Pennswood Village

Bucks County, PA (2002)

Background:

Pennswood Village is a retirement community situated on 82 acres. The site is part of the Neshaminy Creek watershed, a sub-watershed of the Delaware River (approximately 233 square miles in size that encompasses portions of central and lower Bucks and Montgomery counties in Pennsylvania). Over the past few decades, it has become increasingly developed through the conversion of farm lands into residential and commercial properties.

In response to a major flood in June 1996, Middletown Township commissioned a regional stormwater study to identify problem areas, one of which was the area downstream of Pennswood Village. The flood caused the existing 17-foot-deep detention basin on the property to overflow, severely damaging a recently opened health center and many other properties downstream of the retirement village. In order to address this problem, contractors for Pennswood Village created a stormwater management system that mimics a natural riparian stream corridor channel. It uses a number of BMPs linked in a specific series of passive operation. The efficiency of individual BMPs was increased by creating a routing system that integrated a series of hydrologically linked BMPs, thereby creating a pollutant removal train. Each BMP was sized and located to address a specific stormwater management issue. The alignment and grading of the swales, basins, and wetlands, combined with the careful selection of native grasses, shrubs, and trees, diminishes the velocity of the runoff, biofilters and settles pollutants, and creates opportunities for groundwater recharge.

Monitoring:

The result of this project is a highly functional stormwater management system on 8 acres that exceeded the township's stormwater management requirements while providing an attractive environment for the community. The system attenuates peak flows, promotes groundwater recharge, and passively removes pollutants through a combination of filtering, settling, and biological treatment mechanisms. It also provides opportunities for recreation, education, and the appreciation of nature, and uses species native to the area.

Conclusions:

The award winning design achieved preservation of the historical landscape character, avoided development on former farmland, and preserved open space. The stormwater system is functioning so well that it also is carry 50% of the runoff from 2 adjoining school properties (Newtown Friends and the George School). Since the installation of this system back in 2002, no runoff has been reported from the property reaching the adjacent creek, even in heavy storm events. There is, however, no monitoring plan in place to demonstrate that no runoff is occurring or to verify that the storage capacity of this system is capable of handling large scale storm events. Nonetheless, this project serves as an example of successful and attractive community stormwater management.