



**US Army Corps
Of Engineers**
Wilmington District

Proposed Project Description: Ocean Isle Beach Terminal Groin

Corps Action ID #: SAW-2011-01241
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Project Description

Ocean Isle Beach is approximately 31,000 feet (5.8 miles) long and is situated between Shallotte Inlet on the east and Tubbs Inlet on the west. Between March and May 2001, the U.S. Army Corps of Engineers (USACE) constructed a federal beach fill project for storm damage reduction that covers 17,100 feet (3.25 miles) of the Town of Ocean Isle Beach's (TOWN's) shoreline beginning at Shallotte Boulevard on the east and extending to a point approximately 3,700 feet west of the Ocean Isle Beach Pier & Arcade. The westernmost 9,500 feet of the TOWN's shoreline was not included in the federal project as this area is rather stable and is fronted by an established dune system. The eastern end of Ocean Isle Beach between Shallotte Boulevard and Shallotte Inlet was not included in the federal project due to high rates of erosion and the inability to include a terminal structure due to the State prohibition.

Based on an evaluation of USACE survey data, erosion along the eastern 2,000 feet of the project has progressed into the design template prior to each maintenance event. Despite the completion of the initial construction of the federal project in 2001 and the installation of temporary sandbag revetments, the TOWN, the State, and private owners have been directly impacted by erosion at the east end of the TOWN both within the USACE Federal Project and east of Shallotte Boulevard.

The evaluation of the shoreline and volume changes along Ocean Isle Beach indicates that the impacts of Shallotte Inlet are the primary cause of the high rates of erosion east of Raleigh St. One of the features of the island associated with the inlet impacts is the abrupt change in shoreline orientation on the east end that begins just west of Shallotte Boulevard. This abrupt change in shoreline orientation, which is approximately 12 degrees, is a manifestation of the accelerated rate of sediment transport to the east, which is caused by the combination of higher levels of wave energy striking the shore just west of Shallotte Inlet, flood tidal currents concentrated close to shore, and wave refraction patterns around the ebb tide delta.

With this in mind, the TOWN is actively seeking shoreline protection measures to mitigate the chronic erosion problem on the east end of the island caused by Shallotte Inlet's influence on the movement of littoral sediment in the area. Given the failure of past efforts to address the erosion problem on the east end of the island with beach nourishment and temporary sandbag revetments, the Town is exploring alternatives to slow the rate of erosion by eliminating or reducing the influence of Shallotte Inlet on sediment transport in this area. Constructing a terminal groin on the east end of the

island could accomplish this by reducing the influence of flood tidal currents on sediment transport near the shore. A terminal groin could also reduce the impact of Shallotte Inlet on sediment transport by allowing the beach directly west of the terminal groin to assume an alignment comparable to the shoreline alignment farther to the west by retaining sediment in an area known as the accretion fillet.

The terminal groin structures would be designed to reduce periodic beach nourishment requirements along the east end of the federal project (Figure 1). The length of the structure seaward of the existing shoreline would be developed through the use of numerical models to minimize the overall cost of the project. The overall cost of the project would include initial construction and future maintenance cost of the terminal groin and cost associated with beach nourishment west of the terminal groin. The landward end of the structure would extend a sufficient distance landward of the existing erosion scarp line to prevent flanking.

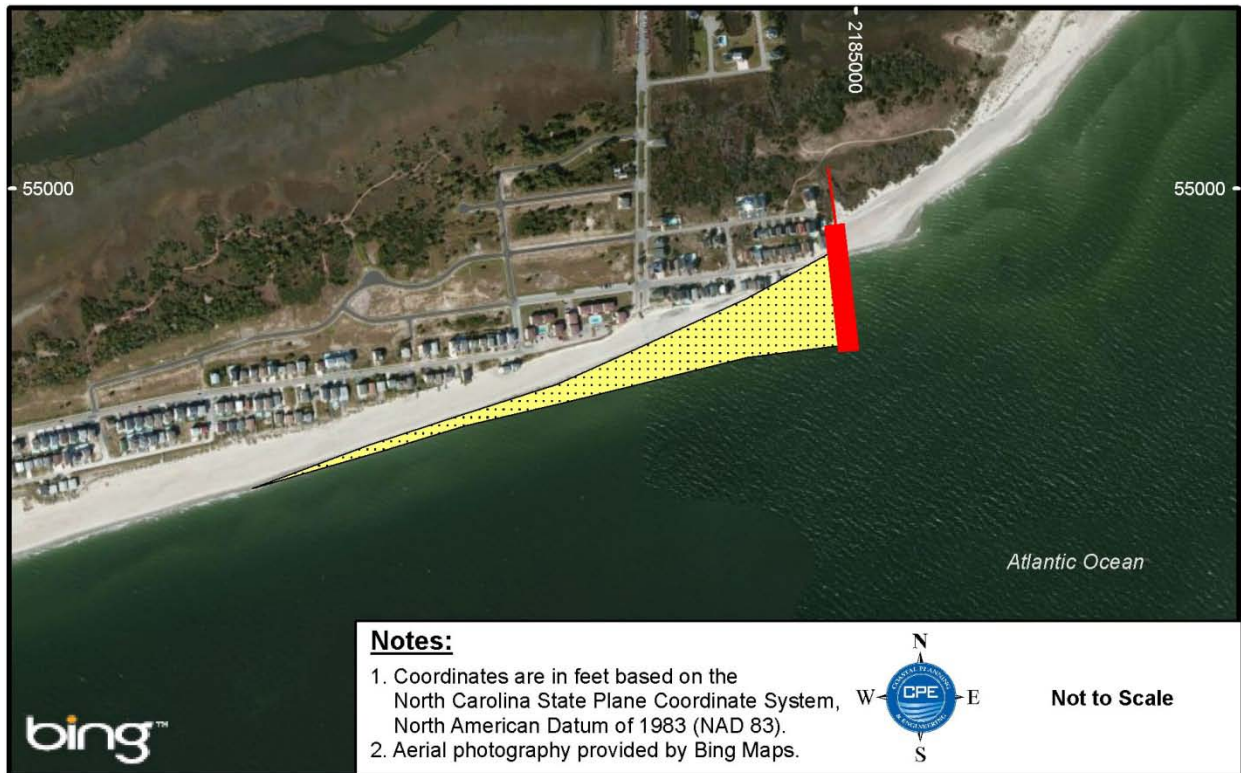


Figure 1. Proposed location of the terminal groin and fillet on Ocean Isle Beach (note: the depicted design and location is preliminary only)

Material to initially construct and maintain the beach fill immediately west of the terminal groin could come from either the existing borrow area in Shallotte Inlet or possibly using material removed to maintain the AIWW at the Shallotte Inlet crossing (Figure 2). Regardless of which source is ultimately used, documentation of the quality of the borrow material and its compatibility with the native beach material as required by 15A NCAC 07H .0312 will be required as part of the major CAMA permit application.

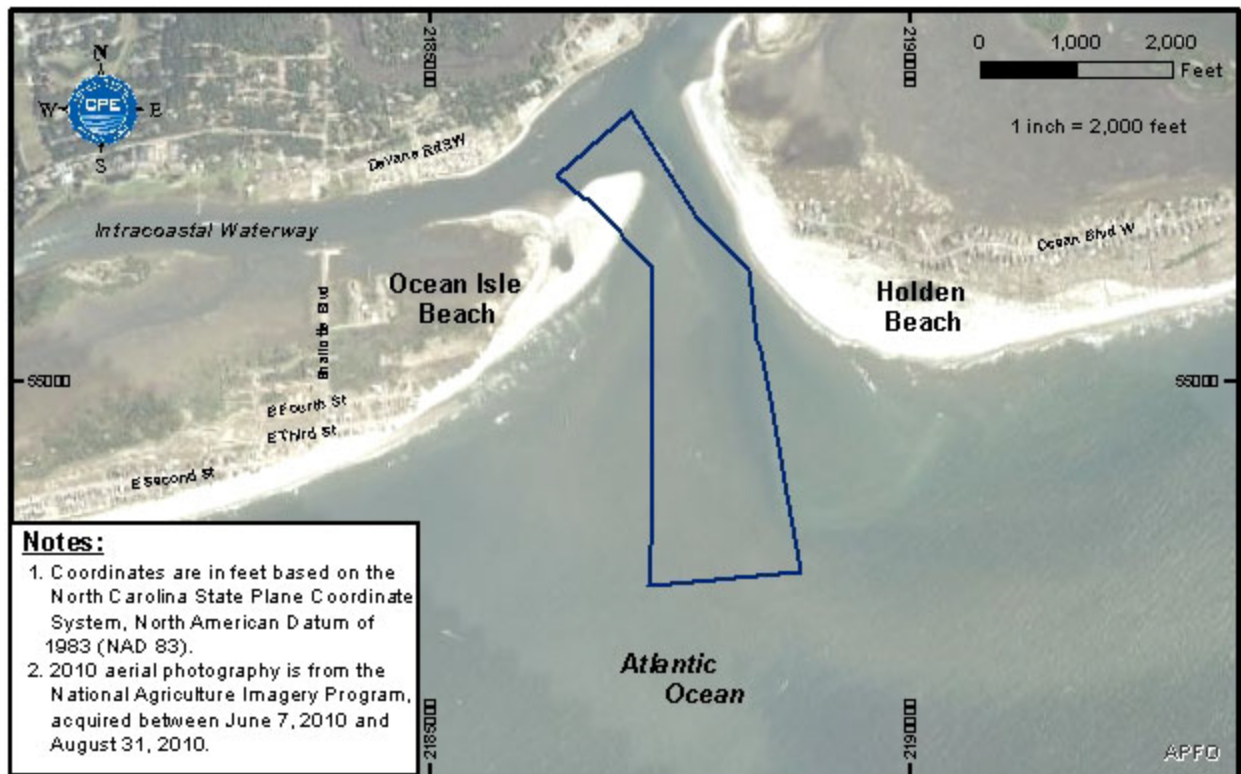


Figure 2. Proposed borrow area within Shallotte Inlet