



2025 Inlet Hazard Area (IHA) Update & Rule Amendments

Ken Richardson - NC Division of Coastal Management November 20, 2025

Outline:

Inlet Hazard Area (IHA) Boundary Update

- 1. Review of IHA Boundaries
- 2. Rule Amendments

Oceanfront (OEA) and Inlet (IHA) Erosion Rate Update

- 1. Review of Ocean Erodible Area Update
- 2. Review of Inlet Hazard Area Update
- 3. Rule Amendments
 - Setbacks from Vegetation Line vs. Hybrid-Vegetation Line (HVL)
 - Unvegetated Beach AECs & Measurement Lines

CRC's Science Panel Scope of Work: Update the IHA for these 10 Inlets

- Tubbs Inlet
- Shallotte Inlet
- Lockwood Folly Inlet
- Carolina Beach Inlet
- Masonboro Inlet
- Mason Inlet
- Rich Inlet
- New Topsail Inlet North Myrtle Beach
- **New River Inlet**
- Bogue Inlet



CARTERET

Existing IHAs at Non-Developed Inlets

Not Updated & Recommend Elimination of Boundaries

- New River Inlet Onslow Beach (Camp Lejeune)
- Brown's Inlet Camp Lejeune
- Bear Inlet Camp Lejeune / NC State Park
- Bogue Inlet NC State Park
- Barden Inlet Shackleford Banks/Cape Lookout
- Ocracoke Inlet National Seashore
- Hatteras Inlet National Seashore



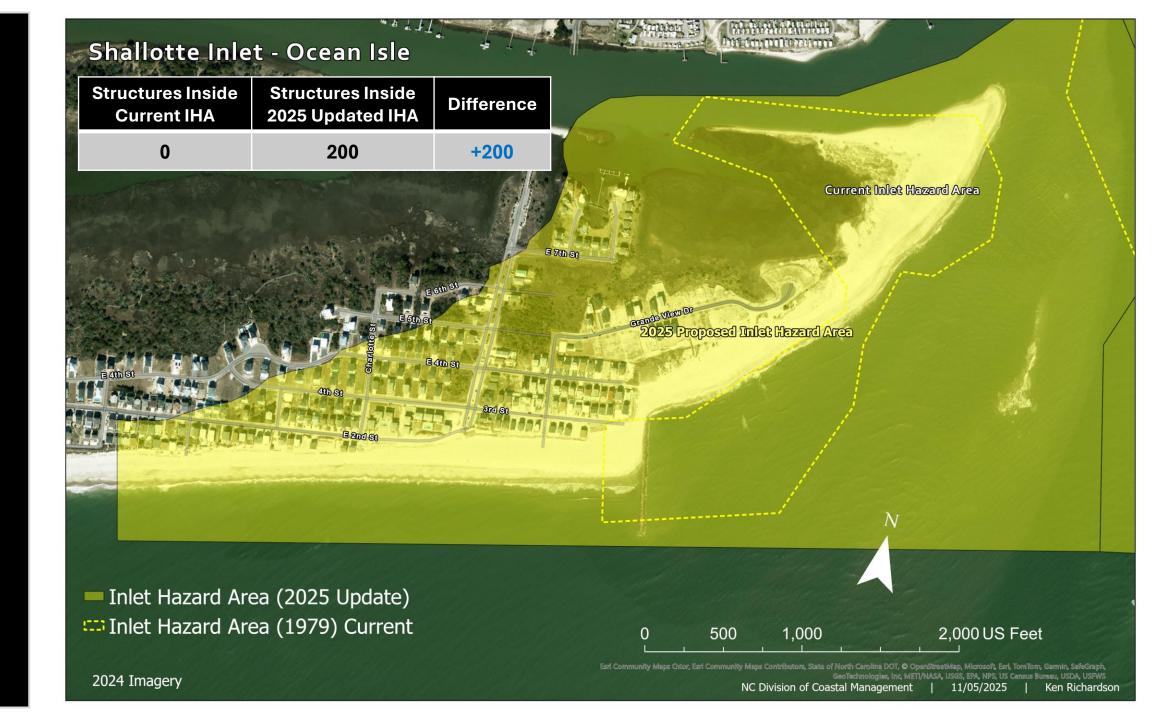
Browns

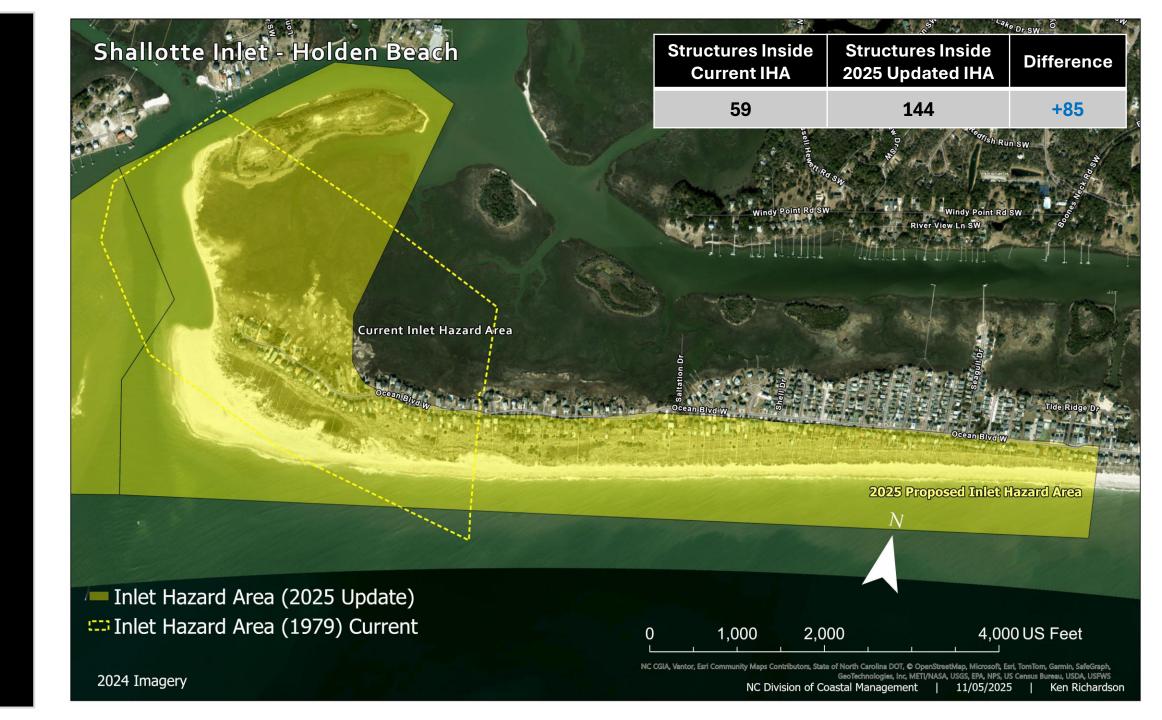
New River



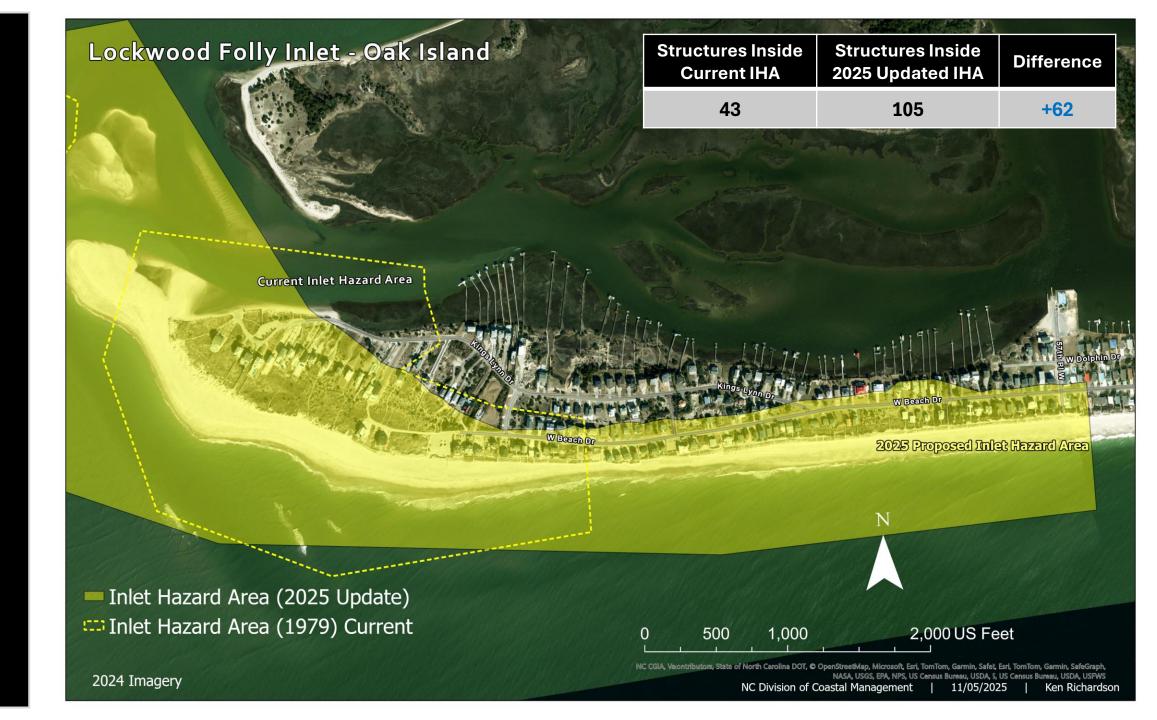


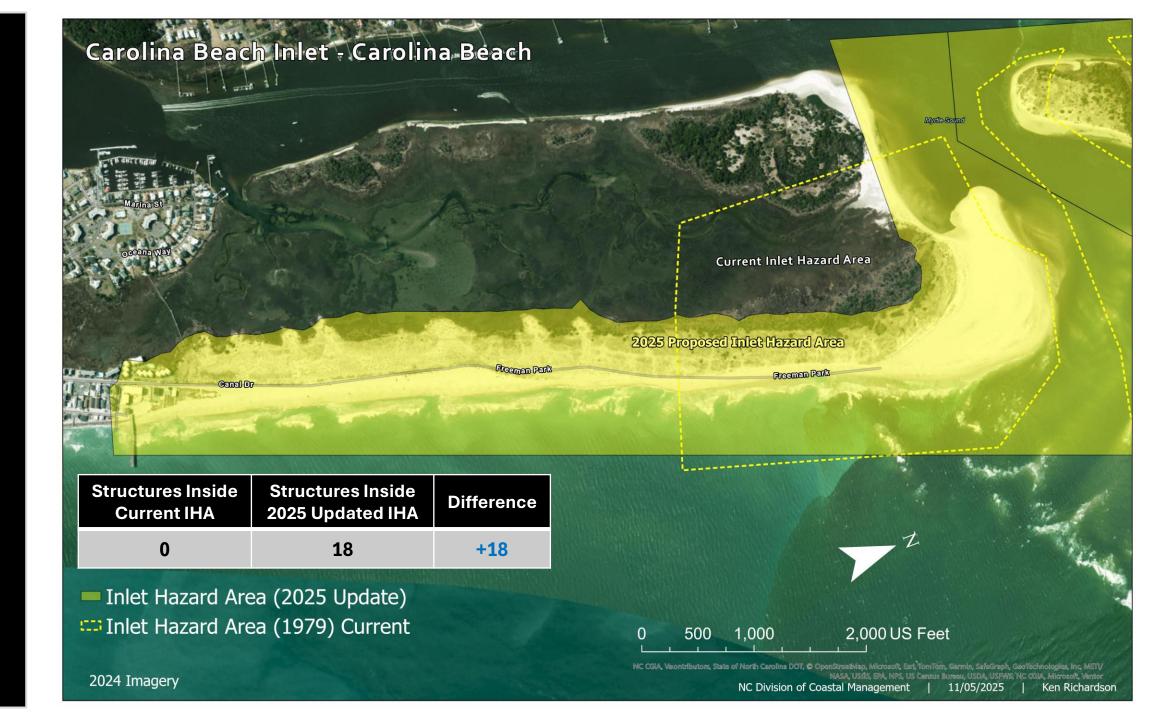


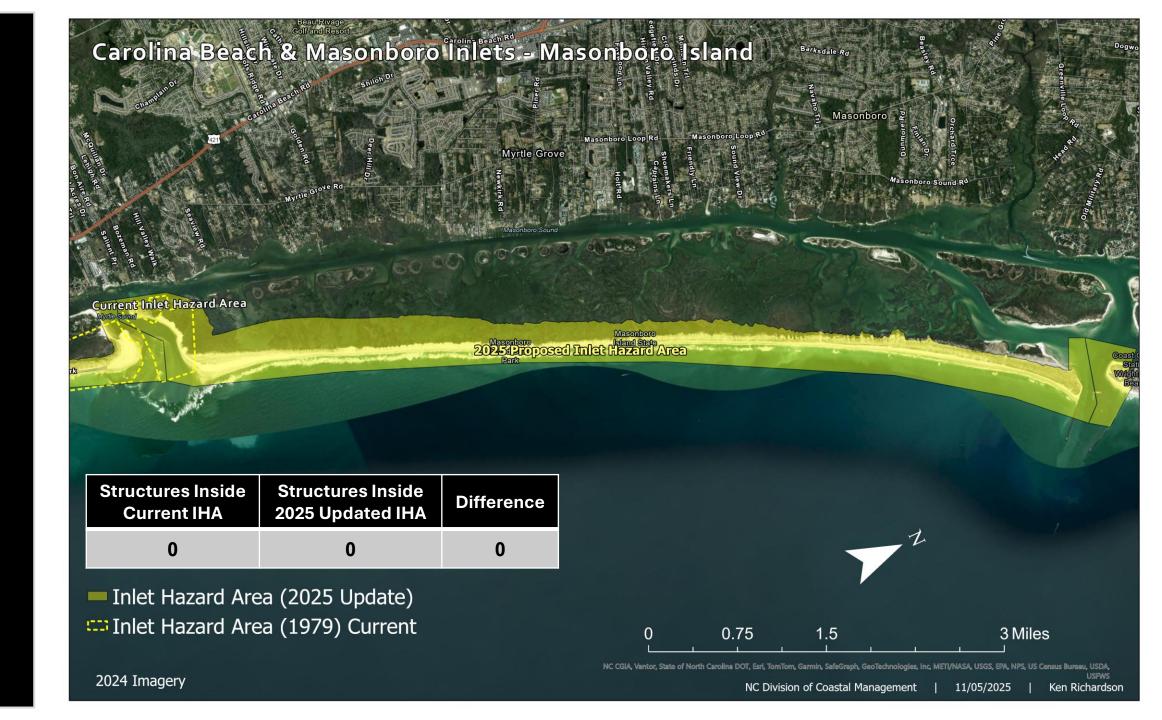










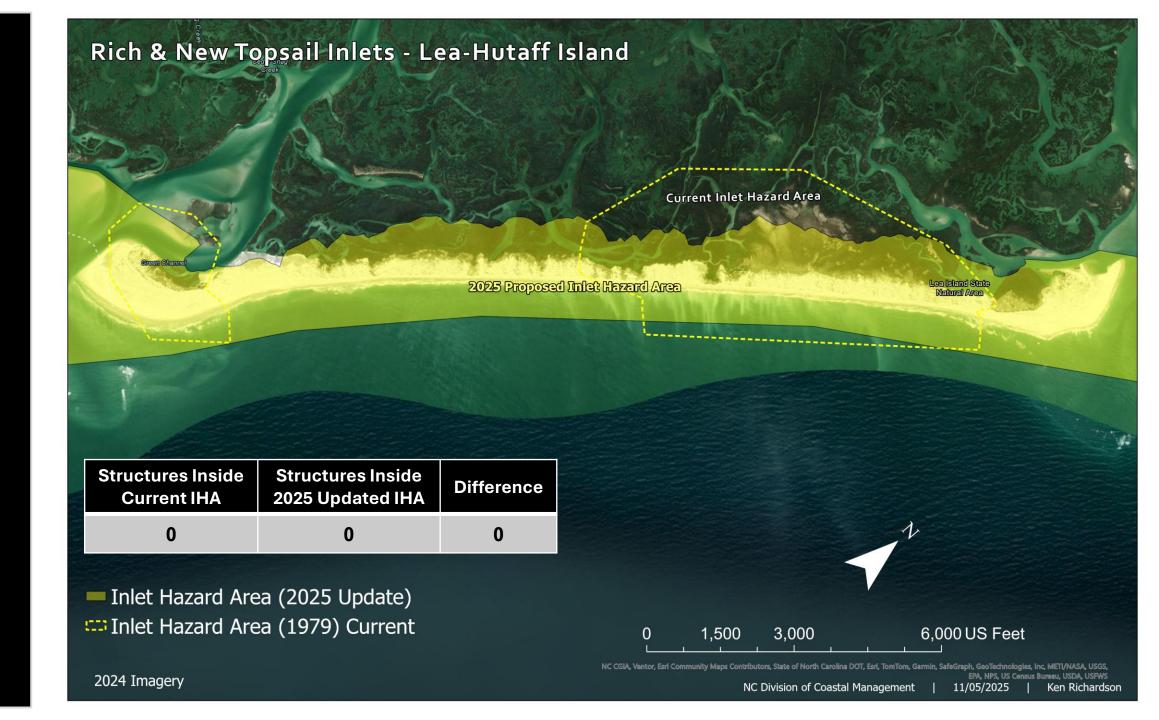


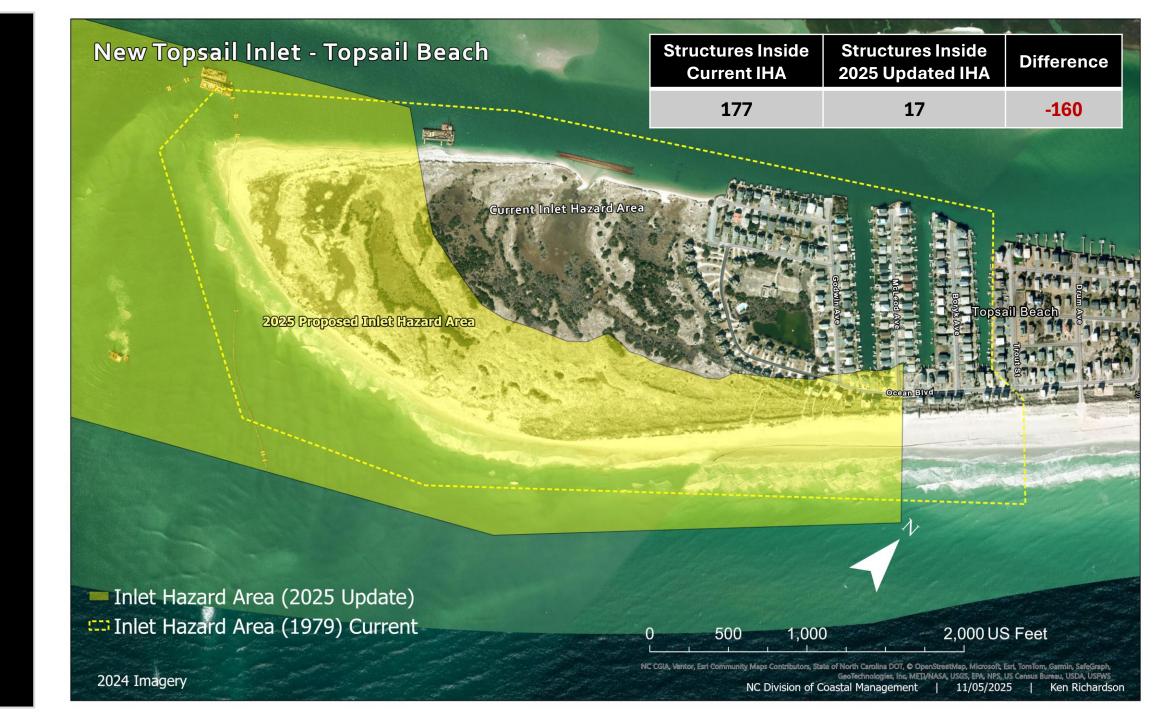


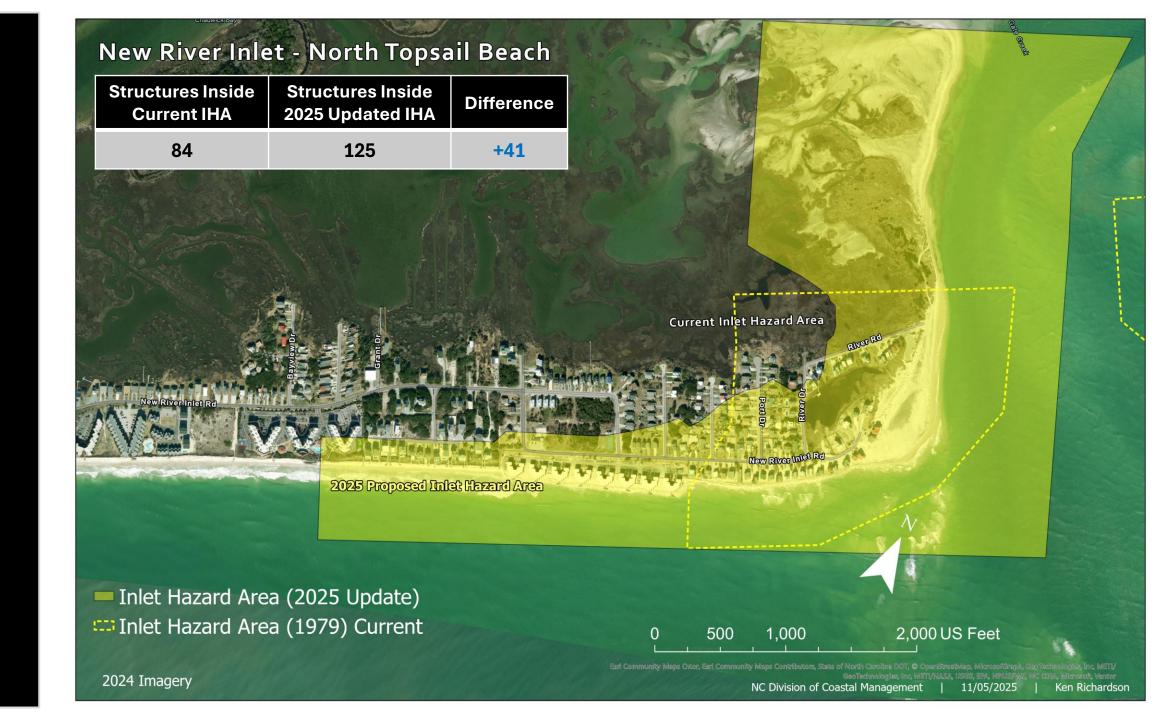














Structures Inside Inlet Hazard Areas (Current vs. Updated)

Location	Current IHA (1979)	Updated IHA (2025)	Difference (current to 2025)
Tubbs Inlet – Sunset Beach	206	17	-189
Tubbs Inlet – Ocean Isle	41	30	-11
Shallotte Inlet – Ocean Isle	0	200	200
Shallotte Inlet – Holden Beach	59	144	85
Lockwood Folly Inlet – Holden Beach	4	42	38
Lockwood Folly Inlet – Oak Island	43	105	62
Carolina Beach Inlet – Carolina Beach	0	18	18
Masonboro Inlet – Wrightsville Beach	0	3	3
Mason Inlet – Wrightsville Beach	1	16	15
Mason Inlet – Figure Eight	36	10	-26
Rich Inlet – Figure Eight	36	62	26
New Topsail Inlet – Topsail Beach	177	17	-160
New River Inlet – North Topsail Beach	84	125	41
Bogue Inlet – Emerald Isle	96	77	-19
Total:	783	866	83

Updating IHA Boundaries

Requires Rule Amendments:

- **1. 07H .0304(2)** definition of Inlet Hazard Area (IHA) to reference:
 - Updated IHA boundary report and maps
 - IHA erosion rates report & maps

Current Rule: 07H .0304(2)

Inlet Hazard Area. The inlet hazard areas are natural-hazard areas that are especially vulnerable to erosion, flooding, and other adverse effects of sand, wind, and water because of their proximity to dynamic ocean inlets. This area extends landward from the mean low water line a distance encompassing that area within which the inlet migrates, based on statistical analysis, and shall consider such factors as previous inlet territory, structurally weak areas near the inlet, and external influences such as jetties, terminal groins, and channelization. The areas on the maps identified as Inlet Hazard Areas included in the report entitled INLET HAZARD AREAS, The Final Report and Recommendations to the Coastal Resources Commission, 1978, as amended in 1981, by Loie J. Priddy and Rick Carraway are incorporated by reference and are hereby designated as Inlet Hazard Areas, except for:

- a) the location of a former inlet which has been closed for at least 15 years;
- b) inlets that due to shoreline migration, no longer include the current location of the inlet; and
- c) inlets providing access to a State Port via a channel maintained by the United States Army Corps of Engineers.

In all cases, the Inlet Hazard Area shall be an extension of the adjacent ocean erodible areas and in no case shall the width of the inlet hazard area be less than the width of the adjacent ocean erodible area. This report is available for inspection at the Department of Environmental Quality, Division of Coastal Management, 400 Commerce Avenue, Morehead City, North Carolina or at the website referenced in Item (1) of this Rule.

Proposed Rule Amendments: 07H.0304(2)

Inlet Hazard Area. These are areas vulnerable to severe erosion driven by the dynamic nature of ocean inlets where natural processes and can undergo rapid shoreline change as inlet movement redistributes sand along adjacent beaches through the combined effects of wind, waves, current, dredging activities, nearshore bathymetry, and erosion control structures.

- a) The Inlet Hazard Area erosion rates are the long-term average erosion rates for each inlet hazard area and depicted in the report entitled "North Carolina 2025 Inlet Hazard Area (IHA) Erosion Rate & Setback Factors: Update Study" and approved by the Coastal Resources Commission on << DATE>>, except for inlets providing access to a State Port via a channel maintained by the United States Army Corps of Engineers.
- b) For the purposes of this Rule, the areas on the maps identified as inlet hazard areas are included in the report entitled, "Inlet Hazard Area Boundaries, 2025 Update: Science Panel Recommendations to the North Carolina Coastal Resources Commission" which were approved by the Coastal Resources Commission on <<DATE>> and are incorporated by reference and hereby designated as Inlet Hazard Areas.
- c) For the purpose of siting development, the minimum erosion rate shall be two feet per year.
- d) Data and maps are available from the Division of Coastal Management online at:
 - Inlet hazard area boundaries: https://www.deq.nc.gov/coastal-management/documents/north-carolina-2025-inlet-hazard-area-iha-boundary-update/open
 - ii. Inlet hazard area erosion rates and setback factors: https://www.deq.nc.gov/coastal-management/north-carolina-2025-inlet-hazard-area-iha-erosion-rate-setback-factors-updatestudy/open

Questions?

Reports & Maps are available online:

https://www.deq.nc.gov/about/divisions/division-coastal-management

DCM's Online Map Viewer (AGOL):

- Viewed
- Data downloaded
- Web Data Services

Contact: Ken.Richardson@deq.nc.gov



Extra Slides

Structures Inside Inlet Hazard Areas (Current vs. Updated)

Inlet	Туре	IHA Method N/E Side of Inlet	IHA Method S/W Side of Inlet	Landward IHA Boundary (N/E Side)	Landward IHA Boundary (S/W Side)
Tubbs	non-migrating	STD ∆ > 1-ft	STD ∆ > 1-ft	90-YRL + Riprap	90-YRL
Shallotte	non-migrating	STD ∆ > 1-ft	STD ∆ > 1-ft	90-YRL	90-YRL
Lockwood Folly	non-migrating	STD > 15-m	STD > 15-m	90-YRL	90-YRL
Carolina Beach	non-migrating	STD ∆ > 1-ft	*	90-YRL	90-YRL
Masonboro	non-migrating	*	#	90-YRL	90-YRL
Mason	non-migrating	STD Δ > 1-ft	STD Δ > 1-ft	90-YRL	90-YRL
Rich	non-migrating	STD Δ > 1-ft	*	90-YRL	90-YRL
New Topsail	migrating	*	STD Δ > 1-ft	90-YRL	90-YRL
New River	non-migrating	STD ∆ > 1-ft	**	90-YRL	n/a
Bogue	non-migrating	**	STD Δ > 1-ft	n/a	90-YRL

The Inlet Hazard Area Method (IHAM)

Map the Hybrid-Vegetation Line (HVL)

- Composite representing the landward-most position of historic vegetation lines,
- Reference HVL to measure landward boundary of the IHA
 - Note: The existing vegetation line does not work (we tried)

Map & Analyze Inlet Shorelines

- Compute erosion rates
- Compute standard deviation (STD) of relative shoreline position

Map Longshore IHA Boundary

- Reference STD data
 - Calculate 15-Meter (49.2 feet) STD threshold
 - Calculate STD Δ > 1 Ft. threshold

Map Landward IHA Boundary

- Map 30- & 90-Year Risk Lines based on inlet erosion rates measured from the HVL
- NOTE: Limited modifications based on Inlet processes, geomorphology and engineering activities considered (where IHA intersects ICW and inlet tidal and shoal features)

Applying the Erosion Rate

Mapping 30- & 90-Year Risk Lines

- Applied conceptual basis of the Ocean Erodible Area & Setbacks
- Measured landward from the hybrid-vegetation line

Where the shoreline is eroding

- 30-Year Risk Line = RL₃₀ = 30 × Erosion Rate
- 90-Year Risk Line = RL₉₀ = 90 × Erosion Rate

Where the shoreline is accreting

- 30-Year Risk Line = RL_{30} = 30 × 2
- 90-Year Risk Line = RL_{90} = 90 × 2

The erosion rate multiplier is 2 where accretion is measured or erosion rate <2 feet/year

Standard Deviation (STD) of Relative Shoreline Position (1970-2022) **Shallotte Inlet at Holden Beach** STD > 15-m STD $\Delta > 1$ Transect STD (m) 18.96 350 1.2 141 18.82 18.82 Legend 142 17.82 17.82 17.44 **144** 17.41 17.41 1.067 ◆STD > 15-m ◆STD Δ >1 16.80 300 147 16.54 16.54 1.0 16.32 16.32 149 16.02 16.02 15.72 0.836 151 15.28 15.28 152 14.97 14.97 250 14.82 STANDARD DEVIATION (FT)
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00 14.84 0.8 155 14.62 14.62 14.17 13.85 158 13.62 13.62 159 13.49 13.49 13.52 0.6 161 13.47 13.47 162 13.33 13.33 12.87 164 12.60 12.60 12.43 12.41 167 12.13 12.13 0.336 0.4 168 11.71 11.71 0.364 Ocean 169 11.45 11.45 100 Inlet influence 11.29 influence 173 10.35 10.35 0.2 50 0.0 206 901 01

TRANSECTS













