

Report as of FY2006 for 2006SC29B: "A Statewide Sediment and Water Quality Approach to Characterize Pollution in Wadeable Streams of South Carolina"

Publications

- Other Publications:
 - Jones, AJ, Carraway, ER, Klaine, SJ, Scott, MC. (2007). A statewide sediment and water quality approach to characterize pollution in wadeable streams of South Carolina. Poster presented at the joint Carolinas and Southeastern Regional Meeting of the Society of Environmental Toxicology and Chemistry, Athens, GA, April 11-13.

Report Follows

Progress Report
for
A Statewide Sediment and Water Quality Approach to Characterize
Pollution in Wadeable Streams of South Carolina
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In the period March 1, 2006 to February 28, 2007 water and sediment samples for the analysis of organic and metal contaminants were obtained during the over the spring to fall period. Finding suitable and accessible sampling sites as close as possible to the target sites (i.e., those sites selected randomly within certain watershed parameters to result in an appropriately random sampling plan) was more challenging than anticipated and overall approximately 70 sites were sampled rather than the goal of 100. Water samples were treated as proposed for selected organic contaminants and water and sediment samples were analysed for several metal contaminants. The organic analytes that were specifically targeted are: 17 β -ethynlestradiol, 4-nonylphenol, caffeine, triclosan, meclofenamic acid, atrazine, pyrene, benzo(a)pyrene, phenanthrene, anthracene, perylene, PCB-30, and PCB-204. They cover a range of compounds that can be found in surface waters resulting from various anthropogenic sources such as pharmaceuticals, personal care products, pesticides, and combustion. In the samples from this season, these compounds were not found (or are present at concentrations below detection limits), however, hydrocarbons that are characteristic of fuels (gasoline, diesel) were found. Recently, the Environmental Engineering and Science department purchased a new GC-MS and we are working on translating and optimizing our method on that instrument. Detection limits should be much lower on this new instrument. For metals analysis, ten metals were measured by ICP-MS: chromium (Cr), nickel (Ni), copper (Cu), zinc (Zn), arsenic (As), selenium (Se), silver

(Ag), cadmium (Cd), thallium (Tl), and lead (Pb). Total aqueous mercury has been measured by CVAAS. ICP-MS results indicate that a small number of sites exceed the USEPA constant contamination concentration and contaminant maximum concentration for waterborne cadmium, copper and nickel. All mercury concentrations have been below detection limits. At this point, the overall results support generally good water quality for small, wadeable streams in South Carolina with the exception of a few exceedances for Cd, Cu, and Ni. This may imply that for a typical small watershed, pollutant concentrations remain very low with higher levels observed in watersheds of greater scale where more and larger municipalities contribute runoff and effluents to surface streams.