



NORTH CAROLINA
Environmental Quality

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CRC-26-56

March 25, 2026

MEMORANDUM

TO: Coastal Resources Commission
FROM: Jonathan Lucas
SUBJECT: Proposed Rulemaking – 15A NCAC 07H .2800 and 07H .0309(a)

Pursuant to 15A NCAC 07J .1103 Designation Procedures, this memorandum provides the information required for the Commission to consider adoption of a new category of general permit, including the attached draft rule language.

Beginning in 2024, the Coastal Resources Advisory Council (CRAC) and the Division of Coastal Management (DCM) staff began to develop options to more efficiently permit temporary weather monitoring structures on the beach in the Ocean Hazard Area of Environmental Concern. This was necessary because temporary weather monitoring structures are required to be installed on the dry sand beach waterward of the first line of stable natural vegetation (FLSNV) and the only permitting pathway to do so is through the general permit process. The general permit process is problematic for a number of reasons including property ownership, adjacent property owner notification requirements and the length of time a general permit is active.

Temporary weather monitoring structures are instrument towers anchored into the beach in the path of approaching hurricanes to collect meteorological data. In 2022 and 2025 the University of Florida, in partnership with North Carolina Sea Grant, was issued a general permit for the installation of these temporary structures under 15A NCAC 07H .1900. Issuing a major or minor permit was not an option due to the requirement in 07H .0309(a) that all development be located landward of the first line of stable natural vegetation or pre-project vegetation line. While the temporary structures general permit in 07H .1900 provided a permitting pathway, the CRAC found the issues highlighted above could be remedied through the adoption of a new general permit.

At the February CRAC meeting, the council was presented with draft rule language for a new general permit for temporary weather monitoring structures. After discussion, the CRAC recommended sending the draft general permit language to the Commission for consideration with amendments. As a result, the Commission directed staff to return with the proposed general permit language and recommended amendments.



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This general permit was drafted considering past projects undertaken by the University of Florida. The particular structural configuration employed by the University of Florida is found in the attached documents, though we expect other applicants may utilize any number of structural configurations that may fit within the proposed specific use standards.

Based on permitting history and accounting for a potential increase in permit applications due to the availability of a streamlined general permit, staff anticipate no more than five permit applications per year over the next five years. Since the structures that would be authorized by these permits are temporary in nature and should involve no permanent impacts to public trust resources, we believe that cumulative environmental impacts of this permit will be insignificant. Finally, to ensure consistency between the ocean hazard area rules and this general permit, CRAC recommend adding language to 07H .0309(a) reflecting that these structures can now be permitted in the oceanfront setback and waterward of the FLSNV. The proposed changes to 07H .0309(a) are included below for your consideration.



SECTION .2800 - GENERAL PERMIT TO ALLOW FOR TEMPORARY WEATHER MONITORING STRUCTURES WITHIN THE OCEAN HAZARD AECS

15A NCAC 07H .2801 PURPOSE

A permit under this Section shall allow the installation of temporary weather monitoring structures in the Ocean Hazard Area AECs according to the Rules in this Section. Temporary weather monitoring structures authorized by this General Permit shall not be subject to the restriction in 15A NCAC 07H .0309(a) that all exceptions to the setback requirements in 15A NCAC .0306(a)(3) shall occur landward of the vegetation line or pre-project vegetation line, whichever is applicable.

History Note: Authority G.S. 113A-107(a)(b); 113A-113(b)(6)(b); 113A-118.1

15A NCAC 07H .2802 APPROVAL PROCEDURES

(a) An applicant for a General Permit under this Subchapter shall contact the Division of Coastal Management and request approval for development.

(b) The applicant shall provide:

- (1) Information on site location, dimensions of the project area, and applicant name and address.
- (2) A copy of a deed or other instrument under which the applicant claims title to the property upon which the development will occur, or other evidence of the ownership of the property or lawful authority to make use of the property. If the applicant is not the owner, the applicant must provide written permission from the owner to carry out the project on the property.
- (3) Notwithstanding the provisions of 15A NCAC 07J .0204(b)(5), adjacent riparian landowner notification is not required.

(c) No work shall begin until an on-site meeting is held with the applicant, a Division of Coastal Management representative, and a Wildlife Resources Commission representative to inspect and mark the site of construction of the proposed development.

History Note: Authority G.S. 113A-107(a)(b); 113A-113(b)(6)(b); 113A-118.1

15A NCAC 07H .2803 PERMIT FEE

The applicant shall pay a permit fee of four hundred seventy-four dollars (\$474.00) by check or money order payable to the Department.

History Note: Authority G.S. 113A-119.1; 143B-279.19

15A NCAC 07H .2804 GENERAL CONDITIONS

(a) Temporary weather monitoring structures for the purpose of this General Permit are structures temporarily installed on the dry sand area of the beach as defined in G.S. 77-20(e), for the specific purpose of collecting meteorological data during approaching storms.

(b) This General Permit shall not be applicable to proposed development where the Division of Coastal Management has determined, based on an initial review of the application, that notice and review pursuant to G.S. 113A-119 is necessary because there are unresolved questions concerning the proposed activity's impact on adjoining properties or on water quality, air quality, coastal wetlands, cultural or historic sites, wildlife, fisheries resources, or public trust rights.

(c) The permittee shall allow the Division of Coastal Management or other representatives of the Coastal Resources Commission to make periodic inspections at any time necessary to ensure that the activity being performed under authority of this General Permit is in accordance with the terms and conditions prescribed herein.



(d) The permit set forth in this Section does not eliminate the need to obtain any other state, local or federal authorization, nor to abide by federal, state, or local laws and ordinances, nor to abide by rules or regulations adopted by any federal, state, or local agency.

History Note: Authority G.S. 113A-107(a)(b); 113A-113(b)(5); 113A-118.1; 113A-126(d)(1)(c); 113A-120(b1)(4);

15A NCAC 07H .2805 SPECIFIC CONDITIONS

(a) Temporary weather monitoring structures authorized by this General Permit shall be installed and removed within five years from the date of issuance, and may remain in place for a maximum total of 14 consecutive days from the date of installation, unless otherwise authorized by the Division of Coastal Management. All aspects of the structure shall be removed and the site returned to pre-project conditions no later than 14 days from the date of installation, or at the expiration of this permit, whichever comes first.

(b) In order to minimize adverse impacts to threatened and endangered species, installation of temporary weather monitoring structures shall not occur inside the Ocean Hazard AEC within the period of April 1 through November 15 of any year, or anytime inside an Inlet Hazard AEC without the prior approval of the Division of Coastal Management, in coordination with the North Carolina Wildlife Resources Commission and the U.S. Fish and Wildlife Service.

(c) The permittee shall notify the Division upon commencement of installation, and upon removal of the structure.

(d) Vehicle or heavy equipment entry onto the beach shall be restricted to existing public vehicular beach access points.

(e) Installation shall not alter or remove any portion of a primary or frontal dune or the dune vegetation.

(f) The structure shall not be installed waterward of normal high water, as determined by the Division of Coastal Management. Alternatively, a surveyed mean high water line provided by the applicant may serve as the waterward limit of the structure.

(g) There shall be no dredge or fill of material.

(h) The proposed structure shall not be habitable.

(i) The proposed structure shall not impede beach access or other public trust uses.

(j) The footprint of the structure shall not exceed 250 square feet.

(k) In the event of damage, the permittee shall be responsible for the removal of all remnants of all portions of the temporary weather monitoring structure.

History Note: Authority G.S. 77-20; 113-229(a); 113A-107(a)(b); 113A-113(b)(5); 113A-118.1

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

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

- (1) campsites;
- (2) driveways and parking areas with clay, packed sand, or gravel;
- (3) elevated decks not exceeding a footprint of 500 square feet. Existing decks exceeding a footprint of 500 square feet may be replaced with no enlargement beyond their original dimensions;
- (4) beach accessways consistent with Rule .0308(c) of this Section;
- (5) unenclosed, uninhabitable gazebos with a footprint of 200 square feet or less;



- (6) uninhabitable, single-story storage sheds with a foundation or floor consisting of wood, clay, packed sand or gravel, and a footprint of 200 square feet or less;
- (7) temporary ~~amusement stands structures~~ consistent with Section .1900 of this Subchapter;
- (8) sand fences;
- (9) swimming pools; ~~and~~
- (10) fill not associated with dune creation that is obtained from an upland source and is of the same general characteristics as the sand in the area in which it is to be ~~placed~~placed.; and
- (11) ~~Temporary weather monitoring structures permitted by General Permit in 15A NCAC 07H .2800.~~

~~In all cases, With the exception of development specifically allowed by another rule in this Chapter, this~~ all development shall be permitted only if it is landward of the vegetation line or pre-project vegetation line, whichever is applicable; involves no alteration or removal of primary or frontal dunes which would compromise the integrity of the dune as a protective landform or the dune vegetation; is not essential to the continued existence or use of an associated principal development; and meets all other non-setback requirements of this Subchapter.



Overview of Project Sentinel

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Overview

Tropical cyclones and other extreme coastal storms cause widespread interruption and damage to meteorological and hydrological measurement stations exactly when researchers need them most. There is a longstanding need to collect collocated and synchronized measurements in areas where storms severely damage civil/coastal infrastructure. To fill this observational gap, researchers at the University of Florida developed a state-of-the-art monitoring station called a "Sentinel". Sentinels are intended for temporary installation on the beach between the mean tidal datum and the sand dunes and are engineered to operate in and measure extreme wind, storm surge, wave, and hazardous water quality conditions. They are envisioned as a shared-use resource, i.e., a hardened IoT platform set up in the right place at the right time to study wind and wave loads, coastal erosion and morphology changes, water quality, and other processes during extreme coastal storms.

Sentinel Mark I

In 2021, a fully functional prototype Sentinel (Mark I) was designed and built through internal support and industry contributions. The structure is engineered to survive a design wind load of 90 m/s (3-sec gust measured at 10-m AGL) in marine exposure, 5 m breaking waves in 5 m still water with a wave celerity of 6.7 m/s, and 1 m of combined erosion and pile scour. The structure anchors to the beach using four 200 mm diameter steel helical piles driven by a hydraulic auger. The piles are segmented such that four sections can reach an embedment depth of 6 m for the worst-case design load. The piles support an adjustable aluminum alloy "crossbeam" pier cap which in turn supports a 10 m tall carbon fiber mast. 3D wind velocity, mast tilt, atmospheric pressure, temperature, and humidity data are collected at 10 Hz at the top of the mast, along with video. The upper instrumentation package makes up the "nerve center" for the system and includes a data logger and cell modem. The base houses batteries and a wave/water depth, temperature, and salinity sensor (sampled at up to 5 Hz) that connects to the upper instrumentation package. The Mark I design is shown in Fig. 1(a). A field test was completed in October 2021 (Fig. 1(b)) to identify logistical challenges and areas for improvement in future Sentinel versions.

Sentinel Mark II

In 2022, Phillips (PI), Masters (co-PI), Raubenheimer (co-PI), Olabarrieta (co-PI), and Morrison (co-PI) received a National Science Foundation (NSF) Major Research Instrumentation (MRI) award to support the design of a Mark II Sentinel and the commissioning of a fleet of six Mark II Sentinels. Mark II will improve on Mark I in several key areas: (1) the deployment conditions will expand beyond tropical cyclones, (2) the pile installation system will accommodate non-cohesive and cohesive soils as well as layers of harder geomaterial, (3) the structural loads will be revisited through field and laboratory studies (4) the structural design will be further optimized to reduce weight and installation time, and (5) focus will be placed on additional sensor packages to measure erosion, water current, conductivity/temperature, pH, optical dissolved oxygen (DO), turbidity, phycoerythrin, chlorophyll, and/or UV fluorescence (for detection of fluorescent dissolved organic matter, fDOM). Design work on the Mark II is underway.

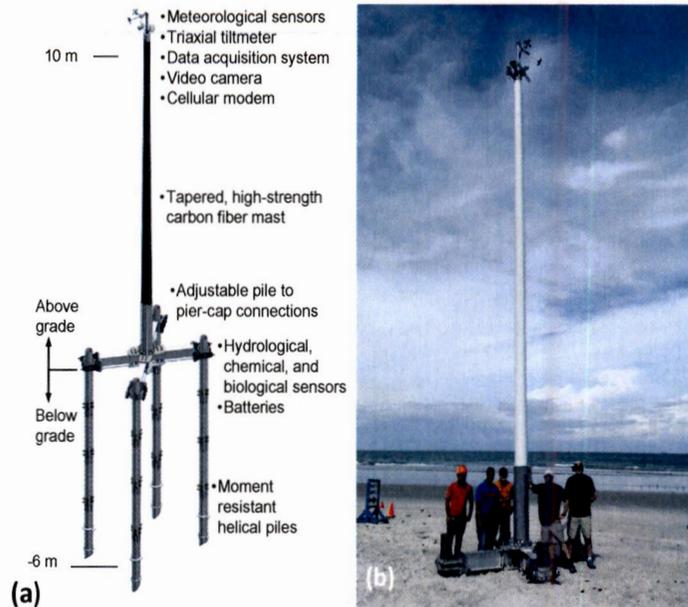


FIGURE 1. (a) Mark I Sentinel design and (b) field installation of prototype.



FIGURE 3. (a) GPR survey, (b) helical pile installation, (c) pier cap installation, (d) securing the 10-m mast, (e) inserting the instrumentation package, and (f) standing up the mast.

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Fast Facts

- **Project Sentinel is a rapid response study during major storms that make landfall between Texas to North Carolina.** The stations collect data including wind speed, water depth, wave height and direction, storm surge, erosion, and hazardous water-quality conditions.
- **How long are the installed:** The Sentinel stations are *temporary* and installed a few days before landfall and removed as soon as it is safe for crew to access the area.
- **Where are they placed:** The Sentinel stations are placed on the beach at public access points. Stations are only placed in a location if a landfall storm is possible and if the station can logistically be transported in time. This means that not all sites will have a station.



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