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Secretary
BRAXTON DAVIS
Director



TO: The Coastal Resources Commission

FROM: Christine A. Goebel, Assistant General Counsel

DATE: April 19, 2021 (for the April 28, 2021 CRC Meeting)

RE: **Variance Request by the Town of North Topsail Beach (CRC-VR-20-02)**

Petitioner is the Topsail Reef Homeowners Association, Inc. (“HOA” or “Petitioner”), which is a 240-unit condominium complex. The HOA is a non-profit corporation located in Onslow County, North Carolina and owns the common-area property around the eight buildings (“Property”). The Property is located on the oceanfront at the north end of North Topsail Beach, approximately a half-mile south of New Inlet. The Property is just outside of the Inlet Hazard Area of Environmental Concern (“AEC”), but is inside the “new” Inlet Hazard Area maps which have been approved by the Commission but are waiting on public hearing for the related rules. Petitioner installed sandbags in 2012, and at that time, received a variance from the Commission to install a larger sandbag structure than allowed by rule in front of Buildings 1-5. At that same time, Petitioner installed sandbags in a 6’ by 20’ structure in front of Buildings 6-8. Petitioner sought a major modification to CAMA Major Permit no. 39-01 in order to increase the size of the sandbag structure in front of Buildings 6-8 and in 2014, the Commission granted a variance to allow the larger sandbag structure until 5 years from the initial November 2014 permit (until Late 2019).

On February 26, 2020, DCM received Petitioner’s variance application seeking to keep the geotextile tube and oversized sandbag structure for five more years to allow them to keep the bags until the Town and Corps’ EIS process can progress. The cancellation of the March 2020 CRC Meeting due to Covid-19 Pandemic and requests by Petitioner to postpone the hearing, have delayed this petition from coming before the Commission until now.

The following additional information is attached to this memorandum:

Attachment A: Relevant Rules
Attachment B: Stipulated Facts
Attachment C: Petitioner’s Positions and Staff’s Responses to Variance Criteria
Attachment D: Petitioner’s Variance Request Materials
Attachment E:
cc(w/enc.): Brian Edes, HOA Attorney, electronically
Mary Lucasse, Special Deputy AG and CRC Counsel, electronically



RELEVANT STATUTES OR RULES

ATTACHMENT A

15A NCAC 07H .0301 OCEAN HAZARD CATEGORIES

The next broad grouping is composed of those AECs that are considered natural hazard areas along the Atlantic Ocean shoreline where, because of their special vulnerability to erosion or other adverse effects of sand, wind, and water, uncontrolled or incompatible development could unreasonably endanger life or property. Ocean hazard areas include beaches, frontal dunes, inlet lands, and other areas in which geologic, vegetative and soil conditions indicate a substantial possibility of excessive erosion or flood damage.

15A NCAC 07H .0302 SIGNIFICANCE OF THE OCEAN HAZARD CATEGORY

(a) The primary causes of the hazards peculiar to the Atlantic shoreline are the constant forces exerted by waves, winds, and currents upon the unstable sands that form the shore. During storms, these forces are intensified and can cause significant changes in the bordering landforms and to structures located on them. Ocean hazard area property is in the ownership of a large number of private individuals as well as several public agencies and is used by a vast number of visitors to the coast. Ocean hazard areas are critical, therefore, because of both the severity of the hazards and the intensity of interest in the areas.

(b) The location and form of the various hazard area landforms, in particular the beaches, dunes, and inlets, are in a permanent state of flux, responding to meteorologically induced changes in the wave climate. For this reason, the appropriate location of structures on and near these landforms must be reviewed carefully in order to avoid their loss or damage. As a whole, the same flexible nature of these landforms which presents hazards to development situated immediately on them offers protection to the land, water, and structures located landward of them. The value of each landform lies in the particular role it plays in affording protection to life and property. (The role of each landform is described in detail in Technical Appendix 2 in terms of the physical processes most important to each.) Overall, however, the energy dissipation and sand storage capacities of the landforms are most essential for the maintenance of the landforms' protective function.

15A NCAC 07H .0303 MANAGEMENT OBJECTIVE OF OCEAN HAZARD AREAS

(a) The CRC recognizes that absolute safety from the destructive forces indigenous to the Atlantic shoreline is an impossibility for development located adjacent to the coast. The loss of life and property to these forces, however, can be greatly reduced by the proper location and design of

structures and by care taken in prevention of damage to natural protective features particularly primary and frontal dunes. Therefore, it is the CRC's objective to provide management policies and standards for ocean hazard areas that serve to eliminate unreasonable danger to life and property and achieve a balance between the financial, safety, and social factors that are involved in hazard area development.

(b) The purpose of these Rules shall be to further the goals set out in G.S. 113A-102(b), with particular attention to minimizing losses to life and property resulting from storms and long-term erosion, preventing encroachment of permanent structures on public beach areas, preserving the natural ecological conditions of the barrier dune and beach systems, and reducing the public costs of inappropriately sited development. Furthermore, it is the objective of the Coastal Resources Commission to protect present common-law and statutory public rights of access to and use of the lands and waters of the coastal area.

15A NCAC 7H .0305 GENERAL IDENTIFICATION AND DESCRIPTION OF LANDFORMS

(a) This section describes natural and man-made features that are found within the ocean hazard area of environmental concern.

(2) 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.

(8) Erosion Escarpment. The normal vertical drop in the beach profile caused from high tide or storm tide erosion.

15A NCAC 07H .0308 SPECIFIC USE STANDARDS FOR OCEAN HAZARD AREAS

(a) Ocean Shoreline Erosion Control Activities:

(1) Use Standards Applicable to all Erosion Control Activities:

(A) All oceanfront erosion response activities shall be consistent with the general policy statements in 15A NCAC 07M .0200.

(B) Permanent erosion control structures may cause significant adverse impacts on the value and enjoyment of adjacent properties or public access to and use of the ocean beach, and, therefore, unless specifically authorized under the Coastal Area Management Act, are prohibited. Such structures include bulkheads, seawalls, revetments, jetties, groins and breakwaters.

(C) Rules concerning the use of oceanfront erosion response measures apply to all oceanfront properties without regard to the size of the structure on the property or the date of its construction.

(D) Shoreline erosion response projects shall not be constructed in beach or estuarine areas that sustain substantial habitat for fish and wildlife species, as identified by natural resource agencies

during project review, unless mitigation measures are incorporated into project design, as set forth in Rule .0306(h) of this Section.

(E) Project construction shall be timed to minimize adverse effects on biological activity.

(F) Prior to completing any erosion response project, all exposed remnants of or debris from failed erosion control structures must be removed by the permittee.

(2) Temporary Erosion Control Structures:

(A) Permittable temporary erosion control structures shall be limited to sandbags placed landward of mean high water and parallel to the shore.

(B) Temporary erosion control structures as defined in Part (A) of this Subparagraph may be used to protect only imminently threatened roads and associated right of ways, and buildings and their associated septic systems. A structure is considered imminently threatened if its foundation, septic system, or right-of-way in the case of roads, is less than 20 feet away from the erosion scarp. Buildings and roads located more than 20 feet from the erosion scarp or in areas where there is no obvious erosion scarp may also be found to be imminently threatened when site conditions, such as a flat beach profile or accelerated erosion, increase the risk of imminent damage to the structure.

(C) Temporary erosion control structures shall be used to protect only the principal structure and its associated septic system, but not appurtenances such as pools, gazebos, decks or any amenity that is allowed under Rule .0309 of this Section as an exception to the erosion setback requirement.

(D) Temporary erosion control structures may be placed waterward of a septic system when there is no alternative to relocate it on the same or adjoining lot so that it is landward of or in line with the structure being protected.

(E) Temporary erosion control structures shall not extend more than 20 feet past the sides of the structure to be protected except to align with temporary erosion control structures on adjacent properties, where the Division has determined that gaps between adjacent erosion control structures may result in an increased risk of damage to the structure to be protected. The landward side of such temporary erosion control structures shall not be located more than 20 feet waterward of the structure to be protected, or the right of way in the case of roads. If a building or road is found to be imminently threatened and at an increased risk of imminent damage due to site conditions such as a flat beach profile or accelerated erosion, temporary erosion control structures may be located more than 20 feet waterward of the structure being protected. In cases of increased risk of imminent damage, the location of the temporary erosion control structures shall be determined by the Director of the Division of Coastal Management or the Director's designee in accordance with Part (A) of this Subparagraph.

(F) Temporary erosion control structures may remain in place for up to eight years for a building and its associated system, a bridge or a road. The property owner shall be responsible for removal of any portion of the temporary erosion control structure exposed above grade within 30 days of the end of the allowable time period.

(G) An imminently threatened structure or property may be protected only once, regardless of ownership, unless the threatened structure or property is located in a community that is actively pursuing a beach nourishment project, or an inlet relocation or stabilization project in accordance

with Part (H) of this Subparagraph. **Existing temporary erosion control structures may be permitted for additional eight-year periods provided that the structure or property being protected is still imminently threatened, the temporary erosion control structure is in compliance with requirements of this Subchapter, and the community in which it is located is actively pursuing a beach nourishment or an inlet relocation or stabilization project in accordance with Part (H) of this Subparagraph.** In the case of a building, a temporary erosion control structure may be extended, or new segments constructed, if additional areas of the building become imminently threatened. Where temporary structures are installed or extended incrementally, the time period for removal under Part (F) or (H) of this Subparagraph shall begin at the time the initial erosion control structure was installed. For the purpose of this Rule:

(i) a building and its septic system shall be considered separate structures,
(ii) a road or highway may be incrementally protected as sections become imminently threatened. The time period for removal of each contiguous section of temporary erosion control structure shall begin at the time that the initial section was installed, in accordance with Part (F) of this Subparagraph.

(H) For purposes of this Rule, a community is considered to be actively pursuing a beach nourishment or an inlet relocation or stabilization project in accordance with G.S. 113A-115.1 if it:

- (i) has been issued an active CAMA permit, where necessary, approving such project; or
- (ii) has been identified by a U.S. Army Corps of Engineers' Beach Nourishment Reconnaissance Study, General Reevaluation Report, Coastal Storm Damage Reduction Study, or an ongoing feasibility study by the U.S. Army Corps of Engineers and a commitment of local or federal money, when necessary; or
- (iii) has received a favorable economic evaluation report on a federal project; or
- (iv) is in the planning stages of a project designed by the U.S. Army Corps of Engineers or persons meeting applicable State occupational licensing requirements and initiated by a local government or community with a commitment of local or state funds to construct the project or the identification of the financial resources or funding bases necessary to fund the beach nourishment, inlet relocation or stabilization project.

If beach nourishment, inlet relocation or stabilization is rejected by the sponsoring agency or community, or ceases to be actively planned for a section of shoreline, the time extension is void for that section of beach or community and existing sandbags are subject to all applicable time limits set forth in Part (F) of this Subparagraph.

(I) Once a temporary erosion control structure is determined by the Division of Coastal Management to be unnecessary due to relocation or removal of the threatened structure, it shall be removed to the maximum extent practicable by the property owner within 30 days of official notification from the Division of Coastal Management regardless of the time limit placed on the temporary erosion control structure. If the temporary erosion control structure is determined by the Division of Coastal Management to be unnecessary due to the completion of a storm protection project constructed by the U.S. Army Corps of Engineers, a large-scale beach nourishment project,

or an inlet relocation or stabilization project, any portion of the temporary erosion control structure exposed above grade shall be removed by the property owner within 30 days of official notification from the Division of Coastal Management regardless of the time limit placed on the temporary erosion control structure.

(J) Removal of temporary erosion control structures is not required if they are covered by sand. Any portion of the temporary erosion control structure that becomes exposed above grade after the expiration of the permitted time period shall be removed by the property owner within 30 days of official notification from the Division of Coastal Management.

(K) The property owner shall be responsible for the removal of remnants of all portions of any damaged temporary erosion control structure.

(L) Sandbags used to construct temporary erosion control structures shall be tan in color and three to five feet wide and seven to 15 feet long when measured flat. Base width of the temporary erosion control structure shall not exceed 20 feet, and the total height shall not exceed six feet, as measured from the bottom of the lowest bag.

(M) Soldier pilings and other types of devices to anchor sandbags shall not be allowed.

(N) Existing sandbag structures may be repaired or replaced within their originally permitted dimensions during the time period allowed under Part (F) or (G) of this Subparagraph.

15A NCAC 07M .0201 DECLARATION OF GENERAL POLICY

It is hereby declared that the general welfare and public interest require that development along the ocean and estuarine shorelines be conducted in a manner that avoids loss of life, property and amenities. It is also declared that protection of the recreational use of the shorelines of the state is in the public interest. In order to accomplish these public purposes, the planning of future land uses, reasonable rules and public expenditures should be created or accomplished in a coordinated manner so as to minimize the likelihood of damage to private and public resources resulting from recognized coastal hazards.

15A NCAC 07M .0202 POLICY STATEMENTS

(a) Pursuant to Section 5, Article 14 of the North Carolina Constitution, proposals for shoreline erosion response projects shall avoid losses to North Carolina's natural heritage. All means should be taken to identify and develop response measures that will not adversely affect estuarine and marine productivity. The public right to use and enjoy the ocean beaches must be protected. The protected uses include traditional recreational uses (such as walking, swimming, surf-fishing, and sunbathing) as well as commercial fishing and emergency access for beach rescue services. Private

property rights to oceanfront properties including the right to protect that property in ways that are consistent with public rights should be protected.

(b) Erosion response measures designed to minimize the loss of private and public resources to erosion should be economically, socially, and environmentally justified. Preferred response measures for shoreline erosion shall include but not be limited to AEC rules, land use planning and land

classification, establishment of building setback lines, building relocation, subdivision regulations and management of vegetation.

(c) The replenishment of sand on ocean beaches can provide storm protection and a viable alternative

to allowing the ocean shoreline to migrate landward threatening to degrade public beaches and cause

the loss of public facilities and private property. Experience in North Carolina and other states has shown that beach restoration projects can present a feasible alternative to the loss or massive relocation of oceanfront development. In light of this experience, beach restoration and sand renourishment and disposal projects may be allowed when:

(1) Erosion threatens to degrade public beaches and to damage public and private properties;

(2) Beach restoration, renourishment or sand disposal projects are determined to be socially and economically feasible and cause no significant adverse environmental impacts;

(3) The project is determined to be consistent with state policies for shoreline erosion response and state use standards for Ocean hazard and Public Trust Waters Areas of Environmental Concern and the relevant rules and guidelines of state and federal review agencies.

When the conditions set forth in this Paragraph can be met, the Coastal Resources Commission supports, within overall budgetary constraints, state financial participation in Beach Erosion Control

and Hurricane Wave Protection projects that are cost-shared with the federal government and affected local governments pursuant to the federal Water Resources Development Act of 1986 and the North Carolina Water Resources Development Program (G.S. 143-215.70-73).

(d) The following are required with state involvement (funding or sponsorship) in beach restoration and sand renourishment projects:

(1) The entire restored portion of the beach shall be in permanent public ownership;

(2) It shall be a local government responsibility to provide adequate parking, public access, and services for public recreational use of the restored beach.

(e) Temporary measures to counteract erosion, such as the use of sandbags and beach pushing, should be allowed, but only to the extent necessary to protect property for a short period of time until

threatened structures may be relocated or until the effects of a short-term erosion event are reversed. In all cases, temporary stabilization measures must be compatible with public use and enjoyment of the beach.

(f) Efforts to permanently stabilize the location of the ocean shoreline with seawalls, groins, shoreline hardening, sand trapping or similar protection devices shall not be allowed except when the project meets one of the specific exceptions set out in 15A NCAC 7H .0308.

(g) The State of North Carolina will consider innovative institutional programs and scientific research that will provide for effective management of coastal shorelines. The development of innovative measures that will lessen or slow the effects of erosion while minimizing the adverse impacts on the public beach and on nearby properties is encouraged.

(h) The planning, development, and implementation of erosion control projects will be coordinated with appropriate planning agencies, affected governments and the interested public. Maximum efforts will be made by the state to accommodate the interest of each interested party consistent with the project's objectives. Local, state, and federal government activity in the coastal area should reflect an awareness of the natural dynamics of the ocean front. Government policies should not only address existing erosion problems but should aim toward minimizing future erosion problems. Actions required to deal with erosion problems are very expensive. In addition to the direct costs of erosion abatement measures, many other costs, such as maintenance of projects, disaster relief, and infrastructure repair will be borne by the public sector. Responses to the erosion should be designed to limit these public costs.

(i) The state will promote education of the public on the dynamic nature of the coastal zone and on effective measure to cope with our ever changing shorelines.

STIPULATED FACTS

ATTACHMENT B

1. The Petitioner in this case is the Topsail Reef Homeowners' Association, Inc., a North Carolina Non-Profit Corporation. ("Petitioner" or "HOA"). The HOA is represented by Brian Edes, Esquire.
2. The HOA manages the affairs of the Topsail Reef Condominium property (the "Property") which is located at 2224 New River Inlet Road in North Topsail Beach (the "Town"), Onslow County. Built between 1980 and 1981 in conformity with the setbacks for residential structures in place at the time, the Property included eight buildings, each having thirty condo units (240 total). Running from the northeast to the southwest, the buildings are numbered 1 through 8. Each of the buildings is approximately 19,860 square feet in area.
3. Located at the northeastern end of Town, the Property is approximately a quarter mile from New River Inlet. The Property is located within the Ocean Erodible and High Hazard Flood Areas of Environmental Concern ("AECs"). The long-term average annual erosion rate for the Property is 2 feet per year, based on the 2020 erosion rate maps. The Property is immediately south of the current Inlet Hazard AEC boundary. The Property is within the proposed updated Inlet Hazard AEC, which the Commission reviewed and "approved" in February of 2019 for the rulemaking process once the companion development standard rules are completed by the Commission. On the new maps, the updated proposed setback factors for the Property are 2 feet per year for Buildings 2-8 and 4.5 feet per year for Building 1.
4. Pictures of the site are included in the powerpoint presentation which is a stipulated exhibit to this variance.
5. The north end of the Town has a history of erosion. More detailed information about the history of erosion and past beach nourishment projects can be found in Appendix B of the Town's 2009 FEIS which is attached as a stipulated exhibit. According to the FEIS, the erosion of the shoreline south of New River Inlet has been a persistent problem since around 1984 when the bar channel of New River Inlet shifted its alignment toward Onslow Beach. Prior to 1984, the north end of North Topsail Beach was accreting at an average rate of 6.1 feet/year. Following the change in channel position and orientation, the north end began to erode at accelerated rates due to the higher degree of exposure of the north end to wave energy. That is, prior to the channel shift, the south side of the ebb tide delta provided a breakwater effect with waves breaking relatively far offshore. With the loss of the south side delta, more wave energy was able to be transmitted directly to the shoreline.
6. The north end of the Town receives relatively small amounts of beach-quality dredge spoil when the Corps undertakes regular (every year or two) shallow-draft inlet maintenance from the New River Inlet Atlantic Intracoastal Waterway crossing and Cedar Bush Cut along an area located generally in front of the Property three times using a pipeline dredge system.
7. Beginning in 2006, the Town hired CP&E to develop an Inlet Management Plan for the New River Inlet ("Inlet Management Plan"). This Inlet Management Plan was completed and memorialized in the 2009 FEIS. The entire Inlet Management Plan is covered by the Department of

the Army permit SAW 2005-00344 dated May 16, 2001. CAMA Major Permit #79-10 was issued on July 21, 2010 authorizing Phase I of the Inlet Management Plan, which authorized the repositioning of the New River Inlet ocean bar channel to a more central location and deposited this dredge material as fill along the shoreline just south of the inlet, including in front of the HOA's Property.

8. The construction of Phase 1 initially moved the mean high water (MHW) shoreline an average of 272 feet seaward of the pre-project MHW shoreline in the area between Building #1 of Topsail Reef and the south shoulder of New River Inlet, but an August 2014 beach profile survey showed that the MHW shoreline had returned to essentially its pre-project position.

9. Following Hurricane Irene in 2011, the HOA initially planned to truck in sand from upland sources to place under the eight buildings as had been their practice in the past, but following a meeting with town officials on December 30, 2011, the HOA President understood that the Town planned to pursue a nourishment project in the near future (what became Phase I in 2012-13) and then the HOA decided to pursue sandbags instead of trucking sand.

10. On February 3, 2012, the Division of Coastal Management issued the HOA a CAMA general permit to install approximately 1,500 linear feet of sandbag revetment along the ocean shoreline in front of the eight buildings. Consistent with 15A N.C.A.C. 07H .0308 (a)(2)(E) and (K), the permit limits the sandbag structure to 20 feet in width and 6 feet in height as measured from the profile directly beneath bags.

11. Between the sandbag installation's initiation in Early-March of 2012 until April 13, 2012, approximately 650 linear feet of revetment adjacent to buildings #8, 7, 6 and part of building #5 had been completed. Since April 13, 2012, no further sandbag installation has taken place.

12. A storm coupled with high lunar tides April 11-13, 2012 generally lowered the sand level directly under the Property by approximately fifty-one inches (4.3 feet). To address the ongoing erosion problems, the HOA, through Mr. Tom Jarrett, P.E., applied for an emergency major permit on May 3, 2012. The HOA's application proposed a sandbag structure using geotubes (which don't conform to the Commission's sandbag rules) which was inconsistent with the Commission's structure limits where they were proposed with a bottom width of 45 feet for Buildings 1-4 where sandbags hadn't yet been installed. The structure was proposed to have an elevation of 12 feet NAVD.

13. On May 4, 2012, DCM issued CAMA Emergency Major Permit #39-12 was issued, a copy of which is a stipulated exhibit which conditioned the sandbag structure to the 20' x 6' size allowed by rule and placement no further waterward than 20 feet from the waterward pilings where the sandbag structure desired by the HOA was as much as 29 feet seaward of the imminently threatened structures (i.e. the waterward pilings of each building). The HOA also sought to have the larger sandbags authorized for 8 years instead of the 5 years allowed under the rule in effect at that time. The HOA received permission to have the variance heard in expedited fashion at the Commission's June 20-21, 2012 CRC meeting.

14. On May 24, 2012, the CRC granted a variance allowing placement of the expanded revetment in front of buildings 1, 2, 3, 4 and 5 to extend a maximum distance of twenty-nine feet seaward from the most water-ward piles, but denied for placement in front of buildings 6, 7 and 8. The CRC also denied the request that the sandbags be allowed to remain for 8 years. A copy of the CRC's

final order issued May 29, 2012 is attached as a stipulated exhibit. DCM issued a permit pursuant to the variance that included conditions limiting the sandbag alignment in front of buildings 6, 7 and 8 to a 6-foot x 20-foot structure. The permit (#39-12 Amended by CRC Variance) is attached as a stipulated exhibit. On October 10, 2012, the sandbag structure authorized by the 2012 variance was completed.

15. In November 2012, the Phase I project authorized in 2010, began in order to relocate the New River Inlet channel began and dredged sand was placed on the beach south of the inlet, including in the beach front area ocean ward of the Property as a 7,735-foot berm approximately 6' high. Approximately 592,000 CY were removed from the 3,500 ft. long channel and placed on the shoreline of North Topsail Beach. The fill area experienced a waterline extension (+1.4 ft. NAVD) an average distance of 170 feet. In 2012, the Town was planning on future re-nourishment of the shoreline in front of Topsail Reef for maintenance of Phase 1 in 2016.

16. On August 22, 2014, the HOA submitted a request for a minor modification to CAMA Major Permit No. 39-12, the permit issued pursuant to the 2012 variance. The HOA requested to enlarge the existing sandbag structure in front of buildings 6 through 8 to achieve a sand bag revetment the same size as that installed on front of buildings 1 through 5 in 2012. This request was denied August 29, 2014 due to inconsistency with 15A NCAC 07H .0308(a)(2)(K), the Commission's sandbag structure size limits.

17. Measurements at the Property from May 13, 2013 through August 21, 2014 show a high rate of erosion of the berm in front of the Property since the beach nourishment project. According to an analysis of the August 2014 survey compared to the April 2014 survey by the HOA's engineer, the rate of loss of the berm along the Property beach front was 8-12 feet per month for the period from May 2013 to August 2014.

18. On August 29, 2014, DCM denied the HOA's request for an oversized sandbag structure at Buildings 6-8 which would match the dimensions of the structure already in place at Buildings 1-5 authorized by the 2012 Variance. On September 9, 2014, Petitioner submitted a variance request to construct an oversized sandbag structure at Buildings 6-8 to remain in place for up to 8 years from the date of the variance. This variance was heard on October 23, 2014 and the Commission issued a written order on November 21, 2014 granting the HOA's variance request. A copy of the Commission's 2014 variance order is attached.

19. In the fall of 2014, the Town submitted several designs for erosion protection projects to DCM, ultimately proposing to install sandbags adjacent to those at Building 1 and extending north approximately 1,450 feet parallel to the existing shoreline. A 50-foot return wall would extend landward from the north end of the sandbag structure just north of the home located at 2378 New River Inlet Road. The proposed borrow site for the sand needed to fill the proposed sandbags was an area of approximately 5 acres on the point, just north of the Site, also called "the spit."

20. On October 21, 2014, DCM staff conducted a site visit of the subject area and determined that "site conditions [had] deteriorated and emergency action is warranted". Consequently, at the Town's request, the DENR Secretary authorized the issuance of an Emergency CAMA Major Permit, which allows DCM discretion to suspend public notice, adjacent riparian notice, and the

normal agency coordination process. On October 24, 2014, DCM issued CAMA Emergency Major Permit 92-14 to the Town, authorizing its final design, but conditioning this approval on compliance with the Commission's rules limiting the size of sandbag structures to a base width of 20' and a height of 6'.

21. On November 7, 2014, DCM received the Town's 2014 variance petition and expedited hearing request. The Town proposed the larger (45' base x elevation 12.0' NAVD) sandbag revetment to be placed in some areas in excess of the maximum 20' waterward of the escarpment in order to protect the 20 threatened residential structures for at least 2.5 years or until such time the beach fill project provided under Phase 1 of the North Topsail Beach shoreline/inlet management plan could be re-nourished in 2016. In addition, the Town of North Topsail Beach committed to managing the north end shoreline by maintaining the preferred position and alignment of the New River Inlet ocean bar channel and using the material removed to maintain the channel to nourish the northern 7.25 miles of its ocean shoreline. Both the channel maintenance program and periodic nourishment are intended to maintain and/or preserve the dune and beach system in as near a natural state as possible. This sandbag structure was funded by a special assessment imposed pursuant to NCGS 160A-238, in order to fund the larger sandbag structure proposed in this variance, with 50% of the total cost (which estimated at approximately \$2.3 million for the total project) to be paid by the 39 parcel-owners identified in the resolution based on oceanfront frontage.

22. On November 19, 2014, the Commission granted the Town's Variance Petition for larger sandbags than allowed by Commission rules, at an expedited hearing. On November 24, 2014, the Commission issued a written Final Agency Decision granting the Town's request, a copy of which is attached. An additional 275 linear feet of sandbags authorized in the traditional 6' by 20' configuration was added to CAMA Major Permit #92-14 through a minor modification in order to protect additional properties to the north of the originally permitted larger sandbag structure.

23. On November 26, 2014, DCM issued a permit to the Town to use a temporary geotextile tube for construction purposes during sandbag installation and Condition 11 confirmed that the geotube was to be removed upon project completion.

24. In February and March of 2015, DCM initiated enforcement action through a March 26, 2015 NOV issued to the Town ordering it to remove the geotubes, while the Town sought a modification in order to keep the tubes for the duration of the sandbag permit. On April 24, 2015, DCM issued a revised restoration plan to the Town, indicating that it could either remove the geotextile tubes as promised, or could proceed with the variance process in time for the Commission's July 15, 2015 meeting to seek a variance from the Commission in order to keep the geotextile tubes in place for some period of time. The Town submitted a modification request seeking to keep the geotube, which was denied on June 2, 2015 for the inconsistency of the geotubes with the Commission's rules about sandbag sizes and its prohibition of anchoring devices.

25. In May of 2015, a group of Homeowners subject to the sandbag revetment assessment filed a lawsuit against the Town, its engineering firm, a contractor and a sub-contractor, alleging, among other things, that the revetment was insufficient to protect their property. The 2017 settlement between the parties focused on how much the north-end owners (not the HOA) would pay the

\$450,000 final cost (about half the original cost) for the larger sandbag revetment north of the HOA's Property and that the Town would pay \$200,000 for new engineers to develop a scope of work to enhance the existing sandbag structure.

26. On July 16, 2015, the Commission approved the Town's variance and added a condition to the variance that allowed the sand tube to remain in place until completion of an Onslow County shallow-draft navigation project or by June 30, 2015.

27. The Onslow County shallow-draft navigation project was intended to maintain authorized federal navigation channels in the vicinity of North Topsail Beach. The cost of approximately \$1,694,500 was split between the state, county, and Town. In the spring of 2016, 130,000 cubic yards of material was deposited along portions of the north end of North Topsail shoreline. Following the project's completion, an NOV from DCM to the Town ordering the removal of the geotubes, the Town's modification request and DCM's denial prohibiting the geotube from remaining in place until the Town's sandbag permit expires in 2022, the Town sought a variance from the Commission at its September 2016 meeting to keep the geotubes in place until November 2022. On September 13, 2016, the Commission granted a modified variance request following the suggestion of the Chair that the Town and Staff come to an agreement for authorizing the geotubes for a shorter amount of time. The parties agreed and the Commission authorized a variance authorizing the geotubes to remain for about six months until May 1, 2017, and after that date, the Town will cut the exposed geotube fabric and remove all visible material using a forklift, but did not need to excavate the tube covered with sand. A copy of the Commission's 2016 Variance Order for the Town is attached.

28. Also during the 2015-16 timeframe, the prospect of an extended period of recovery along the north end of the island associated with the channel relocation project caused the Town to consider applying for a permit to construct a terminal groin on the south shoulder of New River Inlet, following authority for a terminal groin at this location provided by Session Law 2015-241. Following the Town and County entering an inter-local agreement to study options to maintain the navigation channel at New River Inlet for 50 years, in August of 2016, the Town and County issued an RFQ seeking qualified firms to develop long-term management plans for New River Inlet to include but not be limited to consideration of a terminal groin. This study followed July 2015 studies contracted by the Town which indicated that a terminal groin may be effective at New River Inlet.

29. In June of 2017, the Town engaged Dial Cordy and Associates, Inc. to assist the Town in coming up with an alternative approach to addressing the New River Inlet erosion problem. The Town, through its consultants, has determined that a terminal groin would provide supplemental protection at the north end of the Town. This alternative would involve the construction of a 2,021-foot terminal groin at New River Inlet and recurring beach nourishment of the adjoining approximate 5,100 linear-foot north-end shoreline using sand derived from the inlet's outer bar channel realignment dredging events. A copy of this agreement is attached.

30. In September of 2019, the Town entered into a Processing Agreement, a copy of which is attached, with the United States Corps of Engineers wherein the Corps will prepare an EIS for the Town to pursue a shoreline protection project that includes the construction of a terminal groin. The

Town and the Corps are presently working through the various data collection, analysis, and public notice and hearing steps associated with the same.

31. On March 15, 2021, the Corps issued a Public Notice, a copy of which is attached, that the Corps will be holding a scoping meeting with respect to the Town's New River Inlet Management Master Plan for shoreline protection in the northern section of the Town and includes the construction of a terminal groin along the southwest shoulder of New River Inlet.

32. The Town is advised that it will likely take up to three years to complete the EIS and permitting process to enable the Town to begin construction on a terminal groin at this location. An affidavit from Town Mayor McDermon is attached.

33. As described in the Mayor's attached affidavit, the Town has recently engaged the services of DEC Associates, Inc. ("DEC"), to assist the Town in assessing the Town's capital needs, and to assist the Town in its financial planning to meet those needs. The scope of DEC's services includes capital needs for the Town's present and future erosion control/beach nourishment projects. The Town anticipates DEC's engagement will include the terminal groin project if that is the preferred alternative, and the Town is able to estimate the cost of the project.

34. As described in the Mayor's attached affidavit, she anticipates the Town will consider all existing statutory authority to finance the project, including the Town's taxing authority, occupancy tax allocation, the implementation of paid parking, the creation of Municipal Service Districts and the possibility of Special Assessments.

35. On January 28, 2021, Senator Lazzara filed SB 26, a bill which if it becomes law, would enable the Town to pursue funds otherwise prohibited for the financing of a terminal groin project. A copy of the bill is attached.

36. As described in the Mayor's attached affidavit, it is her opinion that the sandbag structures constructed by the Town and by Petitioners are essentially the only means of protection for the properties and infrastructure located in that area at this time. The mayor further contends that if those bags are removed, those homes, condominiums, and the Town's infrastructure serving those residences would be in imminent threat of collapse.

37. Petitioner's Engineer contends in his attached affidavit, that the threat posed by the Atlantic Ocean to the Petitioner's Property remains consistent with the threat present in 2014 when the Commission issued the variance authorizing the larger sandbag structure for all eight buildings.

38. Fran Way, P.E., is a coastal engineer with over 20 years of experience. Mr. Way, through his employer, presently serves as a coastal engineer consultant for the Town. Likewise, Mr. Way, through his employer, also serves a subcontractor on the terminal groin project via a contract with Dial Cordy and associates. Mr. Way is familiar with the subject area and has opined "if the sandbags in front of the [Topsail Reef Condominium complex] are removed it is [his] professional opinion that the structures would almost immediately become uninhabitable and would be in imminent threat of collapsing into the Atlantic Ocean. This would present a tremendous life, public health and environmental risk" and that "Although a few smaller scale nourishments in 2016 and the ongoing Corps placement projects have helped to mitigate the threat presented by erosion in this area they

have by no means prevented the erosion issues facing the Reefs from worsening.”

39. In an attached email, The HOA’s Secretary Ashley Ford describes steps the HOA and its members have taken in supporting the Town’s efforts to find and implement a long-term response to the erosion at the north end. These efforts include the appointment of two different town aldermen from the HOA membership, regular attendance and public comment at town meetings by HOA board members and regular members, and active engagement with the EIS process. Also attached is a 2018 Jacksonville Daily News article about former HOA President Jeremy Grove’s appointment as alderman and a 2019 Jacksonville Daily News article about HOA member Susan Meyer as alderman.

40. The HOA stipulates that this proposed variance request seeking to keep the existing larger sandbags beyond their expiration date of May 4, 2020, as conditioned by CAMA Major Permit No. 39-12 as modified by the 2012 and 2014 Variance Orders, is inconsistent with the Rules of the Commission, specifically 15A NCAC 7H .0308(a)(2)(F-H) which set timelines for how long sandbags may be used or renewed in order to protect structures, and 7H .0308(a)(2)(L) which restricts the size of sandbag structures to 6’ x 20’.

41. The HOA seeks a variance from CAMA Major Permit No. 39-12, as modified by the 2012 and 2014 variances, in order to allow the existing larger sandbag structure to remain in place for a period of five (5) years from the date of the written order for this variance (if granted), in hopes of affording enough time to allow the EIS process authorizing a terminal groin project or other selected alternative to be permitted and developed.

Stipulated Exhibits:

1. North Topsail Beach 2009 FEIS
2. CAMA Emergency Major Permit No. 39-12, issued May 4, 2012
3. Commission’s May 29, 2012 Variance Order granting bigger bags to HOA for 1-5
4. CAMA Major Permit No. 39-12 AS AMENDED by 2012 Variance
5. Commission’s November 21, 2014 Variance Order granting bigger bags to HOA for 6-8
6. Commission’s November 24, 2014 Variance Order granting bigger bags to Town
7. Commission’s 2016 Variance Order granting Town more time before geotube removal
8. 2017 Agreement of Town and Dial Cordy to study hardened structures for New Inlet
9. Town/County Processing Agreement for Corps EIS, signed 2019
10. March 15, 2021 Corps’ Public Notice of Town’s EIS for shoreline protection plan
11. Affidavit from Town Mayor McDermon dated March 17, 2021
12. Senate Bill 26, filed January 28, 2021 re: terminal groin funding
13. Sealed statement from Town Engineer Fran Way, P.E. and his CV
14. Email from HOA Secretary Ashley Ford describing efforts by HOA for long-term erosion solution by Town
15. Jacksonville Daily News articles from 2018 and 2019 re: HOA members appointed as aldermen
16. Powerpoint with photographs of the Property and surrounding area

Petitioner and Staff Positions**ATTACHMENT C**

- I. Will strict application of the applicable development rules, standards, or orders issued by the Commission cause the petitioner unnecessary hardships? If so, the petitioner must identify the hardships.**

Petitioner's Position: Yes.

The Condominium complex's sole protection from the forces of the Atlantic Ocean consists of the subject sandbag erosion control structure. Removing the sandbag structure would cause significant damage to, or total collapse of, the complex prior to additional beach nourishment and/or the installation of a terminal groin by the Town of North Topsail Beach. Since their installation the complex has experienced several storms and hurricanes which have caused the sandbag structure to be integral to the complex's existence.

The shoreline adjacent to the New River Inlet in North Topsail has experienced unprecedented accelerated erosion for at least the last 8 years. One need look no further than the map of the proposed 2019 Inlet Hazard Area to see that this accelerated erosion has affected the Topsail Reef Condominium complex significantly. Historically, the land on which the complex sits was not within the Inlet Hazard Area however the 2019 Proposed Inlet Hazard Area map includes this site. Fortunately, the CRC has previously granted variances for the HOA to install the current sandbag structure. At present it is protecting the structure from significant damage and collapse. Petitioner seeks authorization to allow this structure to remain in place until additional planned beach nourishment can occur and/or the Town of North Topsail Beach constructs the terminal groin it is presently pursuing through the United States Army Corps of Engineers.

In 2016, a year or so after the Town of North Topsail Beach obtained a variance in an emergency hearing to build its own sandbag revetment to save millions of dollars of property and infrastructure the Town entered into an Inter-Local Agreement with Onslow County to share the costs of exploring options to construct a structure at the mouth of the inlet that would protect the shoreline adjacent to the New River Inlet and enhance navigation through the inlet. In June of 2017, the Town engaged the firm of Dial Cordy and Associates to access various viable options to achieve these objectives. In September of 2019, the Town entered into a Processing Agreement with the United States Corps of Engineers wherein the Corps will prepare an EIS for the Town to pursue a shoreline protection project that includes the construction of a terminal groin. The Town and the Corps are presently working through the various data collection, analysis, and public notice and hearing steps associated with the same. It is anticipated that once the EIS has been completed the Town will pursue permits/approvals to proceed with the project as well as the funding needed to complete the project. Additionally, just weeks ago the Federal Government approved a \$237 million beach restoration project for the Town of North Topsail Beach and Surf City. That project is in its infancy but it is anticipated the initial phase of nourishment will occur within the next 2-3 years.

The existing Rules do not address situations where the rate of erosion is so dramatic as in this case nor the consequences of removing permitted sandbags that are the sole protection for these 240 units. While they indicate that “accelerated” erosion may form the basis for the placement of erosion protection structures, they stop short of addressing how the limited structure envisioned by the Rules could reasonably meet the conditions Topsail Reef now encounters.

Staff’s Position: Yes

Staff acknowledge that in this case, a strict application of Commission rules 15A NCAC 7H .0308(a)(2)(F-H) regarding the time period sandbag structures are allowed to remain and whether they can renew for 8 years if they are in a jurisdiction actively pursuing nourishment/inlet relocation/stabilization, and 15A NCAC 7H .0308(a)(2)(L) which limits sandbag structures to 6’ x 20’, will cause the Petitioner unnecessary hardships.

Since the initial 2012 permit and variance for larger sandbags waterward of Buildings 1-6, the Commission revised the sandbags rules to now allow an initial 8-year period for a sandbag structure, and renewal periods of up to 8 years (instead of a one-time per property use for 3 or 5 years depending on structure size) if certain conditions are met. These conditions include being imminently threatened, located in area in which the local jurisdiction is activity pursuing nourishment/inlet relocation/stabilization. (see 15A NCAC 7H .0308(a)(2) (F-H) in the earlier pages of this document at Attachment A). To that end, the Town and its contractor Dial Cordy and Associates, Inc., are working with the Army Corps of Engineers on an EIS document to evaluate various methods for providing a long-term solution to mitigate erosion in this area, including a terminal groin alternative. The Processing Agreement between the Corps and the Town, attached, was signed in the fall of 2019 and on March 15, 2021, the Corps issued a Public Notice for a March 25, 2021 virtual scoping meeting and month-long comment period. Due to these specific steps forward, Staff agrees that the strict application of the sandbag time limit rules causes unnecessary hardships where the “actively pursuing” pre-requisites for an 8-year renewal are not yet met in this case, but may well be met in the coming months. This could include identifying funding, where the Town, as described in facts 32-35 is exploring options for financing a long-term project including a possible law change to allow additional funding sources for a terminal groin than allowed under current law if SB 26 is passed by the General Assembly.

Staff also acknowledge that strict application of the sandbag structure size limits would cause Petitioner hardships where the larger sandbags have been in place since 2012 for the northern buildings 1-5 and since 2014 for the southern buildings 6-8. The Town’s engineer Mr. Way indicates that removing the sandbags at this time would likely result in harm to the structures. High tide currently inundates the beach in this area, reaching the sandbag structure as seen in the attached photos. Due to the specific steps which the Town has made toward long-term solutions to mitigate erosion in this area through the EIS process with the Corps, Staff agree that requiring removal of the larger bags at this time causes Petitioner hardships.

II. Do such hardships result from conditions peculiar to the petitioner's property such as location, size, or topography of the property? Explain.

Petitioner's Position: Yes.

One of the most significant peculiarities facing Topsail Reef is the rapid rate of erosion that has occurred of the last 8 years. This makes this situation far different from the normal assessment of what type of protection is necessary to protect the threatened structures, and how long they should remain in place. As noted in the Final Agency Decision in CRC-VR-14-11, the Topsail Reef Condominium Complex has experienced accelerated erosion rates far beyond those average erosion rates for the subject area. Additionally, the prior inlet realignment project for the New River Inlet had effects peculiar to this property that in part caused the immediate need for the construction of the sandbag structure. These conditions peculiar to the property are likewise the conditions that cause the present hardship in that removing the bags now would cause significant damage/collapse negating the very purpose of their installation.

Staff's Position: Yes.

Staff agrees that Petitioner's hardship is caused by conditions peculiar to the subject property. While not located within the currently applicable Inlet Hazard AEC for the New River Inlet, Staff notes that the Property is located within the 2019 Proposed Inlet Hazard Boundary maps approved by the CRC in February 2019 which will head to public hearing once the Commission finishes the associated IHA rules. The erosion rates for this Property reflected in the Inlet Hazard Rate study are 2 feet per year for Buildings 2-8, but 4.5 feet per year at Building 1 and north of the Property. Staff agree that the conditions on the Property are influenced by inlet processes. The Commission's rules note that inlets are especially volatile and are known to regularly move, causing both erosion and accretion. Both the HOA and the Town demonstrated accelerated erosion at New River in the variances issued to them between 2012 and 2016. The statement by the Town's Engineer and site photos support a finding that the accelerated erosion at the north end, though seemingly slowed by the sandbag structures, has not stopped.

III. Do the hardships result from the actions taken by the Petitioner? Explain.

Petitioner's Position: No.

The Petitioners have done nothing to accelerate or otherwise aggravate the erosion problem facing the Property. Again, the hardship is result of the Property's proximity to the New River Inlet and the peculiar effects the Inlet Realignment Project had/has on the property. Moreover, the Topsail Reef Condominium complex was constructed in compliance with all setback requirements in place at the time it was built.

Staff's Position: No.

Staff agrees that the HOA has supported the Town in taking steps to address the ongoing erosion problem, through regular attendance at town meetings, public comment in support of the Town pursuing long-term erosion control measures, and by the participation on the town council by two HOA members.

IV. Will the variance requested by the petitioner (1) be consistent with the spirit, purpose, and intent of the rules, standards or orders issued by the Commission; (2) secure the public safety and welfare; and (3) preserve substantial justice? Explain.

Petitioner's Position: Yes.

The variance sought is necessary to preserve the Buildings in the face of imminent danger. Finally, the larger sandbag structure should allow the protection of all 8 of Topsail Reef buildings until such time the Town of North Topsail Beach can either realize the projected beneficial results of their Inlet Realignment and Beach Nourishment Projects, or alternatively provide the required maintenance of these Projects, or alternatively address the erosion that has resulted from these Projects.

Allowing these sandbag structures to remain in place for a period of 8 additional years is consistent with the provisions provided to structures subject to the recognized heightened vulnerability of inlet dynamics. There are no structures within this adjoining Inlet Hazard Area that have been subjected to vulnerability as great as the buildings of the Topsail Reef. These other, less vulnerable structures already receive the benefit of such erosion protection structures being allowed for 8 years. Further, DCM has proposed that this section of shoreline be included within the designation of an Inlet Hazard Area AEC due to its shoreline movement in response to the dynamic inlet conditions posed by New River Inlet.

The variance would secure the public safety and welfare because, without a variance, at least one, and probably more, of the Buildings located on the Property will be significantly damaged if not outright lost. The variance will preserve substantial justice because it will protect the complex long enough for the Town of North Topsail Beach to pursue additional beach nourishment and/or a terminal groin as well as protect the complex long enough to allow the new federally funded project to come to fruition thereby adding additional sand to the system in and around the subject property.

Staff's Position: Yes.

Staff agrees that a variance from the Commission's sandbag time limits for the additional 5 years which Petitioner is requesting in order to complete the EIS and permitting processes, is consistent with the spirit, purpose, and intent of the rules. Given the General Assembly's and the Commission's ban on permanent erosion control structures, CRC rules and CAMA allow the use of sandbags as a temporary means to protect "imminently threatened structures" until the structure can be relocated, the erosion abates or the local jurisdiction takes mitigation actions to address chronic erosion. The Commission's rules set limitations for use of sandbags such as size limits and time limits which are sufficient in most cases, especially now that they have been increased to 8 years with possible 8 year renewals if the local jurisdiction is determined to be "actively pursuing" a nourishment, inlet relocation or stabilization project. However, in some situations, these limitations may not offer the temporary protection for a long enough duration to complete the planning, funding, EIS and permitting processes. Petitioner's engineer warns of the possible harm to the buildings if the larger sandbags structures are not allowed to stay in place while the EIS, permitting and funding steps of a project continue. Accordingly, Staff does not disagree with Petitioner's engineer's conclusion that such measures are needed as temporary protection while the Town continues to implement these steps toward a long-term solution for erosion. Accordingly, Staff does not disagree with Petitioner's engineer's conclusion that such measures are needed as temporary protection while the Town continues to implement these steps toward a long-term solution for erosion. As shown in Fact 41, the HOA is asking to keep their existing larger sandbag structure "for a period of five (5) years from the date of the written order for this variance (if granted), in hopes of affording enough time to allow the EIS process authorizing a terminal groin project or other selected alternative to be permitted and developed." Staff suggest that if the Commission grants this variance for whatever period of time, Staff recommend a condition that if any long-term measures are implemented before the expiration of this variance's authority to allow the larger sandbag structure to remain, any sandbags that exceed the maximum structure size limitations, as well as any sandbags in the 6' x 20' alignment that are above grade, must be removed following the completion of any future project.

Staff agrees that the variance would protect public safety and welfare where there is little room waterward of the existing structures to utilize the public trust area. Staff agrees that the variance would preserve substantial justice since it appears that despite Petitioner's and the Town's efforts to address the erosion issue through its earlier nourishment and inlet relocation plan, additional time is necessary to complete the EIS analysis and possible terminal groin project to protect the eight buildings.

Attachment D:

Petitioner's Variance Request Materials

Crossley McIntosh & Collier

CROSSLEY MCINTOSH COLLIER HANLEY & EDES, P.L.L.C.
ATTORNEYS AT LAW

JOHN F. CROSSLEY (1921-2006)
DOUGLAS F. MCINTOSH (1959-2016)
CLAY ALLEN COLLIER
ANDREW HANLEY
BRIAN E. EDES
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ANDREW PENNY

February 26, 2020

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Braxton Davis
Director, NC Division of Coastal Management
400 Commerce Avenue
Morehead City, NC 28557
(252) 808-2808 ext. 202
Via Email: Braxton.Davis@NCDENR.Gov

RE: Topsail Reef Condominiums HOA Variance Petition

Dear Mr. Davis:

On behalf of the Topsail Reef Condominiums HOA, I am transmitting the following along with this letter:

- 1) Signed copy of the Town's Variance Petition (DCM Form 11);
- 2) The subject Final Agency Order (2014 Variance Order);
- 3) Proof of notice to the adjacent property owners;
- 4) The Town's written reasons and arguments as to how the Town meets the four variance criteria; and
- 5) A draft set of proposed stipulated facts and stipulated exhibits.

Per my understanding from Mrs. Christy Goebel, I do not need to include a copy of the subject deed(s) or description/location of the proposed development as they are the same deeds previously submitted in connection with the previous variance(s) associated with this project (CRC-VR-14-11) and this is development site plan and location were likewise submitted with that variance application. Should you need for me to send those again I will be glad to do so.

Please also allow this letter to serve as the HOA's written stipulation that the proposed development / condition is inconsistent with the strict application and letter of the rule(s) at issue.

Sincerely,

Brian Edes

Brian E. Edes

CAMA VARIANCE REQUEST FORM

DCM FORM 11

DCM FILE No.: _____

PETITIONER'S NAME **Topsail Reef Condominium Homeowners' Association**

COUNTY WHERE THE DEVELOPMENT IS
PROPOSED **Onslow**

Pursuant to N.C.G.S. § 113A-120.1 and 15A N.C.A.C. 07J .0700 *et seq.*, the above named Petitioner hereby applies to the Coastal Resources Commission (CRC) for a variance.

VARIANCE HEARING PROCEDURES

A variance petition will be considered by the CRC at a regularly scheduled meeting, heard in chronological order based upon the date of receipt of a complete petition. 15A N.C.A.C. 07J .0701(e). A complete variance petition, as described below, must be *received* by the Division of Coastal Management (DCM) a minimum of six (6) weeks in advance of the first day of a regularly scheduled CRC meeting to be eligible for consideration by the CRC at that meeting. 15A N.C.A.C. 07J .0701(e). The final set of stipulated facts must be agreed to at least four (4) weeks prior to the first day of a regularly scheduled meeting. 15A N.C.A.C. 07J .0701(e). The dates of CRC meetings can be found at DCM's website: **www.nccoastalmanagement.net**

If there are controverted facts that are significant in determining the propriety of a variance, or if the Commission determines that more facts are necessary, the facts will be determined in an administrative hearing. 15A N.C.A.C. 07J .0701(b).

VARIANCE CRITERIA

The petitioner has the burden of convincing the CRC that it meets the following criteria:

- (a) Will strict application of the applicable development rules, standards, or orders issued by the Commission cause the petitioner unnecessary hardships? Explain the hardships.
- (b) Do such hardships result from conditions peculiar to the petitioner's property such as the location, size, or topography of the property? Explain.
- (c) Do the hardships result from actions taken by the petitioner? Explain.
- (d) Will the variance requested by the petitioner (1) be consistent with the spirit, purpose, and intent of the rules, standards or orders issued by the Commission; (2) secure the public safety and welfare; and (3) preserve substantial justice? Explain.

Please make your written arguments that Petitioner meets these criteria on a separate piece of paper. The Commission notes that there are some opinions of the State Bar which indicate that non-attorneys may not represent others at quasi-judicial proceedings such as a variance hearing before the Commission. These opinions note that the practice of professionals, such as engineers, surveyors or contractors, representing others in quasi-judicial proceedings through written or oral argument, may be

considered the practice of law. Before you proceed with this variance request, you may wish to seek the advice of counsel before having a non-lawyer represent your interests through preparation of this Petition.

For this variance request to be complete, the petitioner must provide the information listed below. The undersigned petitioner verifies that this variance request is complete and includes:

- The name and location of the development as identified on the permit application;
- A copy of the permit decision for the development in question;
- A copy of the deed to the property on which the proposed development would be located;
- A complete description of the proposed development including a site plan;
- A stipulation that the proposed development is inconsistent with the rule at issue;
- Proof that notice was sent to adjacent owners and objectors*, as required by 15A N.C.A.07J .0701(c)(7);
- n/a** Proof that a variance was sought from the local government per 15A N.C.A.C. 07J .0701(a), if applicable;
- Petitioner's written reasons and arguments about why the Petitioner meets the four variance criteria, listed above;
- A draft set of proposed stipulated facts and stipulated exhibits. Please make these verifiable facts free from argument. Arguments or characterizations about the facts should be included in the written responses to the four variance criteria instead of being included in the facts.
- This form completed, dated, and signed by the Petitioner or Petitioner's Attorney.

**Please contact DCM or the local permit officer for a full list of comments received on your permit application. Please note, for CAMA Major Permits, the complete permit file is kept in the DCM Morehead City Office.*

Due to the above information and pursuant to statute, the undersigned hereby requests a variance.



Signature of Petitioner or Attorney

February 26, 2020

Date

Brian E. Edes

briane@cmclawfirm.com

Printed Name of Petitioner or Attorney

Email address of Petitioner or Attorney

**5002 Randall Parkway
Wilmington, NC 28412**

(910) 762-9711

Mailing Address

Telephone Number of Petitioner or Attorney

Wilmington **NC** **28412**

(910) 256-0310

City State Zip

Fax Number of Petitioner or Attorney

Crossley McIntosh & Collier

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February 21, 2020

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* Of Counsel

E-mail: briane@cmclawfirm.com

John S. Fisher & Jesse Powell
723 Pine Log Rd.
Whiteville, NC 28472-3858

**Subject: Topsail Reef Homeowners Association's ("Topsail Reef HOA")
Request for Variance to Amended Variance Order CRC VR 14-11
To Extend Deadline to Remove Erosion Control Structure**

Dear John S. Fisher & Jesse Powell:

Please be advised that the Topsail Reef HOA is seeking a variance to amend Variance Order CRC VR 14-11 to extend the deadline to remove the sandbag erosion control structure presently protecting the Topsail Reef Condominiums as follows:

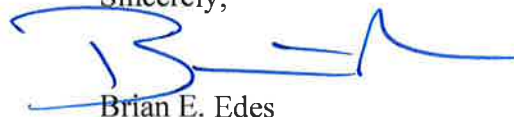
1. The Topsail Reef HOA is requesting a variance to keep the authorized temporary sandbag erosion control structure until such time as the Town of North Topsail Beach installs a terminal groin or until such time as the beach is renourished so as to alleviate the need for the sandbag structure.

This letter is being sent to you pursuant to 15A NCAC 07J .0701(c)(7) which requires an applicant to notify adjoining property owners of the application for a variance.

No action is required from you. However, if you wish to file written comments or objections, you may submit them to:

Braxton Davis, Director
NC Division of Coastal Management
Morehead City, NC 28405
(252) 808-2808

Sincerely,



Brian E. Edes

Crossley McIntosh & Collier

CROSSLEY MCINTOSH COLLIER HANLEY & EDES, P.L.L.C.
ATTORNEYS AT LAW

JOHN F. CROSSLEY (1921-2006)
DOUGLAS F. MCINTOSH*
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ANDREW HANLEY
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February 21, 2020

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TOLL FREE 800/499-9711

* Of Counsel

E-mail: briane@cmclawfirm.com

Secretary of Veterans Affairs
1700 Clairmont Rd.
Decatur, GA 30033-4032

Subject: **Topsail Reef Homeowners Association's ("Topsail Reef HOA")
Request for Variance to Amended Variance Order CRC VR 14-11
To Extend Deadline to Remove Erosion Control Structure**

Dear Secretary of Veterans Affairs:

Please be advised that the Topsail Reef HOA is seeking a variance to amend Variance Order CRC VR 14-11 to extend the deadline to remove the sandbag erosion control structure presently protecting the Topsail Reef Condominiums as follows:


1. The Topsail Reef HOA is requesting a variance to keep the authorized temporary sandbag erosion control structure until such time as the Town of North Topsail Beach installs a terminal groin or until such time as the beach is renourished so as to alleviate the need for the sandbag structure.

This letter is being sent to you pursuant to 15A NCAC 07J .0701(c)(7) which requires an applicant to notify adjoining property owners of the application for a variance.

No action is required from you. However, if you wish to file written comments or objections, you may submit them to:

Braxton Davis, Director
NC Division of Coastal Management
Morehead City, NC 28405
(252) 808-2808

Sincerely,



Brian E. Edes

SENDER: COMPLETE THIS SECTION

- Complete items 1, 2, and 3.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:
 Secretary of Veterans
 Affairs
 1700 Clairmont Rd.
 Decatur, GA 30033-4032



9590 9402 1318 5285 9472 94

2. Article Number (Transfer from service label)

7014 1820 0002 0737 5371

COMPLETE THIS SECTION ON DELIVERY

A. Signature Agent
 Addressee
 X

B. Received by (Printed Name) C. Date of Delivery

D. Is delivery address different from item 1? Yes
 If YES, enter delivery address below: No

3. Service Type
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ATTORNEYS AT LAW

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NORWOOD P. BLANCHARD III
ANDREW PENNY

February 21, 2020

5002 RANDALL PARKWAY
WILMINGTON, NC 28403

TELEPHONE 910/762-9711
FAX 910/256-0310
TOLL FREE 800/499-9711

* Of Counsel

E-mail: briane@cmclawfirm.com

Topsail Reef Homeowners Association
PO Box 79032
Charlotte, NC 28271-7047

**Subject: Topsail Reef Homeowners Association's ("Topsail Reef HOA")
Request for Variance to Amended Variance Order CRC VR 14-11
To Extend Deadline to Remove Erosion Control Structure**

Dear Topsail Reef Homeowners Association:

Please be advised that the Topsail Reef HOA is seeking a variance to amend Variance Order CRC VR 14-11 to extend the deadline to remove the sandbag erosion control structure presently protecting the Topsail Reef Condominiums as follows:

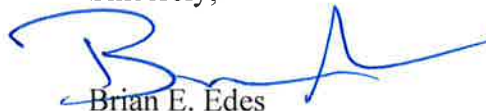
1. The Topsail Reef HOA is requesting a variance to keep the authorized temporary sandbag erosion control structure until such time as the Town of North Topsail Beach installs a terminal groin or until such time as the beach is renourished so as to alleviate the need for the sandbag structure.

This letter is being sent to the you pursuant to 15A NCAC 07J .0701(c)(7) which requires an applicant to notify adjoining property owners of the application for a variance.

No action is required from you. However, if you wish to file written comments or objections, you may submit them to:

Braxton Davis, Director
NC Division of Coastal Management
Morehead City, NC 28405
(252) 808-2808

Sincerely,



Brian E. Edes

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February 21, 2020

5002 RANDALL PARKWAY
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TELEPHONE 910/762-9711
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TOLL FREE 800/499-9711

* Of Counsel

E-mail: briane@cmclawfirm.com

Town of North Topsail Beach
c/o Mr. Bryan Chadwick, Town Manager
1000 NC HWY 210
Sneads Ferry NC 28460

**Subject: Topsail Reef Homeowners Association's ("Topsail Reef HOA")
Request for Variance to Amended Variance Order CRC VR 14-11
To Extend Deadline to Remove Erosion Control Structure**

Dear Mr. Chadwick:

Please be advised that the Topsail Reef HOA is seeking a variance to amend Variance Order CRC VR 14-11 to extend the deadline to remove the sandbag erosion control structure presently protecting the Topsail Reef Condominiums as follows:

1. The Topsail Reef HOA is requesting a variance to keep the authorized temporary sandbag erosion control structure until such time as the Town of North Topsail Beach installs a terminal groin or until such time as the beach is renourished so as to alleviate the need for the sandbag structure.

This letter is being sent to the Town pursuant to 15A NCAC 07J .0701(c)(7) which requires an applicant to notify adjoining property owners of the application for a variance.

No action is required from you. However, if you wish to file written comments or objections, you may submit them to:

Braxton Davis, Director
NC Division of Coastal Management
Morehead City, NC 28405
(252) 808-2808

Sincerely,



Brian E. Edes

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1. Article Addressed to:

Town of North Topsail
 Beach
 c/o Bryan Chadwick
 1000 NC HWY 210
 Snead's Ferry NC 28460



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John S. Fisher & Jesse Powell
 723 Pine Log Rd.
 Whiteville, NC
 28772-3858



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The name and location of the development as identified on the permit application

Topsail Reef HOA, 2224 New River Inlet Road, North Topsail Beach, NC 28460

Erosion control structures located in Onslow County adjacent to Atlantic Ocean at Topsail Reef Condominiums.

TOPSAIL REEF HOA'S VARIANCE APPLICATION

Petitioner, Topsail Reef Homeowners' Association seeks a variance amending the Final Agency Decision in CRC -VR-14-11 authorizing the existing temporary erosion control structures (i.e. sandbags) presently protecting the 240-unit condominium complex known as "Topsail Reef" located in North Topsail Beach, North Carolina, to remain in place for up to eight years from the date of the issuance of the variance.

Variance Criteria

Pursuant to G.S. § 113-120.1, to qualify for this variance, the Petitioner hereby demonstrates the following:¹

(a) Will strict application of the applicable development rules, standards, or orders issued by the Commission cause the petitioner unnecessary hardships? Explain the hardships.

Yes. The Condominium complex's sole protection from the forces of the Atlantic Ocean consists of the subject sandbag erosion control structure. Removing the sandbag structure would cause significant damage to, or total collapse of, the complex prior to additional beach nourishment and/or the installation of a terminal groin by the Town of North Topsail Beach. Since their installation the complex has experienced several storms and hurricanes which have caused the sandbag structure to be integral to the complex's existence.

The shoreline adjacent to the New River Inlet in North Topsail has experienced unprecedented accelerated erosion for at least the last 8 years. One need look no further than the map of the proposed 2019 Inlet Hazard Area to see that this accelerated erosion has affected the Topsail Reef Condominium complex significantly. Historically, the land on which the complex sits was not within the Inlet Hazard Area however the 2019 Proposed Inlet Hazard Area map includes this site. Fortunately, the CRC has previously granted variances for the HOA to install the current sandbag structure. At present it is protecting the structure from significant damage and collapse. Petitioner seeks authorization to allow this structure to remain in place until additional planned beach nourishment can occur and/or the Town of North Topsail Beach constructs the terminal groin it is presently pursuing through the United States Army Corps of Engineers

In 2016, a year or so after the Town of North Topsail Beach obtained a variance in an emergency hearing to build its own sandbag revetment to save millions of dollars of property and infrastructure the Town entered into an Interlocal Agreement with Onslow County to share the costs of exploring options to construct a structure at the mouth of the inlet that would protect the shoreline adjacent to the New River Inlet and enhance navigation through the inlet. In June of 2017, the Town engaged the firm of Dial Cordy and Associates to access various viable options to achieve these objectives. In September of 2019, the Town entered into a Processing Agreement

¹ The HOA also refers to and incorporates herein by reference its reasons and arguments submitted in connection with its variance application that was subject of the Final Agency Order in CRC -VR-14-11.

with the United States Corps of Engineers wherein the Corps will prepare an EIS for the Town to pursue a shoreline protection project that includes the construction of a terminal groin. The Town and the Corps are presently working through the various data collection, analysis, and public notice and hearing steps associated with the same. It is anticipated that once the EIS has been completed the Town will pursue permits/approvals to proceed with the project as well as the funding needed to complete the project.

Additionally, just weeks ago the Federal Government approved a \$237 million beach restoration project for the Town of North Topsail Beach and Surf City. That project is in its infancy but it is anticipated the initial phase of nourishment will occur within the next 2-3 years.

The existing Rules do not address situations where the rate of erosion is so dramatic as in this case nor the consequences of removing permitted sandbags that are the sole protection for these 240 units. While they indicate that “accelerated” erosion may form the basis for the placement of erosion protection structures, they stop short of addressing how the limited structure envisioned by the Rules could reasonably meet the conditions Topsail Reef now encounters.

(b) Do such hardships result from conditions peculiar to the petitioner's property such as the location, size, or topography of the property? Explain.

Yes. One of the most significant peculiarities facing Topsail Reef is the rapid rate of erosion that has occurred of the last 8 years. This makes this situation far different from the normal assessment of what type of protection is necessary to protect the threatened structures, and how long they should remain in place. As noted in the Final Agency Decision in CRC -VR-14-11, the Topsail Reef Condominium Complex has experienced accelerated erosion rates far beyond those average erosion rates for the subject area. Additionally, the prior inlet realignment project for the New River Inlet had effects peculiar to this property that in part caused the immediate need for the construction of the sandbag structure. These conditions peculiar to the property are likewise the conditions that cause the present hardship in that removing the bags now would cause significant damage/collapse negating the very purpose of their installation.

(c) Do the hardships result from actions taken by the petitioner? Explain.

No. The Petitioners have done nothing to accelerate or otherwise aggravate the erosion problem facing the Property. Again, the hardship is result of the Property’s proximity to the New River Inlet and the peculiar effects the Inlet Realignment Project had/has on the property. Moreover, the Topsail Reef Condominium complex was constructed in compliance with all setback requirements in place at the time it was built.

(d) Will the variance requested by the petitioner (1) be consistent with the spirit, purpose, and intent of the rules, standards or orders issued by the Commission; (2) secure the public safety and welfare; and (3) preserve substantial justice? Explain.

Yes. The variance sought is necessary to preserve the Buildings in the face of imminent danger. Finally, the larger sandbag structure should allow the protection of all 8 of Topsail Reef buildings until such time the Town of North Topsail Beach can either realize the projected beneficial results of their Inlet Realignment and Beach Nourishment Projects, or alternatively provide the required maintenance of these Projects, or alternatively address the erosion that has resulted from these Projects.

Allowing these sandbag structures to remain in place for a period of 8 additional years is consistent with the provisions provided to structures subject to the recognized heightened vulnerability of inlet dynamics. There are no structures within this adjoining Inlet Hazard Area that have been subjected to vulnerability as great as the buildings of the Topsail Reef. These other, less vulnerable structures already receive the benefit of such erosion protection structures being allowed for 8 years. Further, DCM has proposed that this section of shoreline be included within the designation of an Inlet Hazard Area AEC due to its shoreline movement in response to the dynamic inlet conditions posed by New River Inlet.

The variance would secure the public safety and welfare because, without a variance, at least one, and probably more, of the Buildings located on the Property will be significantly damaged if not outright lost. The variance will preserve substantial justice because it will protect the complex long enough for the Town of North Topsail Beach to pursue additional beach nourishment and/or a terminal groin as well as protect the complex long enough to allow the new federally funded project to come to fruition thereby adding additional sand to the system in and around the subject property.

Attachment E: Stipulated Exhibits

1. North Topsail Beach 2009 FEIS
2. CAMA Emergency Major Permit No. 39-12, issued May 4, 2012
3. Commission's May 29, 2012 Variance Order granting bigger bags to HOA for 1-5
4. CAMA Major Permit No. 39-12 AS AMENDED by 2012 Variance
5. Commission's November 21, 2014 Variance Order granting bigger bags to HOA for 6-8
6. Commission's November 24, 2014 Variance Order granting bigger bags to Town
7. Commission's 2016 Variance Order granting Town more time before geotube removal
8. 2017 Agreement of Town and Dial Cordy to study hardened structures for New Inlet
9. Town/County Processing Agreement for Corps EIS, signed 2019
10. March 15, 2021 Corps' Public Notice of Town's EIS for shoreline protection plan
11. Affidavit from Town Mayor McDermon dated March 17, 2021
12. Senate Bill 26, filed January 28, 2021 re: terminal groin funding
13. Sealed statement from Town Engineer Fran Way, P.E. and his CV
14. Email from HOA Secretary Ashley Ford describing efforts by HOA for long-term erosion solution by Town
15. Jacksonville Daily News articles from 2018 and 2019 re: HOA members appointed as aldermen
16. Powerpoint with photographs of the Property and surrounding area



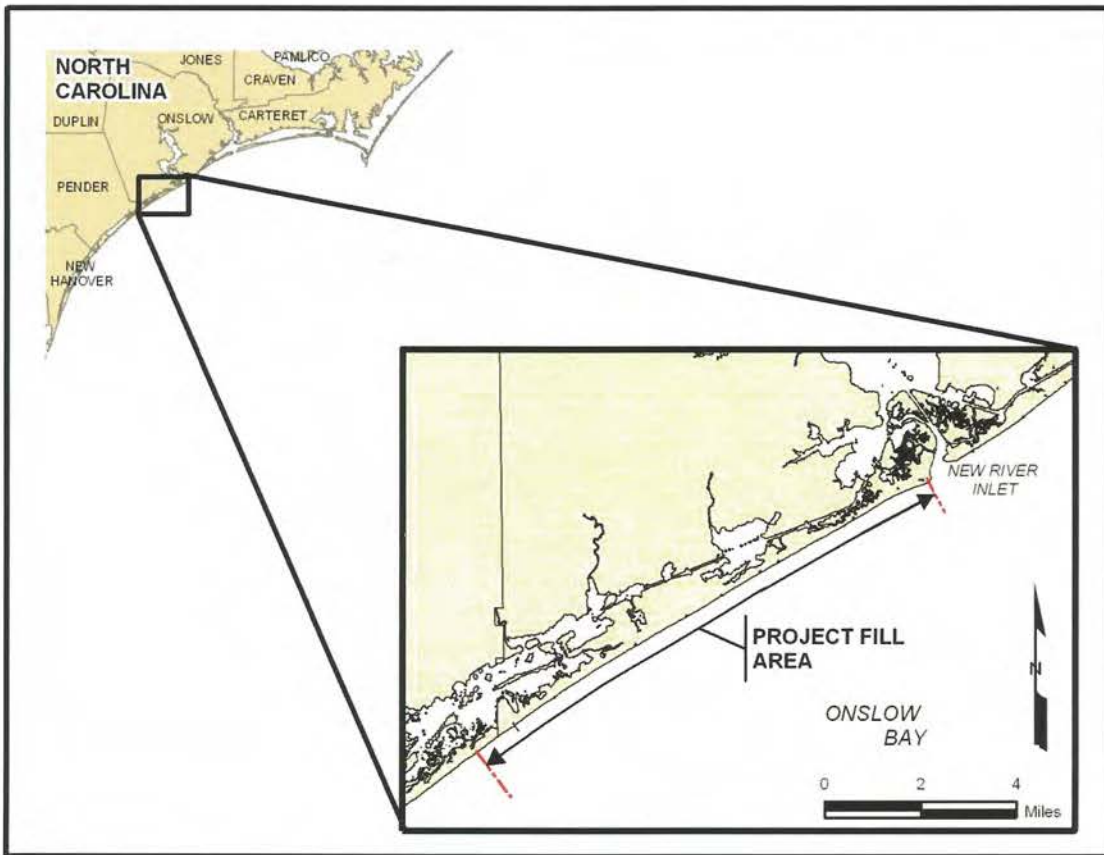
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of Engineers®**
Wilmington District

**VOLUME I OF III
SECTIONS 1-8**

**FINAL
ENVIRONMENTAL IMPACT STATEMENT
DECEMBER 2009**

NORTH TOPSAIL BEACH SHORELINE PROTECTION PROJECT

NORTH TOPSAIL BEACH, NORTH CAROLINA



For more information and comments, contact Mr. Mickey T. Sugg, U.S. Army Corps of Engineers, Regulatory Division, P.O. Box 1890, Wilmington, North Carolina 28402-1890, phone (910) 251-4811, facsimile (910) 251-4025 or via e-mail: mickey.t.sugg@saw02.usace.army.mil

North Topsail Beach Shoreline Protection Project
Final Environmental Impact Statement

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APPENDIX B
Engineering Analysis

**Final Engineering Analysis
Shoreline Protection Project
Town of North Topsail Beach, North Carolina**

Prepared for:

North Topsail Beach, North Carolina

Prepared by:

**Coastal Planning & Engineering of North Carolina, Inc.
4038 Masonboro Loop Rd.
Wilmington, NC 28409**

July 2009

Executive Summary

North Topsail Beach has an 11.1 mile ocean shoreline that occupies the north end of Topsail Island. The Town is bordered on the south by the Town of Surf City and on the north by New River Inlet. Development and infrastructure within the corporate limits of the North Topsail Beach have been damaged during recent storm events and remain vulnerable to damage associated with coastal storms. The north end of the Town is the most vulnerable area due to erosion and shoreline fluctuations caused by uncontrolled changes in position and alignment of the New River Inlet ocean bar channel. The Town is seeking Federal and State permits to allow implementation of a non-Federally funded shoreline and inlet management project that would preserve the Town's tax base, protect its infrastructure, and maintain its tourist oriented economy.

Most of the northern 7.25 miles of the town's shoreline (shoreline north of baseline station 785+00) lies within the Coastal Barrier Resource System (CBRS) and is not eligible for federal storm damage protection. The southern 3.85 miles is presently being evaluated for a possible federal storm damage reduction project.

Seven alternatives were considered and the applicant's preferred alternative is Alternative 3: Implementation of an Inlet Management Plan for New River Inlet and construction of a beach fill along 11.1 miles of the Town's shoreline. The design template for the beach fill within the CBRS includes an artificial dune with a crest elevation of +14.0 feet above NAVD fronted by a variable width horizontal beach berm at elevation +6.0 feet NAVD. The dune feature of the template would only be constructed in areas where the existing dune is inadequate. The beach fill proposed for the southern 3.85 miles is only intended to provide interim protection until such time the federal storm damage reduction project is implemented. The design template for the beach fill along the southern 3.85 miles consists of a horizontal berm at elevation +6.0 feet NAVD.

The inlet management plan includes repositioning the of the main ocean bar channel to a more southerly alignment and periodic maintenance of the preferred position and alignment. The new channel would be constructed to a bottom width of 500 feet and a depth of -18 feet NAVD. Construction of the new channel would require the removal of 635,800 cubic yards of material based on the most recent survey of New River Inlet. Of this total volume 544,400 cubic yards is compatible with the native beach and 91,400 cubic yards incompatible. The incompatible material, which would be deposited in an upland disposal area, consists of a mixture of clay and shells. The compatible inlet material has an average mean grain size of 0.39 mm and would be used to initially construct the beach fill portion of the project along the northern 1.7 miles (9,000 feet) of the project area.

Maintenance of the new channel in the preferred position and along the preferred alignment is critical for the recovery of the extreme northern end of the town's shoreline. Therefore, the inlet management plan includes two channel thresholds which could trigger channel maintenance. The first threshold is based on shoaling of the new channel while the second is based on the position and orientation of the channel. For the shoaling threshold, channel maintenance would

be required when shoaling of the new channel reaches 85% of the initial dredge volume. The position threshold would be exceeded when the channel migrates outside the preferred channel corridor established during initial construction. The time required for the channel to migrate out of the preferred corridor is not known, however; channel shoaling is expected to reach the 85% threshold within 3 to 4 years after construction. Accordingly, formulation of the inlet management plan portion of the project assumed channel maintenance would be required at least every 4 years.

An offshore borrow area has been identified to provide beach fill for the remaining 9.4 miles of the North Topsail Beach shoreline. The borrow area is horseshoe shaped and located between 1 and 2 miles offshore, due south of the Town Hall. The borrow area contains approximately 6,551,000 cubic yards, 357,000 cubic yards of which is coarse material with a mean grain size of 0.33 mm and the balance composed of finer material with a mean grain size of 0.21 mm. The native beach has a mean grain size of 0.23mm.

Hardbottoms exist offshore of North Topsail Beach with some hardbottom areas located approximately 900 to 3,600 ft from the baseline stations. In order to avoid direct impacts on these relatively close hardbottom areas, coarse fill material from the offshore borrow area or from the construction and/or maintenance of the new channel in New River Inlet will be placed in these areas. The use of coarser fill material will require less volume to construct the design beach fill template and will move the point of intercept of the fill with the existing beach profile well landward of the nearshore hardbottom areas. The point of intercept is the seaward most point where the beach fill would ultimately tie into the existing bottom following post-construction adjustments.

The Town of North Topsail Beach proposes to construct the project in 5 phases based on its anticipated funding stream. The first phase of construction would occur between 16 November 2010 and 31 March 2011 (environmental dredging window) and would involve the relocation of the New River Inlet channel. Material from the channel relocation would be used to construct 9,000 feet of the beach fill from baseline station 1160+00, located next to New River Inlet, to 1070+00. Phase II would occur during the November 2012 to March 2013 dredging window and would cover 10,120 feet of shoreline between baseline stations 968+80 to 1070+00. Material for Phase II would come from the offshore borrow area. Coarse material from the offshore borrow area would be placed between baseline stations 1020+00 and 1070+00 (nearshore hardbottom areas) with the balance of the area constructed with material from the northeast portion of the borrow area.

Phase III would be scheduled for the November 2014 to March 2015 dredging window or 4 years after the initial channel relocation and would cover the shoreline between baseline stations 785+00 and 900+00. This is an area that includes hardbottoms approximately 900 to 2,700 ft from the baseline stations and would be constructed using coarse material from either the offshore borrow area or coarse shoal material removed to reestablish the position and alignment of the inlet bar channel. Based on shoaling predictions in the new channel, the 85% shoaling threshold would be exceeded within the first four years following channel relocation which would trigger the first channel maintenance operation. The predicted shoaling of the new

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Phase III would be scheduled for the November 2014 to March 2015 dredging window or 4 years after the initial channel relocation and would cover the shoreline between baseline stations 785+00 and 900+00. This is an area that includes hardbottoms approximately 900 to 2,700 ft from the baseline stations and would be constructed using coarse material from either the offshore borrow area or coarse shoal material removed to reestablish the position and alignment of the inlet bar channel. Based on shoaling predictions in the new channel, the 85% shoaling threshold would be exceeded within the first four years following channel relocation which would trigger the first channel maintenance operation. The predicted shoaling of the new

channel would be sufficient to initially construct the beach fill in Phase III and provide periodic nourishment for the beach fill constructed during Phase I.

Phase IV, which would be scheduled for the 2016 to 2017 environmental dredging window, would be constructed using material from the offshore borrow area and would cover the shoreline north of station 900+00 to 968+80. Phase IV would complete the beach fill within the North and Central Sections of North Topsail Beach. Construction of Phase IV would also correspond to the time nourishment could be required along the Phase II shoreline (968+80 to 1070+00). Since channel maintenance would not be scheduled at this time, nourishment of Phase II would be accomplished using coarse material from the offshore borrow area.

Phase V, the final initial construction phase, would occur during the 2018 to 2019 environmental dredging window and would provide an interim beach fill along the southern 20,320 feet of the town's shoreline. Phase V would also be constructed using material from the offshore borrow area.

Construction of Phase V would be scheduled 8 years after initial construction of the new bar channel in New River Inlet and, based on the theoretical shoaling predictions, could occur at the same time maintenance of the new channel is required. By this time, all or portions of the shoreline segments constructed during Phases I to IV would be in need of periodic nourishment, therefore, the inlet channel maintenance material could be deposited between the inlet and baseline station 785+00. The exact location of disposal would depend on the performance of the fill placed in the four segments.

Following initial construction of the beach fill portion of the project, material removed to maintain the preferred channel position and alignment would be used to provide periodic nourishment of the beach fill between station 785+00 and New River Inlet.

STATE OF NORTH CAROLINA
Department of Environment and Natural Resources
and
Coastal Resources Commission

Permit

for

Major Development in an Area of Environmental Concern
pursuant to NCGS 113A-118

Excavation and/or filling pursuant to NCGS 113-229

Issued to Topsail Reef HOA, 2224 New River Inlet Road, North Topsail Beach, NC 28460

Authorizing development in Onslow County at Atlantic Ocean at Topsail Reef

Condominiums, as requested in the permittee's application dated 5/3/12, incl. the attached
workplan drawings (3), 2 of 4 dated 4/24/12, 3-4 of 4, both undated and AEC Hazard Notice dated 5/1/12

This permit, issued on May 4, 2012, is subject to compliance with the application (where consistent with the permit), all applicable regulations, special conditions and notes set forth below. Any violation of these terms may be subject to fines, imprisonment or civil action; or may cause the permit to be null and void.

- 1) In keeping with 15A NCAC 07H.0308(a)(2)(K) of the rules of the Coastal Resources Commission, the base width of the authorized temporary erosion control structure shall not exceed 20 feet, and the height shall not exceed six feet. This permit does not authorize the placement of additional sandbags in areas where existing temporary erosion control structures already exist.
- 2) No portion of the authorized temporary erosion control structure shall be located more than 20 feet waterward of the imminently threatened structure, which in this case is defined by the waterward most pilings.
- 3) Sandbags used to construct the temporary erosion control structures shall be tan in color and three to five feet wide and seven to 15 feet long when measured flat.

(See attached sheet for Additional Conditions)

This permit action may be appealed by the permittee or other qualified persons within twenty (20) days of the issuing date. An appeal requires resolution prior to work initiation or continuance as the case may be.

This permit must be accessible on-site to Department personnel when the project is inspected for compliance.

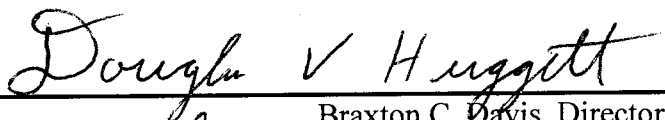
Any maintenance work or project modification not covered hereunder requires further Division approval.

All work must cease when the permit expires on

December 31, 2015

In issuing this permit, the State of North Carolina agrees that your project is consistent with the North Carolina Coastal Management Program.

Signed by the authority of the Secretary of DENR and the Chairman of the Coastal Resources Commission.



for Braxton C. Davis, Director
Division of Coastal Management

This permit and its conditions are hereby accepted.

Signature of Permittee

ADDITIONAL CONDITIONS

NOTE: The configuration of the individual sandbags may vary from that shown on the attached workplan drawings, so long as the dimensions, alignment, and size requirements of Conditions 1, 2, and 3 of this permit are not exceeded.

- 4) Soldier pilings and other types of devices to anchor the sandbags shall not be allowed.
- 5) Sand used to backfill the sandbags shall be of the same general characteristics as the sand in the area in which the material is to be placed. In order to ensure compliance with this requirement, the permittee shall coordinate the location of the backfill borrow source with a representative of the Division of Coastal Management prior to initiation of any backfilling activities.
- 6) The temporary erosion control structures may remain in place for up to five years from May 4, 2012.
- 7) Once the temporary erosion control structure is determined to be unnecessary due to relocation or removal of the threatened structure, a storm protection project constructed by the U.S. Army Corps of Engineers, a large scale beach nourishment project or an inlet relocation project, it shall be removed by the permittee within 30 days of official notification by the Division of Coastal Management regardless of the time limit placed on the temporary erosion control structure. However, removal of the authorized temporary erosion control structures shall not be required if they are covered by dunes with stable and natural vegetation.
- 8) If the temporary erosion control structure becomes damaged, the permittee shall be responsible for the removal of remnants of all portions of the structure(s).
- 9) In order to reduce the possibility of unintended impacts to nesting sea turtles and their nests, the permittee is encouraged to expedite the authorized work as much as possible, to work only during daylight hours, and to coordinate all authorized activities with existing sea turtle monitoring efforts in the area.

NOTE: This permit does not eliminate the need to obtain any additional state, federal or local permits, approvals or authorizations that may be required.

NOTE: Future development of the permittee's property may require a modification of this permit. Contact a representative of the Division at (910) 796-7215 prior to the commencement of any such activity for this determination.

NOTE: The permittee and/or his contractor is urged to meet with a representative of the Division prior to project initiation.

STATE OF NORTH CAROLINA	)	BEFORE THE NORTH CAROLINA
	)	COASTAL RESOURCES COMMISSION
COUNTY OF ONSLOW	)	CRC-VR-12-04
)	
)	
IN THE MATTER OF:)	
PETITION FOR VARIANCE	)	FINAL ORDER
BY)	
TOPSAIL REEF HOMEOWNERS)	
ASSOCIATION, INC.)	

This matter was heard on oral arguments and stipulated facts at an emergency meeting of the North Carolina Coastal Resources Commission (hereinafter CRC) on 24 May 2012 in Morehead City, North Carolina pursuant to N.C. Gen. Stat. § 113A-120.1 and 15A NCAC 7J .0700, *et seq.* Assistant Attorney General Christine A. Goebel, Esq. appeared for the Department of Environment and Natural Resources, Division of Coastal Management. Robert Hornik and T.C. Morphis, Jr. appeared on behalf of Petitioner Topsail Reef Homeowners Association, Inc.

Upon consideration of the record documents and the arguments of the parties, the CRC adopts the following:

STIPULATED FACTS

1. The Petitioner in this case is the Topsail Reef Homeowners' Association ("HOA").
2. The HOA owns the Topsail Reef Condominium property (the "Property") which is located at 2224 New River Inlet Road in North Topsail Beach, Onslow County, North Carolina. Built between 1980 and 1981, the Property includes eight buildings, each having thirty condominium units (240 total). Running from the northeast to the southwest, the buildings are numbered 1 through 8. Each of the buildings is approximately 19,960 square feet in area.
3. Located at the northeastern end of North Topsail Beach, the Property is

approximately a quarter mile from the New River Inlet. The Property is located within the Ocean Erodible and High Hazard Flood Areas of Environmental Concern (“AECs”). The long term average annual erosion rate for the Property is 2 feet per year. The Property is immediately south of the current Inlet Hazard AEC boundary. The Property is within the proposed updated Inlet Hazard AEC, which the Commission reviewed, but then suspended consideration of at its November 2010 meeting, pending completion of all of the ocean shoreline erosion rate updates.

4. Pictures of the site were included in a PowerPoint presentation one of the stipulated exhibits presented to the Commission in Attachment E to the May 22, 2012 Memorandum from Christine A. Goebel to the Commission (“Attachment E”).

5. Over the past six years, the United States Army Corps of Engineers deposited dredge spoil along an area located generally in front of the Property from the New River Inlet Atlantic Intracoastal Waterway crossing and Cedar Bush Cut three times using a pipeline dredge system. Dredge spoil was deposited during the winters of 2007-08, 2009-10 and 2010-11.

6. In 2010, DCM issued CAMA Major Permit No. 79-10 which authorized the Town’s shoreline protection project. Phase 1 of the project authorizes the placement of beach fill 9,000 feet southwest from the north shoulder of the New River Inlet, including in front of the Property. The plan for Phase 1 includes placing approximately 544,400 cubic yards of compatible dredged material along the northern 1.7 miles of project area, including in front of the Property.

7. The Town of North Topsail Beach voted 3 to 1 at its January 4, 2012 meeting to do the following: (1) proceed with Phase 1 of its shoreline protection project and to have the contractor, Coastal Planning and Engineering (“CP&E”), review cost savings with potential

contractors and report back; (2) After review by the town of CP&E's findings, prepare the necessary bid documents in order to begin construction as soon as practicable in 2012; and (3) request that the Board schedule a workshop to review available funding sources and develop a final financial plan. A copy of the meeting minutes was included as a stipulated exhibit presented to the Commission.

8. In a March 9, 2012 letter to the Onslow County Manager, North Topsail Beach Mayor Dan Truman indicated that the project was estimated to cost \$7.5 million. In this letter, Mayor Truman proposed the cost be split in 3 equal shares of \$2.5 million between the Town, Onslow County and the State (through a Water Resources grant). A copy of this letter is a stipulated exhibit. The North Topsail Beach Town Manager, Steve Foster, has indicated that the Town has \$2.5 Million Dollars set aside for this project, that a North Carolina Division of Water Resources grant for \$2.5 Million Dollars is included in the Governor's current budget, and that Onslow County is considering whether to provide the final \$2.5 Million in funding. The Town Manager has also indicated that the North Topsail Board of Commissioners plans to finance the last \$2.5 Million with special obligation bonds to be repaid in about 5 years from room occupancy tax revenues if Onslow County does not authorize funding for the project.

9. If the Town obtains the necessary funding and secures a dredging company, the Town proposes to construct Phase 1 of the project during the conditioned dredging window of November 16, 2012 through March 31, 2013.

10. Hurricane Irene, which made landfall near Cape Lookout on August 27, 2011, impacted North Topsail Beach.

11. In an affidavit, the President of the HOA, Don Street, describes the HOA's

response to erosion following Hurricane Irene. A copy of that affidavit is a stipulated exhibit. Mr. Street and the onsite property manager believed that no further action needed to be taken until after the turtle nesting season had ended, at which time sand could be trucked in from upland sources and placed back under the buildings. Placing sand under the buildings had been the practice of the HOA in years past.

12. At an onsite meeting on November 2, 2011, DCM Field Staff Tara Croft and Jason Dail told HOA representatives that they had the option of applying for a sandbag permit and discussed the options of both sandbags and hauling in sand. This meeting followed the first Nor'easter after Irene.

13. Mr. Street indicates in his affidavit that on or around November 11 and 12, 2011, the remnants from Hurricane Sean removed more sand from under the buildings, with all eight buildings being affected. Mr. Street further states that although he and the property manager considered other options, they had already begun the process of receiving proposals for a sand push and proceeded with that option.

14. Mr. Street's affidavit reports that on December 30, 2011, he met with town officials from the Town of North Topsail Beach in his role as President of the HOA to discuss the use of sandbags to protect the Property. Mr. Street's understanding from town officials was that the Town intended to pursue beach renourishment in the near future. The HOA, through Mr. Street, then decided to switch from trucking in sand to sandbagging.

15. On January 24, 2012, FDH Engineering, Inc., acting at the request of the HOA, conducted an inspection of the Property and determined that pile penetration depth of the building piles varied widely, with at least one pile, among others supporting Building 1, having a

pile penetration depth of only seven feet at that time.

16. On February 3, 2012, the Division of Coastal Management issued the HOA a CAMA general permit to install approximately 1,500 linear feet of sandbag revetment along the ocean shoreline in front of the eight buildings. Consistent with 15A N.C.A.C. 07H .0308 (a)(2)(E) and (K), the permit limits the sandbag structure to 20 feet in width and 6 feet in height as measured from the profile directly beneath the bags. This permit has been renewed twice. (Collectively the three permits are referred to herein as the "First Permit.")

17. Pursuant to the First Permit, the HOA's contractor, Erosion Control Services of NC, Inc. ("ECS"), began installing the sandbag revetment in early March of 2012.

18. As of April 13, 2012, ECS had completed approximately 650 linear feet of revetment adjacent to Buildings 8, 7, 6 and part of Building 5. Since April 13, 2012, no further sandbag installation has taken place.

19. Tom Jarrett, a consultant for the HOA, indicates in his affidavit that southwesterly storm events create conditions on the north end of North Topsail Beach that are especially conducive to beach erosion due to the configuration of the ocean bar channel of the New River Inlet. Currently the bar channel is aligned toward the northeast or toward Onslow Beach. As a result of this alignment, the ebb tide delta of the New River Inlet has migrated north exposing the north end of North Topsail Beach to direct wave attack. In addition, flood tide channels run parallel and adjacent to the beach which accelerates the rate of sediment transport away from the area immediately fronting Topsail Reef.

20. From April 11 to April 13, 2012, the Property was impacted by a moderate Nor'easter during a period of high lunar tides. Mr. Jarrett provided relevant data in his affidavit:

Average Wind Conditions – Wrightsville Beach, NC (Source: <http://tideandcurrents.noaa.gov/>)

Dates	Duration (hrs)	Average Direction Deg true north ⁽¹⁾	Avg. Wind Spd KTS	Max. Wind Gusts KTS
04/07/2012 - 04/08/2012	18.0	226	9.1	23.1
04/08/2012 – 04/09/2012	7.5	225	12.3	24.1
04/12/2012 – 04/13/2012	11.0	230	7.9	9.2
04/13/2012 – 04/14/2012	20.5	204	14.0	15.4
04/14/2012 – 04/18/2012	85.0	211	21.4	25.3

⁽¹⁾ Note: A direction of 150° is approximately shore normal. Wave angles between 150° and approximately 240° would be characterized as coming from the SW.

The wind record covered a total of 127 hours between 20:54 on April 12, 2012 and 04:12 on April 18, 2012. For that period, the waves were from the southwest for 116 hours or over 90 percent of the time. The peak of the storm occurred from the afternoon of April 15 to the early morning hours of April 16. The break in the dates represent a time when winds switched to another direction.

21. The storm coupled with high lunar tides on or about April 6 through 8 and April 11 through 13 generally lowered the sand level directly under the Property by approximately fifty-one inches (4.3 feet), with the drop in elevation becoming most noticeable during the April 12 to 18 timeframe. During this time, portions of the sandbag revetment previously erected by ECS sloughed off as shown in photographs included in the stipulated exhibits included as Attachment E. As a result, the top elevation of the 6-foot tall sandbag revetment permitted under the First Permit would be 6 to 8 feet below the elevation of the first floor of most of the Topsail Reef buildings.

22. To address the ongoing erosion problems, the HOA, through Tom Jarrett, P.E., applied for an emergency major permit on May 3, 2012. DCM required the applicant to provide written notice of the permit application to adjacent property owners. The HOA’s application

proposed a sandbag structure that was inconsistent with 15A N.C.A.C. 07H .308(a)(2)(K) which requires, “Sandbags used to construct temporary erosion control structures shall be tan in color and 3 to 5 feet wide and 7 to 15 feet long when measured flat. Base width of the structure shall not exceed 20 feet, and the height shall not exceed 6 feet.” The applicants proposed to build a sandbag revetment with a bottom width of 40 feet for Buildings 5 through 8 and a bottom width of 45 feet for Buildings 1 through 4 and that portion in front of Building 5 where no sandbags had yet been placed. Further the applicants sought authorization for a sandbag revetment with a maximum crest elevation on the landward portion of the structure of 12.0 feet NAVD as depicted on the plan submitted with the May 3, 2012 permit application.

23. Primarily so Petitioner could seek a variance from the sandbag placement and size restrictions, Petitioner sought an Emergency Permit proposing the larger sandbag structure. On May 4, 2012, CAMA Emergency Major Permit No. 39-12 (“Emergency Permit”) was issued.

24. The Emergency Permit limits the width of the sandbag revetment to 20 feet and its height to 6 feet, and its placement to no further waterward than 20 feet from the nearest waterward piling.

25. Additionally, Condition 2 of the Emergency Permit provides, “No portion of the authorized temporary erosion control structure shall be located more than 20 feet waterward of the imminently threatened structure, which in this case is defined by the waterward most pilings.” In the variance request, Topsail Reef requests permission to place the sandbag revetment as much as 29 feet seaward of the imminently threatened structures (i.e. the waterward pilings of each building).

26. Additional erosion beneath the Buildings was observed on May 5 through 7,

2012. Exposed wires and sewer pipes were observed underneath some of the buildings.

27. On May 8, 2012, Building 3 lost two pilings. The water supply lines to two buildings have been damaged.

28. As of May 21, 2012, DCM has not received any objections from adjoining riparian property owners regarding either the Emergency Permit or the requested variance.

29. As of May 21, 2012, the Town of North Topsail Beach has not condemned any of the buildings.

30. As seen in the recent site photographs presented to the Commission in the Stipulated Exhibits included in Attachment E, Buildings 5 through 8 are slightly seaward of the erosion scarp. Buildings 1 through 4 are further seaward of the erosion scarp. If a variance for the sandbags is granted and the sandbags are installed in compliance with the plans submitted to the Commission as part of the variance request, beach access, which is already adversely impacted by the structures and existing sandbags on the beach should not be worsened substantially.

31. On May 9, 2012, Petitioners filed this variance request with DCM seeking relief from the several of the terms set forth in the Emergency Permit and from other applicable statutes, rules and existing permits in order to construct a sandbag structure in the location and in the dimensions proposed in their application. In addition, Petitioners requested that the Commission hold an expedited hearing on the variance request before the regularly scheduled June 20-21, 2012 CRC meeting.

32. Finally, Petitioners also seek a variance from the permit condition allowing the sandbags to remain for 5 years pursuant to 15A NCAC 07H .0308(a)(2)(G). Petitioners now seek

a variance allowing any sandbags installed (whether under the First Permit, the Emergency Permit, or this proposed variance) to remain for up to 8 years from the date of the variance.

CONCLUSIONS OF LAW

1. The CRC has jurisdiction over the parties and the subject matter.
2. Following a May 9, 2012 letter request by Petitioner for an expedited hearing, the Chair scheduled a telephonic meeting of the CRC for May 24, 2012 to hear the variance request pursuant to the provisions of N.C.G.S. § 143-318.12(f). The decision to hold an expedited hearing was based on Petitioner's *prima facie* claim that the Property was experiencing unexpected, increasing and severe erosion which was imminently threatening the structure. The decision to hold the expedited hearing was explicitly found not to be a determination on the merits of Petitioner's variance request. All notices for the proceeding were adequate and proper.
3. Petitioner has demonstrated that strict application of CAMA rules, in particular 15A NCAC 7H .0308(a)(2)E and .0308(a)(2)K (the "Sandbag Rules") will result in unnecessary hardship as to Buildings 1, 2, 3, 4, and 5 but not as to Buildings 6, 7, and 8 for the reasons set forth herein.

The sandbag rules apply to "imminently threatened structures" and are an exception to the ban on hardened structures imposed by the General Assembly and the Commission. By setting limitations on the placement, size and duration of sandbags, the Commission ensures that the manner in which sandbags are used is well-defined and their use is limited in application. In this case, Petitioner has asserted that the Commission's "rules will not provide the protection needed to allow the structures, especially Buildings 1, 2, 3, 4 and 5, to survive without significant damage or total collapse until the beach nourishment project is completed." Petitioner

argues that for the first five buildings, the regulation-size sandbags are not sufficient to protect the buildings from damage and these buildings require a larger sandbag structure in order to protect their foundations. The Commission agrees and finds that although 6-foot by 20-foot sandbags are generally appropriate for the intended purpose of temporary protection of structures, 6-foot by 20-foot sandbag structure may not prevent waves from overtopping the bags and eroding the area under Buildings 1, 2, 3, 4, and 5 in this case because the buildings are closer to the effects of the inlet and are the ones most seriously impacted by erosion to-date,. Thus, the Commission affirmatively finds that Petitioner has demonstrated that it meets the first factor required by North Carolina General Statute § 113A-120.1(a)(1) for Buildings 1, 2, 3, 4, and 5.

However, the Commission finds that Petitioner has failed to met its burden to show that strict application of CAMA rules, in particular 15A NCAC 7H .0308(a)(2)E and .0308(a)(2)K will result in unnecessary hardship as to Buildings 6, 7, and 8. Specifically, the Commission finds that Petitioner has already placed sandbags at Buildings 6, 7, and 8 under the Emergency Permit and these sandbags are consistent with the Sandbag Rules (“existing sandbags”). The existing sandbags have been on site for at least a month, yet Petitioner has failed to demonstrate that the existing sandbags are not functioning to protect the foundations of Buildings 6, 7, and 8. Thus, the Commission affirmatively finds that Petitioner has failed to meet the first factor required by North Carolina General Statute § 113A-120.1(a)(1) for Buildings 6, 7, and 8.

4. Petitioner has demonstrated that the hardship caused by strict application of the Sandbag Rules to Buildings 1, 2, 3, 4, and 5 results from conditions peculiar to Petitioner’s property such as the location, size, or topography of the property. Specifically, Petitioner’s eight buildings are located on the oceanfront on North Topsail Beach. Even though the buildings are

not in the currently designated Inlet Hazard AEC for the New River Inlet, conditions on the property are exacerbated by the presence of flood channels that have developed immediately in front of the Property. Thus, the Commission affirmatively finds that Petitioner has demonstrated that the unnecessary hardships applicable to Buildings 1, 2, 3, 4, and 5 result from conditions peculiar to its property. Therefore, Petitioner has met the second factor required by North Carolina General Statute § 113A-120.1(a)(2) for these buildings.

5. Petitioner has demonstrated that this hardship was not caused by the HOA but by conditions peculiar to the property. Specifically, the Commission finds that Petitioner has done nothing to accelerate the erosion affecting the property and has taken steps to address the problem, and therefore meets this statutory criterion. Thus, the Commission affirmatively finds that Petitioner has demonstrated that it did not cause the hardship. Therefore, Petitioner has met the third factor required by North Carolina General Statute § 113A-120.1(a)(3).

6. The Petitioner has demonstrated (a) that the requested variance is consistent with the spirit, purpose and intent of the Commission's rules, (b) that it will secure public safety and welfare, and (c) that it will preserve substantial justice.

a. Limited Variance is consistent with spirit, purpose and intent of rules.

The size and placement of the sandbag structure included in the proposed project set forth in the variance request to protect Buildings 1, 2, 3, 4, and 5 is consistent with the spirit, purpose, and intent of the rules for the following reasons as long as the variance is limited to five years and is subject to the condition that the sandbags installed by the HOA, whether pursuant to the First Permit, the Emergency Permit, or the Variance and Permit, be removed once they become unnecessary because of beach nourishment unless

they are covered over with sand and permanent vegetation.

The Sandbag Rules are an exception to the Commission's ban on permanent erosion control structures. By setting limitations on the placement, size and duration of sandbags, the Commission recognized that they are to be used in certain circumstances with well-defined criteria. In this case, the Commission finds that the regulation size sandbag structure may not be sufficient to protect the foundations of Buildings 1, 2, 3, 4, and 5, which are closer to the inlet and have been most damaged by erosion, until the proposed beach nourishment takes place and/or the inlet is realigned as planned.

However, the Commission finds that Petitioner has failed to demonstrate that a variance is required for Buildings 6, 7, and 8. These buildings are presently protected by existing sandbags installed pursuant to an Emergency Permit which have been in place for at least a month. Petitioner has not met its burden of showing that the existing sandbags do not afford protection to the foundations of the Buildings 6, 7, and 8.

Furthermore, Petitioner has requested a variance to keep the requested sandbag structure in place for up to eight years instead of five years on the grounds that the Property is located adjacent to the existing Inlet Hazard AEC and is included within the proposed Inlet Hazard AEC "box". In its Shoreline Erosion Policies, the Commission has determined that "[T]emporary measures to counteract erosion, such as the use of sandbags . . . should be allowed, but only to the extent necessary to protect property for a short period of time until threatened structures may be relocated or until the effects of a short-term erosion event are reversed." (Emphasis added). "In all cases, temporary stabilization measures must be compatible with public use and enjoyment of the beach."

15A NCAC 7M .0202(e). The Commission finds that Petitioner has failed to meet its burden to show that extending the expiration date for the temporary sandbags structure allowed under the term of the permits, including the Emergency Permit, is within the spirit, purpose, and intent of the sandbags rules.

b. A limited variance is consistent with public safety and welfare

Granting Petitioner’s request in part is consistent with public safety and welfare. Specifically, due to the proximity of Buildings 1, 2, 3, 4, and 5 to the ocean and the existing erosion, the public’s access in front of these buildings is already limited. Thus, increasing the waterward footprint of the sandbags an additional nine feet from what is currently allowed under the Emergency Permit will not have significant additional impacts on the public’s beach.

c. Granted limited variance will preserve substantial justice.

The Commission finds that granting Petitioner’s variance in part will preserve substantial justice because it will allow the Petitioner to protect its property while it seeks a long-term solution and undertakes efforts to complete a beach nourishment project.

* * * * *

Given the reasons set forth above in Paragraphs 6(a), (b) and (c), the Commission affirmatively finds that Petitioner has demonstrated in part that the limited variance granted herein for Buildings 1, 2, 3, 4, and 5 is consistent with the spirit, purpose and intent of the Commission’s rules, that it will secure public safety and welfare, and that it will preserve substantial justice. Therefore, Petitioner has met the fourth factor required by North Carolina General Statute § 113A-120.1(a)(4).

ORDER

THEREFORE, the variance from 15A NCAC 7H .0308(a)(2)E and .0308(a)(2)K is GRANTED in Part and DENIED in Part subject to the condition that the sandbags authorized pursuant to this variance be removed if they become unnecessary for any reason, including because of beach nourishment, unless they are covered with sand and permanent vegetation.

Specifically, Commission GRANTS Petitioner's request as follows:


1. This variance authorizes Petitioner to build a sandbag revetment with a bottom width of forty-five feet for Buildings 1, 2, 3, 4, and 5 where no sandbags currently exist.
2. This variance authorizes Petitioner to build a sandbag revetment twelve feet with a crest elevation of 12.0 feet NAVD for Buildings 1, 2, 3, 4, and 5.
3. This variance authorizes Petitioner to place the sandbag revetment as much as twenty-nine feet waterward of Buildings 1, 2, 3, 4, and 5.

The Commission DENIES Petitioner's request that the temporary erosion control structures (i.e. sandbags) be allowed to remain for up to eight years from the date of the issuance of the variance. Under the terms of the existing permits, including the Emergency Permit, the temporary erosion control structures may remain for up to five years from the date of the issuance of the First Permit and/or the Emergency Permit. All other requests not specifically permitted under the terms of this variance are denied.

The granting of this variance does not relieve Petitioner of the responsibility for obtaining a CAMA permit from the proper permitting authority. To the extent that the CAMA permit issued pursuant to this variance contain specific terms not addressed herein, the specific terms of the CAMA permit are controlling.

This variance is based upon the Stipulated Facts set forth above. The Commission reserves the right to reconsider the granting of this variance and to take any appropriate action should it be shown that any of the above Stipulated Facts is not true.

This the 29th day of May, 2012.



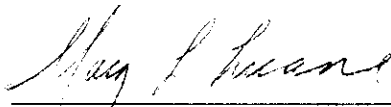
Robert R. Emory, Jr., Chairman
Coastal Resources Commission

CERTIFICATE OF SERVICE

This is to certify that I have this day served the foregoing FINAL ORDER upon the parties by the methods indicated below:

Topsail Reef Homeowners Assoc. Inc. c/o Susan Prather 2224 New River Inlet Road, Unit 131 North Topsail, NC 28460	<i><u>Certified Mail/ Return Receipt Requested</u></i>
Robert Hornik T.C. Morphis, Jr. The Brough Law Firm 1829 E. Franklin Street, Suite 800-A Chapel Hill, NC 27514	<i><u>U.S. Mail and Electronically at</u></i> <u>hornik@broughlawfirm.com</u> <u>morphis@broughlawfirm.com</u>
Christine A. Goebel, Esq. Assistant Attorney General N.C. Department of Justice P.O. Box 629 Raleigh, NC 27603	<i><u>Electronically at</u></i> <u>cgoebel@ncdoj.gov</u>
Braxton A. Davis, Executive Director Angela Willis Division of Coastal Management 400 Commerce Avenue Morehead City, NC 28557	<i><u>Electronically at</u></i> <u>Braxton.Davis@ncdenr.gov</u> <u>angela.willis@ncdenr.gov</u>

This the 29th day of May, 2012.



Mary L. Lucasse
Special Deputy Attorney General
N.C. Department of Justice
P.O. Box 629
Raleigh, N. C. 27602
Commission Counsel

Copy

Permit Class
AMENDED

Permit Number
39-12

(By CRC Variance)

STATE OF NORTH CAROLINA
Department of Environment and Natural Resources
and
Coastal Resources Commission

Permit

for

Major Development in an Area of Environmental Concern
pursuant to NCGS 113A-118

Excavation and/or filling pursuant to NCGS 113-229

Issued to Topsail Reef HOA, 2224 New River Inlet Road, North Topsail Beach, NC 28460

Authorizing development in Onslow County at Atlantic Ocean at Topsail Reef

Condominiums, as requested in the permittee's application dated 5/3/12, incl. the attached
workplan drawings (3), 2 of 4 dated 4/24/12, 3-4 of 4, both undated and AEC Hazard Notice dated 5/1/12

This permit, issued on May 29, 2012, is subject to compliance with the application (where consistent with the permit), all applicable regulations, special conditions and notes set forth below. Any violation of these terms may be subject to fines, imprisonment or civil action; or may cause the permit to be null and void.

- 1) In keeping with 15A NCAC 07H.0308(a)(2) of the rules of the Coastal Resources Commission (CRC), as well as the Variance granted by the CRC on May 24, 2012, and the Variance Order signed by the CRC Chairman on May 29, 2012, the base width of the authorized temporary erosion control structures located in front of buildings 6 through 8 shall not exceed 20 feet, and the height shall not exceed 6 feet.
- 2) No portion of the authorized temporary erosion control structures located in front of buildings 6 through 8 shall be located more than 20 feet waterward of the imminently threatened structure, which in this case is defined by the waterward most pilings.

(See attached sheets for Additional Conditions)

This permit action may be appealed by the permittee or other qualified persons within twenty (20) days of the issuing date. An appeal requires resolution prior to work initiation or continuance as the case may be.

This permit must be accessible on-site to Department personnel when the project is inspected for compliance.

Any maintenance work or project modification not covered hereunder requires further Division approval.

All work must cease when the permit expires on

December 31, 2015

In issuing this permit, the State of North Carolina agrees that your project is consistent with the North Carolina Coastal Management Program.

Signed by the authority of the Secretary of DENR and the Chairman of the Coastal Resources Commission.

Douglas V Huggatt
for **Braxton C. Davis, Director**
Division of Coastal Management

This permit and its conditions are hereby accepted.

Signature of Permittee

ADDITIONAL CONDITIONS

- 3) In keeping with the Variance granted by the CRC on May 24, 2012, and the Variance Order signed by the CRC Chairman on May 29, 2012, the base width of the authorized temporary erosion control structures located in front of buildings 1 through 5 shall not exceed a base width of 45 feet, and the height shall not exceed a crest elevation of 12 feet NAVD.
- 4) No portion of the authorized temporary erosion control structures located in front of buildings 1 through 5 shall be located more than 29 feet waterward of the imminently threatened structure, which in this case is defined by the waterward most pilings.
- 5) Sandbags used to construct the temporary erosion control structures shall be tan in color and three to five feet wide and seven to 15 feet long when measured flat.

NOTE: The configuration of the individual sandbags may vary from that shown on the attached workplan drawings, so long as the dimensions, alignment, and size requirements of Conditions 1, 2, 3, 4 and 5 of this permit are not exceeded.

- 6) Soldier pilings and other types of devices to anchor the sandbags shall not be allowed.
- 7) Sand used to backfill the sandbags shall be of the same general characteristics as the sand in the area in which the material is to be placed. In order to ensure compliance with this requirement, the permittee shall coordinate the location of the backfill borrow source with a representative of the Division of Coastal Management prior to initiation of any backfilling activities.
- 8) In keeping with 15A NCAC 07H.0308(a)(2)(G) of the rules of the Coastal Resources Commission (CRC), as well as the Variance granted by the CRC on May 24, 2012, and the Variance Order signed by the CRC Chairman on May 29, 2012, the temporary erosion control structures may remain in place for up to five years from May 4, 2012.
- 9) Once the temporary erosion control structure is determined to be unnecessary due to relocation or removal of the threatened structure, a storm protection project constructed by the U.S. Army Corps of Engineers, a large scale beach nourishment project or an inlet relocation project, it shall be removed by the permittee within 30 days of official notification by the Division of Coastal Management regardless of the time limit placed on the temporary erosion control structure. However, removal of the authorized temporary erosion control structures shall not be required if they are covered by dunes with stable and natural vegetation.
- 10) If the temporary erosion control structure becomes damaged, the permittee shall be responsible for the removal of remnants of all portions of the structure(s).
- 11) In order to reduce the possibility of unintended impacts to nesting sea turtles and their nests, the permittee is encouraged to expedite the authorized work as much as possible, to work only during daylight hours, and to coordinate all authorized activities with existing sea turtle monitoring efforts in the area.

NOTE: This permit does not eliminate the need to obtain any additional state, federal or local permits, approvals or authorizations that may be required.

ADDITIONAL CONDITIONS

NOTE: Future development of the permittee's property may require a modification of this permit. Contact a representative of the Division at (910) 796-7215 prior to the commencement of any such activity for this determination.

NOTE: The permittee and/or his contractor is urged to meet with a representative of the Division prior to project initiation.

STATE OF NORTH CAROLINA	)	BEFORE THE NORTH CAROLINA
	)	COASTAL RESOURCES COMMISSION
COUNTY OF ONSLOW	)	CRC-VR-14-11
)	
)	
IN THE MATTER OF:)	
PETITION FOR VARIANCE	)	FINAL AGENCY DECISION
BY TOPSAIL REEF HOMEOWNERS)	
ASSOCIATION, INC.)	

This matter was heard on oral arguments and stipulated facts at the regularly scheduled meeting of the North Carolina Coastal Resources Commission (hereinafter CRC) on October 23, 2014¹ in Wilmington, North Carolina pursuant to N.C. Gen. Stat. § 113A-120.1 and 15A NCAC 7J .0700, *et seq.* I. Clark Wright, Jr. appeared on behalf of Petitioner Topsail Reef Homeowners Association, Inc. (HOA). Assistant Attorney General Christine A. Goebel, Esq. appeared for the Department of Environment and Natural Resources, Division of Coastal Management. Upon consideration of the stipulated facts, stipulated exhibits, the record documents and the arguments of the parties, the CRC adopts the following:

STIPULATED FACTS

1. Petitioner in this case is the Topsail Reef Homeowners’ Association (“HOA”).
2. The HOA manages the Topsail Reef Condominium property (“Property”) which is located at 2224 New River Inlet Road in North Topsail Beach, Onslow County, North Carolina. Built between 1980 and 1981, the Property includes eight buildings, each with thirty condominium units (total 240 units). Running from the northeast to the southwest, the buildings are numbered 1 through 8. Each of the buildings is approximately 19,960 square feet in area.

¹ Petitioner had initially submitted a request for an expedited hearing on this variance request September 4, 2014. Based on the information provided, the chairman of the Commission conditionally granted Petitioner’s request for an expedited hearing. However, Petitioner withdrew its request for an expedited hearing by email communication on September 22, 2014 and the matter was heard at the regularly scheduled Commission meeting on October 23, 2014.

3. Located at the northeastern end of North Topsail Beach, the Property is approximately a quarter mile from the New River Inlet. The Property is located within the Ocean Erodeable and High Hazard Flood Areas of Environmental Concern (“AECs”). The long term average annual erosion rate for the Property is two feet per year according to the DCM erosion rate maps which were last updated in 2011 (Long Term Shoreline Change Study and Setback Factors, 2011 Update, Map Sheet North Topsail Beach, Sheet 2 of 2). The Property is immediately south of the current Inlet Hazard AEC boundary. The Property is within the proposed updated Inlet Hazard AEC, which the Coastal Resources Commission (“Commission”) reviewed but did not finalize at its November 2010 meeting, pending completion of the ocean shoreline erosion rate updates.

4. Pictures of the site were provided to the Commission in the Stipulated Exhibits attached to DCM’s Staff Recommendation.

5. Over the past eight years, the United States Army Corps of Engineers deposited dredge spoil along an area located generally in front of the Property three times during the winters of 2007-08, 2009-10 and 2010-11. The dredge spoil was taken using a pipeline dredge system from the New River Inlet Atlantic Intracoastal Waterway crossing and Cedar Bush Cut.

6. **The First Permit.** On February 3, 2012, the Division of Coastal Management (“DCM”) issued a CAMA General Permit (“First Permit”) to the HOA to install a sandbag revetment along 1,500 linear feet of ocean shoreline in front of all eight buildings at the Property. Consistent with 15A NCAC 07H .0308(a)(2)(E) and (K), the permit limited the bag revetment to a section 6 feet high and 20 feet wide as measured from the profile directly beneath the bags. The sand bag revetment installation was begun by Erosion Control Services (“ECS”) in March 2012.

As of April 13, 2012, approximately 650 linear feet of the revetment adjacent to Buildings 8, 7, 6 and part of Building 5 was completed.

7. During the period from April 11 to April 13, 2012, the Property was impacted by a moderate northeaster that occurred during a high lunar tide. Between April 12 and April 18, 2012, a 127-hour period, waves were from the southwest for 116 hours, or over 90 percent of the time. The elevation of the sand on the beach and under the Property eroded approximately 51 inches (4.3 feet). Portions of the existing sandbag revetment sloughed off. As a result, the top elevation of the six-foot tall sandbag revetment permitted under the 2012 General Permit was six to eight feet below the elevation of the first floor of Buildings 1 through 4.

8. **Emergency Permit.** Subsequently, the HOA applied for an emergency Major CAMA Permit on May 3, 2012 to install a sandbag revetment with a bottom width of 45 feet and +12 feet NAVD crest elevation. The permit request was for placement of the larger revetment for Buildings 1 through 4, and a revetment with a bottom width of 40 feet and a crest elevation of +12 feet NAVD for Buildings 5 through 8. CAMA Emergency Major Permit No. 39-12 was issued on May 4, 2012. In accordance with 15A NCAC 07H .0308(a)(2)(E) and (K), the permit limited the width of the sandbag revetment to 20 feet and its height to six feet. The sandbag revetment was to be placed no further waterward than twenty feet from the water ward pilings. The permit and photos of the alignment conditions at the time of the 2012 application were provided to the Commission in the Stipulated Exhibits attached to the DCM Staff Recommendation.

9. The HOA requested an expedited variance from the permit to allow for an expanded sandbag revetment with a bottom width of 45 feet and a maximum crest elevation of

+12 feet NAVD, to allow placement of the sandbags a maximum distance of 29 feet seaward of the waterward most pilings of each building, and to allow the sandbags to remain for up to eight years. On May 24, 2012, the Commission granted the variance request in part and allowed placement of the expanded revetment in front of Buildings 1 through 5 to extend a maximum distance of twenty-nine feet seaward from the most waterward piles. The Commission denied the request to place the larger revetment in front of Buildings 6, 7 and 8. The Commission also denied the request that the sandbags be allowed to remain for eight years instead of five years. A copy of the CRC's final order issued May 29, 2012 was provided to the Commission as a Stipulated Exhibit attached to the DCM Staff Recommendations. DCM issued a permit pursuant to the variance that included conditions limiting the sandbag alignment in front of Buildings 6, 7 and 8 to the six foot by twenty foot revetment contemplated by a general permit. The permit (No 39-12 as amended pursuant to the variance granted by the Commission on May 24, 2012) was provided to the Commission as a Stipulated Exhibit attached to the DCM Staff Recommendation.

10. On October 10, 2012, the revetment constructed pursuant to the 2012 variance and repairs to the existing revetment in front of Buildings 6, 7 and 8 were completed. Hurricane Sandy impacted the North Carolina coast on October 28, 2012 creating strong winds, swells, and storm surge, and causing the near shore flood channel to be pushed up directly against the revetment on the shoreline from the northeast corner of Building 1 to the northeast corner of Building 6. The flood channel ran south of the Property towards the St. Regis Condominiums. By October 31, 2012, the channel was three or four feet deep at low tide along the Property. Photos depicting the flood channel in 2012 before the beach nourishment were provided to the Commission in the Stipulated Exhibits attached to the DCM Staff Recommendation.

11. **Inlet Dredging and Beach Nourishment.** In November 2012, dredging for relocation of the New River Inlet channel began with the dredged sand placed on the beach south of the inlet, including on the beach front area ocean ward of the Property. The information in this paragraph is provided by the Phase 1, New River Inlet Channel Realignment and Beach Restoration, Post Construction Report (CP&E, May 2013). Material removed from the inlet was placed along 7,735 feet of shoreline to widen the beach berm (+6.0 ft. NAVD) approximately 135 feet. The project extended south from New River Inlet to Shipwatch Villas, or from USACE reference station 1163+00, on the north end of Topsail Island, to station 1090+00 (See information included in Stipulated Exhibit 27 on Bearing Point Drawing 02 for stations adjoining Topsail Reef which was provided to the Commission as an attachment to the DCM Staff Recommendations). Approximately 592,000 cubic yards were removed from the 3,500 ft. long channel and placed on the shoreline of North Topsail Beach. The fill area experienced a waterline extension (+1.4 ft. NAVD) an average distance of 170 feet. The in-place volumetric calculations reflect the beach received approximately 566,244 cubic yards, or an average fill density of 73 cubic yards per linear foot. (See information included in the CP&E Presentation of Feb 2013 which was provided to the Commission as a Stipulated Exhibit attached to the DCM Staff Recommendations). The seaward extent of the post-nourishment berm, the 6 foot elevation contour, is shown in the Stipulated Exhibits attached to the DCM Staff Recommendation. Future re-nourishment of the shoreline in front of Topsail Reef is proposed. The Town indicated in a letter dated August 29, 2014, which was provided to the Commission as a Stipulated Exhibit to the DCM Staff Recommendation, that “[i]n 2016 we have scheduled a large-scale maintenance of the entire phase 1 area,” which includes the area in front of the Property.

12. **Minor Modification.** On August 22, 2014, the HOA submitted a request for a minor modification to CAMA Major Permit No. 39-12, the permit issued pursuant to the 2012 variance. The HOA requested permission to enlarge the existing sandbag structure in front of Buildings 6 through 8 so that it would be the same size as the sand bag revetment permitted and installed on front of Buildings 1 through 5 in 2012. *See* first paragraph of the Project Description – Modification, provided to the Commission in the Stipulated Exhibits attached to the DCM Staff Recommendation. DCM denied this request on August 29, 2014 because it was not consistent with 15A NCAC 07H .0308(a)(2)(K).

13. **Condition of the Property.** According to the HOA's coastal engineer, who has analyzed beach profiles from surveys performed in May 2013 and April 2014 at beach monitoring stations 11+40, 11+45, 11+50 and 11+55 (the stations along the beach at the Property) the face of the berm (an approximate six-foot elevation contour) has receded from 105 feet at station 11+40 to 167 feet at station 11+55. (Survey data is depicted in the Stipulated Exhibits provided to the Commission as attachments to the DCM Staff Recommendation.)

14. Diagrams in the Stipulated Exhibits show the progressive movement of the face of the berm from May 13, 2013 through August 21, 2014. These measurements were made by Don Street (a member of the HOA) and ECS and are based on the horizontal distance from the end of walkways in front of each building to the edge of the escarpment (the six-foot elevation contour). The measurements are provided in Tables 1 and 2, below. The measurements show a high rate of erosion of the berm in front of the Property since the beach nourishment project.

15. The end of the expanded bag section in front of Building 5 is exposed. According to the HOA's engineer, loss of the berm would result in a limited work window of 2 to 4 hours

per day during periods of low tide. Pictures showing this condition were provided to the Commission as Stipulated Exhibits attached to DCM's Staff Recommendation.

16. According to an analysis of the August 2014 survey compared to the April 2014 survey by the HOA's engineer, the rate of loss of the berm along the Property beach front is from eight to twelve feet per month for the period from May 2013 to August 2014. Over 58 days, from June 25 to August 28, 2014, the rate of berm recession has been from 0.5 to 1.1 feet per day, *i.e.*, approximately fifteen to thirty-three feet per month. The rate of change at Building 5 through 8 is at the low end of that range but the accelerated rates of erosion are continuing.

Table 1 Measurement to Edge of Berm from Edge of Walkways, May 13, 2013 to August 28, 2014 (from ECS)

bldg.	5/13/13	6/25/14	7/3/14	7/5/14	7/12/14	7/14/14	7/15/14	7/16/14	7/20/14	7/29/14	8/7/14	8/21/14
8	195'	106'	102'	99'	92'	92'	85'	83'	82'	82'	77'	61'
7	190'	96'	92'	90'	82'	81'	74'	71'	71'	71'	63'	41'
6	190'	85'	80'	76'	72'	70'	63'	57'	56'	56'	49'	34'
5	190'	74'	67'	63'	60'	58'	53'	48'	47'	46'	30'	27'
4	185'	61'	57'	51'	48'	46'	42'	39'	38'	33'	12'	0'
3	180'	42'	40'	20'	20'	18'	15'	12'	17'	16'	-20'	-20'
2	170'	19'	16'	6'	6'	1'	0'	-11'	-11'	-24'	-24'	-24'
1	170'	3'	-5'	-10'	-14'	-16'	-24'	-24'	-24'	-24'	-24'	-24'

Table 2 Total Berm Retreat Distances, During July and August 2014 and from May 2014 to August 2014 (from ECS)

Building Number:	8	7	6	5	4	3	2	1
Loss from June 25 to August 21, 2014	45'	33'	51'	47'	61'(1)	62'(2)	43'(2)	27'(3)
Loss from May 2013 to Aug. 2014 (17 months)	134'	149'	156'	163'	185'	200'	194'	194'

- (1) Total berm retreat in 51 days, shoreline at toe of revetment
- (2) Total berm retreat in 40 days, shoreline at toe of revetment
- (3) Total berm retreat in 20 days, shoreline at toe of revetment

17. Petitioner obtained additional beach profile surveys during the week of August 28, 2014. Those beach profiles, along with previous survey profiles, extend from the buildings seaward to approximately -10.0 (NAVD). Graphs displaying profiles from November 2012, January 2013, May 2013, April 2014 and August 2014, extending from baseline stations 11+30 to 11+60, were provided to the Commission in the Stipulated Exhibits attached to the DCM Staff Recommendation.

18. An aerial photo depicting the North Topsail Beach shoreline shows the Baseline Stations for the New River Inlet Channel Realignment and Beach Restoration Project and provides assistance in evaluating beach profile information. This photo was provided to the Commission in the Stipulated Exhibits attached to the DCM Staff Recommendation.

19. James W. Forman, Jr., P.E. provided a letter to clarify the relationship between the escarpment and the water ward edge of the existing sandbags in front of Buildings 6, 7, and 8. His letter was provided to the Commission as one of the Stipulated Exhibits attached to the DCM Staff Recommendation.

20. An evaluation of the erosion along the shoreline fronting Topsail Reef was undertaken by Theodore J. Sampson, one of the HOA's environmental consultants, and was provided to the Commission as a Stipulated Exhibit to the DCM Staff Recommendation.

21. An evaluation of the erosion conditions along the shoreline fronting Topsail Reef was undertaken by Yogi Harper, Erosion Control Specialists of North Carolina, Inc., and was provided to the Commission as a Stipulated Exhibit attached to the DCM Staff Recommendation.

22. The Town of North Topsail Beach stated in the notice to adjacent landowners dated August 18, 2014 that the area of the shoreline to the north of the Property is experiencing

inordinate erosion. A copy of that notice was provided to the Commission in the Stipulated Exhibits attached to the DCM Staff Recommendation.

23. The shoreline upon which to construct a sandbag erosion protection structure is receding at a rate of eight to ten feet per month in front of Buildings 6, 7 and 8.

24. **Variance Request.** On September 9, 2014, Petitioner submitted a variance request letter to DCM and requested that the Commission hear the matter at an expedited hearing before the next regularly-scheduled Commission meeting. Petitioner later withdrew the request for the expedited hearing due to fact that the HOA voted not to undertake a special assessment to fund the sandbags at that time. Petitioner requests a variance in order to construct a sandbag structure in the location and in the dimensions proposed in their application and further requests that the sandbag structure remain in place for up to eight years from the date of the variance.

25. The proposed development sought by this variance petition is inconsistent with the Commission's rules relating to the width and height of sandbag revetments allowed for temporary erosion control structures, and the length of time such structures may remain in place. The application for a modification to the current Permit to allow an oversized revetment for the protection of Buildings 6, 7, and 8 was denied by DCM on August 29, 2014.

26. Petitioner and DCM stipulated that the drawings submitted with the permit modification application on August 22, 2014 govern this variance request even though updated revisions to these drawings were provided as part of the variance application package in order to illustrate current conditions. The August 22, 2014 drawings were provided to the Commission as Stipulated Exhibits attached to the DCM Staff Recommendation.

27. The August 22, 2014 drawing labeled 03 in the lower right corner (which was submitted with the application requesting a permit modification) was intended to show the layout of existing sandbags in front of Buildings 6 through 8 relative to an alignment that was approved in compliance with a twenty-foot width and six-foot height limitation pursuant to the existing permit. A copy was provided to the Commission as a Stipulated Exhibit.

31. The drawing labeled 04 in the lower right corner (which was submitted with the modification application) is intended to depict the proposed layout of sandbags in front of Buildings 6 through 8 relative to the alignment sought by the variance request; i.e., an alignment with a base width no greater than forty-five feet, extending up to +12 feet NAVD high, and with a waterward extension of no more than twenty-nine feet beyond the most seaward building piling. This original drawing does not reflect the existing grade after beach nourishment and the subsequent erosion. The current grade at the seaward extent of the proposed alignment is approximately +6 feet NAVD. Excavation for placement of the bottom row of new sandbags proposed for the oversized alignment would extend to approximately -3 feet NAVD. By agreement with DCM staff on September 15, 2014, this drawing has been revised to reflect the existing grade and to show the area that would need to be excavated to allow for bag placement. The exact location that would be excavated is not indicated on this drawing as conditions at the time of the installation will determine what will be needed. However this drawing does reflect, by indication of the elevation of the bottom of the alignment, that excavation may be necessary to approximately -3 feet NAVD.

32. The erosion rate depicted in the table submitted with the permit modification application reflects erosion based on data available at the time the application was made, and

forms documents accelerated erosion. Additional erosion has occurred since the time that data was provided. Tables from the Permit Modification application were included in Stipulated Fact 16 set forth above.

33. Finally, the HOA also seeks a variance from the permit condition allowing the sandbags to remain for 5 years pursuant to 15A NCAC 07H.0308(a)(2)(G). Petitioner requests that any sandbags installed (under either the prior permits or this proposed variance) be allowed to remain for up to eight years from the date of the issued variance.

STIPULATED EXHIBITS

Included for the Commission's review were the following Stipulated Exhibits:

- a. DCM General Permit No. 57562-D, issued on April 1, 2012
- b. DCM General Permit No. 59165-D, issued on March 2, 2012
- c. DCM General Permit No. 57533-D, issued on February 3, 2012
- d. DCM Exemption Number – NTB11-03, issued on November 17, 2011
- e. DCM Emergency Major Permit Number 39-12, issued on May 4, 2012
- f. CRC-VR-12-04 Final Order on Topsail Reef HOA's 2012 Variance Request
- g. DCM Major Permit Number 39-12 as amended by variance
- h. DCM Denial Letter to Topsail Reef HOA dated August 29, 2014
- i. Notices to Adjacent Property Owners of the Variance Petition
- j. Photographs:
 - a. Vicinity map;
 - b. Aerial of the New River Inlet;
 - c. Aerial showing the area surrounding Topsail Reef;
 - d. Area Near Topsail Reef Aerial with Nourishment Survey Stations;
 - e. Aerial showing Topsail Reef Buildings;
 - f. View looking north from Topsail Reef Building 1 showing the Flood Tide Channel taken May 7, 2012;
 - g. Showing the sandbag transition from the six by twenty foot alignment to the enlarged revetment;
 - h. Photos taken September 9, 2014 (8 photos);
 - i. Photos taken September 24, 2014 (3 photos).
- k. Topsail Reef's Application for Emergency Modification dated August 22, 2014;

- l. Ocean Hazard AEC Notice dated May 1, 2012;
- m. Dune and Sandbag Revetment Drawings 03, 04, 05;
- n. Aerial Photo-Graphic of Town of NTB Proposed Channel Realignment;
- o. Alignment Drawing 04, Rev 1, dated September 14, 2014;
- p. Beach Profiles for Baseline Stations 11+35 to 11+55;
- q. CP&E Figure 1: Aerial Graphic - Shoreline Baseline Stations dated April 3, 2013;
- r. September 10, 2014 letter to Chair Gorham from James Forman, PE and resume;
- s. September 13, 2014 Letter to HOA from Theodore J. Sampson and resume;
- t. September 10, 2014 Letter to HOA from Yogi Harper and resume;
- u. Pictures (7) dated May 8, 2012 of Sandbag Alignment Repair Areas;
- v. Pictures (13) dated October 31, 2012 of Flood Channel along Sandbag Alignment;
- w. Bearing Point Site Plan Drawing 02, Rev 1 dated August 29, 2014;
- x. Graphics of data for baseline stations 1140+00, 1145+00, 1150+00, and 1155+00;
- y. CP&E February 7, 2013 presentation;
- z. Town of NTB CAMA Riparian Notification August 15, 2014;
- aa. Town of NTB Letter dated August 29, 2014 to Topsail Reef HOA;
- bb. Powerpoint Presentation presented to Commission at October 22, 2014 meeting.

CONCLUSIONS OF LAW

1. The CRC has jurisdiction over the parties and the subject matter.
2. All notices for the proceeding were adequate and proper.
3. Petitioner has met each of the requirements set forth in Statute § 113A-120.1(a)

and 15 NCAC 07J .0703(f) which must be found before a variance can be granted as set forth more specifically below.

- a. **Petitioner has shown that strict application of 15A NCAC 07H . 0308(a)(2)(E) will cause unnecessary hardships.**

Strict application of Rule 15A NCAC 7H .0308(a)(2)(E) and (K) would cause an unnecessary hardship because there is an increased risk of imminent damage to the condominium

buildings due to the accelerated erosion at the Site. Specifically, the Town of North Topsail Beach completed its Inlet Realignment and Beach Nourishment Project in approximately 2012. However, positive impacts to the shoreline in front of the HOA may take five to fifteen years to develop. The next anticipated beach renourishment project to maintain this location is not expected until 2016. Petitioner has argued that without a variance, the HOA would suffer an unnecessary hardship because while the HOA is waiting the benefits of the inlet realignment and beach nourishment project, the conditions have worsened to the point where a sandbag revetment of the size allowed under the rules is inadequate to protect the buildings from the accelerated erosion at the site.

DCM agreed in the Staff Recommendation that strict application of the Commission's rules will cause unnecessary hardships based on the data reflecting accelerated erosion at the site and the increase in the inlet flood channel near Buildings 6 through 8. DCM notes that the six foot by 20 foot sandbags authorized and installed waterward of Buildings 6 through 8 in 2012 appear to be protecting the buildings and are partially covered by sand and dune vegetation. However, DCM does not dispute that the existing sandbag revetment may not be sufficient to protect the buildings if the flood channel encroaches on this area. DCM also noted that any rapid change to the Site conditions may hinder or prevent the proposed expansion of the existing sandbag structure.

Based on this information and data provided by Petitioner regarding the accelerated erosion and the flood channel impacting the shoreline by the HOA and given DCM's concurrence, the Commission affirmatively finds that Petitioner has met the first factor required in N.C.G.S. § 113A-120.1(a)(2).

b. Petitioner has demonstrated that any hardships result from conditions peculiar to Petitioner's property.

The Commission affirmatively finds that Petitioner has demonstrated that the hardship results from conditions peculiar to the property. Specifically, the long term average annual erosion rate for the Property is two feet per year according to the DCM erosion rate maps which were last updated in 2011. However in a 127-hour period between April 12 and April 18, 2012 the elevation of the sand on the beach and under the property eroded approximately 51 inches (4.3 feet). In addition, from May 2013 to August 2014, the rate of loss of the berm along the Property beach front was from eight to twelve feet per month. Over the fifty-eight days from June 25 to August 28, 2014, the rate of berm recession has been from 0.5 to 1.1 feet per day, i.e. approximately 15 to 33 feet per month. The rate of erosion at Buildings 5 through 8 is at the low end of that range but that area is still experiencing accelerated rates of erosion.

In addition, the Property has been negatively impacted by the Town's Inlet Relocation Project. Since the project was completed an inlet flood channel adjacent to the Property has shifted landward in response to changing dynamics in the nearby New River Inlet. To date the inlet realignment has not resulted in natural accretion of the shoreline which was an anticipated result of the project. Moreover, as a result of accelerated erosion, beach nourishment of the Site which was completed during the Inlet Realignment Project has failed to the extent that the sand placed on the shoreline has not remained on the shoreline and the next planned beach nourishment is not until 2016.

In its recommendation, DCM argued that Petitioner's hardships were not caused by conditions peculiar to the property as shorelines adjacent to an inlet experience volatile

conditions including both erosion and accretion in the normal course and such erosion is, therefore, not a condition peculiar to Petitioner's property.

In this case, and without prejudice to any future consideration of this property or any other property located in or near an Inlet Hazard AEC, the Commission affirmatively finds that insofar as the subject property is not located within the currently applicable Inlet Hazard AEC for the New River Inlet, the aggressive shifting of the inlet flood channel landward along this shoreline and the accelerated erosion are conditions peculiar to the Property. Thus, the Commission affirmatively finds Petitioner has met the second factor set forth in N.C.G.S. §113A-120.1(a)(2).

c. Petitioner has demonstrated that the hardship does not result from actions taken by Petitioner.

The Commission affirmatively finds that Petitioner has demonstrated that the hardship does not result from actions taken by the Petitioner. Specifically, Petitioner states that it has done nothing to accelerate or otherwise aggravate the erosion problem at the property. Furthermore, in its recommendation to the Commission, DCM agreed that Petitioner has done nothing to accelerate the erosion affecting the shoreline at the Property. Moreover, DCM noted that when the structures were built Petitioner complied with the erosion setbacks established by the Coastal Resources Commission.

For these reasons, the Commission affirmatively finds that any hardships are not caused by actions taken by the Petitioner. Therefore, Petitioner has met the third factor set forth in N.C.G.S. §113A-120.1(a)(2).

- d. Petitioner has demonstrated that the requested variance is consistent with the spirit, purpose and intent of the Commission's rules, will secure public safety and welfare, and will preserve substantial justice.**

The Petitioner has demonstrated (a) that the requested variance is consistent with the spirit, purpose and intent of the Commission's rules, (b) that it will secure public safety and welfare, and (c) that it will preserve substantial justice. Specifically, the sandbag rules are, in effect, an exception to the General Assembly and the Commission's ban on permanent erosion control structures, and allow the temporary use of sandbags for "imminently threatened structures." While the Commission's rules set limitations for use of sandbags which are sufficient in most cases, in some situations the allowed sandbags may not be of sufficient size to offer temporary protection as intended by the rules. In this case, if the accelerated erosion described by Petitioner's engineer continues to move landward, it may preclude or hinder later expansion of the existing sandbag structure. Accordingly, in its recommendation to the Commission, DCM agreed that a larger sandbag revetment in front of Buildings 6 through 8 was needed as temporary protection while the Town of North Topsail Beach's inlet relocation project continues to be implemented. Given the agreement on this issue and based on the facts presented, the Commission affirmatively finds that the requested variance is consistent with the spirit, purpose and intent of the Commission's rules,

The second assessment to be made is whether the variance proposed by Petitioner will impact public safety and welfare. Petitioner submits that without a variance, at least one and probably more of the Buildings located on the property could soon be damaged by accelerated erosion on the shoreline. In its Staff Recommendation DCM notes that if the accelerated erosion described by Petitioner's engineer continues to move landward, it may preclude or hinder later

expansion of the existing sandbag structure. For this reason, DCM did not disagree with the conclusion that such measures are needed as temporary protection while the Town of North Topsail Beach's inlet relocation project continues to be implemented. Given the agreement on this issue and based on the facts presented, the Commission affirmatively finds that the requested variance will serve to protect public safety and welfare.

The third assessment to be made as part of the analysis of the fourth variance factor is whether by granting the requested variance, the Commission will preserve substantial justice. In this case, Commission affirmatively finds that granting Petitioner's request will preserve substantial justice. Specifically, at the time the permit was initially granted in 2012, the Commission's rules provided that sandbags were allowed to remain in place for five years. Since that time, the Commission's rules have been changed. Sandbags are now allowed to remain in place for eight years. Therefore, it would preserve substantial justice to allow the sandbags protecting the Property to remain in place for eight years from the date the permit to install the sandbags was issued.

For these reasons, the Commission has found that Petitioner has shown that the requested variance is consistent with the spirit, purpose and intent of the Commission's rules, will secure public safety and welfare and will preserve substantial justice. Therefore, Petitioner has met the fourth factor in N.C.G.S. §113A-120.1(a)(2).

ORDER

THEREFORE, the variance from 15A NCAC 7H. 0308(a)(2)(E) is GRANTED subject to the following conditions:

1. All sandbags installed in front of Buildings 1 through 8 on the Property in

conformance with a permit or permit modification issued pursuant to variances from the Commission's Sandbag Rules are temporary and may only remain in place for eight years up to May 4, 2020.

2. Petitioner must provide the following documentation to DCM no later than August 21, 2015 (nine months from the date of this Final Agency Decision)

- a. Verification of the cost to construct the proposed sandbag revetment;
- b. Minutes from an HOA Board meeting authorizing the HOA to borrow an amount required to finance the proposed development and/or documentation demonstrating that the HOA members approved the project cost and means of financing the project;
- c. A copy of the HOA Bylaws providing authority for the HOA president to sign loan document.

If the required proof is not provided within this nine month timeframe, the variance will be null and void and the proposed development will no longer be approved or permitted.

3. The granting of this variance does not relieve Petitioner of the responsibility for obtaining a CAMA permit from the proper permitting authority and all other required permits.

This variance is based upon the Stipulated Facts set forth above. The Commission reserves the right to reconsider the granting of this variance and to take any appropriate action should it be shown that any of the above Stipulated Facts is not true or has substantially changed.

This the 21st day of November, 2014.

Frank D. Gorham III

Frank D. Gorham, III, Chairman
Coastal Resources Commission

CERTIFICATE OF SERVICE

This is to certify that I have this day served the foregoing FINAL AGENCY DECISION

upon the parties by the methods indicated below:

Topsail Reef Homeowners Assoc, Inc.
c/o Community Association Management of
NC, Inc. , Registered Agent
P.O. Box 79032
Charlotte, NC 28271

Certified Mail/ Return Receipt Requested

I. Clark Wright, Jr., Esq,
209 Pollock Street
New Bern, NC 28560

U.S. Mail and electronically at
icw@dhwlegal.com

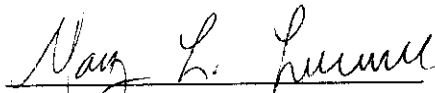
Christine A. Goebel, Esq.
Assistant Attorney General
N.C. Department of Justice
P.O. Box 629
Raleigh, NC 27603

Electronically at
cgoebel@ncdoj.gov

Braxton C. Davis
Angela Willis
Division of Coastal Management
400 Commerce Avenue
Morehead City, NC 28557

Electronically at
braxton.davis@ncdenr.gov
angela.willis@ncdenr.gov

This the 21st day of November, 2014.



Mary L. Lucasse
Special Deputy Attorney General and Commission Counsel
N.C. Department of Justice
P.O. Box 629
Raleigh, N. C. 27602

Permit Class
AMENDED

Permit Number
39-12

(By CRC Variance)

STATE OF NORTH CAROLINA
Department of Environment and Natural Resources
and
Coastal Resources Commission

Permit

for

Major Development in an Area of Environmental Concern
pursuant to NCGS 113A-118

Excavation and/or filling pursuant to NCGS 113-229

Issued to Topsail Reef HOA, 2224 New River Inlet Road, North Topsail Beach, NC 28460

Authorizing development in Onslow County at Atlantic Ocean at Topsail Reef

Condominiums, as requested in the permittee's letter dated 8/22/14, including the
attached workplan drawings (11), as referenced in Condition No. 1 of this permit.

This permit, issued on December 16, 2014, is subject to compliance with the application (where consistent with the permit), all applicable regulations, special conditions and notes set forth below. Any violation of these terms may be subject to fines, imprisonment or civil action; or may cause the permit to be null and void.

- 1) Unless specifically altered herein, all development shall be carried out in accordance with the attached workplan drawings (11), Figure 1 dated 4/3/13, Figures 2-6 dated received in the Morehead City office on 8/27/14, Sheets 1-3 and 5 dated 8/22/14, Sheet 4 dated revised 8/29/14, and AEC Hazard Notice dated 5/1/12.
- 2) In keeping with 15A NCAC 07H.0308(a)(2) of the rules of the Coastal Resources Commission (CRC), as well as the Variance granted by the CRC on October 23, 2014, and the Variance Order signed by the CRC Chairman on November 21, 2014, the base width of the authorized temporary erosion control structures located in front of buildings 6 through 8 shall not exceed 45 feet, and the crest elevation of the structure shall not exceed 12 feet NAVD.

(See attached sheets for Additional Conditions)

This permit action may be appealed by the permittee or other qualified persons within twenty (20) days of the issuing date.

This permit must be accessible on-site to Department personnel when the project is inspected for compliance.

Any maintenance work or project modification not covered hereunder requires further Division approval.

All work must cease when the permit expires on

December 31, 2015

In issuing this permit, the State of North Carolina agrees that your project is consistent with the North Carolina Coastal Management Program.

Signed by the authority of the Secretary of DENR and the Chairman of the Coastal Resources Commission.



Braxton C. Davis, Director
Division of Coastal Management

This permit and its conditions are hereby accepted.

Signature of Permittee

ADDITIONAL CONDITIONS

- 3) No portion of the authorized temporary erosion control structures located in front of buildings 6 through 8 shall be located more than 29 feet waterward of the imminently threatened structure, which in this case is defined by the waterward most pilings.
- 4) Sandbags used to construct the temporary erosion control structures shall be tan in color and three to five feet wide and seven to 15 feet long when measured flat.

NOTE: The configuration of the individual sandbags may vary from that shown on the attached workplan drawings, so long as the dimensions, alignment, and size requirements of Conditions 2, 3 and 4 of this permit are not exceeded.

- 5) Soldier pilings and other types of devices to anchor the sandbags shall not be allowed.
- 6) In keeping with 15A NCAC 07H.0308(a)(2)(G) of the rules of the Coastal Resources Commission (CRC), as well as the Variance granted by the CRC on October 23, 2014, and the Variance Order signed by the CRC Chairman on November 21, 2014, the temporary erosion control structures may remain in place up to May 4, 2020.
- 7) Once the temporary erosion control structure is determined to be unnecessary due to relocation or removal of the threatened structure, a storm protection project constructed by the U.S. Army Corps of Engineers, a large scale beach nourishment project or an inlet relocation project, it shall be removed by the permittee within 30 days of official notification by the Division of Coastal Management regardless of the time limit placed on the temporary erosion control structure. However, removal of the authorized temporary erosion control structures shall not be required if they are covered by dunes with stable and natural vegetation.
- 8) If the temporary erosion control structure becomes damaged, the permittee shall be responsible for the removal of remnants of all portions of the structure(s).
- 9) In order to reduce the possibility of unintended impacts to nesting sea turtles and their nests, the permittee is encouraged to expedite the authorized work as much as possible, to work only during daylight hours, and to coordinate all authorized activities with existing sea turtle monitoring efforts in the area.
- 10) This amended permit shall be attached to the original of Permit No. 39-12, which was issued by CRC Variance on 5/29/12, and copies of both documents shall be readily available on site when Division personnel inspect the project for compliance.
- 11) All conditions and stipulations of the active permit remain in force under this amended permit unless specifically altered herein.

ADDITIONAL CONDITIONS

- NOTE:** This permit does not eliminate the need to obtain any additional state, federal or local permits, approvals or authorizations that may be required.
- NOTE:** Future development of the permittee's property may require a modification of this permit. Contact a representative of the Division at (910) 796-7215 prior to the commencement of any such activity for this determination.
- NOTE:** The permittee and/or his contractor are urged to meet with a representative of the Division prior to project initiation.

STATE OF NORTH CAROLINA
COUNTY OF ONSLOW

BEFORE THE NORTH CAROLINA
COASTAL RESOURCES COMMISSION
CRC-VR-15-05

IN THE MATTER OF:
PETITION FOR VARIANCE
BY TOWN OF NORTH TOPSAIL BEACH

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)

FINAL AGENCY DECISION

This matter was heard on oral arguments and stipulated facts at the regularly scheduled meeting of the North Carolina Coastal Resources Commission (hereinafter “Commission”) on July 16, 2015 in Beaufort, North Carolina pursuant to N.C. Gen. Stat. § 113A-120.1 and 15A NCAC 7J .0700, *et seq.* Assistant Attorney General Christine A. Goebel, Esq. appeared for the Department of Environment and Natural Resources, Division of Coastal Management (hereinafter “DCM”) and Attorney Brian E. Edes appeared on behalf of Petitioner Town of North Topsail Beach.

Upon consideration of the record documents and the arguments of the parties, the Commission adopts the following:

STIPULATED FACTS

1. The Petitioner in this case is the Town of North Topsail Beach (“Petitioner” or “Town”). The Town is represented by the Town’s attorney, Brian E. Edes, Esq.
2. The site at issue in this case is located at the north end of North Topsail Beach, and includes the beach waterward of the first line of stable natural vegetation from just north of the Topsail Reef condominiums to the northernmost house on New River Inlet Road. There are 39 parcels of land with 20 duplexes structures (which include 40 residences) along this stretch of the beach (hereinafter the “Site”). At the time the 20 structures were constructed, they were

“second row” homes. The Site is described in the Project Narrative section of the stipulated exhibits, and in other portions of the stipulated exhibits. The Town holds easements on these oceanfront parcels in order to use the property for the purpose of implementing beach nourishment projects.

3. The Site is located within the Ocean Erodible, High-Hazard Flood and Inlet Hazard Areas of Environmental Concern (AEC).

4. The long-term average annual erosion rate at the Site is 2-feet per year. The Site is entirely within the Inlet Hazard AEC which uses the rate for the adjacent ocean hazard area per 15A NCAC 7H .0310(a)(1). DCM agreed with Petitioner that this Site experienced accelerated erosion in the 12-15 months before the November 2014 variance hearing.

5. According to the Town’s Project Engineer, Tom Jarrett, P.E. of Coastal Planning & Engineering (CP&E), one of the unique features of the area is the influence of the New River Inlet, or more specifically, the ebb tide delta of the inlet, on sediment transport along the shoreline. This is demonstrated by the photo shown in Exhibit 15 in which incoming waves from the southeast are refracted around the ebb tide delta resulting in a change in sediment transport direction (as indicated by the arrows) just south of New River Inlet. The area in which the direction of sediment transport changes as a result of wave refraction is commonly referred to as a nodal zone. In general, the nodal zone is characterized by the net movement of material away from or out of the zone. While a nodal zone will generally always exist adjacent to a tidal inlet, the influence of the nodal zone on the shoreline of North Topsail Beach is enhanced due to the absence of significant shoal accumulations on the south side of the inlet. The absence of shoal material south of the inlet is one of the issues the channel relocation project was designed to

address, i.e., the purpose of moving the channel was to encourage the reconfiguration of the inlet's ebb tide delta through the redistribution of shoal material from the north side of the inlet to the south side. In support of this fact, Mr. Jarrett provided portions of the Final Environmental Impact Statement for the North Topsail Beach Shoreline Protection Project prepared in December of 2009 (hereinafter "FEIS").

History of the Site

6. The north end of the Town has a history of erosion. Detailed information about the history of erosion and past beach nourishment projects was provided to the Commission in Appendix B of the FEIS. Mr. Jarrett also prepared a summary of the nourishment projects which were completed between 2002 and 2011 (hereinafter "Jarrett Erosion History Report").

7. According to the FEIS, the erosion of the shoreline south of New River Inlet has been a persistent problem since around 1984 when the bar channel of New River Inlet shifted its alignment toward Onslow Beach. Prior to 1984, the north end of North Topsail Beach was accreting at an average rate of 6.1 feet per year. Following the change in channel position and orientation, the north end began to erode at an average rate of 5.3 feet per year. Most of the accelerated erosion was attributed to the north end's increased exposure to wave energy. That is, prior to the channel shift, the south side of the ebb tide delta provided a breakwater effect with waves breaking relatively far offshore. With the loss of the south side delta, more wave energy was transmitted directly to the shoreline. This, combined with the development of flood channels running close to and parallel to the north end, greatly increased sediment transport rates to the north.

8. Since 1993, and despite the use of sandbag structures in some places, 11

residential structures, all of which were located seaward of the existing 20 structures at the Site, were either removed or lost to erosion.

The Town's Inlet Management Plan/FEIS

9. Beginning in 2006, the Town hired CP&E to develop an Inlet Management Plan for the New River Inlet (hereinafter "Inlet Management Plan.") This Inlet Management Plan was completed in December 2009 and memorialized in the FEIS publication. The entire Inlet Management Plan is covered by the Department of the Army permit SAW 2005-00344 dated May 16, 2001. CAMA Major Permit No. 79-10 was issued on July 21, 2010 authorizing Phase I of the Inlet Management Plan. The October 12, 2012 modification authorized a change to the beach fill density, the amount of material to be removed from the ocean bar channel, and removed a previously permitted upland disposal site. This CAMA permit was further modified on September 26, 2013 and authorized Phase 5 of the Inlet Management Plan to be developed during the 2014-15 dredging window, an increase in beach fill densities, and allowed Phase 5 to take place before Phases 2-4 if necessary.

10. Phase 1 of the Inlet Management Plan was completed in February 2013 and included the repositioning of the New River Inlet ocean bar channel to a more central location between the south end of Onslow Beach and the north end of North Topsail Beach. The material removed during the repositioning of the channel was used as beach fill along 7,730 feet of shoreline south of New River Inlet.

11. The Town's purpose in moving the ocean bar channel of New River Inlet, as stated in the FEIS, was to induce sand accumulation on the south side of the inlet's ebb tide delta. Based on the documented historic behavior of the inlet, the Town believed that moving the

channel to a more central position with an alignment approximately perpendicular to the adjacent shorelines would result in accretion of the shoreline south of the inlet. According to Dr. William Cleary's letter, the FEIS estimated that the time required for the new channel to have a positive impact on the shoreline was three to four years.

12. According to Mr. Jarrett, the behavior of the shoreline on the north end of North Topsail Beach is tied to the position and alignment of the main bar channel of New River Inlet. Morphological studies of New River Inlet, reported in the FEIS, describe the relationship between the position and alignment of the channel and the response of the shorelines on both sides of the inlet. The FEIS also identified a position and alignment of the bar channel that would provide a beneficial impact on the north end shoreline. Based on the FEIS, the Town of North Topsail Beach elected to artificially move the channel to the preferred position and alignment indicated by the morphological studies.

13. The construction of Phase 1 moved the mean high water (MHW) shoreline an average of 272 feet seaward of the pre-project MHW shoreline in the area between Building No. 1 of Topsail Reef and the south shoulder of New River Inlet (baseline stations 1149+00 to 1160+00). Based on an August 2014 beach profile survey by Gahagan & Bryant, the MHW shoreline north of Topsail Reef had receded between 200 and 250 feet since completion of Phase 1, which is equivalent to rates of between 130 feet per year and 167 feet per year. Visual inspections of the beach show it has continued to erode since the August 2014 survey and the MHW shoreline has returned to essentially its pre-project position. According to Mr. Jarrett, while the rate of loss of the fill placed during Phase 1 of the management plan has been higher than anticipated, the loss is comparable to losses experienced from previous fills created by the

USACE through disposal of navigation maintenance material removed during maintenance of the AIWW and portions of the channel passing through Cedar Bush Cut from the AIWW to the inlet.

14. According to Mr. Jarrett, based on the documented history of shoreline changes along the north end of North Topsail Beach, the recent acceleration in the rate of shoreline change is not related to the channel relocation project. *See*, Jarrett Erosion History Report. Instead, Mr. Jarrett states that much of the accelerated erosion can be attributed to the unnatural shoreline configuration created by the beach fill, i.e., the conditions that were causing the north end to erode prior to relocating the channel, such as the absence of a significant shoal on the south side of the inlet and the presence of flood channels, still persist. Mr. Jarrett states these conditions will continue to exist until such time the newly aligned channel effects the predicted changes in the ebb tide delta of New River Inlet. Until that time, waves will continue to impact the area in such a way as to cause accelerated sediment transport from the north end to New River Inlet.

15. According to the “Year 2 Post-Construction Physical Monitoring Report” dated October 2014 and prepared by CP&E (“Monitoring Report”), monitoring of the inlet has demonstrated some of the expected results are taking place with sand accumulating on the south side of the inlet. However, the rate of build-up, as predicted, has been relatively slow. As a result, the north end of North Topsail Beach has continued to experience high rates of erosion. As of August 2014, most of the fill placed north of the Topsail Reef Condominiums in February 2013 has been lost.

16. The FEIS stated the periodic maintenance of the ocean bar channel would be

necessary at approximately four-year intervals in order to keep the channel in its preferred position and alignment. Material removed to maintain the channel is to be used to provide periodic nourishment of the North Topsail Beach shoreline including the shoreline nourished during Phase 1.

17. The USACE permit allows maintenance of the channel to be accomplished once every four years providing one of two channel maintenance thresholds are met. One channel threshold is associated with shoaling of the channel and the second is based on the position and alignment of the channel. Following Phase 1's completion in February 2013, the Town is not permitted to maintain the channel until the 2016/2017 environmental dredge window.

18. Based on site photographs taken in late September 2014, the final remnants of the artificial dune which was part of the Phase 1 project and was evident in August 7, 2014 photos, has completely eroded.

19. In addition to the threat to homes, flooding of the area has increased with flood waters spilling on to New River Inlet Road and side streets at least four times in late-2014 during high tides.

Larger Sandbag Revetment CAMA Permit Process

20. Beginning in the early summer of 2014, Town and its agents contacted DCM and inquired about possible options for protecting homes at the Site from erosion taking place following Phase 1. DCM issued a modification to permit No. 191-05 on August 14, 2014 authorizing sand from an upland source to be placed at the Site. This permit was originally issued on December 5, 2005 following Hurricane Ophelia and authorized dune reconstruction at the Site. The Town has not undertaken the work authorized by the modified permit.

21. On or about August 15, 2014, the Town, with help from its CP&E consultants Tom Jarrett and Ken Willson, submitted a CAMA Major Permit Application seeking to install approximately 1,450 linear feet of geotextile tubes (7.5 feet tall and 45 feet circumference) at the Site. This permit application was deemed complete (except for the receipt of all of the easement agreements) by DCM on August 27, 2014, and was sent to the resource agencies for comment as part of the CAMA Major Permit process. Because the proposed geotextile tube was inconsistent with the Commission's rules limiting the size of sandbags used for temporary erosion control, DCM planned to deny this permit application after the public notice period ended on September 19, 2014. The Town indicated it planned to seek a variance from this denial.

22. On September 18, 2014, DCM received a request from the Town that the initial geotextile tubes proposal be modified by adding 35,000 to 50,000 cubic yards of sand in a "sand bench" to raise the elevation of the beach at the Site to approximately 6 feet in elevation, and to place the geotextile tube on top of the "sand bench." DCM determined that the significant changes and increased scope of the modified project required a new application for a CAMA permit from the Town, including new notice of the modified project to the public and adjacent neighbors, and new review by the resource agencies.

23. Following discussions between the Town, its agents, DCM and other resource agencies, the Town submitted its proposal with a final sandbag design on September 26, 2014. On October 3, 2015, DCM determined the new CAMA Major Permit application was complete. On October 2, 2014, DCM retired the Town's initial application following receipt of the new application for a CAMA Major Permit based on the modified design.

24. The final design requested permission to install sandbags at the Site from the

existing larger sandbag revetment at Building No. 1 of Topsail Reef extending north approximately 1,450 feet parallel to the existing shoreline. A 50-foot return wall would extend landward from the north end of the sand bag structure just north of the home located at 2378 New River Inlet Road. A plan view of the sand bag revetment and a typical cross-section view of proposed revetment were provided to the Commission in the stipulated exhibits. The proposed borrow site for the sand needed to fill the proposed sandbags is an area of approximately five acres on the point, just north of the Site, also called “the spit.”

25. Topsail Reef received two variances from the Commission in July 2012 and October 2014 to construct a revetment just south of the Site similar to the larger size sandbag structure proposed by the Town.

26. The proposed sandbag revetment would follow an alignment roughly parallel to the seaward-most support piles of the threatened residential structures with the landward toe of the revetment positioned as close as practical to the front support piles of the structures. In this regard, the authorized temporary erosion control structure would be located no more than 45 feet waterward of the waterward most pilings of those buildings controlling the alignment of the temporary erosion control structure from 2304 New River Inlet Rd. to the northern terminus of the temporary erosion control structure, namely those structures at: 2304 New River Inlet Road, 2314 New River Inlet Road, 2354 New River Inlet Road, 2362 New River Inlet Road, 2368 New River Inlet Road, and 2378 New River Inlet Road. No portion of the temporary erosion control structure between 2304 New River Road and the southern terminus of the temporary erosion control structure will be located more than 115 feet waterward of the waterward most piling of each building.

27. As part of the CAMA Major Permit Application process, adjacent neighbors and the public were given notice of the Town's CAMA permit application including the final design for the sandbag revetment through publication in the Star News on October 8, 2014. DCM staff received only one comment—an objection from the adjacent riparian property owner of Topsail Reef, which was later withdrawn.

28. Also as part of the CAMA Major Permit application process, the Town's application, Field Report, and other materials were sent to resource agencies for comment. Of the agencies responding, the DCM Fisheries Specialist raised concerns about the impact of the project on the surf zone habitat. DCM did not deem these concerns sufficient to support permit denial.

29. On October 21, 2014, DCM staff conducted a site visit of the subject area and determined that "site conditions [had] deteriorated and emergency action is warranted". Consequently, at the Town's request, the DENR Secretary authorized the issuance of an Emergency CAMA Major Permit, which allows DCM discretion to suspend public notice, adjacent riparian notice, and the normal agency coordination process. Once the emergency permit authority was activated for the Site, DCM coordination with federal agencies was halted.

30. On October 24, 2014, DCM issued CAMA Emergency Major Permit 92-14 to the Town, authorizing its final design, but conditioning this approval on compliance with the Commission's rules limiting the size of sandbag structures to a base width of 20 feet and a height of 6 feet.

31. The Town stipulated that its "final" design proposal was inconsistent with the Commission's rules limiting the size of sandbag structures.

32. On November 7, 2014, DCM received the Town's 2014 variance petition. The Town also requested an expedited hearing before the Commission's scheduled December meeting.

33. The tax value of the structures at the Site and their lots total about \$9 million, and their loss from the tax base would reduce the annual tax revenue of the Town by \$35,388 based on the proposed 2015 tax rate of \$0.3932 per \$100.

34. The proposed larger sand bag revetment in the 2014 variance request was intended to protect the 20 threatened residential structures for at least two and a half years or until such time the beach fill provided under Phase 1 of the North Topsail Beach shoreline/inlet management plan can be renourished. In addition, the Town is committed to managing the north end shoreline by maintaining the preferred position and alignment of the New River Inlet ocean bar channel and using the material removed to maintain the channel to nourish the northern 7.25 miles of its ocean shoreline. Both the channel maintenance program and periodic nourishment are intended to maintain and/or preserve the dune and beach system in as near a natural state as possible.

35. On October 15, 2014, the Town's Board of Aldermen passed resolution 2014-13 which allowed for a special assessment to be imposed pursuant to NCGS 160A-238, in order to fund the larger sandbag structure proposed in this variance, with 50 percent of the total cost (which was estimated to be approximately \$2.3 million for the total project) paid by the 39 parcel-owners identified in the resolution based on oceanfront frontage. This assessment resolution was the subject of a public hearing on November 6, 2014. On November 6, 2014, the Town passed resolution 2014-16 confirming the assessment. Draft meeting minutes reflect the

five public comments received. On November 14, 2014, the Town issued a Notice of Special Meeting scheduled for November 19, 2014 to receive recommendations on the selection of a contractor for this sandbag project. The Town Board passed the resolution, and is now waiting to tally the final costs of the project before starting the assessment process.

36. In its November 2014 variance request, the Town sought a variance of conditions 1 and 2 of CAMA Major Permit No. 92-14. Specifically:

The Town is requesting a variance to condition 1 in that the Town proposes to construct a temporary erosion control structure with a base width of 45 feet and a height sufficient to achieve an elevation of +12.0 ft. NAVD.

The Town is requesting a variance to condition 2 in that the Town proposes that no portion of the authorized temporary erosion control structure shall be located more than 45 feet waterward of the waterward most pilings of those buildings controlling the alignment of the temporary erosion control structure from 2304 New River Inlet Rd. to the northern terminus of the temporary erosion control structure, namely those structures at: 2304 New River Inlet Rd., 2314 New River Inlet Rd., 2354 New River Inlet Rd., 2362 New River Inlet Rd., 2368 New River Inlet Rd., and 2378 New River Inlet Rd. No portion of the temporary erosion control structure between 2304 New River Road and the southern terminus of the temporary erosion control structure will be located more than 115 feet waterward of the waterward most piling of each building.

November 2014 Variance Hearing

37. At an expedited hearing on November 19, 2014, the Commission heard the Town's 2014 Variance Petition for larger sandbags than allowed by law. The Commission voted to grant the Town's request for a variance and allow it to install sandbags larger than those allowed by rule, up to a base width of 45 feet and an elevation of +12.0 ft. NAVD. The Commission also granted the Town's request to go waterward by as much as 115 feet from the

waterward pilings. On November 24, 2014, the Commission issued a written Final Agency Decision granting the Town's request.

38. An additional 275 linear feet of sandbags authorized in the traditional 6 foot by 20 foot configuration were added to CAMA Major Permit No. 92-14 through a minor modification in order to protect additional properties to the north of the originally permitted larger sandbag structure.

Geotextile Tubes as Construction Method Modification Request

39. On November 24, 2014, Town consultant Tom Jarrett called DCM with a request to further modify CAMA Major Permit No. 92-14 in order to down-scale the size of the sandbag structure from the 45 feet by +12.0 ft. NAVD allowed by the Commission, to a smaller structure. DCM Staff confirmed to the Town that a smaller structure, within the limits set by the variance, was allowable.

40. Later on November 24, 2014, DCM received another call from the Town's agent with a request to allow the use of a temporary geotextile containment tube to stabilize the project area while the larger sandbag structure was being installed. This was the first time the Town raised this proposal.

41. In a series of emails and a report during the November 24-26, 2015 period, the Town formalized its request to use the geotextile tubes as a temporary construction method, and made a commitment to remove them following the installation of the approved sandbag revetment. This request also showed the reduction in size of the proposed sandbag structure, now proposed with an elevation of 7.5 feet - 9.0 feet above grade instead of the elevation of +12.0 feet NAVD proposed and granted by variance.

42. The Town's stated purpose for using the geotextile tube was two-fold: 1) The tube would allow for a safer work environment landward of the tube to expedite the installation of the sandbag revetment; and 2) The tube would stabilize the area around the foundations of the houses and the property between the landward side of the houses and the road. In discussions with DCM Staff, the Town confirmed that these geotextile tubes were to be used as a temporary, construction method only, were not to be part of the sandbag structure's design, and were to be removed immediately following construction of the sandbag revetment, along with the scour apron and chock tubes, which were also inconsistent with the Commission's rules

43. The permit issued by DCM on November 26, 2014, permitted the Town to use a temporary geotextile tube for construction purposes during sandbag installation.

44. Condition 11 of CAMA Major Permit No. 92-14 as amended on November 26, 2014, states:

In accordance with commitments made by the permittee, the authorized temporary construction containment tube used to assist in the safe construction of the authorized temporary sand bag revetment shall be removed in its entirety either immediately upon project completion, or by May 21, 2015, whichever is sooner. Additionally, should the Division of Coastal Management determine that the temporary construction containment tubes are no longer needed or are no longer serving their intended purpose of providing a safe work environment landward of the tubes, the tubes shall be removed immediately upon written notification by the Division.

45. The temporary geotextile tube was permitted for construction purposes only and was not originally intended to be a lasting feature of the sand bag revetment. Both the Town and the Town's consultant agreed to this in writing.

Construction of the Sandbag Revetment

46. Mobilization of equipment to the project area began on December 9, 2014.

47. A geotextile tube was filled in place on top of a scour apron seaward of the proposed sand bag revetment location. The first tube was placed December 13, 2014 (Project Narrative Figure 1). The tenth tube was placed December 22, 2014 (Project Narrative Figure 2).

48. The original plan was to extend the tube south along the shoreline and terminate in a shore parallel orientation 50 feet north of the Topsail Reef sandbag revetment.

49. During the installation of the tube, the contractors and engineer observed high velocities of water flowing out of the protected area during ebbing tides. If such flows were channeled toward the Topsail Reef revetment, there would be a high probability of scour occurring around the base of the Topsail Reef return wall. The contractor and CPE-NC agreed to turn the southern end of the tube landward and tie into high ground in order to avoid such a scenario. Figure 2 on the Project Narrative shows the orientation of the southernmost tube after installation.

50. The geotextile tube worked as designed providing temporary protection to the work area and preventing further loss of sand from the project area during the construction of the sandbag revetment. The nominal dimension of the temporary tube is 30 feet in circumference. The tubes achieved variable heights of approximately 3 to 5 feet and a width of 12 feet. Individual tubes range in length from 100 to 150 feet.

51. Following a break over the Christmas holiday, the contractor returned to the project site on December 28, 2014 and began laying the base layer of the sand bag revetment in the vicinity of 2378 New River Inlet Road on the northern end of the project area.

52. On January 14, 2015, the contractor cut through the southernmost temporary tube in order to construct the sand bag revetment. Over the course of the following two weeks the southernmost tube deflated and the remains of the southern-most tube, scour apron, and chock tube were removed.

53. Construction of the sand bag revetment extending approximately 1,500 feet north from Topsail Reef was substantially completed on February 25, 2015. Approximately, 1,350 feet of the tube is still in place fronting the revetment from 2378 to 2290 New River Inlet Road. On February 24, 2015, the Town's authorized agent sent DCM an email indicating that construction on the sand bag revetment was complete.

54. Beginning around December 1, 2014 work on Phase 5 of the Town's project began to place a 14 feet + NAVD by 25 foot wide dune with a 45 foot wide berm waterward of the dune at the western-most portion of the Town's larger project area. That sand was dredged from an offshore borrow site approximately one half to one and one half miles offshore from the northern extent of Phase 5. The dredging operations for Phase 5 ended on Saturday, June 20, 2015 and demobilization efforts are underway now. The Town's consultant CP&E plans to do a survey of Phase 5 in July.

Request to keep the Geotextile Tube and Notice of Violation

55. On February 27, 2015, DCM sent a letter to the Town Manager notifying the Town that it needed to begin removing the geotextile tube.

56. On March 5, 2015, CPE-NC sent a letter to DCM requesting further modification to CAMA Major Permit No. 92-14 as modified on November 26, 2014, allowing the geotextile tube to remain for the duration of the permit.

57. On March 12, 2015, DCM's Major Permit Manager Doug Huggett responded to the request via email indicating a modification to allow these structures to remain would be inappropriate given that this was now a permit compliance issue, and that the request was incomplete.

58. On March 20, 2015 the Town's authorized agent from CP&E responded to DCM's request to remove the geotextile tube.

59. On March 26, 2015, DCM issued a Notice of Violation (NOV) to the Town as the construction of the sand bag revetment was complete but the Town had not removed the temporary geotextile tube. DCM also issued a proposed restoration plan requiring removal of the geotextile tubes.

60. On April 24, 2015, DCM issued a revised restoration plan to the Town, indicating that it could either remove the geotextile tubes as promised, or could proceed to seek a variance from the Commission during with the upcoming July 15, 2015 meeting for permission to keep the geotextile tubes in place for some period of time.

61. On May 4, 2015, the Town signed and returned the revised restoration agreement, indicating that they wished to proceed with the variance process at the Commission's July 15, 2015 meeting.

Application for Major Modification to CAMA Major Permit No. 92-14

62. Pursuant to the revised restoration plan, on May 1, 2015 the Town sent a revised major modification request, which DCM accepted as complete, seeking to retain the geotextile tubes as a part of its temporary erosion control structures. Section 8a of the modification request states that the tubes would "...remain in place until the Onslow maintenance navigation and

disposal of material along the north end of North Topsail Beach can occur, or until March 31, 2016.”

63. As part of the CAMA Major Permit Modification Application process, adjacent neighbors and the public were given notice of the Town’s CAMA permit application through publication in the Star News on May 11, 2014. No comments were received.

64. Also as part of the CAMA Major Permit Modification application process, the Town’s application, Field Report, and other materials were sent to resource agencies for comment. Of those agencies responding, the DCM Fisheries Specialist raised concerns regarding the proposal due to concerns about surf zone habitat, though DCM did not deem these concerns sufficient to support permit denial. Comments were also received from the Wildlife Resources Commission, raising concerns about the project.

65. On June 2, 2015, DCM denied the Town's request because the geotextile tube design was inconsistent with the Commission's rules regarding temporary erosion control devices found at 15A NCAC 7H. 0308(a)(2)(K) and (L) which regulate the size of sandbags and prohibit the use of anchoring devices for sandbags.

Onslow County's Proposed Shallow-Draft Inlet Navigation Project

66. Onslow County, in cooperation with the Town, is in the process of seeking non-federal permits that will allow the County to maintain authorized federal navigation channels in the vicinity of North Topsail Beach including the channel through Cedar Bush Cut, the southern portion of New River, and sections of the AIWW where these channels meet. In accordance with the permit request, the material removed to maintain the channels would be deposited along portions of the north end of North Topsail Beach including the area immediately fronting the

sand bag revetment. The application for this project was accepted as complete on June 4, 2015 by DCM, with the exception of the signed certified mail receipts, and is currently being circulated for comment through the CAMA major permit process. Tom Jarrett projects that between 65,000 and 110,000 cubic yards of sediment will be deposited from this project on about 3,000 feet of shoreline along the extreme North End of North Topsail Beach.

67. Onslow County hopes to have the permits in time to perform the maintenance dredging during the upcoming environmental dredging window, which runs from November 16, 2015 to March 31, 2016.

68. A cost estimate was developed for construction of the Onslow County project including development of bidding documents and contractor coordination, dredge mobilization, cost to pump sand to beach, and construction observations. The cost to implement this alternative is estimated at \$1,694,500. The state, county, and North Topsail Beach have shared the permitting costs and there are verbal commitments by all three entities to share the cost of construction as well. Based on the project plan, the Town would be responsible for 25 percent of the total cost (\$423,625.00).

The Town's Consultant's Reports

69. In a March 18, 2015 letter from CP&E to DCM, Tom Jarrett opines that the geotextile tube along the north end of the sand bag revetment continues to provide vital scour protection and its removal prior to the placement of the navigation maintenance material could result in dramatic failure of a portion of the sand bag revetment. According to a March 5, 2015 letter from CP&E to DCM, significant accretion of sand has occurred along the southern portions of geotextile tube throughout the last month of construction. Approximately 1,000 feet of the

southern portion of the containment tube has been partially or completely covered with sand. According to Mr. Jarrett, given the amount of burial that has taken place, the excavation and removal of the geotextile tube at this point would likely be detrimental to the integrity of the sand bag revetment.

70. In addition, according to Mr. Jarrett, the tubes have not had any noticeable adverse impact on the adjacent shorelines based on a comparison to revetments composed of only sand bags. Mr. Jarrett further opines that allowing the geotextile tube to remain until March 31, 2016 or the completion of Onslow County's channel maintenance/beach disposal activities, whichever is later, would not have any greater negative impact on adjacent properties than the impacts associated with the sand bag revetment itself. *See* March 5, 2015 letter from CP&E to DCM.

71. In Mr. Jarrett's opinion, the rapidly changing conditions along the north end of North Topsail Beach and the accelerated rate of material lost has made it abundantly clear that the sand bag revetment alone will most likely not be able to protect the homes or the roads in this area for a sufficient amount of time to allow for gradual recovery of the shoreline associated with the channel realignment project. *See* March 5, 2015 Letter from CP&E to DCM.

72. The Year 2 Post-Construction Physical Monitoring Report (included as a stipulated exhibit provided to the Commission) suggests that the ebb shoal is reconfiguring to a preferred alignment as designed; however as stated in the engineering documents, this process will take time.

73. The commitments by the Town to remove the sand tubes in accordance with the permit conditions were based on the Town's Consultant's belief that the sand bag revetment

alone would be able to provide the degree of protection needed to preserve the area until the inlet channel relocation project begins to produce measurable positive impacts on the area. In spite of this request for a permit modification to extend the time allowed for the geotextile tube to remain in place, the Town remains committed to removing the geotextile tubes once the channel maintenance activities are completed and the area exhibits signs of continued recovery/stabilization.

74. The stated purpose of the channel realignment project constructed by the Town between December 2012 and February 2013 under CAMA Major Permit No. 79-10 was to induce reconfiguration of the ebb delta by redistributing material from the north side of the delta to the south side.

75. According to the Town's consultants, a build-up of material on the south side of the ebb tide delta would provide a higher degree of wave sheltering to the north end of North Topsail Beach which should eventually lead to a reduction in shoreline erosion rates immediately south of the inlet in the short term and possibly some widening of the beach in the long term.

76. According to the Town's consultants, the actual time for the shoreline between stations 1140+00 (area from between Topsail Reef Buildings Nos. 5 and 6) and 1160+00 (south shoulder of New River Inlet) to respond to the new channel cannot be made with a high degree of certainty; however, significant accretion should occur within five years with full recovery occurring within 15 years following the channel relocation.

77. Representatives of the Town state that the Town is committed to establishing and maintaining a healthy beach along the north end of the Island. The Town contends that it has also shown a commitment to protect New River Inlet Road to allow the ocean front property owners

as well as those property owners along Oyster Lane, Port Drive, River Drive, and the Beach Club to continue to have access to their property, as shown by the Sand Bag Revetment project.

A History of the Commission's Examination of the Use of Geotextile Tubes

78. At the September 16, 2010 Commission meeting, DCM Staff presented information to the Commission about the use of geotextile tubes for temporary erosion control, following Spencer Rogers' presentation at the July 2010 Commission meeting suggesting their use as another method of temporary erosion control.

79. At the 2010 presentation, Staff raised public safety concerns about the geotextile tubes stability, ability to roll, and their difficulty to climb when uncovered. Due to these concerns, Staff recommended against rulemaking to allow geotextile tubes. Following this presentation, the Commission took no action to initiate rulemaking regarding geotextile tubes.

80. At the April 29, 2015 Commission meeting, DCM Staff presented a PowerPoint similar to that used in 2010, and raised the same public safety concerns about geotextile tubes, and again recommended against rulemaking to allow the use of geotextile tubes as another method of temporary erosion control.

The Town's Variance Request

81. The Town is requesting a variance from 15A NCAC 7H. 0308(a)(2)(K) and (L), as noted in the June 2, 2015 CAMA major modification denial, in order to keep the geotextile tubes in place as a part of the temporary erosion control sandbag structures until March 31, 2016 or the completion of Onslow County's channel maintenance/beach disposal activities, whichever is later.

STIPULATED EXHIBITS

Included with the Petition and the Staff Recommendation for the Commission's review were the following Stipulated Exhibits:

- All Exhibits for CRC-VR-14-16, as well as the following new exhibits:
- Major Permit Modification Application submitted by the Town to the DCM, May 1, 2015, together with all forms, attachments and appendices.
- Correspondence from the DCM to the Town, dated February 27, 2015.
- Correspondence from Coastal Planning and Engineering of North Carolina, Inc. to DCM, March 5, 2015
- Correspondence from Coastal Planning and Eng of NC, Inc. to DCM, March 18, 2015
- June 25, 2015 Statement of Tom Jarrett, P.E.
- Updated PowerPoint with aerial and ground level site photographs
- CRC's November 24, 2014 Final Agency Decision granting 2014 Variance petition
- Modification to CAMA Major Permit #92-14 authorizing "regular" sized bags, north end
- Email chain from November 24-26, 2014 regarding the geotextile tube request, including commitments to remove
- Report from Town re use of geotextile tubes and new proposed size of sandbag structure
- Permit #92-14 as Amended on November 26, 2014
- Project Narrative from Town
- Correspondence from DCM to Town on March 12, 2015.
- March 20, 2015 response from Town to DCM
- March 26, 2015 NOV and restoration plan
- April 24, 2015 revised restoration plan
- May 4, 2015 signed copy of revised restoration plan

- Comments from permit review process from DCM Fisheries Specialist and WRC
- DCM Field Report for modification request
- June 2, 2015 DCM Denial letter
- 2010 PowerPoint re: geotextile tubes by DCM to CRC
- 2015 PowerPoint re: geotextile tubes by DCM to CRC

CONCLUSIONS OF LAW

1. The Commission has jurisdiction over the parties and the subject matter.
2. All notices for the proceeding were adequate and proper.
3. Petitioner has met the requirements in N.C.G.S. § 113A-120.1(a) and 15 NCAC

07J .0703(f) which must be found before a variance can be granted as set forth below.

A. Strict application of Ocean Hazard Rules will cause unnecessary hardships.

The Commission's rules relating to the Ocean Erodible, High-Hazard Flood and Inlet Hazard Areas of Environmental Concern set forth at 15A NCAC 7H .0301, .0302 and .0303 are designed to prevent danger to life, property and prevent encroachment of permanent structures on public beach areas. In addition, 15A NCAC 7H .0308 limits the use of erosion control structures to protect property by requiring temporary placement for a short period of time in order to minimize the loss of resources to erosion, while still protecting the public's right to use and enjoy the beach.

The conditions in amended CAMA Major Permit No. 92-14 required the Town to remove the temporary containment geotextile tube immediately upon completion of the sandbag revetment or by May 21, 2015, whichever came first. The Town received a NOV based on its

failure to comply with the terms of the permit. Without the variance, the Town would be required to come into compliance with its permit and remove the temporary containment geotextile tubes.

In its request for a variance, the Town stated that it completed Phase 1 of its multifaceted inlet and shoreline management plan in February 2013 which included repositioning the New River Inlet ocean bar channel. The material removed during this process was used as beach fill along 7,730 feet of shoreline south of New River Inlet. By August 2014, all of the fill material placed north of Topsail Reef had been lost. In response to the emergency situation created by the rapid deterioration of the fill, the Town applied for a permit to construct a sandbag revetment along approximately 1500 feet of shoreline north of Topsail Reef. DCM issued amended CAMA Major Permit No. 92-14 on November 26, 2014 pursuant to a variance the Commission granted the Town. The permit allowed the Town to use a temporary sand filled containment tube to provide protection to the area during installation of the sandbag revetment. The conditions of the permit required the temporary containment tube to be removed immediately upon completion of the sandbag revetment or by May 21, 2015, whichever occurred sooner. The sandbag revetment was essentially completed on February 25, 2015. However, in violation of the permit condition, approximately 1,350 feet of the containment tube are still in place fronting the revetment from 2378 to 2290 New River Inlet Road.

The Town has provided information from its consultant Mr. Jarrett concluding that along portions of the revetment where the geotextile tube is exposed, the tube is providing scour protection to the sand bag revetment. Mr. Jarrett also opined that the premature removal of the partially buried and exposed geotextile tube will likely result in rapid scour along the toe of the sand bag revetment leading to the failure of the sand bag revetment and possible destruction of

the 20 residential structures located between Topsail Reef and New River Inlet.

The Town provided information to the Commission that the tax value of these structures and their lots total roughly \$9 million. If these properties are lost from the tax base, the Town's annual tax revenue of North Topsail Beach would be reduced by approximately by \$35,388 based on the proposed 2015 tax rate of \$0.3932 per \$100. In addition, the loss of these 20 structures could have a secondary impact on the assessed value of other structures in the area.

In addition to the potential loss of the 20 residential structures, the deteriorated condition of the shoreline on the north end of town has resulted in frequent episodes of wave over-washing of the beach berm and flooding of New River Inlet Road and connecting side streets. Continued recession of the shoreline could eventually undermine New River Inlet Road and cut off access to homes on the north end of town.

Onslow County, in cooperation with the Town, is in the process of seeking non-federal permits that will allow the County to maintain authorized federal navigation channels in the vicinity of North Topsail Beach. In accordance with the permit request, the material removed to maintain the channels would be deposited along portions of the north end of North Topsail Beach including the area immediately fronting the sand bag revetment. The application for this project was accepted as complete on June 4, 2015 by DCM, with the exception of the signed certified mail receipts, and is currently being circulated for comment through the CAMA major permit process. Tom Jarrett projects that between 65,000 and 110,000 cubic yards of sediment will be deposited from this project on about 3,000 feet of shoreline along the extreme North End of North Topsail Beach. Onslow County hopes to have the permits in time to perform the maintenance dredging during the upcoming environmental dredging window, which runs from

November 16, 2015 to March 31, 2016.

The Commission affirmatively finds that strict application of the Rules would cause Petitioner unnecessary hardship insofar as requiring the Town to remove the geotextile tubes prior to the upcoming beach nourishment (planned for the 2015/2016 environmental dredging window) may cause damage to the 20 houses currently protected by the geotextile tubes without measurable improvement to the shoreline system. For these reasons, the Commission affirmatively finds that Petitioner has met the first factor without which a variance cannot be granted.

B. Petitioner has demonstrated that the hardship results from conditions peculiar to Petitioner's property.

The Commission affirmatively finds that Petitioner has demonstrated that the hardship results from conditions peculiar to the property. Specifically, the Site is located within the Inlet Hazard AEC for the New River Inlet and is influenced by the dynamic inlet processes. The behavior of the shoreline on the north end of North Topsail Beach is imminently tied to the position and alignment of the main bar channel of New River Inlet as shown by morphological studies of New River Inlet reported in the project EIS. The studies also identified a position and alignment of the bar channel that would provide a beneficial impact on the north end shoreline. Based on these studies, the Town of North Topsail Beach elected to artificially move the channel to the preferred position and alignment indicated by the morphological studies. The Town implemented Phase 1 of the channel realignment project channel and repositioning the channel was completed in February 2013. Prior to the channel realignment, the nodal influence on North Topsail Beach was enhanced due to the absence of significant shoal accumulations on the south side of the inlet. The absence of shoal material south of the inlet is one of the issues the channel

relocation project was designed to address, i.e., the purpose of moving the channel was to encourage the reconfiguration of the inlet's ebb tide delta through the redistribution of material from the north side of the inlet to the south side. Monitoring of the inlet since the channel was moved seems to indicate some redistribution of material is occurring; however, the process will take years before it has a significant positive impact on the north end of North Topsail Beach. Given the realignment of the channel and its impact on North Topsail Beach, the Commission affirmatively finds that Petitioner has demonstrated that the hardship results from conditions peculiar to the property and has met the second factor required for the grant of its request for a variance.

C. Petitioner has demonstrated that the hardship does not result from actions taken by Petitioner.

The Commission affirmatively finds that Petitioner has demonstrated that the hardship does not result from actions taken by the Petitioner. Specifically, the Town has done nothing to accelerate the erosion affecting the Site and has taken significant steps to address the problem, including the development and implementation of its Inlet Management Plan. While the losses from the beach fill have been higher than anticipated, the condition of most of the shoreline included in the Phase 1 fill is still better, in terms of the beach width measured at MHW than it was prior to construction of Phase 1. The exception, as previously noted, lies in the area north of Topsail Reef.

The Town's commitments to remove the geotextile sand tube in accordance with the permit conditions when construction was completed was based on its belief that the sand bag revetment alone would be able to provide the degree of protection needed to preserve the area until the inlet channel relocation project begins to produce measurable positive impacts on the

area. However, the rapidly changing conditions along the north end of the island and the accelerated rate of loss of material from the area has made it abundantly clear that the sand bag revetment alone will not be able to protect the homes or the roads in this area for a sufficient amount of time to allow for gradual recovery of the shoreline associated with the channel realignment project.

For these reasons, the Commission affirmatively finds that Petitioner has demonstrated that it has met the third factor required for a variance.

D. Petitioner has demonstrated that the requested variance is consistent with the spirit, purpose and intent of the Commission’s rules, will secure public safety and welfare, and will preserve substantial justice.

The Commission affirmatively finds that Petitioner has demonstrated (a) that the requested variance is consistent with the spirit, purpose and intent of the Commission’s rules, (b) that it will secure public safety and welfare, and (c) that it will preserve substantial justice.

Specifically, the spirit, purpose and intent of the Commission’s rules for the Ocean Hazard Area of Environmental Concern is to allow temporary erosion control for imminently threatened structures, while limiting the size of the individual sandbags and the dimensions of the overall structure that may be permitted. In 2003, CAMA was amended to include 113A-115.1, which prohibited the use of erosion control structures along the ocean shoreline, except in a few specific situations. The Commission’s rules allow for the continued use of “temporary erosion control structures” made of sandbags to protect imminently threatened structures within 20 feet of the erosion scarp. The installation and design standards in the Commission’s rules reflect the temporary nature of the structures, and demonstrate that sandbags were not intended as large, permanent structures. As stated in 15A NCAC 07M.0202(e), these temporary measures

are to be used “only to the extent necessary to protect property for a short period of time until the threatened structures can be relocated or until the effects of a short-term erosion event are reversed.” This rule demonstrates that sandbags should only offer immediate relief and time to find a permanent solution. The Commission’s size limits on individual sandbags and limits on the overall structure size are intended to promote structural stability and effectiveness, while maintaining the temporary nature and the public’s right of safe access to the beach. Given the Town’s commitment to renourish the North Topsail Beach during the 2015/2016 dredging window, the Commission affirmative finds that Petitioner's proposed development is consistent with the spirit, purpose, and intent of the Commission’s Rule as long as Condition No. 11 in amended CAMA Major Permit No. 92-14 is revised to allow the authorized containment tube to remain part of the temporary erosion control structures until June 30, 2016 or the Onslow County’s channel maintenance/beach disposal activities are completed whichever comes first.

The second assessment to be made is whether the variance proposed by the Petitioner will impact public safety and welfare. Petitioner submits, and the Commission agrees that if the deadline for removal of the geotextile tubes is extended, public safety and welfare will be protected insofar as the structures will receive some additional protection which may prevent their imminent destruction. Floating debris, submerged and/or hidden piles, as well as other anthropogenic items remaining once these properties are abandoned would pose a serious threat to the safety of the public that uses the area for recreational purposes. Allowing the containment tube to remain as part of the temporary erosion control structures until such time as navigation maintenance material is deposited or June 30, 2016 whichever comes first will significantly lessen any unreasonable danger(s) to life and adjacent property from the foregoing dangers.

Observations made during the construction process indicate the tubes have not had a noticeable adverse impact on adjacent shorelines as compared to revetments composed of only sand bags. Therefore, allowing the sand tube to remain for an extended period of time should not have any greater negative impact on adjacent properties than the impacts associated with the sand bag revetment itself. will have no adverse effect on public safety and welfare.

Finally, the Commission agrees that a variance will preserve substantial justice by allowing the Town to use the geotextile tubes to stabilize the permitted sand bag revetment, preserve the work already done to protect the North End of the island, and preserve the interests of the Town and the North End property owners until such time as the deposit of navigation maintenance material takes place in 2015/2016, and the realignment of New River Inlet begins to yield positive effects. For these reasons, the Commission affirmatively finds that Petitioner has met the fourth factor required by N.C.G.S. § 113A-120.1(a) subject to the condition that the Town's temporary use of the geotextile tube will be extended no longer than June 30, 2016 or when the renourishment project is completed whichever comes first.

During oral argument before the Commission, the Town explicitly agreed that it would remove the temporary geotextile tube when the beach renourishment project was completed or by June 31, 2016 whichever came first.

ORDER

THEREFORE, the Town's request for a variance from 15A NCAC 7H. 0308(a)(2)(K) and (L) in order to extend the time to keep the geotextile tubes in place as a part of the temporary erosion control sandbag structures is GRANTED subject to the condition that the geotextile tubes will be removed when Onslow County's channel maintenance/beach disposal project is

complete or by June 30, 2016 whichever comes first.

The granting of this variance does not relieve Petitioner of the responsibility for obtaining any other required permits from the proper permitting authority. This variance is based upon the Stipulated Facts set forth above. The Commission reserves the right to reconsider the granting of this variance and to take any appropriate action should it be shown that any of the above Stipulated Facts is not true or has materially changed.

This the 14th day of August 2015.

Frank D. Gorham III

Frank D. Gorham, III, Chairman
Coastal Resources Commission

CERTIFICATE OF SERVICE

This is to certify that I have this day served the foregoing FINAL AGENCY DECISION

upon the parties by the methods indicated below:

Stuart Turille, Town Manager
Town of North Topsail Beach
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North Topsail Beach, NC 28460

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This the 14th day of August, 2015



Mary L. Lucasse
Special Deputy Attorney General and Commission Counsel
N.C. Department of Justice
P.O. Box 629
Raleigh, N. C. 27602

STATE OF NORTH CAROLINA	)	BEFORE THE NORTH CAROLINA
	)	COASTAL RESOURCES COMMISSION
COUNTY OF ONSLOW	)	CRC-VR-16-09
)	
)	
IN THE MATTER OF:	)	FINAL AGENCY DECISION
PETITION FOR VARIANCE)	
BY TOWN OF NORTH TOPSAIL BEACH)	

This matter was heard on oral arguments and stipulated facts and stipulated exhibits at the regularly scheduled meeting of the North Carolina Coastal Resources Commission (hereinafter “Commission”) on September 13, 2016 in Wilmington, North Carolina pursuant to N.C. Gen. Stat. § 113A-120.1 and 15A NCAC 7J .0700, *et seq.* Assistant General Counsel Christine A. Goebel, Esq. appeared for the Department of Environmental Quality, Division of Coastal Management (hereinafter “DCM”). Attorney Brian E. Edes, Esq. appeared on behalf of Petitioner Town of North Topsail Beach. Commissioner Neal Andrews recused himself from consideration of the variance request.

During the hearing on the Town’s variance request, Chairman Gorham requested that Petitioner and DCM Staff pull out of the hearing and engage in settlement negotiations to determine whether the Town and DCM could agree on a joint recommendation to the Commission. After approximately 30 minutes, Petitioner and DCM returned to the Commission and stated they had successfully negotiated an agreement. The Town’s attorney informed the Commission that the Town was amending its variance petition to reduce the time it sought to allow the geotextile tubes to remain in place to May 1, 2017.

In light of the revised variance request, DCM recommended that if the Commission decided to grant a variance, the variance should include the following conditions:

- The geotextile tubes may remain in place until May 1, 2017;

- By May 1, 2017, the Town is required to compromise and remove the geotextile tubes. DCM has defined removal to require that the Town cut the exposed geotextile tube and remove all visible material using a forklift to pull out loose material. Removal does not include excavating the entire geotextile tube if it is covered with sand. DCM may provide addition directions to the Town and its consultants based on Site conditions during the removal process.
- By May 1, 2017 any exposed geotextile tube material shall be removed;
- By May 1, 2017 the geotextile tubes shall not be operable.
- No sand or sandbags may be placed on any uncompromised portion of the geotextile tubes;
- The geotextile tubes and sandbag revetment will remain within and will not exceed the footprint of the supersized sandbags allowed by the Commission in its final agency decision dated November 24, 2014.

The Town, through its attorney, orally represented to the Commission at the hearing that it agreed with these conditions.

Upon consideration of the record documents and the arguments of the parties, the Commission adopts the following:

STIPULATED FACTS

1. The Petitioner in this case is the Town of North Topsail Beach (hereinafter “Petitioner” or “Town”). The Town is represented by Town Attorney Brian Edes. DCM Staff are represented by Assistant General Counsel Christine A. Goebel.

2. The site at issue in this case is located at the north end of North Topsail Beach, and includes the beach waterward of the first line of stable natural vegetation (hereinafter “FLSNV”) from just north of the Topsail Reef condominiums toward New River Inlet to the northernmost house on New River Inlet Road, which includes 39 parcels of land with 20 duplexes structures/40 residences (hereinafter “Site”). At the time these 20 structures were

constructed, they were located in the second row from the ocean front. The Site is depicted in the Project Narrative section of the stipulated exhibits, and in other exhibits. The Town holds easements, which are stipulated exhibits, on these oceanfront parcels in order to use the property for the purposes of implementing beach nourishment projects.

3. The Site is located within the Ocean Erodible and Inlet Hazard Areas of Environmental Concern (hereinafter “AECs”).

4. The long-term average annual erosion rate at the Site is 2-feet per year. The Site is entirely within the Inlet Hazard AEC which uses the rate for the adjacent ocean hazard area per 15A NCAC 7H .0310(a)(1). Staff agrees that this Site experienced accelerated erosion in the 12-15 months prior to the November 2014 variance hearing.

5. According to the Town’s Project Engineer, Tom Jarrett, P.E. of Coastal Planning & Engineering (hereinafter “CP&E”), one of the unique features of the area is the influence of the ebb tide delta of the New River Inlet, on sediment transport along the shoreline. This is demonstrated by the photo shown in Stipulated Exhibit 15 in which incoming waves from the southeast are refracted around the ebb tide delta resulting in a change in sediment transport direction (indicated by arrows) just south of New River Inlet. The area in which the direction of sediment transport changes as a result of wave refraction is commonly referred to as a nodal zone. In general, the nodal zone is characterized by the net movement of material away from or out of the zone. While a nodal zone will generally exist adjacent to a tidal inlet, the influence of the nodal zone on the shoreline of North Topsail Beach is enhanced due to the absence of significant shoal accumulations on the south side of the inlet. The absence of shoal material south of the inlet is one of the issues the channel relocation project was designed to address, i.e.,

the purpose of moving the channel was to encourage the reconfiguration of the inlet's ebb tide delta through the redistribution of shoal material from the north side of the inlet to the south side. Mr. Jarrett provided portions of the Final Environmental Impact Statement of the North Topsail Beach Shoreline Protection Project prepared December 2009 (hereinafter "FEIS"). See stipulated exhibit provided to the Commission.

History of the Site

6. The north end of the Town has a history of erosion. Appendix B of the FEIS contains a history of erosion and past beach nourishment projects. Mr. Jarrett summarized the nourishment projects between 2002 and 2011 (hereinafter "Jarrett Erosion History Report").

7. According to the FEIS, erosion of the shoreline south of New River Inlet has been a persistent problem since around 1984 when the bar channel of New River Inlet shifted its alignment toward Onslow Beach. Prior to 1984, the north end of North Topsail Beach was accreting at an average rate of 6.1 feet per year. Following the change in channel position and orientation, the north end began to erode at an average rate of 5.3 feet per year. Most of the accelerated erosion was attributed to the north end's higher degree of exposure to wave energy. Prior to the channel shift, the south side of the ebb tide delta provided a breakwater effect with waves breaking relatively far offshore. With the loss of the south side delta, more wave energy was transmitted directly to the shore. This, combined with the development of flood channels close to and parallel to the north end, increased sediment transport rates to the north.

8. Since 1993, and despite the use of sandbag structures in some places, 11 residential structures, all of which were located seaward of the existing 20 structures at the Site, were either removed or lost to erosion.

The Town's Inlet Management Plan/FEIS

9. Beginning in 2006, the Town hired CP&E to develop an Inlet Management Plan for the New River Inlet (hereinafter "Inlet Management Plan"). The Inlet Management Plan was completed in December 2009 and memorialized in the FEIS publication. The entire Inlet Management Plan is covered by the Department of the Army Permit SAW 2005-00344 dated May 16, 2001. CAMA Major Permit No. 79-10 was issued on July 21, 2010 authorizing Phase I of the Inlet Management Plan. A modification on October 12, 2012 authorized a change to the beach fill density, the amount of material to be removed from the ocean bar channel, and removed a previously permitted upland disposal site. CAMA Permit No. 79-10 was further modified on September 26, 2013 authorizing Phase 5 of the Inlet Management Plan during the 2014-15 dredging window, an increase in beach fill densities, and allowing Phase 5 to take place before Phases 2-4 if necessary. Copies of this permit and its modifications are stipulated exhibits.

10. Phase 1 of the Inlet Management Plan was completed in February 2013 and included the repositioning of the New River Inlet ocean bar channel to a more central location between the south end of Onslow Beach and the north end of North Topsail Beach. Material removed during the repositioning of the channel was used as beach fill along 7,730 feet of shoreline south of New River Inlet as shown in stipulated exhibits provided to the Commission.

11. The Town's stated purpose for moving the ocean bar channel of New River Inlet, as stated in the FEIS, was for the purpose of inducing sand accumulation on the south side of the inlet's ebb tide delta. Based on the documented historic behavior of the inlet, the Town believed that moving the channel to a more central position with an alignment approximately perpendicular to the adjacent shorelines would result in accretion of the shoreline south of the

inlet. Dr. William Cleary estimated that the time required for the new channel to have a positive impact on the shoreline to be three to four years as noted in the FEIS.

12. According to Mr. Jarrett, the behavior of the shoreline on the north end of North Topsail Beach is tied to the position and alignment of the main bar channel of New River Inlet. Morphological studies of New River Inlet, reported in the FEIS, describe the relationship between the position and alignment of the channel and the response of the shorelines on both sides of the inlet. The FEIS also identified a position and alignment of the bar channel that would provide a beneficial impact on the north end shoreline. Based on the FEIS, the Town of North Topsail Beach elected to artificially move the channel to the preferred position and alignment indicated by the morphological studies.

13. Phase 1 construction moved the mean high water (hereinafter “MHW”) shoreline an average of 272 feet seaward of the pre-project MHW shoreline in the area between Building No. 1 of Topsail Reef and the south shoulder of New River Inlet (baseline stations 1149+00 to 1160+00). An August 2014 beach profile survey by Gahagan & Bryant, indicates the MHW shoreline north of Topsail Reef receded between 200 and 250 feet since completion of Phase 1, which is equivalent to 130 and 167 feet per year. Visual inspections of the beach shows continued erosion since the August 2014 survey. The MHW shoreline has essentially returned to its pre-project position. According to Mr. Jarrett, while the rate of loss of the fill placed during Phase 1 of the management plan has been higher than anticipated, the loss is comparable to losses experienced from previous fills by the US Army Corps of Engineers (hereinafter “USACE”) through disposal of material removed during maintenance of the Atlantic Intercoastal Waterway and portions of the channel passing through Cedar Bush Cut.

14. According to Mr. Jarrett in his Jarrett Erosion History Report, based on the documented history of shoreline changes along the north end of North Topsail Beach, he believes that the recent acceleration in the rate of shoreline change is not related to the channel relocation project. Instead, Mr. Jarrett believes that much of the accelerated erosion can be attributed to the unnatural shoreline configuration created by the beach fill, i.e., the conditions that were causing the north end to erode prior to relocating the channel, such as the absence of a significant shoal on the south side of the inlet and the presence of flood channels, still persist. Mr. Jarrett believes these conditions will continue to exist until such time the newly aligned channel effects the predicted changes in the ebb tide delta of New River Inlet. Until that time, waves will continue to impact the area in such a way as to cause accelerated sediment transport from the north end and into New River Inlet.

15. According to the “Year 2 Post-Construction Physical Monitoring Report” dated October 2014 and prepared by CP&E, a copy of which is a stipulated exhibit (hereinafter “Monitoring Report”), monitoring of the inlet demonstrated some of the expected results taking place with sand accumulating on the south side of the inlet. However, the rate of build-up, as predicted, was relatively slow. As a result, the north end of North Topsail Beach has continued to experience high rates of erosion. As of August 2014, most of the fill placed north of the Topsail Reef Condominiums in February of 2013 had been lost, as shown in photographs provided to the Commission as stipulated exhibits.

16. The FEIS states that periodic maintenance is necessary about every 4 years to keep the channel in its preferred position and alignment. Material removed to maintain the channel would be used to provide periodic nourishment of the North Topsail Beach shoreline.

17. The USACE permit allows maintenance of the channel to be accomplished once every four years providing one of two channel maintenance thresholds are met. One channel threshold is associated with shoaling of the channel and the second is based on the position and alignment of the channel. Following Phase 1's completion in February 2013, the Town is not permitted to maintain the channel until at least the 2016/2017 environmental dredge window.

18. Based on site photographs, the final remnants of the dune which was created as part of the Phase 1 project and was evident in August 7, 2014 photos had completely eroded by the time photos were taken in late September 2014. The photographs referred to in these stipulated facts were provided to the Commission as stipulated exhibits.

19. Flooding of the area has increased. Flood waters have spilled on to New River Inlet Road and side streets during times of high tide at least four times in late 2014 as seen in photographs provided to the Commission.

Larger Sandbag Revetment CAMA Permit Process

20. Beginning in the early summer of 2014, Town officials and their agents contacted DCM Staff to inquire about possible options for protecting homes at the Site from erosion taking place following Phase 1. DCM issued a modification to permit 191-05 on August 14, 2014 authorizing sand from an upland source to be placed at the Site. This permit was originally issued on December 5, 2005 following Hurricane Ophelia and authorized for dune reconstruction at the Site. The work authorized by the modification of CAMA Major Permit No. 191-05 has not been undertaken.

21. On or about August 15, 2014, the Town, with help from its CP&E consultants Tom Jarrett and Ken Willson, submitted a CAMA Major Permit Application seeking to install

approximately 1,450 linear feet of geotextile tubes (7.5 feet tall and 45 feet in circumference) at the Site. This permit application was deemed complete (except for the receipt of all of the easement agreements from the Town, which were received later) by DCM on August 27, 2014, and was sent to the resource agencies for comment through the CAMA Major Permit process. Because the proposed geotextile tube was inconsistent with the Commission's rules limiting the size of sandbags, DCM Staff planned to deny the permit application after the public notice period ended on September 19, 2014. The Town planned to seek a variance from this permit denial.

22. On September 18, 2014, DCM received a modification request to the initial geotextile tubes proposal which requested permission to use 35,000 to 50,000 cubic yards of sand to create in a "sand bench" at the Site raising the beach elevation approximately 6 feet before placing the geotextile tube on the "sand bench." DCM determined that the significant changes and increased scope of this modified project would require a new CAMA permit application from the Town, including notice of the modified project to the public and adjacent neighbors, and review by the resource agencies.

23. Following discussions between the Town, its agents, DCM and other resource agencies, the Town submitted its "final design" sandbag proposal on September 26, 2014. This new CAMA Major Permit application was deemed complete by DCM on October 3, 2014. A copy of the application was provided to the Commission as a stipulated exhibit. Also, on October 2, 2014, DCM retired the Town's initial August 2014 application following receipt of the new CAMA Major Permit application for its "final design."

24. The final design proposed installing sandbags at the Site, from the existing larger sandbag revetment at Building No. 1 of Topsail Reef and extending north approximately 1,450

feet parallel to the existing shoreline. A 50-foot return wall would extend landward from the north end of the sandbag structure just north of the home located at 2378 New River Inlet Road. A plan view of the sand bag revetment and a typical cross-section view of proposed revetment are shown in the stipulated exhibits. The proposed borrow site for the sand needed to fill the sandbags was an approximately 5 acre area on the point, just north of the Site, called “the spit.”

25. Topsail Reef received two variances from the Commission in July 2012 and October 2014 to construct a revetment south of the Site similar in size to Petitioner’s proposal.

26. The proposed sandbag revetment would follow an alignment roughly parallel to the seaward-most support piles of the threatened residential structures with the landward toe of the revetment positioned as close as practical to the front support piles of the structures. The authorized temporary erosion control structure would be located no more than 45 feet waterward of the waterward most pilings of those buildings controlling the alignment of the temporary erosion control structure from 2304 New River Inlet Rd. to the northern terminus of the temporary erosion control structure, namely those structures at 2304, 2314, 2354, 2362, 2368 and 2378 New River Inlet Road. No portion of the temporary erosion control structure between 2304 New River Inlet Road and the southern terminus of the temporary erosion control structure will be located more than 115 feet waterward of the waterward most piling of each building.

27. As part of the CAMA Major Permit Application process, adjacent neighbors and the public were given notice of the Town’s application and the final sandbag design through publication in the Star News on October 8, 2014. DCM staff received one comment. This comment, an objection from Topsail Reef - an adjacent riparian property owner, was retracted.

28. During the CAMA Major Permit application process, the Town's application, DCM's Field Report, and other materials were sent to resource agencies for comment. Of the agencies who responded, the DCM Fisheries Specialist raised concerns about the impact of the proposal on the surf zone habitat. DCM did not deem these concerns sufficient to support permit denial. Copies of the field report and noted comments received by DCM were provided to the Commission as stipulated exhibits.

29. On October 21, 2014, DCM staff conducted a site visit and determined that "site conditions [had] deteriorated and emergency action is warranted." Consequently, at the Town's request, the DENR Secretary authorized the issuance of an Emergency CAMA Major Permit, which allows DCM discretion to suspend public notice, adjacent riparian notice, and the normal agency coordination process. Once the emergency permit authority was activated for this site, DCM halted the normal coordination process with federal agencies.

30. On October 24, 2014, DCM issued CAMA Emergency Major Permit No. 92-14 to the Town conditioning its approval on compliance with the Commission's rules limiting the size of sandbag structures to a base width of 20 feet and a height of six feet.

31. The Town stipulated that its proposed design was inconsistent with the Commission's rules limiting the size of sandbag structures.

32. On November 7, 2014, DCM received the Town's 2014 variance petition. The Town also requested an expedited hearing before the scheduled December Commission meeting.

33. The tax value of the structures at the Site and their lots total about \$9 million and their loss from the tax base would reduce the annual tax revenue of the Town by \$35,388 based on the proposed 2016 tax rate of \$0.3932 per \$100.

34. The larger sandbag revetment in the 2014 variance request was intended to protect the 20 threatened residential structures for at least 2.5 years or until such time as the beach fill project provided under Phase 1 of the North Topsail Beach shoreline inlet management plan can be renourished. The Town of North Topsail Beach is committed to managing the north end shoreline by maintaining the preferred position and alignment of the New River Inlet ocean bar channel and using material removed to maintain the channel to nourish the northern 7.25 miles of its ocean shoreline. The channel maintenance program and periodic nourishment are intended to maintain and preserve the dune and beach system in as near a natural state as possible.

35. On October 15, 2014, the Town's Board of Aldermen passed resolution 2014-13 for a special assessment pursuant to N.C.G.S. § 160A-238 to fund the larger sandbag structure requested in the variance. Fifty percent of the total project cost (approximately \$2.3 million) was to be paid by the 39 parcel-owners identified in the resolution based on oceanfront frontage. This assessment resolution was the subject of a public hearing on November 6, 2014. On November 6, 2014, the Town passed resolution 2014-16 confirming the assessment. Meeting minutes (draft) reflect five public comments received. Copies of the resolutions and meeting minutes (draft) were provided to the Commission as stipulated exhibits. On November 14, 2014, the Town issued a Notice of Special Meeting scheduled for November 19, 2014 to receive recommendations on the selection of a contractor for the sandbag project.

36. The Town of North Topsail Beach, in its November 2014 variance request, sought a variance of conditions 1 and 2 of CAMA Major Permit No. 92-14. Specifically, the Town requested a variance to condition 1 to allow a temporary erosion control structure with a base width of 45 feet and a height sufficient to achieve an elevation of +12.0 ft. NAVD. The Town

requested a variance to condition 2 to allow that no portion of the authorized temporary erosion control structure shall be located more than 45 feet waterward of the waterward most pilings of those buildings controlling the alignment of the temporary erosion control structure from 2304 New River Inlet Rd. to the northern terminus of the temporary erosion control structure and no portion of the temporary erosion control structure between 2304 New River Road and the southern terminus of the temporary erosion control structure will be located more than 115 feet waterward of the waterward most piling of each building.

November 2014 Variance Hearing

37. On November 19, 2014, the Commission held an expedited hearing and granted the variance allowing the Town to install sandbags larger than those allowed by rule, up to a base width of 45 feet and an elevation of +12.0 feet NAVD. The Commission also granted the Town's request to locate the sandbag structure waterward up to 115 feet from the waterward pilings. The Commission issued its Final Agency Decision granting the variance on November 24, 2014.

38. An additional 275 linear feet of sandbags authorized in the traditional six foot by 20 foot configuration was added to CAMA Major Permit No. 92-14 through a minor modification in order to protect additional properties north of the originally permitted structure.

Town's Request for Modified Permit to Allow Use of Geotextile Tubes during Construction

39. On November 24, 2014, Town consultant Tom Jarrett called DCM requesting a modification of CAMA Major Permit No. 92-14 to down-scale the size of the sandbag structure from the 45 feet by +12.0 ft. NAVD allowed under the variance granted by the Commission. DCM Staff confirmed that if the proposed modification resulted in a smaller sandbag structure that was within the limits set by the variance, the modification was allowed.

40. Later that day, DCM received another call from the Town's agent requesting permission to use a temporary geotextile containment tube to stabilize the project area while the larger sandbag structure was installed. This was the first time the Town mentioned this proposal.

41. In a series of emails and a report during November 24-26, 2015, the Town formalized its request to use the geotextile tubes as a temporary construction method. The Town agreed to remove the geotextile tubes following installation of the approved sandbag revetment. This request included a proposed sandbag structure with a reduced elevation of 7.5 to 9 feet above grade instead of the +12.0 feet NAVD elevation approved in the Commission's variance.

42. The Town's stated purpose for using a geotextile tube during construction was that the tube would allow for a safer work environment landward of the tube and thereby expedite installation of the sandbag revetment and the tube would stabilize the area around the foundations of the houses and the property between the landward side of the houses and the road. During their discussions, the Town clearly conveyed to DCM Staff that the geotextile tube was a temporary construction method, not part of the sandbag structure's design, and would be removed immediately following construction of the sandbag revetment, along with the scour apron and chock tubes, which are also inconsistent with the Commission's rules

43. On November 26, 2014 DCM issued a permit allowing the Town to use a temporary geotextile tube during construction of the sandbag revetment.

44. CAMA Major Permit No. 92-14, as amended, provides in Condition 11 that,

In accordance with commitments made by the permittee, the authorized temporary construction containment tube used to assist in the safe construction of the authorized temporary sand bag revetment shall be removed in its entirety either immediately upon project completion, or by May 21, 2015, whichever is sooner. Additionally, should the Division of Coastal Management determine that the temporary construction containment tubes are no longer needed or are no longer serving their intended purpose of providing a safe work environment

landward of the tubes, the tubes shall be removed immediately upon written notification by the Division.

45. The Town and its consultant agreed in writing that the temporary geotextile tube was permitted for construction purposes only and was not designed to be part of the revetment.

Construction of the Sandbag Revetment

46. Mobilization of equipment to the project area began December 9, 2014.

47. A geotextile tube was filled in place on top of a scour apron seaward of the proposed sandbag revetment location. The first tube was placed December 13, 2014 (Project Narrative Figure 1). The tenth tube was placed December 22, 2014 (Project Narrative Figure 2).

48. The original plan was to extend the tube south along the shoreline and terminate it 50 feet north of the Topsail Reef sandbag revetment in an alignment parallel to the shore.

49. During installation of the tube, the contractors and engineer observed water flowing at high velocity from the protected area during ebbing tides. If such flows were channeled toward the Topsail Reef revetment, there was a high probability of scour occurring at the base of the Topsail Reef return wall. In order to avoid this scenario, the contractor and CP&E turned the southern end landward and tie the tube into high ground before shutting down for Christmas break. Figure 2, Project Narrative shows the orientation of this tube after installation.

50. The geotextile tube worked as designed providing temporary protection to the work area and preventing further loss of sand from the project area during construction of the sandbag revetment. The nominal dimension of the temporary tube is 30 feet in circumference. The tubes achieved variable heights of approximately 3 to 5 feet and a width of 12 feet. Individual tubes range in length from 100 to 150 feet.

51. The contractor returned to the project site on December 28, 2014 and began laying the base of the sand bag revetment in the vicinity of 2378 New River Inlet Road on the northern end of the project area.

52. On January 14, 2015, the contractor cut through the southernmost temporary tube in order to construct the sand bag revetment. Over the next two weeks, the southernmost tube deflated. The remains of the southern-most tube, scour apron, and chock tube were removed.

53. On February 24, 2015, the Town's authorized agent informed DCM by e-mail that construction on the sand bag revetment was complete. The sandbag revetment extends approximately 1,500 ft. north from Topsail Reef. Approximately, 1,350 feet of the tube remains in place from 2378 to 2290 New River Inlet Road.

54. Beginning around December 1, 2014, during the same timeframe as the Town's sandbag revetment project, the Town began work on Phase 5 of the Town's project to place a 14 foot + NAVD by a 25 foot-wide dune with a 45 foot-wide berm waterward of the dune at the western-most portion of the Town's larger project area. The sand for that project was dredged from an offshore borrow site located approximately one half mile to 1-and-a-half miles offshore of the northern extent of Phase 5. The dredging operations for Phase 5 ended June 20, 2015. The Town's consultant CP&E performed a survey of Phase 5 in July of 2015 and April of 2016.

Lawsuit filed against the Town regarding the Sandbag Revetment and Assessment

55. In May of 2015, a group of Homeowners subject to the sandbag revetment assessment filed a lawsuit against the Town alleging, among other things, that the revetment was insufficient to protect their property. As a result, the Town has not collected the assessment.

56. On June 23, 2016, the Town received a letter from the North Carolina Local Government Commission expressing concern over the significant decrease in the Town's General Fund Balance, noting the assessment was intended to increase the Town's General Fund, and asking for information regarding the status of the assessment collections and the Town's plans to increase the fund balance.

Request to keep the Geotextile Tube and Notice of Violation

57. On February 27, 2015, DCM sent a letter notifying the Town that it needed to remove the geotextile tube, chock tubes and scour apron.

58. On March 5, 2015, CP&E sent a letter to DCM requesting further modification of CAMA Major Permit No. 92-14, modified November 26, 2014, to allow the geotextile tube to remain for the duration of the sand bag permit.

59. On March 12, 2015, DCM's Major Permit Manager Doug Huggett responded to the request informing the Town that it was inappropriate to request a modification of the Permit for permission to allow these structures to remain given this was a permit compliance issue. In addition, Mr. Huggett noted that the request was incomplete.

60. On March 20, 2015 the Town, through its agent, responded to DCM's request that it comply with the terms of the permit and remove the geotextile tubes.

61. DCM issued a Notice of Violation (NOV) to the Town on March 26, 2015 because construction of the sandbag revetment was finished but the Town had not removed the temporary geotextile tubes. DCM included a proposed restoration plan requiring removal of the tubes. The NOV and restoration plan were provided to the Commission as stipulated exhibits.

62. On April 24, 2015, DCM issued a revised restoration plan to the Town, indicating it could remove the geotextile tubes or petition the Commission in time to be heard at its July 15, 2015 meeting for a variance allowing the Town to keep the geotextile tubes.

63. On May 4, 2015, the Town indicated it would seek a variance.

Application for major modification to CAMA Major Permit No. 92-14

64. Prior to requesting a variance, the Town sent a revised major modification request on May 1, 2015, which DCM accepted as complete, seeking to retain the geotextile tubes as a part of the temporary erosion control structure. Section 8a of the modification request states, the tubes would “remain in place until the Onslow maintenance navigation and disposal of material along the north end of North Topsail Beach can occur, or until March 31, 2016.” The Town's request and attachments was provided to the Commission as stipulated exhibits.

65. As part of the CAMA Major Permit Modification Application process, adjacent neighbors and the public were given notice of the Town's CAMA permit application through publication in the Star News on May 11, 2014. No comments were received by DCM staff.

66. Also as part of the CAMA Major Permit Modification application process, the Town's application, Field Report, and other materials were sent to resource agencies for comment. Of the agencies responding, DCM Fisheries Specialist raised concerns about the impact of the project on surf zone habitat. The Wildlife Resources Commission also forwarded concerns. DCM did not deem these concerns sufficient to support permit denial. The Field Report and noted comments received by DCM are stipulated exhibits.

67. On June 2, 2015, DCM denied the Town's request because the proposed geotextile tubes were inconsistent with the Commission's rules regarding temporary erosion

control devices found at 15A NCAC 7H. 0308(a) (2) (K) and (L) regulating the size of sandbags and prohibiting the use of anchoring devices for sandbags.

August 2015 Variance

68. Thereafter, the Town submitted a Petition requesting a variance from 15A NCAC 7H .0308(a)(2)(K) and (L) which would allow the Town to keep the geotextile tubes in place as part of the temporary erosion control sandbag structures until March 31, 2016 or the completion of Onslow County's channel maintenance/beach disposal activities, whichever is later. The variance was heard during the July 16, 2015 Commission meeting. During oral argument, the Town explained that the Onslow County-sponsored shallow-draft channel navigation project would remove shoal material from portions of the Atlantic Intracoastal Waterway, the Channel to Jacksonville, and Cedar Bush Cut and deposit the material along the north end of North Topsail Beach. Based on the available information, the volume of material to be removed during the project appeared sufficient to cover the shoreline from New River Inlet south to the area fronting Topsail Reef.

69. The Commission voted to conditionally approve the variance allowing the sand tubes to remain in place until completion of an Onslow County shallow-draft navigation project or June 30, 2015, whichever comes first. The Commission's final agency decision was issued August 14, 2016. DCM issued the permit modification on August 29, 2015.

Onslow County's Shallow Draft Inlet Navigation Project

70. Onslow County, in cooperation with the Town of North Topsail Beach, obtained permits allowing the County to maintain authorized federal navigation channels in the vicinity of North Topsail Beach. *See*, USACE Permit No. SAW-2014-02012 (GP No. 198000291), CAMA

Permit No. 138-15 (amended December 10, 2015), and DWR 401 Water Quality Certification No. 2015-0605 provided to the Commission as stipulated exhibits.

71. Petitioner states that a cost estimate was developed for construction of the Onslow County project including bidding documents and contractor coordination, dredge mobilization, cost to pump sand to beach, and construction observations. The cost to implement this project was estimated at \$1,694,500. The State, Onslow County, and North Topsail Beach agreed to share the cost of permitting and construction with the Town of North Topsail Beach responsible for 25 percent of the total cost or \$423,625.

72. Between March 22, 2016 and April 22, 2016, more than 130,000 cubic yards of material was removed from the channels and deposited along portions of the north end of North Topsail shoreline between 2396 New River Inlet Road (baseline station 1163+00) and 2300 New River Inlet Road (baseline station 1152+00).

73. The Petitioner states that the original plan for disposal of the navigation maintenance material began at a point opposite the intersection of New River Inlet Road and River Road (approximately baseline station 1157+00) with the disposal extending as far south as the volume of material would allow. The area expected to be covered by the navigation maintenance material included the entire portion of the sandbag revetment fronted by the geotextile containment tube. However, Petitioner contends that conditions along the north end changed from the time the contract was bid to the time the contractor began to mobilize for the job and there was not enough dry sand beach in front of the sandbag revetment to allow the contractor to install the discharge pipeline in the location originally proposed. Therefore, an amendment to the contract was issued that allowed the contractor to begin disposal just north of

the sandbag revetment (near baseline station 1163+50). With disposal starting north of the sandbag revetment, the length of shoreline covered by the navigation maintenance material did not extend along the entirety of the sandbag revetment fronted by the geotextile containment tube. As a result, the disposal area only extended to about baseline station 1152+00.

74. On April 26, 2016, DCM was informed that the project was completed. DCM verified this information during a May 19, 2016 site visit. On or about June 1, 2016, DCM issued another NOV requiring the Town either remove the geotextile tube as required by the permit or seek a variance from the Commission at the September 2016 Commission meeting. The Town responded that it would seek a variance from the Commission at the September meeting.

75. Petitioner contends that at the present time (August 2016) a significant portion of the navigation maintenance material deposited in front of the sandbag revetment has been lost with most of the material migrating north along the New River Inlet shoreline. Petitioner contends that the conditions that existed prior to the navigation maintenance project conducive to potential scour and undermining of the sandbag revetment remain in effect today.

76. The Parties stipulate that conditions at the site vary. Sometimes the geotextile tube is covered and sometimes it is not.

77. Pursuant to the NOV restoration plan, on June 14, 2016 (dated June 3, 2016), the Town again requested a modification to CAMA Permit 92-14 to allow the sand tubes to remain in place for the duration of the existing sandbag revetment permit, which expires in November 2022, or until a more long-term solution to the erosion problem can be implemented. A copy of the modification request was provided to the Commission as a stipulated exhibit and includes notice, the DCM major permit forms, the project narrative, and a letter from Dr. Cleary. A copy

of DCM's 2016 field report was also provided to the Commission as a stipulated exhibit. During the permit review process, the WRC provided new comments and attached their 2015 and 2014 comments. The WRC 2016 comments were provided to the Commission as a stipulated exhibit. In connection with the 2016 modification request, no additional objections were received.

78. DCM denied the Town's request to modify the permit on July 26, 2016.

Opinion of Tom Jarrett, CP&E provided to DCM

79. The March 5, 2015 Letter to DCM from Tom Jarrett, CP&E was provided to the Commission as a stipulated exhibit and includes the following opinions: The geotextile tube along the north end of the sandbag revetment continues to provide vital scour protection and its removal could result in dramatic failure of a portion of the sand bag revetment. Significant accretion of sand has occurred along the southern portions of geotextile tube. Approximately 1,000 feet of the southern portion of the tube has been partially or completely covered.

80. In Tom Jarrett's opinion, the tubes have not had any noticeable adverse impact to adjacent shorelines as compared to revetments composed of only sand bags. Mr. Jarrett further opines that allowing the geotextile tube to remain until expiration of the sandbag revetment permit would not have any greater negative impact on adjacent properties than the impacts associated with the sand bag revetment itself.

81. In Tom Jarrett's opinion, the rapidly changing conditions along the north end of North Topsail Beach and the accelerated rate of loss of material from the area has made it abundantly clear that the sand bag revetment alone will most likely not be able to protect the homes or the roads in this area for a sufficient amount of time to allow for the recovery of the shoreline associated with the channel realignment project.

82. In Tom Jarrett's opinion, reconfiguration of the ebb tide delta of New River Inlet has essentially ceased given that the ocean bar channel has returned to a position and alignment comparable to that existing before the 2012-13 channel relocation project. The movement of the channel to the north and the subsequent impacts on the ebb tide delta are documented in the last two project monitoring reports dated September 2015 and June 2016 (draft) both of which were provided to the Commission as stipulated exhibits. Positive impacts from the inlet channel on shoreline along the north end of North Topsail Beach will likely not occur until the channel can again be moved back to a preferred position and alignment. The Town anticipates performing channel maintenance during the 2017-18.

83. In an April 27, 2016 letter to the Town Manager, Mr. Jarrett stated, "[c]onditions contributing to erosion along the north end of North Topsail Beach have not changed significantly since March of 2015." Since material deposited along the north end did not extend along the entire sandbag revetment, it may be subject to possible failure due to undermining and scour if the sand tubes are removed. See letter provided to Commission as a stipulated exhibit.

84. In Tom Jarrett's opinion, restoring the channel to a preferred alignment will not cause immediate changes. The time required for the north shoreline on North Topsail Beach to respond to the preferred channel location was projected to take at least five years before positive impacts began to be manifest and possibly 15 years before the shoreline returned to a condition comparable to that which existed during the mid-1980's. These projections assumed the channel would be maintained in perpetually in its preferred position. Even though the initial channel relocation project was carried out in 2012-13, the changes in the ebb tide delta resulting from this initial effort have for the most part been negated due to the inability to hold the channel in its

preferred position and alignment. Therefore, the expected changes in the ebb tide delta and its impact on the shoreline along the north end of North Topsail Beach have been delayed.

Opinion of Dr. William J Cleary, University of North Carolina at Wilmington

85. In a letter dated May 25, 2016, Dr. William J. Cleary called attention to scour of the sea bed immediately seaward of the sandbag revetment that resulted from the combined impacts of Perigean tide events in September and October of 2015 and Hurricane Joaquin. See letter provided as a stipulated exhibit. In his opinion, the erosion of the low-tide beach contributed to the slumping of some sandbags which in turn led to overtopping of the revetment and steepening of the foreshore profile in the area fronting most of the sandbag revetment. Dr. Cleary opines that based on his personal observation and shoreline change data, ‘the removal of the [geotextile-tube] will have serious consequences on the stability of the sand bag revetment and that its removal will ultimately lead to accelerated erosion of the sea bed adjacent to the sand bags due to a variety of wave-related processes. In turn, the consequent degradation of the sand bag armoring will have dire consequences for the homes currently protected by the sand bags.’

Town’s Response to Consultants’ Opinions

86. With the prospect of an extended period of recovery along the north end of the island associated with the channel relocation project, the Town is considering applying for a permit to construct a terminal groin on the south shoulder of New River Inlet in the event the next channel relocation project does not produce the needed positive shoreline impacts in a timely manner. Session Law 2015-241 Section 14.6.(r) provides the necessary authority for the Town to consider a terminal groin at New River Inlet.

87. Based on DCM's experience with permitting similar structures, permits for a terminal groin will likely not be available for at least a year once the resource agency review process is initiated. At this time (August 2016), the Town together with Onslow County has issued a request seeking qualified firms to develop long-term management plans for New River Inlet to include but not be limited to consideration of a terminal groin.

Continuing Efforts to Address the Erosion Problem

88. Since the completion of the sandbag revetment, the Town has spent over \$500,000 to maintain the revetment according to an August 2016 statement of Assistant Town Manager Carin Faulkner, a copy of which is a Stipulated Exhibit.

89. In July 2015, the Town authorized CP&E to conduct an alternative channel analysis using the numerical model known as Delft3D. Delft3D is a state of the art model that has the capability of simulating changes in inlet morphology in response to man-induced changes. The model was used to evaluate a full range of possible channel positions and alignments. The alternative analysis was completed in June 2016 and recommended the channel realignment permit be modified to allow for an alternative channel alignment that pivots the 2012/2013 channel clockwise 17 degrees. The Town executed a contract with CP&E on April 14, 2016 to assist with securing permits for this project. It is anticipated that permits will be issued in the fall of 2016 and that the project will be constructed during the winter of 2017/2018.

90. In July 2015, the Town contracted with CP&E to use the Delft3D model to conduct a preliminary assessment of the possible use of a terminal groin on the south side of New River Inlet as a means of controlling the erosion along the shoreline immediately south of the inlet. The preliminary analysis simulated six (6) terminal groins of different lengths and

orientations. The preliminary assessment indicated a terminal groin could be effective in controlling erosion on the north end of town.

91. On July 26, 2016, the Town and Onslow County entered into an interlocal agreement to collaborate in the commission and funding of a study to determine the best available options for the establishment of hardened structures including but not limited to terminal groins, jetties, or a combination thereof, to maintain the navigation channel through the New River Inlet to authorized depths over the next 50 years (hereinafter “Interlocal Agreement”). The long-term sustainability of the Town’s storm damage reduction project will require sand from New River Inlet. Onslow County’s primary interest is to maintain dependable navigation through New River Inlet in the most cost effective manner over 50 years. To that end, the Town issued a Request for Qualifications (hereinafter “RFQ”) seeking qualified engineering firms to conduct a study to determine the best options, including hard structures, to maintain the navigation channel through New River Inlet and protect development on the adjacent shorelines.

History of the Commission's Consideration of Geotextile Tubes

92. Spencer Rogers gave a presentation at the July 2010 Commission meeting on the use of geotextile tubes for temporary erosion control. During the Commission’s September 16, 2010 meeting, DCM Staff presented additional information regarding geotextile tubes.

93. During its 2010 presentation, Staff raised public safety concerns about the stability of geotextile tubes, their ability to roll, and susceptibility to complete failure if damaged. Due to these concerns, Staff recommended against amending the rules for temporary erosion control structures to allow the use of geotextile tubes. The Commission did not initiate rulemaking to allow the temporary use of geotextile tubes.

94. At the April 29, 2015 Commission meeting, DCM Staff presented a PowerPoint similar to that used in 2010, raised the same concerns about geotextile tubes, and recommended against rulemaking. The Commission discussed geotextile tubes again at its July 2016 meeting and decided not to include geotextile tubes in the temporary erosion control structure rules.

The Town's Variance Request

95. On August 3, 2016, the Town requested a variance from 15A NCAC 7H.0308(a)(2)(K) and (L) in order to keep the geotextile tubes in place as a part of the temporary erosion control sandbag structures until the Town can identify a long-term solution for the erosion problem on the extreme north end of its shoreline. The Town indicated that it intends to explore the possibility of installing a terminal groin immediately adjacent to New River Inlet and has entered into an Interlocal Agreement for that purpose. In the event Onslow County and the Town are not successful in obtaining a permit to construct a hardened structure at New River Inlet, the Town requested a variance authorizing modification of the sandbag permit to allow the sand tube to remain for the duration permitted for the sandbag revetment (November 2022).

STIPULATED EXHIBITS

Included with the Petition and the Staff Recommendation for the Commission's review were the following Stipulated Exhibits:

- All the stipulated exhibits presented to the Commission as part of the 2014 Variance including:
 - Beach nourishment easements from 38 oceanfront owners to the Town;
 - Exhibit 15 aerial photo 2014 Google;
 - Relevant portions of FEIS for Inlet Management Project dated July 2009;
 - Tom Jarrett Erosion History Report dated Nov. 13, 2014, Jarrett affidavit Oct. 7, 2014 and Jarrett Erosion Report;
 - CAMA Major Permit 79-10 as amended, issued July 21, 2010;
 - August 2014 Shoreline Survey Beach Profiles Stations 11+35 to 11+55 (CBI);
 - Cleary Letter;
 - October 2014 Monitoring Report;

- Sandbag “Final Design” CAMA Major Permit application and attachments;
 - Comment from DCM Fisheries Specialist;
 - DCM Field Report;
 - Emergency Permit email from DCM to Town dated October 21, 2014;
 - CAMA Major Permit 92-14 with cover letter;
 - Tax base information from Town;
 - Town resolution 2014-13;
 - Town resolution 2014-16;
 - Draft Town meeting minutes showing public comment on sandbag project;
 - Notice of Town meeting on November 19, 2014 to put sandbag project to bid;
 - Various site photographs (22 photos) included in PowerPoint presentation.
- All the stipulated exhibits presented to the Commission as part of the 2015 Variance including:
 - Major Permit Modification Application submitted by the Town to the DCM on May 1, 2015 including forms, attachments and appendices;
 - Correspondence from the DCM to the Town, dated February 27, 2015;
 - Correspondence from Coastal Planning and Engineering of North Carolina, Inc. to DCM dated March 5, 2015;
 - Correspondence from Coastal Planning and Eng of NC, Inc. to DCM dated March 18, 2015;
 - June 25, 2015 Statement of Tom Jarrett, P.E.;
 - The Commission’s November 24, 2014 Final Agency Decision granting 2014 Variance petition;
 - Modification to CAMA Major Permit No. 92-14 authorizing “regular” sized bags on the north end;
 - Email chain from November 24-26, 2014 regarding the geotextile tube request, including Town’s commitment to remove bags;
 - Report from Town re use of geotextile tubes and new proposed size of sandbag structure;
 - Permit No. 92-14 as amended on November 26, 2014;
 - Project Narrative from Town;
 - Correspondence from DCM to Town on March 12, 2015;
 - March 20, 2015 response from Town to DCM;
 - March 26, 2015 NOV and restoration plan;
 - April 24, 2015 revised restoration plan;
 - May 4, 2015 signed copy of revised restoration plan;
 - Comments received during permit review process from DCM Fisheries Specialist and WRC;
 - DCM Field Report for modification request
 - June 2, 2015 letter to Town from DCM denying modification request;
 - 2010 PowerPoint re: geotextile tubes by DCM to Commission;
 - 2015 PowerPoint re: geotextile tubes by DCM to Commission;
 - Updated PowerPoint with aerial and ground level site photographs.

- Final Agency Decision issued August 14, 2015 conditionally granting the Town's request for a variance;
- 2016 Notice of Violation and signed restoration plan;
- The Town's Petition seeking a variance submitted August 3, 2016 and attachments including the following:
 - The subject permit;
 - A description of the proposed development including a site plan;
 - Proof of notice to the adjacent property owners;
 - The Town's written reasons and arguments as to how the Town meets the four variance criteria; and
 - A draft set of proposed stipulated facts and stipulated exhibits.
- May 25, 2016 letter from Dr. William Cleary Opinion to Town Attorney with attachments (Figures 1 – 11);
- CV for Dr. William J. Cleary;
- Coastal Planning & Engineering of NC, Inc. Contract for Terminal Groin Feasibility Study including Exhibits A – C;
- July 26, 2016 Interlocal Agreement between Town and County for Groin/Jetty study;
- July 29, 2016 Request for Qualifications issued by Town;
- June 23, 2016 Letter to Town from Local Government Commission;
- 2016 DCM Field Report for modification request;
- April 27, 2016 letter to Stuart Turille from Tom Jarrett regarding Geo-Tube Removal including attached Fig. 1;
- CV for Stuart Jarrett;
- July 26, 2016 letter to Town from DCM denying request for permit modification;
- August 2016 statement from Assistant Town Manager Carin Faulkner regarding cost spent to maintain the revetment;
- Town's June 2016 application for a Permit Modification, including attachments;
- 2016 comments from WRC on Town's modification request;
- DCM's and Town's PowerPoint presentations.

CONCLUSIONS OF LAW

1. The Commission has jurisdiction over the parties and the subject matter.
2. All notices for the proceeding were adequate and proper.
3. DCM submitted a Staff Recommendation for the Commission's consideration on September 1, 2016 in which it took the position that Petitioner had failed to carry its burden to meet all four of the factors without which a variance cannot be granted. In summary, DCM pointed out that the "supersized" sandbags previously authorized by the Commission in the 2014 variance should have been sufficient to afford the temporary protection required at the Site. DCM argued that any hardship imposed by the Commission's rules is unnecessary as Petitioner opted to install a smaller sandbag structure than that authorized by the Commission and Petitioner can still reconfigure the existing sandbag structure to the full size allowed by the 2014 variance. In its Recommendation, DCM pointed out that it had approved Petitioner's request to employ the geotextile tubes as a temporary construction method because Petitioner and its consultant had provided written confirmation that the geotextile tube would be removed following construction. DCM recommended the Commission deny the request because allowing the geotextile tube to remain in place after construction is complete is not consistent with the spirit, purpose, and intent of the Commission's rules, does not protect public safety and welfare, and does not preserve substantial justice. DCM based its recommendation on the Commission's policy that only allows *temporary erosion control* for imminently threatened structures and its concerns over the stability and safety of geotextile tubes. DCM also noted that contrary to the prediction of the Town's consultants, portions of the Town's geotextile tube have already been removed and the remaining sandbags have not failed.

4. Following the Town's revision to its variance request during the September 13, 2016 hearing, DCM amended its recommendation to the Commission and agreed that if the Commission granted the variance and allowed the geotextile tubes to remain in place until May 1, 2017 it should do so with the following conditions:

- The geotextile tubes may remain in place until May 1, 2017;
- By May 1, 2017, the Town is required to compromise and remove the geotextile tubes. DCM has defined removal to require that the Town cut the exposed geotextile tube and remove all visible material using a forklift to pull out loose material. Removal does not include excavating the entire geotextile tube if it is covered with sand. DCM may provide addition directions to the Town and its consultants based on Site conditions during the removal process.
- By May 1, 2017 any exposed geotextile tube material shall be removed;
- By May 1, 2017 the geotextile tubes shall not be operable.
- No sand or sandbags may be placed on any uncompromised portion of the geotextile tubes;
- The geotextile tubes and sandbag revetment will remain within and will not exceed the footprint of the supersized sandbags allowed by the Commission in its final agency decision dated November 24, 2014.

6. In light of the Town's revised variance request and DCM's revised recommendation, the Commission agrees that Petitioner has met the requirements in N.C.G.S. § 113A-120.1(a) and 15 NCAC 07J .0703(f) which must be found before a variance can be granted as set forth below.

- a. **Strict application of from 15A NCAC 7H .0308(a)(2)(K) and (L) will cause unnecessary hardships.**

The Commission affirmatively finds that in light of the Town's agreement to amend the variance request to specify May 1, 2017 as a date certain by which the geotextile tubes will be removed, strict application of 15A NCAC 7H .0308(a)(2)(K) and (L) (hereinafter "Sandbag

Rules”) would cause Petitioner unnecessary hardship. The Sandbag Rules are designed to allow for temporary erosion control measures in the Ocean Hazard AEC. Without this variance, Petitioner would be in the position of having to remove the geotextile tubes during the upcoming winter storm season.

The Commission affirmative finds that Petitioner has shown that the strict application of the Sandbag Rules would cause Petitioner unnecessary hardship in light of Petitioner’s assurance that the geotextile tubes will be compromised and removed by May 2017, and subject to the condition that neither sand nor sandbags will be placed on the geotextile tubes and that the geotextile tubes and existing sandbag revetment will be maintained within the footprint previously allowed by the Commission in its November 24, 2014 final agency decision.

For these reasons, the Commission affirmatively finds that Petitioner has met the first factor without which a variance cannot be granted.

b. Petitioner has demonstrated that the hardship results from conditions peculiar to Petitioner's property.

The Commission affirmatively finds that Petitioner has demonstrated that the hardship results from conditions peculiar to the property. Specifically, the Site is located within the Inlet Hazard AEC for the New River Inlet and is influenced by the dynamic inlet processes. The behavior of the shoreline on the north end of North Topsail Beach is impacted by the position and alignment of the main bar channel of New River Inlet as shown by morphological studies of New River Inlet reported in the FEIS. The studies also identified a position and alignment of the bar channel that would provide a beneficial impact on the north end shoreline. Based on these studies, the Town elected to artificially move the channel to the preferred position and alignment indicated by the morphological studies. The Town completed the channel realignment project in

February 2013. The purpose of moving the channel was to encourage the reconfiguration of the inlet's ebb tide delta through the redistribution of material from the north side of the inlet to the south side. However, this purpose was not realized.

The Town's consultant, Tom Jarrett, has now advised that the ocean bar channel has returned to a position and alignment comparable to that existing before the channel relocation project. As a result, it is his opinion that reconfiguration of the ebb tide delta of New River Inlet has essentially ceased. *See*, Stip. Fact No. 84 and September 2015 and June 2016 (draft) monitoring reports provided to the Commission as stipulated exhibits. Mr. Jarrett opined that positive impacts from the inlet channel on shoreline along the north end of North Topsail Beach will likely not occur until the channel is relocated to the preferred position and alignment. The Town anticipates performing channel maintenance during the 2017-18.

Given the Town's unsuccessful attempt to realign the channel in the Inlet Hazard AEC, the Commission affirmatively finds that Petitioner has demonstrated that the hardship results from conditions peculiar to the property and has met the second factor required for the grant of its request for a variance.

c. Petitioner has demonstrated that hardships do not result from its actions.

The Commission affirmatively finds that Petitioner has demonstrated that the hardship does not result from actions taken by the Petitioner. Specifically, the Town has done nothing to accelerate the erosion affecting the Site and has taken significant, if unsuccessful, steps to address the problem, including development and implementation of its Inlet Management Plan.

In particular, the Commission notes that in 2014 the Town requested a variance allowing construction of a supersized sandbag structure. The Commission granted the Town's request.

However, as the Town candidly admitted during oral argument, the Town was unable to afford the cost of the permitted sandbag structure when the bids came in. Consequently, the Town reduced the size of the sandbag revetment. In its initial Recommendation, DCM pointed out that hardships, if any exist, are the result of the Town's own failure to build the sand bag revetment to the permitted dimensions authorized by the Commission. While the Commission is troubled to learn that the Town requested a variance for a supersized sandbag structure that it did not have the financial capacity to construct, logically there is no basis for assuming that this failure is the cause of Petitioner's current hardships. In fact, given Site conditions during construction, it is possible that construction of the supersized sandbag revetment might also have also resulted in the Town requesting permission to install a geotextile tube during construction of the supersized sandbag revetment to stabilize the work environment. It is impossible to know whether installation of geotextile tubes during construction of a supersized revetment would have resulted in the same or similar conditions as occurred during construction of the smaller revetment.

During construction of the smaller sandbag revetment the Town requested DCM allow the use of a geotextile sand tube during construction in order to stabilize the work environment and allow equipment to be used safely on the shoreline. The Town and its consultants agreed in writing to remove the geotextile tube when construction was completed. After the smaller sandbag revetment was completed in the Spring of 2015, the Town became aware that the beach profile in front of the revetment and geotextile tube became steep and wave action had caused the geotextile tubes and sandbag structures to mold together. The consultants alerted the Town to concerns that if the geotextile tubes were excavated, that work could cause the revetment to fail. Following construction, the Town was concerned that the sandbag revetment alone would not be

able to protect the homes or the roads in this area during the winter storm season or give the shoreline the necessary time for gradual recovery. These Site conditions do not appear to have been caused by Petitioner nor do they appear to have been anticipated by Petitioner.

After considering the stipulated facts and stipulated exhibits, the Commission affirmatively finds that the hardships relating to this specific variance request are not the result of the Town's actions. For these reasons, the Commission affirmatively finds that Petitioner has demonstrated that it has met the third factor required for a variance.

- d. Petitioner has demonstrated that the revised variance request is consistent with the spirit, purpose and intent of the Commission's rules, will secure public safety and welfare, and will preserve substantial justice.**

Petitioner has demonstrated (a) that the requested variance is consistent with the spirit, purpose and intent of the Commission's rules, (b) that it will secure public safety and welfare, and (c) that it will preserve substantial justice. Specifically, the spirit, purpose and intent of the Commission's rules for the Ocean Hazard Area of Environmental Concern is to allow temporary erosion control to protect imminently threatened structures, while limiting the size of the individual sandbags and the dimensions of the overall structure that may be permitted. In 2003, CAMA was amended to include 113A-115.1, which prohibited the use of erosion control structures along the ocean shoreline, except in a few specific situations. The Commission's rules allow for the continued use of "temporary erosion control structures" made of sandbags to protect imminently threatened structures. The installation and design standards in the Commission's rules reflect the temporary nature of the structures, and demonstrate that sandbags were not intended as large, permanent structures. The Sandbag Rules are designed to offer immediate relief and time to find a permanent solution. The Commission's size limits on

individual sandbags and limits on the overall structure size are intended to promote structural stability and effectiveness, while maintaining the temporary nature and the public's right of safe access to the beach.

The Town has struggled to find a permanent solution to erosion in this Inlet Hazard AEC. In 2013, the Town sought to control erosion by realigning the channel. The channel relocation did not produce the predicted measurable positive impacts on the Site. As part of the 2016 Navigation Maintenance Project funded jointly by the Town, Onslow County, and the State, the Town received sand along the revetment. However, for unforeseen reasons, the 2016 project was unable to place sand along the entire length of the revetment fronted by the geotextile containment tubes. In addition, much of the material placed during the 2016 project has been lost as a result of rapidly changing conditions along the north end of the island.

In its Recommendation, DCM has accurately stated that the spirit, purpose and intent of the Commission's rules is to allow *temporary* erosion control for imminently threatened structures while limiting the size of the individual sandbags and dimensions of the overall structures that may be permitted. Moreover, DCM correctly points out that the Commission has not adopted rules allowing the long term use of geotextile tubes because of safety and other design concerns. In this case, the tubes were only allowed as a temporary construction tool and were not designed to provide continued long-term protection as part of the sandbag revetment.

Under the specific facts of the revised request, which reflect current site conditions and include an agreement between Petitioner and DCM as to conditions to be imposed on this limited further extension of time to leave the geotextile tubes in place, the Commission affirmatively finds that request is consistent with the spirit, purpose, and intent of the Commission's Rules.

The second assessment to be made is whether the variance proposed by Petitioner will impact public safety and welfare. Petitioner submits, and the Commission agrees, that if the deadline for removal of the geotextile tubes is extended through the winter storm season to May 1, 2017, public safety and welfare will be protected. However, because of concerns over the design of geotextile tubes (including stability) as a long term temporary solution, once the winter storm season is ended – no later than May 1, 2017 – the Commission requires that the geotextile tubes be compromised and removed. DCM has defined removal to require that the Town cut the exposed geotextile tube and remove all visible material using a forklift to pull out loose material. Removal does not include excavating the entire geotextile tube if it is covered with sand. DCM may provide additional directions to the Town and its consultants based on Site conditions during the removal process. This removal is necessary to protect the public from safety issues that are anticipated to increase as the tubes deteriorated and as the warmer summer months increase the public's recreation use of the public trust area. Allowing the geotextile tubes to remain in place for the winter storm season and then removing the tubes will lessen any unreasonable dangers to life and adjacent property.

Observations made during the construction process indicate the tubes have not had a noticeable adverse impact on adjacent shorelines as compared to the impacts relating to the revetments composed of only sand bags. Therefore, allowing the sand tube to remain for slightly extended period of time (to May 1, 2017) should not have any additional negative impact on adjacent properties.

Finally, the Commission agrees that a variance subject to conditions will preserve substantial justice by allowing the Town to continue using the geotextile tubes, which were never

designed to be part of the permitted sand bag revetment, for a limited time until May 1, 2017 and then compromise and remove the exposed geotextile tubes under DCM's direction.

For these reasons, the Commission affirmatively finds that Petitioner has met the fourth factor required by N.C.G.S. § 113A-120.1(a) subject to the conditions set forth below.

ORDER

THEREFORE, the Town's request for a variance from 15A NCAC 7H. 0308(a)(2)(K) and (L) in order to extend the time to keep the geotextile tubes in place as a part of the temporary erosion control sandbag structures is GRANTED subject to the following negotiated conditions agreed to by the Town and DCM as a compromise during the September 13, 2016 hearing:

1. The geotextile tubes may remain in place until May 1, 2017;
2. By May 1, 2017, the Town is required to compromise and remove the geotextile tubes. DCM has defined removal to require that the Town cut the exposed geotextile tube and remove all visible material using a forklift to pull out loose material. Removal does not include excavating the entire geotextile tube if it is covered with sand. DCM may provide additional directions to the Town and its consultants based on Site conditions during the removal process.
3. By May 1, 2017 any exposed geotextile tube material shall be removed;
4. By May 1, 2017 the geotextile tubes shall not be operable.
5. No sand or sandbags may be placed on any uncompromised portion of the geotextile tubes;
6. The geotextile tubes and sandbag revetment will remain within and will not exceed the footprint of the supersized sandbags allowed by the Commission in its final agency decision dated November 24, 2014.

The granting of this variance does not relieve Petitioner of the responsibility for obtaining any other required permits from the proper permitting authority. This variance is based upon the Stipulated Facts set forth above. The Commission reserves the right to reconsider the granting of

this variance and to take any appropriate action should it be shown that any of the above Stipulated Facts is not true or that the Stipulated Facts have materially changed. Notice is hereby provided that absent a significant or material change in circumstances, the Commission will not hear or consider any further variance request from the Town to extend the time for removing the geotextile tubes located on North Topsail Beach.

This is the 5th day of October 2016.

Frank D. Gorham III

Frank D. Gorham, III, Chairman
Coastal Resources Commission

CERTIFICATE OF SERVICE

This is to certify that I have this day served the foregoing FINAL AGENCY DECISION upon the parties by the methods indicated below:

Stuart Turille
Town Manager
2008 Loggerhead Court
North Topsail Beach, NC 28460

*Certified Mail/ Return Receipt Requested
and Electronically at*
townmanager@north-topsail-beach.org

Brian E. Edes
Town Attorney
Crossley McIntosh & Collier
5002 Randall Parkway
Wilmington, NC 28403

U.S. Mail and Electronically at
briane@cmclawfirm.com

Christine A. Goebel, Esq.
Assistant General Counsel
N.C. Department of Env. Quality
217 West Jones Street
Raleigh, NC 27699

Electronically at
christine.goebel@ncdenr.gov

Braxton C. Davis, Director
Mike Lopazanski, Assistant Director
Angela Willis, Assistant to the Director
Division of Coastal Management
400 Commerce Ave.
Morehead City, NC 28557

electronically:
Braxton.Davis@ncdenr.gov
Mike.Lopazanski@ncdenr.gov
Angela.Willis@ncdenr.gov

This is the 5th day of October, 2016.



Mary L. Lucasse
Special Deputy Attorney General and Commission Counsel
N.C. Department of Justice
P.O. Box 629
Raleigh, N. C. 27602

North Topsail Beach Hardened Structure Project
Professional Engineering, Planning, Permitting & Design Services Agreement
Fixed Price Basis

This agreement is entered to by and among Dial Cordy and Associates, Inc. and the Town of North Topsail Beach on a fixed price basis, subject to the following terms and conditions:

1. **SCOPE OF SERVICES:** Dial Cordy and Associates, Inc. ("DC&A") agrees to perform for the Town of North Topsail Beach ("CLIENT"), professional consulting ("Services") described in the proposal, attached hereto as Exhibit A and incorporated herein by reference.
2. **FEES, INVOICES AND PAYMENTS:** The Services will be performed on a fixed price basis not to exceed **\$499,985.00**. Invoices will be submitted to CLIENT on a monthly basis and are due and payable within 30 days of receipt by CLIENT. Should there be any dispute as to the amount of payment to be made on a percent complete basis to any portion of an invoice, the undisputed portion shall be promptly paid. All change orders that would require additional compensation beyond the fixed price of this Agreement shall be first be approved by an affirmative vote of the majority of CLIENT'S Board of Aldermen.
3. **CLIENT'S COOPERATION:** To assist DC&A in performing the Services, CLIENT shall (i) consult with DC&A when requested, (ii) permit DC&A reasonable access to relevant project sites, (iii) ensure reasonable cooperation of CLIENT's employees (iv) notify and report to all regulatory agencies as required by such agencies.
4. If DC&A anticipates a delay in the work and/or Services to be performed under this Agreement that, in DC&A's opinion is caused by (i) an act, failure to act or neglect of CLIENT or CLIENT's employees or any third parties; (ii) changes in the scope of the work; (iii) unforeseen, differing or changed circumstances or conditions including differing site conditions, acts of force majeure (such as fires, floods, riots, and strikes); (iv) changes in government acts or regulations; (v) delay authorized by CLIENT and agreed to by DC&A; or (vi) any other cause beyond the reasonable control of DC&A, then DC&A shall immediately report to CLIENT the anticipated delay and the causes thereof in writing. CLIENT and DC&A may then discuss and seek to agree as to the cause(s) of the anticipated delay, the remedies of the delay, as well as any additional compensation to be paid as a consequence of the delay; provided however no additional compensation shall be paid for work additional work performed as a consequence of a delay until such time as DC&A's has provided written notice of the anticipated delay and CLIENT agrees to additional compensation in writing.
5. **INSURANCE:** DC&A is presently protected by Worker's Compensation Insurance as required by applicable law and by General Liability and Automobile Liability Insurance. DC&A shall at all times maintain the nature and amount of insurance depicted on the Certificate of Insurance attached hereto as Exhibit B and incorporated herein by reference. DC&A shall cause CLIENT to be endorsed and named as an additional insured on DC&A's liability insurance throughout the course of and for the purposes of

this Agreement. Insurance certificates shall be furnished to CLIENT with the appropriate endorsement of CLIENT as an additional insured.

6. INDEMNITY: DC&A shall defend, indemnify and hold harmless CLIENT from and against loss or damages to tangible property, or injury to persons, or any other damages or costs to the extent said damages and costs arise from the negligent or intentional acts or omissions of DC&A, its borrowed servants and their employer and its subcontractors, and their respective employees and agents acting in the course and scope of their employment in any way related to the Project.
7. GOVERNING LAWS: This Agreement shall be governed and construed in accordance with the laws of the State of North Carolina.
8. TERMINATION: Either party may terminate this Agreement with or without cause upon thirty (30) days' written notice to the other party. Upon such termination, CLIENT shall pay DC&A for all Services performed hereunder up to the date of such termination provided that DC&A provides the Town with all data, modeling and other associated items developed, gathered or maintained by DC&A for the purpose of this project.
9. ASSIGNMENT: Neither DC&A nor CLIENT shall assign any right or delegate any duty under this Agreement without the prior written consent of the other, which consent shall not be unreasonably withheld.
10. DATA GATHERING AND TRANSFER: It is understood that DC&A's fixed price for this Agreement is based in part on certain assumptions pertaining to data transfers from other non-governmental entities other than CLIENT. DC&A represents that all such material data related to said assumptions shall be obtained by DC&A or otherwise successfully transferred to DC&A within sixty (60) days of the Issuance of the Notice to Proceed. DC&A further represents that the costs associated with the DC&A's gathering and obtaining said data shall not exceed the sum of \$25,000 of the contract price. DC&A shall, in writing, confirm to CLIENT on or before the sixtieth day following the issuance of the Notice to Proceed that DC&A has successfully gathered and obtained the data referenced in this Section 10. In the event DC&A is unable to make such a written confirmation to CLIENT, DC&A shall provide CLIENT with a written comprehensive report of the status of the transfer/collection of the data referenced herein. In the event CLIENT is not satisfied with the status of the data transfer/collection process on the sixtieth (60th) day following the issuance of the Notice to Proceed CLIENT may, in its sole discretion, elect to terminate the Agreement immediately notwithstanding the provisions of Section 8 above. Any such termination shall be by an affirmative vote of a majority of CLIENT'S Board of Alderman and notice of said affirmative vote shall be given to DC&A within three (3) days of the vote to terminate.
11. MISCELLANEOUS:
 - a. ENTIRE AGREEMENT, PRECEDENCE, ACCEPTANCE MODIFICATIONS The terms and conditions set forth herein constitute the entire understanding of the Parties relating to the provisions of

the Services by DC&A to the CLIENT. In the event of conflict, this Agreement, including all Exhibits referenced, shall govern.

b. DISPUTES, ATTORNEY FEES - Any dispute regarding this Agreement or the Services shall be resolved first by exchange of documents by senior management of the parties, who may be assisted by counsel. Any thereafter unresolved disputes shall be litigated in Onslow County, North Carolina. In any litigation, the Prevailing Party shall be entitled to receive, as part of any award or judgment, fifty percent (50%) of its reasonable attorneys' fees and costs incurred in handling the dispute. For these purposes, the "Prevailing Party" shall be the party who obtains a litigation result more favorable to it than its last formal written offer (made at least 20 calendar days prior to the formal trial) to settle such litigation.

c. WAIVER OF TERMS AND CONDITIONS - The failure of DC&A or CLIENT in any one or more instances to enforce one or more of the terms or conditions of this Agreement or to exercise any right or privilege in the Agreement or the waiver by DC&A or CLIENT of any breach of the terms or conditions of this Agreement shall not be construed as thereafter waiving any such terms, conditions, rights, or privileges, and the same shall continue and remain in force and effect as if no such failure to enforce had occurred.

d. NOTICES- Any notices required hereunder may be sent by orally confirmed US Mail, courier service (e.g. FedEx), orally confirmed telecopy (fax) or orally confirmed email (further confirmed by US Mail) to the addresses set forth below.

e. SEVERABILITY AND SURVIVAL- Each provision of this Agreement is severable from the others. Should any provision of this Agreement be found invalid or unenforceable, such provision shall be ineffective only to the extent required by law, without invalidating the remainder of this Agreement.


Further, to the extent permitted by law, any provision found invalid or unenforceable shall be deemed automatically redrawn to the extent necessary to render it valid and enforceable consistent with the parties' intent. The terms and conditions set forth herein shall survive the termination of this Agreement.

CLIENT and DC&A agree to the foregoing and have caused this Agreement to be executed by their duly authorized representatives as of the date set forth below.


[Signatures on following page]

Executed this the 9th day of June, 2017 by:

Town of North Topsail Beach


Stuart Turille, Town Manager
2008 Loggerhead Court
North Topsail Beach, NC 28460

Dial Cordy and Associates Inc.


R. Steven Dial, President
201 North Front Street
Wilmington, NC 28401.

**North Topsail Beach Hardened Structure Project
Professional Engineering, Planning, Permitting & Design Services**

**Dial Cordy and Associates Inc.
and
Applied Technology and Management Inc.**

Scope of Services

Dial Cordy and Associates Inc. (DC&A) will assist the Town of North Topsail Beach (Town) and Onslow County (County) in the preparation and development of a NEPA-compliant Environmental Impact Statement (EIS) and supporting documentation, following acceptance of a preferred hardened structure design by the Town and County. The DC&A team will complete an EIS in accordance with the National Environmental Policy Act (NEPA) / State Environmental Policy Act (SEPA) process as legislatively mandated. Engineering design and cost estimating will be prepared at a level needed to assess alternative costs, and to support the EIS and permitting for the project.

The NEPA/SEPA documentation timeline goal is anticipated to be a minimum of 2 years. While some upfront work on the NEPA/SEPA document can be started, the main body of document preparation will be completed after our subcontractor, Applied Technology and Management Inc., has completed the preliminary engineering analysis and gained approval from the client and the US Army Corps of Engineers Project Manager to proceed with design of the preferred alternative.

For this contract, DC&A will serve as the third-party contractor under direction from the Wilmington District Corps of Engineers. Our subcontractor, ATM, will work independently on the engineering analysis, design alternatives, and cost estimating for the project. Dr. Pete Schuhmann from the University of NC at Wilmington will serve as the team's economist for assistance in the EIS development.

Scope of Work Assumptions

In preparing the Scope of Work, it should be noted that there are some overriding assumptions that have been made which are listed below. These assumptions are provided in order for us to stay within the budget the Town/County presently have for the project.

- The alternatives evaluated and modelled in the Feasibility Report by CBI/CPE will be utilized as a basis for alternative evaluation and selection of a preferred design. No additional numerical modeling is proposed for new hardened structure alternatives and if required will be conducted under separate proposal.
- All available documents requested from CBI/CPE will be provided on a timely basis.

EXHIBIT A

- Additional engineering analysis and modelling required will be limited to minimal desk top analysis. No additional complex numerical modeling is proposed.
- This contract includes only 60% design of the preferred alternative and does not include preparation of bid specifications and final design needed to develop construction plans.
- The overall duration of the project is expected to be two (2) years. Should the timeframe extend beyond this length due to delays on the part of the Corps of Engineers or the Town/County, additional funding may be requested for continued agency coordination.
- Participation in meetings may be required of CPE/CBI staff pertaining to modeling and to linkage of the Ocean Bar project. Their staff time is not covered in our cost for this project.

The following scope of services includes engineering services, preparation of a Draft and Final EIS, an Administrative Record (AR), and associated supplemental documentation as required to meet NEPA of 1969 as amended, found in the 42 United States Code § 4321, SEPA procedures found in North Carolina General Statute 133A-1 through -12, and hardened structure specifics under General Statute 113A-115.1. Efforts will also include a significant and proactive public involvement program through scoping; formal and informal coordination with local, state, and federal resource agencies; and preparation and coordination of specific local, state, and federal environmental authorizations.

1.0 ANALYSIS AND DEVELOPMENT OF ALTERNATIVES

TASK 1.1 - INFORMAL KICK-OFF MEETING and DEVELOPMENT OF ALTERNATIVES

Initially, DC&A will arrange a project workshop between the Town's Board of Aldermen and the County's Board of Commissioners to establish the project's purpose, needs, and desired outcomes. Upon completion of the workshop, DC&A will proceed with an economic evaluation and the development of alternatives as outlined below.

- Review available plans, reports, survey data, and conceptual designs already completed and formulate engineering design alternatives that are cost-effective and accomplish the Town's and County's stated goals and objectives.
- Evaluate a No Action alternative and up to five feasible alternatives. The alternatives will be evaluated based on placement volumes, hardened structure design, engineering approach, cost estimates, and schedules. Alternatives will be delineated to a feasibility level.
- Delineate project life cycle costs for each alternative.
- Conduct an economic analysis that illustrates how each alternative action may impact the property base within the North Topsail Beach erosion zone and what the cost-benefit return is for each action (note: additional analysis will be provide by Dr. Schuhmann, UNCW).
- Prepare a detailed report identifying the clear purpose and need, and summarizing the engineering, cost and benefit of each alternative.

- Present findings of the study task to the Onslow County Board of Commissioners and Town of North Topsail Beach Board of Aldermen, with a recommended plan and associated costs and benefits
- In concert with Onslow County and the Town of North Topsail Beach, identify the preferred project alternative

At the completion of this task, the County and Town will provide a recommended direction to the consultant team should they wish to proceed forward.

2.0 ENVIRONMENTAL IMPACT STATEMENT AND PERMITTING

TASK 2.1 – INTER-AGENCY MEETING and THIRD-PARTY CONTRACT AGREEMENT PROCESS

The third-party contract agreement process will be implemented and coordinated with the USACE following approval of the Scope of Work by the USACE. In coordination with the USACE, DC&A will arrange an informal information session between project team members and primary regulatory or resource agencies of interest. Suggested agency attendees will include the NC Division of Coastal Management (NCDCM) and the USACE. The meeting's purpose will be to share with the respective agencies the Town's proposed goals and to facilitate agency discussion, initial thoughts, and ideas regarding their active roles and involvement in the EIS and supporting documentation. This meeting will also be used to discuss the strategy for the NEPA documentation, and whether a supplemental EIS can be prepared instead of a complete new EIS, as well as to review and discuss the present design alternatives described in the Feasibility Study prepared by CPE/CBI for the Town. Following review and concurrence from the Town/County and the USACE, a summary of the meeting will be prepared and forwarded to respective attendees. This summary will form the basis for the direction needed for design, modelling and development of the EIS.

TASK 2.2 - NOTICE OF INTENT

In coordination with the USACE, DC&A will compose a draft Notice of Intent (NOI) to prepare a Draft Environmental Impact Statement for the preferred alternative plan selected by the Town/County which best meets their purpose and need. The NOI will be sent to the USACE for their approval and use for placement in the Federal Register by the Environmental Protection Agency (EPA). Similarly, a notice will be provided by DC&A for publication in the NC Environmental Bulletin and will include the proposed project's sponsor, a brief action description, a general project location map, anticipated study schedule, and a request for initial comments.

TASK 2.3 - PREPARE ANNOTATED EIS OUTLINE

DC&A will prepare a brief EIS outline which describes the approach to evaluating the proposed actions' effects on the Town's environmental, cultural, and socio-economic condition. A draft of the outline will be provided to the Town and the USACE for review and comment. The outline will be provided to the USACE in advance of specific meetings to discuss and gain concurrence from the

project delivery team (PDT) on the EIS approach. A record of the meeting and issues concurred upon will be prepared and submitted by DC&A as a draft to all attendees. Based on the USACE's input, the meeting summary will serve as the EIS approach, format, and expectations of the consultant and the Town in preparation and coordination of the EIS documentation. A final draft will be sent to all parties following concurrence.

TASK 2.4 – LITERATURE AND DATA COLLECTION AND REVIEW

DC&A will initiate literature and data searches with local, state, and federal agencies to obtain existing available information (i.e. technical reports, scientific journals, databases) relevant to environmental, cultural, socio-economic, and regulatory conditions and issues within the North Topsail Beach project area. Information sought and collected will include both text and GIS files. We will prepare a formal list of reports, data and information needed from CPE/CBI and forward this to the Town's manager for coordination with them. It will be the Town's responsibility to obtain the information requested in a timely manner. The information and data sources identified and collected will be scanned and cataloged within a database for use in the Draft EIS preparation and as part of the EIS's formal administrative record. Aerial imagery will be provided to the project team from the Town or as acquired from other sources.

TASK 2.5 - FORMAL AGENCY AND PUBLIC SCOPING

In concert with the USACE and Town, DC&A will assist the USACE in facilitating and conducting formal agency and public scoping meetings to introduce the proposed project to local, state, and federal agencies; non-governmental organizations (NGO's); and the general public. The agencies' scoping meeting is to request ideas, opinions, and recommendations for evaluation and consideration during preparation of the Draft EIS. Agency and public scoping meetings will be held in North Topsail Beach the same day. The agency scoping meeting will take place in the early afternoon followed in the early evening by an informal public workshop and formal public scoping. North Topsail Beach will be responsible for securing a location and court reporter for the meetings. North Topsail Beach will prepare the advertisement for placement by the Town in local newspapers. DC&A will prepare and receive pre-approval by the USACE for handouts, agendas, boards, and other resources needed for conveying information about the proposed beach nourishment and hardened structure plan and the NEPA process. The DC&A project manager and engineer will assist the USACE in chairing the agency meeting with support from technical staff.

DC&A anticipates the public workshop will be held the evening of the agency scoping meeting and at the same venue. The public workshop will begin with an informal open-house with standing boards/posters, followed by a formal project introduction using MS PowerPoint, and concluded with a formal public scoping comment period. During the public workshop, DC&A staff will be positioned throughout the room to answer any questions posed by interested attendees. Name tags will be prepared and worn by all attending staff and offered to Town staff for their use.

Following the comment period, a scoping summary report of the two meetings, comments received, and list of attendees will be prepared by DC&A in coordination with the USACE. This scoping report will be forwarded to the Town, County and the USACE for review and comment,

and a final scoping report sent by DC&A to the Town, County and USACE as a record of the Draft EIS's formal scoping.

TASK 2.6 - PRELIMINARY DRAFT ENVIRONMENTAL IMPACT STATEMENT (PDEIS)

DC&A will prepare the Preliminary Draft EIS (PDEIS) in accordance with NEPA guidelines and specific requirements as agreed with the USACE on format, content, and technical approach. This document will be a supplemental EIS if allowed by USACE and NCDRCM. The EIS outline (as approved through earlier coordination with the USACE and modified if needed following agency and public scoping) will be used. DC&A will tailor the PDEIS sections from specific interests and/or comments received during scoping. A summary of the approach to each section and appendices of the PDEIS are provided below. Preparation of the document will be subject to receipt of an alternatives formulation and design report, provided by ATM.

Purpose and Need

In concert with the USACE, a Project Purpose and Need Section will be developed describing the proposed action.

General Action

DC&A will define the general action by the location of Town of North Topsail Beach's geographic limits, natural resources, and by the potential borrow source/fillet location(s).

Existing Actions

DC&A will summarize current actions and planned efforts by others that may influence the analysis and ultimate project description.

Economic Evaluation

DC&A will summarize the area's economic benefits resulting from continued maintenance of North Topsail Beach, use of the hardened structure and the inter-relation the beach's natural resources have on the North Topsail Beach and Onslow County economic tourism engine. These economic statistics will be developed by Dr. Pete Schuhmann from UNCW, as a subcontractor to DC&A.

Projected Needs

DC&A will generally describe the current beachfront shoreline status south of New River Inlet, resource challenges, and how the proposed action will help meet the projected needs and better position North Topsail Beach for long-term beachfront shoreline management within the vicinity of New River Inlet and maintain navigation within the inlet.

Scoping and Issues

DC&A will summarize the results of the agency and public scoping report previously prepared and submitted to the USACE.

Alternatives Analysis

In coordination with the USACE, DC&A will further evaluate the engineered template, design, and cost associated with the Town and County's selected alternative. Alternatives Considered but Eliminated from Further Consideration

DC&A will describe, in the detail needed, all alternatives that were considered, but eliminated from further consideration, and not fully analyzed. DC&A will describe the elements of these alternatives in terms of general non-compatibility, excessive environmental, cultural, and/or anthropogenic effects, excessive capital outlays, and/or engineering impracticality.

Project Alternatives

Area borrow sources, beach-fill templates and hardened structure design alternatives in association with ATM's engineering evaluation will be evaluated by DC&A, each representing feasible and cost effective approaches.

Preferred Applicant Alternative

Following the evaluation of the project alternatives, an applicant's preferred alternative will be identified within the PDEIS in consultation with the Town, County and USACE. As mandated by recent state legislation, the Applicant's Preferred Alternative section will include initial construction cost estimates, timelines, annual compliance outlays/deliverables, as well as projected maintenance and potential mitigation costs and timelines in the form of an Inlet Management Plan, which may be required, but is not part of this scope of services

Affected Environment

Based upon existing available data, DC&A will describe the environmental, cultural, and socio-economic resources that may exist both within the hardened structure design and fillet templates, borrow source locations, and borrow source material corridors, as follows:

General Environmental Setting

DC&A will describe in general terms the project location and environmental/cultural attributes, including all potential borrow source locations.

Land Use

DC&A will make use of available aerial photography, topographic maps, and current land use plans encompassing the project area. DC&A will describe current land uses within the project area as found in North Topsail Beach's most recent land use and resource planning documentation. DC&A will coordinate with local, state, and federal resource agencies to determine the presence of unique or prime lands located within the project template or borrow source locations.

Geology

Geologic features and attributes will be characterized by ATM for both the project beach fill area and the borrow source area. Such data will be accessed by DC&A and incorporated into the NEPA/SEPA documentation.

Biotic Resources

DC&A will describe the existing upland, dune, beach, estuarine, and nearshore marine habitats and their associated plant and animal communities based on available documentation and/or scientific literature. Physical and biological reporting and monitoring

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data from all recent beach nourishment events, past EIS's and feasibility studies will be used to develop baseline conditions. Past EIS's for the Towns project may include information regarding nesting and foraging habitat for shorebirds and sea turtles, locations of the listed plant species, seabeach amaranth, and studies of project effects which include the presence/absence and use patterns by species and habitats of concern (i.e. piping plover, red knot, shorebirds, and colonial waterbirds; nesting sea turtles; benthic macroinvertebrates; salt marsh habitat; submerged aquatic vegetation; and shellfish).

In addition, for any proposed sand borrow areas, marine resources and associated benthic and fish communities will be described by DC&A. DC&A does not anticipate the need for further benthic or fisheries studies to complete this section; however, it is anticipated that further desktop mapping and assessment of estuarine resources may be required for full assessment of the hardened structure alternatives. This Biotic Resource Section will also address fisheries and Essential Fish Habitats (EFH). The EFH assessment will be prepared by DC&A as a separate supporting document.

Protected Species

DC&A will formally contact the US Fish and Wildlife Service (USFWS), NC Natural Heritage Program and the National Marine Fisheries Service to confirm and identify the list of federal and state protected species known or thought to exist within the project study area and which are afforded legal protection. These threatened and endangered plants and animals, including their potential habitats, will be described in detail by DC&A in the Protected Species Section, including species that may use or occur on the beaches, in nearshore waters, or within the proposed borrow areas. The occurrence of any significant natural communities, natural heritage areas, or conservation/managed areas within the project area or borrow area locations will also be documented by DC&A. A Biological Assessment (BA) will be prepared by DC&A as a supplemental document.

Water Resources

DC&A will describe the project areas' surface water bodies, state classifications, and ideal uses. North Topsail Beach's point source and non-point source (stormwater) users (readily available NPDES data) will be described as applicable. North Topsail Beach groundwater resources will be described by DC&A from readily available public information depicted by accessible formations, volume, and quality.

Air Quality/Noise

DC&A will describe Onslow County's current air quality attainment status for EPA's criteria pollutants. DC&A will assess from currently available data likely ranges of audible sources found on North Topsail Beach.

Historic and Archeological Resources

DC&A will describe both terrestrial and marine cultural resources found within the project area and all selected borrow source locations from existing reports or data on file with the Town, County or SHPO. Assessments could include archive database reviews, magnetometer surveys, sub-bottom profiles, and Phase II diver reconnaissance. Analyses for this task will be based upon previous cultural assessment efforts by others.

Social and Economic Attributes

DC&A, in collaboration with Dr. Pete Schuhmann, will describe North Topsail Beach's demographics, including seasonal population, population densities, and resident population characteristics. North Topsail Beach's primary community/park facilities, emergency facilities, educational, and ocean-front access facilities will be described by DC&A. The Town's major industries (tourism, boating, and fishing) and their economic effects will be described by DC&A in terms of personal revenue, taxes, and jobs. Readily available economic data will be used by DC&A to develop the Social and Economic Attributes Section.

Coastal Trust Issues

Issues such as areas of environmental concern, natural and cultural resource areas, public trust waters, public trust bottoms, and public use areas will be described by DC&A as components of the coastal analysis. Such coastal, environmental, and cultural resource analyses will also be applied to the borrow source locations.

Navigation Features

DC&A will describe North Topsail Beach's and the New River Inlet proximal navigation features as well as access routes and mechanisms for potential borrow sources and other interest uses.

Coastal Processes

North Topsail Beach and New River Inlet tidal regime, wave climate, nearshore currents, and littoral transport will be described from existing data or modeling developed and provided by CPE/CBI. Applicable coastal processes within or adjacent to proposed borrow areas or structures will also be described by DC&A based on existing documentation or additional data provided by CPE/CBI.

Environmental Consequences

DC&A will describe the beneficial and adverse human, cultural, and environmental effects from implementation of the No Action, Project Alternatives and the Applicant's Preferred Alternative.

Land Use

DC&A will assess and describe the potential effects of the No Action and project alternatives on the Towns current land use, planned land use, and land use goals. DC&A will also assess and describe the borrow source locations' current land/sub-surface uses and planned uses. DC&A will assess and describe the No Action and project alternatives' potential effects on unique or prime lands located within the project template and borrow source locations.

Geology and Soils

DC&A will assess and describe the potential effects of the No Action and project alternatives on the beach fill areas', hardened structure location, and borrow locations' geology and soils. Sediment compatibility will be evaluated and described by ATM for the beaches' physical and chemical sediment characteristics (grain size fractions, percent

carbonate, etc.) and for the borrow sources included in the project alternatives. The compatibility analysis will be based on North Carolina's sediment quality criteria for beach placement and provided by ATM based on previous studies.

Biotic Resources

DC&A will assess and describe the effects of the No Action alternative and project alternatives on terrestrial and marine resources found within the project area and borrow locations. Evaluated resources will include flora and fauna which occur in or use the dune system and dry beach; shorebirds which use the dry beach and intertidal zone for foraging and resting; and fisheries, benthos, marine mammals, and reptiles which may occur in the intertidal, nearshore, and offshore areas. DC&A will prepare an EFH assessment as a supplemental document to the EIS. This EFH assessment will be used by the National Marine Fisheries Service (NMFS) in their evaluation of the proposed project's effects on managed species and their habitats. This Biotic Resources section will summarize the findings of the EFH and agency coordination efforts (see Task 7).

Protected Species

DC&A will assess and describe the potential effects of the No Action and project alternatives on federal and state protected species and their habitats. A BA will be prepared by DC&A as a supplemental document to the EIS. The BA will be provided by DC&A to the USACE, NMFS and USFWS for their review and concurrence under Section 7 of the Endangered Species Act. The Protected Species Section will summarize the findings of the BA and agency coordination efforts (see Task 7).

Water Resources

DC&A will assess construction and operational effects on North Topsail Beach's surface waters resources, groundwater resources, potable water resources, and wastewater treatment capabilities potentially arising from the No Action and project alternatives.

Air Quality/Noise

DC&A will assess the potential effects of the No Action and project alternatives on the Town's and County's air quality attainment status resulting from mobile source equipment emissions and audible emissions. This assessment would include evaluation of potential effects on terrestrial and marine biota, as well as anthropogenic effects.

Historic and Archeological Resources

DC&A will evaluate potential effects of the No Action and project alternatives on any known or potentially occurring terrestrial or marine historic or archeological resources. The Historic and Archeological Resources Section will include a discussion of Section 106 coordination with the NC State Historic Preservation Office.

Social and Economic

DC&A, in coordination with Dr. Pete Schuhmann, will assess and describe the potential effects the No Action and project alternatives may have on the Town's and County's communities' neighborhoods, island travel patterns, and beach accessibility. DC&A will assess and describe, from readily available economic data, the project alternatives' effects on the Town's and County commercial bases (tourism, boating, and fishing). The potential

effects from beach and hardened structure construction on visual aesthetic and lighting associated with the project alternatives will also be assessed and described by DC&A in the Social and Economic Section.

Coastal Trust Issues

DC&A will assess and describe potential effects of the No Action and project alternatives on coastal trust issues ranging from public trust waters and public trust bottoms to cultural and unique coastal resources such as coquina rock outcrops, shipwrecks, or other significant natural or cultural resources within the project area or borrow location(s).

Navigation

Based upon information provided by ATM, DC&A will assess and describe the potential effects of the No Action and project alternatives on navigation during dredging, hardened structure construction, and beach placement activities.

Coastal Processes

Based upon results and information provided by ATM, DC&A will assess and describe the potential effects the No Action and project alternatives may have on erosion, long-shore current patterns, wave climate, wave surge, and sediment transport .

Secondary and Cumulative Effects

DC&A will summarize the potential secondary and cumulative effects resulting from the No Action and project alternatives. The Secondary and Cumulative Effects Section will be presented by DC&A as a supplemental document in the PDEIS's appendices. This section will focus on potential secondary anthropogenic, cultural, and environmental effects (see Task 7).

Avoidance and Mitigation Measures

The Avoidance and Mitigation Measures Section will be prepared by DC&A in conjunction with ATM, the Town and County, as a plan for complying with the specific conditions of the State's legislation with regards to mitigation. DC&A in coordination with the USACE will develop post-construction activities to monitor potential impacts of the proposed project on coastal resources. In addition, DC&A will coordinate with the USACE and NCDCM on defining baseline conditions for assessing any adverse impacts and thresholds for when the adverse impacts must be mitigated. DC&A will assist the USACE and NCDCM in the provision of mitigation measures to be implemented in the event adverse impacts reach the thresholds defined above. In addition to those measures described above, the Avoidance and Mitigation Plan will include a summary of potential mitigation measures and best management practices that may be employed to avoid, minimize, or mitigate for potential effects on biological and cultural resources. A draft Inlet Management plan will be prepared and presented by ATM as a supplemental document in the PDEIS's appendices.

Required Authorizations and Actions

DC&A will develop a list of local, state, and federal authorizations/actions/coordination required prior to construction. A brief description of the authorizations/actions/coordination will be provided and their applicability with the preferred alternative.

List of Preparers

DC&A will develop a primary author list of names and qualifications participating in the PDEIS development.

Comments and Coordination

DC&A will describe the agency and public coordination and participation engaged during the EIS scoping process. Comments received during the EIS effort will be included by DC&A within the Draft and Final EIS as appendices.

Tables, Figures, References, and Appendices

DC&A will develop/manage the inclusion of all tables, figures, references and appendices.

TASK 2.7 - SUPPORTING DOCUMENTATION

The following documents will be prepared by DC&A as supporting documentation of the PDEIS.

Biological Assessment

As part of the EIS, DC&A will research, prepare, and provide a BA as required by the Endangered Species Act, describing the potential effects on federal and state protected species potentially or likely to be encountered within the alternatives' project areas, including all borrow source locations. The BA will be prepared and coordinated by DC&A and the USACE with the USFWS and NMFS for concurrence of findings. The BA will be of the detail necessary for the USFWS and NMFS to prepare and submit a formal Biological Opinion, if necessary. DC&A will coordinate with the USACE regarding any conditions stipulated by either agency which may restrict construction techniques, schedules, or operation and maintenance of the Applicant's Preferred Alternative.

Essential Fish Habitat Assessment

As part of the EIS, DC&A will research, prepare, and provide an EFH Assessment in accordance with the Magnuson-Stevens Fishery Conservation and Management Act of 1979. The assessment will include all managed species, their habitats, and Habitat Areas of Particular Concern (HAPC). The EFH will include all applicable species managed by the Mid-Atlantic and South Atlantic Fishery Management Councils, and the Atlantic States Marine Fisheries Commission. DC&A will coordinate with the USACE regarding any conditions stipulated by the NMFS which may restrict construction techniques, schedules, or operation and maintenance of the preferred alternative.

Cumulative Effects Assessment

As an integral part of the EIS development process, secondary and cumulative effects will be analyzed. These effects can result from minor individual actions viewed collectively, resulting in a significant effect over a period of time. Secondary and cumulative effects result from a preferred alternative when added to past, present, and reasonably foreseeable future actions regardless of the entity responsible for the actions. The Secondary and Cumulative Effects Section will describe the Applicant's Preferred Alternative's effects considering applicable actions both geographically and temporally. DC&A, in coordination with the USACE, will consider activities that may or have contributed to cumulative effects within the project area or within regions of influence. In coordination with the USACE, DC&A will collect and analyze readily available data and perform a cumulative impact analyses on the Applicant's Preferred Alternative.

TASK 2.8 - PREPARE AND SUBMIT FINAL PDEIS FOR CORPS OF ENGINEERS' REVIEW

An electronic copy of the PDEIS will be submitted by DC&A to the USACE for review and comment. After receiving comments, DC&A will schedule conference call meetings with the USACE and Town/County representatives to review comments and discuss applicable responses.

TASK 2.9 - PREPARE DEIS FOR DISTRIBUTION

DC&A shall produce approximately five (5) complete bound hard copies, ten (10) digital copies, and post to a dedicated site a complete pdf of the Draft EIS. Inclusive are complete hard copies and fourteen (14) digital copies of the Draft EIS to be provided to the NC Clearinghouse for agency dispersal and to the EPA.

Hard Copies: Onslow County (1); North Topsail Beach Board of Alderman (1); USACE (1); NC Clearinghouse (1); EPA (1).

TASK 2.10 - PREPARE NOTICE OF AVAILABILITY OF DEIS

In coordination with the USACE, DC&A will prepare the Notice of Availability (NOA) for use by the USACE. DC&A will include, within the NOA, a brief project summary; narrative of the No Action, Project, and Preferred Alternatives; and a project location map.

TASK 2.11 - DEIS PUBLIC HEARING

DC&A will facilitate arrangement (by the USACE and Town) of a formal public hearing that will proceed into a formal comment period. DC&A will arrange, in collaboration with the Town, for detailed minutes to be captured, recorded, or both; DC&A will prepare and provide a written summary of minutes. The Town will prepare two public notices for local newspaper publication. The notices should be published approximately 4 weeks and 2 weeks prior to the scheduled hearing date. The Town will arrange the location of the hearing in coordination with DC&A and the USACE. A brief post-hearing meeting will take place on-site for a project team de-brief.

TASK 2.12 - PREPARE COMMENT AND RESPONSE DOCUMENT

In coordination with the USACE, DC&A will review, sort, and assemble all comments received during the public comment period in a spreadsheet matrix. DC&A will assess each comment, prepare an appropriate response, and prepare a Comment Response report to be included in the FEIS. DC&A will meet with the USACE to review the comment response document and applicable responses. A final Comment Response report will be prepared and forwarded to the Town, County and the USACE. It is anticipated that discussions with the USACE will be needed until the wording is approved by all parties.

TASK 2.13 - FINAL EIS

DC&A will prepare the Final EIS for review by the USACE. Following concurrence by the USACE, DC&A shall produce approximately fifteen (15) complete bound hard copies, fifty (50) digital copies, and post to a dedicated site a complete pdf of the Final EIS. Inclusive are two (2) complete

hard copies and fourteen (14) digital copies of the Final EIS to be provided by DC&A to the NC Clearinghouse for agency dispersal.

Hard Copies: Onslow County (1); N Topsail Beach Board of Alderman (1); Onslow County Library, ECU Library, UNC Library, NC State Library, UNCW (1 each); USACE (1); NC Clearinghouse, (2); and internal and miscellaneous (6).

Electronic Copies: Onslow County (1); N Topsail Beach Board of Alderman (10); Onslow County Library, ECU Library, UNC Library, NC State Library, UNCW (1 each); USACE (5); NC Clearinghouse (14); and internal and miscellaneous (17).

TASK 2.14 - INDIVIDUAL AGENCY MEETINGS

DC&A, as necessary and as requested, will coordinate with resource agencies throughout the EIS process to obtain data, receive comments, and update project status. This coordination may include telephone calls, letters, emails, and individual meetings. A total of eight (8) agency meetings and twelve (12) teleconferences are proposed and budgeted. DC&A will provide at least one staff member for these coordination efforts.

TASK 2.15 - MONTHLY PROGRESS REPORTS AND INVOICES

DC&A will develop monthly summary memos that will accompany monthly invoices. These memos will bullet progress by task with an estimated percent complete to date based on our contract tasks' deliverables. An anticipated 24 monthly memos/invoices will be prepared by DC&A over the duration of the contract.

TASK 2.16 - PROJECT REVIEW TEAM MEETINGS

DC&A will participate in monthly conference calls for the project's duration for up to 24 months. DC&A will budget for quarterly project review team meetings. DC&A will attend up to four board meetings at the board's request. DC&A will facilitate project coordination cooperatively with the Town and the USACE, the lead agency for federal actions under NEPA. The NCDCM will lead the State's CAMA Major permit process in coordination with the USACE and DC&A, in order to limit duplication of effort and conflict. These agencies, along with Camp Lejeune representatives, NCDMF, North Carolina Wildlife Resources Commission (NCWRC), NMFS, USFWS and North Carolina Department of Environmental Quality (NCDEQ), will form the core Project Review Team as well as private and/or non-profit interest groups such as the NC Coastal Federation, Audubon, and Environmental Defense.

TASK 2.17 – USACE AND NCDCM ENVIRONMENTAL PERMIT(S) PRE-APPLICATION MEETING

DC&A will arrange a permit pre-application meeting with the USACE, NCDCM, NCDEQ, and NCDMF, NMFS, NCWRC and USFWS. ATM will provide all required engineering drawings and calculations.

TASK 2.18 - MAJOR CAMA PERMIT AND SECTION 10/404 PERMIT APPLICATION PACKAGE

In coordination with the USACE and NCDCM, DC&A will assemble applications to the USACE and NCDCM. All engineering drawings and engineering support documentation will be provided by ATM. The USACE approved EIS will serve as the support document for the factual information needed for the applications. Upon review and signature of the application packages by the Town, applicable copies of the packages will be delivered by the Applicant to the NCDCM and the USACE. Application fees will be provided by the Town as required by agencies.

TASK 2.19 - AGENCY PERMIT COORDINATION

In coordination with the USACE, DC&A will respond to questions and requests for additional information (RAI) pertaining to the EIS during state and federal review of the permit applications. Upon receipt of an RAI, DC&A will schedule and hold teleconferences/meetings as needed to assign team members comment responsibilities and timeframes. DC&A will coordinate and distribute each response to the agencies' RAIs, with copies to the Town. DC&A will plan for 3 teleconferences/meetings and 3 RAI response letters during the permit coordination period – expected to include up to 6 months. RAI responses will be based on existing information only.

TASK 2.20 - ADMINISTRATIVE RECORD

DC&A will provide the Town and USACE with a CD/DVD of all correspondences, letters, emails, and summaries which constitute the administrative record produced during the EIS process. This record will be integral in preparation for any challenge to the project by third parties. A spreadsheet listing all sources of information included in the AR will be compiled and submitted by DC&A as well.

3.0 ENGINEERING ALTERNATIVES ANALYSIS AND DESIGN

TASK 3.1 – EVALUATION OF DESIGN ALTERNATIVES

ATM will prepare an engineering analysis of design alternatives to serve as a basis for project evaluation within the EIS process. This effort will serve as a basis for identification of the preferred project alternative. Specific sub-tasks include the following:

- Review available plans, reports, survey data and conceptual designs already completed and formulate engineering design alternatives that are cost-effective and accomplish the stated goals and objectives
- Develop engineering alternatives for consideration within the EIS process. Alternatives will be delineated to a feasibility level
- Develop sufficient design analysis, drawings and performance analysis to provide sufficient technical support to the EIS process
- Delineate project life cycle costs for each alternative

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- Conduct an economic analysis that illustrates how each alternative action may impact the property base within the North Topsail Beach erosion zone and what the cost-benefit return is for each action (note: additional analysis will be provide by Dr. Schuhmann, UNCW)
- Prepare a detailed report identifying the clear purpose and need, and summarizing the engineering, cost and benefit of each alternative
- Present findings of the study task to the Onslow County and Town of North Topsail Beach boards, with a recommended plan and associated costs and benefits
- In concert with Onslow County and the Town of North Topsail Beach identify the preferred project alternative

TASK 3.2 – ENGINEERING SUPPORT AND REVIEW – EIS PROCESS

ATM will provide engineering support throughout the EIS process including additional analysis as required to evaluate project impacts, alternatives and mitigative strategies. ATM will provide input for EIS development and evaluation tasks and will review products for consistency with project engineering. This will include submittal of an engineering analysis report and an Inlet Management Plan.

TASK 3.3 – ENGINEERING SUPPORT AND REVIEW – PERMITTING

ATM will provide engineering support throughout the regulatory review process including additional analysis as required to evaluate project impacts, alternatives and mitigative strategies. ATM will provide input for regulatory review tasks and will review products for consistency with project engineering. Engineering design (60% level) of the preferred alternative will be prepared for the permit application process.

TASK 3.4 – MEETINGS AND COORDINATION

ATM will attend either in person or by conference regular and task specific meetings in support of EIS development and permitting process. ATM staff will coordinate with the EIS project development team on an as-needed basis and will provide engineering input and opinion as required to further EIS tasks or complete the permitting process.

PROCESSING AGREEMENT BETWEEN
THE UNITED STATES ARMY CORPS OF ENGINEERS
AND
TOWN OF NORTH TOPSAIL BEACH

I. INTRODUCTION AND PURPOSE

A. This Processing Agreement ("Agreement") provides a framework in which the United States Army Corps of Engineers ("USACE") will prepare an Environmental Impact Statement ("EIS") for the proposed shoreline protection project, which includes the installation of a terminal groin structure in Section 404 Waters and Section 10 Navigable Waters at the northern end of North Topsail Beach, along New River Inlet, Onslow County, North Carolina. Reference Action ID: SAW-2016-02091. The Agreement describes the relationship of the above named parties in preparing the EIS. Subject to completion of the EIS, the USACE will determine whether to authorize the proposed project. This determination will be set forth in a Record of Decision.

B. The USACE will approve the selection of an independent contractor ("Contractor") to prepare the EIS. The Town of North Topsail Beach ("Applicant") shall be the party responsible for engaging and retaining a contractor with funds provided by the Applicant.

C. The EIS and any related documents shall comply with the provisions of the National Environmental Policy Act of 1969 ("NEPA") and appropriate Council on Environmental Quality ("CEQ") and USACE environmental regulations and guidance, as well as all applicable local, state and Federal laws, as appropriate.

D. It is the purpose of this Agreement to establish an understanding between the Applicant and the USACE regarding the responsibilities of the parties and the conditions and procedures to be followed in the development and preparation of the EIS.

E. The parties hereto intend that development and preparation of the EIS as provided in this Agreement will satisfy the pertinent environmental requirements of the USACE.

II. GENERAL PROVISIONS

A. The USACE will be responsible for assuring compliance with all the requirements of NEPA (42 U.S.C. §4321 et seq.), CEQ Regulations (40 C.F.R. §§ 1500- 1508), and appropriate USACE environmental orders. The USACE shall assure that all pertinent environmental issues and impacts, and reasonable alternatives and their impacts are treated in the EIS, and shall be responsible for the scope and content of the EIS.

B. The Applicant will engage and retain a Contractor, approved by the USACE, for the preparation of the EIS. The Contractor, with the approval of the USACE and Applicant, may employ such other contractors and experts (collectively referred to as "Subcontractors"), as are required for the adequate development and preparation of the EIS.

C. The Contractor will provide, through its staff or by Subcontractor, the expertise, staffing, and technical capabilities required for the preparation of the EIS. The USACE will determine the scope of the EIS and will independently evaluate all information, environmental data and analyses submitted by the Contractor, or others, and revise or cause additional study and analyses to be performed as necessary.

D. The Contracts between the Applicant and Contractor and between the Contractor and Subcontractors (collectively the "Contract") shall be consistent with the provisions of this Agreement and shall specifically incorporate those provisions herein which address the conduct of the Contractor. The Contract shall provide, and the Applicant hereby represents, consistent with 40 C.F.R. § 1506.5(c), that the Contractor and any Subcontractors have not entered into and, during the lifetime of the EIS preparation, will not enter into any agreement affording the Contractor and any Subcontractors with any direct or indirect financial interest in the planning, design, construction or operation of the Project except with regard to the preparation of the EIS. Further, the Applicant shall ensure that the Contract shall specifically limit any remedies available to the Contractor and any Subcontractors, so as to affirmatively relieve the United States of America, the USACE, and any officer, agent or employee of same, from any liability arising out of the performance or termination of the contract for preparation of the EIS, or out of this Agreement.

(1) Prior to beginning work on the EIS, the Contractor and any Subcontractors shall sign a "Disclosure Statement" provided by the USACE per the requirements of 40 C.F.R. § 1506.5(c), specifying they have no financial or other interest in the outcome of the project.

(2) The USACE shall evaluate the Disclosure Statement prior to its approval.

E. The Applicant shall facilitate the coordination of effort and the exchange of information related to the planning, design, and construction of the Project, as these activities relate to the preparation of the EIS among and between the Contractor and its Subcontractors and the USACE. The Applicant shall make all reasonable efforts to assure the satisfactory and timely performance of the duties of the Contractor as specified in this Agreement.

F. The Applicant and USACE shall:

(1) Appoint such representatives as necessary to accomplish the coordination necessary for the satisfactory preparation of the EIS. Notice to any such representative shall constitute notice to that party. Failure of a party to respond to such notice shall not be construed to represent approval of a proposal or action.

(2) Review substantive phases of preparation of the EIS as the USACE deems necessary.

(3) Have their respective representatives attend meetings with other Federal, State, regional, and local agencies for the purpose of increasing communications and receiving comments, as the same may be necessary, desirable, or required by law in preparation of the EIS.

G. All costs incurred in connection with the employment of the Contractor and any and all Subcontractors, or other persons retained or employed by the Applicant, shall be the sole responsibility of the Applicant and the Applicant agrees to hold harmless and indemnify the USACE, its officers, agents, and employees, with respect to any and all judgments or settlements arising from claims, demands, causes of action, and the like, in connection with the Applicant's employment of the Contractor and any and all Subcontractors which may arise from the termination or performance of the Contract or any other services, or purchase of materials utilized for the development and preparation of the EIS, or from termination of this Agreement. This indemnification by the Applicant does not extend to administrative or legal costs of the USACE, including suits by third parties (other than the Contractor or its Subcontractors) against the USACE, involving the legality or adequacy of the USACE's compliance with NEPA and other laws and regulations, to the extent of the USACE's liabilities on those issues. The Applicant shall cooperate and shall ensure that the Contractor cooperates in defense of any such suit.

III. PROCEDURES

A. Under the direction of the USACE, the Contractor shall develop and submit a Plan of Study to the USACE for approval. The Plan of Study shall include detailed descriptions of all work to be performed, the methodologies proposed to perform the work, the name and qualifications of the person performing each aspect of the work, estimated man-hours required for completion of each aspect, the schedule for performing each aspect and a description of the internal and external review procedures to assure quality control. Also, the Plan of Study shall include a provision for a thorough literature search and bibliography of references and methodologies to be used in the acquisition of the environmental data and analyses and the development and preparation of the EIS.

B. The USACE will forward the Plan of Study to the Applicant for review and comment. After receiving comments from the Applicant, and after the scoping process conducted pursuant to 40 C.F.R. §1501.7, the USACE will finalize and approve the Plan of Study. The Plan of Study and this Agreement shall establish the scope of work required of the Contractor in the development and preparation of the EIS.

C. The Plan of Study may be amended by the USACE from time to time as the work of the Contractor or its Subcontractors proceeds, but any amendments or changes which require the expenditure of additional funds by the Applicant must be agreed to by the Applicant. The Applicant will be notified and consulted prior to any significant amendments or modifications to the Plan of Study.

D. Unless otherwise directed by the USACE, any and all work performed by the Contractor and its Subcontractors in preparation of the EIS shall be submitted directly to the USACE. The Applicant may communicate with the Contractor and its Subcontractors during the development of the EIS, but no prior review or discussion of data or analyses developed by the Contractor or Subcontractor as related to the EIS shall be afforded the Applicant. In no case will the Applicant discuss, review, modify, or edit the Contractor's work or the work of its Subcontractors prior to submission to the USACE, or be provided the opportunity to do so. All suggestions for modifications or changes to such sections recommended by the Applicant shall only be made to the USACE.

E. The USACE reserves the right to review periodically and modify the work of the Contractor to ensure that requirements under NEPA and other applicable laws and regulations are satisfied. The Contractor shall submit monthly written reports on the progress of its work to the USACE, with a concurrent copy to the Applicant. This report shall describe the present status of each aspect of the work, any problems encountered, and recommendations for modifications to the Plan of Study and any changes in personnel, methodology or schedules for completion.

F. As each portion of any draft or final document is completed, the USACE shall review each portion and those tasks completed thereunder and shall modify, comment thereon and/or, after consultation with the Applicant, direct further work with regard to such portion or tasks as necessary. Said directions and/or comments shall be made by the USACE in a timely manner, and the Contractor shall ensure incorporation of such comments into any editorial changes to the satisfaction of the USACE. Final drafts of any documents will require USACE approval. The Contractor will only make modifications as the USACE directs regarding these comments.

G. If requested, the Contractor will provide the USACE access to, copies of, and review of all procedures and underlying data used by the Contractor in developing submitted sections of the EIS, including, but not limited to, field reports, Subcontractor reports, and interviews with concerned private and public parties, whether or not such information may be contained in a draft or final EIS. The Applicant will also have access to such procedures and underlying data. Confidentiality of data shall be governed by paragraph III.T hereunder.

H. To facilitate the development and preparation of the EIS, joint meetings among the USACE, Applicant, and Contractor may be held. However, the USACE reserves the right to work directly with the Contractor for purposes of assuring objectivity in preparing reports and/or for assuring expeditious communications. The Contractor will notify the USACE and Applicant of any substantive meetings that are scheduled and of their purpose and will provide an opportunity for the parties to attend, as appropriate. No meeting will be held between the Contractor and Applicant without prior notification to and written approval of the USACE. A summary of all matters relating to EIS discussions in any meetings or communications between the Contractor and a party hereto will be included in each formal monthly report submitted by the Contractor to the USACE and Applicant. The USACE reserves the right to consult directly with other

Federal, State, and local officials and agencies during the preparation of the EIS to assure compliance with NEPA and other applicable laws and regulations.

I. The Applicant shall assure the full cooperation of the Contractor and its Subcontractors with respect to participating in any public workshops, hearings, or meetings as required by the USACE to foster public familiarity and participation with respect to the assessment of impacts related to the Project.

J. The Contractor shall be responsible for the costs associated with the printing, publication, and mailing of the draft and final copies of the EIS, as well as any preliminary drafts or reports required by USACE. The Contractor shall be responsible for the costs associated with the compilation of any and all mailing lists necessary for the distribution of preliminary, draft, and final copies of the EIS. The Contractor shall be responsible for all costs associated with the publication of notices announcing public workshops, meetings, hearings, and the like. The Contractor shall also be responsible for costs of stenographic and clerical services, preparation of graphics and visual aids associated with any public workshops, meetings, and hearings.

K. At such time as the USACE has approved the Draft EIS developed and prepared by the Contractor and its Subcontractors, the Contractor shall print the contracted quantity of Draft EIS and submit same to the USACE. The USACE shall submit an appropriate number of copies of the Draft EIS to the Applicant. The USACE shall proceed expeditiously to comply with the provisions of NEPA.

L. In all instances involving questions as to the content or relevance of the environmental data and analyses, and evaluations and wording prepared by the Contractor, the USACE, with appropriate advice and consultation where deemed necessary by the USACE, will make the final determination on the inclusion, deletion or modification of the same in the Draft or Final EIS. Except where otherwise prohibited by NEPA regulation governing the preparation of an EIS, the Contractor may supplement by addendum any material excluded or modified by direction of the USACE in the text of any given report.

M. Upon determination by the USACE that a public hearing is required, the Contractor shall organize the public hearing in accordance with 33 C.F.R. §327, and provide a facility, necessary equipment, and a court reporter therefor. The presiding officer shall be the Wilmington District Engineer or his designee.

N. The USACE will receive all comments during the Draft EIS review and comment period. This period (at least 45 days) will be initiated when the Environmental Protection Agency ("EPA") publishes the "Draft EIS Notice of Availability" in the Federal Register.

O. At the close of the Draft EIS review and comment period, the USACE shall identify the issues and comments submitted which will require response in the Final EIS. The USACE will direct those comments to the Contractor for preparation of proposed responses, and shall furnish the Applicant with copies of all comments received. The Contractor will furnish proposed responses to the USACE for review. The USACE shall

modify the proposed responses as it deems necessary. The Contractor shall have the right to include, by way of addendum or comment, such responses as necessary in the Final EIS.

P. After receipt of comments and preparation of responses, the USACE, after appropriate advice and consultation, may direct the Contractor to make changes to the text of the Draft EIS as necessary.

Q. At such time as the USACE has approved the Final EIS, the Contractor shall print the contracted quantity of Final EIS. The USACE shall submit an appropriate number of copies of the Final EIS to the Applicant. The USACE shall proceed expeditiously to comply with the provisions of NEPA.

R. The USACE will receive all comments on the Final EIS during the mandatory "hold period". This period (at least 30 days) will be initiated when the EPA publishes the "Final EIS Notice of Availability" in the Federal Register.

S. The USACE, with assistance from the Contractor as needed by the USACE, will prepare and issue the USACE Record of Decision.

T. The USACE will maintain the confidentiality of, and will not release or allow access to, any information, documents or materials which in its opinion are validly designated as confidential by the Applicant or Contractor and which contain trade secrets, proprietary data, or commercial or financial information. Information developed under this Agreement is disclosable to the public to the extent required by law. In any instance where the USACE proposes to release to the public or allow access to any information, documents or materials which the Applicant or Contractor has designated as confidential, it shall notify the Applicant or Contractor of its intention to do so and provide the Applicant or Contractor the opportunity to appeal the decision in accordance with applicable regulations on such release or access prior to any such release or access.

IV. CESSATION AND TERMINATION

A. Any of the parties to this Agreement may withdraw from the terms of this Agreement for good cause upon 30 days written notice to the other party. During this period, the parties will actively attempt to resolve any disagreement.

B. In the event of a termination of this Agreement, and if the USACE determines, in its sole discretion, that preparation of an EIS by the USACE is still required by law or desired by the USACE, it is agreed as follows:

(1) The USACE shall have access to all documentation, reports, analyses and data by the Contractor and Subcontractors with confidentiality governed by paragraph III.T.

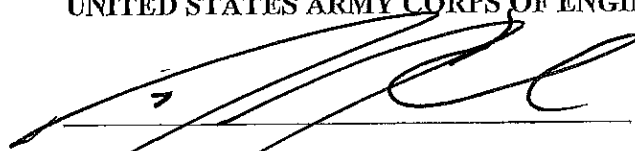
(2) The USACE shall complete the EIS. The Applicant shall no longer be responsible for the payment of costs associated with preparation of the EIS under the terminated Agreement, apart from costs already incurred under the Applicant's contract with the Contractor.

(3) Liability for termination shall be in accordance with paragraph II.G. hereof.

V. NO RIGHTS FOR NON-PARTIES No rights or privileges are created or intended to be created by this Agreement in anyone not a signatory of this Agreement.

VI. MODIFICATION This Agreement represents the entire agreement and may be modified by the parties hereto only by written agreement by all the parties.

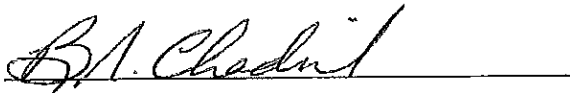
UNITED STATES ARMY CORPS OF ENGINEERS



Robert J. Clark
Colonel, U.S. Army
District Commander

9/11/2019
Date

TOWN OF NORTH TOPSAIL BEACH



8/16/2019
Date

DISCLOSURE STATEMENT
40 CFR § 1506.5(c)

We, Dial Cordy and Associates, Inc. (3rd party contractor), do hereby certify that we have not entered into and, during the lifetime of the EIS preparation, will not enter into any agreement affording us or any Subcontractors that we may hire with any direct or indirect financial interest in the planning, design, construction or operation of the Town of North Topsail Beach's proposed shoreline protection project which includes the installation of a terminal groin structure along New River Inlet, Action ID. SAW-2016-02091, located in North Topsail Beach, Onslow County, North Carolina, except with regard to the preparation of the EIS. In making this certification, we acknowledge that we have read, considered, and are in compliance with the provisions of 40 CFR § 1506.5(c), and the Council on Environmental Quality (CEQ) Forty Questions, Questions 16 & 17 (copies attached). We further certify that we will, in the Draft EIS, make a full disclosure of the scope and extent of the firm's prior involvement in the Town's proposed terminal groin project.

[Contractor]

R Steve Dial

By: R. Steve Dial

Title: President

Date: 8/16/19



US Army Corps
Of Engineers
Wilmington District

PUBLIC NOTICE

Issue Date: March 15, 2021
Comment Deadline: April 14, 2021
Corps Action ID #: SAW-2016-02091

All interested parties are hereby advised that the Wilmington District, Corps of Engineers (Corps) is holding a scoping meeting for proposed work within jurisdictional waters of the United States by the Town of North Topsail Beach in Onslow County, North Carolina. The proposal is to implement a New River Inlet Management Master Plan for shoreline protection in the northern section of the Town and includes the construction of a terminal groin along the southwest shoulder of New River Inlet. Specific plans and location information are described below and shown on the attached plans. Due to COVID-19 restrictions, the scoping meeting will not be an open public meeting, but will be presented in the Facebook Live forum on March 25, 2021 at 6:00 P.M. and can be viewed at the following link, <https://fb.me/e/5B7NV8EgY>. A recording of this event will be available at <https://www.facebook.com/USACE.Wilmington> for further viewing. This Public Notice and all attached plans are also available on the Wilmington District Web Site at <https://www.saw.usace.army.mil/Missions/Regulatory-Permit-Program/Public-Notices/>.

Applicant: Town of North Topsail Beach
C/o: Mr. David Gilbride, Town Manager
1000 Hwy 210
Sneads Ferry, North Carolina 28460

AGENT (if applicable): Dail Cordy and Associates, Inc.
C/o: Mr. Steve Dail
201 N. Front St., Ste 307
Wilmington, North Carolina 28401

Authority

The Corps will evaluate this project pursuant to applicable procedures to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbor; and will develop an Environmental Impact Statement (EIS) to assess the proposal. Additionally, the Corps will coordinate with North Carolina Division of Coastal Management and North Carolina Division of Water Quality in the development of the Environmental Impact Statement (EIS) to ensure the process complies with all State Environmental Policy Act (SEPA) requirements.

Location

The project site is located at 34.526763, -77.337396, adjacent to the New River Inlet, at the end of New River Inlet Road (SR 1568) and encompasses approximately 5,100 linear feet of inlet and oceanfront shoreline in North Topsail Beach, Onslow County, North Carolina.

Existing Site Conditions

North Topsail Beach is located on Topsail Island, a 22-mile long barrier island situated in both Onslow and Pender Counties, and encompasses approximately 11 miles at northeastern tip of the island. This portion of the island is generally low and narrow with elevations ≤ 10 ft MSL and subaerial widths range from approximately 400 to 1,000 ft. The oceanfront beach is backed by a low and discontinuous line of narrow dunes, and the majority of the subaerial island interior has been developed for residential use. The proposed project area comprises of New River Inlet and approximately 5,100 linear-ft of oceanfront shoreline at the most northern end of North Topsail Beach. This section of the island contains several oceanfront multi-family condominiums and apartments, with single-family residential structures closet to the inlet.

The New River Inlet channel is a designated federal navigational channel that is federally maintained via periodic dredging. In addition to this dredging, the Corps' Regulatory Division issued a 30-year authorization on May 27, 2011 to the Town to maintain the ebb tide channel within a specific location. This permit allows the Town to conduct a maintenance dredging event if specific thresholds are triggered and has an expiration date of December 31, 2041. The Town's reevaluation of the original alignment led to development of a modified "pivot channel" alignment that was authorized through a 2017 permit modification of the original 2011 authorization. Within the vicinity of the project area, other authorizations have been granted to the Town and separate individual property owners to provide protection along the parking lot at the inlet shoulder, dune construction and dune plantings along the oceanfront shoreline, and the installation of sand bags.

Applicant's Stated Purpose

The Town's stated purpose for the New River Inlet Management Master Plan is to mitigate ongoing severe and chronic shoreline erosion in order to protect structures and infrastructure located on the north end of North Topsail Beach. The inlet management component of the Town's currently authorized shore protection project is a long-range strategy that may not provide significant north end protection for 15 to 20 years. North end erosion rates have accelerated during the early phases of that project, with rates as high as 100 feet/year occurring in the vicinity of the Topsail Reefs condominium complex. As stated by the Town, the extreme severity of the erosional threat necessitates the need for immediate action to supplement the Town's existing shore protection project with the proposed terminal groin structure.

Project Description

Under the May 27, 2011 authorization, the Town conducted the initial 2012/2013 channel realignment and north end oceanfront nourishment event. After the channel dredging, the north end shoreline experienced higher than expected erosion rates, resulting in the rapid loss of the placed beach fill material. During the initial post-construction year (2013), essentially all of the material placed on approximately 3,700 linear feet of the northern most end eroded and returned to the inlet. Additionally, ebb channel shoaling and thalweg migration exceeded the established thresholds in just 18 to 24 months. By August 2014, accelerating north end erosion led the Town to seek an emergency permit for construction of a sandbag revetment to protect threatened homes and infrastructure on the north end. In February 2015, the Town completed construction of an approximate 2,000 linear-ft sandbag revetment that extends north from the existing Topsail Reefs revetment to New River Inlet. In total, the north end is currently protected by an approximate 3,600 linear-ft sandbag revetment.

With the channel realignment not protecting the northern end as expected and the sandbag revetment being a more short-term alternative, the Town reevaluated other protection options and have determined that a terminal groin would provide supplemental protection at this location. This project alternative would involve the construction of a 2,021 ft-long terminal groin on the north end ocean beach at New River Inlet and recurring beach nourishment of the adjoining approximate 5,100 linear-ft north end shoreline using sand derived from the inlets outer bar channel realignment dredging events. The proposed terminal groin would consist of three main sections: anchor section, upland section, and in-water section. Although the in-water section and most of the upland section would require immediate construction, the anchor section would be constructed at a later date as a cost-saving measure. As proposed, the landward-most approximate 500-ft section of the terminal groin would only be constructed when the receding shoreline contacts an established threshold for a specified buffer distance from the anchor footprint. Beach nourishment events would place approximately 310,000 cy of sand along the northernmost approximate 5,100 linear-ft reach of the north end shoreline (average of 61 cy/ft). Nourishment events would occur approximately every four years in conjunction with outer bar channel realignment/maintenance events. The Town's existing May 27, 2011 permit authorizes dredging of the outer bar channel to a depth of 16 ft and width of 500 ft. Inlet channel dredging events are expected to yield approximately 600,000 cy of beach-compatible material (based on recent sedimentation and pre-project bathymetries). The volume of dredged material in excess of that required for the approximate 5,100 linear-ft project shoreline reach will be placed to the southwest on the remainder of the Phase 1 reach and/or the Phase 2-4 shoreline reaches in accordance with the Town's existing permit. Assuming the long-term success of the New River Inlet ebb channel realignment project, the terminal groin may eventually be modified (e.g., shortened, lowered) or removed completely (based on monitoring data and project performance).

Several alternatives are being considered for the shoreline protection in the northern end of the island. These alternatives will be further formulated and developed during the scoping process and an appropriate range of alternatives, including the no federal action alternative, will be considered in the development of the EIS and review of the Town's permit request.

The scheduled public scoping meeting will be held on March 25, 2021 at 6:00 P.M. As stated above, the scoping meeting will not be an open public meeting, but will be presented in the Facebook Live forum and can be viewed at the following link, <https://fb.me/e/5B7NV8EgY>. A recording of this event will be available at <https://www.facebook.com/USACE.Wilmington> for further viewing.

The scoping meeting is designed to provide information in order to solicit comments from the public; Federal, State and local agencies and officials; and other interested parties to incorporate in the Draft EIS document. The purpose of these comments concerning public interest factors, ranging from navigation to biological resources to private and public lands, will identify issues to be addressed in the Draft EIS.

Written comments pertinent to the proposed work, as outlined above, must be submitted to this office, Attention: Mr. Jordan Jessop, at jordan.e.jessop@usace.army.mil, no later than 5:00 p.m. on April 14, 2021. Questions can be directed to Mr. Mickey Sugg at telephone (910) 251-4811, Wilmington Regulatory Field Office.

STATE OF NORTH CAROLINA)
)
COUNTY OF ONSLOW)
)
)
)
IN THE MATTER OF:)
PETITION FOR VARIANCE)
BY TOPSAIL REEF HOMEOWNERS)
ASSOCIATION, INC)

BEFORE THE NORTH CAROLINA
COASTAL RESOURCES COMMISSION
CRC-VR-21-___

**AFFIDAVIT OF
MAYOR JOANN McDERMON
TOWN OF NORTH TOPSAIL BEACH**


1. I am the Mayor of the Town of North Topsail Beach and was elected to that position in the 2019 municipal elections.
2. Prior to being elected Mayor, I served as a member of the Town's Board of Alderman from 2015 until I took my seat as Mayor.
3. As Mayor, I am familiar with the status of the shoreline throughout the Town including the area at the north end of the Town which includes the area located in front of the Topsail Reef Villas complex.
4. The north end of the Town contains several oceanfront multi-family condominiums and apartments, with single-family residential structures closest to the inlet.
5. Over the past several years the north end of the Town has experienced significant and abnormal erosion which threatens the property owners and residents of that area as well as several million dollars' worth of the Town's tax base and infrastructure.
6. The Town has actively taken steps to mitigate the threat caused by this accelerated erosion.
7. In 2012, the Town commenced a channel realignment and beach nourishment project in hopes to provide a long-term solution to this problem. This resulted in the placement of a significant amount of sand material at the north end, including the area in front of the Topsail Reef Villas complex.
8. After the channel dredging, the north end shoreline experienced higher than expected erosion rates, resulting in the rapid loss of the placed beach fill material.
9. Unfortunately, during the initial post-construction year (2013), essentially all of the material placed on approximately 3,700 linear feet of the northern most end eroded and returned to the inlet.
10. In August 2014, the accelerating north end erosion led the Town to seek an emergency permit for construction of a sandbag revetment to protect threatened homes and infrastructure on the north end. In February 2015, the Town completed construction of an approximate 2,000 linear-ft sandbag revetment that extends north from the existing Topsail

Reefs revetment to New River Inlet. In total, the north end is currently protected by an approximate 3,600 linear-ft sandbag revetment.

11. The Town have evaluated other protection options to provide a long-term solution to this problem. In June of 2017, the Town engaged Dial Cordy and Associates, Inc. to assist the Town is coming up with an alternative approach to addressing this problem.
12. Ultimately, the Town, through its consultants, has determined that a terminal groin would provide supplemental protection at this location. This project alternative would involve the construction of a 2,021 ft-long terminal groin on the north end ocean beach at New River Inlet and recurring beach nourishment of the adjoining approximate 5,100 linear-ft north end shoreline using sand derived from the inlets outer bar channel realignment dredging events
13. In September of 2019, the Town entered into a Processing Agreement with the United States Corps of Engineers wherein the Corps will prepare an EIS for the Town to pursue a shoreline protection project that includes the construction of a terminal groin.
14. The Town and the Corps are presently working through the various data collection, analysis, and public notice and hearing steps associated with the same. It is anticipated that once the EIS has been completed the Town will pursue permits/approvals to proceed with the project as well as the funding needed to complete the project.
15. On March 15, 2021, the Corps issued a Public Notice that the Corps will be holding a scoping meeting with respect to the Town's New River Inlet Management Master Plan for shoreline protection in the northern section of the Town and includes the construction of a terminal groin along the southwest shoulder of New River Inlet.
16. The Town is advised that it will likely take up to three years to complete the EIS and permitting process to enable the Town to construct a terminal groin at this location.
17. The Town has recently engaged the services of DEC Associates, Inc. ("DEC"), to assist the Town in assessing the Town's capital needs and to assist the Town in its financial planning to meet those needs. The scope of DEC's services includes capital needs for the Town's present and future erosion control/beach nourishment projects. The Town anticipates DEC's engagement will include the terminal groin project once a preferred alternative is selected, and the Town is able to estimate the cost of the project.
18. On January 28, 2021, Senator Lazzara filed SB 26, a bill entitled "AN ACT TO CLARIFY THAT A TERMINAL GROIN IS NOT AN EROSION CONTROL STRUCTURE AND THEREFORE IS NOT SUBJECT TO LIMITATIONS ON THOSE STRUCTURES." The Town is hopeful that this bill will become law and thereby enable the Town to pursue funds otherwise prohibited for the financing of the terminal groin project.

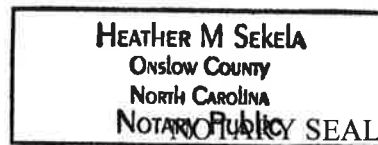
19. The Town will consider all existing statutory authority to finance the project including the Town's taxing authority, occupancy tax allocation, the implementation of paid parking, the creation of Municipal Service Districts and the possibility of Special Assessments to finance the groin project once the Town is a position to estimate the project costs.
20. The sandbag revetment constructed by the Town and the sandbags installed by the Topsail Reef Villas are essentially the only means of protection for the properties and infrastructure located in that area. If those bags are removed those homes and the Town's infrastructure serving those homes would be in imminent threat of collapse and destruction.
21. The Town is committed to seeing the terminal groin project come to fruition as a long-term solution to this problem. To that end, the Town will pursue all reasonably feasible means of financing the terminal groin project as the Town needs a long-term solution for the rapid erosion problem that continues to threaten the north end of the Town.

This the 17th day of March, 2021.


 Honorable Joann McDermon
 Mayor, Town of North Topsail Beach

Sworn to and subscribed before me,
 This the 17th day of March, 2021.


Heather M Sekela Notary Public



My Commission Expires: 20 May 2021

GENERAL ASSEMBLY OF NORTH CAROLINA
SESSION 2021

FILED SENATE
Jan 28, 2021
S.B. 26
PRINCIPAL CLERK

S

D

SENATE BILL DRS45031-MH-4B*

Short Title: Clarify Terminal Groin Definition.

(Public)

Sponsors: Senators Steinburg and Lazzara (Primary Sponsors).

Referred to:

1 A BILL TO BE ENTITLED
2 AN ACT TO CLARIFY THAT A TERMINAL GROIN IS NOT AN EROSION CONTROL
3 STRUCTURE AND THEREFORE IS NOT SUBJECT TO LIMITATIONS ON THOSE
4 STRUCTURES.

5 The General Assembly of North Carolina enacts:

6 **SECTION 1.** G.S. 113A-115.1(a) reads as rewritten:

7 "(a) ~~As used in this section:~~ The following definitions apply in this section:

8 (1) ~~"Erosion control structure" means a~~ Erosion control structure. – A breakwater,
9 bulkhead, groin, jetty, jetty (other than a jetty that is a terminal groin or a
10 portion of a terminal groin), revetment, seawall, or any similar structure.

11 (1a) ~~"Estuarine shoreline" means all~~ Estuarine shoreline. – All shorelines that are
12 not ocean shorelines that border estuarine waters as defined in
13 G.S. 113A-113(b)(2).

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

19 (3) ~~"Terminal groin" means one~~ Terminal groin. – One or more structures
20 constructed at the terminus of an island or on the side of an inlet, with a main
21 stem generally perpendicular to the beach shoreline, that is primarily intended
22 to protect the terminus of the island from shoreline erosion and inlet migration.
23 A "terminal groin" shall be pre-filled with beach quality sand and allow sand
24 moving in the littoral zone to flow past the structure. A "terminal groin" may
25 include other design features, such as a number of smaller supporting
26 structures, that are consistent with sound engineering practices and as
27 recommended by a professional engineer licensed to practice pursuant to
28 Chapter 89C of the General Statutes. A "terminal groin" is not a jetty."

29 **SECTION 2.** This act is effective when it becomes law.





Mr. Brian Edes, Esquire
Crossley McIntosh Collier Hanley & Edes, PLLC
5002 Randall Pkwy
Wilmington, NC 28403

RE: Topsail Reef Villas Complex - Sandbag Update

Dear Mr. Edes,

I currently serve as a coastal engineering consultant for the Town of North Topsail Beach. In that capacity I have familiarized myself with the ocean shoreline within the Town, including the shoreline fronting the Topsail Reef Villas complex ("Reefs"). I last visited that area on February 3rd, 2021.

In my professional opinion, the current condition of the shoreline/beach fronting the Reefs is such that the Reefs would be in imminent danger of collapsing if the sandbags presently protecting them were removed. Figure 1 below presents a low tide photo of the sandbag protection as of October 2019. Please note that this picture was taken at low tide. The condition of the shoreline in front of the Reefs is in no better position today. During my most recent visit to this area (last month) the shoreline/beach was impassable in front of the reefs at high tide as the water was up to the sandbags.

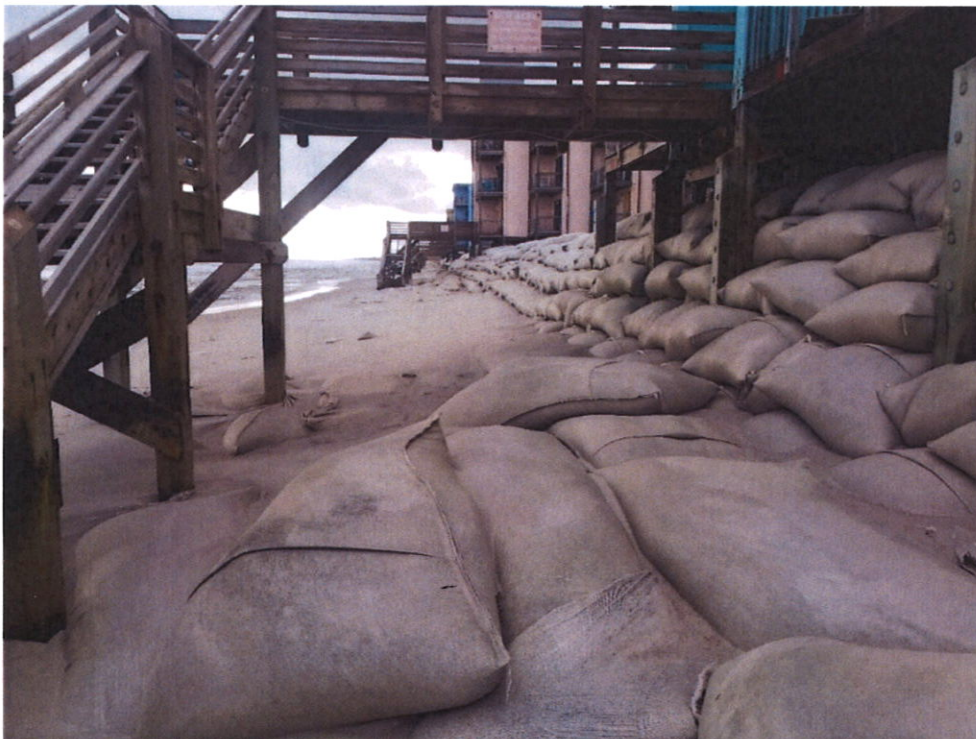


Figure 1: October 2019 at low tide. Note no dune system and no upper beach, making this area impassable at higher tides.



The following is a brief timeline of events involving the reach of shoreline in front of the Reefs since 2014:

- 2016 – Cedar Bush Cut dredging and beach placement just north of Topsail Reef Complex.
Only 130,000 cy placed.
- 2016 – Hurricane Matthew makes landfall.
- 2018 – Hurricane Florence makes landfall.
- 2018 – The Town of North Topsail Beach and the USACE commence the Long-term Inlet and Shoreline Management Environmental Impact Statement (EIS) Investigation (including evaluating the use of a terminal groin).
- 2019 – Hurricane Dorian makes landfall.
- 2020 – Hurricane Isaias makes landfall.
- 2021 – USACE Intracoastal waterway crossing and Jacksonville channel dredging with beach disposal (presently ongoing).

Although dune pushes (aka beach scraping) were performed within the Town of North Topsail Beach following Hurricanes Matthew and Florence, a dune push could not occur in front of the Reefs Complex because there was no dune in front of the Reefs to push, rather the shoreline in that area consist of solely of intertidal beach. This condition in and of itself demonstrates that the sandbags present in front of the Reefs are the Reefs sole source of protection from becoming completely inundated by tides. Figures 2 and 3 present photos from Matthew and Florence impacts on the sandbags:



Figure 2: Hurricane Matthew impacts on sandbag revetment just to the north of Topsail Reef Villas.





Figure 3: Hurricane Florence impacts on Topsail Reef Villas.

In my professional opinion removal of the sandbags at this time would present a significant health and safety risk as the Reefs would be in imminent danger of collapsing, would be uninhabitable, and their collapse would pose a significant health and safety risk to the environment as the ocean would inevitably overcome the contents of the structures and carry those contents to the surrounding area and beyond.



Figure 4 presents a 2020 aerial of the Topsail Reef Villas with a dune line parallel with the existing dunes on either side of the Topsail Reef Villas. The dashed red line in Figure 4 shows that the majority of all the Topsail Reef structures would be out on the beach (seaward of the dune line) almost immediately if the sandbags were removed:



Figure 4: 2020 aerial with red dashed line showing where dune line would be without the sandbag protection.

The Town's "Terminal Groin" Project

The Town of North Topsail Beach (NTB) has begun the process to develop a long-term solution to mitigate erosion for the Phase 1 reach of shoreline which includes the area of shoreline in front of the Reefs. The Town's long-term inlet and shoreline management plan includes the development of an Environmental Impact Statement (EIS) to determine a feasible means of providing a long-term solution to mitigate erosion in that area. A terminal groin is included as an alternative in this EIS process. While this EIS project is commonly referred to as the "terminal groin" project, it is important to note that no final alternative has been selected and other alternatives will be vetted during the EIS process. Figure 5 depicts an overview of the terminal groin, beach nourishment, and New River Inlet channel borrow area:



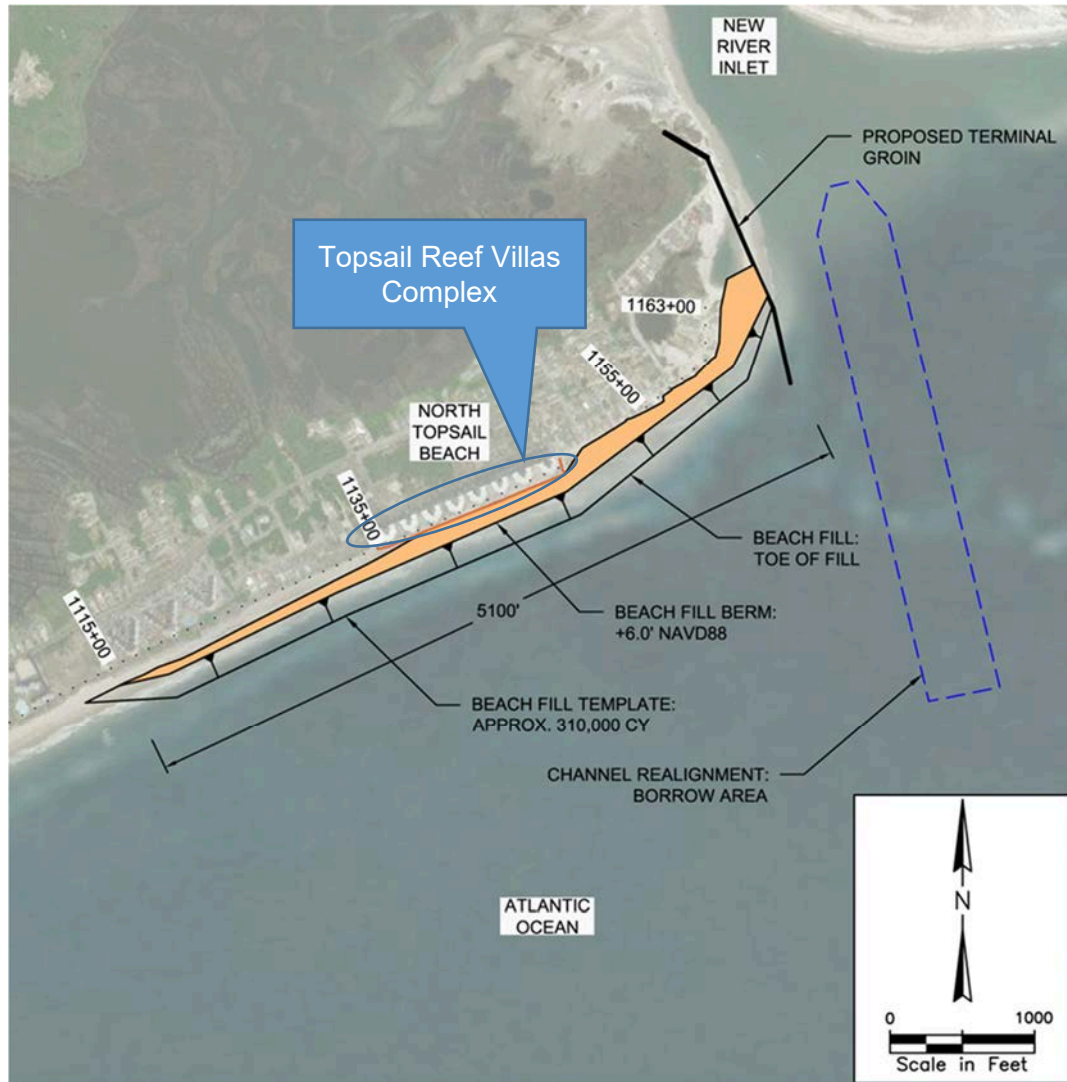


Figure 5: Proposed beach fill and terminal groin plan for the project area (including Topsail Reef Villas).

In terms of timing, a public scoping meeting is planned for March 25, 2021 for this EIS process. According to the Corps announcement: “The scoping meeting is designed to provide information in order to solicit comments from the public; Federal, State and local agencies and officials; and other interested parties to incorporate in the Draft EIS document.”

The EIS process is projected to last approximately 3 years. At the end of this process, the preferred long-term management alternative will be implemented by the Town. It is anticipated that this will alleviate the need for sandbags along this section of shoreline.

Present Conditions

Figures 6 and 7 present photos of the sandbags protecting Topsail Reef Villas on March 16, 2021 during high tide conditions. Without the sandbags, high tides and wave runup would inundate and undermine the Topsail Reef structures. These water and wave effects would damage the



structural integrity of the foundations. In addition to foundation damage, debris and potentially hazardous material would be swept back into the sea and litter the nearby shorelines.



Figure 6: March 16, 2021 photo of the sandbags protecting the Topsail Reef Villas at high tide (looking south).



Figure 7: March 16, 2021 photo of the sandbags protecting the Topsail Reef Villas at high tide (looking north).



Shoreline Monitoring

Survey data collection and monitoring occurs at least once a year along the Town's beach, including the Topsail Reef Complex. Figure 8 presents monitoring stations for the Topsail Reef section of beach. Monitoring surveys occur in the late spring or early summer every year while surveying also occurs for nourishment projects and significant post-storm events. Post-storm surveys have been collected for Matthew (2016), Florence (2018), Dorian (2019), and Isaias (2020). While some nourishment activity has partially mitigated some erosion, this reach of beach continues to experience long-term erosion and the current threat facing the Reefs absent the presence of the sandbags is essentially the same as the threat the Reefs were facing in 2014. This erosion is most pronounced in the inter-tidal and surf zone sections of the beach profile.



Figure 8: Post-Isaias aerial showing transect monitoring stations at the Topsail Reef Complex. Stations 1140+00 and 1145+00 front the complex.

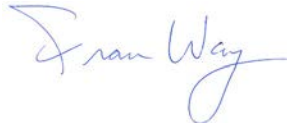


Conclusion

In summary, it is my professional opinion that if the sandbags in front of the Reefs are removed the structures would almost immediately become uninhabitable and would be in imminent threat of collapsing, and ultimately would collapse, into the Atlantic Ocean. This would present a tremendous life, public health, and environmental risk. Although a few smaller scale nourishments in 2016 and the ongoing Corps placement projects have helped to mitigate the threat presented by erosion in this area they have by no means prevented the erosion issues facing the Reefs from worsening. The Town's ongoing EIS process is anticipated to provide a long-term solution to this section of shoreline. I estimate that process will take approximately 3 years based on the information presently available to me.

The opinions and conclusions stated in this letter are based on my personal observation of the Reefs as well as my experience as a coastal engineer as stated in my CV, a copy of which is attached to this letter.

Sincerely,

A handwritten signature in blue ink that reads "Fran Way". The signature is written in a cursive style with a large, sweeping initial "F".

Fran Way, P.E.
Coastal Engineer



PROFESSIONAL EXPERIENCE

Total Years: 22

Years with ATM: 20

AREAS OF SPECIALIZATION

- Coastal and Ocean Engineering
- Coastal Processes and Sediment Transport Modeling
- Wave Modeling
- Shoreline Erosion Modeling
- Hydrodynamic Modeling
- Water Quality Modeling
- FEMA Flood Zone Analysis and Remapping
- Permitting and Comprehensive Environmental Studies
- EIS and NEPA support
- Endangered Species Formal Consultations
- Fisheries, Wetland and Biological Studies
- Physical and Biological Oceanography
- Data Collection and Statistical Analysis
- Data Mining

EDUCATION

- MS, Ocean Engineering, Texas A&M University, 2000
- BS, Biology, Boston College, 1993

PROFESSIONAL REGISTRATIONS

- Prof. Engineer, SC, No. 27831, 2009
- Prof. Engineer, NC, No. 044849, 2017

PROFESSIONAL AFFILIATIONS

- Member, FEMA Scientific Resolution Panel
- SC Beach Advocates

SUMMARY OF QUALIFICATIONS

Mr. Way specializes in coastal, environmental and water resources engineering. He applies his background in coastal and water resources to flood hazard risk assessments, wave and current modeling, beach nourishment, dredging and navigation studies, alternatives analyses, as well as shoreline stabilization projects. Mr. Way provides hydrodynamic, water quality, flushing, watershed, sedimentation, acoustic, artificial neural network, shoreline, and wave modeling and completes field data collection, data mining, statistical, and time series analyses. He is proficient in various surface water hydrodynamic, hydrologic, hydraulic, and water quality models.

Mr. Way has provided services on more than 40 FEMA letters of map revision (LOMRs) and flood insurance rate map (FIRM) appeals. Mr. Way provides expert witness testimony on coastal engineering and FEMA-related issues.

PROJECT EXPERIENCE

WATERFRONT AND COASTAL – U.S.

Central Reach Reimbursement Nourishment Project, Holden Beach, NC: Project manager responsible for the FEMA-sponsored engineered beach mitigation project. This FEMA-sponsored "Category G" project is related to hurricane damages from Hurricane Florence (2018) and Hurricane Dorian (2019). An offshore borrow area search was conducted to identify over 1 million cubic yards of material. Once a suitable sand source and volume was identified, a permit application was developed and submitted. Bid package development is currently ongoing and project construction is slated for winter 2021/2022. Coordination with FEMA and the Town has been consistent during this process to ensure mitigation funding.

Holden Beach Nourishments, Holden Beach, NC: Project manager responsible for the design, permitting and overseeing borrow area and beach nourishment construction activities in 2008, 2009, 2014, 2017 and 2019. Nourishments vary in size and shoreline reach placement. 2008 and 2009 nourishments were truck hauls of 200,000 cubic yards, 2014 and 2019 projects used an inlet shoal as a borrow source while the 2017 nourishment utilized an offshore borrow area and was 1.31 million cubic yards. The 2009 project was a FEMA mitigation project due to Hurricane Hanna. The 2017 project also included some FEMA mitigation from Hurricane Matthew (2016). Interacted with state and federal regulatory agency personnel on a weekly basis and ensured the project complied with all permit and monitoring conditions. Developed bid documents and oversaw bidding process. Performed construction administration and

reviewed all payment/volume data. Coordinated all post-project monitoring requirements. Borrow areas included upland, nearby sections of the Atlantic Intracoastal Waterway (AIWW), and offshore. Currently working on designing and permitting a nourishment project related to FEMA mitigation from Hurricanes Florence and Michael. This project will use an offshore borrow area.

Post-Hurricane Florence Assessment and Mitigation, North Topsail Beach, NC: Performed post-hurricane support and evaluations for the Town following one of the most destructive hurricanes to hit since Hurricane Fran in 1996. Worked with the Town and FEMA to construct emergency dunes (Category B) and engineered beach (Category G) mitigation. Developed an estimate of probable costs for FEMA to get the mitigation/recovery projects obligated for FEMA reimbursement. Permitted, bid, and constructed an upland truck haul project for the Category B section of shoreline in spring 2021. This truck haul project placed ~150,000 cy of sand over 4 miles of shoreline. Worked with the Town to ensure FEMA funding as well as acquire some additional state funding for additional work. The Category G project for 600,000 cy is currently in permitting with construction to occur in the winter/spring environmental window of 2021/2022.

Topsail Beach Dune Development Litigation, Topsail Beach, NC: Worked with an attorney representing a group of homeowners opposed to a recent local ordinance change that will result in the residential development of a dune system that has only been in existence for the last decade. Applied my experience with FEMA regulations as well as coastal risk analyses to identify several potential issues with the proposed local ordinance change. Provided a sworn affidavit.

Crab Bank Sedimentation Study, Mount Pleasant, SC: Worked with the Town of Mount Pleasant to ensure that the Crab Bank Island bird habitat restoration was designed and constructed as to not detrimentally impact the mouth of Shem Creek from a navigational and recreational perspective. Developed several numerical models: wave model, hydrodynamic model and sedimentation model to evaluate several different placement locations and volumes. Met with the Town, USACE, SCDNR and other stakeholders frequently to optimize the habitat restoration effort.

Barnard Expert Witness Testimony, James Island, SC: Provided attorney support for a lawsuit related to tidal creek erosion and damage to docks and upland decks. Visited site, reviewed erosion and currents/waves, and all relevant materials. Provided coastal engineering technical expertise regarding erosion and potential mitigation. Provided technical review and reviewed potential cost estimates. Case was successfully settled.

Coastal Engineering for a Seawall Repair at 2881 Marshall Blvd., Sullivan's Island, SC: Assessed an existing steel sheet pile seawall and developed a repair plan. Developed cost estimates and obtained necessary town and state permits. Worked with contractors to repair the sheet pile wall and to truck haul ~300 cubic yards of sand behind the wall and on its flanks due to hurricane related erosion.

Long Island Bridge Access, Folly Beach, SC: Performed an analysis related to constructing a bridge to access a coastal island. State regulations limit coastal bridges and the analysis developed a strategy to permit the bridge.

Topsail Beach Terminal Groin Analysis and Modeling, Topsail, NC: Project manager who developed alternative analysis and subsequent studies to determine the feasibility of a terminal groin and nourishment project along the erosive north end. Used the DELFT3D numerical sediment transport model which considers inlet and nearshore currents, tides and waves.

Shipyards Creek Mooring Dolphin Design and Permitting, Charleston, SC: Lead in the design and permitting of 10 mooring dolphins. The primary use of the dolphins is to berth two dredge scows. Negotiation with regulatory agencies was required to minimize monitoring conditions. Following the successful design and permitting of the mooring dolphins, a permit modification was successfully obtained that was related to a change in construction materials and methods.

Grand Marina Basin Construction Feasibility and Dredge Disposal Analysis, Mount Pleasant, SC: Developed an analysis related to a potential marina basin in an old dredge disposal area along the intracoastal waterway. Also developed a cost estimate for the project, recommendations to ensure adequate flushing, and long-term dredged material management costs and alternatives.

Boat Ramp and Jetty/Groin Design and Numerical Modeling, Biloxi, MS: Developed sediment transport model for the project site, a Gulf of Mexico oceanfront location, and evaluated several different boat ramp and jetty/groin protection alignments. Also developed report documenting potential updrift and downdrift effects as well as recommendations.

Municipal Memorial Waterfront Park Phase 2, Pier Wave, Water Level, Current, And Flushing Analysis, Mount Pleasant, SC: Developed design forces for the pier related to waves, water levels, currents. Also developed a wave screen design to maximize operations for the marina component of the pier. Assisted in permitting and evaluating flushing as well as scour.

Belle Isle Yacht Club Marina Sedimentation Assessment, Georgetown, SC: Reviewed existing and historical sedimentation issues at the marina. This included reviewing hydrodynamic and environmental data/reports. Developed several options to reduce sedimentation including entrance reconfiguration, additional sheet piling, moving freshwater inputs, and dredge footprint alterations. Developed a numerical model to quantify sedimentation minimization alternatives and worked with the client to permit and implement these solutions.

Bay Point Island Dock Master Plan, Bay Point Island, SC: Developed a dock master plan for two undeveloped islands along the coast. Dock master planning included identifying all lots/parcels that can accommodate docks and then designing centralized community docks based on this analysis to reduce the total number of docks needed.

Cape Fear River Sedimentation Study, Wilmington, NC: Collected wave, water level, current, and flow data as well as bottom sediment and suspended sediment to assess potential sedimentation issues at proposed marina site. Used desktop empirical models as well as collected data to establish sedimentation patterns in the project area. Also evaluated marina tranquility alternatives related to wave exposure.

Marina Basin Wave Tranquility Assessment, Wave Modeling and Wave Screen Design, Bay St. Louis, MS: Evaluated wave basin agitation and tranquility of an existing wave basin. Utilized the CGWave model to assess existing conditions as well as proposed alterations/additions to enhance basin tranquility under operational and extreme conditions.

Marina Wave Modeling and Design Alternatives Review, Burlington, VT: Performed limited wave modeling and interacted with design team related to a marina development project on Lake Champlain.

Coastal Island Resort Feasibility and Alternatives Assessment of Dredging, Vessel Docking, and Island Access Options, Bay Point Island, Beaufort County, SC: Collected bathymetry and sediment data in support

of dredging feasibility. Characterized sediment material and potential uses. Designed channel and developed several island access alternatives. Developed cost estimates for each alternative.

Dock Master Plan Development, Bay Point Island, Beaufort County, SC: Developed a conceptual dock master plan for coastal island development purposes and interaction with state regulatory agencies.

Wake, Wave/Current Data Collection and Wave Modeling, Manhattan, NY: Collected wake, wave, and current data on the East River in support of a marina project. Also applied the CMS-Wave model to assess marina tranquility, entrance opening configuration, and breakwater/wave fence/floating breakwater needs. Developed wave fence loads based on model and data collection.

Recreational Yacht Dock Design, Permitting and Construction, Sea Island, GA: Project manager responsible for design, permitting, bid, and assisted in construction oversight of large residential dock capable of handling a 70-foot yacht. Dock included electrical and low-profile platform for 30-foot vessel.

Transient Vessel Funding Boating Infrastructure Grant (BIG) Application, Brunswick, GA: Project manager responsible for working with the City of Brunswick to submit the necessary information to receive federal funding for waterfront improvements along Brunswick's historic district. Funding is for transient vessels longer than 26 feet and encourages travel up and down the eastern seaboard.

Marina Basin Excavation and Beneficial Uses Study, Daufuskie Island, SC: Worked with client and regulatory agencies to develop a resort marina basin. Dredged material disposal (including beneficial uses) and water quality modeling were two primary studies conducted.

Liberty Harbor Wave and Current Study, Brunswick, GA: Performed a physical analysis of the wind and wave environment in support of a marina project. Tasks included current, flow, wind-wave, and vessel wake data collection as well as wave and current modeling. Several different wave attenuation layouts were modeled, and a final design was developed.

Arlington Marina Environmental Studies, Pamlico County, NC: Performed water quality and flushing analysis and modeling in support of an environmental assessment and marina village development project.

Commercial Dock Design, Permitting, and Construction Oversight, Village Creek Landing, St. Simons Island, GA: Project manager responsible for the redesign of a commercial dock and performed all permitting. Developed bid documents, evaluated bids, coordinated with contractor throughout the construction process.

Harbor Station Marina Wave Design and Flushing Analysis, Harbor Station, VA: Developed extreme water level and wave forces for a proposed marina development on the Potomac River. Assessed existing water quality and potential project impacts. Performed flushing analysis and established marina entrances/openings based on this analysis.

Ingleside Marina Alternatives Analysis, Corpus Christi, TX: Performed an alternatives analysis in support of a marina village. Tasks included locating and assessing several potential locations and creating and evaluating several onsite designs based on project purpose and need. Water quality, wetland impacts and economics evaluations were all performed.

Village Creek Landing Dredge and Disposal Analysis, St. Simons Island, GA: Project manager responsible for designing of a shallow-draft channel dredge project and researched disposal alternatives in the area. Also provided cost estimates and long-term management issues.

Nordic Aquafarms Coastal Conditions Analysis and Pipeline Anchoring/Armoring Design, Belfast, ME: Developed a coastal conditions analysis for the intake and discharge pipelines for an upland aquaculture facility. Intake and discharge pipeline anchoring and armoring design was required to ensure successful facility operation. Pipelines extended from the upland out to 50 feet deep and required different techniques based on depth and energy exposure (waves, currents, sediments, etc.) Worked with the project team to develop seismic and geotechnical sampling plans.

Charleston Harbor Marina Living Shoreline Grant Funding Application, Charleston, SC: Developed and submitted a living shoreline application for an erosive section of shoreline along the clients' shoreline on Charleston Harbor. The proposed living shoreline solution is a rock sill approximately 200 feet long.

Patriots Point Living Shoreline Breakwater Analysis, Mount Pleasant, SC: Developed a living shoreline breakwater to protect an eroding section of marsh that was contributing to the sedimentation problem in the adjacent marina. The project was designed to minimize shoreline erosion to the lee of the living shoreline and to reduce maintenance dredging in the marina. A comprehensive coastal analysis was performed, and a wave model was used to assess breakwater size and shoreline response. Developed cost estimates for the alternatives proposed.

Patriots Point Oceanfront Bulkhead Design and Permitting, Debidue, SC: Worked for a group of 20 oceanfront homeowners to design and permit a timber bulkhead that would replace an existing 1,800 feet of timber bulkhead that is beyond its design life. The permit was obtained but appealed. Provided expert witness testimony and technical support to attorneys to defend the permit.

Breakers/Clarke Ave Numerical Modeling and Breakwater Analysis, Palm Beach, FL: Responsible for development and review of a state-of-the-art sediment transport numerical model. The CMS model used waves, water levels, currents/flows to model the project area shoreline and nearshore areas. Several hard structures (groins, revetments, bulkheads, breakwaters) were included in the modeling. Several alternatives were modeled.

Hurricane Damage Analysis, FEMA Coordination, and Beach/Dune Mitigation/Restoration, Holden Beach, NC: Assisted the Town in recovery from Hurricanes Florence and Michael. Performed beach and dune surveying and loss calculations; developed necessary documents for FEMA mitigation and reimbursement; and identified several alternatives for restoring beach and dune system (upland, nearshore, offshore sand sources, etc.).

Residential Homeowner Erosion Analysis and Recommendations, Sullivan's Island, SC: Provided a review of recent oceanfront erosion at the subject site and provided several recommendations to mitigate the erosion. Recommendations need to comply with town, state and federal restrictions.

Crab Bank Island Mitigation, Restoration Modeling and Coastal Analysis, Mount Pleasant, SC: Reviewed proposed mitigation plans for Crab Bank, an eroding island that is an important seabird rookery. Modeled and analyzed the proposed mitigation plans and developed recommendations and technical comments on how to make project more successful from a coastal engineering perspective (erosion, coastal processes, island movement, etc.)

South Carolina State Ocean Baseline Line Revised Map Review and Appeal, Hilton Head, SC: Reviewed newly released South Carolina state ocean baseline and setback lines at the project site and all background materials. Found several technical items for an appeal (based on incorrect analysis) of the new maps and appealed the proposed changes. Worked with an attorney and provided technical support.

South Carolina State Ocean Baseline Line Revised Map Review and Appeal, Garden City, SC: Reviewed newly released South Carolina state ocean baseline and setback lines at the project site and all background materials. Found several technical items for an appeal (based on incorrect analysis) of the new maps and appealed the proposed changes. Worked with an attorney and provided technical support.

South Carolina State Ocean Baseline and Setback Line Revised Map Review and Appeal, Sullivan's Island, SC: Reviewed newly released South Carolina state ocean baseline and setback lines at the project site and all background materials. Found several technical items for an appeal (based on incorrect analysis) of the new maps and appealed the proposed changes. Worked with an attorney and provided technical support.

South Carolina State Ocean Baseline and Setback Line Revised Map Review and Appeal, Isle of Palms, SC: Reviewed newly released South Carolina state ocean baseline and setback lines at the project site and all background materials. Found several technical items for an appeal (based on incorrect analysis) of the new maps and appealed the proposed changes. Worked with an attorney and provided technical support.

Ocean Rock Revetment Design, Hilton Head Island, SC: Designed a rock revetment for 500 feet of shoreline. Developed forces, erosion, wave heights, wave periods for rock sizing and dimensioning with a focus on Hurricane Matthew impacts. Worked with contractor to optimize protection with project costs.

Coastal Erosion and Stormwater System Review, Isle of Palms, SC: Performed a site visit and developed an assessment related to a change in the stormwater system that resulted in coastal erosion on the active beach which also created beach access issues. Worked with the City, homeowners, and attorney to mitigate the problem.

Dune Restoration Design and Permitting, Sullivan's Island, SC: Worked with a homeowner along Sullivan's Island oceanfront to design and permit a dune restoration project in response to Hurricanes Matthew and Joaquin. Revegetation and truck access restoration were also included in the effort. Coordinated with truck haulers and obtained cost estimates.

Post-Hurricane Matthew Timber Bulkhead "Damage Beyond Repair" Inspections, Daufuskie, Garden City and Harbor Island, SC: Performed lot by lot timber bulkhead inspections to determine level of damage to each structure. The state (OCRM) assigned ATM several beaches to perform these independent inspections to determine if these structures were "destroyed beyond repair" as determined by state regulations. Worked with the state in contested cases.

Groin Rehabilitation, Folly Beach, SC: Designed, permitted and bid the rehabilitation and reconstruction of nine groins along a 5,000-foot section of beach. The existing groins had deteriorated significantly over the last few decades. Developed cost estimates for the groin rehabilitation.

Pine Island Shoreline Stabilization, Hilton Head Island, SC: Worked with property owner association to stabilize 1,000 feet of shoreline that connects to the Pine Island natural area. Nourishment and a rock revetment were initially proposed; however, the rock revetment was removed due to natural resource agency objections and state precedents. A dune walkover/access feature was ultimately permitted and constructed along with a beach nourishment.

Comprehensive Beach Management Plan Update, Isle of Palms, SC: Worked with the City to update its local comprehensive beach management plan. Updated all beach-related and beach-adjacent structures (erosion control features, walkovers, pools within setback lines, historical erosion, houses/gazebos/decks on active beach, etc.)

Vegetation/Shoaling Analysis and Expert Witness Support, Beaufort, SC: Provided expert witness support to a homeowner that was contesting a state permit decision regarding a dock application. Evaluated sedimentation rates at the site and provided erosion and accretion/shoaling estimates.

Ocean Club Villas Bulkhead Violation Expert Witness Support, Isle of Palms, SC: Provided expert witness and coastal engineering support to a condo association that was contesting a state enforcement fine for an unpermitted bulkhead on the oceanfront. Successfully worked with the attorney and condo association to significantly reduce the fine.

Expert Witness Testimony, Sullivan's Island, SC: Provided expert witness support to a homeowner that was contesting a state permit decision. Developed written reports, coordinated with attorneys and provided advice/strategizing. Depositions and testimony were involved.

Attorney Support, Various Sites in SC: Worked with several area attorneys in support of challenges to state permitting regulations, proposed projects and baseline/setback line delineations. Project locations include Edingsville Beach, Sullivan's Island, Capt. Sam's Inlet, and Hunting Island.

Coastal Erosion and Mitigation for Individual Homeowners, Sullivan's Island, SC: Assessed erosion and mitigation options (nourishment, bulkhead, revetment, geotextile, etc.) for homeowners experiencing significant erosion that threatened habitable structures. Designed, permitted, and selected contractor(s).

Coastal Due Diligence of Resort Property, Isle of Palms, SC: Performed coastal due diligence for a potential buyer of a coastal resort with a history of erosion problems. Reviewed the causes of the erosion (hurricanes, nor'easters, inlet-shoal bypassing, etc.) and developed an annual estimate of future costs and recommendations.

3025 Marshall Boulevard Coastal Engineering, Dune Restoration Bidding and Construction Phase Support, Sullivan's Island, SC: Assisted homeowner with construction of a dune restoration truck haul project. Coordinated with several truck and sand hauling companies and ensured the project met all regulatory permit conditions and restrictions.

Terminal Groin Analysis and Modeling, Holden Beach, NC: Developed alternative analysis and subsequent studies to determine the feasibility of a terminal groin and nourishment project along the erosive east end. Applied the CMS numerical sediment transport model which considers inlet and nearshore currents, tides and waves.

Terminal Groin Environmental Impact Statement (EIS) Development, Holden Beach, NC: Worked with the USACE and their third-party independent contractor to develop a draft and final EIS for a terminal groin and nourishment project along the erosive east end. Developed an inlet management plan and performed a 30-year economic cost analysis for several alternative beach management strategies.

Holden Beach FEMA Mitigation, Holden Beach, NC: Responsible for coordination with FEMA on Hurricane Hanna impacts related to dune and engineered beach restoration activities. Successfully performed post-mitigation work with FEMA funding participation.

Borrow Area Search and Analysis, Holden Beach, NC: Conducted a search for beach nourishment sand offshore. Bathymetry, side-scan sonar, seismic imaging, live hardbottom and vibracore data were all analyzed in order to establish feasible, permissible borrow areas.

Terminal Beach Groin Feasibility, Pawley's Island, SC: Developed a comprehensive analysis for several beach management alternatives and evaluated long-term effectiveness of alternatives to minimize a 'hot-spot' erosion area. Designed and permitted one rubble mound groin as well as a small beach nourishment to complement the groin. Developed post-project monitoring plans and coordinated all necessary studies.

DeBordieu Colony Beach Nourishment Bidding, Contracting and Construction Oversight, Debidue, SC: Responsible for the design and permitting of the 650,000-cubic-yard nourishment project. Developed comprehensive bid package utilizing hopper dredge and borrow area three miles offshore. Negotiated and contracted with winning bidder. 2015 project oversight and coordination. Conducted post-project related monitoring in 2016 and 2017.

Groin Feasibility, Design and Permitting, Debidue Island, SC: Developed a comprehensive cost analysis for several beach management alternatives and evaluated long-term effectiveness of alternatives to minimize a hot spot erosion area. Designed and permitted three sheet pile groins.

Borrow Area Search and Analysis, Debidue, SC: Conducted a search for beach nourishment sand offshore. Bathymetry, side-scan sonar, seismic imaging, live hardbottom and vibracore data were all analyzed in order to establish feasible, permissible borrow areas.

DeBordieu Beach Nourishment Alternatives, Debidue, SC: Performed alternative analysis using the GENESIS shoreline change model to maximize nourishment efficiency and permitting for project.

Borrow Area Wave Impact Study, Indian River County, FL: Performed wave modeling and applied littoral transport equations to determine the effects of two proposed borrow areas on incoming waves and any resulting impacts on sediment transport and coastal erosion.

Mitigation/Physical Monitoring of Beach Nourishment, Indian River County, FL: Performed alternative analysis using the GENESIS shoreline change model for three different areas of the county coastline. Also developed toe intersection post-processing model using FORTRAN and Matlab and developed model animation.

Tybee Beach Erosion Study, Savannah, GA: Conducted an evaluation of potential impacts of Savannah Harbor Expansion Project on shoreline erosion. The study included assessment of historical dredging operations and historical geomorphologic changes, and hydrodynamic, wave, and sediment transport modeling to predict impacts. Performed sediment budget and sediment transport studies from Hilton Head to Little Tybee Island.

Holiday Inn Dune Restoration Plan, Hilton Head Island, SC: Project manager responsible for the design of a large dune enhancement project to responsibly increase development density.

FEMA Map Appeal, Jacksonville, NC: Led a review of the City's preliminary FEMA maps and developed a technical strategy for appeal. Several items related to storm surge modeling as well as riverine modeling were identified for appeal. This project has been delayed but is ongoing, and ATM continues to work with Jacksonville staff while FEMA and NC FEMA mapping partners review and update the mapping per ATM modeling and analysis issues identified.

FEMA Preliminary Flood Zone Map Appeal, Wrightsville Beach, NC: Led the Town's appeal of the preliminary FEMA maps from beginning to end. Reviewed the FEMA maps and developed a technical strategy for appeal. Worked with FEMA mapping partners during the project to ensure project success. Moved 175 acres of VE zone into AE zone.

Liberty Hill Farm FEMA Trip Wall Design, Permitting and Construction to Move from VE to AE Zone, CLOMR, Mount Pleasant, SC: To maximize AE zone acreage for development and reduce VE zone construction restrictions, an aluminum sheet-pile trip wall was designed, permitted and constructed. FEMA's Conditional Letter of Map Revision (CLOMR) process was utilized for this purpose. The trip wall was installed along 2,000 feet of estuarine shoreline to convert 50 acres of VE to AE zone. Performed wave modeling and trip wall sheet pile design loads. Worked with geotechnical and structural engineers to design a trip wall to 100-year storm conditions. Worked with owner to ensure a smooth FEMA certification and LOMR process.

FEMA LOMR for 55 Romney Street, Charleston, SC: Developed a LOMR to remap the Limit of Moderate Wave Action (LiMWA) line from the latest FIRMs. The LiMWA line delineates the coastal A zone where V zone construction is required. The commercial development planned for the site required a lower first floor elevation to more accessible to tourism and foot traffic.

Seaside Landing Condominium FEMA Flood Zone Support, Ocean Isle Beach, NC: Resolved a potential FEMA VE flood zone development violation for the Seaside Landing HOA and submitted a LOMR to FEMA to remove the entire property from the Special Flood Hazard Area (SFHA). Performed a site assessment and analysis to determine if past construction activities at the property, which had taken place in a FEMA VE flood zone, had potentially increased flood hazard risks to theirs and/or their neighbor's properties. Reviewed FEMA flood maps and flood study data/information, and created a CMS-Wave model grid to establish 100-year conditions at the site shoreline. Ran the FEMA coastal/wave model CHAMP and conducted FEMA transect analysis under pre- and post-construction conditions to determine the effects of the site's construction. Reviewed the results and determined the past VE zone construction did not increase flood hazards and coordinated a submittal with the County and FEMA to resolve the issue and demonstrate that the past development is not in violation. Developed and coordinated a FEMA LOMR application and submittal to reflect the property's removal from the Special Flood Hazard Area.

FEMA LOMR for Burton Oceanfront Residence on 55th Ave, Isle of Palms, SC: Performed a site assessment and analysis to evaluate the potential for remapping the oceanfront site into a less hazardous FEMA flood elevation zone. Conducted a review of the existing FEMA FIRM and reran the FEMA wave models and analysis based on updated topography and site survey data. Analyzed these results to determine which portions of the subject property could be remapped from the VE zone into the less hazardous AE flood zone, then developed and coordinated a FEMA LOMR application and submittal to reflect the proposed flood zone changes.

FEMA LOMR for Lamach Oceanfront Residence on 51st Avenue, Isle of Palms, SC: Responsible for performing a site assessment and analysis to evaluate the potential for remapping the site into a less

hazardous FEMA flood elevation zone. Conducted a review of the existing FEMA FIRM and reran the FEMA wave models and analysis based on updated LiDAR topography and site survey data. Analyzed these results to determine which portions of the subject property could be remapped from the VE zone into the less hazardous AE flood zone, then developed and coordinated a FEMA LOMR application and submittal to reflect the proposed flood zone changes.

FEMA LOMR for Heirloom Landing, Mount Pleasant, SC: Performed a site assessment and analysis to evaluate the potential for remapping the site into a less hazardous FEMA flood elevation zone. The Conducted a review of the existing FEMA FIRM and reran the FEMA wave models and estuarine analysis based on updated topography and site survey data. Also evaluated the strategic use of fill in the LiMWA zone to lessen flood risk. Developed and coordinated a FEMA LOMR application and submittal to reflect the proposed flood zone changes.

FEMA Flood Zone Support for Holmes Residence at 3193 Waterway Drive, Supply, NC: Resolved a potential FEMA VE flood zone development violation for the property along the intracoastal waterway in Supply, NC. Performed a site assessment and analysis to determine if the site's fill and retaining wall, having been constructed in a VE zone, potentially increased flood hazard risks to theirs and/or their neighbor's properties. Reviewed FEMA flood maps and flood study data/information, and created a CMS-Wave model grid to assess wave reflection/deflection to other properties and to establish 100-year conditions at the site shoreline. Conducted FEMA transect wave runup analysis under pre- and post-construction conditions to determine the effects of the site's construction. Reviewed the results and determined the past VE zone construction did not increase flood hazards, and coordinated a submittal with the County and State to resolve the issue and demonstrate that the construction at the site is not in violation.

Ferry Wharf Flood Zone Variance, Mount Pleasant, SC: Conducted an analysis related to the placement of fill in a FEMA VE zone. The fill placement was adjacent to an under-construction hotel and analysis was needed to show no adverse flooding or wave effects to adjacent properties. Developed a numerical wave model to show negligible wave reflection and refraction effects under 100-year storm conditions. Developed a memo as required by the Town Flood Plain Manager.

Canaveral Port Authority Flood Insurance Rate Map (FIRM) Appeal, Brevard County, FL: Assisted the Canaveral Port Authority (CPA) in an appeal of the FEMA preliminary flood maps. The appeal was based on updated topography and site-specific analysis. Worked with CPA and FEMA subcontractors to successfully change the FEMA preliminary flood maps.

DeBordieu Colony Beach Club FEMA LOMR, Georgetown County, SC: Performed a FEMA Letter of Map Revision (LOMR) near a dune system. Analysis was based on updated topography and site-specific coastal analysis/modeling to remap an area landward of the current dune from VE to AE. This change allowed AE zone construction to the beach club restaurant which is much less restrictive than VE zone construction requirements.

FEMA LOMR on Two Properties, Isle of Palms, SC: Performed LOMRs for two separate homeowners to reflect current conditions at the site. Performed dune erosion and dune removal evaluation scenarios as required by FEMA. These LOMRs also allowed for swimming pool construction which were level with the existing elevated back porches and first floor. Worked with contractor, City and FEMA subcontractors.

2407 Atlantic Avenue FEMA Letter of Map Revision (LOMR), Sullivan's Island, SC: Remapped existing FEMA flood zones at the project site to move the property from a VE to an AE zone (providing significant

insurance premium savings). Analysis included review of existing FEMA data, running FEMA wave model at the site based on updated topography, and performing dune erosion/removal according to FEMA guidance. Developed and submitted LOMR application to FEMA.

130 Ocean Boulevard FEMA Letter of Map Revision (LOMR), James Island, SC: Remapped existing FEMA flood zones at the project site to move the property from a VE to an AE zone (providing significant insurance premium savings). Analysis included review of existing FEMA data, running FEMA wave model at the site based on updated topography, and performing dune erosion/removal according to FEMA guidance. Developed and submitted LOMR application to FEMA.

FEMA Map Appeal, Johns Island, SC: Reviewed proposed FEMA preliminary maps at project site and the proposed increases to VE zones; reviewed all relevant FEMA work material regarding modeling and methods; developed an appeal based on updated topography and site-specific coastal analysis; and updated all modeling adhered to FEMA guidelines and methods.2907 Ion Avenue Letter of Map Revision

Development (LOMR), Sullivan's Island, SC: Reanalyzed and remapped existing FEMA flood zones at the project site to move the property from a VE to an AE zone (providing significant insurance premium savings). Analysis included review of existing FEMA data, running FEMA wave model at the site based on updated topography, and performing dune erosion/removal according to FEMA guidance. Developed and submitted LOMR application to FEMA.

2302 Ion Avenue FEMA Letter of Map Revision (LOMR), Sullivan's Island, SC: Remapped existing FEMA flood zones at the project site to move the property from a VE to an AE zone (providing significant insurance premium savings). Analysis included review of existing FEMA data, running FEMA wave model at the site based on updated topography, and performing dune erosion/removal according to FEMA guidance. Developed and submitted LOMR application to FEMA.

1009 Middle Street FEMA Letter of Map Revision (LOMR), Sullivan's Island, SC: Remapped existing FEMA flood zones at the project site to move the property from a VE to an AE zone (providing significant insurance premium savings). Analysis included review of existing FEMA data, running FEMA wave model at the site based on updated topography, and performing dune erosion/removal according to FEMA guidance. Developed and submitted LOMR application to FEMA.

Palmetto Fort FEMA Trip Wall Design, Permitting and Construction to Move from VE to AE Zone, CLOMR, Mt Pleasant, SC: To maximize AE zone acreage for development and reduce VE zone construction restrictions, a trip wall was designed and permitted. FEMA's Conditional Letter of Map Revision (CLOMR) process was utilized for this purpose. The trip wall will be placed along 2,000 feet of estuarine shoreline to convert 50 acres of VE to AE zone. Performed wave modeling and trip wall sheet pile design loads. Worked with geotechnical and structural engineers to design a trip wall to 100-year storm conditions.

Downtown Charleston East Bay Letter of Map Revision (LOMR), Charleston, SC: Reanalyzed and remapped existing FEMA flood zones at the project site to move a hotel structure from VE to AE zone (allowing for desired reconstruction which was not allowed in the VE zone). Analysis included review of existing FEMA FIRM, running FEMA wave model at the site based on updated topography. Developed and submitted LOMR application to FEMA.

Ravens Run Letter of Map Revision (LOMR), Mount Pleasant, SC: Reanalyzed and remapped existing FEMA flood zones at the project site to move properties from VE to AE zones (providing significant insurance

premium savings). Analysis included review of existing FEMA FIRM, running FEMA wave model at the site based on updated topography. Developed and submitted LOMR application to FEMA.

Toler's Cove Letter of Map Revision (LOMR), Mount Pleasant, SC: Reanalyzed and remapped existing FEMA flood zones at the project site to move properties from VE to AE zones (providing significant insurance premium savings). Analysis included review of existing FEMA FIRM, running FEMA wave model at the site based on updated topography. Developed and submitted LOMR application to FEMA.

Review and Appeal of Preliminary FEMA Maps, Jupiter Island, FL: Reviewed FEMA preliminary maps related to the Coastal High Hazard Area (CHHA) along the beach and the proposed increases to VE zones. Reviewed all relevant FEMA work materials regarding modeling and methods. Proposed several areas where an appeal (based on incorrect analysis) of the new maps would likely be successful.

Review and Appeal of Preliminary FEMA Maps, Kiawah, SC: Reviewed FEMA preliminary maps related to the Coastal High Hazard Area (CHHA) along the beach and the proposed increases to VE zones. Reviewed all relevant FEMA work material regarding modeling and methods. Proposed several areas where an appeal (based on incorrect analysis) of the new maps would likely be successful so that less developable area is in the CHHA.

Headquarters Island Plantation Letter of Map Revision (LOMR), Charleston, SC: Project manager, met with the HOA board to discuss FEMA mapping and LOMR process. Developed the wave analysis transects and digital elevation model. Worked with other ATM staff to develop the numerous submittals (maps, coastal analysis report, application forms, etc.). Met with the City Floodplain Manager to discuss the LOMR and have it signed by the local FPM prior to FEMA submittal. Coordinated and responded to technical requests by FEMA during the LOMR review. Worked with the HOA board and homeowners in navigating the insurance process to lower insurance premiums from the changed flood zones.

Home Farm HOA Letter of Map Revision (LOMR), Mount Pleasant, SC: Reanalyzed and remapped existing FEMA flood zones at the project site to move the property from a VE to an AE zone (providing significant insurance premium savings). Analysis included review of existing FEMA FIRM, running FEMA wave model at the site based on updated topography. Developed and submitted LOMR application to FEMA.

Rushland Plantation Letter of Map Revision (LOMR), St. Johns Island, SC: Project manager, performed an initial site visit and met with the HOA board to discuss FEMA mapping and the LOMR process. Developed the wave analysis transects and digital elevation model. Worked with other ATM staff to develop the numerous submittals (maps, coastal analysis report, application forms, etc.) required. Met with the City Floodplain Manager to discuss the LOMR and have it signed by the local FPM prior to FEMA submittal. Coordinated and responded to technical requests by FEMA during the LOMR review. Worked with the HOA board and homeowners in navigating the insurance process to lower insurance premiums from the changed flood zones.

Dolphin Adventure FEMA Primary Frontal Dune (PFD) Appeal, Marineland, FL: Provided coastal engineering services to assess the potential to appeal the proposed updated FEMA Flood Insurance Rate Map. This work entailed reviewing FEMA supporting data including the FEMA Wave model, LiDAR/DEM data, revetment design, PFD occurrence and available topographic information to identify potential items of appeal. Prepared all necessary appeal documents and maps and worked with FEMA and its subcontractors to successfully move the PFD and the VE zone to create more AE zone on the subject property.

FEMA Flood Zone Remapping, Several Sites in SC: Reanalyzed and remapped existing FEMA flood zones at a specific project site to move the property from a VE zone to an AE zone. Analysis included review of existing FEMA FIRM, rerunning FEMA wave model based on updated topography. Developed and submitted LOMR application. Successful LOMR sites include:

- CHS Townhomes LOMR, Charleston, SC
- Ilderton Tip Lane, Mt. Pleasant, SC
- James Island LOMR Application, James Island, SC
- Fort Lamar LOMR Feasibility, James Island, SC
- Reverie on the Ashley LOMR, North Charleston, SC
- LOMR 250 N. Hwy 17, Mt. Pleasant, SC
- Awendaw LOMR Feasibility, Awendaw, SC
- Hamlin Flood Zone LOMR, Mt. Pleasant, SC
- Sweetwater Apts SC LOMR Feasibility, Daniel Island, SC
- Country Club II LOMR Feasibility, James Island, SC
- Hindman Tract LOMR Feasibility and App, Mt. Pleasant, SC
- Factors Walk LOMR Feasibility Study, Charleston, SC
- Cathedral Oaks FEMA LOMR, Mt. Pleasant, SC
- Marais Feasibility & Application, Mt. Pleasant, SC

Construction Support Related to FEMA Flood Zone Regulations, Sullivan's Island, SC: Worked with architects during reconstruction of a large residence with an accessory structure in a VE flood zone. Provided advice and assistance on complying with FEMA regulations while adhering as closely as possible to client's desired design. Submitted LOMR application to move a VE zone structure into an AE zone to avoid costly VE zone construction restrictions. Utilized the SWAN 1-D wave model to simulate wave setup and site included both ocean and estuarine wave exposure analysis.

VE Flood Zone Technical Support, Mount Pleasant, SC: Worked with Town building and floodplain staff to develop forms and guidelines that the Town could use for VE zone developments. Forms included specifications for fill in VE zones, which are vague in FEMA publications.

Flood Zone Mapping, St. Kitts, West Indies: Applied FEMA guidelines and protocols in developing setbacks, finished floor elevations, base flood elevations, etc., for coastal resort developments along different bays. Conducted coastal wave analysis and FEMA-style wave modeling.

PORTS AND HARBORS

Ripley Light Yacht Club Dredging, Charleston, SC: Project Manager overseeing the latest dredging effort for Ripley Cove which includes the yacht club and a slip-owner POA. Evaluated disposal alternatives and options including mechanical and hydraulic excavation methods as well as disposal options (pipeline, truck haul, offshore disposal, etc.) Updated and submitted permit modification, coordinated with disposal area owners, and designed a cost-effective dredging approach to remove 50,000 cy of material.

Plastic Pellet Remediation SELC Attorney Support, Charleston, SC: Worked as an expert witness for the SELC related to the plastic pellet (nurdle) spill and ongoing operations at the plastic pellet site. Developed a monitoring and mitigation plan, discussed remediation alternatives, and reviewed/commented on previous cleanup efforts and made recommendations going forward. Currently working with SELC on a mitigation/remediation plan.

Grand Port Cruise Facility Environmental Impact Assessment (EIA), Grand Bahamas: Performed wave and sedimentation modeling for a planned cruise ship docking facility. Modeled several potential alternative

layouts and designs in order to minimize sedimentation impacts while also ensuring safe berthing operations. Also reviewed shoreline processes and habitats.

Cruise Siting Study, Lelepa, Vanuatu: Performed wave and sedimentation modeling for a planned cruise ship docking facility. Modeled several potential alternative layouts and designs to minimize sedimentation impacts while also ensuring safe berthing operations.

South Carolina Ports Authority (SCSPA) Mitigation Marsh Design Review and Improvement Recommendations, Charleston, SC: Reviewed a 22-acre marsh mitigation design and developed several improvements and recommendations to "value engineer" and control costs. Recommendations saved costs, improved design and ensured the projects long-term success. Shoreline armoring was also revised and redesigned to improve the overall project.

South Carolina Ports Authority (SCSPA) Harbor Expansion, Charleston USACE District NEPA Support, Charleston, SC: Managed water resources and natural resources elements of environmental impact studies for the proposed SCSPA port expansion. Key tasks included development of hydrodynamic and sedimentation models to evaluate impacts to water resources; stormwater modeling assessment; wetlands, threatened and endangered species, and essential fish habitat evaluations; coastal erosion impacts assessment; impacts to storm surge and flooding.

SCSPA Sedimentation Modeling, Charleston, SC: Applied EFDC hydrodynamic and sedimentation model to evaluate proposed container berth alignments. Deployed 3-D ADCP and performed data analysis on TSS and water quality samples.

Hugh K. Leatherman Container Berth Terminal Sedimentation Assessment, Data Collection and Modeling, Charleston, SC: Collected flow, current, and sediment data at the Hugh Leatherman Terminal in support of a sedimentation study to minimize maintenance dredging. Developed the sedimentation model and provided several minimization alternatives.

TraPac Berth Sedimentation Modeling, Jacksonville, FL: Conducted data collection that included tide gage deployment and current collection to calibrate a hydrodynamic and sedimentation model. The sedimentation model was then used to analyze several proposed design alternatives and to assess changes in hydrodynamics and minimize maintenance dredging. Project successfully minimized berth sedimentation and dredging. Modeling occurred in several phases based on client's needs.

Commercial Port Berth Modeling and Design, Lautoka, Fiji: Performed wave and storm surge studies to design a new berth to accommodate a handymax class vessel for break-bulk materials. The SWAN and COBRAS wave models were used. Berth and turning basin dredging footprints were also analyzed and designed.

Breakwater Design and Wave Modeling, Kiyanly, Turkmenistan: Performed a wave modeling analysis using CGWAVE to assess breakwater effectiveness under operational and extreme wave conditions. Compared results to tranquility and damage criteria within the basin and provided additional design recommendations.

Cruise Ship Berthing Current Analysis, Castaway Cay, Bahamas: Conducted data collection that included short- and long-term current monitoring. Correlated the current data with winds, tides, and ocean currents to develop a comprehensive characterization of the factors affecting cruise ship berthing at the site. Also designed a real-time current monitoring system for cruise ships to access.

Hydrodynamic and Sedimentation Modeling, Kings Bay, GA: Conducted data collection that included tide gage deployment and current data to calibrate a hydrodynamic model. The model was used to analyze several proposed design alternatives and to assess changes in hydrodynamics and sedimentation. Provided several recommendations and design changes to minimize maintenance dredging.

Sedimentation Study, Georgia Port Authority Container Berths 2, 3, 8, and 9, Savannah Harbor, GA: Conducted an analysis of historic sedimentation of the upper Savannah Harbor focusing on Georgia Port Authority berths. Evaluated existing maintenance dredging techniques and costs. Developed costs and efficiency of proposed sedimentation suspension system in comparison to traditional techniques.

Bulk Cargo Terminal Expansion, Jacksonville, FL: Collected current and flow data at the project site to characterize conditions and calibrate a hydrodynamic and sedimentation model. Evaluated pre- and post-project conditions with several different alignments to optimize navigation while also minimizing future maintenance dredging.

Savannah Harbor Expansion Design, Savannah, GA: Assisted in the application and calibration of a 3-D hydrodynamic, salinity and temperature model to the Savannah River Estuary. Performed analysis of salinity, salinity gradients, water surface elevation, temperature gradients, currents, salt flux, and volume flux for modeled and measured data. Performed water quality modeling with WASP to predict changes in dissolved oxygen and establish a total maximum daily load (TMDL) for the Savannah River. Developed a marsh succession model. Also performed a tidal harmonic analysis of historic water levels and quantified effects of sea level rise, land subsidence, and tidal amplification near the city of Savannah. Collected salinity, water quality, and marsh data. Developed Artificial Neural Network (ANN) that linked river model output to marsh data and future impacts.

Kinder Morgan Energy Bulk Cargo Terminal Expansion, Charleston, SC: Project manager who provided comprehensive permitting support and expertise for a proposed terminal expansion that included the following reports: environmental assessment, wetland mitigation, sediment and water quality sampling and analysis plan, Right Whale Section 7 Consultation, alternatives analysis.

Evaluation of Underwater Noise Impacts Related to Pile-Driving for Container Berth 8, Savannah, GA: Project manager responsible for applying a 3-D hydrodynamic model, a 2-D acoustic model (MMPE), and collecting extensive underwater noise from pile-driving, ships, tugs, and dredges to evaluate sound transmission near container berth on the Savannah River and subsequent impacts on the endangered short nose sturgeon. Data analysis included establishing peak and root-mean-squared decibel levels and evaluating sound wave propagation into the Middle River, where a documented short nose sturgeon hole existed. Met with NOAA representatives to develop adequate mitigation.

Southern Liquefied Natural Gas (LNG) Berth Expansion and Shoreline Stabilization, Savannah, GA: Analyzed shoreline erosion causes (wind-waves, ships, currents) and designed and permitted an articulated concrete block revetment to protect a mitigation marsh. Also performed storm surge, fisheries, and other environmental studies in support of terminal expansion.

WATERFRONT AND COASTAL – INTERNATIONAL

Little Thatch Cay Marina Wave Modeling, British Virgin Islands: Conducted wave modeling in support of marina basin development, provided recommendations to improve tranquility under operational and extreme conditions, and produced a deliverable for use with regulatory agencies.

Marina Feasibility Analysis, Wave Modeling and Coastal Analysis, Paradise, MX: Developed a siting analysis for a marina in the Sea of Cortez. Several breakwater layouts and protection schemes were modeled. Wave modeling using CGWave and CMS Wave was conducted to assess marina tranquility as well as potential changes to the regional sediment transport system. An overtopping and extreme storm analysis was also conducted to optimize structure/resort layout.

Hydrodynamic, Wave, and Sediment Transport Modeling and Analysis, Abu Dhabi, UAE: Performed comprehensive coastal analysis related to shoreline stabilization, base flood elevations, and finished floor elevations for an island resort along a large estuary off the Persian Gulf. Protected perched beaches were designed with the necessary adjacent armoring. An extensive modeling effort was conducted for the entire island for the basis of design.

Water Level and Wave Assessment, Grand Cayman Island: Performed water level and wave assessment related to deployed gages as well as available buoy/model data to support mangrove mapping and impact minimization related to resort development.

Marina Basin Wave Tranquility/Agitation Assessment and Wave Modeling, Palmas Del Mar, Puerto Rico: Evaluated wave basin agitation and tranquility of an existing marina basin. Utilized the CGWave model to assess existing conditions as well as proposed changes to enhance basin tranquility under operational and extreme conditions. A wave fixed panel/screen was identified as the most practical, economical, and effective solution. Assisted client with developing wave forces for panel design.

Boating Infrastructure Grant (BIG) Application Development and Submittal, Palmas Del Mar, Puerto Rico: Developed a BIG application for the client related to wave screen construction. This represented the first BIG application submitted by Puerto Rico, which was successfully obtained.

Marina Site Data Collection and Coastal Condition Assessment, Egg Island, Bahamas: Analyzed and documented coastal and environmental conditions necessary for marina development at a remote island location. Analyzed wave, water level, current, and previous modeling to establish 25-year and 50-year design conditions.

Marina Flushing Analysis, Grand Turk, Turks and Caicos: Conducted water quality and flushing analysis and modeling in support of marina basin development. Provided recommendations to improve flushing and water quality. Produced a deliverable for use with regulatory agencies.

Marina Entrance Alternatives Analysis, Baha Mar, Nassau, Bahamas: Utilized NOAA WaveWatch3 wind and wave data to assess navigability of three potential marina inlet entrances. Developed operational and extreme conditions and percent occurrence for each alternative. Recommended alignments that minimized breakwater length.

Skydive Dubai Marina Breakwater Design and Wave Modeling, Dubai, UAE: Developed several floating and fixed breakwater alternatives to provide marina tranquility under operational and extreme conditions. Performed wave modeling of each alternative to recommend final layouts.

Post-Hurricane Marina and Shoreline Damage Assessment and Support, Cabo San Lucas, Mexico: Provided coastal engineering support and analysis following passage of Hurricane Odile in 2014. Reviewed damage at site as well as storm conditions during landfall. Worked on behalf of the client with the insurer to maximize insurance benefits.

Ferry Berthing and Maneuvering Assessment, Bermuda: Collected wake, wave, and current data on the west end of Bermuda for a planned marina that included berthing for several local ferries. Developed wind and wave analysis and conducted wave modeling to assess operational and extreme conditions. Reviewed ferry dimensions and existing berths to compare with planned project.

Marina Basin Wave Tranquility Assessment and Wave Modeling, West Caicos, Turks and Caicos: Evaluated wave basin agitation and tranquility of an existing wave basin. Utilized the CGWave model to assess existing conditions as well as proposed changes to enhance basin tranquility under operational and extreme conditions.

Wave, Water Level, and Current Data Collection, Harvest Caye, Belize: Deployed gages and collected marine data related to the development of a resort. Data was analyzed and included in a feasibility report that provided recommendations to the developer related to wave exposure, water quality, erosion potential, etc.

Marina Design and Wave Attenuation at Yacht Haven Grande, St. Thomas, USVI: Lead responsible for support of Phase II marina developments, deployed several wave and current gages near the project site to assess site conditions and to calibrate wave model. Assessed wave energy during normal operating conditions and during extreme events and developed several wave attenuation alternatives (floating breakwater, rubble-mound breakwater, etc.). Evaluated seiching problems.

Open Coast Docking Pier and Marina Evaluation, Guacalito, Nicaragua: Analyzed the operational and extreme offshore wave conditions, then used the CMS wave model to propagate the conditions to the site. Evaluated many conditions under varying water level, wave height, wave period, wave direction to optimize pier and marina location and dimensions. Also evaluated breakwater alternatives to enhance marina tranquility.

North Sound Yacht Club Modeling and Design of Marina and Heli-Pad Coastal Protection, Oil Nut Bay, British Virgin Islands: Performed coastal analysis and modeling related to a proposed marina. In addition to assessing the need for a breakwater, a helicopter landing pad on the shoreline required adequate rock armoring and elevation siting.

Bimini Bay Modeling Study, Bimini Bay, Bahamas: Applied SSFATE suspended sediment model to evaluate short-term dredging impacts. Applied a 2-D hydrodynamic and flushing model to evaluate proposed development impacts to the Bimini Bay system. Analyzed measured hydrodynamic, water quality, and sediment samples in order to calibrate models and characterize existing conditions.

Rodney Bay Dredging and Disposal Study, St. Lucia: Worked with client and regulatory agency to develop a dredged material disposal plan and protocol. Several alternatives were assessed and presented to the public in an environmental impact assessment. Also oversaw design and construction of confined disposal facility.

Environmental Impact Assessment (EIA) for Coastal Resort Development, Bock Cay, Bahamas: Developed an EIA for a coastal resort that included a golf course, a marina, guest houses, and a beach renourishment. This assessment included a marina flushing analysis, the determination of upland and water-related biological potential effects, and economic effects.

Arabian Canal Navigation Study, Dubai, UAE: Analyzed typical and extreme environmental conditions that affect the engineering, excavation, and operation of a 75-kilometer-long inland canal. Earthquakes, tsunamis, sea level rise, seiching, and currents/flushing were assessed.

Inlet Jetty Optimization Study, Grand Bahamas Island, Bahamas: Assessed wave energy during normal and extreme events to develop design criteria (rock size and structure length) for jetties protecting an inland marina basin. Applied two wave models (SWAN and BOUSS2D) and also evaluated marina basin tranquility.

Marina and Breakwater Studies, Al Harf, Oman: Developed data collection program to evaluate project site environmental conditions and to calibrate hydrodynamic and wave models. Data and model output were used to optimize offshore breakwater design for marina protection as well as water quality (i.e., flushing).

Marina Basin Feasibility and Design, St Kitts, West Indies: Assessed wave energy and coastal processes during normal and extreme events to develop design criteria (rock size and structure length) for jetties protecting an inland marina basin. Applied two wave models (SWAN and CGWAVE) and also evaluated marina basin tranquility.

Environmental Impact Assessment (EIA), Royal Island, Bahamas: Developed an EIA to evaluate the impacts to local circulation, currents, and flushing from a proposed marina basin and excavation of a new channel. Data collection and modeling was performed in support of this task. Stormwater management and other best management practices were also developed.

Beef Island Environmental Impact Assessment (EIA), British Virgin Islands: Developed a comprehensive EIA a golf course and resort project. This entailed describing existing and proposed conditions for a complete spectrum of issues (natural, physical, human, economic, etc.). Golf course management concerns (runoff, pesticides, fertilizer, etc.) were emphasized.

Athol Island Land Reclamation Analysis, Nassau, Bahamas: Performed comprehensive evaluation of existing environment and identified potential impacts pertaining to water quality, shorelines, and the nearshore region. Applied a flushing model (WQMAP) and performed a borrow area study using STWAVE and ACES. Collected ADCP current and flow data and analyzed sediment and water quality sample results.

Marina Expansion and Breakwater Study and Design Support, British Virgin Islands: Updated existing wave flushing models to simulate proposed marina expansion and breakwater. Evaluated marina basin tranquility under operational and extreme conditions. Evaluated flushing and assessed the number of flushing culverts required. Developed wave loads for final design.

Coastal Vulnerability Study and Mapping, Barbuda, West Indies: Developed flood zone maps for two vulnerable low-lying sections of Barbuda hit by Hurricane Irma. Mapping followed FEMA methods and guidelines. 100-year wave, water level, and wind conditions were developed based on data and modeling. FEMA models were used to map the areas following prescribed dune removal/erosion processes.

Bac Cai Bau Coastal Conditions Assessment, Vietnam: Developed a preliminary coastal conditions analysis for a design charette. Waves, water levels, winds, and tsunamis were included in the analysis. Wave protection structures were also recommended.

Seven Mile Beach Shoreline Analysis, Grand Cayman Island: Developed a wave and sediment transport model to assess existing and post-project coastal conditions for a proposed rock removal project that would enhance the recreational resort beach.

Caye Chapel Master Plan Coastal Risk Analysis, Belize: Performed a coastal risk analysis for the proposed resort development and marina. Ran wave models as well as the FEMA wave/erosion model and the SBEACH shoreline erosion model. Developed base flood elevations and coastal setbacks based on FEMA and coastal engineering standards to ensure safe and resilient structure locations. 25-year, 50-year, and 100-year storm event conditions were analyzed while sea level rise was also considered.

Cabo Blanco Yacht Club Pier, Marina and Breakwater Analysis, Peru: Developed a siting analysis for a marina and pier along the Pacific Ocean coast. Several breakwater layouts and protection schemes were modeled. Wave modeling using CGWave and CMSWave was conducted to assess marina tranquility as well as potential changes to the regional sediment transport system. Siting also included avoiding any potential changes to nearby popular surfing spots. A downdrift impact assessment was developed to permit the project.

Normans Cay Marina Coastal Risk Analysis, Bahamas: Performed a coastal risk analysis for the proposed resort development and marina. Ran wave models as well as the FEMA wave/erosion model and the SBEACH shoreline erosion model. Developed base flood elevations and coastal setbacks based on FEMA and coastal engineering standards to ensure safe and resilient structure locations. 25-yr, 50-yr, and 100-yr storm event conditions were analyzed while sea level rise was also considered.

Coastal Erosion and Wave Impact Assessment, Anguilla, West Indies: Conducted a coastal erosion assessment for a 5-star hotel, which was experiencing beach erosion as well as wave damage to structures built proximal to the coast on Ironshore. Deployed a nearshore wave gage to assess wave energy and developed several alternatives to prevent future structure damage, also conducted a sand search for nearby compatible material for beach nourishment and developed environmental impact assessment and assisted in permitting and construction/monitoring.

Gold Rock Creek Shoreline Modeling Impact Study, Grand Bahama Island, Bahamas: Performed wave (STWAVE) and shoreline (GENESIS) modeling to evaluate impacts of a basin excavation. Study assessed updrift and downdrift impacts as well as future maintenance dredging quantities.

Bimini Dune Restoration Design, Bahamas: Lead responsible for the development of a dune and upper beach restoration to offset erosion impacts and to provide additional storm protection. Used the SBEACH model to analyze storm surge impacts and dune responses in response to 25-year and 50-year storm conditions.

Wave and Sediment Transport Modeling to Support Port Development, Cabinda, Angola, Africa: Lead responsible to perform wave (STWAVE) and shoreline (GENESIS) modeling to evaluate several possible port terminal sites along the coastal region of Cabinda, Angola.

Marina Basin Flushing Analysis, Exuma, Bahamas: Developed an EFDC numerical model for pre- and post-project conditions in order to assess flushing characteristics of a proposed marina basin. Model was calibrated to gage data that were also deployed by ATM.

Marina Flushing Study, Grand Bahama Island, Bahamas: Performed hydrodynamic and water quality analyses of proposed inland cut marina basin. Analyzed collected flow, tide, and water quality data;

hydrodynamic and water quality modeling of the proposed basin; analysis of hydraulic pumps to increase circulation and flushing.

Tidal Harmonics Analysis, Long Island, Bahamas: Processed and analyzed several tide gage records within an inland canal system to develop tidal phasing, estimate flushing, and correlate with nearby long-term stations. Also analyzed measured temperature fluctuations in support of the water quality modeling effort.

Open Ocean Cobia Aquaculture Environmental Impact Assessment (EIA), Salt Cay, Bahamas: Developed an EIA for the installation and operation of an open ocean aquaculture facility for cobia. Water quality, currents, and navigation impacts as well as design forces were determined.

Paradise Island Project Environmental Impact Assessment (EIA), Nassau, Bahamas: Performed hydrodynamic and water quality analyses of proposed lagoon modifications and proposed artificial fish habitats for an EIA associated with development of a resort facility. Analyzed collected flow, tide, and water quality data; hydrodynamic and water quality modeling of the proposed lagoon modifications; analysis of a tide gate structure with hydraulic pumps to increase circulation and flushing within the lagoon. Hydrodynamic model (WQMAP), water quality model (WASP5) and surface water model (PLUMES) were applied.

WATER RESOURCES

Ocklawaha River Modeling for Rodman Dam Removal, Marion County, FL: Developed an EFDC hydrodynamic model for a 30-mile reach of the Ocklawaha River where overbank flooding occurs regularly. Modeled existing conditions as well as proposed restoration conditions that include dam removal.

Tidal Caloosahatchee TMDL Review and Model Verification, Lee County, FL: Provided detailed technical review of the model used by FDEP to develop the Tidal Caloosahatchee nutrient TMDL. Verified model input and output and prepared a detailed report on model deficiencies.

NPDES Technical and Permitting Support, Spartanburg County, SC: Lead responsible for response to a proposed stricter copper discharge limit by the state. A detailed review and analysis of the state's data and methods was conducted. This review and analysis proved successful in maintaining the copper limit and in removing this area as an impaired water for copper.

Mixing Zone Establishment, Hillsborough County, FL: Provided mixing zone modeling and analysis for the River Oaks Advanced Wastewater Treatment Facility (AWWTF) for bromodi-chloromethane (a byproduct of disinfection). The mixing zone report was submitted to FDEP and allows the AWWTF to maintain existing levels of treatment and prevent major capital expenditures for upgrades.

McKay Bay TMDL Support and Water Quality Standards Review, Hillsborough County, FL: Provided analysis and support regarding EPA proposed water quality restrictions. This included analysis of water body data to determine impairment level and, if required, amount of nutrient reductions. Review of EPA models and assumptions to determine impairment assessments.

Tampa Bay TMDL Analysis and Support, Hillsborough County, FL: Worked with the County to develop technical comments to draft TMDLs. Successful in putting in abeyance rulemaking by FDEP for a TMDL on Baker Creek/Mill Creek that identified unreasonable load reductions that would have impacted the County.

TMDL Support for Pasco County, FL: Developed technical comments on draft TMDLs. Successful in putting in abeyance rulemaking by FDEP for a TMDL on Trout Creek which identified unreasonable load reductions that would have impacted the county.

Numeric Nutrient Criteria (NNC) Comments, Tallahassee, FL: Provided support on EPA and FDEP NNC proposed rules that would affect many Florida water bodies. The NNC rules were primarily targeted to reducing total nitrogen and total phosphorous; and the underlying analysis and application of the proposed NNC rules required extensive technical review and commenting. Commenting focused on technical flaws and deficiencies in the data and analysis.

FDOT Statewide TMDL Support, FL: Provided support on TMDL issues on a statewide TMDL plan that was developed to identify actions to be taken by FDOT over a two-year window to assure that TMDLs proposed and load allocations assigned to FDOT are fair and equitable. Developed technical comments on draft TMDLs proposed by FDEP and EPA.

Gills Creek TMDL Technical Review and Analysis, Forest Acres, SC: Lead responsible for providing TMDL support to the City by reviewing and commenting on all TMDL documents, modeling, and supporting information.

Ashley River Water Quality Study, Summerville, SC: Ran a previously developed BLTM water quality model to evaluate sensitivity to different inputs. Analyzed and measured DO, temperature, flow, BOD, NH₃, ON, etc. during dry and wet conditions in order to evaluate point and non-point impacts. Also evaluated watershed delineations.

Seagrass Monitoring Statistical Analysis, Lake Worth, FL: Performed statistical analyses (ANOVA, correlations, and regressions) to quantitatively describe annual seagrass transects based on established environmental variables (depth, number of species, macroalgae, etc.).

PAPERS AND PRESENTATIONS

Barotropic Tides in the South Atlantic Bight. Blanton B. O., F. E. Werner, H. E. Seim, R. A. Luettich Jr., D. R. Lynch, K. W. Smith, G. Voulgaris, F. M. Bingham, F. Way (2004), *Journal of Geophysical Research*, 109, C12024, doi:10.1029/2004JC002455.

Holden Beach Piggyback Lockwood Folly Inlet Nourishment. Fran Way. Fall 2014 N.C. Beaches, Inlets and Waterways (NCBIWA) Conference. Wilmington, NC

FEMA Letter of Map Revision (LOMR) process and examples. Fran Way. Fall 2013 N.C. Beaches, Inlets and Waterways (NCBIWA) Conference. Wilmington, NC.

Terminal Groin Analysis and Modeling, Lockwoods Folly Inlet. Fran Way. Fall 2012 N.C. Beaches, Inlets and Waterways (NCBIWA) Conference. Wilmington, NC.

Beach Management Case Study: Holden Beach 2000-2010. Proceedings of 2010 American Shore and Beach Preservation Association Annual Conference, Charleston, SC.

Effects of Agitation Dredging in Savannah Harbor. Fran Way, Chris Ahern, Jack Ellis, Matt Goodrich. Proceedings of 2007 Western Dredging Association WODCON XVIII Annual Dredging Seminar, Orlando, FL.

3-D Hydrodynamic, Salinity, Dissolved Oxygen and Sediment Transport Modeling of The Savannah River Estuary. Way, F., Goodrich, M. and D. Mendelsohn, Applied Technology and Management, Inc. Proceedings of the 13th Biennial Coastal Zone Conference Baltimore, MD, July 2003.
Evaluating Beach and Nearshore Sediment Transport Impacts from the Proposed Deepening of the Savannah Harbor. Way, F., Goodrich, M. and H. Liu. 2003 Georgia Water Resources Conference Proceedings, Athens, GA.

From: Ashley Ford <fordashleyn@yahoo.com>
Date: April 15, 2021 at 5:02:47 PM EDT
To: Brian Edes <briane@cmclawfirm.com>
Subject: **Topsail Reef for the Terminal Groin**

Dear Mr. Edes,

The Topsail Reef HOA has actively worked with the Town for several years to combat the accelerated erosion problems faced by the North end of the Town. We have cooperated with and assisted the Town when it constructed a sandbag revetment to the North of the Reef property. Our former President, Jeremy Groves, was so active in Town affairs he was appointed to fill a vacant seat on the Town Board of Aldermen in August of 2018. Just over a year later, our current President, Susan Meyer was likewise appointed to fill a vacant seat on the Town Board of Aldermen.

Our officers actively attend and provide comment at the Town Board meetings. Many of our homeowners do the same. Our HOA has always actively supported the Town's projects at the North end. We supported both the inlet realignment project as well as the subsequent sandbag revetment project. Unfortunately, neither of those projects have provided a long-term solution to the rapid erosion we face.

The Topsail Reef community adamantly supports the Town in the Town's pursuit of a terminal groin. Once we learned of that the EIS scoping meeting is the next step in the terminal groin project we monitored the Town meetings closely to ensure we were aware when the scoping meeting was scheduled to be held. We were made aware early on after the COVID-19 State of Emergency was declared that that the EIS scoping meetings was being placed on hold due to COVID-19.

We are excited that the scoping and other EIS related meetings are now being conducted. The first scoping meeting was announced to our homeowners on our Facebook page and many of our owners tuned in online to participate. Our owners encouraged their fellow homeowners to start an email campaign to Jordan Jessop with the Army Corp of Engineers. We have also appointed a representative to attend all EIS meetings and to report back to the HOA.

The HOA Board of Directors has a resolution that will be ratified at our owners meeting on April 24th in support of the Town's pursuit of the terminal groin. We would very much appreciate being able to keep our sandbags until this groin is installed. Even with the bags in place the Reef suffered in excess of \$6,339,736 worth of damage as a result of Hurricane Florence based on the insurance adjusters' reports. The sandbags have seen us through at least 3 hurricanes and we do not believe our buildings will be safe without the sandbags until the groin is a reality.

Kind Regards,
Ashley Ford
Topsail Reef HOA - Secretary

NTB shoreline projects proceed

By Jannette Pippin

Daily News Staff

Posted Oct 20, 2019 at 4:49 PM

NORTH TOPSAIL BEACH — A shoreline project in North Topsail Beach that was interrupted by Hurricane Florence is now set to begin within the next month.

The town's project to haul in sand to repair some of the beach and dune system that has been battered by hurricanes is expected to begin by the end of November, said Town Manager Bryan Chadwick.

Progress on efforts to restore the beach in the area of the Phase 5 Beach Restoration Project after Hurricane Matthew in 2016 was destroyed by Hurricane Florence in 2018.

“About a week before Hurricane Florence we got the bid specifications for the Hurricane Matthew project, and once Florence hit we couldn't do anything at that point,” Chadwick said.

Now, he said, the contractor is getting ready to haul in sand for the beach from their sand mine in the Wilmington area.

“They'll bring in about 156,000 cubic yards of sand for a cost of about \$5.4 million dollars,” Chadwick added.

The project will stretch from the Surf City limits north about 3.5 miles along the North Topsail Beach shoreline.

The project cost is covered by Federal Emergency Management Agency.

Another project that is expected to begin soon to bring additional help for the town's shoreline restoration efforts is a federal dredge project at New River Inlet. Chadwick said sand pumped to clear out the inlet will be pumped onto the north end of the beach.

An overview of the various shoreline protection projects in North Topsail Beach was given during a special meeting of the Board of Aldermen on Thursday, Oct. 17.

Chadwick said the board also discussed how best to use approximately \$1.6 million in state funds received after legislation was passed in July diverting \$5 million in funds to be split evenly among the Topsail Island towns for hurricane recovery.

During the meeting, the board approved the staff's recommendation to apply the \$1.6 million appropriated by the state to haul sand for shoreline projects Phase 2-4.

In other action the board appointed Susan Meyer as the town's at-large representative on the Topsail Island Shoreline Protection Commission and directed staff to proceed with a grant application for funds from the Coastal Storm Damage Mitigation Fund.

The board also directed staff to prepare and present a formal proposal for a shoreline protection officer.

Reporter Jannette Pippin can be reached at 910-382-2557 or Jannette.Pippin@JDNews.com.

Q&A with new NTB alderman: Jeremy Grove

By Maxim Tamarov The Daily News

Posted Aug 16, 2018 at 8:23 PM

Updated Aug 17, 2018 at 12:34 PM

Jeremy Grove was sworn in as the newest alderman for the North Topsail Beach Board of Aldermen on Thursday evening, filling a seat left vacant by the mid-term departure of Walter Yurek.

Yurek announced his plans to step down at a July 5 meeting of the board, effective as of Aug. 3, after getting married earlier this year. He will be spending most of his time in Ocean City, Maryland where his wife owns a business.

Four people were considered as replacements for Yurek, according to Laura Oxley, NTB town clerk. They were: Grove, Edward Wirtz, Mia Green and Kevin Finger. Grove received two votes for the position, as did Finger. NTB Mayor Dan Tuman cast the deciding vote in favor of Grove. Grove will serve on the Board of Aldermen until November 2019.

“He has a really good energy,” Oxley said of Grove. “When something’s going on, he’s not shy about commenting in our public comment section.”

The Daily News sat down with Grove for a brief Q&A.

Can you tell me a little about yourself?

I changed companies about seven years ago, and ended working at Camp Lejeune. When I started looking for houses, I found a place on North Topsail Beach and fell in love with it instantly. I have been living down here ever since.

What do you like about North Topsail Beach?

The sense of community. It’s small and everyone kind of knows each other. It’s not overgrown like a lot of places like Myrtle Beach. The beaches are beautiful. The locals are great. It’s got a small town feel, but it’s still close to a lot of things. I love the blue collar atmosphere. I just really, really love the island.

What inspired you to run?

I consistently attended all the meetings most of the time I’ve lived here. I’m the president of my HOA (Homeowners’ Association) at Topsail Reef. I’m involved with other community associations. I volunteered for the Karen Beasley Sea Turtle Hospital (sic). So when this opened up I never really thought about running for office, but when the other alderman decided to leave and the position became available, I just felt that it was my civic duty to try to help out and try to do the best that I can for the town that I love and try to give back a little bit to the community.

You've been a pretty active member at board meetings.

Particularly during any beach projects or major projects in the town that are going on I usually stand up and speak and give my opinion and advice. I've always tried to be as active as possible.

What projects are you most passionate about?

The most I'm passionate about is the beach. The name of the town is North Topsail Beach, if we don't have a beach we might as well be North Topsail. So we obviously have many projects going on, not only on the north end but throughout the island, with erosion problems. It's not unique to hear. All of the east coast is having those types of issues. So I think it requires thinking outside of the box. I have some experience with CAMA and beach projects. We did two major projects on North Topsail Beach over the time I've been there. So I have some experience with that. I think I bring that knowledge to the board. It's probably the thing I'm most passionate about, beyond the overall financial health of the town.

What do you hope to accomplish?

I hope to be able to help create a long-term plan that keeps us financially healthy while still being able to do the necessary projects that we need to do to save the beach and keep our biggest tourist attraction safe and healthy and nice looking ... There's several projects. There's one project with the revampment up there with the sandbag line that the town built. And then they're also working on the terminal groin. I haven't gotten all the information from them yet other than what I've witnessed at the meetings. I know some of the permits have been applied and they're looking at some of the engineering companies and drawing their plans. I really want to deep dive into that and look at what's going on and where we're at with it.

What topics have you been most outspoken about during meetings?

One was Marsy's Law that we got passed that we were very passionate about. I know there's some discussion coming up about a multi-use bike path. That's a major project. Different ideas they've had with parking over the years. Things like that.

You have until next November to cover Yurek's seat. Have you thought about running for re-election when Yurek's term expires?

No. I never thought about running for office. I have a very busy job on base, plus being involved in my HOA. That was never really on my radar, but we'll see how it goes. It was never something I really thought about beforehand.

Can you give me more background history?

I moved down to North Carolina in 2008 from Stamford, Connecticut. I bought a house in the High Point Greensboro area and I worked up there for one company doing food service for High Point University and then Wake Forest University. Then I decided to leave that company and go to our competitor and I took the position

here at Camp Lejeune. We operate all of the mess halls on base. I'm general manager. I run Camp Geiger and Air Station areas. Our company, we run 15 mess halls in total throughout Camp Lejeune.

What makes you qualified for this position?

I had a 20-year career in food service and business in general. I bring a lot of management experience, a lot of fiscal responsibility and financial acumen. I've run budgets that are larger than the entire town budget. So I bring that experience to be able to look at long-term projects, budgeting, finance. From my time being on boards up at the reef, I have learned more about beach projects than I ever thought I would know about in my lifetime. I bring that experience with me, as well as being involved with those condo associations and being out and about in the community. I know a large portion of the people that I'm serving. If you look at the voting history, typically the mayor is going to win with maybe 110 votes. I probably know every single one of those people. I interact with people daily, so if there's concern in the community I think people are going to be comfortable coming to me and bringing that up to me so we can work together.