

Home

Customer Services

» Ways to Pay Your Bill

» Account Information

» Customer Assistance

» Service Line Protection Program

» Water Rates

» Property Managers & Trade Professionals

Water Utilities

» Drinking Water

» Wastewater

» Stormwater

» Harbor Water

» Long Term Control Plan

The Watershed

» Watershed Protection

» Watershed Recreation

Citywide Initiatives

» Regulatory Reform

» Environmental Education

» Conservation Programs

» Air Pollution Control

» Noise Codes & Complaints

Business and Professionals

» Forms & Permits

» Economic Development Unit

» Doing Business with DEP

» Asbestos Abatement

» Construction, Demolition & Abatement

About DEP

» Inside DEP

» News

DEP Featured In...

Stories from DEP

Press Releases

Public Notices

Testimony and Public Comments



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Department of Environmental Protection Announces Nitrogen Reduction Project Given top Honors at American Council of Engineering Companies of new York’s 2013 Engineering Excellence Awards

**Innovations in Treatment have Reduced Nitrogen
Discharges from 26th Ward Wastewater Plant by More
Than 3,000 Pounds Each Day**

**DEP Has Committed more than \$100 Million to Reduce
Nitrogen Discharges from the Four Wastewater Treatment
Plants on Jamaica Bay by 50% Over Next Ten Years**

New York City Environmental Protection (DEP) Commissioner Carter Strickland today announced that DEP received a top honor at the 2013 American Council of Engineering Companies of New York’s (ACEC New York) 46th annual Engineering Excellence Awards. DEP, and two of its research consultants, Hazen and Sawyer, P.C. and CH2M Hill New York, received ACEC New York’s *Empire Award* for research and development of cutting edge nitrogen removal technology at the 26th Ward Wastewater Treatment Plant. The \$2 million joint research and development project resulted in advances to the wastewater treatment process that has reduced nitrogen discharges from the plant into Jamaica Bay by more than 3,000 pounds each day. ACEC’s Empire Award is given to the highest rated project in New York State based on contributions to the economic health of an area, sustainability, innovation, and creativity. DEP’s work was led by Deputy Commissioner Vincent Sapienza, Allen Deur, and Keith Beckmann.

More Information

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» [Capital Projects](#)




» [Careers at DEP](#)


» [Environmental Reviews](#)

» [Interagency MOUs](#)

» [A to Z Index](#)

» [Contact Us](#)





“Across DEP we are focused on new ways to tackle old challenges and we are honored to be recognized by the American Council of Engineering Companies for this innovative and cost-effective solution to nitrogen removal,” said Commissioner Strickland. “We need new technology and business approaches if our employees are going to continue to keep the Harbor clean at an affordable cost.”

Nitrogen is a naturally occurring element that is found in food and other organic materials and is present in wastewater when it enters treatment plants. Because nitrogen is not a pathogen and poses no threat to human health, the wastewater treatment plants were not originally designed to remove it from the treated water before it is discharged into the receiving water body. However, high levels of nitrogen can degrade the overall ecology of a waterway by reducing levels of dissolved oxygen and promoting excessive algae growth, especially in warm weather months.

Nitrogen is present in wastewater in the form of ammonia, which is broken down during the secondary treatment process. The nitrogen reduction technology at the 26th Ward Wastewater Treatment Plant, the first of its kind in the world, removes nitrogen from the treated water by adding glycerol, a high carbon biological byproduct of biodiesel production that is non-hazardous and non-flammable, to a dedicated separate centrate aeration tank at the plant. The discovery of this nitrogen removal process helped DEP avoid having to develop a \$30 million ammonia recovery system or introduce the more commonly used chemical, methanol, which is highly toxic, flammable, and can be hazardous to wastewater treatment plant operators. In total, the new system reduces nitrogen discharges at the plant by more than 3,000 pounds.

The 26th Ward Wastewater Treatment Plant went into operation in 1944 and serves more than 283,000 residents. Located in eastern Brooklyn, it treats up to 85 million gallons of wastewater a day and up to 170 million gallons during wet weather events. New Yorkers produce, and DEP treats, an average of 1.3 billion gallons of wastewater every day. The wastewater is collected through 7,400 miles of lateral sewers that flow downhill by gravity or pumping into large interceptor sewers, which lead directly to the city's 14 wastewater treatment plants.

Jamaica Bay is a 31-square-mile water body with a broader watershed of approximately 142 square miles, which includes portions of Brooklyn, Queens, and Nassau County. The bay is a diverse ecological resource that supports multiple habitats, including open water, salt marshes, grasslands, coastal woodlands, maritime shrublands, and brackish and freshwater wetlands. These habitats support 91 fish species, 325 species of birds, and many reptile, amphibian, and small mammal species. Jamaica Bay is one of the City's most unique natural environments and restoring it is a top priority for the Bloomberg Administration. DEP has committed more than \$100 million to reduce nitrogen discharges from the four wastewater treatment plants on the Bay by 50% over the next ten years and nearly \$20 million to wetland restoration projects.

DEP is also investing more than \$1 billion to reduce nitrogen discharges from the four Upper East River wastewater treatment plants - Bowery Bay, Hunts Point, Tallman Island, and Wards Island - which will reduce total nitrogen discharges from the four plants by more than 52 percent. The work is being funded by DEP and is the result of an agreement between DEP, the Office of the New York State Attorney General, and the New York State Department of Environmental Conservation (DEC).

Activating these advanced treatment technologies is a key component of DEP's *Strategy 2011-2014*, a far-reaching strategic plan that lays out 100 distinct initiatives to help make it the safest, most efficient, cost-effective, and transparent water utility in the nation.

In addition to reducing nitrogen discharges, since 2002 DEP has invested approximately \$10 billion in wastewater treatment plant upgrades to increase

capacity and reduce combined sewer overflows (CSO). Capital investments have included the construction of four CSO storage facilities with the capacity to hold approximately 120 million gallons of wastewater until it can be properly treated. These storage facilities reduce CSOs by more than 2.7 billion gallons annually. Conservation methods, improved operational practices, and regular cleaning of interceptor sewers have also reduced CSO volumes. Last year, DEP completed a two-year cleaning of the city's largest interceptor sewer pipes using vactor trucks, removing more than 29 million pounds of debris and sediment and reducing CSO discharges by more than 100 million gallons annually. Since then, DEP has continued the process of inspecting and cleaning these sewers using other methods which have combined to remove an additional one million pounds of debris. Under the NYC Green Infrastructure Plan launched by Mayor Bloomberg in 2010, DEP will also invest more than \$187 million over the next three years and an estimated \$2.4 billion of public and private funds by 2030 to reduce CSOs by capturing stormwater before it ever enters the city's combined sewer system.

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 billion in investments over the next 10 years that will create up to 3,000 construction-related jobs per year. This capital program is responsible for critical projects like City Water Tunnel No. 3; the Staten Island Bluebelt program, an ecologically sound and cost-effective stormwater management system; the city's Watershed Protection Program, which protects sensitive lands upstate near the city's reservoirs in order to maintain their high water quality; and the installation of more than 820,000 Automated Meter Reading devices, which will allow customers to track their daily water use, more easily manage their accounts and be alerted to potential leaks on their properties. For more information, visit nyc.gov/dep, like us on Facebook at facebook.com/nycwater, or follow us on Twitter at twitter.com/nycwater.

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