



NORTH CAROLINA SEA GRANT
EXTENSION PROGRAM

5600 Marvin Moss Lane
Wilmington, N.C. 28409

Telephone: 910/962-2491
rogerssp@uncw.edu

To: Renee Cahoon
Chair, Coastal Resources Commission

Braxton Davis
Director, NC Division of Coastal Management

From: Spencer Rogers
Coastal Construction and Erosion Specialist, North Carolina Sea Grant

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Subject: Proposed Inlet Hazard Area rules

As a member of the Coastal Resources Advisory Council, I have reviewed the proposed Inlet Hazard Area rules, maps and erosion rates. I attended the public hearings in Brunswick and New Hanover Counties on December 17, 2019. My comments on the proposed IHA rules follow.

Erosion Rate Blocking Underestimates Inlet Erosion Rates

The most serious problem with the proposed rules is the way that shoreline erosion rate transects are blocked to established shoreline segments with similar erosion rates. Those rates are then used to determine vegetation line building setback delineations. The proposed method severely underestimates the inlet erosion rates.

Ocean Erodible Area (OEA) setbacks are based on running averages, which are used to smooth the differences between rates of nearby transects. The results are combined into shoreline segments with similar rates, or "blocked." The procedure is appropriate and effective because the transects are roughly parallel, and the erosion rates are relatively similar. However, radial transects are used to calculate erosion rates in the proposed IHAs, which wrap around the inlet shoreline at much different angles. When the running average includes the lower oceanfront change rates with part or all of the inlet shoreline, the historical changes on the inlet shoreline can be severely underreported. It is common for eroding inlet shorelines to have at least temporary accretion on one side of the inlet. The worst distortions in the proposed erosion rates and setbacks are located on migrating inlets adjacent to accreting oceanfront shoreline caused by the inlet.

Tubbs Inlet is a primary example. Both inlet shorelines are blocked to have erosion rates of 2 feet/year for setback purposes. Between 1994 and 2014, the Ocean Isle Beach inlet shoreline eroded at a rate of 25 feet/year. During that time period 10 new houses were constructed adjacent to the inlet. The CRC later approved an oversized sandbag revetment variance to protect the end house, which at the time of the last maintenance

had scoured to a depth of 13 feet below mean sea level on the inlet shoreline. Between 2009 and 2014, the Sunset Beach inlet shoreline eroded 1,000 feet, or 200 feet/year. Fortunately, most of the lost land was undeveloped. These numbers are approximate. The DCM can provide more accurate numbers.

Most of the proposed inlet shoreline erosion rates have segments where the running average blocking significantly underreports the historical erosion rates, though to a lesser extreme than near Tubbs Inlet. The distorted erosion rates appear unavoidable if the running averages are applied and used for vegetation-line referenced setbacks. It may be possible to delete some of the radial transects from the running averages to better represent the separate erosion rates on the inlet and on oceanfront shoreline near the inlet. However, the problem is one of several reasons that the Science Panel on Coastal Hazards concluded in Inlet Hazard Area Boundary, 2019 Update (IHA Report) that, “A primary finding of this report is that the vegetation line is not a reliable reference feature for certain management purposes near inlets.”

Building Size Limit

A common criticism in the public hearings attended was the IHA-wide building size limit of 5,000 square feet {7H .309(a)(4)}. The methods described in the IHA Report to define the IHA boundary were intended to be as similar as possible to the Ocean Erodible Area (OEA), with added considerations for the wider shoreline oscillations common to inlets. The OEA boundary is defined as 90 times the erosion rate, inside of which building size is limited to less than 100,000 square feet. Smaller buildings may be constructed farther seaward with graduated setback requirements, reducing to 5,000 square feet at 30 times the erosion rate. The IHA Report based the landward boundary of the IHA, in most cases, on the 90-Year Risk Line, with a few exceptions. The 30-Year Risk Line was intended to be similar to the minimum OEA setback for 5,000 square foot buildings. The Science Panel’s recommendations anticipated buildings larger than 5,000 square feet in at least parts of the recommended IHAs.

The proposed IHA size limit is applied to all “structures” but appears to be intended to be applied to buildings. Structures would include parking lots, roads and bridge size limits. Is that the intent?

Grandfathering Date

Another common comment in the public hearings was the restriction placed on the replacement of buildings larger than 5,000 square feet.

Grandfathering provisions are commonly implemented to allow the reconstruction of presently noncompliant buildings that were originally in compliance with required management practices at the time of construction. Under the present rules, buildings larger than 5,000 square feet have been legally constructed inside and outside

of the present IHAs. Under the proposed IHA rules, those legally constructed buildings would be prohibited from replacement. The present grandfathering provisions for replacement of existing “single family or duplex residential structures” larger than 5,000 square feet is addressed in 7H .0306(a)(5)(L) and is limited to buildings constructed prior to August 11, 2009. As I recall, the date stems from the adoption date of the graduated building setback requirements described elsewhere in (5).

Presumably, any existing larger buildings that were constructed after that date were in full setback-based size compliance at the time of construction. To address the public comments and treat buildings in the proposed IHAs equally with those buildings elsewhere in the Ocean Hazard Areas, the date could be changed to the effective date of the proposed IHA rules. Grandfathered building replacement would still be limited to 10,000 square feet in (L), and other reconstruction limits would apply. CRC-18-24 indicates that the revision would potentially apply to 41 existing larger buildings.

IHA Definition

The proposed Inlet Hazard Areas are defined in 7H .0304(2), which includes exceptions for (a) inlets closed for 15 years; (b) inlets that have migrated out of the IHA; and (c) State Port shorelines. **Deletion of the exceptions is recommended, rather simply defining the IHA as described in the IHA Report.** Closure of an inlet for 15 years does not necessarily make it unlikely to reopen. Inlet migration could conceivably move the inlet outside the IHA boundary, but that would not mean that the IHA near the inlet was outside its influence. Both issues would be best addressed in more detail with the recommended 5-year reassessments of all the IHAs. State Port Inlet Management Areas are pending approval as a separately defined Area of Environmental Concern within the Ocean Hazard Area. The areas are not included in the IHA Report and therefore do not require an exception.

Dune Prohibition

When the IHAs were adopted in 1979 it was believed that dune construction near the inlets might give a false sense of security for new development. Dune construction was therefore prohibited in 7H .0308(b)(5).

As indicated by the IHA boundaries, dunes offer little or no protection for inlet migration or inlet-induced shoreline oscillations. However, dunes provide significant protection during hurricanes and other extreme storms, a hazard the IHAs share with the rest of the Ocean Hazard Area. Dune protection is therefore a desirable practice for storm protection that should be encouraged within the IHA, rather than prohibited. **Deletion of the prohibition on dune construction in the IHA is recommended.**

The proposed IHAs extend farther from the inlet than the present boundaries to include shorter-duration inlet oscillations. The impact of the dune building prohibition will

have wider adverse impact on storm protection than under the present, smaller IHAs. In several cases the IHA applies to the entire island, which would prohibit dune construction anywhere on the island.

Required Lot Size

It is proposed to continue the present density limits in the renumbered 7H .0310(a)(3), limiting structures to one unit per 15,000 square feet of land area subdivided after July 23, 1981.

The public hearing presentation indicated that the section is now interpreted to limit density to one unit on later-subdivided, smaller lots. That is a useful density limit in the high-risk IHA but is not the original intent of the section.

In 1981 the intent was to address new subdivisions in previously undeveloped land near the inlets. It was not intended to encourage one unit per lot but rather to encourage multiple units and multiple-unit developments to be set back larger distances on shared ownership. A one-unit limit per lot would encourage new subdivisions to use the minimum size for all new lots, forcing some buildings much closer to the inlet than possible with shared property.

I recommend that the proposed rule be revised to address both purposes, with a revised application date. Because the proposed rules also limit building size to 5,000 square feet, it is not clear how to avoid multiple small lots for new subdivisions. It is one reason to consider larger buildings in the IHA.

Beach Bulldozing

Beach bulldozing appears to be allowed in the IHA in 7H .0308(a)(4). However, the General Permit for beach bulldozing excludes its use in the IHA. With the longer oceanfront shorelines proposed for IHAs, in some cases entire islands, is it still intended to prohibit use of the General Permit for beach bulldozing?

7H .0310 (a)(2)

The purpose of the proposed rule addition is not clear but refers to 7H .0606(5). Depending on the purpose of the rule, the proper reference appears to be to either 7H .0605(a)(5), the OHA building size limits; .0605(a), the OHA setback requirements; or .0605, the general use standards for OHAs.

Please contact me if there are questions about my comments.