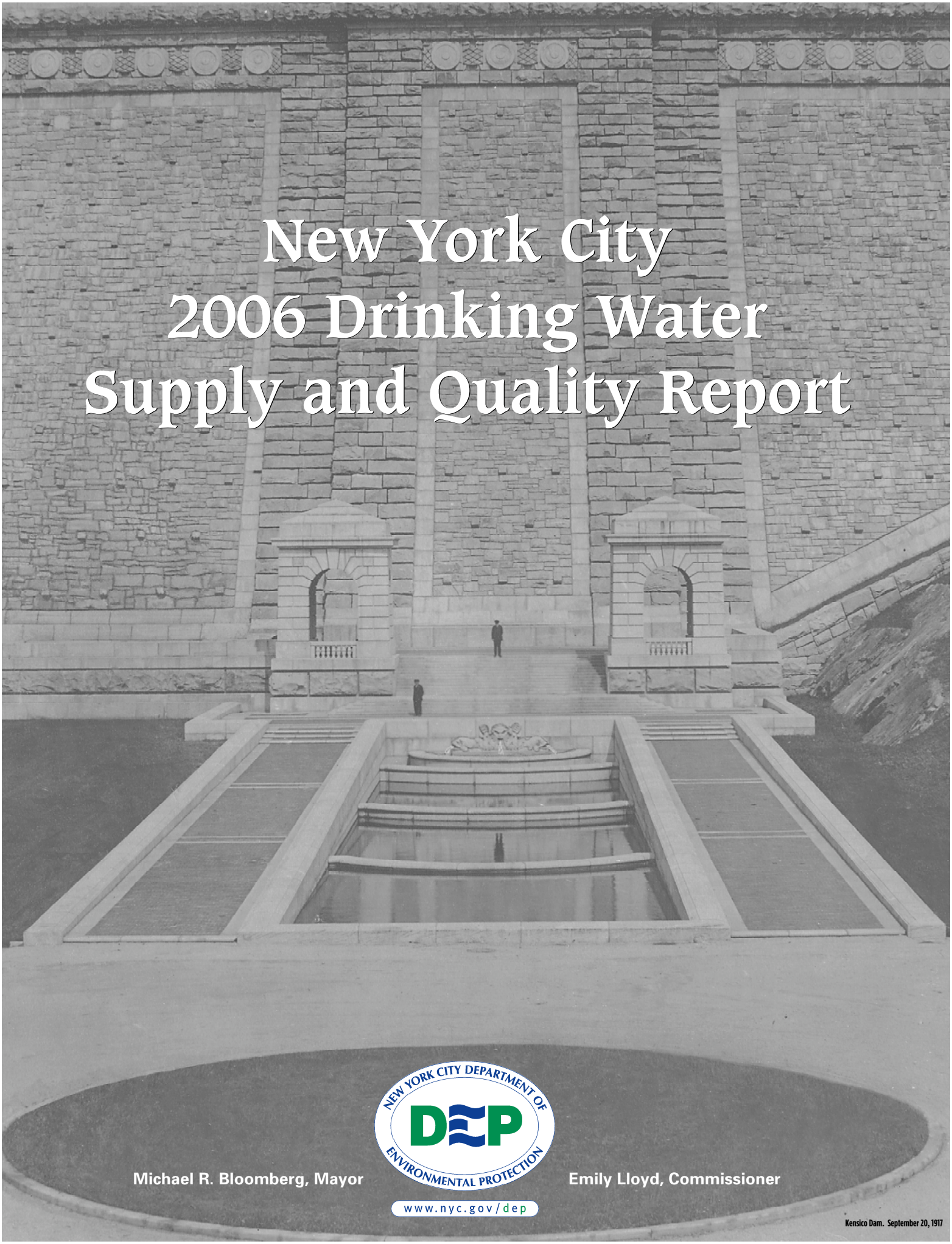
New York City 2006 Drinking Water Supply and Quality Report



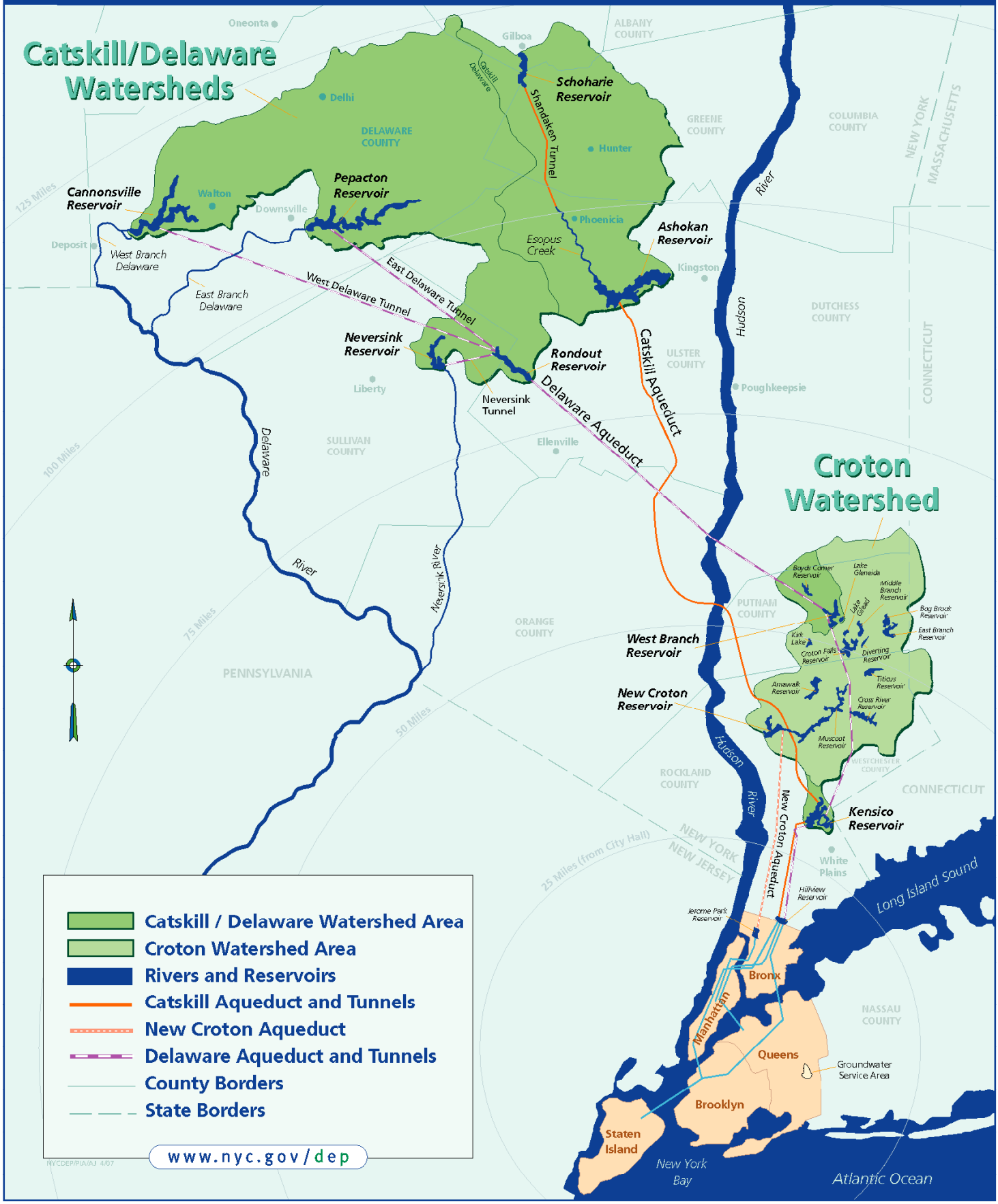
Michael R. Bloomberg, Mayor

Emily Lloyd, Commissioner

www.nyc.gov/dep

Kensico Dam. September 20, 1917

New York City's Water Supply System



The City of New York

DEPARTMENT OF ENVIRONMENTAL PROTECTION

59-17 Junction Boulevard
Flushing, New York 11373

Emily Lloyd
Commissioner

Dear Water Customer:

This year marks the 100th anniversary of New York City's Catskill water system. On June 20, 1907, then Mayor McClellan traveled by river ferry to Putnam County, where he broke ground on what would become the Catskill's critical network of reservoirs and water tunnels, before a crowd of nearly 1,000 impressed onlookers. For New York City, the size and scope of the project was unprecedented – at the time, it was the largest single construction project in the City's history. President of the Board of Water Supply, J. Edward Simmons, boasted of the project's enormity, while newspaper headlines heralded an aqueduct that would "cost more than [the] Panama Canal."

Today, 100 years later, this ambitious engineering feat is an integral part of New York City's vast water system, a system that supplies nearly 9 million people with 1.1 billion gallons of water each day. Mayor McClellan and Board of Water Supply President Simmons could not have known the growth New York would undergo in the century following that auspicious June day, but today their legacy is very much with us, providing City residents with a reliable supply of healthy, clean and safe drinking water.

As New York looks towards the future, we must ensure that the water infrastructure we put in place can support future generations of New Yorkers. With this task in mind, the Department of Environmental Protection (DEP) has developed a $19.5 billion Capital Investment Strategy for the next decade, the majority of which will be used to upgrade and add to existing infrastructure and guarantee that we can fulfill our mandate of delivering quality drinking water to New York for years to come.

This level of capital investment is extraordinary and will allow for new construction to be completed that will be as important to our City's growth as the Catskill System was in the last century. The next decade will see the completion of City Water Tunnel No. 3, an enormous project that will allow for the maintenance of the aging Tunnels Nos. 1 and 2, as well as the Catskill UV disinfection facility and the Croton Filtration Plant, all of which will increase the dependability, viability and sustainability of the City's water system.

As we embark upon this era of construction, DEP is using its long experience to develop, design and build new infrastructure that will carry the legacy of innovation and excellence into the Twenty-First Century.

This year's Annual Water Quality Report, in addition to informing the public of the state of New York's drinking water, tells the story of this water system through photographs gathered from DEP's extensive archives. I hope you will find this report useful and interesting, and I encourage you to visit our website at nyc.gov/dep for more information.

Sincerely,

Emily Lloyd
Commissioner, NYCDEP

NEW YORK CITY 2006
DRINKING WATER SUPPLY AND QUALITY REPORT

The New York City Department of Environmental Protection is pleased to present its 2006 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.

Mayor George McClellan breaking ground at the ceremonies celebrating the inauguration of construction of the Catskill System. June 20, 1907

New York City's Water Supply

The New York City surface (reservoir) water supply system provides approximately 1.1 billion gallons of safe drinking water daily to over 8 million residents of New York City; approximately 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 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

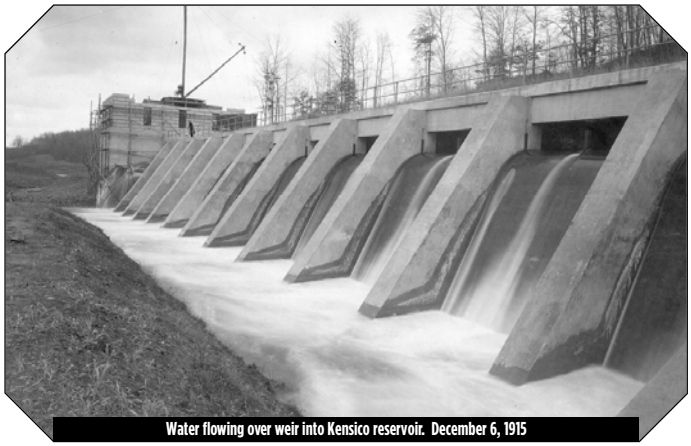
New York City's surface water is supplied from a network of 19 reservoirs and three controlled lakes in a 1,972 square-mile watershed that extends 125 miles north and west of New York City. Due to the City's ongoing efforts to maintain the appropriate volume and high quality of water in the distribution system, there is some rotation in the water sources used by DEP. In 2006, 99% 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, was offline in 2006, and therefore did not provide drinking water to New York City residents for the entire calendar year. New York City's Groundwater System (PWSID NY7011735) in southeastern Queens operated one well which supplied a daily average of 1.3 million gallons of drinking water, less than 1% of the City's total usage.

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.



Water flowing over weir into Kensico reservoir. December 6, 1915

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

Filtration Avoidance Determination Submission

In 2006, New York City continued to implement its long-range, comprehensive watershed protection programs, which are the basis for its waiver from federal surface water filtration requirements. DEP also submitted the City's 2006 Long-Term Watershed Protection Program to the EPA, in accordance with the terms of EPA's 2002 FAD. A new 5-year FAD, based on the Long-Term Program, is expected to be issued by EPA in the spring of 2007.

The City's watershed protection programs enable DEP to provide a safe, plentiful, and reliable drinking water supply to over nine million New York State residents. They also benefit residents and visitors in the upstate communities where the City's source waters are located by protecting the watershed's ecosystems and preserving its extraordinary beauty. These programs target three principal areas: acquiring additional watershed lands; enforcing Watershed Rules and Regulations; and implementing partnership programs to address specific sources of pollution. These efforts reflect the City's long-standing commitment to both rigorous water quality protection and the preservation of the economic vitality and community character of watershed towns, villages and hamlets. More information on these programs and on other watershed issues can be found on DEP's Watershed Web site at www.nyc.gov/watershed.

Land Acquisition

Since the Land Acquisition Program began in 1997, the City has tripled its total land holdings in the watershed. Through outright purchase and conservation easements, DEP and its partners have secured almost 79,000 acres. When combined with the 45,000 acres of land the City owns surrounding its reservoirs, a total of 124,000 acres are now protected from development.

The City buys lands only from willing sellers. DEP solicits parcels for acquisition based on the presence of critical natural features, like streams and wetlands; their proximity to reservoirs and their potential for development. The lands acquired are among those DEP has identified as the most beneficial for water quality protection. During 2006, DEP continued to solicit owners of such sensitive watershed properties.

Land Management

As DEP's portfolio of watershed lands has expanded in recent years, so has the task of managing City-owned properties for their long-term protection. The City has become one of the largest single landowners in the watershed region. To ensure that DEP lands continue to protect water quality, DEP is developing and implementing land management plans that establish overall goals and objectives for water supply lands and identify specific projects to improve water quality. For example, lands with fully mature forests require careful management to ensure that young, vigorous saplings can replace aging stock in a controlled manner, minimizing nutrient and sediment loss into the water supply.

Management of the City's water supply lands also includes opening lands for recreational use and enjoyment. Within the limitations dictated by the need to protect source water quality, DEP has increased the quantities of lands available for recreational use each year over the past eight years. Over 44,000 acres of newly-acquired water supply lands are open for recreation, including fishing, hiking, hunting, cross-country skiing and, in a 2-area pilot program, snowmobiling. The reservoirs themselves offer 33,500 acres of

Ashokan Reservoir - view showing North Cone of Olive Bridge dam. September 25, 1915

Ashokan reservoir - Laying brick pavement on road atop the West Hurley dike. May 25, 1916

great angling water. DEP issued 14,780 new recreation permits in 2006; more than 103,000 people now have valid DEP recreation permits. In 2006, DEP released new, comprehensive watershed recreation regulations, which cover the entire range of permitted activities on City-owned watershed lands. The new rules were developed and revised during a 3-year process that included watershed residents, officials, recreational users and DEP.

Partnership Programs

West of the Hudson River, many of the City's watershed protection programs are administered by the Catskill Watershed Corporation (CWC), a non-profit corporation formed solely for this purpose. Together, CWC and DEP have repaired or replaced over 2,300 failing septic systems, completed construction of 43 winter road de-icing materials storage facilities and financed construction of more than 40 stormwater control measures to address existing stormwater runoff.

Through its New Infrastructure Program, DEP is also financing the construction of new wastewater treatment plants (WWTPs) in seven communities which have areas of failing or likely-to-fail septic systems. Roxbury, Andes, Windham and Tannersville have completed their facilities, while new plants in Fleischmanns, Phoenicia and Prattsville are under construction. DEP's $10 million sewer extension program, which connects new sewer lines to City-owned treatment plants West-of-Hudson, completed work in the Village of Tannersville in 2006, and is currently designing projects for Grahamsville, Margaretville, Grand Gorge and Pine Hill.

Wastewater Treatment Plant Upgrades

More than 100 non-City-owned WWTPs 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 97% of the West-of-Hudson WWTP flow have been upgraded. In the Croton Watershed, plants producing 28% of the flow have been fully upgraded, while facilities accounting for another 48% of the flow are under construction. A further 40 plants are in the design phase.

Watershed Agricultural Program

The Watershed Agricultural Program (WAP) has been in operation since 1992 as a comprehensive effort to develop and implement pollution prevention plans on watershed farms. Almost 95% of the commercial farms in the City's Catskill/Delaware Watersheds participate in this voluntary program, which works to reduce agricultural pollution while improving the economic viability of the farms involved. Funded primarily by the City, WAP is administered by the community-based, not-for-profit Watershed Agricultural Council (WAC). More than $28 million has been spent on implementation of Best Management Practices (BMPs) on 295 farms in the Catskill/Delaware and Croton Watersheds since 1992. The City has augmented the program with a City/federal cost-sharing effort known as the Conservation Reserve Enhancement Program (CREP). CREP pays farmers to re-establish vegetative buffers on sensitive riparian buffer lands near streams and ponds.

Improved Reliability

Upstate Capital Improvements

Much of the City's water supply infrastructure is between 50 and 150 years old, and certain capital improvements are required to ensure a reliable water supply for future generations of New Yorkers. In 2006, DEP continued its ongoing $9 billion, long-term capital program to upgrade and improve the City's upstate water supply facilities. The program targets gatehouses, aqueducts, water testing laboratories and other facilities that are critical to ensuring a safe and reliable supply of drinking water.

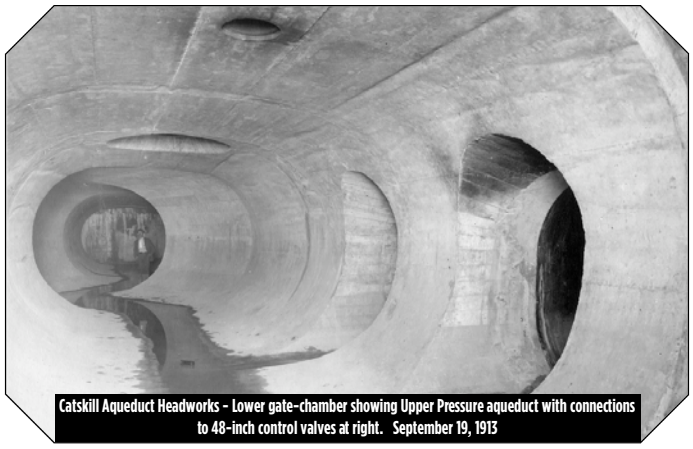
Gilboa Dam Stabilization

During 2006, DEP completed a $24 million project, begun in December of 2005, to stabilize the Gilboa Dam at the Schoharie Reservoir in Greene County. The work made the Dam safer by installing 80 anchoring cables to pin the structure down to the bedrock below. A $300 million full-scale reconstruction of the Dam, which will bring it up to State standards for newly-constructed dams, will begin in 2008. Built between 1920 and 1927, the Gilboa Dam impounds the Schoharie Creek to form the Schoharie Reservoir, which has a capacity of 19.5 billion gallons and on average provides approximately 16% of New York City's water supply.

DEP is committed to the upgrade of its dams according to modern design criteria. It has initiated a comprehensive program in recent years to assess the condition of dams at City-owned reservoirs in the Catskill/Delaware Watershed and to undertake repairs and rehabilitation as required. This is similar to a program initiated by DEP in the mid-1980s to assess and rehabilitate City-owned dams located in the East-of-Hudson watershed.

Catskill/Delaware UV Facility

EPA published new regulations in the Federal Register on January 6, 2006, including the Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR), to improve control of microbial



Catskill Aqueduct Headworks - Lower gate-chamber showing Upper Pressure aqueduct with connections to 48-inch control valves at right. September 19, 1913

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. In April 2006, DEP commenced construction of the plant 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 Chambers and is designed to disinfect 2.2 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 therefore proceeding with the design and 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 by-product levels in the Croton System water. The filtration plant will also ensure compliance with stricter water quality standards. In September 2004, the City commenced construction of the Croton Water Filtration Plant at the Mosholu Golf Course site. During 2006, site preparation work for the plant continued.

As part of an agreement between the City and the Parks Department, more than $200 million generated from water and sewer revenues will be spent on improvements to more than 70 Bronx Parks and recreational facilities over the next five years. In 2006, work commenced on eight playgrounds, four ball fields, two hard court game areas and other renovations at ten different locations totaling $15.8 million in improvements.

In conjunction with plant construction, DEP has opened 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. Although the Croton System water was not sent into distribution in 2006, 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 Tunnel No. 3, one of the largest capital projects in New York City's history, began in 1970. Tunnel No. 3 will enhance and improve the City's water delivery system, and allow for the inspection and repair of City Tunnels No. 1 and 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 consists of a 5.5-mile section in Brooklyn that connects to a 5-mile Queens leg. These were completed in May of 2001. Currently, supply shafts are under construction that will integrate the new tunnel section with the existing distribution system. It is anticipated that the Brooklyn/Queens section, which will deliver water to Staten Island, Brooklyn and Queens, will be activated by 2009. Tunneling on the Manhattan portion of Stage 2 began in 2003 and was completed in 2006. The Manhattan leg is expected to begin water delivery by 2012. Facility planning for Stage 3 of the tunnel is ongoing, with a final facility plan and conceptual design expected by late 2007. 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 Tunnel No. 3. In total, Tunnel No. 3 will span 60 miles. Construction is expected to be completed by 2025.

Mayor Michael Bloomberg on a visit to Manhatan section of Tunnel No. 3.

Hauling 11-foot 3-inch (diameter) steel pipe. Twelve horses required. April 7, 1911

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, amended in 1997 and again in 1999, requiring DEP to complete four activities: 1) remove 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 item 4, the covering of the Hillview Reservoir. DEP also instituted an improvements program which included facility and operational modifications designed to prevent a recurrence of the TCR violations: increasing the chlorine residual in the basins of Hillview Reservoir, and initiating an avian (bird) deterrent program. Significant capital improvements to the Hillview Reservoir structures, chemical addition facilities, and flow control facilities were also undertaken. Many elements of the improvements program went beyond the actions required by the AO. DEP did not meet the AO milestone for completing construction of a cover (December 31, 2005) and is currently engaged in discussions with NYSDOH about modifying the AO and extending the covering milestone.

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 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 state-of-the-art facility will produce high quality drinking water and control groundwater flooding while providing educational resources and community meeting space. Once built, Station 6 will provide between 10 and 12 million gallons per day of drinking water. Construction will not commence before 2009. As part of the Station 6 project, DEP has implemented a comprehensive community outreach program. This ongoing program includes small group meetings, large public forums, distribution of informational materials, and a Citizens Advisory Committee that meets on a monthly basis. More information about the Groundwater System can be found at www.nyc.gov/dep/groundwater.

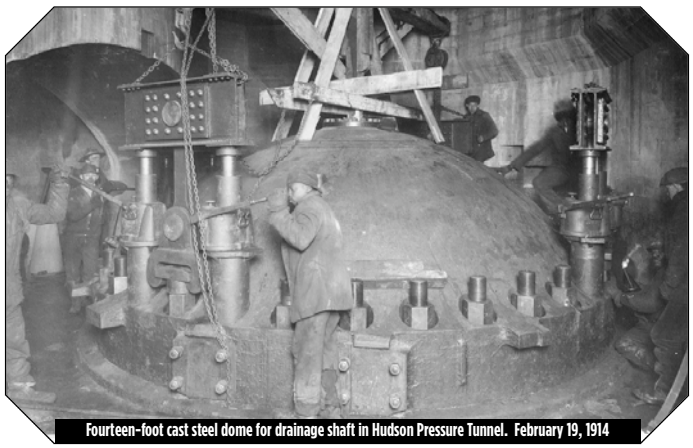
Aquifer Storage and Recovery

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 of the deep aquifers and, when necessary, the City could extract a portion of this potable water to supplement its drinking water supply.

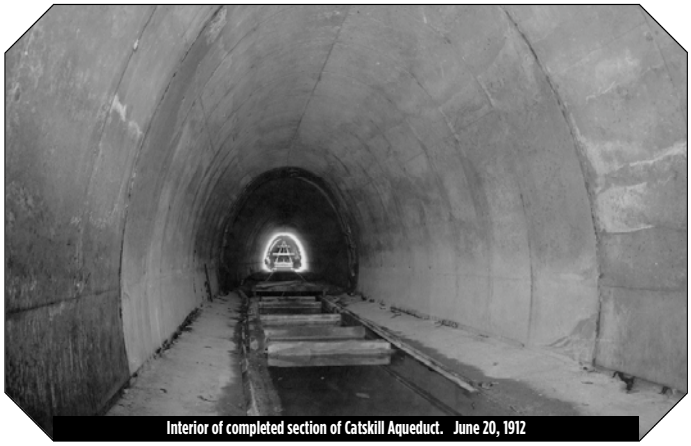
This process will benefit both the City and communities on Long Island. New York City will benefit from a new in-City drinking water supply – created without many of the attendant construction costs and community disturbances involved in traditional capital projects. Most importantly, the City would 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 tetrachloroethene (a.k.a. "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 New York State Department of Environmental Conservation (NYSDEC) are working together to clean up both the soil and the groundwater contamination caused by the spills.



Fourteen-foot cast steel dome for drainage shaft in Hudson Pressure Tunnel. February 19, 1914



Interior of completed section of Catskill Aqueduct. June 20, 1912

Water Conservation

The average single family household in New York City uses approximately 100,000 gallons of water each year, at a cost of $1.65 per 100 cubic feet of water (748 gallons), or about $221.00 each year. 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 $571, consisting of $221 for water service and $350 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 and 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 via the City's helpline, 311. If you are an apartment building owner/manager or a homeowner, you can also obtain a free leak survey. Call DEP's Leak Survey contractor at (718) 326-9426 for information.

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, at a concentration of one part per million, is added to help prevent tooth decay and has been added since 1966 in accordance with the New York City Health Code. 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. However, none of these wells were in operation in 2006. Air stripper facilities can be operated at several wells to remove volatile organic chemicals. The only well in operation in 2006 had an air stripper in operation.

Chlorine

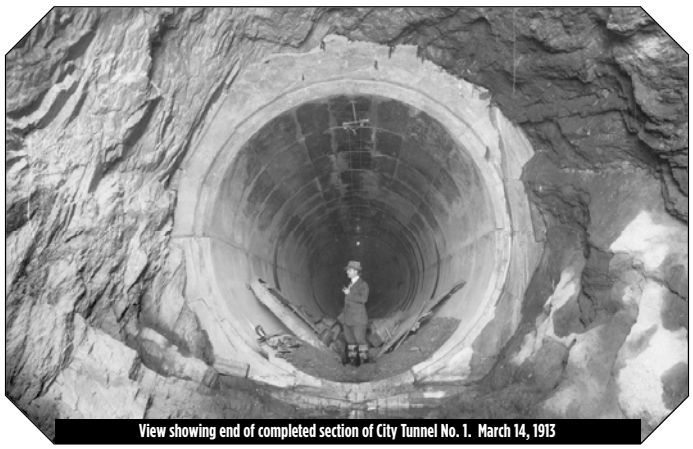
In 2006, DEP successfully repaired and/or replaced the equipment at all chemical feed facilities at both distribution reservoirs. Equipment to disinfect New York City drinking water with chlorine was upgraded at Hillview Reservoir, which receives water from the Catskill/Delaware System, and at Jerome Reservoir, which receives water from the Croton System when in service. Upgrades to the Richmond Booster Chlorination Facility, the entry point to Staten Island, were ongoing in 2006 and are expected to be completed by the summer of 2007.

Turbidity

Following a significant watershed-wide rain event, in October 2005, DEP requested, and received permission from the State Departments of Health and Environmental Conservation (NYSDOH and NYSDEC) to add aluminum sulfate (alum) and sodium hydroxide to Catskill water as it enters Kensico Reservoir. The chemicals are used on an emergency basis to reduce turbidity levels within the reservoir. Alum is a coagulant that causes the suspended particles in the water to bind together; the heavier bound particles then fall through the water column and settle on the bottom of the reservoir. Sodium hydroxide helps to optimize the coagulation process. Whenever it is used, DEP makes every effort to minimize the use of alum, since the NYSDEC believes that deposition of sediments on the reservoir bottom may affect biota and fish populations.

From October 13, 2005 through May 15, 2006, DEP facilitated three distinct alum treatment periods totaling 180 days. The first alum treatment period began on October 13, 2005 and ended on November 23, 2005. The second treatment period lasted from November 30, 2005 through April 10, 2006. Alum treatment restarted again for a third period on May 15, 2006 lasting through May 24, 2006. A fourth alum continuation began on June 28, 2006 and ended August 2, 2006, lasting a total of 36 days. During the entire alum treatment event, from October 13, 2005 to August 2, 2006, DEP treated the Catskill Aqueduct for a total of 216 days.

DEP is happy to report that the use of alum successfully controlled the turbidity coming from the Catskill Aqueduct, limiting its impact on Kensico Reservoir. As a result, DEP was able to maintain compliance with the federal Surface Water Treatment Rule (SWTR) and the New York State Sanitary Code at Kensico Reservoir effluents. Violation of these codes would have affected the filtration avoidance status of the Water Supply.



View showing end of completed section of City Tunnel No. 1. March 14, 1913

On March 23, 2006, the turbidity of the New York City Catskill Water Supply at the Kensico Reservoir in Valhalla, New York in Westchester County exceeded 5 nephelometric turbidity units (NTUs) at approximately 7:40 p.m. and stayed above 5 NTU for about 20 minutes. The highest recorded turbidity value was 19 NTU. This incident constituted a treatment technique violation as specified in the federal Safe Drinking Water Act regulation (40 CFR §141.71(c)(2)(i)) and the New York State Sanitary Code 10 NYCRR section 5-1.30 (c) and (d).

Turbidity is a measure of water clarity related to the amount of suspended matter present in the water. The elevated turbidity was a direct result of a routine gate operation related to an aqueduct start up at the Catskill Lower Effluent Chamber that was performed during the evening of March 23. The aqueduct had been shut down earlier in the day to perform repair work and the start up later that evening caused sediment that had settled to become re-suspended and to enter the Catskill Aqueduct to the City. DEP acted quickly and reduced the flow to allow the solids to settle thus reducing the turbidity. However, some turbid water did enter the Catskill Aqueduct before the flow reduction was completed. As a precaution, chlorine treatment was increased during the operational changes to enhance the disinfection of the water.

Extensive distribution system monitoring demonstrated that the water supply met all other drinking water quality standards. While there is no evidence that this turbidity incident introduced any microbiological contaminants into the drinking water, people with severely compromised immune systems, infants and some elderly may have been at increased risk for a brief period following this event.

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.

Fluoride

During 2006, 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/Delaware System were offline over 20% of the time, with the longest period of fluoridation interruption being 27 days for the Catskill System and 31 days for the Delaware System. 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. Interruptions of fluoridation in 2006 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 remained out of service for the entire 2006 calendar year. Therefore, no Croton water was supplied to the New York City distribution system.

Though Croton water was not put into distribution in 2006, the service area identified in the adjacent map represents the areas of the City in which Croton water could be distributed when the Croton System is online.

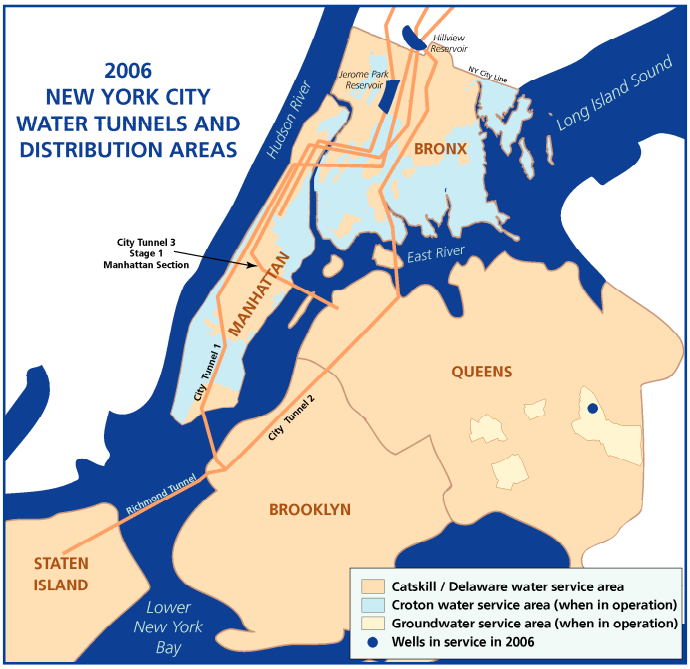
For the Groundwater System, Well 5 was the only well online in 2006 (see adjacent map) in the entire Groundwater service area. The pumping of water at the well was started and stopped on a daily basis, depending upon the water demand of the service area. More operational information for the Groundwater System can be found at www.nyc.gov/dep/groundwater.

Stage 2 Microbials and Disinfection Byproducts Rules

To control microbial contaminants, in 1989 EPA promulgated the SWTR, which established maximum contaminant level goals (MCLGs) for viruses, bacteria and *Giardia*. It also includes treatment technique requirements for filtered and unfiltered systems specifically designed to protect against the adverse health effects of exposure to these microbial pathogens. In addition, the TCR, revised in 1989, established a maximum contaminant level (MCL) for total coliforms.

DEP adds chlorine to disinfect the drinking water and protect it from microbes. However, chlorine can react with naturally-occurring materials in the water to form byproducts, such as trihalomethanes and haloacetic acids, which may pose health risks. In 1979, EPA set an interim MCL for total trihalomethanes (TTHM). The addition of a disinfectant to the water supply creates a challenge of balancing protection from microbial pathogens with the need to simultaneously minimize the health risks from disinfection byproducts (DBPs).

Amendments to the SDWA in 1996 required EPA to develop rules to achieve this balance. The Stage 1 Disinfectants and Disinfection Byproducts Rule and Interim Enhanced Surface Water Treatment Rule, promulgated in December 1998, were the first phase in a rulemaking strategy required by Congress as part of the 1996



Amendments to the SDWA. In January 2006, the final Stage 2 Disinfectants and Disinfection Byproducts Rule (Stage 2 DBPR) and the Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR) were promulgated. These regulations build upon earlier rules to increase protection against microbial contaminants, especially *Cryptosporidium*, and at the same time, reduce potential health risks of DBPs. The Stage 2 Regulations will affect how DEP operates the water supply in the future, leading to increased monitoring and reporting, adjustments of chemical additions, and construction of new infrastructure. For more information on the Stage 2 regulations, visit: www.epa.gov/safewater/disinfection.

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. In 2004, DEP received a Notice of Violation (NOV) from NYSDOH for failure to accurately report monitoring of at-the-tap lead concentrations for two consecutive monitoring periods. Because of the NOV, DEP has taken additional action to educate the public about lead in drinking water and to replace certain lead service lines (discussed in more detail below). In 2006, at-the-tap concentrations for lead and copper fell below their Action Levels of 15 µg/L and 1.3 mg/L respectively.

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 2006, DEP collected more than 28,600 samples from the City's distribution system and performed approximately 346,400 analyses.

DEP conducts most of its distribution water quality monitoring at approximately 1000 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. Although the Croton System was not in operation in 2006, all three City Systems are displayed in the map on page 3.

Test Results

The results of the tests conducted in 2006 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 Groundwater Systems. There are no data presented for the Croton System since the Croton System was not in service in 2006. Whether a particular user received water from the Catskill/Delaware or Groundwater supplies, or a mixture, 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

Water Supply Sampling Station

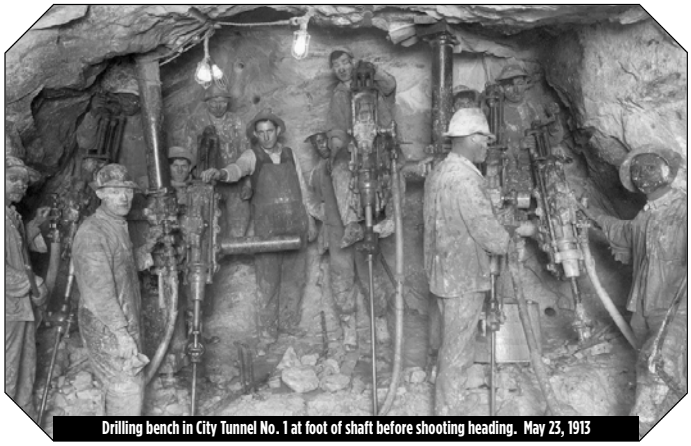
DEP is required to monitor drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not drinking water meets health standards. For the period of July to December 2006 DEP did not meet the monitoring frequency outlined in its monitoring plan, for sampling of water quality parameters at entry points to the distribution system under the Lead and Copper Rule. DEP did not collect a sample from Well 5 entry point during the weeks of July 9 and November 19, 2006 thereby missing weekly samples for pH, temperature, specific conductance and orthophosphate, and the quarterly sample for alkalinity, calcium, lead and copper during the third quarter of 2006. DEP, therefore, cannot be sure of the quality of your drinking water during that time.

This is a violation of Part §5-1.5043 of the New York State Sanitary Code. The impacts to health during the period in question, with respect to the parameters that were not sampled, are not known. However, historical data for the past ten years indicate that the levels of these parameters in entry point samples have always been within an acceptable range.

Nitrate

In 2006, nitrate was detected in the Groundwater System at levels reaching 5.8 mg/L. Although this is not a violation of the nitrate MCL of 10 mg/L, the NYSDOH requires an educational statement about nitrate be included when levels between 5 mg/L and 10 mg/L are detected. In the Catskill/Delaware System nitrate levels remained below 1 mg/L.

The required statement follows: *Nitrate in drinking water at levels above 10 mg/L is a health risk for infants of less than six months of age. High nitrate levels in drinking water can cause blue baby syndrome. Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity. If you are caring for an infant, you should ask for advice from your health care provider.*



Drilling bench in City Tunnel No. 1 at foot of shaft before shooting heading. May 23, 1913

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 2006, the 90th 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 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 90th percentile concentrations, and a failure to collect samples during the period of June 1 to September 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). Working with other City agencies through an inter-Agency Task Force, 55 LSLs were replaced in 2005, and 1 was replaced in 2006.

DEP is currently in discussions with NYSDOH and New York City Department of Health and Mental hygiene (DOHMH) to assess the necessity of further activities under the NOV. DEP has an active corrosion control program aimed at reducing lead absorption from service lines and internal plumbing. The data reported by DEP under the LCR reflect that since the program began in 1992, the 90th 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 13 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 70,000 sample collection kits have been distributed since the start of the program in 1992.

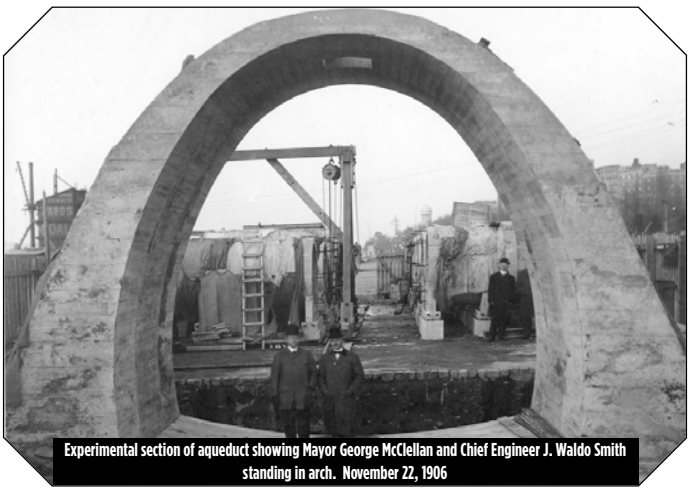
It is a New York State requirement that we make the following statement: *Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure.*

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 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 Help-line at 311 or (212) NEW-YORK.

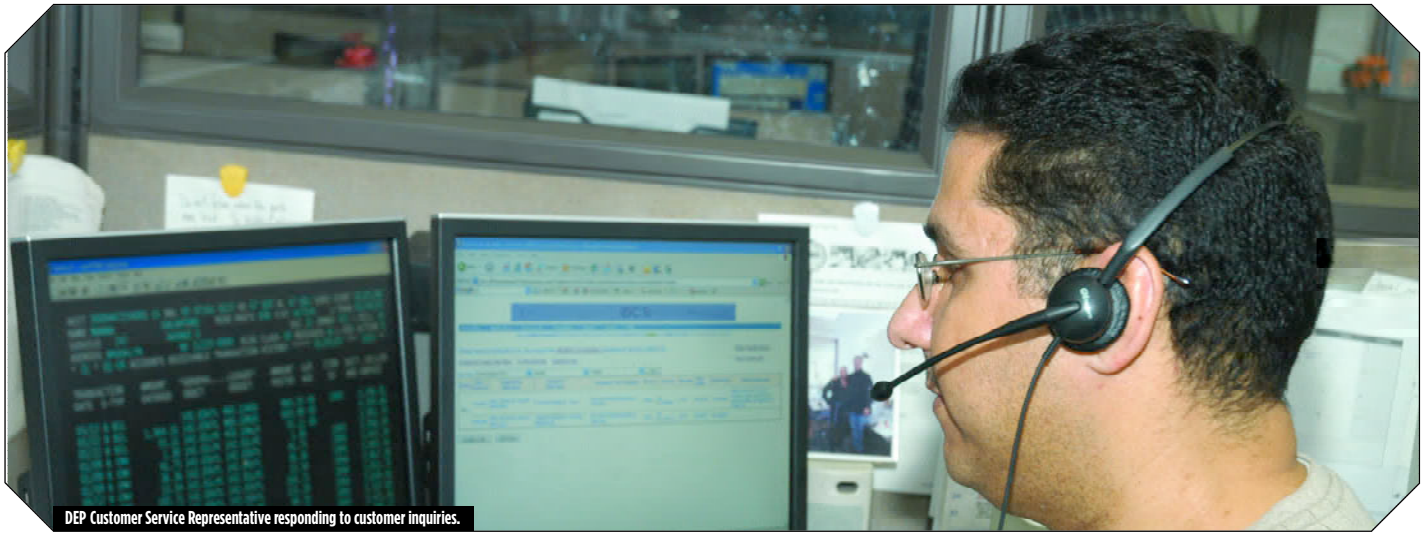
Monitoring for Cryptosporidium and Giardia

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 outflows of the Kensico and New Croton Reservoirs, before water is first chlorinated in the Catskill/Delaware and Croton Systems, respectively. Water from the Croton System did not go into distribution for the entire 2006 calendar year; however, DEP continued to monitor source water at the New Croton Reservoir for *Cryptosporidium* and *Giardia*. 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 us to determine if organisms identified are alive or capable of causing disease.

In 2006, a total of 104 routine samples at Kensico Reservoir effluents and 52 routine samples at the New Croton Reservoir effluent were collected and analyzed for *Cryptosporidium* oocysts and *Giardia* cysts using Method 1623 HV. Of the 104 routine Kensico Reservoir samples, 14 were positive for *Cryptosporidium* (0 to 2 oocysts/50L), and 62 were positive for *Giardia* (0 to 7 cysts/50L). Of the 52 routine New Croton Reservoir samples, 7 were positive for *Cryptosporidium* (0 to 1 oocysts/50L), and 28 were positive for *Giardia* (0 to 6 cysts/50L). Enhanced samples were collected at the Kensico effluents on 14 occasions in 2006 to monitor for protozoa in response to changes in other water quality data. Of these 25 enhanced samples, 1 was positive for *Cryptosporidium* (1 oocyst/50L), and 18 were positive for *Giardia* (0 to 8 cysts/50L). DEP's *Cryptosporidium* and *Giardia* data from 1992 to the present, along with weekly updates, can be viewed on our



Experimental section of aqueduct showing Mayor George McClellan and Chief Engineer J. Waldo Smith standing in arch. November 22, 1906



DEP Customer Service Representative responding to customer inquiries.

web site at www.nyc.gov/html/dep/html/pathogen.html. As mentioned, 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 diseases 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 Centers for Disease Control and Prevention (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 Crohn's disease or 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.

Customer Service Improvements

As the City agency responsible for the billing and collection of water and sewer fees, much of DEP's work involves interaction with the City's 828,000 water account customers. In response to customer feedback as well as its own evaluation of existing operations, DEP has made improving its customer service program a top priority. Already, waiting times in DEP's Customer Call Center are significantly reduced as a result of extended operational hours, and spike notices are being included in current water bills in order to alert customers to unusually high water usage.

Additionally, the Agency has begun tackling bill-payment delinquencies through a comprehensive public outreach program. Currently, 90% of water customers pay their bills within two billing cycles, and DEP is addressing the remaining 10% with targeted outreach events, improved customer service operations and, ultimately, a stronger set of enforcement tools.

In addition to these operational programs, DEP continues to replace old meters and will soon begin installing automated meter reading technology throughout the City. Automated meters will provide more extensive usage information for billing-and-collection purposes, as well as discrete, detailed water-consumption data, which will be an invaluable resource in planning future conservation programs and ensuring a dependable water supply. These programs will also enable greater billing consistency and reduce customer confusion.

DEP is confident that these programs, combined with extensive public outreach campaigns and institutional innovations, can positively improve customer service and billing collection procedures.

New York City Drinking Water Quality Testing Results 2006

Detected Parameters

PARAMETERS	NYSDOH MCL	USEPA MCLG	CATSKILL/DELAWARE SYSTEM			GROUNDWATER SYSTEM			SOURCES IN DRINKING WATER
			# SAMPLES	RANGE	AVERAGE	# SAMPLES	RANGE	AVERAGE	
CONVENTIONAL PHYSICAL AND CHEMICAL PARAMETERS									
Alkalinity (mg/L $CaCO_3$)	-		334	8.7 - 17.6	11.8	14	11.6 - 53.4	28.1	Erosion of natural deposits
Aluminum (µg/L)	50 - 200 [1]		319	7 - 125	34	7	ND - 52	28	Erosion of natural deposits
Barium (mg/L)	2	2	319	0.01 - 0.02	0.02	7	0.01 - 0.03	0.02	Erosion of natural deposits
Calcium (mg/L)	-		334	4.9 - 8.5	5.4	14	9.2 - 33.4	17.1	Erosion of natural deposits
Chloride (mg/L)	250		321	8 - 20	10	11	23 - 96	47	Naturally occurring; road salt
Chlorine Residual, free (mg/L)	4 [2]		10754	0.01 - 1.35	0.66	128	0.02 - 1.30	0.66	Water additive for disinfection
Color - distribution system (color units - apparent)	-		9661	3 - 42	7	82	1 - 12	6	Presence of iron, manganese, and organics in water
Color - entry points (color units - apparent)	15 [3]		1095	4 - 13	7	46	1 - 9	4	Iron and manganese; or organic sources, such as algal growth
Copper (mg/L)	1.3 [4]	1.3	334	0.003 - 0.141	0.011	14	0.003 - 0.019	0.007	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
Corrosivity (Langelier index)	0 [1, 5]		318	-3.05 to -1.65	-2.47	6	-2.06 to -1.46	-1.69	
Fluoride (mg/L)	2.2 [3]	4.0	1515	ND - 1.2	0.7	128	0.3 - 1.3	1.0	Erosion of natural deposits; water additive which promotes strong teeth; runoff from fertilizer
Hardness (mg/L $CaCO_3$)	-		319	17 - 34	18	9	38 - 156	80	Erosion of natural deposits
Hardness (grains/gallon[US]$CaCO_3$)[6]	-		319	1.0 - 2.0	1.0	9	2.2 - 9.0	4.6	Erosion of natural deposits
Iron (µg/L)	300 [7]		336	**20 - 550**	50	7	ND - 90	50	Naturally occurring
Lead (µg/L)	15 [4]	0	334	ND - 4	0.6	14	ND - 1	0.6	Corrosion of household plumbing systems; erosion of natural deposits
Magnesium (mg/L)	-		319	1.0 - 3.0	1.2	9	3.6 - 18.0	8.6	Erosion of natural deposits
Manganese (µg/L)	300 [7]		336	6 - 261	9	7	11 - 31	21	Naturally occurring
Nitrate (mg/L nitrogen)	10	10	321	0.13 - 0.84	0.22	11	0.98 - 5.80	2.55	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Nitrite (mg/L nitrogen)	1	1	318	ND - 0.001	<0.001	9	ND	ND	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
pH (pH units)[8]	6.5 - 8.5 [1]		10756	**6.8 - 8.7**	7.3	128	7.4 - 8.2	7.7	
Phosphate, Ortho- (mg/L)	-		10750	0.6 - 2.8	2.0	128	1.5 - 2.7	2.0	Water additive for corrosion control
Potassium (mg/L)	-		319	0.5 - 0.8	0.6	6	0.8 - 1.0	0.9	Erosion of natural deposits
Silica [silicon oxide] (mg/L)	-		318	1.8 - 5.8	2.9	6	5.8 - 6.8	6.2	Erosion of natural deposits
Sodium (mg/L)	NDL[9]		319	6 - 12	8	7	13 - 43	18	Naturally occurring; road salt; water softeners; animal waste
Specific Conductance (µS/cm)	-		10756	70 - 150	82	128	151 - 574	368	
Strontium (µg/L)	-		319	20 - 30	20	6	40 - 50	40	Erosion of natural deposits
Sulfate (mg/L)	250		321	4.8 - 9.9	6.0	10	11.0 - 41.5	19.3	Naturally occurring
Temperature (°F)	-		10752	32 - 83	55	127	43 - 76	57	
Total Dissolved Solids (mg/L)	500 [1]		318	39 - 85	50	6	90 - 124	105	Metals and salts naturally occurring in the soil; organic matter
Total Organic Carbon (mg/L carbon)	-		318	1.0 - 3.9	1.5	6	1.0 - 1.4	1.3	Organic matter naturally present in the environment
Turbidity[10] - distribution system (NTU)	5 [11]		9661	0.8 - 1.5	1.0	82	0.5 - 1.1	0.7	Soil runoff
UV 254 Absorbency (cm^{-1})	-		318	0.022 - 0.039	0.032	6	0.025 - 0.032	0.029	Organic matter naturally present in the environment
Zinc (mg/L)	5		319	ND - 0.065	0.004	7	ND - 0.006	0.003	Naturally occurring

PARAMETERS	NYSDOH MCL	USEPA MCLG	CATSKILL-DELAWARE SYSTEM			GROUNDWATER SYSTEM			SOURCES IN DRINKING WATER
			# SAMPLES	RANGE	AVERAGE	# SAMPLES	RANGE	AVERAGE	
ORGANIC CONTAMINANTS									
Disinfection By-Products detected:									
Bromochloroacetic acid (µg/L)	50		281	ND - 3	1	2	1 - 2	1	By-product of drinking water chlorination
Chloral Hydrate (µg/L)	50		16	1.6 - 8.2	5	-	-	-	By-product of drinking water chlorination
Chloropicrin (µg/L)	50		16	0.4 - 0.7	0.5	-	-	-	By-product of drinking water chlorination
Haloacetonitriles (HANs) (µg/L)	50		12	1.2 - 3.9	2.7	-	-	-	By-product of drinking water chlorination
Halogenated ketones (HKs) (µg/L)	50		16	1.7 - 3.2	2.3	-	-	-	By-product of drinking water chlorination
Total Organic Halogen (µg/L)	-		318	101 - 262	171	6	106 - 180	148	By-product of drinking water chlorination
Principal Organic Contaminants detected:									
Tetrachloroethylene (µg/L)	5	0	350	ND	ND	17	ND - 1.6 [12]	ND	Discharge from dry cleaners
Specified Organic Contaminants detected:									
Dalapon (µg/L)	50	200	237	ND - 0.8 [12]	ND	2	ND	ND	Runoff from herbicide used on rights of way
Hexachlorocyclopentadiene (µg/L)	5	50	22	ND - 0.10	< 0.05	1	ND	ND	Discharge from chemical factories
Unspecified Organic Chemicals detected:									
Acetone (µg/L)	50		297	ND - 13	< 10	14	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
Methyl tert-butyl ether (MTBE) (µg/L)	10		350	ND	ND	17	ND - 1 [12]	ND	Formerly an additive to gasoline

PARAMETERS	NYSDOH MCL	USEPA MCLG	CATSKILL-DELAWARE SERVICE AREA			CROTON SERVICE AREA [13]			GROUNDWATER SERVICE AREA			SOURCES IN DRINKING WATER
			# SAMPLES	RANGE	RAA	# SAMPLES	RANGE	RAA	# SAMPLES	RANGE	RAA	
Disinfection By-Products detected:												
Haloacetic acid 5 (HAA5) (µg/L)	60 [14]		245	19 - 69	43	18	35 - 54	47	20	11 - 50	34	By-product of drinking water chlorination
Total Trihalomethanes (µg/L)	80 [14]		246	10 - 81	38	50	21 - 76	46	17	ND - 50	32	By-product of drinking water chlorination

MICROBIAL PARAMETERS

PARAMETERS	NYSDOH MCL	USEPA MCLG	CITYWIDE DISTRIBUTION					SOURCES IN DRINKING WATER
			# SAMPLES	RANGE	# SAMPLES POSITIVE	AVERAGE	HIGHEST MONTH % POSITIVE	
Total Coliform Bacteria (% of samples positive/month)	5%	0	9754	-	36	-	1.3%	Naturally present in the environment
E. coli (CFU/100 mL)	[15]	0	9754	-	1	-	0.1%	Human and animal fecal waste
Heterotrophic Plate Count (CFU/mL)	TT	-	3262	ND - 5700	307	3	-	Naturally present in the environment

LEAD AND COPPER RULE SAMPLING AT RESIDENTIAL WATER TAPS

PARAMETERS	NYS DOH AL	US EPA MCLG	Surface Water: January to December 2006				Groundwater: July to December 2006				SOURCES IN DRINKING WATER
			# SAMPLES	RANGE	90th PERCENTILE VALUES	# SAMPLES EXCEEDING AL	# SAMPLES	RANGE	90th PERCENTILE VALUES	# SAMPLES EXCEEDING AL	
Copper (mg/L)	1.3	1.3	120	0.022 - 0.661	0.239	0	99	ND - 0.387	0.230	0	Corrosion of household plumbing systems
Lead (µg/L)	15	0	120	ND - 123.2	13	10	99	ND - 85.3	7	3	Corrosion of household plumbing systems

Undetected Parameters

UNDETECTED CONVENTIONAL PHYSICAL AND CHEMICAL PARAMETERS
Antimony, Arsenic, Asbestos [16], Beryllium, Bromide, Cadmium, Chlorate, Chromium, Cyanide, Foaming Agents, Gross Alpha [17], Gross Beta [17], Lithium, Mercury, Nickel, Selenium, Silver, ^{90}Strontium [17], Thallium, Tritium (^{3}H) [17]
UNDETECTED ORGANIC CONTAMINANTS
Principal Organic Contaminants not detected:
Benzene, Bromobenzene, Bromochloromethane, Bromomethane, n-Butylbenzene, sec-Butylbenzene, tert-Butylbenzene, Carbon Tetrachloride, Chlorobenzene, Chloroethane, Chloromethane, 2-Chlorotoluene, 4-Chlorotoluene, Dibromomethane, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, Dichlorodifluoromethane, 1,1-Dichloroethane, 1,2-Dichloroethane, 1,1-Dichloroethene, 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, 1,1,2,2-Tetrachloroethane, Toluene, 1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene, 1,1,1-Trichloroethane, 1,1,2-Trichloroethane, Trichloroethene, Trichlorofluoromethane, 1,2,3-Trichloropropane, 1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene, m-Xylene, o-Xylene, p-Xylene
Specified Organic Contaminants not detected:
Alachlor, 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, Endothall, Endrin, Ethylene dibromide (EDB), Glyphosate, Heptachlor, Heptachlor epoxide, Hexachlorobenzene, 3-Hydroxycarbofuran, Lindane, Methomyl, Methoxychlor, 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
Unspecified Organic Chemicals not detected:
Acenaphthene, Acenaphthylene, Acetochlor, Acifluorfen, tert-Amyl methyl ether, Anthracene, Bentazon, Benzo[a]anthracene, Benzo[b]fluoranthene, Benzo[k]fluoranthene, Benzo[g,h,i]perylene, a-BHC, b-BHC, d-BHC, Bromacil, Bromomethane, 2-Butanone (MEK), Butylbenzylphthalate, tert-butyl ethyl ether, Caffeine, a-Chlordane, g-Chlordane, 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, Diisopropyl ether, Dimethoate, Dimethylphthalate, 2,4-Dinitrotoluene, 2,6-Dinitrotoluene, Di-N-octylphthalate, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin aldehyde, EPTC, Fluoranthene, Fluorene, Heptachlor epoxide (isomer B), Indeno[1,2,3-cd] pyrene, Isophorone, Malathion, Methiocarb, 4-Methyl-2-pentanone (MIBK), Molinate, Naphthalene, cis-Nonachlor, trans-Nonachlor, Paraquat, Parathion, Pendimethalin, Permethrin, Phenanthrene, Prometryn, Propoxur (Baygon), Pyrene, 2,4,5-T, Terbacil, Terbuthylazine, Thiobencarb, Trichlorotrifluoroethane (freon), 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.

(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 and average of monthly averages.

(12) The contaminant was detected in only one sample. The level found was below the MCL.

(13) Though Croton water was not put into distribution in 2006, DBP monitoring is conducted at specified locations based on the potential distribution of the different source waters to consumers. As such, each system has a defined set of monitoring sites and the data are reported by service area.

(14) 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 annual average.

(15) 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.

(16) NYSDOH has issued a waiver for asbestos monitoring in the Groundwater System since no asbestos cement pipes are used anywhere in the distribution system.

(17) Radionuclide data presented were collected in 2001.

Highlighted and **bolded** value indicates a violation or exceedence occurred.

Exceedences of MCLs

Iron and Manganese::
In the Catskill/Delaware System, the MCL of 300 µg/L for iron and the MCL of 500 µg/L for the combined concentration of iron and manganese was exceeded on 10/03/2006 at site 554550 (Prince's Bay, 10309) with a value of 550 µg/L for iron and 244 µg/L for manganese and at site 24250 (Mapleton, 11204) on 10/04/2006 with a value of 440 µg/L for iron and 261 µg/L for manganese. At site 41750 on 05/03/2006, the MCL of 500 µg/L for combined iron and manganese was exceeded with a value of 270 µg/L for iron and 233 µg/L for manganese.

Iron has no health effect. At 1,000 µg/L, a substantial number of people will note the bitter astringent taste of iron. Also, at this concentration, it imparts a brownish color to laundered clothing and stains plumbing fixtures with a characteristic rust color. Staining can result at levels of 50 µg/L, lower than those detectable to taste buds. Therefore, the MCL of 300 µg/L represents a reasonable compromise as adverse effects are minimized at this level. Many multivitamins may contain 3000 to 4000 µg/L of iron per capsule.

The Food and Nutrition Board of the National Research Council determined an estimated safe and adequate daily dietary intake of manganese to be 2000-5000 µg/L for adults. However, many people's diets lead them to consume even higher amounts of manganese, especially those who consume high amounts of vegetables or are vegetarian. The infant population is of greatest concern. It would be better if the drinking water were not used to make infant formula since it already contains iron and manganese.

Excess manganese produces a brownish color in laundered goods and impairs the taste of tea, coffee, and other beverages. Concentrations may cause a dark brown or black stain on porcelain plumbing fixtures. As with iron, manganese may form a coating on distribution pipes. These may slough off, causing brown blotches on laundered clothing or black particles in the water.

pH:
In the Catskill/Delaware System, pH was elevated at site 50050 (Rosebank, 10305). Elevated laboratory pH readings above 8.5 were detected on 09/08/2006 at 8.6 and on 09/20/2006 at 8.7. On both dates the field pH readings were 8.5.

These elevations in pH may be attributed to a large water main replacement project which involved the installation of a concrete lined water main in the vicinity. Subsequent samples from this location have illustrated that the pH has since returned to the expected range.

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.

Treatment Technique (TT):

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

90th Percentile Value:

The values reported for lead and copper represent the 90th 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 90th 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

RAA = Running Annual Average

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 ($CaCO_3$) 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.

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.

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.

The 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 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

Kensico aerator in operation. March 26, 1917

Pepacton Reservoir Spillway

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 Disease of the New York City Department of Health and Mental Hygiene (DOHMH) at 212-788-9830 or call 311.

311	Dial 311 for all non-emergency City services and hotlines

To contact DOHMH about other water supply health related questions call 311 or call the New York State Department of Health Bureau of Public Water Supply Protection at (212) 417-4883 or (845) 794-2045.

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 2006 Statement, announcements of public hearings, or other information, visit DEP's Web site at:

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.

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 informacje 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.

Please share this information with all the other people who drink this 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.

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

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