

**Ohio Department of Natural Resources
Office of Coastal Management**

Ohio Coastal Management Program
105 West Shoreline Drive, Sandusky
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419.626.7980

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Lake Erie

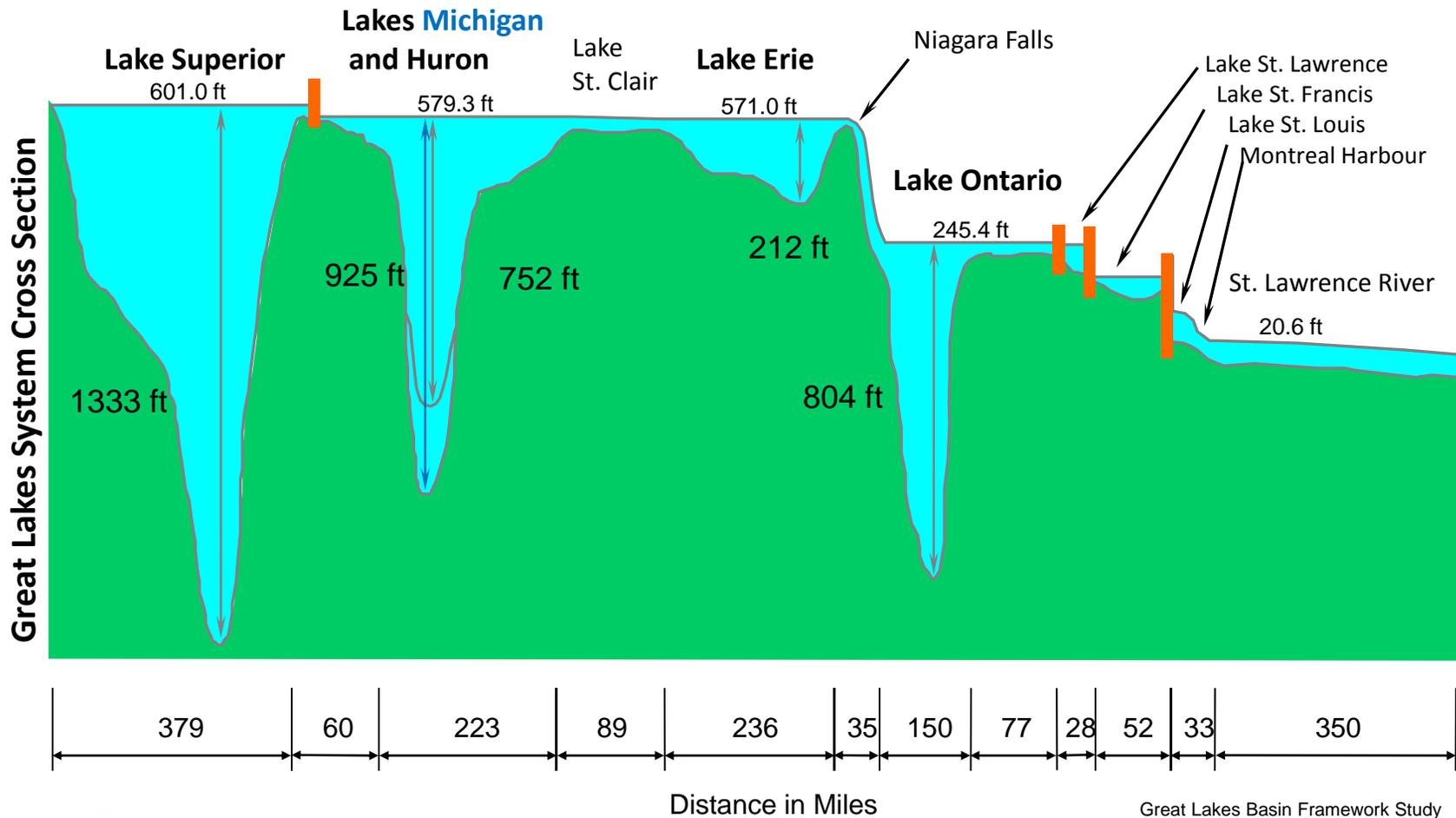
Our Water Resource



October 4, 2012 – Bay Village



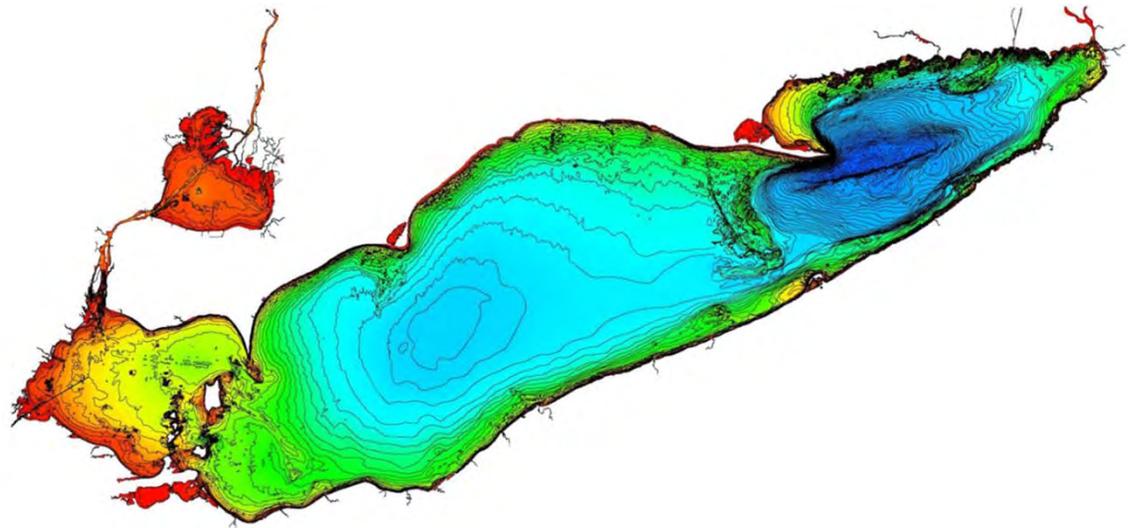
Lake Erie, one of the five Great Lakes, is a body of fresh water with many features.



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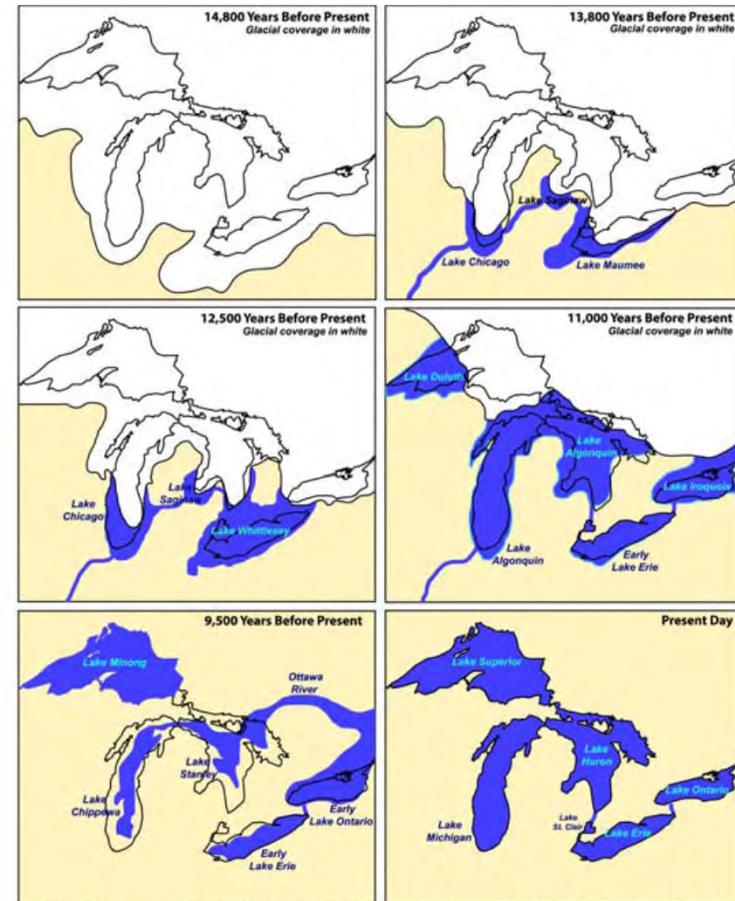
Lake Erie is the:

- shallowest, warmest and most biologically productive Great Lake.
- connected to the other Great Lakes which together form a watershed that drains to the Atlantic Ocean.
- finite and its resources are limited.



Natural forces formed and continue to shape Lake Erie and its watershed.

- Lake Formation
 - Salt deposits beneath Lake Erie
 - Glacial gouging
 - Isostatic rebound is ongoing
- Lake levels
 - Fluctuate
 - Have been recorded 150+ years
 - can effect erosion and accretion



Natural forces formed and continue to shape Lake Erie and its watershed.

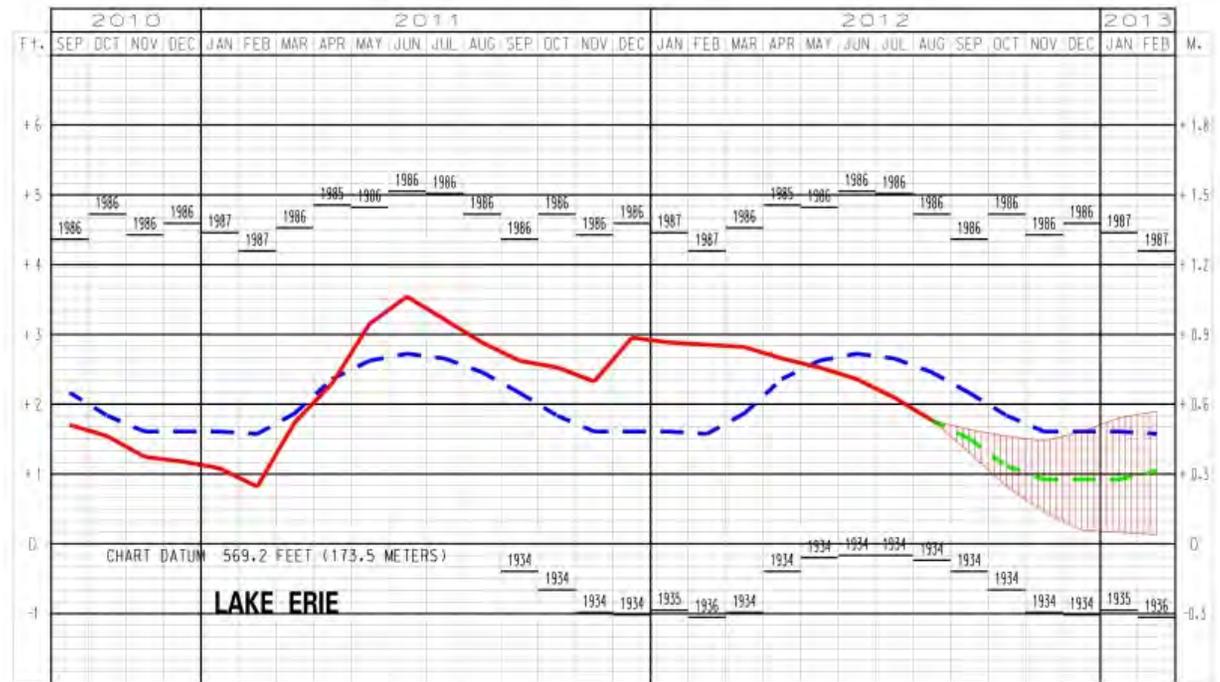
- Lake Formation

- Salt deposits beneath Lake Erie
- Glacial gouging
- Isostatic rebound is ongoing

- Lake levels

- Fluctuate
- Have been recorded 150+ years
- can effect erosion and accretion

LAKE ERIE WATER LEVELS – SEPTEMBER 2012



AVERAGE **	MAXIMUM **	MINIMUM **
1985	1985	1936
1986	1973	1934
1987	1974	1934

** Average, Maximum and Minimum for period 1918-2011

Lake Erie influences local and regional weather and climate.

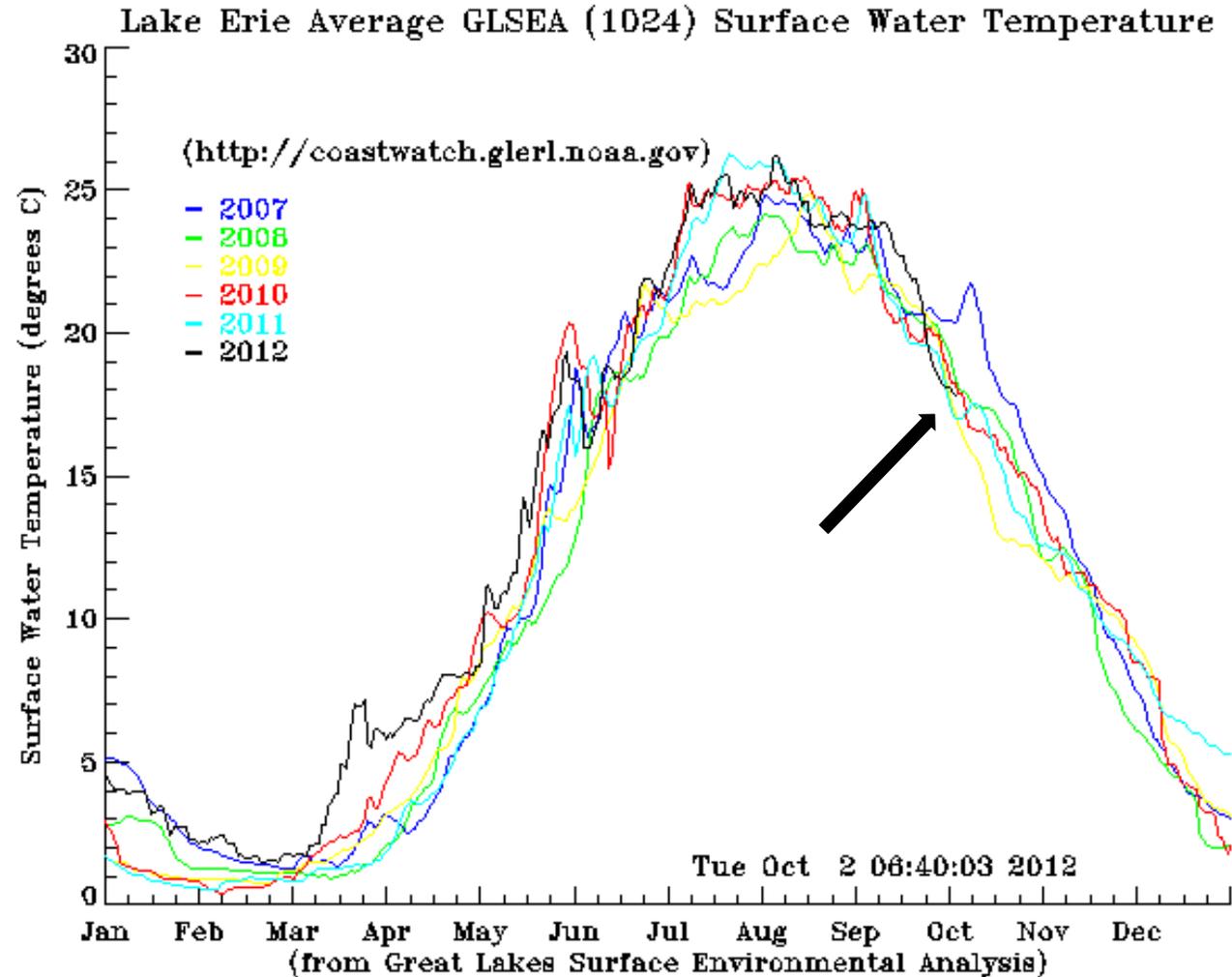
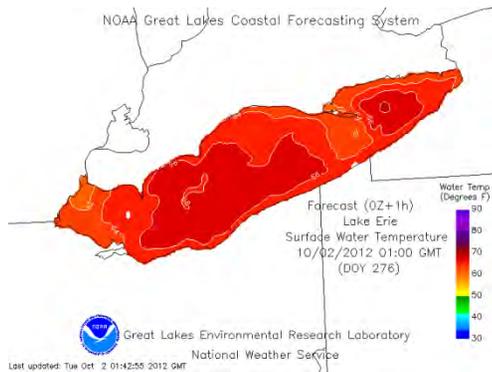
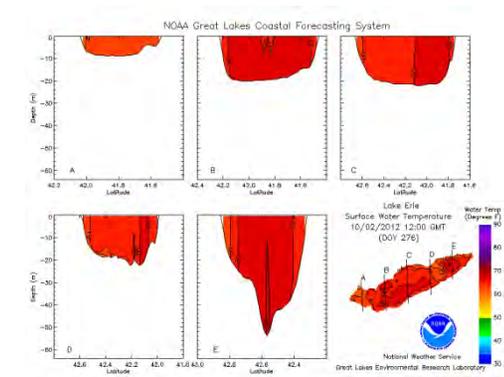
- Lake Erie's moderates the local climate
- Changes in Lake Erie's circulation, water temperature and ice cover can produce changes in local weather
 - snow belt from Cleveland to Buffalo
 - Precipitation can be traced to water evaporated from Lake Erie
- Lake Erie is influenced by global climate change

Weather
what is happening
outside right now.

Climate
average weather in a
location over a long
period of time.



Lake Erie influences local and regional weather and climate.



Water makes Earth habitable; Fresh Water sustains life.

- All life on land needs fresh water to live
 - 75% of the world is water.
 - 3% of the water is fresh.
 - 1% of the fresh water is usable:
 - Of the fresh usable water, some is surface water. Some is ground water.
 - Of the fresh usable surface water, 20% is found in the Great Lakes system.
 - Of the fresh surface water in the Great Lakes, 2.1% is in Lake Erie.
 - Lake Erie is drinking water for 11 million people including 3 million Ohioans.



Lake Erie supports a great diversity of life and ecosystems.

- Life in Lake Erie ranges in size from the smallest blue-green bacteria to the largest animal that still lives in the lake, lake sturgeon.
- **More fish are caught out of Lake Erie every year than the other four Great Lakes combined.**
- Life cycles in Lake Erie have been altered by invasive plant and animal species.
- Lake Erie's ecosystem provides habitat for species to thrive.



Lake Erie is socially, economically & environmentally significant.

- A key element in the formation of the United States:
 - Northwest Ordinance,
 - Battle of Lake Erie during the War of 1812
 - Underground Railroad.
- Today used as a representative model for environmental management.
- More than 119,000 Ohio jobs are directly linked to Lake Erie-region visitors who spend more than \$10.7 billion annually.



Lake Erie and humans in its watershed are connected.



Lake Erie impacts us.

- Supplies freshwater
- Moderates the climate,
- Influences the weather, culture & human health.
- Source of food, mineral and energy resources, recreation and jobs.
- Transportation highway
- Plays a role in national security.

We impact the lake and watershed.

- Lake Erie is affected by the decisions and actions of people throughout its watershed
- Anything that is in the Lake Erie Watershed can be washed by rain into a river... and then into Lake Erie.



8/29/2011



8/29/2012

Lake Erie and humans in its watershed are connected.

CHALLENGES

We impact the lake and watershed

- Changing water levels over a range of scales
 - Long-term
 - Seasonal
 - Short-term
- Climate change impacts
 - Water levels
 - Storm frequency and magnitude
 - Temperature
 - Timing
- Water level regulation
- Land-use change
- Loadings/water quality degradation
- Shoreline development
- Erosion and irreversible lakebed downcutting
- Sand management
- Public access
- Invasive species
- Habitat loss and degradation



Departmental Priorities are connected.

Addressing

We impact the lake and watershed

- Changing water levels over a range of scales
 - Long-term
 - Seasonal
 - Short-term
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Departmental Priorities

Addressing the CHALLENGES

- Loadings/water quality degradation



HAB

- Harmful algal blooms (HABs)



ohioalgaefinfo.com or 1-800-OHBEACH



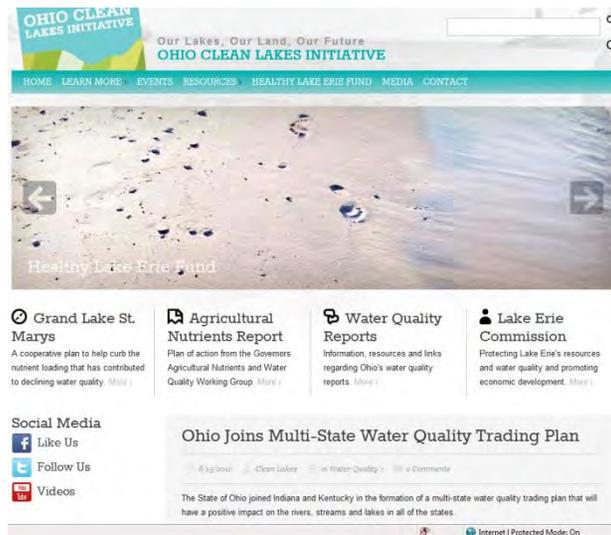
duck weed



Departmental Priorities

Addressing the CHALLENGES

- Loadings/water quality degradation



- Harmful algal blooms (HABs)
 - ohioalgaeinfo.com
- Clean Lakes Initiative (ODNR, OEPA, ODA)
 - www2.ohiodnr.com/cleanlakes
- Healthy Lake Erie Fund (\$3 million)



Departmental Priorities

Addressing the CHALLENGES

- Loadings/water quality degradation



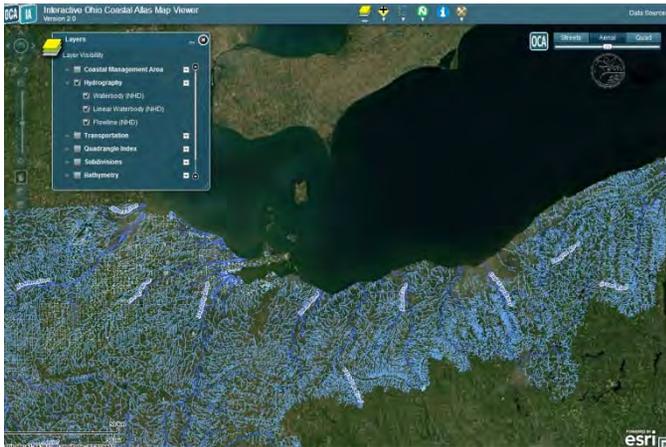
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- “4R” program (source, rate, time, place)
 - www.nutrientstewardship.com



Departmental Priorities

Addressing the CHALLENGES

- Loadings/water quality degradation



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- Healthy Lake Erie Fund (\$3 million)
- “4R” program (source, rate, time, place)
 - www.nutrientstewardship.com
- Restoration of natural flow regimes (control drainage devices)



Departmental Priorities

Addressing the CHALLENGES

- Invasive species



- eDNA, Asian Carp

– www.ohiodnr.com/tabid/24070/Default.aspx

- Stop Aquatic Hitchhikers: Clean. Drain. Dry.



**STOP AQUATIC
HITCHHIKERS!**

Prevent the transport of nuisance species.
Clean all recreational equipment.
www.ProtectYourWaters.net

- Continue to manage and maintain a world-class sport-fishery

– Ohio's Lake Erie Fishery value: \$800 million annually.





Departmental Priorities

CHALLENGES

We impact the lake and watershed.

- Minimize impacts to land, air, water.

How will we meet the challenges?

- Best Management Practices (BMPs)
- Innovative Solutions
- Working together

Exploration and understanding of Lake Erie is ongoing.

- Better resource protection and conservation
- New technologies expand our ability to explore.
- Ecosystem models help us understand the complexity of Lake Erie and its role in the Great Lakes and the Earth.
- Collaboration Required

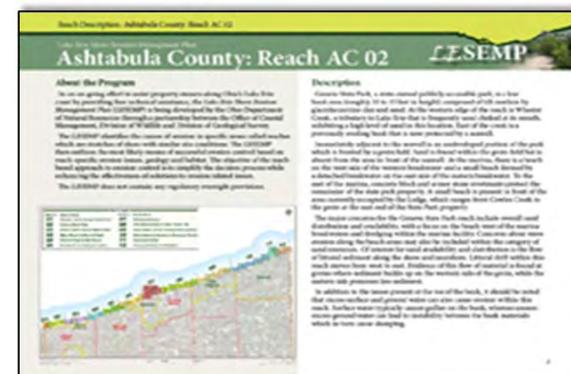
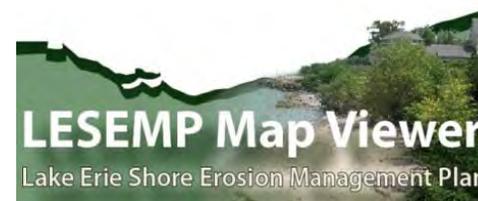




Office of Coastal Management Initiatives

- Lake Erie Shore Erosion Management Plan
 - Reaches identified by coastal characteristics and erodibility.
 - Provides information to coastal property owners and guidance as to appropriate methods of erosion control by coastal reach.
 - Various reaches finalized and factsheets are online.
 - Reach from Vermilion to Cleveland Harbor is under development.

www.ohiodnr.com/tabid/20501/Default.aspx

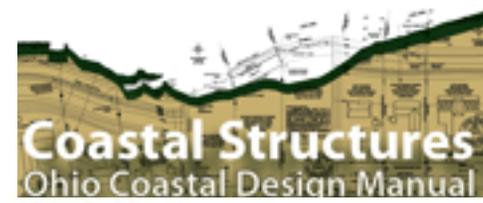




Office of Coastal Management Initiatives

- Ohio Coastal Design Manual
 - Demonstrates how structures along the shore of Lake Erie should be designed and how coastal engineering principles are best applied.
 - Printed manual can be downloaded online or viewed as a webpage.
 - Additional chapters being developed.

LakeErie.ohiodnr.com/Design



Design Drawings

Example D: Concrete Block Seawall (Call out on sheet 2 of 9) [Download](#)

Example D: Concrete Block Seawall (Call out on sheet 2 of 9) [Download](#)

Example D: Concrete Block Seawall (Call out on sheet 2 of 9) [Download](#)

Example D: Concrete Block Seawall (Call out on sheet 4 of 9) [Download](#)

Example D: Concrete Block Seawall (Call out on sheet 2 of 9) [Download](#)

Example D: Concrete Block Seawall (Call out on sheet 5 of 9) [Download](#)

Example D: Concrete Block Seawall (Call out on sheet 6 of 9) [Download](#)

Example D: Concrete Block Seawall (Call out on sheet 7 of 9) [Download](#)

Example D: Concrete Block Seawall (Call out on sheet 8 of 9) [Download](#)

Example D: Concrete Block Seawall (Call out on sheet 9 of 9) [Download](#)

Project Site Metrics Map [Download](#)

Building Site Plan (plan view) [Download](#)

Building Site Plan (cross section) [Download](#)



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Learn more
www.ohiodnr.com

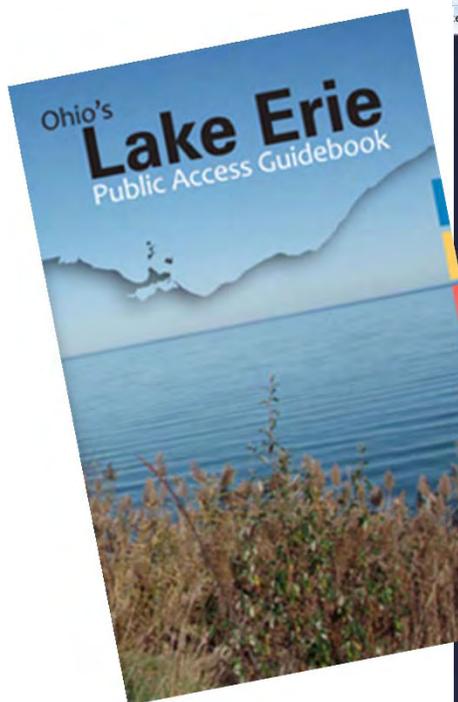
Ohio Coastal Design Manual, Introduction

Ohio Coastal Design Manual, Introduction



Access to the Coast . . .

and Watershed



Ohio's Lake Erie Public Access Guide

Explore Ohio's 312-mile Shore

Ohio's Lake Erie Public Access Guide is your resource for exploring Ohio's Great Lake coast. From trails and nature preserves and scenic vistas to sandy swimming beaches and prime fishing spots, Ohio's coast has something for everyone.

As of May 1, 2012 - Ohio has 167 public access sites along Lake Erie.

Each of the 169 public access locations in the 8 coastal counties along Ohio's 312-mile coast that are/will open to the public in July 1, 2012, are illustrated with a map, narrative, list of amenities, photographs, address and location coordinates in the printed guide. Full information about each site is found online, geographically arranged within their respective county.

Printed Guidebook: Sized to fit in backpacks, glove boxes and tackle boxes (8.5" tall by 5.5" wide).

Printed Brochure: This 8.5" tall by 3.75" wide brochure unfolds to 17" tall 18.5" wide to reveal a map numbered with each access site, basic Lake Erie related information, a listing of each access site by county (west to east) with site name, address, latitude/longitude coordinates, amenity listing and references to web addresses for the online guide for more information at each site. This *Viewers of July 2012* brochure will be available a few weeks across the coast in the next few weeks (a list will be posted). You can also request your copy by contacting the *Office of Coastal Management* at 419-626-7980.

PDFs: Download and print the entire guide or download PDFs of chapter or individual sites on their respective pages.

- [Entire Guidebook](#) (87 MB - Time: About 5 minutes on a high speed connection. This is the 2010 version of the guide and does not include all of the new sites. See "updates" for sites opened to the public after August 2010.)
- [Introduction Chapter PDF](#) (1,394 KB)
- Text from the individual *Introduction Chapter* pages are below along with links to download each page's PDF.

Online Maps: Maps of Ohio's coast can be downloaded and printed from the links below and from the "Coastal Atlas & GIS" page.

- [Updated August 2012: Map of all public access sites](#) (228 KB);
- [Online Interactive Map Viewer of all public access sites](#)
- Maps of sites within each county as of August 2010 can be downloaded and printed on each county's page;
- A map of each site can be downloaded and printed from each site's page.

Recent Ohio's Coast
About the Guidebook
Maps (All Sites)
Map Legend
Amenity key
Download 328-page Guidebook as PDF
Beach Safety
Lake Erie Boating
Clean Marinas
Clean Boaters
Coastal Ohio Trail
Data Collection Sources
Facts and history
Fish Consumption
Fishing, Hunting and Trapping
Ice on Lake Erie
Ohio Water Trails
Public access points on rivers in the designated CMA
Water Quality Monitoring at Beaches

Lucas County
Ottawa County
Sandusky County
Erie County
Lorain County
Cuyahoga County
Lake County
Ashtabula County
Acknowledgements
Recreation Use
Mass Viewer
Guidebook Updates

As a product of the Ohio Department of Natural Resources (ODNR)

Internet | Protected M

Coming soon: a companion Document focusing on Public Access Sites on Ohio's main Lake Erie Tributaries:

- Ottawa River
- Maumee River
- Toussaint River
- Portage River
- Sandusky River
- Huron River including West Branch
- Vermilion River
- Black River with East & West branches
- Rocky River with East & West branches
- Cuyahoga River
- Chagrin River
- Grand River
- Ashtabula River
- Conneaut Creek

LakeErie.ohiodnr.com/GoCoast

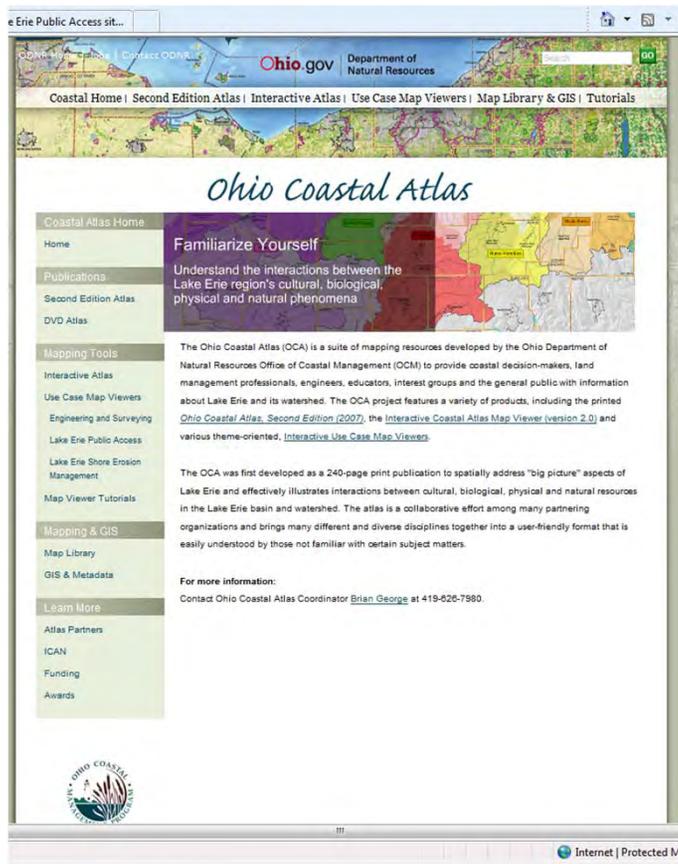


Ohio Coastal Atlas

LakeErie.ohiodnr.com/Atlas

Available Data Layers

- [Engineering and Surveying](#)
- [Lake Erie Environment](#)
- [Lake Erie Public Access](#)
- [Lake Erie Shore Erosion Management](#)
- [Lake Erie Watershed](#)
- [Ports, Harbors and Recreational Boating](#)
- [School Districts](#)
- [Population \(census\)](#)
- [More!!](#)



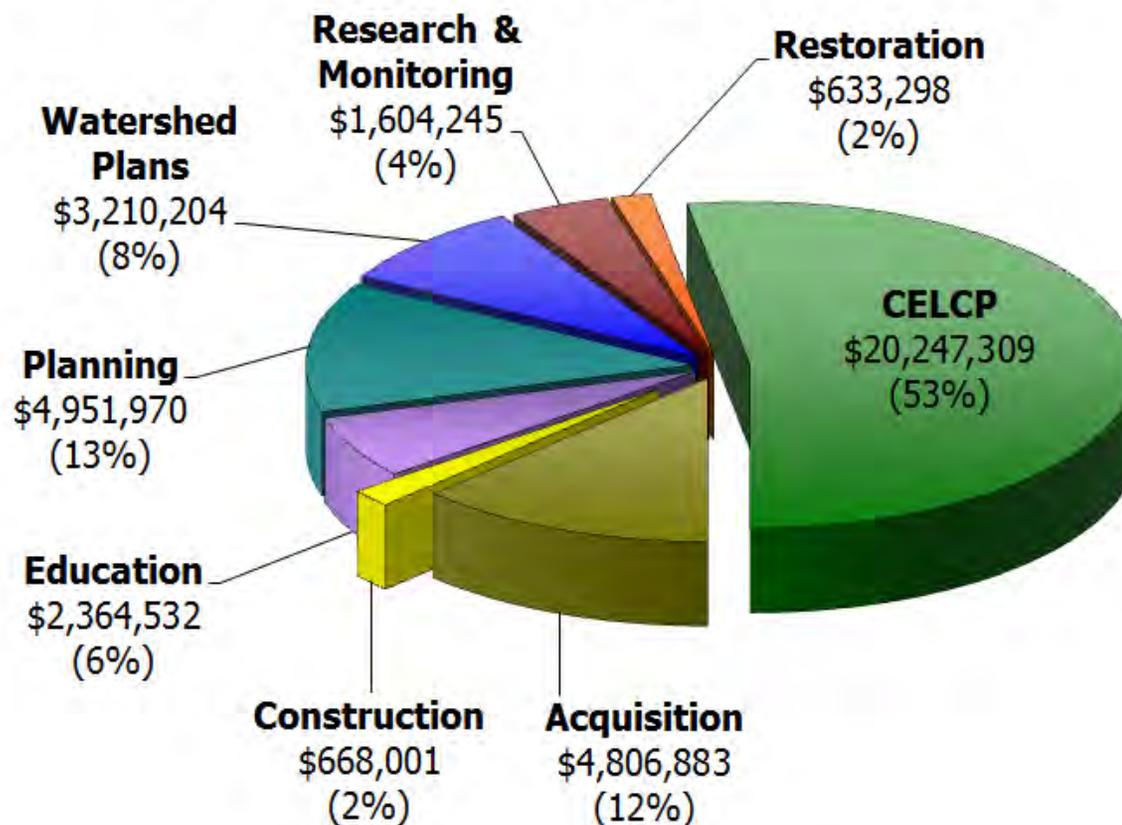


LakeErie.ohiodnr.com/Grants

FY2014 Priorities:

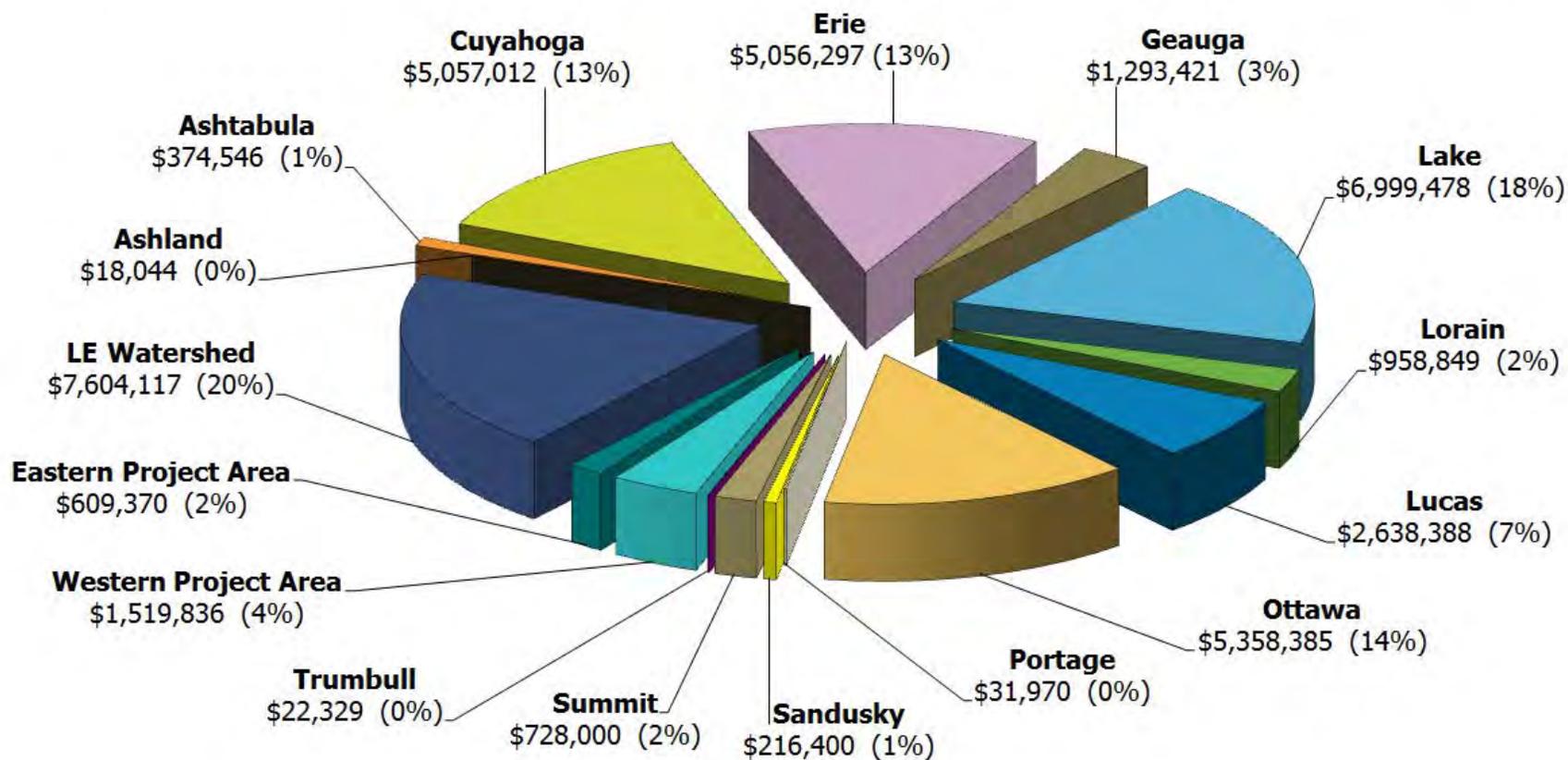
- Water Quality
- Coastal Planning
- Coastal Resource Management
- Education and Outreach
- Research and Data Collection

Ohio Coastal Management Grants by Award Category 1998-2012





Ohio Coastal Management Program Grants by County 1998-2012





Office of Coastal Management Initiatives: Outreach and Education

LELP 1 - [Lake Erie, one of the five Great Lakes, is a body of fresh water with many features.](#)

LELP 2 [Natural forces formed and continue to shape Lake Erie and its watershed.](#)

LELP 3 - [Lake Erie influences local and regional weather and climate.](#)

LELP 4 - [Water makes Earth habitable; fresh water sustains life on land.](#)

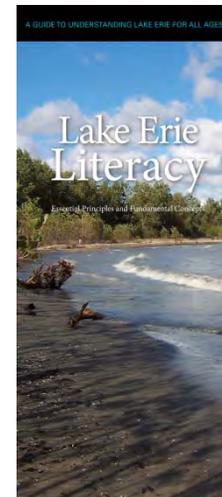
LELP 5 - [Lake Erie supports a broad diversity of life and ecosystems.](#)

LELP 6 - [Lake Erie and humans in its watersheds are inextricably interconnected.](#)

LELP 7 - [Much remains to be learned about Lake Erie.](#)

LELP 8 - [Lake Erie is socially, economically and environmentally significant to the region and nation.](#)

- Lake Erie Literacy Principles and Concepts finalized, presented at CZ2011 and aligned with the National Science Education Standards.
- Were used to write a monthly full-page feature story in a newspaper distributed to more than 32 schools (K-6) in 3 of Ohio's coastal counties which won national awards.
- Has been used TODAY. Do the headings at left look familiar?



Ohiodnr.com/LakeErieLiteracy



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