

Milwaukee Water Works

Safe, Abundant Drinking Water.

2012 Annual Report

Mayor Tom Barrett
Ghassan Korban, Commissioner of Public Works
Carrie M. Lewis, Superintendent
Laura Daniels, Administration & Projects Manager

Zeidler Municipal Building, 841 N. Broadway
Milwaukee, WI 53202
www.milwaukee.gov/water

About the Milwaukee Water Works

The Milwaukee Water Works (MWW) is a national leader in providing high-quality drinking water and water quality monitoring. While contributing to a high quality of life, the water works also provides a reliable supply of pure water at a low price to support business, industry, and research.

The Milwaukee Water Works is the publicly owned utility of the City of Milwaukee. Policy is set by the Mayor and Common Council. The utility is regulated by the U.S. Environmental Protection Agency (EPA) and the Wisconsin Department of Natural Resources (DNR) for facilities, operations, and water quality; and the Public Service Commission of Wisconsin (PSC), for rates and accounting.

The utility's budget is funded through revenue from water rates and proceeds of borrowing. City property tax levy revenue is not used to fund utility operations. In addition, Milwaukee Water Works revenue is used to reduce the tax rate for the city. In 2012, the utility made a \$12 million Payment In Lieu Of Taxes to offset the city tax levy, reducing the tax rate by \$0.47 per thousand dollars of assessed valuation. The utility pays other city departments for services it uses and covers the cost of its own employee benefits.

The operating budget covers financial needs of the utility's work units. Two **Water Treatment Plants** provide round-the-clock water treatment and operational activities. **Water Quality** ensures all water quality regulations are met and exceeded. **Water Distribution** focuses on scheduled preventive maintenance and repair of 1,956 miles of underground piping throughout Milwaukee and the utility's retail customer suburbs. Activities include inspection and repair of facilities within planned paving projects, annual flushing of certain mains, leak surveys to identify non-surfacing water leaks, and a hydrant inspection program. **Water Engineering** collaborates with other sections in applied research needs and developing and overseeing the Capital Improvements Program. **Business** includes accounting, customer service, billings and collections,



Ald. Michael Murphy held a news conference on one of many hot July days to ask the public not to illegally open fire hydrants. Such openings create a hazard on the street, damage hydrants, reduce water pressure, and waste water. The Milwaukee Water Works has installed over 2,800 hydrant-locking McGard devices in areas with high repeat hydrant openings to prevent illegal openings.

marketing and public affairs. **Meter Services** ensures water meters operate properly and accurately represent water usage. **Technical Services** provides informational technology support. The **Supervisory Control and Data Acquisition System (SCADA)** provides treatment plant operators control of water pumping stations and the distribution system. Real-time pressure, power and flow information is provided. SCADA incorporates all chemical feed systems, including ozone, and water quality monitoring.

Customers

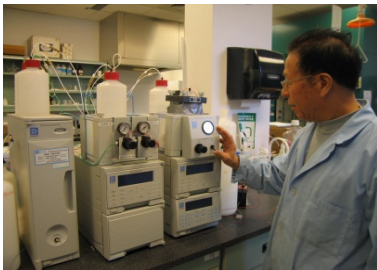
The Milwaukee Water Works serves a population of 861,249 in 16 communities with a service area of 196 square miles. Water is provided to wholesale customers who operate their own water utilities. These are Brown Deer, Butler, Greendale, Menomonee Falls, Mequon, New Berlin, Shorewood, Thiensville, Wauwatosa, West Allis, and the Milwaukee County Grounds. Retail customers receive full water service, including customer billing and distribution system maintenance. These customers are Greenfield, Hales Corners, St.

Francis, Franklin (a portion). West Milwaukee receives billing services from MWW and maintains its own distribution system

Water Treatment Process

MWW uses ozone gas as its primary disinfectant in the water treatment process. As water from Lake Michigan enters the plants, ozone is bubbled into the water in large contactor tanks. This highly reactive gas destroys illness-causing microorganisms such as *Cryptosporidium* and *Giardia*. Ozone removes taste and odor compounds and reduces the formation of disinfection byproducts. Particles are removed from the water through the processes of coagulation, flocculation, settling, and biologically active filtration. Chlorine is added as a secondary disinfectant. Fluoride is added at the level recommended by the Department of Health and Human Services to reduce dental cavities among consumers. A phosphorous compound is added to help control pipe corrosion in the distribution system and plumbing. This helps prevent lead and copper that may be present from leaching from pipes into the water. As the water leaves the treatment plants, ammonia is added to change the free chlorine to chloramine. This is a very stable form of chlorine disinfectant that maintains a residual protection in the distribution system from bacterial contamination in accordance with DNR and Safe Drinking Water Act requirements.

Exceptional Water Quality



Continuous water quality monitoring ensures pure, safe, delicious drinking water.

Milwaukee's treated drinking water quality meets or exceeds all EPA and DNR standards. MWW water quality monitoring and screening activities test for contaminants that are not yet regulated but are considered of emerging concern and may be regulated in the future. The utility tests source and treated drinking water for over 500 contaminants while the EPA requires tests for 93. The extensive monitoring is done as a precaution to ensure safe water, to collect baseline data for study, and to meet future regulations. Milwaukee was one of the first U.S. cities to test its source and treated water for emerging contaminants. MWW was the first water utility in the U.S. to post monitoring results on the Internet, demonstrating a commitment to water quality and transparency.



The Milwaukee Water Works has been recognized by the EPA for its work with health agencies to track and respond to public health issues related to water.

In 2012, the Water Quality Section completed the first round of monitoring under the new Stage 2 Disinfectants and Disinfection Byproduct Rule requirements. Due to high quality finished water, MWW qualified for reduced quarterly frequency of monitoring. Staff completed the fourth year of offering, in-house, the American Water Works Association High-Tech Operator certificate series to MWW staff working in a variety of areas. Seventy-three staff attended at least one class of the three-part series, and 32 graduates received certificates of completion.

A strategy to operate as efficiently as possible

As water use declines, the Milwaukee Water Works has focused on reducing costs and making operational efficiencies. The strategy results in savings in energy, chemicals, manpower, and other costs to maintain low and reasonable water rates. Part of this strategy is the practice of supply-side conservation. The utility saved over one billion gallons of water from 2006 to 2012 through operational changes in treating and distributing water, flushing mains and hydrants. It would take decades of conservation by utility customers to equal this amount of water savings.

Use Water Wisely

The Milwaukee Water Works helps customers find and repair water leaks to reduce water waste, control water costs, and conserve the water resource through its award-winning Use Water Wisely program. This outreach is conducted in collaboration with the environmental group, Clean Wisconsin. From billing data, employees identify customers with high water use and counsel them on how to find and fix leaks. Customers receive a brochure and toilet leak-detecting dye tabs, and a postage-paid feedback card. Meter Services staff provide the information as they investigate high water use and replace meters in homes. Helpful tips are available on the MWW website, Milwaukee.gov/water/UseWaterWisely.

Of customers who returned the feedback card in 2012, 70% said they used the leak-detecting dye tabs and 30% said they found and fixed water leaks in their homes. Forty-eight percent of the leaks fixed were in toilets, 44% were at faucets, and 11% were at garden hoses. Only a small percentage of leaks were reported at showerheads and water heaters. Ninety-one percent of the customers said they found the Use Water Wisely information useful.

Street Repair Program a Boon for Motorists; Saves Time, Money

One of Department of Public Works (DPW) Commissioner Ghassan Korban's resolutions as part of his confirmation process was to address Common Council frustration with the quality of temporary street patches and the length of time it took for street cuts to be permanently restored after underground work was completed. MWW is only one of many agencies that make cuts into the street pavement to reach infrastructure below; DPW divisions that provide work on sewers and lighting, and private entities such as other utilities and private contractors also have an impact on the street surfaces.

MWW teamed with the DPW Street Maintenance Division to address the challenge. MWW now sends daily reports to Street Maintenance describing all cuts made the previous day. Cuts on arterials are temporarily patched but those on local streets are barricaded; Street Maintenance staff responds promptly to make the permanent restoration. There are labor and materials savings for both MWW and Street Maintenance. Time savings allow the utility to redirect that productivity to other jobs. The result is a significant improvement in permanently restoring the cuts quickly and with cost savings.

From May-November 2012, there were an estimated 810 street or sidewalk excavations by MWW of which 444 street cuts were repaired immediately by Street Maintenance instead of MWW making temporary patches. The estimated cost savings in man-hours for MWW was \$35,000; additional savings were also realized by not using temporary repair materials.

Infrastructure

The capital budget is based on long-term planning to replace or upgrade existing infrastructure, and to install new infrastructure as needed. The Capital Improvements Program prioritizes projects based on results of water-related research, new technology, and condition assessments of existing systems. The program includes treatment processes, buildings, laboratories, pumping and water storage, equipment, water mains, and hydrants. A multi-year project to provide backup electric power generation for five critical infrastructure sites is underway with design and installation of diesel generators to power treatment processes and pumps in the event of an electrical outage. While the Riverside Station was completed in 2011, major projects for 2012 included substantial completion of the Florist Station construction and design completion for the Linnwood Water Treatment Plant. Since 1993, the Milwaukee Water Works has invested \$406 million in its infrastructure.



A Meter Services Technician opens a curb stop that allows water to flow from the water main in the street through the homeowner's lateral pipe to the house.

Meter Replacement Program

The Milwaukee Water Works is replacing 155,967 water meters in homes and small businesses in Milwaukee, and its retail customer communities of Greenfield, Hales Corners, St. Francis, and West Milwaukee. Customers with meters sized one-inch or smaller receive a new meter, automated meter reading device (AMR), and battery. The original meters were installed in 1996 and the batteries are reaching the end of their useful life. The replacement project will continue over several years to allow for normal meter service operations and maintenance. As of Dec. 31, 2012, technicians had replaced 35,679 meters for 23% completion of the program.

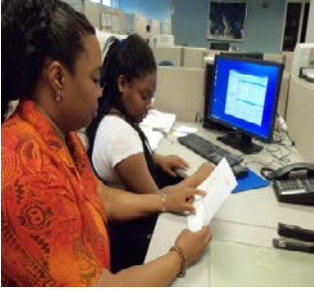
Information Technology Services

During 2012, Water Works Technical Services consolidated its enterprise data onto dedicated high-end digital appliances called SANs, short for Storage Area Network. This

major initiative marked a turning point in the administration and safeguarding of mission-critical Milwaukee Water Works infrastructure data.

Customer Service

The Milwaukee Water Works manages the billing for the Municipal Services Bill which, in addition to water, includes charges for five City of Milwaukee services and two Milwaukee Metropolitan Sewerage District (MMSD) charges. The utility forwards the payments to the City Treasurer for distribution to other city departments and the MMSD. This naturally generates inquiries from the public.



A Milwaukee high school student found summer work in the Customer Service Center through Mayor Tom Barrett's Earn & Learn Summer Youth Internship Program.

In 2012, the Customer Service Center received 165,806 calls, a 1% decrease from 2011. Customer Service Representatives answered 94% of all calls within 60 seconds. They also served 24,345 customers at the Customer Service Counter at utility offices in the Zeidler Municipal Building. The walk-in total was a 6% increase over 2013.

Electronic Payment Collection

More and more customers are embracing electronic payment of their bills. In 2012, over \$26,711,000 was collected through electronic channels: MasterCard, Discovery Card, and eCheck through the utility's website and over the telephone using the interactive voice response system (IVR). This represents 13% of funds collected and 20% of all payment

transactions. When electronic payment service began in 2006, only 4% of all bill payments were processed electronically using only Automatic Clearing House (ACH).

Business Outreach

To retain and attract water-intensive business to Milwaukee, the utility conducts a marketing program. In a Business-to-Business campaign in 2012, the Milwaukee Water Works reached out twice to its commercial and industrial customers and members of the M7 (FaB) Food and Beverage Milwaukee Network. MWW sent mailings to a select national audience that included business site selection consultants and manufacturers. In addition to raising awareness of the benefits and low cost of Milwaukee water, the campaign highlighted the utility's Declining Block Rate (DBR) structure in which cost per unit of water decreases with increased water usage. This is an advantage for commercial customers who use more than 34 Ccf per month (25,000 gallons/month).

International Ozone Association Honors Milwaukee Water Works

In September, the International Ozone Association Pan American Group (IOA PAG) chose Milwaukee for its 40th Annual Conference and Expo, citing the Milwaukee Water Works for successfully using ozone for drinking water disinfection for nearly 20 years. Several IOA PAG members had been instrumental in the installation of ozone disinfection facilities at Milwaukee's two water treatment plants. At the time, the \$51 million design-build project was the largest ozone retrofit in the world. Presenting MWW Superintendent Carrie Lewis with an honorary plaque, IOA PAG President Michael Oneby, P.E., said, "We could not have had such a successful conference without the participation of MWW staff. The conference organizers praised their pleasant demeanor, willingness to help, and just plain good company behind the registration desk. Exhibitors complemented them. Whether speaking, volunteering, or listening, everyone appreciated their participation. To top it off, there were few better days this year to be at the lakefront. Few people know the experience of living on the shore of a Great Lake. I have received numerous comments on how great a city Milwaukee is, which you and I have known for years. Thanks again for all of your help. Let's do it again!"

Alliance for Great Lakes Salutes Milwaukee Water Works

In its November 2012 report, "Keeping Great Lakes Water Safe: Priorities for Protecting against Emerging Chemical Pollutants," the Alliance for the Great Lakes commended the Milwaukee Water Works for its water quality monitoring program. "The city takes its water supply seriously. ... In addition to required water monitoring, Milwaukee Water Works staff collect water samples annually and analyze them for about 500 unregulated compounds in raw Lake Michigan water, finished water and in the distribution system. The Milwaukee Water Works was one of the first utilities in the U.S. to test for endocrine-disrupting compounds, beginning in 2004, and for pharmaceuticals and personal care products, beginning in 2005. The voluntary monitoring is conducted to collect baseline data, learn more about water quality, and to prepare to take further action on the issue. The data is available to the public on its website, along with information about MWW's water treatment process and other educational materials. The effort put forth by MWW is commendable as it is leading the way among public water utilities. More frequent monitoring for priority chemicals could help to establish temporal trends — if any exist — in the occurrence of emerging contaminants."

Carrie M. Lewis Receives Women of Influence Award



Superintendent Carrie M. Lewis was the recipient of a 2012 Milwaukee Women of Influence Public Policy Award. The award was presented by the *Business Journal Serving Greater Milwaukee*, which said, "With her expertise in drinking water quality science, water treatment, and water system financial and security issues and her management of a nationally recognized water utility, Lewis is making a difference in public policy that impacts public health and business, industry and research. As Milwaukee rises as a global leader in freshwater science and industry, Lewis ensures sterling water service which provides a strong foundation for economic growth and stability."

Lewis is the first woman to serve as superintendent of the Milwaukee Water Works, now in its 141st year of operation. She was named the utility's first water quality manager in 1995 and appointed superintendent in 1997. Lewis was honored in 2006 with the drinking water industry's most prestigious distinction, the American Water Works Association George Warren Fuller Award. She was the first woman in Wisconsin to be honored with the award.

General Statistics



Over 1,300 people visited the historic, Victorian Gothic-design North Point Tower during the Historic Milwaukee, Inc. Doors Open Milwaukee event in September.

The Milwaukee Water Works was organized on April 18, 1871. The utility began pumping Lake Michigan water into a distribution system in September 1874. Treatment of the water to prevent illness began in 1910.

- Howard Avenue Treatment Plant rated capacity 105 million gallons per day (MGD)
- Linnwood Treatment Plant rated capacity..... 275 MGD
- Average Daily Pumpage..... 101 million gallons (MG)
- Total Annual Water Sales..... 32 billion gallons (BG)
- Water mains, total length..... 1,956 miles
- Water meters in service..... 161,611
- Hydrants..... 19,847
- Population served..... 861,249 in Milwaukee and 15 communities
- Area served..... 196 sq. mi.

Residential water use..... 46 gallons per person per day
 Pumping stations -- Two supply stations at the treatment plants, three pumping stations, eight re-pumping stations

Storage -- 40 million gallons in eight tanks

The highest actual pumpage for a 24-hour period was 322 million gallons, on Aug. 2, 1988.

Cost of drinking water: Five gallons cost \$0.01 (one cent). Water use is measured in 100 cubic feet, or Ccf. One Ccf, the equivalent of 748 gallons, costs \$1.68.

Retail customers - The utility provides water and billing to Greenfield, Hales Corners, St. Francis, and a portion of Franklin. West Milwaukee receives billing services from MWW and maintains its own distribution system.

Wholesale customers – The MWW sells water to these communities which operate their own water utilities: Brown Deer, Butler, Greendale, Menomonee Falls, Mequon, New Berlin, Shorewood, Thiensville, Wauwatosa, and West Allis. The MWW also sells water to the Milwaukee County Grounds on a wholesale basis.



As visitors stepped into the 14-foot-wide North Point Tower they stood face-to-face with the 135-foot-tall iron standpipe that once was part of a steam engine system that pumped Lake Michigan water for fire suppression and drinking. Visitors saw a display of historical photos dating back to the 1870s, when cows grazed outside the tower on what was then farmland north of downtown Milwaukee.

Milwaukee Water Works Customer Service Center 841 N. Broadway, Fourth Floor
Monday – Friday, 7:30 a.m. – 5:00 p.m. **Telephone** (414) 286-2830 **Fax** (414) 286-5452 **TDD** (414) 286-8801
Non-emergency email: watwebcs@milwaukee.gov
www.milwaukee.gov/water Milwaukee Water Works 24-Hour Control Center (414) 286-3710
Para una explicación en español, por favor llame al (414) 286-2830.

The Milwaukee Water Works is a member of the [American Water Works Association](#), the [Association of Metropolitan Water Agencies](#), the [Water Research Foundation](#), the [Wisconsin Water Association](#), the [Wisconsin Rural Water Association](#), the [Milwaukee Water Council](#), and the [M7 \(FaB\) Food and Beverage Network](#).