



# Green Infrastructure & Stormwater Management CASE STUDY

---

## Gowanus Canal Pilot Streetend Sponge Park™

**Location:** Brooklyn, New York, NY

**Client:** New England Interstate Water Pollution Control Commission

**Design Firm(s):** DLandstudio LLC

**Landscape architect/Project contact:** Susannah C. Drake, RLA, ASLA

**Email:** [sdrake@dlandstudio.com](mailto:sdrake@dlandstudio.com)

**ASLA Chapter:** New York

### Project Specifications

**Project Description:** The Gowanus Canal Sponge Park™ is a multifunctional public open space system that slows, absorbs and filters surface water runoff to remediate contaminated water, activate the private canal waterfront, and revitalize the neighborhood. Our proposal communicates a larger vision for environmental stewardship to a broad community through productive landscape strategies, collaboration among public and private constituencies, and an interactive design process that incorporates the input of residents, community groups, and city, state, and federal agencies. A pilot street-end park is currently being designed to be constructed in 2011.

#### Project Type:

Open space - park

A retrofit of an existing property

**Design features:** Bioswale and curb cuts. The pilot street-end Sponge Park is a series of planted basins within the street-end that collect, treat and release stormwater. The stormwater management system combines the street-end bioretention facility with an upland sidewalk swale strategy to maximize the water detention and treatment volumes.

**This project was designed to meet the following specific requirements or mandates:** US Environmental Protection Agency, NYS Department of Environmental Conservation, NYC Department of Environmental Protection, NYC Department of Transportation, NYC Department of Parks and Recreation, USACE

**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:** The Gowanus Canal Pilot Street-end Sponge Park, retrofits existing impervious street-end and sidewalks into a new green and public open space that did not exist prior to implementation.

**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?** Working with the community groups and various City, State and Federal agencies, dlandstudio worked to develop an open space system that considered the larger sewer-shed capacity and community need for open space. Work on the pilot project enhances the existing condition at the street-end by seamlessly incorporating the new stormwater management facility to complement the existing use of the street-end as a community boat launch. DLandstudio met with community members to discuss potential short and long term improvements to the street-end park as it emerges as a public amenity for the general public.

## Cost & Jobs Analysis

**Estimated Cost of Stormwater Project:** \$500,000-\$1,000,000 (Public funding: Federal, state, local, (DLandstudio contributed significant pro-bono services to developing the project))

**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:** Utilizing existing open space for stormwater management saves grey infrastructure costs such as upgrading New York City's aging combined stormwater and sewer system.

**Cost impact of conserving green/open space for stormwater management over traditional site design/site development approaches (grey infrastructure)?** Significantly reduced costs (10% or greater savings)

**Number of jobs created:** Projected to create multiple jobs in design, construction, scientific monitoring and long term maintenance.

### Job hours devoted to project:

Planning and Design: Estimated at 2,700 plus hours

Construction: Estimated duration of 4 months

Annual Maintenance: Estimated at 96 hours including monitoring

## Performance Measures

### Stormwater reduction performance analysis:

The project will be designed and engineered to capture 1.2" of rainfall or 90% of storms in NYC based on NYS Department of Environmental Conservation.

**Community & economic benefits that have resulted from the project:** Gowanus Canal Street-end Sponge Park™ provides environmental, community, educational and economic benefits as a result from a site specific design process. dlandstuido's vision requires coordination from the community, city, state and federal agencies throughout the design development and construction. The development of inter-agency and community relationships resulted in awarding of local, state and federal funding designated to improving the water quality of Gowanus Canal.

Years of exposure to industrial waste and water pollution classified the Gowanus Canal as a New York State Saline Surface Water Quality Standard Class SD. Class SD water bodies are identified as dangerously polluted areas where activities such as fishing, swimming, and secondary contact are discouraged. This poor water quality is exacerbated by a lack of maintenance of the canal bulkhead, high clean up costs, and minimal private investment.

New York City has a combined sewer system. During storm events, rain falling within the Bergen watershed enters the storm drains and mixes with raw sewage in the sanitary sewer system. During heavy rainfall, the combined sewage and stormwater overflow directly into the Gowanus Canal. The Sponge Park™ master-plan proposes diverting surface water runoff into a water management system and publicly accessible park that includes programmed urban outdoor space and vegetated landscape buffers to slow, absorb and filter the contaminated water, reduce the input of storm water into the sewer system, and create an accessible public waterfront.

Recently, the U.S. Environmental Protection Agency began designated the Gowanus Canal as a Superfund site and released their Remedial Investigation Report. EPA has identified the Combined Sewer Overflows (CSO) as a current contamination source. EPA Remedial Manager for Gowanus Canal supports the street-end Sponge Park project as a strategy to improve the canal water quality by reducing Combined Sewer Overflows (CSO) discharges. The environmental benefits include decrease in effluent release into the canal and creation of micro habitat adjacent to a water body.

The Sponge Park™ master-plan proposes a strategy of urban stitching, connecting the public and private lands adjacent to the water, to create a continuous esplanade with recreational spaces spanning 1.5 miles along the canal. Existing public street-ends serve as public entry nodes enabling public access to the esplanade and to the waterfront, as well as providing an open space network for community oriented programs such as dog runs, community gardens, public exhibition spaces, and temporary markets. The proposed total area for the Gowanus

Canal Sponge Park™ is 11.4 acres: 7.9 acres of esplanade and recreational open spaces, and 3.5 acres of remediation wetland basins. This master-plan has been used as a model for basis of current community organizations' efforts to improve the environmental conditions of the Gowanus Canal. The masterplan also recognizes the cultural context of current and future resources by linking important historic sites, recreation areas, and neighborhood facilities. Important sites include the currently inaccessible Revolutionary War Memorial at the head of the canal, the Old Stone House in J.J. Byrne Park which was once connected by water to the Gowanus Canal, Thomas Green playground, Gowanus Dredgers boathouse & launch, and the historic waterfront itself. The use of remediation wetlands recognizes the natural history of the Gowanus watershed as a wetland creek. While the former marsh will not be restored to its 17th century state the plant communities and processes that historically helped control flooding and kept the Gowanus Bay clean will be reintroduced in a 21st Century adaptation.

Public education is an integral part of the project as community input and environmental awareness is critical to the successful implementation and function of the park. The park will have an educational sign for public to explain the storm-water management strategies employed in the park. The public and private relationship structure used in the project creates environmental stewardship for the community through providing opportunities for the public to participate in the care of the built and natural environment.

## Project Recognition

ASLA National Honor Award, Analysis and Planning, 2010; ASLA New York Chapter, Un-built Works, Merit Award, 2008; AIA National Honor Award, Regional and Urban Design, 2011, AIANYS, Award of Merit, Un-built, 2009; Chicago Athenaeum & European Centre for Architecture Art Design & Urban Studies, American Architecture Award, 2009, Boston Society of Architects, Award for Urban Regeneration, 2009, Green Dot Awards: Service Category, Honorable Mention, 2009; Topos. Volume 68 "Sponge Park, New York City."09/2009 WCBS TV News "Polluted Gowanus Canal Might Get Needed Makeover."07/28/2009 The Brooklyn Eagle " 'Sponge Park' for Gowanus Gets Support – but Money?"02/05/2009 The New York Sun "The Smell of Gowanus Canal May Be Sponged Away"07/03/2008 Brooklyn Daily Eagle "Gowanus Group's Sponge Parks Honored by AIA, ASLA"06/23/2008 The Brooklyn Paper "Sponge on the Canal"04/26/2008 www.Gothamist.com "Gowanus Canal's Sponge Park Renderings"04/23/2008 The Brooklyn Paper "Sponge Bob unveils canal park"04/19/2008 www.Brownstoner.com "Gowanus Group Proposes 'Sponge Park' to Soak Run-Off "04/16/2008

## Additional Information

Links to images: <http://www.dlandstudio.com/> <http://www.spongepark.org/>

It is important to recognize how significant development of the Gowanus Canal Sponge Park™ is to the future of urban infrastructure development. Water management within the Sponge

Park™ design is based on reconfiguration of sewer and stormwater systems to reduce reliance on expensive engineered solutions that do not include generative vegetal and biological structures. In addition to its economic benefits, the Sponge Park™ system integrates stormwater management with the cultural context of important historic sites, recreation areas, and neighborhood facilities in a way that creates programmable urban open space while improving the environment. This environmental urbanism is a synthetic idea that can be implemented across the country. It is applicable to mature cities whose infrastructure is taxed by age and growth as well as in areas where industrial development has left behind inhospitable toxic landscapes. With the Sponge Park™, consideration of the environment becomes an integral part of the way the system functions. The flexible program of public spaces allows adaptation to site-specific program needs, and adds accessible urban open space to underserved neighborhoods. The design proposes realistic strategies for fixing broken infrastructure in a manner that supports the promise of a cleaner future.