

GREAT LAKES FISHERY COMMISSION

2006 Project Completion Report¹

Conserving Great Lakes Aquatic Habitat from Lakebed Alteration Proposals

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ABSTRACT:

Dempsey, D., Gannon, J., Shafer, C., and Ugoretz, S. 2006. *Conserving Great Lakes Aquatic Habitat from Lakebed Alteration Proposals*. The numbers and types of proposals involving physical alterations of Great Lakes lakebeds and riverbed habitat in the connecting rivers have multiplied in recent years. Many of these are energy-related, including wind turbines, water intake/discharge pipes and cribs, transmission cables, gas wells, fuel pipelines, etc. There is an absence of a common Great Lakes basin-wide information source or basis for jurisdictions to respond to energy-related proposals. In order to fill this information gap, the Lakebed Habitat Alterations Workshop was held in Ann Arbor, MI on September, 20-21, 2005 where the habitat/ecology issues and legal/regulatory tools were discussed on the ways and means of conserving lake and riverbed habitat in association with energy-related proposals and projects. Fisheries biologists and managers, coastal policy and permit staff, representatives of non-profit organizations and others participated in the discussions. Based on the workshop results and reviews of lakebed habitat ecology and the legal/regulatory framework pertaining to lakebed alterations, the project team developed a GLFC position statement and guidelines for evaluating energy-related and other lakebed alteration projects and protecting essential submerged bottomlands resources. The Great Lakes jurisdictions, at a minimum, are encouraged to adopt and use the principles expressed in the position statement and guidelines in their own policies. Aquatic bottomlands, consisting of fine- and coarse-grained sediment, rocks ranging from pebbles to boulders, bedrock, and submerged beds of aquatic plants, provide critically important habitat for fish and other aquatic organisms. These policies and guidelines are necessary to address energy-related proposals in order to prevent, minimize or mitigate harm to the public trust values of bottomlands habitat, assure long-term monitoring, and provide for coordinated decision-making among the great lakes states and the province of Ontario.

PROPOSED PRESS RELEASE:

**STATES, ONTARIO SHOULD ADOPT POLICIES
PROTECTING LAKEBED HABITAT FROM ALTERATIONS
RESULTING FROM ENERGY PROJECTS**

A panel advising the Great Lakes Fishery Commission is urging the eight Great Lakes states and the province of Ontario to promote protection of vital Great Lakes aquatic habitat from disruptions caused by a growing number of energy projects.

The panel said growing interest in crossing the beds of the Great Lakes with pipelines and in installing wind turbines in the beds of the Lakes, in addition to other proposed lakebed alterations, raises important questions about protection of aquatic habitat that should be addressed through revisions in state and provincial policies.

A legal review undertaken as part of the project found that the jurisdictions have most if not all of the legal authority they need to assure habitat protection and should exercise that authority by delineating policies that:

- Identify and map areas that should be protected from any significant lakebed alterations, due to the sensitivity of their biological, physical, archaeological, or other values, and designate them for legal protection;
- Promote the siting of alteration projects in areas that can tolerate such disturbances;
- Prevent, or, where necessary, minimize or mitigate degradation of aquatic habitat for fish and other aquatic organisms from proposed uses;
- Prevent or, where necessary, minimize or mitigate adverse impacts to water dependent birds, and other wildlife from proposed uses;
- Prohibit uses of the lakebed that are not water dependent;
- Require a demonstration of clear and substantial public benefit, including but not limited to environmental benefit, before authorizing such uses;
- Apply or enact mechanisms to collect fair market value for the use of bottomlands to assure the public is compensated for lakebed alterations, including lease costs;
- Require long-term ecological monitoring paid for by those who undertake projects that alter lakebed habitat, and provide for adjustment or disapproval of projects that impair the trust values of bottomlands.

Panel members include: Dave Dempsey, former member (1994-2001), Great Lakes Fishery Commission (U.S.), Saint Paul, Minnesota; Dr. John Gannon, Senior Scientist, International Joint Commission, Windsor, Ontario, Canada; Chris Shafer, Professor, Cooley Law School, Lansing, Michigan; Steven Ugoretz, Wisconsin Department of Natural Resources, Madison, Wisconsin.

SUMMARY STATEMENT:

The project team was charged with the following project **objectives**:

1. To provide a legal and ecosystem context for considering proposals for altering lake and riverbeds in the Great Lakes and connecting ecosystems.
2. To recommend a position statement for consideration by the GLFC and International Joint Commission and regulatory agencies.
3. To recommend guidelines for predicting, evaluating and avoiding or mitigating impacts to the ecosystem and to related human use.

The project team agreed to undertake the following **tasks**:

1. To create an informal project advisory team consisting of representatives from national, provincial, state agencies and nongovernmental organizations to assist with review of draft materials.
2. To catalogue realized and proposed lakebed alterations, including pipelines, transmission lines, wind turbines and other structures that physically occupy Great Lakes bottomland.
3. To characterize/classify structures in terms of type and potential impacts, including solid fill; pipelines/transmission lines and appurtenances; and others.
4. To analyze impacts of each classification of structures applying the following criteria to both nearshore and open lake environments:
 - a. Biological;
 - b. Navigation and safety;
 - c. Human;

- d. Diminution of public uses, including boating and fishing.
5. To analyze the legal framework (national in both Canada and the U.S., provincial, state, municipal) for regulating structures:
 - a. Identify legal authority(ies).
 - b. Summarize case law.
 - c. Identify commonalities/differences among/between U.S./Canada federal authorities, state-province, state-state.
 6. To conduct a workshop, inviting expert presentations and feedback on draft findings related to tasks above, and to record and publish proceedings.
 7. To prepare and submit a final report for issuance as a white paper by the International Association for Great Lakes Research (IAGLR) in its science-policy linkage program.

All goals and tasks were satisfactorily accomplished.

Conserving Great Lakes Aquatic Habitat

From Lakebed Alteration Proposals

A Report to the Great Lakes Fishery Commission

February 28, 2006

Submitted by Project Team

January 2006

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Table of Contents

| | |
|---|---|
| Executive Summary | 3 |
| Appendix A Recommended Position Statement | 11 |
| Appendix B Recommended Guidelines for Great Lakes Aquatic Habitat Managers In Reviewing Lakebed Alteration Proposals | 18 |
| Appendix C Survey of Governmental Regulators and Non-Governmental Organizations Regarding Lakebed Habitat Alterations | 23 |
| Appendix D Proceedings of Workshop September 20-21, 2005 Ann Arbor, Michigan | 26 |
| Appendix E List of Workshop Participants | 50 |
| Appendix F Review of Legal Authorities of the States and Ontario With Respect to Managing Lakebed Habitat | <i>following page 55 separately paginated</i> |

Executive Summary

Concerned about the recent and expected proliferation of proposals for physical alteration of the bottomlands of the Great Lakes and connecting waterways – particularly in light of the energy needs of Canada and the U.S. – the Great Lakes Fishery Commission (GLFC) in 2004 supported a project, through a grant made as part of its coordination activities program, to develop a recommended position statement for the states and Ontario and guidelines for fishery habitat managers. The Commission charged this project team with considering appropriate policies and procedures for responding to habitat alteration proposals involving wind turbines, artificial reefs, docks and locks, gas fixtures, pipelines, and other projects. This report summarizes the work of the project team and provides the requested recommendations.

Our key recommendations include:

- The states and Ontario should use their full existing legal authorities, and, where necessary, seek additional authority to adequately regulate all projects with the potential, individually or cumulatively, to affect the public benefits of bottomlands.
- They should also:
 - Identify and map areas that should be protected from any significant lakebed alterations, due to the sensitivity of their biological, physical, archaeological, or other values, and designate them for legal protection;
 - Promote the siting of alteration projects in areas that can tolerate such disturbances;
 - Prevent, or, where necessary, minimize or mitigate degradation of aquatic habitat for fish and other aquatic organisms from proposed uses;

- Prevent or, where necessary, minimize or mitigate adverse impacts to water dependent birds, and other wildlife from proposed uses;
- Prohibit uses of the lakebed that are not water dependent;
- Require a demonstration of clear and substantial public benefit, including but not limited to environmental benefit, before authorizing such uses;
- Apply or enact mechanisms to collect fair market value for the use of bottomlands to assure the public is compensated for lakebed alterations, including lease costs;
- Require long-term ecological monitoring paid for by those who undertake projects that alter lakebed habitat, and provide for adjustment or disapproval of projects that impair the trust values of bottomlands.

Also included in this report are recommended guidelines that provide additional support to fisheries habitat managers and others in responding to proposals for alteration of lakebed habitat.

Introduction

Except for a 1990 GLFC artificial reef position statement and evaluation guidelines (http://www.glf.org/pubs/SpecialPubs/Sp90_2.pdf), there is no common resource or basis to assist the states and Ontario in responding to proposals for the alteration of lakebed habitat. To remedy that, the project team was charged with the following project **objectives**:

1. To provide a legal and ecosystem context for considering proposals for altering lake and riverbeds in the Great Lakes and connecting ecosystems.
2. To recommend a position statement for consideration by the GLFC and International Joint Commission and regulatory agencies.
3. To recommend guidelines for predicting, evaluating and avoiding or mitigating impacts to the ecosystem and to related human use.

The project team agreed to undertake the following **tasks**:

1. To create an informal project advisory team consisting of representatives from national, provincial, state agencies and nongovernmental organizations to assist with review of draft materials.
2. To catalogue realized and proposed lakebed alterations, including pipelines, transmission lines, wind turbines and other structures that physically occupy Great Lakes bottomland.
3. To characterize/classify structures in terms of type and potential impacts, including solid fill; pipelines/transmission lines and appurtenances; and others.
4. To analyze impacts of each classification of structures applying the following criteria to both nearshore and open lake environments:
 - a. Biological;
 - b. Physical/hydrological;

- c. Navigation and safety;
 - d. Human;
 - e. Diminution of public uses, including boating and fishing.
5. To analyze the legal framework (national in both Canada and the U.S., provincial, state, municipal) for regulating structures:
- a. Identify legal authority(ies).
 - b. Summarize case law.
 - c. Identify commonalities/differences among/between U.S./Canada federal authorities, state-province, state-state.
6. To conduct a workshop, inviting expert presentations and feedback on draft findings related to tasks above, and to record and publish proceedings.
7. To prepare and submit a final report for issuance as a white paper by the International Association for Great Lakes Research (IAGLR) in its science-policy linkage program.

This report summarizes work undertaken to fulfill these objectives and carry out these tasks, and includes both recommendations for a GLFC position statement on lakebed habitat alterations and proposed guidelines for aquatic habitat managers in the Great Lakes Basin in reviewing these projects. It also includes, as appendices, several work products associated with the above tasks, including a detailed summary of legal authorities; proceedings of a workshop held in September 2005; and a review of literature associated with marine and lakebed habitat alteration projects and impacts.

Problem Statement

In recent years, the numbers and types of proposals involving physical alterations of Great Lakes lakebeds and connecting riverbed habitat have multiplied. These include proposed transmission cables, wind turbines, water intake/discharge pipes and cribs, gas wells, fuel pipelines, and others. The

absence of a common Great Lakes Basin-wide information resource or a basis for responding to proposals was identified by the Great Lakes Fishery Commission as a gap to be closed. Under its coordination activities grant program, GLFC supported this project to develop such a resource and guidelines for responding to lakebed/habitat alteration proposals. Although energy-related projects are currently prominent, other projects involving the physical alteration of lakebeds were also of interest.

The project team undertook its work beginning in January 2005. Team member Chris Shafer, professor at Cooley Law School and a former regulator in the Michigan Departments of Natural Resources and Environmental Quality, undertook a comprehensive review of the legal framework and authorities within which the eight Great Lakes states and Ontario manage and conserve lakebed habitat. Shafer circulated a draft with his findings to regulators and legal experts in the Great Lakes Basin before submitting a final document that is included as Appendix F.

Team members John Gannon and Steven Ugoretz catalogued real and proposed lakebed alterations, classified them by impacts, and analyzed them for biological, physical/hydrological, navigation and safety, and other impacts, and developed the guidelines for habitat managers discussed in this report and provided as Appendix B.

Team member David Dempsey worked with other members in crafting the recommended position statement, provided as Appendix A, and in coordinating the September 2005 workshop in Ann Arbor, Michigan.

All team members participated in the drafting and dissemination of an informal survey of government agencies and nongovernmental organizations to ascertain the recent history of lakebed alteration proposals in the Great Lakes and to pinpoint habitat concerns associated with same. Results of the survey are provided as Appendix C.

Workshop: September 20-21, 2005

On September 20-21, 2005, the project team convened a workshop at the Great Lakes Science Center in Ann Arbor, Michigan, inviting fisheries biologists and managers, coastal policy and permit staff, representatives of nonprofit organizations and others to learn about and offer suggestions on the proposed GLFC position statement and habitat guidelines. Over the two days, approximately 30 persons from Canadian, U.S., provincial and state agencies and NGO representatives participated. A summary of workshop proceedings is provided as Appendix D. A list of participants is provided as Appendix E.

Presentations included:

- Regulatory issues associated with the environmental review for the Cape Wind, Massachusetts proposed marine wind turbine project: *Karen Adams, New England District, U.S. Army Corps of Engineers.*
- The Elm Road Power Plant Intake Controversy: Science and Policy Considerations: *Steve Ugoretz, Wisconsin Department of Natural Resources Office of Energy.*
- The Millennium Pipeline Project: *Steven Resler, New York Coastal Zone Management Program.*

Findings from the presentations included the following:

- Developers are reluctant to consider placing wind turbines in greater than 50 feet of water depth because of limitations of current anchoring and support technology; it should be at least 10 years before technology is available for greater than 100 feet water depths for wind turbine generators.

- There are specific limitations on current transmission technology that from a practical perspective restrict how far offshore a wind turbine farm could be feasibly located – probably no more than 5-10 miles.
- Primary environmental impacts of concern from in-water wind turbine development are fisheries impacts and impacts to aquatic habitat, migratory birds – both water birds (these include waterfowl such as ducks and geese, and open water dependent birds such as diving ducks, cormorants, and other migratory birds and passerines, potential impacts to public drinking water supplies and public health concerns.
- There is a clear need for additional aquatic habitat analysis and inventories to identify avoidance areas due to high value habitat or endangered species in the offshore area. These offshore habitat surveys or sensitive analyses should be focused in the areas where offshore energy development is most likely to occur due to availability of good connections to the existing electrical transmission grid.
- Water dependency should be an essential criterion for determining whether a permit can be issued for a new energy project in the offshore or nearshore areas.
- There are ample state, provincial and federal statutory and common law authorities in the Great Lakes region to regulate and control a wide spectrum of lakebed alterations, including offshore energy projects, but there may be a need for minor statutory amendments to address unique aspects of offshore energy projects like wind turbine farms.
- Consistent with the legal obligations of the public trust doctrine, clear and demonstrable public benefits must be assured as a prerequisite for locating new energy projects on Great Lakes submerged lands in the United States.

- There is a need for some type of multi-state and binational notice and consultation scheme, similar to the original Great Lakes Charter of 1985, for evaluating larger energy projects that may adversely impact more than one state or several states and the province of Ontario.

APPENDIX A

Recommended Position Statement

Preamble

The bottomlands of the Great Lakes are an exceptional and vital publicly owned resource that must be conserved and protected by the governments that manage them for the benefit of the people of the Great Lakes states and Ontario. Comprising more than 90,000 square miles (198,000 square kilometers) of aquatic habitat, this resource is held in trust for the public by the eight Great Lakes states, and managed for public benefit by the province of Ontario and the Canadian federal government. Aquatic bottomlands, consisting of fine- and coarse-grained sediment, rocks ranging in size from small pebbles to large boulders, and bedrock and submerged beds of aquatic plants, provide critically important habitat for fish, including shelter, spawning, nursery, and feeding grounds, and also provide habitat for benthic organisms and other biota.

North America's energy needs, in particular, pose challenges to the management of Great Lakes bottomlands. Proposals to alter bottomlands for the installation of wind turbines, construction of pipelines and cables, and for oil and gas drilling are expected to increase in number and complexity in the immediate future. In the last decade, public controversies concerning proposed energy-related projects, and government response to such proposals have underscored the urgent need for a policy to address these proposals, in order to prevent, minimize or mitigate harm to public trust values, and assure long-term monitoring, and coordinated decision-making among the states and Ontario.

The states and Ontario should use their full existing legal authorities, and, where necessary, seek additional authority to adequately regulate all projects with the potential, individually or cumulatively, to affect the public benefits of bottomlands. They should also:

- Identify and map areas that, due to the sensitivity of their biological, physical, and archaeological values, including sensitive surface areas used by waterfowl or commercial anglers, should be protected from any substantial lakebed alterations, and designate them for legal protection;
- Promote the siting of lakebed alteration proposals in areas that can tolerate such disturbances;
- Prevent, or, where necessary, minimize or mitigate degradation of aquatic habitat for fish and other aquatic organisms from proposed uses;
- Prevent or, where necessary, minimize or mitigate adverse impacts to water dependent birds, and other wildlife from proposed uses;
- Prohibit uses of the lakebed that are not water dependent unless no feasible and prudent alternative is available;
- Require a demonstration of clear and substantial public benefit, including but not limited to environmental benefit, before authorizing such uses;
- Apply or enact mechanisms to collect fair market value for the use of bottomlands to assure the public is compensated for lakebed alterations, including lease costs.

- Require those who undertake projects that alter lakebed habitat to include appropriate long-term ecological monitoring , and provide for adjustment or disapproval of projects that impair the trust values of bottomlands.
- Identify locations of high public use for recreational and commercial fisheries.

To assure consistency of lakebed conservation and protection, the states and the province of Ontario should enter into and implement a written agreement requiring prior notice and consultation on a lakewide basis for all substantial¹ proposed lakebed alteration projects with potential for multi-jurisdictional impacts, including, but not limited to, energy projects. Such written notification and consultation are consistent with the provisions of A Joint Strategic Plan for Management of Great Lakes Fisheries (1997).

I. Purpose

The purpose of this position statement is to set forth management and policy recommendations for the jurisdictions to utilize and implement to protect essential submerged lands resources. This position statement presents recommended elements of a comprehensive policy to accomplish this purpose, and is accompanied by guidelines for the evaluation of habitat impacts. The jurisdictions and agencies are encouraged to adopt and use the principles expressed in the position statement and guidelines, at a minimum, in their own policies for evaluating energy-related, and other, lakebed alterations and protecting essential submerged lands resources.

II. Scope

This position statement addresses the proposed alteration of lakebed habitat through the construction and operation of structures²; laying and operating of pipelines for water or fuel; construction and operation of communications facilities and wind turbine generators; seismic exploration activities; the installation of navigation aids; dredging³; installation of electrical utilities; the construction and operation of drilling platforms for oil and gas, and other similar projects.

This position statement applies to all Great Lakes bottomlands managed and protected by the Province of Ontario and the eight Great Lakes states, Canada and the United States.

This position statement also recognizes that emerging energy needs may soon lead to a substantial increase in the number of proposals to alter lakebed habitat, particularly through the construction and operation of oil and gas pipelines, electric cables and wind turbine facilities. In particular, the placement and operation of wind turbine generators poses questions of habitat impact and public benefit tradeoffs that have not previously been addressed in the Great Lakes. Consequently,

¹ In this context, “substantial” refers to affecting either a large geographic area or route, highly sensitive resource elements, and/or requiring an environmental impact statement by the primary decision-maker(s).

² Structures include all fixed, constructed facilities that protrude above the bed, and may also extend above the surface. Examples include caissons or other foundations, towers and derricks, etc. It does not include baffles, barriers, gas fixtures, canals and channels, locks, dams and turbines, etc.

³ Only dredging related to lakebed construction projects is included, not navigational dredging, which is beyond the scope of this document.

the Great Lakes states and the province of Ontario should carefully monitor and review, as needed, the position statement and accompanying guidelines as experience with these facilities increases. These projects require appropriate monitoring and performance evaluation programs that are tailored to the size and ecological concerns of each project.

The Great Lakes Fishery Commission is encouraged to review the policy for needed revisions or updates after a period of five years.

III. Authority

This position statement was developed under the authority of the Convention on Great Lakes Fisheries between the United States of America and Canada, September 10, 1954, and is within the scope of the internationally accepted revision of the Joint Strategic Plan for the Management of Great Lakes Fisheries dated June 10, 1997, and the objectives of the Great Lakes Water Quality Agreement as revised by Protocol, 1987. It is consistent with the document entitled, “Guidelines for Fish Habitat Management and Planning in the Great Lakes” of March, 1987, and recognizes applicable environmental laws and policies in Canada and the United States, including but not limited to the Policy for Management of Fish Habitat (Department of Fisheries and Oceans, Canada) the Fisheries Act (Canada), the (U.S.) Clean Water Act, and the (U.S.) Fish and Wildlife Coordination Act.

IV. Policy and Management

It is recommended that all agencies and jurisdictions with natural resource management authority in the Great Lakes Basin consider the following elements, at a minimum, in developing lakebed habitat alteration policy and in reviewing proposals for lakebed habitat alteration:

A. Use of Legal Authorities

Existing legal authorities in both the United States and Canada appear, in general, to provide an adequate framework within which to regulate projects with the potential to alter lakebed habitat. The states and Ontario should use these authorities in conjunction with the relevant federal agencies and authorities to appropriately regulate the design, location and construction of energy projects to avoid, minimize, and mitigate adverse impacts to lakebed habitats and to fish and wildlife

In the United States, two key federal statutes implemented by the states provide substantial authority:

The Clean Water Act. Section 401 of the Act requires that applicants for any federal license or permit for activities involving discharges into navigable waters must provide a certification from the affected state that the proposed project meets the state’s water quality standards.

The Coastal Zone Management Act. Section 307 of the Act requires that all federal licenses and permits, direct federal construction projects, and federal grants for activities in a state’s coastal zone must be conducted in a manner that is consistent with the state’s federally approved coastal management program.

Each of these laws provides for state review and certification of projects as consistent with statutory goals, including the protection of the physical, chemical and biological integrity of the waters of the United States.

All eight Great Lakes states and the province of Ontario have existing statutory authorities to regulate construction activities on Great Lakes bottomlands or submerged lands. In general, these permitting statutes regulate filling, excavating materials, and placing structures on the beds of the Great Lakes. These permitting statutes generally mandate the states and province to protect the public's interests in navigation, fishing, water quality, and in at least three instances, to protect specifically the state's public trust interests in the Great Lakes bottomlands.

In addition, the states are empowered by the public trust doctrine, adopted by U.S. courts since the late 1800s, which holds that certain natural resources, especially the waters and submerged lands of the sea coast and navigable lakes and streams, are of such importance to the public that they are incapable of purely private ownership and control. Versions of the doctrine are incorporated into state regulatory statutes that apply to lakebed alteration projects in all eight Great Lakes states.

In Canada, the Federal Fisheries Act calls for no net loss of habitat and promotes the net gain of fish habitat. Provincial resource management activities are required to be in compliance with Federal Fisheries Act provisions. Ontario provincial work permits are required for construction projects on Great Lakes bottomlands under Section 14 of the Public Lands Act. This statute governs uses and construction activities on Crown lands, which include both uplands and lakebed, but the statute specifically addresses dredging or filling any shore lands or placing any structures or buildings on public lands. In addition to its policy on Wind Power Development on Crown land, which has several provisions regarding the use of submerged lands, the Ontario Ministry of Natural Resources has issued a policy entitled "Public Lands Work Permits," which provides detailed guidance on evaluating projects that involve dredging or filling shore lands and projects, such as groins and offshore breakwaters, that may interfere with coastal processes.

B. Mapping of Critical Habitat

The jurisdictions should identify, map and designate for legal protection areas that should be protected from any substantial lakebed alterations because of their sensitivity, or of their biological, environmental, archaeological, or other values. They should give consideration to the concept of a linked interjurisdictional network of Great Lakes underwater biological preserves, similar in nature to U.S. and Canadian national marine preserves and sanctuaries.

Recognizing constraints on agency budgets, this position statement recommends that the jurisdictions first conduct sensitivity analyses that identify known or suspected areas of biological importance, such as essential spawning and nursery habitats, as well as areas of physical and chemical sensitivity, using available data and mapping tools.

In addition, this position statement recommends that the jurisdictions identify, and analyze in advance, the areas most likely in the short term to be proposed for lakebed habitat alterations for a particular category of projects. The siting of wind turbines in the Great Lakes, for example, is

constrained by the availability of adjacent on-shore electrical grid connections and the consistency and magnitude of the wind resource. The task of identifying and mapping sensitive lakebed habitat is more feasible by concentrating the initial analysis in such areas. Bottomland habitat in the Great Lakes is not well-mapped and, therefore, jurisdictions should consider having project proponents pay for mapping at proposed project locations as part of the permitting process.

C. Siting in Areas Not Considered Sensitive

Because Great Lakes bottomlands are a publicly owned resource, and within U.S. waters, one held in trust by the state governments for the people, the states and Ontario should plan for the protection and conservation of that resource rather than respond piecemeal to applications for lakebed alteration. To the extent that governments themselves facilitate or promote projects that involve lakebed alteration – such as the development of wind energy resources or the construction of pipelines and cables – the governments have a unique responsibility as well as an opportunity to assure that such alterations occur in the areas indicated as least sensitive on the basis of available information.

The states and Ontario should identify common corridors for pipelines and cables based on an environmental analysis that establishes the least sensitive areas. For wind energy development, the states and Ontario should overlay areas of high potential for wind energy generation with areas of lesser environmental sensitivity

D. Prevent, Minimize or Mitigate Degradation of Aquatic Habitat

A primary purpose of this position statement is to foster protection and conservation of aquatic habitat in the Great Lakes. The attached guidelines seek to prevent aquatic habitat degradation from lakebed alteration. The jurisdictions should only accept proposals to minimize or mitigate impacts, based on the attached guidelines, if there are unavoidable impacts and all other recommended conditions are met – including demonstration of clear and substantial public benefits that include environmental enhancement.

E. Prevent, Minimize or Mitigate Impacts to Waterfowl, Birds and Bats

The potential development of in-lake wind turbines, in particular, has raised concern about impacts on waterfowl, birds and bats. Although improvements in wind turbine design have reportedly reduced the loss of birds at more recent wind energy installations, the jurisdictions should carefully consider potential impacts, especially given the use of the Great Lakes shores as crossings and migratory corridors by many types and populations of birds.

F. Prohibit Uses of Lakebed That Are Not Water Dependent Unless There is No Demonstrated Feasible and Prudent Alternative

One of the most important considerations in management of lakebed habitat is its protection from unnecessary disturbances. Lakebed is, in effect, an underwater public resource/preserve that

should not be disturbed unless such disturbance is essential to furthering a public interest. Disturbance is not essential if the proposed use can be carried out on land. A water dependent use is an activity that can only be conducted on, in, over or adjacent to a water body because the activity requires access to the water body for waterborne transportation, recreation, energy production, or source of water.⁴

By way of example, a marina would be a water dependent use, but an oil pipeline is not. A proposed wind turbine is not a water dependent use unless it can be demonstrated that location in the open waters of the Great Lakes or along the immediate shoreline provides a public benefit that inland locations cannot provide.

G. Require a Demonstration of Clear and Substantial Public Benefit

Because Great Lakes bottomlands are a publicly owned resource, any activities that encroach on bottomlands and have the potential to impair their values should only be authorized where the applicant has demonstrated a clear and substantial public benefit in addition to any private benefit that may accrue. The benefits provided should include, but not be limited to, an environmental benefit such as reduction of other adverse impacts to aquatic and terrestrial resources (e.g. reduction of mercury or other toxic emissions). Projects that impair or destroy lakebed habitat values should not be authorized in the absence of a comparable benefit to the water and water-dependent natural resources of the Great Lakes.

H. Charge Fair Market Value

In the United States, the public trust doctrine requires that the public be compensated for the use and/or impairment of public trust resources. Ontario also requires compensation for the use of Crown lands. This is a sensible policy that should be implemented and enforced across the Basin. In addition to other considerations, fair market value should recover:

- The cost of agency review and response to the application;
- The cost of agency monitoring of the proposed activity during its anticipated lifespan;
- Leasing, deeding and easement fees and royalty rates for use and occupancy of submerged lands to ensure that fair market value is obtained for the use of publicly owned bottomlands and that these public resources are not treated as cheap and convenient locations for energy projects.
- The cost of long-term ecological monitoring of the affected resources.

I. Provide for Adaptive Management

Alteration of lakebed can have unforeseen consequences. No activity altering lakebed habitat should be authorized without retaining the express authority of the jurisdictions, upon timely notice, to

⁴ See New York Dep't of State, State Coastal Policies, Policy #2, pg. 7 (April, 2002); see also, National Oceanic and Atmospheric Administration, OCRM Program Policy Series Technical Document 97-1, Coastal and Water Dependent Uses, pg. 10 (March, 1997).

require modification of the activity based on its actual impact. It is recommended that permits and leases be authorized for a period of no longer than five years to provide for periodic review and, where appropriate, implement changes in permit and lease terms and operating requirements to assure protection of bottomlands and lakebed habitat.

J. Multi-Jurisdictional Coordination

To promote ecosystem management, jurisdictions should consult and coordinate in the development of consistent policies for the identification, mapping and management of bottomlands, and should agree to provide prior notice and consultation on a lakewide basis for all substantial proposed lakebed alteration projects with multi-jurisdictional impacts, including but not limited to energy projects. Such an agreement, based on existing legal authorities and A Joint Strategic Plan for Management of Great Lakes Fisheries (1997), should be adopted at the earliest possible opportunity.

APPENDIX B

Recommended Guidelines for Great Lakes Aquatic Habitat Managers In Reviewing Lakebed Alteration Proposals

ECOLOGICAL CONSIDERATIONS AND GUIDELINES PERTAINING TO LAKEBED ALTERATIONS

Introduction

In the late 1980s, there was increasing interest in developing artificial reefs in the Great Lakes for the enhancement of fishing opportunities. Questions arose regarding the effectiveness of artificial reefs in the Great Lakes. That concern led to the formation of the Artificial Reef Task Force under the auspices of the Great Lakes Fishery Commission, and production of GLFC Special Publication 90-2: “International Position Statement and Evaluation Guidelines for Artificial Reefs in the Great Lakes.” Since that time it has become clear that the lakebed habitats (also known as bottomlands) are being considered for installing a number of different projects, primarily related to the energy and public works infrastructure. These include pipelines, water intake and wastewater discharge structures, natural gas and oil rigs, wind farms and other facilities. To help evaluate and respond to these projects, guiding them in an ecologically sound direction, the GLFC sponsored the Lakebed Alteration Policy/Procedures Workshop in Ann Arbor, MI on September 20 – 21, 2005.

This document distills information from this workshop to provide Great Lakes states/provinces and federal governments an ecological framework for managing their biological resources and regulating physical alterations under federal and state/provincial laws and authorities associated with lakebeds. It is intended to enhance existing legal requirements to assist those responsible for managing the fisheries resources and making regulatory decisions when addressing proposed projects that potentially will alter lakebed habitat. It is the intent of this guidance to assist, decision-makers, project developers and the concerned public to make better and better-informed decisions whereby lakebed habitat and associated biological resources are protected to the maximum extent possible. Where the existing regulatory framework does not adequately take these ecological considerations into account, it is recommended that the authorities should consider incorporating these guidelines into their decision-making structure.

Ecologically based guidelines applying to all lakebed alteration projects:

- *Identify, and map areas that should be protected from any substantial lakebed alterations, due to the sensitivity of their biological, physical, or archaeological values, and designate them for applicable legal protection;*
- *Promote the siting of alteration proposals in areas that can tolerate such disturbances;*
- *Prevent, or, where necessary, minimize or mitigate the degradation of aquatic habitat for fish and other organisms from any of these proposed uses;*
- *Prevent or, where necessary, minimize or mitigate adverse impacts to water dependent birds, and other wildlife from proposed uses;*

- *Prohibit uses of the lakebed that are not water dependent or only feasible in the coastal zone;*
- *Require long-term ecological monitoring by those who undertake projects that alter lakebed habitat, and provide for adjustment or disapproval of projects that impair the trust values of bottomlands.*

Guideline 1: Identify and map areas that should be protected from any substantial lakebed alterations, due to the sensitivity of their biological, physical, or archaeological values, and designate them for legal protection.

The first step in protecting important ecological assets is to identify and classify them based on their quality and vulnerability to disturbances. This gives all parties the information they need to make well-founded decisions. There are a number of ongoing data-gathering efforts including state and provincial natural features inventories, aquatic habitat classification research, and Biodiversity Investment Areas (BIAs) of the binational State of the Lakes Ecosystem Conference (SOLEC), etc. which are working towards this objective.

Managers and regulators should have the most complete and up to date information available to support their decisions. These data should be available in digital format to facilitate its use. This is the same guideline that applies to siting land-based infrastructure projects using Natural Habitat Inventory data. Project developers have a vested interest in supporting this important function because it substitutes actual data for conservative approaches such as the Precautionary Principle (defined most simply as applying extra caution in making decisions in the face of incomplete information).

In terms of setting priorities, the most sensitive and most threatened habitat resources should be identified and mapped first. State and provincial natural resources agencies and private organizations like the U.S. and Canadian Nature Conservancy and others should be consulted to ensure that all ecological considerations and priorities are recognized and considered. A similar consultation should apply for archaeological and cultural resources, and other non-physical or biological considerations. In addition, energy-related projects, most likely for cost effectiveness, will be proposed for siting near the existing power grid. Consequently, high priority areas for habitat mapping should be where power transmission lines intersect or run near the shoreline.

Guideline 2: Direct the siting of lakebed alteration proposals to areas that can tolerate such disturbances.

This guideline follows from the first one: Avoiding sensitive areas directs development towards locations and routes that can sustain those alterations without substantial degradation of the resource base. The same types of data describing the physical and biological settings can be used to identify these more disturbance-tolerant areas, preferably early in project development, so that the planners can evaluate these areas first. These guidelines should prevail unless the developer can establish that the project meets a vital public need, and would be made infeasible due to factors such as technological incompatibility, substantially greater costs, or more adverse impacts of alternative projects.

Factors that could be considered in this evaluation include the resiliency of the physical habitat, sensitivity to disturbance of the biological resources, size and extent of permanent structures such as oil or gas platforms and turbine foundations, and the compatibility of existing human uses of the area

(e.g., long-established fishing or fishery assessment grounds, lake trout rehabilitation zones, historical shipwreck sites, etc.).

Guideline 3: *Prevent, or, where necessary, minimize or mitigate degradation of aquatic habitat for fish and other organisms from proposed uses.*

In logical order this is the next step in considering a proposed development project. It reflects the approach applied in many of the existing regulatory programs. The first priority is to prevent habitat degradation by selecting a technology, site/route, and/or construction method that does not substantially degrade the resource in the first place. The second priority is to minimize the damage to the extent technologically feasible. This includes restricting the timing of construction activity to periods when sensitive resources are not present, or existing resource are least sensitive. An example would be avoiding periods when the greatest number and diversity of pelagic fish eggs or larvae will be drifting through an area, or fish are on spawning grounds or nursery areas.

Mitigation is a more complex topic, and likely to be subject to specific restrictions and rules administered by the permitting agencies. This guidance incorporates these by reference, and advises project developers to take them into account in project planning, and consider developing appropriate mitigation plans as an element of project plans.

Guideline 4: *Prevent or, where necessary, minimize or mitigate adverse impacts to water dependent birds, and other wildlife from proposed uses.*

This principle should be consistent with the U.S. Fish and Wildlife Coordination Act, which applies when there is a federal development or permitting agency involved, and other U.S. and Canadian requirements for interdisciplinary collaboration. It recognizes that lakebed alterations can affect wildlife as well as aquatic biota. These interactions may be direct, such as avian fatalities due to turbine strikes, or oil and gas flares, or indirect, due to changes in the suitability of the habitat for meeting these species' life requirements (such as reduced food availability).

Many species and groups of terrestrial migrating birds, including water birds such as geese and ducks, and land birds such as songbirds and raptors, (along with some bats) must cross the lakes, and often use the shorelines as orienting features during migration. They also depend on shoreline habitat for resting and feeding along the way, and may be blown out over the lakes due to strong weather-front winds. These can force them down within the height range of taller structures, such as wind turbines. Exhausted birds and bats may seek a resting place on platforms out in the lakes, leading to injury or death.

To the extent that these factors can be identified in advance, based on existing information, they should be considered by developers proposing these types of lakebed alterations. They should also be evaluated in environmental review documents (such as Environmental Impact Statements, and Environmental Assessments) prepared by government agencies.

Guideline 5: *Prohibit uses of the lakebed that are not water or coastal dependent.*

This guideline also reflects existing regulatory review considerations. Laws and regulations administered by the states and province, as well as federal authorities, apply the tests of coastal or water dependency in developing recommendations and reviews of projects under authorities such as the Coastal Zone Management Act, and state water management laws such as Wisconsin's Chapter 30, Stats.

In practice, this guideline reinforces the concept that projects that do not have to be located in these waters should not be located in them. Considerations of substantial public benefits, such as affordable, reliable energy supplies, and reduced impacts from fossil fuel mining, transportation and burning, should have a place in this evaluation in balance against this principle. However, it should be the responsibility of the developer to make this argument before the reviewing agencies.

Guideline 6: *Require long-term ecological monitoring by those who undertake projects that alter lakebed habitat, and provide for adjustment or disapproval of projects that impair the trust values of bottomlands.*

This guideline indicates that the responsibility of the developer should not stop with the installation of the approved facilities. Only long-term ecological monitoring can provide the information needed to understand the full impacts of a development project, including magnitude and duration, as well as the success of any mitigation. This does not mean an open-ended commitment imposed on the developer, but these elements should be part of the negotiations leading to acceptable terms and conditions.

Regulatory and research institutions should be part of this process, both in determining the scope, and in identifying additional resources to help support these activities. These may include public/private partnership grant programs, state public benefits research programs (related to utility impacts), foundations, and other sources.

Monitoring is most effective when it is part of an adaptive management framework. This means that finding that impacts have reached a measurable, agreed-upon level leads to a response. This may be a physical alteration of the project to reduce the impact, or initiation of a mitigation project to replace any lost or degraded resources.

Finally, if monitoring data show that a type of project (either in general or in particular locations) produces unacceptable adverse impact, then similar future projects are more likely to be disapproved, or at least subject to more stringent review and permit conditions, and existing projects may have to be modified to reduce adverse impacts.

Summary

Lakebed alteration projects could adversely affect the biological and ecological resources of the Great Lakes. Consultation with the various agencies and institutions involved has led to the development of these guidelines to help regulatory authorities evaluate these projects in light of their value to the public, and their impacts on the resources found in the Great Lakes. The purpose is to strive for an economy and ecology "win-win", whereby energy-related and other projects, if they must be lake based, are located, constructed, and maintained to minimize lakebed habitat impacts.

This guidance should be used to supplement regulatory processes where they exist, and suggest the need for and content of additional authorities, where they are absent. It can also help to focus the existing reviews on issues critical to the integrity of the Great Lakes ecosystem, and their connecting waters.

APPENDIX C

Survey of Governmental Regulators and Non-Governmental Organizations

Regarding Lakebed Habitat Alterations



Great Lakes Fishery Commission

ESTABLISHED BY CONVENTION BETWEEN CANADA AND THE UNITED STATES TO IMPROVE AND PERPETUATE FISHERY RESOURCES

To Whom It May Concern:

An increasing number of proposed projects in the Great Lakes involve the construction and installation of structures that result in alteration of lakebeds. These include pipelines, cables, wind turbines, and other projects that physically occupy Great Lakes lakebeds. Although energy-related projects are of current interest, other projects involving the physical alteration of lakebeds are also of interest.

There is concern about the potential habitat impacts and other biological implications of this proliferation of new facilities being placed into and on the beds of the Great Lakes. Therefore, the commission is seeking to develop a policy statement and recommendations for appropriate agencies about criteria to be applied in the review of those proposals. The commission has established a project team to assist, in this regard.

I am requesting that you provide advice to the project team about the status of current projects and proposals in your area. To this end, I would appreciate it if you would respond to this electronic survey. If you believe someone else in your agency or organization is a more appropriate respondent, please feel free to pass it on to them. Results of the survey will be presented and analyzed at a regional Great Lakes workshop in Ann Arbor on September 20- 21, 2005.

Please return the survey by **Monday, May 23, 2005** to Steven Ugoretz of the Wisconsin Department of Natural Resources. His e-mail address is Steven.Ugoretz@dnr.state.wi.us. His mailing address is: Office of Energy – OE/7, P.O. Box 7921, Madison, WI, 53707-7921.

Other members of the project team include: John Gannon, Great Lakes Regional Office of the International Joint Commission; Chris Shafer, a professor of environmental law at Cooley Law School and former Coastal Zone Management Program manager for the Michigan Department of Natural Resources; and Dave Dempsey, a former member of the Fishery Commission and an environmental policy consultant.

The objective of the questionnaire and workshop is to develop a position statement and guidelines to assist resource managers and policymakers in predicting, evaluating, and avoiding or mitigating impacts to Great Lakes lakebeds related to human uses. Your responses will help to define the issues and begin the discussion of appropriate responses by the Federal and State/Provincial agencies involved in regulating and managing the Lakes. The results of the survey and the workshop will be published by the commission or other appropriate outlet.

Thank you for your assistance in this effort.

Sincerely,

Chris Goddard
Executive Secretary

5/9/2005

Questions about Lakebed Alterations:

Note: If you believe another member of your agency/organization is better equipped to respond to the survey, please feel free to pass it along to her/him.

1. Does your agency/organization (you) deal with activities that require lakebed alterations (as defined below)?

___ Yes ___ No

If “No”, you need not continue this questionnaire, unless you would like to share information you have on the subject.

2. If Yes:

What type of agency/organization are you (check all that apply)?

___ Government (or quasi-government {e.g. regional planning})
___ Regulatory
___ Funding
___ Advisory/Educational
___ Infrastructure (utilities, etc.)
___ Other (describe briefly):

___ Resource Management
___ Construction
___ Planning

___ Non-government
___ Environmental protection {air, water quality}
___ Conservation (species/habitat acquisition/management)
___ Other (describe briefly):

___ Business
___ Economic development

3. What is your location/jurisdiction? (Country, state/province, municipality, service territory, etc.)

4. What role(s) do you play in Great Lakes issues?

___ Regulatory processes
___ Education and information
___ Advocacy⁵

___ Project development
___ Policy (&/or legislative development)

¹ Advocacy includes all non-governmental groups supporting specific actions or issues including conservation, development, business, consumers, etc.

² Structures include all fixed, constructed facilities that protrude above the bed, and may also extend above the surface. Examples include caissons or other foundations, towers and derricks, etc.

⁵ Only dredging related to lakebed construction projects, not navigational dredging, which is beyond the scope of this review

⁴ Same as footnote above.

APPENDIX D

Proceedings of Workshop

September 20-21, 2005

Ann Arbor, Michigan

Executive Summary

Sponsored by the Great Lakes Fishery Commission (GLFC) and supported by the International Joint Commission's Great Lakes Regional Office (IJC-GLRO), the Lakebed Alteration Policy/Procedures Workshop was held in the Great Lakes Science Centre of the United States Geological Survey (USGS), Ann Arbor, MI, September 20-21, 2005. Twenty-seven Great Lakes habitat managers, natural resources planners, representatives of nongovernmental organizations, researchers and others attended this workshop. Mr. Dave Dempsey, former GLFC member, presided over the workshop. The plenary session of the workshop was facilitated by selected background presentations on recent lakebed alteration projects and controversies involving the Cape Wind Project (in marine waters adjacent to Massachusetts), the Millennium Pipeline Project (New York State), and the Elm Road Power Plant Intake and Discharge Project (Wisconsin) for science and policy considerations. The workshop then featured special presentations on issue considerations for lessons learned, information gaps and research needs of lakebed alteration legal framework, technical and regulatory issues, and lakebed habitat and ecology. After the presentation sessions, the steering committee of the workshop organized a plenary specific in-depth discussion with full attendees covering a wide range of topics fundamental to identifying lakebed alteration policy, information and management gaps, and exploring possible courses of actions and next steps. Then two breakout groups were formed to develop strategic recommendations for lakebed alteration policies and procedures.

Workshop Contents

1. Recent projects and controversies

The Cape Wind Energy Project

Karen Adams, U.S. Army Corps of Engineers, New England District gave a presentation on the progress of the Cape Wind Energy Project. This project is the nation's first and largest offshore wind power initiative, which has been designed to generate 454 megawatts of electricity at market prices, about half of the total energy needed to power Cape Cod, Martha's Vineyard and Nantucket areas. It is proposed to be located at the Horseshoe Shoals in Nantucket Sound, off the southern coast of Cape Cod in Massachusetts, with a complex of 130 wind turbines with 100x200 ft electric service platforms, 40-stories tall each in a range of 62 km long near north Atlantic coast. Its 16-ft diameter piles w/scour mats will occupy an area of about 2 acres. In addition, two 115 kilovolt AC transmission lines will come ashore in Yarmouth to provide power to the independent system operator of the New England grid.

Adams noted that under the National Environmental Policy Act, an environmental impact statement (EIS) is required for major federal actions that significantly affect the environmental quality and human health to document the relevant potential impacts and issues as well as reasonable alternatives of the proposed actions. Sixteen government agencies have been involved in the permitting and review process for the EIS associated this project. The U. S. Army Corps of Engineers, until a statutory amendment that became law in the summer of 2005, was the federal lead agency for the project permit application and performing the EIS under section 10 of the federal Rivers and Harbors Act of 1899. A number of environmental issues and potential impacts have been identified in

the EIS of the project. They are: the range of alternatives (onshore, shallow water, deeper water and combined locations); birds, fish, marine mammals, benthos; endangered species-whales, turtles, birds; visual effect on historic districts; changes to the coastal ecosystem due to the establishment of wind turbine structures; property rights, public trust, environmental justice; socio-economic impacts (recreation, tourism & fishing industries); aviation, navigation, and air water quality.

Environmental consequences and benefits were also considered for geology, oceanography, fish, benthos and shellfish, protected marine species, birds, water quality, historic and cultural resources, noise, navigation (both air and sea), air quality and climate change, telecommunications and socio-economic issues.

The public consultation results showed that there were 37% of supporters vs. 39% of opponents for this project. More detailed information and data on the Cape Wind project and its EIS was also provided in a CD.

1.2. The Millennium Pipeline Project

Steve Resler, New York Department of State, Coastal Zone Management Program discussed the Millennium Pipeline Project. The Millennium Pipeline Project was a proposed 424-mile-long and 36-inch-diameter natural gas pipeline system with a high pressure of 1,440 psi, beginning in Empress, Alberta, Canada, and ending in Westchester County, New York, with a designed transport capacity of 18.5 million cube meters per day. It would have crossed 146 kilometers on the bottomland of Lake Erie, where the pipeline would consist of 0.91 m outside diameter steel pipe, encapsulated with a 75 mm concrete coating for its stability. The construction work across Lake Erie would be performed by 24 hours a day and 7 days a week for approximately 6 continuous months. The effects of disturbances to the fish, benthic organisms and aquatic plant communities of the lake were unknown.

New York CZM policy does not allow non-water-dependent projects to occupy space in the water body and any projects in the water must have a water-dependent primary use. The state has authority to determine whether the project is consistent with the CZM policy or not. If the state objects to the project, the project is disapproved. The proponent can appeal to the U.S. Secretary of Commerce to override the state's decision, but to obtain an override, the proponent must demonstrate the project is necessary for national security or will have a large positive impact on a national objective.

The first meeting of Millennium Pipeline Project with Federal Energy Regulatory Commission (FERC) was held in 1998. The proponent was required to submit the federal application to the state along with any supporting data for review. The state can perform its own researches to determine the potential adverse impacts on the coastal ecosystem. The project must comply with all policies of the state's CMZ objectives. The state conducted an environmental impact assessment and determined that the dredging activities resulting from the project would destroy fish habitat in the Hudson River and adversely impact the aquatic substrate ecosystem, so that the project was not consistent with state's CZM policy.

The proponent filed a certification with the state to show that the pipeline advanced federal and state coastal energy objectives. The state took six months to determine that the pipeline was not consistent with its policy and would have a significant adverse effect. The proponent appealed the decision of the state on the grounds that the state exceeded its time limit for making the decision, and argued the project would advance national objectives. The state argued that it required more time to conduct the environmental impact assessment for decision-making due to lack of necessary information and that while the project advanced federal and state energy objectives it was not

consistent with CZM and environmental objectives. The Secretary of Commerce did not override the decision of the state.

1.3. The Elm Road Power Plant Intake and Discharge Project

The Elm Road Power Plant Intake and Discharge Project is an additional example of controversy to an existing lakebed alteration facility. The history of the project was presented by Steve Ugoretz of the Wisconsin Department of Natural Resources (WDNR). The WDNR and the Wisconsin Public Service Commission (WPSC) conducted the EIS for this project. The project processes include WDNR permits under cited authorities, WPSC certificate of Public Convenience and Necessity: ch.196.491, Wis. Stats., EIS under Ch.1.11, Wis. Stats.: Wisconsin Environmental Policy Act, and delegated federal reviews for air permit, wastewater treatment and discharge certificates. The proposed in-lake changes included a new intake structure, a newly buried 7900 ft long intake pipeline, a new discharge structure and the discharge location. Main ecological issues resulting from this project were determined to be entrainment and impingement at the new intake, thermal impacts of the discharge into Lake Michigan, physical habitat loss and disruption, and potential impacts of air pollutions on aquatic ecosystems and on long shore currents. The project required a discharge permit for effluent to Lake Michigan under the federal regulation. The original project design did not provide the reduction of impingement necessary; therefore a redesign was required to provide a better level of protection and a decreased velocity. There have been many challenges to the plan, but all of them have been overturned in state court proceedings.

Biological findings of this project for its intake: a 60% fish entrainment reduction target can be met, both large and small organisms are adequately protected; *Diporeia* are in low abundance at the intake site; yellow perch entrainment will be no worse than the status quo; and the intake is not

expected to affect *Diporeia*, *Mysis* or yellow perch. Biological findings of this project for its discharge: new configuration discharges less BTU/hr than original power plant; plume will be directed to the deeper water and not interact with the shore structures; mixing process will be rapid and reduce thermal effects; and summer plume buoyant can be avoided. So far, all permits for this project have been granted. Challenges to EIS and permits have failed to halt project. Biological issues are still a part of challenges, but they will be extensively addressed in EIS and permitting.

2. Specific issue considerations

2.1 Legal framework pertaining to lakebed alterations

Chris Shafer, Professor at Thomas M. Cooley Law School, provided an overview of the existing legal framework pertaining to lakebed alterations by analyzing various common law and statutory approaches for regulating such structures and projects, and identifying commonalities and differences between the U. S. and Canada federal authorities, among the Great Lakes states and the province of Ontario.

Shafer declared that it was clear from the foregoing legal analysis that there are ample state, provincial and federal authorities to regulate and control a wide spectrum of lakebed alterations, including specifically those related to offshore energy development projects. Ownership of the beds of the Great Lakes and the connecting channels by the states and province of Ontario, together with their policy power regulatory statutes, gives the states and province strong authority to protect lakebed/riverbed resources and essential aquatic habitat. On the U.S. side, the widespread adoption and application of the public trust doctrine significantly bolsters the states' authority and duty to protect the aquatic bottomland resources for navigation, recreation and ecological purposes.

In addition to the state and provincial regulatory authorities, the two federal governments have important authorities related to protecting national issues such as navigation, fisheries, water quality

and endangered species. One interesting twist here is that under Canadian doctrine, similar to the federal supremacy or preemption doctrine on the U.S. side, the Canadian federal government's power over navigation and fisheries is exclusive and trumps provincial concerns in these areas, whereas there is more concurrent jurisdiction between states and the federal government on the U.S. side regarding navigation and fisheries management. Even in those areas on the U.S. side where a federal statute purports to give exclusive jurisdiction to a federal agency, such as the authority FERC has been granted over interstate gas pipelines, the states have the authority to substantially modify and even veto federal permits under the 401 water quality certification and CZM federal consistency authorities. There does not seem to be a comparable doctrine or statutory delegation of power on the Canadian side to the provinces.

Two other differences between the U.S. and Canada are notable. These are the lack of the public trust doctrine on the Canadian side and the greater difficulty of citizen access to Canadian courts to compel or restrain administrative agencies. At the heart of the public trust doctrine in U.S. law is the notion that citizens can seek access to the courts and gain judicial intervention to protect public trust rights and responsibilities. Although there are some indications that the Canadian courts may be receptive to considering the public trust doctrine, this hasn't happened yet. The concept of citizen suits to enforce environmental rights and remedies is well established on the U.S. side. At least three Great Lakes states have specific statutes that authorize citizen suits and several federal statutes, such as the Clean Water Act, specifically authorize such suits. There is more deference to Canadian administrative agencies, provincial and federal, and the ability to challenge administrative agency decisions in court is much more limited in Canada than that in the U.S.

According to the current status of legal framework, it is recommended that:

- the states, province and respective federal agencies should use their full regulatory authorities to carefully regulate the design, location and construction of energy related projects to avoid and minimize adverse impacts to lakebed habitats, and to condition permits with necessary resources mitigation and long-term monitoring requirements to ensure that projects are performed as well-designed and intended;
- the states, province and federal agencies should pool their information and experiences regarding innovative energy projects such as wind turbine generators. In this regard, there is much that the Great Lakes region can learn from the Cape Wind Energy Project and much that the Great Lakes states can learn from the Province of Ontario;
- the states and province should continue their coordination efforts with their federal counterparts to ensure that many regulatory programs pertaining to the Great Lakes submerged lands are as efficient and effective as possible;
- the states and province should evaluate their respective leasing, deeding and easement fees and royalties for the use and occupancy of the submerged lands to ensure that full fair market value is charged for new projects, and that there are no inadvertent “bargains” provided that encourage energy projects such as pipelines to be located on bottomlands, because the lakebed is viewed as the cheapest alternative;
- the Great Lakes states should aggressively use their public trust authority to protect their submerged lands resources from unnecessary damage or exploitation; and
- the states should make full use of their 401 water quality certification and CZM federal consistency authorities to ensure that federally conducted or licensed projects fully comply with the state’s water quality standards and coastal management policies.

2.2. Ecological issues for offshore wind energy projects

Steven Ugoretz of WDNR described major ecological issues for offshore wind energy projects in Western European countries (e.g., Denmark, Germany, Holland, Sweden and England) and North America (i.e., the U. S. and Canada).

Migratory bird species must be considered in evaluating these projects. The turbine structure footprint and transmission cables could also result in habitat changes, reducing food sources available to the birds, and changing bird movement patterns. Early wind turbines have not been successful in reducing bird mortality. Other ecological issues caused by the physical construction of wind turbines include potential effects on habitat quality, benthos, plankton, invasive species on colonization such as zebra mussel colonization, and other physical factors such as currents that may consequently affect aquatic biology. Comparing the Great Lakes ecosystem, there are many differences from marine systems (e.g., fisheries community structure, benthic structure, lack of aquatic mammals such as cetaceans and pinnipeds, absence of many water bird taxa, water chemistry and icing conditions).

Ecological study requirements for wind power projects include physical and ecological considerations at pre-installation stage, and biological interactions, chemical, physical and thermal impacts during operational stages. The ecological study contents of these projects should emphasize population levels, habitat use, bird movement patterns and routes, feeding ecology and reproductive biology. Strategic policy options should be considered before large-scale energy development occurs.

2.3. Lakebed habitat and ecology issues

John Gannon of IJC-GLRO addressed potential adverse impacts of lakebed alteration projects on aquatic habitat and ecology. Lakebed habitat provides a natural home for various fishes, benthic organisms and aquatic wildlife, which are related to many local and regional benefits related to environmental, social, cultural and economic issues. Major challenges to lakebed habitat are effects on life history stages and seasons; the three-dimensional aspect of habitat; and structural vs. functional

approaches to classification. Maintaining lakebed integrity and health is of great importance to essential fish habitat in the Great Lakes ecosystem. However, lakebed habitat can be easily damaged or even completely lost due to improper human actions that occur in, near, or with water, as well as any significant lakebed habitat alterations or disturbances due to frequent engineering constructions, operational activities and unfavorable physical structures permanently built in the aquatic substrate. These impacts will also potentially result in profound adverse consequences on local and regional economic, social, cultural and environmental benefits that the abundant freshwater fishery provides to us. The previous literature and our recent survey results both indicate that Lake Erie is more vulnerable to the environmental impacts of lakebed habitat alterations than any other Great Lakes. Hence, more special care should be taken for Lake Erie in the future while considering engineering construction or energy development projects and related operational activities in the Great Lakes basin.

There are five basic types of lakebed/riverbed alteration projects that may physically occupy the bottomlands of the Great Lakes and the connecting channels. These have either permanent or temporary potential impacts on the lakebed/riverbed habitat. Their impact varies. For an overall consideration, the probability of the environmental impact risks of these projects is: pipeline and electric cables > wind power generators > intake and discharge structures > drilling platforms and gas wells > non-structural lakebed/riverbed disturbances. Among various lakebed and riverbed construction projects, more attention needs to be given to fuel pipelines and transmission lines for the transportation of natural gas and petroleum products as well as electricity and communication cables across the lakebed or riverbed because of their high risks of permanent environmental impacts. Top priority should be given to biological/ecological and physical/hydrological issues since they have the

highest impact risks in all of the above-mentioned projects. More specific attention should be paid to these issues not only during the construction and in operation, but also after the engineering work is completed, such as proactive mitigation and long-term monitoring and restoration activities. Generally, there is no potential impact of these physical projects on public health.

Dredging activities are involved in most lakebed alteration projects, which may harmfully alter, disrupt or destroy the lakebed/riverbed habitat in addition to resulting in the resuspension of contaminants and affecting environmental health and water quality of the aquatic ecosystem. Dredging can cause biological and ecological impacts, physical and hydrological alterations, toxicological and public health problems, and concerns associated with navigation safety and recreational activities. Shell dredging and confined spoil disposal techniques can significantly limit sediment re-suspension, minimize the impacts on lakebed/riverbed habitat, and prevent the degradation of water quality. Most potential threats to navigational safety and recreational activities resulting from dredging and filling operations can be overcome by careful selection of the construction times, sites and materials for the lakebed/riverbed engineering projects. It is possible to conduct dredging projects in the Great Lakes and the connecting channels without a significant harm to the lakebed/riverbed habitat if it is strictly regulated, scientifically designed and properly monitored.

Renewable energy and wind power development is a worldwide emerging issue. Wind power has a great potential as a superior renewable source of future electricity. It has recently been becoming the fastest growing source of renewable energy all over the world, because it can easily be generated on a large scale with a low cost for a long-term and efficient operation. There are few or no air pollution and public health problems for the wind power projects. It is also relatively safe for the sea and air navigation if the wind turbines are carefully designed and properly managed.

But permanent wind turbines are sight and noise pollutants, and may affect land values. They may hurt local and migratory bird population, aquatic species and other wildlife. Electric transmission cables submerged in aquatic substrate may impact lakebed/riverbed habitat. In addition, it is still unable to store surplus wind generated energy for no wind time demands. Careful considerations are needed for the development of wind power projects to achieve the “Win – Win” scenario of both environmental and economic benefits.

A new U.S. energy law provides \$3.7 billion in new tax incentives for renewable energy over the next 5 years, including wind energy incentives. Existing wind power facilities across the country generated 6740 MW of electricity energy in 2004. It has been estimated that 2500 MW and \$3 billion in investment will be added for wind power development in 2005. The Cape Wind Power Project has attracted common interests for the potential renewable energy alternative near north Atlantic coast. Many wind farm projects have also been proposed in the Great Lakes states. Most of them will be located on the coastal lands.

3. Discussions

3.1. Plenary Discussions

Workshop attendees discussed the need for a Great Lakes habitat inventory to:

- assess different types of lakebed habitat and aquatic substrate ecosystem,
- evaluate the threats using the proper inventory of Great Lakes habitat, and
- protect Great Lakes’ unique natural resources and lakebed habitat.

Underwater natural features may be important for lakebed habitat. Lakebed habitat is a complex combination of biological and physical features. It will be very expensive to get an accurate picture of lakebed habitat. Observational systems (e.g., global ocean observing system, integrated ocean observing system, the Great Lakes observation system, and national ecological observation networks)

and surveillance of lakebed habitat may be useful tools for lakebed habitat monitoring and management. Habitat should drive where observational facilities are located. The National Science Foundation has a useful ecological observation system that can be used for the classification of the lakebed habitat and the physical, chemical and biological monitoring for lakebed habitat. Underwater zoning has been considered by the US-NOAA for mapping.

The planning process should begin with a suitability analysis and seek participation from various institutions. There is a difference between social and cultural concerns vs. ecological concerns. Zoning and permitting will occur for different areas of the Great Lakes basin. It is necessary to coordinate all monitoring and research programs of lakebed habitat. A large amount of existing research activities driven by lake carriers could provide integrated time records of fish habitat in certain areas of concern. The project team could get technical data and information from vessels equipped with multi-beam. But the multi-beam does not necessarily generate clean data and the integrity could be challenged. The data quality could be an issue if agencies use the data to support the protection of lakebed habitat. Canada has a scheme for habitat observation systems but does not have an available funding for any large scale projects.

Participants identified follow-up activities below to help address lakebed alteration issues and projects:

- conducting regional analyses of what can be expected in the next 20-50 years through reactive stance vs. proactive stance/planning approach.
- using terrestrial habitat experience as a guide for aquatic habitat researches driven by demand and footprint.
- applying the precautionary principle for lakebed alteration projects,
- developing pilot projects for lakebed habitat monitoring and management,

- lakebed alteration regulatory gap identification and analysis,
- establishing appropriate criteria to protect drinking water uses of the Great Lakes and protecting public health,
- developing interstate/province process agreements for jointly reviewing, permitting, regulating and guiding lakebed alteration programs in the Great Lakes basin; and
- adopting this issue into the upcoming review of the GLWQA for a more effective bi-national cooperation and coordination.

3.2. Group discussions

3.2.1. Technological/legal/regulatory group

This group identified the following technological and regulatory gaps for lakebed alteration projects in the Great Lakes basin:

- CZM consistency and state law,
- suitability analyses: long term vs. short term,
- water use practice and watershed planning models for lakebed resources management,
- watershed plans in the coastal zone – can apply offshore,
- existing authorities: there are languages to designate to specific areas,
- bottomland preserve authority – ecology functions,
- Where will the electric grid connections be, and what facilities will be needed for them? What will be related costs? Should this be a concern?
- In Europe, little data has been collected from on shore farms; in 10-20 years a different scenario will exist. Is it possible to postpone wind farm projects until then (new scenario will consist of building wind turbines in deeper waters).

- How will fish be affected by turbine vibration?,
- Pipeline breaks should be a concern in the Great Lakes because of their importance as a fresh water reservoir.

This group also developed some technological and regulatory considerations for lakebed alteration projects in the Great Lakes basin:

- the possibility for a state to auction a wind farm project,
- authority to lease offshore submerged lands,
- using section 304 of CZM Act assessment as a tool to address existing gaps,
- developing multi-state agreements on regulating lakebed alteration projects (e.g., wind farms),
- the agreement should include not only limits to what will be acceptable, but state where governments draw the line, i.e., what is absolutely unacceptable?
- energy loss and engineering problems are evident, e.g., when wind farms are far from shore (greater 10 miles) the project will cause economical problems because more costs of transformers will be needed for establishing such a wind energy facility),
- identifying potential risks of lakebed alteration projects in proper categories such as primary and secondary risks, and
- conducting risk-benefit analyses and input the analysis results into lakebed resources planning and decision-making processes..

3.2.2. Habitat/ecology group

This group's discussion was generally focused on: (1) the complexity of the lakebed habitat, (2) the difficulty of appreciating different areas, and (3) an urgent need for intensive lakebed mapping, monitoring and research to determine essential lakebed habitats, sensitive natural features, biodiversity investment areas and other technical information. Participants identified four innovative technologies

and their limitations in practice, which may be applied to monitoring the lakebed structures and habitat characteristics:

- aerial survey photographs –requires optimal water and weather conditions,
- light detection and ranging technology – limited by the water transparency,
- side-scan Sonar digital data processing technology - suitable for sea floor and lakebed mapping, and
- multi-beam technology – suitable for the lakebed monitoring under the deep water.

Agencies may also combine the above four new technologies to get a complete lakebed picture and use the terrestrial ecosystem as a precedent, but should be careful with these new technologies, and cannot presuppose. Remote sensing without ground proofing may be challenged in application of these technologies. Satellite imagery technology may also be helpful for time-change effects in shallow waters, e.g., blue/green algae, but not as detailed. It is important to get a real picture of the lakebed. Connecting waterways and reefs should also be considered. We should start with areas most readily justified, then other areas will follow easily. There are also some less expensive alternatives, listed below:

- Simple beam system is easier to manage and integrate the data;
- Agencies can put sounders on boats to collect data as well; and
- Underwater vehicles can provide interesting side scan.
- Deployment/recovery is difficult,
- This could be an area of cooperation with marine community,
- Requires a ship with dynamic positioning.

Agencies should check these devices over time because the aquatic substrate could be common denominator and then be considered as biological changes. Agencies should start with a crude initial view in order to “zone out” certain areas.

In addition, participants said, a well-done pilot project could give momentum for an effective lakebed resources monitoring, research and management because a pilot project:

- needs more comprehensive data and information for mapping,
- will promote data collection and management,
- needs form and function of habitat from many variable to map, and
- needs extensive political supports and coordinated efforts for optimal products.

It is possible for certain current lakebed alteration projects as a starting point for a longer single pilot program in the Great Lakes basin. These areas for the pilot projects should have biodiversity, depth, and high productivity. This group also recommended a special meeting for the protocol development of lakebed monitoring as soon as possible to determine where we want to go, and to find useful tools and technologies for lakebed habitat monitoring and management.

Findings and Recommendations from the Workshop

1. Findings

There are many physical construction projects either underway or proposed in the Great Lakes basin, which have potential adverse environmental impacts on the alterations and disturbances of lakebed habitat and surrounding environment, and we need paying more attentions to them. There is a need for some type of multi-state and bi-lateral notice and consultation scheme, similar to the original Great Lakes Charter of 1985, for evaluating larger lakebed alteration projects such as wind farms that may adversely impact more than one state or several states and the province of Ontario.

There are ample state, provincial and federal statutory and common law authorities (e.g., public trust doctrine on U.S. side) in the Great Lakes region to regulate and control a wide spectrum of lakebed alterations, including offshore energy projects, but there is a need for minor statutory amendments to address unique aspects of offshore energy projects like wind turbine farms. Consistent with the legal obligations of the public trust doctrine, clear and demonstrable public benefits must be assured as a prerequisite for locating new energy projects on the Great Lakes submerged bottomlands.

The GLFC and IJC have been playing important roles in dealing with these issues, but more efforts are needed for guiding and coordinating lakebed alteration projects in the Great Lakes and the connecting channels in the future.

Lakebed habitat is a complex combination of water, sediment and various aquatic biota, especially fish habitat, which can be easily damaged by physical, biological and chemical alterations or disturbances resulting from construction projects or physical structures built on, near or across the lakebed. The primary environmental impacts of concern for lakebed alteration projects are fishery impacts and impacts to other aquatic habitats, wildlife and birds – including both local waterfowl and migratory birds. There are also potential impacts to public drinking water supplies and public health concerns.

Developers are reluctant to consider placing wind turbines in greater than 50 feet of water depth because of limitations of current anchoring and supporting technologies, but it has been estimated that it should be at least 10 years before the technologies become available for greater than 100 ft water depths for establishment of wind turbine generators.

Offshore habitat surveys should be focused in the areas where offshore energy development is most likely to occur due to the availability of good connections to the existing electrical transmission

grids. Coastal dependency or water dependency is an essential criteria for determining the approvability or permissibility of a new energy project in the offshore or nearshore areas.

There are significant gaps in lakebed habitat research, monitoring and surveillance, as well as information inventory and technology exchange in the Great Lakes basin. There is a clear need for additional aquatic habitat analyses and lakebed habitat inventories to identify avoidance areas (e.g., sensitive areas) due to high valuable habitat or endangered species in the offshore areas for the considerations of lakebed alteration projects in the future.

2. Recommendations

The GLFC and IJC should continuously play their important roles in dealing with lakebed alteration projects in the Great Lakes basin in the future. It is necessary to integrate this issue into the U. S. and Canadian Governments upcoming review of the GLWQA.

The states, province and respective federal agencies should use their full legal authorities to carefully regulate the design, location and construction of lakebed alteration projects to avoid, minimize, and mitigate adverse impacts to the lakebed habitats. It is also necessary to strengthen governmental cooperation, coordination and regulation of these projects at bi-national, federal, state/provincial, and municipal levels in the Great Lakes basin. The states, province and federal agencies should share their information and experience regarding large-scale lakebed alteration projects such as wind farms, and coordinate their regulatory efforts to minimize administrative burdens on applicants and provide notice and opportunity for consultation on larger lakebed alteration projects that may impact more than one jurisdiction.

The states and province should carefully evaluate their respective leasing, deeding and easement fees and royalty rates for use and occupancy of submerged lands to ensure that full fair market value is

charged for the use of publicly owned bottomlands so that these resources are not viewed merely as a cheap and convenient location for energy projects.

The states and province should also evaluate their regulatory programs for such issues as water dependency and protection of public health concerns and, where necessary, develop regulatory criteria and technical standards to reflect these essential concerns.

The states should make full use of their Section 401 water quality certification and CZM federal consistency authorities to ensure that federally conducted or licensed projects (e.g., pipelines, hydroelectric facilities) comply with the state's water quality standards and coastal management policies.

If the uses are deemed "water dependent" and permissible uses of state and provincial bottomlands, then COMMON transmission corridors need to be identified for pipelines, electric lines and fiber optic cables to minimize fragmentation and lakebed disturbances.

It is also necessary to strengthen scientific research and monitoring to determine essential lakebed habitats, sensitive natural features, biodiversity investment areas, and other technical information and innovative technologies (e.g., lakebed mapping, mitigating or minimizing potential adverse environmental effects and any risks of lakebed alteration projects, preserving sensitive areas, protecting lakebed habitat, flying routes of migratory birds and their habitat, placing wind turbines in more than 100 ft water depths, wind power transmission and storage technologies, etc.), to develop a technical information inventory, and to establish a technical inventory and information exchange network of lakebed habitat and lakebed alteration projects in the Great Lakes basin as well.

Focused aquatic habitat inventories and surveys should be conducted in those portions of the Great Lakes basin where lakebed alteration projects (e.g., wind turbine generators) are most likely to be located due to transmission grid connections, and that areas of avoidance can be identified due to high

value habitats or particular sensitivity to disturbances. A possible source of funds for these focused aquatic habitat surveys are the Section 309 Assessment & Strategy funds of the eight states' CZM programs.

The precautionary principle should be applied to the projects associated with permanent physical structures either on, near, or across the bottomland of the lakebed.

Appropriate legislations regulations, strategic policies and technical standards also need to be promptly developed to effectively regulate and guide the lakebed alteration projects in the Great Lakes basin, e.g., renewable energy development projects.

For wind turbine projects, the primary priority should be put on mitigation, elimination or minimizing of the potential adverse effects on bird habitat and mortality by collisions, including local waterfowl and migratory birds. For other lakebed alteration projects, the emphases should be put on the adverse environmental impacts and potential risks on aquatic habitat (especially fish habitat) and wildlife, water quality and human health.

Agencies should develop technical information for lakebed resources planning and management strategically by: (a) focusing on bays, connecting watercourses, reefs and islands; (b) identifying ecological needs in advance (environmental objectives, species rehabilitation plans, biodiversity investment areas, etc.); (c) developing mapping needs that developers must meet; (d) addressing known shortcomings in technology (e.g., offshore wind turbines, better trenches, etc.); (e) suggesting desired technologies and remediation; (f) identifying least sensitive areas to target for least harmful alterations (e.g., the minimum percentage of non-reef, non-bay, non-connecting waters beyond intersection of thermocline with shore); and (g) considering opportunities for improving vetting in any revision of the GLWQA.

The Workshop Agenda

GLFC-Supported Lakebed Alteration Policy/Procedures Workshop

Ann Arbor, MI, September 20-21, 2005

U.S. Geological Survey Great Lakes Science Center

1451 Green Road, Ann Arbor, 48105

September 20

1 p.m. *Welcome and introductions* **Dave Dempsey**

- Background and purpose of workshop
- GLFC Artificial Reefs document
- Recent developments, technology and regulatory
- Use and audiences for GLFC report
- Workshop objectives
 1. Share information on the issues, impacts and legal framework
 2. Review recent experience with these types of projects
 3. Identify follow-up activities to help address issues and projects
 4. Help develop and refine recommendations to GLFC

2 p.m. *Background presentations:* Recent/historic projects and controversies

2:05 p.m. Cape Wind, Massachusetts **Karen Adams, New England District, U.S. Army Corps of Engineers**

2:45 p.m. The Elm Road Power Plant Intake Controversy: Science and Policy Considerations
Steve Ugoretz, Wisconsin DNR Office of Energy

3:15 p.m. Millennium Pipeline Project **State of New York – Steven Resler, Coastal Zone Management Program**

4 p.m. Break

4:15 p.m. Issue Considerations: Lessons Learned, Information Gaps and Research Needs

- Legal framework - US & Canada **Chris Shafer**
- Technical and Regulatory **Steve Ugoretz**
- Habitat/Ecology **John Gannon**

5:30 p.m. Adjourn

6 p.m. Social (Hampton Inn)

September 21

8 a.m. Continental breakfast

8:30 a.m. First day summary and charge to breakout groups

8:45 a.m. Small group discussions: *Discuss, make checklists, recommendations*

- Technological/Legal/Regulatory: **Steve Ugoretz, Chris Shafer, Moderators**
- Habitat/Ecology: **John Gannon, Moderator**

10 a.m. Break

10:15 a.m. Report and Wrapup **Dave Dempsey**

- Small group reports
- Identify policy, information and management gaps
- Identify possible courses of action
- Next steps
- Timing, content, distribution of workshop summary

11:30 a.m. Adjourn

Appendix E

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A List of Acronyms

CZM -- Coastal zone management

EIS -- Environmental impact statement

FERC -- Federal Energy Regulatory Commission

GLFC -- Great Lakes Fishery Commission

GLRO – Great Lakes Regional Office

GLWQA -- Great Lakes Water Quality Agreement

IJC – International Joint Commission

Millennium -- Millennium Pipeline Project

NOAA – National Oceanic and Atmospheric Administration

USGS – the United States Geological Survey

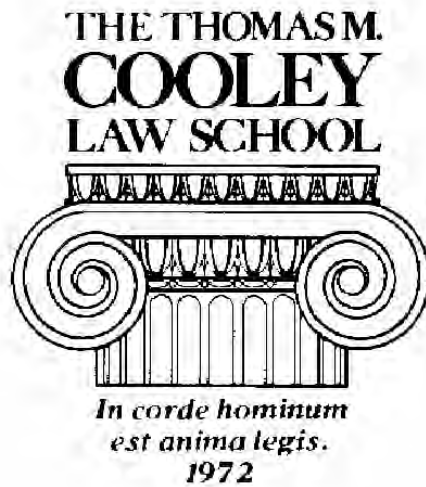
WDNR -- Wisconsin Department of Natural Resources

WPSC -- Wisconsin Public Service Commission

APPENDIX F

Review of Legal Authorities of the States and Ontario

With Respect to Managing Lakebed Habitat



LEGAL FRAMEWORK PERTAINING TO LAKEBED ALTERATIONS

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January 11, 2006

Legal Framework Pertaining to Lakebed Alterations

by Chris A. Shafer¹

I. Introduction

An increasing number of projects have recently been proposed that involve construction or placement of structures and alterations of the lakebeds or submerged lands of the Great Lakes. These include a variety of energy projects such as pipelines, water intake structures, cables, wind turbines, drilling platforms, and other projects that physically occupy the lakebeds of the Great Lakes. In response to this increased demand to physically alter the lakebeds, the Great Lakes Fisheries Commission funded a study with the following objectives: 1) evaluate the various energy-related projects proposed to be located on lakebeds and their associated environmental impacts; 2) analyze the legal framework of federal, state and provincial authorities for regulating such structures; and 3) propose policy guidelines concerning such lakebed alterations for the Commission's consideration. This background paper on the legal framework pertaining to lakebed alterations is part of this larger study effort. It analyzes various common law and statutory approaches for regulating such structures and projects, and identifies commonalities and differences between U.S. and Canadian federal authorities, among the Great Lakes states and with the Province of Ontario.

II. Overview of Energy Projects Recently Proposed on Lakebeds

A Westlaw search of Great Lakes newspapers conducted on February 2, 2005 and updated October 25, 2005, revealed that a variety of energy related projects and policies have

¹ Professor of Law, Thomas M. Cooley Law School, Lansing, Michigan. The author sincerely appreciates the financial assistance provided for this project by the Great Lakes Fishery Commission in Ann Arbor, Michigan. The author would also like to gratefully acknowledge the legal research assistance provided to this project by Ms. Alfreda Newton, J.D. (May 2005) Thomas M. Cooley Law School.

been proposed over the past five years. These range from new pipelines to transport natural gas, wind turbines to generate electricity, and directional drilling for natural gas beneath the lakebeds. The results of this media search are summarized in Table 1. It seems evident from this search that in addition to water intake structures associated with conventional electric generating plants, there is considerable interest in additional pipelines on Great Lakes bottomlands and wind turbine generators, which may be located either onshore or offshore. These projects would involve extensive dredging of the lakebed and placement of structures and anchoring mechanisms in the lakebed.

The Millennium Pipeline project, a proposed 36-inch natural gas pipeline running across the eastern end of Lake Erie, appears to have been the most serious recent pipeline proposal.² Another pipeline running 104 miles up the southern coast of Lake Michigan was proposed by Peoples Energy of Houston, Texas, but this project seems to have fizzled. In contrast, the Millennium Pipeline Company is pursuing its project in federal district court against the state of New York, which had objected to the issuance of the Federal Energy Regulatory Commission (FERC) license for the pipeline.³ Interest in wind turbines seems to be generated by a desire to harness the abundant winds blowing across the Great Lakes as a source of renewable and non-polluting energy production. At least some of the current interest in wind turbines is sparked by the large-scale project known as Cape Wind, which is proposed to be located on Nantucket Sound offshore of Cape Cod in Massachusetts.⁴ Already the subject of two federal lawsuits,⁵ the

² See generally Mary Beth Brandoni, *A Preliminary Discussion of Natural Gas Pipelines Under The Great Lakes*, 11 BUFF. ENVTL. L.J. 149 (2004).

³ See Telephone Interview, Steven C. Resler, New York Dept. of State, May 12, 2005.

⁴ See generally Matthew C. Heerde, *Don't Need A Weatherman To Know Which Way The Wind Blows: What Does The Cape Wind Decision Fortell For The Offshore Wind Energy Industry?*, 17 GEO. INT'L ENVTL. L. REV. 253 (2005).

TABLE 1.

| SUMMARY OF ENERGY PROJECTS PROPOSED OR HIGHLIGHTED IN GREAT LAKES NEWS MEDIA OVER LAST 5 YEARS | | |
|--|------------------------------|---|
| Date | Location | Type of Project |
| Aug. 30, 05 | Cleveland, Ohio | Tallest wind-monitoring tower on the Great Lakes installed on city's water intake crib in Lake Erie. <i>SOURCE: Cleveland Plain Dealer, Aug. 30, 2005.</i> |
| Aug. 14, 05 | Ontario portion of Lake Erie | Canadians still drilling in Lake Erie – 51 natural gas leaks between 1997-2001, and 83 oil spills between 1990-1995 reported. <i>SOURCE: Detroit News, Aug. 14, 2005.</i> |
| Aug. 7, 05 | Ohio portion of Lake Erie | President Bush expected to sign Energy Policy Act of 2005 that contains a permanent ban on drilling additional oil and natural gas wells beneath U.S. portion of Great Lakes. <i>SOURCE: The Toledo Blade, Aug. 7, 2005.</i> |
| July 10, 05 | Oceana County, Michigan | Michigan's largest wind power project – a 21-turbine wind farm – is proposed by Mackinaw Power in rural area close to Lake Michigan. <i>SOURCE: Detroit News, July 10, 2005.</i> |
| Feb 2, 05 | Illinois | Governor commits state to at least 8% of State's electricity to come from wind turbines. No specific location proposed. <i>SOURCE: Chicago Tribune – Feb. 2, 2005</i> |
| Feb 2, 05 | New York – N of Syracuse | Wind turbine generators – not on lake but on shoreline proposed by Zilkha Renewable Energy – 150 turbines @ 264 ft. tall with blades 120 ft across. <i>SOURCE: Feb. 1, 2005, www.energycentral.com</i> |
| May 16, 04 | Oak Creek, Wis. | 8000 ft long tunnel in bed of Lake Michigan as cooling water intake for twin coal fired electric power plants – Wisconsin Energy Corp. would withdraw 2.2 billion gallons per day from lake and discharge almost same volume 15° warmer temp. <i>SOURCE: The Milwaukee Journal Sentinel, May 16, 2004</i> |
| Aug 20,03 | Ohio | Governor Taft issues executive order banning oil and gas drilling in Lake Erie through 2006. <i>SOURCE: Columbus Dispatch, Aug. 20, 2003</i> |
| Feb 18, 01 | East end of Lake Erie | 93 mile 36" natural gas pipeline across bed of Lake Erie from Patrick Point, Ontario to Ripley, N.Y. – Millennium Pipeline – pending FERC approval. <i>SOURCE: Plain Dealer, Cleveland, OH, February 18, 2001</i> |
| 2000-2001 | Manistee, MI | Large controversy generated by slant drilling proposals in vicinity of Manistee, MI – under bed of Lake Michigan to complete 80-acre drilling units – Legislature passed law in 2002 that prohibits slant drilling or directional drilling under beds of Michigan's Great Lakes. <i>SOURCE: Gannet News Service, February, 2, 2003; Grand Rapids Press, April 12, 2002.</i> |
| 1999-2001 | West side of Lake Michigan | 104-mile, 36" natural gas pipeline from northern Indiana up to just north of Milwaukee – Proposed by Peoples Energy & Coastal Corp of Houston – last report as of June 7, 2001, Peoples Energy had pulled out due to environmental opposition. <i>SOURCE: Chicago Sun-Times, Inc., June 7, 2001; Houston Chronicle, Dec. 7, 1999.</i> |

⁵ See *id.* at 258-59.

Cape Wind project is currently winding its way through the environmental impact statement and regulatory process within the U.S. Army Corp of Engineers for the 130 turbine, twenty-four square mile wind farm.⁶

In the Great Lakes region, both the state of Michigan and province of Ontario are actively pursuing wind turbine generators. The Michigan Public Service Commission has a Wind Power Work Group that has been meeting periodically over the past year. This work group has been focusing on the feasibility of on-shore wind turbine generators, but they have recently released a report prepared by several graduate students at the University of Michigan that addresses offshore wind turbine generators.⁷ On the other side of the Lakes, the province of Ontario has developed a specific policy on encouraging wind power generators and how operators of wind farms would be allowed to lease Crown lands, which are administered by the Ontario Ministry of Natural Resources.⁸

An energy issue that illustrates a dramatic contrast between the Canadian side of the Lakes compared to the U.S. side is drilling for natural gas into the beds of the Great Lakes, either by offshore drilling platforms or through directional drilling from on-shore well pads. Currently, the province of Ontario maintains over 2000 natural gas wells into the bed of Lake Erie within Canadian waters, of which approximately 550 are actively producing natural gas.⁹ These wells

⁶ See generally, U.S. Army Corps of Engineers, New England District, Cape Wind Draft EIS/EIR Summary, Nov. 8, 2004; entire Cape Wind Draft EIS available at <http://www.nae.usace.army.mil>.

⁷ See generally Scott Pryor et al., Offshore Wind Energy Development in the Great Lakes: A Preliminary Briefing Paper for the Michigan Renewable Energy Program, April, 2005.

⁸ See Ontario Ministry of Natural Resources, Wind Power Development on Crown Land, PL 4.10.04 (April, 2005).

⁹ See Brandoni, *supra* note 2, at 159-160.

are connected by a series of natural gas pipelines and since 1955, no adverse environmental incidents related to these pipelines have been reported.¹⁰ In contrast, no natural gas wells have been drilled into the beds of the Great Lakes from offshore platforms on the U.S. side, and only a few have been completed using directional drilling from an upland site. In Michigan, between 1979 and 1997, 13 wells were directionally drilled into the bed of Lake Michigan under permits issued by either the Michigan Department of Natural Resources (MDNR), or since 1995 by the Michigan Department of Environmental Quality (MDEQ), with the bottom hole distances ranging from 30 feet to 3750 feet offshore and several thousand feet below the lakebed.¹¹

A firestorm of public controversy was generated in Michigan beginning in 1998 as a result of plans by Newstar Resources, a Canadian energy company, to directionally drill several wells into the bed of Lake Michigan in the vicinity of Manistee, Michigan.¹² This controversy ultimately culminated in 2002 with legislative amendments that prohibited the MDNR from issuing any bottomland leases for natural gas development and the MDEQ from issuing any drilling permits for new wells into the beds of Michigan's portion of the Great Lakes.¹³ In this same vein, Ohio's Governor Taft issued an Executive Order in August of 2003 prohibiting any oil or gas drilling in Ohio's portion of Lake Erie through 2006. Although it seems clear that there are very different attitudes on each side of the Great Lakes concerning drilling into the beds of the lakes for natural gas, certain state energy policies in Pennsylvania and New York seem to

¹⁰ *See id.* at 160, 162.

¹¹ *See* Larry R. Jensen, *Ensuring The Purity Of The Great Lakes: A Case For Federal Intervention In The Directional Drilling Process*, 1998 DET. C.L. MICH. ST. U.L. REV. 293, 296, FN13 (1998).

¹² *See* Table 1, *supra*.

¹³ *See* Part 329, Control of Certain State Lands, of the Natural Resources and Environmental Protection Act (NREPA), M.C.L. §324.33938(2), and Part 615, Supervisor of Wells, of NREPA, M.C.L. §324.61505(a).

allow and even encourage such energy development,¹⁴ so perhaps the differences aren't as clear as they seem at first blush. However, Section 386 of the Energy Policy Act of 2005¹⁵ contains a flat prohibition on any federal or state permit or lease being issued for new slant or directional drilling in or under the Great Lakes, so perhaps this issue is resolved for the time being on the U.S. side.

III. Common Law Authority – The Public Trust Doctrine

U.S. Side – An Overview

In terms of available common law authorities that may be used to control lakebed alterations, the public trust doctrine is unquestionably the strongest. The public trust doctrine traces its lineage back to Roman Law and the Codes of Justinean, which was later incorporated into English common law and ultimately recognized by federal and state courts in the U.S. in a series of decisions in the late 1800's.¹⁶ The basic tenet of the public trust doctrine is that certain natural resources, especially the waters and submerged lands of the seacoast and navigable lakes and streams, are of such importance to the public that they are incapable of purely private ownership and control.¹⁷ The public trust doctrine was first recognized in an 1821 New Jersey

¹⁴ See Pa. Dep't. of Environmental Protection, Coastal Zone Management Program Guidance Document, Policy 8.2, at 2-18 ("It is the policy of the Coastal Zone Management Program to facilitate the production of natural gas supplies in Lake Erie using proper, environmental safeguards....") (March 31, 1999); see also, New York Dep't. of State, Coastal Management Program, State Coastal Policies, Policy 29 at 42 ("Encourage the development of energy resources on the Outer Continental Shelf, in Lake Erie and other water bodies, and ensure the environmental safety of such activities.") (April, 2002).

¹⁵ See P.L. 109-58, Title III, §386, Aug. 8, 2005, 119 Stat. 744.

¹⁶ See generally David C. Slade, PUTTING THE PUBLIC TRUST TO WORK, 3-5 (2d ed. 1997); Chris A. Shafer, *Public Rights in Michigan's Streams: Toward A Modern Definition of Navigability*, 45 WAYNE L. REV. 9, 71 (Spring 1999).

¹⁷ See *id.*

case involving dredging an oyster bed on Raritan Bay,¹⁸ and then broadly extended to all tidelands and tidal rivers by the Supreme Court in *Martin v. Waddell's Lessee*, 41 U.S. (16 Pet) 367 (1842). The Court next extended the public trust doctrine up the Mississippi River in *Barney v. Keokuk*, 94 U.S. (4 Otto) 324 (1876), and finally into the Great Lakes in *Illinois Central R. Co. v. Illinois*, 146 U.S. 387, 437 (1892), a case that Professor Sax refers to as the “lodestar” of American public trust law.¹⁹

In *Illinois Central*, *supra*, the Court invalidated a purported legislative conveyance of over 1,000 acres of Lake Michigan bottomlands along the Chicago waterfront, *see id.* at 454, and held that certain uses of the navigable waters of the Great Lakes, including commerce, fishing and navigation, must be protected for the public. *See id.* at 452. In reaching this conclusion, the Court stated in a frequently quoted passage:

The state can no more abdicate its trust over property in which the whole people are interested, like the navigable waters and the soils under them, so as to leave them under the exclusive control of private parties, except in the instance of parcels mentioned for the improvement of navigation and use of the waters, or when parcels can be disposed of without impairment of the public trust interest in what remains, *than it can abdicate its police powers in the administration of government and the preservation of the peace.* *Id.* at 453 (emphasis added).

In describing the nature of the state’s trust in the Great Lakes submerged lands, the Court stated:

But it is a title different in character from that which the state holds in lands intended for sale . . . It is a title held in trust for the people of the state, that they may enjoy the navigation of the waters, and have liberty of fishing therein, *freed from the interference of private parties.* *Id.* at 452 (emphasis added).

¹⁸ *See Arnold v. Mundy*, 6 NJL 1 (NJ 1821).

¹⁹ *See Joseph L. Sax, The Public Trust Doctrine in Natural Resources Law: Effective Judicial Intervention*, 68 MICH. L. REV. 473, 489 (1970).

Just two years after its decision in *Illinois Central*, the Court strongly affirmed the public trust doctrine in *Shively v Bowlby*, 152 U.S. 1 (1894), a case the Court later referred to as “the seminal case in American public trust jurisprudence.”²⁰ This decision contains an excellent discussion of the evolution of the public trust doctrine from salt water tidal areas into freshwater rivers and lakes. *See Shively, supra* at 15-19, 49-50. The Supreme Court has recently affirmed the continued vitality of the public trust doctrine with its decision in *Phillips Petroleum, supra*, which confirmed state ownership over, and extended the public trust authority into very shallow tidal flats and coastal wetlands along the Gulf of Mexico in Mississippi. *See id.* at 476, 479-80.

As noted by the Court in *Illinois Central, supra*, the traditional uses that were protected by the public trust doctrine were commerce, navigation and fishing. Over the past thirty-five years state courts have substantially broadened the protected uses and resources to include recreational and ecological concerns,²¹ wetlands protection,²² and reducing diversions from non-navigable tributaries to protect a navigable lake.²³ From these cases and many others we can draw two overriding principles for state public trust administration: (1) states hold these resources in trust for the citizens of their respective jurisdictions and cannot divert or convey these resources to private parties, except for uses that enhance the trust, without first determining that the remaining trust resources will not be significantly impaired;²⁴ and (2) states have an affirmative duty to “protect the people’s common heritage of streams, lakes, marshlands, and tide

²⁰ *Phillips Petroleum Co. v. Mississippi*, 484 U.S. 469, 473 (1988).

²¹ *See Marks v. Whitney*, 491 P.2d 374 (Cal. 1971).

²² *See Just v. Marinette County*, 201 N.W.2d 761 (Wis. 1972).

²³ *See National Audubon Soc’y v. Superior Court of Alpine County*, 658 P.2d 709 (Cal. 1983).

²⁴ *See Illinois Central, supra*, at 452-53.

lands, surrendering that right of protection only in the rare case when the abandonment of that right is consistent with the purposes of the trust”.²⁵

The potential scope and power of this dynamic common law doctrine is illustrated by two Michigan cases. In extending the public doctrine into Michigan’s navigable rivers, the court determined in *Collins v. Gerhardt*, 237 Mich. 38, 47; 211 N.W. 115 (1926), that the riparian owner took title to their property subject to the state’s paramount trust interest. Regarding the nature of the state’s trust interest, the court stated that as long as water flowed and fish swam in the Pine River, the public’s rights of fishing and navigation “are protected by a *high, solemn and perpetual* trust, which it is the duty of the state to forever maintain.” *Id.* at 49 (emphasis in original). In *Obrecht v. National Gypsum Co.*, 361 Mich. 399; 105 N.W.2d 143 (1960), a case involving construction of a large commercial dock and navigation channel on Tawas Bay of Lake Huron, the Michigan Supreme Court stated that it, “equally with the legislative and executive departments is one of the sworn guardians of Michigan’s duty and responsibility as trustee” over the beds of the Great Lakes within the state’s boundaries. *Id.* at 412. In affirming the state’s authority to regulate navigation structures and protect Great Lakes submerged lands, the court determined that “the public title and right is supreme as against National Gypsum’s asserted right of wharfage, and [we] hold that the latter may be exercised by the company only in accordance with the regulatory assent of the state.” *Id.* at 413.

Status of the Public Trust Doctrine in the Great Lakes States

All eight Great Lakes states have recognized and embraced the public trust doctrine in some form in their case law, statutes, constitutions, administrative rules, or some combination of these authorities. However, because this is an evolving common law doctrine, each state may differ as to what resources are protected on behalf of its citizens. Courts in all Great Lakes states

²⁵ *National Audubon*, 658 P.2d at 724.

except Indiana have adopted the public trust doctrine for their navigable lakes and rivers. Although the Indiana Supreme Court has not fully used the phrase “public trust doctrine,” the Indiana Court of Appeals has applied certain principles of the doctrine to its cases. For example, in *Lake Land Co. v. State*, 68 Ind. App. 439; 120 N.E. 715 (1918), the court upheld an injunction against an Illinois company that was removing sand and gravel from the bed of Lake Michigan, in part because the bed of the lake was held in trust for the people. In addition the Indiana Department of Natural Resources has promulgated a rule that requires the public trust doctrine to be considered when issuing a permit for the extraction, removal and deposition of minerals or placement of structures in navigable waters of the state, including Lake Michigan.²⁶

The states of Illinois, Wisconsin and Michigan have especially rich histories of their courts applying the public trust doctrine to a variety of issues. It is not surprising that Illinois, the scene of the *Illinois Central Railroad* case on the Chicago waterfront, should be active in interpreting and applying the public trust doctrine. The Illinois Supreme Court first applied the public trust doctrine in *People ex rel. Maloney v. Kirk*, 162 Ill. 138, 157 (1896), and held that the state legislature had the authority to grant submerged lands to the Board of Park Commissioners to extend a public boulevard over the bed of Lake Michigan. Similarly, the Court held in *Bowes v. City of Chicago*, 3 Ill. 2d 175, 180 (1954), that the public trust doctrine was not violated by the city granting a lease for a water filtration plant in Chicago harbor provided that it did “not materially interfere with the use of the waters for navigation.” However, in *People ex rel. Scott v. Chicago Park District*, 66 Ill.2d. 65; 360 N.E.2d 773 (1976), the court invalidated a legislative conveyance of 194.6 acres of Lake Michigan bottomlands to the U.S. Steel Corporation as being

²⁶ See I.A.C. tit. 312, r. 6-1-1 (2005). See also Natural Resources Commission: The Public Trust Doctrine on Navigable Waters and Public Freshwater Lakes, 27 Ind. Reg. 6 (2004).

contrary to the public trust doctrine because there was no public purpose to be served by allowing the state to grant the submerged land for private use. The court held that the asserted public purpose “cannot be only incidental and remote. The claimed benefit [of] . . . employment and economic improvement is too indirect, intangible, and elusive to satisfy the requirement of a public purpose.” *Id.* at 80-81. Perhaps reflecting the more urban nature of the Chicago waterfront, the Illinois courts seem more willing to find grants of submerged lands as being in the best interest of the public, provided there are legitimate public benefits to be derived from the project.

The state of Wisconsin has a long tradition of applying the public trust doctrine to its navigable waters. An early expression of this was a provision of the state’s first constitution, adopted in 1848, that incorporated a provision of the Northwest Ordinance of 1787 that “all navigable waters flowing into the Mississippi and St. Lawrence Rivers remain free public highways.”²⁷ In *Diana Shooting Club v. Husting*, 15 Wis. 261, 271; 145 N.W. 816 (1914) the court expanded its definition of navigability to include recreational uses such as hunting and fishing. In 1952, based in part on the public trust doctrine, the court in *Muench v. Public Service Commission*, 53 N.W.2d 514, 519 (Wis. 1952), declared that navigability of a stream could be determined by its capacity to float recreational vessels, and that natural scenic beauty was a legitimate public right to be considered in evaluating a proposed hydroelectric dam. More recently, the court endorsed the public trust doctrine as providing a basis for the state to protect riverine floodplain and wetland habitat from private filling activities in *Just v. Marinette County*, 201 N.W.2d 761 (Wis. 1972). The court declared that “[t]he active public trust duty of the state of Wisconsin in respect to navigable waters requires the state to not only promote navigation but also to preserve and protect those waters for fishing, recreation and scenic beauty.” *Id.* at 768

²⁷ See John Quick, *The Public Trust Doctrine in Wisconsin*, 1 WIS. ENVTL. L. J. 105, 106 (1994).

(citing *Muench, supra*). And most recently in *State v. Trudeau*, 408 N.W.2d 337, 341 (Wis. 1987), a case involving a proposed condominium project along the Lake Superior shoreline, the court confirmed that title to the beds of the Great Lakes up to the ordinary high-water mark was held by the state in trust for the people of Wisconsin.

In Michigan, the public trust doctrine was used early on to determine the ownership of a large wetland complex lying at the mouth of the St. Clair River. In *State v. Lake St. Clair Fishing & Shooting Club*, 127 Mich. 580, 594-95; 87 N.W. 117 (1901), the court quoted extensively from *Illinois Central, supra*, to confirm state ownership and public trust nature of the bottomlands of Lake St. Clair. The Michigan Supreme Court then extended the public trust doctrine up into the state's navigable rivers in *Collins, supra*, applied it to the bottomlands of Lake Michigan in *Hilt v. Weber*, 252 Mich. 198, 217; 233 N.W. 159 (1930), and over to the submerged lands of Lake Huron in *Obrecht, supra*. More recently, the Court in *Peterman v. Dep't of Natural Resources*, 446 Mich. 177, 193; 521 N.W.2d 499 (1994), a case involving damage caused to private beachfront property on Grand Traverse Bay by construction of a public boat launch ramp, the court confirmed the state's ownership below the ordinary high-water mark and public trust responsibility over the Great Lakes bottomlands.

Most recently, the Michigan Supreme Court issued its decision in *Glass v. Goeckel*, 473 Mich. 667; 703 N.W.2d 58 (2005), concerning the public's rights along the shoreline of the Great Lakes. In what began as a nasty dispute between two neighbors along the Lake Huron shoreline in Alcona County and ended as a landmark decision, the Court held that the public has a right to walk along the shores of the Great Lakes on the sandy shoreline or exposed lakebed below the ordinary high-water mark. *See id.* at 674-675. The Court firmly grounded its decision in the public trust doctrine and stated emphatically that "the public trust doctrine is alive and well in Michigan...." *Id.* at 681.

One final note about the public trust doctrine in Michigan is worth mentioning and that is the Great Lakes Submerged Lands Act, originally enacted in 1955 and amended in 1965 and 1968, and now codified at Part 325, Great Lakes Submerged Lands, of NREPA, M.C.L. 324.32501 *et seq.* This statute, almost unique among the Great Lakes states, is essentially a codification of the public trust doctrine for Michigan’s Great Lakes domain.²⁸ Now administered by the Michigan Department of Environmental Quality (DEQ), the act has repeated references to public trust principles and mandates. For example, Section 3 of Part 325 authorizes the DEQ to enter into agreements and leases for the private use of waters and submerged lands “after a finding that the public trust in the waters will not be impaired or substantially affected.” M.C.L. 324.32503(1). This section also authorizes the DEQ to regulate “dredging or placing spoil or other material on bottomlands,” M.C.L. 324.32503(2), a provision that is fully consistent with the public trust mandate to protect the waters and beds of the Great Lakes,²⁹ and the constitutional mandate to prevent pollution, impairment and destruction of the state’s natural resources. *See* Const. 1963, art. 4, §52.

Another powerful reflection of the public trust doctrine appears in the constitution of the Commonwealth of Pennsylvania. Although a 1928 Attorney General’s opinion declared that the submerged lands beneath navigable waters belonged to the commonwealth and were held in trust for public use,³⁰ and the Pennsylvania courts had reached similar conclusions,³¹ the Pennsylvania

²⁸ *See* Shafer, *supra*, at 85. *See also* *Superior Public Rights v. Dep’t of Natural Resources*, 80 Mich. App. 72, 85; 263 N.W.2d (1977), where the Court of Appeals stated that “[t]he test set forth in *Illinois Central*, *supra*, and the Great Lakes Submerged Lands Act, *supra*, are nearly identical and go about protecting public trusts in a similar manner.”

²⁹ *See also* 1999 A.C. R. 322.1001 *et seq.*, for administrative rules promulgated under Part 325 that also contain numerous public trust requirements.

³⁰ *See* 12 Pa. D. &C. 88 (1928).

³¹ *See e.g. Leigh Falls Fishing Club v. Andrejewski*, 735 A.2d 719 (Pa. Sup. 1999).

Constitution was amended on May 18, 1971 by adding a new section, referred to as Article I, Section 27, or the Environmental Rights Amendment. This amendment provides as follows:

Article I, Section 27 Natural resources and the public estate

The people have a right to clean air, pure water, and to the preservation of the natural, scenic, historic and aesthetic values of the environment. Pennsylvania's public natural resources are the common property of all the people including generations yet to come. As trustee of these resources, the Commonwealth shall conserve and maintain them for the benefit of all the people.

The first sentence of this amendment creates important personal “environmental rights” similar to those found in our Bill of Rights in the U.S. Constitution such as due process, freedom of speech and freedom of religion, which citizens can assert on their own, if necessary. *See Pennsylvania Gas and Water Co. v. Kassab*, 14 Pa. Cmwlth. 564; 322 A.2d 775 (1974). The remaining portion of the amendment imposes specific duties on the Commonwealth to act as a trustee to conserve and protect Pennsylvania's natural resources. The Pennsylvania courts have held that this amendment is self-executing, meaning that no additional legislation is necessary before the court will enforce the rights and duties created by Article I, Section 27. *See Payne v. Kassab*, 11 Pa. Cmwlth. 14; 312 A.2d 86 (1973), *aff'd* without a general ruling on self-execution, 468 Pa. 226; 361 A.2d 263 (1976). In addition to publicly owned land, air and water are clearly included in the public trust. *See Commonwealth v. Barnes and Tucker Co.*, 455 Pa. 392, 412; 319 A.2d 871, 872 (1974). According to *Commonwealth v. National Gettysburg Tower, Inc.*, 8 Pa. Cmwlth. 231; 302 A.2d 586 (1973), *aff'd* 454 Pa. 193; 311 A.2d 558 (1973), Article I, Section 27 also protects natural, scenic, aesthetic and historic values, which gives Pennsylvania one of the broadest versions of the public trust doctrine in the United States.

Canadian Side – No Public Trust Doctrine in Ontario

In contrast to the universal adoption of the public trust doctrine in one form or another by the eight Great Lakes states, the doctrine has not yet been adopted by any Canadian court. In fact, in the only decision that directly addressed the doctrine, *Green v. Ontario*, 2 O.R. 396 (1973), a case involving a challenge to sand dune mining in a Provincial Park on Lake Ontario, the court flatly rejected application of the public trust doctrine. Several authors have advocated that the Canadian courts should import the public trust doctrine from its southern neighbor and provided a reasoned legal analysis for such adoption,³² but so far to no avail. However, a recent Canadian Supreme Court decision involving timber harvesting on Crown Land and the value of fire-damaged timber, *British Columbia v. Canadian Forest Products Ltd.*, 2004 S.C.C. 38, shows some promise for future adoption of the doctrine.³³ In this case, referred to as the Canfor decision, the Court expressed strong support for environmental values and stated that “environmental protection has emerged as a fundamental value in Canadian society.” *Id.* at para. 8. The Court also specifically discussed the public trust doctrine (*see id.* at paras. 79-80) and quoted from *Illinois Central, supra*, but ultimately concluded that the factual record in the case did not support addressing the “novel policy questions” or adopting the public trust doctrine in the posture of the case. *See id.* at paras. 81-82.

Despite the lack of formal adoption of the public trust doctrine by the Canadian courts, certain aspects of the doctrine are present in Canadian law. First, under Section 109 of the Canadian Constitution Act of 1867,³⁴ the provinces own all minerals and other natural resources

³² See Barbara von Tigerstrom, *The Public Trust Doctrine in Canada*, 7 J. ENVTL. L. PRAC. 379 (1997). See also, Constance D. Hunt, *The Public Trust Doctrine in Canada*, in ENVIRONMENTAL RIGHTS IN CANADA (John Swaigan, ed. (1981)).

³³ See Jerry V. DeMarco, *Law For Future Generations: The Theory Of Intergenerational Equity in Canadian Environmental Law*, 15 J. ENVTL. L. & PRAC. 1 (2004).

and have jurisdiction over property within a province.³⁵ This, combined with Section 117, which provides that the provinces retain the remainder of public lands including the ownership of water, not specifically allocated to the federal Crown in Section 108 for navigation and other general purposes, means that the Province of Ontario owns the bed, the fish and water on the Canadian side of the Great Lakes.³⁶ Although the province owns the beds of the Great Lakes within its jurisdiction as Crown land, the Canadian courts have recognized since the 1880's that the public has a right to fish and navigate in these waters.³⁷ What seems to be missing is the concept that these natural resources are held in trust for the people of Ontario and that citizens have a right to seek judicial enforcement of their public trust rights.³⁸ Although the Northwest Territories with its Environmental Rights Act,³⁹ and the Yukon Territory with its Environmental Act⁴⁰ have statutorily embraced the public trust doctrine, the Province of Ontario has not done this either judicially or legislatively.

³⁴ Constitution Act, 1867, 30 & 31 Vict., art VIII, §109.

³⁵ See Canadian Environmental Law Research Foundation, *An Overview of Canadian Law and Policy Governing Great Lakes Water Management*, 18 CASE W. RES. J. INTL. L. 109, 111 (1986).

³⁶ See *id* at 120-121.

³⁷ See *e.g.*, *Wood v. Esson*, 9 S.C.R. 239 (1886).

³⁸ See Canadian Environmental Law Research Foundation, *supra* note 33, at 117.

³⁹ See R.S.N.W.T. 1988, c. 83, §1 and 6(1).

⁴⁰ See R.S.Y. 2002, c. 76, §2.

IV. State and Provincial Statutory Authorities for Regulating and Leasing Submerged Lands

All of the eight Great Lakes states and the Province of Ontario have existing statutory authorities to regulate construction activities on Great Lakes bottomlands or submerged lands. In general, these permitting statutes regulate filling, excavating materials, and placing structures on the beds of the Great Lakes. The states and province are generally mandated in these permitting statutes to protect the public's interests in navigation, fishing, water quality, and in at least three instances to protect specifically the state's public trust interests in the Great Lakes bottomlands.⁴¹ States with smaller Great Lakes shorelines typically include the Great Lakes within the scope of a broader statute that protects all of the state's navigable lakes and streams. The Rivers, Lakes and Streams Act⁴² in Illinois, the Navigable Waterways Act⁴³ in Indiana, the Protected Waters Act⁴⁴ in Minnesota, and the Dam Safety Act⁴⁵ in Pennsylvania are examples of this type of permitting statute. The state of Michigan, with its 3,288 miles of Great Lakes shoreline and over 23 million acres of Great Lakes bottomlands, has a special purpose statute, the Great Lakes Submerged Lands Act, *supra*, that governs construction projects on Great Lakes bottomlands. And Wisconsin, which has substantial jurisdiction on Lakes Michigan and Superior and many inland navigable rivers, has codified all of its water regulatory and navigation authorities into Chapter 30.⁴⁶

⁴¹ See e.g., 615 IL.C.S. 5/24 (Illinois), M.C.L. 324.32303 (Michigan), O.R.C. 1506.10 (Ohio).

⁴² 615 IL.C.S. 5/4.9 *et seq.*

⁴³ I.C. 14-29-1 *et seq.*

⁴⁴ Minn. Stat. 103G. 245 *et seq.*

⁴⁵ 32 P.S. 693.1 *et seq.* and 25 PA. CODE §105.32.

⁴⁶ Wis. Stats. §30.01 *et seq.*

In Ontario, work permits are required for construction projects on Great Lakes bottomlands under Section 14 of the Public Lands Act.⁴⁷ This statute governs uses and construction activities on Crown lands, which include both uplands and lakebed, but the statute specifically addresses dredging or filling any shore lands or placing any structures or buildings on public lands.⁴⁸ In addition to the policy on Wind Power Development on Crown land, *supra*, which has several provisions regarding the use of submerged lands, the Ontario Ministry of Natural Resources (OMNR) has issued a policy entitled Public Lands Work Permits,⁴⁹ which provides very detailed guidance on evaluating projects that involve dredging or filling shore lands and projects that may interfere with coastal processes such as groins and offshore breakwaters.⁵⁰ It is evident from this statute and these policies that the province has ample authority and capability to carefully regulate dredging, filling and placing structures on Great Lakes submerged lands. In this regard, the province is currently evaluating its first wind farm proposed to be located on Great Lakes submerged lands in Lake Erie, and anticipates an application in the future for a wind farm on Georgian Bay of Lake Huron.⁵¹ However, OMNR officials encountered significant opposition to the proposed wind farm from cottage owners based on aesthetic concerns when public meetings were held on Georgian Bay this past summer.⁵²

⁴⁷ R.S.O. (1990) ch. P. 43, §1 *et seq.*

⁴⁸ *See id.* at §14, (b), (d) and (e).

⁴⁹ *See* PL 3.03.04 (Aug. 13, 2003).

⁵⁰ *See id.* at 5.1 and 5.7.

⁵¹ *See* Telephone Interview, Ms. Kathy Hawthorne, Policy Analyst, Ontario Ministry of Natural Resources (May 19, 2005).

⁵² *See* Telephone Interview, Ms. Kathy Hawthorne, *supra*, (Nov. 8, 2005).

The foregoing permitting authorities give the states and province direct control over the various types of structures placed on their submerged lands, including the design and location of structures. Permit conditions can and are routinely attached to such permits to protect essential aquatic habitat and minimize interference with coastal processes. The states and province can also attach conditions that require monitoring of permitted structures and projects to ensure that the projects perform as expected and that adverse impacts have indeed been avoided and/or minimized. As an extension or reflection of these regulatory authorities, the public trust doctrine creates an affirmative duty for the states to protect their submerged lands and other trust resources, and also creates a legal basis for citizens and environmental groups to challenge a state's decision in court that may be contrary to its trust responsibilities.⁵³

In addition to the permitting authorities discussed above, all of the states and province have existing authority to enter into leases, deeds, easements and other forms of agreements for the use of the Great Lakes bottomlands.⁵⁴ Whether for a utility water intake, an offshore breakwater, a drilling platform, a buried gas pipeline or the anchoring structure for an offshore wind turbine generator, the structure is using and occupying publicly owned submerged lands and the private developer generally has to pay fair market value for that privilege. In this sense, the state or province is acting as the state or provincial landlord and must ensure a fair return for the use of public lands. In this context a serious problem surfaced during the Millennium Pipeline Project, which proposed to cross Pennsylvania's submerged lands on Lake Erie. Apparently the Commonwealth traditionally charged a flat fee of \$5,000 for a pipeline crossing

⁵³ See *eg.*, *Lake Michigan Fed'n v. U.S. Army Corps of Engineers*, 742 F. Supp. 441 (N.D. Ill. 1990) (invalidating state conveyance of 18.5 acres of Lake Michigan bed to private university for landfill).

⁵⁴ See *eg.*, 615 IL.C.S. 5/18(b) & (c) (Illinois); O.R.C. §1501-6-05 and §1506.11 (Ohio); M.C.L. §324.32503 (Michigan); Wis. Stats. Chapter 30, §30.30 and §30.31 (Wisconsin), R.S.O. (1990), ch. 43 §16 (Ontario).

of a navigable waterway, regardless of whether the pipeline crossing was a few feet or several thousand feet long.⁵⁵ This flat fee had a certain logic for a crossing of a river, but not for a lengthy crossing of Lake Erie. Apparently the Millennium Pipeline Company was delighted to pay \$5,000 for an easement across submerged lands that would have cost hundreds of thousands of dollars if it were located on upland.⁵⁶ The Commonwealth of Pennsylvania has been working to correct this problem and collect fair market value for any future pipeline crossings on its Lake Erie bottomlands.

When the states or province control the use and occupancy of the Great Lakes bottomlands, they are not just using their police powers, but also their proprietary or ownership power, and at least on the U.S. side, their public trust responsibilities over these publicly owned bottomlands. This combination of authority provides the states and province with an extremely strong basis for determining the appropriate design, location and use of Great Lakes submerged lands, and virtually insulates them from any regulatory taking claim because it is the publicly-owned bottomlands that are being controlled and regulated, not privately owned property.⁵⁷ A good example of how this works in practice is in the Province of Ontario, where the Ministry of Natural Resources does not issue a submerged lands lease or easement until all federal and provincial environmental and navigation permits are issued.⁵⁸ In this way, the province holds the final trump card in the process, which is only appropriate since it is their public land that is affected by the project.

⁵⁵ See Brandoni, *supra* note 2, at 155.

⁵⁶ See *id.*

⁵⁷ See Shafer, *supra* note 16, at 94-100.

⁵⁸ See Telephone Interview, Ms. Kathy Hawthorne, *supra* note 51.

Other State and Provincial Statutory Authorities

The states and province of Ontario have a variety of other statutory authorities that may be helpful in regulating energy projects and controlling lakebed alterations. For example, the states of Minnesota, Ohio, New York and Wisconsin have power plant siting statutes⁵⁹ that generally require comprehensive advance planning and site approval for major new energy facilities and power plants. Other states like Indiana and Michigan still rely primarily on the more traditional Public Utility Commission or Public Service Commission to issue certificates of public convenience and necessity for new power plants.⁶⁰

Several governments, including Indiana, Minnesota, Wisconsin and Ontario have statutes⁶¹ that require detailed environmental assessments or environmental impact reviews for significant projects similar to the environmental impact statement (EIS) process required under the National Environmental Policy Act (NEPA)⁶² for major federal projects affecting the environment. These statutes generally require a careful analysis of anticipated adverse impacts and an evaluation of alternatives to a proposed project, and could be very helpful in evaluating a major new pipeline or wind farm project proposed to be located on Great Lakes submerged lands.

⁵⁹ See Minn. Stat. §§116C.51-69 (Minnesota); Article 6 of New York State Energy Law (New York); O.R.C. §4935.01 *et seq.* (Ohio); and Wis. Stats. §196.491 (Wisconsin).

⁶⁰ See *eg.*, I.C. 8-1-8.5-2 and 5 (Indiana).

⁶¹ See Indiana Environmental Protection Act, I.C. 13-12-4-01 *et seq.*; Minnesota Environmental Policy Act, Minn. Stat. §116 D.04 and 045; Wisconsin Environmental Policy Act, Wis. Stats. §1.11; and the Ontario Environmental Assessment Act, R.S.O. (1990) ch. E-18.

⁶² See 42 U.S.C. §§4321-4370a.

In addition to the environmental impact assessment requirements, several states including Indiana, Michigan, and Minnesota, have statutes⁶³ that allow citizens and environmental groups to file suits in court to challenge projects that may significantly harm or damage the environment. These statutes are generally patterned after Michigan's Environmental Protection Act (MEPA) *supra*, which allows citizens to seek to enjoin projects that will or are likely to pollute, impair or destroy the state's natural resources.⁶⁴ The province of Ontario has a similar statute, the Ontario Environmental Bill of Rights,⁶⁵ but this statute seems to be more deferential to the administrative agency's decision and more limited in its access to the courts than Michigan's statute.⁶⁶ These statutes all have common objectives of making administrative agencies more accountable for the permitting decisions and direct construction projects they undertake that significantly affect the environment, and to make it easier for citizens to have access to the courts to protect their environmental rights. These additional state and provincial management authorities are summarized in Table 2.

⁶³ See Indiana's Environmental Citizen Suit Act, I.C. 13-30-1-1 *et seq.*; Michigan's Environmental Protection Act, Part 17 of NREPA, M.C.L. §§324, 1701-1706; and Minnesota's Environmental Rights Act, Minn. Stat. ch. 116 B.01 *et. seq.*

⁶⁴ See M.C.L. §324.1701.

⁶⁵ See R.S.O. (1993) ch. 28.

⁶⁶ See Joseph F. Castrilli, *Environmental Rights Statutes In The United States And Canada: Comparing The Michigan And Ontario Experiences*, 9 VILL. ENVTL. L. J. 349, 435-436 (1998).

TABLE 2. – Summary of State and Provincial Management Authorities

| Energy Project Management Authority | Illinois | Indiana | Michigan | Minnesota | Ohio | New York | Pennsylvania | Wisconsin | Ontario |
|--|----------|---------|----------|-----------|------|----------|--------------|-----------|---------|
| Adopted Public Trust Doctrine | X | X | X | X | X | X | X | X | |
| Submerged Lands Permitting Authority | X | X | X | X | X | X | X | X | X |
| Submerged Lands Leasing, Deeding or Easement Authority | X | X | X | X | X | X | X | X | X |
| Power Plant Siting Statute | | | | X | X | X | | X | |
| Environmental Citizen Suit Statute | | X | X | X | | | X | | |
| EIS Requirements for Major Projects | X | X | | X | | X | | X | X |
| CZM Federal Consistency Authority | | X | X | X | X | X | X | X | |
| 401 W.Q. Certification Authority | X | X | X | X | X | X | X | X | |

Two other important statutory authorities are conferred upon the states by federal law and these are the Section 401 water quality certification requirements of the Clean Water Act (CWA),⁶⁷ and the Section 307 federal consistency requirements of the Coastal Zone Management Act (CZMA).⁶⁸ Section 401 of the CWA requires that applicants for any federal license or permit for activities involving discharges into navigable waters must provide a certification from the affected state that the proposed project meets the state’s water quality standards.⁶⁹ These applicable water quality standards can be numeric standards for such

⁶⁷ See 33 U.S.C. §1251 *et seq.* (2001).

⁶⁸ See 16 U.S.C. §§1451-1465 (2000).

⁶⁹ See 33 U.S.C. §1341 (2001).

constituents as dissolved oxygen, or specific designated uses such as high quality trout streams, which are authorized under Section 303 of the CWA.⁷⁰ The leading case involving application of the Section 401 certification authority, *PUD NO. 1 v. Washington Dep't of Ecology*, 511 U.S. 700 (1994), involved a proposed new hydroelectric project on the Dosewallips River, located just outside Olympic National Park in Washington State. *See id.* at 703. The State of Washington, using its Section 401 certification authority, imposed minimum stream flow requirements on the FERC license to protect a high quality trout stream, and the Court upheld this action as a legitimate exercise of authority under the CWA. *See id.* at 723.

In the Great Lakes region, all of the states exercise their 401 water quality certification authority pertaining to federal licenses and permits, but it appears that Indiana and Ohio place considerably more emphasis on this authority to protect coastal wetlands and aquatic habitats.⁷¹ This may be because these two states don't have comprehensive state wetland protection statutes as do the states of Minnesota, Michigan and Wisconsin.⁷² The Section 401 water quality certification authority is a powerful tool authorized by federal law that allows states to require that federal licenses and permits for new construction projects affecting navigable waters, including energy projects, comply with state water quality standards, including specifically the protection of critical aquatic habitat.

A similar authority exists for states with federally approved coastal zone management programs, and this is referred to as the federal consistency authority authorized under Section

⁷⁰ *See* 33 U.S.C. §§1311, 1313 (2001).

⁷¹ *See* Indiana Lake Michigan Coastal Program and Final Environmental Impact Statement, 124, 175 (April 2002), and Ohio Coastal Management Program and Final Environmental Impact Statement, 50-55 (March 1997).

⁷² *See eg.*, Minnesota Wetland Conservation Act, Minn. Stat. §1036.222 *et seq.*, and Part 303, Wetlands Protection, of NREPA, M.C.L. §324.30301 *et seq.*

307 of the CZMA.⁷³ This section requires that all federal licenses and permits, direct federal construction projects, and federal grants for activities in a state's coastal zone must be conducted in a manner that is consistent with the state's federally-approved coastal management program.⁷⁴ The scope of this federal consistency authority is quite broad and would include FERC licenses for pipelines or hydroelectric facilities, direct construction projects undertaken by the Corps of Engineers, and Department of Energy grants and loans for development of wind turbine generators. The geographic scope of this authority is also quite broad because all of the Great Lakes states except Illinois have federally approved coastal management programs. Unfortunately, there is no comparable federal statute on the Canadian side for the province of Ontario to utilize.

A specific example of applying this federal consistency authority involved the Millennium Pipeline project that proposed to cross Lake Erie from Canada, travel south through the State of New York and terminate at New York City. The pipeline required a FERC license on the U.S. side, and when the applicant refused to relocate the crossing of the Hudson River to avoid a state designated critical fish habitat area, the state of New York found issuance of the FERC license to be inconsistent with its federally approved coastal management program in 2002.⁷⁵ The applicant appealed the state's consistency determination to the U.S. Secretary of Commerce, who upheld the state's decision.⁷⁶ Although this matter is currently pending in federal district court, it illustrates the significant strength of the federal consistency authority to protect critical coastal habitat areas.

⁷³ See 16 U.S.C. §1456 (2000).

⁷⁴ See *id.* at §1456 (c).

⁷⁵ See Telephone Interview, Steven C. Resler, N.Y. Dep't of State (May 12, 2005).

⁷⁶ See Consistency Appeal of Millennium Pipeline Co, L.P. from an objection by the State of New York, 2003 NOAA LEXIS 17 (Dec. 12, 2003), available at <http://www.ogc.doc.gov/czma.htm>.

Another section of the CZMA, Section 309,⁷⁷ requires states with approved coastal programs to periodically conduct assessments of new and emerging issues, including the siting of energy facilities, and to develop strategies for addressing these issues and protecting coastal resources. The state of Michigan is currently revising and updating its Section 309 Assessment and Strategy and is looking at ways in which wind turbine generators may affect Michigan's coastal area.⁷⁸ This may eventually lead to the state making financial grants to shoreline communities to update their master plans and zoning ordinances to help control land use impacts of wind farm developments. Controlling the on-shore land use impacts of energy projects like wind farms is largely the domain of cities, counties and townships on the U.S. side through the various state planning and zoning enabling statutes,⁷⁹ and the coastal programs routinely make grants to local units of government to assist with these efforts. One New York municipality on Lake Ontario, for example, is currently evaluating height limitations on wind turbine generators to address aesthetic concerns with the state's encouragement.⁸⁰

V. Overview of Federal Authorities – U.S. and Canada

Federal authorities pertaining to lakebed alterations on both sides of the Great Lakes are primarily concerned with protecting and regulating certain issues of national importance such as navigation, water quality, fisheries, migratory birds and endangered species. On the U.S. side, the primary federal agency for regulating lakebed alterations is the Army Corps of Engineers

⁷⁷ See 16 U.S.C. §1456.b

⁷⁸ See Personal Interview, Catherine Ballard, Mich. Dep't of Environmental Quality (May 5, 2005).

⁷⁹ See *eg.*, Municipal Planning Act, M.C.L. 125.31 *et seq.*; Township Planning Act, M.C.L. 125.32 *et seq.*; Municipal Zoning Act, M.C.L. 125.581 *et seq.*; Township Zoning Act, M.C.L. 125.271 *et seq.*

⁸⁰ See Telephone Interview, Steven C. Resler, *supra* note 75.

(COE), which has authority to regulate filling and placement of structures that may interfere with navigation under Section 10 of the Rivers and Harbors Act of 1899,⁸¹ and to control the discharge of dredged or fill material into navigable waters and adjacent wetlands under Section 404 of the CWA.⁸² Since 1899 the COE has had broad authority to regulate placement of wharves, piers, docks, breakwaters, bulkheads, jetties and other structures into the navigable waters of the U.S. Since 1977, the COE has also had broad authority to regulate the discharge of dredged or other fill material into the waters of the United States and adjacent wetlands. Lakebed alterations for energy projects would almost certainly require permits under either Section 10 or Section 404, or both, and the COE would evaluate the proposed project for its impact on navigation, water quality, aquatic habitat and endangered species, among other concerns. A recent example of the COE's jurisdiction over energy projects located on submerged lands is the previously discussed Cape Wind project on Nantucket sound, where until recently the COE has been the lead federal regulatory agency.⁸³ Table 3 summarizes the primary federal authorities and agencies involved in regulating wind turbine projects on the U.S. side.

In terms of regulating pipelines on the U.S. side, the Federal Energy Regulatory Commission (FERC) is the lead federal regulatory agency under the Natural Gas Act⁸⁴ for the siting, construction and operation of interstate gas pipelines. FERC is also the primary federal agency that regulates new or expanded hydroelectric facilities under the Federal Power Act.⁸⁵

⁸¹ See 33 U.S.C. §403 (2000).

⁸² See 33 U.S.C. §1344 (2001).

⁸³ See COE DEIS, Cape Wind, *supra* note 6. See also Heerde, *supra* note 4.

⁸⁴ See 15 U.S.C. §717 *et seq.* (1997).

⁸⁵ See 16 U.S.C. §791a *et seq.* (2000).

TABLE 3. – Summary of Federal Permits for an Off-Shore Wind Farm

| Agency | Jurisdiction | Permit Description |
|---|--|---|
| U.S. Army Corps of Engineers | Rivers and Harbors Act Section 10 jurisdiction for work in navigable waters of the United States | Individual Permit – Section 10 |
| | Direct and indirect effects on designated historic properties, offshore and upland | Review for compliance with Section 106 of National Historic Preservation Act (NHPA) as amended through 2000 |
| Council on Environmental Quality, National Environmental Policy Act | NEPA jurisdiction is over the entire project | Draft Environmental Impact Statement |
| | | Final Environmental Impact Statement |
| | | Record of Decision |
| U.S. Environmental Protection Agency | USEPA jurisdiction is on the upland component of the Project and under the Clean Air Act for emissions and for NEPA (Section 309) review | NPDES General Stormwater Permit |
| Federal Aviation Administration | Structures exceeding 200 feet into navigable airspace | Notice of Proposed Construction or Alteration Form (FAA Form 7460-1) |
| U.S. Coast Guard | Structures located in navigable waters of the U.S. | Permit to Establish and Operate a Private Aid-to-Navigation to a Fixed Structure |
| U.S. Fish & Wildlife Service | Review for impacts to threatened or endangered species and critical habitat | Authorization under Endangered Species Act of 1973 |
| U.S. Fish & Wildlife Service | Review and coordination of impacts for fish, wildlife and migratory birds | Certification under Fish and Wildlife Coordination Act of 1958. |

Modified from Table 1-2 – Cape Wind DEIS Executive Summary at 1-24. (Nov. 9, 2004)

Licenses for hydroelectric projects are issued for terms up to 50 years in length, and FERC’s jurisdiction is exclusive, meaning that the Federal Power Act preempts state regulatory authority over federally licensed hydroelectric projects.⁸⁶ But, as we saw in the preceding section, the Section 401 water quality certification and Section 307 federal consistency provisions give states substantial influence over the FERC permitting process. In both the FERC

⁸⁶ See 16 U.S.C. §799 (2000).

and COE permitting processes there are public notices and public hearings that provide opportunities for concerned citizens and environmental groups to express their views on a proposed energy project. In addition, at least an environmental assessment and perhaps a full environmental impact statement would be prepared for larger projects to comply with the NEPA requirements.⁸⁷

On the Canadian side, the National Energy Board is the rough equivalent of FERC and regulates the location and construction of inter-provincial natural gas pipelines.⁸⁸ For projects that involve placement of structures in navigable waters, including the Great Lakes, the Ministry of Transport is the rough equivalent of the Corps of Engineers and regulates dredging, filling and placement of structures in navigable waters under the Navigable Waters Protection Act.⁸⁹ In addition, Section 108 of the Canadian Constitution⁹⁰ reserves ownership rights over navigation structures such as lighthouses, navigation canals and associated power generation, and public harbors such as Kingston, Ontario, to the federal government.

Key habitat protection provisions concerning lakebed alteration projects are included in the Fisheries Act,⁹¹ which is administered by the Department of Fisheries and Oceans. This federal act calls for no net loss of habitat and promotes the net gain of fisheries habitat. Approvals under the Fisheries Act are required for off-shore projects such as pipelines, oil and

⁸⁷ See e.g., 42 U.S.C. §4332; *Hudson River Fisherman's Assoc. v. Federal Power Commission*, 498 F.2d 827 (2nd Cir. 1974). See also, 18 C.F.R. §§380.1 – 380.15 (FERC's regulations for implementing NEPA).

⁸⁸ See The National Energy Board Act, CAN. REV. STAT. ch. N-17, §31 (1985). The Energy Board also regulates pipelines that extend beyond the international boundary, such as the Millennium Pipeline. *Id.*

⁸⁹ See CAN. REV. STAT. ch. N-19 (1985).

⁹⁰ See Constitution Act, 1867, 30 & 31 Vic. art VIII, §108, sched. 3.

⁹¹ See CAN. REV. STAT. ch. F-14 (1985).

gas drilling platforms, and water intake structures. The federal government is empowered to regulate any work or activity that may adversely affect fish or fisheries habitat, even if this interferes with provincial management of water or public lands.⁹² The Supreme Court of Canada in *R. v. Northwest Falling Contractors Ltd.*,⁹³ upheld a provision of the Fisheries Act that prohibited the discharge of “deleterious substances” into waters utilized by fish, despite a claim that this interfered with provincial resource management authority.

In terms of environmental impact assessment, the Canadian equivalent of NEPA is the Canadian Environmental Assessment Act (CEAA),⁹⁴ which provides a very detailed description of the environmental assessment process required for major projects. Similar to the U.S. Council on Environmental Quality, the Canadian Environmental Assessment Agency oversees implementation of the CEAA and is independent of Environment Canada, although still supervised by the Minister of the Environment.⁹⁵ An important early case involving environmental assessment is *Friends of the Oldman River Society v. Canada (Minister of Transport)*,⁹⁶ where the Minister of Transport had evaluated the navigation impacts of a proposed dam, but had failed to conduct a broader environmental review. The Federal Court of Appeals ordered the Minister of Transport to conduct the required environmental impact assessment before the dam could be approved.

⁹² See *Attorney General of Canada v. Aluminum Co. of Canada*, 115 D.L.R. 3d 495, 496 (1981).

⁹³ 2 S.C.R. 292 (1980).

⁹⁴ See CAN. REV. STAT. ch. 37 (1992).

⁹⁵ See generally, Elaine L. Hughes, et al., ENVIRONMENTAL LAW AND POLICY, 226 (3rd ed. 2003).

⁹⁶ 7 C.E.L.R. (NS) 1, at 21-52 (1992).

One other Canadian federal authority that may affect energy projects proposed on Great Lakes submerged lands is the Species At Risk Act.⁹⁷ Similar to the Endangered Species Act on the U.S. side, this statute regulates both the direct taking of species at risk and protection of critical habitat for these species. For an offshore energy project such as a wind farm, this act would be jointly administered by the Minister of Fisheries and Oceans with respect to aquatic species, and the Minister of the Environment for migratory birds and waterfowl.⁹⁸

VI. Conclusions and Recommendations

It seems clear from the foregoing legal analysis that there are ample state, provincial and federal authorities to regulate and control a wide spectrum of lakebed alterations, including specifically those related to offshore energy projects. Ownership of the beds of the Great Lakes by the states and province of Ontario, together with their police power regulatory statutes, provides the states and province extremely strong authority to protect lakebed resources and essential aquatic habitat. On the U.S. side, the widespread adoption and application of the public trust doctrine significantly bolsters the states' authority and duty to protect these bottomland resources for navigation, recreation and ecological purposes.

In addition to the state and provincial regulatory authorities, the two federal governments have important authorities related to protecting national values such as navigation, fisheries, water quality and endangered species. One interesting twist here is that under the Canadian "paramountancy" doctrine, which is similar to the federal supremacy or preemption doctrine on the U.S. side, the Canadian federal government's power over navigation and fisheries is dominant and trumps conflicting provincial concerns in these areas, whereas there is more

⁹⁷ See CAN. REV. STAT. ch. 29 (2002).

⁹⁸ See *id.* at §2(1)(b) and (c).

concurrent jurisdiction between states and the federal government on the U.S. side regarding navigation and fisheries management. Even in those areas on the U.S. side where a federal statute purports to give exclusive jurisdiction to a federal agency, such as FERC has been granted over interstate gas pipelines, the states have the authority to substantially modify and even veto federal permits under the 401 water quality certification and CZM federal consistency authorities. There does not seem to be a comparable doctrine or statutory delegation of power on the Canadian side to the provinces.

Two other differences between the U.S. and Canada are notable, and those are the lack of the public trust doctrine on the Canadian side and the much greater difficulty of citizens seeking access to Canadian courts to enforce their environmental rights against administrative agencies. At the heart of the public trust doctrine is the notion that citizens can seek access to the courts and gain judicial intervention to protect public trust rights and responsibilities. Although there are signs that the Canadian Supreme Court may be receptive to considering the public trust doctrine, this hasn't happened yet and so this important environmental enforcement avenue related to navigable waters and submerged lands is not available north of the border. Also, the concept of citizen suits to enforce environmental rights and remedies is well established in the U.S. Three Great Lakes states have specific statutes that enable these citizen suits⁹⁹ and several federal statutes, such as the Clean Water Act, specifically authorize such suits.¹⁰⁰ Perhaps it is because we are a more litigious society in the U.S. or have a healthier skepticism for administrative agencies, but the fact remains that there is more deference to Canadian administrative agencies, provincial and federal, and the ability to challenge administrative

⁹⁹ *See supra* note 61.

¹⁰⁰ *See eg.*, 33 U.S.C. §1365 (2001).

agency decisions in court is much more limited in Canada compared to the U.S.¹⁰¹ This is not intended as a criticism but merely an observation on a significant difference between the two countries that may affect the final outcome of proposed lakebed alteration projects.

Recommendations:

1. That the states, province and respective federal agencies use their full regulatory authorities to carefully regulate the design, location and construction of energy projects to avoid and minimize adverse impact to lakebed habitats, and to condition permits with necessary resource mitigation and long-term monitoring requirements to ensure that projects perform as designed and intended;

2. That the Great Lakes states aggressively use their public trust authority to protect their submerged lands resources from unnecessary damage or exploitation, and to assure that legitimate public benefits are derived from private energy projects located on or over the lakebeds.

3. That the states and province evaluate their respective leasing, deeding and easement fees and royalties for the use and occupancy of submerged lands to ensure that full fair market value is charged for new projects, and that there are no inadvertent “bargains” provided that encourage energy projects such as pipelines to be located on bottomlands, because the lakebed is viewed as the cheapest alternative;

¹⁰¹ See John Swaigan (editor), ENVIRONMENTAL RIGHTS IN CANADA, 180-186 (1981).

4. That the states make full use of their 401 water quality certification and CZM federal consistency authorities to ensure that federally conducted or licensed projects comply with state water quality standards and coastal management policies.

5. That the states, province and federal agencies share their information and experiences regarding innovative energy projects such as wind turbine generators. In this regard, there is much that the Great Lakes region can learn from the Cape Wind project and much that the Great Lakes states can learn from the Province of Ontario.

6. That the states and province should continue coordination efforts with their federal counterparts to ensure that the many regulatory programs pertaining to Great Lakes submerged lands are administered in as efficient and effective manner as possible.¹⁰²

¹⁰² Although the Great Lakes Fishery Commission (GLFC) provided financial support for this project, the views expressed in this report are those of the author and not necessarily endorsed by the GLFC.

APPENDIX I

| Great Lake State or Province | Agency Responsible for Administration of Submerged Lands & Agency Website | State or Provincial Statutory Authority | Areas agency regulates | Does agency regulate/control Submerged Lands | Good Sources of Information |
|-------------------------------------|--|--|--|---|---|
| Illinois | Department of Natural Resources Web Address: www.dnr.state.il.us | 615 IL. COMP. STAT. 5/5 et seq. | <ul style="list-style-type: none"> • Recreation • Aesthetics • Navigation • Public Utilities | Yes | Rivers, Lakes, & Streams Act |
| Indiana | Department of Natural Resources Web Address: www.in.gov/nrc.html | IND. CODE §14-29-1-8; IND. CODE § 14-29-3-1 | <ul style="list-style-type: none"> • Navigable and freshwater lakes • Right to natural scenic beauty and recreational activities | Yes | Information Bulletins from the DNR. Available on DNR webpage |
| Michigan | Department of Environmental Quality Web Address: www.mi.gov/deq | Part 325, Great Lakes Submerged Lands, of NREPA, M.C.L. 324.32501 et seq. | <ul style="list-style-type: none"> • Navigation • Recreation • Aquatic Habitat • Public Utility Uses | Yes | Information summaries and permit guidance on DEQ webpage under Land and Water |
| Minnesota | Department of Natural Resources Web Address: www.dnr.state.mn.us | Minn. Stat. Ann. 103G.201-315 | <ul style="list-style-type: none"> • Promote public health, safety, welfare • Ecological Concerns | Yes | DNR Webpage Minn. Rules 6115.0150-6115.0520 |
| New York | Department of Environmental Conservation Web Address: www.dec.state.ny.us | N.Y. NAVIGATION LAW § 30 et seq.; N.Y. Environmental Conservation Law, §15-0505. | <ul style="list-style-type: none"> • Navigation • Aquatic Habitat • Recreation • Public Utilities | Yes | Permit regulations at 6A NYCRR §608.1 et seq. |

| | | | | | |
|---------------------|--|--|---|------------|--|
| Ohio | Department of Natural Resources Web Address: www.dnr.state.oh.us | Fleming Act (1917) established PTD in Ohio. Current version of Act found in Ohio Revised Code Section 1506.10-11 | <ul style="list-style-type: none"> • Public right to navigate • Water commerce • Fishery • Property right of littoral owners (are allowed to construct wharves, piers, fills, etc. even if they interfere with public rights) | Yes | Coastal Management Program fact sheets found on DNR website under coastal/regs and public trust. |
| Pennsylvania | Department of Conservation and Natural Resources of the Commonwealth Web Address: www.dcnr.state.pa.us | 32 P.S. §693.15 et seq. 25 Pa. Code §105.32 | <ul style="list-style-type: none"> • Navigation • Fishing • Recreation • Other public uses (safety, utility, energy, waste treatment) | Yes | Pa. CZM Program Guidance Document #394-0300-001 |
| Wisconsin | Department of Natural Resources Web Address: http://dnr.wi.gov | Chapter 30 – Navigable Waters, Harbors and Navigation, WIS. STATS. §30.01 et seq. | <ul style="list-style-type: none"> • Right to boat, fish, hunt, ice skate, and swim on navigable waters. • Right to natural scenic beauty, quality, and quantity of water that supports uses. • Shorelands | Yes | See articles by John Quick and Melissa Scanlan. |
| Ontario | Ministry of Natural Resources Web Address: www.mnr.gov.on.ca | Public Lands Act §§14 and 16 | <ul style="list-style-type: none"> • Navigation • Recreation • Ecological Values • Coastal Processes | Yes | See Policy PL 3.03.04 and Procedure PL 3.03.04 |