

One of The Largest Coastal Wetland Restoration Projects in The United States: The Bahia Grande Hydrologic Restoration Project

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The Bahia Grande was historically a tidally influenced coastal wetland connected to the Lower Laguna Madre Bay System. Starting in the 1930's construction including a railroad, the Brownsville Ship Channel, and later Highway, connecting the city of Brownsville to Port Isabel, TX, which cut off all tidal flow into the Bahia. The ecosystem dried up, resulting in massive "dead zones", and the bay became the source of dust storms and fish kills. In 2000, the Laguna Atascosa National Wildlife Refuge acquired the 22,000-acre Bahia Grande Unit and in 2005, a pilot channel was constructed to connect the Brownsville Ship Channel to the Bahia Grande to reflood the basin and reduce the probability of dust storms. That project successfully mitigated the dust storms but did not provide enough circulation to the system and salinities stayed high.

Mott MacDonald, with the Texas General Land Office and The Port of Brownsville, designed and constructed channel improvements to lower salinity levels and restore wildlife and habitat within the 22,000-acre sanctuary. The objectives were to maximize natural tidal circulation, while providing protection to the Highway 48 bridge. Numerical models were used for the salinity/hydrodynamic modeling to test a variety of deepening and widening alternatives against existing conditions. The analysis of preferred alternative resulted in a reduction of salinity levels within the Bahia by approximately 11-13%, which would result in the restoration of approximately 10,000 acres of wetland and shallow water habitat for local wildlife and fisheries. This is one of the largest coastal wetland restoration projects in Texas history. The design was kept flexible, providing many opportunities during construction to analyze collected data and adjust where necessary, to not limit the construction methodology. The project involved widening the pilot channel from 50' to 100' and cutting to a depth of -8 ft.

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