

Houston Ship Channel Expansion Project 11: Dollar Reef Oyster Mitigation, Galveston Bay, Galveston County, Texas

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Background/Objectives. In the wake of the 2007-2014 Panama Canal Expansion to accommodate “New Panamax” ships, the US Army Corps and coastal state’s port authorities have commissioned numerous projects to widen and dredge existing ship channels to allow these modern vessels access to US ports. In Texas, the Port of Houston and US Army Corps Galveston District have awarded multiple construction contracts under Project 11 which includes deepening and widening of the Houston Ship Channel. As a consequence, the widening and dredging of the Houston Ship Channel will encroach on existing oyster reefs and four oyster mitigation projects have since been awarded to qualified contractors. One such project is the Dollar Reef Oyster Mitigation awarded to Wiipica QRI JV by the US Army Corp’s Galveston District in the fall of 2021.

Approach/Activities. The Dollar Reef project called for the construction of three 13-, 14- and 17-acre oyster reefs using 2-inch limestone aggregate placed on the bay bottom to a vertical height of 1.5-2.5 ft in 8 feet of water. The three reefs were constructed with 203,000 tons of limestone aggregate which collectively is enough to fill a typical football stadium to the 15th row. The Dollar Reef Oyster Mitigation project commenced in January of 2022, and once completed in the fall of 2022, will be one of the largest manmade oyster reefs in the world in terms of volume.

The biological and ecological benefits of the eastern oyster (*Crassostrea virginica*) are well-established by modern science. It is widely accepted that an adult oyster has the capacity to filter 50 gallons of seawater per day. It is also generally accepted that the adult oyster shell typically weighs 0.37 pounds and has the capacity to store 800 pounds of CO₂ per ton. Additionally, oyster reefs are well known to stabilize bottom sediment and have been proven effective in slowing coastal erosion when used in restoration projects on the eastern seaboard and on the gulf coast.

Results/Lessons Learned. The project area is located in an area closed to oyster harvesting in the eastern reaches of Galveston Bay roughly 1 mile north of the Moses Lake Floodgate (red area in photo above). Given the total aerial extent of 1,943,400 square feet, the three reefs have the potential to produce 349,812,000 adult oysters.

Recent sampling of previously placed stone was undertaken in September of 2022, proving the reef is currently home to a healthy fast-growing crop of seed oysters. The previously mentioned sampling efforts have identified an average density of 180 oysters per square foot. The oysters currently measure 1-2 inches since spatting in June of 2022 and typically cluster seven to 11 individuals per 2-3 inches grain of limestone.

If half of the Dollar Reef oysters reach adulthood, they have the potential to filter 8.745×10^9 gallons of seawater per day as well as tie up 2.591×10^6 pounds of dissolved CO₂ generated by natural and industrial sources nearby.