

INDICATOR 3

STORMWATER



OVERVIEW

Stormwater typically can carry very high pollutant loads from the developed areas of the Susquehanna basin. Regardless of the activity, human alteration of the landscape affects the natural hydrology. Several studies indicate that the presence of as little as 8-10 percent of developed lands within a watershed will negatively affect the quality of water (Arnold and Gibbons, 1996; Schueler, 1994).

Within the Susquehanna basin, more than 1,000 stream miles are classified as polluted from developed/stormwater runoff. Some of the pollution issues associated with stormwater runoff include: contaminants washed from the land surface; streambank erosion and sedimentation; overflow of raw sewage from sewer systems; increased water temperature; and increased flooding.

Impervious surfaces in developed areas prevent the natural infiltration of rainfall into the soil. This decreases the removal of pollutants by the soil and increases the volume and flow rate of surface runoff.

Overarching Issue

When rain or snow falls on land, the water returns to the hydrologic system in one of three ways: seeping into the ground to recharge the soil or groundwater; evaporating or being used by plants; or running off land and into lakes or rivers. As development occurs within a watershed, the land is less able to absorb water as impervious surfaces, like parking lots and roofs, intercept water that would typically infiltrate into the ground and funnel that water directly into streams and rivers. The intercepted water is commonly referred to as stormwater.

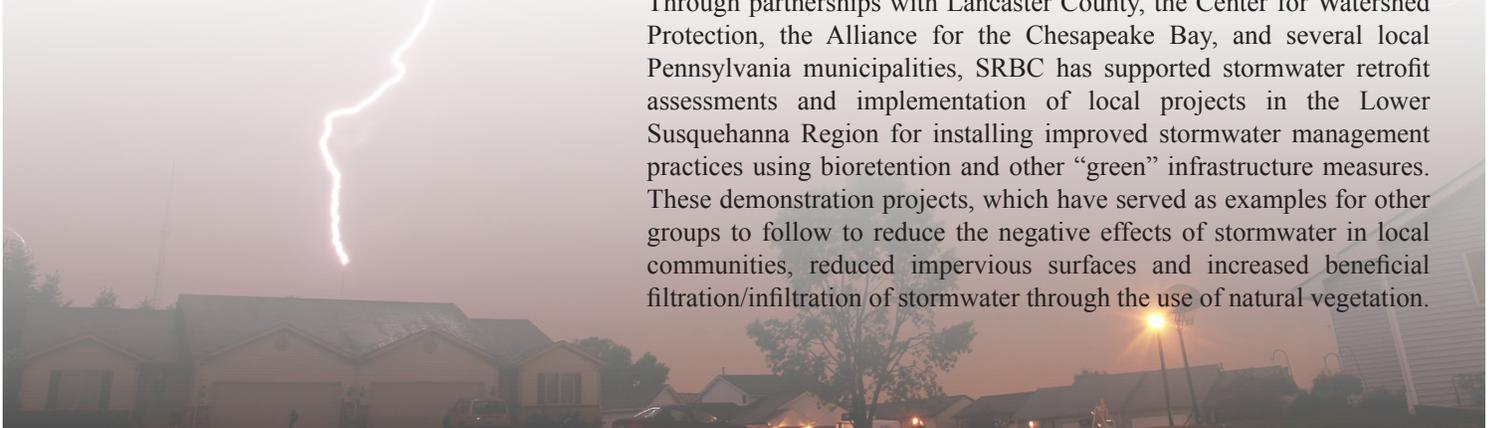
INDICATOR CRITERIA

Criteria	Assessment Period	
	2010	2012
Number of stream miles impaired by stormwater	1,120	1,150
Percent impervious cover or developed lands	7.9%	8.1%
Approximate area managed by state permits covering "urbanized areas" (Municipal Separate Storm Sewer System (MS4) Permits)	1300 sq mi	2700 sq mi
Number of precipitation-driven high flow events for the Susquehanna River above the 100,000 cubic-feet-per-second threshold over the previous two years	33	100

Data Sources: SRBC SNAP data, NY/PA/MD MS4 community data, NY/PA/MD stream impairment data, USGS land use data

PARTNERSHIPS

Through partnerships with Lancaster County, the Center for Watershed Protection, the Alliance for the Chesapeake Bay, and several local Pennsylvania municipalities, SRBC has supported stormwater retrofit assessments and implementation of local projects in the Lower Susquehanna Region for installing improved stormwater management practices using bioretention and other "green" infrastructure measures. These demonstration projects, which have served as examples for other groups to follow to reduce the negative effects of stormwater in local communities, reduced impervious surfaces and increased beneficial filtration/infiltration of stormwater through the use of natural vegetation.

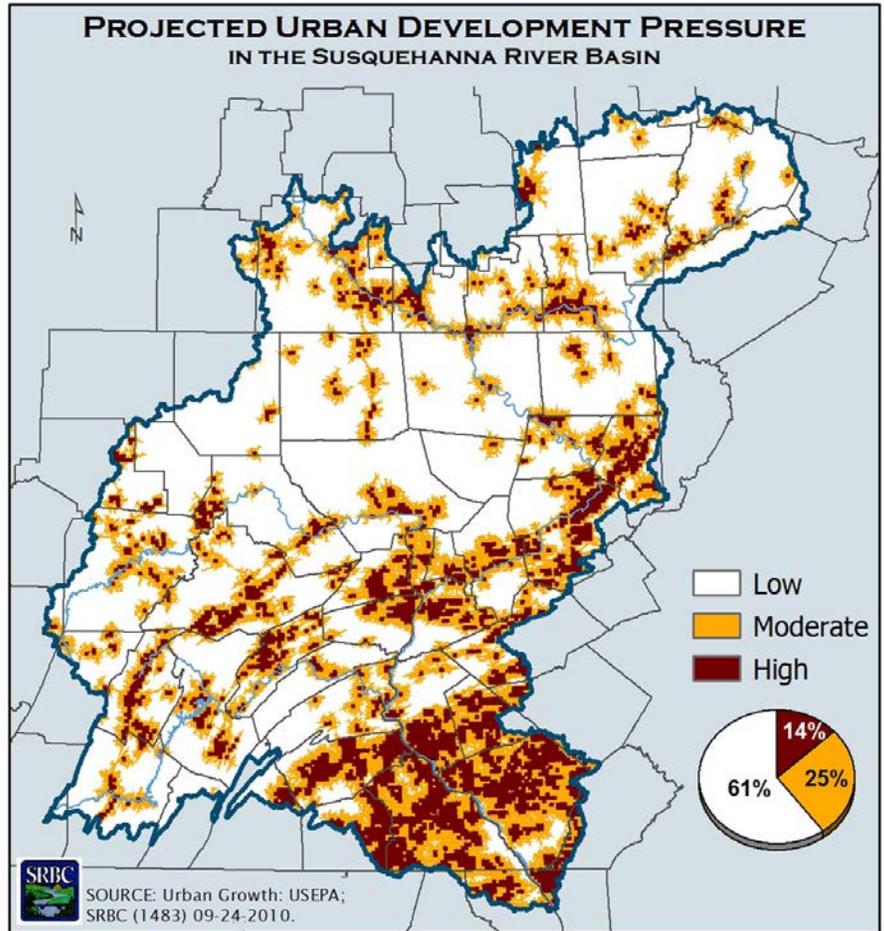


STORMWATER TIPS

Every property owner can help minimize the negative impacts of stormwater runoff. Use landscaping practices that infiltrate stormwater, and reduce or refrain from using products that can contaminate stormwater runoff.



- ◆ Plant a rain garden (above photo), which is a specially designed and strategically located garden to intercept and treat stormwater using carefully selected plants and soil medium.
- ◆ Leave a buffer strip of native vegetation (trees, bushes and other plants) along lake shorelines or streambanks.
- ◆ Prevent grass clippings and leaves from washing into the storm sewer.
- ◆ Make certain, if you use a lawn care service, that the company is not applying “blanket” applications of fertilizer and pesticides. Ask if the company has conducted soil tests and a pest analysis to determine appropriate applications.



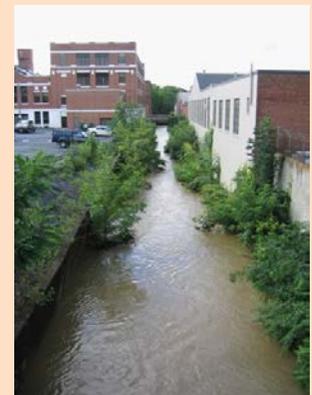
FOCUS STORY

URBAN MONITORING — CEDAR RUN AND PAXTON CREEK

Since 2006, SRBC has been conducting both chemical and biological sampling in two small urban watersheds to better understand the conditions that affect water quality within these land use intensive settings. Water quality in urban watersheds is typically affected not only by polluted runoff from impervious areas, but also by an increased concentration of industrial/commercial facilities and discharges, concrete stream channelization, runoff



from heavily treated lawns, and other issues. The Paxton Creek and Cedar Run Watersheds in the greater Harrisburg area have monitoring programs in place to track water quality conditions, and in some areas, the conditions are monitored continuously in “real-time” as well as outfitted with auto-samplers to collect water for full lab analyses during storms or when the real-time data may “trigger” an alarm. These data are critical to understanding urban watershed processes.



Urbanized channel of Paxton Creek, Harrisburg, Pa., during base flow and stormflow conditions.

Continuous water quality monitoring and water auto-sampler station in the Cedar Run Watershed.