

Town of North Topsail Beach

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Winner of 2014 Best Restored Beaches Award

TERMINAL GROIN FACT SHEET

(Released December 3, 2014)

Terminal groins were illegal in the State of North Carolina until 2011, when the State Legislature passed a bill to allow up to 4 groins to be constructed in the state. The following is a link to the legislation that was passed: <http://www.ncleg.net/Sessions/2011/Bills/Senate/PDF/S110v6.pdf> (also attached).

The Town of North Topsail Beach had been working on a town-wide shoreline protection plan since 2002 with the goal of having an engineered beach which would qualify for FEMA reimbursement in the event of declared disasters. After the legislation passed the Town asked three coastal engineering firms to present proposals for a terminal groin for the north end of Topsail Island near the New River Inlet. The presentations can be found near the bottom of this web page: <http://www.ntbnc.org/Pages/ShorelineProtection.aspx>

The permitting process for terminal groins was estimated to take two years. As of November 19, 2014 only one North Carolina municipality has received a permit for a terminal groin and that was granted on October 21, 2014 (<http://www.starnewsonline.com/article/20141022/ARTICLES/141029913>). Three other municipalities are currently seeking permits and are attempting to do so with push back from environmental groups (<http://www.nccoast.org/Article.aspx?k=d8133cac-0bdf-4be7-be64-5a57f78f2554>).

In 2011 the Town already had a permit for the channel realignment project which is expected to have the same effect as a terminal groin, to mitigate long term erosion and inlet induced erosion. With the Topsail Reef Condominium complex and several houses north in imminent danger, the Board of Aldermen opted to continue to pursue the New River Inlet Channel Realignment Project (Phase One). Construction on Phase One began on November 26, 2012 and was completed on January 9, 2013 resulting in the realignment of the New River Inlet Channel and placement of approximately 566,244 cubic yards of sand on 1.5 miles of shoreline on the north end of North Topsail Beach. To-date the shoreline south of the inlet hazard area has held up while the inlet hazard area shoreline has eroded quickly. The desired result of the channel realignment, natural shoaling and build-up of shoreline has not yet occurred.

Considerations

Sand Source: The New River Inlet is a renewable source of sand for the Town's future projects and will provide sand for initial beach fill and subsequent maintenance for the town's entire shoreline. The inlet is the only known source of *coarse sand* that can be used to construct the portions of the town's shoreline that have nearshore hardbottoms. Coarse sand is required by resource agencies as a condition of the Town's permit. Construction of a terminal groin will render the Town's existing permit useless. The proximity of the inlet to the Town's shoreline as opposed to other sources for sand such as borrow islands and offshore, makes the inlet a very cost-effective source for sand as dredging from areas far from the beach increases the cost of nourishment

dramatically. If the Town is able to construct a terminal groin in the future, the Town will have to modify its existing permit to be able to use the inlet as a sand source.

Financing: The Town set up Municipal Service Districts for the five phases of the Town's shoreline protection plan so that the Town can finance projects through Special Obligation Bonds. Phase One and Phase Five have been partially or fully financed through Special Obligation Bonds, a financing method that is not allowed per the terminal groin legislation (see section (h) of the bill). Other methods to finance terminal groins that are prohibited by the law are: Non-voted general obligation bonds issued pursuant to G.S.159-48(b) (4) and financing contracts entered into under G.S.160A-20 or G.S.159-148. In 2006 the Town had a bond referendum for general obligation bonds for beach nourishment and it failed 34 to 102.

Cost: The following are estimated costs to construct a terminal groin based on figures that the Town was presented with in 2011:

Coastal Planning & Engineering - \$6,600,000 - \$7,837,500 (depending on size – including permit cost)
Gahagan & Bryant - \$5,850,000
Coastal Science & Engineering - \$7,239,347 (not including permit)
Coastal Resources Commission Study - \$3.5 million - \$10 million depending on size.
Projected annual maintenance \$0.7 million-\$3 million.

In comparison, the Phase One project cost was \$5.6 million (not including permit cost).

Shoreline Management Goals: Terminal groins mitigate inlet induced erosion. They also mitigate long term erosion, but only along the area in which fill is placed to fill the accretion fillet.

The New River Inlet Channel Realignment strategy meets more shoreline management goals than a terminal groin. Over time, the effect of the channel realignment should mitigate long term erosion and inlet induced erosion like a terminal groin. The placement of the sand on the shoreline provides the extra benefits of storm damage reduction and keeps the inlet channel maintained for navigation.

State Funding: Section 4 of the terminal groin legislation states, "No State funds may be spent for any activities related to a terminal groin and its accompanying beach fill project permitted pursuant to G.S.113A-115.1, as amended by Section 1 of this act, unless the General Assembly enacts legislation appropriating funds explicitly for such purpose. This section shall not apply to any beach fill or beach nourishment project initiated prior to the effective date of this act." The State recently adopted legislation that funds inlet management activities by using revenues from boating license fees and gas taxes. The Town was integral in getting this legislation passed and has included these funds in its plans to pay for future phases of the Town's shoreline protection plan using the inlet as a sand source.

Summary: Before terminal groins were allowed in the state of North Carolina the Town of North Topsail Beach was pursuing a shoreline protection plan which aims to address long term erosion and storm damage reduction for the entire town. When groins became legal, the Town looked into its options and still moved forward with the permitted project and plan instead of attempting to begin a lengthy permitting process for a project which would benefit a portion of the Town's Phase One area.

Since Phase One's completion, the northern ½ mile of the project area has experienced significant erosion. This ½ mile area is in an inlet hazard area – an area that is subject to inlet migration, rapid and severe changes in watercourses, flooding and strong tides. The desired effect of the channel realignment has not occurred, but is expected to occur as natural processes do, gradually and quite unpredictably. One mile of the project area, outside

the inlet hazard area, has held up very well as forecast. This gives the Town much confidence that the Phase 5 project that is scheduled to begin by year's end will successfully restore and protect 3.85 miles of beach on the south end of the town.

The Town has recently asked its coastal engineering firm to assess future long term shoreline protection actions and provide a contingency plan for consideration by the Town. Some of the items the firm will assess are:

1. Placement of beach quality material from navigation maintenance,
2. Re-directing the bar channel during navigation dredging to induce by-passing;
3. Modifications for the 2nd channel realignment event (2016/2017);
4. Incorporation of a terminal groin structure into the Town's Beach and Inlet Management Plan.

The contingency plan is expected to be complete in February 2015 and will include a description of each of the management strategies evaluated. The plan will also include pros and cons of each alternative, the estimated cost of implementation, and the time frame required to permit and implement each of the management strategies.

**GENERAL ASSEMBLY OF NORTH CAROLINA
SESSION 2011**

**SESSION LAW 2011-387
SENATE BILL 110**

**AN ACT TO AUTHORIZE THE PERMITTING AND CONSTRUCTION OF UP TO FOUR
TERMINAL GROINS AT INLETS UNDER CERTAIN CONDITIONS.**

Whereas, it has been the policy of the State of North Carolina since 1985, as stated in the Coastal Area Management Act and rules adopted pursuant to the act, to give preference to nonstructural responses to erosion, including relocation of threatened structures, beach nourishment, inlet relocation, and the temporary use of sandbags for short-term stabilization; and

Whereas, a terminal groin is a permanent erosion control structure that is constructed on the side of an inlet at the terminus of an island generally perpendicular to the shoreline to limit or control sediment passage into the inlet channel; and

Whereas, a terminal groin may reduce beach erosion, reduce the frequency of beach nourishment projects, and slow the migration of inlets; and

Whereas, the use of terminal groins on inlet beaches may adversely impact the value and enjoyment of adjacent properties, damage the public beach, obstruct public access to the beach and to navigable waters, and result in increased erosion to adjacent and downdrift properties; and

Whereas, due to the uncertainties associated with the costs and benefits of terminal groins, it is reasonable to authorize the Coastal Resources Commission to establish a terminal groin pilot program under which the Commission may permit the construction of up to four terminal groins under certain conditions; and

Whereas, it is reasonable to authorize the Coastal Resources Commission to permit the construction of a terminal groin under the pilot program if the Commission finds that (i) structures or infrastructure are imminently threatened by erosion and that nonstructural approaches to erosion control are impractical; (ii) the terminal groin will be accompanied by a concurrent beach fill project; (iii) construction and maintenance of the terminal groin will not result in significant adverse impacts to private property or to the public recreational beach; (iv) the terminal groin will be managed pursuant to an inlet management plan; and (v) there are sufficient financial resources to cover the costs associated with the terminal groin; Now, therefore,

The General Assembly of North Carolina enacts:

SECTION 1. G.S. 113A-115.1 reads as rewritten:

"§ 113A-115.1. Limitations on erosion control structures.

(a) As used in this section:

(1) "Erosion control structure" means a breakwater, bulkhead, groin, jetty, revetment, seawall, or any similar structure.

(1a) "Estuarine shoreline" means all shorelines that are not ocean shorelines that border estuarine waters as defined in G.S. 113A-113(b)(2).

(2) "Ocean shoreline" means the Atlantic Ocean, the oceanfront beaches, and frontal dunes. The term "ocean shoreline" includes an ocean inlet and lands adjacent to an ocean inlet but does not include that portion of any inlet and lands adjacent to the inlet that exhibits characteristics of estuarine shorelines.

(3) "Terminal groin" means a structure that is constructed on the side of an inlet at the terminus of an island generally perpendicular to the shoreline to limit or control sediment passage into the inlet channel.

(b) No person shall construct a permanent erosion control structure in an ocean shoreline. The Commission shall not permit the construction of a temporary erosion control



structure that consists of anything other than sandbags in an ocean shoreline. This section shall not apply to ~~(i) any~~ any of the following:

- (1) Any permanent erosion control structure that is approved pursuant to an exception set out in a rule adopted by the Commission prior to ~~1 July 2003~~ or ~~(ii) any~~ July 1, 2003.
- (2) Any permanent erosion control structure that was originally constructed prior to ~~1 July 1974~~ July 1, 1974, and that has since been in continuous use to protect an inlet that is maintained for navigation.
- (3) Any terminal groin permitted pursuant to this section.

(b1) This section shall not be construed to limit the authority of the Commission to adopt rules to designate or protect areas of environmental concern, to govern the use of sandbags, or to govern the use of erosion control structures in estuarine shorelines.

(c) The Commission may renew a permit for an erosion control structure issued pursuant to a variance granted by the Commission prior to ~~1 July~~ July 1, 1995. The Commission may authorize the replacement of a permanent erosion control structure that was permitted by the Commission pursuant to a variance granted by the Commission prior to ~~1 July 1995~~ July 1, 1995, if the Commission finds that: (i) the structure will not be enlarged beyond the dimensions set out in the original permit; (ii) there is no practical alternative to replacing the structure that will provide the same or similar benefits; and (iii) the replacement structure will comply with all applicable laws and with all rules, other than the rule or rules with respect to which the Commission granted the variance, that are in effect at the time the structure is replaced.

(d) Any rule that prohibits permanent erosion control structures shall not apply to terminal groins permitted pursuant to this section.

(e) In addition to the requirements of Part 4 of Article 7 of Chapter 113A of the General Statutes, an applicant for a permit for the construction of a terminal groin shall submit all of the following to the Commission:

- (1) Information to demonstrate that structures or infrastructure are imminently threatened by erosion, and nonstructural approaches to erosion control, including relocation of threatened structures, are impractical.
- (2) An environmental impact statement that satisfies the requirements of G.S. 113A-4.
- (3) A list of property owners and local governments that may be affected by the construction of the proposed terminal groin and its accompanying beach fill project and proof that the property owners and local governments have been notified of the application for construction of the terminal groin and its accompanying beach fill project.
- (4) A plan for the construction and maintenance of the terminal groin and its accompanying beach fill project prepared by a professional engineer licensed to practice pursuant to Chapter 89C of the General Statutes.
- (5) A plan for the management of the inlet and the estuarine and ocean shorelines immediately adjacent to and under the influence of the inlet. The inlet management plan shall do all of the following relative to the terminal groin and its accompanying beach fill project:
 - a. Describe the post-construction activities that the applicant will undertake to monitor the impacts on coastal resources.
 - b. Define the baseline for assessing any adverse impacts and the thresholds for when the adverse impacts must be mitigated.
 - c. Provide for mitigation measures to be implemented if adverse impacts reach the thresholds defined in the plan.
 - d. Provide for modification or removal of the terminal groin if the adverse impacts cannot be mitigated.
- (6) Proof of financial assurance in the form of a bond, insurance policy, escrow account, or other financial instrument that is adequate to cover the cost of:
 - a. Long-term maintenance and monitoring of the terminal groin.
 - b. Implementation of mitigation measures as provided in the inlet management plan.
 - c. Modification or removal of the terminal groin as provided in the inlet management plan.

d. Restoration of public, private, or public trust property if the groin has an adverse impact on the environment or property.

(f) The Commission shall issue a permit for the construction of a terminal groin if the Commission finds no grounds for denying the permit under G.S. 113A-120 and the Commission finds all of the following:

- (1) The applicant has complied with all of the requirements of subsection (e) of this section.
- (2) The applicant has demonstrated that structures or infrastructure are imminently threatened by erosion and that nonstructural approaches to erosion control, including relocation of threatened structures, are impractical.
- (3) The terminal groin will be accompanied by a concurrent beach fill project to prefill the groin.
- (4) Construction and maintenance of the terminal groin will not result in significant adverse impacts to private property or to the public recreational beach. In making this finding, the Commission shall take into account mitigation measures, including the accompanying beach fill project, that will be incorporated into the project design and construction and the inlet management plan.
- (5) The inlet management plan is adequate for purposes of monitoring the impacts of the proposed terminal groin and mitigating any adverse impacts identified as a result of the monitoring.
- (6) Except to the extent expressly modified by this section, the project complies with State guidelines for coastal development adopted by the Commission pursuant to G.S. 113A-107.

(g) The Commission may issue no more than four permits for the construction of a terminal groin pursuant to this section.

(h) No permit may be issued where funds are generated from any of the following financing mechanisms and would be used for any activity related to the terminal groin or its accompanying beach fill project:

- (1) Special obligation bonds issued pursuant to Chapter 159I of the General Statutes.
- (2) Nonvoted general obligation bonds issued pursuant to G.S. 159-48(b)(4).
- (3) Financing contracts entered into under G.S. 160A-20 or G.S. 159-148."

SECTION 2. The Department of Environment and Natural Resources shall amend the management program it adopted pursuant to the federal Coastal Zone Management Act, 16 U.S.C. § 1451, et seq., to ensure the management program is consistent with G.S. 113A-115.1, as amended by Section 1 of this act, and shall seek approval of the proposed amended management plan by the United States Secretary of Commerce or the Secretary's authorized designee no later than six months after the effective date of this act.

SECTION 3. The Department shall adopt any rules necessary to implement this act.

SECTION 4. No State funds may be spent for any activities related to a terminal groin and its accompanying beach fill project permitted pursuant to G.S. 113A-115.1, as amended by Section 1 of this act, unless the General Assembly enacts legislation appropriating funds explicitly for such purpose. This section shall not apply to any beach fill or beach nourishment project initiated prior to the effective date of this act.

SECTION 5. No later than September 1 of each year, the Coastal Resources Commission shall report to the Environmental Review Commission on the implementation of this act. The report shall provide a detailed description of each proposed and permitted terminal groin and its accompanying beach fill project, including the information required to be submitted pursuant to subsection (e) of G.S. 113A-115.1, as amended by Section 1 of this act. For each permitted terminal groin and its accompanying beach fill project, the report shall also provide all of the following:

- (1) The findings of the Commission required pursuant to subsection (f) of G.S. 113A-115.1, as amended by Section 1 of this act.
- (2) The status of construction and maintenance of the terminal groin and its accompanying beach fill project, including the status of the implementation of the plan for construction and maintenance and the inlet management plan.

- (3) A description and assessment of the benefits of the terminal groin and its accompanying beach fill project, if any.
- (4) A description and assessment of the adverse impacts of the terminal groin and its accompanying beach fill project, if any, including a description and assessment of any mitigation measures implemented to address adverse impacts.

SECTION 6. This act is effective when it becomes law.

In the General Assembly read three times and ratified this the 16th day of June, 2011.

s/ Walter H. Dalton
President of the Senate

s/ Thom Tillis
Speaker of the House of Representatives

This bill having been presented to the Governor for signature on the 17th day of June, 2011 and the Governor having failed to approve it within the time prescribed by law, the same is hereby declared to have become a law. This 28th day of June, 2011.

s/ Karen Jenkins
Enrolling Clerk