



Geosyntec is developing the TIDEGateway tool as an online resource to help coastal resource managers plan for and manage climate change impacts.

Client: Massachusetts Office of Coastal Zone Management; Massachusetts Bays National Estuary Program

Services Provided:

- ✓ Geodatabase development
- ✓ Field protocol development
- ✓ Coastal climate change modeling
- ✓ GIS based web-development

Project Objective

A tide gate, as defined by the Massachusetts Office of Coastal Zone Management (CZM), is “any conveyance of tidal flow with the ability to passively or actively manipulate water flow.” These can include self-regulating tide gates, manually controlled devices, or passive control structures such as flappers. CZM estimates there may be as many as 300 or as few as 100 tide gates in Massachusetts that meet this definition. CZM and the Massachusetts Bays National Estuary Program (MassBays) retained Geosyntec to gather and assess existing information related to tide gates in the state to inform the management of these structures, especially in light of potential climate change impacts such as anticipated sea level rise and changes in precipitation patterns.

Geosyntec’s Scope of Services

Geosyntec began the process by working with CZM and MassBays to gather and assess existing information related to tide gates in the MassBays planning area by reaching out broadly to local, state, and federal coastal managers. We then developed and implemented detailed field protocols to gather missing data and assess current conditions at identified tide gates. From there, a planning level GIS based desktop tool was developed capable of visualizing tide gates and their upstream resource areas under an array of sea level rise and storm surge scenarios. The planning tool enables coastal managers to rapidly assess and understand existing and potential future upstream floodplain function, potential impacts to wetland ecology, and affected upstream infrastructure in order to better inform future management. We will complete the project by providing the state with recommendations regarding ecological and floodplain implications of tide gate operations, implications for anticipated impacts of climate change and sea level rise, and use of the tide gate analysis tool to improve future management of tide gates.

Geosyntec’s project approach integrates each of the above project tasks as components of TIDEGateway - a fully integrated suite of GIS map products, fact sheets, data, modeling projections, and related planning tools. TIDEGateway is accessible online through a secure interface and provides convenient and comprehensive access to tide gate information without requiring specialized software training or licenses.



Notable Accomplishments

The TIDEGateway tool has been developed to be easily used, expanded, and adapted by MassBays and CZM staff over time as more tide gate information becomes available. The field protocols were specifically developed to be easily followed and rapidly implemented without any specialized survey equipment. Additionally, TIDEGateway enables anyone with login information to edit tide and share specific tide gate information and files including permits, operations and maintenance manuals, and monitoring data. TIDEGateway has been developed to be flexible and can easily be adapted to support additional tidal restriction types. We hope that TIDEGateway will continue to expand throughout the northeast and the country, ultimately helping coastal state manage its tide gates, tidal restrictions, and other coastal features to ultimately help protect and inform effective management of its valuable coastal resources from the potential impacts of climate change and sea level rise.