

# New York City 2008 Drinking Water Supply and Quality Report



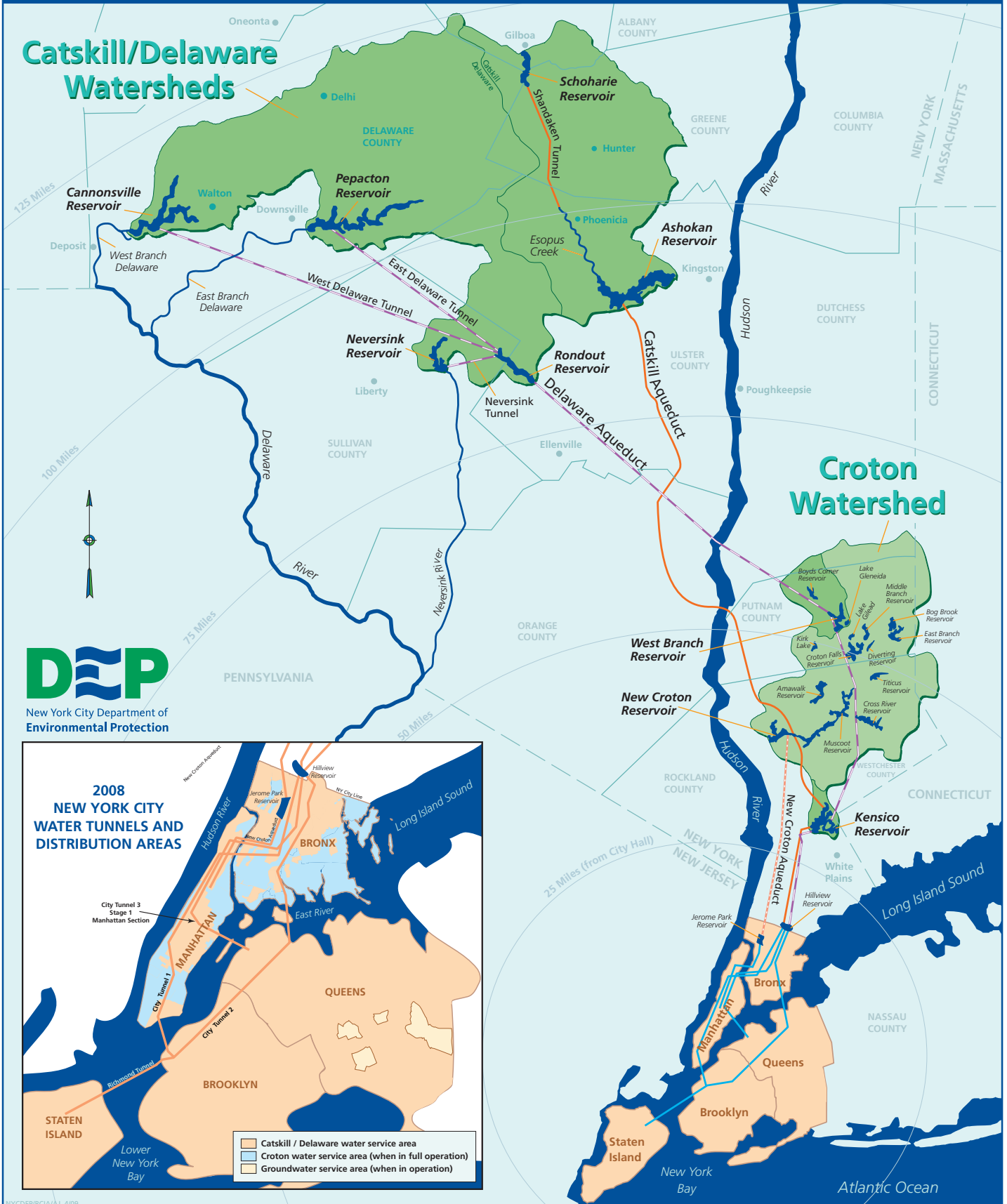
New York City Department of  
Environmental Protection

Michael R. Bloomberg, Mayor  
Steven W. Lawitts, Acting Commissioner





# New York City's Water Supply System





59-17 Junction Boulevard  
Flushing, NY 11373

Steven W. Lawitts  
Acting Commissioner

Dear Water Customer:

New York City's water supply system delivers more than 1 billion gallons of fresh, clean water daily to 9 million customers throughout the five boroughs and upstate. Consisting of 19 reservoirs, 3 controlled lakes, and more than 6,000 miles of pipes, aqueducts, and tunnels – our system is a green machine that runs almost entirely by gravity and, for the most part, doesn't require filtration.

Though our City and our Department face economic challenges that are very much influencing the way we do business, under Mayor Bloomberg's leadership DEP is presiding over one of the most important periods of revitalization for New York City's water and wastewater infrastructure since the creation of the Delaware Water Supply system in the 1950s and the post-1970s transformation of our Wastewater Treatment System. City Water Tunnel No. 3, the Croton Water Filtration Plant, the Catskill/Delaware Ultraviolet Light Disinfection Facility, land acquisition and infrastructure support for the Filtration Avoidance Determination (FAD), sweeping changes to the Newtown Creek Wastewater Treatment Plant, and preparation to fix the Delaware Aqueduct are just a few of the agency's significant ongoing projects.

These projects are ambitious and forward thinking. They are in the best tradition of the engineers who, more than 150 years ago, began building one of the greatest water supply systems in the world, and will ensure that – consistent with the Mayor's PlaNYC vision – this system can support an additional population of 1 million people by 2030 and remain viable for generations to come.

In addition to safeguarding and modernizing our infrastructure, DEP has made tremendous headway in revamping its Bureau of Customer Services. This year, DEP initiated the implementation of a citywide automated meter reading (AMR) network. AMR leverages the City's wireless network capabilities, and will provide our 833,000 customers with more accurate billing information. It will also eliminate estimated bills and the need for door-to-door meter reading.

Soon, DEP will launch NYC Water, a campaign to promote our delicious tap water, which is among the highest-quality and best-tasting in the world. With no carbohydrates, sugar, or calories, NYC Water is not only good for your health; it's healthier for your wallet. Drinking two liters of NYC Water each day costs just 50¢ a year, while drinking two liters of bottled water a day can cost more than \$1,400 a year.

In addition to being economically prudent, it is also environmentally responsible to drink tap water. Forty-seven million gallons of fossil fuels are used to produce all the plastic bottles Americans use each year, which results in one billion pounds of CO<sub>2</sub> added to the atmosphere. By drinking NYC Water, instead of bottled water, you can help protect our environment and minimize the likely impacts of climate change on our water supply system.

With your help, we can continue to promote NYC Water so that all of our customers, in addition to the millions of people who commute to or visit the City each year, know to reach for the tap instead of a bottled drink the next time they're thirsty.

Sincerely,

A handwritten signature in black ink, appearing to read 'S. Lawitts'.

Steven W. Lawitts



# NEW YORK CITY 2008 DRINKING WATER SUPPLY AND QUALITY REPORT

*The New York City Department of Environmental Protection (DEP) is pleased to present its 2008 Annual Water Quality Report. This report was prepared in accordance with Part 5-1.72 of the New York State Sanitary Code (10NYCRR), and the National Primary Drinking Water Regulations, 40 CFR Part 141 Subpart O, of the United States Environmental Protection Agency (EPA), which require all drinking water suppliers to provide the public with an annual statement describing the water supply and the quality of its water.*

## **New York City's Water Supply**

The New York City surface (reservoir) water supply system provides approximately 1.0 billion gallons of safe drinking water daily to over 8 million residents of New York City, and to one million people living in Westchester, Putnam, Ulster, and Orange counties, as well as the millions of tourists and commuters who visit the City throughout the year. In addition to our surface water supplies, fewer than 100,000 people in southeastern Queens may receive groundwater or a blend of groundwater and surface water. In all, the City system supplies nearly half the population of New York State with high quality water.

## ***Source of New York City's Drinking Water***

New York City's surface water is supplied from a network of 19 reservoirs and three controlled lakes in a 1,972 square-mile watershed that extends 125 miles north and west of New York City. Due to the City's ongoing efforts to maintain the appropriate volume and high quality of water in the distribution system, there is some rotation in the water sources used by DEP. In 2008, 98.3% of our water came from the Catskill/Delaware System (Public Water System Identification Number – PWSID NY7003493), located in Delaware, Greene, Schoharie, Sullivan, and Ulster counties, west of the Hudson River. The Croton System (PWSID NY7003666), the City's original upstate supply, provided, on average, 1.6% of the daily supply to the City from 12 reservoir basins in Putnam, Westchester, and Dutchess counties. New York City's Groundwater System (PWSID NY7011735) in southeastern Queens was off-line for the entire 2008 calendar year.

## ***Regulation of Drinking Water***

The sources of drinking water worldwide (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material and can pick up substances resulting from the presence of animals or from human activities. Contaminants that may be present in source water include: microbial contaminants, inorganic contaminants, pesticides and herbicides, organic chemical contaminants, and radioactive contaminants.

In order to ensure that tap water is safe to drink, the New York State Department of Health (NYSDOH) and EPA prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. The State Health Department's and the federal Food and Drug Administration's (FDA) regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline at (800) 426-4791.



## Ensuring a Safe, Reliable and Sufficient Water Supply

### *Source Water Assessment Program*

The Safe Drinking Water Act (SDWA) Amendments of 1996 required states to develop and implement Source Water Assessment Programs (SWAP) to: identify the areas that supply public tap water; inventory contaminants, and assess water system susceptibility to contamination; and inform the public of the results. The SDWA gave states a great deal of flexibility on how to implement SWAP. These assessments were to be created using available information, and to help estimate the potential for source water contamination. Elevated susceptibility ratings do not mean that source water contamination has or will occur in the water supply, but instead indicate the need for water suppliers to implement additional precautionary measures.

Starting in 1993, and culminating in 1997 with the historic watershed agreement and Filtration Avoidance Determination (FAD), New York City began implementation of a series of programs to reduce the susceptibility of the surface water supply to contamination from a variety of sources. These programs, which are still ongoing, operate under the close scrutiny of both the NYSDOH and the EPA. Due to these efforts, further detailed below, the SWAP methodologies applied to the rest of the state were not applied to the New York City water supply by NYSDOH.

### *Watershed Protection Programs*

#### *10-Year Filtration Avoidance Determination from EPA*

2008 marked the first full year of DEP's implementation of the latest 10-year FAD, covering 2007 to 2017, issued by EPA in July of 2007. The FAD is based on the Long-term Watershed Protection Program DEP submitted in December, 2006, and describes enhancements to existing watershed protection programs as well as the development of several new efforts.

#### *Land Acquisition*

New York City buys real property interests from willing sellers only, with the goal of further protecting and buffering its 19 reservoirs and controlled lakes in the Catskill/Delaware and Croton watersheds. Surrounding these reservoirs are 1.2 million acres of land, of which the City owned 45,000 acres in 1997. Since the Land Acquisition Program began in 1997, the City and its partner, the Watershed Agricultural Council (WAC), have secured over 92,000 acres in fee simple or conservation easements. In all, the City now owns more than 137,000 acres, land which is now protected from development and managed pro-actively to protect water quality. DEP solicits parcels for acquisition based on the presence of critical natural, topographical features, such as streams and wetlands and/or proximity to reservoirs, as well as potential for development. During 2008, DEP continued to solicit – and re-solicit – owners of such sensitive watershed properties.

#### *Land Management*

With the City's acquisition of land over the past 11 years, it has become one of the largest single landowners in the watershed region. These properties must be managed to ensure that water quality is protected. To achieve this critical objective, DEP has developed and implemented land management programs that identify specific beneficial uses and projects for the City's water supply lands that include opening properties for recreational use.

Since 1997, DEP has increased the acreage of land open for recreation every year, and 51,538 acres are now available for fishing, hiking, hunting, trapping, cross-country skiing and other passive activities. New in 2008 were Public Access Areas, where recreation users can enter City lands without a DEP Access Permit or Hunt tag. An additional 4,337 recreation Access Permits were issued in 2008, for a total of more than 114,085 valid permits.





### ***Partnership Programs***

Many of the City's watershed protection programs west of the Hudson River are administered by the Catskill Watershed Corporation (CWC), a non-profit corporation formed for this purpose. Together, the CWC and DEP have repaired, replaced or managed more than 2,800 failing septic systems and authorized the construction of approximately 70 stormwater control measures to address existing stormwater runoff.

The Community Wastewater Management Program (CWMP), funded by the City and administered by CWC, enables the planning, design and construction of community septic systems or septic maintenance districts in hamlets west-of-Hudson. CWMP projects have been completed in the hamlets of Bovina and DeLancey and are underway in Hamden, Bloomville, Boiceville, and Ashland.

DEP also works with communities to address the issue of septic systems that are failing or likely to fail. Through its New Infrastructure Program, DEP is financing the construction of new wastewater treatment plants in areas with problem septic systems. Roxbury, Andes, Windham, Hunter, Fleischmanns, and Prattsville have completed construction of wastewater treatment facilities. DEP's sewer extension program connects new sewer lines to City-owned treatment plants west-of-Hudson. The projects in Grahamsville, Tannersville, Margaretville, Grand Gorge, and Pine Hill are either in design or under construction.

### ***Wastewater Treatment Plant (WTP) Upgrades***

More than 100 non-City-owned WTPs in the upstate watershed are being upgraded to provide state-of-the-art treatment of pathogens and substantially reduce nutrients in their waste streams. Under this City-funded effort, plants generating 98% of the west-of-Hudson WTP flow have been upgraded. In the Croton Watershed, plants producing 81% of the flow have been fully upgraded; facilities accounting for another 9% of the flow are in the construction phase; while another 22 plants (generating 10% of the flow) are now in the design phase.

### ***Stream Management Program***

Stream Management Program (SMP) is a partnership program founded to encourage the long-term stewardship of streams and floodplains in the west-of-Hudson watershed. The SMP and its partners work to address the challenges associated with living in the Catskill Mountains that can affect water quality: damage to property and infrastructure, such as homes, roads, bridges and culverts; excessive stream-bank erosion; flooding hazards; and ecological and habitat degradation. Over the past several years the City has contracted with four county Soil and Water Conservation Districts and the Cornell Cooperative Extension of Ulster County to develop stream management plans that report the condition of stream corridors and provide a comprehensive set of recommendations for their protection, conservation, and enhancement.

Plans have been completed for the Esopus Creek, the Schoharie Creek and all of its major tributaries, and the main streams of the East and West Branches of the Delaware River. Over the past several years, the SMP and its partners have also demonstrated stream restoration techniques throughout the west-of-Hudson watershed, completing 53 projects and restoring natural channel stability to many miles of watershed streams. In 2008, DEP and its contractual partners began implementing the variety of recommendations made within these plans. The SMP along with our partners has established watershed councils for each major reservoir basin, with participating communities providing a leadership role in implementing the plans' recommendations.

New York City has committed \$34 million to the Stream Management Program through the 2007 FAD, which is in addition to the \$21 million funded under the 2002 FAD.

### ***Watershed Agricultural Program and Forestry Program***

The Watershed Agricultural Program and the Watershed Forestry Program combined function as collaborators between DEP and the local not-for-profit Watershed Agricultural Council (WAC) that supports and maintains well-managed family farms and working forests as beneficial land uses for water quality protection. In 2008, DEP and WAC completed negotiations on a 46-month contract that enables WAC to continue



administering and implementing the Watershed Agricultural and Forestry Programs through 2012. This new contract took effect January 1, 2009. It includes both actual and proposed federal matching fund commitments from the USDA Forest Service, Farm Service Agency, and Natural Resource Conservation Service, primarily through direct WAC grants, but also through the City/federal cost-sharing Conservation Reserve Enhancement Program (CREP) and the 2008 federal Food, Conservation and Energy Act.

Since 1992, the Watershed Agricultural Program has developed pollution prevention plans for more than 390 small and large farms in both the Catskill/Delaware and Croton watersheds, in addition to implementing thousands of best management practices (BMPs) that reduce agricultural pollution and protect water quality. In the Catskill/Delaware watersheds, approximately 96% of large commercial farms participate in the program.

Since 1997, the Watershed Forestry Program has developed more than 740 forest management plans covering 132,500 watershed acres, of which an estimated 103,800 acres are forested. It has also implemented 150 timber harvest road BMP projects and remediated 59 forest roads having erosion problems. Each year, the program also conducts dozens of forestry education and training programs for thousands of watershed landowners, foresters, loggers, teachers, students, forest industry professionals, local officials, and other upstate/downstate audiences.

### ***Improved Reliability Catskill/Delaware UV Facility***

EPA published new regulations in the Federal Register on January 5, 2006, including the Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR), to improve control of microbial pathogens. In preparation for the new rule, which was first proposed in August 2003, New York City designed an ultraviolet (UV) light disinfection plant for the Catskill/Delaware System. Construction of the facility began in 2008 and is expected to begin operation in 2012. The plant is located at the New York City-owned Eastview site, a 153-acre property situated in the towns of Mount Pleasant and Greenburgh in Westchester County, New York. The Catskill/Delaware facility will consist of fifty-six 40-million-gallon-per-day UV Disinfection Units and is designed to disinfect a maximum of 2.4 billion gallons of water per day. The plant will provide an additional barrier of microbiological protection by inactivating potentially harmful organisms, such as *Cryptosporidium* and *Giardia*. This treatment will supplement DEP's existing microbial disinfection programs.

### ***Croton Water Filtration Plant***

The City's goals are to ensure that water from all three of its water supply systems is at all times protected against microbiological contamination, is aesthetically pleasing, and meets all drinking water quality standards. With respect to the Croton System, the City is proceeding with the construction of a filtration plant for Croton System water, pursuant to the terms of a November 1998 federal court Consent Decree entered into with the United States and the State of New York. The filtration plant is expected to reduce color levels, the risk of microbiological contamination, and disinfection byproduct (DBP) levels in the Croton System water. The filtration plant will also ensure compliance with stricter water quality standards. In September 2004 the City issued a notice to proceed with the first phase of construction of the Croton Water Filtration Plant at the Mosholu Golf Course site. In August 2006 and August 2007 the second and third phases went forward. Construction work at the site continues to make progress: excavation of the two Treated Water Tunnels has been completed; placement of concrete for lining the Raw Water Tunnel is underway; and, concrete placement, installation of mechanical piping and electrical work at the site continue to advance. In addition, work off-site at the Treated Water Shafts at Jerome Park Reservoir continues. The Croton Water Filtration Plant is expected to be operational by 2012.

As part of an agreement between the City and the Parks Department, more than \$200 million generated from water and sewer revenues are being spent on improvements to more than 70 Bronx Parks and recreational facilities. DEP also operates a community







outreach office adjacent to the Mosholu site. The office, located at 3660 Jerome Avenue, Bronx, New York is open Monday through Friday from 9 AM to 5 PM. For more information, the telephone number of the center is (718) 231-8470.

The City remains committed to maintaining a comprehensive watershed protection program for the Croton System. Until DEP begins to filter Croton water, we are required to make the following statement: *Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites, which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.*

### ***City Water Tunnel No. 3***

Construction of City Water Tunnel No. 3, one of the largest capital projects in New York City's history, began in 1970. City Water Tunnel No. 3 will enhance and improve the City's water delivery system, and allow for the inspection and repair of City Water Tunnels No. 1 and No. 2 for the first time since they were put into service, in 1917 and 1936, respectively. The 13-mile Stage 1 section went into service in August 1998. It runs from Hillview Reservoir in Yonkers, through the Bronx, down Manhattan across Central Park, and into Astoria, Queens. Stage 2 of City Water Tunnel No. 3 consists of the Brooklyn/Queens leg and the Manhattan leg. The Brooklyn/Queens leg is a 5.5-mile section in Brooklyn that connects to a 5-mile section in Queens. These sections were completed in May of 2001. It is anticipated that the Brooklyn/Queens section, which will deliver water to Staten Island, Brooklyn and Queens, will be activated by 2013. Tunneling on the Manhattan portion of Stage 2 began in 2003 and was completed in 2008. Almost 9 miles were excavated and lined with concrete. In addition, ten new supply shafts have been constructed on the Manhattan leg that will integrate the new tunnel section with the existing distribution system. Work on the distribution chambers, which are underground facilities atop the shafts, continues and should be completed in 2013 at which time the Manhattan leg is expected to begin water delivery. Facility planning for Stage 3 of the tunnel is ongoing, with a final facility plan and conceptual design expected by 2011. Stage 3, referred to as the Kensico-City Tunnel (KCT) involves construction of a 16-mile section that extends from the Kensico Reservoir to a valve chamber in the Bronx. When completed, the KCT will be able to deliver water directly from Kensico Reservoir to City Water Tunnel No. 3. In total, City Water Tunnel No. 3 will span 60 miles. Construction is expected to be completed by 2025.

### ***Hillview Reservoir***

Due to violations of the Total Coliform Rule (TCR) in the distribution system in 1993 and 1994 that were attributed to conditions at Hillview Reservoir, DEP entered into a 1996 Administrative Order (AO) with NYSDOH, which was amended in 1997 and again in 1999, requiring DEP to complete four activities: 1) remove sediment from the Hillview Reservoir sediments; 2) undertake a biofilm research study of the distribution system; 3) investigate the integrity of the Hillview Reservoir dividing wall; and 4) install a cover over the Hillview Reservoir. DEP completed all of the action items stipulated in the AO except for item 4, the covering of the Hillview Reservoir. However, DEP instituted an improvements program comprised of facility and operational modifications designed to prevent a recurrence of the TCR violations. The improvements include: increasing the chlorine residual in the basins of Hillview Reservoir, developing and updating Standard Operating Procedures, and initiating an avian (bird) deterrent program. Significant capital projects were also completed, including improvements to chemical addition facilities and site security. Other capital projects are planned which exceed the requirements of the AO. Because DEP did not meet the AO milestone for commencing construction of a cover (April 30, 2002), nor for completing construction of a cover (December 31, 2005), NYSDOH and DEP negotiated to amend the terms of the AO, and reached an agreement to modify the AO and extend the covering milestone. The final AO was signed in February 2008. It requires DEP to complete the cover over the East Basin by June 2014, and the cover over the West Basin, by October 2016.

### ***Groundwater System Enhancements***

In the late 1990s, after purchasing the wells in southeastern Queens and assuming responsibility for the delivery of drinking water from those wells to the adjacent



communities, DEP embarked upon a broad program to integrate New York City's surface water supply with the groundwater supplied by the aquifer system below southeastern Queens. As part of the Brooklyn-Queens Aquifer Feasibility Study, DEP continues to investigate the use of the deep aquifers for water storage and to develop plans for a treatment plant at Station 6 in Jamaica.

### ***Station 6 Groundwater Treatment Plant***

DEP continues to develop plans for a new groundwater treatment plant to replace DEP's existing facility located at Station 6 in Jamaica, Queens. This proposed state-of-the-art facility, whose final design is expected to be completed in 2012 and construction projected for 2014, will produce high quality drinking water and control groundwater flooding. Once built, Station 6 will provide between 10 and 12 million gallons per day of drinking water. As part of the Station 6 project, DEP has implemented a comprehensive community outreach program. This program includes small group meetings, large public forums, distribution of informational materials, and a Citizens Advisory Committee. More information about the Groundwater System can be found at [www.nyc.gov/dep/groundwater](http://www.nyc.gov/dep/groundwater).

### ***Aquifer Storage and Recovery***

In addition to improving the quality of groundwater from Queens' aquifers through treatment, DEP is investigating the possibility of improving the groundwater supply by using the deep aquifers (Magothy and Lloyd) to provide additional storage for surface water. Working with regional agencies, DEP is developing an Aquifer Storage and Recovery (ASR) project. Currently, the Lloyd Aquifer's resources are depleting, mainly due to rate of consumption by Long Island communities that is greater than the aquifer's natural rate of recharge. ASR would help to replenish the Lloyd Aquifer by injecting surplus water from New York City's upstate surface water reservoirs into the aquifer. This water would be stored in both deep aquifers and, when necessary, the City could extract a portion of this potable water to supplement its drinking water supply.

This process will benefit both the City and communities on Long Island. New York City will benefit from a new in-City drinking water supply -- created without many of the attendant construction costs and community disturbances involved in traditional capital projects. Most importantly, the City would also gain a temporary alternate water supply in case of an emergency, such as a drought or the need to shut down one of the City's three aqueducts. The injection process will have an added benefit in that it will recharge the aquifer. This recharging process would help to guard the aquifer against saltwater intrusion, protecting Long Island beach communities' underground drinking water from salinization, which is a long-term threat to their supply.

### ***The West Side Corporation Site***

The West Side Corporation (WSC), located at 107-10 180th Street in Jamaica, was a dry cleaning storage and distribution center that handled large amounts of the chemical tetrachloroethylene (also known as "PERC" or PCE) between 1969 and 1982. When the business closed, it left behind spills and storage tank leaks that resulted in the seepage of hazardous chemicals, including PERC, through the soil and into the groundwater. Today, DEP and the DEC are working together to clean up both the soil and the groundwater contamination caused by the spills.

## **Water Conservation**

The average single family household in New York City uses approximately 100,000 gallons of water each year, at a cost of \$2.02 per 100 cubic feet of water (748 gallons), or about \$270 each year (based on the FY2008 water rate). Since virtually all City residences are connected to the public sewer system and, therefore, receive wastewater collection and treatment services as well, the combined annual water and sewer charge for the typical NYC household using 100,000 gallons per year is \$699 consisting of \$270 for water service and \$429 for wastewater services. New York City is fortunate to have reasonably priced drinking water; however, everyone should do their part to conserve this precious resource. All New Yorkers are encouraged to observe good water conservation habits, and are required to obey the City's year-round water use





restrictions, which include a prohibition on watering sidewalks and lawns between November 1 and March 31, and between 11 AM to 7 PM from April 1 to October 31. It is illegal to open fire hydrants at any time. You can help save water by ordering a Home or Apartment Water Saving Kit by calling the City's helpline, 311. If you are an apartment building owner/manager or a homeowner, you can also obtain a free leak survey by calling DEP's Leak survey contractor at (718) 326-9426 for information. You can also go to [www.nyc.gov/dep](http://www.nyc.gov/dep), click on "more services" in the Customer Services Box, and fill-in these order forms to send to the person listed.

## Water Treatment

All surface water and groundwater entering New York City's distribution system is treated with chlorine, fluoride, food grade phosphoric acid and, in some cases, sodium hydroxide. New York City uses chlorine to meet the New York State Sanitary Code and federal Safe Drinking Water Act (SDWA) disinfection requirements. Fluoride, added since 1966, at a concentration of one part per million, in accordance with the New York City Health Code, helps prevent tooth decay. Phosphoric acid is added to create a protective film on pipes that reduces the release of metals such as lead from household plumbing. Sodium hydroxide is added to Catskill/Delaware water to raise the pH and reduce corrosivity.

In the Groundwater System, DEP has the ability to apply a sequestering agent at several wells to prevent the precipitation of naturally occurring minerals, mostly iron and manganese, in the distribution mains and customers' household piping. Air stripper facilities can be operated at several wells to remove volatile organic chemicals. For the entire 2008 calendar year there were no wells in operation.

## Fluoride

DEP is one of the many drinking water systems in New York State that provides drinking water with a controlled, low level of fluoride for consumer dental health protection. According to the United States Centers for Disease Control and Prevention (CDC), fluoride is very effective in preventing cavities when present in drinking water at an optimal range of 0.8 to 1.2 mg/L. The New York City Health Code requires a fluoride concentration of approximately 1.0 mg/L, with an acceptable range of 0.9 to 1.1 mg/L. To ensure that the fluoride supplement in your water provides optimal dental protection, NYSDOH requires that we monitor fluoride levels on a daily basis. During 2008, none of the monitoring results showed fluoride at levels that approach the 2.2 mg/L MCL for fluoride.

During 2008, fluoride was not continuously supplied in the Catskill/Delaware System due to upgrades and repair work on the fluoride feed system. Fluoridation facilities for the Catskill System were off-line over 7% of the time, with the longest period of fluoridation interruption being approximately two days, from 2/22/08 through 2/24/08. Fluoridation facilities for the Delaware System were off-line over 9% of the time, with the longest period of fluoridation interruption being five days, from 6/14/08 through 6/19/08. NYSDOH Bureau of Dental Health has indicated that a brief interruption of fluoridation to the Catskill/Delaware System is not expected to have a significant impact on dental health. Interruption of fluoridation in 2008 did not require public notification.

## Operational Changes

As part of a multi-year program to inspect and rehabilitate the New Croton Aqueduct, the Croton System was removed from service on October 12, 2007. On October 15, 2008, the Croton System was activated and began supplying water into distribution through December 12, 2008 when the Mosholu Pump Station was shut down. Croton water was not fed into distribution for the remainder of the year.

For the Groundwater System, there were no wells in operation for the entire 2008 calendar year. Operational information for the Groundwater System can be found at [www.nyc.gov/dep/groundwater](http://www.nyc.gov/dep/groundwater). The map on the inside front cover represents the Catskill/Delaware, Croton, and Groundwater service areas. This map depicts the Croton and Groundwater service areas when in operation.



## Drinking Water Quality

DEP's water quality monitoring program -- far more extensive than required by law -- demonstrates that the quality of New York City's drinking water remains high and meets all health-related State and federal drinking water standards.

### *Drinking Water Monitoring*

DEP monitors the water in the distribution system, the upstate reservoirs and feeder streams, and the wells that are the sources for the City's supply. Certain water quality parameters are monitored continuously as the water enters the distribution system, and water quality is regularly tested at sampling points throughout the entire City. DEP conducts analyses for a broad spectrum of microbiological, chemical, and physical measures of quality. In 2008, DEP collected more than 29,800 samples from the City's distribution system and performed more than 381,300 analyses.

DEP conducts most of its distribution water quality monitoring at approximately 1,000 fixed sampling stations throughout the City. These stations, visible in many neighborhoods, allow DEP to collect water samples throughout the distribution system in an efficient and sanitary manner. The approximate boundaries of the service areas for all three City Systems are displayed in the map on the inside of the front cover.

### *Test Results*

The results of the tests conducted in 2008 on distribution water samples under DEP's Distribution System Monitoring Program are summarized in the tables in this Report. These tables reflect the compliance monitoring results for all regulated and nonregulated parameters. The tables present both the federal and State standard for each parameter (if applicable), the number of samples collected, the range of values detected, the average of the values detected, and the possible sources of the parameters. The monitoring frequency of each parameter varies and is parameter specific. Data are presented separately for the Catskill/Delaware and Croton Systems. (There are no data presented for the Groundwater System since it was not in service in 2008.) Whether a particular user received water from the Catskill/Delaware or Croton supplies, or a mixture of the two, depends on location, system operations, and consumer demand. Those parameters monitored, but not detected in any sample, are presented in a separate box. The State requires monitoring for some parameters less than once per year because the concentrations of these parameters do not change frequently. Accordingly, some of these data, though representative, are more than one year old. For specific information about water quality in your area, New York City residents should call the City of New York's 24-hour helpline at 311.

### *Sampling*

DEP is required to monitor drinking water for various parameters on a regular basis. Results of regular monitoring are an indicator of whether or not drinking water meets health standards. DEP collects samples at a frequency prescribed by the State. In 2008, DEP met all State and federal sampling requirements.

### *Color*

The Croton System experiences seasonal water quality problems associated with elevated color levels, resulting from naturally occurring minerals and organic matter present in the water. In the Croton System, there was one violation of the color MCL in October 2008 at the Croton System entry point Site 37 on 10/30/2008. In November 2008, there were a total of seven color MCL violations at the Croton System entry points: three color MCL violations at entry point Site 1SC21 (11/2/2008, 11/18/2008, and 11/27/2008), three color MCL violations at Site 37 (11/2/08, 11/6/08, 11/9/08), and one color MCL violation at Site 12900 (11/18/2008). In December 2008, there was one color MCL violation at the Croton System entry point Site 1SC21 on 12/9/2008, and one color MCL violation at the Croton System entry point Site 37 on 12/11/2008. In each case, the average of two consecutive samples from the same site exceeded the MCL of 15 apparent units. Color has no health effects unless detected in very high concentrations. In some instances, color may be objectionable to some people at as low as 5 apparent units. The presence of elevated color levels is aesthetically objectionable and suggests that the water may need additional treatment.





## ***Turbidity***

For the month of November 2008, the Croton System's monthly average daily entry point turbidity was 1.52 NTU, which violated the MCL of 1 NTU.

On 10/30/2008 there was a Croton System entry point turbidity reading of 1.66 NTU at Site 1SC21. If the daily entry point analysis exceeds 1 NTU, a repeat sample must be taken within one hour. DEP failed to collect a repeat sample on 10/30/2008 and was issued a Tier 3 monitoring violation by NYSDOH.

On 11/1/2008, there was a Croton System entry point turbidity reading of 1.94 NTU at Site 37. DEP failed to collect the repeat sample on 11/1/2008 and was issued a Tier 3 monitoring violation by NYSDOH.

*Turbidity has no health effect. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches. Please pay special attention to the additional statement in this document regarding Cryptosporidium.*

## ***Lead in Drinking Water***

New York City water is virtually lead-free when it is delivered from the City's upstate reservoir system, but water can absorb lead from solder, fixtures, and pipes found in the plumbing of some buildings or homes. Under the federal Lead and Copper Rule (LCR), mandated at-the-tap lead monitoring is conducted at selected households located throughout the City. Based on the results of this monitoring, in 2008, the 90<sup>th</sup> percentile did not exceed 15 µg/L, the established standard or Action Level (AL) for lead. The at-the-tap monitoring results are also presented in a separate table in the Report.

In 2004, NYSDOH issued a NOV asserting violations of the LCR. This NOV was in relation to DEP's reporting of past data collected under the LCR, specifically a failure to report all results, a failure to utilize all results to determine the 90<sup>th</sup> percentile concentrations, and a failure to collect samples during the period of June 1 to September 30, 2004. In 2005, under the NOV, DEP re-instituted a lead public education program, returned to semi-annual at-the-tap monitoring in the distribution system, began monitoring the surface and groundwater systems separately for lead, and established a program to replace City-owned lead service lines (LSLs). In 2007, because the at-the-tap lead results in 2005 and 2006 met the Action Level for lead of 15 µg/L, NYSDOH gave DEP permission to monitor at-the-tap lead and copper levels annually. To fulfill the requirement to replace LSLs, DEP worked with other City agencies through an inter-Agency Task Force, and 55 LSLs were replaced in 2005, 1 was replaced in 2006, and 16 were replaced in 2008. As a result of these efforts, in 2008, NYSDOH agreed that DEP had satisfied the requirements of the NOV in order to reassume its compliance with the LCR. The NOV was formally closed on October 6, 2008.

The data reported by DEP under the LCR reflect that since the program began in 1992, the 90<sup>th</sup> percentile values for lead levels at-the-tap, at locations sampled for Rule compliance, have decreased from levels as high as 55 µg/L to approximately 11 µg/L in the surface water systems.

DEP offers a Free Residential Lead Testing Program which allows all New York City residents to have their tap water tested at no cost. The Free Residential Testing Program is the largest of its kind in the Nation: Over 75,000 sample collection kits have been distributed since the start of the program in 1992.

Infants and young children are typically more vulnerable to lead in drinking water than the general population. It is possible that lead levels at your home may be higher than at other homes in the community as a result of materials used in your home's plumbing. If you are concerned about elevated lead levels in your home's water, you may wish to have your water tested, and also flush your tap for 30 seconds to 2 minutes before using tap water. Additional information is available from the EPA's Safe Drinking Water Hotline (800) 426-4791. To request a free kit to test for lead in your drinking water, call the City of New York's 24-hour helpline at 311 or (212) NEW-YORK.



## *Monitoring for Cryptosporidium and Giardia*

In 1992, the City started a comprehensive program to monitor its source waters and watersheds for the presence of *Cryptosporidium* and *Giardia*. Since then, samples have been collected weekly from the effluents of the Kensico and New Croton Reservoirs, before water is first chlorinated in the Catskill/Delaware and Croton Systems, respectively. Since 1992, DEP has modified its laboratory protocols twice to improve the Department's ability to detect both *Cryptosporidium* oocysts and *Giardia* cysts. These test methods, however, are limited in that they do not allow DEP to determine if organisms identified are alive or capable of causing disease.

From January 1 to December 31, 2008, a total of 104 routine samples were collected and analyzed for *Cryptosporidium* oocysts and *Giardia* cysts at the Kensico Reservoir effluents, and 52 routine samples were collected at the New Croton Reservoir effluent. Samples were analyzed using Method 1623 HV (US EPA). Of the 104 routine Kensico Reservoir effluent samples, 11 were positive for *Cryptosporidium* (0 to 2 oocysts 50L<sup>-1</sup>), and 85 were positive for *Giardia* (0 to 8 cysts 50L<sup>-1</sup>). No enhanced samples were collected at the Kensico effluents in 2008. Of the 52 routine New Croton Reservoir effluent samples, seven were positive for *Cryptosporidium* (0 to 3 oocysts 50L<sup>-1</sup>), and 26 were positive for *Giardia* (0 to 4 cysts 50L<sup>-1</sup>). Four enhanced samples were collected from the New Croton Reservoir effluent in 2008 in response to a laboratory issue and not a water quality issue. Nevertheless, data from the enhanced samples resulted in no detection of *Cryptosporidium* oocysts and only one detection of a *Giardia* cyst. DEP's *Cryptosporidium* and *Giardia* data from 1992 to the present, along with weekly updates, can be viewed on our web site at: [www.nyc.gov/html/dep/html/drinking\\_water/pathogen.shtml](http://www.nyc.gov/html/dep/html/drinking_water/pathogen.shtml). As stated above, detecting the presence of *Cryptosporidium* oocysts and *Giardia* cysts does not indicate whether these organisms are alive or potentially infectious.

While there is no evidence of the illnesses cryptosporidiosis or giardiasis related to the New York City water supply, federal and New York State law requires all water suppliers to notify their customers about the potential risks of *Cryptosporidium* and *Giardia*. Cryptosporidiosis and giardiasis are intestinal illnesses caused by microscopic pathogens, which can be waterborne. Symptoms of infection include nausea, diarrhea, and abdominal cramps. Most healthy individuals can overcome both of these illnesses within a few weeks. DEP's Waterborne Disease Risk Assessment Program conducts active surveillance for cryptosporidiosis and giardiasis to track the incidence of illness and determine all possible causes, including tap water consumption. No cryptosporidiosis or giardiasis outbreaks have been attributed to tap water consumption in New York City.

According to the EPA and the CDC, it is unclear how most cases of cryptosporidiosis or giardiasis in the United States are contracted. The relative importance of various risk factors is unknown. Risk factors include eating contaminated food, swallowing contaminated recreational water while swimming or camping, contact with animals, contact with human waste, certain sexual practices, and drinking contaminated water. Individuals who think they may have cryptosporidiosis or giardiasis should contact their health care provider.

Some people may be more vulnerable to disease-causing microorganisms or pathogens in drinking water than the general population. Immuno-compromised persons, such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants, can be particularly at risk from infections. These people should seek advice from their health care providers about their drinking water.

EPA/CDC guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium*, *Giardia* and other microbial contaminants are available from the EPA's Safe Drinking Water Hotline at (800) 426-4791.



# New York City Drinking Water Quality Testing Results 2008

## Detected Parameters

PARAMETERS	NYSDOH MCL	USEPA MCLG	CATSKILL/DELAWARE SYSTEM		CROTON SYSTEM		SOURCES IN DRINKING WATER	
			# SAMPLES	RANGE	AVERAGE	# SAMPLES		RANGE
<b>CONVENTIONAL PHYSICAL AND CHEMICAL PARAMETERS</b>								
Alkalinity (mg/L CaCO <sub>3</sub> )	-		325	9.3 - 33.7	12.9	12	38.3 - 60	Erosion of natural deposits
Aluminum (µg/L)	50 - 200 <sup>(1)</sup>		317	9 - 97	21	13	5 - 28	Erosion of natural deposits
Barium (mg/L)	2	2	317	0.012 - 0.025	0.017	13	0.026 - 0.038	Erosion of natural deposits
Calcium (mg/L)	-		325	4.8 - 12.9	5.6	13	14.4 - 25.2	Erosion of natural deposits
Chloride (mg/L)	250		316	8 - 28	10	12	37 - 63	Naturally occurring; road salt
Chlorine Residual, free (mg/L)	4 <sup>(2)</sup>		10978	0.00 - 1.38	0.72	319	0.09 - 1.37	Water additive for disinfection
Color - distribution system (color units - apparent)	-		9885	4 - 112	6	172	6 - 74	Presence of iron, manganese, and organics in water
<b>Color - entry points (color units - apparent)</b>	15 <sup>(3)</sup>		1098	4 - 12	6	148	<b>7 - 20</b>	Presence of iron, manganese, and organics in water
Copper (mg/L)	1.3 <sup>(4)</sup>	1.3	325	0.003 - 0.096	0.008	14	0.001 - 0.018	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
Corrosivity (Langelier index)	0 <sup>(1,5)</sup>		315	-2.82 to -1.78	-2.41	12	-1.47 to -1.18	
Fluoride (mg/L)	2.2 <sup>(3)</sup>	4.0	1447	ND - 1.38	1	170	ND - 1.16	Erosion of natural deposits; water additive which promotes strong teeth; runoff from fertilizer
Hardness (mg/L CaCO <sub>3</sub> )	-		317	16 - 47	19	13	54 - 96	Erosion of natural deposits
Hardness (grains/gallon [US] CaCO <sub>3</sub> ) <sup>(6)</sup>	-		317	0.9 - 2.7	1.1	13	3.1 - 5.5	Erosion of natural deposits
Iron (µg/L)	300 <sup>(7)</sup>		317	20 - 280	40	15	70 - 170	Naturally occurring
Lead (µg/L)	15 <sup>(8)</sup>	0	325	ND - 8	0.5	15	ND	Corrosion of household plumbing systems; erosion of natural deposits
Magnesium (mg/L)	-		317	1.1 - 3.7	1.2	13	4.4 - 8.1	Erosion of natural deposits
Manganese (µg/L)	300 <sup>(7)</sup>		317	8 - 221	18	14	28 - 163	Naturally occurring
Nitrate (mg/L nitrogen)	10	10	316	0.12 - 0.31	0.21	12	0.11 - 0.22	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Nitrite (mg/L nitrogen)	1	1	316	ND - 0.001	ND	12	ND	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
pH (pH units) <sup>(8)</sup>	6.5 - 8.5 <sup>(1)</sup>		10935	6.5 - 8	7.2	320	6.8 - 7.7	
Phosphate, Ortho- (mg/L)	-		10979	0.7 - 2.82	2.02	319	0.00 - 4.33	Water additive for corrosion control
Potassium (mg/L)	-		317	0.5 - 1.2	0.6	13	1.4 - 2.4	Erosion of natural deposits
Silica [silicon oxide] (mg/L)	-		316	1.6 - 3.5	2.5	12	3.8 - 6	Erosion of natural deposits
Sodium (mg/L)	NDL <sup>(9)</sup>		317	7 - 17	9	13	21 - 32	Naturally occurring; road salt; water softeners; animal waste
Specific Conductance (µS/cm)	-		10983	73 - 211	85	320	224 - 390	
Strontium (µg/L)	-		317	17 - 40	20	13	45 - 78	Erosion of natural deposits
Sulfate (mg/L)	250		316	4.6 - 6.4	5.0	12	7.2 - 9.8	Naturally occurring
Temperature (°F)	-		10981	36 - 78	54	320	44 - 60	
Total Dissolved Solids (mg/L)	500 <sup>(1)</sup>		316	38 - 104	51	12	133 - 204	Metals and salts naturally occurring in the soil; organic matter
Total Organic Carbon (mg/L carbon)	-		316	1.3 - 2	1.4	12	1.9 - 3	Organic matter naturally present in the environment
Turbidity <sup>(10)</sup> - distribution system (NTU)	5 <sup>(11)</sup>		9885	0.48 - 19.2	1.8	172	0.73 - 23.2	Soil runoff
<b>Turbidity <sup>(10)</sup> - entry points (NTU)</b>	1 <sup>(12)</sup>		-	-	-	148	-	Soil runoff
Turbidity <sup>(10)</sup> - source water (NTU)	5 <sup>(13)</sup>		4356	-	4.0	552	-	Soil runoff
UV 254 Absorbency (cm <sup>-1</sup> )	-		316	0.02 - 0.038	0.027	12	0.044 - 0.066	Organic matter naturally present in the environment
Zinc (mg/L)	5		317	ND - 0.018	0.004	15	ND - 0.004	Naturally occurring



PARAMETERS	NYSDOH MCL	USEPA MCLG	CATSKILL/DELAWARE SYSTEM			CROTON SYSTEM			SOURCES IN DRINKING WATER		
			# SAMPLES	RANGE	AVERAGE	# SAMPLES	RANGE	AVERAGE	# SAMPLES	RANGE	AVERAGE
<b>ORGANIC CONTAMINANTS</b>											
<b>Disinfection Byproducts detected:</b>											
Bromochloroacetic acid (µg/L)	50		246	ND - 2	1	10	1 - 3	2	Byproduct of drinking water chlorination		
Chloral Hydrate (µg/L)	50		16	1.7 - 9.3	5.1	2	5.8 - 7.2	6.5	Byproduct of drinking water chlorination		
Chloropicrin (µg/L)	50		16	0.3 - 0.7	0.5	2	0.4 - 0.5	0.5	Byproduct of drinking water chlorination		
Chloromethane (µg/L)	50		777	ND - 1.36 <sup>(14)</sup>	ND	12	ND	ND	Byproduct of drinking water chlorination		
Halooxonitriles (HANs) (µg/L)	50		16	1.8 - 3.9	2.8	2	3.3 - 5.8	4.5	Byproduct of drinking water chlorination		
Halogenated ketones (HKs) (µg/L)	50		16	1.3 - 3.6	2.5	2	3.0 - 4.5	3.7	Byproduct of drinking water chlorination		
Total Organic Halogen (µg/L)	-		289	80 - 221	149	12	215 - 318	264	Byproduct of drinking water chlorination		
<b>Specified Organic Chemicals detected:</b>											
Hexachlorocyclopentadiene (µg/L)	50		12	ND	ND	3	ND - 0.12	0.1	Discharge from chemical factories		
<b>Unspecified Organic Chemicals detected:</b>											
Acetone (µg/L)	50		777	ND - 12	ND	16	ND	ND	Occurs naturally and is used in the production of paints, varnishes, plastics, adhesives, organic chemicals and alcohol. Also used to clean and dry parts of precision equipment		

PARAMETERS	NYSDOH MCL	USEPA MCLG	CATSKILL-DELAWARE SERVICE AREA			CROTON SERVICE AREA			GROUNDWATER SERVICE AREA			SOURCES IN DRINKING WATER
			# SAMPLES	RANGE	RAA	# SAMPLES	RANGE	RAA	# SAMPLES	RANGE	RAA	
<b>Disinfection Byproducts detected:</b>												
Haloacetic acid 5 (HAA5) (µg/L)	60 <sup>(15)</sup>		203	17 - 62	49	33	21 - 65	56	20	14 - 41	39	Byproduct of drinking water chlorination
Total Trihalomethanes (µg/L)	80 <sup>(15)</sup>		217	12 - 66	46	56	20 - 70	62	520	14 - 47	33	Byproduct of drinking water chlorination

PARAMETERS	NYSDOH MCL	USEPA MCLG	CITYWIDE DISTRIBUTION						SOURCES IN DRINKING WATER		
			# SAMPLES	RANGE	# SAMPLES POSITIVE	AVERAGE	HIGHEST MONTH % POSITIVE	# SAMPLES	RANGE	RAA	
			# SAMPLES POSITIVE	AVERAGE	HIGHEST MONTH % POSITIVE	Naturally present in the environment					
Total Coliform Bacteria (% of samples positive/month)	5%	0	10056	-	14	-	0.5%	Naturally present in the environment			
<i>E. coli</i> (CFU/100mL)	<sup>(16)</sup>	0	10056	-	0	-	0.0%	Human and animal fecal waste			
Heterotrophic Plate Count (CFU/mL)	T.T.	-	4576	ND - 375	418	2	-	Naturally present in the environment			

PARAMETERS	NYSDOH MCLG	USEPA MCLG	Surface Water Service Area						Groundwater Service Area					
			# SAMPLES	RANGE	90 <sup>th</sup> PERCENTILE VALUES	# SAMPLES EXCEEDING AL	RANGE	90 <sup>th</sup> PERCENTILE VALUES	# SAMPLES EXCEEDING AL	RANGE	90 <sup>th</sup> PERCENTILE VALUES	# SAMPLES EXCEEDING AL		
			# SAMPLES	RANGE	90 <sup>th</sup> PERCENTILE VALUES	# SAMPLES EXCEEDING AL	RANGE	90 <sup>th</sup> PERCENTILE VALUES	# SAMPLES EXCEEDING AL	RANGE	90 <sup>th</sup> PERCENTILE VALUES	# SAMPLES EXCEEDING AL		
Copper (mg/L)	1.3	1.3	185	0.008 - 0.567	0.194	0	0.009 - 2.596	0.200	93	0.009 - 2.596	0.200	2	Corrosion of household plumbing systems	
Lead (µg/L)	15	0	185	ND - 942.4	11	14	ND - 6408.0	8	93	ND - 6408.0	8	6	Corrosion of household plumbing systems	

# New York City Drinking Water Quality Testing Results 2008 (Continued)

## Undetected Parameters

UNDETECTED CONVENTIONAL PHYSICAL AND CHEMICAL PARAMETERS
Antimony, Arsenic, Asbestos <sup>(7)</sup> , Beryllium, Cadmium, Chromium, Cyanide, Foaming Agents, Lithium, Mercury, Nickel, Selenium, Silver, Thallium, Gross Alpha, Gross Beta, Radium 228
UNDETECTED ORGANIC CONTAMINANTS
<b>Principal Organic Contaminants not detected:</b>
Benzene, Bromomethane, Bromochloromethane, Bromoethane, n-Butylbenzene, sec-Butylbenzene, tert-Butylbenzene, Carbon Tetrachloride, Chlorobenzene, Chloroethane, Chloromethane, 2-Chlorotoluene, 4-Chlorotoluene, Dalapon, Dibromomethane, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, Dichlorodifluoromethane, 1,1-Dichloroethane, 1,2-Dichloroethane, cis-1,2-Dichloroethylene, trans-1,2-Dichloroethylene, 1,2-Dichloropropane, 1,3-Dichloropropane, 2,2-Dichloropropane, 1,1-Dichloropropene, cis-1,3-Dichloropropene, trans-1,3-Dichloropropene, Ethylbenzene, Hexachlorobutadiene, Isopropylbenzene, p-Isopropyltoluene, Methylene chloride, n-Propylbenzene, Styrene, 1,1,1,2-Tetrachloroethane, Tetrachloroethylene, Toluene, 1,2,3-Trichlorobenzene, 1,1,1-Trichloroethane, 1,1,2-Trichloroethane, 1,1,2-Trichloroethane, 1,1,1-Trichloroethane, 1,1,2-Trichloroethane, Trichloroethene, Trichloroethane, 1,2,3-Trichloropropane, 1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene, m-Xylene, o-Xylene, p-Xylene
<b>Specified Organic Contaminants not detected:</b>
Aflatoxin, Aldicarb (Temik), Aldicarb sulfone, Aldicarb sulfoxide, Aldrin, Atrazine, Benzo(a)pyrene, Butachlor, Carbaryl, Carbofuran (Furadan), Chlordane, 2,4-D, 1,2-Dibromo-3-chloropropane, Dicamba, Dieldrin, Di(2-ethylhexyl)adipate, Di(2-ethylhexyl)phthalate, Dinoseb, Diquat, Endosulfan, Endrin, Ethylene dibromide (EDB), Glyphosate, Heptachlor, Heptachlor epoxide, Hexachlorobenzene, 3-Hydroxycarbofuran, Lindane, Methomyl, Methoxychlor, Methyl-tertiary-butyl-ether (MTBE), Metolachlor, Metribuzin, Oxamyl (Vydate), Pentachlorophenol, Picloram, Polychlorinated biphenyls [PCBs], Propachlor, Simazine, Toxaphene, 2,4,5-TP (Silvex), 2,3,7,8-TCDD (Dioxin), Vinyl chloride
<b>Unspecified Organic Chemicals not detected:</b>
Acenaphthene, Acenaphthylene, Acetochlor, Acifluorfen, Anthracene, Bentazon, Benzo[a]anthracene, Benzo[b]fluoranthene, Benzo[k]fluoranthene, Benzol[g,h,i]perylene, a-BHC, b-BHC, d-BHC, Bromacil, Butylbenzylphthalate, a-Chlorodane, g-Chlorodane, Chlorobenzilate, Chloroneb, Chlorothalonil (Draconil, Bravo), Chlorpyrifos (Dursban), Chrysene, 2,4-DB, DCPA (total mono & diacid degradate), p,p' DDD, p,p' DDE, p,p' DDT, Diazinon, Dibenz[a,h]anthracene, Di-n-Butylphthalate, 3,5-Dichlorobenzoic acid, Dichlorprop, Dichlorvos (DDVP), Diethylphthalate, Dimethoate, Dimethylphthalate, 2,4-Dinitrotoluene, 2,6-Dinitrotoluene, Di-N-octylphthalate, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin aldehyde, EPT C, Fluoranthene, Fluorene, Heptachlor epoxide (isomer B), Indeno[1,2,3-cd]pyrene, Isophorone, Malathion, Methiocarb, Molinate, Naphthalene, cis-Nonachlor, trans-Nonachlor, Paraquat, Parathion, Pendimethalin, Permethrin, Phenanthrene, Propoxur (Baygon), Pyrene, 2,4,5-T, Terbacil, Terbutylazine, Thiobencarb, Trifluralin

## Footnotes

- (1) USEPA Secondary MCL: NYSDOH has not set an MCL for this parameter.
- (2) Value represents MRDL, which is a level of disinfectant added for water treatment that may not be exceeded at the consumer's tap without an unacceptable possibility of adverse health effects. The MRDL is enforceable in the same manner as an MCL and is the calculated running annual average. Data presented are the range of individual sampling results and the highest of the 4 quarterly running annual averages.
- (3) Determination of MCL violation: If a sample exceeds the MCL, a second sample must be collected from the same location within 2 weeks. If the average of the two results exceeds the MCL, then an MCL violation has occurred.
- (4) Action Level (not an MCL) measured at the tap. The data presented in this table were collected from sampling stations at the street curb. For at-the-tap monitoring, see the following table.
- (5) A Langelier Index of less than zero indicates corrosive tendencies.
- (6) Hardness of up to 3 grains per gallon is considered soft water; between 3 and 9 is moderately hard water.
- (7) If iron and manganese are present, the total concentration of both should not exceed 500 µg/L.
- (8) The average for pH is the median value.
- (9) Water containing more than 20 mg/L of sodium should not be used for drinking by people on severely restricted sodium diets. Water containing more than 270 mg/L of sodium should not be used for drinking by people on moderately restricted sodium diets.
- (10) Turbidity is a measure of cloudiness of the water. Turbidity is monitored because it is a good indicator of water quality and can hinder the effectiveness of disinfection.
- (11) This MCL for turbidity is the monthly average rounded off to the nearest whole number. Data presented are the range of individual sampling results and the highest monthly average from distribution sites.
- (12) This MCL for turbidity only applies to the Croton System. The value presented is the highest monthly average for the Croton distribution entry points.
- (13) This MCL for turbidity is on individual readings taken every 4 hours at the source water entry point. Data presented are the highest individual sampling result for each system.
- (14) Only one sample collected from site 39650 on 11/5/2008 had a detection of 1.36 µg/L.
- (15) USEPA MCLs for HAA5 and TTHMs are the calculated quarterly running annual average. Data presented are the range of individual sampling results and the highest quarterly running average.
- (16) If a sample and its repeat sample are both positive for coliform bacteria and one of the two samples is positive for *E. coli*, then an MCL violation has occurred.
- (17) NYSDOH has issued a waiver for asbestos monitoring in the Groundwater System since no asbestos cement pipes are used anywhere in the distribution system.

Highlighted and bolded value indicates a violation or exceedance occurred.



## Definitions

### *Action Level (AL):*

The concentration of a contaminant, which if exceeded, triggers treatment or other requirements that a water system must follow. An exceedence occurs if more than 10% of the samples exceed the Action Level.

### *Maximum Contaminant Level Goal (MCLG):*

The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

### *Maximum Contaminant Level (MCL):*

The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible, using the best available treatment technology.

### *Maximum Residual Disinfectant Level (MRDL):*

The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

### *Maximum Residual Disinfectant Level Goal (MRDLG):*

The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contamination.

### *Treatment Technique (TT):*

A required process intended to reduce the level of a contaminant in drinking water.

### *90<sup>th</sup> Percentile Value:*

The values reported for lead and copper represent the 90<sup>th</sup> percentile. A percentile is a value on a scale of 100 that indicates the percent of a distribution that is equal to or below the value. The 90<sup>th</sup> percentile is equal to or greater than 90% of the lead and copper values detected at your water system.

## Abbreviations

**CFU/mL** = colony forming units per milliliter

**mg/L** = milligrams per liter ( $10^{-3}$  grams per liter)

**NA** = Not Applicable

**ND** = Lab analysis indicates parameter is not present

**NDL** = No Designated Limit

**NTU** = Nephelometric Turbidity Units

**µS/cm** = microsiemens per centimeter

**µg/L** = micrograms per liter ( $10^{-6}$  grams per liter)

**µmho/cm** = micromhos per centimeter

**pCi/L** = picocuries per liter

Cover Art: "Water is the Life of NYC"

© Groundswell Community Mural Project (2008)

Lead Artist: Nicole Schulman; Assistant Artist: Crystal Bruno

Community Partners: NYC Department of Environmental Protection

Youth Artists: Stephon Samuel, Samuel Walker, Federico Tenorio, Christina Cacioppo, Dwight Vacciana, Lilyana Lucero, Zane Smith, Epigmenio JR Sosa, Johnathan Marrero, Ernessa De Rose, Geoffrey Kixmiller

The project was made possible with a grant from the StratREAL Foundation USA with additional support from: Winifred Johnson Clive Foundation, Assemblywoman Joan Milman, Brooklyn Borough President's Office, Councilwoman Sara Gonzalez, National Endowment for the Arts, NYC Department of Cultural Affairs, the Park Slope Civic Council.  
Location: 209 4th Avenue (at Sackett Street), Brooklyn

Photographs of ornamental fountains courtesy of the New York City Department of Parks and Recreation. All other photographs by the New York City DEP.



## Frequently Asked Questions

### *Is New York City's water "hard"?*

Hardness is a measure of dissolved calcium and magnesium in the water. The less calcium and magnesium in the water ("soft" water), the easier it is to create lather and suds. Depending upon location, the hardness can be 1.0 grain/gallon (CaCO<sub>3</sub>) for the Catskill/Delaware System, and 5 grains/gallon for the Croton System. New York City's water is predominantly "soft."

### *At times, my drinking water looks "milky" when first taken from a faucet, but then clears up. Why?*

Air becomes trapped in the water as it makes its long trip from the upstate reservoirs to the City. As a result, bubbles of air can sometimes cause water to appear cloudy or milky. This condition is not a public health concern. The cloudiness is temporary and clears quickly after the water is drawn from the tap and the excess air is released.

### *At times I can detect chlorine odors in tap water. What can I do about it?*

Chlorine odors may be more noticeable when the weather is warmer. Chlorine is a disinfectant and is added to the water to kill germs. The following are ways you can remove the chlorine and its odor from your drinking water:

- Fill a pitcher and let it stand in the refrigerator overnight. (This is the best way.)
- Fill a glass or jar with water and let it stand in sunlight for 30 minutes.
- Pour water from one container to another about 10 times.
- Heat the water to about 100 degrees Fahrenheit.
- Once you remove the chlorine, be sure to refrigerate the water to limit bacterial regrowth.

### *Does my drinking water contain fluoride?*

Yes, all New York City tap water contains fluoride. In accordance with Article 141.08 of the New York City Health Code, DEP, as the New York City water supplier, adds a fluoride compound that provides our water supply with a concentration of approximately 1.0 part per million (ppm) fluoride. Fluoridation began in 1966.

### *The faucet aerators in my home are clogging with pieces of a small, whitish material. What is causing this to occur?*

This problem may be accompanied by a significant drop in water pressure at the affected faucet in addition to a decrease in your hot water supply. The culprit is the hot water heater's "dip-tube." This is a long internal tube that delivers cold water to the bottom of the hot water heater tank. The tube, which is composed of polypropylene, may disintegrate. The problem affects approximately 16 million water heaters manufactured between 1993 and 1996.

### *Sometimes my water is a rusty brown color. What causes this?*

Brown water is commonly associated with plumbing corrosion problems inside buildings and from rusting hot water heaters. If you have an ongoing problem with brown water, it is probably due to rusty pipes. It is recommended that you run your cold water for 2-3 minutes, if it has not been used for an extended period of time. This will flush the line. You can avoid wasting water by catching your "flush" water in a container and using it to water plants or for other purposes. Brown water can also result from street construction or water main work being done in the area. Any disturbance to the main, including the opening of a fire hydrant, can cause pipe sediment to shift, resulting in brown water. The settling time will vary, depending on the size of the water main.

### *Should I buy bottled water?*

You do not need to buy bottled water for health reasons in New York City, since our water meets all federal and State health-based drinking water standards. Also, bottled water costs up to 1,000 times more per year than the City's drinking water. When purchasing bottled water, consumers should look for the NYSHD CERT#. Consumers can access additional information on New York State certified bottled water facilities within the entire United States that can be sold within New York State at [www.health.state.ny.us/environmental/water/drinking/bulk\\_bottle/bottled.htm](http://www.health.state.ny.us/environmental/water/drinking/bulk_bottle/bottled.htm). As an alternative to purchasing bottled water, use a reusable bottle and fill it with New York City tap water.



## **Automated Meter Reading (AMR)**

Improving customer service to its 833,000 account holders remains a top priority for DEP. This important work continues with the launch of Automated Meter Reading (AMR). AMR technology will end the use of estimated water bills, giving homeowners and small businesses more accurate and timely records of usage – increasing their ability to identify how they can conserve water and reduce water bills.

### ***What is AMR?***

The installation of a citywide automated meter reading (AMR) network is an important next step in the New York City Department of Environmental Protection's comprehensive transformation of its Bureau of Customer Services. AMR systems consist of small, low-power radio transmitters connected to individual water meters that send readings to a network of rooftop receivers throughout the city. DEP's system will leverage DoITT's New York City Wireless Network (NYCWIn).

### ***How does AMR work?***

DEP will attach a small device to your meter that automatically transmits readings to electronic data receivers throughout the city. These receivers will provide DEP with all relevant billing information and eliminate the need for meter readers to visit your property.

### ***How does AMR benefit me?***

- AMR eliminates, with rare exceptions, the need to estimate your bill.
- AMR tracks consumption and can alert you to costly leaks.
- AMR eliminates the need for a meter reader to visit your premises.
- AMR ensures that you receive a more accurate bill each month.

### ***How will AMR affect my bill?***

AMR will eliminate estimated bills and increase billing accuracy. AMR can also help alert you to household leaks so you are able to fix them before they become costly problems. You will continue to receive your water and sewer bills in the mail in accordance with your normal billing schedule, though DEP is also finalizing a new, customer-friendly bill that will explain consumption data in a clear, easy to read format. We anticipate that you will begin receiving these bills in 2009.

### ***When will an AMR transmitter be installed on my meter?***

DEP contractors are performing transmitter installation door-to-door beginning in the winter of 2009. Installing transmitters on all 833,000 meters in New York City will take approximately three years. Installations will occur first in Brooklyn and Queens, then in the Bronx and Manhattan, and then in Staten Island. You will receive notification from DEP when AMR installation contractors are in your neighborhood. In addition, you may call 311 at any time to schedule a transmitter installation – performed by DEP contractors – for your property.

### ***Will DEP need access to my home?***

DEP may need to enter your home, depending on where your current meter is installed; and we may need to shut off your water. In addition, a very small number of old meters may need to be replaced before an AMR transmitter can be properly installed. DEP will pay for these replacements.

### ***How long will the installation take?***

Installation of the transmitter will take around 30 minutes.

### ***What are the benefits of AMR to DEP?***

- AMR increases customer satisfaction by ensuring that bills are based on actual usage.
- AMR allows DEP to more closely monitor citywide consumption and more effectively manage the city's water supply systems.
- AMR is a less expensive way to read meters. It is efficient, accurate and can reduce costs.

### ***Does AMR equipment meet industry and Federal standards?***

Yes. AMR technology is designed to function at very low power levels and is in widespread use throughout the utility industry. We will use AMR equipment that has been tested and is compliant with American National Standards Institute (ANSI) and Federal Communication Commission (FCC) standards. Similar systems are already used by many other major cities, including Dallas, Detroit and Washington, D.C.

### ***Will AMR interfere with TV, personal computers, or other electronic equipment?***

AMR equipment operates on a low-power frequency band reserved specifically for this purpose. It is highly unlikely to interfere with the operation of any other electronic equipment.

### ***Where can I find more information about DEP's AMR system?***

More information is available on DEP's website at [nyc.gov/dep](http://nyc.gov/dep). Additional information is also available by calling 311.



New York City Department of  
**Environmental Protection**  
59-17 Junction Boulevard  
Flushing, New York 11373-5108

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City of New York  
Department of  
Environmental Protection

**Please share this information with all the other people who drink NYC water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.**

## Contact Us

For a copy of this report, to report unusual water characteristics, or to request a free kit to test for lead in your drinking water, call 311, or from outside NYC, call (212) New-York. TTY services are available by calling (212) 504-4115.

For more information on *Cryptosporidium* and *Giardia*, please contact the Bureau of Communicable Diseases of the New York City Department of Health and Mental Hygiene (DOHMH) at (212) 788-9830 or call 311.

To contact DOHMH about other water supply health-related questions, call 311, or call NYSDOH Bureau of Water Supply Protection at (518) 402-7650.

To report any pollution, crime or terrorism activity occurring both in-City and in the watershed, call (888) H2O-SHED (426-7433).

To view this 2008 Statement, announcements of public hearings, or other information, visit DEP's Web site at:

[www.nyc.gov/dep](http://www.nyc.gov/dep)

Este reporte contiene información muy importante sobre el agua que usted toma. Haga que se la traduzcan o hable con alguien que la entienda.

Ce rapport contient des informations importantes sur votre eau potable. Traduisez-le ou parlez en avec quelqu'un qui le comprend bien.

Questo documento contiene informazioni importanti sulla vostra acqua potabile. Traducete il documento, or parlatene con qualcuno che lo può comprendere.

Rapò sa a gen enfòmasyon ki enpòtan anpil sou dlo w'ap bwè a. Fè tradwi-l pou ou, oswa pale ak yon moun ki konprann sa ki ekri ladan-l.

Ten raport zawiera bardzo istotną informację o twojej wodzie pitnej. Przetłumacz go albo porozmawiaj z kimś kto go rozumie.

В этом материале содержится важная информация относительно вашей питьевой воды. Переведите его или поговорите с кем-нибудь из тех, кто понимает его содержание.

這個報告中包含有關你的飲用水的重要信息。請將此報告翻譯成你的語言，或者詢問懂得這份報告的人。

이 보고서는 귀하의 식수에 관한 매우 중요한 정보를 포함하고 있습니다. 이 정보에 대해 이해하는 사람에게 그 정보를 번역하거나 통역해 받으십시오.