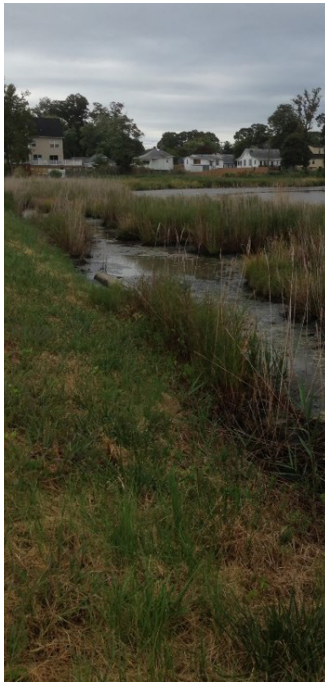
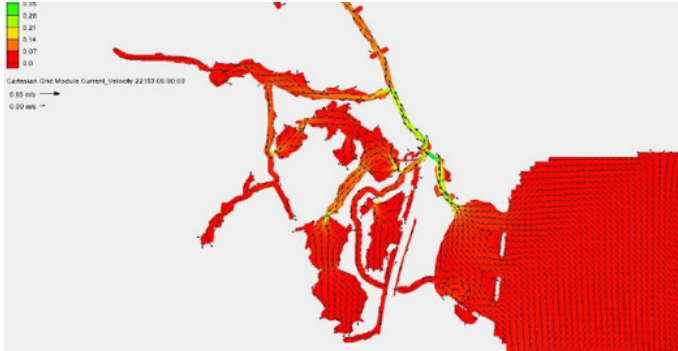


# MD 261 Tidal Exchange

North Beach, MD



top: CMS-Flow Model  
bottom: Existing salt marsh

In the 1930s, the Maryland State Highway Administration (SHA) constructed MD Rt. 261 along 12.8 miles of the western shore of the Chesapeake Bay. The road connects several shoreline communities in two counties, but in the town of North Beach, it also separates tidal marsh from the Bay. While two small culverts beneath the highway supplied the marsh with some tidal waters, the solution proved insufficient, and over the decades, the marsh began to degrade. Meanwhile, an increase in storm frequency and intensity began to cause highway flooding.

*After signing a joint agreement to protect and improve their shared watersheds, two major urban jurisdictions now have a solid framework for action items to improve water quality.*

When SHA decided to elevate Rr. 261 to reduce flood risk, they sought a solution to simultaneously restore tidal connectivity beneath the roadway. Biohabitats helped SHA evaluate their plans, which involved constructing a 26-foot bridge, along with a plan previously developed by The Town of North Beach and the U.S. Army Corps of Engineers (USACE), which involved adding one culvert and excavating a tidal canal.

The evaluation included modeling and engineering to evaluate the effects of multiple culvert and bridge span configurations on the water surface elevations and tidal flux within a 140-acre salt marsh. To compare SHA's proposed designs to the USACE

restoration plan, Biohabitats developed multiple, two-dimensional, finite difference numerical models utilizing Aquaveo's Surface-water Modeling System (SMS) interface and the USACE's Coastal Modeling System Flow Computation Model (CMS-Flow). The model results were then used to validate the similarity between SHA's proposed design and the culvert design within the USACE's original salt marsh restoration and living shoreline designs. The model results were compiled within a technical report and provided to SHA.

## SERVICES

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