

**Squeezing blood from a turnip:
Using limited monitoring data, impervious cover and land use information to
establish subwatershed management goals and implementation strategies**

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Biographical Sketch of Author

Paul Sturm is a watershed planner and biologist at the Center with ten years experience researching and implementing urban and agricultural BMPs and producing local watershed plans. He is knowledgeable in the use and evaluation of best management practices (BMPs) in both urban and agricultural environments and also proficient in the monitoring and interpretation of chemical, physical and biological parameters. His responsibilities at the Center include working with local governments, non-profits and small watershed groups to manage and protect watersheds, performing conservation area assessments and writing technical guidance documents in areas including urban stormwater and site design.

Abstract

The Paxton Creek watershed, a 27 square mile tributary to the Susquehanna River in Dauphin County, Pennsylvania, contains portions of the City of Harrisburg and the suburbs draining from the north and northeast. Typical of most urban watersheds, a variety of monitoring data exists ranging in quality and geographic coverage. Based on disparate monitoring information, how should different management practices be employed and how should goals and expectations be set?

In Paxton Creek, the impervious cover model (the relationship between impervious cover and stream health) provided a backdrop to view limited water quality and biological data, allowing more effective tailoring of goals and management strategies on a subwatershed basis. Three management categories were created for ten subwatersheds (1-10 sq. miles): protection, rehabilitation and enhancement. Five protection subwatersheds featured 10-25% impervious cover, fair/good macroinvertebrates, and forested headwaters. Recommendations designed to help preserve and even improve the biological community in these subwatersheds included land conservation, water quality and groundwater recharge stormwater retrofits, environmentally sensitive design with proposed new development, increased riparian buffers, and improved sediment erosion control. Four subwatersheds targeted for rehabilitation all had impervious cover >25%, fair/poor macroinvertebrate communities, and urbanized headwaters. Recommendations geared towards reducing pollutant loads in these subwatersheds included water quality retrofits, channel protection retrofits, stream rehabilitation, pollution prevention education, illicit discharge detection and elimination, and riparian buffer plantings along with an improved greenway/trail system. The enhancement subwatershed, Paxton Creek mainstem through Harrisburg, is channelized with concrete along much of its length, and has an estimated impervious cover of 56%, poor water quality, suspected illicit discharges (baseflow high ammonia and fecal coliform levels), and combined sewer overflows (CSOs). Rehabilitation of the mainstem for supporting sensitive biological communities is unlikely, therefore tracking down illicit discharges, reducing CSOs, and actively encouraging redevelopment centered on an improved "Creekscape" were recommended.