

IN THE MATTER OF

**TOWN OF LONG BEACH ADVISORY PLAN COMMISSION
PROPOSED ORDINANCE:**

**LAKE MICHIGAN SHORELINE PRESERVATION AND
ENHANCEMENT OVERLAY ZONING DISTRICT**

**FOLLOW-UP COMMENTS & AUTHORITIES
LONG BEACH COMMUNITY ALLIANCE**

July 14, 2018

Long Beach Community Alliance (“LBCA”), a not-for-profit community organization with over 400 supporters in the Town of Long Beach, hereby provides its follow-up comments responding to changes made in the Advisory Plan Commission’s June 21, 2018 version of the proposed Lake Michigan Shoreline Preservation and Enhancement Overlay Zoning District (“Proposed Ordinance”) and comments made by Shabica & Associates at the June 28, 2018 hearing.

1. Setbacks Are a Well-Established Component of Beach Protection Measures

We object to the proposed waiver of the 20-foot rear setback requirement for lakefront development projects. This waiver is newly proposed in the June 21, 2018 version of the Proposed Ordinance. The rear setback requirement is an independent requirement of the Town Ordinances that has long applied to lakefront properties as well as every other property in Long Beach. We have heard no justification for waiving the 20-foot rear setback for lakefront properties. In fact, for lakefront properties, this minimum setback is particularly necessary to ensure against construction right up against the Natural Ordinary High Water Mark (OHWM) and is far smaller than the IDNR and experts on coastal protection recommend.

Waiving even this minimum setback will endanger environmentally sensitive State-owned dunes and public beach property, allow contaminated run-off onto the beach and lake, accelerate erosion of the beach, and result in future encroachment on the public trust beach. This important setback should not be arbitrarily waived just as a “trade off” to attempt to satisfy lakefront owners. Where necessary and appropriate, property owners can seek a variance from this setback as they can from any other setback on a case-by-case basis.

We all should have learned from the serious mistake made by the Indiana Department of Health a few years ago when they changed their regulations to allow septic systems to be built just 50 ft. from the OHWM, rather than the 200 ft. previously required. See 410 IAC 6-8.3-57(b). That mistake is the reason the Town and lakefront owners are now faced with a health and safety-based County Health Department moratorium on all septic systems on Lake Shore Drive. That change in the law (from a 200-ft. setback to a 50-ft. setback) was enacted at the urging of the same lakefront property owners who at the June 28, 2018 hearing blamed the Town for their septic problems. The

Town should not make the same mistake the State made and be bullied into allowing construction of any new structures too close to the OHWM.

The APC should consider the many expert studies that have supported setbacks as the best way to approach the coastal hazard of rising Great Lakes' waters. The APC's proposed waiver of the 20-foot rear setback from the OHWM – indeed its proposal of a zero setback -- is entirely inconsistent with the recommendations of the Indiana Department of Natural Resources in its July 2016 Coastal Hazard Guidance for Indiana Coastal Communities ("IDNR Coastal Guidance") (Attached here in pdf format) and the approach of other municipalities in the region.

The IDNR Coastal Guidance evaluates a variety of shore protection measures and concludes that "the most promising measure for minimizing future damage to coastal property and life are strict local zoning and structural setback requirements." *Id.* at p. 49.

"Setback requirements protect development and redevelopment from potential hazards by establishing an area a certain distance from the edge of the lake, commonly from the Ordinary High Watermark, within which development is not allowed." *Id.*

In fact, the IDNR Coast Guidance states that far greater than a 20 ft. rear setback from the OHWM should be required in coastal hazard areas such as Long Beach:

"The generally accepted rule of thumb is that a setback minimum should not be less than 75 feet from the Ordinary High Watermark; however, this standard is likely not enough for areas of shoreline with high erosion rates. For example, in an area with a recession rate of 2 feet per year, a 75-foot setback ordinance means that a structure could be within 55 feet of the Ordinary High Watermark within 10 years. A structure like this would be out of compliance with the ordinance and, more seriously, in danger of suffering damage from coastal hazards like erosion and storms." *Id.*, at p. 49.

The USACE Coastal Engineering Manual (Section III-5-13) states:

"(1) The two most important issues in the planning and management of cohesive shores relate to implementing setbacks for development and to managing human influences on the sediment supply.

"(2) Many Jurisdictions along U.S. shorelines impose a setback for new development consisting of some multiple of the average annual recession rate (e.g., 30 to 100 times the average recession rate). The purpose of the setback is to avoid the need for shore protection within the life of the new development, recognizing the irreversible and inevitable erosion that occurs along cohesive shores (and some sandy shores as well)."

Notably, the State of Wisconsin requires setbacks to "...conform to health, safety and welfare requirements, preserve natural beauty, reduce flood hazards and avoid water pollution". Chapter NR 115 of the Wisconsin Administrative Code requires all buildings and structures to be setback a minimum of 75 feet from the OHWM of navigable lakes, rivers, and streams. This requirement applies to Wisconsin's coastline on both Lake Michigan and on Lake Superior.

At the same time that the Town of Long Beach has been considering its Beach Protection Overlay District, other municipalities on the Great Lakes have been studying the same issue and concluding that substantial setbacks are the best way to protect their coastline.

The City of St. Joseph, Michigan has commissioned two studies on how to best protect its Lake Michigan shoreline. The first study culminated in a report titled *City of St. Joseph, Michigan Coastal Engineering Study*, Edgewater Resources, LLC, August 17, 2012 ("St. Joseph Study") which recommended a 200 ft. development setback for portions of the St. Joseph beach ("Area 1"), a prohibition on vertical seawalls, and a review process for shore hardening projects on other St. Joseph beaches with nearby residential development ("Area 2").

<http://greatlakesresilience.org/sites/default/files/120817%20Final%20Report%20-%20SJ%20Coastal%20Study%20rf.pdf> In the fall of 2012, the St. Joseph City Commission passed a "no-build" zoning ordinance that, in accordance with the consulting engineers' recommendations, prohibits the construction of permanent structures at a fixed elevation above sea level, which intersects with the shoreline approximately 200 feet from the water's edge. <http://greatlakesresilience.org/stories/michigan/st-joseph-protects-public-trust-ground-breaking-ordinance-0>

In 2017, with rising Lake Michigan water levels, the City of St. Joseph commissioned a second study to consider further protections for "Area 2". Notably, St. Joseph put in place a moratorium on the construction of any new seawalls while this study is pending.

https://www.heraldpalladium.com/localnews/how-close-is-too-close-to-the-water/article_b76b972f-8cbf-5447-afe4-efaa938818dd.html?utm_medium=social&utm_source=email&utm_campaign=user-share

The City of Grand Haven¹ recently commissioned a study of by the University of Michigan (under the supervision of Great Lakes expert Richard Norton), the Land Information Access Association (LIAA), and Michigan Technological University to make recommendations for managing its Lake Michigan shore. That study culminated in a January 2017 report titled *Building Coastal Resiliency in Grand Haven, Michigan: Developing Land Use Regulations and Infrastructure Policies to Implement Great Lakes Shoreland Area Management Plans* ("Grand Haven Study").

<http://org/wp-content/uploads/2017/02/City-of-Grand-Haven-IA-Report.pdf?189db0>

One of the key recommendations of that Report was "Establishing new setback criteria for the city's North Shore Zoning District to halt residential encroachment toward Lake Michigan." *Id.* at p. 6-7.

¹ Grand Haven Charter Township has also studied coastal resiliency measures. See <http://resilientgreatlakescoast> to download those reports.

The Grand Haven Study recommends a zoning overlay district and setback requirements reflecting Lake Michigan dynamics. Interestingly, Grand Haven already had a 25-ft. setback from the rear lot line and the study found “Over time, this regulation will allow for new homes to slowly creep closer to Lake Michigan and closer to dangerous coastal dynamics.”

The Grand Haven Report recommends the following policy options:

“1. Prohibit the placement of any new structure lakeward of the setback line.

“2. Allow only readily movable structures lakeward of the setback line (e.g., following standards regarding ‘readily movable’ like Michigan’s standards for structures within state-designated high-risk erosion areas).

“3. Establish that existing structures currently lakeward of the setback line (or structures that become lakeward of that line as the shoreline erodes over time) are nonconforming structures, such that they must be removed if substantially damaged by a coastal storm event.²

“4. Require that owners of structures currently lakeward of the setback line (or that become lakeward) post a surety bond or obtain homeowner’s insurance sufficient to cover the costs of cleaning up and restoring the shoreline should the structure need to be removed following a coastal storm event (e.g., similar to bond requirements typically required to ensure the cleanup of project sites after construction, or homeowner’s insurance required for properties located within floodplains under the National Flood Insurance Program).
Id. at p. 35.

As to what the setback should be, the IDNR Coastal Guidance recommends a methodology based on historic erosion data and a safety factor. IDNR Coastal Guidance at p. 49-50.

The Grand Haven study recommends establishing and periodically adjusting a setback for the overlay district that is tied to the actual dynamics of the Lake Michigan shoreline, rather than one arbitrarily established.

The St. Joseph Study lays out its methodology for determining the necessary setback distance based on historic water levels and other factors reflecting lake dynamics, as follows:

² The Grand Haven Study recommends that “when a structure within the [overlay] district is damaged or destroyed to a specified extent or more of its replacement cost (e.g., 60 percent) specifically as a result of inundation or wave action from a coastal storm, that structure must be removed and the area restored to natural conditions, such that no portion of the structure retained or relocated is situated lakeward of the waterfront setback line.”

“The location of the proposed setback is based upon the following factors:

- Lake Michigan all-time high water level + 5.0 LWD (Rounded from +4.9 LWD)
 - Storm surge of two feet + 2.0’
 - 2% wave runup, 50-year deep water wave + 7.0’ + 14.0’ LWD = Elevation 591.5’
 - Factor of Safety
 - o Factor of Safety of 1.3 applied to average offset of the calculated runup elevation from current still water level. (50’)
 - Engineering design utilizes a factor of safety ranging from 1.2 to over 4.0, depending on what is being designed, data quality/accuracy and consequences of failure. Most designs use a factor between 1.2 and 1.8.
 - o Reduces the likelihood that structures will adversely affect the public trust property and the natural shoreline
 - o Provides space to account for the constantly-changing shoreline.”
- Id.* at p. 30.

While a different approach than basing the setback on historic beach erosion data, this lake levels and wave dynamics method is consistent with the IDNR’s recognition that a setback from the lake should be based on real historic data with a safety factor. It must be understood that the Natural OHWM, which is the boundary of state and private property in Indiana, is a dynamic boundary reflecting the lakebed, *i.e.*, the point to which the waters of Lake Michigan actually reach on a recurring “ordinary” or periodic basis. This point may change over time and move further landward. It also may be exceeded in the immediate future during non-ordinary storms and surge events. Thus, providing no setback or only the 20-ft. minimum rear setback from the OHWM is likely to result in beach protection structures and other lakefront property development, such as decks and stairways, encroaching on public beach and protruding into the lake itself – as we see today at many locations in Long Beach.

We urge that the APC not only NOT WAIVE the current 20-foot setback, but also amend its Proposed Ordinance to set-out a time-frame for the enactment of a separate “*Lake Michigan Setback*” based upon historic and anticipated erosion patterns or lake levels and wave dynamics, to be reviewed every 10 years.

2. Barrier Islands Are an Interesting Idea, But Require More Study in a Different APC Docket

Shabica & Associates comments at the two APC hearings to date reveal that they have not actually focused on or understood the purpose of the APC’s Proposed Ordinance. While it may be a good idea to seek funding for “barrier islands” in the lake, as Shabica suggests, that is a very different and enormously time and money consuming project. Notably, no member of the lakefront owner’s group opposing the Proposed Ordinance has taken the leadership to investigate this option over the past two years that the APC has been working on this issue. Rather, these property owners are seeking permits to build seawalls and revetments.

Nor does a proposal to form a committee to study the possibility of building “barrier islands” supersede or displace the important and immediate purpose of this proposed Ordinance. As stated by Mr. Byvoet’s at the June 28, 2018 hearing, the purpose of this proposed Ordinance is to balance lakefront owners’ desire to develop their properties lakeward and build seawalls and revetments with the concern of other Long Beach residents that those structures will accelerate erosion of the public beach and neighboring Town-owned lakefront properties. The Town is under tremendous pressure from lakefront owners to allow more development and seawalls and revetments to be built with no Town ordinance expressly providing guidance on how to permit these structures without risking damage to surrounding properties. In this docket, the APC is taking a necessary and rational step to develop Town policies that provide that guidance.

3. Multiple Studies Show Seawalls and Revetments Damage Adjacent Properties and Should Be Considered As a “Last Resort” and, If Necessary, Be Carefully Designed and Reviewed

Contrary to Shabica’s statements, the APC is right to recognize the concern that “hardening” the shore at one location can adversely affect surrounding beach property. This is the well-accepted finding of a myriad of studies of the impact of parallel shore structures on surrounding properties. The following are just a few examples of these authorities:

The IDNR Coastal Guidance referenced above unequivocally states:

“While parallel shoreline structures do not stop sand from moving between reaches, they increase erosion rates in adjacent areas. These shore hardening structures prevent erosion that would have normally contributed to sand necessary to maintain natural buffers like wide beaches and offshore sandbars. The result is sand-starved conditions in front and downdrift of the structure.” IDNR Coastal Guidance, p. 17

The APC is also right to be especially concerned about vertical seawalls. The IDNR Coastal Guidance expressly recognizes the particular problems posed by vertical seawalls:

“[Seawalls] are often built as solid structures to reflect wave energy, but this leads them to be more vulnerable to scour and erosion than revetments because they are vertical and reflect more wave energy. It is not uncommon for the beach to disappear entirely in front of a seawall after a number of years...” *Id.* at p. 18

“...these types of structures negatively affect the natural transport of sand along the shoreline and, while intended to minimize erosion, actually increase erosion in the long run.”

It is for these reasons that the IDNR Coastal Guidance recommends that coastal communities adopt “living shoreline concepts” and allow “hard, manmade shoreline

protection structures” only as “an option of last resort with proper design and implementation.” *Id.* at p.51.

In their 2003 Guidance, *Living on the Coast: Protecting Investments in Shore Property on the Great Lakes*, the U.S. Army Corps of Engineers and Sea Grant Institute of the University of Wisconsin expressly recognize that seawalls and revetments designed to protect one person’s property increase erosion on neighboring properties:

“Constructed, linear defenses are intentional barriers to the offshore movement of upland beach materials, blocking one of the natural responses to wave attack. Near these barriers, mobile materials are “borrowed” from adjoining unprotected shore slopes, beaches, and the nearshore lakebed to respond to wave attack in front of the linear structures. This borrowing makes neighbors’ unprotected coastal properties more vulnerable to damaging wave attack.” *Id.* at p.30

For more detail on the use of, impacts from, and alternatives to hardened structures, see:

Living on the Coast: Protecting Investments in Shore Property on the Great Lakes (by the U.S. Army Corps of Engineers & University of Wisconsin Sea Grant in 2003) <https://publications.aqua.wisc.edu/product/living-on-the-coast-protecting-investments-in-shore-property-on-the-great-lakes/>

No Adverse Impact: A Toolkit For Common Sense Floodplain Management (by the Association of State Floodplain Managers in 2003) https://www.floods.org/NoAdverseImpact/NAI_Toolkit_2003.pdf

A New York State Guidance titled “Protection Against Wave-Based Erosion” also explains how the negative impacts of seawalls and revetments occur on surrounding beach property, as follows:

“Seawalls, (and to a lesser extent, stone revetments) change the direction (wave reflection) and intensity of wave energy along the shore. Wave reflection can cause an increase in the total energy at the seawall or revetment interface with the water, allowing sand and gravel to remain suspended in the water, which will usually prevent formation of a beach directly fronting the structure. This effect may impact the adjacent downdrift properties by either reducing beach formation (immediately adjacent) or potentially increasing beach formation (further downdrift). In extreme conditions, wave reflection may allow littoral material to be transported off shore rather than along the shore, which would potentially remove that material from the littoral system and starve downdrift beaches.” *Protection Against Wave-Based Erosion* at p. 1 https://www.dec.ny.gov/docs/water_pdf/waverosionrevetment.pdf

The Grand Haven Report, referenced above, includes a section titled: “Why is Armoring the Shoreline Not Recommended?” That section explains:

“[Armored shore protection] structures can yield a variety of harmful impacts, such as the following:

- They can result in the scouring away of the entire beach lakeward of the armored structure, preventing the natural movement of the beach as a viable ecosystem and a place to recreate.
- They can interrupt the longshore movement of sediments, scouring away beach on the property itself at the edges of the structure and, more likely, exacerbating the loss of beach on neighboring properties.
- They can give shoreland property owners a false sense of security that, having erected the shoreline armoring, their property is no longer threatened by the lake.
- They can destroy native vegetative cover and nearshore habitat, likely further exacerbating the loss of the beach itself.

“In short, given the natural and dynamic movement of Great Lakes shoreline, the placement of armoring on a Great Lakes shore, especially a shoreline comprised primarily of sandy beaches and bluffs, will provide some protection for structures situated on the shore. But that protection will ultimately and necessarily come at the expense of the Great Lakes beach. That is, shoreline armoring works to protect the beach house—often at great expense and sometimes in a losing battle, but not the beach. For this reason, we do not recommend that the city facilitate the construction of permanent hardened structures to protect nearshore properties. Rather, we recommend that it encourage the placement of natural vegetation and other “green” shoreline protection, and that it adopt policies that allow shoreline property owners to enjoy their built structures while they can, but to be prepared for the need to move those structures when Lake Michigan decides that the time has come.” *Id.* at p. 37.

To address these concerns, the 2012 St. Joseph Report recommended the City of St. Joseph adopt the following policies for beach protection structures:

- Design must be prepared by a licensed professional engineer experienced in coastal engineering to account for coastal engineering

factors including, but not limited to wave overtopping, scour protection, and flanking prevention.

- Approval must be granted by the City of St. Joseph City Engineer prior to construction
 - Vertical walls are prohibited
 - Perpetual public access landward of the structure must be provided to ensure continued public access along the coast regardless of lake levels.
 - Structures must not adversely affect other/neighboring properties and must connect to adjacent shoreline protection structures, if present, to eventually create one unified structure
- St. Joseph Report, at p. 31.*

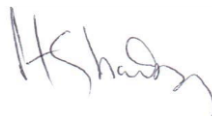
Thus, the APC is far from alone in concluding that seawalls and other shore hardening measures erode neighboring property and must be carefully reviewed. This is the view of every authority that we have found. The APC's Proposed Ordinance correctly focuses on the risks posed by shore hardening structures and appropriately establishes a rigorous review process for approval of such projects. This process should not be weakened. If anything, the Proposed Ordinance is less stringent than recommended by the IDNR Coastal Guidance and less restrictive than the Ordinances adopted by other states and municipalities facing the risk of rising Lake Michigan waters in that it does not strictly prohibit all development within a substantial setback from the OHWM.

CONCLUSION

LBCA, on behalf of its over 400 supporters, respectfully requests:

1. The APC not waive the existing 20-ft. rear setback requirement for lakefront property development and shore hardening structures;
2. The APC include in the Proposed Ordinance a provision for establishing within 90 days from the adoption of the Proposed Ordinance a separate Lake Michigan Setback based on historic erosion patterns in Long Beach or lake levels and dynamics, such setback to be reviewed every 10 years;
3. The APC otherwise maintain the substance of the Proposed Ordinance, including strict review and permitting procedures which prohibit vertical seawalls and allow well-designed shore hardening structures only as a "last resort" as proposed on June 21, 2018; and
4. The APC conclude hearings on this proposal and move forward with presenting its Proposed Ordinance to the Town Council as quickly as possible.

Respectfully submitted,



Patricia Sharkey
LBCA Board Member

AUTHORITIES

BUILDING COASTAL RESILIENCY IN THE CITY OF GRAND HAVEN: Developing Land Use Regulations and Infrastructure Policies to Implement Great Lakes Shoreland Area Management Plans, University of Michigan and LIAA, January 2017
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Resilient Great Lakes Coast: Implementing Adaptation (webpage)
<http://resilientgreatlakescoast.org/home/implementing-adaptation-city-of-grand-haven-michigan/>
http://www.resilientmichigan.org/grand_haven.asp

U.S. Army corps of Engineers Coastal Engineering Manual (Section III-5-13) Erosion, Transport, and Deposition of Cohesive Sediments

Wisconsin Administrative Code, Chapter NR 115