Testimony to the Speaker's Task Force on Water Quality

Karen Dettmer, P.E.
Superintendent
Milwaukee Water Works

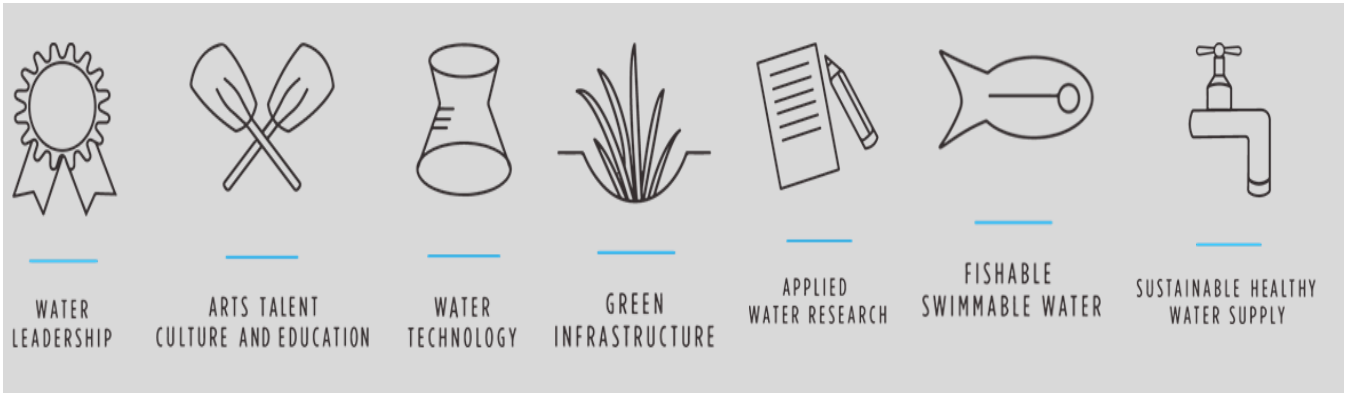
August 13, 2019

Milwaukee Water Works

Safe, Abundant Drinking Water.

WaterCentricCity.org

WATER CENTRIC CITY
MILWAUKEE



Seven Principles
of the
Water Centric City

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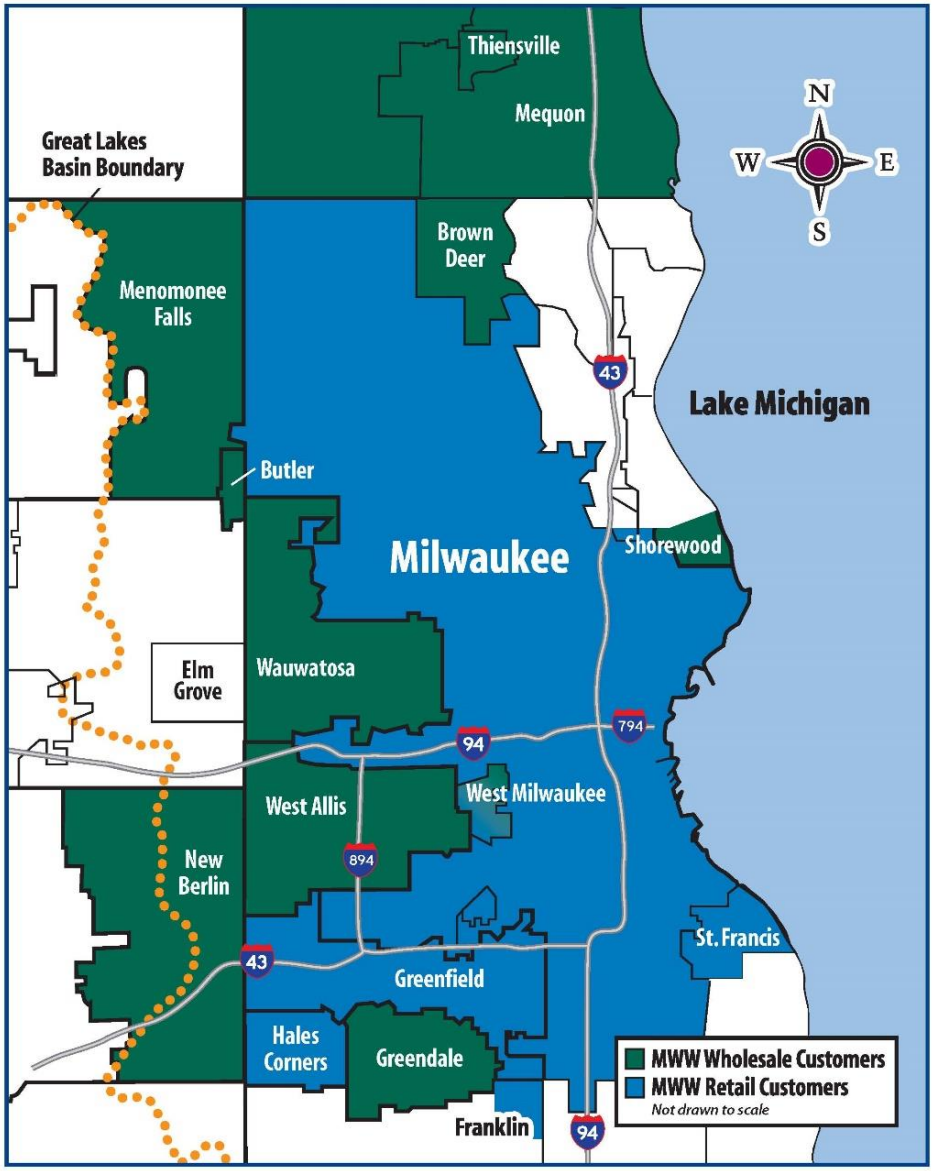
Service Area



- 867,000 customers
- 16 Communities
- 1,960 miles of water mains
- 34 billion gallons

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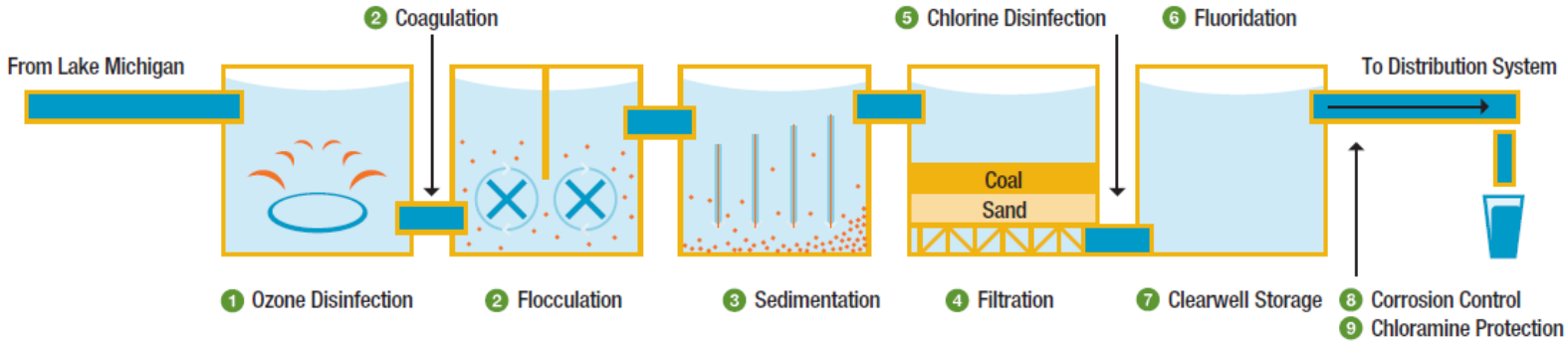
Milwaukee Water Works Drinking Water Treatment Process



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 the formation of chlorinated disinfection byproducts.

② **Coagulation and Flocculation** Aluminum sulfate is added to the water to neutralize the charge on microscopic particles in the water. The water is then gently mixed to encourage the suspended particles to stick together to form floc.

③ **Sedimentation** Sedimentation is the process in which the floc settles out and is removed from the water.

④ **Biologically Active 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 filtration, 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 Storage** 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.

The Milwaukee Water Works is a member of the American Water Works Association, the Association of Metropolitan Water Agencies, the Water Research Foundation, and the Wisconsin Water Association.

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Plants Improvements

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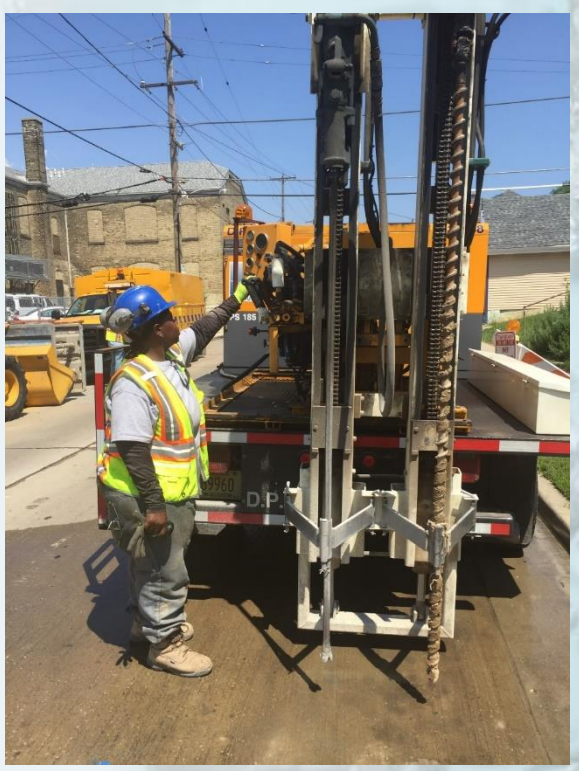
Distribution System Procedures and Improvements

- Hydrant flushing
- Lost water correlation
- Cross connection inspections
- Meter replacement
- Water main replacement program
- Lead service line replacement mandate



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Safe Drinking Water Loan Funding

Water main replacement program

- $6M for 2017
- $11.3M for 2018 (18 miles)
- $16.2M for 2019 (18 miles)
- 20 miles in 2020

Lead service line replacement

- $2.6M for year 1
- $3.8M for year 2
- Principle forgiveness
- NOT continued past year 2
- Average LSL replacement = $10,683

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Lead service lines replaced to-date

Reason for LSL Replacement	2017	2018	2019	Total (%)
Leak or failure	438	542	340	1320 (66)
Child cares and schools	149	204	56	409 (20)
Water main relay project	18	124	57	199 (10)
Owner initiated	10	40	17	67 (3)
Other utility work	6	0	1	7 (<1)
Total LSL Replacements	**621**	**910**	**471**	**2002 (100)**

- Workforce Development is needed to increase contractor capacity
- Funding is needed to increase replacement rates, incentivize owner interest
- Potential in Water Infrastructure Improvements for the Nation (WIIN) Act

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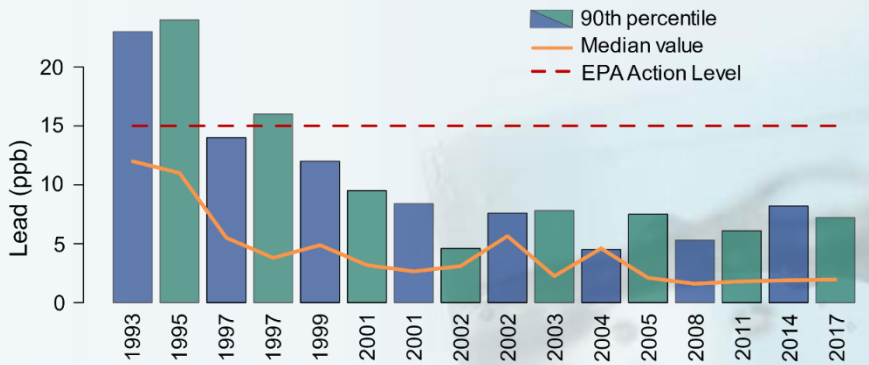
Corrosion Control Demonstrative Study

CCT initiated in 1996

- Reduced lead by > 60%
- Assessed in 2002 and 2016



2019 Evaluation

- Evaluation of corrosion control treatments
- Evaluation of current data and water quality parameters
- Identification of all chemical and physical constraints
- Impact on all other treatment processes
- Recommended implementation of process that minimizes lead at consumer's taps
- If different than current process, proposed treatment chemicals and doses to be used, including changes to any other treatment processes
- Schedule for full implementation

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Water Quality Laboratory

- Specific **treatment parameters** are required to be sampled continuously turbidity, chlorine and chlorine C_T, ozone, pH, and phosphate
  Monthly raw and treated water samples are sent to the Milwaukee Health Department for **safety/illness** - *Cryptosporidium*, *Giardia*, and viruses.
- 252 samples per month analyzed for the **Total Coliform Rule (TCR)** bacteriology and chlorine
- **Surface Water Treatment Rule** includes requirements for disinfection relating to *Cryptosporidium*, *Giardia*, and viruses. These all relate to log removal calculations and are monitored continuously
- **Disinfectant and Disinfection Byproduct Rule** requires monitoring of bromate (due to ozone), total trihalomethanes (TTHMs), and haloacetic acids (HAAs).

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Water Quality Laboratory

- Lead and Copper Rule (LCR) samples collected every three years (By request for the Lead Service Line Replacement program)
- Since 2017, the DNR has required analysis for over a dozen other parameters related to Optimized Corrosion Control Treatment.

- Another 90 regulated contaminants have DNR determined schedules, which are often broken down into monthly, quarterly, semiannually, and annually sampling regimes.

- Unregulated Contaminant Rule (UCMR) sampling every five years for up to 30 new contaminants of emerging concern.
- MWW monitors approximately 400 more substances that are not currently regulated.

45 PFAS at both treatment plants and throughout our distribution.

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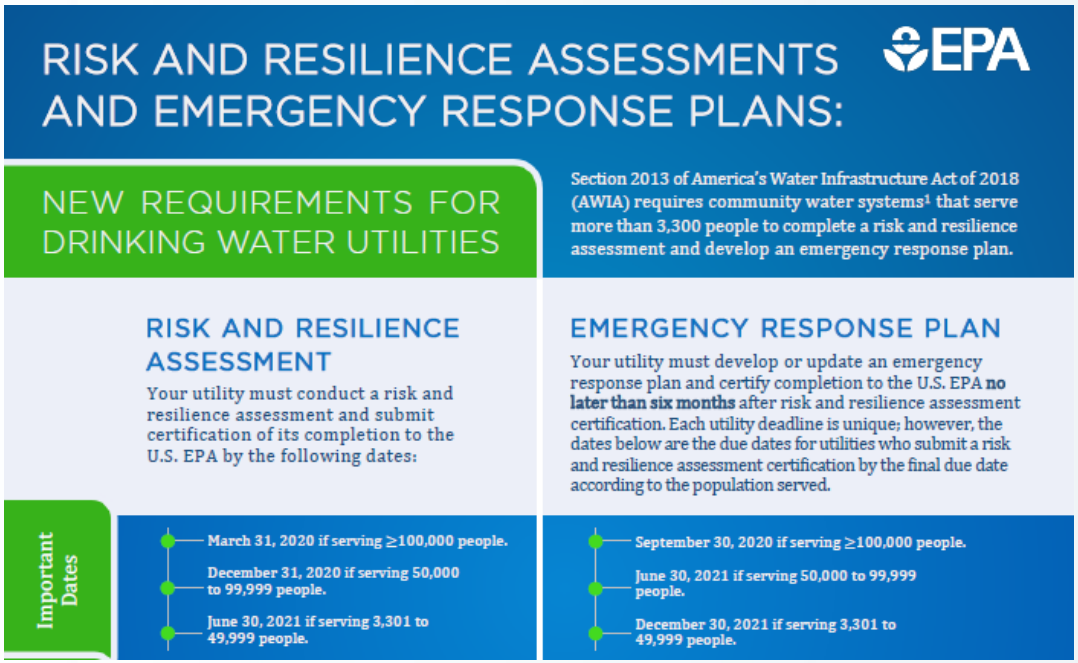
America's Water Infrastructure Act of 2018

- Risk and Resilience Plan – updated annually
  Source water protection and climate impacts
- Emergency Response Plan – updated annually
- Consumer Confidence Report – semiannually



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Drinking Water Affordability

Milwaukee Metro Area Water Rates
Incremental of 3% for Milwaukee Water Works

			CCF	Effective
1	Elkhorn Light and Water	Walworth	$ 7.30	November 01 2017
2	Wauwatosa Water Utility	Waukesha	$ 3.80	November 29 2016
3	Franklin Municipal Water Utility	Milwaukee	$ 3.77	June 23 2016
4	Hartford City of Utilities	Washington	$ 3.70	January 08 2011
5	Port Washington Mun. Water Utility	Ozaukee	$ 3.50	September 01 2017
6	Pleasant Prairie Vill of WTR	Kenosha	$ 3.29	June 01 2015
7	Menomonee Falls Village of WTR Utilities	Ozaukee	$ 3.22	January 01 2017
8	New Berlin Water Utility	Waukesha	$ 3.18	January 01 2017
9	South Milwaukee Water Utility	Milwaukee	$ 3.18	April 4 2019
10	Caledonia Village of Water Utilities	Racine	$ 3.16	December 06 2017
11	Glendale Water Utility	Milwaukee	$ 2.69	January 01 2018
12	Racine Water Woks Commission	Racine	$ 2.58	September 25 2017
13	Oak Creek Water & Sewer Utility	Milwaukee	$ 2.54	November 15 2017
15	Greendale Village of Water Utility	Milwaukee	$ 2.49	April 01 2017
14	Oconomowoc City of Utilities	Waukesha	$ 2.49	September 16 2011
16	West Allis Municipal Water Utility	Milwaukee	$ 2.42	October 01 2017
17	Cedarburg Light And Water Commission	Ozaukee	$ 2.39	January 01 2015
18	Lake Geneva Utility Commission	Walworth	$ 2.32	December 4 2018
19	Waukesha Water Utility	Waukesha	$ 2.32	December 01 2017
20	Whitefish Bay Village of Water Utility	Milwaukee	$ 2.23	December 01 2017
21	Cudahy City of Water Utility	Milwaukee	$ 2.20	August 01 2018
22	West Bend City of Water Utilities	Washington	$ 2.14	April 01 2011
22	Milwaukee Water Works	Milwaukee	$ 2.14	3% (September 2019)
24	Grafton Water & Wastewater Utility	Ozaukee	$ 2.00	March 20 2018
25	Kenosha Water Utility	Kenosha	$ 2.00	June 01 2015
26	Brookfield Municipal Water Utility	Waukesha	$ 1.89	December 01 2015
27	Germantown Water Utility	Washington	$ 1.71	December 15 2014

- Average residential customer pays $60.18 per quarter (consumption + meter)
- 3.5 gallons of water for $0.01

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Collaborations

- Partnership for Safe Water
- Research
- Best Practices

Resources

American Water Works Association
Dedicated to the World's Most Important Resource

THE Water Research FOUNDATION
www.waterrf.org

LSLR COLLABORATIVE

ASSOCIATION OF METROPOLITAN WATER AGENCIES

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WISCONSIN DEPARTMENT of HEALTH SERVICES

WISCONSIN DEPT. OF NATURAL RESOURCES

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City of Milwaukee Health Department

Water Quality Protection for the Public's Health

Dr. Jennifer Freiheit
Chief Deputy Commissioner

CITY OF MILWAUKEE
HEALTH DEPARTMENT

Various Clinical & Environmental Testing

- Collaborations with MWW and other partners
- Beaches (3 + Jet Ski Launch Area + Lagoon)
- Lead
- Legionella
- Summerfest Grounds

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Beach Water Quality Monitoring

- Partners with the UWM Laboratory for Aquatic Environmental Microbiology and Chemistry (Miller Laboratory), DNR, County Parks System
  - Bradford Beach: 3x/wk
  - McKinley Beach: 5x/wk
  - South Shore Beaches: 5x/wk
  - McKinley Jet Ski Launch: 1x/wk
  - Veterans Park Lagoon water (tested for toxic algae species): 3x/wk
- MHD Lab tests for E. coli levels and recommends swimming advisories

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Lead in Water

- MHD Laboratory Testing
  - Licensed or certified childcare facilities after lead service line replacement
  - Part of reported elevated blood lead level (EBL) investigations
  - City Chartered Schools (tested annually)
  - *No funding to be able to perform testing for the general public*

- Free Water Filters
  - Over 4,800 certified drinking water filters have been distributed
    - Bottle-fed infants
    - Children, under age 6, with EBL
    - Childcare facilities
    - Pregnant or Breastfeeding Women

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Other Water Quality Testing

- Legionella
  - No confirmed 2019 cases
  - MHD equipped to investigate, collect, & analyze water samples
  - Work with property owner to eliminate source

- Summerfest Water Quality
  - Coliform sampling weekly
  - Heterotrophic Plate Count (Overall Biomass in water sample)

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HEALTH DEPARTMENT

Thank you!

Dr. Jennifer Freiheit, MCHES

Chief Deputy Commissioner

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