



WATER RESOURCES RESEARCH GRANT PROPOSAL

Project ID: 2002DE1B

Title: Graduate Fellowship in Water Quality: Baseflow and Storm Discharges of Nutrients to Delaware's Inland Bays

Project Type: Research

Focus Categories: Water Quality, Non Point Pollution, Geochemical Processes

Keywords: Nutrient management, nutrient cycling and discharge to waters, environmental management and policy, water quality

Start Date: 03/01/2001

End Date: 05/31/2003

Federal Funds: \$3000.00

Matching Funds: \$6000.00

Congressional District: At-large

Principal Investigators: Ullman, William J.; J. Thomas Sims; Scudlark, Joseph R.

Abstract: Direct atmospheric deposition and runoff are important sources of nutrients to estuaries, estuarine lagoons, and to the coastal zone and play a significant role in sustaining the typically high levels of primary productivity of these ecosystems. Discharges of runoff generally follow a seasonal baseflow pattern punctuated by short duration but extremely intense discharges in response to storms. These storm-related discharges of water may contain 50% or more of the annual nutrient discharge to estuaries and the coastal zone. Models of nutrient loads to estuaries that are used for regulatory or goal setting purposes must account for the non-linear and seasonal impacts of rainfall, storm water discharge, and nutrient cycling in complex tributary watersheds. A three-year study is being conducted by a Delaware Water Resources Center supported Graduate Research Fellow that builds on existing research and monitoring programs currently underway in which we routinely sample water from a number of tributaries in of Delaware's Inland Bays system. These results, together with atmospheric deposition from the Cape Henlopen AIRMoN site and land use and land cover taken from other studies, will be used to develop a model that will more correctly include the effects of seasonality, storm discharge, and land use in models of nutrient loading. The relative importance of discharge due to direct atmospheric input,

overland and interflow during storms, and from deeper groundwaters.(baseflow) will be related to land use. A conceptual model will be developed for regulatory use. Note that this is the final year of this 3-year graduate fellowship and that funding for this project terminates on May 31, 2003.

[U.S. Department of the Interior, U.S. Geological Survey](#)

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