



CRC-25-33

August 6, 2025

MEMORANDUM

TO: Coastal Resources Commission
FROM: Ken Richardson, *Shoreline Management Specialist*
SUBJECT: Inlet Hazard Areas (IHA): Overview

The establishment of Areas of Environmental Concern (AEC) is authorized under the NC Coastal Area Management Act (CAMA) of 1974 (NCGS 113A-100 et seq.) and forms the foundation of the North Carolina Coastal Resources Commission's (CRC) permitting program for regulating coastal development. Rules defining three specific ocean hazard AECs appear in 15A NCAC 07H.0300: 1) Ocean Erodible, 2) Inlet Hazard, and 3) Unvegetated Beach AECs. The inlet hazard area (IHA) AEC is defined in 15A NCAC 07H.0304(2) as locations that "are especially vulnerable to erosion, flooding and other adverse effects of sand, wind, and water because of their proximity to dynamic ocean inlets."

Unlike other CRC jurisdictional areas, IHA boundaries are defined in a report referenced in the CRC's rules at 7H.0304(2). The current IHA boundaries correspond to maps originally developed by Priddy and Carraway (1978) for all of the State's then-active inlets. The report designating the IHA boundaries was adopted by the CRC in 1979, with minor amendments since that time.

The original IHA boundaries were based on statistical analysis (and to a lesser extent previous inlet location) of historical shoreline movement identified on multiple aerial photosets. In most cases, the statistical methods used in the 1978 study identified the landward-most shoreline position (99% confidence interval) projected to occur between 1978 and 1988. Originally, the CRC anticipated that these boundaries were to be updated at the end of the 1980s. However, due to a combination of factors, that update did not occur.

It was not until the late 1990s, after the CRC's Science Panel on Coastal Hazards was formed, that the need to update IHAs became more of a focal point of discussion. The following is a summarized timeline from 1998 to 2025:



- **1998-1999:** The newly-formed Science Panel recommended to the CRC that the IHAs were outdated and should be updated. The Science Panel recommended that DCM hire staff to work on inlet hazards data collection and analysis.
- **November 2002:** DCM hired a Coastal Hazards GIS Specialist to support all oceanfront and inlet data collection, mapping, and analysis efforts.
- **2004-2008:** Data collection and mapping in preparation for updating IHAs. DCM worked extensively with the Science Panel to develop inlet delineation methodologies.
- **2009:** DCM synthesized data and study results into a report.
- **May & July 2010:** DCM presented a proposed IHA boundary update to the CRC.
- **2010-2012:** Due to concerns about the increased size of the proposed Inlet Hazard Areas (IHAs), there were numerous questions regarding the applicable IHA rules, and particularly whether “risk” was consistent across all areas within the proposed boundaries. With several of these questions about IHA development standards remaining unresolved, and with other major issues demanding the attention of both the CRC and the Science Panel, such as studies on terminal groins and updates to oceanfront erosion rates, the IHA boundary update was temporarily paused.
- **2012:** The General Assembly directed the CRC to study the feasibility of creating a new AEC for the lands adjacent to the mouth of the Cape Fear River. Session Law 2012-202 required the CRC to consider the unique coastal morphologies and hydrographic conditions of the Cape Fear River region, and to determine if action is necessary to preserve, protect, and balance the economic and natural resources of this region through the elimination of current overlapping AECs by incorporating appropriate development standards into one single AEC unique to this location. During this study, the CRC found that while the Cape Fear River inlet did present a unique set of challenges, other inlets may have similar issues. The CRC therefore decided to undertake a comprehensive review of inlet-related issues, with the expectation of developing additional management tools that would allow the CRC to more proactively address the issues confronted by local governments in these dynamic areas.
- **February 2014:** The CRC asked the Science Panel to review a recommendation to remove IHA status from Mad Inlet, which had been naturally closed for some time. From this effort, the Panel made two recommendations that were presented to the CRC: 1) Mad Inlet was not at risk of reopening so IHA status should be removed; and 2) current IHAs were severely out of date and needed to be updated.
- **September 2014:** DCM presented a report to the CRC that was prepared following a series of stakeholder meetings, entitled, “NC Coastal Resources Commission Inlet Management Study Findings and Policy Options.” Stakeholders made several recommendations to the CRC that pertained specifically to IHAs: 1) The CRC should task the Science Panel to



complete the development of methods to define revised IHAs and potential inlet and near-inlet setback lines for CRC review; and, 2) The IHAs should be eliminated and incorporated into the Ocean Erodible Area (OEA) while applying the same development standards currently utilized in the OEA.

- **May 2016:** Staff proposed to the CRC to continue discussing the IHAs, and to update inlet shoreline change rates that were presented in 2010 – CRC unanimously approved.
- **July 2016:** At the CRC meeting in Beaufort, the Commission issued the following scope of work to the Science Panel:
 - Develop a methodology for calculating inlet shoreline change rates.
The Science Panel chose the linear regression method to measure shoreline change at inlets. This method incorporates multiple shorelines, versus the end-point method currently used on the oceanfront which only uses two shorelines (early and current). Inlet shoreline changes rates have not historically been used for determining construction setbacks at inlets.
 - Re-evaluate points along the oceanfront shoreline where inlet processes no longer influence shoreline position.
When the Science Panel first started working on updating IHA boundaries in 2005, the Panel evaluated changes in shoreline position over time to determine the location along the shoreline where inlet-related processes no longer have a dominant influence on the shoreline's position.
 - Present results at a CRC Meeting.
- **November 2018:** At the CRC meeting in Ocean Isle, the Science Panel Co-Chair, Mr. Bill Birkemeier, presented the Panel's updated proposed IHA boundaries, and described the methods utilized by the Panel to map them.
- **February 2019:** The Science Panel's IHA report titled, "Inlet Hazard Area Boundary 2019 Update: Science Panel Recommendations to the North Carolina Coastal Resources Commission" was approved by the CRC, in addition to rule amendments 07H.0304, and 07H.0310. This started the rule making process.
 - **September 2019:** The CRC approved the fiscal analysis
 - **December 2019- January 2019:** Seven Public Hearings held in each of the affected counties (Brunswick, New Hanover, Onslow, Pender, Carteret, Hyde and Dare)
 - **December 2019- January 2019:** Five public workshops held in North Topsail, Ocean Isle, Holden Beach, Carolina Beach and Topsail Beach
 - **January 2020:** Public comment period closed, but then was later extended to March 2020 to allow more time for submitting comments
 - **COVID-19:** delayed rule making until the CRC was able to meet in-person.
- **April 2023:** One of the recommendations in the Science Panel's 2019 report was to re-evaluate Inlet Hazard Area (IHA) boundaries and associated erosion rates in coordination with future oceanfront erosion rate update studies. However, delays in rulemaking, caused by an extended public comment period and the onset of COVID-19, meant that the next



scheduled oceanfront erosion rate update (2025) was approaching. In response, and at the request of both stakeholders and Division staff, the Coastal Resources Commission (CRC) re-issued a scope of work to its Science Panel.

- Perform 5-year re-evaluation of IHA methods and boundaries incorporating data collected since the 2019 study.
 - Evaluate end-point and linear regression methods, and consider alternative methods for calculating oceanfront shoreline change rates.
 - Present draft report(s), including proposed IHA boundaries and erosion rates.
- **August 2025:** The CRC's Science Panel on Coastal Hazards and DCM Staff will be presenting results for the updated IHA boundaries and OEA & IHA erosion rate studies detailed in the following reports:
 - *Inlet Hazard Area Boundaries, 2025 Update: Science Panel Recommendations to the North Carolina Coastal Resources Commission.*
 - *North Carolina 2025 Inlet Hazard Area (IHA) Erosion Rate & Setback Factors: Update Study*
 - *North Carolina 2025 Oceanfront Setback Factors & Long-Term Average Annual Erosion Rate Update Study: Methods Report*

Staff's Recommendation to the Commission

Following the presentation of all three reports, staff will request that the Commission consider approving each report to initiate the rulemaking process.

