Green Infrastructure & Stormwater Management CASE STUDY

Village of Greenwood Lake Stormwater Management Plan

Location: Village of Greenwood Lake, Orange County, NY
Client: Village of Greenwood Lake
Design Firm(s): Lehman & Getz Engineering, P.C. & Karen Arent, Landscape Architect
Landscape architect/Project contact: Karen Emmerich, AICP
Email: karen@lehmangetz.com
ASLA Chapter: New York

Photo: Lehman & Getz Engineering, P.C.

Project Specifications

Project Description: The Village of Greenwood Lake upgraded its current Village Complex by reducing impervious surfaces, incorporating pervious pavers, constructing a rain garden, a vegetated swale, and a green screen to reduce localized flooding and to reduce the impact of stormwater on the water quality of Greenwood Lake. By taking a leadership role in responsible site design, and demonstrating green, innovative strategies that can be used by commercial

property owners and homeowners alike, the Village Trustees believed that residents would be encouraged to follow suit and implement small scale projects on their own properties. This project was a demonstration that stormwater management can be effective as well as attractive.

Project Type:
Government complex
A retrofit of an existing property

Design features: Rain garden, bioswale, downspout removal, porous pavers, and curb cuts. Native plantings and trees were used throughout the site's redevelopment, not just for the stormwater practices.

This project was designed to meet the following specific requirements or mandates: State statute, to assist the Village in complying with NYS MS4 SPDES permit

Impervious area managed: 5,000 sq/ft to 1 acre

Amount of existing green space/open space conserved or preserved for managing stormwater on site: greater than 5 acres. Green space was created at this site in lieu of impervious pavement.

The regulatory environment and regulator was supportive of the project.

Did the client request that other factors be considered, such as energy savings, usable green space, or property value enhancements? Yes. The goal was to reduce runoff, thereby reducing localized flooding, and reducing the pollutant loading to nearby Greenwood Lake, which is a priority waterbody with a TMDL (total maximum daily load) requirement for phosphorus. An added benefit was creating green space that is now a pocket park where there once was a generator, dumpsters, and an asphalt parking lot.

Cost & Jobs Analysis

Estimated Cost of Stormwater Project: $100,000-$500,000 (Public funding: Federal, local, ARRA funds, plus local match (10%))

Was a green vs. grey cost analysis performed? No

Cost impact of conserving green/open space to the overall costs of the site design/development project: Creating green space was estimated to be less costly and more aesthetically appealing than installing grey infrastructure.

Cost impact of conserving green/open space for stormwater management over traditional site design/site development approaches (grey infrastructure)? Slightly reduced costs (1-9% savings).

Number of jobs created: 9

Job hours devoted to project:

Planning and Design: 160
Construction: 9,000
Annual Maintenance: Unknown at this point

Performance Measures

Stormwater reduction performance analysis:

Overall impervious surface area removed = 30% Site perviousness increased from 10% to 58%.

Community & economic benefits that have resulted from the project: This project addresses a seasonal flooding problem in the center of the Village. It also serves as a means to reduce the excessive amount of impervious area surrounding the Village Hall and Police Station which was contributing to the flooding problem. By slowing the flow and redirecting the runoff into the ground via the pervious pavers, the rain garden and the vegetated swale, the Village is demonstrating an alternative method of capturing and filtering stormwater runoff. An added benefit was the creation of green space between Village Hall and the Police Station, with abundant native landscaping that enhances the Village's property. The project also serves as a green infrastructure demonstration project for Orange County, NY, and is a teaching tool for the local elementary school, Village residents, and visitors.

Project Recognition

Additional Information

Links to images:

http://www.ocsoil.org/GreenInfrastructure/GreenwoodLakeRainGardenPhotos.pdf