



North Carolina Department of Environment and Natural Resources
Division of Coastal Management

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July 11, 2007

MEMORANDUM

CRC 07-07

TO: Coastal Resources Commission
FROM: Jeffrey Warren, PhD
SUBJECT: Static Vegetation Line and Setback Recommendations
15A NCAC 07H.0305
15A NCAC 07H.0306

At the March 2007 CRC meeting, I gave an update on stakeholder input on the DCM staff recommendations for setback policy revision to the I&S Committee (memo I&S 07-04). The draft policy originally had been presented to the Committee at the preceding meeting in January 2007 (memo I&S 07-05). DCM staff recommendations for the static vegetation line were presented to the full CRC at the March 2007 meeting (memo CRC 07-02). These recommendations do not endorse beach fill over retreat, rather they recognize the hazard mitigation effect of large-scale beach fill that is maintained over time as well as the replacement of old, dilapidated structures with new structures built to current building code with state-of-the-art materials. Staff was asked to work with stakeholders, including local governments and the CRC Science Panel, to refine recommendations based on this policy (i.e., limited development behind maintained, large-scale beach fill).

Because both setbacks and static vegetation lines are defined in the same rules (15A NCAC 07H.0305 and .0306), I will provide a comprehensive recommendation developed by DCM staff for both issues to the full CRC on July 27th 2007. Draft rule language is attached and a summary of the major points of the policy recommendations follows:

SETBACKS

1. Setbacks to be based on size and not use of building
2. Buildings less than 5,000 ft² shall be set back 30 times the erosion rate
3. Graduated increase in setback factors from 60 to 90 for buildings 5,000 ft² or greater
4. Consistent setback formula, regardless of erosion rate
5. No cantilevering oceanward of the setback line
6. Setback exemptions provided for transportation and utility infrastructure

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STATIC VEGETATION LINE

1. Static vegetation line will continue to represent the vegetation line in place just prior to a large-scale beach fill project
2. Large-scale project will be defined as one that is greater than 300,000 yds³ or any USACE storm protection project
3. Allows communities to petition CRC for limited exemptions to static line setback restrictions if a long-term commitment (at least 30 years) to large-scale beach fill has been made (development of a design plan for engineered project, adequate volume of compatible sediment to construct design plan, financial resources for duration of project)
4. Minimum 5-year waiting period before static line exemptions can be allowed
5. Exemptions from static line require development to be setback the appropriate distance from the line of stable vegetation
6. Exemptions from the static line require development to be no greater than 2,000 total ft²
7. Exemptions from static vegetation line allow buildings to be no farther oceanward than the landward-most adjacent structure
8. Exemptions from the static vegetation line do not allow swimming pools to be oceanward of static vegetation line
9. Exemptions from the static vegetation line do not allow use of the existing single-family exemption for lots platted before 1979 (i.e., size limited to 1000 ft² footprint or 10% of lot area, whichever is greater with a minimum setback of 60 feet)

15A NCAC 07H .0305 GENERAL IDENTIFICATION AND DESCRIPTION OF LANDFORMS

(a) Ocean Beaches. Ocean beaches are lands consisting of unconsolidated soil materials that extend from the mean low water line landward to a point where either:

- (1) the growth of vegetation occurs, or
- (2) a distinct change in slope or elevation alters the configuration of the landform, whichever is farther landward.

(b) Nearshore. The nearshore is the portion of the beach seaward of mean low water that is characterized by dynamic changes both in space and time as a result of storms.

(c) Primary Dunes. Primary dunes are the first mounds of sand located landward of the ocean beaches having an elevation equal to the mean flood level (in a storm having a one percent chance of being equaled or exceeded in any given year) for the area plus six feet. The primary dune extends landward to the lowest elevation in the depression behind that same mound of sand (commonly referred to as the dune trough).

(d) Frontal Dunes. The frontal dune is deemed to be the first mound of sand located landward of the ocean beach having sufficient vegetation, height, continuity and configuration to offer protective value.

(e) General Identification. For the purpose of public and administrative notice and convenience, each designated minor development permit-letting agency with ocean hazard areas may designate, subject to CRC approval in accordance with the local implementation and enforcement plan as defined in 15A NCAC 07I .0500, a readily identifiable land area within which the ocean hazard areas occur. This designated notice area must include all of the land areas defined in Rule .0304 of this Section. Natural or man-made landmarks may be considered in delineating this area.

(f) "Vegetation Line." The vegetation line means refers to the first line of stable and natural vegetation, which shall be used as the reference point for measuring oceanfront setbacks. This line represents the boundary between the normal dry sand beach, which is subject to constant flux due to waves, tides, storms and wind, and the more stable upland areas. The vegetation line is generally located at or immediately oceanward of the seaward toe of the frontal dune or erosion escarpment. The Division of Coastal Management or Local Permit Officer shall determine the location of the stable and natural vegetation line based on visual observations of plant composition and density. If the vegetation has been planted, it may be considered stable when the majority of the plant stems are from continuous rhizomes rather than planted individual rooted sets. The vegetation may be considered natural when the majority of the plants are mature and additional species native to the region have been recruited, providing stem and rhizome densities that are similar to adjacent areas that are naturally occurring. In areas where there is no stable natural vegetation present, this line may shall be established by interpolation between the nearest adjacent stable natural vegetation by on ground observations or by aerial photographic interpretation. ~~connecting or extending the lines from the nearest adjacent vegetation on either side of the site and by extrapolating (by either on ground observation or by aerial photographic interpretation) to establish the line. In areas within the boundaries of a large scale beach nourishment or spoil deposition project, the vegetation line that existed prior to the onset of project construction shall be used as the vegetation line for determining oceanfront setbacks after the project is completed except for those circumstances described under Paragraph (g) of this Rule for projects constructed after September 1, 2000. A project shall be considered large scale when:~~

- ~~(1) it places more than a total volume of 200,000 cubic yards of sand at an average ratio of more than 50 cubic yards of sand per linear foot of shoreline; or~~
- ~~(2) it is a Hurricane Protection project constructed by the U.S. Army Corps of Engineers.~~

~~(g) If within three years prior to the award of contract date of a large scale project as defined in Subparagraph (f)(1) or (f)(2) of this Rule, a large storm or series of storms cause the vegetation line to be relocated landward of its normal position relative to other natural features of the beach such as the typical high water or mid tide line, the affected local government may request that the CRC establish an alternative vegetation line where the storm effect on the vegetation line contained within the boundaries of a large scale beach nourishment or spoil deposition project is mitigated. Once the CRC grants the local government's request to establish an alternative vegetation line the following activities shall be conducted:~~

- ~~(1) A primary vegetation line shall be established prior to the onset of project construction as described in Paragraphs (f) of this Rule;~~
- ~~(2) An alternative vegetation line shall be determined based on a dry sand beach width template (measured from the wet/dry line or other appropriate shoreline indicator to the vegetation line) developed by DCM staff from analysis of historic aerial photographs, a ground reconnaissance survey of the site and adjacent areas, and where available, other~~

historic data such as beach profiles and site specific studies. The template is intended to show the location of the vegetation line relative to the existing shoreline as if no storm had affected the location of the vegetation line. The template will be applied to the existing shoreline immediately prior to the commencement of project construction; and

- (3) ~~The storm effect mitigated vegetation line may be used to replace the primary pre-project vegetation line for setback determinations and other appropriate regulatory actions after a minimum time period of eight years from the award of contract date of the large scale project as defined in Subparagraph (f) of this Rule, and the Division of Coastal Management personnel have determined that natural vegetation is reestablished on the large scale project. To be considered as reestablished, natural vegetation shall meet all of the following criteria:~~
- ~~(A) the dune grasses appear the same in terms of species composition and stem density as adjacent non-project dune areas; and~~
 - ~~(B) the majority of stems are from continuous rhizomes rather than planted individual rooted sets and, the vegetation is established and stable at least as far seaward as the storm effect mitigated pre project vegetation line.~~

(h)(g) Static Vegetation Line. In areas within the boundaries of a large-scale beach fill project, the vegetation line that existed within one year prior to the onset of project construction shall be defined as the static vegetation line. A static vegetation line shall be established in coordination with the Division of Coastal Management using on-ground observation and survey or aerial imagery for all areas of oceanfront that undergo a large-scale beach fill project. Once a static vegetation line is established, and after the onset of project construction, this line shall be used as the reference point for measuring oceanfront setbacks in all locations where it is landward of the vegetation line. Because the impact of Hurricane Floyd (September 1999) caused significant portions of the vegetation line in Oak Island and Ocean Isle Beach to be relocated landward of its pre-storm position, the static line for areas adjacent to the beach fill construction in Oak Island in 2000 and Ocean Isle in 2001 shall be defined by the general trend of the vegetation line established by the Division of Coastal Management from June 1998 aerial orthophotography. A static vegetation line shall not be established where a static vegetation line is already in place, including those established by the Division of Coastal Management prior to the effective date of this Rule. In all locations where the vegetation line as defined in this Rule is landward of the static vegetation line, the vegetation line shall be used as the reference point for measuring oceanfront setbacks. A record of all static vegetation lines, including those established by the Division of Coastal Management prior to the effective date of this Rule, shall be maintained by the Division of Coastal Management for determining development standards as set forth in Rule .0306 of this Section.

- (1) Beach fill refers to the placement of sediment along the oceanfront shoreline. Sediment used solely to establish or strengthen dunes shall not be considered a beach fill project under this Rule.
- (2) A large-scale beach fill project shall be defined as any volume of sediment greater than 300,000 cubic yards or any hurricane protection project constructed by the U.S. Army Corps of Engineers.
- (3) The onset of construction shall be defined as the date sediment placement begins with the exception of projects completed prior to the effective date of this Rule in which case the award of contract date will be considered the onset of construction.

~~(h) "Erosion Escarpment," means~~The normal vertical drop in the beach profile caused from high tide or storm tide erosion.

~~(i) Measurement Line. The means the line from which the ocean front setback as described in Rule .0306(a) of this Section is measured in the unvegetated beach area of environmental concern as described in Rule .0304(4) of this Section. Procedures for determining the measurement line in areas designated pursuant to Rule .0304(4)(a) of this Section shall be adopted by the Commission for each area where such a line is designated pursuant to the provisions of G.S. 150B. These procedures shall be available from any local permit officer or the Division of Coastal Management. In areas designated pursuant to Rule .0304(4)(b) of this Section, the Division of Coastal Management shall establish a measurement line that approximates the location at which the vegetation line is expected to reestablish by:~~

- ~~(1) determining the distance the vegetation line receded at the closest vegetated site to the proposed development site; and~~

- (2) locating the line of stable natural vegetation on the most current pre-storm aerial photography of the proposed development site and moving this line landward the distance determined in Subparagraph (g)(1) of this Rule.

The measurement line established pursuant to this process shall in every case be located landward of the average width of the beach as determined from the most current pre-storm aerial photography.

*History Note: Authority G.S. 113A-107; 113A-113(b)(6); 113A-124;
Eff. September 9, 1977;
Amended Eff. December 1, 1992; September 1, 1986; December 1, 1985; February 2, 1981;
Temporary Amendment Eff. October 10, 1996;
Amended Eff. January 1, 1997;
Temporary Amendment Eff. October 10, 1996 Expired on July 29, 1997;
Temporary Amendment Eff. October 22, 1997;
Amended Eff. August 1, 2002; August 1, 1998.*

15A21 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 these Rules shall be located according to whichever of the following rules is applicable.

~~(1) If neither a primary nor frontal dune exists in the AEC on or landward of the lot on which the development is proposed, the development shall be landward of the erosion setback line. The erosion setback line shall be set at a distance of 30 times the long term annual erosion rate from the first line of stable natural vegetation or measurement line, where applicable. In areas where the rate is less than two feet per year, the setback line shall be 60 feet from the vegetation line or measurement line, where 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. The setback distance shall be determined by both the size of development and the shoreline erosion rate as defined in Rule .0304 of this Section. Development size shall be defined by total floor area for buildings or total area of footprint for structures other than buildings. Total floor area is the total square footage of living space plus all roof-covered porches, walkways and structurally attached parking. No portion of a building's total floor area may extend oceanward of the ocean hazard setback distance including elevated portions that are cantilevered, knee braced or otherwise extended beyond the support of pilings or footings. The ocean hazard setback shall be established using the following conditions:

(A) A building or other structure less than 5,000 square feet shall require a minimum setback factor 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 shall require a minimum setback factor 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 shall require a minimum setback factor 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 shall require a minimum setback factor 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 shall require a minimum setback factor 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 shall require a minimum setback factor 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 shall require a minimum setback factor 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 shall require a minimum setback factor of 180 feet or 90 times the shoreline erosion rate, whichever is greater;

(I) Utility lines providing for the transmission of electricity, water, telephone, cable television, data, storm water, sewer and septic shall require a setback factor of 30 times the shoreline erosion rate;

(J) Transportation structures such as roads, surface parking lots and bridges less than 5,000 square feet shall require a setback factor of 30 times the shoreline erosion rate and 60 times the shoreline erosion rate for areas greater than or equal to 5,000 square feet.

(2) If a primary dune exists in the AEC on or landward of the lot on which the development is proposed, the development shall be landward of the crest of the primary dune or the

~~long term erosion setback line~~ ocean hazard setback, whichever is farthest from the ~~first line of stable natural vegetation line, static vegetation line~~ or measurement line, ~~where 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 ~~seaward-oceanward~~ of the primary dune. In such cases, the development ~~may~~ shall be located landward of the ~~long term erosion-ocean hazard setback line and~~ but shall not be located on or ~~oceanward in front of~~ a frontal dune. The words "existing lots" in this Rule shall mean a lot or tract of land which, as of June 1, 1979, is specifically described 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) of land under the same ownership.

- (3) If no primary dune exists, but a frontal dune does exist in the AEC on or landward of the lot on which the development is proposed, the development shall be set landward of the frontal dune or landward of the ~~long term erosion-ocean hazard setback line~~, whichever is farthest from the ~~first line of stable natural vegetation line, static vegetation line~~ or measurement line, ~~where whichever is applicable~~.
- ~~(4) Because large structures located immediately along the Atlantic Ocean present increased risk of loss of life and property, increased potential for eventual loss or damage to the public beach area and other important natural features along the oceanfront, increased potential for higher public costs for federal flood insurance, erosion control, storm protection, disaster relief and provision of public services such as water and sewer, and increased difficulty and expense of relocation in the event of future shoreline loss, a greater oceanfront setback is required for these structures than is the case with smaller structures. Therefore, in addition to meeting the criteria in this Rule for setback landward of the primary or frontal dune or both the primary and frontal dunes, for all multi-family residential structures (including motels, hotels, condominiums and motelminiums) of more than 5,000 square feet total floor area, and for any non residential structure with a total area of more than 5,000 square feet, the erosion setback line shall be twice the erosion setback as established in Subparagraph (a)(1) of this Rule, provided that in no case shall this distance be less than 120 feet. In areas where the rate is more than 3.5 feet per year, this setback line shall be set at a distance of 30 times the long term annual erosion rate plus 105 feet.~~
- ~~(4) If neither a primary nor frontal dune exist in the AEC on or landward of the lot on which development is proposed, the structure shall be landward of the ocean hazard setback.~~
- (5) Structural additions or increases in the footprint or total floor area of a building or structure represent expansions to the principal structure and both shall meet the setback requirements established in Paragraph (a) of this Rule and Rule .0309(a) of this Section. The enclosure of existing roof covered porches shall be exempt from this requirement if the footprint is not expanded, modifications to existing foundations are not required and the existing porch is located landward of the vegetation line, static vegetation line or measurement line, ~~whichever is~~ which ever is applicable. 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.
- (6) 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.
- ~~(7) Beach fill as defined in this Section represents a temporary response to coastal erosion, and compatible beach fill as defined in Rule .0312 of this Section can be expected to erode at least as fast as, if not faster than, the pre-project beach. Furthermore, there is no assurance of future funding or beach-compatible sediment for continued beach fill projects and project maintenance. Therefore, development setbacks measured from an established vegetation line in areas that have received beach fill may, over time, be~~

located so as to be closer to the shoreline and more vulnerable to natural hazards along the oceanfront. Therefore, development setbacks in areas that have received large-scale beach fill shall be measured landward from the static vegetation line as defined in this Section. If development adjacent to the large-scale beach fill project does not 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 Part (1) of this Rule, a local government or community may request that the Coastal Resources Commission for a "static line exception" to allow development of oceanfront property that lies both within the jurisdictional boundary of the petitioner as well as the boundaries of the large-scale beach fill project. If the request is approved, the Coastal Resources Commission may allow development under the following conditions:

- (A) The local government or community provides evidence of a long-term commitment to beach fill including:
 - (i) plans for design, construction and maintenance of a beach fill project prepared by a licensed engineer and designed for a period of at least 30 years; and
 - (ii) documentation by a licensed geologist or engineer of the volume of compatible sand necessary to construct and maintain the beach fill project over its design life; and
 - (iii) proof of the financial resources necessary to fully fund the beach fill project over its design life; and
- (B) A minimum of five (5) years has passed since the onset of the large-scale beach fill construction associated with the static vegetation line as defined in Section .0305 of this Rule; and
- (C) Development shall meet all setback requirements from the vegetation line or measurement line defined in this Rule, whichever is applicable; and
- (D) Total floor area of a building shall be no greater than 2,000 square feet; and
- (E) Development setbacks shall be calculated from the shoreline erosion rate in place at the time of permit issuance; and
- (F) No portion of a building's total floor area, including elevated portions that are cantilevered, knee braced or otherwise extended beyond the support of pilings or footings, may extend oceanward of the total floor area of the landward-most adjacent structure. When the geometry or orientation of a lot precludes the placement of a building in line with the landward most adjacent structure of similar use, 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; and
- (G) With the exception of swimming pools, the development outlined in Rule .0309(a) may be allowed oceanward of the static vegetation line; and
- (H) Development shall not be eligible for the single-family exception defined in Rule .0309(b) outlined in this Section; and
- (I) The Coastal Resources Commission reserves the right to revoke the "static line exception" and require ocean hazard setbacks to be measured landward from the static vegetation line at any time there is evidence that a local government's or community's long-term commitments to beach fill as defined in this Rule are not being upheld.

(b) In order to avoid weakening the protective nature of ocean beaches and primary and frontal dunes, no development shall be permitted that involves the removal or relocation of primary or frontal dune sand or vegetation thereon which 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, and any disturbance of any other dunes shall be allowed only to the extent allowed by Rule .0308(b) of this Section.

(c) In order to avoid public expenditures for maintaining public safety, construction or placement of growth-inducing public facilities to be supported by public funds shall be permitted in the ocean hazard area only when such facilities:

- (1) are of public benefit,
- (2) shall not increase existing hazards or damage natural buffers,
- (3) shall be safe from flood and erosion-related damage,
- (4) shall not promote growth and development in ocean hazard areas.

Such growth inducing facilities include sewers, waterlines, roads, and bridges.

(d) Development shall not cause irreversible damage to documented historic architectural or archaeological resources documented by the Division of Archives and History, the National Historical Registry, the local land-use plan, or other sources.

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

(f) 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.

(g) Development shall comply with general management objective for ocean hazard areas set forth in Rule .0303 of this Section.

(h) 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.

(i) 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.

(j) Prior to the issuance of any permit for development in the ocean hazard AECs, there shall be a written acknowledgment from the applicant 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. By granting permits, the Coastal Resources Commission does not guarantee the safety of the development and assumes no liability for future damage to the development.

(k) All relocation of structures shall require permit approval. Structures relocated with public funds shall comply with the applicable setback line as well as 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 may not be located seaward of the primary structure. In these cases, all other applicable local and state rules shall be met.

(l) 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 Rule .0308(2)(B) of this Section. The structure(s) 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 renourishment 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 condition shall not affect the permit holder's right to seek authorization of temporary protective measures allowed under Rule .0308(a)(2) of this Section.

*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. November 1, 2004; June 27, 1995.*