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DEP Completes Tunnels at Croton Water Filtration Plant

Key Milestone in Construction of Facility That Will Ensure Clean Water for Future; Important Step Toward Fulfilling Strategic Plan Goal for Operation of the Water System

Environmental Protection Commissioner Cas Holloway today announced the completion of the tunnels that will convey water to and from the Croton Water Filtration Plant in the Bronx when it becomes operational. The tunnel project included the construction of one 12-foot diameter, 880-foot-long raw water tunnel and two nine-foot diameter treated water tunnels with a combined length of 7,965 feet. The raw water tunnel connects the plant to the New Croton Aqueduct, which brings water from the upstate Croton reservoir system. The two treated water tunnels will deliver the filtered water to the existing distribution system in the vicinity of Jerome Park Reservoir in the Bronx. Construction work on the tunnel project started in August 2006. Located in Van Cortlandt Park, the filtration plant is being built under a golf course driving range, which will be restored and upgraded upon completion of the project. The plant will enable DEP to supply 290 million gallons of water a day from the Croton watershed, or up to 30% of the city's daily supply, and will ensure that the Croton system remains a reliable part of New York City's water infrastructure for generations to come. More than 800 construction workers are currently on the job every day, and the projected total cost of the plant — including approximately \$242 million being used for parks and other community improvements — is about \$3 billion. Completion of the tunnel work is a major step towards achieving DEP's goal to continue supplying high quality drinking water to its nine million customers.

"The Croton Water Filtration Plant and the Catskill/Delaware Ultraviolet Disinfection Plant under construction in Westchester will fundamentally transform New York City's drinking water system, but to the public, the result will be the same — great tasting, high quality drinking water," said Commissioner Holloway. "Like the aqueducts and City water tunnels that first made fresh drinking water available to all New Yorkers last century, these investments will help to ensure the high quality of the

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city's drinking water for the next one. Even in tough economic times, Mayor Bloomberg has continued to make the infrastructure investments necessary for the city to thrive and grow, and completing the Croton Water Filtration Plant is central to that effort."

The raw water tunnel was drilled and blasted through 880 feet of rock, and the treated water tunnels were excavated using a tunnel boring machine. The raw water tunnel was then lined with cast-in-place concrete; cement-lined steel pipe was used to build one treated water tunnel, and reinforced concrete cylinder pipe was used to build the second treated water tunnel. Both pipelines were secured by placing concrete between the rock and the outside of the newly installed pipes. The tunnels necessary to deliver water to and from the plant also required the excavation of three shafts and lining of five shafts ranging in depth from 90 to 115 feet.

Site preparation for the Croton Water Filtration Plant began in September 2004 and construction of the facility began in August 2007. The footprint of the plant is approximately 830 feet long by 555 feet wide by 90 feet deep in the underlying rock. Approximately 1,106,000 cubic yards of rock and soil was drilled, blasted and excavated from the site. Construction work at the site continues to make progress as concrete placement, installation of mechanical, electrical, heating and ventilating, and plumbing work advances. Last June, the final concrete slab was placed on the roof of the facility. The concrete area of roof over the plant is 341,000 square feet. There is approximately 25,000 cubic yards of concrete in the roof structure and 235,000 cubic yards for the entire plant. Work off-site at Jerome Park Reservoir to connect the treated water shafts to the existing distribution system is ongoing.

Plant operations also require the rehabilitation of a portion of the New Croton Aqueduct, which began last September. The New Croton Aqueduct, which was placed into service around 1890, is the major conduit to carry water from the Croton Lake Gate House, where water enters the aqueduct for conveyance to the filtration plant, to the intersection of Convent St. and 135th St. in Manhattan. The 33-mile aqueduct runs from the New Croton Reservoir in Westchester County to the Jerome Park Reservoir in the Bronx, where drinking water is distributed to neighborhoods in the Bronx and upper Manhattan, before emptying into City Water Tunnel No. 1.

Water filtration is a multi-step process that will work as follows:

1. Raw water from the Croton watershed will be pre-treated with chemicals to optimize particle removal in the filtration processes.
2. Pre-treated water will be clarified in a dissolved air-flotation process that will force 90% of suspended particles to the surface of the water, where they will be collected using a skimming device.
3. Clarified water will be filtered through sand and anthracite coal to remove the remaining particles.
4. Filtered water will be disinfected with ultraviolet light before it is chlorinated and discharged through the treated water tunnels to the distribution system.
5. Concentrated solids removed from the water will be pumped to a wastewater treatment plant for processing and disposal.

DEP provides more than one billion gallons of water each

day to more than nine million residents, including eight million in New York City, and a million residents in Ulster, Orange, Putnam and Westchester counties. The water travels through aqueducts and tunnels from three major upstate watersheds: the Catskill, Delaware, and Croton. Croton, the oldest and smallest of the three, began to supply fresh surface water to the City in 1842; when it is in operation, the Croton watershed supplies approximately 10% of the City's daily water needs. The Croton water system consists of 12 reservoirs and three controlled lakes located in Westchester, Putnam and Dutchess Counties. Currently, all of the city's water is unfiltered, with most of the three watersheds consisting of undeveloped forests and largely rural areas. When the Croton system was first tapped to augment the city's water supply, Westchester was still a bucolic country neighbor. Today this watershed is highly developed, and although the water supply meets all health-based water quality standards, unfiltered Croton water has seasonal variations in color, odor, and taste. DEP is required to filter Croton water to satisfy the mandates of the Federal Safe Drinking Water Act.

The construction of the Croton Water Filtration Plant is pivotal to achieving Mayor Bloomberg's PlaNYC goal to improve the reliability and long-term sustainability of New York City's water infrastructure. Mayor Bloomberg has made a larger commitment to maintaining and improving the City's water system than any administration in history. Since fiscal year 2002, approximately \$21 billion has been allocated for water system capital projects such as the Croton plant, including:

- ▶ \$2.5 billion to complete City Water Tunnel No. 3 – more funding for the tunnel than the previous five administrations combined;
- ▶ Acquisition of nearly 79,000 acres of land upstate to protect the city's watershed – allowing New York City to remain one of only five large cities in the country to supply the majority of its drinking water from unfiltered sources;
- ▶ \$1.6 billion for the Ultraviolet Disinfection Facility, which will provide an extra level of drinking water protection for water from the Catskill and Delaware Watersheds; and
- ▶ Approximately \$6 billion to upgrade the city's 14 wastewater treatment plants and more than \$1 billion to reduce combined sewer overflows, which has helped bring harbor water quality to an all-time high since testing began 100 years ago.

The construction of the Croton Water Filtration Plant is part of Strategy 2011-2014, a far-reaching strategic plan that lays out 100 distinct initiatives to make DEP the safest, most efficient, cost-effective, and transparent water utility in the nation. The new plan, the product of nearly one year of analysis and outreach, builds on PlaNYC, Mayor Bloomberg's sustainability blueprint for New York City. The plan is available on DEP's website at www.nyc.gov/dep.

New York City's water is delivered from a watershed that extends more than 125 miles from the city, and comprises 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 7,400 miles of sewer lines take wastewater to 14 in-city treatment plants. DEP also manages storm

water throughout the city, and ensures that the city's facilities comply with the Clean Water Act, and other federal, state and local rules and regulations. For more information, visit www.nyc.gov/dep or follow us on Facebook at www.facebook.com/nycwater.

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