Soil and Water Sciences Department Graduate Student Research Seminar

Speaker: Qianyao Si
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Advisor(s): Mary Lusk, Ph.D.

Title: The Inorganic N Production and Removal in Different Hydrologic Conditions along the Sediment Gradient of Stormwater Infiltration Basins

Date: Wednesday, April 8, 2020
Time: 3:00 pm – 3:30 pm
Location: N/A - Live Stream & Recording Via Zoom

Stormwater infiltration basins (SIBs) are designed to mitigate the potentially negative effect of excess stormwater runoff and pollutant loads in urban environments. In this research, the soil nitrogen (N) cycle processes that produce and remove inorganic N in two urban SIBs were assessed. We identified N mineralization, nitrification, and denitrification in wet and dry seasons along a sedimentation gradient in each basin. Net N mineralization was higher in the wet season than in the dry season; however, nitrification was much higher in the dry season, providing a pool of nitrate that would be susceptible to leaching during periodic dry season storms or with the onset of the following wet season. The top layers of soil near the inlet pipes in SIBs functioned as hotspots of denitrification, which decreased along the sediment gradient from inlet zone (0.11 μg N/g*h to 5.2 μg N/g*h) to the outermost zone (0.0 μg N/g*h to 3.5 μg N/g*h) - providing significant spatial variation in inorganic N removal via denitrification for the SIBs. Sediment accumulating around the inflow areas likely provided a carbon source as well as maintained stable anerobic conditions, which in turn enhanced N removal via denitrification. Evaluating the influence of sediment gradients and seasonal variation on the inorganic N pools in urban SIBs soils can aid in future SIB designs and construction criteria that will be protective of aquifer and groundwater quality.

This seminar can be viewed live via this link: [Qianyao Si](#). Viewers of the live stream may now ask questions by clicking on the message icon at the bottom. Questions will be read at the end during the question and answer portion. In addition, all seminars are archived for viewing on our [SWSD Seminar Page](#).