



Agenda Item Summary

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DEPT-3

Meeting Date: 6/20/2023

PLACEMENT: Departmental

TITLE:

UPDATE ON THE HUTCHINSON ISLAND SHORE PROTECTION PROJECT

EXECUTIVE SUMMARY:

County staff will present the status of the Hutchinson Island Shore Protection Project.

DEPARTMENT: Public Works

PREPARED BY: **Name:** Jessica Garland
Title: Coastal Program Manager

REQUESTED BY: Don G. Donaldson, County Administrator

PRESET:

PROCEDURES: None

BACKGROUND/RELATED STRATEGIC GOAL:

Hutchinson Island Shore Protection Project (SPP)

The federal beach project was authorized on August 3, 1995 as a 3.75 mile project beginning at the north Martin County line and continuing south through Stuart Beach. It was first constructed from December 1995 to April 1996 with a County funded ¼ mile “local option” added to the south end, resulting in the full 4-mile-long project. Since that time a total of 6 projects have been constructed, including 2 partial projects (2001, 2002) and post-hurricane (recovery) projects in 2005, 2013, and 2018. Material for the first 4 projects came from Gilbert shoal, which lies approximately 1.2 miles off the southern project limit and was pumped directly to shore. The most recent projects used a hopper to transport sand from a new borrow site on St. Lucie Shoal, lying approximately 7 miles offshore and just north of the project’s northern boundary. Two pipelines extended offshore at the north and south ends to move the sand from the hopper to the beach. Construction of the 422,763 Cubic Yard (CY) project was completed by the Liberty Island. To date, the total construction expenditure for all projects is \$36,835,736 with funding provided by state and federal partners at a 46.59% federal, 28.86% County, and 24.55% state ratio.

The construction template includes a 90-foot (ft) wide beach berm 6.5 ft above the North American Vertical Datum of 1988 (NAVD88) and a 1 Vertical:10 Horizontal (V:H) foreshore slope. This construction berm comprises a 35-ft wide authorized design berm plus advanced nourishment extending from the Florida Department of Environmental Protection reference monument R-2 south

to R-24, with taper back to the existing shoreline continuing approximately 900 ft north and south to references R-1 and R-25. In addition to the berm, construction included a 20-ft-wide dune feature at elevation 11.0 ft NAVD88.

In November of 2022, the project area was impacted by Hurricane Ian and Hurricane Nicole. Hurricane Nicole induced shoreline recession and beach erosion within the Hutchinson Island SPP. The project area experienced a net erosion of -77,157 CY as a result of Hurricane Nicole. Longshore dispersion of fill appears to have contributed to minor accretion south of the 2018 placement area and at the northern project extent, as noted in annual monitoring reports. However, storm-induced erosion outweighs the benefit from fill dispersion. Additionally, seaward cross-shore movement of sediment is evident; but post-storm natural recovery of the beach is not likely to occur due to the movement of sediment beyond -20 ft NAVD88. Significant erosion of the upper berm and dune occurred throughout the central and southern portions of the project area.

County personnel collected pre- and post-storm photographs of the beach. The photographs, located at the end of this report, indicate significant scarping and overtopping of the berm and dune features; approximate water levels are indicated by wet sand and the wrack line. The profile plots included in the letter report indicate the beach's berm further eroded from its post-Ian position and erosion of the dune occurred at many profiles. The steep profile and nominal berm width following Hurricane Nicole leave the dune vulnerable throughout much of the project area. The combined impacts of Hurricanes Ian and Nicole have greatly affected the Hutchinson Island SPP with an average erosion of -29.2 cy/ft above -20 ft-NAVD88 and an average shoreline retreat of -15.7 ft since June 2022.

To allow the SPP to be more resilient to the effects of climate change (e.g., sea level rise (SLR) and higher intensity storms), an additional berm and dune width and height may be desired to support the beach's natural ability to reduce inland damage and more quickly recover from storm events. However, the current United States Army Corps of Engineers (USACE) permit for this project limits the project's total volume. The SPP is further limited by the easement limitations to the west, and hardbottom resources to the east. These constraints on the project's volume and available construction width restrict the SPP's template to support a more resilient beach by limiting changes to only additional vertical height in the dune or berm. Due to the language used in the project's authorizing documents, a vertical increase of the berm height due to SLR may be warranted. Further investigation with modeling of alternate beach templates will be conducted before the next USACE permit application and modifications to increase resilience will be incorporated as necessary in the new project proposal. Discussions have been initiated with the United States Army Corps of Engineers, Jacksonville District to identify how modifications might be incorporated into the authorized project.

ISSUES:

Given the changes that have occurred in the SPP project to date, the next project is currently scheduled for Winter 2024/2025. Monitoring continues to allow staff to track any further changes to the shoreline and adjust the plans as necessary for the next project. For the 2025 project, Federal funds have been allocated as a result of Hurricane Nicole. State funds will also be requested for the Non-Federal share of the project.

LEGAL SUFFICIENCY REVIEW:

None

RECOMMENDED ACTION:

RECOMMENDATION

Receive the update and presentation on the Hutchinson Island Shore Protection Project.

ALTERNATIVE RECOMMENDATIONS

None

FISCAL IMPACT:

RECOMMENDATION

None

ALTERNATIVE RECOMMENDATIONS

None

DOCUMENT(S) REQUIRING ACTION:

- ☐ Budget Transfer / Amendment ☐ Chair Letter ☐ Contract / Agreement
☐ Grant / Application ☐ Notice ☐ Ordinance ☐ Resolution
☐ Other:

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