APCC
Association to
Preserve Cape Cod
482 Main Street, Dennis, MA 02638 • Phone: 508-619-3185 • E-Mail: info@apcc.org

PRESS RELEASE

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CONTACT: Ed DeWitt, Executive Director, edewitt@apcc.org or Dr. Jo Ann Muramoto, Director of Science Programs, jmuramoto@apcc.org, at (508) 619-3185.

USGS Issues Final Report on "Potential Effects of Sea-Level Rise on the Depth to Saturated Sediments of the Sagamore and Monomoy Flow Lenses on Cape Cod, Massachusetts"

The Association to Preserve Cape Cod (APCC) announces the publication of the U.S. Geological Survey's (USGS) final report on the results of a study to model the effects of sea level rise on the mid-Cape's ground water system. The report, "Potential Effects of Sea-Level Rise on the Depth to Saturated Sediments of the Sagamore and Monomoy Flow Lenses on Cape Cod, Massachusetts," by Donald A. Walter, Timothy D. McCobb, John P. Masterson, and Michael N. Fienen, is published as U.S. Geological Survey Scientific Investigations Report 2016-5058 and is available on the web at https://pubs.er.usgs.gov/publication/sir20165058. The USGS press release is posted at https://www.usgs.gov/news/cape-cod-susceptible-potential-effects-sea-level-rise . The report is also posted on APCC's website at www.apcc.org / What's New and www.apcc.org /Programs/Effects of Sea Level Rise on Coastal Aquifers.

At the urging of APCC and with support from APCC and partners, the study was undertaken to evaluate the effects of future sea level rise on groundwater and to inform development of coastal resilience measures. In coming decades, rising sea level is expected to affect Cape Cod's groundwater. Groundwater supports the Cape's sole source aquifer and most of the Cape's ponds, lakes and streams.

"We were concerned that septic system pollution would get worse as the water table rises due to rising sea level," said Ed DeWitt, APCC's executive director. "Even today there are septic systems in contact with groundwater. How much worse will pollution get as the water table rises due to rising sea levels? This study shows that the Cape's freshwater hydrology will be affected by rising sea level. We need to plan for impacts on infrastructure, wastewater and stormwater management, and water resources."

The USGS study found that rising sea level could potentially raise the water table and decrease depths to groundwater in some areas, which can adversely affect infrastructure, as follows: (1) The median rise in the water table following a 6-foot rise in sea level is predicted to be about 2.11 feet but will be strongly affected by the presence of surface water drainages. As the water table rises, hydraulic gradients and streamflow should also increase, causing streams, ponds with outlets, and wetlands to drain faster. This will help to dampen the increase in water table altitudes and may mitigate some of the adverse effects of higher ground water.
(2) The area underlain by shallow depths to groundwater (less than 5 feet) will increase as sea level rises. Currently this area covers about 24.9 square miles, mainly in low-lying coastal areas or near streams and ponds. For a 6-foot rise in sea level, this area will increase by about 15.9 square miles, also in low-lying coastal areas and near streams and ponds. These are vulnerable areas in which infrastructure could be impacted by higher groundwater.

“The results of the USGS project to model the impacts of sea level rise on the Cape Cod Aquifer gives Cape communities a framework to evaluate appropriate water, wastewater and stormwater infrastructure needs for vulnerable areas”, said Tom Cambareri, Director of the Water Resources Department, Cape Cod Commission. “The USGS effort also provides an updated groundwater modeling tool for multiple water resource management issues”.

“We’ll be applying this study to understand impacts on natural resources and to develop coastal resilience measures. For example, it appears that the Cape’s surface drainage system may partly offset the effects of rising groundwater. One important coastal resilience measure may be protecting and restoring our natural surface drainage system,” said Dr. Jo Ann Muramoto, APCC’s director of science programs.

“In addition to recognizing the value of our nature-based infrastructure such as marshes, dunes and seagrass for adapting to sea level rise, this report identifies impacts to our human built infrastructure such as roads, utilities and septic systems so that we can work now to mitigate future natural disasters,” said Jon Kachmar, urban program director for The Nature Conservancy in Massachusetts.”

APCC partnered with the USGS, the Cape Cod Commission, Barnstable County Coastal Resources Committee, Massachusetts Bays National Estuary Program, and The Nature Conservancy. Funding was provided by the Massachusetts Environmental Trust, USGS, Department of Environmental Protection, The Nature Conservancy, Cape Cod Five Cents Savings Bank Charitable Foundation and APCC member dues and donations.

For more information, contact Ed DeWitt or Dr. Jo Ann Muramoto at APCC at (508) 619-3185.

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