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$1 Billion Nitrogen Reduction Project Improves the Health of the East River and Long Island Sound

Upgrades to Four Wastewater Treatment Plants Reduce Nitrogen Discharges by 60 Percent, Increase Dissolved Oxygen Levels and Improve the Ecology of the Waterways

Photos of the Upgrades and a Map are Available on DEP's Flickr Page

New York City Department of Environmental Protection (DEP) Acting Commissioner Vincent Sapienza today announced that following a $1 billion investment in upgrades at four wastewater treatment plants, the amount of nitrogen being discharged into the Upper East River has been reduced by more than 60 percent. These significant upgrades will improve the health and ecology of the East River, Long Island Sound and New York Harbor.

"Ensuring the proper collection and treatment of wastewater is essential to protecting public health and our local waterways," said **DEP Acting Commissioner Vincent Sapienza**. "New York City has invested more than $1 billion and has been a regional leader in nitrogen removal, ensuring that Long Island Sound, the East River and all of New York Harbor are healthy and clean. I'd like to thank all of our partners that are committed to protecting the environment and recognize DEP's scientists, engineers and planners that made these complex upgrades while ensuring New York City's wastewater treatment plants continued to operate around the clock."

"The work New York City has done to upgrade sewage treatment plants has helped reduce the amount of nitrogen going into the East River and the Long

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Island Sound," said **Judith A. Enck, Environmental Protection Agency Region 2 Administrator**. "State and local governments need to continue to invest in treatment plants, and communities need to reduce pollution from septic systems and fertilizers, which also degrade water quality in Long Island Sound. We recognize New York City's efforts to reduce nitrogen and expect more of these important water infrastructure projects to keep taking place in the near future."

"I congratulate DEP for achieving this important clean water milestone for the East River, Long Island Sound, and New York Harbor," said **New York State Attorney General Eric T. Schneiderman**. "This achievement reflects years of collaborative effort by my office, the State DEC, and New York City DEP to reduce the nitrogen pollution discharged by the City's wastewater treatment plants. We look forward to continuing this collaboration and sustaining progress in improving the health and cleanliness of waters that surround the New York City area."

"This $1 billion capital upgrade to our wastewater facilities will help protect our city's greatest resource—our waterways. With this essential nitrogen reduction project, our city is continuing to be a leader in protecting our environment and our ecological resources," said **City Council Member Costa Constantinides, Chair of the Council's Environmental Protection Committee**. "I thank DEP Acting Commissioner Vincent Sapienza for his leadership on this important issue."

"New York City's residents, fish and wildlife will all reap the benefits from the clean water investments announced by the Department of Environmental Protection today" said **Robert Pirani, Director of the New York-New Jersey Harbor & Estuary Program at the Hudson River Foundation**. "The vitality of our waterways depends on realizing nutrient reduction, stormwater management, and other commitments to clean water by the City and its State and federal partners."

"Nitrogen overload from inadequate wastewater treatment has been wreaking havoc on ecosystems such as Long Island Sound and the East River, causing algal blooms and major wildlife die-off events," said **Marcia Bystryn, President of the New York League of Conservation Voters**. "We are pleased to see New York City's Department of Environmental Protection taking the lead with a significant investment to upgrade its facilities, protecting our fragile waterways from further damage and creating the conditions for them to bounce back."

"The flora and the fauna of our harbor and waterways (especially the millions of humans that use and enjoy our waters) can rejoice because DEP is meeting its goals to reduce nutrient pollution," said **Roland Lewis, President and CEO of the Metropolitan Waterfront Alliance**. "Continuing to invest in our infrastructure —green and grey—will support the dream of a fishable, swimmable New York Harbor, the ultimate goal of the Clean Water Act."

In total, New York City produces, and DEP collects and treats, an average of 1.3 billion gallons of wastewater each day. The wastewater travels through the City's 7,500 mile sewer system until it reaches one of 14 wastewater treatment plants, where it is treated to federal and New York State water quality standards in accordance with the Clean Water Act before it is discharged into local waterways.

Nitrogen is a naturally occurring element that is found in food and other organic materials and is present in wastewater when it enters the treatment plants. Because nitrogen it 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 a receiving waterbody. However, more recent scientific research has found that high levels of nitrogen can degrade the overall ecology of a waterway by promoting excessive algae growth that can reduce levels of dissolved oxygen, especially in warm weather months.

As part of an agreement with the New York State Department of Environmental

Conservation (DEC) and the New York State Attorney General, DEP committed to reducing the combined nitrogen discharges from its wastewater treatment plants located along the East River by 58.5 percent by January 2017. And, as of September 2016, nitrogen discharges from New York City wastewater treatment plants to the East River have been reduced by approximately 61 percent. The capital investments include:

- $277 million at the Hunts Point Wastewater Treatment Plant
- $388 million at the Wards Island Wastewater Treatment Plant
- $209 million at the Tallman Island Wastewater Treatment Plant
- $161 million at the Bowery Bay Wastewater Treatment Plant

The introduction of nitrogen removal technology, which converts the organic nitrogen present in wastewater into inert nitrogen gas that is released harmlessly into the atmosphere, required significant upgrades to much of the plants' supporting infrastructure. Some of the work included new or upgraded electrical substations, aeration systems, and sludge pumping systems. In addition, some facilities saw the installation of new sluice gates, mixers, diffusers, froth hoods, blowers, and surface wasting systems. In addition to reducing the amount of nitrogen discharged from the plant, this investment will ensure that the facilities remain in a state of good repair for decades to come.

The western end of Long Island Sound is funneled into a narrow area bounded by lower Westchester, Connecticut, western Nassau, the Bronx and northern Queens and flows into the Upper East River. Wastewater treatment facilities that serve more than a dozen municipalities along the Connecticut and New York coasts are one of the many sources of nitrogen in the Sound. Coastal watersheds that drain directly into the Sound and those that drain into tributaries to the Sound are also major contributors. High levels of nitrogen in the Sound over the last few decades has led to periodic algae blooms that reduce the amount of dissolved oxygen in the water and impair the survival of fish and other marine organisms. Algae colonies can flourish with an ample supply of sunlight and nutrients, such as nitrogen.

On April 5, 2001, the U.S. Environmental Protection Agency approved a nitrogen reduction plan for Long Island Sound which had been established by New York and Connecticut. The plan mandated a 58.5 percent reduction of nitrogen from the 1994 baseline, for dischargers to Long Island Sound, including New York City's Upper East River wastewater treatment plants (Hunts Point, Bowery Bay, Wards Island and Tallman Island), the City's Lower East River wastewater treatment plants (Newtown Creek and Red Hook), as well as wastewater treatment plants serving Long Island, Westchester and Connecticut, through a phased approach over 15 years. DEC imposed nitrogen limits reflecting the approved plan on all the New York wastewater treatment plants through the process of renewing required operating permits, also known as the State Pollution Discharge Elimination System.

DEP will continue to work to reduce nitrogen discharges from stormwater runoff and Combined Sewer Overflows. In addition, wastewater treatment plants located in Westchester, Connecticut and Long Island that drain to the Sound must meet reduction targets for nitrogen discharges, and these localities are also required to reduce nitrogen discharges in stormwater runoff and Combined Sewer Overflows.

As part of DEP's extensive New York Harbor water quality monitoring program, the reduction in nitrogen discharges into the East River and the effect on water quality will be closely monitored over the next several years. As the plan requires further reductions in nitrogen discharges, it is anticipated that Long Island Sound will take some time to respond to the changes. As the scientific data is quantified, DEP will continue to work with its partners in the region to determine the appropriate steps to continue the restoration of the health and ecology of the Sound.

In addition to the work at the Upper East River plants, DEP has invested $460 million in similar nitrogen removal upgrades at the Jamaica Bay and 26th Ward Treatment Plants, which discharge into Jamaica Bay.

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. For more information, visit nyc.gov/dep, like us on Facebook, or follow us on Twitter.

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