

**Michigan Coastal Management Program  
Office of the Great Lakes  
Department of Natural Resources and Environment**

**Section 309 Assessment and Five-Year Strategy for  
Coastal Zone Management Program Enhancement  
Fiscal Years 2012-2016**

**Review Draft  
November 2010**

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## I. Introduction

Section 309 of the federal Coastal Zone Management Act (CZMA; Public Law 92-583, as amended) establishes a voluntary enhancement grants program for states with federally approved Coastal Management Programs (CMPs). Under the provisions of Section 309, every five years state CMPs may assess and prioritize challenges and needs regarding the management of nine “enhancement areas” within their coastal zones, specifically: Wetlands; Coastal Hazards; Public Access; Marine Debris; Cumulative and Secondary Impacts; Special Area Management Planning; Ocean/Great Lakes Resources; Energy and Government Facility Siting; and Aquaculture. Guided by the assessments, states may develop and implement changes to their CMPs that improve management of high- and medium-priority enhancement areas over a five-year timeframe, subject to federal approval. States implement the approved changes with annual funding provided under Section 309.

The Michigan Coastal Management Program (MCMP), Department of Natural Resources and Environment (DNRE) developed this draft *Section 309 Assessment and Five-Year Strategy for Coastal Zone Management Program Enhancement: Fiscal Years 2012-2016*, pursuant to final guidance issued by the Office of Ocean and Coastal Resource Management (OCRM) National Oceanic and Atmospheric Administration (NOAA) in July, 2009. This draft document contains the Assessments for each of the nine enhancement areas, including the predicted priority of the management challenge to the MCMP over the State’s Fiscal Year 2012-2016 timeframe, corresponding to federal Fiscal Years 2011-2015. A number of factors influence the prioritization of the enhancement areas, including the immediacy, scope, and magnitude of the management challenge in Michigan’s coastal zone, availability of other sources of funding to apply to the management challenge, and the extent to which the MCMP’s enforceable policies encompass the enhancement area.

The MCMP identifies the Wetlands, Cumulative and Secondary Impacts, Great Lakes Resources, and Energy and Government Facility Siting enhancement areas as high priorities over the Fiscal Year 2012-2016 timeframe. The Coastal Hazards, Public Access, and Special Area Management Planning enhancement areas are medium priorities, while the Marine Debris and Aquaculture enhancement areas are low priorities. It is important to note that a low priority rating indicates only that specific issues related to an enhancement area are low priorities within the context of the Section 309 Assessment, given the limited uses of Section 309 funding. The priority rating is not a broader indication of the importance of the enhancement area to the MCMP.

This document also contains seven Strategies; each Strategy addresses one or more high- or medium-priority enhancement areas. The Strategies are presented in a separate section following the Assessments. The development and approval of a Strategy does not guarantee funding for the projects therein; however, only projects contained in an approved Section 309 Assessment and Strategy document are eligible for Section 309 funding annually appropriated and allocated to state CMPs.

MCMP staff prepared this draft document in consultation with staff from various DNRE divisions, and other state agencies as needed. The MCMP encourages review and comments on this draft *Section 309 Assessment and Five-Year Strategy for Coastal Zone Management Program Enhancement: Fiscal Years 2012-2016*. The input provided will help guide revisions to the final document.

## II. Summary of Completed Section 309 Projects Included in the Previous Section 309 Assessment and Strategy

The MCMP's previous Section 309 Assessment and Strategy covers Fiscal Years 2007-2011, corresponding to federal Fiscal Years 2006-2010. This period is still ongoing, as Michigan's Fiscal Year 2011 ends September 30, 2011. Consequently, the following summary of projects is necessarily incomplete. Section 309 funds supported projects in two high-priority enhancement areas, specifically, Coastal Hazards, and Cumulative and Secondary Impacts. Selected major accomplishments are summarized in the table below:

Enhancement Area	Major Accomplishments Supported with Section 309 Funds 2007-2010
Coastal Hazards	<ul style="list-style-type: none"> <li>• DNRE staff worked with researchers at Michigan State University (MSU) to develop and test a more accurate methodology for measuring shoreline recession rates used to designate High Risk Erosion Areas under Part 323, Shorelands Protection and Management, of the Natural Resources and Environmental Protection Act (NREPA; Public Act 451 of 1994, as amended). This research will form the basis for Administrative Rule amendments.</li> <li>• MSU researchers developed a GIS-based Critical Dune Area decision support tool for regulatory staff to use in administering Part 353, Sand Dune Protection and Management, of the NREPA in Lower Peninsula counties. MSU researchers also conducted an assessment of the effectiveness of the current Part 353 regulatory program.</li> </ul>
Cumulative and Secondary Impacts	<ul style="list-style-type: none"> <li>• Twenty-three coastal communities developed or updated land use plans or zoning ordinances, including four joint planning projects that involved multiple jurisdictions.</li> <li>• The DNRE has developed and adopted management plans for seven coastal State Parks that collectively contain more than 16,000 acres of recreational lands, sensitive habitats, and almost 30 miles of Great Lakes shoreline.</li> <li>• The Institute for Fisheries Research developed a GIS-based lakebed alteration decision support tool (DST) that proved indispensable in the deliberations of the Great Lakes Offshore Wind (GLOW) Council. The GLOW Council was tasked by the Governor Jennifer Granholm in 2009 with identifying areas of the Great Lakes most suitable for offshore wind energy development, as well as areas that should be off limits to wind farms due to potential impacts.</li> <li>• Additional projects focused on minimizing resource impacts from wind energy development include surveys of waterfowl use of coastal and offshore waters of Saginaw Bay, bat migration over northern Lake Michigan, and impacts of wind farm operation on nesting songbirds.</li> <li>• Huron Pines worked with a variety of stakeholders to develop a conservation plan for sensitive coastal habitats in the northeast Lower Peninsula. The project area contains almost 500 miles of Lake Huron shoreline. The conservation plan laid the groundwork for a highly successful effort now underway to identify, map, and control <i>Phragmites</i> infestations along the shore.</li> <li>• Two regional planning commissions developed new coordinated greenway and blueway plans for Cheboygan, Presque Isle, Alpena, Alcona, Iosco, and Muskegon Counties.</li> </ul>

# Wetlands

## Section 309 Enhancement Objective

Protection, restoration, or enhancement of the existing coastal wetlands base, or creation of new coastal wetlands

## Resource Characterization

*Purpose: To determine the extent to which problems and opportunities exist with regard to the enhancement objective*

1. Please indicate the extent, status, and trends of wetlands in the coastal zone using the following table:

Wetlands type	Estimated historic extent (acres)	Current extent (acres)	Trends in acres lost since 2006 (Net acres gained & lost)	Acres gained through voluntary mechanisms since 2006	Acres gained through mitigation since 2006	Year and source(s) of Data
Tidal (Great Lakes) vegetated	See table below	See table below	See table below	See responses to questions #2 and #7	133.32 acres	CIWPIS (Coastal and Inland Waters Permitting Information System)
Tidal (Great Lakes) non-vegetated	N/A	N/A	N/A	N/A	N/A	N/A
Non-tidal/freshwater	See table below	See table below	See table below	See responses to questions #2 and #7	N/A	See table below

Wetlands Type	Estimated Historic extent (acres)	1998 state-wide (estimated acres)	Trend historic – 1998 (estimated acres gained/lost)	1998 Lower Peninsula only (estimated acres)	2005 Lower Peninsula only (estimated acres)	Trend 1998 – 2005 (estimated acres gained/lost)	Most recent acreage estimates of area (1998 Upper peninsula + 2005 Lower peninsula)	Trend historic – most recent estimated 1998/2005 (acres gained lost)
Tidal (Great Lakes) vegetated	158,365	71,396	86,969 acres <i>lost</i>	28,496	48,911	20,415 acres <i>gained</i>	91,083	67,282 acres <i>lost</i>
Tidal (Great Lakes) non-vegetated	** not applicable for Michigan's Great Lakes coastal wetlands **							
Non-tidal/freshwater	236,099	182,855	53,244 acres <i>lost</i>	82,819	95,584	12,765 acres <i>gained</i>	194,708	41,391 acres <i>lost</i>

**Revised Resource Characterization Table for Section 309 Assessment and Strategy**

**Tidal (Great Lakes) vegetated** – this includes vegetated wetlands within the Coastal Zone Management (CZM) boundary, which intersect the ordinary high watermark (OHWM) of the Great Lakes and are directly affected by water levels of the lakes.

**Non-tidal/freshwater** – this includes vegetated wetlands within the CZM boundary, which do not intersect the OHWM of the Great Lakes, and are therefore indirectly affected by water levels of the lakes.

There are no figures listed for **Tidal (Great Lakes) non-vegetated** because there are no significant acres of coastal wetlands along the coast of Michigan which fit this description. It was determined that this category does not apply in Michigan.

The most recent GIS data available for acreage of coastal wetlands in Michigan is a 2005 National Wetlands Inventory (NWI) update, but only for the Lower Peninsula. The 1998 NWI update is a statewide data set, and is the next most recent available GIS data. This table shows the various acreages based on these available data sets. Historic extent was calculated using hydric soils data.

**Please note:** This table shows a significant increase in coastal wetland acres in the Lower Peninsula between 1998 and 2005. Based on the mapped areas of significant increase, this appears to be accurate. 1998 was marked by high Great Lakes water levels, while 2005 was marked by low water levels. The significant increase in wetland acreage appears to have occurred mainly in very shallow coastal areas with extensive areas of bottomlands exposed by the low water levels. Emergent wetland vegetation rapidly colonized the exposed bottomlands.

Overall, the trends indicated in this table show a substantial loss in coastal wetlands from historic estimates, but also indicate significant variability due to water level fluctuations.

2. If information is not available to fill in the above table, provide a qualitative description of information requested including wetlands status and trends, based on the best available information.

CIWPIS, the database the DNRE uses to manage permitting information for several land and water regulatory programs including the Wetlands Program, does not provide the capability to track impacts and mitigation by type of wetland, nor to extract information specific to the coastal zone. The Department is in the process of updating or replacing the database and these and other data management capabilities will be incorporated into the new database.

3. Provide a brief explanation for trends.

Refer to footnotes to the above table.

4. Identify ongoing or planned efforts to develop monitoring programs or quantitative measures for this enhancement area.

The Michigan Wetlands Program is about to participate in a five-year, basin-wide wetland assessment and monitoring effort funded by federal Great Lakes Restoration Initiative (GLRI) grants and administered by a multi-partner team headed by researchers at Central Michigan University. This project is described in question #2 in the Management Characterization section. One of the strategies proposed in this document will address the dissemination and management of the data that will be gathered through this new wetland assessment and monitoring project.

5. Use the following table to characterize direct and indirect threats to coastal wetlands, both natural and man-made. If necessary, additional narrative can be provided below to describe threats.

Type of threat	Severity of impacts (H,M,L)	Geographic scope of impacts (extensive or limited)	Irreversibility (H,M,L)
Development/Fill	High	Extensive	Low
Alteration of hydrology	Medium	Limited	Medium
Erosion	Low	Limited	Low
Pollution	Medium	Limited	Low
Channelization	Medium	Limited	Medium
Nuisance or exotic species	High	Extensive	Medium
Freshwater input	N/A	N/A	N/A
Sea level rise/Great Lake level change	High	Extensive	Low

6. (CM) Indicate whether the Coastal Management Program (CMP) has a mapped inventory of the following habitat types in the coastal zone and the approximate time since it was developed or significantly updated.

Habitat type	CMP has mapped inventory (Y or N)	Date completed or substantially updated
Tidal (Great Lakes) Wetlands	Yes	1998 statewide, 2005 Lower Peninsula
Beach and Dune	Yes	1989
Nearshore	No	N/A

7. **(CM) Use the table below to report information related to coastal habitat restoration and protection. The purpose of this contextual measure is to describe trends in the restoration and protection of coastal habitat conducted by the State using non-CZM funds or non-Coastal and Estuarine Land Conservation Program (CELCP) funds. If data is not available to report for this contextual measure, please describe below actions the CMP is taking to develop a mechanism to collect the requested data.**

Contextual measure	Cumulative acres for 2004-2010
Number of acres of coastal habitat restored using non-CZM or non-Coastal and Estuarine Land Conservation Program (CELCP) funds	See below
Number of acres of coastal habitat protected through acquisition or easement using non-CZM or non-CELCP funds	See below

The MCMP does not currently track the acres of coastal habitat restored using non-CZM or non-CELCP funds. The MCMP is coordinating with other state and federal agencies as well as non-profit partners to create a mechanism to accurately reflect the number of acres of coastal habitat restored within the CZM boundary. Information is currently available for approximate wetland acres restored statewide for 2006-2009. The approximate acreage is 3,382. The MCMP is planning to continue to work with partners to resolve this tracking issue.

The MCMP does not currently track the acres of coastal habitat protected through acquisition or easement using non-CZM or non-CELCP funds. The MCMP is coordinating with other state and federal agencies as well as non-profit partners to create a mechanism to accurately reflect the number of acres of coastal habitat protected through acquisition or easement using non-CZM or non-CELCP funds. Information is currently available for approximate wetland acres acquired statewide for 2006-2009. The approximate acreage is 12,047. The MCMP is planning to continue to work with partners to resolve this tracking issue.

**Management Characterization**

*Purpose: To determine the effectiveness of management efforts to address those problems described in the above section for the enhancement objective.*

1. **For each of the wetland management categories below, indicate if the approach is employed by the state or territory and if significant changes have occurred since the last assessment:**

Management categories	Employed by state/territory (Y or N)	Significant changes since last assessment (Y or N)
Wetland regulatory program implementation, policies, and standards	Yes	Yes
Wetland protection policies and standards	Yes	No
Wetland assessment methodologies (health, function, extent)	Yes	Yes
Wetland restoration or enhancement programs	No	No
Wetland policies related to public infrastructure funding	No	No
Wetland mitigation programs and policies	Yes	No

<b>Management categories</b>	<b>Employed by state/territory (Y or N)</b>	<b>Significant changes since last assessment (Y or N)</b>
Wetland creation programs and policies	No	No
Wetland acquisition programs	No	No
Wetland mapping, GIS, and tracking systems	Yes	Yes
Special Area Management Plans	No	No
Wetland research and monitoring	Yes	Yes
Wetland education and outreach	No	No

**2. For management categories with significant changes since the last assessment provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference rather than duplicate the information.**

- a) Characterize significant changes since the last assessment;**
- b) Specify if it was a 309 or other CZM-driven change (specify funding source) or if it was driven by non-CZM efforts; and**
- c) Characterize the outcomes and effectiveness of the changes.**

Wetland Regulatory Program Implementation, Policies, and Standards

Public Act 120 of 2009 amended Part 303, Wetlands Protection, and related Parts of Michigan’s Natural Resources and Environmental Protection Act, affecting several aspects of the State’s wetland regulatory program. Broadly speaking, the multiple, varied provisions of Act 120 provide for additional general permitting options and minor project categories, and facilitate the permitting process for cranberry growing operations. A number of these changes are temporary and will be revisited in coming years. A Wetland Advisory Council established under the amendments is responsible for studying implementation of the changes and developing recommendations on the State’s long-term approach to protecting and managing wetland resources. The Council must submit its final set of recommendations to the Governor, DNRE, and certain legislative committees by August 15, 2012. The Wetland Program staff implementing the changes is partly supported by Section 306 CZM funding.

Wetland Assessment Methodologies, Mapping, GIS, and Tracking Systems, and Research and Monitoring

An unprecedented effort to collect comprehensive, consistent sampling data from coastal wetlands throughout the Great Lakes system is set to launch in the spring of 2011, with Great Lakes Restoration Initiative funding provided by the U.S. Environmental Protection Agency (EPA). Several years in the making, the monitoring program is the current phase of a long-running endeavor to classify and map Great Lakes coastal wetlands, and assess and track their health. The \$10 million program will take five years to complete and involve scores of researchers and resource management agency staff from the U.S. and Canada, working at several hundred sites. Central Michigan University is coordinating the program, and the DNRE is one of many program partners.

The coastal wetland monitoring program implements an EPA-funded monitoring plan finalized by the Great Lakes Coastal Wetlands Consortium in 2008, following almost seven years of research and development. The building blocks of the monitoring plan are five sets of indicators addressing major components of coastal wetland condition, specifically, water chemistry, vegetation, invertebrates, fish, and amphibian and bird communities. The plan prescribes a suite of standard measurements and data collection protocols for assessing each set of indicators. Over the next five years, researchers will collect sampling data for these indicators from every Great Lakes coastal wetland at least 10 acres in area. A subset of the sites sampled one year will be resampled the

following year to determine trends in wetland health. The project team will hold training sessions in the last year of the project for agencies and organizations interested in continuing the monitoring program locally. The EPA's Great Lakes National Program Office will then take over monitoring effort coordination. DNRE staff involved in this effort is partly supported by Section 306 CZM funding.

**3. (CM) Indicate whether the CMP has a habitat restoration plan for the following coastal habitats and the approximate time since the plan was developed or significantly updated.**

Habitat type	CMP has a restoration plan (Y or N)	Date completed or substantially updated
Tidal (Great Lakes) Wetlands	No	N/A
Beach and Dune	No	N/A
Nearshore	No	N/A

**Priority Needs and Information Gaps**

Using the table below, identify major gaps or needs (regulatory, policy, data, training, capacity, communication and outreach) in addressing each of the enhancement area objectives that could be addressed through the Coastal Management Program and partners (not limited to those items to be addressed through the Section 309 Strategy). If necessary, additional narrative can be provided below to describe major gaps or needs.

Gap or need description	Select type of gap or need (regulatory, policy, data, training, capacity, communication & outreach)	Level of priority (H,M,L)
Statewide Coastal Habitat Restoration Plan based on current research and monitoring data.	Policy, data, communication and outreach	High
Integrating coastal wetland monitoring data into regulatory decisions	Policy, data	High
Technical assistance, education and outreach to local governments, land conservancies, and conservation organizations on current and emerging climate change research to help inform policy decisions.	Data, communication and outreach	Medium
Database of acquisition and restoration projects statewide and within the CZM boundary.	Data	Medium

**Enhancement Area Prioritization**

**1. What level of priority is the enhancement area for the coastal zone (including, but not limited to, CZMA funding)?**

High

**Briefly explain the level of priority given for this enhancement area.**

Public Act 120 of 2009 initiated a period of review for Michigan's wetland regulatory program, coordinated by the new Wetland Advisory Council. Consequently, it is a high priority for the MCMP to identify options for the effective science-based, data-driven management and stewardship of coastal wetlands during this review period.

**2. Will the CMP develop one or more strategies for this enhancement area?**

Yes

**Briefly explain why a strategy will or will not be developed for this enhancement area.**

The ongoing project to update or replace the CIWPIS database with a more powerful and sophisticated database with GIS capabilities, and the new, five-year effort to collect comprehensive monitoring data on coastal wetland status and trends present an unprecedented opportunity to develop new wetland programs, policies, and guidance that respond to the latest information on coastal wetland condition and trends, including climate trends. Strategies will be developed to take advantage of this opportunity.

## Coastal Hazards

### Section 309 Enhancement Objective

Prevent or significantly reduce threats to life and property by eliminating development and redevelopment in high-hazard areas, managing development in other hazard areas, and anticipating and managing the effects of potential sea level rise and Great Lakes level change

### Resource Characterization

*Purpose: To determine the extent to which problems and opportunities exist with regard to the enhancement objective*

#### 1. Characterize the level of risk in the coastal zone from the following coastal hazards:

(Risk is defined as: “the estimated impact that a hazard would have on people, services, facilities and structures in a community; the likelihood of a hazard event resulting in an adverse condition that causes injury or damage.” Understanding Your Risks: Identifying Hazards and Estimating Losses. FEMA 386-2. August 2001)

Type of hazard	General level of risk (H, M, L)	Geographic Scope of Risk (Coast-wide, Sub-region)
Flooding	High	Multiple sub-regions
Coastal storms, including associated storm surge	Low	Coast-wide
Geological hazards (e.g., tsunamis, earthquakes)	Low	Coast-wide
Shoreline erosion (including bluff and dune erosion)	High	Coast-wide
Sea level rise and other climate change impacts	N/A	Coast-wide
Great Lake level change and other climate change impacts	High	Coast-wide
Land subsidence	Low	Coast-wide
Other (please specify) Rip Current Hazards	High	Coast-wide, with higher risk on Lake Michigan/Superior

#### 2. For hazards identified as a high level of risk, please explain why it is considered a high level risk. For example, has a risk assessment been conducted, either through the State or Territory Hazard Mitigation Plan or elsewhere?

##### Flooding

Under the Flood Risk Area provisions of Part 323, Shorelands Protection and Management, of the NREPA, new structures in the 100-year floodplain of the Great Lakes must be elevated to prevent property damage. Forty-one coastal communities have designated flood risk areas mapped and regulations in effect, which is the same number of communities identified in the 2006 Assessment. The Flood Risk Area Program continues to be operated mostly at the community level, and DNRE staff provides periodic technical assistance and monitoring. Relatively low water levels have limited recent flooding events; however, the flooding threat continues to be characterized as high due to the combination of historical flooding problems with the possibility of higher water levels returning within the 2012-2016 timeframe. All 41 communities participate in the National Flood Insurance Program and have local zoning requirements which meet or exceed Flood Risk Area Program standards.

### Shoreline Erosion

Approximately 268 miles of Michigan's Great Lakes Coast are designated as High Risk Erosion Areas (HREA) under Part 323 of the NREPA. DNRE recession rate studies have shown these areas are receding at an average annual rate of one foot or more per year. The Department continues to reassess recession rates on a county-by-county basis to account for changing physical conditions, and to incorporate up-to-date technology in the recession rate studies. Recent county-wide studies show significant decreases in the number of regulated properties as well as a decrease in the length of designated shoreline. However, the hazard threat remains significant in many locations and would increase given a return to normal or above-normal water levels.

### Great Lakes Level Changes

Great Lakes water level changes are identified as having a high level of risk, as was the case in the 2006 Assessment. Low water levels have persisted for the past decade, particularly on Lakes Superior, Michigan, and Huron. Multiple impacts and damages can be attributed to Great Lakes level variations and several of these will be addressed in other enhancement area assessments. However, the threat specifically related to coastal hazards are the continued attempts by property owners to construct buildings and infrastructure further lakeward due to the perception of a lower level of threat from both coastal erosion and flooding. One example of this trend is a recent proposal reviewed by DNRE regulatory staff for a new single-family home on the southeast shore of Lake Michigan, to be sited on the open beach. Historic orthophotographs from the high water period of the mid-1980's show water partly covering the area of the proposed footprint of the house.

The current prolonged period of low water levels, especially in embayment regions such as Saginaw Bay and Georgian Bay, is the subject of the two-phase International Upper Great Lakes Study sponsored by the International Joint Commission. Phase I is the examination of a theory that historic dredging may have widened the St. Clair River, leading to a drop in the level of lakes that lie above it in the hydrologic regime. Phase II addresses the overall need for improved regulation of outflows at the Sault Locks.

### Rip Currents

Rip currents have been identified as a significant coastal hazard by scientists and the public alike for some time. Since a 2004 Great Lakes Rip Current Conference, Michigan Sea Grant and the National Weather Service have increased their focus on rip current outreach and education. Yet, even with this increased effort the hazard associated with rip currents in Michigan waters remains, as evinced by the number of rip current-related deaths in 2010. Prior to Labor Day, rip currents contributed to 11 deaths along Michigan's Lake Michigan coast and 25 deaths throughout the Great Lakes. Rip current-related deaths are a regular occurrence in Michigan, with the State ranking fourth in the number of fatalities for all coastal states in the contiguous U.S., during the 1994-2007 time period.

### **3. If the level of risk or state of knowledge of risk for any of these hazards has changed since the last assessment, please explain.**

#### Flooding

The Federal Emergency Management Agency's (FEMA) ongoing Map Modernization Program is increasing the body of research on Michigan's Flood Risk Areas. Under the program, the FEMA is producing county-wide flood maps for much of the Great Lakes coast. The agency is using the U.S. Army Corps of Engineers' (USACE) 1988 Phase I and Phase II Revised Reports on Great Lakes Open-Coast Flood Levels to delineate the floodplain along the shoreline. In addition, USACE reports for Saginaw Bay (1989), Green Bay (1990), Grand Traverse Bay (1990), and Lake St. Clair/Anchor Bay (2007) will be used to delineate the floodplain.

The following is a summary of the county-wide mapping projects currently underway or completed along Michigan's Great Lakes coastal counties:

- Maps have been completed for Berrien, Huron, Macomb, St. Clair, and Van Buren counties.
- Preliminary maps are now available for Bay, Cheboygan, Monroe, Ottawa, Sanilac, Tuscola, and Wayne counties.
- Preliminary maps for Alpena, Charlevoix, Chippewa, Grand Traverse, Iosco, Muskegon, and Saginaw counties are underway and expected to be available by early 2011.
- Mapping activities are underway for Alcona, Allegan, Arenac, Gogebic, Leelanau, Marquette, Mason, Menominee, and Oceana counties, and preliminary maps are expected to be available by late 2011.
- In 2010/2011, the floodplain boundaries in Macomb County along Lake St. Clair will be updated to reflect the revised floodplain elevations for Lake St. Clair developed by the USACE in 2007/2008. This report was prepared to reflect the effect of adding 19 years of gage record to the 1988 report.
- Updated mapping activities are not planned by FEMA for Alger, Antrim, Baraga, Benzie, Delta, Emmet, Houghton, Keweenaw, Luce, Mackinac, Manistee, Ontonagon, Presque Isle, or Schoolcraft Counties.

The FEMA is in the process of working with the USACE and mapping contractors to review and update the methodology for determining the 1% annual chance flood elevations (including wave run-up and velocity zones) on the Great Lakes. A pilot study is underway on Lake Michigan to test the methodology along the Allegan County shoreline and within Green Bay in Wisconsin. Once the methodology is refined, the FEMA intends to consider mapping velocity zones (V-zones) on the Great Lakes. V-zones are the shoreline areas subject to significant wave action during a 1% annual chance flood event. While there may be areas where a V-zone designation is appropriate, the DNRE has concerns about implementation of a V-zone methodology on the Great Lakes in all locations. The Department recommends that the methodology reflect historic events and should only be applied in areas where there is significant V-zone risk. These areas do not include the bluff conditions that characterize much of the Lake Michigan and Lake Superior shoreline.

#### Great Lakes Level Changes and Shoreline Erosion

Prolonged low water levels have reduced the immediacy of the threat of coastal erosion to existing development along many stretches of Michigan's Great Lakes coast. All of the Great Lakes remain at relatively low levels (particularly Lakes Superior, Michigan and Huron) compared to historic averages and these relatively low water levels have been sustained for almost a decade.

Updated shoreline recession rate studies were completed for five counties since the 2006 Assessment; specifically, Alcona, Alpena, Arenac, Berrien, and Presque Isle Counties. In each case, the total length of designated HREA shoreline was reduced and in four of the counties the HREA designations were removed entirely. A recession rate update study in Cheboygan County was recently completed with results showing a reduction in total designated HREA shoreline length. DNRE staff is in the process of notifying affected property owners and addressing input received regarding areas proposed for designation under the HREA program.

During the current low water period many stretches of shore - especially sand-dominated shorelines and beaches - have recovered significantly from past erosion events, and in some cases beach widths have increased by hundreds of feet. There is a readily observable relationship between beach composition/morphology and the ability of a beach to "recover" during low water periods. Coasts characterized by sand dunes or lower sandy shores have generally undergone a period of subaerial beach growth. This beach growth has provided a temporary buffer for coastal buildings/infrastructure from episodic erosion events. Cohesive bluff shorelines generally show a

minimal amount of subaerial beach growth lakeward of the bluff slopes. Notably, some stretches of sediment-starved beach (such as Baldwin Township, Iosco County) that have been armored with seawalls or revetments have not recovered during this extended period of low water. In fact, along some stretches of coast wave action has continued to impact the seawalls during this low water period.

The natural beach-building that has occurred over the past several years has generally decreased the overall risk from episodic erosion events. However, this reduction in risk will be short-lived if water levels return to normal or above-normal levels. The 2006 Assessment contained separate assessments for episodic erosion vs. chronic erosion. If this were still the case, chronic erosion would maintain a status of high risk while episodic erosion would be lowered to medium risk. Since these items are now combined, the overall erosion risk is maintained at the high level because of the potential for higher lake levels in the 2012-2016 timeframe.

Rip Currents

The assessment of rip current threats has changed due to the significant increase in rip current-related deaths over the past year. Rip currents have always been a threat along Michigan's Great Lakes coast; however there is some indication that regional climate changes may be contributing to an increase in the threat level, specifically: 1) Increased air and water temperatures have increased the overall number of swimmers visiting public beaches; and 2) changes in temperatures and perhaps changes in temperature gradients between the air and water may be driving increased wind, wave, and current activity.

**4. Identify any ongoing or planned efforts to develop quantitative measures of risk for these hazards.**

DNRE continues to conduct shoreline recession rate update studies on a county-by-county basis pursuant to Part 323 of the NREPA. The objective is to quantify coastal recession rates and apply these to the calculation of appropriate construction setbacks for coastal development. A statewide HREA shoreline layer has been created and will be updated as needed to monitor changes in the mileage of designated HREAs.

**5. (CM) Use the table below to identify the number of communities in the coastal zone that have a mapped inventory of areas affected by the following coastal hazards. If data is not available to report for this contextual measure, please describe below actions the CMP is taking to develop a mechanism to collect the requested data.**

Type of hazard	Number of communities that have a mapped inventory	Date completed or substantially updated
Flooding	41	Varies by Community
Storm surge	N/A	N/A
Geological hazards (including earthquakes, tsunamis)	None	N/A
Shoreline erosion (including bluff and dune erosion)	183	Varies by Community
Sea level rise	N/A	N/A
Great lake level fluctuation	None	N/A
Land subsidence	None	N/A

**Management Characterization**

*Purpose: To determine the effectiveness of management efforts to address those problems described in the above section for the enhancement objective.*

1. For each of the management categories below, indicate if the approach is employed by the state or territory and if significant changes have occurred since the last assessment.

Management categories	Employed by state/territory (Y or N)	Significant changes since last assessment (Y or N)
Building setbacks/restrictions	Yes	No
Methodologies for determining setbacks	Yes	Yes
Repair/Rebuilding restrictions	Yes	No
Restriction of hard shoreline protection structures	Yes	No
Promotion of alternative shoreline stabilization methodologies	No	No
Renovation of shoreline protection structures	No	No
Beach/dune protection (other than setbacks)	Yes	Yes
Permit compliance	Yes	No
Sediment management plans	No	No
Repetitive flood loss policies, (e.g., relocation, buyouts)	No	No
Local hazards mitigation planning	Yes	No
Local post-disaster redevelopment plans	No	No
Real estate sales disclosure requirements	No	No
Restrictions on publicly funded infrastructure	Yes	No
Climate change planning and adaption strategies	No	No
Special Area Management Plans	No	No
Hazards research and monitoring	Yes	No
Hazards education and outreach	Yes	No

2. For management categories with significant changes since the last assessment provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference rather than duplicate the information.

- a) Characterize significant changes since the last assessment;
- b) Specify if it was a 309 or other CZM-driven change (specify funding source) or if it was driven by non-CZM efforts; and
- c) Characterize the outcomes and effectiveness of the changes.

Methodologies for Determining Setbacks

Significant changes have occurred since the last assessment regarding the methodology for determining coastal construction setbacks under the High Risk Erosion Area program. Section 309 funding was used to collect field data and assess the feasibility of using a modern erosion reference feature (ERF) collected with a differential GPS unit, rather than the former process of orthorectifying modern aerial images and digitizing the ERF on the imagery within a geographic information system. The new approach still requires orthorectified historic aerial imagery for acquisition of the historic ERF. Early results show that the new approach has advantages including increased accuracy in the identification/delineation of this feature, as well as providing staff the opportunity to collect on-site photographs, field notes, and other information at the time of data collection. However, this method is time-intensive and not well-suited to assessing long stretches

of shoreline, such as an entire county. DNRE staff is currently using this approach to examine and update recession rates within existing stretches of designated HREA shoreline.

Recent recession rate studies have also included collection of the top of bluff/bank feature to assess whether it is appropriate to use this as the erosion reference feature in place of the currently used landward extent of the zone of active erosion, typically expressed as a vegetation line. Further assessment of the bluff top approach for calculating required setback distances is ongoing with Section 309 funding support. This year's effort will focus on the applicability of these methods to different shore types, including high bluff environments.

Beach Protection

Beach protection efforts have been directly affected by a Michigan Supreme Court ruling which resulted in a new interpretation of the landward boundary for public trust protection. The case, Glass v. Goeckel (473 Mich. 667) resulted in a change of interpretation regarding the jurisdiction line in Part 325, Great Lakes Submerged Lands, of the NREPA by changing from an elevation- to a feature-based delineation referencing the Natural Ordinary High Water Mark (NOHWM). This was a major paradigm shift for regulatory staff and required additional research and guidance. Section 309 funds supported a two-phase research project in which a University of Michigan research team analyzed the physical representation of the NOHWM as it exists on dynamic beaches of the Great Lakes, as well as the legal aspects of this change. To date, the change in procedure has been addressed through development of a new internal guidance document; however, it is expected that modifications will be required in Part 325 or administrative rules.

3. **(CM) Use the appropriate table below to report the number of communities in the coastal zone that use setbacks, buffers, or land use policies to direct development away from areas vulnerable to coastal hazards. If data is not available to report for this contextual measure, please describe below actions the CMP is taking to develop a mechanism to collect the requested data.**

**For CMPs that use numerically based setbacks or buffers to direct development away from hazardous areas report the following:**

Contextual measure	Number of communities
Number of communities in the coastal zone required by state law or policy to implement setbacks, buffers, or other land use policies to direct development away from hazardous areas.	130 townships, villages, and cities contain designated high risk erosion areas, covering portions of 33 coastal counties.
Number of communities in the coastal zone that have setback, buffer, or other land use policies to direct develop away from hazardous areas that are more stringent than state mandated standards or that have policies where no state standards exist.	Accurate data not available <sup>1</sup>

<sup>1</sup> A survey was conducted in 2008 of coastal communities and a very poor response rate (~11%) was received; 32 responses out of a total of 301 coastal counties, townships, cities and villages. Six communities indicated they employed setbacks, buffers, or other land use policies more stringent than state standards. Sixteen respondents indicated the use of such policies in locations where no state standards existed. The MCMP will continue to look for opportunities to include data collection of this sort into a future initiative such as development of a Michigan Coastal Atlas.

**For CMPs that do not use state-established numerical setbacks or buffers to direct development away from hazardous areas, report the following:**

<b>Contextual measure</b>	<b>Number of communities</b>
Number of communities in the coastal zone that are required to develop and implement land use policies to direct development away from hazardous areas that are approved by the state through local comprehensive management plans.	N/A
Number of communities that have approved state comprehensive management plans that contain land use policies to direct development away from hazardous areas.	N/A

**Priority Needs and information Gaps**

Using the table below, identify major gaps or needs (regulatory, policy, data, training, capacity, communication and outreach) in addressing each of the enhancement area objectives that could be addressed through the CMP and partners (not limited to those items to be addressed through the Section 309 Strategy). If necessary, additional narrative can be provided below to describe major gaps or needs.

<b>Gap or need description</b>	<b>Type of gap or need</b> (regulatory, policy, data, training, capacity, communication & outreach)	<b>Level of priority</b> (H, M, L)
Acquisition of low-altitude oblique aerial imagery for Lower Peninsula Great Lakes shoreline	Data	Medium
Revisions to Administrative Rules for High Risk Erosion Areas under Part 323, Shorelands Protection and Management of the NREPA	Regulatory	High
Revisions to Administrative Rules for Part 325, Great Lakes Submerged Lands, of the NREPA	Regulatory	Medium
Online coastal atlas or other readily accessible portal for DNRE staff and public, providing information on erosion hazard areas, critical dune areas, and other coastal hazards	Communication and Outreach	Medium
Lack of “in-house” capacity in DNRE to conduct GIS-Based HREA recession rate update studies	Capacity	Medium
Research to improve rip current forecasting and guidance for public beach managers on assessing rip current conditions	Data, training, communication and outreach	High

**Enhancement Area Prioritization**

**1. What level of priority is the enhancement area for the coastal zone (including, but not limited to, CZMA funding)?**

Medium

**Briefly explain the level of priority given for this enhancement area.**

Relatively low Great Lakes water levels over the past several years have moderated the threat of coastal flooding, erosion, and associated property damage. Nevertheless, the potential remains for lake levels to rise again over the course of the 2012-2016 timeframe.

The number of fatalities due to rip currents at Michigan's beaches suggests the need for research-based enhancements in the way that rip current conditions are forecast and communicated to public beachgoers.

**2. Will the CMP develop one or more strategies for this enhancement area?**

Yes

**Briefly explain why a strategy will or will not be developed for this enhancement area.**

The enhancement objective is, in part, to prevent or significantly reduce threats to life posed by coastal hazards. Rip current research and improved forecasting and guidance for public beach managers would substantially advance this objective.

The new methodology for determining construction setbacks in designated High Risk Erosion Areas will be ready for formal adoption through administrative rule revisions in the 2012-2016 timeframe, and the DNRE is interested in adopting the new methodology.

## **PUBLIC ACCESS**

**Definition:** *pathways, boardwalks, trails, parks, scenic overlooks, beaches, fishing piers, boat launches, lighthouses, docks/marinas*

### **Section 309 Enhancement Objective**

Attain increased opportunities for public access, taking into account current and future public access needs, to coastal areas of recreational, historical, aesthetic, ecological, or cultural value.

### **Resource Characterization**

*Purpose: To determine the extent to which problems and opportunities exist with regard to the enhancement objective.*

#### **1. Characterize threats and conflicts to creating and maintaining public access in the coastal zone:**

<b>Type of threat or conflict causing loss of access</b>	<b>Degree of threat (H,M,L)</b>	<b>Describe trends or provide other statistics to characterize the threat and impact on access</b>	<b>Type(s) of access affected</b>
Private residential development (including conversion of public facilities to private)	Low	From 2007 through 2009, Michigan's 42 coastal counties saw a total net increase of only 2,352 housing units, or 0.10%, with some coastal counties actually losing housing units during that timeframe.	Coastal lands above the ordinary high watermark – all types listed in definition of public access
Non-water dependent commercial/industrial uses of the waterfront (existing or conversion)	Low	There is anecdotal evidence that some water-dependent uses in community waterfronts, including public access sites, have been converted to non-water dependent private uses, but this conversion rate hasn't been studied or quantified. Starting in Fall 2011, a NOAA fellow will develop a peer-reviewed methodology for measuring waterfront land use conversion rates, and apply the methodology to determine the overall rate of waterfront conversion for the State of Michigan.	Coastal lands above the ordinary high watermark – all types listed in definition of public access
Erosion	Low	Impacts to public access due to erosion have been lower than normal due to the relatively low water levels sustained for the past decade.	Coastal lands above the ordinary high water mark – all types listed in definition of public access
Great Lake level change	Medium	During the past several years, low water levels in Lakes Michigan and Huron exposed substantial expanses of bottomlands, allowing emergent native and invasive species of wetland vegetation to take hold. The low water and dense vegetation changed the character of the shoreline and limited use of public access sites	Fishing piers, boat launches, beaches, marinas, docks, trails, boardwalks, overlooks, pathways

Type of threat or conflict causing loss of access	Degree of threat (H,M,L)	Describe trends or provide other statistics to characterize the threat and impact on access	Type(s) of access affected
		dependent on deep water.	
Natural disasters	Low	No known qualitative data on the effect of flooding, thunderstorms, tornadoes, wildfires, winter storms and drought on coastal public access	Coastal lands above the ordinary high watermark – all types listed in definition of public access
National security	Low	No known anecdotal or qualitative data on national security impacts on coastal public access at Michigan's ten international border crossings or other facilities	Coastal lands above the ordinary high watermark – all types listed in definition of public access
Encroachment on public land	Low	Unknown at this time	Coastal lands above the ordinary high watermark – all types listed in definition of public access

**2. Are there new issues emerging in your state that are starting to affect public access or seem to have the potential to do so in the future?**

2005 Michigan Supreme Court - Glass v. Goeckel (473 Mich. 667)

On July 29, 2005, the Michigan Supreme Court ruled that the general public has the right to walk along the Great Lakes shore on land below the ordinary high watermark. The Court based its decision on the language of the public trust doctrine and found that walking along the lakeshore is a traditionally protected public right. The decision included a determination of the ordinary high watermark based on the presence of persistent upland vegetation, instead of a numeric elevation.

Invasive Species

During the past several years, low water levels in Lakes Michigan and Huron exposed substantial expanses of bottomlands. Wetland vegetation quickly established on the exposed soil, and in some areas along the coast bands of vegetation dozens to hundreds of feet wide now lie between the ordinary high water mark and the water's edge. Much of this vegetation is the invasive form of the common reed, *Phragmites australis*, which forms extensive stands 8 to 12 feet tall. The dense stands of *Phragmites* have poor wildlife habitat value, and block physical and visual access to the water.

A potentially emerging threat to the Great Lakes ecosystem are Asian carp, the popular term for two species of large, non-native fish that have caused significant ecological and recreational impacts in U.S. waterways where they have become established. Asian carp have been expanding throughout the Mississippi River Basin since the 1970s and 1980s, after escaping from catfish farms and aquaculture research facilities in southern states. Severe flooding in the Midwest during the 1990s might have aided the carps' spread. They have since been detected within miles of the Chicago River diversion and associated canals that connect the Mississippi River watershed to Lake Michigan. The Asian carp can injure boaters with their acrobatic leaps from the water, and boaters and jet-skiers have experienced concussions, cuts, bruises, and broken bones after being hit by the leaping fish, which can weigh up to 100 pounds.

Shoreline Armoring

Seawalls, revetments, breakwaters, groins, jetties, and other structures meant to stabilize shorelines, protect property from flooding and erosion, or to accommodate commercial navigation or industry line the coast in many developed areas of Michigan's Great Lakes, Lake St. Clair, and connecting channels. Historically, these structures were made of wood or metal pilings, rock, or

reinforced concrete. A growing body of research shows that such "hard" engineered structures commonly exacerbate erosion in their vicinity, and are associated with other negative effects, including public access impacts. For example, hard-surfaced seawalls resist impact from wave action, but the surfaces also deflect wave energy in ways that cause the adjacent beach to erode and narrow. Groins and jetties designed to protect the shore from erosion or to keep sediment from building up in channels also trap sand on the updrift side and leave beaches on the downdrift side of littoral systems starved and prone to narrowing and erosion. In addition, hard engineered steep walls may prevent or discourage people's movement between the beach and upland areas, and have negligible habitat value for fish and wildlife compared to natural shorelines.

While hard-engineered shoreline armoring continues to be installed or maintained around the Great Lakes, rising awareness of their damaging effects is leading to a greater interest in "soft" engineering to protect the shore. Soft engineering is the use of ecological principles and practices to reduce erosion and achieve the stabilization and safety of shorelines, while enhancing habitat, improving aesthetics, and saving money. Soft engineering is achieved by using vegetation and other materials to soften the land-water interface. It has significant potential to improve public access along the Great Lakes shore.

#### Conflicting Objectives

Conflicts with coastal resource management objectives also complicate efforts to provide adequate and appropriate access. Public demand may exceed the limits or capacity of some resources to sustain impact. For example, some coastal upland, wetland, and aquatic habitats are very sensitive to even modest levels of disturbance. Consequently, the DNRE Recreation Division has adopted a new approach to developing state park management plans. The approach is based on a National Park Service model that involves dividing the park into management zones appropriate for certain levels and types of recreational use, corresponding to the sensitivity of habitats or resources within the zones.

A perennial issue is adjacent landowner opposition to the establishment of public boat launches and other access, because of real or perceived concerns over traffic congestion, noise, litter, and vandalism. Many shoreline property owners also have a strong and often exclusive sense of ownership toward the beaches and waters lakeward of their property lines, and may view legally-sanctioned beach walking as trespass.

#### Great Lakes Water Levels

Fluctuating Great Lakes levels may affect the quality of access provided at public sites in various ways. As mentioned previously, the low water levels prevalent for the past several years throughout the Great Lakes have exposed bottomlands, most prominently where the lands below the ordinary high watermark have very gradual slopes, such as Saginaw Bay. The native, emergent wetland vegetation that now covers portions of the exposed bottomlands expands habitat for some forms of wildlife, which may improve hunting opportunities. On the other hand, low water and dense, invasive, non-native vegetation make it difficult or impractical to maintain many boating access sites, and some public boat launches have been idled until higher water levels return.

#### Algal Growth

Excessive algal growth, detritus, or "muck" frequently washes up and accumulates on the shoreline in parts of Michigan's Great Lakes, such as Saginaw Bay, with a perceived increase in duration and spatial distribution compared to past years. The subsequent degradation of the aesthetic value of the beaches often greatly concerns the public, especially adjacent property owners. In addition, these algal mats have the potential to retain and/or promote the growth of pathogens. In preliminary testing, the presence of a potential fecal signature in the material suggests a cause for concern and the need for appropriate management strategies.

Universal Access

The DNRE received a \$3 million grant from the W.K. Kellogg Foundation for a universal access initiative titled “*Access to Recreation*”. It focuses on providing universal access to public park and recreation opportunities across Michigan. Funds are allocated through the DNRE Grants Management program to both state and local public entities. This funding initiative is intended to increase use at coastal public access sites by people of all abilities.

3. **(CM) Use the table below to report the percent of the public that feels they have adequate access to the coast for recreation purposes, including the following. If data is not available to report for this contextual measure, please describe below actions the CMP is taking to develop a mechanism to collect the requested data.**

Contextual measure	Survey data
Number of people that responded to a survey on recreational access	N/A
Number of people surveyed that responded that public access to the coast for recreation is adequate or better	N/A
What type of survey was conducted (i.e. phone, mail, personal interview, etc.)?	N/A
What was the geographic coverage of the survey?	N/A
In what year was the survey conducted?	N/A

The MCMP has no formal process to assess demand for public access along the Great Lakes shoreline. A survey mechanism for measuring the current level of public access and corresponding public demand will be proposed under a Section 309 strategy. DNRE Recreation Division, Michigan Sea Grant, and others have expressed interest in partnering with the MCMP to develop and conduct the survey.

4. **Briefly characterize the demand for coastal public access within the coastal zone, and the process for periodically assessing public demand.**

To assist in preparing the State Comprehensive Outdoor Recreation Plan (SCORP) for the 2008-2012 timeframe, the DNRE conducted a mail survey of 2,001 randomly selected registered Michigan voters in 2007 to obtain information on their outdoor recreation activities and preferences. More than half (51%) of the respondents cited outdoor recreation as very important to their households, while 35% reported it moderately important and the remaining 14% reported it as slightly important or unimportant. More than half the responding households reported that one or more members walked outdoors, relaxed outdoors, picnicked, bicycled, took sightseeing trips, drove for pleasure, swam outdoors, or fished in the past year. The survey also showed strong support for conservation of natural resources. In particular, the survey results demonstrated that Michigan citizens want continued public acquisition of lands for outdoor recreation with an emphasis on conservation, water access and trails.

5. **Please use the table below to provide data on public access availability. If information is not available, provide a qualitative description based on the best available information. If data is not available to report on the contextual measures, please also describe actions the CMP is taking to develop a mechanism to collect the requested data.**

Types of public access	Current number(s)	Changes since last assessment (+/-)	Cite data source
<b>(CM)</b> Number of acres in the coastal zone that are available for public (report both the total number of acres in the coastal zone and acres available for public access)	1,291,615 total acres in coastal zone  499,167 acres (38.65%) available for public access	Not reported in last Assessment	Conservation and Recreation Lands (CARL) GIS database - <a href="http://www.ducks.org/conservation/glaro/carl-gis-layer">http://www.ducks.org/conservation/glaro/carl-gis-layer</a>
<b>(CM)</b> Miles of shoreline available for public access (report both the total miles of shoreline and miles available for public access)	Approximately 3,288 total miles of shoreline. Technically, most of the exposed bottomlands along the shoreline are available for public use, due to the Supreme Court ruling cited.	Not reported in last Assessment	Michigan Supreme Court in Glass v Goeckel (473 Mich. 667)
Number of State/County/Local parks and number of acres	Approximately 47 coastal state parks, approx. 120 county parks, numerous local parks	- One additional state park - Increase in county parks	<a href="http://www.michigandnr.com/parksandtrails/parkmap.aspx">http://www.michigandnr.com/parksandtrails/parkmap.aspx</a> for State Parks  County parks data obtained from "Mapbook of Michigan Counties"
Number of public beach/shoreline access sites	600 public beach/shoreline access sites totaling 542 public beach miles	Reported as unknown in last Assessment	<a href="http://www.nrdc.org/water/oceans/ttw/titinx.asp">http://www.nrdc.org/water/oceans/ttw/titinx.asp</a>
Number of recreational boat (power or non-power) access sites	90 State Harbors and Marinas; 96 State Boat Access Sites; At least 58 canoe/kayak access sites	Decrease - data source used in previous Assessment included the entire coastal county rather than just the coastal boundary	<a href="http://www.mcgi.state.mi.us/MRBIS/harboresearch.asp">http://www.mcgi.state.mi.us/MRBIS/harboresearch.asp</a> for Harbors and Marinas; For Boat Access Sites; <a href="http://www.mcgi.state.mi.us/MRBIS/">http://www.mcgi.state.mi.us/MRBIS/</a>  For canoeing and kayaking <a href="http://www.michigan.org/Things-to-Do/Paddle-Sports/Canoeing/Default.aspx?city=G42&amp;sort=asc&amp;n=100">http://www.michigan.org/Things-to-Do/Paddle-Sports/Canoeing/Default.aspx?city=G42&amp;sort=asc&amp;n=100</a>
Number of designated scenic vistas or overlook points	See paragraph at end of table		
Number of Underwater Preserves and/or Marine Sanctuary	12 Underwater Preserves encompassing approximately 2,700 square miles of Great Lakes bottomland; 1 National Marine Sanctuary	One additional State Underwater Preserve	Michigan Underwater Preserve System - <a href="http://www.michigan.gov/deq/0,1607,7-135-3313_3677_3701-14531--,00.html">http://www.michigan.gov/deq/0,1607,7-135-3313_3677_3701-14531--,00.html</a>
Number of State or	See paragraph at	Unknown	

Types of public access	Current number(s)	Changes since last assessment (+/-)	Cite data source
locally designated perpendicular rights-of-way (i.e. street ends, easements)	end of table		
Number of fishing access points (i.e. piers, jetties)	Approximately 130 sites	Increase	<a href="http://www.gift.org/grants/funded/index.cfm">http://www.gift.org/grants/funded/index.cfm</a> <a href="http://www.gift.org/angleraccessguide/locations.cfm">http://www.gift.org/angleraccessguide/locations.cfm</a> DNRE Fisheries Division staff
Number and miles of coastal trails/boardwalks	See paragraph at end of table	Unknown	<a href="http://www.michigandnr.com/parksandtrails/Default.aspx?SearchType=trails">http://www.michigandnr.com/parksandtrails/Default.aspx?SearchType=trails</a> (partial data)
Number of dune walkovers	See paragraph at end of table	Unknown	
Percent of access sites that are ADA compliant	19% of coastal state parks, unknown for sites under other ownership	Data for last Assessment was obtained from a now-obsolete publication; no known single source of data exists for coastal ADA access sites	DNRE Recreation Division staff
Percent and total miles of public beaches with water quality monitoring and public closure notice programs	2006 – 35% 2007 – 35% 2008 – 35% 2009 – 37% - Total miles unknown at this time. - No data available at this time for 2010.	- Increase in overall number of coastal public beaches monitored; however, the percentage of total beach miles monitored is low.  - Total miles was not required previously	DNRE Beach Monitoring Annual Reports - 2006-2009
Average number of beach mile days closed due to water quality concerns	2006–52 closures, 148 days 2007–46 closures, 443 days 2008–52 closures, 327 days 2009–62 closures, 661 days - No data available at this time for 2010.	Increase in beach days closed	DNRE Beach Monitoring Annual Reports - 2006-2009

There is no existing, comprehensive source of data addressing the number of boardwalks, dune walkovers, or rights-of-way that are legal access sites, local parks, scenic vistas and overlooks, or other public access sites available on lands owned or controlled by the local governments within Michigan’s coastal boundary. Several entities have expressed interest in partnering with the MCMP in developing a coastal public access guide.

**Management Characterization**

*Purpose: To determine the effectiveness of management efforts to address those problems described in the above section for the enhancement objective.*

- 1. For each of the management categories below, indicate if the approach is employed by the state or territory and if significant changes have occurred since the last assessment:**

<b>Management categories</b>	<b>Employed by state/territory (Y or N)</b>	<b>Significant changes since last assessment (Y or N)</b>
Statutory, regulatory, or legal system changes that affect public access	Yes	Yes
Acquisition programs or policies	Yes	Yes – CELCP
Comprehensive access management planning (including GIS data or database)	Yes	Yes - CARL GIS database
Operation and maintenance programs	Yes	No
Alternative funding sources or techniques	Yes	Yes – Recreation Passport
Beach water quality monitoring and pollution source identification and remediation	Yes	No
Public access within waterfront redevelopment programs	Yes	No
Public access education and outreach	Yes	No

- 2. For management categories with significant changes since the last assessment provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference rather than duplicate the information.**
- a) Characterize significant changes since the last assessment;**
  - b) Specify if it was a 309 or other CZM-driven change (specify funding source) or if it was driven by non-CZM efforts; and**
  - c) Characterize the outcomes and effectiveness of the changes.**

Statutory, Regulatory, or Legal System Changes that Affect Public Access

Refer to summary of the Michigan Supreme Court case – Glass v. Goeckel (473 Mich. 667) under question #2. This was not supported by CZM funding.

In 2009, the DNRE and stakeholders in the lighthouse restoration community agreed on language for a use agreement to authorize the continuing occupation of Great Lakes public trust bottomlands by historic, offshore lighthouses. The agreement is required to receive a deed to the lighthouse from the National Park Service (NPS), through the disposal process provided for in the National Historic Lighthouse Preservation Act of 2000. The grant of the subject use agreement finalizes issuance of the deed. The NPS deed and associated covenant include requirements for continued lighthouse preservation and maintenance. This effort was not supported with Section 309 funds, however the DNRE staff involved in this process was partially supported with Section 306 funding.

Acquisition Programs or Policies

The Coastal and Estuarine Land Conservation Program (CELCP) is a new federal program for acquisition of coastal lands. In Michigan CELCP funds are used to acquire and protect in perpetuity coastal habitats with exceptional ecological values. Low impact public recreation such as hunting, hiking, and nature observation is allowed on lands acquired with CELCP funds. Development of Michigan's draft CELCP Plan was supported by Section 306 CZM funding.

Comprehensive Access Management Planning (Including GIS Data or Database)

Since the last Assessment, Ducks Unlimited in partnership with The Nature Conservancy developed a GIS database of Michigan's Conservation and Recreation Lands (CARL), including lands open to the public. This database has current and future value as a resource for informing local, regional, and state conservation, recreation, and land use planning efforts. Development of the coastal portion of the CARL database was supported with Section 309 CZM funding.

Alternative Funding Sources or Techniques

The Recreation Passport is a new initiative which grew out of a proposal developed by the Citizens Committee for Michigan State Parks. It replaces the traditional state park and boating Motor Vehicle Permit system currently in place at state parks, recreation areas, and boat launches. Starting October 1, 2010, Michigan residents renewing license plates through the Secretary of State can purchase a Recreation Passport tag for an additional \$10.00. The passport will be required for entry to state parks, recreation areas, and boating access sites, and must be renewed annually. It is expected to provide a stable funding source for Michigan's state-owned outdoor recreation facilities, allowing them to be maintained and operated for the enjoyment of current and future generations. Development of the Recreation Passport was not supported with CZM funding.

**3. Indicate if your state or territory has a printed public access guide or website. How current is the publication and/or how frequently is the website updated? Please list any regional or statewide public access guides or websites.**

Michigan has numerous guides and websites for public access statewide, developed by a variety of state and local agencies and organizations; however, there are no known, comprehensive guides or websites that focus specifically on coastal public access. A few examples of Michigan public access websites are listed below:

- <http://www.michigan.org/> - Michigan's Official Travel and Tourism Site;
- <http://www.michigan.gov/dnre> - Michigan Department of Natural Resources and Environment;
- <http://greatsandbayproductions.com/migreatbay/index.html> - Website currently being developed for Iosco, Arenac, Bay, Saginaw, Tuscola, Huron counties;
- [http://www.wm-alliance.org/parks\\_recreation.php?initiative\\_id=2](http://www.wm-alliance.org/parks_recreation.php?initiative_id=2) - West Michigan Parks and Recreation Inventory

**Priority Needs and Information Gaps**

Using the table below, identify major gaps or needs (regulatory, policy, data, training, capacity, communication and outreach) in addressing each of the enhancement area objectives that could be addressed through the CMP and partners (not limited to those items to be addressed through the Section 309 Strategy). If necessary, additional narrative can be provided below to describe major gaps or needs.

Gap or need description	Type of gap or need (regulatory, policy, data, training, capacity, communication & outreach)	Level of priority (H, M, L)
Inventory of coastal public access and assessment of public demand	Data, communication and outreach	High

Gap or need description	Type of gap or need (regulatory, policy, data, training, capacity, communication & outreach)	Level of priority (H, M, L)
Comprehensive coastal public access guide and/or website	Communication and outreach	High
Public access prioritization and planning for adapting to fluctuating water levels and changing coastal environments	Data, policy, communication and outreach	Medium

The development of a comprehensive coastal access inventory and guide, and a process to periodically assess public demand specifically for coastal access would improve MCMP efforts to identify gaps in public access and inform decisions on allocating CZM funding to support local or regional public access project proposals. The inventory would be GIS-based to facilitate decision-making, given that Michigan has 3,288 miles of coastline and more than 1.2 million acres of land in the coastal zone. Public survey data and other data on the types of shoreline changes triggered by fluctuating water levels, and their impacts on public access by region, would help identify the types of public access projects most resilient to these fluctuations and changes. This data would inform MCMP strategic decisions on allocating limited CZM funding to ensure that the public access projects funded would have substantial, long-term use with minimal maintenance needs.

**Enhancement Area Prioritization**

**1. What level of priority is the enhancement area for the coastal zone (including, but not limited to, CZMA funding)?**

Medium

**Briefly explain the level of priority given for this enhancement area.**

Public access projects represent a substantial proportion of the applications received in response to the annual request for proposals for CZM Section 306/306A-funded pass-through grant projects. This indicates that public access is a high priority for Michigan’s coastal communities. The MCMP is interested in strategically using limited CZM public access funding to maximize its impact.

**2. Will the CMP develop one or more strategies for this enhancement area?**

Yes

**Briefly explain why a strategy will or will not be developed for this enhancement area.**

The MCMP will propose a strategy to work with partner agencies and organizations to develop a coast-wide public access inventory, a public involvement process for assessing coastal public access needs on a regional basis, and identify the types of projects that would represent the most strategic investments of CZM public access funding.

## Marine Debris

### Section 309 Enhancement Objective

Reducing marine debris entering the Nation's coastal and ocean environment by managing uses and activities that contribute to the entry of such debris

### Resource Characterization

*Purpose: To determine the extent to which problems and opportunities exist with regard to the enhancement objective.*

1. In the table below, characterize the significance of marine debris and its impact on the coastal zone.

Source of marine debris	Extent of source (H, M, L)	Type of impact (aesthetic, resource damage, user conflicts, other)	Significant changes since last assessment (Y or N)
Land Based – Beach/Shore Litter	High	Aesthetic, user conflict, danger to wildlife (ingestion of and entanglement in debris items), public health hazard (dangerous debris items, such as broken glass)	No
Land Based – Dumping	Low	Aesthetic, user conflict, danger to wildlife	No
Land Based – Storm Drains and Runoff	High	Aesthetic, user conflict, danger to wildlife (ingestion of and entanglement in debris items), public health hazard (dangerous debris items, such as used syringes), water quality impacts	No
Land Based – Fishing Related (e.g. fishing line, gear)	Low	Aesthetic, danger to wildlife (ingestion of and entanglement in debris items)	No
Great Lakes Based – Fishing (Derelict Fishing Gear)	Low	Aesthetic, danger to wildlife (potential entanglement in fishing line, nets, etc.)	No
Great Lakes Based – Derelict Vessels	Low	Danger to navigation	No
Great Lakes Based – Vessel Based (cruise ship, cargo ship, general vessel)	Low	Aesthetic, danger to wildlife, aquatic habitat impacts, water quality impacts	Yes
Hurricane/Storm	Low	Unknown	No
Other (please specify) Trash wash-up in west Michigan 2008 & 2010. U.S. Coast Guard is investigating source.	High	Aesthetic, user conflict, danger to wildlife, public health hazard (dangerous debris items, such as syringes, medical waste, etc.)	Yes

2. If information is not available to fill in the above table, provide a qualitative description of information requested, based on the best available information.

In most cases, it is not possible to conclusively determine whether the debris on Michigan's beaches is from people using the beach, debris discharged from storm drains or in stormwater runoff, or from recreational or commercial vessels. In 2009, 48% of all debris removed from shorelines and cataloged during the Michigan Coastal Clean-up was from smoking-related activities, 43% was food-related, 1% was medical/hygiene items, 2% balloons, and 6% from other sources.

Top ten items found during the 2009 Michigan Coastal Clean-up:

Cigarette filters	70,784
Food wrappers & containers	24,422
Caps and lids	16,108
Straws and stirrers	8,228
Cigar tips	7,066
Plastic bags	6,400
Cups, plates, eating utensils	5,108
Balloons	4,159
Plastic bottles	3,219
Paper bags	2,033

**3. Provide a brief description of any significant changes in the above sources or emerging issues.**

In 2008, the United States Coast Guard (USCG) proposed a new final rule under the federal Act to Prevent Pollution from Ships (33 U.S.C. Sections 1901-1912), which would authorize commercial bulk freighters in the Great Lakes to dispose of dry cargo residue overboard. Dry cargo residue is waste that accumulates on the decks of bulk freighters during the loading and unloading of bulk dry cargoes such as coal, cement, iron ore, salt, and limestone. The final rule would have replaced an interim rule currently in effect that limits the areas where ship crews may sweep dry cargo residue overboard. An estimated 250 tons per year of dry cargo residue is discharged into the Great Lakes under the interim rule. The proposed final rule was determined to be inconsistent with Part 95, Watercraft Pollution Control, of the NREPA, a Michigan Coastal Management Program enforceable policy. Due to a number of concerns raised by Great Lakes states the USCG did not proceed with final rulemaking at that time. However, in the summer of 2010 the agency indicated its renewed interest in developing a final rule.

A potential emerging issue in Michigan relates to the trash wash-ups that occurred in 2008 and 2010 along the eastern Lake Michigan shoreline which included medical waste. However, it has been noted that the trash that washed up both years was preceded by heavy rains and flooding in Milwaukee and Chicago that resulted in large sewage overflows. The USCG is still investigating the source of the trash.

**4. Do you use beach clean-up data? If so, how do you use this information?**

The Michigan Coastal Management Program provides small grants to the primary participating nonprofit organizations that coordinate and implement the Michigan Coastal Clean-up, which is typically scheduled to coincide with the International Coastal Clean-up. The organizations submit a summary of the beach clean-up data to the MCMP, and provide the full suite of data to The Ocean Conservancy, which uses the information to develop national and international strategies for reducing marine debris. In Michigan, beach clean-up data is used to educate people about the problems caused by marine debris. Data has also been shared with the USCG for their investigation into the beach trash wash-ups in 2008 and 2010. In 2009, a volunteer with the Alliance for the Great Lakes found a commercial ice machine on the beach in Sleeping Bear Dunes. A serial number was found and turned into the Coast Guard who located the ship that lost the ice machine. There is also interest in the clean-up data from researchers examining links between marine debris and beach health issues, for example, the possible link between food waste on public beaches and substantial concentrations of gulls and other scavengers. Gulls are suspected to contribute to bacterial contamination problems that trigger beach closings.

**Management characterization**

*Purpose: To determine the effectiveness of management efforts to address those problems described in the above section for the enhancement objective.*

**For each of the management categories below, indicate if the approach is employed by the state or territory and if significant changes have occurred since the last assessment:**

<b>Management categories</b>	<b>Employed by state/territory (Y or N)</b>	<b>Employed by local governments (Y, N, Uncertain)</b>	<b>Significant changes since last assessment (Y or N)</b>
Recycling requirements	No	Yes	No
Littering reduction programs	Yes	Uncertain	No
Wasteful packaging reduction programs	No	No	No
Fishing gear management programs	No	Uncertain	No
Marine debris concerns in harbor, port, marine, & waste management plans	Yes	No	Yes
Post-storm related debris programs or policies	No	No	No
Derelict vessel removal programs or policies	No	No	No
Research and monitoring	CMP funded Adopt-A-Beach programs	Uncertain	No
Marine debris education & outreach	Same as above	Uncertain	No
Other (boat shrink wrap recycling program)	No	Yes	Yes – this program was launched by Michigan Sea Grant in 2007

**Priority Needs and Information Gaps**

Using the table below, identify major gaps or needs (regulatory, policy, data, training, capacity, communication and outreach) in addressing each of the enhancement area objectives that could be addressed through the CMP and partners (not limited to those items to be addressed through the Section 309 Strategy). If necessary, additional narrative can be provided below to describe major gaps or needs.

<b>Gap or need description</b>	<b>Type of gap or need</b> (regulatory, policy, data, training, capacity, communication & outreach)	<b>Level of priority</b> (H, M, L)
Research on hypothetical link between food waste on beaches, gull populations, and water quality impacts	Data	Low

**Enhancement Area Prioritization**

**1. What level of priority is the enhancement area for the coastal zone (including, but not limited to, CZMA funding)?**

Low

**Briefly explain the level of priority given for this enhancement area.**

With uncommon exceptions that are typically related to violation of existing laws, marine debris impacts on Michigan’s coast are minimal.

**2. Will the CMP develop one or more strategies for this enhancement area?**

No

**Briefly explain why a strategy will or will not be developed for this enhancement area.**

Many needs under the Marine Debris enhancement area are adequately addressed through existing funding, laws, educational services, and voluntary recycling/pollution reduction programs; therefore Marine Debris is a low priority for Michigan’s Section 309 Enhancement Grants Program.

## CUMULATIVE AND SECONDARY IMPACTS

### Section 309 Enhancement Objective

Development and adoption of procedures to assess, consider, and control cumulative and secondary impacts of coastal growth and development, including the collective effect of various individual uses or activities on coastal resources, such as coastal wetlands and fishery resources.

### Resource Characterization

*Purpose: To determine the extent to which problems and opportunities exist with regard to the enhancement objective.*

1. **Identify areas in the coastal zone where rapid growth or changes in land use require improved management of cumulative and secondary impacts (CSI) since the last assessment. Provide the following information for each area:**

Geographic area	Type of growth or change in land use	Rate of growth or change in land use (% change, average acres converted, H, M, L)	Types of CSI
Mainland areas of coastal counties	Wind energy development	Anticipated rate of growth through 2016 - High	Habitat fragmentation; direct mortality to bats and birds
Offshore waters of the Great Lakes	Wind energy development	Anticipated rate of growth through 2016 - Low	Direct mortality to bats and birds
Great Lakes islands	Wind energy development	Anticipated rate of growth through 2016 - Medium	Fragmentation of important migration stop-over habitat for bats and birds; direct mortality to bats and birds

Population growth, demographic shifts, and attendant residential development were forecast as important agents of cumulative and secondary impacts on coastal habitats and other resources in the 2006 Assessment. However, decreased availability of mortgages, declining employment, economic uncertainty, and shrinking population have instead contributed to the current trend of slow or negative coastal residential growth in Michigan. The state-wide rate of growth in the number of housing units began to deflate in 2004, a year before the housing unit growth rate began to decline nationally. From 2007 through 2009, Michigan's 42 coastal counties saw a combined net increase of 2,352 housing units, or 0.10%. The highest rate of growth over the three-year period was 1.8% (304 units gained) in Charlevoix County. The highest rate of decrease was -0.63% (102 units lost) in Oceana County. The greatest numerical gain was 1,209 units (1.2%) in Ottawa County. The greatest numerical loss was 2,881 units (-0.34%) in Wayne County.

In 2010, growth of the wind energy industry is anticipated to emerge as the prominent driver of coastal land use change in the next five years. Department of Energy, Labor and Economic Growth (DELEG) data indicate that 144 megawatts (MW) of wind power had been installed in Michigan as of December, 2009. At the time of the 2006 Assessment, less than 2.8 MW of wind power had been installed in the state. The DELEG Energy Systems Bureau forecasts that Michigan will have between 2,000 MW and 2,500 MW of installed wind power by 2015, supplied by an estimated 1,200 wind turbines. Since the recommended spacing between wind turbines is approximately 1,500 feet, commercial wind farms occupy several hundred to thousands of acres. Coastal counties are expected to host a substantial portion of these facilities because of their relatively abundant and reliable wind resources.

Interest in a Great Lakes offshore wind energy industry is strong in Michigan, though offshore wind turbines have yet to be installed. On September 1, 2009, an advisory council appointed by

Governor Jennifer Granholm released its report outlining recommendations for siting and regulating offshore wind farms in Michigan's 38,000 square miles of Great Lakes waters. Preliminary scoping indicates that more than 40% of this area may eventually prove suitable for wind energy facility development. However, there is a need for new state laws and administrative rules to allow construction and operation of wind farms on state-owned bottomlands.

**2. Identify sensitive resources in the coastal zone (e.g., wetlands, waterbodies, fish and wildlife habitats, critical habitat for threatened and endangered species) that require a greater degree of protection from the cumulative or secondary impacts of growth and development. If necessary, additional narrative can be provided below to describe threats.**

Sensitive resources	CSI threats description	Level of threat (H, M, L)
Birds and bats	Direct mortality by wind turbine blade strikes	High
Onshore wildlife habitat	Fragmentation and reduction in area through wind farm development	High
Offshore waterbird and waterfowl habitat	Loss of foraging habitat necessary for migration and overwintering	Medium

Research conducted at wind farms in the United States has shown that resident and migrating raptors and other birds are killed when they strike or are struck by wind turbine blades. Mortality may be relatively high where prominent landscape features such as high ridges direct migrating birds through wind farms. Many birds that typically migrate at night are attracted to artificial lights, including lights affixed to wind turbine towers for aviation safety. This suggests that wind turbines may present a particular hazard to certain bird species such as Neotropical migrant passerines, which are nocturnal migrants. Other research has shown that bats are killed by rotating wind turbine blades. A lethal mechanism other than direct strikes may cause at least some bat mortality; specifically, experiencing the sudden drop in air pressure within the sweep of the rotating blades may fatally damage the bat's lungs and vascular system. This damage has been termed "barotrauma."

All birds and bat species breeding in or migrating through Michigan's coastal zone, including Great Lakes offshore waters and islands, may be susceptible to direct mortality through wind turbine impacts. The potential for bird impacts would be influenced by the proximity of operating wind turbines to breeding locations, migration routes, and stop-over habitat. The potential for bat impacts would be influenced by the proximity of operating wind turbines to occupied foraging habitat and migration corridors.

Potential bird and bat impacts include direct mortality of threatened and endangered species. Twenty-four bird species are listed pursuant to the provisions of Part 365, Endangered Species Protection, of the NREPA. Of this number, nine species are designated as endangered, 14 as threatened, and one as extirpated from Michigan. Most of the 23 extant species are migratory. Two of these migratory state-listed species, the piping plover and Kirtland's warbler, are listed as endangered under the federal Endangered Species Act (P.L. 93-205). Two bat species are listed pursuant to Part 365 of the NREPA, with one species each designated as endangered and threatened. The state-listed endangered Indiana bat is also federally endangered.

Construction and operation of wind farms and supporting infrastructure such as roads and transmission lines has the potential to destroy, degrade, and fragment wildlife habitat, including habitat in the coastal zone important for birds and bats. Habitat on the mainland and Great Lakes

islands is used by migrating and breeding birds, while certain areas in the offshore waters of the Great Lakes and connecting channels are important rafting locations for migrating and wintering waterbirds and waterfowl. The U.S. Fish and Wildlife Service (USFWS) has designated critical habitat for two federally-endangered species, the piping plover and Hine’s emerald dragonfly, in the coastal zone of 15 Michigan counties.

**Management Characterization**

*Purpose: To determine the effectiveness of management efforts to address those problems described in the above section for the enhancement objective.*

**For each of the management categories below, indicate if the approach is employed by the state or territory and if significant changes have occurred since the last assessment:**

<b>Management Categories</b>	<b>Employed by state/territory (Y or N)</b>	<b>Significant changes since last assessment (Y or N)</b>
Regulations	No	No
Policies	No	No
Guidance	Yes	No
Management plans	No	No
Research, assessment, monitoring	Yes	Yes
Mapping	Yes	Yes
Education and Outreach	No	No

**Regulations and Policies**

Siting of onshore, commercial wind energy facilities on private lands in Michigan is subject to local zoning; it is not subject to state or federal control. Yet, assessment of potential wildlife impacts requires a sophisticated level of analysis beyond the capacity and resources of most local government units. Michigan’s Great Lakes bottomlands are owned by the State and future offshore wind energy projects would be subject to State review, approval, and control. However, there is consensus that the current State statutes and rules addressing developments on bottomlands are insufficient to manage offshore wind energy development.

**Guidance**

Wildlife mortality caused by wind energy facilities may be subject to the provisions of Part 365 of the NREPA and federal statutes including the Migratory Bird Treaty Act (16 U.S.C. 703-712), Endangered Species Act, and Bald and Golden Eagle Protection Act (16 U.S.C. 668a-d). The DNRE Wildlife Division encourages wind energy developers to participate in informal, non-binding consultations that involve staff from the Lansing Office, local field biologists, and staff from the USFWS - East Lansing Field Office early in the wind energy facility development process. The consultations provide developers the opportunity to learn of protected species issues relevant to the area of the proposed development, and discuss agency recommendations. For example, Wildlife Division staff recommends that developers obtain a free Environmental Review of the proposed project site to identify known occurrences of threatened and endangered species in the vicinity. Environmental Reviews are based on protected species location information in the Biotics database, maintained by the Michigan Natural Features Inventory. A generic recommendation from USFWS Region III, which includes Michigan, is to avoid siting wind farms within three miles of the Great Lakes shoreline, and within five miles of bald eagle nests.

Management Plans

No State management plans for onshore or offshore wind energy development have been developed. Two county-level wind energy land use plans have been developed with Section 306 CZM funding, for Manistee and Alpena Counties.

Research, Assessment, and Mapping

The Environmental Protection Agency, Great Lakes National Program Office funded the 2010 report, *Islands of Life: A Biodiversity and Conservation Atlas of the Great Lakes Islands*, prepared by the Ontario Ministry of Natural Resources, Nature Conservancy of Canada, and The Nature Conservancy, Great Lakes Program. The report is based on a comprehensive assessment and ecologically-based analysis of the biodiversity values, threats, and conservation needs of Great Lakes islands in U.S. and Canadian waters. Notably, the report identifies islands that harbor nesting colonies of terns, herons, and other waterbirds.

The MCMP has used Section 309 CZM funding for limited migratory bird and bat research relevant to wind farm siting and operation for certain areas of the coastal zone, specifically, Saginaw Bay and northern Lake Michigan. The MCMP has also provided Section 309 funding to the Institute for Fisheries Research, a collaboration between the University of Michigan and DNRE Fisheries Division, to develop a GIS-based decision support tool for informing decisions on the siting of offshore wind farms and other developments on Michigan’s Great Lakes bottomlands. However, GIS data on migratory bird and bat use of offshore areas are lacking, and is recognized as a critical need to improve the effectiveness of the decision support tool.

Education and Outreach

The State has not developed a program or materials to educate the public about potential Michigan-specific wildlife impacts of onshore or offshore wind energy development.

**Priority Needs and Information Gaps**

Using the table below, identify major gaps or needs (regulatory, policy, data, training, capacity, communication and outreach) in addressing each of the enhancement area objectives that could be addressed through the CMP and partners (not limited to those items to be addressed through the Section 309 Strategy). If necessary, additional narrative can be provided below to describe major gaps or needs.

<b>Gap or need description</b>	<b>Type of gap or need</b> (regulatory, policy, data, training, capacity, communication & outreach)	<b>Level of Priority</b> (H, M, L)
State statutes and administrative rules addressing offshore wind energy developments	Regulatory, policy	High
Research and GIS mapping of coastal and offshore bird and bat migration routes and stop-over habitat	Data	High
Updated occurrence information on threatened and endangered species within the coastal zone, to inform the Environmental Review process	Data	Medium
County-level guidance for local governments and wind energy developers on siting onshore wind farms to avoid or minimize wildlife impacts	Training, communication and outreach	High
Monitoring of offshore wind farm wildlife impacts	Data	Low

Gap or need description	Type of gap or need (regulatory, policy, data, training, capacity, communication & outreach)	Level of Priority (H, M, L)
Public outreach and education on Michigan-specific wildlife issues relevant to coastal and offshore wind farm siting and operation	Communication and outreach	Medium

In the next few years Michigan will begin a comprehensive effort to manage the cumulative and secondary impacts of coastal and offshore wind energy development. This includes development of a regulatory program for offshore wind energy, technical assistance for local governments and the wind energy industry on siting wind farms to avoid or minimize wildlife impacts, and public education on Michigan-specific wildlife issues related to wind farm development and operation. Wildlife research and survey data will provide a critical part of the foundation for siting and regulatory decisions.

**Enhancement Area Prioritization**

**1. What level of priority is the enhancement area for the coastal zone (including, but not limited to, CZMA funding)?**

High

**Briefly explain the level of priority given for this enhancement area.**

The rapid growth of the onshore wind energy industry and intense interest in offshore wind energy development in Michigan has put State and local government in the position of promoting wind energy for its economic and environmental benefits while assuming responsibility for protecting coastal resources, including public trust resources, from associated impacts. Presently, the information base on coastal and offshore resources is insufficiently developed to allow regulatory agencies to make informed decisions on balancing promotion of the industry with resource protection.

**2. Will the CMP develop one or more strategies for this enhancement area?**

Yes

**Briefly explain why a strategy will or will not be developed for this enhancement area.**

Strategies will be developed to build the needed information base and State and local government capacity for managing wind energy development to accommodate coastal resource protection.

## ***Special Area Management Planning***

### **Section 309 Enhancement Objective**

Preparing and implementing special area management plans for important coastal areas

The Coastal Zone Management Act (CZMA) defines a Special Area Management Plan (SAMP) as “a comprehensive plan providing for natural resource protection and reasonable coastal-dependent economic growth containing a detailed and comprehensive statement of policies; standards and criteria to guide public and private uses of lands and waters; and mechanisms for timely implementation in specific geographic areas within the coastal zone. In addition, SAMPs provide for increased specificity in protecting natural resources, reasonable coastal-dependent economic growth, improved protection of life and property in hazardous areas, including those areas likely to be affected by land subsidence, sea level rise, or fluctuating water levels of the Great Lakes, and improved predictability in governmental decision making.”

### **Resource Characterization**

*Purpose: To determine the extent to which problems and opportunities exist with regard to the enhancement objective.*

**Identify geographic areas in the coastal zone subject to use conflicts that can be addressed through special area management plans (SAMP). Also include areas where SAMP have already been developed, but new issues or conflicts have developed that are not addressed through the current plan. If necessary, additional narrative can be provided below.**

<b>Geographic Area</b>	<b>Major conflicts</b>	<b>Is this an emerging or a long-standing conflict?</b>
St. Clair River Delta	Historic private development on publicly-owned Great Lakes bottomlands	Long-standing
Offshore waters of the Great Lakes suitable for wind energy development	Natural resource, navigation, recreation, and other impacts from offshore wind farms	Emerging

#### **St. Clair River Delta**

The St. Clair Flats is a geographically discrete area in the St. Clair River Delta, in Lake St. Clair. It is subject to formal state management guidelines. Most or all of the Flats is Great Lakes bottomlands and below the 100-year flood elevation. The Delta is a productive and regionally important wetland habitat for fish and wildlife, and has a centuries-long history of use by hunters, anglers, and trappers.

At the end of the 19<sup>th</sup> century the Michigan Legislature formalized the occupation of a portion of the Delta bottomlands near Harsen’s Island by platting almost 2,000 lots. The Legislature provided for the leasing of these lots under the St. Clair Flats Act (Public Act 326 of 1913, as amended; now Part 339, Control of Certain State Lands, of the NREPA). Since then, some of these lots have reverted to State ownership, some have been deeded to private ownership, and the remaining lots are leased for a term of 99 years. Development on deeded lots is subject to the permitting and other requirements established under various Parts of the NREPA and administrative rules, including Part 325, Great Lakes Submerged Lands. The options available to the DNRE for disposition of individual leased lots include converting leases for developed lots to deeds pursuant to the provisions of Part 339, or allowing the lease to expire to regain State ownership. The Department’s general management approach includes consolidating State ownership by acquiring the private interests in tracts of leased land that cannot be developed, and concentrating private development in areas that can be served by public utilities. Prior to the State’s completion of a deed

conversion, the waste disposal system for that leased lot must be approved by the county health department. The private development must also be protected from damage and destruction as a result of wave action, high water levels, and storms on Lake St. Clair.

**Offshore Regions Suitable for Wind Energy Development**

As described in the Great Lakes Resources Assessment and Cumulative and Secondary Impacts Assessment, the construction and operation of offshore wind energy facilities in Michigan’s Great Lakes is increasingly likely, and will constitute an unprecedented level of development and occupation of State-owned, offshore bottomlands. At present, five “Wind Resource Areas” totaling 13,339 square miles of Great Lakes bottomlands are classified as “most favorable” for offshore wind energy development by the Michigan Great Lakes Wind Council (the October, 2010 report is posted at: [http://www.michiganlowcouncil.org/GLOWreportOct2010\\_with%20appendices.pdf](http://www.michiganlowcouncil.org/GLOWreportOct2010_with%20appendices.pdf)).

Offshore wind energy facilities will represent an additional use of waters and public trust bottomlands that are already used for commercial and recreational navigation, commercial and recreational fisheries, military purposes, fish and wildlife populations and habitat, public and industrial water supply, and other uses. The bottomlands also support shipwrecks, other submerged cultural artifacts, *in situ* remnants of prehistoric, Ice Age forests valuable in climate research, and other archaeological and paleontological resources. As witnessed by the recent, negative and vigorous public reaction to proposed wind farms within sight of the Lake Michigan shoreline, coastal waters are also prized for their aesthetic qualities.

At present, individual uses are addressed under a variety of limited-focus laws, treaties, and policies; no comprehensive statute or policy addresses balancing and managing the competition among offshore uses and values, much less in a way that protects natural resources, including public trust resources.

**Management Characterization**

*Purpose: To determine the effectiveness of management efforts to address those problems described in the above section for the enhancement objective.*

1. **Identify below any special management areas in the coastal zone for which a SAMP is under development or a SAMP has been completed or revised since the last Assessment:**

<b>SAMP title</b>	<b>Status</b> (new, revised, or in progress)	<b>Date approved or revised</b>
N/A	N/A	N/A

Michigan has not developed or adopted a SAMP.

2. **For management categories with significant changes since the last assessment provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference rather than duplicate the information.**
  - a) **Characterize significant changes since the last assessment (area covered, issues addressed and major partners);**
  - b) **Specify if it was a 309 or other CZM-driven change (specify funding source) or if it was driven by non-CZM efforts; and**
  - c) **Characterize the outcomes and effectiveness of the changes.**

Not applicable.

**Priority Needs and Information Gaps**

Using the table below, identify major gaps or needs (regulatory, policy, data, training, capacity, communication and outreach) in addressing each of the enhancement area objectives that could be addressed through the CMP and partners (not limited to those items to be addressed through the Section 309 Strategy).

<b>Gap or need description</b>	<b>Type of gap or need</b> (regulatory, policy, data, training, capacity, communication & outreach)	<b>Level of priority</b> (H, M, L)
Spatial information on uses and resources of Great Lakes bottomlands and waters	Data	High
Comprehensive, inclusive approach to balancing competing uses and values of Great Lakes bottomlands and waters	Regulatory, policy, capacity, communication and outreach	Medium

**Enhancement Area Prioritization**

- 1. What level of priority is the enhancement area for the coastal zone (including, but not limited to, CZMA funding)?**

Medium

**Briefly explain the level of priority given for this enhancement area.**

The Obama Administration’s July 19, 2010 Executive Order establishing a National Policy for the Stewardship of the Ocean, Our Coasts, and the Great Lakes calls for comprehensive, integrated, ecosystem-based, coastal and marine spatial planning and management for the nation’s coastal waters, including Great Lakes waters. The Executive Order creates the expectation that Michigan will participate in the development and implementation of such a plan for the Great Lakes.

- 2. Will the CMP develop one or more strategies for this enhancement area?**

No

**Briefly explain why a strategy will or will not be developed for this enhancement area.**

The Executive Order directs the newly-established National Ocean Council to develop a strategic action plan for implementing coastal and marine spatial planning over the next several months. The MCMP believes that it is prudent to wait until the Council finalizes the action plan in consultation with the Great Lakes states to decide how to prepare for the development of a State and regional coastal and offshore spatial plan. In the interim, implementing the strategy proposed in this document, *Addressing Critical Coastal and Offshore Data Gaps*, will result in important research and GIS data on coastal and offshore resources. Though the strategy does not address this enhancement area *per se*, the MCMP expects that the information developed will have substantial value when incorporated into a future coastal and offshore spatial plan for the Great Lakes.

## GREAT LAKES RESOURCES

### Section 309 Enhancement Objective

Planning for the use of ocean/Great Lakes resources

### Resource Characterization

*Purpose: To determine the extent to which problems and opportunities exist with regard to the enhancement objective.*

1. In the table below, characterize Great Lakes resources and uses of state concern, and specify existing and future threats or use conflicts.

Resource or use	Threat or use conflict	Degree of Threat (H, M, L)	Anticipated threat or use conflict
Fisheries	Aquatic Nuisance Species	High	High
Lighthouses	Property Issues/Maintenance	Low	Low
Recreation	Access	Low	Low
Water Quality	Contamination	Low	Low
Underwater Archeological Resources	Preservation	Low	Low
Drilling for Oil and Gas	Pollution/Contamination	Low	Low
Shipping	Navigability due to low water levels	Low	Low
Fresh water	Water Diversion	Low	Low
Offshore Wind Energy	Recreation, Navigation, Environmental	High	High

2. Describe any changes in the resources or relative threat to the resources since the last assessment.

#### Fisheries and Aquatic Nuisance Species

The 2006 Assessment identified threats from new Aquatic Nuisance Species (ANS) that included the potential invasion of the Asian carp into the Great Lakes through the Chicago Sanitary and Ship Canal. The threat of the Asian carp entering the Great Lakes has increased substantially since then as occurrences have been documented in 2009 less than 10 miles from Lake Michigan. Asian carp present a severe threat to the Great Lakes ecosystem due to their high degree of mobility, rapid rate of reproduction, and a voracious appetite. More than 180 non-native aquatic species have become established in the Great Lakes to date, representing an estimated economic loss of \$5.7 billion annually. An Asian carp invasion would be expected to have more serious environmental and economic consequences than any of the preceding invaders. Multiple efforts to address threats posed by the Asian carp are ongoing at the federal, state and regional level, including initiation of a study by the Great Lakes Commission and the Great Lakes and St. Lawrence Cities Initiative to develop and evaluate scenarios for separating the Mississippi River and Great Lakes watersheds, focusing on the Chicago area waterway system. DNRE Fisheries Division recently released the "Proposed Plan for the Prevention, Detection, Assessment, and Management of Asian Carps in Michigan Waters."

ANS such as the zebra mussel, quagga mussel, and round goby continue to require attention and management due to their ability to threaten the diversity and abundance of native species and the ecological stability of the lakes. Additionally new species of invaders continue to be identified, such as the bloody red shrimp.

### Oil and Gas Drilling

The 2010 BP Deepwater Horizon incident in the Gulf of Mexico and the Enbridge oil spill in Marshall, Michigan, which caused approximately 800,000 gallons to reach the Kalamazoo River, raised public concern over the potential for oil spill impacts in the Great Lakes. The Enbridge spill was captured far upstream from Lake Michigan. However, the event triggered introduction of a package of legislative bills that would have put to vote a constitutional ban on drilling in Michigan's Great Lakes waters. The bills were not passed. However, Michigan's Great Lakes currently are off limits to new drilling (both platform and directional) under State and federal law, as described in the 2006 Assessment.

### Diversion of Great Lakes Waters

Through the Council of Great Lakes Governors, the governors of Michigan, Illinois, Indiana, Minnesota, New York, Ohio, Pennsylvania and Wisconsin, and the premiers of Ontario and Québec have taken the lead in protecting the Great Lakes and St. Lawrence River Basin. On December 13, 2005, the Great Lakes governors and premiers signed the Great Lakes-St. Lawrence River Basin Sustainable Water Resources Agreement. At the same time, the governors endorsed the companion Great Lakes-St. Lawrence River Basin Water Resources Compact. These documents detail how the states and provinces will cooperatively manage and protect the waters in the Basin, and provide a framework for each state and province to enact measures for its protection. The documents include the following points:

- There will be a ban on new diversions of water from the Great Lakes Basin. Limited exceptions could be allowed, such as for public water supply purposes in communities near the Basin, but exceptions would be strictly regulated.
- The states and provinces will use a consistent standard to review proposed uses of Basin water.
- The collection of technical data will be strengthened, and the states and provinces will share the information to improve decision-making by the governments.
- Regional goals and objectives for water conservation and efficiency will be developed, and reviewed every five years. Each state and province will develop and implement a water conservation and efficiency program.
- Economic development will be fostered through the sustainable use and responsible management of Basin waters.
- The waters of the Basin are recognized as a shared public treasure and there is a strong commitment to continued public involvement in the implementation of the agreements.

In February, 2006 Governor Jennifer M. Granholm signed landmark legislation that allows the State to manage large quantity water withdrawals of over 100,000 gallons per day, and prohibits withdrawals that would have an adverse impact on the water resource. The legislation requires all bottled water operators with withdrawals of over 250,000 gallons per day to meet certain requirements, including avoiding impacts to common law riparian water rights.

In 2008, the Governor signed legislation that further defined the "adverse resource impact standard" in numeric terms and called for development of an online water withdrawal assessment tool. The assessment tool became available online on July 9, 2009 through a joint effort of the DNRE, Michigan State University, and the United States Geological Survey. It provides the ability for DNRE regulatory staff and prospective water users to determine in real time whether a proposed withdrawal would cause an adverse resource impact. The 2008 legislation also adopts and implements in Michigan the Great Lakes Compact.

**Offshore Wind Energy**

The siting of offshore wind energy facilities became a priority issue for Michigan during the assessment period and is expected to be a high priority during the 2012-2016 timeframe. The U.S. Department of Energy has predicted significant growth in both onshore and offshore wind energy production in its report “20% Wind Energy by 2030: Increasing Wind Energy’s Contribution to U.S. Electricity Supply.” The National Renewable Energy Laboratory has reported that “Offshore wind generated electricity in the United States has the potential to become a major contributor to the domestic energy supply... because it can compete in highly populated coastal energy markets where onshore wind energy is generally not available” (Musial, 2004).

Michigan is well positioned to capitalize on its offshore wind energy potential, given its location in the heart of the Great Lakes population center, abundant offshore wind resources, and a wealth of Great Lakes bottomland areas. Of the more than 38,000 square miles of Great Lakes bottomlands within Michigan’s boundaries, 7,874 square miles have a depth of 30 meters or less, which is currently the practical limiting depth for offshore wind development. A study released by Michigan State University’s Land Policy Institute (Adelaja, 2008) indicated that Michigan’s portion of the Great Lakes could produce nearly 322,000 megawatts of power from wind – an amount equal to roughly one-third of all electricity generated nationwide. Realizing this large potential would require placing a large number of turbines in the Lakes.

Several management challenges and potential use conflicts have emerged through recent investigations surrounding offshore wind energy production. A number of these challenges relate to two key issues: 1) The State of Michigan is the owner of, and provides for Public Trust protection over Great Lakes bottomlands from the ordinary high watermark lakeward to the respective state/international boundary lines; and 2) the primary law - Part 325, Great Lakes Submerged Lands, of the NREPA - regulating bottomland alterations was enacted prior to interest in a Great Lakes offshore wind energy industry and does not provide for the siting of offshore wind facilities. New legislation addressing offshore wind energy development is needed to address shortfalls in existing state statutes.

**Management Characterization**

*Purpose: To determine the effectiveness of management efforts to address those problems described in the above section for the enhancement objective.*

1. **For each of the management categories below, indicate if the approach is employed by the state or territory and if significant changes have occurred since the last assessment:**

<b>Management categories</b>	<b>Employed by state/territory (Y or N)</b>	<b>Significant changes since last assessment (Y or N)</b>
Comprehensive Great Lakes management plan or system of Marine Protected Areas	Yes	Yes
Regional comprehensive Great Lakes management program	Yes	No
Regional sediment or dredge material management plan	No	No
Intra-governmental coordination mechanisms for Great Lakes resources	Yes	No
Single-purpose statutes related to Great Lakes resources	Yes	No
Comprehensive Great Lakes management statute	Yes	No

Management categories	Employed by state/territory (Y or N)	Significant changes since last assessment (Y or N)
Great Lakes resource mapping or information system	Yes	Yes
Great Lakes habitat research, assessment, or monitoring programs	Yes	Yes – refer to the Wetlands Assessment for a description of the new GLRI-funded Great Lakes coastal wetland monitoring program
Public education and outreach efforts	No	No

2. **For management categories with significant changes since the last assessment provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference rather than duplicate the information.**
- a) **Characterize significant changes since the last assessment;**
  - b) **Specify if it was a 309 or other CZM-driven change (specify funding source) or if it was driven by non-CZM efforts; and**
  - c) **Characterize the outcomes and effectiveness of the changes.**

Great Lakes Marine Protected Areas

The Grand Traverse Bay State Bottomland Preserve was established in 2008 through amendment to the administrative rules for Part 761, Aboriginal Records and Antiquities, of the NREPA. The new bottomland preserve encompasses approximately 295 square miles of Lake Michigan bottomlands and surface waters and includes the East and West Arms of Grand Traverse Bay. Several known shipwreck sites are located in the preserve, and many more ships are documented as lost in Grand Traverse Bay. This effort was not driven with Section 309 CZM funds, however the DNRE staff involved in this process was partially supported with 306 funding.

Regional Comprehensive Great Lakes Management Program

The 2006 Assessment outlined the development of the Great Lakes Regional Collaboration (GLRC), Strategy to Restore and Protect the Great Lakes (released December 12, 2005), and the GLRC Implementation Framework. The GLRC is a cooperative effort to design and implement a strategy for the restoration, protection and sustainable use of the Great Lakes. In response to the GLRC Strategy, the DNRE Office of the Great Lakes developed the Michigan Great Lakes Protection and Restoration Initiative and the MI-Great Lakes Plan ([http://www.michigan.gov/documents/deq/MI-GLPlan\\_262388\\_7.pdf](http://www.michigan.gov/documents/deq/MI-GLPlan_262388_7.pdf)), intended to foster the protection, restoration, and sustainability of Michigan’s Great Lakes for current and future generations. Development of the MI-Great Lakes Plan was not funded with Section 309 funding. However, a number of the strategies proposed in this document will advance priorities listed in the Plan.

Great Lakes Resource Mapping or Information System

Increased interest in offshore wind energy development is addressed earlier in this Assessment and in the Cumulative and Secondary Impacts Assessment. A significant advance is the GIS-based Lakebed Alterations Decision Support System developed through various phases of CZM Section 309 grant-funded projects with the Institute for Fisheries Research – a collaboration between the University of Michigan and DNRE Fisheries Division. The focus of the project is a GIS-based decision support tool (DST) to inform decisions on the siting of offshore wind farms and other developments on Michigan’s Great Lakes bottomlands.

An early version of the lakebed alterations DST was made available to the Governor’s Great Lakes Offshore Wind (GLOW) Council and ultimately was the tool of choice in the Council’s determination

of Michigan’s five offshore Wind Resource Areas (WRAs). The Council issued two successive reports, on September 1, 2009, and October 1, 2010. The first report identified areas in Michigan’s Great Lakes considered most favorable for development of offshore wind energy facilities, and included recommendations for legislative and rule changes to guide the development of offshore wind energy. The second report included refined mapping efforts following incorporation of additional and updated data sets into the analysis, which resulted in modifications to the previously identified WRAs. The second report also included a proposed legislative framework for permitting and bottomland leasing, and discussion on an appropriate public engagement process to be incorporated into any future permitting program.

The lakebed alterations DST has already proved influential in planning for offshore wind energy and will become increasingly important over the next five years. Plans for the 2012-2016 timeframe include enhancing the DST to serve as both a decision support system for regulators reviewing permits under expected new offshore wind energy siting laws, as well as a tracking system for associated offshore bottomland leases, facility installations, and other required parameters. High quality, updated data layers are a key component of a well-functioning DST that properly informs the user, as was shown through the revised mapping conducted between publications of the two GLOW Council reports. The mapping in the 2010 report reflected at least partly updated data on shipping lanes, threatened and endangered species, and fish spawning areas, and a new method of accounting for commercial fishing within the mapped environment. These data improvements led to shifts in the location of the Wind Resource Areas identified in the 2010 report versus the 2009 report. Significantly, the WRA in Saginaw Bay was relocated outside of the Bay into the main body of Lake Huron. Further improvement of the lakebed alterations DST and associated data layers is also expected to aid future coastal and marine spatial planning initiatives and the development of a Michigan coastal atlas.

**Public Education and Outreach**

The creation of the DNRE in January, 2010 has brought together under one agency many of the entities responsible for management of ANS including the Office of Great Lakes, Water Resources Division, and Fisheries Division. These staff will continue to coordinate efforts with Michigan Sea Grant, Michigan Natural Features Inventory, and Michigan Department of Agriculture and other DNRE divisions. The DNRE also partners with other state, federal, nonprofit and local agencies to provide information about ANS prevention, control, species identification and to promote general awareness. The DNRE provides the general public with educational materials such as fact sheets, brochures, posters, and watch cards for ANS. The OGL coordinates a statewide Aquatic Invasive Species Awareness Week each year in June to educate the public about the environmental and economic cost of ANS, and provide information on steps individuals can take to reduce the spread of ANS.

**Priority Needs and Information Gaps**

Using the table below, identify major gaps or needs (regulatory, policy, data training, capacity, communication and outreach) in addressing each of the enhancement area objectives that could be addressed through the CMP and partners (not limited to those items to be addressed through the Section 309 Strategy). If necessary, additional narrative can be provided below to describe major gaps or needs.

<b>Gap or need description</b>	<b>Type of gap or need</b> (regulatory, policy, data, training, capacity, communication & outreach)	<b>Level of priority</b> (H, M, L)
State statutes and administrative rules addressing offshore wind energy developments	Regulatory, policy	High
Research and GIS mapping of coastal	Data	High

and offshore bird and bat migration routes and stop-over habitat		
Research and GIS mapping of near-shore fisheries habitat and updated fish spawning data	Data	High
Monitoring of offshore wind farm wildlife impacts	Data	Low

**Enhancement Area Prioritization**

**1. What level of priority is the enhancement area for the coastal zone (including, but not limited to, CZMA funding)?**

High

**Briefly explain the level of priority given for this enhancement area.**

Development of offshore wind farms in the Great Lakes will represent construction on and occupation of the public trust submerged lands to an unprecedented degree. To ensure that the future offshore wind energy development minimizes impacts to coastal resources and the Public Trust, it is a MCMP priority that appropriate laws governing these developments are in place, and regulatory reviews incorporate complete, up-to-date, and relevant data.

**2. Will the CMP develop one or more strategies for this enhancement area?**

Yes

**Briefly explain why a strategy will or will not be developed for this enhancement area.**

The MCMP will develop two strategies targeting this enhancement area. The first will address development of administrative rules, policy guidance, and outreach regarding Part 324 of the NREPA, which is the current placeholder for the anticipated offshore wind energy siting law. The second will address current information and data gaps related to important offshore and near-shore resources, specifically those related to potential fish and bird impacts associated with offshore construction projects.

## **ENERGY AND GOVERNMENT FACILITY SITING**

### **Section 309 Enhancement Objectives**

Adoption of procedures and enforceable policies to help facilitate the siting of energy facilities and Government facilities and energy-related activities and Government activities which may be of greater than local significance

### **Resource Characterization**

*Purpose: To determine the extent to which problems and opportunities exist with regard to the enhancement objective.*

- In the table below, characterize the types of energy facilities in your coastal zone (e.g., oil and gas, liquefied Natural Gas (LNG), wind, wave, Ocean Thermal Energy Conversion (OTEC), etc.) based on best available data. If available, identify the approximate number of facilities by type.**

<b>Type of Energy Facility</b>	<b>Exists in CZ (# or Y/N)</b>	<b>Proposed in CZ (# or Y/N)</b>	<b>Interest in CZ (# or Y/N)</b>	<b>Significant changes since last assessment (Y or N)</b>
Oil and gas facilities	Yes	Yes	Yes	Yes
Pipelines	Yes	No	Unknown	No
Electric transmission cables	Yes	Yes	Yes	Yes
LNG	No	No	No	No
Wind	Yes	Yes	Yes	Yes
Wave	No	No	Unknown	No
Tidal	No	No	No	No
Current (ocean, lake, river)	Yes	Yes	Yes	No – pilot-scale projects exist or are proposed
OTEC	No	No	Unknown	No
Solar	Yes	Yes	Yes	No – not a significant source of energy at present; facilities do not depend on or benefit from a coastal location
Other – coal-fired power plants	Yes	Yes	Yes	Yes
Other – hydroelectric pumped storage facilities	Yes	No	No	No
Other – hydroelectric dams	Yes	No	Unknown	No
Other – nuclear power plants	Yes	No	No	No

**2. Please describe any significant changes in the types or number of energy facilities sited, or proposed to be sited, in the coastal zone since the previous assessment.**

Gas Facilities

Oil and gas production has been ongoing in many areas of Michigan's Lower Peninsula for several decades, including many coastal counties. Oil and gas exploration and production in Michigan are subject to statutes, rules, and orders administered by the Department of Natural Resources and Environment. Part 615, Supervisor of Wells, of the NREPA provides for regulatory oversight including promulgation of administrative rules.

DNRE records of oil and gas permits issued every year since 1927 provide a basic measure of oil and gas industry activity in the state. Annual permit totals indicate a period of comparatively intense exploration and production lasting from the early 1980's through the mid-1990s and peaking in 1992 when the State issued 2,024 permits. Industry activity has continued at lower levels in recent years with an average of 646 new permits issued annually from 2006 through 2009.

A potentially significant change since the 2006 Assessment relates to recent, sudden interest in natural gas in formations called the Collingwood and Utica Shales. The gas in these formations lies at depths ranging from 9,000 to 10,000 feet below the surface, far beneath the gas in the 1,500 to 2,000 foot-deep Antrim Shale formation that fueled the exploration and production activity in the 1980s and 1990s. The interest in the deep formations was sparked by a recent exploratory well drilled in Missaukee County that initially produced 2.5 million cubic feet per day. Subsequently, the May 4, 2010 oil and gas lease auction held by the DNRE netted \$178 million from oil and gas companies bidding for the right to explore for and produce natural gas and oil on leased, state-owned lands. Given that cumulative sales from all previous State oil and gas lease auctions since 1929 totaled \$190 million, it appears that gas companies may be preparing to launch a boom in exploration and possibly production focused on these deep formations. Pipeline construction often follows trends in oil and gas production, and increased gas production may prompt demand for new pipeline projects.

If exploration shows that the gas resources are economically profitable, production from the deep formations will require horizontal drilling and an extraction process called hydraulic fracturing that involves high-pressure injection of a mix of sand, water, and chemicals into the shale to widen naturally occurring fissures in the rock. The water mixture is then pumped back to the surface and the natural gas flows through the widened fissures, into the pipe and up to the wellhead. Hydraulic fracturing in these deep formations often uses millions of gallons of fresh water per project, and produces comparable volumes of flowback waste water. Proper management of flowback water is essential in protecting public health and the environment. In Michigan, all flowback water (as well as water produced along with oil and gas during subsequent production operations) is considered an oil and gas waste and must be managed and disposed of according to strict rules specifically applying to those fluids. The fluids must be contained in steel tanks and transported to disposal wells where they are injected into deep rock layers that are isolated from fresh water supplies. The disposal wells are licensed by both the DNRE and the U.S. Environmental Protection Agency, and must be tested periodically to assure well integrity.

Wind Energy and Electric Transmission Cables

Department of Energy, Labor and Economic Growth (DELEG) data indicate that 144 megawatts (MW) of wind power had been installed in Michigan as of December, 2009. At the time of the 2006 Assessment, less than 2.8 MW of wind power had been installed in the state. The DELEG Energy Systems Bureau forecasts that Michigan will have between 2,000 MW and 2,500 MW of

installed wind power by 2015, supplied by an estimated 1,200 wind turbines. Coastal counties are expected to host a substantial portion of these facilities because of their relatively abundant and reliable wind resources. Demand for new electric transmission lines will accompany increased wind power generation.

At least 122 MW of wind power have been installed in Huron County, which borders Lake Huron and Saginaw Bay. The Michigan Public Service Commission (PSC) is reviewing a request from a power transmission company to install a 120-mile extension of a 345 kilovolt (kV) electric transmission line into Huron County. The new line would increase the wind energy transmission capacity in the area by 5,000 MW. The PSC must complete its review and decision on the request by the end of February, 2011.

Interest in a Great Lakes offshore wind energy industry is strong in Michigan, though offshore wind turbines have yet to be installed. On September 1, 2009, an advisory council appointed by Governor Jennifer Granholm released its report outlining recommendations for siting and regulating offshore wind farms in Michigan's 38,000 square miles of Great Lakes waters. Preliminary scoping indicates that more than 40% of this area may eventually prove suitable for wind energy facility development.

#### Coal-Fired Power Plants

Under Part 55, Air Pollution Control, of the NREPA the DNRE has the authority to issue permits for emissions from new coal-fired power plants and other sources of air pollution. The DNRE has the authority to administer the federal Clean Air Act (CAA) within Michigan. Part 55 permits are issued to satisfy the requirements of the CAA.

Michigan Air Pollution Control Rules and Section 165(a)(2) of the CAA, allow for the consideration of alternatives to a given proposal, including a new coal-fired power plant. An alternatives analysis may evaluate, among other things, construction of new, non-coal burning, electric power generation facilities; new coal-burning technologies that reduce or sequester emissions; electricity demand reduction through energy efficiency programs or load management; and generation or purchase of electricity from existing power generation facilities. The DNRE analysis of alternatives under Section 165(a)(2) of the CAA and Rule 1817(2) can include consideration of need for the proposed facility. Under a Memorandum of Understanding entered between the DNRE and the PSC on April 1, 2009, the PSC provides technical assistance to the DNRE in making determinations on alternatives to and need for new coal-fired power generation.

### **3. Does the state have estimates of existing in-state capacity and demand for natural gas and electric generation? Does the state have projections of future capacity? Please discuss.**

Pursuant to Executive Directive 2006-02, the PSC prepared and submitted to Governor Granholm in January, 2007 *Michigan's 21<sup>st</sup> Century Electric Energy Plan*. When the Plan was completed, annual electric power generation in the State totaled approximately 105 million mega-watt hours, and peak electric demand was forecast to increase by 1.2% per year for the next 20 years. At that rate, the authors of the Plan estimated that additional baseload power generation – that is, power generated by plants intended to run constantly at near-capacity levels – would be necessary by 2015 at the latest. However, assumptions that supported this prediction have since been countered by a state population decline and state and national economic troubles. Specifically, between July, 2006 and July, 2009, Michigan's population decreased by an estimated 112,711 people or approximately 1.1%. The loss of residents and contraction in the State's automotive and other manufacturing industries has meant that Michigan's electric power needs lag behind the projected demands forecast a few years ago.

**4. Does the state have any specific programs for alternative energy development? If yes, please describe including any numerical objectives for the development of alternative energy sources. Please also specify any offshore or coastal components of these programs.**

Mandatory Renewable Energy Standard for Electricity Providers

On October 6, 2008, Public Act 295 of 2008, the “Clean, Renewable, and Efficient Energy Act,” was enacted and took immediate effect. The Act establishes a renewable energy standard requiring all electric power providers to provide a minimum of 10% of their electricity from renewable sources by 2015. The first phase of the requirement starts in 2012, when electricity providers must provide at least 2% of their electricity from renewable sources. The percentage increases to 3.3% in 2013, 5% in 2014, and the full 10% the following year. Electricity providers failing to meet the required standard may be subject to financial penalties. Under the Act, renewable energy resources include biomass, solar, wind, hydroelectric, geothermal, municipal solid waste, and landfill gas. The definition of hydroelectric energy in the law does not include dams constructed after October, 2008 or pumped storage facilities. Petroleum, coal, natural gas, and nuclear power are explicitly excluded from the definition of renewable energy resources.

Onshore Wind Energy Resource Zones

Act 295 also contains provisions directing the PSC to create a Wind Energy Resource Zone Board charged with developing a “list of regions in the state with the highest level of wind energy harvest potential” and conducting relevant studies. Board membership includes representation from local government, electric utilities, independent power transmission companies, environmental organizations, renewable energy industry, PSC, Office of the Attorney General, and the public. The Board convened to begin its assessment late in 2008. The high-level wind energy resource assessment involved applying a series of criteria to Michigan’s 37 million acres. First, the Board used several exclusion criteria to determine lands to be removed from consideration, due to constraints related to environmental and natural resource protection, topography, public safety, and other factors. In the next step, a grid with 450 meter by 450 meter spacing laid over the remaining 19 million acres indicated the maximum number of wind turbines that could be theoretically placed on those lands, since turbines in commercial wind farms are spaced at least 450 meters apart. Finally, a wind resource map overlay from the National Renewable Energy Laboratory, U.S. Department of Energy, showed which areas had consistent wind speeds in the range thought to be high enough for commercial wind farms.

The Board identified four priority regions through the assessment process and with public input, as described in its October, 2009 Final Report (available at [http://www.dleg.state.mi.us/mpsc/renewables/windboard/werzb\\_final\\_report.pdf](http://www.dleg.state.mi.us/mpsc/renewables/windboard/werzb_final_report.pdf)). Three regions are on Lake Michigan and the other is Huron County and adjacent parts of the “Thumb” area on Lake Huron and Saginaw Bay. The regions have abundant and reliable wind resources, open space suitable for commercial wind projects, and are substantially free from other known development constraints. The Thumb area has the highest wind energy production potential of the four regions. Electric utilities and transmission companies operating in the regions advised the PSC on transmission infrastructure expansions and upgrades needed to deliver each region’s expected wind-generated power to urban markets. The PSC subsequently designated two of the four regions - the Thumb area and western Allegan County – as wind energy resource zones to guide state decisions and industry investments in planning, siting, and constructing electric transmission lines. Nevertheless, it is expected that market forces, local government decisions, and other factors will also prove influential in determining where wind developers locate their projects in the State.

Offshore Wind Resource Areas

On September 1, 2009 the Great Lakes Offshore Wind (GLOW) Council appointed by Governor Jennifer Granholm earlier that year released its report outlining recommendations for siting and regulating offshore wind farms in Michigan’s 38,000 square miles of Great Lakes waters. Preliminary scoping indicated that more than 40% of this area may eventually prove suitable for wind energy facility development. In its subsequent October 1, 2010 report, the GLOW Council refined the focus to five “wind resource areas” totaling 13,339 square miles of Great Lakes bottomlands classified as “most favorable” for offshore wind energy development (the October, 2010 report is posted at:

[http://www.michiganglowcouncil.org/GLOWreportOct2010\\_with%20appendices.pdf](http://www.michiganglowcouncil.org/GLOWreportOct2010_with%20appendices.pdf)).

The refinements largely resulted from review and analysis of additional data incorporated into the CZM-funded, GIS-based lakebed alteration DST that the Council relied on for its deliberations, as described in the Great Lakes Resources Assessment. The designation of the offshore wind resource areas will guide state decisions on leasing Great Lakes bottomlands and permitting offshore wind energy projects, and direct industry efforts in offshore wind project data collection, planning, and site selection. Importantly, the Council determined that there is a need for new state laws and administrative rules to allow construction and operation of wind farms on state-owned bottomlands.

**5. If there have been any significant changes in the types or number of government facilities sited in the coastal zone since the previous assessment, please describe.**

No significant changes have occurred in the types or number of government-owned or operated facilities in the coastal zone since 2006.

**Management Characterization**

*Purpose: To determine the effectiveness of management efforts to address those problems described in the above section for the enhancement objective.*

**1. Does the state have enforceable policies specifically related to energy facilities? If yes, please provide a brief summary, including a summary of any energy policies that are applicable to only a certain type of energy facility.**

The DNRE regulates oil and gas drilling facilities under Part 615, Supervisor of Wells, of the NREPA. Permittees must meet conformance bond, wellhead blowout control, soil erosion and sedimentation control, and other requirements. Drilling project activities must comply with permit requirements under other Parts of the NREPA if the project impacts wetlands, inland lakes and streams, or other protected resources.

The PSC has review and approval authority on the routing of intrastate natural gas pipelines under Public Act 9 of 1929, as amended, intrastate oil and petroleum pipelines under Public Act 16 of 1929, as amended, and electric transmission lines under Public Act 30 of 1995, as amended.

**2. Please indicate if the following management categories are employed by the State or Territory and if there have been significant changes since the last assessment:**

Management categories	Employed by state/territory (Y or N)	Significant changes since last assessment (Y or N)
Statutes or regulations	Yes - Part 615 of NREPA (oil and gas wells); Act 30 of 1995 (electric	Yes

Management categories	Employed by state/territory (Y or N)	Significant changes since last assessment (Y or N)
	transmission cables); Act 9 of 1929 (intrastate gas pipelines); Act 16 of 1929 (intrastate oil and petroleum pipelines); offshore wind energy statute (Part 324 of NREPA) pending	
Policies	Yes – state and federal moratoria on oil and gas drilling beneath the Great Lakes, including horizontal drilling; Executive Directive 2003-22 on the siting of State offices and buildings in urban areas	No
Program guidance	Yes – siting onshore wind turbines to avoid wildlife impacts (refer to Cumulative and Secondary Impacts Assessment)	No
Comprehensive siting plan (including SAMPs)	No	No
Mapping or GIS	Yes	Yes
Research, assessment or monitoring	Yes	Yes
Education and outreach	Yes	Yes

3. For management categories with significant changes since the last assessment provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference rather than duplicate the information.
- a) Characterize significant changes since the last assessment;
  - b) Specify if it was a 309 or other CZM-driven change (specify funding source) or if it was driven by non-CZM efforts; and
  - c) Characterize the outcomes and effectiveness of the changes.

Statutes and Regulations

The DNRE is currently participating in a legislative workgroup drafting legislation to regulate offshore wind energy development in Michigan’s Great Lakes, under a new Part 324 of the NREPA. This workgroup includes legislators from the House and the Senate, who will sponsor the bill once introduced to the Legislature. The draft legislation contains specific details for the siting, construction, operation, and decommissioning of wind energy facilities in the Great Lakes; outlines the requirements to nominate Great Lakes bottomland parcels for lease; describes an auction process to acquire bottomland parcels; specifies information and studies required when submitting permit applications for site assessment, construction, operation, and decommissioning activities; and establishes criteria for reviewing these applications. The draft legislation also provides for public comment periods and public hearing opportunities for the general public to review and provide input on proposed bottomland parcel nominations and permit applications for site assessment, construction, operation, and decommissioning work.

By all expectations, the legislation will be introduced in the remaining days of the current session or promptly in the following session of the Legislature. The need for such legislation is widely recognized, for example, in the October 1, 2010, *Report of the Michigan Great Lakes Wind Council* mentioned previously. The Department anticipates the authority to develop and administer a Part 324 regulatory program in 2011. The DNRE staff assisting the legislators in their deliberations is supported by Section 306 CZM funds.

Mapping and GIS

A description of the GIS-based lakebed alteration DST and its role in identifying offshore wind resource areas is provided in the Great Lakes Resources Assessment. Development of the DST has been supported with Section 309 CZM funds.

Research, Assessment, or Monitoring

The MCMP has funded limited migratory bird and bat research relevant to wind farm siting and operation for certain areas of the coastal zone, specifically, Saginaw Bay and northern Lake Michigan. These research projects are supported with Section 309 CZM funds.

Education and Outreach

Onshore wind energy facility siting decisions on private lands are subject to local zoning; state law does not specifically address onshore wind farm siting. The DELEG Energy Office has developed sample zoning language for small-scale and utility grid wind energy systems, to assist local governments in developing wind turbine siting requirements in zoning ordinances. Michigan State University has developed and offered basic training on wind energy siting and policy issues through its Michigan Citizen Planner program. Michigan Citizen Planner courses are popular among local government officials, including planning and zoning officials. These efforts were not supported with CZM funding.

The GLOW Council process used to identify offshore wind resource areas provided for public involvement. The Council hosted five public meetings in different areas of the state in 2010 that were attended by more than 500 people. The Council used the meetings, in part, to educate attendees about offshore wind energy and policy issues. The GLOW Council's public involvement process was supported with Section 306 CZM funds.

In 2010, Michigan State University Extension developed an outreach and education program on oil and gas drilling for landowners. The program addresses oil and gas geology and production, hydraulic fracturing, leases, contracts, legal information, tax information, and other topics of interest to landowners who may be approached by oil and gas companies to lease their mineral rights. This program is not supported with CZM funding.

**Priority Needs and Information Gaps**

Using the table below, identify major gaps or needs (regulatory, policy, data, training, capacity, communication and outreach) in addressing each of the enhancement area objectives that could be addressed through the CMP and partners (not limited to those items to be addressed through the Section 309 Strategy). If necessary, additional narrative can be provided below to describe major gaps or needs.

<b>Gap or need description</b>	<b>Type of gap or need</b> (regulatory, policy, data, training, capacity, communication & outreach)	<b>Level of priority</b> (H, M, L)
State statutes and administrative rules addressing offshore wind energy developments	Regulatory, policy	High
Research and GIS mapping of coastal and offshore bird and bat migration routes and stop-over habitat	Data	High
Updated occurrence information on threatened and endangered species within the coastal zone, to inform the Environmental Review process	Data	Medium

Gap or need description	Type of gap or need (regulatory, policy, data, training, capacity, communication & outreach)	Level of priority (H, M, L)
County-level guidance for local governments and wind energy developers on siting onshore wind farms to avoid or minimize wildlife impacts	Training, communication and outreach	High
Public outreach and education on offshore wind energy regulations, and Michigan-specific wildlife issues relevant to coastal and offshore wind farm siting and operation	Communication and outreach	Medium

In the next few years Michigan will begin a comprehensive effort to manage the impacts of coastal and offshore wind energy development. This includes development of a regulatory program for offshore wind energy, technical assistance for local governments and the wind energy industry on siting wind farms to avoid or minimize wildlife impacts, and public education on offshore wind energy regulations and Michigan-specific wildlife issues related to wind farm development and operation. Wildlife research and survey data will provide a critical part of the foundation for siting and regulatory decisions. The importance of the wildlife data, and the Environmental Review process, are explained in the Cumulative and Secondary Impacts Assessment.

**Enhancement Area Prioritization**

**1. What level of priority is the enhancement area for the coastal zone (including, but not limited to, CZMA funding)?**

High

**Briefly explain the level of priority given for this enhancement area.**

The rapid growth of the onshore wind energy industry and intense interest in offshore wind energy development in Michigan has put State and local government in the position of promoting wind energy for its economic and environmental benefits while assuming responsibility for protecting coastal resources, including public trust resources, from associated impacts. Presently, the information base on coastal and offshore resources is insufficiently developed to allow regulatory agencies to make informed decisions on balancing promotion of the industry with resource protection.

**2. Will the CMP develop one or more strategies for this enhancement area?**

Yes

**Briefly explain why a strategy will or will not be developed for this enhancement area.**

Strategies will be developed to build the needed information base and State and local government capacity for managing wind energy development to accommodate coastal resource protection.

## ***Aquaculture***

### **Section 309 Enhancement Objective**

Adoption of procedures and policies to evaluate and facilitate the siting of public and private aquaculture facilities in the coastal zone, which will enable States to formulate, administer, and implement strategic plans for marine aquaculture

### **Resource Characterization**

*Purpose: To determine the extent to which problems and opportunities exist with regard to the enhancement objective.*

**Generally characterize the private and public aquaculture facilities currently operating in your state or territory.**

<b>Type of existing aquaculture facility</b>	<b>Describe recent trends</b>	<b>Describe associated impacts or use conflicts</b>
Private – 26 aquaculture facilities in coastal counties currently licensed with the Michigan Department of Agriculture	Not a growth industry at this time. Tribes have received federal funding to support aquaculture production of walleye. No new facilities in the Coastal Zone.	Potential risk of pathogen and aquatic nuisance species introductions to the Great Lakes ecosystem. Potential for nutrient pollution from facilities with concentrated fish populations.
Public- six state fish hatcheries, two hatcheries managed by the USFWS	No new hatcheries have been established since the previous Assessment	Potential risk of pathogen and aquatic nuisance species introductions to the Great Lakes ecosystem. Potential for nutrient pollution from facilities with concentrated fish populations. A new effluent treatment system was installed at the Platte River State Fish Hatchery in 2003 to address effluent quality concerns.

All aquaculture facilities in Michigan are land based; Michigan law does not provide for caged aquaculture facilities in the Great Lakes. A variety of warm- and cool-water fish and other aquaculture species are raised in these facilities. Aquaculture facilities licensed with the Michigan Department of Agriculture are subject to the provisions of the Michigan Aquaculture Development Act (Public Act 199 of 1996, as amended), including provisions restricting the species raised to those on the State's approved list.

### **Management Characterization**

*Purpose: To determine the effectiveness of management efforts to address those problems described in the above section for the enhancement objective.*

**1. For each of the management categories below, indicate if the approach is employed by the state or territory and if significant changes have occurred since the last assessment:**

<b>Management categories</b>	<b>Employed by state/territory (Y or N)</b>	<b>Significant changes since last assessment (Y or N)</b>
Aquaculture regulations	Yes	Yes
Aquaculture policies	Yes	No
Aquaculture program guidance	No	No
Research, assessment, monitoring	Yes	No
Mapping	No	No
Aquaculture education and outreach	Yes	Yes

2. For management categories with significant changes since the last assessment provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference rather than duplicate the information.
  - a) Characterize significant changes since the last assessment;
  - b) Specify if it was a 309 or other CZM-driven change (specify funding source) or if it was driven by non-CZM efforts; and
  - c) Characterize the outcomes and effectiveness of the changes.

Aquaculture Regulations

In December, 2008, the Department of Natural Resources (now part of the Department of Natural Resources and Environment, DNRE) issued Fish Disease Control Order FO-245.09 to contain and slow the spread of Viral Hemorrhagic Septicemia Virus (VHSV), a lethal fish pathogen recently detected in parts of the Great Lakes, from impacted waters. In 2010, the State Veterinarian issued an importation requirement under the authority of the Animal Industry Act (Public Act 466 of 1988, as amended) requiring a pre-importation permit for aquaculture species imported into the state. Importers must provide proof that the aquatic livestock is free of VHSV. The Fish Disease Control Order and importation requirement are not supported by CZM funds.

Aquaculture Education and Outreach

The Michigan Department of Agriculture, Michigan Sea Grant, and other agencies and organizations have launched education and outreach efforts targeting the aquaculture industry, anglers, and others to prevent the introduction of VHSV to new waters. Nevertheless, it is possible that the pathogen will eventually spread through the Great Lakes, aided by the movement of wild fish. The education and outreach efforts are not supported by CZM funds.

**Priority Needs and Information Gaps**

Using the table below, identify major gaps or needs (regulatory, policy, data, training, capacity, communication and outreach) in addressing each of the enhancement area objectives that could be addressed through the CMP and partners (not limited to those items to be addressed through the Section 309 Strategy). If necessary, additional narrative can be provided below to describe major gaps or needs.

Gap or need description	Type of gap or need (regulatory, policy, data, training, capacity, communication & outreach)	Level of priority (H, M, L)
Research to inform future policy development addressing caged aquaculture facilities	Regulatory, policy, data	Low

There is a possibility that caged aquaculture facilities may be proposed in the future, for example, as secondary developments to offshore wind farms. According to Michigan Department of Agriculture staff, the Michigan Aquaculture Development Act does not provide for the establishment of caged aquaculture facilities in the Great Lakes.

**Enhancement Area Prioritization**

1. What level of priority is the enhancement area for the coastal zone (including, but not limited to, CZMA funding)?

Low

At present, there are no proposed caged aquaculture facilities in Michigan's portion of the Great Lakes or tributaries. The Michigan Aquaculture Development Act would need to be amended to provide for caged aquaculture facilities.

**2. Will the CMP develop one or more strategies for this enhancement area?**

No

**Briefly explain why a strategy will or will not be developed for this enhancement area.**

The Michigan Department of Agriculture and DNRE have the regulatory authority to manage aquaculture industry activities under the Michigan Aquaculture Development Act, Animal Industry Act, and Part 459, Propagation of Game Fish in Private Waters, of the NREPA, and other regulations. State law does not provide for the establishment of caged aquaculture facilities in the Great Lakes.

## **Strategy: Climate Change Adaptation in Coastal Wetland Management**

### **Issue Area:**

Wetlands

### **Program Change Description:**

- New or revised coastal land acquisition, management, and restoration programs; and
- New or revised guidelines, procedures, and policy documents which are formally adopted by a state or territory and provide specific interpretations of enforceable CZM program policies to applicants, local governments and other agencies that will result in meaningful improvements in coastal resource management

This strategy would advance efforts to study and analyze the effects of climate change on Great Lakes coastal wetlands, identify adaptation actions and strategies, and incorporate coastal wetland climate change adaptation into State and local resource management plans. Specifically, it would:

- Develop and implement a process to investigate and track the ongoing scientific advances regarding climate change predicted effects in Great Lakes coastal wetlands, and opportunities for adaptation. Partner with academic institutions, government agencies, conservation organizations, and other groups working on this issue throughout the region to coordinate planning and research.
- Use research results to promote preservation and restoration of coastal wetlands through incorporation into the state's Climate Change Action Plan, Wetlands Action Plan, and Wildlife Action Plan, and through modification of overall wetlands management goals. Explore opportunities to incorporate climate change adaptation strategies for coastal wetlands into other action plans or programs as appropriate, such as state and local park management plans and Michigan's CELCP Plan.
- Encourage adaptation actions that will maintain or expand overall biodiversity, increase connectivity of coastal wetland areas, and improve water management to address multiple natural resource goals. The goals of habitat improvement, water quality protection, flood management, recreation, and aesthetics can all be achieved through actions and management modifications that address anticipated climate change effects on coastal wetlands.
- Provide climate change adaptation technical assistance to local governments in the development of green infrastructure plans, land use plans, and zoning ordinances. This type of outreach will be achieved through publication of information fact-sheets or guidelines for local agencies, website improvements and updates, and workshops and informational meetings.

### **Needs and Gaps Addressed:**

Climate change is a global issue, but it is important to start planning to address effects already observed within the Great Lakes. Many State agencies are involved in climate change mitigation and adaptation activities, but none have determined the predicted affects on coastal wetlands and identified and implemented prudent adaptations. Michigan's Wetland Program lacks a comprehensive mechanism for tracking the current science, and using the information effectively to promote science-based protection and management of coastal wetlands. These systems are dynamic and management of these areas should promote adaptation and practical action. Some loss in coastal wetland acreage is anticipated due to climate change, but there is also potential for the formation of new wetland areas due to increased flooding, exposed bottomlands, and changes in wetland type and function, for example.

To date, Michigan's Wetland Program has focused on the "no net loss" goal of wetlands protection, but this may not be a practical measure of wetlands management efforts if climate change significantly affects hydrology and water levels, as expected. This goal will need to be refined to account for changes in coastal wetland type, quality, habitat, and human uses as Great Lakes water levels change. Wetland management should anticipate and prepare for the effects that intensified storm events, droughts, ice patterns, and other

climate-related phenomena may have on Great Lakes coastal wetlands, and adapt measures of success to account for these changes.

**Benefits to Coastal Management:**

Michigan's Climate Action Plan, Wetlands Action Plan, and Wildlife Action Plan currently guide State agencies in program and policy decisions. Incorporating the most recent climate change information and adaptation strategies into these plans would improve state coastal wetland management.

**Likelihood of Success:**

This proposal has significant support within DNRE. Importantly, the newly-formed Michigan Wetlands Association and DNRE are partnering to host a symposium in the spring of 2011 which will focus on current trends and goals of wetlands protection in Michigan, with a keynote address and workshop focus on climate change in coastal wetlands. This symposium will initiate a statewide collaboration to expand the knowledge base and preparation for climate change, and will provide an opportunity to launch this strategy in partnership with other agencies and organizations.

**Strategy Work Plan:**

Total Years: 5

Total Budget: \$300,000

Final Outcomes and Products:

Increased knowledge of climate change trends and predictions within the Great Lakes basin, and improved understanding of the anticipated effects on coastal wetlands. Incorporate coastal wetland predictions and management recommendations into outreach and education efforts and materials. Use climate change predictions and adaptation principles to further enhance coastal wetland restoration and preservation prioritization plans.

**Year 1:**

Description of activities:

Research published climate change studies; work with the Climate Change Action Council and other groups to address climate change issues in coastal wetlands. Partner with researchers and agencies actively working on preparation for improvements to coastal wetland management to address climate change predictions. Improve information sharing between agencies and interest groups.

Outcomes:

Increased knowledge of climate change trends and predictions within the Great Lakes Basin, and improved understanding of the anticipated effects on coastal wetlands. Begin to implement modified coastal wetland management practices to address climate change, incorporate climate change adaptation principles into existing wetland restoration efforts, land acquisition plans, and regulatory permitting and compliance under Part 303, Wetlands Protection, of the NREPA.

Budget: \$60,000

**Year 2:**

Description of activities:

Continue coordination with climate change researchers, Climate Change Action Council, other resource managers, and workgroups to address climate change effects in coastal wetlands.

Outcomes:

Begin to incorporate climate change predictions, adaptation principles, and management recommendations into coastal wetland outreach and education efforts and materials. Begin to prepare guidelines for land managers and regulators to address climate change adaptation issues in coastal wetlands. Continue to improve overall knowledge and management goals to link the current science to agency policy and procedures.

Budget: \$60,000

**Year 3:**

Description of activities:

Continue coordination with climate change researchers, action council, other resource managers, and workgroups to address climate change affect in coastal wetlands.

Outcomes:

Continue to incorporate climate change predictions, adaptation principles, and management recommendations into coastal wetland outreach and education efforts and materials. Continue to prepare guidelines for land managers and regulators to address climate change adaptation issues in coastal wetlands. Expand efforts to link the current science to agency policy and procedures. Use climate change predictions and trends to improve coastal wetland restoration and preservation prioritization plan.

Budget: \$60,000

**Year 4:**

Description of activities:

Continue coordination with climate change researchers, Climate Change Action Council, other resource managers, and workgroups to address climate change affect in coastal wetlands. Expand efforts to link the current science to agency policy and procedures.

Outcomes:

Continue to incorporate climate change predictions, adaptation principles, and management recommendations into coastal wetland outreach and education efforts and materials. Use climate change predictions and trends to further enhance coastal wetland restoration and preservation prioritization plan.

Budget: \$60,000

**Year 5:**

Description of activities:

Continue coordination with climate change researchers, action council, other resource managers, and workgroups to address climate change affect in coastal wetlands. Expand efforts to link the current science to agency policy and procedures.

Outcomes:

Continue to incorporate coastal wetland predictions and management recommendations into outreach and education efforts and materials. Use climate change predictions and adaptation principles to further enhance coastal wetland restoration and preservation prioritization plan.

Budget: \$60,000

**Fiscal and Technical Needs:**

**Fiscal needs:**

Due to the lack of other applicable sources of funding currently available, the Wetland Program will be unable to implement the proposed activities if funding is not obtained through Section 309.

**Technical needs:**

The outcomes specified within this strategy can be achieved primarily by DNRE Wetland Program staff.

## Strategy: Using Monitoring Data to Inform Coastal Wetland Management

### Issue Area:

Wetlands

### Program Change Description:

- New or revised coastal land acquisition, management, and restoration programs;
- New or revised guidelines, procedures, and policy documents which are formally adopted by a state or territory and provide specific interpretations of enforceable CZM program policies to applicants, local governments and other agencies that will result in meaningful improvements in coastal resource management

This strategy builds on the GLRI-funded coastal wetland assessment and monitoring project described in the Wetlands Assessment. The ecology of Great Lakes coastal wetlands is highly complex. A better understanding of the status and trends of these areas will improve management of these unique resources. The ultimate goal of additional monitoring and assessment is linking the best science of the day to policy and practices state-wide. Better scientific data will drive policy and inform best management practices for these highly valued resources.

The broad goal of the strategy is to use comprehensive monitoring data to evaluate the status and trends of Michigan's coastal wetlands over the next five years, and manage the results of the research to provide information to the public, State and local decision makers, and other stakeholders. For example, this information will be provided to the Michigan Legislature for use in crafting new and revised Great Lakes coastal wetlands policy. The development of education and outreach tools will improve individual and local management of coastal wetland resources, public understanding and support for wetland protection efforts, and improved compliance with Part 303 and Part 325 of the NREPA by the regulated community. Overall land acquisition, resource management, and restoration efforts will be improved through information dissemination.

The strategy contains the following components:

**Incorporate the monitoring data and associated findings into a plan, already under development in DNRE Water Resources Division, for improved dissemination of information to improve education and outreach on coastal wetland issues.** This plan includes the development of fact sheets and pamphlets, web-based information sharing, and other activities. This plan will outline the various efforts, both anticipated and underway, that constitute a comprehensive system for making the results of coastal wetland monitoring understandable and easily accessible to all stakeholders and decision makers, including government agencies, tribes, conservation organizations, research institutions, the general public, land managers, and others.

**Develop a Great Lakes Coastal Wetlands website for disseminating the information derived from the monitoring effort to the public and other stakeholders.** The website will make the results of the ongoing monitoring and assessment project easily accessible, and provide links to related sites, such as the Great Lakes Coastal Wetlands Consortium website. Website development and content will be guided by and consistent with the education and outreach plan described above. This website will provide guidelines for land owners and managers to improve compliance with Part 303 and Part 325, as well as increase restoration and enhancement efforts.

**Use the monitoring data to improve regulatory protections for coastal wetlands.** The monitoring data and associated findings will support regulatory decisions, provide research-based expert testimony in contested case hearings, and advance regulatory tools such as Environmental Area designations under Part 323 of the NREPA, and wetland mitigation planning. Importantly, the CIWPIS permitting database

upgrade described in the Wetland Assessment is expected to provide more powerful data management and reporting capabilities, including GIS capabilities that would provide for incorporation of area-specific monitoring and trends data into permit application reviews and other regulatory decisions. Some of these capabilities may include digital GIS mapping of permits and violations, conservation easements, protected species locations, and priority land acquisition areas, with links to site photos and notes, and the coastal wetlands monitoring and assessment data.

**Use the monitoring and trends data to inform development of a state-wide prioritization of coastal wetland restoration and/or preservation areas.** Identify specific coastal wetland functions or values that could be provided, and areas where the cumulative impacts have been particularly severe. Prioritizing restoration and preservation areas, specific functions and values for sites, and potential partnership opportunities would improve Michigan's overall success in the protection and enhancement of coastal wetlands. Michigan will be able to more efficiently allocate funding and technical support for restoration and preservation efforts; for example, through the Coastal and Estuarine Land Conservation Program. The prioritization scheme may also serve as a reference for permit and mitigation reviews under Part 303, and for state and local agencies working towards implementation of Michigan's Climate Action Plan, Wetlands Action Plan, and Wildlife Action Plan.

**Needs and Gaps Addressed:**

A recent influx of GLRI grant monies supporting data collection for biological, chemical, and physical monitoring of Great Lakes coastal wetlands has not been accompanied by funding support to disseminate this information in a way that the public, decision makers, and stakeholders can easily access and understand. To add value, this information needs to be condensed and interpreted to be useful to resource management agencies, conservation organizations, the legislature, and other audiences.

**Benefits to Coastal Management:**

Coastal management in Michigan will be enhanced through better public education, improved regulatory decision making, compliance with wetland and other coastal resource regulations, and the development of a prioritization plan for strategically focusing investments in land acquisition, coastal wetland management, and restoration areas. This goal is designed to support and supplement the recent surge in coastal wetland monitoring and assessment work that is being done along the Michigan coast.

**Likelihood of Success:**

The development of a Coastal Wetlands website with up-to-date scientific information, prioritization plan, educational materials, and legislative summary reporting are all items that have been long-standing Wetland Program goals. The launch of the GLRI funded research provides an excellent opportunity to commit to these tasks. This strategy has widespread agency support, as well as strong support from the GLRI-funded research team conducting the Basin-wide coastal wetland monitoring and assessment.

The CIWPIS upgrade described previously is already underway with DNRE funding. It is integral to the success of this strategy though not a strategy component *per se*.

**Strategy Work Plan:**

The data collection and field work funded through the GLRI grant will occur from 2011 through 2015. The core of this proposed strategy is monitoring and trends information summarization and widespread dissemination. Therefore, it is anticipated that the annual cost of the project will be higher in the first two years as the initial monitoring and assessment efforts get underway.

Total Years: 5

Total Budget: \$340,000

Final Outcomes and Products:

Great Lakes Coastal Wetlands website including access to the monitoring and assessment results and analysis; fact sheets and guidelines for the public, resource managers, permit applicants, regulators; and conservation organizations; Legislative status and assessment report for use in development of new or revised legislation; detailed coastal wetlands prioritization plan and map including target areas for potential coastal wetland acquisition, restoration, mitigation, preservation, Area of Concern target sites, and possible climate change objective sites.

**Year 1:**

Description of activities:

Create the Great Lakes Coastal Wetlands website, link to existing relevant sites. Update the site to include access to the first available monitoring and assessment results from the GLRI funded project, as it becomes available.

Outcomes:

Increased access to existing information on Great Lakes Coastal Wetlands resources, locations, and regulations; improved understanding and compliance with Part 303 and Part 325 through education of land owners and managers, local governments, and resource managers.

Budget: \$80,000

**Year 2:**

Description of activities:

Improvements to the website, updating as more monitoring and assessment data becomes available; begin work on the prioritization map and plan.

Outcomes:

Increased access to existing information on Great Lakes Coastal Wetlands resources, locations, and regulations; improved understanding and compliance with Part 303 and Part 325 through education of land owners and managers, local governments, developers, and other stakeholder groups.

Budget: \$80,000

**Year 3:**

Description of activities:

Improvements and updates to the website and prioritization map and plan as new monitoring and assessment data becomes available; begin drafting the first annual legislative information report; begin drafting educational materials including fact sheets, pamphlets, landowner brochures, prioritization guidelines; work with partner groups to begin planning future, additional coastal wetland monitoring.

Outcomes:

Increased access to information on Great Lakes coastal wetlands resources, locations, and regulations; improved understanding and compliance with Part 303 and Part 325 through education of land owners and managers, local governments, developers, and various other interest groups.

Budget: \$60,000

**Year 4:**

Description of activities:

Improvements and updates to the website and prioritization map and plan as new monitoring and assessment data becomes available; update and submit the legislative information report; continue publishing educational materials; continue work with partner groups to plan or initiate a long-term coastal wetland monitoring plan.

Outcomes:

Increased access to existing information on Great Lakes coastal wetlands resources, locations, and regulations; improved understanding and compliance with Part 303 and Part 325 through education of land owners and managers, local governments, developers, and various other interest groups.

Budget: \$60,000

**Year 5:**

Description of activities:

Improvements and updates to the website and prioritization map as new monitoring and assessment data becomes available; update and submit the legislative information report; continue publishing educational materials; complete work with partner groups on a long-term coastal wetland monitoring plan.

Outcomes:

Increased access to existing information on Great Lakes coastal wetlands resources, locations, and regulations; improved understanding and compliance with Part 303 and Part 325 through education of land owners and managers, local governments, developers, and various other interest groups.

Budget: \$60,000

**Fiscal and Technical Needs:**

**Fiscal Needs:**

It is unlikely that this strategy would be achieved in part or in whole without Section 309 funding. However, the CIWPIS upgrade described in the Wetlands Assessment is supported with separate DNRE funding.

**Technical Needs:**

Most of the outputs detailed within this strategy can be completed by DNRE Water Resources Division staff and MCMP staff. Partner organizations will provide additional technical support, including the GLRI-funded coastal wetland monitoring and assessment project team, and Michigan Wetlands Association. The ongoing CIWPIS upgrade will facilitate incorporation of the recent monitoring and assessment data into regulatory decision making.

## Strategy: High Risk Erosion Area Rule Revisions

### Issue Area:

Coastal Hazards

### Program Change Description:

- New or revised authorities, including statutes, regulations, enforceable policies, administrative decisions, executive orders, and memoranda of agreement/understanding that will improve a State's ability to achieve one or more of the enhancement objectives;
- New or revised guidelines, procedures, and policy documents which are formally adopted by a state or territory and provide specific interpretations of enforceable CZM program policies to applicants, local governments and other agencies that will result in meaningful improvements in coastal resource management

The administrative rules for designated high-risk erosion areas (HREA) promulgated under Part 323, Shorelands Protection and Management, of the NREPA have not been substantially updated since 1992. Changes to the existing rules are warranted given recent advances in the technology applied to the update research used to identify erosional areas, as well as knowledge that has been gained regarding the application of the current erosion reference feature, among other issues. The DNRE Water Resources Division proposes to research necessary rule changes, build consensus through a formal stakeholder process, draft rule changes, and move these rule changes through the administrative process for full adoption. MCMP staff will provide technical assistance on an as-needed basis.

The following objectives will be pursued through the rule revisions:

- Ensure setback regulations coincide with the measuring point used in recession rate studies that has evolved due to advances in Global Positioning System (GPS) and Geographic Information System (GIS) accuracy.
- Provide for flexibility in recession rate research methodology to incorporate new technologies, data sets, and approaches as they become available.

Extensively revise the HREA regulations by promulgating rules to

- Change the regulations so elements of the research correspond to parameters used in reviewing permit applications.
- Clarify and simplify as appropriate standards and definitions.
- Remove unnecessary regulations while maintaining protection of the coastal resources.
- Change definitions to correspond with revised recession rate study methodology and regulatory amendments.

### Needs and Gaps Addressed:

Benchmark best practices in coastal erosion programs in other coastal states, focusing on Great Lakes states. Increase the effectiveness of the HREA regulations by simplifying the administrative rules while maintaining protections against erosion hazards.

### Benefits to Coastal Management:

Effective coastal construction setback standards are needed to ensure protection of public and private property along the coast and more importantly provide for protection of beach resources while minimizing the need for shore protection structures, which have significant impacts on beaches.

**Likelihood of Success:**

The proposed rule revisions are supported by DNRE Water Resources Division. The administrative rule promulgation process requires stakeholder and legislative involvement.

**Strategy Work Plan:**

Total Years: 5

Total Budget: \$330,000

Final Outcomes and Products:

Improve program efficiency

New administrative rules and an improved outreach program

**Year 1:**

Description of activities:

- Contract benchmarking best practices in the erosion programs of other coastal states. Evaluate these other programs to further evaluate possible changes in Michigan's HREA administrative rules.
- Identify performance issues with Michigan's current HREA program.
- Propose changes to the HREA Administrative Rules.

Outcomes:

Preparations made for the administrative rule amendment process.

Budget: \$50,000

**Year 2:**

Description of activities:

Establish and convene stakeholders committee to work with DNRE staff in developing rule amendments.

Outcomes:

Rule amendment document developed for use as process continues.

Budget: \$30,000

**Year 3:**

Description of activities:

Use information developed through stakeholder initiative to commence the process of promulgating administrative rules pursuant to State law. This process involves several steps, including but not limited to publication of notices, holding state-wide public hearings, possible changes to the proposed administrative rules, and review by the legislative committee responsible for rule amendment promulgation.

Outcome:

Draft of new administrative rules

Budget: \$50,000

**Year 4:**

Description of activities:

Complete administrative rule promulgation process pursuant to State law. This process involves several steps, including but not limited to publication of notices, holding state-wide public hearings, possible changes to the proposed administrative rules, and review by the legislative committee responsible for rule amendment promulgation.

Outcome:

New administrative rules

Budget: \$50,000

**Year 5:**

Description of activities:

Implement amended administrative rules, including staff training, program web-site modification and development, and outreach efforts to local units of governments and property owners.

Budget: \$150,000

Outcome:

Fully implement the new administrative rules, and outreach to local government partners and the regulated community.

**Fiscal and Technical Needs:**

Section 306 funding with state matching funding, or other funding avenues will be needed in the event that 309 funding is unavailable and/or insufficient to achieve the program change.

Technical support will be sought from NOAA, the Coastal States Organization, universities, and other agencies to aid in Michigan's development of strategies for stakeholder and public participation in the rule promulgation process and in developing an effective outreach strategy.

## **Strategy: Improved Rip Current Forecasting and Communication**

### **Issue Areas:**

Coastal Hazards

### **Program Change Description:**

- New or revised guidelines, procedures, and policy documents which are formally adopted by a state or territory and provide specific interpretations of enforceable CZM program policies to applicants, local governments and other agencies that will result in meaningful improvements in coastal resource management

The Great Lakes possess both the breadth and power to develop the dynamics necessary for the production of rip currents, which pose a significant threat to the recreational community. The rip current strategy is a multifaceted approach aimed at increasing our scientific knowledge regarding Great Lakes rip current formation and forecasting, thereby increasing the ability to aid hazard mitigation planning efforts at the state and local level. It will expand and enhance existing outreach and education efforts related to rip current hazards. The MCMP will work with Recreation Division and University of Michigan Department of Naval Architecture and Marine Engineering (who in turn will continue to work with National Weather Service, Great Lakes Forecast Offices) to improve and implement rip current forecasting methods and public advisory systems at state park beaches. Additionally, the MCMP will work with University of Michigan, Michigan Sea Grant, and local governments to develop and promote guidance for improving forecasting methods and public awareness of rip current hazards and safety measures at local public beaches.

The first two phases of the strategy will focus on building the knowledge base with respect to the forcing factors of Great Lakes rip currents, which differ in several important and poorly understood ways from classic open ocean rips. Funding will be provided to the University of Michigan to deploy recently acquired shore based radar units specifically designed to map rip currents in real time. These units will support the acquisition of time-sensitive “perishable” data before, during, and after a rip event to determine if morphodynamic influences of nearshore features are playing a role in rip current generation. Phase II of the research effort would continue work with the University of Michigan and apply knowledge gained in the first year towards a spatial analysis to identify potential “hotspots” for rip occurrence based on the morphology, fetch, wave climate and other characteristics of specific stretches of the lakeshore. This analysis will focus on identifying those areas that are open to the public for swimming - such as those within the state park system - which are particularly susceptible to rip current formation. The assessment will incorporate recent LiDAR bathymetric data available for a large expanse of the Lake Michigan shoreline, high resolution aerial photographs and pictometry, and CZM-funded bathymetric survey data previously collected by the University of Michigan, as deemed appropriate.

Research findings will be applied towards the continued development of recommendations to Great Lakes Forecast Offices of the National Weather Service identifying appropriate revisions and refinements to their current forecasting methods for rip current hazards. Specifically, for each field data collection, close coordination will occur with the local forecast office to compare forecasted and observed beach and nearshore conditions. The present rip current forecasting used by these offices will be continuously improved as new data is collected. To date, these efforts have been coordinated with the Marquette, Grayling, and Grand Rapids Forecast Offices.

Knowledge gained during the research phase of the project will also be applied in the form of recommendations to DNRE’s Recreation Division for approaches to better inform state park managers of the overall level of rip current-related risks at individual park locations, and an approach for park managers to incorporate information such as the National Weather Service surf forecasts into their routine management activities.

Throughout the Michigan state park and recreation area system there are water frontages that are buoyed in areas designated for swimming, commonly called a “swimming beach.” The swimming beach designation refers to a regulated area the public may use for swimming. For water frontage to be approved as a designated beach requires local approval of a beach permit application and the placement of buoys or markers identifying the swimming area. Types of buoys or markers, spacing, and proper marking and wording of the buoy must conform to existing established regulations, as per MCL 324.80198b. The permit required for the placement of buoys is obtained from the Marine Safety Section of the Law Enforcement Division, DNRE or the District Law Supervisor. The third and final year of the strategy will focus on revisions to the DNRE Recreation Division’s Designated Beach Policy (Parks and Recreation Policy #3.6) to incorporate a summarized analysis of the rip current hazards along Michigan’s coast as well as a process that beach managers may employ on a daily basis in order to properly assess the potential hazard that exists on any given day. The revisions would also address the potential for incorporating review of National Weather Service surfcast information as a criterion for determining whether to fly the green, yellow, or red flag as part of the beach hazard warning system.

**Needs and Gaps Addressed:**

A significant amount of scientific research has been conducted regarding rip current hazards on the ocean coasts. However, the Great Lakes have not benefitted from a comparable research effort on this issue. While some aspects of the ocean coast research apply to the Great Lakes, it is advisable to further these efforts with a specific Great Lakes context because the hydrodynamic conditions contain distinct differences from the salty shores. In recent years Michigan Sea Grant, Marine Hydrodynamics Lab at the University of Michigan, and National Weather Service have partnered on rip current research and outreach and education efforts. Although this partnership has resulted in significant progress, there exists a gap in Great Lakes Rip current research knowledge and, in light of continued rip current-related incidents, there also remains the need to further strengthen outreach and education efforts to public beach managers.

**Benefits to Coastal Management:**

Improved rip current risk forecasting and communication is expected to reduce the number of fatalities due to rip currents at Michigan’s Great Lakes public beaches.

**Likelihood of Success:**

Michigan Sea Grant, University of Michigan Department of Naval Architecture and Marine Engineering, and DNRE Recreation Division are interested partners in this project.

**Strategy Work Plan:**

Total Years: 3

Total Budget: \$170,000

Final Outcomes and Products:

This strategy will provide a significant increase in the understanding of Rip Current formation and associated hazards from the Great Lakes perspective and will provide coastal park managers with guidance intended to assist them in the assessment of rip current hazards at the site level. Products include field data, scientific reports and publications, and a revised guidance document within DNRE’s Recreation Division.

**Year 1:**

Description of activities:

The MCMP will work with the University of Michigan to deploy recently acquired shore-based radar units specifically designed to map rip currents in real time. Based on this data, and past research efforts the university researchers will further assess those weather conditions and site characteristics that combine to raise the risk associated with rip currents.

Outcomes:

Improved understanding of rip current dynamics and forcing factors in the Great Lakes

Budget: \$60,000

**Year 2:**

Description of activities:

Results of year one research will be applied towards the spatial identification of specific stretches of shoreline that are “high-risk” in terms of being prone to rip current formation. Recommendations will be provided to the DNRE’s Recreation Division and local offices of the National Weather Service regarding ways to improve rip current forecasting and the communication of these hazards to beach managers.

Outcomes:

Increased ability to forecast rip current hazards. Improved information to beach managers thereby promoting better information to the public

Budget: \$60,000

**Year 3:**

Description of activities:

Revise the DNRE Recreation Division’s designated beach policy to better inform managers of rip current hazards and approaches to mitigate these hazards.

Outcomes:

Beach hazard warning system that is more reflective of true rip current hazards.

Budget: \$50,000

**Fiscal and Technical Needs:**

Additional components to this project may be added on an as-needed basis with Section 306 CZM funding support. Coordination with Michigan Sea Grant will aid outreach and education efforts.

## Strategy: Guidance for CZM-Funded Public Access Projects

### Issue Area:

Public Access

### Program Change Description:

- New or revised guidelines, procedures, and policy documents which are formally adopted by a state or territory and provide specific interpretations of enforceable CZM program policies to applicants, local governments and other agencies that will result in meaningful improvements in coastal resource management

The MCMP proposes to work with DNRE Divisions, coastal communities, Michigan Association of Regions, recreation organizations, and other partners to develop a public involvement process for assessing coastal public access needs on a regional basis and identifying types of projects that would represent the most strategic uses of CZM public access funding. Examples of the factors that would be considered in this determination are existing coastal access in the region, types of projects eligible for other public access and recreation grant programs in DNRE, and the impact of fluctuating lake levels on the success of various types of public access projects. The MCMP would use the information gained through the process to create and adopt guidance for selecting public access projects for CZM pass-through grant support. This guidance would be available to the public to improve the quality of public access grant applications.

The process will involve identifying and reviewing existing sources of information on public access in Michigan, extracting the information specific to coastal public access, and compiling the data in a coastal public access inventory. The inventory data will provide the foundation for developing a coast-wide GIS database of public access sites. County maps produced with this GIS data will be posted on the Program website, for reference in an accompanying online survey designed to solicit input from the public and coastal community officials on major public access gaps and funding needs, by county. The survey for the general public will solicit information on public access gaps and underserved geographic areas of the coast, by type of access. The survey for local officials will also pose questions on previous assessments of local access needs, funding needs, and access site maintenance issues.

The MCMP will work with project partners to analyze the information derived from the surveys, and summarize the major findings and themes on a county and regional basis. These summary statistics will inform the development of MCMP guidance on public access projects that are CZM funding priorities.

### Needs and Gaps Addressed:

The MCMP does not have a public involvement process for assessing and forecasting regional coastal public access needs.

The MCMP does not have a comprehensive inventory of existing coastal public access sites.

Other grant programs in DNRE fund public access projects, and the MCMP has a strong interest in coordinating with these programs to identify the most strategic way to use CZM funds in leveraging and advancing the agency's support for public access.

Michigan is seeking to expand the Coastal Boundary in 2011, and the MCMP expects that the increased program area along the coast of the Lower and Upper Peninsulas will translate into a greater number of communities applying for funding for public access projects. The MCMP is interested in providing guidance to communities on the types and locations of public access projects appropriate for CZM funding support.

**Benefits to Coastal Management:**

The public involvement process and resulting guidance will enhance the MCMP's ability to encourage, identify, and fund public access projects that meet demonstrated local and regional needs, have strong public support, and require low levels of annual maintenance for long-term, successful use. The MCMP will improve coordination and reduce overlap with other DNRE programs that fund public access projects.

**Likelihood of Success:**

Multiple sources of information on public access in Michigan have been developed or are under development, including the Michigan Recreational Boating Information System, Conservation and Recreation Lands Database, West Michigan Parks and Recreation Inventory, the asset inventories of the communities in the Michigan Port Collaborative, and many coastal community public access plans, guides, and projects developed with CZM funding support. The MCMP will draw on these and other existing sources of information to create the inventory of coastal access sites to use in developing the surveys.

In 2011, the MCMP will participate in the NOAA Coastal Management Fellowship Program and work with the Fellow and Michigan Sea Grant on a two-year project to identify, characterize, and support Michigan's coastal working waterfronts. A significant component of the project involves data collection and research on water-dependent uses in coastal communities, and considerable data on coastal public access in these communities will result. These data will be applied to the strategy.

The MCMP is currently in the process of developing a contact information database for all coastal units of government, specifically, all counties, townships, cities, villages, and conservation districts in the coastal zone. This database will prove invaluable in publicizing and deploying the online surveys. The MCMP will also publicize the surveys in the quarterly electronic newsletter, *Michigan Coastal News*.

The MCMP's partner agencies, organizations, communities and the public have a substantial interest and stake in identifying coastal public access needs for future funding support, and we believe they will participate in this strategy. The MCMP will adopt the public involvement process and resulting guidance developed through this strategy, and will implement the guidance in subsequent pass-through grant cycles using Section 306/306A funds.

**Strategy Work Plan:**

Total Years: 2

Total Budget: \$125,000

Final Outcomes and Products: Coastal public access inventory and GIS database; public involvement process for identifying public access needs on a regional basis; guidance for CZM pass-through grant applicants on eligible public access projects.

**Year 1:**

Description of activities:

Public access inventory development; begin GIS database development

Outcomes:

Coast-wide public access inventory

Budget: \$75,000

**Year 2:**

Description of activities:

Complete GIS database development; survey development and deployment; survey analysis; guidance development, adoption, and implementation

Outcomes:

Coastal public access GIS database; adopted guidance on CZM-funded public access projects; strategy completion

Budget: \$50,000

**Fiscal and Technical Needs:**

The Section 309 funding identified in the strategy work plan is sufficient to develop the regional inventories of existing coastal public access sites based on available data, and the GIS public access database founded on the inventories. The MCMP will use Section 306 funding to post the county public maps on the Program website; promote and conduct the online surveys; analyze the survey results; develop and adopt the guidance; and publish the guidance online. These tasks will accomplish the program change.

The MCMP will partner with the agencies, organizations, and communities that have existing information on coastal public access, including GIS data. Current MCMP partners likely to assist in this strategy include, but are not limited to DNRE Recreation Division, DNRE Forest Management Division, State Center for Shared Solutions and Technology Partnerships, Michigan Sea Grant, Michigan Port Collaborative, Ducks Unlimited, The Nature Conservancy, Michigan Association of Regions, and many coastal counties, cities, villages, and townships. The Program will contract for the development of the public access inventory and GIS database.

The MCMP intends to use a free or low-cost online survey mechanism to conduct the public access survey. The Program does not anticipate additional technical needs beyond its current capacity to achieve the program change.

## Strategy: Addressing Critical Coastal and Offshore Data Gaps

### Issue Areas:

Wetlands; Cumulative and Secondary Impacts; Great Lakes Resources; Energy and Government Facility Siting

### Program Change Description:

- New or revised authorities, including statutes, regulations, enforceable policies, administrative decisions, executive orders, and memoranda of agreement/understanding that will improve a State's ability to achieve one or more of the enhancement objectives;
- New or revised coastal land acquisition, management, and restoration programs; and
- New or revised guidelines, procedures, and policy documents which are formally adopted by a state or territory and provide specific interpretations of enforceable CZM program policies to applicants, local governments and other agencies that will result in meaningful improvements in coastal resource management

In 2011, the DNRE anticipates the responsibility and authority for administering a new regulatory program addressing Great Lakes offshore wind energy developments, under a new Part 324 of the NREPA. Once the program is established, the Department will be required to make regulatory decisions on proposed offshore wind energy facilities and associated infrastructure. The decisions must provide for the protection of coastal resources, including public trust resources. This strategy describes the research and data on these resources that the Department will need to inform these decisions, and the process for obtaining this information and incorporating it into regulatory decision-making, including decisions made at the local government level. By and large, the necessary data does not presently exist.

The primary research and survey needs are as follows: Research on coastal and offshore bird and bat migration routes and stop-over habitat; surveys of protected species sensitive to wind energy facility development and operation in the coastal zone, including threatened and endangered species; and assessments of near-shore fisheries habitats. The MCMP proposes that a technical advisory group of DNRE regulatory staff, agency and academic researchers, and wind energy industry representatives would provide guidance on research and survey priorities, geographic area priorities, and experimental design. The main research and survey themes will include:

- Identification and mapping of coastal lands, Great Lakes islands, and near-shore areas used by migrating birds and bats, and colonially-breeding waterbirds
- Surveys and location data for threatened and endangered species in the coastal zone
- Identification and mapping of offshore areas used by migrating birds and bats, and offshore rafting locations used by overwintering and migrating waterbirds and waterfowl
- Research on influence of weather conditions and season on coastal and offshore migrating behavior
- Research on migration flight heights over land and water
- Assessment and mapping of near-shore habitats important for fisheries

For the purposes of the fisheries habitat assessments, near-shore areas include submerged lands and the water column from a depth of 0 meters (shoreline) to the 30 meter (98.4 feet) depth contour. Near-shore areas do not extend upstream from coastal river mouths, nor do they include riverine coastal wetlands.

Known geographic priorities for research on bird and bat coastal and offshore habitat use and migration routes include, but are not limited to:

- Lake Michigan - Beaver Island archipelago, Manitou and Fox Islands, Leelanau Peninsula, Garden Peninsula, Bays de Noc, Straits of Mackinac, southern Lake Michigan

- Lake Huron - Saginaw Bay, Tawas Point, North Point (Alpena County), northern and mid-Lake Huron, Straits of Mackinac
- Lake Superior – Whitefish Point, Whitefish Bay, Keweenaw Peninsula
- Southeast Michigan – St. Clair and Detroit River corridors, western Lake Erie

Known survey priorities for threatened and endangered species in the coastal zone include, but are not limited to:

- Piping plover (state and federally endangered)
- Henslow's sparrow (state endangered)
- Red-shouldered hawk (state threatened)
- Hine's emerald dragonfly (state and federally endangered)
- Copperbelly water snake (state endangered, federally threatened)

The information and GIS data resulting from the offshore and near-shore research would be incorporated into the Part 324 regulatory decision-making process and guidance for offshore wind energy developers via the lakebed alteration DST, described in the Great Lakes Resources Assessment. For example, the Department would use the GIS data to evaluate potential impacts of a proposed offshore wind energy facility to the various resources (birds, bats, fisheries) in the area of the proposed facility. The data would also allow the Department to develop alternatives to avoid and minimize adverse impacts to the resources, and develop mitigation measures as required by law.

The Department would use the survey, research, and GIS data resulting from the coastal onshore studies to develop online guidance for the onshore wind energy industry, local government planners, and the public. The guidance would encompass written guidelines for avoiding and minimizing wildlife impacts resulting from the siting, construction, and operation of coastal wind energy facilities. The written guidance would be coordinated with online, coastal county maps produced to indicate specific geographic areas where there is significant potential for wildlife impacts from wind energy development. Technical assistance for implementing the guidance would include workshops for target audiences and model wind energy land use plans. Additionally, the location data obtained for threatened and endangered species will be entered into the Biotics database maintained by the Michigan Natural Features Inventory, Michigan State University. The information in Biotics is the basis of the free Environmental Review process available to state and local government agencies, environmental consultants, the regulated community, and the public. Regulatory agencies use Environmental Reviews to inform permitting decisions, and the regulated community uses the information to guide development decisions.

#### **Needs and Gaps Addressed:**

Information on bird, bat, and threatened and endangered species use of coastal lands and offshore waters is lacking or outdated for most of Michigan's coastal zone, as explained in the Cumulative and Secondary Impacts Assessment. This information is critically needed for decisions on the siting and operation of coastal and offshore wind energy developments, including regulatory decisions made under the authority of the future Part 324, which is the focus of a companion strategy, and decisions made at the local government level regarding onshore wind farms.

Information on coastal near-shore fisheries habitat is lacking for most of Michigan's coastal zone, as explained in the Great Lakes Resources Assessment. This information is critically needed for decisions on the siting and construction of offshore wind energy developments and other developments, including regulatory decisions made under the authority of Part 303 (Wetland Protection), Part 323 (Shorelands Protection and Management), Part 325 (Great Lakes Submerged Lands), and the future Part 324 of the NREPA. For example, the DNRE would use this data to evaluate permit applications for dredging, dock construction, and other projects in the coastal near-shore, including U.S. Army Corps of Engineers harbor dredging projects.

**Benefits to Coastal Management:**

The data developed through this strategy will establish the information basis for the Department's efforts to protect migratory birds, bats, and threatened and endangered species from the impacts of coastal and offshore wind energy development, including direct mortality from turbine strikes. It will also establish the information basis for the Department's efforts to manage and mitigate impacts from development or alteration of near-shore fisheries habitats.

The online data and guidance developed through this strategy will establish the information basis for local government efforts to protect migratory birds, bats, and threatened and endangered species from the impacts of coastal wind energy development through the adoption of local land use plans and zoning ordinances. The online data and guidance will also be available for the general public to consider when reviewing and commenting on proposed projects, and for the regulated community to use in shaping proposed projects to minimize adverse impacts to these resources.

The data developed through this strategy would be incorporated into any future efforts to develop a coastal and marine spatial plan for Michigan's coastal zone, as described in the Special Area Management Planning Assessment. However, development of such a plan is not a component of this strategy, or any companion strategy.

**Likelihood of Success:**

The DNRE is currently participating in a legislative workgroup drafting legislation to regulate offshore wind energy development in Michigan's Great Lakes, under a new Part 324 of the NREPA. This workgroup includes legislators from the House and the Senate, who will sponsor the bill once introduced to the Legislature. The draft legislation contains specific details for the siting, construction, operation, and decommissioning of wind energy facilities in the Great Lakes; outlines the requirements to nominate Great Lakes bottomland parcels for lease; describes an auction process to acquire bottomland parcels; specifies information and studies required when submitting permit applications for site assessment, construction, operation, and decommissioning activities; and establishes criteria for reviewing these applications. The draft legislation also provides for public comment periods and public hearing opportunities for the general public to review and provide input on proposed bottomland parcel nominations and permit applications for site assessment, construction, operation, and decommissioning work.

By all expectations, the legislation will be introduced in the remaining days of the current session or promptly in the following session of the Legislature. The need for such legislation is widely recognized, for example, in the October 1, 2010, *Report of the Michigan Great Lakes Wind Council* (available at: [http://www.michiganlowcouncil.org/GLOWreportOct2010\\_with%20appendices.pdf](http://www.michiganlowcouncil.org/GLOWreportOct2010_with%20appendices.pdf)). The Department anticipates the authority to develop and administer a Part 324 regulatory program in 2011. At that time, development of the data and guidance described in this strategy will be a Department priority. The MCMP will seek NOAA approval to include the Part 324 of the NREPA among the Program's enforceable policies.

**Strategy Work Plan:**

Total Years: Five

Total Budget: \$1,680,000

Final Outcomes and Products:

- GIS data layers for the lakebed alteration decision support tool
- Guidance and technical assistance on siting and operating coastal and offshore wind energy developments to avoid and minimize wildlife and fisheries impacts
- New and updated threatened and endangered species occurrence data for the coastal zone in the Biotics database

**Year 1-5:**

Description of activities:

Research, surveys, Biotics data updates, GIS data development, work on the online guidance and related technical assistance would occur in every year of the five-year strategy implementation timeframe. A technical advisory group would guide the direction and proportion of funding dedicated to each of these activities on an annual basis.

Outcomes:

As described in Final Outcomes and Products

Budget: \$335,000 per year divided among the following activities:

- \$120,000 annually for bird and bat migration and habitat use studies
- \$75,000 annually for near-shore fisheries habitat assessments
- \$35,000 annually for development and integration of GIS data layers into the lakebed alteration decision support tool
- \$60,000 annually for threatened and endangered species surveys in the coastal zone
- \$50,000 annually for development of online guidance and delivery of technical assistance workshops

**Fiscal and Technical Needs:**

Section 309 funding will be sufficient to develop the data and guidance described above, and to support development of the Part 324 Program described in a companion strategy. Once the Part 324 Program is established and Part 324 is approved as an enforceable policy for the MCMP, program administration will be partly supported by Section 306 funding. Additional funding sources for the Part 324 Program are expected to include the State General Fund, annual rental fees from bottomland leases, and permit application fees. Once the offshore wind energy facilities begin generating electricity the Department is also expected to receive royalty payments.

The MCMP will partner with the agencies, organizations, and academic institutions that have the trained personnel needed to conduct the research and surveys, and develop the GIS data and online guidance. Current MCMP partners who would assist in this strategy include, but are not limited to DNRE Wildlife Division, DNRE Fisheries Division, Michigan Natural Features Inventory – Michigan State University, Institute for Fisheries Research, University of Michigan, Central Michigan University, The Nature Conservancy, Department of Energy, Labor, and Economic Growth, and Michigan Association of Regions.

Ideally, the GIS data developed through this strategy and incorporated into the lakebed alteration decision support tool would be served to the public and departmental staff through a web-based viewer. This strategy does not include development and deployment of the viewer, and the associated upgrades needed for certain DNRE staff computers to run the ArcView-based GIS tool. Instead, the Department may use Section 306 funding or other Part 324 Program funding to meet this need.

## Strategy: Offshore Wind Energy Regulatory Program Development

### Issue Areas:

Great Lakes Resources; Energy and Government Facility Siting

### Program Change Description:

- New or revised authorities, including statutes, regulations, enforceable policies, administrative decisions, executive orders, and memoranda of agreement/understanding that will improve a State's ability to achieve one or more of the enhancement objectives;
- New or revised coastal land acquisition, management, and restoration programs; and
- New or revised guidelines, procedures, and policy documents which are formally adopted by a state or territory and provide specific interpretations of enforceable CZM program policies to applicants, local governments and other agencies that will result in meaningful improvements in coastal resource management

Legislation is under development to authorize the DNRE to regulate the siting and leasing of Great Lakes public trust bottomlands for offshore wind energy development. When the legislation is enacted into law, the DNRE will be required to implement the provisions in the new statute, including development of a database to track bottomland parcel nominations and permit applications, a website to provide information to applicants and the general public, operational procedures for the auction process and for processing applications, staff needs and training (GIS software), development of forms, internal accounting, and other associated activities.

The draft legislation requires the DNRE to hold a nomination period 90 days after the effective date of the act. In addition, the DNRE will be required to identify categorical exclusion areas where no offshore parcels can be nominated due to the presence of shipping channels, military operation areas, utility line corridors, and other incompatible uses. The Department will also identify conditional areas with one or more competing uses such as recreational/commercial fishing, navigation, high biological activity, and shipwreck sites. These areas would need to be the focus of studies to determine their suitability for offshore wind energy development.

The following activities and items are the basis of the proposed Part 324 Program:

- Development of initial program procedures, processes, and criteria related to application reviews, auctions, nominations, and accounting
- Parcel nomination/lease and permit tracking database development
- Update and maintenance of the GIS-based lakebed alteration decision support tool (DST)
- Integration of the permitting/nomination database and GIS DST
- Program guidance, including guidance for the regulated community, and guidance for the public on involvement in the regulatory process – websites, application instructions, public comment submittal, etc.
- Memoranda of Understanding development between DNRE divisions, and with other state and federal agencies
- Public education and outreach on the new regulatory program, including a summary of the statute and program, application review outlines, public comment submittal guidance, and other information.

Many of these program components would be developed with start-up funding appropriated by the Legislature. Part 309 funds would be used in FY 2012 and beyond for the promulgation of administrative rules to provide for authority to distribute pass-through funding - from royalties secured from the bottomlands leases - for the purposes of bottomlands protection and management, aquatic habitat enhancement, shipwreck site management, and other mitigation measures. Additionally, data

and work products developed through program activities would be incorporated into the lakebed alteration tool GIS for use by Water Resources Division and other divisions within the DNRE.

**Needs and Gaps Addressed:**

Should the Part 324 become law as expected, the DNRE will be required to have an operational program within a short timeframe. Though program start-up funding would help initiate many of the tasks mentioned above, the initial funding will not cover all needed items and actions, including development and promulgation of administrative rules under the act.

One of the most pressing needs in the 2012-2016 timeframe is the transformation of the lakebed alteration DST into a system that provides regulatory program staff GIS-based decision support and the capacity to track and manage active permit files. The DST platform will need to be transitioned from its current location within the Institute for Fisheries Research at the University of Michigan to DNRE servers. Such a transition will require coordination and contracting with the Michigan Department of Technology, Management, and Budget to ensure the setup within the state system is reliable and sustainable.

**Benefits to Coastal Management:**

Part 324 will be a new enforceable policy for the Michigan Coastal Management Program and will enhance the State's ability to maximize the benefits and to avoid, minimize, and mitigate the impacts of offshore wind energy developments.

**Likelihood of Success:**

The DNRE is currently participating in a legislative work group drafting legislation to regulate the siting and operation of offshore wind energy facilities in the Great Lakes. This work group includes two state representatives and two state senators who will sponsor the bill. By all expectations, the legislation will be introduced in the remaining days of the current session or promptly in the following session of the Legislature. The need for such legislation is widely recognized, for example, in the October 1, 2010, *Report of the Michigan Great Lakes Wind Council* (available at: [http://www.michiganlowcouncil.org/GLOWreportOct2010\\_with%20appendices.pdf](http://www.michiganlowcouncil.org/GLOWreportOct2010_with%20appendices.pdf)). The Department anticipates the authority to develop and administer a Part 324 regulatory program in 2011. At that time, development of the program will be a Department priority. The MCMP will seek NOAA approval to include the Part 324 of NREPA among the Program's enforceable policies.

Success of the proposed Part 324 Program depends, in part, on acquiring data on migratory bird and bat use of offshore areas and data on nearshore fisheries habitat, which is the focus of a companion strategy. These data would inform regulatory decisions made under the authority of the proposed Part 324.

Part 324 administrative rule promulgation has DNRE support. The rule promulgation process requires stakeholder and legislative involvement.

**Strategy Work Plan:**

Total Years: 5

Total Budget: \$500,000

Final Outcomes and Products: Integrated database and GIS to manage the day-to-day operations of the proposed Part 324 program. Workgroup meetings, reports, continually updated website, program procedures, public education materials, applicant guidance materials, administrative rules.

**Year 1:**

Description of activities:

Water Resources Division will work with State of Michigan IT staff and GIS developers at the Institute for Fisheries Research to transform the existing DST into a comprehensive permit

management and decision support system within the State's information technology framework. Staff will begin to develop procedures to guide program development and administration, public education materials, and applicant guidance materials. DNRE will work with the Institute for Fisheries Research and others as necessary to incorporate any new and updated data layers necessary to better inform decision making within the DST.

**Outcomes:**

Implementation of a comprehensive GIS-based decision support and permit management system.

Budget: \$100,000

**Year 2:**

**Description of activities:**

Begin administrative rule-making process to provide for authority to distribute pass-through funding royalties from the bottomlands leases for the purposes of bottomlands protection and management, aquatic habitat enhancement, shipwreck site management, and other mitigation measures. A stakeholder group will be formed with work products (recommendations, reports, meeting minutes, etc.) produced. Additionally, certain work products would be incorporated into the lakebed alteration DST for use by Water Resources Division and other DNRE divisions. Continue development of program procedures, public education materials, and applicant guidance materials, as necessary.

**Outcomes:**

Draft version of administrative rules under Part 324. Release of additional guidance documents and program information for applicants.

Budget: \$100,000

**Year 3:**

**Description of activities:**

Complete administrative rule-making process and promulgation. Continue development of program procedures, public education materials, and applicant guidance materials as necessary. DNRE will work with the Institute for Fisheries Research and others as necessary to incorporate any new and updated data layers into the DST.

**Outcomes:**

Promulgation of administrative rules under Part 324. Release of additional guidance documents and program information for applicants.

Budget: \$100,000

**Year 4:**

**Description of activities:**

Continue updates to database and GIS, website, program procedures, public education materials, and applicant guidance materials. Significant updates to the DST will likely be necessary at this time.

Outcomes:

Implementation of new administrative rules and continued effective implementation of statutory requirements by ensuring DST is maintained and fully updated.

Budget: \$100,000

**Year 5:**

Description of activities:

Continue updates to database and GIS, website, program procedures, public education materials, and applicant guidance materials. DNRE will work with the Institute for Fisheries Research and others as necessary to incorporate any new and updated data layers into the DST.

Outcomes:

Implementation of new administrative rules and continued effective implementation of statutory requirements by ensuring DST is maintained and fully updated.

Budget: \$100,000

**Fiscal and Technical Needs:**

**Fiscal needs**

The draft legislation provides for seed money for basic program development, including funding for two full-time employees for the first year. Once the Part 324 Program is established and Part 324 is approved as an enforceable policy for the MCMP, program administration will be partly supported by Section 306 funding. Additional funding sources for the Part 324 Program are expected to include the State General Fund, annual rental fees from bottomland leases, and permit application fees. Once the offshore wind energy facilities begin generating electricity the Department is also expected to receive royalty payments.

**Technical needs**

The DNRE has requested funding for two full time positions (professional specialist and a GIS specialist) to staff this program. The sponsoring legislators have agreed to include that request in the legislation. The DNRE has provided a budget to the legislative workgroup that includes funds for database development and continued use of the GIS. The Department will coordinate with the Michigan Department of Technology, Management, and Budget to transition the lakebed alteration DST from the Institute for Fisheries Research to DNRE.