

Observed Performance of a No Impact Beach Nourishment Project: Sector 7, Indian River County

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Abstract

Indian River County has developed and continues to implement a comprehensive Beach Management Plan. The plan identifies areas of long-term erosion within the county, and one of the projects identified is the Sector 7 project. The Sector 7 project includes placement of sand along a headland where there is persistent nearshore hardbottom. In some areas, the hardbottom adjacent to the surf zone. Advanced numerical modeling was utilized to design the project and predict the project's toe of fill in relation to the hardbottom (presented at the February 2006 FSBPA Conference). A No-Impact design was developed, and USACE and DEP permits were obtained.

The Sector 7 No-Impact Project was constructed in April/May 2007, placing 363,000 cubic yards along nearly 12,000 feet of shoreline. Before sand could be placed, baseline (pre-project) hardbottom mapping and biological monitoring data needed to be collected. Data acquisition required close coordination with FDEP in the development of a pragmatic and holistic hardbottom biological monitoring protocol that was feasible to implement in the turbid nearshore waters in Indian River County. Project monitoring has been complicated by the effects of the 2004 hurricanes. The 2006 pre-construction survey indicated the deposition of a relatively thin layer of fine sediments over extensive areas of hardbottom and thick accumulations of mud at the base of scarps and ledges in Sector 7. The high adhesive capacity of the mud particles has enabled sediments to persist for several years. Storms continue to suspend this fine material, resulting in turbid nearshore waters for long periods. However, using the adaptive biological monitoring protocol, the baseline and post-construction monitoring data were successfully collected and analyzed. As part of the protocol, the nearshore edge of hardbottom was mapped and compared to the project's toe of fill and permanent monitoring transects were established and revisited. Based on the data collected to date, the project is performing as anticipated, and there have been indiscernible project-related adverse impacts to the nearshore hardbottom communities based on review and analysis of the data. The 1-year post-construction dataset will be collected during the summer 2008. This project suggests that a nourishment project in an area with significant nearshore hardbottom resources can be designed and constructed with insignificant impacts to nearshore hardbottom communities.



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