

Public Abstract

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Title:Quantifying Suspended Sediment Loading in a Mid-Missouri Urban Watershed Using Laser Particle Diffraction

Soil erosion and suspended sediment are among the most common causes of water impairment globally. Suspended sediment originates from terrestrial erosion as well as from in-stream channel processes. Excess suspended sediment can lead to biological, chemical, and physical water quality impairment. Over the last several decades suspended sediment monitoring has decreased significantly, largely due to expense and labor associated with suspended sediment monitoring. However, new technologies have been developed that eliminate much of the labor and time associated with traditional methods of suspended sediment sampling and analysis. Understanding suspended sediment processes in Missouri is critical for water quality restoration and protection. A study was conducted during the spring of 2010 using new suspended sediment sensing technology to characterize and quantify suspended sediment in a Mid-Missouri, urbanizing watershed. The watershed selected for study was Hinkson Creek Watershed located in Boone County, Missouri. The study design was implemented to investigate how differences in dominant land-use (i.e. agricultural, mixed land-use, and urban) affect observed suspended sediment trends. Results indicate that suspended sediment concentrations were highest in the urban areas. Similarly, the total amount of sediment originating from the urban area was three times greater than the agricultural and mixed land-use areas. This study is the first of its kind in central Missouri and provides valuable insight about suspended sediment processes in a multi-use urbanizing watershed. Results will provide information allowing scientist, policy makers, and land managers to make informed, science-based decisions to protect and restore water quality in Missouri.