

Michigan Great Lakes Offshore Wind

Permitting Dry Run

Final Report

Michael Klepinger, Proprietor of *Mikinetics Consulting, LLC*, submitted this report in partial fulfillment of a contract between the Michigan Economic Development Corporation (MEDC) and the Great Lakes Renewable Energy Association (GLREA). The report has not been subjected to a peer-review process, nor have its findings or recommendations been endorsed by MEDC, GLREA, or the State of Michigan.

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Michigan Great Lakes Offshore Wind Permitting Dry Run - Final Report

Executive Summary and Recommendations

Summary of Outcomes and Recommendations from the Dry Run

The dry run process illustrated Michigan's current state of readiness to permit large-scale offshore wind developments in two very different areas of the Great Lakes. Presently, the timeframe for completion of a real-world application similar to the mock applications used in this project (the timeframe for making an application ready for public comment – not final consideration by agencies) would run from 6 to 24 months. Overall, the permit process is adequate to address the State's myriad management interests but it could be streamlined by immediate action on a few important issues.

The State of Michigan should consider taking the following measures to enable and promote the timely development of wind-energy resources in the State:

- Establish an offshore wind-energy technical-siting council that would, within a suggested three-to-six month lifespan, identify criteria for mapping the least favorable development areas, "categorical exclusion areas" and most favorable development areas, "best potential areas."
- Enact legislation or adopt an executive order that would authorize offshore leasing by non-riparians.
- Enact legislation or adopt an executive order that would provide coastal power transmission facilities essential service status.
- Determine how the public will be compensated for wind rights.
- Develop a handbook describing the process that will be used to engage all Michigan stakeholders in wind-energy development.

Further detail on these recommendations is provided in the final report but a convincing case is not made for each of them due to the limited scope of work for the project. It should also be noted that the dry run was not designed to evaluate either the economic viability of the hypothetical fields or the viability of Michigan's offshore development public engagement mechanisms. These will be tested when the marketplace for offshore wind ripens.

Michigan Great Lakes Offshore Wind Permitting Dry Run

Introduction

A Growing Interest in Wind Energy Development

On average, each megawatt-hour (MWh) of electricity generated in the U.S. results in the emission of 1,341 lbs. of carbon dioxide, 7.5 lbs. of sulfur dioxide and 3.5 lbs. of nitrogen oxide.¹ In Michigan, statewide greenhouse gas emissions increased from 57.4 million metric tons of carbon equivalent in 1990 to 62.6 million in 2002. As of 2002, 33% of Michigan's greenhouse gas emissions resulted from the production of electricity in the State, while 26% came from the transportation sector and 17% from industrial operations.²

In the process of generating about 105 million MWh of electric power annually, Michigan contributes a significant pollution load to the atmosphere.³ At the same time, virtually all of the Great Lakes' mercury contamination is delivered via the atmosphere.⁴ Mercury and other contaminants polluting the Great Lakes (and the recurring fish-consumption advisories they have spawned) have caused serious damage to Michigan's economy.

In February 2007, the Intergovernmental Panel on Climate Change reported that the observed increase in global average temperature over the past 50 years is very likely (>90% certainty) due to the observed increase in GHG emissions from human activity. Global climate change is causing widespread reconsideration of the use of fossil fuels to generate electricity all around the world. There is now significant social and political pressure in Michigan to reduce the State's contribution to atmospheric pollution, marking a basic shift in public policy. Concurrent with the rising interest in developing clean, renewable sources of energy, the cost of electricity from utility-scale wind systems worldwide has dropped by more than 80% over the last 20 years.⁵

A study released in 2006 by the Rand Corporation states, "Wind is the fastest growing form of renewable energy in the United States and the only source of renewable energy that is currently cost-competitive in multiple markets with conventional electricity sources." In 2007, wind-industry capacity in the United States expanded by about one-third.⁶

There is strong public support for wind-energy development, evidenced by numerous opinion polls conducted worldwide since the 1970s. More broadly, surveys indicate a nearly universal preference for renewable energy sources over fossil fuels. Yet when specific renewable-energy generation facilities are proposed, they often encounter local opposition. When they are presented in the abstract, renewable-energy developments are seen as desirable, but the siting of actual facilities has created considerable social controversy. Resistance to the development of industrial-scale energy facilities at the local level is not new, nor is that resistance necessarily quelled by the perceived benefits of clean, renewable-energy.

Social scientists tell us that the emotional nature of our relationship to our surroundings is complex and nuanced. Resistance to change is a daunting force no matter the nature of the change, particularly change in our own "backyard."⁷ Although not imminent, the development of

offshore wind-generator fields in the Great Lakes is quite likely to occur in coming years as global energy markets change. For Michiganders, the Great Lakes are in everyone's "backyard."

Higher installation and operation costs offshore are barriers to the wind business. In Europe, where wind is by far the leading source of renewable energy, the European Wind Energy Association has projected that as much as 33% of the total installed electric generating capacity among its members will be found offshore by 2020. Significantly, many of the best onshore sites are already taken in Europe, while development has barely scratched-the-surface in the U.S. Onshore sites are plentiful in the North American hinterlands but the majority of Americans live in a relatively thin ribbon of coastal counties along the coasts and most of our energy demand comes from there. The availability of suitable land sites in the United States might retard offshore Great Lakes wind development for many years; but, then again, it might not. We do not know when the pace of offshore wind development will accelerate.

Why is public pressure for wind development intensifying?⁸ One reason often cited is price predictability. The consumer price of offshore wind energy would be stable over the 20 to 30 year life of constructed facilities because, after all, the energy needed to operate wind turbines is free of charge. Fossil-fuel-based sources, on the other hand, have experienced strong and unpredictable price spikes in recent years. What's more, many experts expect governments around the world to adopt carbon dioxide surcharges in the coming years. This trend will make (free) wind energy even more appealing by comparison.

Another consideration favoring wind-power development around the Great Lakes Basin relates to health and ecology. Reducing the amount of fuel burned in the generation of electricity effectively reduces air pollution. Thus, establishing Great Lakes offshore and onshore wind generators would serve to improve health in the Basin, lowering health-care costs and maybe even saving lives. And there are other social and economic benefits associated with cleaner air. Although today's electricity prices do not reflect the external costs of higher health care demand, impaired fisheries, or global climate change, an increasing number of experts are calling for full accounting and pricing.

Wind turbine siting and development can be done relatively quickly, at least onshore. In contrast, nuclear power faces such strong public opposition that no nuclear generators have been approved for construction in the United States for more than 25 years. The siting of new coal or gas generators can also take a long time and recent proposals are generating legal action by opponents. Developers of the most recent utility scale coal burning power plant constructed in Michigan, Detroit Edison's Belle River plant (which became operational in 1986) spent a great deal of time and money obtaining all required permits. The permitting process for the Prairie State coal plant in Illinois took more than six years from the initial application through the final court challenge.⁹ The situation will not improve if the public resists the prospect of pollution impacts created by new facilities that rely on fossil fuels. Such time lags expose energy suppliers to higher risks associated with the uncertainty of siting delays, which translates into higher financing costs. The high cost of borrowed money ultimately increases the price of energy to consumers.

The Great Lakes' unique offshore wind resources could become an important part of the Midwest's contribution to the wind industry's national vision of "20% by 2030."¹⁰ Offshore sites are appealing candidates for future development in the Great Lakes because wind development companies are looking for Class 4, Class 5, and higher wind resources that will allow new turbines to run at very high capacity.¹¹ Several thousand square miles of Great Lakes surface area lie within Michigan's jurisdiction and fewer than 100 square miles would be needed to generate significant amounts of wind power. Michigan is surrounded by high-value Great Lakes wind resources, making it very likely that Michigan communities will be debating offshore development proposals as the demand for clean, renewable energy rises.

Coastal communities will speak up about their stake in the State's decision to permit anything within close proximity to land. Although local zoning authority does not (generally speaking) extend into the Great Lakes, locally important socio-economic values will certainly be considered by state and federal permitting agencies. In keeping with tradition, coastal communities will be given an opportunity to comment on offshore wind development proposals as part of the Michigan Department of Environmental Quality and United States Army Corps of Engineers (MDEQ and USACE) joint permit process. Current Michigan law provides that local jurisdictions may regulate onshore power transmission facilities as they would any other land use.¹² This could prove to be something of a linchpin if state law is not written in the future to partially usurp local laws by providing coastal transmission facilities statewide with special utility-corridor or "essential service" status.

Assuming federal requirements (described in the catalogue of authorities beginning on page 18) are met, current laws^{*}, clearly authorize the State to decide whether or not to allow the development of offshore wind facilities on the surface or bottomlands of the Great Lakes.¹³ The State holds legal title to Michigan's Great Lakes resources (wind, bottomland and water). As wind development projects are proposed in coming years, a bottomland lease or conveyance will be required. Under Michigan law, it is the state Department of Environmental Quality (DEQ) that makes the final recommendation to the state Administrative Board for its decision on conveyances.¹⁴ The State also derives authority from its police powers as well as the State's responsibilities under the public-trust doctrine and long-adopted laws.¹⁵ The State will be called upon to make difficult judgments as it balances local, regional, and statewide interests.

Purpose of the Permitting Dry Run Project

Pre-construction permitting is presently one of the least predictable aspects of offshore wind development. The Michigan Economic Development Corporation undertook the permitting dry run because it wanted to inform the decision-making process and make it as efficient as possible for everyone concerned. Accomplishing project goals would enhance Michigan's position as "development ready" in the competitive world market for wind-system development. Michigan's resource managers and permitting agencies had never explored the regulatory

* Michigan's Great Lakes legal scholar Chris Shafer succinctly characterizes bottomland alteration laws as regulating "issues of national importance such as navigation, water quality, fisheries, migratory birds and endangered species."

protocols surrounding offshore wind-energy development and therefore prospective developers were reluctant to propose taking action. Several wind-industry leaders had indicated unwillingness to be regulatory trailblazers because of the risk of delays during agency permitting. It was reasonable and prudent for Michigan to anticipate these problems and take steps to address them. Michigan wants to encourage sustainable development.

Industry prefers to develop areas with the highest winds and the lowest development costs. The bulk of industry's development costs can be placed in three categories: capital (infrastructure), operation and maintenance, and pre-construction permitting. All three types of site development costs are influenced by the choice of project location.

When the first real-world permitting process does begin, it is expected to take several months or even years to complete. The joint permit-application review process administered by the Michigan DEQ and the US Army Corps of Engineers (USACE) provides a well-tested means of handling Great Lakes submerged-lands development proposals for things like water intakes, piers, and trenched utility crossings. However, none of the Great Lakes states have yet experienced the unique combination of disturbances associated with an offshore wind-field development.

Rather than try to deal broadly with every conceivable issue related to wind development on the Great Lakes, the principle goal of the four-month-long offshore permitting dry run project was to identify and test permitting procedures for development of two fairly large wind-energy fields in Michigan waters: nearshore in Lake Huron and remote offshore in Lake Michigan.¹⁶ And while these two hypothetical locations were chosen because they were each thought to be plausibly representative of future proposals, they also allowed the 2008 dry-run project agency participants to work toward a definitive conclusion in just a few short months. A second goal was to help DEQ and other agencies identify data gaps and needed studies, at least in a preliminary way. The dry run hypothetical permitting project did not consider economic feasibility. Nor did it engage the public. All participants agreed, though, that both of these aspects of siting would be essential to address when the first real-world permitting process takes place.

Decision-making criteria for developers and permitting agencies will generally fall into two broad categories for any development: evidentiary and procedural. Consideration of both types of issues will depend on site location; therefore, the dry run exercise was site-specific. Some types of evidence will take a long time to collect. Evidentiary issues, or issues related to physical and cultural resource management, include:

- Geology and sediment
- Benthic biology
- Sport and commercial fisheries
- Protected species and habitat
- Terrestrial ecology
- Birds and bats
- Coastal and riparian resources
- Water quality
- Cultural, heritage and recreational resources

Socioeconomics
Views
Noise
Transportation
Electrical and magnetic fields
Telecommunications systems
Air and climate

The second category, procedural issues, varies by agency and will necessarily include consideration of both legal standing and due process. How will fair and reasonable notice be given of proposed agency actions? What, exactly, is in the broad public interest? Who are the legally recognizable “parties of interest”? The dry run was designed to give agency professionals an opportunity to work together for the first time to create and implement an inclusive, transparent process for permitting wind development, driven by science and sound public policy.

¹ USEPA, 1999 factsheet data

² Michigan at a Climate Crossroads. 2007. University of Michigan, Center for Sustainable Systems, Report No. CSS07-02, April 17, 2007. Online at http://css.snre.umich.edu/css_doc/CSS07-02.pdf, citing Bull, P., McMillan C., and Yamamoto A. (2005). Michigan Greenhouse Gas Inventory 1990 and 2002.

³ Michigan’s 21st Century Electric Energy Plan, 2007. Online at http://www.michigan.gov/documents/mpsc/21stcenturyenergyplan_185274_7.pdf

⁴ MDEQ, 2003, Identification of Atmospheric Mercury Sources in the Great Lakes States Through an Ambient Monitoring Program: Final Report. November 2003.

⁵ AWEA, 2008, American Wind Energy Association Frequently Asked Questions. Online at <http://www.awea.org/faq/cost.html>

⁶ EIA. 2007, Energy Information Administration Annual Energy Outlook 2007 with Projections to 2030. Online at [http://www.eia.doe.gov/oiaf/aeo/pdf/0383\(2007\).pdf](http://www.eia.doe.gov/oiaf/aeo/pdf/0383(2007).pdf).; Rand Corporation. 2006. Impacts on U.S. Energy Expenditures of Increasing Renewable Energy Use. Santa Monica, California.

⁷ Devine-Wright, P., 2005 Beyond NIMBYism: Towards an Integrated Framework for Understanding Public Perceptions of Wind Energy. *Wind Energy*. 2005; 8:125–139

⁸ AWEA, 2008, American Wind Energy Association News. Online at <http://www.awea.org/news/>

⁹ Prairie State Generation Station, PSD Appeal No. 05-02, Remand Order March 25, 2005

¹⁰ AWEA, 2007. 20% Wind Energy by 2030: Increasing Wind Energy’s Contribution to US Electricity Supply”. Online at <http://www.20percentwind.org/>

¹¹ AWEA, 2008. FAQ. Online at http://www.awea.org/faq/wwt_basics.html

¹² MZEA, 2006, Public Act 110 of 2006, Michigan Zoning Enabling Act, M.C.L. 125.3101 et seq.

¹³ Michigan Natural Resources Protection Act (NREPA), Clean Water Act, National Environmental Policy Act, Rivers and Harbors Act of 1899.

¹⁴ Michigan NREPA, Part 325, Great Lakes Submerged Lands.

¹⁵ Dempsey, D., J. Gannon, C. Shafer, S. Ugoretz, 2006, Conserving Great Lakes Aquatic Habitat from Lakebed Alteration Proposals. 2006 Project Completion Report to the Great Lakes Fishery Commission.

¹⁶ Dry run project site maps in this report

Great Lakes Wind-Field Permitting Dry Run Exercise – The Hypothetical Case

Scale, Footprints, and Locations of the Dry-Run Wind Fields

Two offshore wind fields, each 500 MW capacity, are being proposed by a fictitious developer, Michigan Offshore Wind, Inc., who has completed meteorological monitoring to determine available wind. Each 500 MW field consists of 100 turbines with nameplate capacity of 5 MW. The first is a shallow “near shore” field (Lake Huron) and the other is a deepwater “distant offshore” field (Lake Michigan). The shallow water field uses monopole foundations driven into the lake bottom while the deepwater field uses floating monopoles tethered to the lake bottom.

Footprint of the Proposed Fields

The two wind fields are located in Michigan waters in a way that simulates the offshore spacing used at the world’s two largest offshore wind farms, Horns Rev and Nysted in Denmark. Turbine spacing is engineered, in part, to minimize inter-turbine turbulence or wind wake. Industry practice (onshore) calls for spacing of machines by 3-10 rotor diameters to minimize turbulence. In this hypothetical, a rotor diameter of 120 meters on the 5 MW machines would require a distance between machines of 360 meters to 1200 meters. Turbines are placed in rows 600 meters apart, meaning that each field requires a surface area of approximately four square miles. (This spacing is a simplification for purposes of the exercise and not a recommendation based on knowledge of local conditions.)

Location of the Dry-Run Project Fields

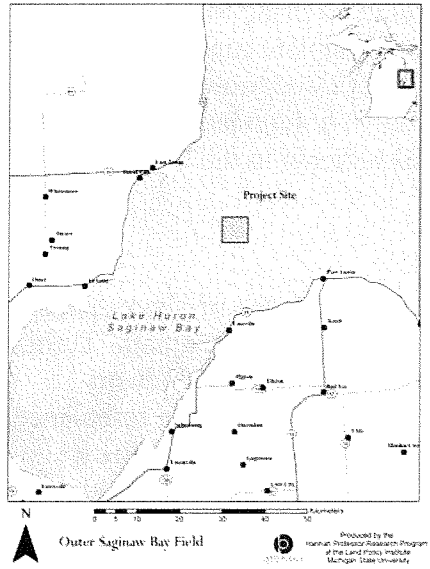
Preliminary constraints analysis was conducted via literature review and conversations with members of the Great Lakes resource-management community. Both fields are near shipping lanes to test real-world conditions and account for the concerns of the shipping industry. They are far enough from the shore to minimize (for purposes of the exercise) obvious and avoidable shoreland resource conflicts such as migratory bird flight patterns and long-established airport-approach regulations. Turbine noise and shadow-flicker nuisance issues for human settlements are also minimized by this hypothetical placement.

The Southern Lake Michigan Deepwater Field development site is located in waters 70-80 meters deep near the halfway point on a 62-mile line between Evanston, IL and Benton Harbor, MI. The 3.75-square-mile field is centered at Latitude 42 degrees 6' 2.72" North and Longitude 87 degrees 5' 58.56" West. Power is not transmitted as electricity by cable, it is converted to containerized hydrogen offshore for shipment to port.

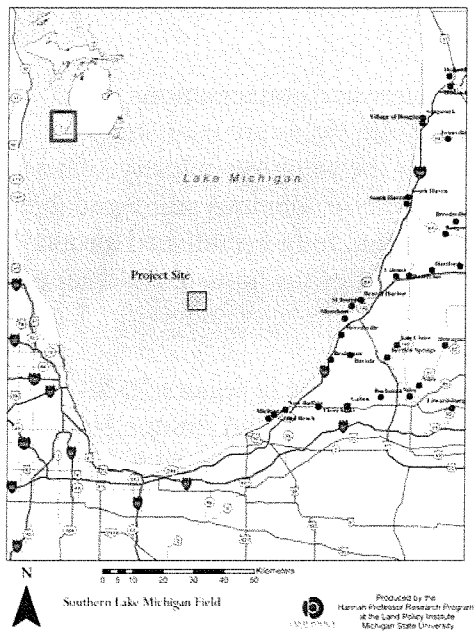
The Outer Saginaw Bay Nearshore Field development site is located in 20-30 meters deep water near the halfway point on a 31-mile line between Port Austin and Tawas City in southern Lake Huron. The 3.75-square-mile field is centered at Latitude 44 degrees 9' 49.68" North and Longitude 83 degrees 14' 21.02" West. Electricity is cabled to shore.¹⁷

Maps of the Dry Run Wind Fields

Outer Saginaw Bay



Southern Lake Michigan



Outcomes of the Agency Meeting on the Great Lakes Wind-Field Dry Run

In January 2008, two permit applications (lacking some data, for example, side scan surveys of suspected underwater wreck sites, which would have been collected and presented but for the limited scope of the dry run) were presented to agency representatives. Agencies were asked to describe the process their office would use to fulfill applicable permit requirements. In early February, agency representatives met to discuss this question. They created a catalog of existing permit authorities and identified a need for new legal authorities to handle bottomland leasing. They brainstormed about wind facility siting criteria and mitigation.

Unedited whiteboard notes and the meeting agenda are presented in the next section. This report also incorporates materials provided by agency representatives following that meeting.

During the meeting, a complete listing was created of the state and federal agency contacts involved in the process of permitting two 500MW offshore wind-generation facilities, and the legal authorities under which their agencies operate.¹⁸ Agency representatives reviewed and commented on the annotated list. Participants were asked to suggest ideas to improve the permitting process and to identify knowledge gaps and evidentiary issues. The fictitious project developer enthusiastically presented his rationale, asked questions of agency representatives, and fielded their questions in a role-playing exercise.

Several Evidentiary Issues, One Big Idea

At the end of the day, the group agreed on the value of establishing a new *ad hoc* advisory group: the Michigan Great Lakes Offshore Wind Siting Council (GLOW Council), and several prospective council members were identified. The GLOW Council could be established by the Governor and given a 3 to 6-month charge to identify criteria for mapping the “very worst” and “very best” sites for development in Michigan waters. This charge could be given by the Governor in a very public way, much like the initial work done with the Land Use Leadership Council. The lake areas could then be mapped and labeled as either wind development “categorical exclusion areas” or wind development “best potential areas.” (The idea is modeled on the work of a Danish technical committee that recently sought to identify the best 1,000 square kilometers for wind development in Danish territorial waters.) Consideration was given during the agency meeting to formation of a decision-making body, a Michigan offshore energy siting panel, but this was rejected by consensus of the group as superfluous.

Locating the Best Wind Potential Areas - the GLOW Council

The GLOW Council, if convened, should take a proactive approach to identification of the criteria needed for identification and mapping of several thousand acres for expedited approval, in-depth siting studies and perhaps even the prioritization of sites – suggesting the order of development through the next few decades. Mapping could commence after the Council is dissolved. Because each area will carry with it certain location-specific issues, this group might

also be charged with creating a road map for development of the best wind potential sites after it has located them. In conversation with experienced industry members, the council should first identify broad categories of desirable and undesirable site features. For example, sites in close proximity to scenic lighthouses might be very undesirable while sites near existing transmission facilities might be most desirable. These categories, which will on occasion overlap geographically, could be ranked and rated in a point system by the GLOW Council.

The next steps for the council could be modeled in part on the BMP decision-tree recently published by the Minerals Management Service for offshore energy development. The idea would be to break down the site development process into phases and resource concerns which would point logically to the best development areas (“best” being agreed upon by proponents and opponents). For example, during the preconstruction phase a best management practice could be adopted of avoiding “reefs, critical spawning habitat and popular fishing areas.” During the construction phase, industry could “minimize disturbance of important fishery nursing grounds.”

The concept of impact mitigation, which arises from the public-trust doctrine and has long been applied to other Great Lakes disturbances by the State, was first applied to offshore wind development (albeit hypothetically) during the dry run project. Following the identification of Michigan’s best wind potential areas, offshore development will raise practical concerns about the conveyance of public property, dredging, placement of structures, and navigational hazards (among other things). Agencies will be called upon to work with industry and stakeholders to mitigate the impacts of development, ensuring that the disturbed resource is restored or enhanced. Mitigation of impacts is where evidentiary issues and procedural issues intersect. Ideally, mitigation plans would be worked out during the permitting process and charged to industry - treated as a cost of power generation, thus conserving scarce State resources. The GLOW Council should not be expected to get into fine-scale detail about siting criteria, it should be charged to anticipate and then accept expert detailed agency input during the permitting process.

Procedural Issues with Bottomland Leasing

No changes to the joint permit process under Michigan’s NREPA Part 325 were suggested by the dry run project. The procedural issue of consequence relates to bottomland leasing, which is a critical component of any offshore wind development. At present, the bottomland leasing process runs concurrent with the Part 325 process and there are no clear wind project leasing guidelines for decision-makers. This should be rectified. A recent offshore wind field lease written for the State of Texas calls for a minimum of 150 MW power production capacity and yields projected royalties of between \$15 and \$25 million over 30 years.

There was no consensus on the question of whether leasing guidelines should be established by legislative action or administrative rulemaking. Though either method would bring the desired result, administrative rulemaking would very likely be the most expeditious and acceptable to the market. Similar to marina bottomland leasing, a fair value will need to be determined for the transfer of the bundle of rights on the small portion of the Great Lakes proposed for wind field development. Because some of the impacts of development are very local to the site (e.g. preserving familiar viewscapes as local residents have known them) and some of the impacts are

arguably lakewide (e.g. resuspension of sediments), setting the fair value for leasing will be complicated. This should be discussed by policy-makers.

There will be no fee simple sale of bottomlands: how will the people receive compensation for the use of the Lakes? Considering the fact that the State's primary interest in bottomland leasing for wind is control of the development of property, followed by the prospect of receiving income from the property, lease terms should be dictated by the traditions of the public trust doctrine. If the State finds, after an integrated assessment, that a wind energy development company satisfies the threshold of "no significant harm" to habitat, cultural resources or traditional surface uses (e.g. bird flyways, shipwrecks, shipping) it should feel free to entertain a lease of these uniquely powerful wind energy areas for the environmental benefits and the immediate (even if marginal) economic income offered to the State by wind power development.

The first modern-day proposal to develop offshore wind energy was presented in the fall of 1972 at the annual conference of the Marine Technology Society by William E. Heronemus, a distinguished professor of civil engineering at the University of Massachusetts. His system employed floating platforms and deep sea hydrogen storage supplied by electrolysis of wind energy. His detailed description, which preceded by a year the 1973 "energy crisis" brought on by an OPEC embargo on oil, was seen as visionary by some and folly by others.¹⁹ Given present-day federal energy policy and the instability of federal production tax credit policy, it is difficult to predict when a visionary offshore wind field development proposal will come to the Great Lakes state.

¹⁷ Stanton, T. 2008. (personal correspondence). A Michigan Public Service Commission transmission study now underway will include the hypothetical projects in its preliminary analysis so that Michigan policy makers can begin to understand the possible ramifications of offshore wind development on transmission needs and capabilities.

¹⁸ See the "Annotated List of Offshore Great Lakes Wind Siting Authorities (Mich.)" section of this report

¹⁹ Heronemus, W. E. 1972. Pollution-free Energy from the Offshore Winds. Marine Technology Society 8th Annual Conference, Washington D.C., September 11-13, 1972.

Agenda – Agency Meeting on the Great Lakes Wind Field Development Hypothetical

Agency Dry Run for Michigan Offshore Wind Permitting

February 8, 2008

9:30am until 3:30pm

Con-Con Room, Constitution Hall, 525 West Allegan Avenue, Lansing, MI 48933

Agenda

9:30 – 9:45 Coffee and introductions – Mike Klepinger

9:45 – 10:00 Background presentation, why we are here – Applicant Joe Windiman

10:00 – 10:30 Review of the mocked-up Joint Permits - Joe Windiman

Participants will be asked to discuss the permit specifics and describe the process each agency would undertake to fulfill requirements.

10:30 – 11:00 Catalog of authorities – Mike Klepinger

The group will finalize a complete listing of 1) the current state and federal agency office contacts involved in permitting 500-1000MW wind offshore and 2) the legal authorities under which they operate.

11:00 – 12:30 Considering mitigation requirements – Mike Klepinger and Tom Graf

Because offshore development will raise concerns about the conveyance of public property, dredging, placement of structures and navigational hazards (among other things), agencies will need to require mitigation activities which will restore or enhance the resource under the public trust doctrine. Well-informed judgments will need to be made about mitigation. What are your thoughts?

12:30 Pizza delivery

1:00 – 2:00 Improvements to the process? Evidentiary issues?

Participants will be asked to suggest ideas to improve the permitting process and to identify knowledge gaps and evidentiary issues.

2:00 – 3:00 Discussion – Mike Klepinger

Consideration will be given to developing new legislative provisions for Michigan and to next steps, e.g. brainstorm the creation of a Great Lakes Offshore Wind Technical Committee for Michigan – who would serve? What would trigger its establishment? Could that committee identify the “off limits” and the “best site” criteria in year one? Should a small decision-making board be empaneled by the Governor to prepare for the first real proposal?

Brainstorming Notes (Unedited) and List of Invitees

I. What might be needed for mitigation – to offset impacts? What impacts might be important?

- Loss of use: recreation, commercial fishing, navigation in these 32 square miles
- Loss of productive habitat in these 32 square miles
- Loss of navigable airspace
- Changed views from shore are likely [if built within a few miles of shore]
- Re-suspension of toxic sediments in Saginaw Bay site
- Facilities will provide habitat for bio-fouling organisms
- Operations and maintenance will increase use of the areas
- Suction anchors may not have sufficient sediment thickness to be useful
- Ice scour carries unknown impacts
- Evaporative cooling may occur in the microclimate
- Vibration carries unknown impacts
- Sound carries unknown habitat impacts
- If future site development occurs near shore there may be sediment transport impacts
- If future site development proposals are near marine protected areas there may be impacts
- Will probably find shipwreck(s) in the Saginaw Bay site
- Require “clear zones” (a few hundred feet or yards?) for cultural resource protection

II. Should Michigan create an offshore energy site leasing program?

*Part 325 talks about “who” can apply for a lease and as written only allows riparians

*Significant amendments to 325 will be needed, to address:

Circumstances under which lease and permit can be granted

Payment to the public (severance tax is probably wrong, royalty is right)

III. Create Michigan Offshore Wind Council in the near future? *Perhaps the advisory council could be created by DLEG & DEQ Directors (or Governor’s SAB) to identify criteria for mapping the “very worst” and “very best” sites for development in Michigan waters. Agency personnel recommended including representatives from:

- | | | |
|------------|-----------------|------------------------------------|
| MDEQ | USDOJ | Wind developers |
| MDNR | NOAA | Tribal leaders |
| MDOT | FAA | <i>[ed note.: NGOs,</i> |
| HAL | USCG | <i>Academics, Utilities and</i> |
| MPSC | Comm’l shippers | <i>Transmission</i> |
| Atty Gen’l | Charter Capt’s | <i>system industry were not to</i> |
| USUSACE | Local gov’t | <i>be excluded from process]</i> |
| USFWS | Travel Mich | |

IV. Michigan Offshore Energy Siting Panel – created by the Governor?

(The regulatory panel membership for this concept was not discussed because the group felt the state Administrative Board was adequate for the job with input from staff and the new advisory council.)

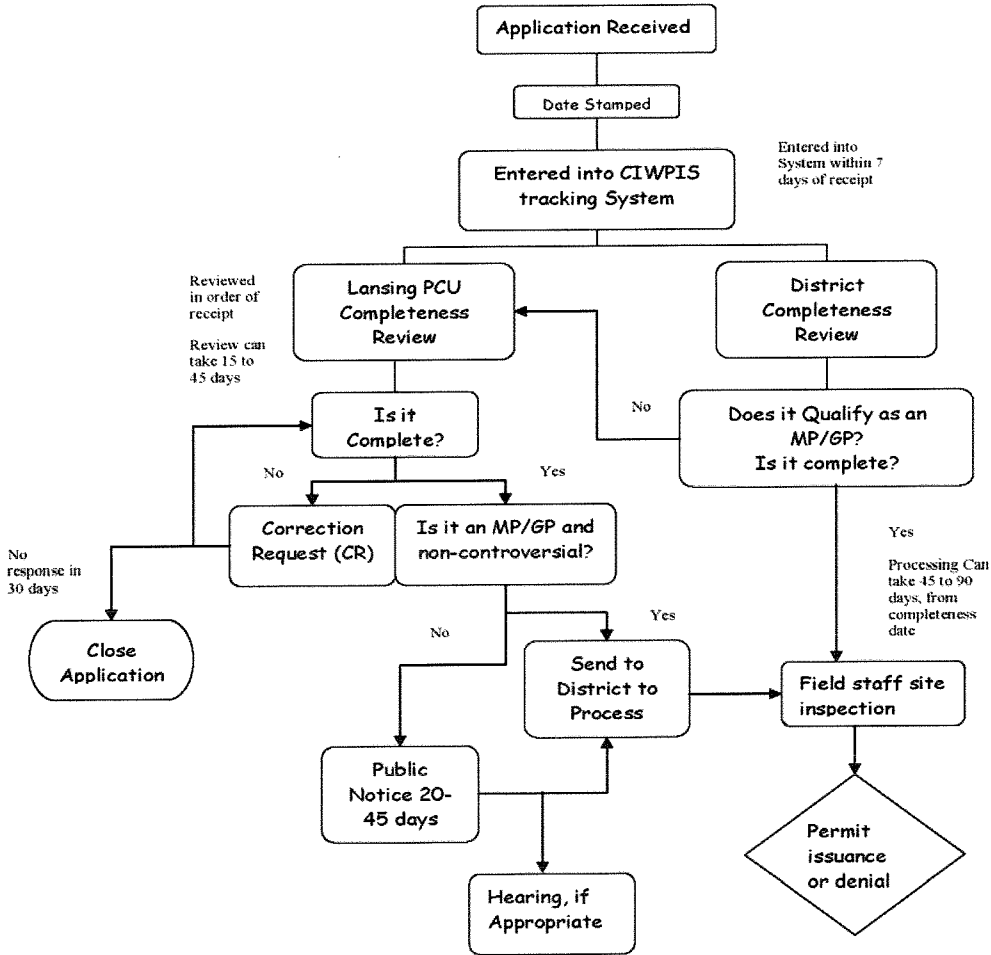
Invitees to the Agency Meeting, February 8, 2008

Coordinator	Klepinger, M.		
Michigan AGO	Reichel, Robert	Michigan EDC	Krause, Gary
Michigan DEQ-ESSD	Ballard, Cathie	Michigan EDC	Shreffler, Eric
Michigan DEQ-OGL	DeBeaussart, K.	Michigan HAL	Grennell, Brian
Michigan DEQ-LWMD	Graf, Tom	Michigan HAL	Halsey, John
Michigan DLEG	Sarver, John	Michigan HAL	Lusardi, Wayne
Michigan DLEG	Stanton, Tom	Office of the Governor	Hofmeister, B.
Michigan DNR-Executive	Knapp, Dennis	Office of the Governor	Pruss, Skip
Michigan DNR	Freed, Dave	US Army CE	Gauthier, Wally
Michigan DNR-Fisheries	Dexter, James	US Army CE	Simon, Charlie
Michigan DNR-Fisheries	Hanshue, S.	USEPA	Westlake, Ken
Michigan DNR-Fisheries	Newcomb, T.	US Coast Guard	Sharp, Doug
Michigan NFI	Gehring, Joelle	FAA	Gubry, Ernie
Michigan DNR-Wildlife	Lederle, Pat	USFWS	Fisher, Burr
Michigan DOT-Aeronautics	Smith, Linn		

Observers: Tim Eder, Great Lakes Commission; Chris Shafer, Cooley Law School; Jeremy Wittrock, Great Lakes Renewable Energy Association.

DEQ/USACE Joint Permit Timeline Graphic

Joint Permit Application Review Process by MDEQ



Annotated List of Offshore Great Lakes Wind-Siting Authorities (Michigan)

Regulatory agencies were asked to cite the authorities they relied upon when considering the mocked-up offshore permit application. Noting that an application for conveyance (bottomland lease) is typically pursued concurrently, agency representatives reviewed and commented on the preliminary list of authorities. The annotated list below reflects agency input received during the dry run project.

A. The Michigan Department of Environmental Quality (MDEQ)

MDEQ's regulatory authority related to offshore wind-energy facility siting derives from constitutional and statutory laws and implementing regulations, as well as common law that has been established and refined over the years in accordance with the public-trust doctrine. In its consideration of wind-energy development proposals, MDEQ would apply well-established protocols for agency and public participation that it currently uses for proposals relating to bottomland alteration and conveyances.

(1) Michigan Constitution, Article 4, Section 52:

The conservation and development of the natural resources of the State are declared to be of paramount public concern in the interest of the health, safety and general welfare of the people. Legislation provides for the protection of the air, water and other natural resources of the State from pollution, impairment and destruction.

(2) Michigan Natural Resource and Environmental Protection Act (NREPA), Great Lakes Submerged Lands, Part 17, M.C.L. 324.1701 *et seq.*:

A permit is required for all filling, dredging, and placement of permanent structures (i.e., groins, docks, piers, pilings, etc.) below the "ordinary high water mark" and on all upland channels extending landward of the "ordinary high water mark" of the Great Lakes.

This law and the subsequent Administrative Rule 322.1001 *et seq.* established the MDEQ "Joint Permit" process for all Great Lakes bottomland alteration projects and conveyances.

(3) The Michigan Department of Natural Resources (MDNR) has responsibilities across the Great Lakes for resource management. These are derived some several authorities, including the Michigan Constitution, statutory law, treaties, court orders, and the public-trust doctrine. MDEQ is required to seek MDNR review during an offshore wind-development joint-permit process or a bottomland conveyance process. The MDNR exercises statutory authority under NREPA:

- Part 365, Endangered Species Protection
- Part 401, Wildlife Conservation
- Part 473, Commercial Fishing
- Part 801, Marine Safety

The State is bound by a 2000 consent decree on the waters of the Great Lakes under the tribal Treaty of 1836 (a.k.a. the Treaty of Washington, or the Treaty of March 28, 1836. 7 Stat. 491) in which five tribes ceded certain lands to the United States. Among other things, the consent decree requires lakewide management and rehabilitation of lake trout.

Michigan, like the other Great Lakes states, is bound by the Great Lakes Basin Compact (PL 90-419). The compact's purposes are:

1. To promote the orderly, integrated, and comprehensive development, use, and conservation of the water resources of the Great Lakes Basin (Basin).
2. To plan for the welfare and development of the water resources of the Basin as a whole as well as for those portions of the Basin that may have problems of special concern.
3. To make it possible for the States of the Basin and their people to derive the maximum benefit from utilization of public works, in the form of navigational aids or otherwise, which may exist or which may be constructed.
4. To advise in securing and maintaining a proper balance among industrial, commercial, agricultural, water supply, residential, recreational, and other legitimate uses of the water resources of the Basin.
5. To establish and maintain an intergovernmental agency to the end that the purposes of this compact may be accomplished more effectively.

In 1954 the Convention on Great Lakes Fisheries (Great Lakes Fishery Act of 1956) created the Great Lakes Fishery Commission, whose duties include advising the two countries on issues affecting sustainable benefits from fish stocks of common concern. Interstate cooperative objectives are memorialized in the 1980 Joint Strategic Plan to Manage Great Lakes Fisheries, and subsequent plans.

The State of Michigan has assumed from the U.S. Environmental Protection Agency (EPA) the authority to regulate the placement of fill material in waterways and wetlands under provisions of Section 404(g)(1) of the Clean Water Act of 1977 (33 U.S.C. §1251 et seq.). However, because Section 10 of the Rivers and Harbors Act (discussed below) does not provide for similar transfer to states, the USACE retains Section 404 jurisdiction within the navigable waters of the U.S. and their adjacent wetlands. The discharge of any fill materials must comply with state water quality standards consistent with Sections 301, 307, and 401 of the Clean Water Act. If discharges of "pollutants" are part of the plan, a project would require a surface-water discharge permit under Part 31 of NREPA, MCL 324.3101 *et seq* and under parallel provisions of the Clean Water Act. It is not clear whether the National Pollutant Discharge Elimination System process would apply. The federal Coastal Zone Management Act, (CZMA) 16 U.S.C. §§1451-1465 (2000), requires that any federal action in the coastal zone be consistent with State management plans. A timely objection raised by a State that a project is inconsistent with the State's coastal management program precludes federal agencies from granting a license or permit

for the project unless, on appeal by the applicant or on the Secretary of Commerce's own initiative, the Secretary overrides the objection because the activity is "consistent with the objectives of the CZMA." Under the Energy Policy Act of 2005 the Secretary must issue a decision on a CZMA consistency appeal within a maximum of 310 days from the date of the Notice of Appeal.

B. The United States Army Corps of Engineers (USACE)

The USACE regulatory authority related to offshore wind energy facility siting derives primarily from the Rivers and Harbors Act of 1899 and the Clean Water Act. It is the federal partner in MDEQ joint permit processing and also has compliance review responsibilities under Section 106 of the National Historic Preservation Act.

(1) Rivers and Harbors Act of 1899, Section 10. 33 U.S.C. § 403 (2000)

This prohibits the obstruction or alteration of navigable waters of the United States without a permit from the USACE.

(2) Clean Water Act. 33 U.S.C. §1344 (2001)

This prohibits the discharge of dredged or fill material into all waters of the United States, including wetlands, both adjacent and isolated, without a permit. The Corps is responsible for the day-to-day administration and permit review and EPA provides program oversight. The fundamental rationale of the program is that no discharge of dredged or fill material should be permitted if there is a practicable alternative that would be less damaging to aquatic resources or if significant degradation would occur to the nation's waters. Permit review (jointly with MDEQ) and issuance follows a sequence process that encourages avoidance of impacts, followed by minimizing impacts and, finally, requiring mitigation for unavoidable impacts to the aquatic environment.

(3) National Historic Preservation Act, Section 106. 16 U.S.C. § 470 *et seq.* (1966)

This requires Federal agencies to review all actions that may affect a property listed on the National Register of Historic Places, or that may affect property eligible for listing. The Act functions like NEPA, requiring a determination of the presence of historic items or sites, and an evaluation of the effects of proposed developments on them.

"The head of any Federal agency having direct or indirect jurisdiction over a proposed Federal or federally assisted undertaking in any State and the head of any Federal department or independent agency having authority to license any undertaking shall, prior to the approval of the expenditure of any Federal funds on the undertaking or prior to the issuance of any license, as the case may be, take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register. The head of any such Federal agency shall afford the Advisory Council on Historic

Preservation ... a reasonable opportunity to comment with regard to such undertaking.”

C. The United States Environmental Protection Agency (EPA)

(1) National Environmental Protection Act (NEPA) 42 U.S.C. § 4371 *et seq.* (1969)

NEPA contemplates that a lead federal agency involved in a major undertaking with a significant potential for environmental impacts can do an Environmental Assessment to determine if an Environmental Impact Statement is needed. USACE would identify interested parties to the undertaking during processing of the MDEQ joint permit as part of its scoping process. NEPA also requires agencies to consider cumulative impacts of development (positive or negative) on the environment, including impacts on air quality under the Clean Air Act.

(2) Clean Water Act (CWA) 33 U.S.C. §1251 *et seq.* (2001)

The EPA and USACE jointly administer Section 404. EPA may object to or veto a decision. EPA would look to the state DEQ for a determination on the need for an NPDES permit if offshore energy conversion systems (e.g. hydrogen production via electrolysis and resultant hydrogen storage as proposed in the dry run permit application) could result in the discharge of pollutants.

D. The US Fish and Wildlife Service (USFWS)

(1) Fish and Wildlife Coordination Act (FWCA) 16 U.S.C. § 661-667e (1958)

The FWCA provides the basic authority for USFWS involvement in evaluating impacts to fish and wildlife from proposed water resource development projects. It requires that fish and wildlife resources receive equal consideration to other project features. It also requires Federal agencies that construct, license or permit water resource development projects to first consult with the Service and state fish and wildlife agency regarding the impacts on fish and wildlife resources and measures to mitigate these impacts. The Service is authorized (1) to provide assistance to, and cooperate with, Federal, State, and public or private agencies and organizations in the development, protection...of all species of wildlife, resources thereof, and their habitat, in controlling losses of the same...and in carrying out other measures necessary to effectuate the purposes of said sections; (2) to make surveys and investigations of the wildlife of the public domain, including lands and waters or interests therein acquired or controlled by any agency of the United States.

With rising interest in siting wind energy facilities, the Service has issued voluntary Interim Guidelines to avoid and minimize wildlife impacts.²⁰ In a letter of clarification to the Guidelines, the Department stated its policy with regard to the need for local information in decision-making.

Where information is considered insufficient to make informed decisions about development of a site, recommendations for collection of additional information should be based on the local situation.²¹

The USFWS Interim Guidelines acknowledge the balanced approach required in consideration of renewable energy developments. Emission-free wind energy is good for the environment in many ways but historic avian mortality rates are too high. According to the Guidelines,

Birds can strike the towers; electrocutions can occur if designs are poor; and wind farms may impact bird movements, breeding, and habitat use. [Offshore] Collision mortality, while generally unknown, is believed to be small because birds appear to avoid offshore wind farms.²²

The Service plans to develop an operations manual for evaluation, site selection, design, construction, operation, and monitoring of wind energy facilities in both terrestrial and aquatic environments.²³

(2) National Environmental Policy Act (NEPA), 42 U.S.C. § 4371 *et seq.* (1969)

Requires USFWS review and comment on the MDEQ-USACE joint permit per sections 1501.6 (opportunity as a cooperating agency) and section 1503.4 (duty to comment on federally-licensed activities for agencies with jurisdiction by law). USFWS will apply policy and procedures from the following statutes during its review:

-Migratory Bird Treaty Act, 16 U.S.C. §§ 703-712 (1918)

This act does not specifically allow the Department to provide for unauthorized taking of migratory birds (incidental collisions) but the Department recognizes the need for prosecutorial discretion toward those who have made good faith efforts to avoid the taking of migratory birds. Very little is known about the risks to migratory birds presented by wind turbine arrays located more than 10 miles offshore in the Great Lakes but USFWS intends to actively pursue data collection and the development of offshore guidance similar to its (interim) onshore guidance for wind facility siting.²⁴

-Bald and Golden Eagle Protection Act 16 U.S.C. § 668-668-d (1962)
Similar to the above, specific to these raptors.

(3) Endangered Species Act 16 U.S.C. §§ 1531-1544 (1973)

Requires USFWS to assist other Federal agencies in ensuring that any action they authorize, implement or fund will not jeopardize the continued existence of a federally endangered or threatened species. Section 7 (a)(2) requires Federal agencies to consult with the USFWS to ensure that actions that they fund, authorize, permit, or otherwise carry out will not jeopardize the continued existence of any listed species or adversely modify designated critical habitats. Permits for “incidental take” can be obtained from the FWS for take which would occur

as a result of an otherwise legal activity, such as construction of wind turbines, and which would not jeopardize the species.²⁵

E. The Federal Aviation Administration and the Michigan Department of Transportation

(1) The Michigan Tall Structure Act 259 of 1959 has identical criteria to the applicable federal regulation under 14 CFR 77, (Objects Affecting Navigable Airspace) Aeronautics and Space, Department of Transportation, Special Federal Aviation Regulation Number 98.

Under this FAA regulation, and the Michigan Tall Structures Act, the FAA and MDOT control structures exceeding 200 feet into navigable airspace and shorter structures which break the plane of the airspace in a 1:100 slope near a landing field within 20,000 feet (roughly 3.75 miles). The FAA and the Michigan Department of Transportation Bureau of Aeronautics use the FAA's Notice of Proposed Construction or Alteration Form FAA 7460-1 to regulate tall structures on land or water.

(2) Michigan Airport Zoning Act, Public Act 23 of 1950, and the local laws it authorizes, does not apply because the nearest airport is more than 10 miles away. .

F. The United States Coast Guard, Department of Homeland Security (USCG)

(1) 33 CFR 64, 66, 67 Private Aids to Navigation

USCG requires a permit to establish and operate a private aid-to-navigation to a fixed structure located in navigable waters of the United States. Wind field equipment will be required to install, maintain and operate Class I private aids, using Forms CG-2554 and 4143. The District Commander reviews the application for compliance with all regulations including NEPA and CZMA. In some cases, the application will be sent up to the Commandant for approval. USCG makes a recommendation to the National Ocean Service to publish a notice to mariners and to chart the aid locations. Any part of a wind field within a fairway or navigational channel will be listed on the Light List and entered into I-ATONIS. Permitting by USCG requires prior approval of the USACE.

G. The Federal Energy Regulatory Commission (FERC) 18 C.F.R. §§ 380.1 – 380.15

FERC authority regarding generating facilities concerns authorizing wholesale generators to engage in sales at market based rates. The only electric generating projects that require FERC approval are hydropower projects. FERC does have NEPA responsibilities related to transmission of energy. Under Section 1221 of the Energy Policy Act of 2005, the Commission has been given limited authority to site interstate electric transmission.

H. The Michigan Public Service Commission (MPSC)

(1) Public Act 106 of 1909; Transmission of Electricity §§ 460.551 - 460.559 authorizes the MPSC to regulate energy transmission, similar to some of the authorities of FERC.

(2) Public Act 30 of 1995; Electric Transmission Line Certification Act §§ 460.561 - 460.575 Provides that “If an electric...transmission company plans to construct a major transmission line in this state...company shall submit a construction plan to the commission” as part of its application for a certificate of public convenience and necessity. “Major transmission line” is defined as a “transmission line of 5 miles or more in length...through which electricity is transferred at system bulk supply voltage of 345 kilovolts or more.” The law allows the MPSC considerable discretion when it provides that the plan must include “Additional information required by commission rule or order that directly relates to the construction plan.” And the law requires the same construction plan to be provided “to each municipality in which construction of the planned major transmission line is intended.” It also provides that “Before applying for a certificate... company shall schedule and hold a public meeting in each municipality” and requires that “In the 60 days before a public meeting ...company shall offer in writing to meet with the chief elected official of each affected municipality...” The law also provides an “essential service” override of local ordinances: “If the commission grants a certificate under this act, that certificate shall take precedence over a conflicting local ordinance, law, rule, regulation, policy, or practice...”

I. Local land use planning and zoning ordinances directly applicable to the regulation of offshore energy facilities siting can be used under the police powers to protect local resource values. Clear authority exists to regulate shoreside placement of transmission facilities. Michigan's main planning enabling acts are the Township Planning Act (P.A. 168 of 1959), the County Planning Act (P.A. 282 of 1945) and the Municipal Planning Act (P.A. 285 of 1931). These were presented March, 2008 to Governor Granholm for signature in consolidated form as PA 33 of 2008, the Michigan Planning Enabling Act. Michigan’s main zoning enabling acts, adopted in 1921 and 1943, were recently consolidated into a single act (P.A. 110 of 2006) called the Michigan Zoning Enabling Act (M.C.L. 125.3101 *et seq.*) or MZEA, 2006.

Michigan jurisdictions known to have enacted wind energy planning and/or zoning provisions (as of late 2007).²⁶

Banks Township, Antrim Co.
Billings Township, Gladwin Co.
Caseville Township, Huron Co.
Claybanks Township, Oceana Co.
Crystal Township, Oceana Co.
Elmwood Township, Leelanau Co.
Emmet County
Eveline Township, Charlevoix Co.
Filer Township, Manistee Co.
Golden Township, Oceana Co.
Grant Township, Newaygo Co.
Hamlin Township, Mason Co.
Huron County
Lake Township, Benzie Co.
Lodi Township, Washtenaw Co.

Mackinaw City, Cheboygan Co.
Marion Township, Charlevoix Co.
Mason County
Oliver Township, Huron Co.
Otsego County
Suttons Bay Township, Oceana Co.
Whiteriver Township, Muskegon Co.

²⁰ Interim Guidelines to Avoid and Minimize Wildlife Impacts from Wind Turbines. USFWS, May 2003

²¹ Williams, S., Director, USFWS. Implementation of Service Voluntary Interim Guidelines to Avoid and Minimize Wildlife Impacts from Wind Turbines. Memorandum dated April 26, 2004.

²² Ibid. Appendix 7 - Known and Suspected Impacts of Wind Turbines on Wildlife

²³ Ibid.

²⁴ Interim Guidelines to Avoid and Minimize Wildlife Impacts from Wind Turbines. USFWS, May 2003

²⁵ Ibid. Appendix 3 - Wildlife Laws Relevant to Wind Power Development Projects.

²⁶ Klepinger, 2007. Michigan Land Use Guidelines for Siting Wind Energy Systems. MSUE Bulletin WO-1053



Mock-Up of Joint Permit MDEQ/USACE Applications for the 500 MW Wind Fields in Lake Huron and Lake Michigan

U.S. ARMY CORPS OF ENGINEERS (USACE)
Detroit District Office
Phone: 313-226-2218, Fax: 313-226-6763
Website: www.lre.usace.army.mil

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY (MDEQ)
Land and Water Management Division (LWMD)
Phone: 517-373-9244, Fax: 517-241-9244
Website: www.michigan.gov

The MDEQ, LWMD, regulates activities under the following Parts of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. The regulated activities are summarized in Appendix D. The complete statutes and rules can be downloaded from our website at www.michigan.gov/jointpermit.

- Part 301, Inland Lakes and Streams
- Part 303, Wetlands Protection
- Part 325, Great Lakes Submerged Lands
- Floodplain Regulatory Authority found in Part 31, Water Resources Protection
- Part 353, Sand Dunes Protection and Management
- Part 323, Shorelands Protection and Management
- Part 315, Dam Safety

The USACE has the authority to regulate activities within the waters of the United States under the following statutes:

- Section 10, Rivers and Harbors Act of 1899 (33 U.S.C. 403)
- Section 404, Clean Water Act of 1977 (33 U.S.C. 1344)

DIRECTIONS for completing the Joint Permit Application

For additional guidance go to the “Joint Permit Application Training Manual” link on our website at www.michigan.gov/jointpermit.

Complete all items in Sections 1 through 9 on pages 1 and 2 of the application:

Make sure you:

- Provide the Township, Range, Section, and Property Tax Identification Numbers required in Section 1.
- Provide the requested information for all adjacent and impacted property owners in Section 8.
- Print your name and sign and date your application in Section 9. If applicant is a corporation, include title of authorized representative.
- Provide a letter of authorization if the legal property owner is not the individual who signs the application. A letter of authorization is a letter from the legal landowner(s) authorizing the applicant or agent to apply for the project. The letter should include the signature from the landowner, the project site address, and a brief project description.

Complete project-specific information:



- Complete items in Sections 10 through 21 on pages 3 through 7 that apply to your project. Follow the instructions at the beginning of each section. The instructions for each sample drawing in Appendix B indicate the application sections you will most likely need to complete. Utilize the application form as much as possible before adding attachments to save on paper resources and to make the review more efficient.

Provide maps and drawings with adequate detail for review. Refer to Appendix B of the application and/or www.michigan.gov/jointpermit for sample drawings.

- Vicinity Map:
 - A map to the proposed project location that includes ALL streets, roads, intersections, highways, or cross-roads to the project. Include written directions from a well-known landmark or major intersection. Do not assume field staff knows where your project is.
- Project Site Plan:
 - Overhead drawings to scale or including dimensions, length and width, of the proposed project are required.
- Section Views (cross and profile to scale or including dimensions, length, width, and height):
 - Cross sectional drawings of the proposed projects are required.
- Provide descriptive photographs of the proposed work site showing vegetation if wetlands are involved or the shoreline for shore protection projects. All photographs must be labeled with your name and the date of the photograph, indicate what they show, and be referenced to the site plan. Proposed activities or structure(s) may be indicated directly on the photographs using indelible markers or ink pens. Provide aerial photographs 1:400 or larger for major projects.
- Provide a reproducible version of maps and drawings if the originals are supplied in color.
- Elevation data must include a description of the reference point or benchmark used and its corresponding elevation. For projects on the Great Lakes or Section 10 Waters, elevations must be provided in IGLD 85. For observed Great Lake water elevations in IGLD, visit the USACE website under “water levels”. If elevations are from still water, provide the observation date and water elevation. On inland sites, elevations can use NAVD 88, NGVD 29, a local datum or an assumed bench mark. The state building code requires an Elevation Certificate for any building construction or addition in the floodplain. A sample form can be found at www.fema.gov/nfip/elvinst.shtm

Flagging/staking project sites and project impacts:

- Flag the area for site inspection including the property corners, proposed road or driveway centerlines, and areas of proposed impacts. Site must be flagged at the time the application is submitted. A site visit will not be completed or action taken if the project is not flagged.



To prevent processing delays, make sure all the following items are mailed to the LWMD at the address below, label each attachment with applicant's name and date:

- Pages 1 and 2 of the application.
- Pages 3 through 7, as applicable, of the application. Do not submit blank application pages. Submit only those pages where you have provided information.
- The Site Location Map, Overall Site Plan, Plan View and Cross-Section Drawings, and additional information sheets on 8.5" x 11", 8.5" x 14", or 11" x 17" paper suitable for photocopying for public notice purposes. Aerial photographs do not substitute for site plans. If larger drawings or blueprints are required to show adequate detail for review, you may also submit 5 full size copies. The USACE requires one set of drawings on 8.5" x 11" paper, with all notations clearly legible. Larger supplemental drawings may be submitted, as well.
- An authorization letter from the property owner if someone other than the property owner is signing the application.
- A check made payable to the **State of Michigan**. Fees typically range from \$50.00 to \$4,000.00 depending on the type of project. Refer to Appendix C of the application and/or visit our website at <http://www.michigan.gov/jointpermit> to determine the appropriate fee for your project.

Mail to:

**MDEQ
LWMD-PCU
P.O. BOX 30204
LANSING, MI 48909-7704**

DEQ-LWM-PCU@michigan.gov

- Public Agencies eligible to receive federal and/or state transportation funding for a roject involving public roadways, non-motorized paths, airports, or related facilities, do not require an application fee and should submit applications to:

**MDEQ
LWMD-TFHU
P.O. Box 30458
Lansing, MI 48909-7958**

APPENDICES

Appendix A: Acronyms and Abbreviations..... A-1

Appendix B: General Instructions for All Drawings and Sample Drawings

1. General Instructions for all Drawings and Sample Site Location Maps..... B-1

2. Inland Lake Shore Protection..... B-2



3. Bulkhead/Seawall.....	B-2
4. Pond Construction.....	B-3
5. Floodplain Fill.....	B-3
6. Wetland Boardwalk.....	B-4
7. Dredging Project.....	B-4
8. Driveway Across Wetland.....	B-5
9. Residential Wetland Fill and Boardwalk Construction.....	B-5
10. Docks - Piers - Mooring Piles.....	B-6
11. Beach Sanding.....	B-6
12. Pipe/Utility Crossings in a Trench.....	B-7
13. Pipe/Utility Crossings using Directional Bore.....	B-7
14. Bridge or Culvert (4 drawings).....	B-8
15. Dam Construction.....	B-12
16. Water Intake.....	B-12
17. Great Lakes Shore Protection.....	B-13
18. Maintenance Dredge Channel.....	B-13
19. Proposed Residence in a High Risk Erosion Area.....	B-14
20. Proposed Residence in a Critical Dune Area.....	B-14
21. Marina Site Plan.....	B-15
22. Outlet Pipe.....	B-16
23. Temporary Logging Road Crossing.....	B-16
Appendix C: State Fees, Federal Fees, Minor Permit and General Permit for Minor Activities Categories.....	C-1
Appendix D: State Authority, Federal Authority, Privacy Act Statement, and State and Federal Penalties.....	D-1
Appendix E: Glossary (listed words are italicized in the application package).....	E-1
Appendix F: Joint Permit Application Withdrawal Guidance.....	F-1

Application status can be viewed on the MDEQ website at www.deq.state.mi.us/CIWPIS. Once the MDEQ/LWMD has received the information necessary for review of the project, **including drawings that have adequate detail for review** and the **full application fee**, the file will be reviewed for final processing. A mailed postcard or a public notice will provide the file number and the telephone number of the office where the application is being processed. The review time to determine if an application is complete for processing ranges from 15 to 30 days. Technical processing times may range from 60 to 90 days. Processing times will be longer if a public hearing is held. A LWMD staff person from your local District/Field Office may visit the project site and may request additional information prior to a decision on the permit. Fees are not refundable on files once a site visit is held, a public notice is posted, or an action is taken, including closure of a file due to no response to a correction request after 30 days. Applications can be reopened within 180 days of an initial correction request, if all the information requested is provided. The application file will be permanently closed if all of the requested information is not provided within 180 days of the initial correction request. A new application can be submitted after 180 days, but fees are not transferable.

If a federal permit will also be required, a copy of the permit application will be sent to the Detroit District Office, USACE, for processing at the federal level. Additional copies of this application form can be downloaded from the MDEQ website at www.michigan.gov/jointpermit or can be photocopied from the original. If you have any questions about the permitting process or if you need to modify your application, you can contact the LWMD by phone, fax, at the addresses on the previous page, or email at DEQ-LWM-PCU@michigan.gov.





AGENCY USE	Previous USACE Permit or File Number	Date Received	Land and Water Management Division, MDEQ File Number	
	USACE File Number		Marina Operating Permit Number	
			Fee received \$	

- Complete all items in Sections 1 through 9 and those items in Sections 10 through 21 that apply to the project. Clear drawings and cross sections must be provided.

1 PROJECT LOCATION INFORMATION

- Refer to your property's legal description for the Township, Range, and Section information, and your property tax bill for your Property Tax Identification Number(s).

Address <i>Southern Lake Michigan</i>		Township Name(s) <i>none</i>	Township(s)	Range(s)	Section(s)
City/Village <i>none</i>	County(ies) <i>none</i>	Property Tax Identification Number(s) <i>lease number?</i>			
Name of Waterbody <i>Lake Michigan</i>	Project Name or Job Number <i>100 floating turbines</i>	Subdivision/Plat <i>none</i>	Lot Number <i>none</i>	Private Claim <i>none?</i>	
Project types (check all that apply)		<input checked="" type="checkbox"/> private <input type="checkbox"/> public/government <input type="checkbox"/> building addition <input type="checkbox"/> new building or structure <input checked="" type="checkbox"/> other (explain) <i>The project is subject to state bottomland lease conveyance provisions</i>		<input checked="" type="checkbox"/> industrial <input checked="" type="checkbox"/> commercial <input type="checkbox"/> building renovation or restoration <input type="checkbox"/> river restoration	
The proposed project is on, within, or involves (check all that apply)		<input type="checkbox"/> a legally established County Drain (date established) (M/D/Y)			
<input type="checkbox"/> a stream	<input type="checkbox"/> a pond (less than 5 acres)	<input checked="" type="checkbox"/> a Great Lake or Section 10 Waters		<input type="checkbox"/> a natural river	<input type="checkbox"/> a new marina
<input type="checkbox"/> a river	<input type="checkbox"/> a channel/canal	<input type="checkbox"/> a designated high risk erosion area		<input type="checkbox"/> a dam	<input type="checkbox"/> a structure removal
<input type="checkbox"/> a ditch or drain	<input type="checkbox"/> an inland lake (5 acres or more)	<input type="checkbox"/> a designated critical dune area		<input type="checkbox"/> a wetland	<input type="checkbox"/> a utility crossing
<input type="checkbox"/> a floodway area	<input type="checkbox"/> a 100-year floodplain	<input type="checkbox"/> a designated environmental area		<input type="checkbox"/> 500 feet of an existing waterbody	

2 DESCRIBE PROPOSED PROJECT AND ASSOCIATED ACTIVITIES, AND THE CONSTRUCTION SEQUENCE AND METHODS

- Attach separate sheets, as needed, including necessary drawings, sketches, photographs, aerials, or plans.
We will install 100 wind turbines on a 3.75 mile square grid approximately 30 miles from shore. The floating turbines will be spaced roughly 650 yards apart and tethered to the lake bottom using 4 suction anchors, the largest of which will alter approximately 160 square feet of the lake bottom. Suction pile anchors do not require the placement of fill. The turbines will be interconnected by roughly 30 miles of 33kV sea-cables at an average depth of 100 feet and trunked to a floating energy storage station tethered as above. Details, including a lake chart showing GPS coordinates of each turbine and anchor, are attached.

3 APPLICANT, AGENT/CONTRACTOR, AND PROPERTY OWNER INFORMATION

- The applicant can be either the property owner or the person or company that proposes to undertake the activity.
- If the applicant is a corporation, both the corporation and its owner must provide a written document authorizing the agent/contractor to act on their behalf.

Applicant (individual or corporate name) <i>Michigan Offshore Wind Inc</i>		Agent/Contractor (firm name and contact person)	
Mailing Address <i>123 Main Street</i>		Address	
City <i>Lansing</i>	State <i>MI</i>	City	State
Zip Code <i>48822</i>		Zip	
Daytime Phone Number with Area Code <i>555-555-5555</i>	Cell Phone Number <i>- -</i>	Daytime Phone Number with Area Code	Cell Phone Number
		<i>- -</i>	<i>- -</i>



Fax - -	E-mail <i>klep@msu.edu</i>	Fax - -	E-mail
Is the applicant the sole owner of all property on which this project is to be constructed and all property involved or impacted by this project? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If No, provide a letter signed by the property owner authorizing the agent/contractor to act on his or her behalf or a copy of easements or right-of-ways. If multiple owners, attach all property owners' names, mailing addresses, and telephone numbers. Disclose any DEQ conservation easements or other easements, deed restrictions, leases, or any other encumbrance upon the property in the project area. A copy of the land restriction must be provided.			
Property Owner's Name (If different from applicant) <i>State of Michigan</i>		Mailing Address <i>345 Main Street</i>	
Daytime Phone Number with Area Code <i>555-555-5555</i>	Cell Phone Number - -	City <i>Lansing</i>	State Zip Code <i>MI 48822</i>
4 PROPOSED PROJECT PURPOSE, INTENDED USE, AND ALTERNATIVES CONSIDERED (Attach additional sheets if necessary)			
<ul style="list-style-type: none"> The purpose must include any new development or expansion of an existing land use. Include a description of alternatives considered to avoid or minimize resource impacts. Include factors such as, but not limited to, alternative construction technologies; alternative project layout and design; alternative locations; local land use regulations and infrastructure; and pertinent environmental and resource issues. For utility crossings, include both alternative routes and alternative construction methods. <p><i>This development will provide energy to the Midwest's electric transmission grid and to the transportation fuel market. Clean power will be generated from the unique USDOE Class 4-5 wind resource over the Great Lakes.</i></p>			
5 LOCATING YOUR PROJECT SITE			
<ul style="list-style-type: none"> Provide the requested information listed below to help staff locate your project site. Attach a copy of a map, such as a plat, county, or USGS topographic map, clearly showing the site location and include an arrow indicating the north direction. Project area must be staked at the time of application submittal. 			
Is there an access road to the project? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes (If Yes, type of road, check all that apply) <input type="checkbox"/> private <input type="checkbox"/> public <input type="checkbox"/> improved Name of roads at closest main intersection <i>none</i> and . Directions from main intersection <i>na</i> Style of house or other building on site <input type="checkbox"/> ranch <input type="checkbox"/> 2-story <input type="checkbox"/> cape cod <input type="checkbox"/> bi-level <input type="checkbox"/> cottage/cabin <input type="checkbox"/> pole barn <input checked="" type="checkbox"/> none <input type="checkbox"/> other (describe) Color <i>na</i> Color of adjacent property house and/or buildings <i>na</i> House number <i>na</i> Address is visible on <input type="checkbox"/> house <input type="checkbox"/> garage <input type="checkbox"/> mailbox <input type="checkbox"/> sign <input type="checkbox"/> other (describe) Street name <i>na</i> Fire lane number Lot number How can your site be identified if there is no visible address? <i>Hmmmm...</i> Provide directions to the project site, with distances from the best and nearest visible landmark and waterbody <i>The 3.75 mile square field is roughly centered on a 62 mile line between Benton Harbor MI and Evanston IL. Latitude 42 degrees 6' 2.72" N. and Longitude 87 degrees 5' 58.56" W</i>			
Does project cross boundaries of two or more political jurisdictions? (City/Township, Township/Township, County/County, etc.) <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes (If Yes, list jurisdiction names.)			
6 List all other federal, interstate, state, or local agency authorizations required for the proposed activity, including all approvals or denials received.			
Agency for denial	Type approval	Identification number	Date applied Date approved / denied If denied, reason
<i>unknown</i>			
7 If a permit is issued, date activity will commence (M/D/Y) <i>01/01/2010</i>		Proposed completion date (M/D/Y) <i>01/01/2011</i>	
Has any construction activity commenced or been completed in a regulated area? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If Yes, identify the portion(s) underway or completed on drawings or		Were the regulated activities conducted under a MDEQ permit? <input type="checkbox"/> No <input type="checkbox"/> Yes If Yes, list the MDEQ permit number	



attach project specifications and give completion date(s) (M/D/Y) / /	
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Are you aware of any unresolved violations of environmental law or litigation involving the property? No Yes (If Yes, explain)

8 PUBLIC NOTIFICATION (Attach additional sheets if necessary)

- Complete information for all *adjacent and impacted property owners* and the lake association or established lake board, including the contact person's name.
- If you own the adjacent lot, provide the requested information for the first adjacent parcel beyond your property line.

Property Owner's Name	Mailing Address	City	State	Zip Code
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to be determined

Name of Established Lake Board or Lake Association and the Contact Person's name, phone number, and mailing address

9 APPLICANT'S CERTIFICATION READ CAREFULLY BEFORE SIGNING

I am applying for a permit(s) to authorize the activities described herein. I certify that I am familiar with the information contained in this application, that it is true and accurate, and, to the best of my knowledge, is in compliance with the *State Coastal Zone Management Program* and the *National Flood Insurance Program*. I understand that there are penalties for submitting false information and that any permit issued pursuant to this application may be revoked if information on this application is untrue.

I certify that I have the authority to undertake the activities proposed in this application. By signing this application, I agree to allow representatives of the MDEQ, USACE, and/or their agents or contractors to enter upon said property in order to inspect the proposed activity site and the completed project. I understand that I must obtain all other necessary local, county, state, or federal permits and that the granting of other permits by local, county, state, or federal agencies does not release me from the requirements of obtaining the permit requested herein before commencing the activity. I understand that the payment of the application fee does not guarantee the issuance of a permit.

- All applicants must complete **all** of the items in Sections 1 through 9 on pages 1 and 2 of this application.
- Complete those items in Sections 10 through 21 that apply to the project. Submit only those pages where you have provided information.
- Your application will not be processed if the application form is not completely filled out.
- List here the application page numbers being submitted and a brief description of other attachments included with your application.
Reproducible vicinity map, project site plan, cross sectional drawings of typical tether anchor and dimensional drawings of turbines, cables and bouys
- Submit 8.5" by 11," 8.5" by 14" or 11" by 17" size drawings with 4 copies. The USACE requires one set of drawings on 8.5" x 11" paper, with all notations clearly legible. Larger copies may be submitted in addition to the standard size copies.
- A letter of authorization from the owner must be included if not signed below by the owner.

<input type="checkbox"/> Property Owner	Printed Name	Signature	Date (M/D/Y)
<input type="checkbox"/> Agent/Contractor	<i>Joe Windiman</i>		
<input checked="" type="checkbox"/> Corporation – Title <i>CEO</i>			<i>01/02/2008</i>



10 PROJECTS IMPACTING WETLANDS OR FLOODPLAINS OR LOCATED ON AN INLAND LAKE OR STREAM OR A GREAT LAKE

- Check boxes A through N that may be applicable to your project and provide the requested information.
- If your project may affect wetlands, also complete Section 12. If your project may impact regulated *floodplains*, also complete Section 13.
- Provide an overall site plan showing existing lakes, streams, wetlands, and other water features; existing *structures*; and the location of all proposed *structures*, land change activities and *soil erosion and sedimentation control measures*. Review sample drawings for guidance in completing site-specific drawings for your project.
- Some projects on the Great Lakes require an application for conveyance prior to Joint Permit Application completeness.
- On a Great Lake use IGLD 85 surveyed converted from observed still water elevation. On inland waters, NGVD 29 local datum other
- Observed water elevation (ft) _____, date of observation (M/D/Y) _____ / _____ / _____

A. PROJECTS REQUIRING FILL (See All Sample Drawings)

- To calculate volume in cubic yards (cu yd), multiply the average length in feet (ft) times the average width (ft) times the average depth (ft) and divide by 27.
- Attach both plan and *cross-section* views to scale showing maximum and average fill dimensions.

(Check all that apply) floodplain fill wetland fill riprap seawall, bulkhead, or revetment bridge or culvert
 boat launch off-shore swim area beach sanding boatwell crib dock other

Fill dimensions (ft)		Total fill volume (cu yd)	Maximum water depth in fill area (ft)
Length	width	maximum depth	
Type of clean fill <input type="checkbox"/> pea stone <input type="checkbox"/> sand <input type="checkbox"/> gravel		Will filter fabric be used under proposed fill?	
<input type="checkbox"/> wood chips <input type="checkbox"/> other		<input type="checkbox"/> No <input type="checkbox"/> Yes (If Yes, type)	
Source of clean fill <input type="checkbox"/> on-site, If on-site, show location on site plan <input type="checkbox"/> commercial <input type="checkbox"/> other, If other, attach description of location			
Fill will extend _____ feet into the water from the shoreline and upland		_____ feet out of the water.	
		Fill volume below OHWM (cu yd)	

B. PROJECTS REQUIRING DREDGING OR EXCAVATION (For dredging projects see Sample Drawing 7, for excavation see other applicable Sample Drawings)

- To calculate volume in cubic yards (cu yd), multiply the average length in feet (ft) times the average width (ft) times the average depth (ft) and divide by 27.
- Attach both plan and *cross-section* views to scale showing maximum and average dredge or excavation dimensions.
- The applicant will be notified if sediment sampling is required.

(Check all that apply) floodplain excavation wetland dredge or draining seawall, bulkhead, or revetment
 navigation boat well boat launch other

Total dredge/excavation volume (cu yd)	Dimensions length	width	depth	Dredge/excavation volume below OHWM (cu yd)	Method and equipment for dredging

Has proposed dredge material been tested for contaminants? No Yes (If Yes, attach testing results)

Will dredged or excavated spoils be placed on-site off-site. Attach a detailed disposal area site plan, location map. If dispose off site, provide address and letter of authorization.

Has this same area been previously dredged? No Yes (If Yes, provide date and permit number, if available) _____ / _____ / _____

If Yes, are you proposing to enlarge the previously dredged area No Yes

Is long-term maintenance dredging planned? No Yes (If Yes, when and how much?)

C. PROJECTS REQUIRING RIPRAP (See Sample Drawings 2, 3, 8, 12, 14, 17, 22, and 23. Others may apply)

Riprap waterward of the <input type="checkbox"/> shoreline OR <input type="checkbox"/> ordinary high water mark	Dimensions (ft) length	width	depth	Volume(cu yd)
Riprap landward of the <input type="checkbox"/> shoreline OR <input type="checkbox"/> ordinary high water mark	Dimensions length	width	depth	Volume(cu yd)

Type of riprap field stone angular rock other

Will filter fabric be used under proposed riprap? No Yes (If Yes, type)

D. SHORE PROTECTION PROJECTS (See Sample Drawings 2, 3, and 17)

(check all that apply)

riprap – length (ft.) seawall/bulkhead – length (ft.) revetment – length

Distances of project



<i>(ft.)</i>	from both property lines (ft)
<input type="checkbox"/> E. DOCK - PIER - MOORING PILINGS (See Sample Drawing 10)	
Type <input type="checkbox"/> open pile <input type="checkbox"/> filled <input type="checkbox"/> crib	Seasonal structure? <input type="checkbox"/> No <input type="checkbox"/> Yes
Proposed structure dimensions (ft) length width	Dimensions of nearest adjacent structures (ft) length width
<input type="checkbox"/> F. BOAT WELL (No Sample Drawing available)	
Type of bank stabilization <input type="checkbox"/> wood <input type="checkbox"/> steel <input type="checkbox"/> concrete <input type="checkbox"/> vinyl <input type="checkbox"/> riprap <input type="checkbox"/> other	
Boat well dimensions (ft) Length width depth	Number of boats
Volume of backfill behind sidewall stabilization (cu yd)	Distances of boat well from adjacent property lines (ft)
<input type="checkbox"/> G. BOAT LAUNCH (No Sample Drawing available) (check all that apply) <input type="checkbox"/> new <input type="checkbox"/> existing <input type="checkbox"/> public <input type="checkbox"/> private <input type="checkbox"/> commercial <input type="checkbox"/> replacement	
Proposed overall boat launch dimensions (ft) length width depth	Type of material <input type="checkbox"/> concrete <input type="checkbox"/> wood <input type="checkbox"/> stone <input type="checkbox"/> other
Existing overall boat launch dimensions (ft) Length width depth	Boat launch dimensions (ft) below ordinary high water mark Length width depth
Distances of launch from both property lines (ft)	Number of skid piers
	Skid pier dimensions (ft) width length
<input type="checkbox"/> H. BOAT HOIST (No Sample Drawing available)	
(Check all that apply) <input type="checkbox"/> seasonal <input type="checkbox"/> permanent <input type="checkbox"/> cradle <input type="checkbox"/> side lifter <input type="checkbox"/> other	located on <input type="checkbox"/> seawall <input type="checkbox"/> dock <input type="checkbox"/> bottomlands
<input type="checkbox"/> I. BOARDWALKS AND DECKS IN WETLANDS - OR - FLOODPLAINS (See Sample Drawings 5 and 6. Provide table if necessary)	
(Check all that apply) <input type="checkbox"/> boardwalk <input type="checkbox"/> deck	Boardwalk or deck is on <input type="checkbox"/> fill <input type="checkbox"/> piling
	Dimensions (ft) length width
10 Continued - PROJECTS IMPACTING WETLANDS OR FLOODPLAINS OR LOCATED ON AN INLAND LAKE OR STREAM OR A GREAT LAKE	
<input type="checkbox"/> J. INTAKE PIPES (See Sample Drawing 16) <input type="checkbox"/> OUTLET PIPES (See Sample Drawing 22)	
Type <input type="checkbox"/> headwall <input type="checkbox"/> end section <input type="checkbox"/> pipe <input type="checkbox"/> other	If outlet pipe, discharge is to <input type="checkbox"/> wetland <input type="checkbox"/> inland lake <input type="checkbox"/> stream, drain, or river <input type="checkbox"/> Great Lake <input type="checkbox"/> other
Dimensions of headwall OR end section (ft) length width depth	Number of pipes Pipe diameters and invert elevations
<input checked="" type="checkbox"/> K. MOORING AND NAVIGATION BUOYS (No Sample Drawing available)	
<ul style="list-style-type: none"> Provide an overall site plan showing the distances between each buoy, distances from the shore to each buoy, and depth of water at each buoy in feet. Provide cross-section drawing(s) showing anchoring system(s) and dimensions. 	
Number of buoys <i>xxx# radar reflective USCG approved buoys to be spaced evenly around the 15 mile perimeter of the project area</i>	Purpose of buoy <input type="checkbox"/> mooring <input checked="" type="checkbox"/> navigation <input type="checkbox"/> swimming
Type of anchor system <i>tether</i>	
Dimensions of buoys (ft) width <i>2</i> height <i>2</i>	Do you own the property along the shoreline? <input type="checkbox"/> No <input type="checkbox"/> Yes If No, you must provide an authorization letter from the property owner(s)
<input type="checkbox"/> L. GROINS (No Sample Drawing available)	
<ul style="list-style-type: none"> Provide an overall site plan showing the distances (ft) of the outermost groins from the property lines, distances between groins, length and width of each groin, and the distance from the existing toe of the bluff to the lakeward end of the groins. If existing groins are located on adjacent properties, provide distances (ft) from closest neighboring groin to your property lines on the site plan. Provide cross-section views showing the length and height of each groin and the height of groin ends above the observed water level (date and time). If step down type, show the height of each section above the observed water level. 	
Number of groins	Will groin be placed on a foundation? <input type="checkbox"/> No <input type="checkbox"/> Yes (If Yes, dimensions of foundation (ft)) length width height
Type of groin <input type="checkbox"/> steel <input type="checkbox"/> wood <input type="checkbox"/> other	



M. FENCES IN WETLANDS, STREAMS, OR FLOODPLAINS (No Sample Drawing available)

- Provide an overall site plan showing the proposed fencing through wetlands, streams, or floodplains.
- Provide drawing of fence profile showing the design, dimension, post spacing, board spacing, and distance from ground to bottom of fence (if in a floodplain).

(check all that apply) <input type="checkbox"/> wetlands <input type="checkbox"/> streams <input type="checkbox"/> floodplains	Total length (ft) of fence through wetlands streams floodplains	Fence height (ft)	Fence type and material
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N. OTHER - e.g., structure removal, marine railway, low sand trap wall, breakwater, and structural foundations in wetlands or floodplains
Note: Approximately 4 turbine tether anchors will be needed per turbine. With different soil conditions and different design loads at each anchor location, the suction pile anchor design varies. The largest suction anchor in the system measures 40 ft wide, 40 ft high, and weighs 150 tons. The smallest anchor is 20 ft wide and 20 feet high. Piles are positioned 90% below ground.

11 EXPANSION OF AN EXISTING OR CONSTRUCTION OF A NEW LAKE OR POND (See Sample Drawings 4 and 15)
 Which best describes your proposed waterbody use (check all that apply)
 wildlife stormwater retention basin stormwater detention basin recreation wastewater basin other

Water source for lake/pond
 groundwater natural springs Inland Lake or Stream stormwater runoff pump sewage other

Location Of the lake/basin/pond floodplain wetland upland

Will project involve construction of a dam, dike, outlet control structure, or spillway? No Yes (If Yes, complete Section 17)

12 ACTIVITIES THAT MAY IMPACT WETLANDS (See Sample Drawings 8 & 9)
 • For information on the MDEQ's Wetland Assessment Program, visit the LWMD website or call 517-373-1170.

(check all that apply) fill (Section 10A) dredge or excavation (Section 10B) boardwalk or deck (Section 10I) dewatering
 fences (Section 10M) bridges and culverts (Section 14) draining surface water other

Has a professional wetland delineation been conducted for this parcel? No Yes (If Yes, provide a copy; if federal method was used, supply data sheets) Applicant purchased property before OR after October 1, 1980.

Is there a recorded DEQ easement on the property? No Yes (If Yes, provide the number)

Has the MDEQ conducted a wetland assessment for this parcel? No Yes (If Yes, provide a copy)

Describe the wetland impacts, proposed use or development, and efforts to avoid/minimize impacts. Describe the wetland alternatives and provide the type and amount of mitigation proposed if more than 1/3 acre is to be impacted.

Is any grading or mechanized land clearing proposed? No Yes (If Yes, show locations on site plan) Has any of the proposed grading or mechanized land clearing been completed? No Yes (If Yes, label and show locations on site plan)

- Complete the wetland dredge and wetland fill dimension information for each impacted wetland area.
- Attach additional sheets if necessary and label the impacted wetland areas on a site plan drawn to scale. Attach at least one typical cross-section for each wetland dredge and/or fill area. Also complete Section 10A for fill and Section 10B for dredge or excavation activities.
- If dredge material will be disposed of on site, show the location on site plan in an upland area and include soil erosion and sedimentation control measures.

Wetland dredge dimensions	maximum length (ft)	maximum width (ft)	dredge area <input type="checkbox"/> acres <input type="checkbox"/> sq ft	average depth (ft)	dredge volume (cu yd)
Wetland fill dimensions	maximum length (ft)	maximum width (ft)	fill area <input type="checkbox"/> acres <input type="checkbox"/> sq ft	average depth (ft)	fill volume (cu yd)

Total wetland dredge area
 acres sq ft Total wetland dredge volume (cu yd)

Total wetland fill area
 acres sq ft Total wetland fill volume (cu yd)

The proposed project will be serviced by public sewer
 private septic system (If septic system, show existing and new or expanded system on plans) If septic system, has application been made to the County Health Department for a permit? No Yes If Yes, has permit been issued? No Yes (If Yes, provide a copy)



13 FLOODPLAIN ACTIVITIES (See Sample Drawing 5. Others may apply.)

- Attach additional sheets with the requested information when multiple *floodplain* activities are included in this application.

(check all that apply) fill excavation other

Site is _____ feet above *ordinary high water mark* (OHWM) OR observed water level. Date of observation (M/D/Y) / /

Fill volume below the 100-year floodplain elevation (cu yd)	Compensating cut volume below the 100-year floodplain elevation (cu yd)
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14 BRIDGES AND CULVERTS (Including Foot and Cart Bridges)

- Provide detailed site-specific drawings of existing and proposed *Plan View* (Sample Drawing 14A), *Elevation View* (Sample Drawing 14B), *Stream and Floodplain Cross-Section* (Sample Drawing 14C), *Stream Profile* (Sample Drawing 14D) and *Floodplain Fill* (Sample Drawing 5) at a scale adequate for detailed review.
- Provide the requested information that applies to your project. If there is not an existing *structure*, leave the "Existing" column blank.
- If you choose to have a Licensed Professional Engineer "certify" that your project will not cause a "*harmful interference*" for a range of flood discharges up to and including the 100-year flood discharge, then you must use the "Required Certification Language." You may request a copy by phone, email, or mail. A hydraulic report supporting this certification may also be required.
- Attach additional sheets with the requested information when multiple crossings are included in this application.

	Existing	Proposed		Existing	Proposed
Culvert type (box, circular, arch) and material (corrugated metal, timber, concrete, etc.)			Bridge span (length perpendicular to stream) OR culvert <input type="checkbox"/> width <input type="checkbox"/> diameter (ft)		
Bridge type (concrete box beam, timber, concrete I-beam, etc.)			Bridge width (parallel to stream) OR culvert length (ft)		
Entrance design (projecting, mitered, wingwalls, etc.)			Bridge <i>rise</i> (from bottom of beam to streambed) OR Culvert <i>rise</i> (from top of culvert to streambed) (ft)		
Total <i>structure waterway opening</i> above streambed (sq ft)					
<input type="checkbox"/> elevation of culvert crown	Upstream		Higher elevation of <input type="checkbox"/> culvert invert OR <input type="checkbox"/> streambed within culvert (ft)	Upstream	
	Downstream			Downstream	
<input type="checkbox"/> bottom of bridge beam (ft)					
Elevation of road grade at <i>structure</i> (ft)			Distance from low point of road to mid-point of bridge crossing (ft)		
Elevation of low point in road (ft)					
<i>Cross-sectional</i> area of primary channel (sq ft) (See Sample Drawing 14C)			Average stream width at OHWM outside the influence of the structure (ft)	Upstream	Downstream
Reference datum used (show on plans with description) <input type="checkbox"/> NGVD 29 <input type="checkbox"/> IGLD 85 (Great Lakes coastal areas) <input type="checkbox"/> local					

High water elevation – describe reference point and highest known water level above or below reference point and date of observation.

15 STREAM, RIVER, OR DRAIN CONSTRUCTION ACTIVITIES (No sample drawing available)

- Complete Section 10A for fill, Section 10B for dredge or excavation, and Section 10C for *riprap* activities.
- If side casting or other proposed activities will impact wetlands or *floodplains*, complete Sections 12 and 13, respectively.
- Provide an overall site plan showing existing lakes, streams, wetlands, and other water features; existing *structures*; and the location of all proposed *structures* and land change activities. Provide *cross-section* (elevation) drawings necessary to clearly show existing and proposed conditions. Be sure to indicate drawing scales.
- For activities on legally established county drains, provide original design and proposed dimensions and elevations.

(check all that apply) maintenance improvement relocation enclosure new drain wetlands other

Dimensions (ft) of existing stream/drain channel to be worked on.	length	width	depth
Dimensions (ft) of new, relocated, or enclosed stream/drain channel.	length	width	depth
Existing channel average water depth in a normal year (ft)	Proposed side <i>slopes</i> (vertical / horizontal)		



How will <i>slopes</i> and bottom be stabilized?			
Will old/enclosed stream channel be backfilled to top of bank grade? <input type="checkbox"/> No <input type="checkbox"/> Yes		Length of channel to be abandoned (ft)	Volume of fill (cu yds)
If an enclosed <i>structure</i> is proposed, check type <input type="checkbox"/> concrete <input type="checkbox"/> corrugated metal <input type="checkbox"/> plastic <input type="checkbox"/> other			
Dimensions of the structure size length		volume of fill	
Will spoils be disposed of on site? <input type="checkbox"/> No <input type="checkbox"/> Yes (If Yes, show location of spoils on site plan in an <i>upland</i> area.)			
Reference datum used (show on plans with description) <input type="checkbox"/> NGVD 29 <input type="checkbox"/> IGLD 85 (Great Lakes coastal areas) <input type="checkbox"/> local			
16 DRAWDOWN OF AN IMPOUNDMENT			
• If wetlands will be impacted, also complete Section 12.			
Type of drawdown <input type="checkbox"/> over winter <input type="checkbox"/> temporary <input type="checkbox"/> one-time event <input type="checkbox"/> annual event <input type="checkbox"/> permanent (<i>dam</i> removal) <input type="checkbox"/> other			
Reason for drawdown			
Has there been a previous drawdown? <input type="checkbox"/> No <input type="checkbox"/> Yes (If Yes, provide date (M/D/Y) / /			Previous MDEQ permit number, if known
Does waterbody have established legal lake level? <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> Not Sure			Dam ID Number, if known
Extent of vertical drawdown (ft)		Impoundment design head (ft)	Number of adjacent or impacted property owners
Date drawdown would start (M/D/Y) / /		Date drawdown would stop (M/D/Y) / /	Rate of drawdown (ft/day)
Date refilling would start (M/D/Y) / /		Date refill would end (M/D/Y) / /	Rate of refill (ft/day)
Type of outlet discharge <i>structure</i> to be used <input type="checkbox"/> surface <input type="checkbox"/> bottom <input type="checkbox"/> mid-depth		Impoundment area at normal water level (acres)	Sediment depth behind <i>impoundment</i> discharge <i>structure</i> (ft)
17 DAM, EMBANKMENT, DIKE, SPILLWAY, OR CONTROL STRUCTURE ACTIVITIES (See Sample Drawing 15)			
• If wetlands will be impacted, also complete Section 12.			
• Attach site-specific conceptual plans for construction of a new <i>dam</i> , reconstruction of a <i>failed dam</i> , or enlargement of an existing <i>dam</i> for resource impact review. Detailed engineering plans are required once the activity has been determined to be permissible from an environmental standpoint.			
• Attach detailed engineering plans for a <i>dam</i> repair, <i>dam</i> alteration, <i>dam</i> abandonment, or <i>dam</i> removal.			
Which one best describes your project? <input type="checkbox"/> new <i>dam</i> construction <input type="checkbox"/> reconstruction of a <i>failed dam</i> <input type="checkbox"/> enlargement of an existing <i>dam</i> <input type="checkbox"/> <i>dam</i> repair <input type="checkbox"/> <i>dam</i> alteration <input type="checkbox"/> <i>dam</i> abandonment <input type="checkbox"/> <i>dam</i> removal <input type="checkbox"/> other			
Dam ID Number If known	Type of outlet discharge <i>structure</i> <input type="checkbox"/> surface <input type="checkbox"/> bottom <input type="checkbox"/> mid depth	Will proposed activities require a drawdown of the waterbody to complete the work? <input type="checkbox"/> No <input type="checkbox"/> Yes (If Yes, also complete Section 16)	
Riprap Volume (cu yd)	Dredging/excavation Volume (cu yd)	Fill volume (cu yd)	Does <i>structure</i> allow complete drainage of waterbody? <input type="checkbox"/> No <input type="checkbox"/> Yes
Benchmark elevation (ft)	Datum used <input type="checkbox"/> Local <input type="checkbox"/> NGVD 29 <input type="checkbox"/> other	Describe benchmark and show on plans	
Have you engaged the services of a Licensed Professional Engineer? <input type="checkbox"/> No <input type="checkbox"/> Yes (If Yes, name, registration number, and mailing address)			
Will a water diversion during construction be required? <input type="checkbox"/> No <input type="checkbox"/> Yes (If Yes, describe how the stream flow will be controlled through the <i>dam</i> construction area during the proposed project activities)			
• The following additional information is required for a new <i>dam</i> , reconstruction of a <i>failed dam</i> , or enlargement of an existing <i>dam</i> . Describe the type of <i>dam</i> and how you will design the <i>dam</i> and embankment to control seepage through and underneath the <i>dam</i> .			
Embankment top elevation (ft)	Streambed elevation at downstream embankment toe (ft)	Structural height (difference between embankment top elevation and streambed elevation at downstream embankment toe) (ft)	



Embankment length (ft)	Embankment top width (ft)	Embankment bottom width (ft)	Embankment slopes (vertical / horizontal)	Upstream	Downstream
Proposed normal pool elevation (ft)	Impoundment flood elevation (ft)		Maximum vertical drawdown capability (ft) (Attach operational procedure of the proposed structure, if available)		
Have soil borings been taken at dam location? <input type="checkbox"/> No <input type="checkbox"/> Yes (If Yes, submit results with permit application)		Will a cold water underspill be provided? <input type="checkbox"/> No <input type="checkbox"/> Yes (If Yes, invert elevation (ft.))		Do you have flowage rights to all proposed flooded property at the design flood elevation? <input type="checkbox"/> No <input type="checkbox"/> Yes	

18 UTILITY CROSSINGS (See Sample Drawings 12 and 13)

- If side casting is required, complete Subsections 10A and 10B. If spoils will be placed in wetlands or wetlands may be impacted, complete Section 12.
- Attach additional sheets with the requested information as needed for multiple crossings.

What method will be used to construct the crossings? <input type="checkbox"/> flume <input type="checkbox"/> plow <input type="checkbox"/> open trench <input type="checkbox"/> jack and bore <input type="checkbox"/> directional drilling			Crossing of floodplain <input type="checkbox"/> Inland Lake or Stream <input type="checkbox"/> <input type="checkbox"/> international waters <input type="checkbox"/> wetlands (also complete Section 12)			
Type	Number of wetland crossings	Number of inland lake or stream crossings	Pipe diameter (in.)	Pipe length per crossing (ft.)	Distance below streambed or wetland (in.)	Trench width (ft.)
<input type="checkbox"/> sanitary sewer						
<input type="checkbox"/> storm sewer						
<input type="checkbox"/> watermain						
<input checked="" type="checkbox"/> cable	0	0	0	0	0	0
<input type="checkbox"/> oil/gas pipeline						

19 MARINA CONSTRUCTION AND OPERATING PERMIT INFORMATION (See Sample Drawing 21)

- Marinas located on one of the Great Lakes, including Lake St. Clair, may be required to secure leases or conveyances from the state of Michigan to place structures on the bottomlands.
- Enclose a copy on any current pump-out agreement with another marina facility.
- Attach a copy of the property legal description or a property boundary survey report to your application.
- Some projects on the Great Lakes require an application for conveyance prior to Joint Permit Application completeness.

Marina owner			Marina name		
Mailing address			Location address		
City	State	Zip Code	City	State	Zip Code
Marina owner's daytime telephone number with area code - -			Marina's daytime telephone number with area code - -		
Check the reasons for submitting this application <input type="checkbox"/> Owner's name change <input type="checkbox"/> Construction of a new marina <input type="checkbox"/> Issuance of a new Marina Operating Permit <input type="checkbox"/> Expansion/modification of an existing marina <input type="checkbox"/> Reissuance of a Marina Operating Permit			Current Marina Operating Permit Number		Expiration Date (M/D/Y)
	Existing	Proposed		Existing	Proposed
Number of boat slips/wells			Are sanitary pump-out facilities available?	<input type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> Yes
Number of launch ramps/lanes			Number of hoist/take-out wells		
Number of mooring buoys			Number of gas pumps		
Lineal feet of broadside dockage			Name of marina insurance company		
Number of parking spaces					

20 HIGH RISK EROSION AND CRITICAL DUNE AREAS (See Sample Drawings 19 and 20, also Sample Drawing 9 if wetlands are impacted)

- Construction in critical dune areas on slopes greater than a 1-foot vertical rise in a 3-foot horizontal plane (33 percent) are prohibited without a special exception.



- Construction in *critical dune areas* on slopes that measure from a 1-foot vertical rise in a 4-foot horizontal plane (25 percent) to less than a 1-foot vertical rise in a 3-foot horizontal plane (33 percent) requires plans prepared by a registered architect or licensed professional engineer.
- Construction in critical dune areas requires the following written assurances: 1) permit or letter from county enforcing agent stating project complies with Part 91 (Soil Erosion and Sedimentation Control), 2) permit or letter from County Health Department for work on a septic system, and 3) letter from applicant stating tree/vegetation removal complies with instructions of the local Soil Conservation District.
- All property boundaries and proposed structure corners, septic system, water well, and driveway locations must be staked before the MDEQ site inspection.
- Scaled overhead and cross-section plans that include all property boundaries, and the location and dimensions of all structures and terrain alterations must be included.
- Additional information, including the building construction plans, may be required to complete the application review.

Parcel dimensions (ft) width depth	Property is a <input type="checkbox"/> platted lot <input type="checkbox"/> unplatted parcel	Year current property boundaries created	Date project staked (M/D/Y) / /
Type of construction activities <input type="checkbox"/> home <input type="checkbox"/> garage <input type="checkbox"/> driveway <input type="checkbox"/> septic <input type="checkbox"/> addition <input type="checkbox"/> renovation <input type="checkbox"/> other			
The proposed project will be serviced by <input type="checkbox"/> public sewer <input type="checkbox"/> private septic system (If septic system, show existing and new or expanded system on plans)	If septic system, has application been made to the County Health Department for a permit? <input type="checkbox"/> No <input type="checkbox"/> Yes If Yes, has permit been issued? <input type="checkbox"/> No <input type="checkbox"/> Yes	If Yes, critical dune projects require County Health Department approval submitted with application.	Number of individual living-units in proposed building
Existing construction is on <input type="checkbox"/> pilings <input type="checkbox"/> basement <input type="checkbox"/> concrete slab <input type="checkbox"/> crawl space	Proposed new construction will be on <input type="checkbox"/> pilings <input type="checkbox"/> basement <input type="checkbox"/> concrete slab <input type="checkbox"/> crawl space		
Existing construction material above foundation wall <input type="checkbox"/> stud frame <input type="checkbox"/> log <input type="checkbox"/> block <input type="checkbox"/> other	Proposed new construction material above foundation wall <input type="checkbox"/> stud frame <input type="checkbox"/> log <input type="checkbox"/> block <input type="checkbox"/> other		
Existing siding material <input type="checkbox"/> wood <input type="checkbox"/> vinyl <input type="checkbox"/> block <input type="checkbox"/> other	Proposed new siding material <input type="checkbox"/> wood <input type="checkbox"/> vinyl <input type="checkbox"/> block <input type="checkbox"/> other		
Area of the existing foundation, excluding attached garage (sq ft)	Area of the proposed foundation, excluding attached garage (sq ft)		
Area of the existing garage foundation (sq ft)	Area of the proposed garage foundation (sq ft)		
If renovating or restoring existing structure, renovation or restoration cost \$	Current structure replacement value \$	Tax assessed value of existing structure (excluding land value) \$	Assessment Year

21 ACTIVITIES IN DESIGNATED ENVIRONMENTAL AREAS (No Sample Drawings Available)

- Many designated *environmental areas* are completely or partially wetlands. Be sure to complete Section 12 if your proposed activities will also occur in wetlands.
- If you are proposing any alteration in a designated *environmental area*, attach a detailed site plan.

(Check all that apply) placement of structures grading or other soil alteration alteration of natural drainage

alteration of vegetation boardwalk or deck driveway or road

dredge fill culvert other

Has the MDEQ staff or anyone else conducted a *wetland assessment* for this parcel? No Yes (If Yes, provide copy of response)

U.S. ARMY CORPS OF ENGINEERS (USACE)
 Detroit District Office
 Phone: 313-226-2218, Fax: 313-226-6763
 Website: www.lre.usace.army.mil

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY (MD
 Land and Water Management Division (LWM)
 Phone: 517-373-9244, Fax: 517-241-9
 Website: www.michigan.gov/

The MDEQ, LWMD, regulates activities under the following Parts of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. The regulated activities are summarized in Appendix D. The complete statutes and rules can be downloaded from our website at www.michigan.gov/jointpermit.

- Part 301, Inland Lakes and Streams
- Part 303, Wetlands Protection
- Part 325, Great Lakes Submerged Lands
- Floodplain Regulatory Authority found in Part 31, Water Resources Protection
- Part 353, Sand Dunes Protection and Management
- Part 323, Shorelands Protection and Management
- Part 315, Dam Safety



AGENCY USE	Previous USACE Permit or File Number	Date Received	Land and Water Management Division, MDEQ File Number
	USACE File Number		Marina Operating Permit Number
			Fee received \$

- Complete all items in Sections 1 through 9 and those items in Sections 10 through 21 that apply to the project. Clear drawings and cross sections must be provided.

1 PROJECT LOCATION INFORMATION

- Refer to your property's legal description for the Township, Range, and Section information, and your property tax bill for your Property Tax Identification Number(s).

Address <i>Outer Saginaw Bay Lake Huron</i>		Township Name(s) <i>none</i>	Township(s)	Range(s)	Section(s)
City/Village <i>none</i>	County(ies) <i>none</i>	Property Tax Identification Number(s) <i>lease number?</i>			
Name of Waterbody <i>Lake Huron</i>	Project Name or Job Number <i>100 turbines</i>	Subdivision/Plat <i>none</i>	Lot Number <i>none</i>	Private Claim <i>none?</i>	
Project types (check all that apply)	<input checked="" type="checkbox"/> private <input type="checkbox"/> building addition <input checked="" type="checkbox"/> other (explain) <i>The project is subject to state bottomland lease conveyance provisions</i>	<input type="checkbox"/> public/government <input type="checkbox"/> new building or structure	<input checked="" type="checkbox"/> industrial <input type="checkbox"/> building renovation or restoration	<input checked="" type="checkbox"/> commercial <input type="checkbox"/> river restoration	
The proposed project is on, within, or involves (check all that apply)		<input type="checkbox"/> a legally established County Drain (date established) (M/D/Y)			
<input type="checkbox"/> a stream	<input type="checkbox"/> a pond (less than 5 acres)	<input checked="" type="checkbox"/> a Great Lake or Section 10 Waters	<input type="checkbox"/> a natural river	<input type="checkbox"/> a new marina	
<input type="checkbox"/> a river	<input type="checkbox"/> a channel/canal	<input type="checkbox"/> a designated high risk erosion area	<input type="checkbox"/> a dam	<input type="checkbox"/> a structure removal	
<input type="checkbox"/> a ditch or drain	<input type="checkbox"/> an inland lake (5 acres or more)	<input type="checkbox"/> a designated critical dune area	<input type="checkbox"/> a wetland	<input type="checkbox"/> a utility crossing	
<input type="checkbox"/> a floodway area	<input type="checkbox"/> a 100-year floodplain	<input type="checkbox"/> a designated environmental area	<input type="checkbox"/> 500 feet of an existing waterbody		

2 DESCRIBE PROPOSED PROJECT AND ASSOCIATED ACTIVITIES, AND THE CONSTRUCTION SEQUENCE AND METHODS

- Attach separate sheets, as needed, including necessary drawings, sketches, photographs, aerials, or plans.
- We will install 100 wind turbines on a 3.75 mile square grid approximately 15 miles from shore. The turbines will be spaced roughly 650 yards apart and installed by driving the monopole tower deep into the lake bottom. The turbines will be interconnected by roughly 30 miles of 33kV sea-cables buried at an average depth of 3 feet and trunked to a transformer station in rural Alabaster Township, Iosco County. Details, including a lake chart showing GPS coordinates of each turbine, are attached.*

3 APPLICANT, AGENT/CONTRACTOR, AND PROPERTY OWNER INFORMATION

- The applicant can be either the property owner or the person or company that proposes to undertake the activity.
- If the applicant is a corporation, both the corporation and its owner must provide a written document authorizing the agent/contractor to act on their behalf.

Applicant (individual or corporate name) <i>Michigan Offshore Wind Inc</i>		Agent/Contractor (firm name and contact person)	
Mailing Address <i>123 Main Street</i>		Address	
City <i>Lansing</i>	State <i>MI</i>	Zip Code <i>48822</i>	
Daytime Phone Number with Area Code <i>555-555-5555</i>	Cell Phone Number <i>- -</i>	Daytime Phone Number with Area Code <i>- -</i>	Cell Phone Number <i>- -</i>
Fax <i>- -</i>	E-mail <i>klep@msu.edu</i>	Fax <i>- -</i>	E-mail



Is the applicant the sole owner of all property on which this project is to be constructed and all property involved or impacted by this project? No
 Yes
 If No, provide a letter signed by the property owner authorizing the agent/contractor to act on his or her behalf or a copy of easements or right-of-ways. If multiple owners, attach all property owners' names, mailing addresses, and telephone numbers. Disclose any DEQ conservation easements or other easements, deed restrictions, leases, or any other encumbrance upon the property in the project area. A copy of the land restriction must be provided.

Property Owner's Name (If different from applicant) <i>State of Michigan</i>	Mailing Address <i>345 Main Street</i>
Daytime Phone Number with Area Code <i>555-555-5555</i>	Cell Phone Number - -
City <i>Lansing</i>	State <i>MI</i>
Zip Code <i>48822</i>	

4 PROPOSED PROJECT PURPOSE, INTENDED USE, AND ALTERNATIVES CONSIDERED (Attach additional sheets if necessary)

- The purpose must include any new development or expansion of an existing land use.
- Include a description of alternatives considered to avoid or minimize resource impacts. Include factors such as, but not limited to, alternative construction technologies; alternative project layout and design; alternative locations; local land use regulations and infrastructure; and pertinent environmental and resource issues.
- For utility crossings, include both alternative routes and alternative construction methods.

This development will provide energy to the Midwest's electric transmission grid. Clean power will be generated from the unique USDOE Class 4-5 wind resource over the Great Lakes.

5 LOCATING YOUR PROJECT SITE

- Provide the requested information listed below to help staff locate your project site.
- Attach a copy of a map, such as a plat, county, or USGS topographic map, clearly showing the site location and include an arrow indicating the north direction.
- Project area must be staked at the time of application submittal.

Is there an access road to the project? No Yes (If Yes, type of road, check all that apply) private public improved

Name of roads at closest main intersection *none* and .

Directions from main intersection *na*

Style of house or other building on site ranch 2-story cape cod bi-level cottage/cabin pole barn none other (describe)

Color *na* Color of adjacent property house and/or buildings *na*

House number *na* Address is visible on house garage mailbox sign other (describe)

Street name *na* Fire lane number Lot number

How can your site be identified if there is no visible address? *Hmmmm...*

Provide directions to the project site, with distances from the best and nearest visible landmark and waterbody *The 3.75 square mile field is roughly centered on a 31 mile line between Tawas City, Iosco County and Port Austin, Huron County. Latitude 44 degrees 9' 49.68" N. and Longitude 83 degrees 14' 21.02" W*

Does project cross boundaries of two or more political jurisdictions? (City/Township, Township/Township, County/County, etc.)
 No Yes (If Yes, list jurisdiction names.)

6 List all other federal, interstate, state, or local agency authorizations required for the proposed activity, including all approvals or denials received.

Agency for denial	Type approval	Identification number	Date applied	Date approved / denied	If denied, reason
<i>unknown</i>					

7 If a permit is issued, date activity will commence (M/D/Y) *01/01/2010*

Proposed completion date (M/D/Y)
01/01/2011

Has any construction activity commenced or been completed in a regulated area? No
 Yes
 If Yes, identify the portion(s) underway or completed on drawings or attach project specifications and give completion date(s) (M/D/Y) */ /*

Were the regulated activities conducted under a MDEQ permit? No Yes
 If Yes, list the MDEQ permit number

Are you aware of any unresolved violations of environmental law or litigation involving the property? No Yes (If Yes, explain)



Empty header box

- 8 PUBLIC NOTIFICATION** (Attach additional sheets if necessary)
- Complete information for all *adjacent and impacted property owners* and the lake association or established lake board, including the contact person's name.
 - If you own the adjacent lot, provide the requested information for the first adjacent parcel beyond your property line.

Property Owner's Name	Mailing Address	City	State	Zip Code
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to be determined

Name of Established Lake Board or Lake Association and the Contact Person's name, phone number, and mailing address

9 APPLICANT'S CERTIFICATION READ CAREFULLY BEFORE SIGNING

I am applying for a permit(s) to authorize the activities described herein. I certify that I am familiar with the information contained in this application, that it is true and accurate, and, to the best of my knowledge, is in compliance with the State *Coastal Zone Management Program* and the *National Flood Insurance Program*. I understand that there are penalties for submitting false information and that any permit issued pursuant to this application may be revoked if information on this application is untrue.

I certify that I have the authority to undertake the activities proposed in this application. By signing this application, I agree to allow representatives of the MDEQ, USACE, and/or their agents or contractors to enter upon said property in order to inspect the proposed activity site and the completed project. I understand that I must obtain all other necessary local, county, state, or federal permits and that the granting of other permits by local, county, state, or federal agencies does not release me from the requirements of obtaining the permit requested herein before commencing the activity. I understand that the payment of the application fee does not guarantee the issuance of a permit.

- All applicants must complete **all** of the items in Sections 1 through 9 on pages 1 and 2 of this application.
- Complete those items in Sections 10 through 21 that apply to the project. Submit only those pages where you have provided information.
- Your application will not be processed if the application form is not completely filled out.
- List here the application page numbers being submitted and a brief description of other attachments included with your application.
Reproducible vicinity map, project site plan, cross sectional drawings of typical foundation and dimensional drawings of turbines, cables and bouys
- Submit 8.5" by 11," 8.5" by 14" or 11" by 17" size drawings with 4 copies. The USACE requires one set of drawings on 8.5" x 11" paper, with all notations clearly legible. Larger copies may be submitted in addition to the standard size copies.
- A letter of authorization from the owner must be included if not signed below by the owner.

<input type="checkbox"/> Property Owner	Printed Name	Signature	Date (M/D/Y)
<input type="checkbox"/> Agent/Contractor	<i>Joe Windiman</i>		<i>01/01/2008</i>
<input checked="" type="checkbox"/> Corporation - Title <i>CEO</i>			



10 PROJECTS IMPACTING WETLANDS OR FLOODPLAINS OR LOCATED ON AN INLAND LAKE OR STREAM OR A GREAT LAKE			
<ul style="list-style-type: none"> • Check boxes A through N that may be applicable to your project and provide the requested information. • If your project may affect wetlands, also complete Section 12. If your project may impact regulated <i>floodplains</i>, also complete Section 13. • Provide an overall site plan showing existing lakes, streams, wetlands, and other water features; existing <i>structures</i>; and the location of all proposed <i>structures</i>, land change activities and <i>soil erosion and sedimentation control measures</i>. Review sample drawings for guidance in completing site-specific drawings for your project. • Some projects on the Great Lakes require an application for conveyance prior to Joint Permit Application completeness. • On a Great Lake use IGLD 85 <input checked="" type="checkbox"/> surveyed <input type="checkbox"/> converted from observed still water elevation. On inland waters, <input type="checkbox"/> NGVD 29 <input type="checkbox"/> local datum <input type="checkbox"/> other • Observed water elevation (ft) _____, date of observation (M/D/Y) _____ / _____ / _____ 			
<input checked="" type="checkbox"/> A. PROJECTS REQUIRING FILL (See All Sample Drawings)			
<ul style="list-style-type: none"> • To calculate volume in cubic yards (cu yd), multiply the average length in feet (ft) times the average width (ft) times the average depth (ft) and divide by 27. • Attach both plan and <i>cross-section</i> views to scale showing maximum and average fill dimensions. 			
(Check all that apply) <input type="checkbox"/> floodplain fill <input type="checkbox"/> wetland fill <input type="checkbox"/> riprap <input type="checkbox"/> seawall, bulkhead, or revetment <input type="checkbox"/> bridge or culvert			
<input type="checkbox"/> boat launch <input type="checkbox"/> off-shore swim area <input type="checkbox"/> beach sanding <input type="checkbox"/> boatwell <input type="checkbox"/> crib dock <input checked="" type="checkbox"/> other <i>cable trenching</i>			
Fill dimensions (ft)		Total fill volume (cu yd)	Maximum water depth in fill area (ft) <i>varies</i>
Length	width	maximum depth	
Type of clean fill <input type="checkbox"/> pea stone <input type="checkbox"/> sand <input type="checkbox"/> gravel		Will filter fabric be used under proposed fill?	
<input type="checkbox"/> wood chips <input checked="" type="checkbox"/> other <i>indigenous</i>		<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes (If Yes, type)	
Source of clean fill <input checked="" type="checkbox"/> on-site, If on-site, show location on site plan <input type="checkbox"/> commercial <input type="checkbox"/> other, If other, attach description of location			
Fill will extend _____ feet into the water from the shoreline and upland		_____ feet out of the water.	
		Fill volume below OHWM (cu yd)	
<input checked="" type="checkbox"/> B. PROJECTS REQUIRING DREDGING OR EXCAVATION (For dredging projects see Sample Drawing 7, for excavation see other applicable Sample Drawings)			
<ul style="list-style-type: none"> • To calculate volume in cubic yards (cu yd), multiply the average length in feet (ft) times the average width (ft) times the average depth (ft) and divide by 27. • Attach both plan and <i>cross-section</i> views to scale showing maximum and average dredge or excavation dimensions. • The applicant will be notified if sediment sampling is required. 			
(Check all that apply) <input type="checkbox"/> floodplain excavation <input type="checkbox"/> wetland dredge or draining <input type="checkbox"/> seawall, bulkhead, or revetment			
<input type="checkbox"/> navigation <input type="checkbox"/> boat well <input type="checkbox"/> boat launch <input checked="" type="checkbox"/> other <i>cable trenching</i>			
Total dredge/excavation volume (cu yd)	Dimensions length	width	depth
	Dredge/excavation volume below OHWM (cu yd)		Method and equipment for dredging
Has proposed dredge material been tested for contaminants? <input type="checkbox"/> No <input type="checkbox"/> Yes (If Yes, attach testing results)		Will dredged or excavated spoils be placed <input type="checkbox"/> on-site <input type="checkbox"/> off-site. Attach a detailed disposal area site plan, location map. If dispose off site, provide address and letter of authorization.	
Has this same area been previously dredged? <input type="checkbox"/> No <input type="checkbox"/> Yes (If Yes, provide date and permit number, if available) _____ / _____ / _____			
If Yes, are you proposing to enlarge the previously dredged area <input type="checkbox"/> No <input type="checkbox"/> Yes			
Is long-term maintenance dredging planned? <input type="checkbox"/> No <input type="checkbox"/> Yes (If Yes, when and how much?)			
<input type="checkbox"/> C. PROJECTS REQUIRING RIPRAP (See Sample Drawings 2, 3, 8, 12, 14, 17, 22, and 23. Others may apply)			
Riprap waterward of the <input type="checkbox"/> shoreline OR <input type="checkbox"/> ordinary high water mark	Dimensions (ft) length	width	Volume(cu yd)
	depth		
Riprap landward of the <input type="checkbox"/> shoreline OR <input type="checkbox"/> ordinary high water mark	Dimensions length	width	depth
	Volume(cu yd)		
Type of riprap <input type="checkbox"/> field stone <input type="checkbox"/> angular rock <input type="checkbox"/> other		Will filter fabric be used under proposed riprap? <input type="checkbox"/> No <input type="checkbox"/> Yes (If Yes, type)	
<input type="checkbox"/> D. SHORE PROTECTION PROJECTS (See Sample Drawings 2, 3, and 17)			
(check all that apply) <input type="checkbox"/> riprap – length (ft.) <input type="checkbox"/> seawall/bulkhead – length (ft.) <input type="checkbox"/> revetment – length			Distances of project



<p>(ft.)</p>	<p>from both property lines (ft)</p>	
<p><input checked="" type="checkbox"/> E. DOCK - PIER - MOORING PILINGS (See Sample Drawing 10)</p>		
<p>Type <input type="checkbox"/> open pile <input checked="" type="checkbox"/> filled <input type="checkbox"/> crib</p>	<p>Seasonal structure? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes</p>	
<p>Proposed structure dimensions (ft) length width <i>Note: Each turbine foundation will consist of an injected steel tower, which is 20 feet in diameter. The typical tower weighs 1000 tons and the hollow foundation extends 50 feet into the lake bottom. It is 390 feet from the lake surface to the navigation light mounted on top of the nacelle.</i></p>	<p>Dimensions of nearest adjacent structures (ft) length width</p>	
<p><input type="checkbox"/> F. BOAT WELL (No Sample Drawing available)</p>		
<p>Type of bank stabilization <input type="checkbox"/> wood <input type="checkbox"/> steel <input type="checkbox"/> concrete <input type="checkbox"/> vinyl <input type="checkbox"/> riprap <input type="checkbox"/> other</p>		
<p>Boat well dimensions (ft) Length width depth</p>	<p>Number of boats</p>	
<p>Volume of backfill behind sidewall stabilization (cu yd)</p>	<p>Distances of boat well from adjacent property lines (ft)</p>	
<p><input type="checkbox"/> G. BOAT LAUNCH (No Sample Drawing available) (check all that apply) <input type="checkbox"/> new <input type="checkbox"/> existing <input type="checkbox"/> public <input type="checkbox"/> private <input type="checkbox"/> commercial <input type="checkbox"/> replacement</p>		
<p>Proposed overall boat launch dimensions (ft) length width depth</p>	<p>Type of material <input type="checkbox"/> concrete <input type="checkbox"/> wood <input type="checkbox"/> stone <input type="checkbox"/> other</p>	
<p>Existing overall boat launch dimensions (ft) Length width depth</p>	<p>Boat launch dimensions (ft) below ordinary high water mark Length width depth</p>	
<p>Distances of launch from both property lines (ft)</p>	<p>Number of skid piers</p>	<p>Skid pier dimensions (ft) width length</p>
<p><input type="checkbox"/> H. BOAT HOIST (No Sample Drawing available) (Check all that apply) <input type="checkbox"/> seasonal <input type="checkbox"/> permanent <input type="checkbox"/> cradle <input type="checkbox"/> side lifter <input type="checkbox"/> other</p>		
<p>located on <input type="checkbox"/> seawall <input type="checkbox"/> dock <input type="checkbox"/> bottomlands</p>		
<p><input type="checkbox"/> I. BOARDWALKS AND DECKS IN <input type="checkbox"/> WETLANDS - OR - <input type="checkbox"/> FLOODPLAINS (See Sample Drawings 5 and 6. Provide table if necessary)</p>		
<p>(Check all that apply) <input type="checkbox"/> boardwalk <input type="checkbox"/> deck</p>	<p>Boardwalk or deck is on <input type="checkbox"/> fill <input type="checkbox"/> piling</p>	<p>Dimensions (ft) length width</p>
<p>10 Continued - PROJECTS IMPACTING WETLANDS OR FLOODPLAINS OR LOCATED ON AN INLAND LAKE OR STREAM OR A GREAT LAKE</p>		
<p><input type="checkbox"/> J. INTAKE PIPES (See Sample Drawing 16) <input type="checkbox"/> OUTLET PIPES (See Sample Drawing 22)</p>		
<p>Type <input type="checkbox"/> headwall <input type="checkbox"/> end section <input type="checkbox"/> pipe <input type="checkbox"/> other</p>	<p>if outlet pipe, discharge is to <input type="checkbox"/> wetland <input type="checkbox"/> inland lake <input type="checkbox"/> stream, drain, or river <input type="checkbox"/> Great Lake <input type="checkbox"/> other</p>	
<p>Dimensions of headwall OR end section (ft) length width depth</p>	<p>Number of pipes Pipe diameters and invert elevations</p>	
<p><input checked="" type="checkbox"/> K. MOORING AND NAVIGATION BUOYS (No Sample Drawing available)</p>		
<p>• Provide an overall site plan showing the distances between each buoy, distances from the shore to each buoy, and depth of water at each buoy in feet. • Provide cross-section drawing(s) showing anchoring system(s) and dimensions.</p>		
<p>Number of buoys <i>xxx# radar reflective USCG approved buoys to be spaced evenly around the 15 mile perimeter of the project area</i></p>	<p>Purpose of buoy <input type="checkbox"/> mooring <input checked="" type="checkbox"/> navigation <input type="checkbox"/> swimming</p>	
<p>Dimensions of buoys (ft) width <i>2</i> height <i>2</i></p>	<p>Type of anchor system <i>concrete gravity</i></p>	
<p>Do you own the property along the shoreline? <input type="checkbox"/> No <input type="checkbox"/> Yes If No, you must provide an authorization letter from the property owner(s)</p>		
<p><input type="checkbox"/> L. GROINS (No Sample Drawing available) • Provide an overall site plan showing the distances (ft) of the outermost groins from the property lines, distances between groins, length and</p>		



width of each *groin*, and the distance from the existing toe of the bluff to the lakeward end of the *groins*.

- If existing *groins* are located on adjacent properties, provide distances (ft) from closest neighboring *groin* to your property lines on the site plan. Provide *cross-section* views showing the length and height of each *groin* and the height of *groin* ends above the observed water level (date and time). If step down type, show the height of each section above the observed water level.

Number of <i>groins</i>	Type of <i>groin</i> <input type="checkbox"/> steel <input type="checkbox"/> wood <input type="checkbox"/> other	Will <i>groin</i> be placed on a foundation? <input type="checkbox"/> No <input type="checkbox"/> Yes (If Yes, dimensions of foundation (ft)) length width height
-------------------------	---	---

M. FENCES IN WETLANDS, STREAMS, OR FLOODPLAINS (No Sample Drawing available)

- Provide an overall site plan showing the proposed fencing through wetlands, streams, or *floodplains*.
- Provide drawing of fence profile showing the design, dimension, post spacing, board spacing, and distance from ground to bottom of fence (if in a *floodplain*).

(check all that apply) <input type="checkbox"/> wetlands <input type="checkbox"/> streams <input type="checkbox"/> <i>floodplains</i>	Total length (ft) of fence through wetlands streams <i>floodplains</i>	Fence height (ft)	Fence type and material
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N. OTHER - e.g., *structure* removal, *marine railway*, *low sand trap wall*, *breakwater*, and structural foundations in wetlands or *floodplains*

11 EXPANSION OF AN EXISTING OR CONSTRUCTION OF A NEW LAKE OR POND (See Sample Drawings 4 and 15)

Which best describes your proposed waterbody use (check all that apply)

wildlife *stormwater retention basin* *stormwater detention basin* recreation wastewater basin other

Water source for lake/pond

groundwater natural springs *Inland Lake or Stream* *stormwater runoff* pump sewage other

Location Of the lake/basin/pond *floodplain* wetland upland

Will project involve construction of a *dam*, *dike*, outlet control *structure*, or *spillway*? No Yes (If Yes, complete Section 17)

12 ACTIVITIES THAT MAY IMPACT WETLANDS (See Sample Drawings 8 & 9)

- For information on the MDEQ's *Wetland Assessment* Program, visit the LWMD website or call 517-373-1170.

(check all that apply) fill (Section 10A) dredge or excavation (Section 10B) boardwalk or deck (Section 10I) dewatering
 fences (Section 10M) bridges and culverts (Section 14) draining surface water other

Has a professional wetland delineation been conducted for this parcel? No Yes (If Yes, provide a copy; if federal method was used, supply data sheets)

Applicant purchased property before OR after October 1, 1980.

Is there a recorded DEQ easement on the property? No Yes (If Yes, provide the number)

Has the MDEQ conducted a *wetland assessment* for this parcel? No Yes (If Yes, provide a copy)

Describe the wetland impacts, proposed use or development, and efforts to avoid/minimize impacts. Describe the wetland alternatives and provide the type and amount of mitigation proposed if more than 1/3 acre is to be impacted.

Is any grading or mechanized land clearing proposed? No Yes (If Yes, show locations on site plan)

Has any of the proposed grading or mechanized land clearing been completed? No Yes (If Yes, label and show locations on site plan)

- Complete the wetland dredge and wetland fill dimension information for each impacted wetland area.
- Attach additional sheets if necessary and label the impacted wetland areas on a site plan drawn to scale. Attach at least one typical *cross-section* for each wetland dredge and/or fill area. Also complete Section 10A for fill and Section 10B for dredge or excavation activities.
- If dredge material will be disposed of on site, show the location on site plan in an *upland* area and include *soil erosion and sedimentation control measures*.

Wetland dredge dimensions	maximum length (ft)	maximum width (ft)	dredge area <input type="checkbox"/> acres <input type="checkbox"/> sq ft	average depth (ft)	dredge volume (cu yd)
Wetland fill dimensions	maximum length (ft)	maximum width (ft)	fill area <input type="checkbox"/> acres <input type="checkbox"/> sq ft	average depth (ft)	fill volume (cu yd)

Total wetland dredge area <input type="checkbox"/> acres <input type="checkbox"/> sq ft	Total wetland dredge volume (cu yd)
Total wetland fill area <input type="checkbox"/> acres <input type="checkbox"/> sq ft	Total wetland fill volume (cu yd)

The proposed project will be serviced by <input type="checkbox"/> public sewer <input type="checkbox"/> private septic system (If septic system, show existing and new or expanded system on plans)	If septic system, has application been made to the County Health Department for a permit? <input type="checkbox"/> No <input type="checkbox"/> Yes	If Yes, has permit been issued? <input type="checkbox"/> No <input type="checkbox"/> Yes (If Yes, provide a copy)
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13 FLOODPLAIN ACTIVITIES (See Sample Drawing 5. Others may apply.)

- Attach additional sheets with the requested information when multiple *floodplain* activities are included in this application.

(check all that apply) fill excavation other

Site is _____ feet above *ordinary high water mark* (OHWM) OR observed water level. Date of observation (M/D/Y) / /

Fill volume below the 100-year floodplain elevation (cu yd)	Compensating cut volume below the 100-year floodplain elevation (cu yd)
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14 BRIDGES AND CULVERTS (Including Foot and Cart Bridges)

- Provide detailed site-specific drawings of existing and proposed *Plan View* (Sample Drawing 14A), *Elevation View* (Sample Drawing 14B), *Stream and Floodplain Cross-Section* (Sample Drawing 14C), *Stream Profile* (Sample Drawing 14D) and *Floodplain Fill* (Sample Drawing 5) at a scale adequate for detailed review.
- Provide the requested information that applies to your project. If there is not an existing *structure*, leave the "Existing" column blank.
- If you choose to have a Licensed Professional Engineer "certify" that your project will not cause a "*harmful interference*" for a range of flood discharges up to and including the 100-year flood discharge, then you must use the "Required Certification Language." You may request a copy by phone, email, or mail. A hydraulic report supporting this certification may also be required.
- Attach additional sheets with the requested information when multiple crossings are included in this application.

		Existing	Proposed			Existing	Proposed
Culvert type (box, circular, arch) and material (corrugated metal, timber, concrete, etc.)				Bridge span (length perpendicular to stream) OR culvert <input type="checkbox"/> width <input type="checkbox"/> diameter (ft)			
Bridge type (concrete box beam, timber, concrete I-beam, etc.)				Bridge width (parallel to stream) OR culvert length (ft)			
Entrance design (projecting, mitered, wingwalls, etc.)				Bridge <i>rise</i> (from bottom of beam to streambed) OR Culvert <i>rise</i> (from top of culvert to streambed) (ft)			
Total <i>structure waterway opening</i> above streambed (sq ft)							
<input type="checkbox"/> elevation of culvert crown <input type="checkbox"/> bottom of bridge beam (ft)	Upstream			Higher elevation of <input type="checkbox"/> culvert invert	Upstream		
	Downstream			OR <input type="checkbox"/> streambed within culvert (ft)	Downstream		
Elevation of road grade at <i>structure</i> (ft)				Distance from low point of road to mid-point of bridge crossing (ft)			
Elevation of low point in road (ft)							
Cross-sectional area of primary channel (sq ft) (See Sample Drawing 14C)		Average stream width at OHWM outside the influence of the structure (ft)		Upstream		Downstream	
Reference datum used (show on plans with description) <input type="checkbox"/> NGVD 29 <input type="checkbox"/> IGLD 85 (Great Lakes coastal areas) <input type="checkbox"/> local							

High water elevation – describe reference point and highest known water level above or below reference point and date of observation.

15 STREAM, RIVER, OR DRAIN CONSTRUCTION ACTIVITIES (No sample drawing available)

- Complete Section 10A for fill, Section 10B for dredge or excavation, and Section 10C for *riprap* activities.
- If side casting or other proposed activities will impact wetlands or *floodplains*, complete Sections 12 and 13, respectively.
- Provide an overall site plan showing existing lakes, streams, wetlands, and other water features; existing *structures*; and the location of all proposed *structures* and land change activities. Provide *cross-section* (elevation) drawings necessary to clearly show existing and proposed conditions. Be sure to indicate drawing scales.
- For activities on legally established county drains, provide original design and proposed dimensions and elevations.

(check all that apply) maintenance improvement relocation enclosure new drain wetlands other

Dimensions (ft) of existing stream/drain channel to be worked on.		length	width	depth
Dimensions (ft) of new, relocated, or enclosed stream/drain channel.		length	width	depth
Existing channel average water depth in a normal year (ft)				Proposed side <i>slopes</i> (vertical / horizontal)
				Volume of Dredge/excavation (cu yds)



How will slopes and bottom be stabilized?

Will old/enclosed stream channel be backfilled to top of bank grade? No Yes Length of channel to be abandoned (ft) Volume of fill (cu yds)

If an enclosed structure is proposed, check type concrete corrugated metal plastic other
 Dimensions of the structure size length volume of fill

Will spoils be disposed of on site? No Yes (If Yes, show location of spoils on site plan in an upland area.)

Reference datum used (show on plans with description) NGVD 29 IGLD 85 (Great Lakes coastal areas) local

16 DRAWDOWN OF AN IMPOUNDMENT

- If wetlands will be impacted, also complete Section 12.

Type of drawdown over winter temporary one-time event annual event permanent (dam removal) other

Reason for drawdown

Has there been a previous drawdown? No Yes (If Yes, provide date (M/D/Y) / / Previous MDEQ permit number, if known

Does waterbody have established legal lake level? No Yes Not Sure Dam ID Number, if known

Extent of vertical drawdown (ft) Impoundment design head (ft) Number of adjacent or impacted property owners

Date drawdown would start (M/D/Y) / / Date drawdown would stop (M/D/Y) / / Rate of drawdown (ft/day)

Date refilling would start (M/D/Y) / / Date refill would end (M/D/Y) / / Rate of refill (ft/day)

Type of outlet discharge structure to be used surface bottom mid-depth Impoundment area at normal water level (acres) Sediment depth behind impoundment discharge structure (ft)

17 DAM, EMBANKMENT, DIKE, SPILLWAY, OR CONTROL STRUCTURE ACTIVITIES (See Sample Drawing 15)

- If wetlands will be impacted, also complete Section 12.
- Attach site-specific conceptual plans for construction of a new dam, reconstruction of a failed dam, or enlargement of an existing dam for resource impact review. Detailed engineering plans are required once the activity has been determined to be permissible from an environmental standpoint.
- Attach detailed engineering plans for a dam repair, dam alteration, dam abandonment, or dam removal.

Which one best describes your project? new dam construction reconstruction of a failed dam enlargement of an existing dam
 dam repair dam alteration dam abandonment dam removal other

Dam ID Number If known Type of outlet discharge structure surface bottom mid depth Will proposed activities require a drawdown of the waterbody to complete the work? No Yes (If Yes, also complete Section 16)

Riprap Volume (cu yd) Dredging/excavation Volume (cu yd) Fill volume (cu yd) Does structure allow complete drainage of waterbody? No Yes

Benchmark elevation (ft) Datum used Local NGVD 29 other Describe benchmark and show on plans

Have you engaged the services of a Licensed Professional Engineer? No Yes (If Yes, name, registration number, and mailing address)

Will a water diversion during construction be required? No Yes (If Yes, describe how the stream flow will be controlled through the dam construction area during the proposed project activities)

- The following additional information is required for a new dam, reconstruction of a failed dam, or enlargement of an existing dam.

Describe the type of dam and how you will design the dam and embankment to control seepage through and underneath the dam.

Embankment top elevation (ft) Streambed elevation at downstream embankment toe (ft) Structural height (difference between embankment top elevation and streambed elevation at downstream embankment toe) (ft)



Embankment length (ft)	Embankment top width (ft)	Embankment bottom width (ft)	Embankment slopes (vertical / horizontal)	Upstream Downstream
Proposed normal pool elevation (ft)	Impoundment flood elevation (ft)		Maximum vertical drawdown capability (ft) (Attach operational procedure of the proposed structure, if available)	
Have soil borings been taken at dam location? <input type="checkbox"/> No <input type="checkbox"/> Yes (If Yes, submit results with permit application)		Will a cold water underspill be provided? <input type="checkbox"/> No <input type="checkbox"/> Yes (If Yes, invert elevation (ft.))		Do you have flowage rights to all proposed flooded property at the design flood elevation? <input type="checkbox"/> No <input type="checkbox"/> Yes

18 UTILITY CROSSINGS (See Sample Drawings 12 and 13)

- If side casting is required, complete Subsections 10A and 10B. If spoils will be placed in wetlands or wetlands may be impacted, complete Section 12.
- Attach additional sheets with the requested information as needed for multiple crossings.

What method will be used to construct the crossings? <input type="checkbox"/> flume <input type="checkbox"/> plow <input checked="" type="checkbox"/> open trench <input type="checkbox"/> jack and bore <input type="checkbox"/> directional drilling			Crossing of floodplain <input type="checkbox"/> Inland Lake or Stream <input type="checkbox"/> <input type="checkbox"/> international waters <input type="checkbox"/> wetlands (also complete Section 12)			
Type	Number of wetland crossings	Number of inland lake or stream crossings	Pipe diameter (in.)	Pipe length per crossing (ft.)	Distance below streambed or wetland (in.)	Trench width (ft.)
<input type="checkbox"/> sanitary sewer						
<input type="checkbox"/> storm sewer						
<input type="checkbox"/> watermain						
<input type="checkbox"/> cable						
<input type="checkbox"/> oil/gas pipeline						

19 MARINA CONSTRUCTION AND OPERATING PERMIT INFORMATION (See Sample Drawing 21)

- Marinas located on one of the Great Lakes, including Lake St. Clair, may be required to secure leases or conveyances from the state of Michigan to place structures on the bottomlands.
- Enclose a copy on any current pump-out agreement with another marina facility.
- Attach a copy of the property legal description or a property boundary survey report to your application.
- Some projects on the Great Lakes require an application for conveyance prior to Joint Permit Application completeness.

Marina owner			Marina name		
Mailing address			Location address		
City	State	Zip Code	City	State	Zip Code
Marina owner's daytime telephone number with area code - -			Marina's daytime telephone number with area code - -		
Check the reasons for submitting this application <input type="checkbox"/> Owner's name change <input type="checkbox"/> Construction of a new marina <input type="checkbox"/> Issuance of a new Marina Operating Permit <input type="checkbox"/> Expansion/modification of an existing marina <input type="checkbox"/> Reissuance of a Marina Operating Permit			Current Marina Operating Permit Number		Expiration Date (M/D/Y)
	Existing	Proposed		Existing	Proposed
Number of boat slips/wells			Are sanitary pump-out facilities available?	<input type="checkbox"/> No <input type="checkbox"/> Yes	<input type="checkbox"/> No <input type="checkbox"/> Yes
Number of launch ramps/lanes			Number of hoist/take-out wells		
Number of mooring buoys			Number of gas pumps		
Lineal feet of broadside dockage			Name of marina insurance company		
Number of parking spaces					

20 HIGH RISK EROSION AND CRITICAL DUNE AREAS (See Sample Drawings 19 and 20, also Sample Drawing 9 if wetlands are impacted)

- Construction in critical dune areas on slopes greater than a 1-foot vertical rise in a 3-foot horizontal plane (33 percent) are prohibited without a special exception.



- Construction in *critical dune areas* on *slopes* that measure from a 1-foot vertical *rise* in a 4-foot horizontal plane (25 percent) to less than a 1-foot vertical *rise* in a 3-foot horizontal plane (33 percent) requires plans prepared by a registered architect or licensed professional engineer.
- Construction in critical dune areas requires the following written assurances: 1) permit or letter from county enforcing agent stating project complies with Part 91 (Soil Erosion and Sedimentation Control), 2) permit or letter from County Health Department for work on a septic system, and 3) letter from applicant stating tree/vegetation removal complies with instructions of the local Soil Conservation District.
- All property boundaries and proposed *structure* corners, septic system, water well, and driveway locations must be staked before the MDEQ site inspection.
- Scaled overhead and cross-section plans that include all property boundaries, and the location and dimensions of all structures and terrain alterations must be included.
- Additional information, including the building construction plans, may be required to complete the application review.

Parcel dimensions (ft) width depth		Property is a <input type="checkbox"/> platted lot <input type="checkbox"/> unplatted parcel	Year current property boundaries created	Date project staked (M/D/Y) / /
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Type of construction activities home garage driveway septic addition renovation other

The proposed project will be serviced by <input type="checkbox"/> public sewer <input type="checkbox"/> private septic system (If septic system, show existing and new or expanded system on plans)	If septic system, has application been made to the County Health Department for a permit? <input type="checkbox"/> No <input type="checkbox"/> Yes If Yes, has permit been issued? <input type="checkbox"/> No <input type="checkbox"/> Yes	If Yes, critical dune projects require County Health Department approval submitted with application.	Number of individual living-units in proposed building
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Existing construction is on <input type="checkbox"/> pilings <input type="checkbox"/> basement <input type="checkbox"/> concrete slab <input type="checkbox"/> crawl space	Proposed new construction will be on <input type="checkbox"/> pilings <input type="checkbox"/> basement <input type="checkbox"/> concrete slab <input type="checkbox"/> crawl space
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Existing construction material above foundation wall <input type="checkbox"/> stud frame <input type="checkbox"/> log <input type="checkbox"/> block <input type="checkbox"/> other	Proposed new construction material above foundation wall <input type="checkbox"/> stud frame <input type="checkbox"/> log <input type="checkbox"/> block <input type="checkbox"/> other
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Existing siding material <input type="checkbox"/> wood <input type="checkbox"/> vinyl <input type="checkbox"/> block <input type="checkbox"/> other	Proposed new siding material <input type="checkbox"/> wood <input type="checkbox"/> vinyl <input type="checkbox"/> block <input type="checkbox"/> other
--	--

Area of the existing foundation, excluding attached garage (sq ft)	Area of the proposed foundation, excluding attached garage (sq ft)
--	--

Area of the existing garage foundation (sq ft)	Area of the proposed garage foundation (sq ft)
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If renovating or restoring existing <i>structure</i> , renovation or restoration cost \$	Current <i>structure</i> replacement value \$	Tax assessed value of existing <i>structure</i> (excluding land value) \$	Assessment Year
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21 ACTIVITIES IN DESIGNATED ENVIRONMENTAL AREAS (No Sample Drawings Available)

- Many designated *environmental areas* are completely or partially wetlands. Be sure to complete Section 12 if your proposed activities will also occur in wetlands.
- If you are proposing any alteration in a designated *environmental area*, attach a detailed site plan.

(Check all that apply) placement of *structures* grading or other soil alteration alteration of natural drainage

alteration of vegetation boardwalk or deck driveway or road

dredge fill culvert other

Has the MDEQ staff or anyone else conducted a *wetland assessment* for this parcel? No Yes (If Yes, provide copy of response)

Author's Postscript

The level of public conversation and industry interest in offshore wind development rose significantly during the dry run project. Several offshore wind development-related announcements occurred during the few months the dry run project was underway.

1. In January 2008, the US Minerals Management Service issued a draft Programmatic Environmental Impact Statement for offshore renewables. Although MMS jurisdiction does not extend to the waters of the Great Lakes, the decision table for best management practices contained in the EIS could serve as a model to organize action by a future Michigan siting council.

2. Also in January, the Michigan Alternative & Renewable Energy Center in Muskegon announced a fund-raising initiative for the purpose of erecting meteorological equipment on Muskegon Lake at the edge of Lake Michigan. According to news reports, the Energy Center hopes to spark a West Michigan Offshore Wind program.

3. In February 2008 the Province of Ontario, Canada's Ministry of Natural Resources lifted a deferral on applications to produce offshore wind power in the province's waters.

4. Also in February, researchers at Michigan State University announced they are seeking funds to survey coastal landowners in two Lake Michigan communities about the visual acceptability of nearshore, midrange, and distant offshore wind field development concepts. The data would require about a year to collect and analyze.

5. As of March 2008, BQ Energy is conducting a study, sponsored in part by the New York State Energy Research and Development Authority, to examine the feasibility of offshore wind energy in the New York waters of Lake Erie. The areas that the study covers are:

- Characterization of the site, including bathymetry, borders, shipping lanes, ice data and existing uses (fishing, boating, shipping, etc.).
- Examination of methods by which a private entity could gain site control for an offshore wind project.
- Analysis of wind resource, energy output estimates and description of a program to obtain on-site metocean data.
- Description of regulatory and permitting authorities and the process to obtain permits.
- Community outreach work plan.
- Interconnection feasibility and points for injecting power into the transmission grid.
- Report on marketing renewable energy credits.
- Assessment of power sales prices required for economic feasibility.
- Conceptual designs and cost estimates for ice-resistant foundations.
- Project execution plan.
- Operations and maintenance assessment.
- Financial considerations, including insurance, budgeting, sources of capital.
- Issues requiring resolution or more study before financing becomes viable.

6. Also in March, *Blue H USA LLC* announced it was seeking a permit from the US Minerals Management Service to construct meteorological testing equipment in 50 meter deep water 23 miles offshore from Nantucket, beyond the view of Martha's Vineyard's renowned wind field opponents. The \$1 billion 120-turbine wind farm would use submerged tension-legged platforms, developed by the oil industry for offshore rigs, to support towers and wind turbines capable of generating more than 400 MW. The company is currently testing a large-scale prototype submerged deepwater platform in 100 meters of water 10 miles off the coast of southern Italy and hopes to have it commercially viable by next year.

7. In early April 2008, the Wisconsin Public Service Commission agreed to explore, before the end of the year, placing wind turbines in its Great Lakes waters. Private concerns there are beginning to create offshore proposals.

8. Also in April, the County of Essex, Ontario received a consultant's report recommending a ban on wind energy projects within 200 meters of Lake Erie and in national parks. According to press reports, Essex should divide the county into four management areas to protect "heritage resources and significant heritage landscapes" and place a duty on wind developers to show their project would not harm communities or the environment.

9. The state of Ohio is now making a strong push to be the Great Lakes' technology leader in offshore wind systems. With federal, corporate and foundation support, Ohio is working to establish an offshore wind demonstration and R&D Center in Lake Erie off of Cleveland. Case Western would manage the center and subsequent testing of blades, generators, gearboxes and support structures for freshwater, near-shore applications. Turbines generating somewhere between 5MW and 20MW will also be installed for the purpose of testing and power generation.

10. AWS TruWind, under contract with USDOE, released final draft wind mapping for the Great Lakes in late April. These data illustrate that the capacity of the Lakes is world-scale.

These initiatives and announcements could have implications for State action on permitting Great Lakes wind development in Michigan, where leaders are considering whether or not to encourage the industry. It has been suggested that if the State wishes to fulfill some of its renewable energy needs (as projected the 21st Century Energy Plan) with wind energy from Great Lakes sources it could issue a call for industry proposals. A referendum on a new energy revenue-bond, which could include requirements for locally derived and manufactured wind-system components, has recently been suggested to spur offshore wind development.

Michael Klepinger
Mikinetics Consulting, LLC
May 30, 2008

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