

# A Billion-Dollar Investment in New York's Water

New York City's water system moves over a billion gallons a day, nearly all of it unfiltered. A major investment aims to keep it that way.

By WINNIE HU

New Yorkers like to brag about their tap water. Not only is it safe to swill, but it has even been called the "champagne of drinking water."

Now, New York City has committed \$1 billion to protect the nation's largest municipal water system as part of a far-reaching 115-page agreement with state health officials that makes New York one of the few cities in the country that can provide nearly all of its tap water without being forced to rely on expensive filtration plants.

"The city's water system could well be its single most important capital asset — or at least on par with the subway system," said Eric A. Goldstein, a senior lawyer for the Natural Resources Defense Council, an advocacy group. "Imagine living without clean running water in New York City for even a single day. Life as we know it would grind to a halt."

New York's immaculate water supply is backed by science, lots of it. Every day, dozens of scientists monitor the quality of the city's drinking water, collecting samples by hand that are tested no less than 600,000 times a year for more than 250 variables, including pollutants. They are augmented by a growing army of robotic monitors that have been plunged into far-flung reservoirs, testing the water another 1.6 million times a year.

This enormous monitoring apparatus is one critical part of New York City's drinking water supply, ensuring the safety of more than a billion gallons of water flowing daily through a sprawling network of three pristine lakes, 19 reservoirs, and mile after mile of aqueducts and tunnels. About 90 percent of that water never sees the inside of a filtration plant, flowing from huge reservoirs as far as 125 miles away in the rural Catskill Mountains.

New York has spent more than \$1.7 billion to protect this unfiltered water supply since the early 1990s, in return for being granted a succession of federal and state waivers exempting it from costly filtration requirements. It is one of only five cities nationally — along with Boston, San Francisco, Seattle, and Portland, Ore. — that have an unfiltered water supply. This marvel of water engineering has attracted visits from scientists and government officials from Australia, China, India, Singapore and Colombia.

The financial stakes are high. Vincent Sapienza, the commissioner of the city's Department of Environmental Protection, said that if the city were refused a waiver, it would have to spend more than \$10 billion to build a massive filtration plant, and at least another \$100 million annually on its operation — which would be "the largest capital project that the city has ever taken on." Water bills would have to rise significantly to cover the cost, he said.

The city already filters 10 percent of its drinking water from a dozen small reservoirs surrounded by development in

Westchester and Putnam counties. In 2015, it opened a \$3.2 billion filtration plant under a golf driving range at Van Cortlandt Park in the Bronx.

The city's new \$1 billion investment in the drinking water system will be used to reinforce and expand a host of programs that protect the one million acres of watershed land surrounding the reservoirs that supply the unfiltered drinking water. The biggest chunk, or \$200 million, will be used to maintain and upgrade dozens of wastewater treatment plants. Ensuring the adequate collection and treatment of wastewater, including sewage, is crucial because that wastewater is cleaned and released back into the environment and eventually reaches the rivers and streams that feed the reservoirs.

Another \$180 million will go toward reducing pollution from working farms and managing forests to remove old and dead trees to make room for young trees that absorb more nutrients from rain and snow melt that run into the reservoirs. There will also be \$150 million for shoring up eroding streams to improve water quality and support flood mitigation projects.

In addition, \$96 million has been allocated for preserving land from development, especially in critical streamside areas, and \$85 million will be used to expand a program that repairs or replaces septic systems for homes and small businesses to municipal buildings, churches and other nonprofit groups as well.

The new agreement is the result of more than six months of negotiations between city and state officials, along with input from environmental and public health advocates, and representatives of upstate residents near the reservoirs.

"New Yorkers have a powerful impact when working toward a common goal — the protection of clean drinking water and lands that provide it," said Dr. Howard A. Zucker, the state health commissioner. "That is the spirit behind this agreement."

New York City's modern water system dates to 1842 when water flowed down from the first reservoir in Westchester — created by building a dam on the Croton River — in what would become known as the Croton system. It replaced a local patchwork of ponds, streams, wells and cisterns that were inadequate for a growing city, resulting in shortages during the Great Fire of 1835 and outbreaks of cholera from contaminated water.

The new water system was welcomed with parades, fireworks, and fountains shooting plumes of water 50 feet into the air. Eventually, the Croton system grew to a dozen reservoirs, but it was not enough. So in the early 1900s, city officials looked further north and started building the much larger Catskill and Delaware water systems — an immense undertaking that involved relocating residents and cemeteries and submerging entire villages.

Today, with three water systems, the city no longer has to worry about where to get its water. Yet it has faced challenges in keeping the water from the Catskill and Delaware systems safe enough to drink. The federal government has generally required surface drinking water systems to be filtered since the late 1980s, granting waivers to New York beginning in 1993 as long as the city's unfiltered drinking water met federal and state water quality standards. The unfiltered water is disinfected with ultraviolet light and chlorine.

The New York State Health Department took over direct oversight of the city's drinking water system in 2007, and last month issued the latest waiver for 10 years, including a public review process to be conducted at the five-year midpoint. State health officials said that they regularly review the city's water quality and conduct on-site inspections of the reservoirs and disinfection stations. The new agreement also calls for an independent review of the city's water protection efforts by the National Academies of Sciences, Engineering and Medicine.

"The water continues to be of a very high quality," said Brad Hutton, a deputy state health commissioner.

Mr. Goldstein concurred that the city's water protection efforts have been successful, but added that "this is no time to let down one's guard." He pointed to climate change as a growing problem, leading to more storms and floods and rapid snow melts that could increase the turbidity of the water in the reservoirs.

City environmental officials said they are expanding their efforts to address the impact of climate change on the watershed, including setting aside more money to buy out homeowners in flood-prone areas and pay for engineering studies of flood hazards in towns and villages.

The city's efforts have not only safeguarded its water system, but also provided tangible economic benefits to residents of upstate towns and villages in the watershed — helping to smooth lingering tensions over the reservoirs, which were built decades ago on land seized by eminent domain. The city's investment in the water system has created local construction jobs, and funded development loans to hospitals, restaurants and small businesses, a far cry from the economic distress in many parts of northern New York.

The Catskill Watershed Corporation, whose board members include local town supervisors, has used city money to reimburse private property owners for treating storm water runoff, and for elevating homes and relocating businesses in flood areas. It has also sponsored school programs about the watershed, including having children raise trout in classrooms that they later release in the Catskills.

But its most popular program may be one that has given out more than \$40 million to reimburse a total of 5,200 homeowners and small businesses for the repair or replacement of aging septic systems that they might otherwise have to pay for themselves. Those septic systems now treat 1.7 million gallons of sewage a day.

"Homeowners get a septic system that is working and the city gets 1.7 million gallons of clean water," said Timothy Cox, a lawyer for the corporation. "It has been successful in not only preserving the watershed but also the community character of the watershed."

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