

The Milwaukee Water Works Today

Milwaukee Water Works is recognized nationally as a leader in providing high-quality drinking water and for its comprehensive water quality monitoring program. We continuously conduct water quality monitoring, or sampling, from the lake source water to the distribution system of almost 2,000 miles of water mains that carry over 100 million gallons of treated water every day. The utility is recognized by the U.S. Environmental Protection Agency for its collaboration with health and environmental agencies to monitor and respond to public health issues.

While providing fresh, safe water for a healthful quality of life, we provide commercial and manufacturing business and research operations with a reliable supply of high-quality water at a low cost.

The Milwaukee Water Works is organized for maximum efficiency, and employs 312 professionals, down from a peak of 570 employees in 1966.

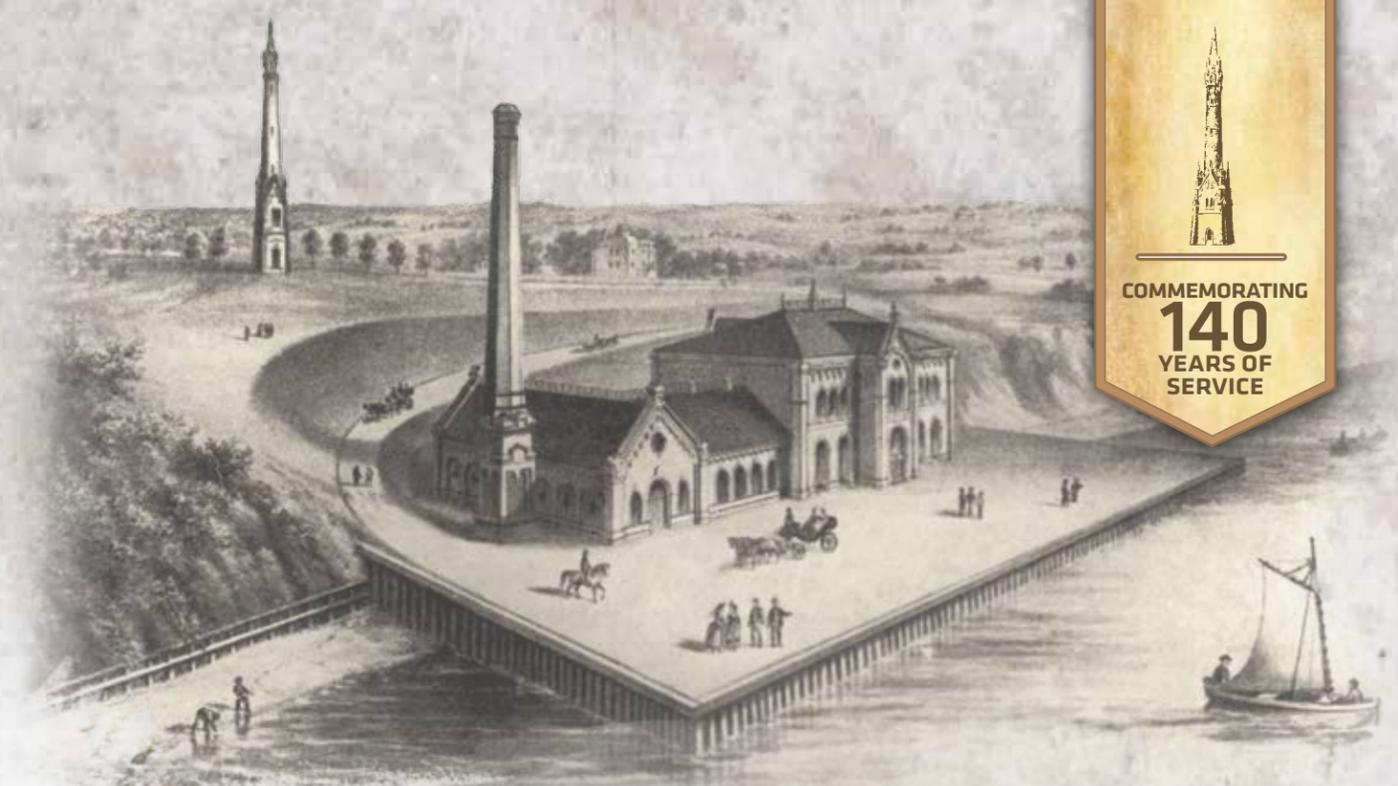
- At the two Water Treatment Plants, which provide round-the-clock service, Water Quality staff ensure the water meets quality regulations. The Supervisory Control and Data Acquisition System (SCADA) provides real-time data about the utility's operations and water quality monitoring.
- Water Distribution provides scheduled preventive maintenance and repair of 1,956 miles of underground piping, and responds to emergencies 24-hours-a-day.
- Water Engineering provides applied research and manages the Capital Improvements Program.
- Business includes customer service, accounting, billings and collections, and public outreach.
- Meter Services ensures meters operate properly and accurately represent water use.

Our customers

The Milwaukee Water Works provides water to more than 860,000 people in 16 communities in Milwaukee, Ozaukee, and Waukesha Counties, including: Milwaukee, Brown Deer, Butler, Greendale, Greenfield, Hales Corners, Shorewood, St. Francis, Wauwatosa, West Allis, and West Milwaukee. We also provide water to the Milwaukee County Grounds facilities and parts of Franklin, Menomonee Falls, Mequon, New Berlin, and Thiensville.

While Milwaukee's setting on the shore of Lake Michigan allows for a bountiful supply of clean, fresh water, it is never taken for granted. The Milwaukee Water Works uses sustainable practices such as supply-side conservation, water accountability, energy conservation, operational efficiency and consumer advocacy to prevent water waste.

The Milwaukee Water Works has received several environmental stewardship awards for these activities. These actions ensure the long-term availability of high-quality water for generations to come. The Milwaukee Water Works is committed to ensuring your water quality, service reliability and water security.



History of the Milwaukee Water Works

The City of Milwaukee had been incorporated 25 years and there were well over 100,000 residents before plans were in place for a municipal water system. The first priority of municipal borrowing had been to help railroads build into the city.

There was a dire need for a central water source. Water was supplied by some 30,000 wells (often located near polluting outdoor privies), the Milwaukee, Menomonee, and Kinnickinnic Rivers, and vendors pulling Lake Michigan "water wagons." Waterborne illness was a daily public health problem. And, with a limited water supply, any fire could potentially burn the city to the ground.

There were several proposals from 1857 to 1867, but the city's railroad debt prevented financing of a water works. Milwaukee also needed state authority to build a water system. Working ahead of permission, the city hired E. S. Chesbrough, designer of Chicago's system, to create a plan. He delivered it in October 1868. Three years later, the Legislature authorized the city to readjust its debt and to build and manage a water works.

On April 18, 1871, a Board of Water Commissioners met to organize the Milwaukee Water Works. The board included:

- Alexander Mitchell, congressman, founder of the Wisconsin Marine and Fire Insurance Company Bank and president of the Chicago, Milwaukee & St. Paul Railway
- John Plankinton, founder of two meat-packing operations that became Armour & Co.
- Edward Broadhead, superintendent and construction engineer for the Milwaukee & Mississippi Railroad Co.

- Edward O'Neill, mayor of Milwaukee in 1869 and president of the Bank of Commerce
- Guido Pfister, owner of a tanning firm that became Pfister Vogel Leather Co.
- Frederick Pabst, president of P. Best and Co. brewery (later Pabst Brewing Co.)
- George Burnham, manufacturer of cream-colored clay bricks that became so prevalent they gave Milwaukee its Cream City nickname

In October 1871, fires destroyed Chicago and Peshtigo, hastening the 1872 groundbreaking for a water works based on Chesbrough's plans to pump and pipe Lake Michigan water.

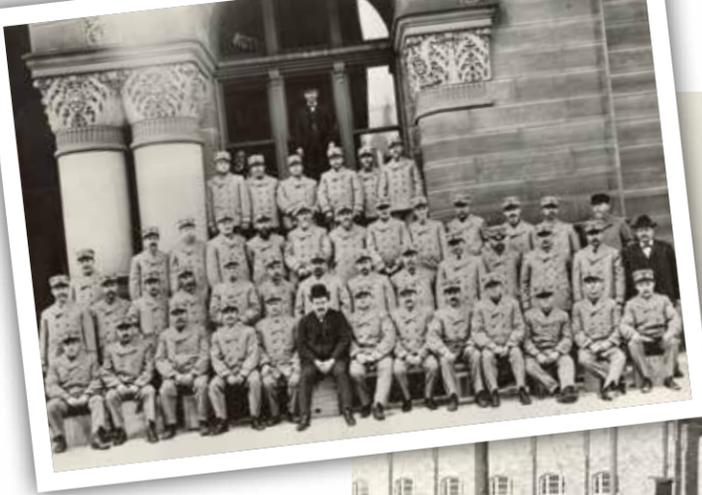
The first water works

The first water works consisted of a water intake; a station on the lakeshore housing two steam pumping engines, each with a capacity of eight million gallons per day; a standpipe (inside the North Point Tower); the Kilbourn Reservoir; and 58 miles of water mains. The cost was \$1.9 million.

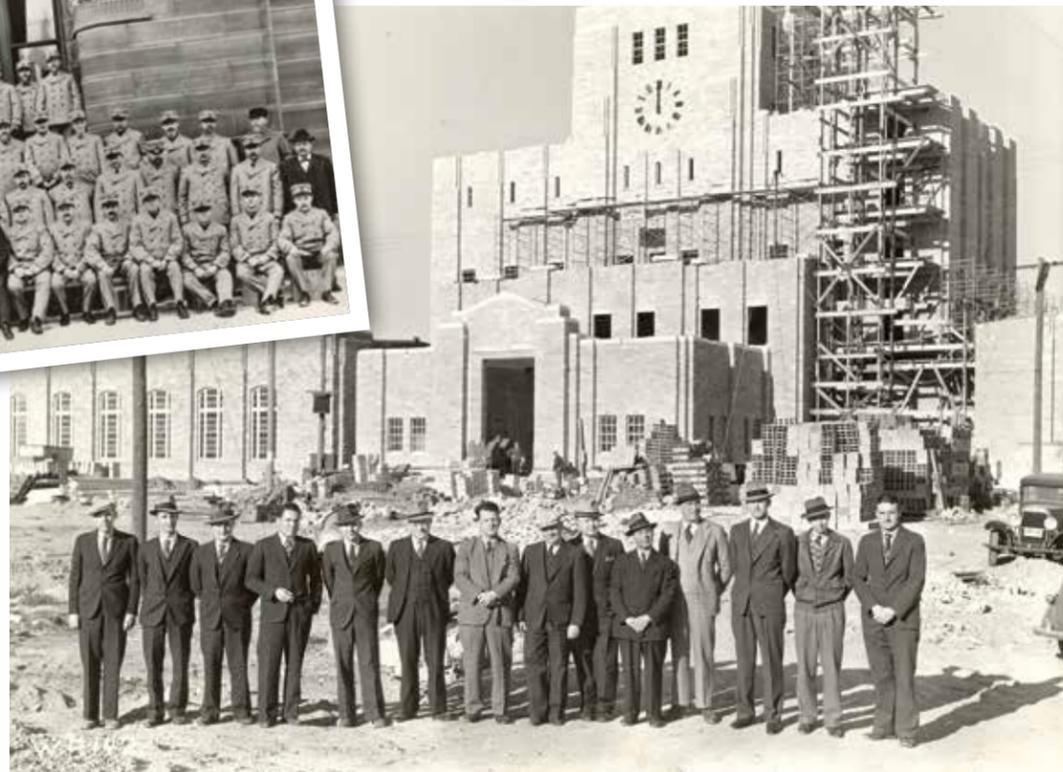
On Sept. 14, 1874, the station began pumping water into the distribution system. The first customer to connect to the system was P. Best and Co. brewery at N. 9th and E. Juneau Ave. During the first year of operation, daily water use was 1,250,000 gallons, serving 1,807 customers. The water works employed 22 people, including an inspector of plumbing and a tapper; the only two authorized to use the utility's two horses and buggies.

Of all the choices of water available to you, only one must meet all standards of the Safe Drinking Water Act: your Milwaukee tap water.

www.milwaukee.gov/water



Main Photo: Linnwood Water Treatment Plant, 1936
Upper Left: Milwaukee Water Works Employees at City Hall, 1903



Early innovation in water treatment and conservation

By the early 1900s, bacteria from Milwaukee's polluted harbor began to reach the water intake. Water Works officials installed a system of mixing calcium hypochlorite, or bleaching powder, into the water before pumping it into the distribution pipes. By 1910, chlorine was being used as a disinfectant. An experimental filtration system was added in 1919.

Founded in Milwaukee in 1905, Badger Meter led the national movement to install meters to avoid water waste. By 1910, Milwaukee was one of the first cities to install meters to avoid water waste and fairly charge customers for water treatment and pumping. The same year, the Milwaukee Water Works purchased its first motorized trucks. The last two horses and wagons retired in 1914.

While the Milwaukee Water Works had been disinfecting and filtering lake water for drinking since 1919, there was no treatment of sewage; sewers merely funneled waste into the rivers and lake. Historian John Gurda writes in "The Making of Milwaukee, "...after a massive outbreak of diarrhea in 1916, voters decided that it was finally time to stop mixing raw sewage with their drinking water. In 1925, Milwaukee's present sewage treatment plant went into operation."

Social and industrial climates reflected in water demand

In 1933, construction began on a water treatment plant using coagulation, sedimentation, filtration, and disinfection to clean the lake water. The Linnwood Water Treatment Plant was built on 24 acres of landfill under the bluffs of Lake Park and was completed in 1939. The Neo Gothic exterior houses 32 water filters with a rated capacity of 275 million gallons per day.

Text based on "A Century of Milwaukee Water, A Historical Account of the Origin and Development of the Milwaukee Water Works," by Elmer Becker, 1974.

In the summer of 1961, the Linnwood Plant recorded its highest single-day production of 267 million gallons. Plans were established to increase water capacity, and in 1962, construction of the Howard Avenue Water Treatment Plant was completed. The brick-box, glass block exterior houses eight filters with a rated capacity of 105 million gallons per day.

Water use in Milwaukee began a steady decline in 1976, the result of more efficient water use by appliances and commercial machinery, and changes in the industrial landscape. Also, the Milwaukee Metropolitan Sewerage District tied its sewer user charges to the water use bill in 1979, raising customer awareness of water use. Water sold dropped from 58 billion gallons in 1976 to 30.6 billion gallons by 2013. Average daily pumpage in 2013 was 100 million gallons.

Milwaukee transforms treatment standards with ozone and upgrades

The critical importance of clean water for public health was underscored in 1993 when a massive dose of the micro-organism *Cryptosporidium* passed through the water system. City leaders vowed there would never again be a water contamination crisis. Working with water professionals and researchers from around the world, the Milwaukee Water Works transformed its manual, conventional system into the largest ozone retrofit in the world at the time, with enhanced lake intakes and an upgraded filtration system.

Since the 1990s, the Milwaukee Water Works has reinvested over \$441 million in all water systems to ensure clean, healthy drinking water. We are proud to serve as the longest continuously operating water utility in Wisconsin.

The North Point Tower

The iconic and beloved North Point Tower, atop the bluff above Lake Michigan at 2288 N. Lake Drive, is symbolic of 140 years of water service provided by the Milwaukee Water Works. Praised for its beauty, the structure is a notable example of the Victorian Gothic style, fanciful and charming.

The tower was designed by architect Charles A. Gombert, and construction was completed in 1873. Four years earlier, William Boyington designed a similar tower in Chicago but that tower is 21 feet shorter than Milwaukee's North Point Tower.

The 175-foot tower design was executed in cream-colored Wauwatosa cut limestone with a Cream City brick exterior trimmed with dressed limestone. The exterior is composed in three stages with a square, buttressed base, a tapered cylindrical tower topped with gabled roofs and finials, and a weather vane-crowned octagonal spire.

"In an unprecedented fit of municipal whimsy, officials decided to surround the pipe with a fairy-tale stone tower worthy of the Brothers Grimm. The standpipe was capped decades ago, but the North Point Water Tower, minus Rapunzel, remains one of the East Side's most cherished landmarks."

**HISTORIAN JOHN GURDA,
"THE MAKING OF MILWAUKEE"**

Constructed at a cost of \$50,892, the tower was a principal work in the city's original water supply system. Below the tower stood the North Point Station, where reciprocating steam engines pumped water from Lake Michigan. The tower covers a four-foot diameter, 120-foot tall iron standpipe that absorbed pulsations of water from the steam engines, easing

the strain on the distribution system pipes. The exterior stonework prevented the formation of ice in the standpipe. Some 60 employees manned the steam engines around the clock.

By 1960, the system was becoming too costly to operate. The 86-year-old pump building, refurbished many times, was replaced by a new building and electrical pumps in 1963; the standpipe in the tower was taken out of service in May 1963.

At one time, Milwaukee had two other standpipe towers. Now, only the North Point Tower remains, standing in what was once a cow-grazing pasture at the city's northern limit. It bears landmark designations of city, state, and national historical, architectural, and water works distinction.



"Younger Milwaukeeans will have a hard time believing this, but about 60 years ago, there were cows in a pasture to the south of the then still new North Point Water Tower." Estella L. Wengler, Haddam, Conn., sent this picture to the Journal.

**MILWAUKEE JOURNAL,
JUNE 1, 1935**

