

# QUEEN BESS ISLAND RESTORATION



## BACKGROUND

Located in Louisiana's Barataria Basin 2.5 miles northeast of Grand Isle, Queen Bess Island is one of the state's vital habitats for colonial nesting waterbirds. Historically, it supported roughly 4,500 nests including 3,000 Brown Pelican nests each year. Queen Bess has experienced significant subsidence over the years. The island has been eroded by many hurricanes that have affected the Barataria Basin and was impacted by the 2010 Deepwater Horizon oil spill. As a result, the nesting habitat for many of the bird species severely declined.

Only about five of Queen Bess Island's 36-acres were suitable habitat for nesting birds when construction of this project began. Completed in 2020, the project restored the habitat of most of the island footprint through placement of Mississippi River sand, vegetative plantings, and a designed bare ground nesting area, all surrounded by a rip rap dike.



The perimeter of the island is protected by a rock dike originally constructed during a previous project. The existing footprint has survived the major hurricanes of the 21st Century.

## PROJECT DESIGN

This project map shows the three designed fill cells. In yellow are the bird ramps that provide access to shallow waters for smaller birds, in the purple are breakwaters designed to protect the tidal exchange point in the north and provide calm waters for swimming and fledging in the south, and in blue is the rock containment dike meant to contain fill material and further protect the nesting grounds. The limestone covering the sand fill in Cell 3 was intended to reduce vegetation growth, addressing an important nesting preference for terns and Black Skimmers. The rest of the island supports the nesting preferences of other colonial waterbirds, like Brown Pelicans, herons, and egrets.



**\$18.71 M**  
Natural Resource  
Damages  
Assessment  
Funds



**150,000**  
Cubic Yards of  
MS River Sand Fill



**75,000**  
Square Yards of  
Geotextile  
Fabric



**22,400**  
Tons of Rock  
Containment  
Dike and  
Breakwaters



**26,000**  
Matrimony Vine,  
Groundsel Bush,  
and Marsh Elder  
Plants

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The existing rock ring around the island was enhanced to serve as containment for the ~150,000 cubic yards of Mississippi River sand fill material that were procured from a sand pit and then barged to the project site. Similar fill materials used in previous projects have provided a good combination of stability and ability to sustain vegetation. The island's elevation is highest on its southwestern side, approximately four feet above sea level after construction. The elevation gradually slopes downward toward the northeast side of the island, where intertidal marsh elevations and an enhanced tidal exchange gap support the growth of black mangroves and essential fish habitat. A nearby breakwater reduces wave-driven erosion through the tidal gap. In the middle elevations, scrub-shrub vegetation was planted to support Brown Pelican and colonial wading bird nesting.

The southwestern third of the island, approximately seven acres, was designed as tern and Black Skimmer habitat. Six inches of small limestone were placed on top of the sand fill there to inhibit vegetation growth, enhancing the attractiveness to these bare-ground-nesting birds. Segmented breakwaters were installed on the island's southwest side to dissipate wave energy, providing young birds with a calm water environment for swimming and fledging. Bird ramps were created with medium-sized stone in sections of the rock dike that might be difficult for flightless juvenile birds to safely traverse to gain access to the water.

Engineers estimate that the fill material will settle significantly within the first five years after construction. An additional six inches of small limestone is scheduled to be installed in the tern and Black Skimmer habitat in the fifth year, which engineers estimate will keep that area from settling below the mean high water level for at least the rest of the project's 20-year design life. By the end of the first decade after construction, the middle elevations are expected to settle to intertidal levels. The scrub-shrub vegetation there should support nesting well into the future.



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## PROJECT BENEFITS

Restoration has allowed Queen Bess Island to continue to serve as one of the top Brown Pelican colonies in the state, expanding and sustaining the nesting and brood rearing habitat for this and other important bird species on the island. Almost seven acres of the island are designed to meet tern and Black Skimmer nesting and brood rearing habitat needs, while the remaining ~29 acres are designed to support Brown Pelicans and other colonial waterbirds that prefer to nest in scrub-shrub vegetation. Lessons learned from this project will also inform the restoration of other vulnerable Brown Pelican colonies along our coast.