



► **Why Your Water Tastes Great - High Quality Source Water**

Your water comes from the Quabbin Reservoir, about 65 miles west of Boston, and the Wachusett Reservoir, about 35 miles west of Boston. These pristine reservoirs supply wholesale water to local water departments in 51 communities. The two reservoirs combined supplied about 200 million gallons a day of high quality water to consumers in 2015.

The Quabbin and Wachusett watersheds are naturally protected with over 85% of the watersheds covered in forest and wetlands. To ensure safety, the streams and reservoirs are tested often and patrolled daily by the Department of Conservation and Recreation (DCR).

Rain and snow falling on the watersheds - protected land around the reservoirs - turn into streams that flow to the reservoirs. This water comes in contact with soil, rock, plants, and other material as it follows its natural path to the reservoirs. While this process helps to clean the water, it can also dissolve and carry very small amounts of material into the reservoir. Minerals from soil and rock do not typically cause problems in the water. But water can also transport contaminants from human and animal activity. These can include bacteria and pathogens - some of which can cause illness. The test data in this report show that these contaminants are not a problem in your reservoirs' watersheds.

The Department of Environmental Protection (DEP) has prepared a Source Water Assessment Program report for the Quabbin and Wachusett Reservoirs. The DEP report commends DCR and MWRA on the existing source water protection plans, and states that our "watershed protection programs are very successful and greatly reduce the actual risk of contamination." MWRA follows the report recommendations to maintain the pristine watershed areas.



Dear Customer,

You have probably seen many news reports about lead in drinking water over the last few months, particularly in Flint, Michigan. We want you to know that your water is safe. This year, we have added a few pages to this report so that you can find out as much about lead in drinking water as possible and learn how to minimize your risks.

It is important for you to know that as a whole, the MWRA's water system has been below the Environmental Protection Agency's Lead Action Level for over a decade. 98% of the 2,300 samples tested over the last five years were below the Level. This system-wide success is the result of aggressive treatment to make the water less corrosive and thus less likely that lead will leach into the drinking water. While the water at the reservoirs and in the MWRA and local pipes is lead free, it is important to realize that there are still risks of elevated lead levels in certain homes and buildings in our service area. The issue in some homes is a lead service - the connection between the water main in the street and the home. There are roughly 28,000 homes in our service area that may still have lead water services. MWRA's goal is to have all of those lead services removed to eliminate even the smallest chance that a child may get lead poisoning.

And we will continue to work with your local community on this important issue. The MWRA Board of Directors recently approved a \$100 million, zero-interest loan program to replace lead service lines. In addition, the Governor has made \$2 million available for lead testing in public schools.

There are many differences between our water system and Flint's. Our water source - the Quabbin and Wachusett Reservoirs, are clean and well-protected; our treatment - MWRA utilizes state-of-the-art ozone and UV to disinfect the water without adding a lot of chemicals; and our people - the scientists, operators and managers who run the system, and the regulators that oversee the process, all work together to ensure your water is as safe as possible.

In addition to lead, MWRA takes hundreds of thousands of tests each year for 120 contaminants, and your water met every state and federal drinking water standard. Please read the letter on page 7 for more information on your community's local water system.

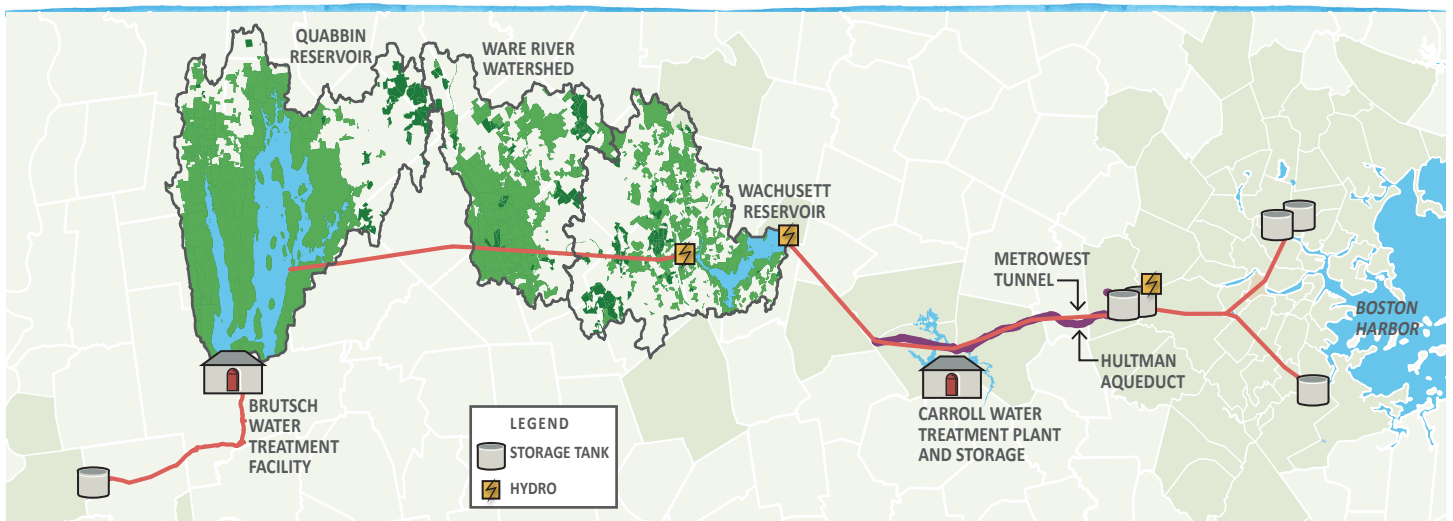
We hope you take a few moments to read this report. The best way to ensure your safety is to stay informed. We have great confidence in the water we deliver to over 2 million customers and we want you to as well. Please contact us if you have any questions or comments about your water quality or any of MWRA's programs.

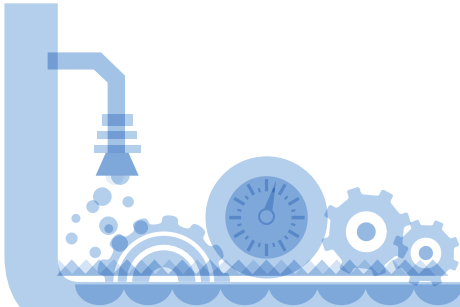
Sincerely,

Frederick A. Laskey
Executive Director

MWRA Board of Directors

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MONITORING WATER QUALITY IN REAL TIME – Your water is monitored by a state-of-the-art system in real time – 24 hours a day, seven days a week – to make sure it is free of contaminants. This allows MWRA to respond to changes in water quality almost immediately.

► **Why Your Water Tastes Great - Water Treatment**

Clean, fresh water that tastes great – that’s what you expect when you take a drink of water, and that’s what the Massachusetts Water Resources Authority delivers right to your tap. Part of the reason that the water tastes so good is the MWRA’s state-of-the-art John J. Carroll Water Treatment Plant in Marlborough. Since 2005, your water has been treated with ozone - produced from pure oxygen. Ozone has ensured strong protection against microbes and viruses, improved water clarity, and makes the water taste better. In 2014, we also started adding ultraviolet (UV) disinfection, further improving the quality of water. UV light is essentially a more potent form of the natural disinfection from sunlight, and ensures that any pathogens potentially in our reservoirs are rendered harmless.

In addition, fluoride is added to promote dental health and the water chemistry is adjusted to reduce corrosion of home plumbing. Last, we add monochloramine, a mild and long-lasting disinfectant combining chlorine and ammonia to protect the water as it travels through miles of pipelines to your home.

► **Testing Your Water - Every Step of The Way**

Test results show few contaminants are found in the reservoir water. The few that are found are in very small amounts, well below EPA’s standards.

Turbidity (or cloudiness of the water) is one measure of overall water quality. All water must be below 5 NTU (Nephelometric Turbidity Units), and water can



only be above 1 NTU if it does not interfere with effective disinfection. In 2015, turbidity was always below both the 5.0 and 1.0 NTU standards, with the highest level at 0.65 NTU. Typical levels at the Wachusett Reservoir are 0.3 NTU.

MWRA also tests reservoir water for pathogens such as fecal coliform, bacteria, and the parasites *Cryptosporidium* and *Giardia*. They can enter the water from animal or human waste. No *Cryptosporidium* or *Giardia* was detected in 2015.

► **Test Results - After Treatment**

EPA and state regulations require many water quality tests after treatment to check the water you are drinking. MWRA conducts hundreds of thousands of tests per year for over 120 contaminants (a complete list is available on www.mwra.com). Details about 2015 test results are in the table below. The bottom line is that the water quality is excellent.

FACTS ABOUT SODIUM

Sodium in water contributes only a small fraction of a person’s overall sodium intake (less than 10%). MWRA tests for sodium monthly and the highest level found was 32.4 mg/L (about 9 mg per 8 oz. glass). This would be considered VERY LOW SODIUM by the Food and Drug Administration.

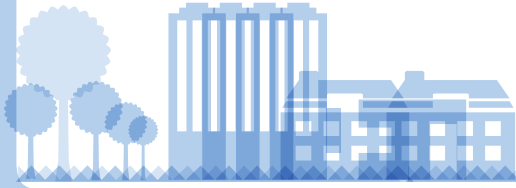


TEST RESULTS AFTER TREATMENT

COMPOUND	UNITS	(MCL) HIGHEST LEVEL ALLOWED	(WE FOUND) DETECTED LEVEL-AVERAGE	RANGE OF DETECTIONS	(MCLG) IDEAL GOAL	VIOLATION	HOW IT GETS IN THE WATER
► Barium	ppm	2	0.008	0.008-0.009	2	No	Common mineral in nature
► Monochloramine	ppm	4-MRDL	1.9	0-3.8	4-MRDLG	No	Water disinfectant
► Fluoride	ppm	4	1.02	0.59-1.08	4	No	Additive for dental health
► Nitrate	ppm	10	0.08^	0.01-0.08	10	No	Atmospheric deposition
► Nitrite	ppm	1	0.005^	0-0.005	1	No	Byproduct of water disinfection
► Total Trihalomethanes	ppb	80	13.5	6.4-19.1	ns	No	Byproduct of water disinfection
► Haloacetic Acids-5	ppb	60	10.7	0-15.8	ns	No	Byproduct of water disinfection
► Total Coliform	%	5%	0.7% (Sept)	ND-0.7%	0	No	Naturally present in environment
► Combined Radium*	pCi/L	5	1.76	ND-1.76	0	No	Erosion of natural mineral deposits



KEY: MCL=Maximum Contaminant Level. The highest level of a contaminant allowed in water. MCLs are set as close to the MCLGs as feasible using the best available technology. MCLG=Maximum Contaminant Level Goal. The level of contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety. MRDL=Maximum Residual Disinfectant Level. 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. MRDLG=Maximum Residual Disinfectant Level Goal. The level of a drinking water disinfectant below which there is no known or expected health risk. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contamination. ppm=parts per million ppb=parts per billion ns=no standard ND=non detect ^=As required by DEP, the maximum result is reported for nitrate and nitrite, not the average. *Result from 2014



TAKING ADVANTAGE OF GRAVITY – MWRA operates 3 hydroelectric generators that capture the energy of the water as it flows east providing \$1.5 million in renewable energy annually.



► Meadow on top of Spot Pond Covered Storage Tank in Stoneham

► **Covered Storage Keeps Water Safe and Clear**

In November 2015, MWRA turned on its new Spot Pond Covered Storage Tank in Stoneham. The 20 million gallon water storage facility and pump station provides storage for Charlestown, Chelsea, Everett, Malden, Medford, and Somerville and system redundancy for 21 communities. A meadow planted on top of the buried tanks provides open space and public access adjacent to Fells Reservation.

Over the last 10 years, MWRA has constructed a network of covered storage tanks across the service area that keep your water protected from the treatment plant all the way to your tap. The tanks replace a 100-year-old system of open reservoirs. Many of the original, open reservoirs are still maintained for emergency use.

► **Water System Redundancy**

Plans for water system redundancy (or parallel ways to deliver water) go back to the 1930s, but like many infrastructure projects, they were filed away after World War II and nearly forgotten. MWRA has been working on a number of projects over the last several years that continue to improve the agency’s flexibility and emergency response capabilities by being able to reroute water flows in order to take a pipeline out of service for repairs or ensure adequate service after a break. The Wachusett Aqueduct Pump Station under construction in Marlborough will provide redundancy from the reservoir to the Carroll Water Treatment Plant.

In the distribution system, major redundancy projects are ongoing north and south of Boston.

► **Pipeline Rehabilitation**

MWRA continues to rehabilitate and replace older pipelines throughout the distribution system to improve both reliability and water quality.

MWRA has also provided zero-interest loans to communities for local pipeline projects since 1998. In 2015, nearly \$20 million was loaned to communities for 18 projects including the replacement of over 17 miles of older unlined pipes with new lined water pipes.



► Wachusett Aqueduct Pump Station (Under Construction)





WITH ALL THE NEWS about lead in drinking water, you may have some concerns about the safety of your tap water. The MWRA system has been below the Lead Action Level for over a decade. Of the 2,300 samples taken in the last 5 years, 98% were below this 15 ppb level.



You Have Questions. We Have Answers.

IMPORTANT INFORMATION FROM EPA ABOUT 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. MWRA is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. If your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 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 at 1-800-426-4791 or www.epa.gov/safewater/lead.

► What You Need to Know About Lead in Tap Water

MWRA water is lead-free when it leaves the reservoirs. MWRA and local pipes that carry the water to your community are made mostly of iron and steel and do not add lead to the water. However, lead can get into tap water through pipes in your home, your service line if it is made of lead, lead solder used in plumbing, and some brass fixtures. Corrosion or wearing away of lead-based materials can add lead to tap water, especially if water sits for a long time in the pipes before it is used.

In 1996, MWRA began adding sodium carbonate and carbon dioxide to adjust the water's pH and buffering capacity. This change has made the water less corrosive, thereby reducing the leaching of lead into drinking water. Lead levels found in tests of tap water have dropped by over 90 percent since this treatment change.

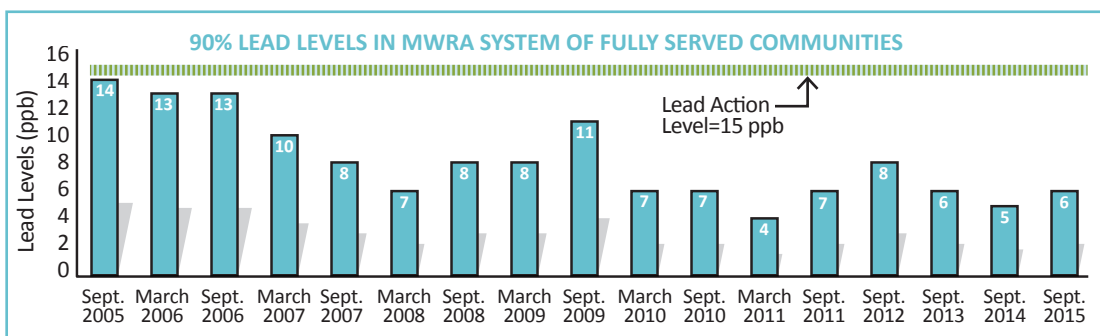
► MWRA Meets Lead Standard in 2015

Under EPA rules, each year MWRA and your local water department must test tap water in a sample of homes that are likely to have high lead levels. These are usually homes with lead service lines or lead solder. The EPA rule requires that 9 out of 10, or 90%, of the sampled homes must have lead levels below the Action Level of 15 parts per billion (ppb).

All 20 sampling rounds over the past twelve years have been below the EPA standard. Results for the 453 samples taken in September 2015 are shown in the table. 9 out of 10 houses were below 6.2 ppb, which is below the Action Level of 15 ppb. Only two communities had more than one home test above the Action Level for lead. If you live in these communities, your town letter will provide you with more information.

SEPT. 2015 LEAD & COPPER RESULTS	Range	90% Value	(Target) Action Level	(Ideal Goal) MCLG	# Home Above AL/# Homes Tested
Lead (ppb)	0-584	6.2	15	0	11/453
Copper (ppm)	0-2.3	0.1	1.3	0	1/453

KEY: AL=Action Level-The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow. Definition of MCLG available on page 2.



What Can I Do to Reduce Exposure in Drinking Water?

- Let the water run before using: fresh water is better than stale! To save water, fill a pitcher with fresh water and place in the refrigerator for future use.
- Any time water has gone unused for more than 6 hours, run each faucet used for drinking or cooking until after the water becomes cold.
- Never use hot water from the faucet for drinking or cooking, especially when making baby formula or other food for infants.
- Check your plumbing fixtures to see if they are lead-free. Read the labels closely.
- Remove loose lead solder and debris. Every few months remove the aerator from each faucet in your home and flush the pipes for 3-5 minutes.
- Be careful of places you may find lead in or near your home. Paint, soil, dust and some pottery may contain lead.
- Call the Department of Public Health at 800-532-9571 or EPA at 800-424-LEAD for health information.



DID YOU KNOW? Most cases of lead poisoning are from contact with peeling lead paint and lead paint dust. But drinking water exposed to lead can increase a person's total lead exposure. This is particularly a concern for infants or pregnant women.

What Do I Do If I Have A Lead Service Line?

MWRA PROGRAM TO REPLACE LEAD SERVICE LINES

To help communities in removing lead service lines, MWRA's Board of Directors has approved a program to make available \$100 million in zero-interest loans to its member communities to fully replace lead service lines. Under the program, each community would develop its own program, tailored to their local circumstances. More details on this program will be available later this year. The Commonwealth of Massachusetts is also making \$2 million available for lead testing in schools.

► What is a Lead Service Line? What is the Concern?

A **service line is the pipe** that connects your house to the water main in the street. Some service lines that run from older homes (constructed before 1940) are made from lead. Many of these older service lines have been replaced, but some remain. These service lines are the main source of lead in tap water in homes that have them. Therefore, removing lead service lines is a priority to reduce the potential for lead exposure, particularly if a pregnant woman or child lives in your home.

► How Do I Replace My Lead Service Line?

If you have a lead service line, you should consider replacing it. Many communities have programs to help with the replacement cost. Removing the whole lead service line is important. It is the only way to ensure that your service line will not be adding lead to your water. Partial replacements - which remove only the portion in the street - do not lower lead levels, and in many cases, can actually increase lead levels.

► How Much Does It Cost?

The cost of service line replacement depends on the length of the service line, the construction method, and where the service line is located. Please contact your local water department to learn more about options for lead service line replacement and any possible payment assistance.

WATER SERVICE LINES – OLD AND NEW

You can identify lead service line by carefully scratching with a key.



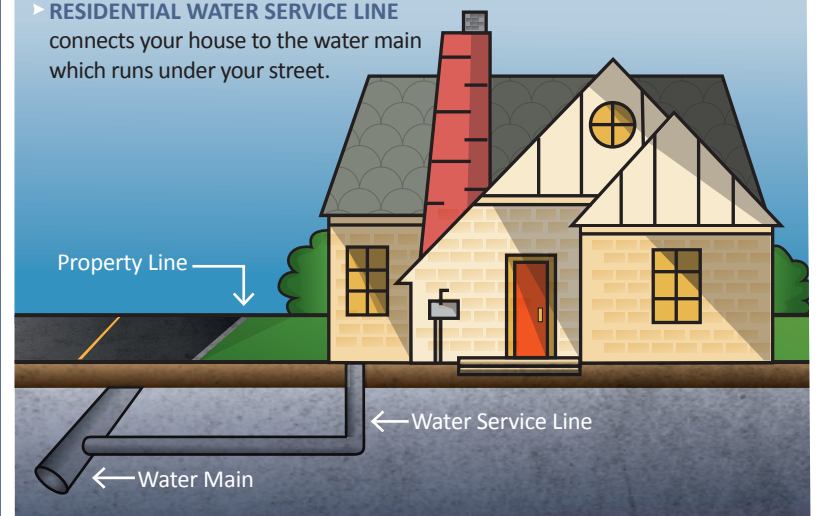
New Copper Service Line

► How do I Tell If I Have a Lead Service Line?

Go into your basement and locate your service line. Lead service lines are generally a dull gray color and very soft. You can identify one by carefully scratching it with a key. If the pipe is made of lead, the area you've scratched will turn a bright silver color. Do not use a knife or other sharp instrument and take care not to puncture a hole in the pipe. Contact your local water department for more information.

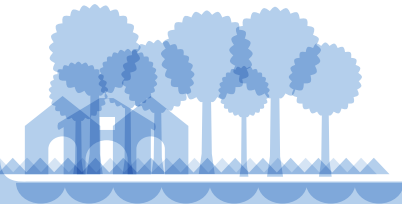
► RESIDENTIAL WATER SERVICE LINE

connects your house to the water main which runs under your street.



How Do I Get My Home's Tap Water Tested For Lead?

The best way to find out if your household tap water contains lead is to contact your local water department. Contact information is on page 7. You can also visit the lead testing page at www.MWRA.com or call MWRA at 617-242-5323.



MWRA TAKES CUSTOMER CONCERNS SERIOUSLY – Every call is investigated to ensure that there are no problems with the water supply. Most complaints are related to discolored water, which is usually related to local construction or hydrant use. If you have a question or concern about your water, please call your local water department or MWRA at 617-242-5323.



SAME GREAT SOURCE – PROTECTED BY TREES AND REGULATIONS

MWRA has been using the Quabbin Reservoir for 70 years and it still is providing great water. This is thanks to the well-protected watersheds, the MWRA and DCR staff, as well as the state regulators who keep a close eye on making sure the water meets all standards.



FLUSH YOUR TAP!

It is always best to use fresh water for drinking or cooking. If the water has been sitting for some time, you should flush your tap until the water is consistently cold. To promote conservation, fill a pitcher with fresh water and place in the refrigerator for future use.

► **Tests in Community Pipes**

departments test 300 to 500 water samples each week for total coliform bacteria. Total coliform bacteria can come from the intestines of warm-blooded animals, or can be found in soil, plants, or other places. Most of the time, they are not harmful. However, their presence could signal that harmful bacteria from fecal waste may be there as well. The EPA requires that no more than 5% of the samples in a month may be positive. If a water sample does test positive, we run more specific tests for *E.coli*, which is a bacteria found in human and animal fecal waste and may cause illness. No *E.coli* was found in any MWRA community in 2015. If your community found any total coliform, it will be listed within the community letter on page 7.

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 (1-800-426-4791) or MWRA. In order to ensure that tap water is safe to drink, the Massachusetts DEP and EPA prescribe regulations which limit the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration (FDA) and the Massachusetts Department of Public Health regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

► **Drinking Water and People with Weakened Immune Systems**

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the EPA's Safe Drinking Water Hotline (1-800-426-4791).

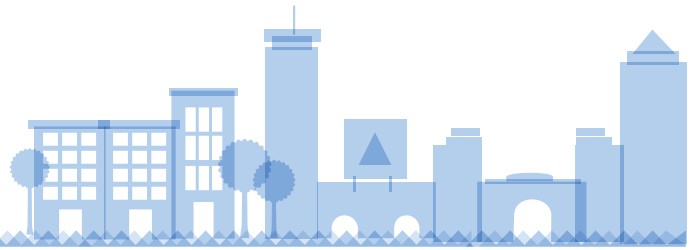
► **Research for New Regulations**

MWRA has been working with EPA and other researchers to define new national drinking water standards by testing for unregulated contaminants. To read more about these regulations, and to see a listing of what was found in MWRA water, please visit www.mwra.com/UCMR/2015.html.

► **Contaminants in Bottled Water and Tap Water**

Drinking water, including bottled water, may reasonably be expected to contain at least small

INFORMATION ABOUT CROSS CONNECTIONS
 Massachusetts DEP recommends the installation of backflow prevention devices for inside and outside hose connections to help protect the water in your home as well as the drinking water system in your town. For more information, please visit www.mwra.com/crosscon.html.



**Town of Brookline
WATER & SEWER DIVISION**

Public Water Supply
3046000

Andrew M. Pappastergion
Commissioner
Frederick W. Russell, PE
Director

Dear Water Customer:

The Annual Water Quality Report to Consumers is a report on the quality of the drinking water supplied by the Town of Brookline in partnership with the Massachusetts Water Resources Authority (MWRA). We are pleased to be working with the MWRA in this joint communication on the quality of the drinking water arriving at your homes and businesses. This annual report provides detailed information on the MWRA's source water reservoirs, which are the sole sources of water distributed within the Town of Brookline, and the quality of water as determined through federal and state testing guidelines. Water quality test data, as well as the definition of the terms used in the drinking water industry, are presented in clear and readily understandable language. The water quality testing information is also presented as it relates to the health effects of tested contaminants.

In continuing our efforts to make the Town's water system more efficient, in 2015 the following improvements were completed: replacement of MWRA meter 98 located on Fisher Avenue, which included replacement of approximately 100 linear feet of 20" ductile iron water main and six large water gate valves and installation of three new large butterfly water valves. The Town also replaced/repared 52 fire hydrants and cleaned the interior and exterior of the Singletree Water Storage Tank.

The Town of Brookline has a Cross Connection Control and Prevention Program (CCCP) to protect the water distribution system from contamination. The Certified Backflow Inspectors/Testers survey sites, test the devices, and review and approve new devices prior to installation. The Town operates under the state DEP regulation 310 CMR 22.22.

The Water & Sewer Division has continued an ongoing uni-directional flushing program designed to remove tuberculation and sediments from water mains. The program involves closing water gates and forcing water flow at high velocities, which scours the water mains.

Each year, MWRA and local water departments test tap water in homes that are likely to have high lead and copper levels. The following are the most recent results:

September 2015 Lead & Copper Results			
	Range	90% Value	(Target) Action Level
Lead	0.0774-7.59 ppb	3.06 ppb	15 ppb
Copper	13.5-188 ppb	84.0 ppb	1300 ppb

The Town of Brookline is committed to providing its residents with the best quality water possible. As our customers, we hope that you will find this report informative and useful. If you would like more information on a particular topic, including meetings, or have a specific question, please call the Water & Sewer Division office at 617-730-2170, or contact the MWRA directly using the phone numbers listed in this report.

Sincerely,

Frederick W. Russell, PE, Director
Brookline Department of Public Works
Water & Sewer Division