

Prepared in cooperation with the  
National Park Service

## Assessment of Groundwater Resources to Adapt to Climate Change at Fire Island, New York

*By using numerical groundwater flow modeling techniques, this USGS study will provide a better understanding of climate-driven changes.*

### Summary

Fire Island National Seashore (FIIS) occupies 42 km of the barrier island for which it is named that lies off the southern shore of western and central Suffolk County, Long Island, N.Y. Fire Island is underlain by a complex aquifer system consisting of unconsolidated glacial, lacustrine, deltaic, and marine deposits of clay, silt, sand, and gravel that range in age from Late Cretaceous to Holocene.

Accelerated sea level rise, storms, rising temperatures, and changes in patterns of precipitation are all expected to drive significant ecological change. Among the most vulnerable resources are the Island's fresh groundwater resources. The potential for

climate-driven changes in the quantity and quality of FIIS ground water resources threatens sensitive ecological habitats, including the Sunken Forest, an example of the rare maritime holly forest; a suite of dependent wildlife such as amphibian, waterfowl, and invertebrate populations; as well as a National Park Service (NPS) natural area visitor use center.

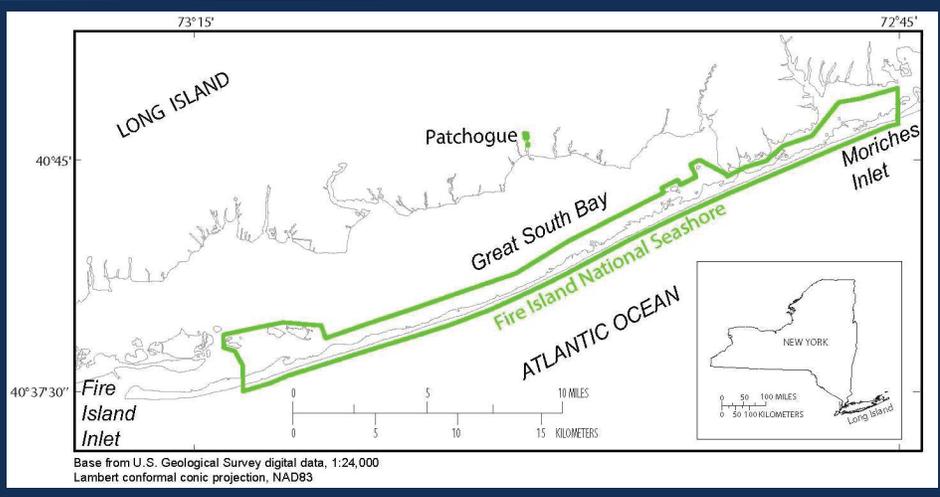
As part of Hurricane Sandy Disaster Recovery, the Department of the Interior mitigation funds have a goal of increasing the resiliency and capacity of coastal habitat and infrastructure to withstand storms and reduce the amount of damage caused by such storms. This program is the FIIS component of a larger project to Assess Groundwater Resources to Adapt to

Climate Change in Mid-Atlantic National Seashores, that includes three national park units, FIIS, Assateague Island National Seashore and the Sandy Hook unit of Gateway National Recreation Area. Project coordination and support for the other units will be accomplished through separate programs with the New Jersey and Maryland-Delaware-District of Columbia USGS Water Science Centers.

### Objectives

The overall objectives of this project are to 1) identify baseline conditions of groundwater resources by establishing and continuously monitoring a network of wells; 2) develop groundwater flow models that can be used to assess impacts of climate change; 3) develop a set of protocols to assess changes in groundwater resources of National Seashores that are related to climate variability and other drivers; and 4) develop related technical products describing the results of the study.

### Fire Island National Seashore, New York



### Primary Researchers

Paul E. Misut  
U.S. Geological Survey  
2045 Route 112, Building 4  
Coram, NY 11727  
(631) 736-0783 ext. 106  
pemisut@usgs.gov

### For Additional Information

Visit the New York Water Science Center Web site at: <http://ny.water.usgs.gov>  
Or contact Ward O. Freeman, Director  
(518) 285-5665 dc\_ny@usgs.gov

