

DEER ISLAND AQUATIC ECOSYSTEM RESTORATION
DEER ISLAND, MS, USA

COASTAL PROTECTION

Product: MacTube® , MacScour

Problem

Deer Island is located in the Mississippi Sound near the mouth of Biloxi Bay and the City of Biloxi, MS. It is a spindle-shaped, 4.5 mile-long island that is not a true barrier island but is a remnant of the mainland. It has long provided a diverse habitat eco-system and provided the City of Biloxi with long-term coastal erosion protection by reducing the energy of wind and waves moving on-shore. Hurricanes Camille (1969), Ivan (2004), Dennis (2005), Katrina (2005), Gustav (2008), and Ike (2008) are noted to have had significant adverse impacts to Deer Island’s structural integrity and ecological diversity. In the past 25 years, the strong storms have significantly eroded beaches, breached an entire section of the island, reduced island elevations and severely damaged the forested areas.

Solution

The first step of the solution was using MacTubes® to close the West End Breach. This breach had not only occurred and widened over time due to prior storm events, it had also significantly deepened as a result of scour. To fill the 4,300ft (1,310m) west end breach and restore the southern shoreline, a total of 1.95 million CUY (1.5M m³) of sand was needed. The sand was locally sourced and hydraulically dredged from a nearby borrow site.

Instead of stabilizing the west end breach with an emergent rip-rap dike, MacTubes® were placed in the breach template below surface level and utilized a robust, strategic native planting effort involving over 300,000 plants.

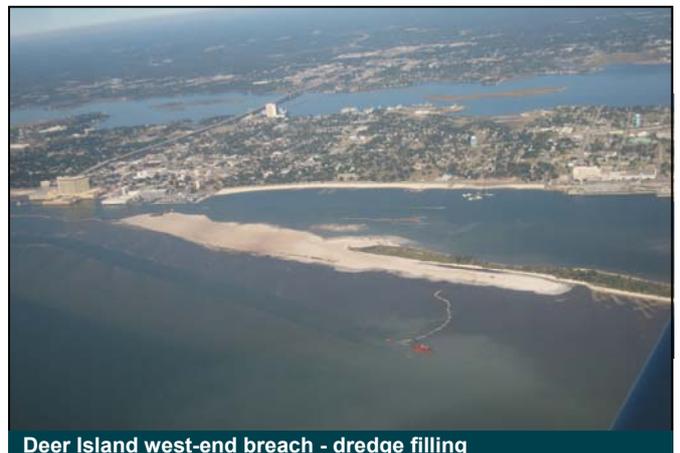
This design enabled the project to minimize the overall boundary footprint, as well as maintain natural shoreline egress and ingress activities for faunal species and recreators. This effort also reduced the need for (and associated cost of) rock resources and the construction and maintenance of over-dike access points.



View of the project site



MacScour & MacTube® placement adjacent to filled MacTube®



Deer Island west-end breach - dredge filling

Client:

US ARMY CORPS OF ENGINEERS

Main contractor:

MIKE HOOKS INCORPORATED

Designer:

USACE, MOBILE DISTRICT

Products used:

MACTUBE®, MACSCOUR*

Date of construction

August 2010

At the conclusion of the project, 40 tubes, equal to 10,000 linear feet (3,000m) of MacTube® OS500 with 30ft (9.1m) circumference and 280,800ft² (26,000m²) of MacScour OS150 with integral double anchor tubes, were used.

MacTube®/MacScour Installation procedure:

- Sand dredged and placed
- MacTube® alignment excavated
- MacScour placed and anchor tubes filled
- MacTube® placed and filled
- MacTube® covered to surface level

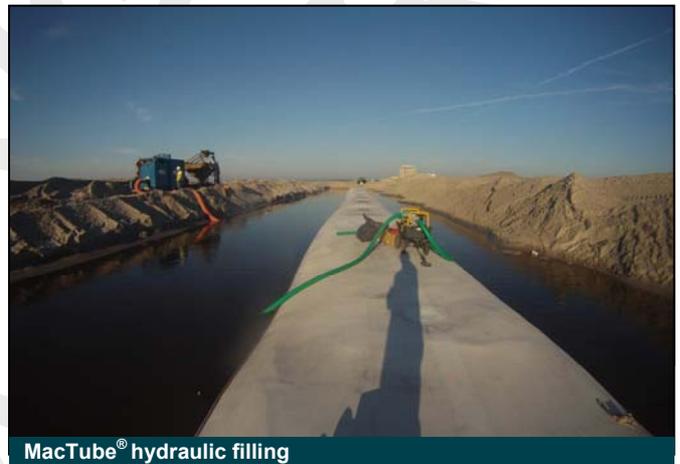
** = Not all products are available in all Maccaferri subsidiaries around the world. Please contact your local Maccaferri technical office for support to identify the optimum solution on your project.*



Aligning MacScour and MacTube® placement



Deer Island west-end branch



MacTube® hydraulic filling



Final beach fill coverage over MacTube® / MacScour, to surface level

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