

Williamsport, Pennsylvania : implementing a natural stormwater management system to alleviate combined sewer overflow issues

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Abstract:

One of the most serious injuries humans have inflicted on nature is the pollution of the earth's freshwater supply. In the United States, consistently insufficient management of stormwater runoff has led to serious combined sewer overflow issues that have worn much of the country's sewer infrastructure to the brink of collapse . Around the country, designers who attempt to address the issue by implementing new, more sustainable stormwater management practices are met with resistance by local committees and permit review boards that do not understand the need for change. The presentation of conclusive research is needed in order for decision makers at local, regional, state, and national levels to adopt sustainable stormwater management systems. This project includes comprehensive research and the development of a design in Williamsport, Pennsylvania, a city under legal obligation to improve its combined sewer overflow issues, in order to show both the environmental and economic benefits of implementing sustainable stormwater management practices in urban areas. The project will develop a natural system to improve water quality at multiple scales, including Williamsport, the Susquehanna River, and the Chesapeake Bay.

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drainage area, yet for an extreme rain event the separated systems generated outfalls peaks 18% greater than the 51 year average Creek flow, even Combined sewer systems collect stormwater and convey it in the same pipes that are used to collect sewage, sending the mixture to a municipal wastewater treatment plant. During rainfall events, combined systems, unable to handle the tremendous increase in volume, commonly overflow at designated locations, dumping a blend of stormwater and sewage into waterways. While pollution from separate sewer systems is a problem affecting a large majority of the country, pollution from combined sewer systems (CSSs) tends to be a more regional problem, concentrated in the older urban sections of the Northeast, the Great Lakes region, and the Pacific Northwest. municipalities to develop a stormwater management plan. entering the system. However, approximately one-fifth of. Higher Taxes The stormwater issue is now serious enough to result in each of us paying more in federal, state and sometimes local taxes to pay for it. Some of these costs include: • the federal effort for redefining flood plains, which is so important to our safety These areas still often flood despite man's best attempts to alleviate the flooding, because they were in a natural floodway. Hard packed or cobbled streets and other early impervious areas were the first generators of higher levels of stormwater than would be naturally found in a forested or farmed area. To alleviate the flooding of these fill areas and the areas downstream where water levels were now higher due to the displacement, early engineers began building piped drainage systems. 1 The sewer systems most overloaded by storm flows are known as combined sewer systems and the overflows as combined sewer overflows. These systems were designed with one common set of underground pipes and conveyances for sanitary and storm water. Thus, when it rains or when there is snowmelt, combined sewer systems can become over-loaded. Agency, Stormwater Discharges from Municipal Separate Storm Sewer Systems, <http://cfpub.epa.gov/npdes/stormwater/munic.cfm> (last visited Jan. 8, 2010) (discussing EPA stormwater regulations for large and small cities). 2010]. Green Infrastructure as a Means of Alleviating Urban Poverty. Small scale projects have been effectively implemented and. 79 Combined Sewer Overflow Policy, 59 Fed. Reg.