

A Green Technology for Nutrient and Metals Reduction in New Jersey Coastal Waters R/6410-0015

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The goal of this project is to develop a “green” and inexpensive technology to reduce nutrient and metal input from stormwater into New Jersey’s coastal waters. The project will test phosphorus and metal fixation potential of a waste material – the drinking water treatment residuals that are generated in the order of 2 megatons daily in the United States alone, and in conjunction with different plant species with varying degrees of metal and nutrient uptake capacities, via greenhouse and pilot-scale field experiments.

The first phase of the project will consist of laboratory-based experiments and greenhouse tests to study the mechanisms of metals and nutrient removal for both the residuals and vegetation,



Laboratory column studies using aluminum-based drinking water treatment residuals.
Photo - Mike Peters, MSU

and to optimize their pollutant removal capabilities. In the second phase, the technology will be field tested in a pilot scale in two coastal locations in the Barnegat Bay watershed. The aluminum-based drinking water



Vetiver grass growing in the climate controlled greenhouse of Montclair State University.
Photo - Mike Peters, MSU

treatment residuals, which are considered non-hazardous and safe for land application, will be mixed with sand and/or granular carbon, and placed in filter bags and inserted into catch-basins in a parking lot to capture runoff. Also, buffer strips will be installed to intercept runoff from a golf course. The soil in the strips will be amended with the residuals and sections will be planted with the different vegetation. Water will be sampled entering and leaving both the catch-basin insert and the buffer strips to determine the pollutant removal performance of each type of installation. Reduction in erosion potential will be monitored as well.

Excess nutrients and the resultant eutrophication is a serious problem in coastal waters in New Jersey. Waters are also affected by metal pollution. This problem is exacerbated during storm events when huge amounts of nutrients, metals and sediments enter the water bodies. This project will couple scientific and engineering efforts to develop and test a new “green” technology that could be widely deployed to reduce such pollution in New Jersey’s coastal waters.