THE METROPOLITAN DISTRICT
2016 WATER QUALITY REPORT

OVERVIEW

The MDC's Water Quality Report, provides a summary of water quality for 2016 and includes information on how the MDC collects, treats and delivers quality drinking water. In 2016, the MDC's water supply once again met all state and federal standards for water quality. The MDC remains committed to providing our customers with the highest quality water.

In 2016, the MDC's state-licensed Water Quality Laboratory, located at Reservoir No. 6 in Bloomfield, conducted more than 145,000 physical, chemical and bacteriological tests. These tests determine the levels, if any, of over 130 potential water contaminants at the MDC's reservoirs, treatment plants and the 46 state approved sampling sites throughout the MDC service area. These tests and others conducted at various certified consulting laboratories confirmed that the potable water supplied by the MDC met all State of Connecticut Public Health Code and Federal Environmental Protection Agency standards for water quality.

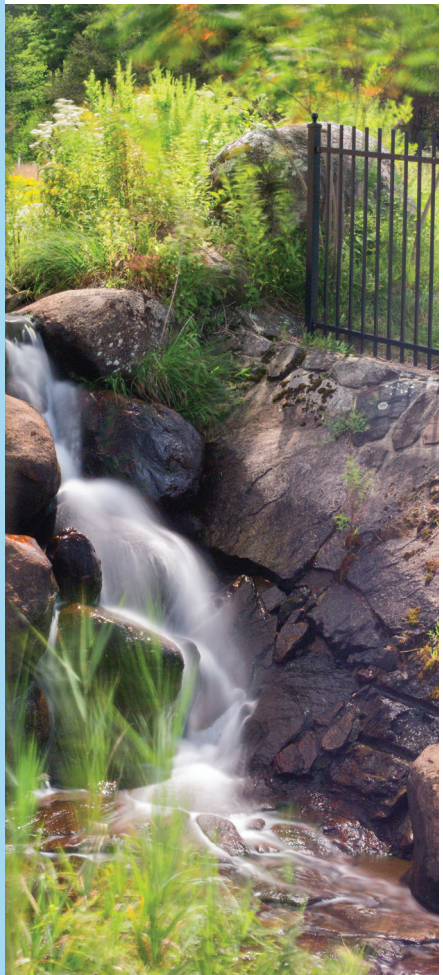
Last year, the MDC distributed an average of 49.9 million gallons of water per day to a population of approximately 400,000. In order to continue to deliver the highest quality water, there were significant improvements made to the MDC's drinking water system, including the installation of over 4 miles of new waters mains to the distribution system as well as infrastructure improvements to the Nepaug Reservoir.

(Este reporte contiene información importante sobre el agua potable.
Si necesita este Reporte en Español por favor llame al 278.7850 ext. 3211)

WATER SOURCE

The MDC's untreated water comes entirely from surface water sources in watersheds (drainage areas) that cover approximately 89.7 square miles. These sources are: the 30.3-billion gallon Barkhamsted Reservoir, impounded by the Saville Dam, located about one mile north of New Hartford; and the 9.5-billion gallon Nepaug Reservoir, created by the Phelps Brook and Nepaug Dams, located about one mile northwest of Collinsville. These reservoirs are part of the larger Farmington River watershed and are located roughly 20 miles from Hartford in Connecticut's northwest hills.

These reservoirs feed the MDC's smaller reservoirs, which are located in West Hartford and Bloomfield. The majority of the watershed areas are relatively rural, which reduces the chance of pollution. Even so, the MDC conducts an aggressive source water protection program to further ensure the quality of its water supplies.



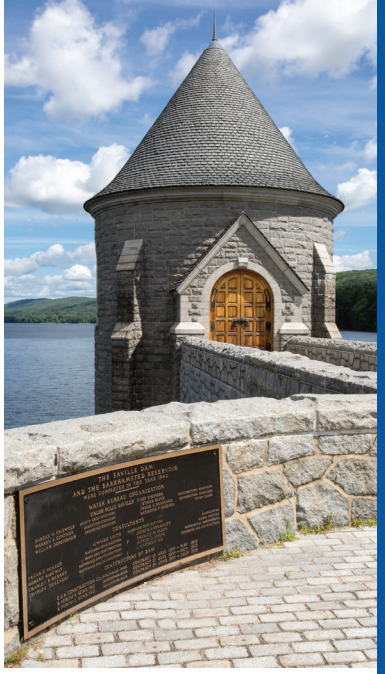
SOURCE WATER PROTECTION

Source water is untreated water that is used to supply public drinking water. Natural processes and human activities that occur within a watershed area can greatly impact the quality of that source water. As water travels over the surface of the land or through the ground, it can carry substances such as soil particles, salts, metals, oils, bacteria, fertilizers and pesticides that can contaminate water supplies. The MDC is very fortunate to have heavily forested watersheds, which help safeguard the water supplies by acting as a natural filter and buffer to potential contaminants.

In order to prevent contamination and unsanitary conditions in the watershed areas, the MDC performs watershed inspections on properties draining to the Barkhamsted Reservoir, the Nepaug Reservoir, and Reservoir No. 6 and the West Hartford Reservoirs. These inspections are required by the Connecticut Department of Public Health (DPH).

The MDC's Watershed Inspector visits residential, business and farm properties located within the watersheds to identify conditions that may adversely affect drinking water supplies. The inspector checks for signs of septic system failure, leaking fuel oil tanks, soil erosion and sedimentation issues, illegal discharges and dumping, improper storage of chemicals and animal waste, and other conditions that have the potential to affect water quality. In 2016, a total of 2,968 watershed inspections were conducted, with no violations.

The MDC's Watershed staff also reviews land use development proposals that come before watershed towns and when appropriate, submits comments to encourage practices that protect reservoir water quality.



In addition, raw water sampling of reservoirs and tributaries is performed in order to monitor changes in water quality. The MDC's Water Quality Laboratory conducts physical, chemical, nutrient and biological analyses to help identify potential drinking water contaminants.

Permanently protecting water supply watershed land is one of the most important measures that can be taken to strengthen source water protection efforts. To this end, the MDC implemented a land acquisition program and has acquired a total of 211.4 acres of additional watershed land since 2006.

SOURCE WATER ASSESSMENT

The Connecticut DPH Drinking Water Section completed assessments of all public drinking water sources in 2003 to identify and document potential sources of contamination that could adversely impact drinking water quality. The assessments found that reservoirs owned by the MDC have a low susceptibility to potential sources of contamination.

The Source Water Assessment Program report can be found on the Connecticut DPH's website:
http://www.ct.gov/dph

For more information visit the U.S. Environmental Protection Agency's (EPA) website:
http://water.epa.gov/drink

WATER TREATMENT

The MDC has always filtered its water supplies. The slow sand filtration plant located just off Farmington Avenue in West Hartford contains 22 underground filter beds. In the filter beds, water trickles down through more than three feet of sand and stones, where within the first 2-3 inches of sand, solids and microscopic bacteria are trapped. Additional chemical treatment follows to eliminate any remaining bacteria.

The Reservoir No. 6 plant in Bloomfield is a dual media filtration facility, also known as a complete conventional plant. The system combines chemical treatment prior to filtration at six filter beds. Because pre-treatment removes most impurities, the rapid sand filtration process can remove those remaining impurities quickly. While the filtration process is accomplished somewhat differently at each plant, there are five basic components in the treatment process that the plants have in common:

1. **Filtration**
2. **Disinfection through chlorination**
3. **Fluoridation** *(mandated by the State of Connecticut Department of Public Health to help prevent tooth decay)*
4. **pH adjustment of all treated water**
5. **Corrosion control for distribution system piping and household plumbing**

CROSS CONNECTION

The State of Connecticut and MDC Ordinances require that the MDC conduct periodic inspections of properties for cross connection situations. A cross connection is an actual or potential connection between a public water system and any other source or system through which it is possible to introduce any contamination or polluting agent. The regulations require that commercial, industrial and residential structures maintain one or more cross connection control devices if there is a possibility of a "toxic or objectionable substance" being used at, in or outside the structure. State of Connecticut cross connection regulations require that the homeowner notify the MDC and obtain its approval of the plans prior to the installation of any of the previously mentioned installations.

The cross connection requirements have been expanded to include, but are not limited to, fire suppression systems, lawn irrigation systems, marinas, boilers, solar heat, geothermal wells, lawn irrigation wells, ice machines and facilities which utilize chemicals within the premises, which would meet the definition of toxic or objectionable substances. MDC conducted over 1300 inspections in 2016.

WATER CONSERVATION

Water is a limited resource, so it is vital that we all work together to maintain it and use it wisely. Here are a few tips that you can follow to help conserve water:

- Check for leaky fixtures. A leaking faucet or toilet can dribble away thousands of gallons of water per year.
- Store a jug of ice water in the refrigerator for a cold drink.
- Water lawn and plants in the early morning or during the evening to avoid excess evaporation. Don't water on a windy, rainy or very hot day.
- Apply mulch around flowers, shrubs, vegetables and trees to reduce evaporation.

LEAD

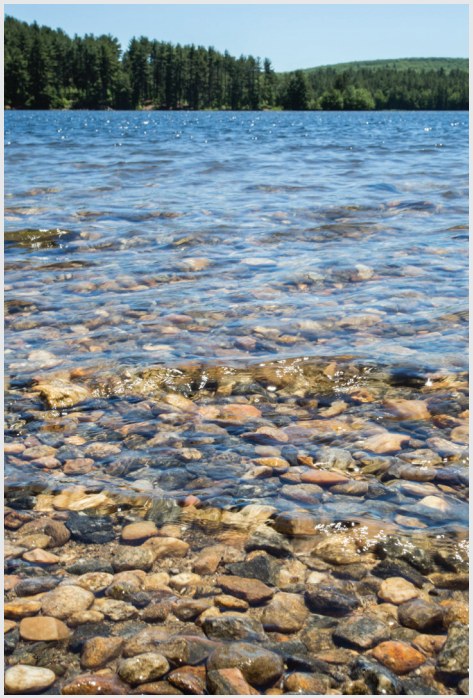
If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The MDC is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When water has been sitting in the internal plumbing for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to two minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested.

Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://water.epa.gov/drink/info/lead.

Another simple way to reduce the possible exposure to lead is to regularly clean your faucet screens to remove material that may become trapped in the screen. Some of that material may be lead particles from your home's internal plumbing. Finally, do not use hot water from the tap to make infant formula or for cooking. Hot water may have higher mineral content than the cold water supplied by the MDC. Infants and young children who drink water containing lead in excess of the EPA action level could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities.

Adults who drink water-containing lead in excess of the action level over many years can develop kidney problems or high blood pressure. Infants and young children are typically more vulnerable to lead in drinking water than the general population. **While the MDC uses no lead pipes in its distribution system, it is possible that lead levels may be elevated in your home, which is a result of materials used in your home's plumbing fixtures**.

The table on page 14 of this report summarizes the results of lead and copper testing. Federal regulations require that the MDC analyze samples from a minimum of 50 homes by having the homeowner collect a one-liter sample from the cold-water kitchen tap as "first draw" (after water has been standing motionless in household pipes for at least six hours). During the last lead and copper sampling round conducted in 2014, the MDC collected samples from 54 homes. Since less than 10 percent (3 out of the 54 - see table) of the homes sampled were above the action level set by the EPA, the MDC remains in compliance with the Lead and Copper Rule. The MDC will conduct the next round of lead and copper analysis in 2017.



During this testing, homeowners were also asked to collect an additional sample after having the water run for a few minutes. These samples were also analyzed for lead and copper content. The results consistently showed that little or no lead or copper was present in the water coming from the MDC water mains after the water was allowed to run for a short period of time.

COPPER

Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short amount of time could experience gastrointestinal distress. Some individuals who drink water containing elevated copper in excess of the action level over many years could suffer liver or kidney damage. People with Wilson's disease should consult their personal health care provider. During the lead and copper monitoring period conducted in 2014, there were no exceedances of the copper action level in any of the first draw samples collected by the homeowners.

SYNTHETIC ORGANIC COMPOUNDS

In 2015, the MDC utilized a State of Connecticut certified public health environmental laboratory to conduct synthetic organic compound analysis regulated under the public health code. The collection and analysis of these forty-two synthetic organic compounds (herbicides, pesticides, PCBs, etc) did not detect any of these compounds in the potable water supplied to the customers of the MDC. Review of the analytical data by the public, related to this monitoring is available at the MDC's Water Quality Laboratory.

CRYPTOSPORIDIUM MONITORING

Cryptosporidium is a microbial pathogen recovered in untreated surface waters that if ingested, could lead to gastrointestinal illness. Test results conducted in 2015 and 2016 indicated that 6 samples out of 88 found 2 oocysts at the 0.2 oocyst/Liter level. The MDC's water treatment processes are optimized to provide barriers for effectively removing these organisms from raw water. The remaining 82 samples were reported at a level between <0.053 oocysts/Liter to <0.098 oocysts/Liter level (non detects).

RADIOLOGICAL & ASBESTOS MONITORING

During 2013, the MDC had samples analyzed for radiological parameters including Uranium, gross alpha, gross beta, radium 228 and radium 226. There was no detection of any of these constituents as a result of the analysis. Asbestos monitoring was also conducted in 2013 with no asbestos fibers detected in the analysis.

INFORMATION ABOUT DRINKING WATER CONTAMINANTS

The State of Connecticut is one of the few states where only Class A waters (not receiving discharges from sewer treatment plants) may be used for drinking water purposes.

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and in some cases, radioactive material, and can pick up substances from the presence of animal or human activity.

Contaminants that may be present in source water include:

- Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife;
- Inorganic contaminants, such as salts and metals, which can be naturally occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production and mining or farming;
- Pesticides and herbicides, which may come from a variety of sources, such as agriculture, urban storm water runoff and residential uses;
- Organic chemical contaminants, including synthetic and volatile organic chemicals, which are byproducts of industrial processes and petroleum production, can come from gas stations, urban storm water runoff or septic systems (some of these compounds, such as trihalomethanes and haloacetic acids, are disinfection byproducts that result from the use of chlorine as a disinfectant in water treatment, which reacts with naturally occurring materials in water);
- Radioactive contaminants, that can be naturally occurring or the result of mining activities.
- Radon, a radioactive gas found commonly in well water. (Radon is not present in MDC water since all its drinking water is initially derived from surface water reservoirs.)

In order to ensure that tap water is safe to drink, the EPA prescribed regulations which limit the amount of certain contaminants in water provided by public water systems. The U.S. Food and Drug Administration regulations establish limits for contaminants in bottled water, which must provide similar protection for public health. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants.

The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline 800.426.4791.

UNREGULATED CONTAMINANT MONITORING RULE 3

In order to develop new drinking water regulations to protect public health, the EPA does years of research and water quality monitoring. Every five years, the EPA is required to issue a new list of no more than 30 unregulated contaminants to be monitored by public water systems. These contaminants are known or anticipated to occur at public water systems and may warrant future regulation.

From July 2013 through April 2014, quarterly samples were collected by the MDC and forwarded to an EPA-certified laboratory for analysis of 28 unregulated chemicals, which may be found in the nation's drinking water. The compounds of interest from the study included hormones, metals, volatile compounds, a synthetic organic compound and a disinfection by-product compound. Samples were collected from locations where water enters the District's distribution system and sample points that are indicative of the maximum residence time.

Analysis of the quarterly samples collected at the District's sample points showed the presence of 4 of the 28 unregulated compounds of interest (See chart on page 11). It is important to note that the EPA has yet to establish regulatory standards for any of the unregulated contaminants. The purpose of monitoring for these contaminants is to help the EPA to decide whether or not to establish such standards for them.

COMPOUNDS	AVG/RANGE (ppb)	POTENTIAL SOURCES OF COMPOUNDS
Strontium	19.4 15-22	Naturally occurring and also found in air from milling, fertilizers, manufacturing, and coal burning.
Vanadium	0.19 <0.02-0.39	Naturally occurring and found in minerals and fossil fuels.
Chromium 6	0.042 <0.03-0.058	Naturally occurring. Used in manufacturing processes for steel and other metals.
Chlorate	118.5 45-250	Drinking water disinfection process byproduct.

HOW TO READ THE TABLE (PAGE 14)

The table on page 14 shows the results of the MDC's water quality analyses on its treated drinking water delivered from its water treatment facilities and distribution system. The table lists all drinking water analytes that were detected during the 2016 calendar year. Unless otherwise noted, the data presented in this table are from tests performed between January 1 and December 31, 2016. The table contains the name of each substance, the highest level allowed by regulation (Maximum Contaminant Level, or MCL), the ideal goals for public health, the amount detected, the usual sources of each substance and a key to units of measurement.

DEFINITIONS

Action Level (AL):
The concentration of a contaminant that, if exceeded, triggers treatment or other requirements that a water system must follow.

Maximum Contaminant Level (MCL):
The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Maximum Contaminant Level Goal (MCLG):
The level of a contaminant in drinking water below, which there is no known or expected risk to health. MCLGs allow for a margin of safety.

Maximum Residual Disinfectant Level or MRDL:
The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Maximum Residual Disinfectant Level Goal or MRDLG:
The level of a drinking water disinfectant below, which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

NTU:
Nephelometric Turbidity Units

ppm:
parts per million, or milligrams per liter

ppb:
parts per billion, or micrograms per liter

Treatment Technique:
A required process intended to reduce the level of a contaminant in drinking water.

HOW TO LEARN MORE ABOUT YOUR WATER

If you have questions about the quality of your tap water or the information contained in this report, please call The Water Quality Labratory at 860.278.7850, ext. 3901 during normal business hours.

The MDC welcomes public input and participation in decisions affecting your drinking water. District Board and committee meetings are held at the MDC's Headquarters located at 555 Main Street in Hartford, CT. Meeting schedules, notices, agendas and minutes are available on the MDC's website: www.themdc.org.

Meetings are open to the public.

OTHER SOURCES OF INFORMATION:

U.S. EPA Safe Drinking Water Hotline:
800.426.4791

CT Department of Public Health:
860.509.7333

2016 MDC WATER QUALITY RESULTS

SUBSTANCE (UNITS)	HIGHEST LEVEL ALLOWED (EPA's MCL)	GOALS (EPA's MCLG)	AVERAGE	RANGE	MAJOR SOURCES
INORGANICS					
Fluoride (ppm)	4	4	0.86	0.53 - 2.72	Erosion of natural deposits; water additive that promotes strong teeth
Calcium (ppm)	N/A	N/A	3.66	3.0 - 6.4	Erosion of natural deposits
Chloride (ppm)	250	N/A	11.92	9.0 - 14.8	Byproduct of drinking water disinfection
Nitrate (ppm)	10	10	0.08	0.01 - 0.15	Runoff from fertilizer use; leaching from septic tanks; sewage; erosion of natural deposits
Nitrite (ppm)	1	1	<0.005	<0.005	Runoff from fertilizer use; leaching from septic tanks; sewage; erosion of natural deposits
Disinfectant residual distribution (ppm)	4.0	4.0	0.55	0.01 - 1.05	Byproduct of drinking water disinfection
Sodium (ppm)	28 (State of CT Advisory Level)	N/A	7.6	5.4 - 9.7	Erosion of natural deposits and byproduct of water treatment
Sulfate	N/A	N/A	6.4	4.6 - 8.3	Erosion of natural deposits
Orthophosphate (ppm)	N/A	N/A	0.98	0.54 - 1.98	Corrosion control inhibitor added at the water treatment plants
Alkalinity (ppm)	N/A	N/A	11.4	6.0 - 18.0	Erosion of natural deposits
pH	N/A	6.4 - 10 (State of CT)	7.5	6.1 - 8.3	Sodium Hydroxide added for corrosion control to bring pH above a neutral pH (7.0)
Copper (ppm)	1.3	1.3	0.007	<0.003 - 0.012	Erosion of natural deposits
Barium (ppm)	2.0	2.0	0.006	0.005 - 0.007	Erosion of natural deposits
TURBIDITY & BACTERIA					
Turbidity (NTU-Max allowable) West Hartford Water Treatment Plant CFE (combined filter effluent)	1.0	0	0.08	0.01 - 0.70	Soil Runoff - Turbidity has no health effects but may interfere with disinfection and provide a medium for microbial growth.
Turbidity (NTU-Max allowable) Reservoir No. 6 Filter Plant CFE	0.3	0	0.03	0.02 - 0.15	Soil Runoff
Total coliform (Distribution system) (2357 samples - 2160 required) No thermo-tolerant fecal coliform were recovered	Presence of coliform bacteria in 5% of monthly samples	0	0%	0 - 1%	Naturally present in the environment
VOLATILE ORGANICS & ORGANIC CAR-BON (DISTRIBUTION DATA)					
Total haloacetic acids (ppb) total distribution average and highest site location running annual average	60	None Set	System Average: 21.8 Highest Single Sample Site Average: 27.8	Range of All Locations: 10.7 - 40.7 Range for Highest Sample Location: 10.9 - 40.7	Byproduct of drinking water disinfection
Total trihalomethanes (ppb) total distribution average and highest site location running annual average	80	None Set	System Average: 32 Highest Single Sample Site Average: 51.9	Range of All Locations: 13.9 - 65.7 Range for Highest Sample Location: 35.3 - 65.7	Byproduct of drinking water disinfection
Total organic carbon (minimum of 35 percent reduction required at the Reservoir #6 Water Treatment Plant)	N/A	Minimum removal ratio 35%	45%	38 - 53%	Rapid sand filter plant only treatment technique
HOUSEHOLD LEAD AND COPPER (2014 DATA - MOST RECENT REQUIRED HOUSEHOLD TESTING)					
SUBSTANCE (UNITS)	**ACTION LEVEL**	**GOALS (EPA's MCLG)**	**90TH PERCENTILE**	**HIGHEST LEVEL DETECTED**	**MAJOR SOURCES**
Lead (ppb)	15 ppb	0	5.1 ppb	181 ppb, 54 sites tested (number of sites above AL=3)	Corrosion of household plumbing systems; erosion of natural deposits
Copper (ppm)	1.3 ppm	1.3	0.152 ppm	0.663 ppm, 54 sites tested (number of sites above AL=0)	Corrosion of household plumbing systems; erosion of natural deposits

MDC

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