

**BAREFOOT BEACH SURVEY & ANALYSIS – EXECUTIVE SUMMARY**  
**JULY 2018**  
**BAREFOOT BEACH PROPERTY OWNERS ASSOCIATION**

PREPARED BY  
HUMISTON & MOORE ENGINEERS

This report presents the background shoreline stability evaluation of Barefoot Beach in north Collier County between R-1 to R-9 conducted on behalf of the Barefoot Beach Homeowners Association. The evaluation included analysis of the shoreline and volumetric change from 2000 to 2017 based on a post-Irma survey, conducted in September of 2017 in comparison to historical surveys conducted along Barefoot Beach in Collier County. The post-Irma survey was conducted by the U.S. Army Corps of Engineers between September 18<sup>th</sup> & 25<sup>th</sup>, 2017 while shoreline and volumetric change were determined at each monument for surveys conducted in June 2000, June 2003, June 2015, and September 2017. The portion of Barefoot Beach referenced and analyzed in this report is the residential section of Barefoot Beach ranging from the Department of Environmental Protection (DEP) reference monuments R-1 south to R-9.

The shoreline and volume change generally shows a stable beach with fluctuations, both erosion and recovery, in response to storm activity. There were losses in beach width for the periods from 2000-2003 and from 2015-2017 spanning only 2-3 years, both periods having active hurricane seasons impacting Collier County beaches. The beach subsequently recovered, and the most recent survey shows the post-Irma beach width varying from 70 to 97 feet; with an average width of 82 feet. Although there are short term changes to Barefoot Beach as it is impacted by storms and has normal localized fluctuations, the longer term analysis indicates a relatively stable beach.

Total volume change out to depth of closure for the period from 2000 to 2017 shows a loss of over 10,000 cubic yards of sand or less than 1.3 cubic yards per foot of beach. The beach and dune system have been compromised over time with overwash and a narrow beach providing minimal storm protection and environmental habitat. While the erosion rates are not high, when considering impacts of future storms and the idea of adaptation to sea level rise, nourishment is recommended, including raising the elevation and possibly width of the dune.

Applying the method of fill determination used for the Collier Beach nourishment program, volumetric quantities were estimated for both the 85 and 100 *Design Standard* for Barefoot Beach. When considering the 100-foot *Design Standard* the project area would require over 86,000 cubic yards of sand spanning the entire reach from R-1 to R-9.

Although Barefoot Beach appears to be relatively stable in the long term the reach reacts to storm impacts and recovers. This area of the shoreline is developed, and the beach and dune system is relatively narrow offering little protection to the upland properties. The recreational uses, environmental habitat, and storm protection provided by the beach and dune system along this stretch of beach has been compromised over time particularly after the storm effects of Hurricane Irma. If a storm were to impact Barefoot Beach there is currently no permit in place to authorize nourishment. Although nourishment at this point may be considered optional, it is recommended Barefoot Beach initiate coordination with Collier County Coastal Zone Management Department to be added to the Collier Beach Nourishment Project in order to begin the permitting process, allowing time for compliance with the required environmental conditions and consideration of other logistical concerns e.g. financing, monitoring, development of an erosion control line, and a sidescan/environmental survey to determine the location of any hardbottom potentially effected by nourishment.