



# Milwaukee **Water Works**

*Safe, Abundant Drinking Water.*

## **2005 Annual Report**

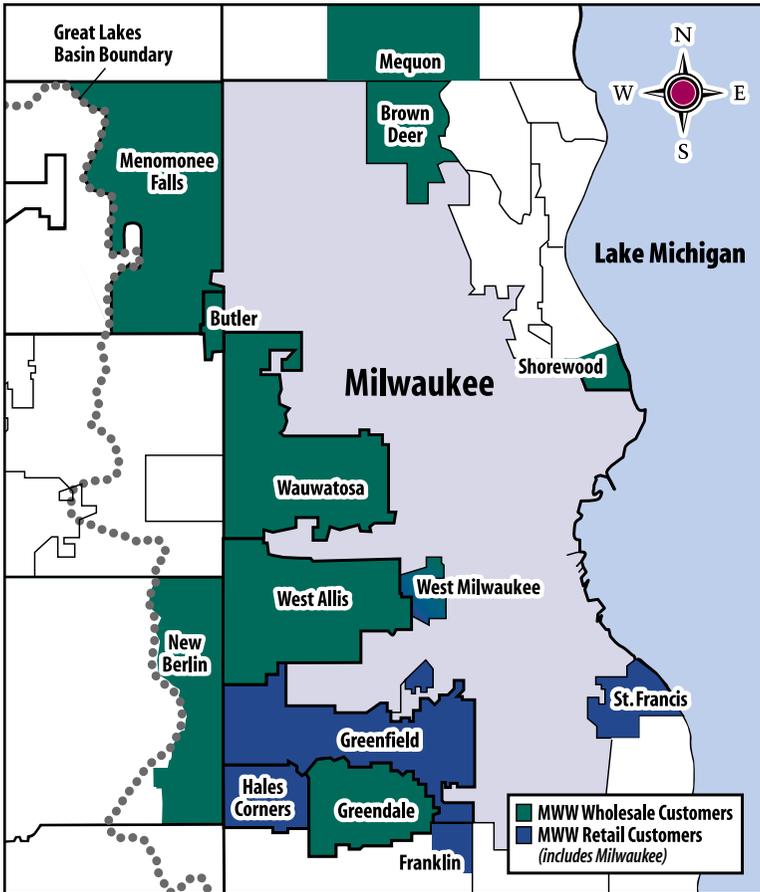
AN ENTERPRISE FUND  
OF THE CITY OF MILWAUKEE



# Milwaukee Water Works

# Service Area

*Safe, Abundant Drinking Water.*



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## 2005 Superintendent's Message

**T**he Milwaukee Water Works (MWW) provides safe, abundant drinking water to the City of Milwaukee and 14 neighboring communities.

The Water Works is a self-financing enterprise owned by the City of Milwaukee and regulated by the Public Service Commission of Wisconsin, the U.S. Environmental Protection Agency, and the Wisconsin Department of Natural Resources.

We treat Lake Michigan water at the Linnwood and Howard Avenue plants, passing it through multiple treatment process barriers that remove illness-causing microorganisms from the water. The primary form of disinfection is ozonation, in which ozone gas is bubbled through the water. The highly reactive gas destroys illness-causing microorganisms, controls taste and odor, and reduces chlorinated disinfection byproducts. Following inactivation of microorganisms, the processes of coagulation, settling, and filtration remove additional particles. A final disinfection procedure ensures safe, high quality drinking water throughout the distribution system.

Our 350 employees in water treatment, distribution, engineering, customer service, and administration are committed to providing a reliable supply of superior quality water. They also support their city through payment of property taxes, service to the community, and contributions to the city's Combined Giving Campaign benefiting the United Way of Greater Milwaukee and other agencies, and the United Performing Arts Fund.

### Highlights of 2005

**Exceptional Water Quality.** The Water Works' mission is to provide drinking water that is exceptional in quality and is healthier than any standards set by regulators. We have exceeded that goal throughout 2005 and intend to provide the same exceptional quality water in the coming year. Coca-Cola Enterprises recently chose to expand its bottling line to produce *Dasani* for distribution to seven Midwest states, citing the high quality of Milwaukee water that forms the basis for the product.

**Abundant Water.** In 2005, the Water Works delivered over 39 billion gallons of superior quality drinking water. Average daily pumpage was 122 million gallons per day (MGD) while maximum treatment capacity is 380 MGD. There is an abundant supply of treated water for manufacturing and water-intensive industry.

**An Asset to Taxpayers and the City.** The Milwaukee Water Works serves as a source of revenue for the City of Milwaukee. While the Water Works collected \$71.4 million to finance its operations in 2005, the utility paid to the city a \$7.7 million payment in the form of a payment in lieu of taxes (PILOT). This payment was used to directly offset the city tax levy, reducing the 2005 tax rate by \$0.30 per thousand dollars of assessed valuation. The Water Works pays other city departments for the municipal services it uses and for the payment of employee benefits. In 2005, this payment, in addition to federal taxes and other payments, totaled \$14.5 million.

**Expanded customer base.** In August, the Water Works began receiving additional revenue by providing service to a portion of the City of New Berlin. The Milwaukee Common Council and Mayor John O. Norquist approved a water contract in 2003, and physical connections were completed during the next two years. The agreement is estimated to generate \$600,000 in annual revenue to the Milwaukee Water Works while providing relief from water supply shortage and contamination issues to some areas of New Berlin.



Carrie M. Lewis, Superintendent

# Milwaukee **Water Works**

*Safe, Abundant Drinking Water.*

**2005 Year in Review**



**M**ilwaukee Water Works water quality surpassed all federal and state standards for water quality in 2005. The Environmental Protection Agency requires public water utilities to test for 90 regulated contaminants on a regular basis. Performing beyond all requirements, the Water Works tests for over 450 known contaminants to deliver the highest quality water possible.

Milwaukee water is an excellent value. The average cost per person per day for water in 2005 was 8.5 cents. Consider also that Milwaukee tap water delivers clean water to protect public health and enhances the quality of life, provides fire suppression, and supports the regional economy.

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In 2005, the Milwaukee Water Works (MWW) delivered over 39 billion gallons of clean, safe drinking water. Average daily pumpage was 122 million gallons per day (MGD). This represents approximately one-third of the combined treatment capacity of the two water treatment plants.

There has been a steady decline in the volume of water sold by the Milwaukee Water Works during the past four decades. This affects the ability of the MWW to collect sufficient revenues to cover increasing operating costs, while keeping rates down. Factors leading to the decrease in water sales include the loss of customers in water-intensive industry, for example, brewing and automotive manufacturing; energy and water-efficient appliances and industrial processes, and water conservation measures. More recently, from 2000 through 2005, the volume of Milwaukee water sold to industrial customers dropped by 18.4%; the volume of water sold to all MWW customers dropped 6% during those five years.

In 2005, Milwaukee's second largest commercial customer, LeSaffre Red Star Yeast, announced its move to Cedar Rapids, Iowa. The impact on Water Works' revenue is estimated to be a decrease of \$1.1 million per year.

A marketing initiative begun in 2003 aims to generate additional sales of water by encouraging water-intensive companies to locate in the Milwaukee service area and to assist existing businesses to expand here.

The City of New Berlin became a wholesale customer of the Water Works in August with service to a portion of the suburb that lies within the Great Lakes basin boundary. The agreement for service, reached in 2003, will provide an estimated \$600,000 in revenue



annually to the Milwaukee Water Works. Milwaukee water service resolves supply and well contamination issues for some areas of New Berlin. Water main connections were made during the past two years.

## WATER QUALITY SECTION

Among the most notable activities of 2005, Water Quality Section staff trained the Water Treatment Plant Operators to facilitate management of the filter bed inspection and maintenance program by the Plants Section. This will increase productivity and increase the number of filter bed inspections completed each year. In addition, micro-biology staff improved various aspects of the sampling and monitoring program.



Water Quality staff, as a part of the “Distribution Water Quality Team,” researched and proposed improvements and initiatives to enhance water quality in the distribution system based on the ‘Distribution systems: assessing and reducing risks’ report by the National Research Council. The Distribution Water Quality Team is addressing the five priority issues identified in the report through a series of ongoing and future projects.

2005 was the first full year using a Computerized Maintenance and Management System (CMMS) to schedule and document routine maintenance and quality control checks on over 175 pieces of online water quality monitoring instrumentation at the water treatment plants. The data collected in the program is critical to optimizing the water treatment process and assuring the highest quality water. New components were added this year, such as automated service request submittal. Water Quality staff worked with Plants Maintenance and Automation staff to refine the system, and provide greater accountability.

Microbiology staff updated methods and improved detection capability for the distribution testing program.



Staff worked with the MWW Marketing Specialist to improve the content and layout of the annual Water Quality Report with the first-ever Spanish language edition, expanded coverage on the MWW website, and access to more data and information. One outcome was a continued drop in the number of calls and inquiries to the Water Quality Hotline number, now at its lowest level since 1993, and averaging less than a dozen calls a month.

## Hydrants are for fighting fires, not for fun

In response to a rising number of illegally opened fire hydrants in late spring as the weather began to warm, the Milwaukee Water Works teamed with the Milwaukee Fire Department and Milwaukee Public Schools (MPS) for a public awareness campaign to stop the illegal openings.

The Fire Department provided fire hose and sprinkling devices for “Cool Spots” at MPS-supervised school playgrounds and the Water Works supplied water and turn-on service at nearby hydrants.

The information campaign, in English and Spanish, was carried in posters, flashcards, news coverage, and public service announcements.



*Mayor Tom Barrett and Superintendent Carrie Lewis kick off the campaign*

### It's Dangerous

- Breaking open a hydrant makes it unusable to put out a fire
- Lowers water pressure and hampers firefighting
- Strong spray hazardous to children and motorists may not see them in the spray
- Spray obstructs the view of motorists and can cause accidents

### It's a Crime

- \$1,000 fine or 30 days in jail for tampering with a hydrant

### Costly to all Water Users

- Hydrant open one hour = water customers pay \$227
- Hydrant open four hours = water customers pay \$883
- Damaged hydrant = \$850
- Broken hydrant = \$3500
- Loss of a precious resource, water
- Buildings are flooded = property damage

Before the campaign began in June, there were an average 30 illegally opened hydrants reported each day; by the end of July, the number was fewer than 10 per day. Citizens called the Water Works to report seeing people illegally opening hydrants, and one arrest was made for illegally opening a hydrant.

## BUSINESS SECTION

### Accounting Services

The Accounting Services group provides budgeting and accounting services for the Water Works. This includes developing the budget, monitoring and analyzing expenditures, processing contract and other vendor payments, and payroll.

The group is also responsible for financial analysis and reporting of the enterprise's operations. This is accomplished in compliance with two separate reporting systems. The first is reporting in compliance with Generally Accepted Accounting Principles (GAAP), which is the basis for the enterprise's audited financial statements. The second reporting deals with complying with the requirements of the Public Service Commission of Wisconsin (PSC), the utility's oversight agency, and is used to provide proper reporting and interaction with the PSC. The combined reporting functions serve both internal and external users of the financial information of the Water Works.



*"A milestone event protecting the Great Lakes," was how Wisconsin Gov. Jim Doyle (l) termed the December Leadership Summit of the Council of Great Lakes Governors in Milwaukee as the group signed the Annex 2001 Implementing Agreements. Pictured with Doyle is Dalton McGuinty, premier of Ontario, Canada. Doyle said the agreement would "ensure sustainable use of water resources" among the Great Lakes states and Canadian provinces.*

### Meter Services

Meter Reading employees read residential water meters on a quarterly basis. Using wireless radio transmitters, Automated Meter Reading (AMR) technology remotely reads meters from a van passing by each residence and transfers the data into the billing system. In 2005 this operation performed 612,898 meter readings, reading 98% of the electronic meters installed.

Meter reading staff performed 12,760 manual reads involving investigations, some larger residential and commercial accounts, and meters located in hard-to-read areas. Clerical staff mailed 1,239 high usage letters notifying customers of substantially higher water usage to prompt them to check for water leaks.

Water meters range from 5/8-inch to 12 inches in diameter. The size of a water meter refers to the diameter of the pipe at the inlet of the meter. The weight of these meters ranges from 12 pounds to 3,300 pounds.

Commercial Meter Readers manually read the meters of the 1,000 largest customers on a monthly basis; there were 21,842 readings in 2005. Many of these large meters are located in underground vaults. Monitors and confined space entry permits are required to safely read the meters. Meter readers compare current usage to past usage to identify changes in seasonal or monthly patterns and report discrepancies for timely corrective action.

Water Meter Investigators provide services to customers who report high bills and questionable account information. In 2005, they made 6,720 visits to customer locations to verify meter, address, and water use information. They also inspect interior plumbing fixtures to locate leaks for residential and small commercial customers.



*The new Milwaukee Water Works logo and tagline, "Safe, Abundant Drinking Water" are proudly displayed on MWW vehicles. The two reinforce the reliability and quality of Milwaukee's drinking water.*

Meter Repair Shop personnel ensure that water meters accurately represent water use, provide the customer fair value, and provide the Water Works appropriate revenue for water delivered. The staff tests and repairs large and small water meters at the shop and install, exchange, and test meters in the field.

Large (three-inch and greater) meters are typically used in industrial applications and are not yet included in the AMR program. MWW tests these meters according to PSC requirements. Testing of large water meters involves isolating the meter and confirming its accuracy by running a known volume of water through the meter. Large turbine and electronic/magnetic meters are used to determine the water usage of large users, such as wholesale communities. Because of the high volume of water used, these meters are monitored 24 hours a day.

During 2005, the Meter Shop installed over 164 hose connections and handled almost 11 miles of hose. These connections enable service-provider customers to remain open for business while repairs are performed on nearby water mains. Meter Shop personnel are on call 24 hours a day to support these activities.

Each year the Water Works is required to test a statistically determined random number of residential meters. This quality control method ensures the equipment provides the most accurate reading possible. Meter Shop staff also installs meters at new water services.



*Customer Service Representatives, shown here with Supt. Carrie Lewis and Water Business Manager Earl Smith, handle over 60,000 telephone inquiries and 50,000 customer service visits each year.*

## Customer Service

Customer Service employees respond to telephone inquiries and speak with customers who visit the service counter on the fourth floor of the Zeidler Municipal Building. They resolve billing inquiries and schedule meter appointments. Customer Service Representatives served 61,587 customer telephone contacts in 2005. Employees working the service counter answered 4,166 customer inquiries, and processed 61,369 cashing transactions and 50,350 payments in 2005.

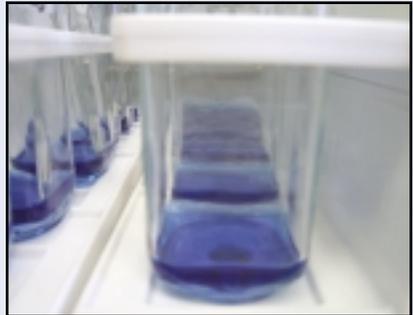
An Interactive Voice Response (IVR) system allows customers access to their account information by telephone on a 24-hour basis. The IVR processed 126,475 calls during 2005.

A new customer information and billing system was activated in June. The new enterprise database and browser interface streamlines business processes, improves reporting and billing capabilities, and provides convenient access to account information. Work is underway to provide customer self-service account access via the Internet.

## Hands Across the Hallway: Partnerships Pay off for Public Health

One of the leading national examples of partnerships among health departments and water utilities and other public health stakeholders marked its tenth year of collaboration in 2005. Milwaukee's Inter-Agency Clean Water Advisory Council (IACWAC) was endorsed by Milwaukee Common Council legislation in 1994 and charged with coordination of water quality issues in the city.

The IACWAC was one of three case studies in the Environmental Protection Agency's publication, *"Security Information Collaboratives: A Guide for Water Utilities."* (see <http://www.epa.gov>) The multi-agency team approach was found to be highly relevant to managing security concerns involving water and public health, such as possible contamination of a public water system.



The council had its beginnings when a Milwaukee Water Works (MWW)/Health Department Technical Committee was formed as an interdisciplinary work group of professionals to exchange information, foster communications, provide technical support, discuss water quality issues, and evaluate impacts to the public served by the MWW.

Most importantly, the council serves as an idea incubator and discussion forum that has produced an early warning disease surveillance network and procedures to notify the public and respond in the event of a contamination or disease outbreak. The team developed new methods of analyzing risk for illness-causing microorganisms and viruses. Discussions by this group ultimately led to the formation of the Southeastern Wisconsin Beach Task Force, which coordinates research and education efforts of state and local agencies and community organizations working to solve the problem of beach closings in southeast Wisconsin.

The committee also provides recommendations to the IACWAC in the areas of water treatment process and system operation, and source water impact and influences. In addition to MWW and the Health Department, the group includes representatives from the Milwaukee Department of Public Works (DPW) Administration and Environmental Sections, Milwaukee Metropolitan Sewerage District, and the Wisconsin Department of Natural Resources.

The council has expanded the knowledge base of members and fostered a spirit of cooperation between the agencies involved, all to the benefit of public health.

## Billings and Collections

This group generates and collects the Milwaukee Municipal Services Bill. The bill, collected quarterly, includes charges for drinking water, Milwaukee Metropolitan Sewerage District (MMSD) sewage treatment, and certain municipal services provided within the City of Milwaukee.

The municipal charges include the Local Sewerage Charge, the Storm Water Management Charge, the Solid Waste Charge, and the Snow and Ice Charge. It is cost-effective to include all of the charges on

one bill. MWW manages the billing and forwards the collected charges to the Milwaukee city treasurer for distribution to city departments and the MMSD. In 2005, billing statements totaling \$132 million were mailed on schedule to the utility's customers.



*Milwaukee Public Works Commissioner Jeffrey Mantes and New Berlin Mayor Jack Chiovatero turn the valve to bring Milwaukee water to a portion of New Berlin that lies within the Great Lakes Basin. The water service contract with New Berlin will provide an estimated \$600,000 in annual revenue for Milwaukee while New Berlin gets some relief from water supply and radium contamination problems.*

## Water Marketing

The Water Marketing Specialist teams with the Department of City Development (DCD) and other Milwaukee economic development efforts to recruit water-intensive business to Milwaukee, and to retain existing industry. Activities focus on raising awareness of the benefits of Milwaukee's water quality, quantity, and value. The specialist serves as liaison with existing large water customers, and uses elements of the marketing plan to improve utility communications and public education.

In 2005, a joint effort with DCD led to a Cintas Corporation decision to locate a new industrial laundry facility on city property on the northwest side. The firm plans to create up to 125 new jobs and would be a major customer of the Water Works.

**The Milwaukee Water Works is proud to provide high quality water.  
These are some of our largest commercial customers.**

Aldrich Chemical	Journal Communications	SE Wisconsin Products (Campbell's)
Aurora Health Care	Marquette University	St. Luke's Medical Center
Coca-Cola Enterprises	Master Lock	Stainless Foundry & Engineering
Emmpak Foods	Masterson Co.	Towne Realty
Falk Corp.	Maynard Electric	University of Wisconsin- Milwaukee
Fontarome Chemical	Miller Brewing Co.	We Energies
GE Medical Systems	Milwaukee Public Schools	Wisconsin Paperboard
Harnischfeger Corp.	Mitchell International Airport	Wisconsin Center District
Henri's Food Products	Molecular Biology Resources	
Hotel Pfister		

Marketing efforts led to retention of Coca-Cola Enterprises (CCE) in Milwaukee. CCE decided to expand its *Dasani* bottled water operation in Milwaukee to serve seven states, citing excellent quality water from the Milwaukee Water Works. Staff assisted DCD and Forward Wisconsin with presentations at the International Economic Development Council annual meeting in Chicago and BIO2006 in Chicago, and provided outreach to Milwaukee business, serving on Mayor Tom Barrett’s Business Retention & Expansion Team.

Marketing staff filled requests for information about Milwaukee water from various sources, such as commercial real estate brokers, and, for example, Forward Wisconsin’s Project Fuchsia, which was finding a site for a bio-pharmaceutical manufacturing facility. Marketing staff presented Milwaukee’s water story to the annual meeting of suburban wholesale customers, coordinated public information for startup of water delivery to a portion of New Berlin, and in state outreach efforts, served as chair of the Wisconsin Water Association Image and Public Relations Committee.

Marketing and public relations strategies included development of educational and communications tools. A new logo and tagline, “Safe, Abundant Drinking Water,” distinguishes MWW from the Milwaukee Metropolitan Sewerage District (“The clean water people”). “Safe, Abundant Drinking Water” also reinforces the reliability and quality of Milwaukee water.

Several publications became available in English and Spanish in 2005, including brochures and door hangers and the annual report. On-hold messages for the new IVR system included informational items about Milwaukee water. The MWW website, [www.water.mpw.net](http://www.water.mpw.net), now includes plumbing and water service rules, regulations and specification books, once an expensive pile of paper to duplicate for customers. From June to August, a public awareness campaign worked to discourage the dangerous and illegal opening of fire hydrants by the public.



*Representatives of suburban municipalities that purchase Milwaukee water meet once a year with Milwaukee Water Works managers for a briefing on operations and to learn about new regulations and treatment techniques.*

### Technical Services Section

These employees maintain the Water Works’ information processing network and equipment. During 2005 Technical Services completed the physical restructuring of the Water Works’ primary data center. A new network backup system has the capacity and speed to complete the backup during the night and not affect operations the next day. A second backup will be installed offsite in 2006 as part of the MWW disaster recovery plan.

Staff provided technical support for the customer information system replacement project. In accord with a move to “best practices” wherever feasible, domain controllers and applications servers were reconfigured, the aging network file and print server were being replaced, and firewalls were purchased and deployed to improve security.



*Filter hall at Linnwood Water Treatment Plant*

## WATER TREATMENT PLANTS

In 2005, the Linnwood Water Treatment Plant pumped and treated 28.6 billion gallons of water while the Howard Avenue Plant pumped 15.9 billion gallons of treated water, a slight increase of 0.4% over 2004.

Chemical and energy costs increased in 2005 due to growing global demands for oil and raw materials. Gulf Coast hurricanes damaged a number of chemical processing plants, reducing the availability of water treatment chemicals.

Overall, in 2005 MWW chemical costs increased by 17%.

As part of the continuing filter maintenance program, the Linnwood Operations, Maintenance, Instrumentation and Water Quality staffs performed complete filter inspections and maintenance on 10 filters. The work included filter media measurements, replacement of the anthracite coal filter media, replacement of surface wash nozzles and flushing of surface wash pipes, replacement of pipe hangers, and servicing of instruments.

During 2005, all filters were operated using extended run criteria that had been piloted in 2004. This resulted in a more efficient operation of the filter bed, reduced the amount of filter backwashing and washwater used while still maintaining the high quality of filtered water leaving the plant. There were 246 fewer filter backwashes performed in 2005 than in 2004. That saved roughly 125 start/stop operations of the 40 million gallon per day (MGD) washwater pumps and saved 98 million gallons of treated water that would have been used for backwashing.



*Original 1939 filter gauges no longer in use*



**Before**



**After**

*Filter beds remove particles from the water after ozone disinfection and coagulation and settling. The water is filtered in each bed through 36 inches of media: 24 inches of crushed anthracite coal and 12 inches of sand. These photos show a bed undergoing cleaning and replacement of the filter media and a filter bed that was cleaned and is back in service filtering water. The beds measure 51' x 39' x 6'.*

In July 2000, the Linnwood Plant began the transition to biologically active filtration. Since then, algae growth on the filter walls and troughs during warm water periods has been noted, and is believed to be enhanced by natural light from the skylights above the filters. To reduce this maintenance problem, Water Engineering designed to retrofit skylights over four filters with blue acrylic panels that cover the glass panes. The panels allow filtered light into the filter box and should significantly reduce if not eliminate algae growth in the filters. Water Quality staff is monitoring the filters to verify the effectiveness of the covered skylights.

2005 major capital projects coordinated with Water Engineering staff include upgrade of the 2,400-volt Linnwood plant internal switchgear, removal of trees growing over the clearwells, replacement of the two ozone sample sump dewatering pumps, planned replacement of the Linnwood Pump Room windows and addition of heating, ventilation, and air conditioning to the

Pump Room for 2006, scope of work and drawings to install additional thrust blocks for the south raw water pipeline, and planned upgrade of the calcium thiosulfate (ozone quenching) storage tank and feed pumps and addition of chemical feed pump flow meters.

The MWW Security Manager oversaw a number of security upgrades at Riverside Pumping Station. The Linnwood Control Room now monitors and controls a remote door alarm system and cameras on the pumping station exterior and entry gate, and can remotely open the gate, which was modified to allow security card access. Card readers and new door alarms were added to exterior doors.

The Plant Automation group fully implemented a new computerized plants maintenance manager system for all preventive maintenance, demand maintenance, and project planning. All Electrical, Instrumentation, and Maintenance staff enter their time electronically onto work orders. Daily reports are available for payroll entry, productivity, scheduled and unscheduled work orders, employee assigned work orders, and work order comments reports.

The Linnwood Maintenance, Instrumentation, and Electrical service groups completed such projects as replacement of corroding electrical conduit in the ozone contactor aisle, inspection of 10 bearings in a coagulation basin, replacement of numerous sump pumps at Linnwood and Riverside, replacement of railings in both south coagulation basins, and installation of new conductivity and suspended solids meters.



*Filter skylights, exterior view*



*Filter skylights, interior view*

Several major projects were completed at the Howard Avenue Plant in 2005, including repairs to the 84-inch Howard Avenue intake main, a chlorine storage tank, and a liquid oxygen storage tank. Two of the ozone generators were cleaned and serviced and the northeast clearwell baffles were inspected and repaired. At the Texas Avenue station, raw water pump #2 was rebuilt.

The ozone quenching feed system piping for calcium thiosulfate was redesigned and relocated to improve the mixing with the ozone. A raw water conductivity meter was installed to aid in monitoring water quality changes.

Several projects at the booster stations were completed. The Kilbourn Reservoir was decommissioned in 2004 and the low service district was being supplied with variable speed pumps and pressure reducing valves located at the North Point Pumping Station and Kilbourn, respectively. A manual control option was installed for the Kilbourn Pressure Reducing Valves. Florist pump #5 was inspected and refurbished. Water Engineering staff began hydraulic modeling of the Grange District to be used to plan pumping station upgrades. In mid-2005, New Berlin began using water from Milwaukee's southwest pressure district.



*Preventive maintenance is an important component of the Milwaukee Water Works' assurance that infrastructure is in top functioning condition. During maintenance of the ozone generators, the open door on the generator reveals the shell in which dielectric tubes are inserted. Electricity flowing through the tubes creates the sparks that transform oxygen into ozone. There are approximately 800 tubes per ozone generator, and the Water Works has a total of seven generators.*



*To prevent surface water leakage and contamination, a rubber membrane roof was installed over the east clearwell at the Howard Avenue Plant.*

## DISTRIBUTION

Water Distribution repairs and maintains the water distribution piping system throughout the City of Milwaukee and the retail suburbs of Greenfield, St. Francis, and Hales Corners to ensure continuous delivery of sufficient high quality water. Distribution employs state-of-the-art repair practices using high quality parts and materials.

Scheduled preventive maintenance activities include repair and maintenance of facilities within every upcoming paving project area, annual flushing of dead end water mains, leak surveys to identify non-surfacing water leaks, and a hydrant inspection program. Distribution researches and uses new technologies for materials, repair parts, and equipment to ensure the distribution system provides a safe conduit to deliver high quality water.

Distribution activities frequently focus on emergency repairs. Distribution conducted 10,425 investigations for various reasons such as reports of leaks in the street and concerns from customers. The Water Distribution Supervisor on duty or on call assesses each emergency situation and determines the necessary action. Repair

crews responded to 993 call-outs for emergency, after-hours repair needs to maintain water service with the least amount of interruption and to maintain the integrity of the water distribution system. In 2005, Distribution repaired 671 main breaks and made repairs to service laterals, hydrants, valves, and curbstops.

Distribution coordinates new water main installation projects with contractors to plan water shut-off requirements, operate valves for the shut-off, coordinate water outages with affected customers, provide pipe cutting services with specialty saws for large diameter water mains, and to return the water main to service.

Distribution works closely with the paving programs of the City of Milwaukee and suburban communities to coordinate preventive maintenance activities. The goal is to ensure that buried water infrastructure is in good operating condition prior to the street above being paved. Prior to paving, the water distribution system is reviewed in detail for possible improvements such as installation of additional shut-off valves and elimination of unused piping that, if left in service, could potentially cause future leaks. All valves are exercised and repaired or replaced as needed. Service lateral access boxes are located and inspected to make sure the curbstop is accessible and operable for any future shut-off needs. Leak surveys detect any underground leaks. This preventive maintenance program has successfully reduced the incidence of disruption to new pavement for emergency repairs.

Underground leaks can sometimes go undetected as water seeps into underground voids. The use of a leak correlator provides a mechanism to detect these leaks that do not surface, helps identify repair activities, and reduces the need for future emergency repairs. The leak correlator uses highly sensitive microphones attached to valves or services. Data about the pipes is entered into a computer, the sound is analyzed, the location of the leak is pinpointed, and repairs are made.

The Milwaukee Water Works maintains 20,000 hydrants in Milwaukee, Greenfield, St. Francis, and Hales Corners. Field staff inspects the hydrants, first using a handheld computer to scan an identifying bar code on each hydrant, then records inspection data into the computer.

While flushing each hydrant, the water is sampled using a portable turbidimeter to ensure water quality standards are met or exceeded throughout the distribution system. Hydrant defects noted from the inspection are reported for repairs. If a hydrant is found to be inoperable, MWW notifies the local fire department of the out-of-service status and again



*The MudDog Hydroexcavator® uses high-pressure water and a powerful vacuum system to quickly loosen and remove soil from excavation sites. The MudDog injects water into the ground to soften the dirt, then vacuums the dirt into a holding tank. Water Works crews use the MudDog for excavating around pipes and fire hydrants. The equipment provides a quicker way to dig near other underground utilities without damaging them.*

when repair of the hydrant is complete. For further identification of hydrants, plastic collar rings are installed to indicate dead end main hydrants, hydrants out-of-service, restricted use hydrants, and private hydrants, which are not installed or maintained by the Milwaukee Water Works.

## WATER ENGINEERING

The Water Engineering Section serves as an in-house resource for the utility. The section is responsive to applied research needs of the utility and coordinates the Capital Improvements Program (CIP). The 2005 CIP budget totaled \$20.62 million with \$14.8 million to replace water mains and \$5.82 million for water treatment process and facility improvements. Capital improvement projects are specifically planned to increase efficiency and maintain the reliability of the entire MWW system.

In 2005, Water Engineering was responsible for project management duties associated with various plant improvements as well as operations and maintenance projects. A project to replace the Linnwood Plant filter effluent valve operators with new electro-hydraulic operators was completed in January. Meter Shop roof replacement was completed in May. Plans and specifications were developed for the 2005 construction of a membrane roofing and draining system for the Howard Avenue Plant east clearwell. Other projects included roof replacement and heating and ventilating upgrades at Northpoint Pumping Station, providing additional chemical storage and a chemical meter pump at the Linnwood Plant, and landscaping and tree removal above Linnwood clearwells.

Water Engineering staff prepared plans and specifications for 0.5 miles of new water main extensions and 12.5 miles of replacement water mains. One hundred sixty-four plans were prepared for these installations within Milwaukee. Plans were designed and reviewed for 20 alterations of water mains for various external projects. Plans were reviewed and approved for 10 suburban projects.

One major water main extension project was the installation of approximately one mile of 12" water main in the realigned West Canal Street from South 30th Street to South 44th Street. This water main will provide service to the redeveloped Menomonee Valley area. Installation of this water main presented a number of challenges. Two sources of supply were required to provide sufficient capacity and reliability of service.

On the east end of the project, near South 33rd Street, the existing water facilities were separated from the Menomonee Valley by the Canadian Pacific Railroad property. A



*Throughout the year, the Wisconsin Water Association (WWA), a section of the American Water Works Association, provides members a variety of educational opportunities through conferences and seminars addressing drinking water industry issues, from equipment advances and engineering to treatment processes, testing, and complying with U.S. Environmental Protection Agency and state regulations. Here, Milwaukee Water Works Distribution employees provide an equipment demonstration at a WWA conference.*

railroad license was obtained from Canadian Pacific Railroad, a casing pipe was installed beneath the property, and the water main was then installed inside the casing pipe.

On the west side of the project, the water main was installed through a Miller Park parking lot and then below the Menomonee River before connecting at South 44th Street. An easement to install the water main through the parking lot was obtained from the Southeast Wisconsin Professional Baseball Park District, the Milwaukee Brewers Baseball Club, the State of Wisconsin, and State Building Commission. A Department of Natural Resources permit was required to install the water main within the Menomonee River limits. The water main installation in the river area was done during winter months to take advantage of the low flow conditions, to minimize environmental impact, and to avoid seasonal activities at Miller Park.

2005 saw continuation of strategic review, planning, and construction of the new Marquette Interchange Freeway and its impact on Milwaukee Water Works facilities. Construction in 2005 centered on the “North Leg” phase of work, encompassing Interstate 43 between West Wells Street and West North Avenue. Water construction included a new 30” feeder main freeway crossing at West Juneau Avenue, a 24” feeder main crossing at North 9th Street, and three separate 16” water main crossings at West Highland Avenue, West McKinley Avenue and West Walnut Avenue. The Juneau, McKinley, and Walnut crossings required the additional construction constraint of boring casing pipes under the live freeway. In addition, water main relays related to the North Leg freeway work were completed in adjacent local roads. The major item remaining for 2006 construction is a 54” feeder main alteration passing under the proposed northbound West North Avenue exit ramp.

Staff also reviewed water plans and bids as part of the “Core” phase of the interchange project. The Core is the final freeway contract to complete the Marquette Interchange, and includes sections of Interstates 43 and 94 between West Wells Street to the north, North 13th Street to the west, the Milwaukee River to the east, and extending south of the existing High Rise Bridge. Four water construction plans were bid as part of the state contract, including a 16” freeway crossing at West Wisconsin Avenue and several local road water main relays. In the late fall of 2005 the North 10th Street local road water main relay was completed as well as abandonment of the existing 16” water main crossing at West Wisconsin Avenue. 2006 construction will see additional local road water alterations as well as construction of the new West Wisconsin Avenue crossing. The new Wisconsin Avenue crossing will be significant in that the water main will be hung from the deck of the proposed bridge and insulated.



*Installation of 36" concrete water main  
in East Wisconsin Avenue*

Permit applications for installation and alteration of the facilities of private utilities in public ways are reviewed for their impact on the water system. Permit applications for buildings are also reviewed. The staff reviewed over 1,000 permits in 2005.

Water Engineering provides flow and pressure information to plumbing contractors and fire protection companies to use in the design of interior plumbing and sprinkler systems. As the

distribution system changes, new flow tests are conducted to ensure that accurate information is given to fire protection companies. A request form is available on the MWW website and requests are taken via e-mail and fax. In 2005, the staff conducted 169 fire flow tests.

In 2005, Milwaukee Water Works obtained a consultant to perform meter and instrumentation testing in the southwest district at three stations. The data collected in the field will aid in calibration of the hydraulic model as well as provide recommendations for replacement equipment. It was determined that in 2006 the Milwaukee Water Works would issue a subsequent contract covering the remaining pumping stations.

Field testing took place in the Southwest District following the meter and instrumentation testing contract, and was being used for the calibration of the model.

Inspections of distribution materials ensure that only materials meeting Milwaukee Water Works' high standards are installed in the distribution system. In many cases, these items are hydrostatically tested at design pressures. Water Engineering staff responded to 217 requests for inspection of various purchases such as hydrants, valves, fittings, etc. The 217 requests translated to 17,110 pieces of materials and 15 miles of water main. The staff also inspected fittings furnished by the contractor.



*One of many pumps in the distribution system*



*Pipe inventory*



*Milwaukee Water Works employees share their trade secrets with students from Pulaski High School on Career Day and Garfield Science & Academy School for Careers on Wheels Day.*



# Milwaukee **Water Works**

*Safe, Abundant Drinking Water.*

## **2005 Financial Report**





KPMG LLP  
777 East Wisconsin Avenue  
Milwaukee, Wisconsin 53202-5337

## Independent Auditors' Report

The Honorable Members of the Common Council  
City of Milwaukee:

We have audited the accompanying basic financial statements of the City of Milwaukee – Water Works (Water Works), an enterprise fund of the City of Milwaukee, Wisconsin, as of and for the year ended December 31, 2005 and 2004, as listed in the table of contents. These financial statements are the responsibility of the Water Works' management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes consideration of internal control over financial reporting as a basis for designing audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the City's internal control over financial reporting of the Water Works. Accordingly, we express no such opinion. An audit also includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

As discussed in note 1, the financial statements present only the Water Works and do not purport to, and do not, present fairly the financial position of the City of Milwaukee, Wisconsin, as of December 31, 2005 and 2004, and the changes in its financial position for the years then ended in conformity with U.S. generally accepted accounting principles.

In our opinion, the basic financial statements referred to above present fairly, in all material respects, the financial position of the City of Milwaukee – Water Works as of December 31, 2005 and 2004, and the changes in its financial position and its cash flows for the years then ended in conformity with U.S. generally accepted accounting principles.

The management's discussion and analysis on pages 20 through 26 is not a required part of the basic financial statements but is supplementary information required by U.S. generally accepted accounting principles. We have applied certain limited procedures, which consisted principally of inquiries of management regarding the methods of measurement and presentation of the required supplementary information. However, we did not audit the information and express no opinion on it.

Milwaukee, Wisconsin  
July 28, 2006

**KPMG LLP**

## **City of Milwaukee – Water Works**

### **Management Discussion and Analysis**

#### **December 31, 2005 and 2004**

#### **(Unaudited)**

The management of the Milwaukee Water Works offers readers of this organization's financial statements this narrative overview and analysis of the Milwaukee Water Works' financial statements for the fiscal years ended December 31, 2005 and 2004. Readers are encouraged to consider the information presented here in conjunction with the financial information.

The mission of the Milwaukee Water Works is to provide safe, reliable and aesthetically pleasing drinking water to the City of Milwaukee and customers in suburban communities.

### **Financial Highlights**

#### *Year ended December 31, 2005*

- Total revenues increased by 1.25% in 2005, from \$72.1 million in 2004 to \$73.0 million in 2005.
- Total expenses increased by \$4.2 million to \$58.2 million or 7.77% in 2005. In 2004, total expenses were \$54.0 million.
- As of December 31, 2005, the Water Works outstanding debt consisted of \$12.9 million in revenue bonds through the State of Wisconsin Safe Drinking Water Loan Program and \$28.4 million in general obligation bonds for a total of \$41.3 million. As of December 31, 2004, total debt amounted to \$46.9 million, with \$13.7 million in revenue bonds and \$33.2 million in general obligation bonds.
- The Milwaukee Water Works is an enterprise fund within the primary government of the City of Milwaukee and as such is not subject to property taxes. In place of property taxes, the Milwaukee Water Works contributes to the City's tax levy by making a payment in lieu of taxes (PILOT). This amounted to \$7.7 million in 2005 and \$7.9 million in 2004 and is reported in the accompanying statement of revenues, expenses, and changes in net assets as operating transfers out.

#### *Year ended December 31, 2004*

- Total revenues decreased by 3.26% in 2004, from \$74.5 million in 2003 to \$72.1 million in 2004.
- Total expenses decreased by \$2.5 million to \$54 million or 4.46% in 2004. The 2003 expenses were \$56.5 million.
- As of December 31, 2004 the Water Works outstanding debt consisted of \$13.7 million in revenue bonds through the State of Wisconsin Safe Drinking Water Loan Program and \$33.2 million in general obligation bonds for a total of \$46.9 million. As of December 31, 2003, total debt amounted to \$52.7 million, with \$14.5 million in revenue bonds and \$38.2 million in general obligation bonds.
- The payment in lieu of taxes (PILOT) amounted to \$7.9 million in 2004 and \$7.7 million in 2003.

## Overview of the Financial Statements

This discussion and analysis is intended to serve as an introduction to the basic statements of the Milwaukee Water Works. The Milwaukee Water Works basic financial statements are comprised of two components: 1) the financial statements and 2) notes to the financial statements which explain in more detail some of the information in the statements.

## Required Financial Statements

The financial statements of the Water Works report information about the Water Works using accounting methods similar to those used by private-sector companies. These statements provide both long-term and short-term information about the Water Works' overall financial status.

The statement of net assets presents information on all of the Water Works' assets and liabilities, with the difference between the two reported as net assets. This statement provides information about the nature and the amounts of investments in resources (assets) and the obligations to Water Works creditors (liabilities). It provides one way to measure the financial health of the Water Works by providing the basis for evaluating the capital structure of the Water Works and assessing the liquidity and financial flexibility of the Water Works. However, one will need to consider other non-financial factors such as changes in economic conditions, population and industrial/commercial customer growth, and new or changed government legislation.

All of the current year's revenues and expenses are accounted for in the statement of revenues, expenses, and changes in net assets. This statement measures the Water Works' results of operations over the past year and can be used to determine whether the Water Works has successfully recovered all its costs through its user fees and other charges.

The final required financial statement is the statement of cash flows. The statement reports cash receipts, cash payments, and net changes in cash resulting from operations, financing and investing, activities. This statement identifies sources and uses of cash as well as the change in the cash balance during the reporting period.

## Financial Analysis of the Water Works

**Statement of Net Assets** — A summary of assets, liabilities, and net assets as of December 31, 2005, 2004, and 2003 is as follows:

**Table A-1 Condensed Summary of Net Assets**

	2005	2004	2003
<b>Assets</b>			
Total Current Assets	\$58,670,375	60,975,985	57,850,903
Net Capital Assets	365,522,302	359,121,526	352,031,865
<b>Total Assets</b>	<b>424,192,677</b>	<b>420,097,511</b>	<b>409,882,768</b>
Total Current Liabilities	16,524,444	15,907,702	12,289,042
Total Non current Liabilities	35,780,698	41,298,818	46,921,651
<b>Total Liabilities</b>	<b>52,305,142</b>	<b>57,206,520</b>	<b>59,210,693</b>
<b>Net Assets</b>			
Invested in Capital Assets, net of related debt	324,203,338	312,147,014	299,299,247
Restricted for Debt Service	620,880	609,999	599,399
Unrestricted Net Assets	47,063,317	50,133,978	50,773,428
<b>Total Net Assets</b>	<b>\$371,887,535</b>	<b>362,890,991</b>	<b>350,672,074</b>

Net assets may, over time, serve as a useful indicator of an entity's financial position. In the case of the Milwaukee Water Works, assets exceeded liabilities by \$371,887,535 and \$362,890,991 at December 31, 2005 and 2004, respectively.

In Table A-1, it can be seen that the largest portion of the Water Works' net assets (87% and 86% as of December 31, 2005 and 2004, respectively) reflects the Utility's investment in capital assets (e.g., water mains, buildings, machinery and equipment) net of related debt. Also, as shown in Table A-3, the Water Works' water main system makes up approximately 55% of the capital assets as of December 31, 2005 and 53% as of December 31, 2004. The Milwaukee Water Works uses these capital assets to provide safe reliable and aesthetically pleasing drinking water to its 831,000-customer base that lives in the City of Milwaukee and surrounding communities.

The Milwaukee Water Works investment in capital assets is reported net of related debt. The resources to repay this debt must be provided from operating and non-operating activities as the capital assets themselves are not intended to be used to liquidate these liabilities.

The remaining net assets (13% and 14% as of December 31, 2005 and 2004 respectively) are unrestricted and represent current assets (e.g., cash on hand for operation, cash held in the local government investment pool, accounts receivable and inventory and materials).

As can be seen in Table A-1, capital assets net of related debt increased by \$12.1 and \$12.8 million during the years ended December 31, 2005 and 2004, respectively. The increases in capital assets net of related debt were mainly due to a combination of reduction in related debt, increase in completion and capitalization of capital projects and contributed capital in both 2005 and 2004. The increases in net capital assets were \$6.4 million and \$7.1 million for 2005 and 2004, respectively. The amounts of contributed capital were \$ 1,850,214 and \$2,092,276 for 2005 and 2004, respectively.

**Statement of Revenues, Expenses, and Changes in Net Assets** — While the summary of net assets (Table A-1) shows the amount of net assets, the statement of revenues, expenses and changes in net assets (Table A-2) provides answers as to the nature and source of the changes.

**Table A-2 Condensed Summary of Revenues, Expenses and Changes in Net Assets**

	2005	2004	2003
Operating Revenue	\$71,518,280	71,068,443	73,814,123
Non-Operating Revenue	1,525,883	987,669	668,742
<b>Total Revenues</b>	<b>73,044,163</b>	<b>72,056,112</b>	<b>74,482,865</b>
Depreciation Expense	12,000,434	11,726,310	11,928,616
Other Operating Expenses	44,284,191	39,984,555	42,072,263
Non-Operating Expenses	1,945,467	2,318,959	2,552,893
<b>Total Expenses</b>	<b>58,230,092</b>	<b>54,029,824</b>	<b>56,553,772</b>
<b>Income before Capital Contributions &amp; Transfers</b>	<b>14,814,071</b>	<b>18,026,288</b>	<b>17,929,093</b>
Capital Contributions	1,850,214	2,092,276	2,053,370
Transfers Out	(7,667,741)	(7,899,647)	(7,723,956)
<b>Changes in Net Assets</b>	<b>8,996,544</b>	<b>12,218,917</b>	<b>12,258,507</b>
<b>Beginning Net Assets</b>	<b>362,890,991</b>	<b>350,672,074</b>	<b>338,413,567</b>
<b>Ending Net Assets</b>	<b>\$371,887,535</b>	<b>362,890,991</b>	<b>350,672,074</b>

### *Year ended December 31, 2005*

A review of Table A-2 shows that operating revenues increased by \$ 0.5 million or 0.6% and total expenses also increased by \$4.2 million or 7.8%. These results may be explained as follows:

#### **Revenues:**

- 2005 water revenues and water consumption have both gone up from the previous year. Operating revenues increased by \$ 0.5 million and the gallons sold increased by 1.1 billion gallons. This increase is mainly due to the hot and dry summer that Milwaukee experienced in 2005. In 2004, the gallons sold decreased by 2.1 billion gallons from the previous year, resulting in the largest decrease in the preceding five years. That decrease was a result of the cool summer in 2004.
- Non-operating revenues for 2005, which is mainly composed of interest income, increased by 54% or \$0.5 million from 2004. This increase is due to a favorable interest rate on investments in 2005. Interest rate on Local Government Investment Pool (LGIP) with the State of Wisconsin, where most of Water Works' funds are invested, went up to 4.06% at the end of 2005 from 1.9% at the end of 2004.

#### **Expenses:**

The \$4.2 million increase in expenses is attributed to the following:

- Operating expenses, excluding depreciation, increased by \$4.3 million or 10.8% in 2005. A major portion of this increase is in water pumping and water treatment expenses with a total increase of \$3.3 million between the two categories.  
  
Two major repair projects were undertaken in 2005. The Howard East Clearwell Roof Repair Project cost \$1.1 million and the Riverside Lead Abatement Project cost \$0.7 million. There were no projects of similar magnitude in 2004.  
  
Rising cost of chemicals and energy also contributed to the increase in operating expenses.
- Non-operating expenses, which is mainly interest expense, decreased by \$373,492 in 2005. In 2004, there was a decrease of \$233,934. These were basically due to declining principal balances.

### *Year ended December 31, 2004*

A review of Table A-2 shows that operating revenues decreased by \$2.7 million or 3.7% and total expenses also decreased by \$2.5 million or 4.5%. Factors behind these results include:

#### **Revenues:**

- 2004 water revenues and water consumption have both gone down from the previous year. Operating revenues decreased by \$2.7 million and the gallons sold decreased by 2.1 billion gallons. The 2004 decrease in gallons sold represents the largest decrease in the last five years, or over five times the decrease in 2003. In 2003, the gallons sold decreased by 479 million gallons. This is, in part, explained by the cool summer Milwaukee experienced in 2004.

#### **Expenses:**

The \$2.5 million decrease in expenses is attributed to the following:

- Operating expenses, excluding depreciation, decreased by \$2.1 million or 5% in 2004. The major portion of this decrease was due to a large decrease in transmission and distribution expenses. Transmission and distribution expenses decreased by \$3.0 million. The major causes of this decrease were as follows:

- ◆ A major project was underway in 2003 that involved painting and maintaining of the Hawley Road tank. The cost of that project was reflected in 2003 expenditures whereas in 2004 there was no similar project in this category.
- ◆ There were 638 water main breaks in 2004, compared to 851 in 2003, which resulted in lower transmission and distribution expenses for 2004. Early in 2003, MWW experienced a large number of water main breaks. This surge in the level of main breaks caused an unusual increase in overtime pay and an increase in salaries & wages expenses.
- Non-operating expense, which is mainly interest expense, decreased in 2004 by \$233,934. In 2003, there was a decrease of \$292,613. These were basically due to declining principal balances.

## Capital Assets and Debt Administration

### Capital Assets:

The Milwaukee Water Works calculates depreciation based on composite groups of assets within a given category and the average useful life. These categories are building & improvements, machinery & equipment and transmission and distribution systems. Each group's depreciation is then calculated using a rate authorized by the latest PSC rate order.

As of December 31, 2005, the Milwaukee Water Works investment in capital assets amounted to \$365,522,302 (net of accumulated depreciation). This represents an increase of \$6.4 million from year 2004. Investment in transmission and distribution system assets increased by \$19.4 million, where as construction in progress decreased by \$8.7 million. This is due to completion and capitalization of a large number of projects in 2005. The combination of these two items along with depreciation expense and other minor changes in the remaining categories resulted in the \$6.4 million increase.

As of December 31, 2004, the Milwaukee Water Works investment in capital assets was \$359,121,526 (net of accumulated depreciation). This is an increase of \$7,089,660 from year 2003. The increase is explained, mainly, by a \$6.9 million increase in net investment in transmission and distribution system assets. In 2004, a large number of projects were completed and capitalized.

**Table A-3 Capital Assets**

	2005	2004	2003
<b>Capital Assets:</b>			
Land	\$1,541,856	1,567,911	1,567,911
Buildings	22,851,934	22,986,740	22,361,767
Transmission and Distribution System	295,103,517	275,708,732	266,638,590
Machinery & Equipment	197,870,747	195,798,480	192,358,519
Construction in Progress	11,524,958	20,250,713	16,439,912
Nonutility Property	3,018,679	540,299	540,299
<b>Total Capital Assets</b>	<b>531,911,691</b>	<b>516,852,875</b>	<b>499,906,998</b>
<b>Less</b>			
Accumulated Depreciation	(166,389,389)	(157,731,349)	(147,875,132)
<b>Net Capital Assets</b>	<b>\$365,522,302</b>	<b>359,121,526</b>	<b>352,031,866</b>

### **Investment Administration**

As an enterprise fund within the primary government of the City of Milwaukee, the Milwaukee Water Works does not have a direct investment plan. As such, cash not in use for day-to-day operation is invested through the City of Milwaukee, primarily in the State of Wisconsin's Local Government Investment Pool (LGIP) and/or other types of investment instruments as determined by the City Treasurer. As of December 31, 2005 and 2004, the City Treasurer held cash and cash equivalents of \$29.0 million and \$30.2 million respectively on behalf of the Milwaukee Water Works that consisted of certificates of deposit, LGIP investments and cash accounts.

### **Debt Administration**

Debt service is administered by the Public Debt Commission and can only be initiated through Council resolution with approval from the Commissioner of Public Works (or his designee, the Superintendent of Water Works).

The Water Works continues to make its regularly scheduled payments on its bonds. All bond debt covenants have been met.

As of December 31, 2005, and 2004, the Water Works debt consisted of \$12.9 and \$13.7 million respectively, in revenue bonds through the State of Wisconsin Safe Drinking Water Loan program and \$28.4 and \$33.2 million respectively, in general obligation bonds for a total indebtedness of \$41.3 and \$46.9 million for 2005 and 2004 respectively.

### **Economic Factors**

There was no rate change in 2005 or 2004, nor there is any pending rate change request initiated in 2005 for subsequent years.

The loss in recent years of customers in "wet industries" (breweries, leather tanneries, food processors, etc.) coupled with water conservation measures have resulted in a steady decline in water volume sold, as shown in Table A-4. Over the last five years, the volume of water sold to industrial customers has dropped by 18.4% where as the drop in total water sold to all customers is 6%.

Late in 2005, one of Milwaukee Water Works' largest industrial customers (Red Star Yeast) announced its planned move from Milwaukee. The impact of this move on Milwaukee Water Works revenue is estimated to be a decrease of \$1.1 million a year.

The Milwaukee Water Works, through its marketing specialist, continues its effort to attract new commercial clients or developers that would utilize its water resources. Accordingly, both in 2005 and 2004, Milwaukee Water Works developed new marketing strategy and materials. In addition, a multi-agency marketing group was initiated to target water-intensive business and industry in business attraction and retention efforts.

**Table A-4 Sale of Water (Billion gallons)**

<b>Customer Class</b>	<b>2005</b>	<b>2004</b>	<b>2003</b>	<b>2002</b>	<b>2001</b>
Residential	13.0	12.7	13.5	13.7	13.7
Commercial	8.4	8.3	8.5	8.7	9.2
Industrial	6.2	6.2	6.6	7.0	7.6
Public Authority	2.6	2.4	2.6	2.6	2.4
Subtotal	30.2	29.6	31.2	32.0	32.9
Wholesale	8.2	7.7	8.2	7.9	7.9
<b>Total</b>	<b>38.4</b>	<b>37.3</b>	<b>39.4</b>	<b>39.9</b>	<b>40.8</b>

The Water Works is seeking to increase revenue and broaden the rate base by adding major new customers. A water service agreement was negotiated with the City of New Berlin and was approved by the Milwaukee Common Council in 2003. Accordingly, in August 2005, Milwaukee Water Works started selling water to the City of New Berlin.

**Contacting Milwaukee Water Works Financial Management**

This financial report is designed to provide a general overview of the Milwaukee Water Works’ finances to our customers, creditors and any one who has an interest in the Water Works’ operations. If you have questions about this report or need additional information, contact Milwaukee Water Works, Superintendent, Carrie Lewis, 841 N. Broadway, Room 401, Milwaukee, Wisconsin 53202.

**City of Milwaukee – Water Works  
Statements of Net Assets  
December 31, 2005 and 2004**

	<b>2005</b>	<b>2004</b>
<b>Current Assets</b>		
Cash and Cash Equivalents	\$28,419,655	29,585,701
Restricted Cash and Cash Equivalents	620,880	609,999
Accounts Receivable (Net)	10,570,759	10,149,380
Unbilled Accounts Receivable	9,471,062	9,584,695
Accrued Interest	135,433	69,732
Due from Other Funds	6,559,201	8,029,835
Inventory of Materials and Supplies	2,526,208	2,596,955
Prepaid Items	11,397	13,380
Other Assets	355,780	336,308
<b>Total Current Assets</b>	<b>58,670,375</b>	<b>60,975,985</b>
<b>Non Current Assets</b>		
Water Plant in Service (Net)	352,424,757	338,457,773
Construction Work In Process	11,524,958	20,250,713
Other Property (Net)	1,572,587	413,040
<b>Total Non Current Assets</b>	<b>365,522,302</b>	<b>359,121,526</b>
<b>Total Assets</b>	<b>424,192,677</b>	<b>420,097,511</b>
<b>Current Liabilities</b>		
Accounts Payable	3,639,281	4,629,866
Interest Payable	409,962	449,018
Accrued Wages	933,119	1,012,005
Compensated Absences	1,031,464	943,396
Due to Other Funds	4,169,164	3,197,724
Due to Other Governments	803,188	—
Long-term Debt Due Within One Year	5,538,266	5,675,693
<b>Total Current Liabilities</b>	<b>16,524,444</b>	<b>15,907,702</b>
<b>Non Current Liabilities</b>		
General Obligation Bonds Payable	23,705,719	28,377,799
Revenue Bonds Payable	12,074,979	12,921,019
<b>Total Noncurrent Liabilities</b>	<b>35,780,698</b>	<b>41,298,818</b>
<b>Total Liabilities</b>	<b>52,305,142</b>	<b>57,206,520</b>
<b>Net Assets</b>		
Invested in Capital Assets, net of related debt	324,203,338	312,147,014
Restricted for Debt Service	620,880	609,999
Unrestricted	47,063,317	50,133,978
<b>Total Net Assets</b>	<b>\$371,887,535</b>	<b>362,890,991</b>

*The accompanying Notes to Financial Statements are an integral part of these statements.*

**City of Milwaukee – Water Works**  
**Statements of Revenues, Expenses and Changes**  
**in Fund Net Assets**

For the Years Ending December 31, 2005 and 2004

	<b>2005</b>	<b>2004</b>
<b>Operating Revenues</b>		
Water Sales	\$59,132,967	57,913,722
Fire Protection Service	5,910,078	5,896,555
Charges for Shared Services	4,728,383	5,808,606
Other	1,746,852	1,449,560
<b>Total Operating Revenues</b>	<b>71,518,280</b>	<b>71,068,443</b>
<b>Operating Expenses</b>		
Administrative and General	4,952,562	4,919,532
Billing and Collection	2,266,380	2,232,788
Transmission and Distribution	17,594,059	16,701,551
Water Pumping	7,168,579	6,133,526
Water Treatment	12,302,611	9,997,158
Depreciation	12,000,434	11,726,310
<b>Total Operating Expenses</b>	<b>56,284,625</b>	<b>51,710,865</b>
<b>Operating Income</b>	<b>15,233,655</b>	<b>19,357,578</b>
<b>Non-operating Revenues (Expenses)</b>		
Interest Income	1,141,884	477,371
Interest Expense	(1,945,467)	(2,318,959)
Miscellaneous	383,999	510,298
<b>Income Before Capital Contributions and Transfers</b>	<b>14,814,071</b>	<b>18,026,288</b>
Capital Contributions	1,850,214	2,092,276
Transfers Out	(7,667,741)	(7,899,647)
<b>Increase in Net Assets</b>	<b>8,996,544</b>	<b>12,218,917</b>
<b>Net Assets Beginning of Period</b>	<b>362,890,991</b>	<b>350,672,074</b>
<b>Net Assets End of Period</b>	<b>\$371,887,535</b>	<b>362,890,991</b>

*The accompanying Notes to Financial Statements are an integral part of these statements.*

**City of Milwaukee – Water Works**  
**Statements of Cash Flows**  
For the Years Ended December 31, 2005 and 2004

	<u>2005</u>	<u>2004</u>
<b>Cash Flows from Operating Activities</b>		
Receipts from customers and users	\$71,418,588	72,178,295
Cash receipts from other funds	2,442,074	891,592
Payments to suppliers	(20,322,676)	(13,070,879)
Payments to employees	(21,864,238)	(21,630,110)
Payments to other funds	(3,723,211)	(3,387,055)
<b>Net Cash Provided by Operating Activities</b>	<u>27,950,537</u>	<u>34,981,843</u>
 <b>Cash Flows from Noncapital Financing Activities</b>		
Miscellaneous Non-Operating Revenue	383,999	510,298
Transfer to other funds	(7,667,741)	(7,899,647)
<b>Net Cash Used in Noncapital Financing Activities</b>	<u>(7,283,742)</u>	<u>(7,389,349)</u>
 <b>Cash Flows from Capital and Related Financing Activities</b>		
Acquisition of property, plant and equipment	(15,258,074)	(16,723,697)
Retirement of bonds, notes and revenue bonds	(5,675,693)	(5,810,967)
Interest paid	(1,964,377)	(2,232,544)
<b>Net Cash Used in Capital and Related Financing Activities</b>	<u>(22,898,144)</u>	<u>(24,767,208)</u>
 <b>Cash Flows from Investing Activities</b>		
Interest income	1,076,184	439,225
<b>Net Cash Provided by Investing Activities</b>	<u>1,076,184</u>	<u>439,225</u>
 Net Increase (Decrease) in Cash and Cash Equivalents	(1,155,165)	3,264,511
 Cash and Cash Equivalents - Beginning	30,195,700	26,931,189
 <b>Cash and Cash Equivalents - Ending</b>	<u>\$29,040,535</u>	<u>30,195,700</u>

*The accompanying Notes to Financial Statements are an integral part of these statements.*

– continued –

**City of Milwaukee – Water Works**  
**Statements of Cash Flows**  
For the Years Ended December 31, 2005 and 2004

	<b>2005</b>	<b>2004</b>
Cash and Cash Equivalents at Year End Consist of:		
Unrestricted Cash and Cash Equivalents	\$28,419,655	29,585,701
Restricted Cash and Cash Equivalents	620,880	609,999
<b>Total Cash and Cash Equivalents</b>	<b>\$29,040,535</b>	<b>30,195,700</b>

**Reconciliation of Operating Income to Net Cash  
Provided by Operating Activities**

Operating income	\$15,233,655	19,357,579
<b>Adjustments to reconcile operating income to net cash provided by operating activities:</b>		
Depreciation	12,000,434	11,726,310
Changes in assets and liabilities:		
Receivables	(307,746)	926,839
Due from/to other funds	2,442,074	891,593
Inventory of Materials and Supplies	70,747	(11,836)
Prepaid items	1,983	(3,701)
Other assets	(19,472)	(159,969)
Accounts Payable	(1,480,320)	2,324,113
Accrued Wages and Compensated Absences	9,182	(69,085)
 <b>Net cash provided by operating activities</b>	 <b>\$27,950,537</b>	 <b>34,981,843</b>

**Non-cash Activities:**

During the year, water mains and related property, installed by others were deeded to the Water Works in the amount of	\$1,850,214	2,092,276
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*The accompanying Notes to Financial Statements are an integral part of these statements.*

## City of Milwaukee – Water Works

### Notes to Financial Statements

#### December 31, 2005 and 2004

### 1. Summary of Significant Accounting Policies

The City of Milwaukee Water Works ("Water Works") is an enterprise fund within the primary government of the City of Milwaukee (the "City"). The Water Works provides water to residents and commercial enterprises in the metropolitan Milwaukee area. The financial statements of the Water Works have been prepared in accordance with U. S. generally accepted accounting principles (GAAP), as prescribed by the Governmental Accounting Standards Board (GASB) modified for certain requirements of the Public Service Commission of Wisconsin ("PSC"). The PSC regulates rates charged to customers and other practices of the Water Works. To facilitate the understanding of data included in the financial statements, summarized below are the significant accounting policies.

**Reporting Entity** — As defined by U. S. GAAP, the financial reporting entity consists of a primary government as well as its component units, which are legally separate organizations for which the elected officials of the primary government are financially accountable. Financial accountability is defined as:

- (1) Appointment of a voting majority of the component unit's board and either
  - (a) The ability to impose will by the primary government or
  - (b) The possibility that the component unit will provide a financial benefit to or impose a financial burden on the primary government, or
- (2) Fiscal dependency on the primary government.

Based on the GASB criteria, the Water Works has no component units and is not a component unit of any other entity. However, because the Water Works is not legally separate from the City, it is included in the financial statements of the City as an enterprise fund.

**Basis of Accounting**—The accompanying financial statements were prepared on the accrual basis of accounting. Revenues from operations, investments, and other sources are recorded when earned. Expenses (including depreciation and amortization) of providing services to the public are accrued when incurred. Under the accrual basis of accounting, revenues are recognized in the accounting period in which they are earned and expenses are recognized in the period they are incurred.

Non-exchange transactions, in which the Water Works receives value without directly giving equal value in return, include contributions and grants. On an accrual basis, revenue from contributions and grants is recognized in the fiscal year in which all eligibility requirements have been satisfied. Eligibility requirements include timing requirements and expenditure requirements. Timing requirements specify the year when the resources are required to be used or the fiscal year when use is first permitted. Expenditure requirements specify the year in which the resources are provided to the Waterworks on a reimbursement basis.

Pursuant to GASB Statement No. 20, *Accounting and Financial Reporting for Proprietary Funds and Other Governmental Entities that Use Proprietary Fund Accounting*, private-sector standards of accounting and financial reporting issued prior to December 1, 1989, generally are followed to the extent that those standards do not conflict with or contradict guidance of the Governmental Accounting Standards Board. The Water Works also has the option of following subsequent private-sector guidance, subject to this same limitation. The Water Works has elected not to follow subsequent private-sector guidance.

**Cash equivalents**—Cash equivalents represent all highly liquid investments purchased with original maturities of ninety days or less are stated at cost or amortized cost, which approximates fair value, and are invested with the City Treasurer.

**Accounts Receivable**—Accounts receivables is composed of charges to customers for water services and receivables for sundry bill charges that cannot be attached to the property. The year-end balance includes actual unpaid charges and a year-end estimate of the 2005 receivables that will be billed in the first quarter of 2006.

**Inventory of Materials and Supplies**—Inventories of materials and supplies are stated at moving average cost or lower of cost or market, based upon perpetual record keeping systems and periodic cycle counts of quantities on hand.

**Investments**—The City Treasurer is responsible for managing all of the Waterworks' investments subject to the City's investment policy and Wisconsin Statutes. Wisconsin Statutes permit the City to invest funds not immediately needed in any of the following:

- ◆ Time deposits maturing within three years in any credit union, bank, savings bank, trust company or savings and loan association which are authorized to transact business in the State of Wisconsin.
- ◆ Bonds or securities issued or guaranteed by the Federal government.
- ◆ Bonds or securities of any county, city, drainage district, technical college district, village, town or school district of the State of Wisconsin, as well as bonds issued by a local exposition district, a local professional baseball park district, or the University of Wisconsin Hospitals and Clinics Authority.
- ◆ Local Government Investment Pool - Investment Fund of the State of Wisconsin.
- ◆ Repurchase agreements with public depositories, if the agreement is secured by federal bonds or securities.
- ◆ Any Security which matures or which may be tendered for purchase at the option of the holder within not more than seven years of the date on which it is acquired, if that security has a rating which is the highest or second highest rating category assigned by Standard & Poor's Corporation, Moody's Investors Service, Inc. or other similar nationally recognized rating agency or if that security is senior to, or on a parity with, a security of the same issuer which has such a rating.
- ◆ Securities of open-end management investment companies or investment trusts (mutual funds) if the portfolio is limited to (a) bonds and securities issued by the federal government or a commission, board or other instrumentality of the federal government, (b) bonds that are guaranteed as to principal and interest by the federal government or a commission, board or other instrumentality of the federal government, and (c) repurchase agreements that are fully collateralized by these bonds or securities.

Investments are reported at fair value based on quoted market prices. The Local Government Pooled – Investment Fund is an external investment pool administered by the State of Wisconsin. The fair value of the Waterworks' investment in the fund is the same as the value of the pooled shares. Although not subject to direct regulatory oversight, the fund is administered in accordance with the provisions of Section 25.50 of the Wisconsin Statutes.

**Capital Assets**—Capital assets are defined by the Water Works as assets with an initial, individual cost of more than \$2,000 and an estimated useful life in excess of a year. Capital assets are capitalized at cost when purchased or constructed. Donated capital assets are recorded at their estimated fair value at the date of donation. Costs of depreciable property retired are removed from utility plant accounts and are charged to accumulated depreciation. Maintenance and repair costs are charged to operations as incurred and renewals and improvements are added to the

asset accounts. Depreciation is provided over the estimated useful lives using the straight-line method. The estimated useful lives are as follows:

Building and Improvements .....	45–58
Transmission and Distribution Systems .....	64–110
Machinery and Equipment .....	6–56

**Bond Premiums, Discounts, and Issuance Costs**—Bond premiums and discounts, as well as issuance costs are deferred and amortized over the life of the bonds using the effective interest method. Bonds payable are reported net of the applicable bond premium or discount. Bond issuance costs are reported as deferred charges and amortized over the term of the related debt.

**Net Assets**—Equity is displayed in three components as follows:

- ◆ **Invested in Capital Assets, Net of Related Debt**—This consists of capital assets, net of accumulated depreciation, less the outstanding balances of any bonds, mortgages, notes, or other borrowings that are attributable to the acquisition, construction, or improvement of those assets.
- ◆ **Restricted**—This consists of net assets that are legally restricted by outside parties or by law through constitutional provisions or enabling legislation. When both restricted and unrestricted resources are available for use, generally, it is the Water Work’s policy to use restricted resources first, and then unrestricted resources when they are needed. The Water Works has restricted net assets of \$620,880 and \$609,999 at December 31, 2005 and 2004, respectively. The restriction of Net Assets is related to the debt service requirements of the Revenue Bond.
- ◆ **Unrestricted**—This consists of net assets that do not meet the definition of “restricted” or “invested in capital assets, net of related debt”.

**Vacation Benefits**—Vacation benefits are recorded as expenses over the periods the benefits accrue to the employees.

**Sick Leave**—Sick leave is recorded as an expense when paid since accumulated sick leave is forfeited upon termination. Upon retirement, employees are generally entitled to payment of accumulated sick leave up to a maximum of 30 days. At December 31, 2005 and 2004, accumulated sick leave earned but not taken was approximately \$4,748,563 and \$4,667,878 respectively. Accumulated sick leave is determined on the basis of current salary rate. The amount of accumulated sick leave to be forfeited upon termination and retirement is not available and would reduce this amount. Payments for sick leave to retirees were immaterial to the financial statements for the years 2005 and 2004.

**Revenues**—Revenues are recognized when water services are rendered. Unbilled water services are accrued as receivables and revenues at year-end. The Water Works has classified its revenues as either operating or nonoperating. Operating Revenue includes activities that have the characteristics of exchange transactions including sales of water supplied to city, suburban and commercial users. Non-operating revenue includes activities that have the characteristics of non-exchange transactions, such as contributions and most Federal, State, and local grants and contracts.

**Taxes**—Payments in lieu of property taxes are recognized as a transfer in the year billed by the City.

**Estimates**—The preparation of financial statements, in conformity with accounting principles generally accepted in the United States of America, requires management to make estimates and assumptions relating to the reporting of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements. Estimates also affect the reported amounts of revenues and expenses during the reporting period. A significant estimate included herein is the allowance for doubtful accounts receivable. Actual results could differ from this estimate.

**Reclassifications**—Certain 2004 amounts have been reclassified to conform to the 2005 presentation.

**New Accounting Pronouncements**—Waterworks implemented Governmental Accounting Standards Board (GASB) issued Statement No. 40, *Deposit and Investment Risk Disclosures — an amendment of GASB Statement No. 3* during the year ended December 31, 2005. The implementation of this standard resulted in specific disclosures for credit risk, concentration of credit risk, interest rate risk, and foreign currency risk.

Waterworks implemented GASB issued Statement No. 42, *Accounting and Financial Reporting for Impairment of Capital Assets and for Insurance Recoveries* during the year ended December 31, 2005. This Statement establishes accounting and financial reporting standards for impairment of capital assets. No changes were made to the reported value of capital assets as of December 31, 2005 and 2004 based on Waterworks’ implementation of this pronouncement.

In July 2004, GASB issued Statement No. 45, *Accounting and Financial Reporting by Employers for Postemployment Benefits Other Than Pensions*. This Statement establishes accounting and financial reporting standards for employers that participate in a defined benefit “other postemployment benefit” (OPEB) plan. Specifically, the City will be required to measure and disclose an amount for annual OPEB cost on the accrual basis for health and insurance benefits that will be provided to retired employees in future years. The City is also required to record a net OPEB obligation which is defined as the cumulative difference between annual OPEB cost and the employer’s contributions to a plan, including the OPEB liability or asset at transition, if any. The Waterworks is currently evaluating the impact of the City adopting Statement No. 45. The Waterworks will implement Statement No. 45 beginning with the year ended December 31, 2007.

## 2. Deposits and Investments

As of December 31, 2005, and 2004, the Water Works deposits and investments are as follows:

	2005	2004
Local Government Investment Pool	\$5,658,819	5,210,858
Deposits and Cash on Hand	23,381,716	24,984,842
<b>Total</b>	<b>\$29,040,535</b>	<b>30,195,700</b>

### **Custodial Credit Risk – Deposits:**

Custodial credit risk for deposits is the risk that in the event of a financial institution failure, the Water Works’ deposits may not be returned. Per Common Council the City Treasurer shall require collateralization of certificates of time deposit (including interest checking) at financial institutions when the total amount of such certificates of deposit with any institution exceeds the combined insured limit of \$500,000. As of December 31, 2005 and 2004, the Water Works’ deposits were not subject to custodial credit risk as they were either insured or collateralized by securities held in the pledging bank’s trust department in the City’s name.

### **Interest Rate Risk:**

Interest rate risk is the risk that the fair value of the Water Works’ investments will decrease as a result of an increase in interest rates. The City’s investment policy does not explicitly limit investment maturities. However, the City manages its exposure to interest risk based on the anticipated cash flow needs of the City. The City manages the Water Works’ cash and investments. The maturities for the Water Works’ deposits and investments are less than one year and are invested with the City Treasurer.

**Credit risk:**

Credit risk is the risk that the City will not recover its investments due to the ability of the counterparty to fulfill its obligations. Wisconsin Statutes expressly limit the City to invest in certain allowable investments. The City's investment policy generally does not further limit its investment choices. The Water Works' investment in the Wisconsin Local Government Investment Pool is not rated by a nationally recognized rating agency.

**Concentration of Credit Risk:**

As of December 31, 2005 and 2004, there are no investments that are considered to be a concentration of credit risk.

**3. Capital Assets**

Capital asset activity for the year ended December 31, 2005 was as follows:

	Balance Jan. 1, 2005	Additions	Deletions	Transfers	Balance Dec. 31, 2005
Capital assets not being depreciated:					
Land and land improvements	\$1,567,911	—	—	(26,055)	1,541,856
Non Utility Property, Land	—	—	—	26,055	26,055
Construction in progress	20,250,713	18,321,449	(27,047,204)	—	11,524,958
<b>Total capital assets not being depreciated</b>	<b>21,818,624</b>	<b>18,321,449</b>	<b>(27,047,204)</b>	<b>—</b>	<b>13,092,869</b>
Capital assets being depreciated:					
Buildings	22,986,740	—	—	(134,806)	22,851,934
Transmission and distribution system	275,708,732	22,070,383	(697,488)	(1,978,110)	295,103,517
Machinery and equipment	195,798,480	4,976,821	(2,565,145)	(339,409)	197,870,747
Non Utility Property	540,299	—	—	2,452,325	2,992,624
<b>Total capital assets being depreciated</b>	<b>495,034,251</b>	<b>27,047,204</b>	<b>(3,262,633)</b>	<b>—</b>	<b>518,818,822</b>
Less: accumulated depreciation:					
Buildings	13,597,248	722,401	—	(121,142)	14,198,507
Transmission and distribution system	69,275,343	3,294,879	(726,357)	(969,839)	70,874,026
Machinery and equipment	74,731,499	7,983,154	(2,618,014)	(225,875)	79,870,764
Non Utility Property	127,259	1,977	—	1,316,856	1,446,092
<b>Total accumulated depreciation</b>	<b>157,731,349</b>	<b>12,002,411</b>	<b>(3,344,371)</b>	<b>—</b>	<b>166,389,389</b>
<b>Total capital assets, being depreciated, net</b>	<b>337,302,902</b>	<b>15,044,793</b>	<b>81,738</b>	<b>—</b>	<b>352,429,433</b>
<b>Total capital assets, net</b>	<b>\$359,121,526</b>	<b>33,366,242</b>	<b>(26,965,466)</b>	<b>—</b>	<b>365,522,302</b>

Capital asset activity for the year ended December 31, 2004 was as follows:

	Balance Jan. 1, 2004	Additions	Deletions	Transfers	Balance Dec. 31, 2004
Capital assets not being depreciated:					
Land and land improvements	\$1,567,911	—	—		1,567,911
Construction in progress	16,439,912	18,617,898	(14,807,097)		20,250,713
<b>Total capital assets not being depreciated</b>	<b>18,007,823</b>	<b>18,617,898</b>	<b>(14,807,097)</b>	<b>—</b>	<b>21,818,624</b>
Capital assets being depreciated:					
Buildings	22,361,767	624,973	—		22,986,740
Transmission and distribution system	266,638,590	9,568,933	(498,791)		275,708,732
Machinery and equipment	192,358,519	4,613,191	(1,173,230)		195,798,480
Non Utility Property	540,299	—	—		540,299
<b>Total capital assets being depreciated</b>	<b>481,899,175</b>	<b>14,807,097</b>	<b>(1,672,021)</b>	<b>—</b>	<b>495,034,251</b>
Less: accumulated depreciation:					
Buildings	12,884,846	712,402	—		13,597,248
Transmission and distribution system	66,772,537	3,198,542	(695,736)		69,275,343
Machinery and equipment	68,092,467	7,815,366	(1,176,334)		74,731,499
Non Utility Property	125,282	1,977	—		127,259
<b>Total accumulated depreciation</b>	<b>147,875,132</b>	<b>11,728,287</b>	<b>(1,872,070)</b>	<b>—</b>	<b>157,731,349</b>
<b>Total capital assets, being depreciated, net</b>	<b>334,024,043</b>	<b>3,078,810</b>	<b>200,049</b>	<b>—</b>	<b>337,302,902</b>
<b>Total capital assets, net</b>	<b>\$352,031,866</b>	<b>21,696,708</b>	<b>(14,607,048)</b>	<b>—</b>	<b>359,121,526</b>

## 4. Long Term Obligations

### A. Changes in Long Term Obligations

Changes in long-term obligations for the year ended December 31, 2005 were as follows:

	Balance Jan. 1, 2005	Additions	Deletions	Balance Dec. 31, 2005	Due Within One Year
General obligation bonds	\$32,800,701	—	(4,851,413)	27,949,288	4,692,226
Deferred amount on refundings	(1,118,755)	—	228,069	(890,686)	—
Unamortized premiums	1,547,266	—	(207,923)	1,339,343	—
Revenue bonds	13,745,299	—	(824,280)	12,921,019	846,041
<b>Total</b>	<b>\$46,974,511</b>	<b>—</b>	<b>(5,655,547)</b>	<b>41,318,964</b>	<b>5,538,267</b>

Changes in long-term obligations for the year ended December 31, 2004 were as follows:

	Balance January 1, 2004	Additions	Deletions	Balance Dec. 31, 2004	Due Within One Year
General obligation bonds	\$37,808,589	—	(5,007,888)	32,800,701	4,851,413
Deferred amount on refundings	(1,391,402)	—	272,647	(1,118,755)	—
Unamortized premiums	1,767,053	—	(219,787)	1,547,266	—
Revenue bonds	14,548,378	—	(803,079)	13,745,299	824,280
<b>Total</b>	<b>\$52,732,618</b>	<b>—</b>	<b>(5,758,107)</b>	<b>46,974,511</b>	<b>5,675,693</b>

**B. General Obligation Bonds**

The City issues general obligation bonds to provide funds for the acquisition and construction of the water plant and related equipment. General obligation bonds are secured by the full faith and unlimited taxing power of the City. The bonds for the Water Works will be retired by revenues from water services or, if the revenues are not sufficient, by future tax levies. The original amount of general obligation bonds issued in prior years was \$95,004,263. There were no general obligation bonds issued during the year ended December 31, 2005 or 2004. General obligation bonds outstanding at December 31, 2005 and 2004 respectively, were as follows:

Series	Maturity	Interest Rates	Original Principal	Principal Balance at Dec. 31, 2005	Principal Balance at Dec. 31, 2004
C Refunded	2003 to 2004	4.90%	\$5,000,000	—	—
D Refunded	2003 to 2006	5.00%	11,000,000	—	—
Refunding C&D	2003 to 2015	5.83%	4,851,248	2,654,815	3,252,703
E Refunded	2003 to 2006	5.49%	9,000,000	599,800	1,199,600
F	2003 to 2011	4.97%	13,100,000	873,472	1,746,944
G	2003 to 2012	4.93%	4,212,000	561,982	843,103
J	2003 to 2012	4.78%	8,718,000	1,160,910	1,741,365
K	2003 to 2013	4.64%	18,044,000	3,607,020	4,809,360
Refunding E	2003 to 2019	4.49%	3,125,658	2,799,706	2,814,113
Refunding C,D,F,G,J & K	2003 to 2016	2.5% to 5.25%	17,953,357	15,691,583	16,393,513
<b>TOTALS</b>			<b>\$95,004,263</b>	<b>27,949,288</b>	<b>32,800,701</b>

**C. Revenue Bonds**

In December of 1998, Water Works issued a Revenue Bond, in the amount of \$19,358,172, to the State of Wisconsin Safe Drinking Water Loan Program. This bond supports loans to the Water Works for water quality capital projects, or reimbursement for capital expenditures related to water quality, up to the face value of the bond. The Revenue Bond borrowing authority was closed in 2004 and the final loan amount was \$17,559,378. Loan covenants provide for the monthly escrow of revenues to repay the debt plus interest. Regardless of loan proceeds disbursement, the final maturity of the Revenue Bond is May 1, 2018. Revenue bonds outstanding at December 31, 2005 and 2004 respectively, were as follows:

Series	Maturity	Interest Rates	Original Principal	Principal Balance at Dec. 31, 2005	Principal Balance at Dec. 31, 2004
SDW-1	2003 to 2018	2.64%	\$4,873,153	3,585,896	3,814,654
SDW-2	2003 to 2018	2.64%	1,618,213	1,190,757	1,266,720
SDW-3	2003 to 2018	2.64%	5,001,067	3,680,021	3,914,783
SDW-4	2003 to 2018	2.64%	4,148,305	3,052,519	3,247,250
SDW-5	2003 to 2018	2.64%	1,918,640	1,411,826	1,501,892
<b>TOTALS</b>			<b>\$17,559,378</b>	<b>12,921,019</b>	<b>13,745,299</b>

**D. Debt Service Requirements**

The maturities of the outstanding principal and related interest requirements as of December 31, 2005 are as follows:

Year	GENERAL OBLIGATION BONDS		REVENUE BONDS	
	Principal	Interest	Principal	Interest
2006	\$4,692,226	1,357,704	846,041	329,947
2007	3,362,249	1,120,280	868,376	307,317
2008	2,845,339	959,533	891,301	284,089
2009	1,989,325	851,167	914,832	260,248
2010	2,491,847	754,021	938,984	235,778
2011-2015	11,519,842	1,881,088	5,080,105	788,616
2016-2020	1,048,460	58,379	3,381,380	135,453
<b>TOTALS</b>	<b>\$27,949,288</b>	<b>6,982,172</b>	<b>12,921,019</b>	<b>2,341,448</b>

**E. Advance Refundings**

In prior years, the Water Works defeased certain general obligation and revenue bonds by placing the proceeds of new bonds in an irrevocable trust to provide for all future debt service payments on the old bonds. Accordingly, the trust account assets and the liability for the defeased bonds are not included in the Water Work’s financial statements. At December 31, 2005, \$17,680,326 of bonds were considered to be defeased.

**5. Revenue Bond Debt Covenants**

Fiscal Year	Gross Revenues	Debt Coverage Expenses	Net Revenue Available for Debt Service	DEBT SERVICE REQUIREMENTS			Coverage
				Principal	Interest	Total	
2004	\$71,545,814	47,884,202	23,661,612	824,280	351,996	1,176,276	20.12
2005	72,660,164	51,951,932	20,708,232	846,041	329,947	1,175,988	17.61

Gross Revenues is defined as total revenues plus interest income. Debt Coverage Expenses is defined as total operating expenses including Pilot, minus depreciation.

The revenue bonds debt service coverage ratio requirement is the greater of 1.1 or the highest debt service coverage ratio with respect to any other debt obligations payable from the revenues of the water system.

At December 31, 2005 and 2004, there were no other debt obligations payable from the revenues of the water system.

**6. Retirement Plan and Other Post-Employment Benefits**

**Pension Benefits**

*Plan Description*—The City makes contributions to the Employees’ Retirement System of the City of Milwaukee (the “System”), a cost-sharing multiple-employer defined benefit pension plan, on behalf of all eligible City employees. The System provides retirement, disability, and death benefits to plan members and beneficiaries. The City Charter assigns the authority to establish and amend benefit provisions. The System issues a publicly available financial report that includes financial statements and required supplementary information for the System. That report may be obtained by writing to the Employees’ Retirement System of the City of Milwaukee, 200 East Wells Street, Room 603, Milwaukee, WI 53202.

*Funding Policy*—Plan members are required to contribute, or have contributed on their behalf, a percentage of their annual earnable compensation equal to 5.5%, 6%, 7% and 7% for general City employees, police officers, firefighters, and elected officials, respectively. The City is required to contribute the actuarially determined amount. The City Charter assigns the authority to establish and amend contribution requirements. The Water Work's contribution to the System for the years ending December 31, 2005 and 2004 was \$1,090,298 and \$985,608 respectively and is equal to the required contributions on behalf of the plan members for the year.

**Other Post-Employment Benefits**

The City provides post-employment medical and life insurance coverage for substantially all retirees. Such benefits are recorded when paid. These costs are recorded in the City of Milwaukee General Fund. The Water Works' portion of these costs cannot be reasonably estimated for the years ended December 31, 2005 and 2004.

**7. Related Party Transactions**

A summary of significant revenue and expense transactions between the City and Water Works for 2005 and 2004 are shown below:

		2005	2004
Revenues (receipts from the City):	Water Consumption	\$316,390	317,172
Expenses (payments to the City):	Payment-in-lieu-of-taxes	7,667,741	7,899,648
	Employee Fringe Benefits	6,309,198	5,835,822
	Administrative Services	766,413	830,386
	Electrical Equipment Maintenance	599,949	628,711
	Motor Vehicle Usage and Maintenance	720,293	766,761
	Street Repairs	3,192,675	2,996,067
	All Other Services	2,869,422	2,576,841
<b>Total Payments to City</b>		<b>\$22,125,691</b>	<b>21,534,236</b>

The Water Works also acts as a billing and collection agent for sewer and other municipal charges and is reimbursed for costs incurred in providing such billing services.

The City purchases the delinquent water and sewer accounts receivables of the Water Works at the unpaid amounts. Any subsequent uncollectible accounts are absorbed by the City.

The Water Works has an annual maximum contingent liability of \$200,000 for general liability claims. Claims in excess of this amount, if any, are the liability of the City.

**8. Regulatory Agency**

Certain PSC reporting requirements give rise to differences between revenues and expenses that are included in the PSC reports and these financial statements. The more significant of these differences are as follows: (1) the amount of payment-in-lieu-of-taxes allowed for PSC purposes exceeds the amount of taxes actually paid; and (2) operating transfers to the City of Milwaukee are reflected as miscellaneous adjustments to Retained Earnings for PSC purposes, rather than being included in the computation of Net Income.

The effect of such differences on net income are as follows for the years ended December 31, 2005 and 2004:

	(Thousands of Dollars)	
	2005	2004
Increase in Net Assets as shown in accompanying financial statements	\$8,997	12,219
Reimbursement in Excess of Expenses	1,090	—
Amortization of deferred credits resulting from Contributions In Aid of Construction (CIAC) reclassification	811	811
Net Income as Shown on PSC Reports	\$10,898	13,030

## 9. Commitments and Contingencies

The Water Works is generally committed under the terms of various contracts for construction of improvements and additions to the Water Works system. Contract terms provide for partial payments as construction progresses with specified retention to assure full contract compliance. Open commitments on such contracts, as of December 31, 2005, totaled \$5,124,297.

## 10. Transfers and Inter-Fund Balances

At December 31, 2005 and 2004, the Water Works has recorded a due from other funds of \$6,559,201 and \$8,029,835 respectively which in part represents cash held by the general obligation debt fund of the City on behalf of Water Works for the 2006 and 2005 respective principal and interest payments on its general obligation bonds. The remaining balance represents the amount owed to the Water Works as a result of regular advance and reimbursement activities. At December 31, 2005 and 2004, the Water Works has recorded a due to the City (General and Sewer Funds) of \$4,169,164 and \$3,197,724 respectively for sewer maintenance and other municipal fees collected by the Water Works.

The Water Works transfers funds to the City (general fund) for payments in lieu of taxes (PILOT). In 2005 and 2004, the PILOT transfers to the City were \$7,667,741 and \$7,899,648 respectively.



## Milwaukee Water Works

### Milwaukee Administration

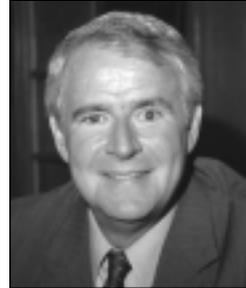
Mayor Tom Barrett  
City Attorney Grant F. Langley  
City Comptroller W. Martin Morics  
City Treasurer Wayne F. Whittow  
Commissioner of Public Works Jeffrey J. Mantes  
Public Works Operations Director James P. Purko  
City Engineer Jeffrey S. Polenske

### 2005 Milwaukee Common Council

President Willie L. Hines, Jr., District 15  
Ashanti Hamilton, District 1  
Joe Davis, Sr., District 2  
Michael S. D'Amato, District 3  
Robert Bauman, District 4  
James A. Bohl, Jr., District 5  
Mike McGee, Jr., District 6  
Willie C. Wade, District 7  
Robert G. Donovan, District 8  
Robert W. Puente, District 9  
Michael J. Murphy, District 10  
Joseph A. Dudzik, District 11  
James N. Witkowiak, District 12  
Terry L. Witkowski, District 13  
Tony Zielinski, District 14

### Utilities and Licenses Committee

Ald. James Witkowiak, Chairman  
Ald. James Bohl, Jr., Vice Chair  
Ald. Joseph Dudzik  
Ald. Robert Puente  
Ald. Willie Wade



**Mayor Tom Barrett**



**Jeffrey J. Mantes  
Public Works  
Commissioner**



**Carrie M. Lewis  
Superintendent**

## Milwaukee Water Works Administration

### Executive

Superintendent .....Carrie M. Lewis  
Administration and Projects Manager .....Laura B. Daniels

### Business

Water Business Manager .....Earl Smith, Jr.  
Water Accounting Manager .....Menbere W. Medhin  
Water Revenue Manager.....Richard D. Rasmussen  
Water Meter Services Manager.....Jeffrey Novak

### Plants

Water Plant Manager – North.....Daniel Welk  
Water Plant Manager – South.....John Gavre

### Water Engineering

Water Engineering Manager .....Dinah G. Gant  
Water Mains Design Engineer.....Mark J. Scheller

### Distribution

Water Distribution Manager .....Gary K. Gibson  
Water Distribution District Supervisor-North .....Ben Glatzel  
Water Distribution District Supervisor-South.....David Goldapp

### Water Quality

Water Quality Manager.....Lon A. Couillard

**841 North Broadway, Room 409 • Milwaukee, Wisconsin 53202**

**24 Hour Water Control Center  
(414) 286-3710**

**Customer Service Center  
Monday-Friday, 7:30 a.m. to 5 p.m. • (414) -286-2830**

**Fax (414) 286-2672 • TDD 414-286-2025**

**[www.water.mpw.net](http://www.water.mpw.net)**

## General Information about the Milwaukee Water Works

Howard Avenue Treatment Plant rated capacity . . . . .	105 million gallons per day (MGD)
Linnwood Treatment Plant rated capacity . . . . .	275 MGD
Average daily pumpage 2005 . . . . .	122 million gallons
Total pumpage 2005 . . . . .	44.6 billion gallons
Total length of all water mains in service . . . . .	1,961 miles
# of meters in service. . . . .	161,428
# of fire hydrants in service . . . . .	19,754
Population served. . . . .	830,719
Area served. . . . .	172 square miles
Daily usage per person in Milwaukee . . . . .	55 gallons

Only three percent of water we use is used for drinking. The rest is used for bathroom purposes, clothes washing, dish washing, outdoor watering, etc. Please use water wisely.

Cost of drinking water: four gallons for one cent or 100 cubic feet (748 gallons) for \$1.18

Retail customers: (*water, billing service, maintenance*) Franklin, Greenfield, Hales Corners, St. Francis, West Milwaukee (provides its own maintenance)

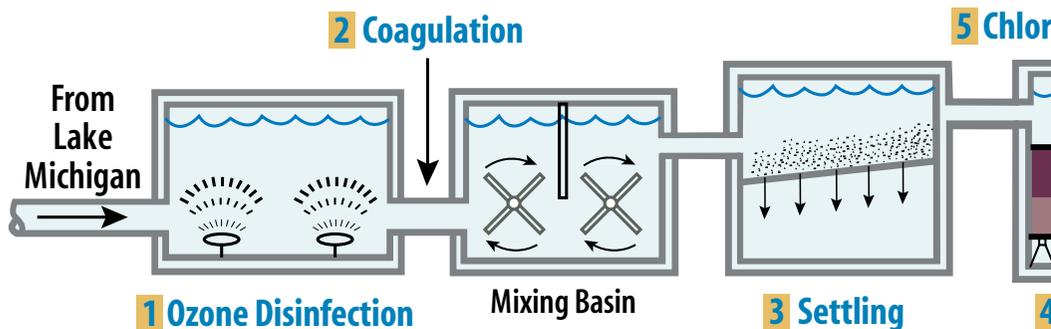
Wholesale customers: (*water only*): Brown Deer, Butler, Greendale, Menomonee Falls, We Energies Water Services for part of Mequon, Milwaukee County Grounds facilities, New Berlin, Shorewood, Wauwatosa, West Allis.

The Milwaukee Water Works was officially organized on April 18, 1871. The public water system was built to not only provide safe drinking water but also to provide water to fight fires. In partnership with the Fire Department, the Water Works maintains 20,000 fire hydrants in the city. The maintenance is supported through the water service charge on the Municipal Services Bill.

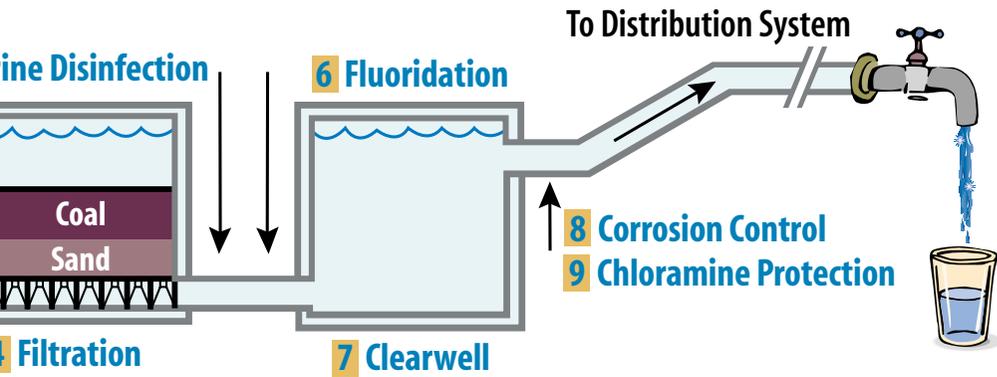
### The Milwaukee Municipal Services Bill

The Milwaukee Municipal Services Bill includes charges for drinking water, Milwaukee Metropolitan Sewerage District (MMSD) sewage treatment, and certain municipal services provided within the City of Milwaukee. It is cost-effective to include all of the charges on one bill. The Water Works manages the billing and forwards the collected charges to the Milwaukee City Treasurer for distribution to city departments and the MMSD.

## Milwaukee Water Works Drinking Water Treatment Process



1. **Ozone Disinfection** — Ozone gas is bubbled through the incoming lake water. Ozone destroys disease-causing microorganisms including *Giardia* and *Cryptosporidium*, controls taste and odor, and reduces chlorinated disinfection byproducts.
2. **Coagulation** — Very fine particles in the water adhere together to form larger particles as the coagulant alum is mixed into the water. Large particles are more effectively removed during the settling and filtering processes.
3. **Settling** — Settling is the process in which solid particles settle out and are removed from the water.
4. **Filtration** — The water is slowly filtered through 24" of anthracite coal and 12" of crushed sand to remove very small particles.
5. **Chlorine Disinfection** — After filters, chlorine is added as a secondary disinfectant. This provides extra protection from potentially harmful microorganisms.



6. **Fluoridation** — Fluoride, when administered at low levels, is proven to help prevent tooth decay.
7. **Clearwell** — Treated water is stored in deep underground tanks and pumped as needed through the distribution system.
8. **Corrosion Control** — A phosphorous compound is added to help control corrosion of pipes. This helps prevent lead and copper from leaching from plumbing into the water.
9. **Chloramine Protection** — Ammonia changes the chlorine to chloramine, a disinfectant that maintains bacteriological protection in the distribution system.

## Milwaukee Water Works

*Safe, Abundant Drinking Water.*

Learn more about Milwaukee Water at: [www.water.mpw.net](http://www.water.mpw.net).

## Milwaukee Water Quality

Our drinking water is exceptional in quality and is better than any standards set by water quality regulators.

The Milwaukee Water Works treats Lake Michigan water at two plants, passing the water through multiple barriers that prevent illness-causing microorganisms from contaminating finished drinking water. The first barrier is ozone gas disinfection. This destroys illness-causing microorganisms, controls taste and odor, and reduces chlorinated disinfection byproducts. Following this inactivation of microorganisms, the coagulation, settling, and dual media filtration processes remove additional particles. A final disinfection with chloramines maintains bacteriological protection in the distribution system that delivers water to our customers.

### Typical Finished Water Values

<u>Parameter</u>	<u>Average Value</u>	<u>Range</u>
Alkalinity	100 mg/L (as CaCO <sub>3</sub> )	95 - 118
Calcium	35 mg/L	27 - 37
Chlorine Residual	0.75 mg/L	0.3 - 1.3
Conductivity	305 uS/cm	280 - 350
Fluoride	0.85 mg/L	0.3 - 1.2
Hardness	7.5 grains per gallon	7 - 9
Hardness	124 mg/L (as CaCO <sub>3</sub> )	117 - 146
Iron	0.02 mg/L	0.002 - 0.32 ppm
Nitrate, as N	0.3 mg/L	0.2 - 0.7
pH	7.4	7.2 - 7.9
Potassium	1.2 mg/L	0.8 - 1.4
Sodium	7.5 mg/L	6 - 12
Temperature	58°F	32° - 70°F
Total Dissolved Solids	177 mg/L	125 - 195
Turbidity	< 0.2 NTU	0.1 - 0.5 NTU

### Definitions

< = “is less than”

mg/L = milligrams per liter = ppm = parts per million

gpg = grains per gallon

NTU = nephelometric turbidity units

uS/cm = microsiemens per centimeter

The Milwaukee Water Works reported in its 2005 Water Quality Report that Milwaukee drinking water quality continues to exceed the quality requirements of state and federal regulations, without exception. The full report is available at [www.water.mpw.net](http://www.water.mpw.net). *The Milwaukee Water Works tested for all of the chemicals on the following list but detected none of them.* MWW has expanded its monitoring and screening activities to include a new class of emerging contaminants called endocrine disrupting compounds.

## 2005 Undetected Chemical Contaminant List

**INORGANIC CHEMICALS** — Antimony, Arsenic, Beryllium, Cadmium, Cerium, Cesium, Chlorite, Cobalt, Cyanide, Dysprosium, Erbium, Europium, Gadolinium, Gallium, Germanium, Gold, Hafnium, Holmium, Iridium, Lanthanum, Lutetium, Mercury, Molybdenum, Neodymium, Niobium, Nitrite, Osmium, Palladium, Platinum, Praseodymium, Protactinium, Rhenium, Rhodium, Samarium, Selenium, Silver, Tantalum, Tellurium, Thallium, Thorium, Thulium, Tin, Tungsten, Uranium, Vanadium, Ytterbium, Zinc and Zirconium.

**SYNTHETIC ORGANIC CHEMICALS** — Acenaphthene; Acenaphthylene; Acetochlor; Alachlor (Lasso); Aldicarb; Aldicarb sulfone; Aldicarb sulfoxide; Aldrin; Ametryn; Anilazine; Anthracene; Aspon; Atraton; Atrazine; Azinphos-ethyl; Azinphos-methyl; Bendiocarb; Benfluralin; Benzo(a)anthracene; Benzo(b)fluoranthene; Benzo(k)fluoranthene; Benzo(a)pyrene; Benzo(g, h, i)perylene; alpha-Benzenehexachloride; beta-Benzenehexachloride; delta-Benzenehexachloride; gamma-Benzenehexachloride (Lindane); Bolster; Bromacil; Burachlor; Butylate; Butylbenzylphthalate; Carbaryl; Carbofuran; Carbophenothion; Carboxin; Chlordane alpha, Chlordane gamma, Chlordane, Chlorfenvinphos; Chlorobenzilate; 2-Chlorobiphenyl; Chloroneb; Chloropropylate; Chlorothalonil; Chlorpropham; Chlorpyrifos; Chlorpyrifos methyl; Chrysene; Clomazone; Clopyralid; Coumaphos; Croxoxyphos; Cyanazine; Cycloate; 2,4-D; Dalapon; DCPA; 4,4'-DDD; 4,4'-DDE; 4,4'-DDT; Deethylatrazine; Deisopropylatrazine; Demeton O; Demeton S; Desethylatrazine; Desisopropylatrazine; Diazinon; Dibenzo(a,h)anthracene; 1,2-Dibromo-3-chloropropane (DBCP); Di-n-butylphthalate; Dicamba; Dichlobenil; Dichlofenthion; Dichloran; 2,3-Dichlorobiphenyl; Dichlorvos; Dicrotophos; Dieltrin; Di (2-ethylhexyl) adipate; Di (2-ethylhexyl) phthalate; Diethylphthalate; Dimethoate; Dimethylphthalate; 2,4-Dinitrotoluene; 2,6-Dinitrotoluene; Dinoseb; Di-n-octylphthalate; Dioxathion; Diphenamid; Diquat; Disulfoton; Disulfoton sulfone; Disulfoton sulfoxide; Endosulfan I; Endosulfan II; Endosulfan sulfate; Endothal; Endrin; Endrin aldehyde; EPN; EPTC; Ercyclamide; Esfenvalerate; Ethalfuralin; Ethion; Ethofumesate; Ethoprop; Ethylene dibromide (EDB); Etridiazole; Fampur; Fenamiphos; Fenarimol; Fenitrothion; Fenoxypop-ethyl; Fensulfothion; Fenthion; Fluzifop-butyl; Fluchloralin; Fluometuron; Fluoranthene; Fluorene; Fluridone; Fonofos; Glyphosate (Round-up); Heptachlor; Heptachlor epoxide; 2,2',3,3',4,4',6'-Heptachlorobiphenyl; Hexachlorobenzene; 2,2',4,4',5,6'-Hexachlorobiphenyl; Hexachlorocyclopentadiene; Hexazinone, 3-Hydroxycarbofuran; Indeno(1,2,3-cd)pyrene; Iprodione; Isofenphos; Isophorone; Leptophos; Lindane; Malathion; Merphos; Metalaxyl; Methoxychlor; Methomyl; 1-Methyl naphthalene; 2-Methyl naphthalene; Methyl paraoxon; Methyl parathion; Dual (Metolachlor); Metribuzin (Sencor); Metsulfuron methyl; Mevinphos; MGK-264 isomer a; MGK-264 isomer b; MGK-326; Mirex; Molinate; Monocrotophos; Naled; Naphthalene; Napropamide; trans-Nonachlor; Norflurazon; 2,2',3,3',4,5',6,6'-Octachlorobiphenyl; Oryzalin; Oxadiazon; Oxamyl (Vydate); Oxylfluorin; Parathion; Pebulate; Pendimethalin; Pentachlorobenzene; Pentachloronitrobenzene; 2,2',3',4,6-Pentachlorobiphenyl; Pentachlorophenyl; Pentachlorobenzene; cis-Permethrin; trans-Permethrin; Phenanthrene; Phorate; Phosmet; E-Phosphamidon; Z-Phosphamidon; Picloram (Tordon); Polychlorinated Biphenols (total); Profluralin; Prometon; Prometryn; Pronamide; Propachlor; Propanil; Propazine; Propiconazole isomer a; Propiconazole isomer b; Prothiofos; Pyrene; 2,4,5-TP(Silvex); Simazine; Simetryn; Stirofos; Sulfotep; 2,3,7,8-TCDD (Dioxin); Tebuthiuron; TEPP; Terbacil; Tribufos; Terbutryn; 1,2,4,5-Tetrachlorobenzene; 2,2',4,4'-Tetrachlorobiphenyl; Thiabendazole; Thiobencarb; Thionazin; Toxaphene; Triademefon; Tribufos (DEF); Trichlorfon; 2,4,5-Trichlorobiphenyl; Trichloronate; Tricyclazole; Trifluralin; Vernolate; Vinclozolin.

**VOLATILE ORGANIC CHEMICALS** — Acetaldehyde; Acetone; Acrylonitrile; Allyl chloride; tert-Amyl methyl ether; Benzaldehyde; Benzene; Bromobenzene; Bromochloromethane; Bromomethane; 2-Butanone (MEK); n-Butylacrylate; n-Butylbenzene; sec-Butylbenzen; tert-Butylbenzene; Butylaldehyde; Carbon disulfide; Carbon tetrachloride; Chloroacetonitrile; Chlorobenzene; 1-Chlorobutane; Chloroethane; Chloromethane; Chloroprene; Chloroprene; 2-Chlorotoluene (o-); 4-Chlorotoluene (p-); Crotonaldehyde; Cyclohexanone; Dibromomethane; 1,2-Dibromo-3-Chloropropane(DBCP); Decanal; Dibromoacetic acid; 1,3-Dichlorobenzene; 1,2-Dichlorobenzene; 1,4-Dichlorobenzene; trans-1,4-Dichloro-2-butylene; Dichlorodifluoromethane; 1,1-Dichloroethane; 1,2-Dichloroethane; 1,1-Dichloroethylene; cis-1,2-Dichloroethylene; trans-1,2-Dichloroethylene; Dichloromethane; 1,2-Dichloropropane; 1,3-Dichloropropane; 2,2-Dichloropropane, 1,1-Dichloropropene; 1,3-Dichloropropene; 1,1-Dichloropropanone; 1,1-Dichloropropylene; cis-1,3-Dichloropropylene; trans-1,3-Dichloropropylene; Diethyl ether; 1,4-Dioxane; Epichlorohydrin; Ethyl acrylate; Ethylbenzene; Ethyl ether; Ethyl methacrylate; Ethyl tert-butyl ether; Heptanal; Hexachlorobutadiene; Hexachlorobenzene; Hexanal; 2-Hexanone; Isopropylbenzene; 4-Isopropyltoluene (p-); Methacrylonitrile; Methacrylate; Methyl iodide (Iodomethane); Methylmethacrylate; 4-Methyl-2-pentanone (MIBK); 2-Methyl-2-propanol; Methyl-t-butyl ether (MBTE); Monobromoacetic acid; Monochloroacetic acid; Naphthalene; Nitrobenzene; 2-Nitropropane; Nonanal; Octanal; Pentachloroethane; Propionaldehyde (Propanal); Propionitrile; n-Propylbenzene; Pyruvaldehyde (Methylglyoxal) Styrene; 1,1,1,2-Tetrachloroethane; 1,1,2,2-Tetrachloroethane; Tetrachloroethylene; Tetrahydrofuran; Toluene; Tribromoacetic acid; Trichloroacetic acid; 1,2,3-Trichlorobenzene; 1,2,4-Trichlorobenzene, 1,1,1-Trichloroethane; 1,1,2-Trichloroethane; Trichloroethylene; Trichlorofluoromethane; 1,2,3-Trichloropropane; 1,1,2-Trichloro-1,2,2-trifluoroethane; 1,2,3-Trimethylbenzene; 1,2,4-Trimethylbenzene; 1,3,5-Trimethylbenzene; n-Valeraldehyde (Pentanal); Vinyl acetate; Vinyl chloride; Xylene, total.

**ESTROGENS AND OTHER HORMONES** — Diethylstilbestrol (DES); Estone; 17alpha-Estradiol; 17beta-Estradiol; Estriol; 17alpha-Ethynyl estradiol; Progesterone; cis-Testosterone; trans-Testosterone.

**PHENOLIC ENDOCRINE DISRUPTORS** — Bisphenol A; Nonylphenol diethoxyate, isomer mix; Nonylphenol monoethoxyate, isomer mix; Nonylphenol, isomer mix; 4-n-Octylphenol; 4-tert-Octylphenol; Pentachlorophenol; Phenylphenol; Tetrabromobisphenol A; 2,4,6-Trichlorophenol.

## Treated Water Quality

Listed below are contaminants detected in Milwaukee's drinking water during 2005. *All are below levels allowed by state and federal laws.*

Substance	Ideal Goals (MCLGs)	Highest Level Allowed (USEPA – MCLs)	Average Value	Highest Level Detected	Source(s) of Contaminant
Aluminum	0.2 mg/L	NR	0.06 mg/L	0.10 mg/L	Water treatment additive; natural deposits
Bromate	10 ug/L	10 ug/L (RAA)	4 ug/L (RAA)	NR	Byproduct of drinking water disinfection
Barium	2 mg/L	2 mg/L	0.019 mg/L	0.019 mg/L	Natural deposits
Chromium	100 ug/L	100 ug/L	2 ug/L	4 ug/L	Natural deposits
Chlorine, Total		4 mg/L	1.33 mg/L	1.55 mg/L	Residual of drinking water disinfection
Copper	1.3 mg/L	1.3 mg/L (AL)	0.060 mg/L (AL)	NR	Corrosion of household plumbing systems
Fluoride		4 mg/L	1.01 mg/L	1.46 mg/L	Water treatment additive; natural deposits
Haloacetic Acids, Total	0 ug/L	60 ug/L	2.8 ug/L	11.2 ug/L	Byproduct of drinking water disinfection
Lead	0 ug/L	15 ug/L (AL)	7 ug/L (AL)	NR	Corrosion of household plumbing systems
Nickel	100 ug/L	100 ug/L	<1 ug/L	2 ug/L	Metal alloys, electroplating, batteries, chemical production
Potassium	NR	NR	1.3 mg/L	1.5 mg/L	Natural deposits
Radium – combined	0 pCi/L	5 pCi/L	0.7 pCi/L	0.7 pCi/L	Natural deposits
Sulfate	500 mg/L	NR	30 mg/L	34 mg/L	Natural deposits
Sodium	NR	NR	7.4 mg/L	9.2 mg/L	Natural deposits
Total Organic Halides (2002)	NR	NR	28 ug/L	54 ug/L	Byproduct of drinking water disinfection
Trihalomethanes, Total	0 ug/L	80 ug/L	6.3 ug/L	14.2 ug/L	Byproduct of drinking water disinfection
Turbidity		< 0.3 NTU 95 % of the time	0.06 NTU 95 % of the time	0.29 NTU one-day max	Natural deposits
Total Organic Carbon	TT	TT	1.5 mg/L	3.8 mg/L	Natural deposits
Total Coliform Bacteria	0	<5 % of samples/month	0 %	0.3 %	Naturally present in the environment
Uranium, Total (2003)		20 pCi/L	0.54 pCi/L	0.57 pCi/L	Natural deposits

### Definitions

**AL=Action Level** – The concentration of a contaminant that triggers treatment or other requirement that a water system must follow. Action Levels are reported at the 90th percentile for homes at greatest risk.

**Haloacetic Acids** – mono-, di-, and tri-chloroacetic acid; mono- and di-bromoacetic acid; and bromochloroacetic acids

< means “less than” or not detected

**Maximum Contaminant Level (MCL)** – The highest level of a contaminant that is allowed in drinking water

**Maximum Contaminant Level Goal (MCLG)** – The level of a contaminant in drinking water below which there is no known or expected risk to health  
**mg/L** – milligram per liter = parts per million

**Median** – The middle value of the entire data set for the parameter (range from high to low)

**NTU** = Nephelometric Turbidity Units - unit to measure turbidity

**NR** – not regulated

**pCi/L** = Picocuries per liter - a measure of the radioactivity in water. A picocurie is 10-12 curies.

**RAA** = Running Annual Average – the average of (4) quarterly samples collected in one year

**TT** = Treatment Technique – A required process intended to reduce the level of a contaminant in drinking water

**Trihalomethanes** – chloroform, bromochloromethane, dibromochloromethane and bromoform

**ug/L** – microgram per liter = parts per billion

# North Point Water Tower

Step inside, look straight up and this is the view inside the historic North Point Water Tower. The Milwaukee Water Works opened the tower at the request of Historic Milwaukee for its North Point Neighborhood tour in May. Several hundred people stepped inside for a briefing about the decorative stonework tower, first used in 1874. The great-granddaughter of Johann Kornbach, the ironworker who built the interior spiral staircase, brought family photos to the open house. The tower stairway was no longer capable of handling weight, but visitors could



stand inside the tour and gaze upward. One visitor said she had convinced all of her children the tower was the home of the tooth fairy; several adults

reminisced about climbing to the top of the tower in the 1970s when the structure remained unlocked. In the days of steam-driven engines, the 120-foot-high, four-foot-diameter standpipe absorbed pulsations of water from steam-driven engines that pumped water from Lake Michigan into the water main system. The tower was taken out of service in 1963 but retains local, state, and national historic landmark status.

Prior to the event, the Water Works and Department of Public Works cleaned the inside of the tower and prepared a viewing area, and repainted and cleaned the windows on the first two levels. Forestry spruced up landscaping at the tower and adjoining park. The Water Works prepared a brochure on the history of the tower, a photo display, and a video showing the old triple expansion pumps in operation.





# Milwaukee **Water Works**

*Safe, Abundant Drinking Water.*

**841 N. Broadway, Room 409 • Milwaukee, Wisconsin 53202**

**[www.water.mpw.net](http://www.water.mpw.net)**

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