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NORTH CAROLINA
Environmental Quality

September 4, 2018

MEMORANDUM **CRC-18-20**

TO: Coastal Resources Commission

FROM: Ken Richardson, *Shoreline Management Specialist*

SUBJECT: Ocean Erodible AEC and Setback Factor Update Study based on Long-term Average Annual Shoreline Change Rates

Background

Since 1980, the Division of Coastal Management has updated its oceanfront shoreline change rates approximately once every five years for calculating both oceanfront development setbacks (setback factors), and the landward boundary of the Ocean Erodible Area of Environmental Concern (15A NCAC 07H .0306 and 07H .0304). The last update became effective on January 31, 2013 and is now due to be updated.

Additionally, shoreline change rates are required to be updated every five years to keep North Carolina compliant with Federal Emergency Management Administration (FEMA) guidelines for the Community Rating System (CRS). This ensures that property owners in coastal communities that participate in the National Flood Insurance Program are eligible for fifty (50) additional CRS points, which can reduce insurance rates.

The Commission setback rules are used to site oceanfront development based on the size of the structure. In places where there is a high rate of erosion, buildings must be located farther from the shoreline than in places where there is less erosion. The construction setback equation depicted in Table 1 is used to site oceanfront development and determine the extent of the CRC's jurisdictional are for the Ocean Erodible Area of Environmental Concern (OEA) - the area where there is a substantial possibility of excessive shoreline erosion. A minimum factor of two (2) is applied if the erosion rate is less than two feet per year (see Table 1). This method of siting oceanfront development was initially established by the Coastal Resources Commission (CRC) in 1979.

***Table 1**. This table demonstrates an example of minimum construction setback based on structure size and minimum setback factor of 2.*

Structure Size (square feet)	Construction Setback Equation	Minimum Setback (calculated using Setback Factor = 2 ft./yr.)
Less than 5,000	30 x Setback Factor	60
=>5,000 and < 10,000	60 x Setback Factor	120
=>10,000 and < 20,000	65 x Setback Factor	130
=>20,000 and < 40,000	70 x Setback Factor	140
=>40,000 and < 60,000	75 x Setback Factor	150
=>60,000 and < 80,000	80 x Setback Factor	160
=>80,000 and < 100,000	85 x Setback Factor	170
Greater than 100,000	90 x Setback Factor	180

Overview of 2018 Shoreline Change Update Study

Setback Factors are based on the average annual long-term shoreline change rates calculated using the end-point methodology. This technique of calculating shoreline change rates is consistent with earlier studies and the results can be compared to those from previous studies. Applying the end-point method to the 2018 update study used the earliest (1933-1962) and most current shoreline (2016) to calculate change rates by measuring distance between the two shorelines (shore-transect intersect) and dividing by time. Raw shoreline change rates are statistically "smoothed and blocked" with neighboring transects to group adjacent shoreline segments that have similar rates into segments that can be assigned a single erosion rate. A "segment" of shoreline is defined as a portion of beach with statistically similar erosion rates and a minimum length of approximately 1,300 feet (400 meters). The mean shoreline change rate for a segment of beach serves as the Ocean Hazard Area Setback Factor.

The 2018 statewide mean shoreline change rate is equal to -2 feet per year (measured erosion), which is consistent with previous studies. Although the 2018 calculated setback factors show similar trends compared to the overall average of all the past six studies (Table 2), there was a slight erosion rate increase for portions of the coastline north of Cape Lookout, resulting in an increase in the average statewide setback factor. More specifically, erosion rate increases were identified at those areas adjacent to inlets and capes, and along the National Seashore. The following table illustrates a statewide comparison of shoreline length and setback factors for all six studies (1980-2018):

Table 2. *This table illustrates a comparison of oceanfront Setback Factors (SBF) that were calculated using long-term average annual shoreline change rates. Values show the length of shoreline (miles and %) for categorized setback factors (far-left column). Total shoreline mileage is the length of shoreline analyzed and should not be interpreted as a "shrinking" or "expanding" shoreline. Of the 304.5 miles, 2 miles of shoreline was considered to have "no data," meaning that only one shoreline was available.*

Erosion Rate Studies	2016	2011	2003	1992	1986	1980
Miles (total)	**304.5**	307.4	312	300	237	245
SBF = 2	**175.1 (57.5%)**	190.2 (61.9%)	193 (62%)	165 (59%)	144 (61%)	149 (61%)
SBF = 2.5 to 5	**66.5 (21.8%)**	62.1 (20.2%)	64 (20%)	54 (19%)	43 (18%)	52 (21%)
SBF = 5.5 to 8	**38.2 (12.6%)**	31.5 (10.2%)	28 (9%)	30 (11%	20 (8%)	22 (9%)
SBF > 8	**22.6 (7.4%)**	20.8 (6.8%)	27 (9%)	32 (11%)	22 (9%)	22 (9%)

Of the 304.5 miles of oceanfront shoreline analyzed, results show that approximately 69 percent of the shoreline is experiencing some degree of erosion, while 30 percent is accreting either due to beach nourishment or natural processes. Of the eroding portions of shoreline, 22.7 percent is eroding at rates less than two feet per year, while 22.9 percent is eroding between two and five feet per year (Table 3).

Table 3. *This table illustrates a summary of length of shoreline (and percentage) and calculated shoreline change rates. The first row shows approximately 92 miles of oceanfront shoreline with measured accretion; the second row shows approximately 210 miles with measured erosion; and then subsequent rows show a breakdown of erosion from the total length of shoreline with measured erosion (210 miles).*

Shoreline Change Rate Summary:	Miles	%
Accretion (all)	91.6	30.1%
Erosion (all)	209.5	68.8%
Erosion 2ft/Year or Less (>0, <=2)	69.3	22.7%
Erosion 2 to 5 Feet/Year (>2, <=5)	69.7	22.9%
Erosion 5 to 8 Feet Year (>5, <=8)	42.8	14.1%
Erosion More Than 8 Feet/Year	27.6	9.1%
Data Gaps (missing shoreline segment)	1.9	0.6%

Next Steps

The 2018 update study report has been completed and is currently being reviewed by DCM staff and will be presented, along with the fiscal analysis, at the February 2019 CRC meeting. Although there are no action items for the Commission to consider at this meeting, staff will seek the Commission's approval in February is anticipated that updated setback factors will go into effect in the summer or fall of 2019.

No action required at the November 2018 meeting.

APPENDIX A: CRC Rules Pertaining to Oceanfront Shoreline Change Rates and Setback Factors

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Appendix A: CRC's Rules Pertaining to Oceanfront Shoreline Change Rates and Setback Factors

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

The ocean hazard AECs contain all of the following areas:

(1) Ocean Erodible Area. This is the area where there exists a substantial possibility of excessive erosion and significant shoreline fluctuation. The oceanward boundary of this area is the mean low water line. The landward extent of this area is the distance landward from the first line of stable and natural vegetation as defined in 15A NCAC 07H .0305(a)(5) to the recession line established by multiplying the long-term annual erosion rate times 90; provided that, where there has been no long-term erosion or the rate is less than two feet per year, this distance shall be set at 120 feet landward from the first line of stable natural vegetation. For the purposes of this Rule, the erosion rates are the long-term average based on available historical data. The current long-term average erosion rate data for each segment of the North Carolina coast is depicted on maps entitled "2011 Long-Term Average Annual Shoreline Rate Update" and approved by the Coastal Resources Commission on May 5, 2011 (except as such rates may be varied in individual contested cases or in declaratory or interpretive rulings). In all cases, the rate of shoreline change shall be no less than two feet of erosion per year. The maps are available without cost from any Local Permit Officer or the Division of Coastal Management on the internet at http://www.nccoastalmanagement.net.

(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 sufficient to encompass 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 and channelization. The areas on the maps identified as suggested 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 Cape Fear Inlet Hazard Area as shown on the map does not extend northeast of the Bald Head Island marina entrance channel; and

(b) the former location of Mad Inlet, which closed in 1997.

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. Photocopies are available at no charge.

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

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

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

History Note: *Authority G.S. 113A-107; 113A-107.1; 113A-113; 113A-124;*
Eff. September 9, 1977;

Amended Eff. December 1, 1993; November 1, 1988; September 1, 1986; December 1, 1985;
Temporary Amendment Eff. October 10, 1996;
Amended Eff. April 1, 1997;
Temporary Amendment Eff. October 10, 1996 Expired on July 29, 1997;
Temporary Amendment Eff. October 22, 1997;
Amended Eff. 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.

15A NCAC 07h .0306 GENERAL USE STANDARDS FOR OCEAN HAZARD AREAS

(a) In order to protect life and property, all development not otherwise specifically exempted or allowed by law or elsewhere in the Coastal Resources Commission's rules shall be located according to whichever of the following is applicable:

(1) The ocean hazard setback for development shall be measured in a landward direction from the vegetation line, the static vegetation line, or the measurement line, whichever is applicable.

(2) In areas with a development line, the ocean hazard setback shall be set in accordance with Subparagraphs (a)(3) through (9) of this Rule. In no case shall new development be sited seaward of the development line.

(3) In no case shall a development line be created or established on state owned lands or oceanward of the mean high water line or perpetual property easement line, whichever is more restrictive.

(4) The ocean hazard setback shall be determined by both the size of development and the shoreline long term erosion rate as defined in Rule .0304 of this Section. "Development size" is defined by total floor area for structures and buildings or total area of footprint for development other than structures and buildings. Total floor area includes the following:

(A) The total square footage of heated or air-conditioned living space;

(B) The total square footage of parking elevated above ground level; and

(C) The total square footage of non-heated or non-air-conditioned areas elevated above ground level, excluding attic space that is not designed to be load-bearing.

Decks, roof-covered porches, and walkways shall not be included in the total floor area unless they are enclosed with material other than screen mesh or are being converted into an enclosed space with material other than screen mesh.

(5) With the exception of those types of development defined in 15A NCAC 07H .0309, no development, including any portion of a building or structure, shall extend oceanward of the ocean hazard setback. This includes roof overhangs and elevated structural components that are cantilevered, knee braced, or otherwise extended beyond the support of pilings or footings. The ocean hazard setback shall be established based on the following criteria:

(A) A building or other structure less than 5,000 square feet requires a minimum setback of 60 feet or 30 times the shoreline erosion rate, whichever is greater;

(B) A building or other structure greater than or equal to 5,000 square feet but less than 10,000 square feet requires a minimum setback of 120 feet or 60 times the shoreline erosion rate, whichever is greater;

(C) A building or other structure greater than or equal to 10,000 square feet but less than 20,000 square feet requires a minimum setback of 130 feet or 65 times the shoreline erosion rate, whichever is greater;

(D) A building or other structure greater than or equal to 20,000 square feet but less than 40,000 square feet requires a minimum setback of 140 feet or 70 times the shoreline erosion rate, whichever is greater;

(E) A building or other structure greater than or equal to 40,000 square feet but less than 60,000 square feet requires a minimum setback of 150 feet or 75 times the shoreline erosion rate, whichever is greater;

(F) A building or other structure greater than or equal to 60,000 square feet but less than 80,000 square feet requires a minimum setback of 160 feet or 80 times the shoreline erosion rate, whichever is greater;

(G) A building or other structure greater than or equal to 80,000 square feet but less than 100,000 square feet requires a minimum setback of 170 feet or 85 times the shoreline erosion rate, whichever is greater;

(H) A building or other structure greater than or equal to 100,000 square feet requires a minimum setback of 180 feet or 90 times the shoreline erosion rate, whichever is greater;

(I) Infrastructure that is linear in nature, such as roads, bridges, pedestrian access such as boardwalks and sidewalks, and utilities providing for the transmission of electricity, water, telephone, cable television, data, storm water, and sewer requires a minimum setback of 60 feet or 30 times the shoreline erosion rate, whichever is greater;

(J) Parking lots greater than or equal to 5,000 square feet require a setback of 120 feet or 60 times the shoreline erosion rate, whichever is greater;

(K) Notwithstanding any other setback requirement of this Subparagraph, a building or other structure greater than or equal to 5,000 square feet in a community with a static line exception in accordance with 15A NCAC 07J .1200 requires a minimum setback of 120 feet or 60 times the shoreline erosion rate in place at the time of permit issuance, whichever is greater. The setback shall be measured landward from either the static vegetation line, the vegetation line, or measurement line, whichever is farthest landward; and

(L) Notwithstanding any other setback requirement of this Subparagraph, replacement of single-family or duplex residential structures with a total floor area greater than 5,000 square feet, and commercial and multi-family residential structures with a total floor area no greater than 10,000 square feet, shall be allowed provided that the structure meets the following criteria:

(i) the structure was originally constructed prior to August 11, 2009;

(ii) the structure as replaced does not exceed the original footprint or square footage;

(iii) it is not possible for the structure to be rebuilt in a location that meets the ocean hazard setback criteria required under Subparagraph (a)(5) of this Rule;

(iv) the structure as replaced meets the minimum setback required under Part (a)(5)(A) of this Rule; and

(v) the structure is rebuilt as far landward on the lot as feasible.

(6) If a primary dune exists in the AEC on or landward of the lot where the development is proposed, the development shall be landward of the crest of the primary dune, the ocean hazard setback, or development line, whichever is farthest from vegetation line, static vegetation line, or measurement line, whichever is applicable. For existing lots, however, where setting the development landward of the crest of the primary dune would preclude any practical use of the lot, development may be located oceanward of the primary dune. In such cases, the development may be located landward of the ocean hazard setback, but shall not be located on or oceanward of a frontal dune or the development line. The words "existing lots" in this Rule shall mean a lot or tract of land that, as of June 1, 1979, is specifically described in a recorded plat and cannot be enlarged by combining the lot or tract of land with a contiguous lot or tract of land under the same ownership.

(7) If no primary dune exists, but a frontal dune does exist in the AEC on or landward of the lot where the development is proposed, the development shall be set landward of the frontal dune, ocean hazard setback, or development line, whichever is farthest from the vegetation line, static vegetation line, or measurement line, whichever is applicable.

(8) If neither a primary nor frontal dune exists in the AEC on or landward of the lot where development is proposed, the structure shall be landward of the ocean hazard setback or development line, whichever is more restrictive.

(9) Structural additions or increases in the footprint or total floor area of a building or structure represent expansions to the total floor area and shall meet the setback requirements established in this Rule and 15A NCAC 07H .0309(a). New development landward of the applicable setback may be cosmetically, but shall not be structurally, attached to an existing structure that does not conform with current setback requirements.

(10) Established common law and statutory public rights of access to and use of public trust lands and waters in ocean hazard areas shall not be eliminated or restricted. Development shall not encroach upon public accessways, nor shall it limit the intended use of the accessways.

(11) Development setbacks in areas that have received large-scale beach fill as defined in 15A NCAC 07H .0305 shall be measured landward from the static vegetation line as defined in this Section,

unless a development line has been approved by the Coastal Resources Commission in accordance with 15A NCAC 07J .1300.

(12) In order to allow for development landward of the large-scale beach fill project that cannot meet the setback requirements from the static vegetation line, but can or has the potential to meet the setback requirements from the vegetation line set forth in Subparagraphs (a)(1) and (a)(5) of this Rule, a local government, group of local governments involved in a regional beach fill project, or qualified "owners' association" as defined in G.S. 47F-1-103(3) that has the authority to approve the locations of structures on lots within the territorial jurisdiction of the association and has jurisdiction over at least one mile of ocean shoreline, may petition the Coastal Resources Commission for a "static line exception" in accordance with 15A NCAC 07J .1200. The static line exception shall apply to development of property that lies both within the jurisdictional boundary of the petitioner and the boundaries of the large-scale beach fill project. This static line exception shall also allow development greater than 5,000 square feet to use the setback provisions defined in Part (a)(5)(K) of this Rule in areas that lie within the jurisdictional boundary of the petitioner, and the boundaries of the large-scale beach fill project. If the request is approved, the Coastal Resources Commission shall allow development setbacks to be measured from a vegetation line that is oceanward of the static vegetation line under the following conditions:

(A) Development meets all setback requirements from the vegetation line defined in Subparagraphs (a)(1) and (a)(5) of this Rule;

(B) Development setbacks shall be calculated from the shoreline erosion rate in place at the time of permit issuance;

(C) No portion of a building or structure, including roof overhangs and elevated portions that are cantilevered, knee braced, or otherwise extended beyond the support of pilings or footings, extends oceanward of the landward-most adjacent building or structure. When the configuration of a lot precludes the placement of a building or structure in line with the landward-most adjacent building or structure, an average line of construction shall be determined by the Division of Coastal Management on a case-by-case basis in order to determine an ocean hazard setback that is landward of the vegetation line, a distance no less than 30 times the shoreline erosion rate or 60 feet, whichever is greater;

(D) With the exception of swimming pools, the development defined in Rule .0309(a) of this Section shall be allowed oceanward of the static vegetation line; and

(E) Development shall not be eligible for the exception defined in Rule .0309(b) of this Section.

(b) No development shall be permitted that involves the removal or relocation of primary or frontal dune sand or vegetation thereon that would adversely affect the integrity of the dune. Other dunes within the ocean hazard area shall not be disturbed unless the development of the property is otherwise impracticable. Any disturbance of these other dunes shall be allowed only to the extent permitted by 15A NCAC 07H .0308(b).

(c) Development shall not cause irreversible damage to historic architectural or archaeological resources as documented by the local historic commission, the North Carolina Department of Natural and Cultural Resources, or the National Historical Registry.

(d) Development shall comply with minimum lot size and set back requirements established by local regulations.

(e) Mobile homes shall not be placed within the high hazard flood area unless they are within mobile home parks existing as of June 1, 1979.

(f) Development shall comply with the general management objective for ocean hazard areas set forth in 15A NCAC 07H .0303.

(g) Development shall not interfere with legal access to, or use of, public resources, nor shall such development increase the risk of damage to public trust areas.

(h) Development proposals shall incorporate measures to avoid or minimize adverse impacts of the project. These measures shall be implemented at the applicant's expense and may include actions that:

(1) minimize or avoid adverse impacts by limiting the magnitude or degree of the action;

(2) restore the affected environment; or

(3) compensate for the adverse impacts by replacing or providing substitute resources.

(i) Prior to the issuance of any permit for development in the ocean hazard AECs, there shall be a written acknowledgment from the applicant to the Division of Coastal Management that the applicant is aware of the risks associated with development in this hazardous area and the limited suitability of this area for permanent structures. The acknowledgement shall state that the Coastal Resources Commission does not guarantee the safety of the development and assumes no liability for future damage to the development.

(j) All relocation of structures shall require permit approval. Structures relocated with public funds shall comply with the applicable setback line and other applicable AEC rules. Structures, including septic tanks and other essential accessories, relocated entirely with non-public funds shall be relocated the maximum feasible distance landward of the present location. Septic tanks shall not be located oceanward of the primary structure. All relocation of structures shall meet all other applicable local and state rules.
(k) Permits shall include the condition that any structure shall be relocated or dismantled when it becomes imminently threatened by changes in shoreline configuration as defined in 15A NCAC 07H .0308(a)(2)(B). Any such structure shall be relocated or dismantled within two years of the time when it becomes imminently threatened, and in any case upon its collapse or subsidence. However, if natural shoreline recovery or beach fill takes place within two years of the time the structure becomes imminently threatened, so that the structure is no longer imminently threatened, then it need not be relocated or dismantled at that time. This permit condition shall not affect the permit holder's right to seek authorization of temporary protective measures allowed pursuant to 15A NCAC 07H .0308(a)(2).

History Note: *Authority G.S. 113A-107; 113A-113(b)(6); 113A-124;*
Eff. September 9, 1977;
Amended Eff. December 1, 1991; March 1, 1988; September 1, 1986; December 1, 1985;
RRC Objection due to ambiguity Eff. January 24, 1992;
Amended Eff. March 1, 1992;
RRC Objection due to ambiguity Eff. May 21, 1992;
Amended Eff. February 1, 1993; October 1, 1992; June 19, 1992;
RRC Objection due to ambiguity Eff. May 18, 1995;
Amended Eff. August 11, 2009; April 1, 2007; November 1, 2004; June 27, 1995;
Temporary Amendment Eff. January 3, 2013;
Amended Eff. September 1, 2017; February 1, 2017; April 1, 2016; September 1, 2013.

15A NCAC 07J .0210 REPLACEMENT OF EXISTING STRUCTURES

Replacement of structures damaged or destroyed by natural elements, fire or normal deterioration is considered development and requires CAMA permits. Replacement of structures shall be permitted if the replacements is consistent with current CRC rules. Repair of structures damaged by natural elements, fire or normal deterioration is not considered development and shall not require CAMA permits. The CRC shall use the following criteria to determine whether proposed work is considered repair or replacement.

(1) NON-WATER DEPENDENT STRUCTURES. Proposed work is considered replacement if the cost to do the work exceeds 50 percent of the market value of an existing structure immediately prior to the time of damage or the time of request. Market value and costs are determined as follows:
  (a) Market value of the structure does not include the value of the land, value resulting from the location of the property, value of accessory structures, or value of other improvements located on the property. Market value of the structure shall be determined by the Division based upon information provided by the applicant using any of the following methods:
    (i) appraisal;
    (ii) replacement cost with depreciation for age of the structure and quality of construction; or
    (iii) tax assessed value.
  (b) The cost to do the work is the cost to return the structure to its pre-damaged condition, using labor and materials obtained at market prices, regardless of the actual cost incurred by the owner to restore the structure. It shall include the costs of construction necessary to comply with local and state building codes and any improvements that the owner chooses to construct. The cost shall be determined by the Division utilizing any or all of the following:
    (i) an estimate provided by a North Carolina licensed contractor qualified by license to provide an estimate or bid with respect to the proposed work;
    (ii) an insurance company's report itemizing the cost, excluding contents and accessory structures; or
    (iii) an estimate provided by the local building inspections office.
(2) WATER DEPENDENT STRUCTURES. The proposed work is considered replacement if it enlarges the existing structure. The proposed work is also considered replacement if:

(a) in the case of fixed docks, piers, platforms, boathouses, boatlifts, and free standing moorings, more than 50 percent of the framing and structural components (beams, girders, joists, stringers, or pilings) must be rebuilt in order to restore the structure to its pre-damage condition. Water dependent structures that are structurally independent from the principal pier or dock, such as boatlifts or boathouses, are considered as separate structures for the purpose of this Rule;

(b) in the case of boat ramps and floating structures such as docks, piers, platforms, and modular floating systems, more than 50 percent of the square feet area of the structure must be rebuilt in order to restore the structure to its pre-damage condition;

(c) in the case of bulkheads, seawalls, groins, breakwaters, and revetments, more than 50 percent of the linear footage of the structure must be rebuilt in order to restore the structure to its pre-damage condition.

History Note: *Authority G.S. 113A-103(5)b.5.; 113A-107(a),(b);*
Eff. July 1, 1990;
Amended Eff. August 1, 2007.