

**SHORE STABILIZATION WHICH MET THE TEST OF TIME ON EAST GT BAY**



Critical Dune sea wall – Photo BY: TNN

**TODAY'S WEATHER:**

[www.wunderground.com/us/mi/kewadin](http://www.wunderground.com/us/mi/kewadin)

**STORM CENTRAL**

[www.gtlakes.com/storm-central/](http://www.gtlakes.com/storm-central/)



Breakwater - Damaged but unbowed  
Photo by TNN



Bluff Toe Protection. Photo By TNN

**Facts:** All Great Lakes levels declined from 2019, except L. Michigan-Huron rose 3 in. Why? Several wet years for all the Lakes. Georgian Bay Great Lakes Foundation concludes St. Clair River (drains L. Michigan-Huron into Lakes St. Clair & Erie) has silted up. This conclusion and Foundation demands sent to IJC, which oversees the Great Lakes. TNN will keep you posted.

**This Edition is about Options to Protect East Bay Beaches & Bluffs from Erosion.**

*Consult local, state, federal agencies and your legal advisor before undertaking projects to protect your shoreline.*

East GT Bay is at Crisis High Water; broke 1986 record. Video by Adam Bechle of Sea Grant-Wisconsin offers reasons/options for bluff collapse; common on Antrim Bay shore. <https://www.youtube.com/watch?v=6vd84d0caKI&feature=youtu.be> *Please play YouTube segment*

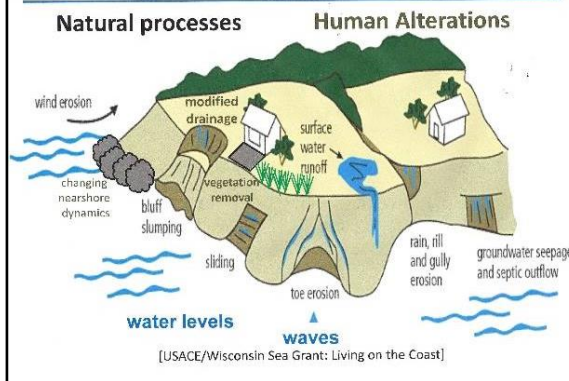
Key points from video are shown in slides below - University of Wisconsin Sea Grant.

**“COASTAL BLUFF RECESSION AND ADAPTATION OPTIONS”**

Wisconsin Sea Grant Webinar on Coastal Hazards Adaptation and Education Resources.

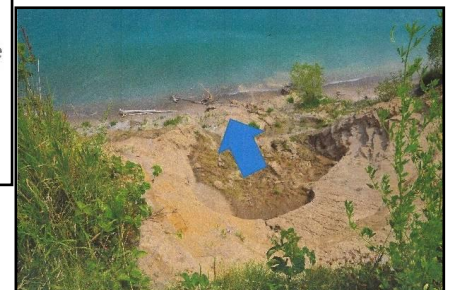
BY: Adam Bechle, Coastal Engineering Outreach Specialist, Wisconsin Sea Grant

**Factors of Shoreline and Bluff Recession**



**Take Away!** Example of collapse of an unstable bluff as seen from above.

**Take Away!** Bluffs collapse by natural processes & human alterations over time. Water drainage on your property must be managed to reduce erosion.



**Manage Water**

Direct runoff away from bluff



Intercept Perched Groundwater



Minimize Impervious Surfaces



Direct wastewater away from bluff



**Take Away!** Direct water away from bluff such as runoff to rain garden, restrict paving, divert pooled ground water, divert septic field drainage away.

**Take Away!** Enhance vegetation to evaporate water, slow runoff, protect from wind, catch sediment and wind-blown sand.

**Maintain and Enhance Vegetation**

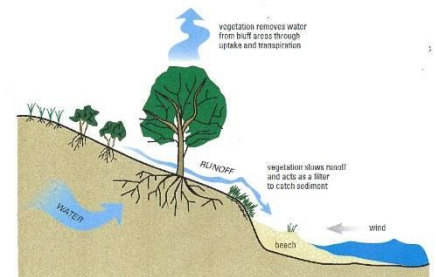


Figure 12: Revegetated Coastal Slope  
[Wisconsin Sea Grant: Stabilizing Coastal Slopes on the Great Lakes]



**HELP! MY EAST BAY SHORELINE IS WASHING AWAY! WHAT DO I DO??**

BY: Heidi Shaffer, Antrim Soil Erosion Officer

Many folks are dealing with devastating erosion on their Lake Michigan shore. The entire beach front is eroding, the banks are eroding, trees are being lost, and structures are being threatened.

What and when are permits needed? What is process for securing a permit?

Any time work is done on Great Lakes shore, permit requests are submitted to Michigan Department of Energy, Great Lakes and the Environment (EGLE), the US Army Corps of Engineers (USACE), and Antrim County Soil Erosion Control.

State of Michigan EGLE assesses shoreline erosion permit application above OHWM. The State sends it to Army Corps for a Federal permit.

State permit requests are at link below <https://miwaters.deq.state.mi.us/miwaters/external/home>.

Apply to EGLE; Army Corps of Engineers automatically receives a copy. **Nothing additional needs to be done.**

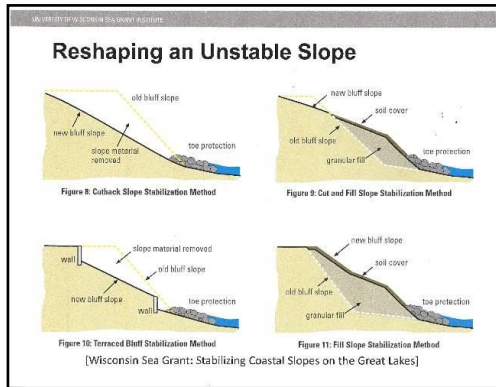
Apply for soil erosion permit at [www.AntrimCD.com](http://www.AntrimCD.com). Antrim County Soil Erosion Control (ACSE) will provide on-site consultations before you apply for the required permit. Heidi Shaffer can provide information on who can help with permit submissions and who can perform stabilization work. Do your research.

Heidi Shaffer is the Soil Erosion contact: [Heidi.shaffer@macd.org](mailto:Heidi.shaffer@macd.org) - 231-533-8363.X3.

Keri Kent is the EGLE representative: [kentk4@michigan.gov](mailto:kentk4@michigan.gov) – 989-619-2443.

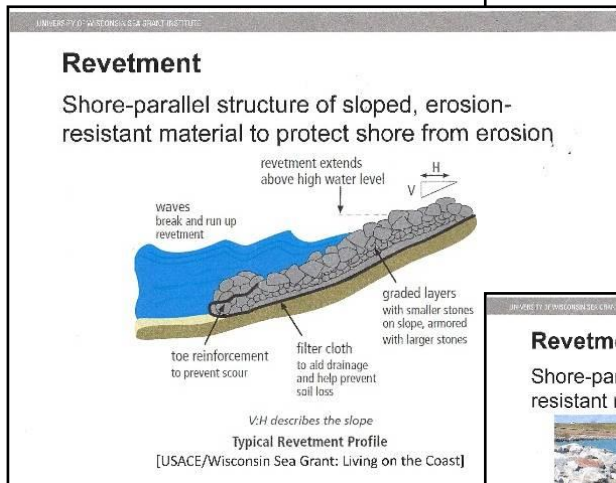
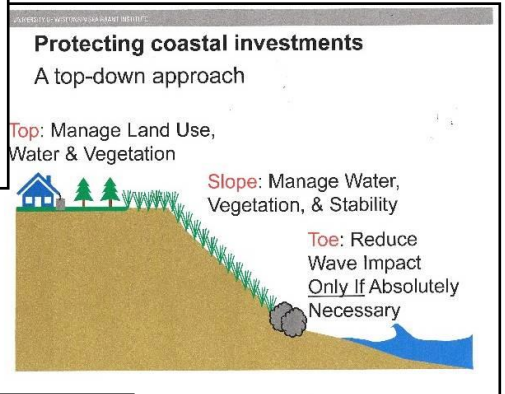
Suzanne Bright is the USACE contact: [Sue.P.Bright@usace.army.mil](mailto:Sue.P.Bright@usace.army.mil) - 906-632-1866  
Phone, Email answered in one-two days.

**Options to Protect East Bay Beaches & Bluffs from Erosion.** – Continued.



**Take Away!** Top down approach.  
**Top:** Land use, water, vegetation  
**Slope:** Water, vegetation, & stability.  
**Toe:** Reduce wave impact as necessary

**Take Away!** Reshape unstable slopes by cut-back method, cut and fill method, terraced bluff method and fill slope method. Stabilize slopes before hardening the slope or toe of the bluff.

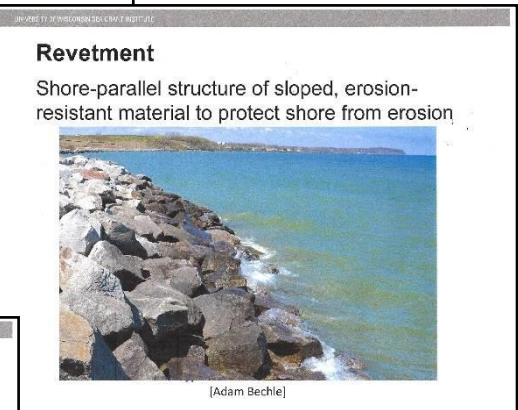


**Take Away!** Real world example of a shore parallel rock revetment.

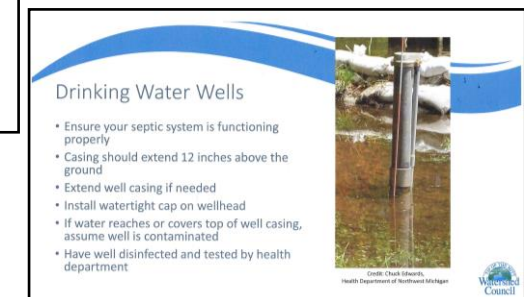
**Take Away!** Typical revetment profile. Revetment is a shore-parallel structure of sloped, erosion resistant material to protect shore from erosion.



**Take Away!** If water well is in flood plain – extend casing at least 12 inches above surface water, add watertight cap.  
 BY: Tip of the Mitt Watershed Council

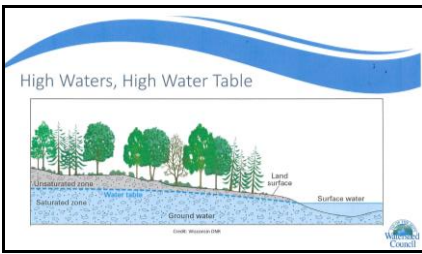


**Take Away!** Shore protection is better in concert with neighbors next door to reduce impact of wind/waves



- Drinking Water Wells**
- Ensure your septic system is functioning properly
  - Casing should extend 12 inches above the ground
  - Extend well casing if needed
  - Install watertight cap on wellhead
  - If water reaches or covers top of well casing, assume well is contaminated
  - Have well disinfected and tested by health department





**HIGH LAKES = HIGHER WATER TABLE**

**MOUNDED, ELECTRIC POWERED SEPTIC Replaces Gravity System.**

BY: Keith Termaat

Roots/sludge ended 40 years of seasonal service for the gravity field. Long life was achieved by meticulous inspections every 3 years, root removal, additives, and periodic pump-outs. Tank/field never driven-on.

Health Dept. bore hole at depth clumped when squeezed indicating dampness from higher water table. The solution is a mounded field with pump-up:

--500-gallon chamber, electric pump, controls, alarm, and two buried circuits.

Contractor verified the concrete septic tank was sound and OK to use. The 4-inch waste pipe from the house was sound and clean and remained in-place.

Clean sand/gravel in a layered mound per Health Spec. replaced old field. Depth of bed is 8 inches above water table.

Extensive excavation; new landscaping restored esthetics and wind resistance.



New system cost nearly 2X gravity system plus landscaping. Photo by TNN

**Options to Protect East Bay Beaches & Bluffs from Erosion.** Continued.

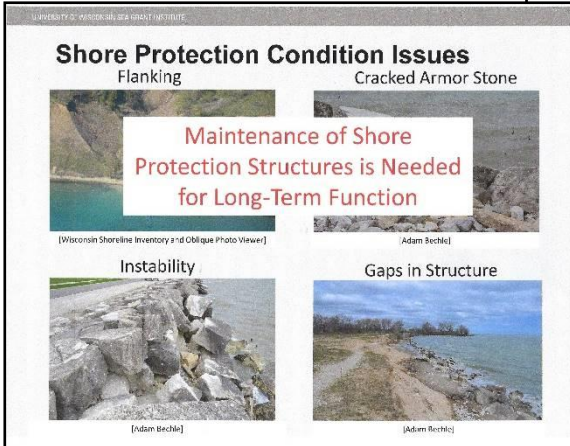
**Take Away!** Off-shore break water is a structure parallel to the shore to reduce wave energy reaching the shoreline.

**Breakwater**

Shore-parallel structure that blocks or reduces wave energy reaching the shore

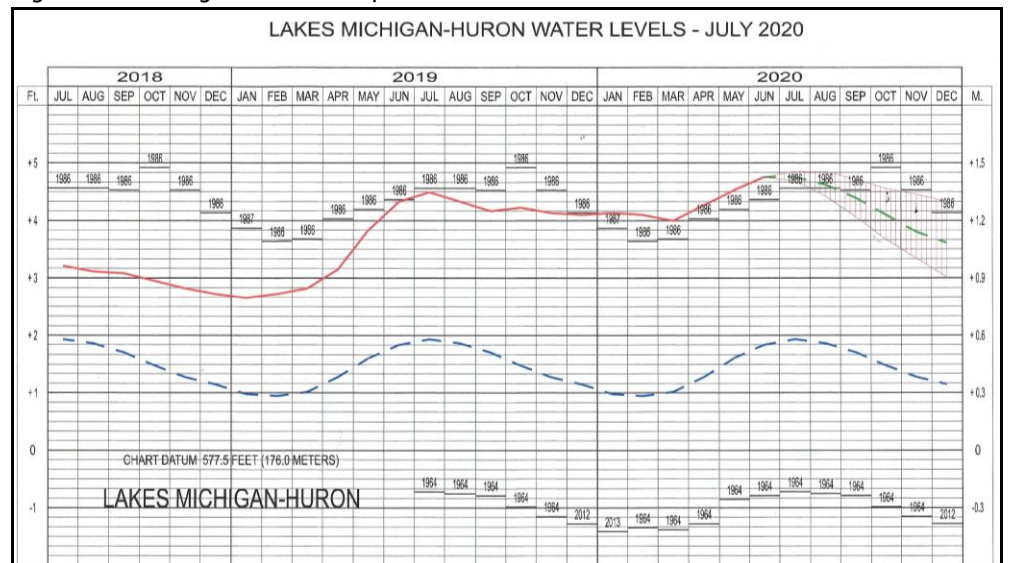


[Adam Bechle]



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**LAKE MICHIGAN-HURON WATER LEVELS – July 17.** BY: US Army Corps of Engineers  
July 17th forecast of **Lake Superior is 4 inches lower** than a year ago. Forecast of **Lake Michigan-Huron is 3 inches higher** than last year's level (emphasis added). Relative to June 17<sup>th</sup>, 2020, lake level for Michigan-Huron remains steady hovering near record July highs. Lake Michigan-Huron is expected to fall 1 inch over the next month.



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