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## Department of Environmental Protection Completes Installation of Green Infrastructure in East New York That Will Improve Water Quality in Fresh Creek and Jamaica Bay

### Green Infrastructure Will Manage Stormwater and Beautify the Neighborhood as Part of an Effort to Reduce Combined Sewer Overflows into Fresh Creek and Jamaica Bay

New York City Department of Environmental Protection (DEP) Commissioner Carter Strickland today announced that the recently completed installation of a Green Infrastructure Neighborhood Demonstration Area in East New York, Brooklyn, will prevent nearly four million gallons of stormwater from reaching the combined sewer system each year. As part of the \$880,000 project, DEP constructed 29 bioswales, elongated tree pits that collect and absorb stormwater from the street and sidewalk, and two stormwater greenstreets, along Junius Street and Powell Street from East New York Avenue to Belmont Avenue. In addition, this area, which has been identified by the Department of Parks and Recreation as a Trees for Public Health Neighborhood due to less than average street tree counts and higher than average rates of asthma among young people, will benefit from the addition of the 29 new trees. The increased tree canopy will clean the air, provide shade during hot summer months, and beautify the neighborhood. The Demonstration Area is the first of three that will be completed pursuant to a March 2012 Modified Consent Order with The New York State Department of Environmental Conservation (DEC), which formalized the City's inclusion of green infrastructure as an important component of its plan to

More Information

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reduce combined sewer overflows (CSOs) and improve the ecological health and cleanliness of New York City harbor water. Similar Demonstration Areas in the Newtown Creek CSO tributary area in Brooklyn and Hutchison River CSO tributary in the Bronx will be completed later this year.

“The East New York Demonstration Area is a terrific example of the dual benefits that green infrastructure can bring to a community,” said DEP Commissioner Strickland. “Local residents will benefit from the greening of their neighborhood and all New Yorkers will enjoy a cleaner and healthier Jamaica Bay.”

“Converting the city’s impervious neighborhoods to a more natural and absorbent landscape integrates water quality and ecological benefits for a more sustainable community,” said NYS Department of Environmental Conservation Commissioner Joe Martens. “NYSDEC enthusiastically supports these GI demonstration projects that provide the City an opportunity to monitor the performance of bioswales constructed under the 2012 Modified Consent Order as one stormwater source control technique for CSO abatement and to determine their cost effectiveness as an adaptable element of the City’s future CSO Long Term Control Plans.”

“NYC Parks works closely with DEP to make East New York and the areas beyond it healthier and more beautiful through joint efforts and the latest techniques,” said NYC Parks Commissioner Veronica M. White. “We will continue to create and design great green infrastructure improvements that benefit the public.”

“It’s a great program—a win-win for the local community and Jamaica Bay,” said Don Riepe, Jamaica Bay Guardian / American Littoral Society.

“As a matter of public policy, it is important for our city to invest in sustainable projects that improve health outcomes and protect our environment in a cost efficient manner,” said Council Member Erik Martin Dilan. “This project meets those criteria. It is my pleasure to be associated with initiatives that can effect real change in the quality of life of my constituents and the environment we are tasked with preserving.”

“With the installation of the bioswales, we look forward to improved street drainage, cleaner air, and a greener community,” said Viola Greene-Walker, District Manager of Community Board 16.

“As the oldest industrial BID in New York City, we are pleased to participate and partner with DEP in this environmental friendly initiative,” said East Brooklyn Business Improvement District Manager William Wilkins. “Not only will it reduce the amount stormwater runoff going into the combined sewer system but it’s a step in the right direction towards beautification of an at-risk community”

The neighborhood Demonstration Areas, including the one in East New York, were developed in order to collect and analyze data on CSO volume reductions from green infrastructure projects, and the other associated benefits of the installations on a multi-block scale. The data collected from each of the three Demonstration Areas will then be extrapolated for calculating and modeling green infrastructure water quality and cost-benefit data on a waterbody and citywide basis.

The East New York Demonstration Area is located in a mixed use neighborhood with approximately 2,300 residents as well as industrial, manufacturing, transportation, and utility facilities. It is an approximately 23 acre drainage area that is served by combined sewers. The sewer lines from the four block long by two block wide area drain to a single point, located at the intersection of Belmont Avenue and Junius Street, where they combine to form a single 24-inch sewer that conveys both sanitary and stormwater flow towards the 26th Ward Wastewater Treatment Plant.

Prior to the installation of the green infrastructure, in October 2011, DEP installed depth and flow monitoring devices in the sewer pipe where it exits the

demonstration area at Belmont Avenue and Junius Street. Normal and peak flow levels have been collected continuously in the sewer pipe over the last fifteen months to provide pre-construction, or baseline, flow data. Now that the green infrastructure projects are complete, the pre-construction flow data will be compared to the post-construction flow data. This comparison analysis will allow DEP to determine how much stormwater the green infrastructure is keeping out of the sewer system during wet weather.

Bioswales differ from standard street tree pits in that they are significantly larger, have curb cuts that allow stormwater to enter and exit, and have been designed in a way that will allow them to manage approximately 2,244 gallons each during a storm. During construction they were excavated to a depth of five feet and were backfilled with layers of broken stone and engineered soil. These layers contain void spaces which store stormwater and promote infiltration. The addition of hardy plants will further encourage infiltration through root growth and increase the capacity of the bioswale through evapotranspiration. To better understand how the design of each bioswale influences its ability to absorb stormwater, five have been outfitted with monitoring equipment. A pressure transducer will monitor how effectively the surface storage capacity is being utilized and piezometers will be buried at alternate depths to evaluate how much water the broken stone and permeable soil layers can retain. To view a video of a bioswale absorbing stormwater go [here](#).

Stormwater greenstreets are the next evolution of the popular Greenstreets Program managed by the Department of Parks and Recreation. Similar to bioswales they feature inlets, broken stone, engineered soil and hardy plants to collect and absorb stormwater from the street and sidewalk. They are slightly larger than bioswales and are built in underutilized roadbed areas along the curb. DEP provides funding for Department of Parks and Recreation crews to maintain all bioswales and stormwater greenstreets.

Since 2002, DEP has invested more than \$10 billion in upgrades to wastewater treatment plants and related efforts to reduce CSOs and the cleanliness and health of New York City harbor water continues to improve to levels not seen in more than a century. However, CSOs remain the city's major harbor water quality challenge. As further "grey" infrastructure upgrades became increasingly expensive and the resulting level of water quality improvements diminished, in 2010 DEP launched the Green Infrastructure Plan, an alternative approach to improving water quality that combines traditional infrastructure upgrades and the integration of green infrastructure to capture and retain stormwater runoff before it ever enters the sewer system. Over the next 20 years, DEP is planning for \$2.4 billion in public and private funding for targeted green infrastructure installations, as well as \$2.9 billion in cost-effective grey infrastructure upgrades, to reduce CSOs by 40%. Thus far DEP has installed 43 bioswales city-wide, 65 bioswales and nine stormwater greenstreets are currently under construction, hundreds are planned to be completed by the end of 2013, and thousands more will be added over the next five years.

DEP manages New York City's water supply, providing more than one billion gallons of water each day to more than nine million residents, including eight million in New York City. The water is delivered from a watershed that extends more than 125 miles from the city, comprising 19 reservoirs and three controlled lakes. Approximately 7,000 miles of water mains, tunnels and aqueducts bring water to homes and businesses throughout the five boroughs, and 7,500 miles of sewer lines and 96 pump stations take wastewater to 14 in-city treatment plants. DEP has nearly 6,000 employees, including almost 1,000 in the upstate watershed. In addition, DEP has a robust capital program, with a planned \$14.4 billion in investments over the next 10 years that will create up to 3,000 construction-related jobs per year. For more information, visit [nyc.gov/dep](http://nyc.gov/dep), like us on Facebook at [facebook.com/nycwater](https://www.facebook.com/nycwater), or follow us on Twitter at [twitter.com/nycwater](https://twitter.com/nycwater).

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