# Oyster Pond: Links between watershed land-use and nitrogen loading rates, and a discussion of management issues

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**Abstract**

Eutrophication of estuaries, stimulated by anthropogenic nitrogen loading, is of increasing concern on Cape Cod and throughout the world. Land-use surrounding estuaries plays an important role in the amount of nitrogen entering a body of water. Land covers differ throughout the Oyster Pond watershed. A Nitrogen Load Model (NLM) developed for use in rural to suburban coastal watersheds underlain by unconsolidated coarse sediments, was applied to the Oyster Pond watershed. The N load entering this estuary from the watershed was estimated and the relative potential effectiveness of management options for reducing the N load to this estuary were evaluated.

The predicted N load to Oyster Pond was 878 kg N $y^{-1}$. Wastewater derived nitrogen contributed 69% of the total N load. Wastewater contribution to the N load is correlated to the number of people living in an area. The N load to Oyster Pond is relatively low compared to other estuaries on Cape Cod.

It is possible to decrease the N load even under build-out conditions by installing septic systems with higher retention rates than conventional models. The greatest change in N load (19% decrease from present) was predicted for build-out conditions where new buildings contained RUCK® septic systems and a package treatment plant is installed. Managing fertilizer application has limited potential because fertilizer contributes only 7% to the total N load. It is hoped that these NLM predictions will assist with future decision-making concerning nitrogen loads to this estuary.