

Township Undertakes Dune Stabilization Project to Mitigate Flood Damages

Atlantic County, NJ - The project is located in the West Atlantic City portion of Egg Harbor Township and consisted of dune stabilization in three sections of shoreline along the north shore of Lake's Bay, a large tidal embayment behind the barrier beach located south of Ventnor City, New Jersey, and north of Great Egg Harbor Inlet. Lake's Bay opens into the Atlantic Ocean via Great Egg Harbor Inlet and is thus vulnerable to tidal forces, particularly the extremes associated with hurricanes and other severe storms.

The project dunes are located between the north shore of Lake's Bay and the adjacent Highway (U.S. 40 / NJ 322) also known as Black Horse Pike. Several residential and commercial properties are located between the dunes and the highway. Black Horse Pike is one of only three major highways connecting insular Atlantic City with the mainland. More importantly, the highway is a Coastal Emergency Evacuation Route in the event of a major storm.

Prior to this project, the natural dunes along the shore of Lake's Bay were often breached by major storms, tidal surges, or high tides with a full moon. The result was that Bay waters not only inundated the adjacent residential and commercial properties along Black Horse Pike, but often flooded the highway itself, forcing it to close. This sometimes rendered it unusable as an emergency evacuation route in the event that Atlantic City would have to be evacuated. This put additional pressure on the other two coastal evacuation routes, the Atlantic City Expressway and the White Horse Pike.

Another result of coastal storms was that major amounts of sand, formerly part of the dunes and beach along the adjacent road (Bay Drive), would be left behind on the roadway itself. This meant large amounts of residual sand had to be moved back onto the breached dunes and beach by Township staff and equipment.

After each successive storm, the follow-up solution to the displaced sand was to simply fill in the gaps in the line of dunes breached by the storm. This became a never-ending cycle, which was both inefficient and costly, and was not a long-term solution to the problem. Egg Harbor Township decided that a more permanent solution was needed. The approach originally proposed was the construction of a permanent, fixed-in-place linear bulkhead along about 4,000 feet of shoreline.

Local residents with a long-term familiarity with the workings of Lake's Bay recommended against this approach. They advocated a more natural solution, an approach more akin to the way nature might mitigate this problem. For various reasons, some agencies reviewing the proposed bulkhead would not approve the project as proposed.

Working closely with FEMA and the State of New Jersey, Egg Harbor officials proposed and designed a dune stabilization project that would integrate gabion baskets into the rebuilt dune. The finished project was designed to provide a protective barrier that would be more flexible, absorbent and stable under storm conditions than the original proposed rigid bulkhead. This approach to solving the ongoing and recurring problem was reviewed and approved.

Funding became available through a financing package that included participation from FEMA, New Jersey Department of Environmental Protection (NJDEP), and Egg Harbor Township. The total final cost for the project was \$660,000. FEMA and NJDEP combined to provide 72 percent of the project cost and Egg Harbor Township provided 28 percent.

By the time project bids were awarded, budgetary limitations on available project funds made it impossible for the Township to complete the entire 4,000-foot dune stabilization project in one phase. Based on the



anticipated costs for this project, it was determined that the Township had enough funding available to properly support and construct 2,000 linear feet, or roughly half of the originally proposed dune project.

Based on prior storm experience, the project was reduced in scope during the first phase to encompass the most vulnerable sections of the dunes. The decision to reduce the scope of the project meant deferring completion of the remaining shoreline until additional funding needed could be secured.

The project went to bid and the Township Administration was pleasantly surprised to find that the first phase of the project would be completed by \$100,000 under the estimated cost. The project took advantage of the downturn in the economy, attracting responsible bids. The project realized a savings of \$100,000 leaving funds available that could be applied to the completion of the remainder of the project.

Completion of the project was accomplished in mid-June 2011, just 2 months before Hurricane Irene roared up the coast of New Jersey. In spite of the storm's visit, the newly-stabilized dunes withstood the onslaught. The adjacent residential and commercial properties experienced minimal flooding.

Any floodwaters that managed to penetrate the coastal defenses were quickly dispersed after the storm. Newly installed drains within the nearby residential area allowed any floodwaters left behind the dunes to quickly flow back into Lake's Bay after the storm passed and the tide subsided. The completed project totaled approximately 2,000 linear feet of stabilized dune.

Approximately 1,600 to 2,000 additional linear feet of dunes (shoreline) still need to be stabilized to further mitigate the impacts of future storms. The government and citizens of the Township of Egg Harbor remain optimistic that, with future funding assistance, they will be able to finish a second phase of this project and provide improved mitigation and a higher level of security from coastal storms for the community.