

**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/)

**WIND MAP**

<http://hint.fm/wind/>

**Beach July 2015–water level 580.0**



**EDITOR'S NOTE:** This Edition reports of how erosion of one property (my own) over 5 years of rising GT Bay waters led to building a breakwater in August 2020 and results thereof.

**Same beach July 2020–water level 582.2**



Many seawalls and other structures have been built. Shore-owners quite properly make their own choices as to whether or when or which type of shore protection is best for each.

**This is democracy in action** in the face of official inaction. In so doing, the groundwork is laid to compare results for thousands of projects once water levels decline closer to average.

**Will Great Lakes Rise with Sea Level?**

**NO** says John Englander. EXCERPT

<https://johnenglander.net/will-the-great-lakes-rise-with-sea-level/>

“Even though the Great Lakes are isolated from sea level rise, they still flood. A geologic perspective is helpful to grasp the changes now underway in a warming world with the two remaining ice sheets in Greenland and Antarctica melting at accelerating rates. That will raise real sea level far into the future. In comparison the:

“Great Lakes will be quite stable. “

**OFF-SHORE SILL TYPE BREAKWATER ALONG THE ANTRIM COUNTY COAST – COVERED BEACH**

By: Keith Termaat



Like many, I love the natural shoreline and have struggled to maintain it for decades. Yet erosion has been a problem alongshore the Antrim County MI coast of East Traverse Bay for years. Water level peaked in 1986; set new records for three years to 2020.

As water’s edge encroached (sidebar), sections of my modular boardwalk were removed—either to storage or by gale force winds/waves. That walkway guided our grandchildren to avoid dry beach, bluff, Marram grass, and mixed cobble shore bird habitat. In 2015, the boardwalk stretched 70 feet; in 2020, 8 feet into the water.

In 2020, huge waves rolled in unimpeded as a result of crisis high water level and inaction by authorities. A natural limestone barrier reef offshore was destroyed by ice in ‘Polar vortex’ winters of 2014-15. Sandbars that had formed in the lee of the reef are also gone. As a result, towering storm waves broke on shore. Memorial Day and July storms tore 8+ feet off battered beaches, undermined high bluffs, and caused slides on critical dunes. Waves pounded beaches and bluffs all summer long.

**What to do to protect the beloved natural shoreline?** Each of the last several years, neighbors up and down the Antrim County coast installed seawalls as officials did not address water levels and even dumped more water from Lake Superior into already high Lakes Michigan-Huron (Chicago Tribune). Shore protection began with headlands, then high bluffs, and finally coved beaches between headlands.

Lake bottom near here slopes gradually. The bluff is low on our property. So, for 3 years, manual labor tried to preserve the natural shore. After all it had worked in 1986. Antrim County Erosion Control Officer, Shaffer was consulted. Contractor quotes were obtained each year for shore protection structures.

Finally, Summer 2020 storm damage/erosion, 8+ feet of beach loss and cockamamie deck over July 4 weekend forced action. July conditions alongshore are illustrated in **photo above**. Stakes locate Ordinary High-Water Mark - 580.5 feet. I engaged alongshore neighbors who had built protective structures, walked their sites to review seawalls and see results for myself.



The sill type breakwater was designed by Termaat, engineered by Mike Zattlin and Keith. Construction was by Mike’s Michigan Stone & Boulder, LLC.

Permitting by Heidi Shaffer (Antrim County), Keri Kent (MI - EGLE) and Rachel Nys (US Army Corps of Engineers). The unified state/federal application was helped along by Lindsay Banwell, with additional coordination on my part. The whole permit process took just over 6 weeks.

Kudos to these experts.

A friend showed me a sill type breakwater built in 1986 – still standing and keeping ‘sea’ waves away from a high bluff.

There was a referral to sill type breakwater built in 2020 and the contractor who built it. He and I closed a deal; and began to engineer and build a sill type breakwater to hold sediment banked by waves and expected to hold wind-blown sand.

**PLEASE DONATE TO TNN,  
501(c)(3)**

Dear Neighbor,

In these challenging times, some in the TNN community stay home, others venture out. Happily, TNN has always operated virtually – no physical facility and no employees.

Adversity brings out the best in us with perseverance and shared goals. We engage support partners within the limits of resources.

TNN News publishes information curated to your interests. Your tax-deductible donation finances various projects to help contend with challenges to our lifestyle.

We appreciate your renewed commitment.

*Keith Termaat*, TNN President

Mail check: Township Neighbors Network  
P.O. Box 887, Elk Rapids, MI 49629  
For checks use attached form.  
PAY PAL on website.

Employer match, IRA, 401k?  
Contact [TNN.Mich@gmail.com](mailto:TNN.Mich@gmail.com).

**BREAKWATER-BACKGROUND RESEARCH**

Seawalls can be a barrier to beach access unless stair-steps are included. TNN research of breakwater designs saw sill breakwaters as an effective approach (Summer 2020 TNN News)

Survey and engineering the property began with staking the 580.5 Ordinary High-Water Mark and 581.5 US ACE Mark. Created drawings for required permits: Antrim County Soil Erosion, Michigan Dept of Environment, Great Lakes and Energy (EGLE), US ACE.

The Antrim Permit is local; State and Federal Permits share a unified online application process, which was helped along with consultants. NOTE: Photos, drawings, and supporting data must be provided to each Agency

My 20 - foot side yard allowed heavy equipment access and on-site staging of boulders and supplies for transport to the beach. Kept neighbors updated. In other instances, neighbors have done joint projects where possible.

**OFF-SHORE 'SILL TYPE' BREAKWATER – Cont'd**

The 'sill type' breakwater consists of a row of boulders in then 20 inches of water along the 580.5 OHWM, laid end-to-end. Six-nine inches spacing allows surf to drain back to the 'sea'. The first boulder is a two-ton monster to anchor the break water at the south end. All boulders are granite and weigh 1 – 2 ton. A worker trims juniper along the bluff to make room for riprap on erosion blanket along the low bluff. Larger rocks protect key trees, and other



features.

Riprap – left photo.  
Breakwater - right photo  
Sand begins to collect landward of the break water almost right away.

Mid-October (4 photos).  
Incoming sand partly obscures boulders. A gravel bar has formed 'seaward' causing waves to break further out to protect the newly restored beach.

Note yellow straw cover on the access trail at the top of the low bluff.



**A DEGREE OF SUCCESS!**  
Confirmed by a Nov. 1 gale; sand shifted from south to north in a 2<sup>nd</sup> storm. We'll see what winter brings.

**2021 TNN Board**

Protect GT Bay Antrim County coast, watersheds, and resident lifestyles. TNN serves Torch Lake, Milton, Elk Rapids, and Banks Townships, Norwood to Elk Rapids. Nominees are selected from TNN members, partners, donors, and local leaders. Interested? Contact Keith Termaat. [TNN.Mich@gmail.com](mailto:TNN.Mich@gmail.com).

**Directors and Officers**

**Wenche Borgnakke - Secretary.** Sr. Research Associate, UM School of Dentistry. Member, Gum disease workgroup, Centers for Disease Control & Prevention. Award winning lecturer in U.S. and Canada, Europe, Middle East. DDS & PhD-Dentistry in Denmark, MPH - Dental Public Health at UM.

**Scott H. Finch – Vice President.** Treasury Executive. Juris Doctor. Finance and Corporate Strategy. Worked on Wall Street, Detroit, Houston, and Traverse City, where he was born and raised. Aided in rewriting Milton Township Master Plan.

**Deborah Leich – Sr. member Victory Capital Institutional Markets.** Michigan Municipal League Foundation Board. Detroit Economic Club, 100+ Women of Motown. Investment advisor.

**Alan Martel – Supervisor (Ret.), Torch Lake Township, ZBA, Antrim Planning Commission.** Biology, Chemistry teacher (Ret.). Developed 2000 feet Bay front into residential lots. Witness: proper shoreline structures protect homes, prevent erosion, reduces surface run off.

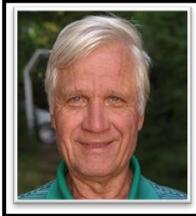
**LTC (Ret) Ross W. Snare - US Army** As Lieutenant Colonel deployed to Iraq and Afghanistan. Security & Defense consultant securing the homeland from external threats. Continues proud family tradition in the military. PhD Operations Research.

**Keith Termaat – TNN President.** Non-profit leader of GT Bay coastal waters, watersheds, Great Lakes. Boards - Restore Our Water Intl., American Nat' l Standards Institute-ISO Exec. & Finance Committees (Ret.), Society of Engineers(Ret), Executive Engineer Ford Motor Company (Ret.).

**Norman Veliquette – Agricultural Economist, cherry farming leader and iconic voice in the community.**

**JIM (JAMES A.) WELSH**

**FAREWELL MY BROTHER!**



We were friends nearly forty years. A family man who cherished his life partner Jeannie, children Ryan and Michelle, and grandchildren. A man's man, he was always kind and respectful of women. We stayed in each other's homes and traveled worldwide. Jim was loyal, patient and grew deep friendships. I am blessed to be one. Our last walk together was to inspect my new breakwater and the beach it built.

Our band of brothers played two-bit poker each week all summer. We took down a huge birch tree that threatened Jim's cottage. We also

moved a shed from Bill's cottage to Jim's. It weighed a ton, having been built by Tom and Bill to last a lifetime. The first leg was uphill then downhill on a dirt drive. Success at last aided by Nick's F-250. Jeannie guided the last few inches with much laughter along the way.

Jim was generous with his time, serving as Director and Officer of Township Neighbors Network. He created the Tri-township Fiscal Comparison published annually by TNN for nearly a decade. As a TNN officer, he arranged not-for-profit standing, PayPal for donations, sound counsel and much more. He taught me a lot.

Once a year, Jim's career buddies, came north. Meals of wild game were prepared by chefs, Rick, and Jeff. 'Scooter' was the cheerleader. The UM-MSU game was celebrated at the Town Club. Turtle Creek for great dinners which appealed to Jim's thrifty nature. Black Jack and slots rounded-out the evening. We raised a few toasts but always with a designated driver.

Jim was funny with his buddies at gatherings filled with laughter and banter. Above all he was a steady hand in the face of life's hardships. This Vietnam veteran was a true friend to us all!

Jim's light will shine in my life forever. Farewell my brother, see you on the other side.

Keith Termaat

TNN Director (Ret.) Richard Lampman, "This donation is in memory of Jim Welsh. He was a wonderful neighbor, good friend, and colleague on the TNN Board. Jim will truly be missed."

**LAKE MICHIGAN-HURON WATER LEVEL – November 13.** US Army Corps of Engineers

All Great Lakes are in their seasonal decline. November 13<sup>th</sup> predicted water level on Lake Michigan – Huron is 2 inches below a month ago. Water levels forecast for November 13<sup>th</sup> is 3 inches below water levels from last year and 7 inches below record-high November average. By December 13<sup>th</sup>, water levels for Lake Michigan-Huron are forecast to be 3 inches below November 13<sup>th</sup>.

