

NORTH CAROLINA
Environmental Quality

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Secretary

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Director

November 6, 2019

CRC-19-32

TO: Coastal Resources Commission

FROM: Heather Coats, Beach & Inlet Management Project Coordinator, Wilmington Office

SUBJECT: Consideration of Public Comments and Adoption of State Ports Inlet Management Area of Environmental Concern (AEC)

In 2012, state legislation was passed that directed the CRC to study the feasibility of creating a new AEC for lands adjacent to the Cape Fear River. The Commission's study led to a more comprehensive study of all inlets, and one of the resulting recommended priorities of the Commission was to develop management objectives and use standards for a new AEC adjacent to the two inlets in North Carolina with federally maintained shipping channels, Beaufort Inlet and the Cape Fear River Inlet.

Staff first met with representatives from the adjacent local governments to solicit input regarding the application of current rules and new management strategies they believed were needed to address the unique circumstances experienced at these inlets. Discussion with the Village of Bald Head Island revolved around needs previously discussed as part of the Cape Fear River AEC Feasibility Study. The Village expressed an interest in more flexible sandbag rules- particularly the ability to protect dunes in addition to primary structures and infrastructure as well as the allowable location and size of sandbags and sandbag structures. They also stated that new rules for the AEC should advocate the beneficial use of dredged material as part of CZMA (Coastal Zone Management Act) federal consistency concurrence.

The discussion with representatives from the Town of Caswell Beach and the NC Baptist Assembly at Ft. Caswell primarily focused on the federal designation of Ft. Caswell as a national historic site and the need for more flexibility on the property to address erosion and other issues.

The main topic of discussion with Carteret County's Shore Protection Manager was beneficial use of beach-compatible dredged material and the limitations of the current federal Dredged Material Management Plan (DMMP) at Beaufort Inlet. Concerns were expressed that the US Army Corps of Engineers should not be allowed to degrade the inlet environment simply because of a lack of funding.



Over the first year of AEC rule development, discussion focused on the beneficial use rule language requiring beach-compatible dredged materials to be placed on active nearshore, beach or inlet shoal system and whether the rule should further require all sand be placed on adjacent beaches. Strong objections were received from the US Army Corps of Engineers (USACE) during that time, with the Corps reporting that removing flexibility could seriously jeopardize the continued operation of the NC State Port at Morehead City. Concerns were also raised by both the Department of Environmental Quality and the Department of Transportation. Following additional discussion with the USACE and other stakeholders, the beneficial use requirement was removed from the draft rule.

Other use standards developed for the AEC included allowing the use of geotextile tubes (or geotubes), allowing the use of temporary erosion control structures to protect frontal or primary dunes and infrastructure, and broadening the definition of what qualifies as “imminently threatened”. All other rules applicable to ocean hazard areas would still apply. The Coastal Resources Advisory Council (CRAC) then discussed the remaining components of the draft AEC rule language, including the sandbag provisions, at the April and July 2015 meetings. They recommended the AEC definition clarify that the AEC includes the Cape Fear and Beaufort Inlets. The CRAC also recommended that a minimum sandbag size be specified, in accordance with current sandbag rule language. The draft rule language was updated to include these recommendations.

AEC boundaries were also proposed in accordance with updated inlet hazard area boundaries developed by the Commission’s Science Panel in 2010. However, requests from the Brunswick County local governments to extend the AEC limits to encompass additional area within their jurisdictions were also presented to the Commission and the expanded areas were approved by the CRC.

The fiscal analysis was approved by OSBM in June 2019. Public hearings were held in Carteret County on July 17, 2019, Brunswick County on September 17, and in New Hanover County on September 18. The public comment period extended from July 1- September 18. No comments were made during the public hearings. One written comment was received from Southern Environmental Law Center (SELC) on behalf of the N.C. Coastal Federation and their members. The comments expressed the following three concerns: allowing frontal and primary dunes and infrastructure to be considered as imminently threatened could increase the use of sandbag structures which could thereby result in increased environmental impacts; that allowing the use of geotubes could increase beach erosion, and that the AEC boundaries were drawn arbitrarily and without regard to a science-based approach. The comments also asked the CRC to take into account the proposal to deepen and widen the Wilmington Port, which could increase erosion of the adjacent beaches and increase the demand for erosion control structures.

All temporary erosion control structures must still be located above mean high water (MHW) and in the areas in question, are typically covered with sand either through beach nourishment or by sand haul operation. Both Beaufort Inlet and Cape Fear Inlet are highly managed and engineered shorelines subject to Dredged Material Management Plans (DMMPs), through which the Town of Caswell Beach, the Village of Bald Head Island and Atlantic Beach regularly receive sand on their beaches from dredging of the federal channels. Additionally, the Village of Bald Head Island supplements the federal project through locally-funded beach nourishment.



Both inlets have been stabilized with hardened structures, including a geotube groinfield constructed on Bald Head Island in the 1990's, as well as a terminal groin built in 2015. A portion of the shoreline of Fort Caswell has a post- Civil War-era seawall and Fort Macon, adjacent to Beaufort Inlet, has multiple terminal groins stabilizing its shorelines. Additionally, it is believed that the local governments who could utilize these strategies generally have more incentive and resources to maintain geotubes than individual property owners. Structures that are not maintained will be subject to removal, in accordance with the current timing requirements. Finally, as stated earlier, the intent of the CRC is to recognize the highly managed nature of these two deep draft inlets and the influence of the federally mandated channels by way of additional considerations for erosion control structures, as established in the Inlet Management Study.

While staff recognizes the N.C. Coastal Federation's concerns, it is believed that the AEC and its use standards were developed in accordance with the local stakeholders' requests as well as in accordance with the intent and direction of the Commission. Therefore, staff recommends the Commission continue to approve the rules as proposed.



1 15A NCAC 7H .0304 is proposed for amendment as follows:

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3 **15A NCAC 07H .0304 AECS WITHIN OCEAN HAZARD AREAS**

4 The ocean hazard AECs contain all of the following areas:

- 5 (1) Ocean Erodible Area. This is the area where there exists a substantial possibility of excessive
6 erosion and significant shoreline fluctuation. The oceanward boundary of this area is the mean low
7 water line. The landward extent of this area is the distance landward from the first line of stable and
8 natural vegetation as defined in ~~15A NCAC 07H .0305(a)(5)~~ Rule .0305(a)(5) of this Section to the
9 recession line established by multiplying the long-term annual erosion rate times 90; provided that,
10 where there has been no long-term erosion or the rate is less than two feet per year, this distance
11 shall be set at 120 feet landward from the first line of stable natural vegetation. For the purposes of
12 this Rule, the erosion rates are the long-term average based on available historical data. The current
13 long-term average erosion rate data for each segment of the North Carolina coast is depicted on
14 maps entitled "2011 Long-Term Average Annual Shoreline Rate Update" and approved by the
15 Coastal Resources Commission on May 5, 2011 (except as such rates may be varied in individual
16 contested cases or in declaratory or interpretive rulings). In all cases, the rate of shoreline change
17 shall be no less than two feet of erosion per year. The maps are available without cost from any
18 Local Permit Officer or the Division of Coastal Management on the internet at
19 <http://www.nccoastalmanagement.net>.
- 20 (2) Inlet Hazard Area. The inlet hazard areas are natural-hazard areas that are especially vulnerable to
21 erosion, flooding, and other adverse effects of sand, wind, and water because of their proximity to
22 dynamic ocean inlets. This area extends landward from the mean low water line a distance sufficient
23 to encompass that area within which the inlet migrates, based on statistical analysis, and shall
24 consider such factors as previous inlet territory, structurally weak areas near the inlet, and external
25 influences such as jetties and channelization. The areas on the maps identified as suggested Inlet
26 Hazard Areas included in the report entitled INLET HAZARD AREAS, The Final Report and
27 Recommendations to the Coastal Resources Commission, 1978, as amended in 1981, by Loie J.
28 Priddy and Rick Carraway are incorporated by reference and are hereby designated as Inlet Hazard
29 Areas, except for:
- 30 (a) ~~the Cape Fear Inlet Hazard Area as shown on the map does not extend northeast of the Bald~~
31 ~~Head Island marina entrance channel; and~~
- 32 (b) ~~the former location of Mad Inlet, which closed in 1997.~~
- 33 (a) the location of a former inlet which has been closed for at least 15 years;
- 34 (b) inlets that due to shoreline migration, no longer include the current location of the inlet;
35 and
- 36 (c) inlets providing access to a State Port via a channel maintained by the Unites States Army
37 Corps of Engineers.

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

7 (3) Unvegetated Beach Area. Beach areas within the Ocean Hazard Area where no stable and natural
8 vegetation is present may be designated as an Unvegetated Beach Area Areas on either a permanent
9 or temporary basis as follows:

10 (a) An area appropriate for permanent designation as an Unvegetated Beach Area is a dynamic
11 area that is subject to rapid unpredictable landform change due to wind and wave action.
12 The areas in this category shall be designated following studies by the Division of Coastal
13 Management. These areas shall be designated on maps approved by the Coastal Resources
14 Commission and available without cost from any Local Permit Officer or the Division of
15 Coastal Management on the internet at the website referenced in Item (1) of this Rule.

16 (b) An area that is suddenly unvegetated as a result of a hurricane or other major storm event
17 may be designated by the Coastal Resources Commission as an Unvegetated Beach Area
18 for a specific period of time, or until the vegetation has re-established in accordance with
19 ~~15A NCAC 07H .0305(a)(5)~~ Rule .0305(a)(5) of this Section. At the expiration of the
20 time specified or the re-establishment of the vegetation, the area shall return to its pre-
21 storm designation.

22 (4) State Ports Inlet Management Area. These are areas adjacent to and within Beaufort Inlet and the
23 mouth of the Cape Fear River, providing access to a State Port via a channel maintained by the
24 Unites States Army Corps of Engineers. These areas are unique due to the influence of federally-
25 maintained channels, and the critical nature of maintaining shipping access to North Carolina's State
26 Ports. These areas may require specific management strategies not warranted at other inlets to
27 address erosion and shoreline stabilization. State Ports Inlet Management Areas shall extend from
28 the mean low water line landward as designated on maps approved by the Coastal Resources
29 Commission and available without cost from the Division of Coastal Management, and on the
30 internet at the website referenced in Item (1) of this Rule.

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32 *History Note: Authority G.S. 113A-107; 113A-107.1; 113A-113; 113A-124;*
33 *Eff. September 9, 1977;*
34 *Amended Eff. December 1, 1993; November 1, 1988; September 1, 1986; December 1, 1985;*
35 *Temporary Amendment Eff. October 10, 1996;*
36 *Amended Eff. April 1, 1997;*
37 *Temporary Amendment Eff. October 10, 1996 Expired on July 29, 1997;*

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Temporary Amendment Eff. October 22, 1997;
Amended Eff. June 1, 2019; July 1, 2016; September 1, 2015; May 1, 2014; February 1, 2013;
January 1, 2010; February 1, 2006; October 1, 2004; April 1, 2004; August 1, 1998.

1 15 NCAC 07H .0309 is proposed for amendment as follows:

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3 **15A NCAC 07H .0309 USE STANDARDS FOR OCEAN HAZARD AREAS: EXCEPTIONS**

4 (a) The following types of development shall be permitted seaward of the oceanfront setback requirements of Rule
5 .0306(a) of ~~the Subchapter~~ this Section if all other provisions of this Subchapter and other state and local regulations
6 are met:

- 7 (1) campsites;
- 8 (2) driveways and parking areas with clay, packed sand or gravel;
- 9 (3) elevated decks not exceeding a footprint of 500 square feet;
- 10 (4) beach accessways consistent with Rule .0308(c) of this ~~Subchapter~~; Section;
- 11 (5) unenclosed, uninhabitable gazebos with a footprint of 200 square feet or less;
- 12 (6) uninhabitable, single-story storage sheds with a foundation or floor consisting of wood, clay, packed
13 sand or gravel, and a footprint of 200 square feet or less;
- 14 (7) temporary amusement stands;
- 15 (8) sand fences; and
- 16 (9) swimming pools.

17 In all cases, this development shall be permitted only if it is landward of the vegetation line or static vegetation line,
18 whichever is applicable; involves no alteration or removal of primary or frontal dunes which would compromise the
19 integrity of the dune as a protective landform or the dune vegetation; has overwalks to protect any existing dunes; is
20 not essential to the continued existence or use of an associated principal development; is not required to satisfy
21 minimum requirements of local zoning, subdivision or health regulations; and meets all other non-setback
22 requirements of this Subchapter.

23 (b) Where application of the oceanfront setback requirements of Rule .0306(a) of this ~~Subchapter~~ Section would
24 preclude placement of permanent substantial structures on lots existing as of June 1, 1979, buildings shall be permitted
25 seaward of the applicable setback line in ocean erodible ~~areas~~; areas and State Ports Inlet Management Areas, but not
26 inlet hazard areas or unvegetated beach areas, if each of the following conditions are met:

- 27 (1) The development is set back from the ocean the maximum feasible distance possible on the existing
28 lot and the development is designed to minimize encroachment into the setback area;
- 29 (2) The development is at least 60 feet landward of the vegetation line or static vegetation line,
30 whichever is applicable;
- 31 (3) The development is not located on or in front of a frontal dune, but is entirely behind the landward
32 toe of the frontal dune;
- 33 (4) The development incorporates each of the following design standards, which are in addition to those
34 required by Rule .0308(d) of this ~~Subchapter~~; Section.
 - 35 (A) All pilings shall have a tip penetration that extends to at least four feet below mean sea
36 level;

1 (B) The footprint of the structure shall be no more than 1,000 square feet, and the total floor
2 area of the structure shall be no more than 2,000 square feet. For the purpose of this
3 Section, roof-covered decks and porches that are structurally attached shall be included in
4 the calculation of footprint;

5 (C) Driveways and parking areas shall be constructed of clay, packed sand or gravel except in
6 those cases where the development does not abut the ocean and is located landward of a
7 paved public street or highway currently in use. In those cases concrete, asphalt or
8 turfstone may also be used;

9 (D) No portion of a building's total floor area, including elevated portions that are cantilevered,
10 knee braced or otherwise extended beyond the support of pilings or footings, may extend
11 oceanward of the total floor area of the landward-most adjacent building. When the
12 geometry or orientation of a lot precludes the placement of a building in line with the
13 landward most adjacent structure of similar use, an average line of construction shall be
14 determined by the Division of Coastal Management on a case-by-case basis in order to
15 determine an ocean hazard setback that is landward of the vegetation line, static vegetation
16 line or measurement line, whichever is applicable, a distance no less than 60 feet.

17 (5) All other provisions of this Subchapter and other state and local regulations are met. If the
18 development is to be serviced by an on-site waste disposal system, a copy of a valid permit for such
19 a system shall be submitted as part of the CAMA permit application.

20 (c) Reconfiguration and development of lots and projects that have a grandfather status under Paragraph (b) of this
21 Rule shall be allowed provided that the following conditions are met:

22 (1) Development is setback from the first line of stable natural vegetation a distance no less than that
23 required by the applicable exception;

24 (2) Reconfiguration shall not result in an increase in the number of buildable lots within the Ocean
25 Hazard AEC or have other adverse environmental consequences.

26 For the purposes of this Rule, an existing lot is a lot or tract of land which, as of June 1, 1979, is specifically described
27 in a recorded plat and which cannot be enlarged by combining the lot or tract of land with a contiguous lot(s) or tract(s)
28 of land under the same ownership. The footprint is defined as the greatest exterior dimensions of the structure,
29 including covered decks, porches, and stairways, when extended to ground level.

30 (d) The following types of water dependent development shall be permitted seaward of the oceanfront setback
31 requirements of Rule .0306(a) of this Section if all other provisions of this Subchapter and other state and local
32 regulations are met:

33 (1) piers providing public access; and

34 (2) maintenance and replacement of existing state-owned bridges and causeways and accessways to
35 such bridges.

36 (e) Replacement or construction of a pier house associated with an ocean pier shall be permitted if each of the
37 following conditions is met:

- 1 (1) The ocean pier provides public access for fishing and other recreational purposes whether on a
2 commercial, public, or nonprofit basis;
- 3 (2) Commercial, non-water dependent uses of the ocean pier and associated pier house shall be limited
4 to restaurants and retail services. Residential uses, lodging, and parking areas shall be prohibited;
- 5 (3) The pier house shall be limited to a maximum of two stories;
- 6 (4) A new pier house shall not exceed a footprint of 5,000 square feet and shall be located landward of
7 mean high water;
- 8 (5) A replacement pier house may be rebuilt not to exceed its most recent footprint or a footprint of
9 5,000 square feet, whichever is larger;
- 10 (6) The pier house shall be rebuilt to comply with all other provisions of this Subchapter; and
- 11 (7) If the pier has been destroyed or rendered unusable, replacement or expansion of the associated pier
12 house shall be permitted only if the pier is being replaced and returned to its original function.

13 (f) In addition to the development authorized under Paragraph (d) of this Rule, small scale, non-essential development
14 that does not induce further growth in the Ocean Hazard Area, such as the construction of single family piers and
15 small scale erosion control measures that do not interfere with natural oceanfront processes, shall be permitted on
16 those non-oceanfront portions of shoreline that exhibit features characteristic of an Estuarine Shoreline. Such features
17 include the presence of wetland vegetation, and lower wave energy and erosion rates than in the adjoining Ocean
18 Erodible Area. Such development shall be permitted under the standards set out in Rule .0208 of this Subchapter. For
19 the purpose of this Rule, small scale is defined as those projects which are eligible for authorization under 15A NCAC
20 07H .1100, .1200 and 15A NCAC 07K .0203.

21 (g) Transmission lines necessary to transmit electricity from an offshore energy-producing facility may be permitted
22 provided that each of the following conditions is met:

- 23 (1) The transmission lines are buried under the ocean beach, nearshore area, and primary and frontal
24 dunes, all as defined in Rule ~~07H .0305~~, .0305 of this Section, in such a manner so as to ensure that
25 the placement of the transmission lines involves no alteration or removal of the primary or frontal
26 dunes; and
- 27 (2) The design and placement of the transmission lines shall be performed in a manner so as not to
28 endanger the public or the public's use of the beach.

29 (h) Existing stormwater outfalls within the Ocean Hazard AEC that are owned or maintained by a State agency or
30 local government, may be extended oceanward subject to the provisions contained within 15A NCAC 07J .0200.
31 Outfalls may be extended below mean low water, and may be maintained in accordance with 15A NCAC 07K .0103.
32 Shortening or lengthening of outfall structures within the authorized dimensions, in response to changes in beach
33 width, is considered maintenance under 15A NCAC 07K .0103. Outfall extensions may be marked with signage, and
34 shall not prevent pedestrian or vehicular access along the beach. This Paragraph does not apply to existing stormwater
35 outfalls that are not allowed or maintained by a State agency or local government.

1 *History Note: Authority G.S. 113A-107(a); 113A-107(b); 113A-113(b)(6)a; 113A-113(b)(6)b; 113A-113(b)(6)d;*
2 *113A-124;*
3 *Eff. February 2, 1981;*
4 *Amended Eff. June 1, 2019; June 1, 2010; February 1, 2006; September 17, 2002 pursuant to S.L.*
5 *2002-116; August 1, 2000; August 1, 1998; April 1, 1996; April 1, 1995; February 1, 1993; January*
6 *1, 1991; April 1, 1987.*

1 15A NCAC 07H .0313 is proposed for adoption as follows:
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3 **15A NCAC 07H .0313 USE STANDARDS FOR STATE PORTS INLET MANAGEMENT AREAS**

4 Development within State Ports Inlet Management areas, as defined by Rule .0304 of this Section, shall be permitted
5 in accordance with the following standards:

6 (a) All development in the State Ports Inlet Management Areas shall be set back from the first line of stable and
7 natural vegetation, static vegetation line, or measurement line at a distance in accordance with Rule .0305(a)(5) of this
8 Section, except for development exempted under Rule .0309 of this Section.

9 (b) Notwithstanding the use standards for temporary erosion control structures described in Rule .0308(a)(2) of this
10 Section, a local government may apply for a permit to seek protection of an imminently threatened frontal or primary
11 dune, public and private structures and/or infrastructure within a State Ports Inlet Management Area. For the purpose
12 of this Rule, a frontal or primary dune, structure, or infrastructure shall be considered imminently threatened in a State
13 Ports Inlet Management Area if:

14 (1) its foundation, septic system, right-of-way in the case of roads, or waterward toe of dune is less than
15 20 feet away from the erosion scarp; or

16 (2) site conditions, such as flat beach profile or accelerated erosion, increase the risk of imminent
17 damage to the structure as determined by the Director of the Division of Coastal Management; or

18 (3) the frontal or primary dune or infrastructure will be imminently threatened within six months as
19 certified by persons meeting all applicable State occupational licensing requirements; or

20 (4) the rate of erosion from the erosion scarp or shoreline within 100 feet of the infrastructure, structure,
21 frontal or primary dune was greater than 20 feet over the preceding 30 days.

22 Permit applications to protect property where no structures are imminently threatened require consultation with the
23 US Army Corps of Engineers.

24 (c) Temporary erosion control structures constructed by a local or state government shall have a base width not
25 exceeding 20 feet, and a height not to exceed six feet. Individual sandbags shall be tan in color and be a minimum of
26 three feet wide and seven feet in length when measured flat.

27 (d) Established common-law and statutory public rights of access to the public trust lands and waters in State Ports
28 Inlet Management Areas shall not be eliminated or restricted. Development shall not encroach upon public accessways
29 nor shall it limit the intended use of the accessways.

30 (e) Except where inconsistent with the above standards, all other rules in this Subchapter pertaining to development
31 in the ocean hazard areas shall be applied to development within the State Ports Inlet Management Areas.

32 (f) In addition to the types of development excepted under Rule .0309 of this Section, small-scale, non-essential
33 development that does not induce further growth in the State Ports Inlet Management Areas, such as the construction
34 of single-family piers and small-scale erosion control measures that do not interfere with natural inlet movement,
35 may be permitted on those portions of shoreline within a designated State Ports Inlet Management Area that exhibit
36 features characteristic of Estuarine Shoreline. Such features include the presence of wetland vegetation, lower wave
37 energy, and lower erosion rates than in the adjoining Ocean Erodible Area. Such development shall be permitted under

1 the standards set out in Rule .0208 of this Subchapter. For the purpose of this Rule, small-scale is defined as those
2 projects which are eligible for authorization under 15A NCAC 07H .1100 and .1200.

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4 History Note: Authority G.S. 113A-107, 113A-107.1; 113A-113; 113A-124;
5 Eff. June 1, 2019.

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September 17, 2019

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Re: Comments on the N.C. Coastal Resources Commission's Proposed State Ports Inlet Management AEC Designation and Use Standards

Dear Dr. Davis,

The Southern Environmental Law Center ("SELC") submits these comments on behalf of the N.C. Coastal Federation and the thousands of members they represent, regarding the N.C. Coastal Resources Commission's ("CRC") proposed amendments to 15A N.C. Admin. Code 07H .0304 and .0309, and proposed rule for adoption at 15A N.C. Admin. Code 07H .0313.¹ These proposals designate a new Area of Environmental Concern ("AEC") for lands adjacent to the Cape Fear River and Beaufort Inlets— known as the "State Ports Inlet Management" AEC— and create new management standards in these areas which would extend greater flexibility to local and state agencies in the use of sandbags and geotubes to protect dunes and infrastructure.

North Carolina has long recognized inlets as one of the State's most dynamic coastal features. The proposed regulations do not reflect the sensitive and constantly-changing nature of this coastal landscape or anticipated changes in sea levels. We write to express concern with the proposed standards that would govern the use of erosion control methods in these areas and the arbitrary nature by which the boundaries for these areas appear to have been drawn.

The proposed rules could lead to increased use of hardened erosion control measures adjacent to these ecologically sensitive areas, by broadening the definition of structures "imminently threatened" by erosion. More hardened structures would almost certainly accelerate erosion in these areas that are already vulnerable to sea level rise and storm damage. We urge the CRC and DCM to prioritize softer erosion control methods over hardened methods, which could be equally effective and less harmful, over hard structures like sandbags.

I. Background

North Carolina's inlets serve as channels through the State's barrier island system, connecting the open ocean to the sound. Inlets are an important feature of barrier island coasts. They facilitate the exchange of sediment, fresh water, and salt water that is necessary for the

¹ Proposal text, related fiscal analyses, and other files are available at *State Ports Inlet Management AEC*, N.C. DEP'T OF ENVTL. QUALITY (DEQ) (Feb. 22, 2018), <https://deq.nc.gov/documents/state-ports-inlet-management-aec>.

health and function of North Carolina's estuaries.² They are also important elements of the State's economy, facilitating navigation, improving water quality, and supporting recreation, trade, and fishing.³

Shorelines adjacent to inlets behave much differently than the rest of the coastline. Inlet shorelines are constantly moving under powerful, combined natural forces like tides, winds, currents, and waves. Ocean inlet systems are highly dynamic balances, with waves and currents persistently attempting to "fill in" the gaps with sand, while tidal currents and periodic storms oppose these forces by constantly trying to enlarge the opening. As a result of this persistent accretion and erosion, inlets are in a constant and unpredictable state of flux. These changes may occur slowly over many years, or suddenly, such as after a storm event.⁴

Inlet dynamics affect not only the shorelines inside the inlet but also the oceanfront shorelines nearby, sometimes even at some distance from the inlet. On North Carolina's coast, oceanfront beaches near inlets erode approximately five times faster than oceanfront beaches not influenced by inlets, at an average rate of 4.3 feet per year.⁵

North Carolina's coastal management framework has recognized the importance of prudent inlet management for over four decades. The State's longstanding reliance on inlet channels for navigation, trade, fishing, and recreation has presented the State with some challenging coastal management decisions, as inlets are not fixed in space or time. The CRC has recognized that "dynamic ocean inlets" are exceptionally difficult to regulate by establishing the Inlet Hazard Area ("IHA") AEC in 1977.⁶ An AEC is a region of the coast with specific natural importance designated by the CRC which require more tailored coastal regulations.⁷ To regulate the use of inlet stabilization methods and the development near inlets, the CRC adopted use standards specific to IHAs, codified at 15A N.C. Admin. Code 7H .0305. The IHA boundaries in use today were adopted by the CRC in 1979, as amended in 1981.⁸ In February 2019, the

² David J. Mallinson et al., *Past, Present, and Future Inlets of the Outer Banks Barrier Islands, North Carolina* (White Paper), N.C. COASTAL GEOLOGY COOP. RES. PROGRAM (Dec. 2008), at 1-2, <http://core.ecu.edu/geology/mallinsond/PP&F%20Inlet%20Book.pdf>.

³ *Inlet Hazard Area Boundary, 2019 Update: Science Panel Recommendations to the North Carolina Coastal Resources Commission*, N.C. COASTAL RES. COMM'N'S (CRC) SCI. PANEL ON COASTAL HAZARDS & N.C. DIV. OF COASTAL MGMT. (DCM) (Feb. 12, 2019), at 8, <https://files.nc.gov/ncdeq/Coastal%20Management/GIS/2019%20Inlet%20Hazard%20Area%20Boundary%20Update%20190212.pdf> [hereinafter "2019 IHA Boundary Update"].

⁴ For animations showing the movement of North Carolina's inlets through time, see *Shifting Shorelines: Inlet Atlas*, N.C. SEA GRANT (last visited Sep. 13, 2019), <https://ncseagrant.ncsu.edu/program-areas/coastal-hazards/inlet-atlas/>.

⁵ 2019 IHA Boundary Update, *supra* note 3.

⁶ 15A N.C. ADMIN. CODE 7H.0304(2) ("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.").

⁷ The CRC has organized the AECs into four categories: (1) the Estuarine and Ocean System; (2) the Ocean Hazard System; (3) Public Water Supply AECs; and (4) Natural & Cultural Resource AECs. The Inlet Hazard Area AEC falls within the Ocean Hazard System. See *CAMA Handbook for Coastal Development*, N.C. DCM (Apr. 2014), <https://files.nc.gov/ncdeq/Coastal%20Management/documents/PDF/CAMA/CAMA%20Handbook%202014%20edition%20printable.pdf>, at § 2.

⁸ 2019 IHA Boundary Update, *supra* note 3, at 9.

Science Panel for the Coastal Resources Commission proposed a long-overdue update that includes boundaries for ten of North Carolina's nineteen active inlets.⁹

In 2012, the N.C. General Assembly directed the CRC to “study the feasibility of creating new [AEC] for the lands adjacent to the mouth of the Cape Fear River.”¹⁰ The intent of this directive was to:

consider the unique coastal morphologies and hydrographic conditions of the Cape Fear River region, and to determine if action was necessary to preserve, protect, and balance the economic and natural resources of this region through the elimination of overlapping AECs and by incorporating appropriate development standards into one single AEC unique to this location.¹¹

That feasibility study found that the coastal dynamics of the Cape Fear River inlet may not be unique to only that area and thus recommended completing a more inclusive study of all inlets in the state. The “Inlet Management Study” was then undertaken in 2014, which established numerous goals, one of which was to create a new, separate AEC category for the areas adjacent to the state's two ports—the Cape Fear River and Beaufort Inlets.¹² Later in 2014, the legislature directed the CRC to repeal the IHA designation at inlets providing access to a State Port via a channel maintained by the U.S. Army Corps of Engineers (i.e., Cape Fear River and Beaufort Inlets).¹³ These areas were thereby removed from the IHA designation but remained within the “Ocean Erodible” AEC.¹⁴ At present, the CRC is proposing to formalize the creation of a new “State Ports Inlet Management” AEC for lands adjacent to the Cape Fear River and Beaufort Inlets and create unique management objectives and use standards for this new AEC category.

The two State Ports Inlet Management AECs on either side of Beaufort Inlet consist of state and federal lands within Fort Macon State Park to the west and the westernmost portion of Cape Lookout National Seashore (i.e., Shackleford Banks) to the east. The proposed AECs on either side of the Cape Fear River Inlet consist of the entire oceanfront shoreline of Caswell Beach and the areas known as “West Beach” and “South Beach” on Bald Head Island.¹⁵ The new use standards would allow local and state agencies greater flexibility to use of sandbags to protect threatened frontal and primary dunes, structures, and infrastructure.

II. Discussion

⁹ See generally *id.* SELC and N.C. Coastal Federation will address the proposed boundary changes to the IHAs and amended associated use standards when the full proposal is out for public comment.

¹⁰ S.L. 2012-202, The Act to Study and Modify Certain Coastal Management Policies, Section 4.

¹¹ Heather Coats, *Fiscal Analysis: State Ports Inlet Management Area of Concern*, N.C. DCM (Nov. 15, 2018), at 1 (on file with the CRC) [hereinafter “Fiscal Analysis”].

¹² See *Inlet Management Study*, N.C. DCM (last visited Sep. 12, 2019), <https://deq.nc.gov/about/divisions/coastal-management/coastal-resources-commission/inlet-management-study>.

¹³ N.C. Sess. Laws. 2014-120, An Act To Provide Further Regulatory Relief To The Citizens Of North Carolina By Providing For Various Administrative Reforms, By Eliminating Certain Unnecessary Burdens Or Outdated Statutes And Regulations and Modernizing Or Simplifying Cumbersome Or Outdated Regulations, And By Making Various Other Statutory Changes, § 35.(c)(3) (2014).

¹⁴ Fiscal Analysis, *supra* note 11, at 2.

¹⁵ *Id.*

SELC understands that parts of these proposals are a result of legislative mandate. Therefore in this section we will only discuss our concerns with the following changes not resulting from the abovementioned legislation:

- Allowing infrastructure and frontal and primary dunes to be classified as “imminently threatened” and broadening the definition of how such structures may qualify as being imminently threatened in the State Ports Inlet Management AEC, allowing local or state agencies more flexibility in the use of sandbags;
- Allowing for the use of geotubes in State Ports Inlet Management AECs;
- Arbitrarily drawing the geographic boundaries that define the new State Ports Inlet Management AEC.

The new rules would allow greater flexibility to local and state agencies in the use of sandbags to protect threatened public or private frontal and primary dunes, structures, and infrastructure. DCM currently issues permits for sandbags pursuant to use standards which limit sandbags to protection of “imminently threatened” structures (i.e., buildings, roads, and septic systems).¹⁶ Sandbags are not currently allowed to protect dunes or habitat. The proposed amendments would allow local governments or state agencies to apply for permits to protect frontal or primary dunes as well as structures and infrastructure within the new AEC by changing the definition of what can be classified as “imminently threatened.”

Since 1996, DCM has permitted 17 sandbag projects on Caswell Beach and Bald Head Island, and no sandbags adjacent to Beaufort Inlet.¹⁷ Ten of these were permits were placed to protect private property, while the rest were issued to local governments to protect roadways and infrastructure.¹⁸ In its fiscal analysis of the proposed rules, DCM assures that “the number of permits issued may increase, but any attempt to estimate a number of permits by the division would be speculative since the action would be dependent upon erosion events and the intentions of local governments.”¹⁹ This assessment completely ignores the current projected erosion rates for these areas.

Rising sea levels will continue to increase erosion rates along the coast.²⁰ Changes in wave action along the coast, combined with intensifying storms fueled by climate change, have led to dramatic shifts in longshore sediment transport gradients.²¹ Average erosion rates along the Wilmington area beaches, for example, appear to be between 4 and 6 feet per year.²² Cape Lookout National Seashore, adjacent to Beaufort Inlet is eroding at rates ranging from 1 to 7 feet per year.²³ The impact of rising seas becomes even more powerful when storm surge or rainfall

¹⁶ *Id.* at 3.

¹⁷ *Id.* at 7.

¹⁸ *Id.*

¹⁹ *Id.*

²⁰ See Stephen P. Leatherman et al., *Sea level rise shown to drive coastal erosion*, EOS TRANSACTIONS AM. GEOPHYSICAL UNION (Feb. 8, 2000); Roshanka Ranasinghe et al., *Climate change impact assessment for inlet-interrupted coastlines*, NATURE CLIMATE CHANGE (Sep. 2, 2012).

²¹ Jennifer M. Johnson et al., *Recent shifts in coastline change and shoreline stabilization linked to storm climate change*, EARTH SURFACE PROCESSES & LANDFORMS (Apr. 2015).

²² Online GIS Layer, *DCM Oceanfront Setback Factors (2019)*, N.C. DCM (Mar. 19, 2019)

<https://ncdenr.maps.arcgis.com/apps/webappviewer/index.html?id=f5e463a929ed430095e0a17ff803e156>

²³ *Id.*

is added on top of a higher tide, therefore it is crucial to consider storm surge and rainfall vulnerabilities in addition to sea level rise. Storms are already becoming more intense as a result of changing climate.²⁴ Under these future scenarios, is likely that DCM will see an increase in the demand for sandbags, and the proposed rules make sandbag use even more likely.

The construction of more hardened structures, including sandbags, on the beachfront harms the health of the beach system, disrupts the natural movement of inlets, and hinders adaptation in the face of the rising seas.²⁵ Research has shown that shoreline armoring, including placing sandbags in place for long periods of time, inhibits natural coastal processes and worsens erosional forces by creating scouring, wave reflection, and downdrift erosion.²⁶ Shoreline stabilization can drastically change the way a cusped cape coastline, such as that of North Carolina, responds to a shift in wave energy. Even isolated areas of shoreline stabilization have the potential to worsen the erosional effects of sea level rise.²⁷ Where hard stabilization methods like sandbags are installed, the eventual loss of the beach and its associated habitats is virtually inevitable. In fact, according to best management practices recommended to the U.S. Fish and Wildlife Service (“FWS”),

Due to their incredible ecological significance and the significant adverse environmental impacts that hard stabilization generates, inlets should not be stabilized with jetties, terminal groins, revetments, riprap, geotubes, sandbags or any other hard structure. The cumulative impacts of inlet...manipulation along the Atlantic and Gulf coasts of the U.S. already are significant and adverse...²⁸

It is therefore in the long-term interest of the community, the state, and the ecosystem to rigorously assess alternatives that do not involve shoreline armoring.

Hardened structures can also be detrimental to coastal wildlife. Female sea turtles attempting to nest on beaches armored with sandbags or geotubes have been shown to abandon their nest attempts at higher rates than those attempting to nest on natural beaches.²⁹ Notably, the four beaches adjacent to the two proposed State Ports Inlet Management AECs—Bald Head Island, Caswell Beach, Fort Macon State Park, and Shackleford Banks—all serve as important sea turtle nesting habitat. North Carolina is home to five species of sea turtle, including the federally threatened loggerhead turtle. Three of the four beaches of concern here (excluding

²⁴ D.R. Easterling et al., *Precipitation Change in the United States*, in CLIMATE SCIENCE SPECIAL REPORT: FOURTH NATIONAL CLIMATE ASSESSMENT, VOLUME I, 207-230 (Donald J. Wuebbles et al. eds., 2017).

²⁵ Jennifer Miselis & Jorge Lorenzo Trueba, *Natural and human-induced variability in barrier-island response to sea level rise*, GEOPHYSICAL RES. LETTERS (Dec. 11, 2017).

²⁶ Tomas Beuzen et al., *Physical model study of beach profile evolution by sea level rise in the presence of seawalls*, COASTAL ENGINEERING (Jun. 2018); Kenneth Ells & A. Brad Murray, *Long-term, non-local coastline responses to local shoreline stabilization*, GEOPHYSICAL RES. LETTERS (Oct. 2, 2012).

²⁷ Jordan M. Slott et al., *Large-scale responses of complex-shaped coastlines to local shoreline stabilization and climate change*, J. GEOPHYSICAL RES. (Sep. 16, 2010).

²⁸ Tracy Monegan Rice, *Best Management Practices for Shoreline Stabilization to Avoid and Minimize Adverse Environmental Impacts*, TERWILLIGER CONSULTING, INC. (Nov. 2009), <https://www.fws.gov/charleston/pdf/PIPL/BMPs%20For%20Shoreline%20Stabilization%20To%20Avoid%20And%20Minimize%20Adverse%20Environmental%20Impacts.pdf>

²⁹ Blair Witherington et al., *Sea turtle responses to barriers on their nesting beach*, J. EXPERIMENTAL MARINE BIOLOGY & ECOLOGY (2011).

Shackleford Banks) have been designated as terrestrial critical habitat for nesting loggerheads.³⁰ Caswell Beach and Bald Head Island see the third and fourth highest annual nesting density, respectively, of any beach in the State, with an average of 120 nests laid along the 16 miles of beach per year.³¹ In 2019, these two beaches saw a record 272 nests laid. Sea turtles are iconic elements of the tourism industry in North Carolina. On Bald Head Island, sea turtle viewing activities bring in as much as \$30 million per year in tourism spending.³²

In addition, portions of Shackleford Banks—adjacent to Beaufort Inlet—are designated as critical habitat for the federally threatened piping plover.³³ North Carolina is the only state where the piping plover's breeding and wintering ranges overlap and where the birds are present year-round.³⁴ The installation of hard structures like sandbags degrades, destroys, and fragments beachfront piping plover habitat throughout its wintering range.³⁵ Therefore, the increased use of sandbags in these important sea turtle and piping plover habitats is of great concern.

Furthermore, we are concerned that the proposed regulations will make it easier for local governments and state agencies to use geotubes. While proponents of geotube systems tout the potential benefits of this erosion control method, the impacts of these structures on the beachfront must also be acknowledged. A review of alternative erosion control structures found that geotubes were likely to cause erosion to the beaches in front of the tube structures.³⁶ Additionally, maintaining enough sand on the beach profile for a geotube to remain intact can be a costly effort, and the structures can be destroyed when exposed to storm surge.³⁷ In application, geotubes are another form of hard shoreline armoring, which disrupt coastal processes and can concentrate erosional forces onto the beach.³⁸

As a general matter, we are concerned about the way the State Ports Inlet Management AEC boundaries were drawn because of the expected increase in the use of harmful hardened control structures within these boundaries. It is not clear how the CRC arrived at the proposed boundaries. We oppose drawing lines arbitrarily and recommend the CRC take a consistent, science-based approach to delineating the new AEC boundaries, like the one that was used to update the IHA boundaries this year, to ensure that the boundaries are not over-inclusive.³⁹

³⁰ 79 Fed. Reg. 39755 (Aug. 11, 2014).

³¹ *Sea Turtle Nest Monitoring System*, N.C. WILDLIFE RES. COMM'N (last visited Sep. 12, 2019), <http://www.seaturtle.org/nestdb/?view=1>.

³² Kate Elizabeth Queram, *Report – Sea Turtles Have Economic Impact*, STAR NEWS (Dec. 4, 2013), <http://www.starnewsonline.com/news/20131204/report---sea-turtles-have-economic-impact>.

³³ 73 Fed. Reg. 62816 (Oct. 21, 2008); *see also* 66 Fed. Reg. 36038 (July 10, 2011).

³⁴ Fact Sheet, *Showcase Species: Southeast – Piping Plover in the Southeast*, NAT'L WILDLIFE FED'N, [https://www.nwf.org/~media/PDFs/Wildlife/SE-PipingPlover.ashx](https://www.nwf.org/~/media/PDFs/Wildlife/SE-PipingPlover.ashx).

³⁵ Melissa Bimbi et al., *Comprehensive Conservation Strategy for the Piping Plover (Charadrius melodus) in its Coastal Migration and Wintering Range in the Continental United States*, U.S. FISH & WILDLIFE SERV. (Dec. 2012), <https://www.fws.gov/midwest/endangered/pipingplover/pdf/CCSpipI/NoApp2012.pdf>.

³⁶ Orrin H. Pilkey & J. Andrew G. Cooper, "Alternative" Shoreline Erosion Control Devices: A Review, in PITFALLS OF SHORELINE STABILIZATION, 187-214 (A.G. Cooper & O.H. Pilkey eds., 2012).

³⁷ James C. Gibeaut et al., *Geotubes for temporary erosion control and storm surge protection along the Gulf of Mexico Shoreline of Texas*, PROC. 13TH BIENNIAL COASTAL ZONE CONFERENCE (Jul. 13, 2003), http://www.beg.utexas.edu/coastal/presentations_reports/geotubes_temperosion.pdf.

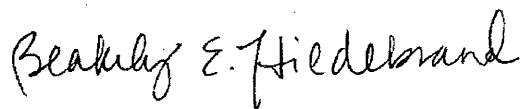
³⁸ Ells & Murray, *supra* note 26.

³⁹ *See* 2019 IHA Boundary Update, *supra* note 3, at § 2.

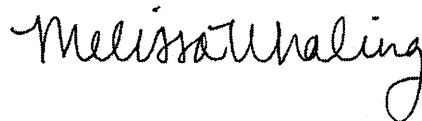
Finally, when considering the proposed rules, the CRC must take into account the proposal to deepen and widen the Wilmington Port, which overlaps the Cape Fear River Inlet.⁴⁰ It is highly likely that these activities will increase erosion of the beaches inside and adjacent to the inlet, which will further increase the demand for erosion control structures like sandbags and geotubes. We urge the CRC to consider other projects such as this when developing the use standards within the State Ports Inlet Management AECs.

Thank you for your consideration of these comments.

Sincerely,



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⁴⁰ Lynda Van Kuren, *Port Officials Review Expansion Study Draft*, COASTAL REV. ONLINE (Aug. 28, 2019), <https://www.coastalreview.org/2019/08/port-officials-review-expansion-study-draft/>.

