Coastal Zone Canada Conference 2016

Great Lakes Coastal Resilience Planning Guide

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Association of State Floodplain Managers

Toronto, ON
June 13, 2016

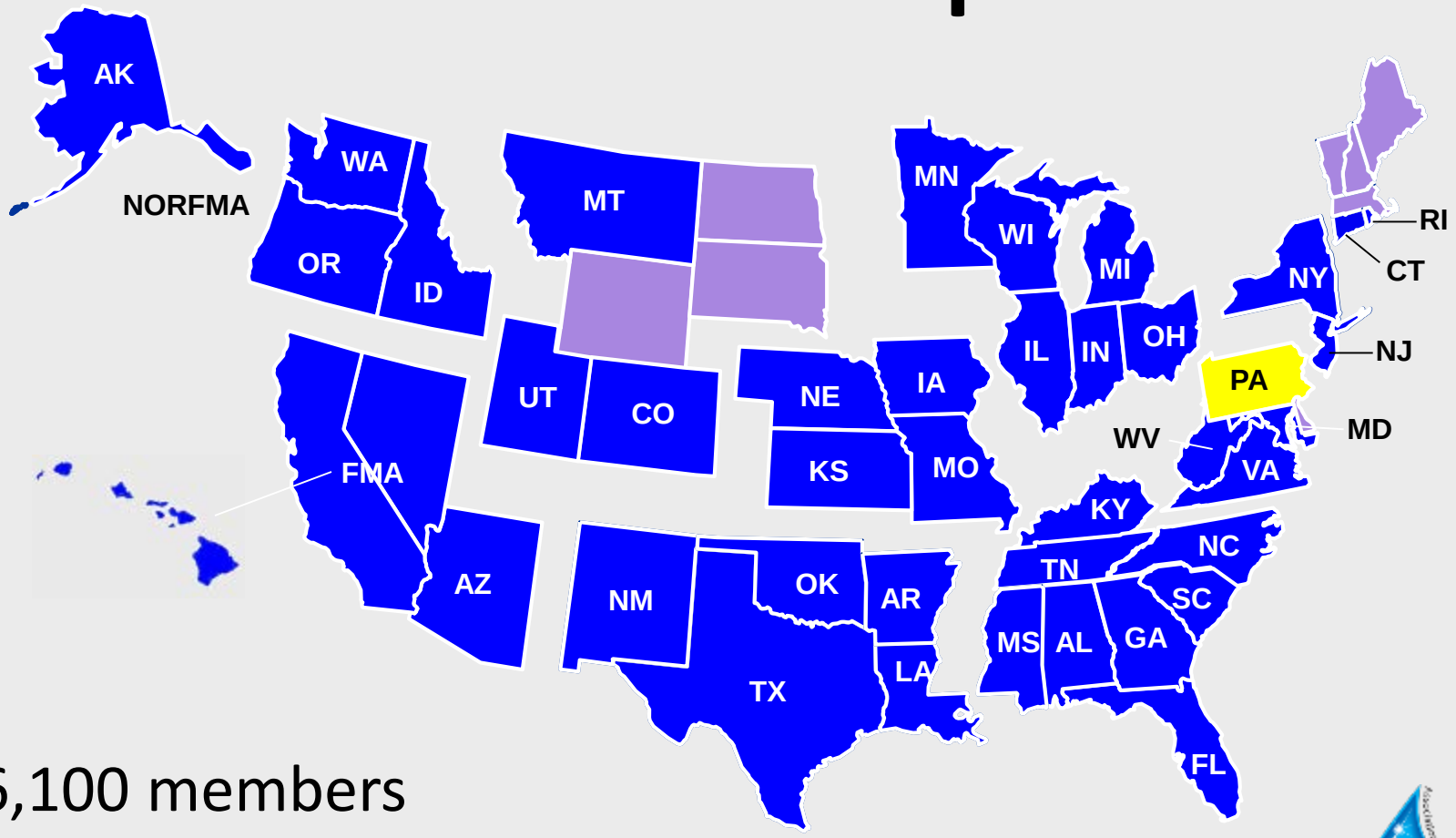
ASFPM Mission

Reduce the losses, costs, and human suffering caused by flooding.

and…

Protect the natural and beneficial functions of floodplains without impacting the property rights of others.

ASFPM Chapters



16,100 members

9,000 Certified Floodplain Managers

- 36 Chapters
- State Assoc. & Pending Chapters

GLCR PLANNING GUIDE

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GREAT LAKES COASTAL RESILIENCE PLANNING GUIDE

Case Studies | Climate & Environment | Local Stories | Maps, Tools & Data | Library | People & Organizations | Events & Funding

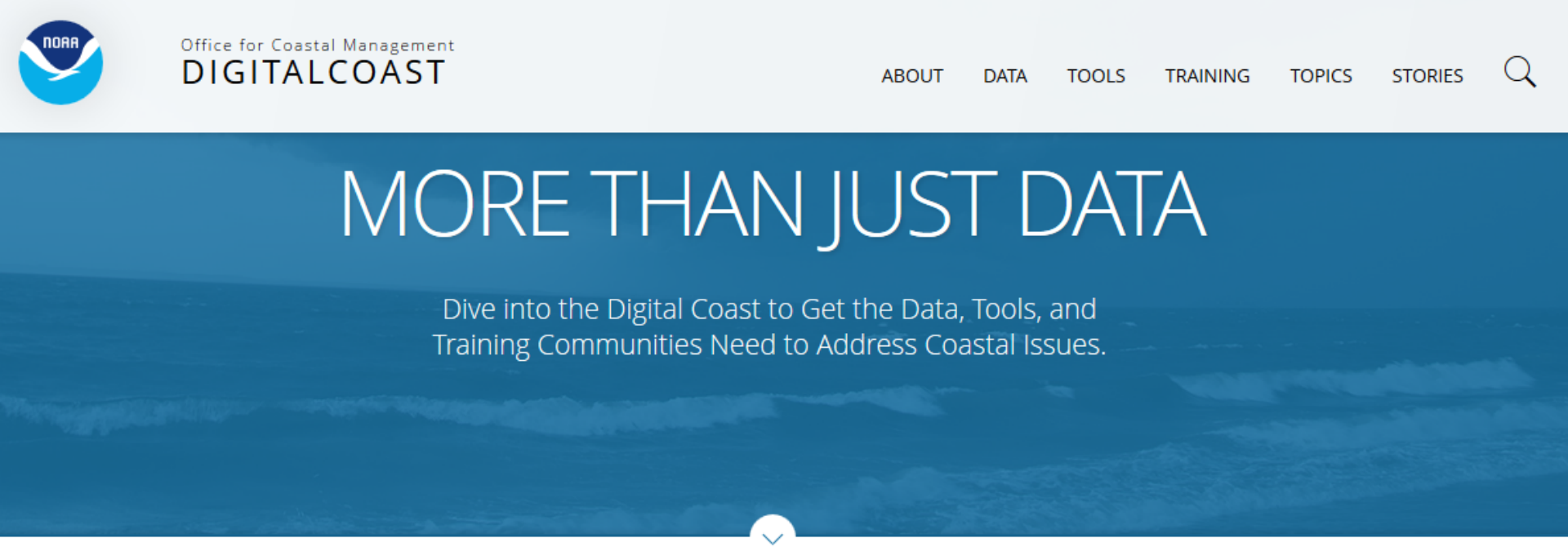
Hazard & Climate Case Studies

Read case studies to explore how local planners and practitioners are using data, tools, methods, and policies to help make their communities more resilient.

Guidance for using Digital Coast & local data and tools

Online & Interactive Guide

- Link natural hazards, climate adaptation & resilience planning/management in coastal watersheds
- Provide “locally relevant” data, science & outreach to promote natural hazard resilience
- Develop work flows and case studies
- Link directly with essential data, tools, reports, ordinances, people



What is Digital Coast?

This NOAA-sponsored website is focused on helping communities address coastal issues and has become one of the most-used resources in the coastal management community. The dynamic Digital Coast Partnership, whose members represent the website's primary user groups, keeps the effort focused on customer needs.

Learn more in our About section, or just dive in. And please provide feedback as often as possible. Hearing from you is what makes the Digital Coast work.

Learn More about the Digital Coast

Tips for First Time users · Contributing Partners · GeoZone Blog

Top 5 Data Tools Training Stories

1. Coastal Lidar
2. Coastal Change Analysis Program
3. Economics: National Ocean Watch
4. Electronic Nautical Charts
5. Emergency Response Imagery

coast.noaa.gov/digitalcoast/

Partners & Collaborators

Digital Coast Partnership

- NOAA Office for Coastal Mgmt
- American Planning Association
- ASFPM
- Coastal States Organization
- National Association of Counties
- National Estuarine Research Reserve Association
- National States Geographic Information Council
- The Nature Conservancy
- Urban Land Institute

Collaborators

- Pilot - 6 Wisconsin Counties
- WI Sea Grant
- University of Wisconsin Extension

Additional Influences

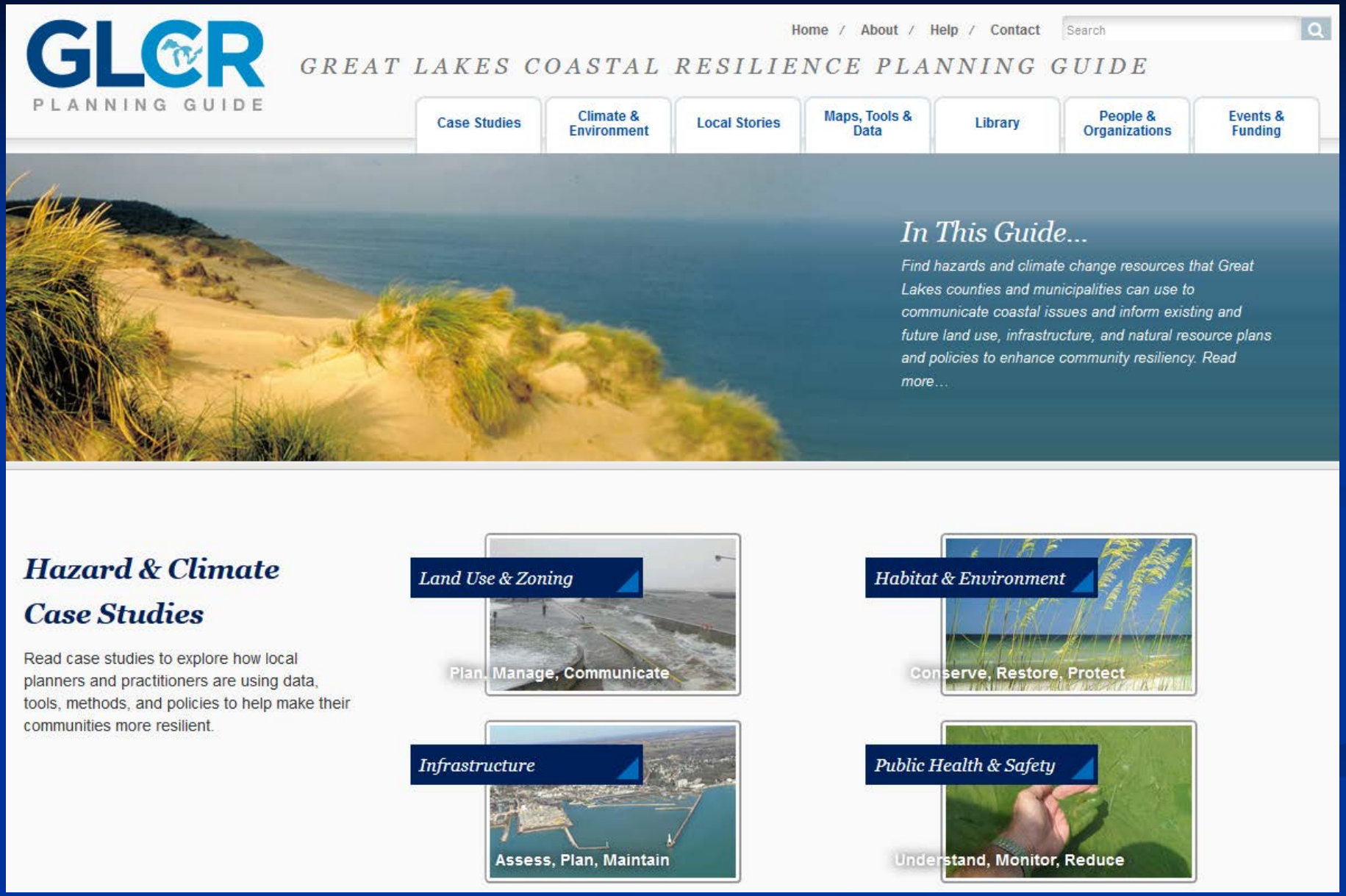
- NOAA GLERL
- Great Lakes Sea Grant Network
- Regional Planning Commissions
- State Floodplain Programs
- Great Lakes Commission

Why Build It?

User Needs – Inputs from the region

- GLERL Tech. Memorandum 153
  - Process-based
- APA, NACo Surveys
- OCM Technical Meeting
- Focus Groups – 4 webinars
- Site Visits – 3 to 5 planned
  - Include County LIO Officer
- Federal Interagency Floodplain Management Task Force

Exploring the Planning Guide

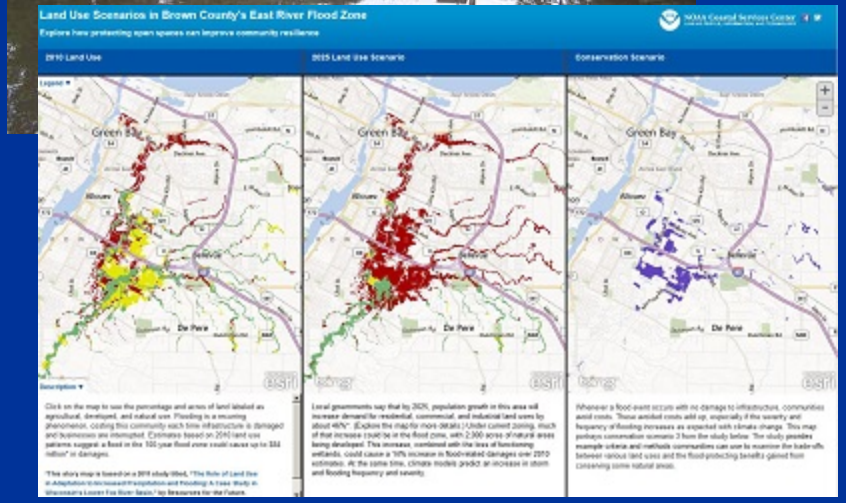


Issue-based Search

Resource-based Search

Local Stories & Case Studies

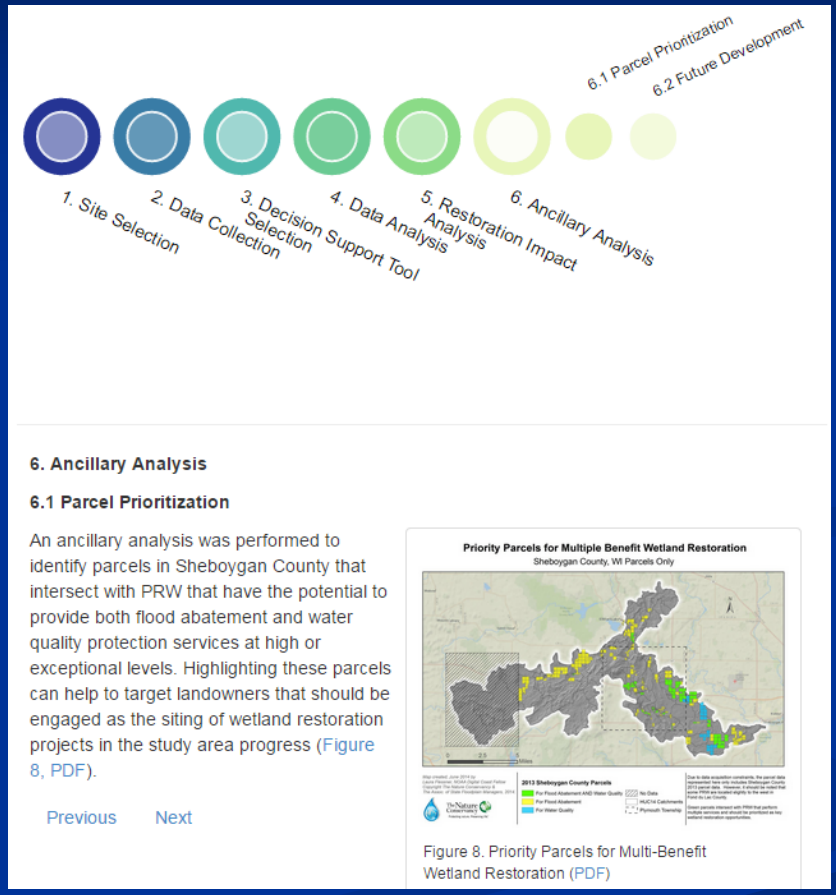
Local Stories



What are the challenges?

Quick portrayal of issues

Case Studies



Process-based; Peer-reviewed & comprehensive

Case Study Elements

- Awareness (introduction)
  - What is the issue or challenge to be addressed?
- Understanding (data & information)
  - What do we need to understand the issue?
- Analysis (information & knowledge)
  - How do we bring it all together to make choices?
- Strategies (decisions & applied knowledge)
  - How do we implement or support actions?

Case Study – "Minimizing Bluff Top Development Risk"

Minimizing Bluff Top Development Risk

› Case Studies › Land Use & Zoning › Minimizing Bluff Top Development Risk

Objective: *Explain bluff erosional processes, the factors that cause and exacerbate it, and the risks associated with building too close to the bluff. Identify tools and resources that communities can use to communicate and establish sustainable setback standards, thereby preventing purchase and development of at-risk private properties.*

Authors: *Bridget Faust and Jeffrey D. Stone, Association of State Floodplain Managers*

Publication Date: *October 10, 2014*

Revision Date: *May, 2016*

Update Note: *Since this study was written in 2014, the bluffs along the Lake Michigan shore have remained stable. The recently rising Lake Michigan water level has not yet had a noticeable effect, although Ozaukee County officials anticipate that continued high water levels will have an effect on the bluffs over time. In some places within the county the higher lake level has eliminated the beach, with water now reaching the toe of the bluff. Also, a paragraph explaining the existing 2006 Ozaukee County Shoreland and Floodplain Zoning Ordinace which specifies setback requirements on the bluffs has been added to the "Regulation" part of the final section in this case study,"Strategies to Reduce Risk."*

Awareness | **Understanding** | **Analysis** | **Strategy**

Ozaukee County, just 25 miles north of Milwaukee, is located along Wisconsin's southeastern shore. As is typical of the coastal counties of most Great Lakes states, the soils in Ozaukee County are composed of sand, gravel, clay, and claylike material called till. These soil layers were deposited when the lakes were carved by the glaciers, leaving behind extensive sloping bluffs which reach from the sandy beach to as high as 140 feet above lake level (A Multi-Jurisdictional

Share This Case Study

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Geography Tags:

Wisconsin | Ozaukee County

Hydrology Tags:

Lake Michigan

Keyword Tags:

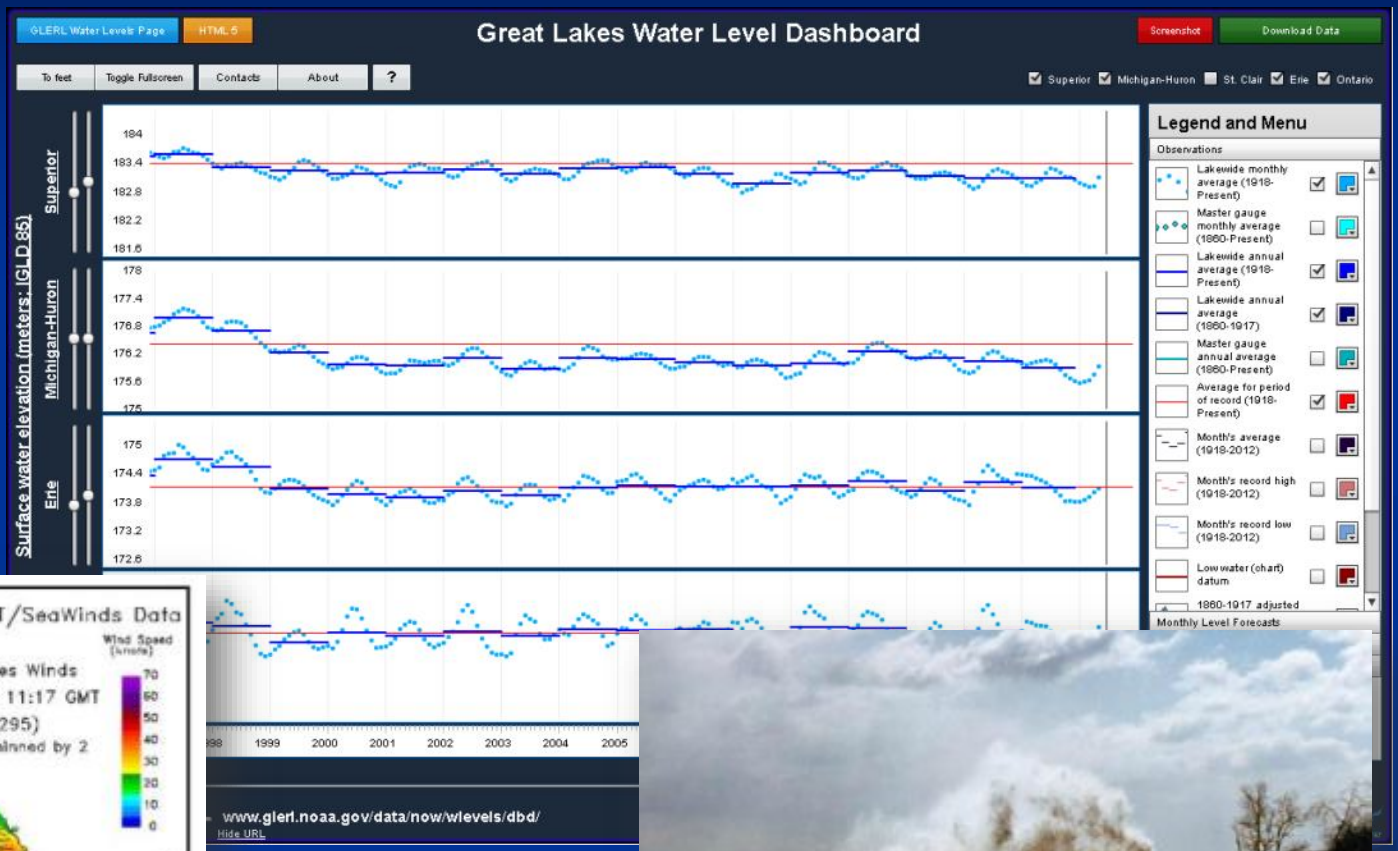
Bluff Erosion | Slope Angle | Setbacks | Coastal Processes

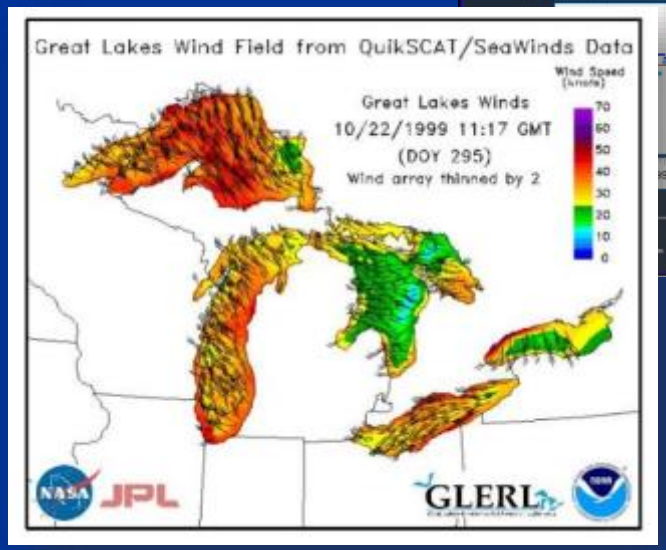
Case Study – “Minimizing Bluff Top Development Risk”

Awareness – Bluff Erosion

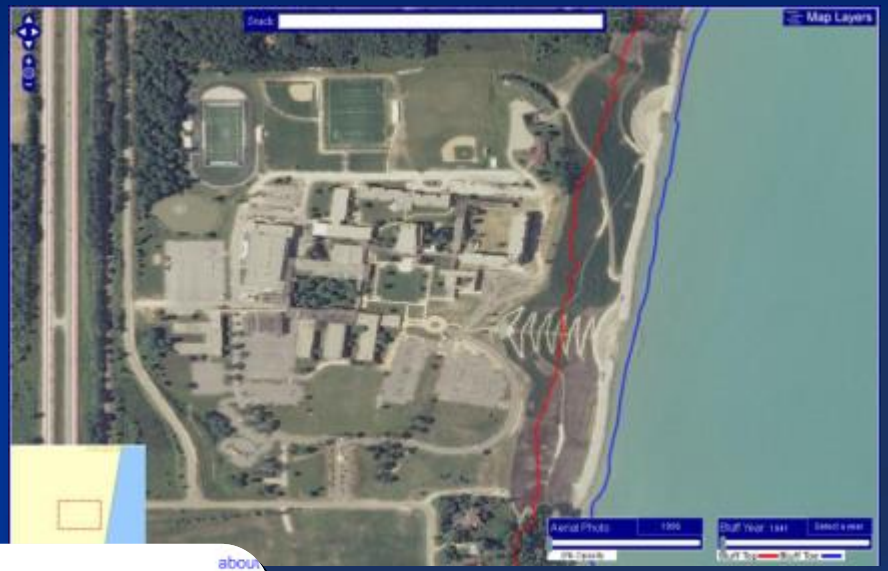
Understanding – Bluff Erosion

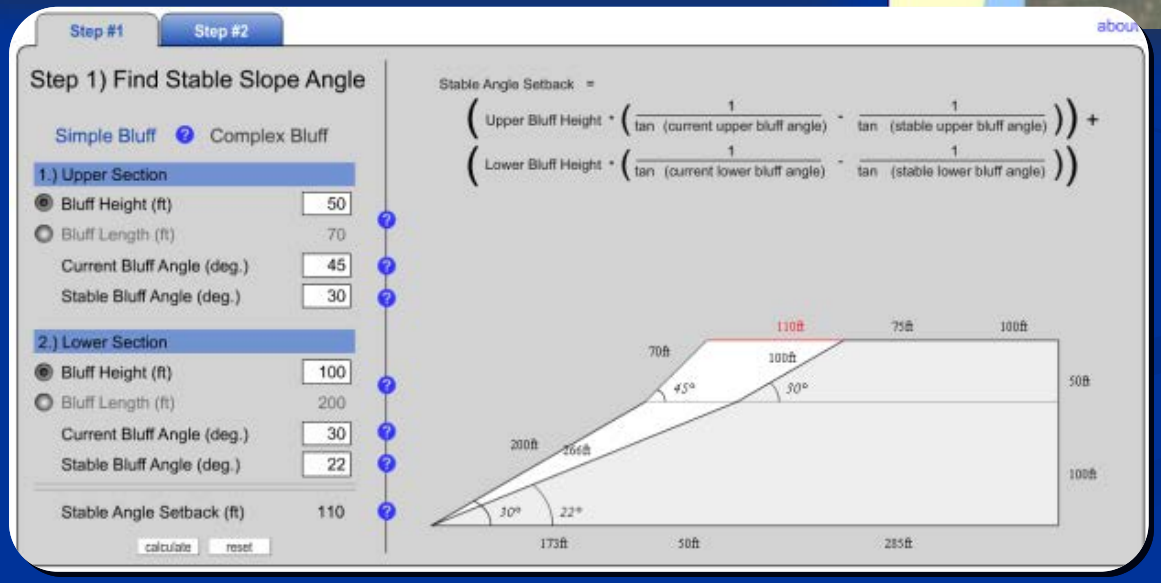
- Wave Action
- Lake Levels
- Surface Runoff
- Ground Water
- Geology





Analysis – Bluff Erosion





- Shoreline Location
- Recession Rates
  - 1941 – 2010
- Stable Slope Angle
- Setback Calculation

Case Study – "Minimizing Bluff Top Development Risk"

Strategy – Bluff Erosion

Developing a Legally Defensible Setback Ordinance for Bayfield County, Wisconsin
June 15, 2011

Karl Kastrosky[1], Scott Galetka[2], David Mickelson[3], Lisa David[4]

Introduction

Note: All supporting materials except the 1976 study are provided on a DVD accompanying this report.

The study of erosion along the Lake Superior shoreline began in the 1970s with an anal of bluff materials, shoreline recession rates, and additional information collected in a survey published by the Wisconsin Coastal Management Program (Need, et al., 1976). study covered the shoreline from the City of Superior to Bark Point in Bayfield County

Calculate a setback

Setbacks are calculated using:
1. useful life of structure
2. toe recession rate
3. stable slope angle distance

Use the calculation tool below to enter these factors and determine different building setback distances.

Simple Bluff

1.) Structure Life
- Local Regulation (ft): 25

2.) Stable Slope Angle
- Bluff Height (ft): 100
- Current Bluff Angle (deg.): 30
- Stable Bluff Angle (deg.): 22
- Stable Angle Setback (ft): 74

3.) Recession
- Recession Rate (ft/yr): 2
- Recession Setback: 50yrs (ft): 100

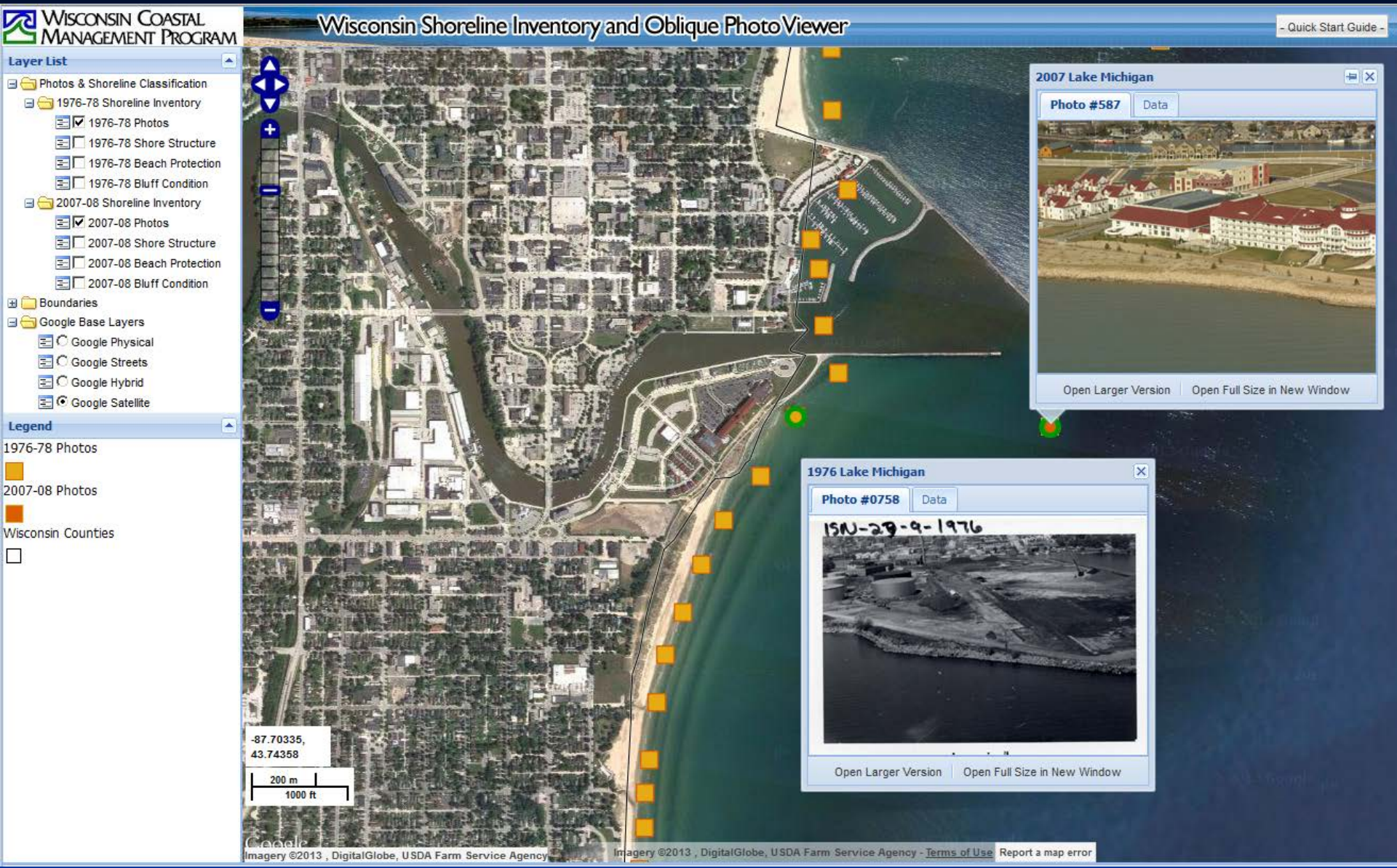
Total Setback Distance (ft): 199

calculate reset

Analysis & Reporting

Model Ordinances

Risk Communication


Wisconsin Coastal Management Program
Wisconsin Shoreline Inventory and Oblique Photo Viewer
- Quick Start Guide -
Layer List
Photos & Shoreline Classification
1976-78 Shoreline Inventory
1976-78 Photos
1976-78 Shore Structure
1976-78 Beach Protection
1976-78 Bluff Condition
2007-08 Shoreline Inventory
2007-08 Photos
2007-08 Shore Structure
2007-08 Beach Protection
2007-08 Bluff Condition
Boundaries
Google Base Layers
Google Physical
Google Streets
Google Hybrid
Google Satellite
Legend
1976-78 Photos
2007-08 Photos
Wisconsin Counties
2007 Lake Michigan
Photo #587
Data
Open Larger Version
Open Full Size in New Window
1976 Lake Michigan
Photo #0758
Data
ISN-29-9-1976
Open Larger Version
Open Full Size in New Window
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43.74358
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1000 ft
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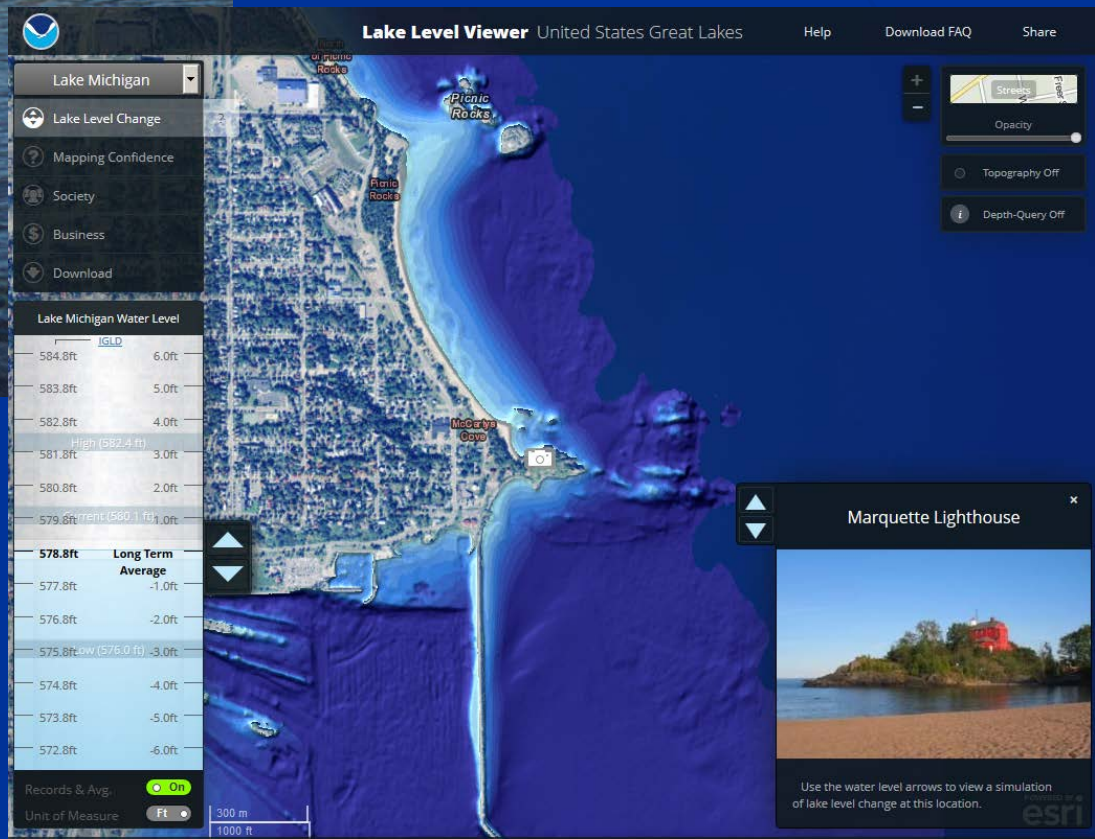
Report a map error

Case Study – Brown County, WI

Visualizing Coastal Flood Hazards and Lake Levels

CanVis – Photo Simulation Software

Lake Level Viewer



Case Study – St. Joseph, MI

The Herald-Palladium
St. Joseph • Benton Harbor, MI www.TheHP.com

Don't build along shoreline

■ That's what St. Joe city planners are recommending. It could be a first in Michigan.

Story Comments Print For

Posted: Friday, September 7, 2012 6:00 am

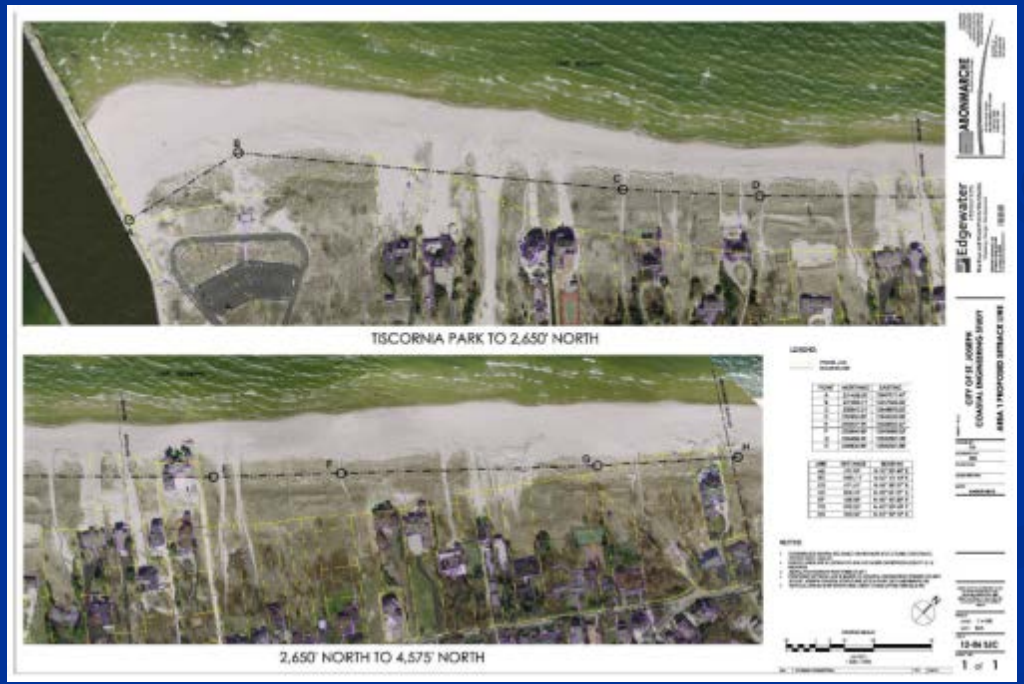
By JOHN MATUSZAK - H-P Staff Writer | 0 comments

ST. JOSEPH - The St. Joseph Planning Commission Thursday recommended that city commissioners adopt a no-build zone along the lakeshore north of the St. Joseph River to protect homeowners from encroaching water and to preserve the beach for the public.

"SECTION 9.7 "EB-OD" EDGEWATER BEACH OVERLAY DISTRICT

9.7.1 Intent. The Edgewater Beach Overlay District (EB-OD) is an overlay District intended to preserve the character of the public trust land along the shore of Lake Michigan, which is found to be a valuable public resource of the community, to prevent damage to the public trust land and to prevent damage to private property.

Based on the record presented the City further finds that the beach and property area near the shoreline is subject to submergence and erosion during periods of higher Lake Michigan water levels and resulting from weather conditions. It has been demonstrated that current state and federal development standards for the Lake Michigan shoreline, such as the Ordinary High Water Mark (OHWM) and the Base Flood Elevation, do not ensure that property shoreward of those locations is protected from erosion, inundation, or damage during such periods of time and/or weather events. The OHWM is not intended to reflect these periods of peril, and the Base Flood Elevation is a still water elevation that does not take into account the effect of wave action. The City further understands that revised federal floodplain regulations are being developed to take into account additional environmental factors such as waves and to provide an improved standard of floodplain development protection, but implementation of these regulations will not likely occur for several years.



Additional Case Studies

- *Combating Invasive Species to Protect Recreation Jobs*
  - Les Cheneaux Watershed, MI
- *Climate Consideration for Habitat Restorations*
  - Ottawa National Wildlife Refuge, OH
- *Economic Valuation of Port Infrastructure*
  - Toledo, OH
- *Prioritizing Locations for Wetland Restoration*
  - Sheboygan County, WI
- *Resilient Stormwater Planning Takes Time and Pays Off*
  - Toledo, OH
- *Assessing Coastal Wetland Pressures*
  - Georgian Bay, ON
- *Conservation Habitat through Shoreline Management*
  - Elgin County, ON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Toronto, ON
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