



LINAP Newsletter - October 2017

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Long Island Nitrogen Action Plan (LINAP) Newsletter

October 2017

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This issue's topics:

- United States Geological Survey: Solute Transport Methods to Estimate Time-Varying Nitrogen Loading Rates to the Peconic Estuary
- Department of Environmental Conservation Releases Report on Eelgrass and Water Quality
- Peconic Estuary Seaweed Aquaculture Feasibility Study

USGS Solute-Transport Methods to Estimate Time-Varying Nitrogen Loading Rates to the Peconic Estuary

The Peconic Estuary watershed has transitioned from a rural area dependent on agriculture and tourism to a suburban one with a larger year-round population. The area surrounding the Peconic Estuary was intensely farmed prior to suburbanization. Nitrogen loading from past fertilizer use was substantial as estimated from historical information and the continued detection of elevated concentrations attributed to legacy land uses. Likewise, the discharge of wastewater into the environment, primarily through onsite systems, has adversely affected both water supplies and surface waters. The objective of the U.S. Geological Survey (USGS) study is to apply methods that will allow for the quantitative analysis of nitrogen loading rates to the

Peconic Estuary resulting from wastewater and fertilizer inputs to groundwater. Similar USGS work on Cape Cod, Mass., contributed to development and implementation of nitrogen Total Maximum Daily Loads there. As part of that effort, the USGS developed methods that allow for incorporation of parcel-scale water use data into solute-transport models and hypothetical simulation of time-varying nitrogen loads to estuaries for sequential wastewater management actions (including sewerage and centralized wastewater disposal). The investigation will develop data sets representing current and historic land uses relevant to nitrogen loading, incorporate these data as source terms in models capable of simulating transport processes to estimate current estuarine loading rates and nutrient concentrations in the aquifer, and use these models to simulate the response of estuarine loading rates to possible future wastewater-management actions.

Department of Environmental Conservation Releases Report on Eelgrass and Water Quality

Eelgrass is the principal meadow-forming seagrass in New York State waters. It provides critical support to ecosystems, improves the seabed, and is essential in coastal resiliency. In recent decades, the drastic decline in eelgrass has been attributed in part to water quality deterioration. The report, [Eelgrass and Water Quality: A Prospective Indicator for Long Island Nitrogen Pollution Management Planning](#) (PDF), by Liana Simpson, a graduate student intern at the Division of Marine Resources from Stony Brook's School of Marine and Atmospheric Sciences, and Soren Dahl, Seagrass Coordinator for New York State Department of Environmental Conservation, details the relationship between seagrass health and water quality. The report will help guide the development of nitrogen endpoints and load reductions as part of island-wide subwatershed planning efforts.

Peconic Estuary Seaweed Aquaculture Feasibility Study

The [Peconic Estuary Seaweed Aquaculture Feasibility Study](#), funded by Suffolk County and implemented by [Cornell Cooperative Extension \(CCE\)](#), evaluated the viability of seaweed aquaculture in portions of the Peconic Estuary. The study is important to LINAP as seaweed has the capacity to improve water quality by removing nitrogen (bioextraction), while producing a high demand, renewable product for food, feed, fertilizer or other uses.

The first step in developing a seaweed aquaculture industry on Long Island was taken by CCE in this study. They tested the feasibility of growing sugar kelp (*Saccharina latissima*) to harvest size in five Peconic Estuary sites. The study was conducted with guidance from Dr. Charles Yarish of the University of Connecticut, the region's leading expert on seaweed culture. The kelp was grown successfully through the 2016-2017 winter and harvested this June. Results are promising. This fall, the researchers will conduct another grow-out at those sites found to be conducive to kelp aquaculture during the first phase of the feasibility study. Additional work by CCE and LINAP is expected.

