Pacer
Environmental Engineer
SAIC

Nicolas Parent
Transport Quebec

Anne Parker, President
Physical Advantage, Inc

James Pendergast, Chief
Health Protection and Modeling
Branch
U.S. EPA

Martin Petit, Project Manager
Biosphere
Environment Canada

Matthew D. Rathsack, P.E.
Tetra Tech

Tom Rayburn
Project Manager
Great Lakes Commission

Jeffrey M. Reutter, Director
Ohio Sea Grant and Stone Lab
Ohio State University

Carl Richards, Director
MN Sea Grant College Program
University of Minnesota

Kelvin Rogers, Coordinator
Cuyahoga River RAP
Ohio EPA

John D. Rogner
Field Supervisor
U.S. Fish and Wildlife Service

William E. Ryan III
Deputy Commander
Great Lakes & Ohio River Division
U.S. Army Corps of Engineers

Paul Scholz, Services Chief
Coastal Management
NOAA

Dennis L. Schornack, Chair
U.S. Section
International Joint Commission

Norm Schultz
Lake Erie Marine Trades
Association

Stu Schwartz, Director
Center for Environmental Science,
Technology and Policy
Cleveland State University

Megan Seymour, Wildlife Biologist
U.S. Fish and Wildlife Service

Gerald Sgro
John Carroll University

Kevin Shafer, Executive Director
Milwaukee Metropolitan Sewerage
District

Charles Shea, Project Manager
Chicago District
U.S. Army Corps of Engineers

Jim Siebert, Sr. Vice President
DLZ Ohio, Inc.

Thomas Skinner, Administrator
U.S. EPA - Region V

Brian Slack, Planner
Genesee/Finger Lakes RPC

Sam Speck, Director
Ohio Dept. of Natural Resources

Claudia R. Steele, Biologist
U.S. Army Corps of Engineers

Carol Stepien, Director
Great Lakes Environmental
Genetics
Cleveland State University

David Stilwell
Field Supervisor

U.S. Fish and Wildlife Service
Lester Stumpe
Manger of Watershed Programs
Northeast Ohio Regional Sewer
District

Roger Thomas
OH EPA

Carla R. Thornton
Secretary - LDP Participant
U.S. Army Corps of Engineers

Robyn Thorson
Regional Director
U.S. Fish and Wildlife Service

Gildo M. Tori
Director of Public Policy
Ducks Unlimited

Gagik Torosyan
State Engineering University of
Armenia

Tim Touchette
Incoming Commander
Buffalo District
U. S. Army Corps of Engineers

Gregory Tracey
Program Manager
SAIC

David A. Ullrich
Executive Director
Great Lakes Cities Initiative

Russell Van Herik
Executive Director
Great Lakes Protection Fund

Donn Waage
Director, Central Region
National Fish and Wildlife
Foundation

Maury Walsh
Corporate Vice
President/Operations Manager
SAIC

Joe R. Wanielista, Project Manager
DLZ Michigan

James H. I. Weakley
President
Lake Carriers' Association

Lynne Whelan
Public Affairs Officer
U.S. Army Corps of Engineers

Jim White
Executive Director
Cuyahoga River Remedial Action
Plan

Doug Wilcox
Great Lakes Science Center
U.S. Geological Survey

Charles Wooley
Deputy Regional Director
U.S. Fish and Wildlife Service

Donald Zelazny
Great Lakes Programs Coordinator
NYS Dept. of Environmental
Conservation

Scott Zody
Deputy Director
Ohio Dept. of Natural Resources

Pete Zuzek
Baird and Associates