ABSTRACTS

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Lajoie,C.L., Dunstan,W.M.. Impacts of External Nutrient Loading on the Water-Column Dynamics of a Coastal Watershed. Old Dominion University, Norfolk, Virginia 23529. Ph.D., SEERS

Greens Creek, on Virginia's Eastern Shore, is a coastal watershed associated with upland agricultural activities, wetlands, and the Great Machipongo river and tidal inlet between coastal barrier islands. The water quality of Greens Creek is controlled by mechanisms coupled to the watershed and the surrounding lands. The approximate volume of water exchange in Greens Creek is $5 * 10^5$ cubic meters per tidal cycle allowing the nutrient composition of coastal water to be altered before it is transported back to the continental shelf. External nutrient loading into Greens Creek is principally by groundwater, precipitation, and reservoir discharge and was evaluated with measurements of nitrate, ammonium, nitrite, and phosphate at five stations through the year. Understanding the levels of nutrient enrichment in such watershed areas will let us determine the significance of terrestrial nutrient inputs into the coastal ocean. During the agricultural growing season, groundwater underlying fertilized fields flows seaward discharging nitrogen in the form of nitrate and ammonium to the creek water column. Ammonium concentrations accounted for ~79.5% of the DIN species found in groundwater over the season. Nitrogen loading by direct precipitation (rain) into the watershed has been characterized by nitrate and ammonium inputs. Random precipitation samples were collected and concentrations will be discussed. The indirect effect of precipitation is runoff integrated from the adjacent fertilized fields and upland shallow groundwater into the reservoir located at the head of Greens Creek. Reservoir discharge into Greens Creek was measured directly following rainy episodes with concentrations of ammonium, nitrate, and phosphate averaging 8.58, 93.9, and 0.902 micromoles per liter respectively.