

PAXTON CREEK REHABILITATION PROJECTS

(Stormwater Best Management Practices)

Introduction

Stormwater is the bane of Paxton Creek watershed. Excess storm runoff leads to a plethora of miseries: dried up wells due to poorly recharged aquifers; worsened flooding downstream; pollutants washed off the landscape to degrade water quality and diminish its uses; eroded lands that create gobs of sediment to clog drains, contribute to unstable waterway dams, and settle out into waters -- diminishing water depths, smothering aquatic life, and causing other problems. All of this can be legal!

Runoff occurs where water precipitation (rain, snow/hail melt) fail to infiltrate into the ground, and surface waters flow to lower elevations. Impervious surfaces (concrete, asphalt, rubber, metals, stone, even packed dirt) can result in maximum runoff. Urban and suburban areas have large amounts of impervious surfaces (IS). In 2005 Paxton Creek watershed had an average 30% IS; the Harrisburg and Penbrook subwatersheds (2 of 11) had 59% IS; Lucknow subwatershed (mostly undeveloped mountain land) had 9% IS. It took 3 major transformations of watershed development (forest, to farms, to urban and suburban land uses) to create the large amounts of IS that greatly exacerbate the problems described above, and, this pattern is repeated in thousands of communities across the nation. This is a major factor in the demise of the Chesapeake Bay, and most watersheds . . . and most of it is greatly preventable.

Strategies

Fixing Paxton Creek's main stormwater problems (runoff volumes/flow rates; pollution; insufficient infiltration) will require 5 principal action strategies: 1) embracement of a shared image of an improved watershed wanted by people -- its promise, protection, and ways to go about the improvements; 2) reduction of existing IS (decreased quantity, & making more porous), and retrofit of existing stormwater management facilities so as to enhance their performance; 3) development of new lands, and infill on existing developed lands with different approaches that create much less IS (as Low Impact Development techniques which incorporate many types of Stormwater Best Management Practices -- BMPs); 4) greatly increased local landscape infiltration, so as to decrease runoff; 5) changed practices and habits of watershed stakeholders so as to generate decreased pollution.

BMP Tours

To help implement the watershed improvement strategies, Paxton Creek Watershed and Education Association (PCWEA) offers 2 BMP tours in the watershed. Tour I is in Harrisburg and Susquehanna Township. Tour II is in Lower Paxton Township.

Similar BMP approaches are generally featured in both tours, but individual differences exist (Tour I contains more educational considerations and a brownfield site); Tour II has some unique aspects such as a rehabilitated rain garden, retrofitted detention basins, and a site with salinized soils). Site numbers are in two series: Tour I, 49 and below; Tour II, 50 and above. Site signs do not exist at all locations. Lists of the tour sites follow.

Tour I Sites and BMPs include: Harrisburg Area Community College (1A, B, C, G), PA Farm Show (2J, N [coming 2009]), Harrisburg U. S. Post Office (3L), Londonderry School (4B), State Farm Road Near Game Commission (5M), State Hospital (6C), PA State Police (7B, J), Mouth of Black Run (8D), Beaufort Plaza (9G), Capital View Commerce Center (10A, C, J [coming 2009]), and Brandywine Village (11K).

Tour II Sites and BMPs include: Kramer, Shirley, Ditty & Malfiso Dental Offices (50 B), Centennial Acres Park (51 B,C); Centennial Acres residential area (52 B, C, F. J), Office Buildings at 4775 Linglestown Road (53J), Linglestown United Methodist Church (54C), Koons Park (55 A), Linglestown Middle School (56 B), Brightbill Park (57 C, D), and Friendship Center (58 B, E, M, P).

The initial tour sites are mainly on public properties for demonstration purposes. The site BMPs are of the following types:

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| A. Bioretention Area (Garden) | H. Green Roof | P. Erosion Control |
| B. Rain Garden &/or Conservation Landscaping | I. Infiltration Terrace | Q. Porous Pavement |
| C. Riparian (Waterway) Buffer | J. Vegetated Swale | Z. Others |
| D. Stream Rehabilitation | K. Detention Basin | |
| E. BMP Retrofit (Various Types) | L. Retention Basin (Wet Pond) | |
| F. Rain Barrel | M. Gabion | |
| G. Underground Infiltration | N. Runoff Reuse | |
| | O. Rip Rap with Fascines | |

More on BMPs

Many BMPs use bioretention (porous soils, stones, vegetation, and mulch, often in ground depressions) to achieve desired results (delayed runoff, stormwater infiltration, partial removal of pollutants, and other benefits). Explanatory brochures or fact sheets, which may be downloadable, are available for some of these sites. Some good BMP practices exist in citizens' yards and grounds, but these site specifics are not provided for reasons of privacy. During special tours, these sites may be visited upon occasion, and only with permission of owners. A map shows the location of designated BMP sites. Records on each site contain the following information: BMP type, site name and location, BMP type code and individual site identification number for maps, global position system (GPS) coordinates, significant site features, brochure link (if available), and site directions. Sites that are not completed may not have pictures, and narratives may change upon project completion.

Many stormwater management measures exist throughout the watershed, but many are inadequate, and/or at individual sites they may not be best management practices as designed, installed, operated, and/or maintained.

Estimates of pollutant removal capacities, and other technical information largely exist in *Pennsylvania Stormwater Best Management Practices Manual*, 2006, Department of Environmental Protection: Harrisburg.

This list of sites is only a beginning. Hundreds of places involving projects, plus local municipal actions are necessary for significant watershed improvement. It will take decades to solve problems associated with 3 centuries of inappropriate development, and to significantly enhance watershed attributes.

Susquehanna River Basin Commission generously provides web hosting services for these Best Management Practice tours.

Paxton Creek Watershed and Education Association