



Dear Customer,

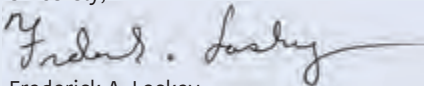
I am pleased to share with you the results of our annual water quality testing. MWRA takes hundreds of thousands of tests each year to ensure your water is safe and of the highest quality. In 2016, we again met every federal and state drinking water standard.

Lead in drinking water is still a hot topic. System-wide, MWRA has been below the lead action level for many years now, but there are still many lead service lines within our member communities. MWRA has developed a \$100 million, zero-interest loan program to help communities remove these lead service lines and communities are starting to use those funds. MWRA has also tested over 14,000 samples from drinking water fixtures in over 300 schools in 35 communities. We have been working closely with our partners at the Massachusetts Departments of Environmental Protection and Public Health to make every effort to reduce the risk of lead at the tap to protect the health of the children in our service area. More information on lead can be found on pages 4 and 5 of this report.

Also of importance this year is the recent drought that has affected our region. Even with the rain we have had this spring, it is very important that everyone work together to conserve the water we have. In November 2016, the Quabbin Reservoir dipped into the “Below Normal” range for the first time in over a decade. While there are no mandatory restrictions and there is still a long way to go before we reach the “Drought Warning” stage, it is important that residents and businesses in our member communities save water wherever they can. Page 3 of this report includes tips on how you can conserve water both indoors and outdoors. More information can also be found on our website at [www.mwra.com](http://www.mwra.com).

We hope you take a few minutes to read this report and learn about your water system. MWRA has great confidence in the water we deliver to your home and we want you to share that confidence. Please contact us if you have any questions or concerns about your water quality, or about any of MWRA’s programs.

Sincerely,



Frederick A. Laskey  
Executive Director

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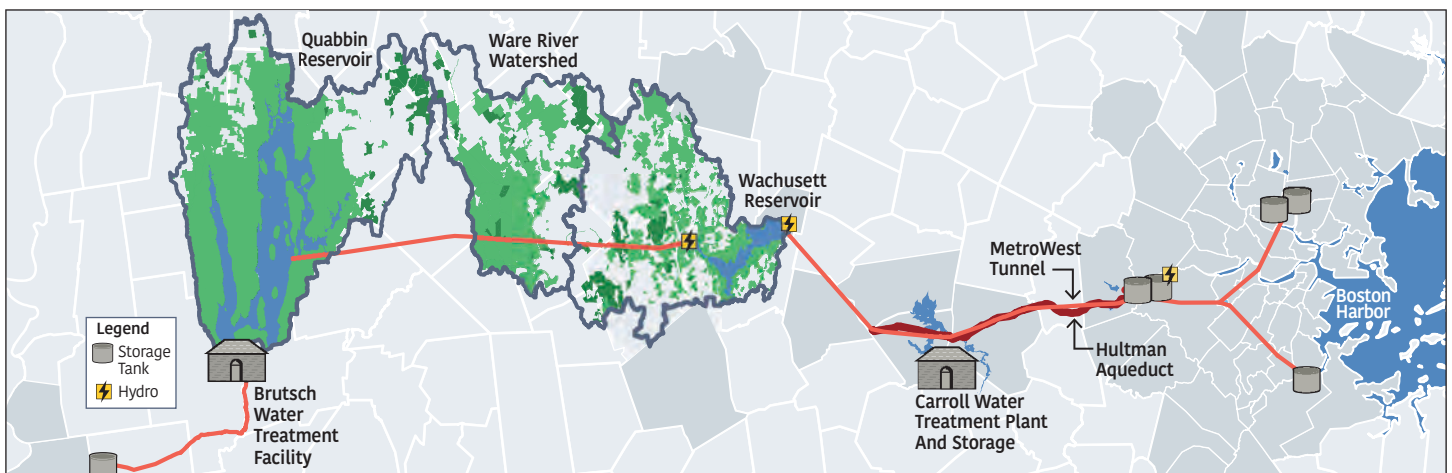
**WHY YOUR WATER TASTES GREAT – HIGH QUALITY SOURCE WATER**

Your water comes from the Quabbin and Wachusett Reservoirs, about 65 and 35 miles west of Boston, respectively. Water from the Ware River can also add to the supply at times. These pristine reservoirs supply wholesale water to local water departments in 51 communities. The two reservoirs combined supplied about 210 million gallons a day of high quality water to consumers in 2016.

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 - flow into streams and then into 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.





**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 IS SAFE – WATER TREATMENT**

Clean, fresh water is 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 quality is so good is MWRA’s state-of-the-art treatment at the John J. Carroll Water Treatment Plant in Marlborough. Since 2005, your water has been treated with ozone produced by pure oxygen. Ozone ensures strong protection against microbes and viruses, improves water clarity, and makes the water taste better. In 2014, we added 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 that may be 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 mono-chloramine,

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 (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 2016, turbidity was always below both the 5.0 and 1.0 NTU standards, with the highest level at 0.8 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. All test results were well within state and federal testing and treatment standards.

**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 on over 120 contaminants (a complete list is available on [www.mwra.com](http://www.mwra.com)). Details about 2016 test results are in the table below. The bottom line is 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 5%). MWRA tests for sodium monthly and the highest level found was 32.9 mg/L (about 8 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
Mono-Chloramine	ppm	4-MRDL	2.12	0-3.6	4-MRDLG	No	Water disinfectant
Fluoride	ppm	4	0.68	0.43-0.87	4	No	Additive for dental health
Nitrate^	ppm	10	0.04	0.01-0.04	10	No	Atmospheric deposition
Nitrite^	ppm	1	0.005	ND-0.005	1	No	Byproduct of water disinfection
Total Trihalomethanes	ppb	80	12.6	3.2-15.6	ns	No	Byproduct of water disinfection
Haloacetic Acids-5	ppb	60	10.3	0-13	ns	No	Byproduct of water disinfection
Total Coliform	%	5%	0.7% (Aug)	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



**Drink Local And Be Green!** Tap water is delivered straight to your home without trucking or plastic waste. Bottled water produces over 10,000 times the amount of greenhouse gases as tap water. Half of our energy needs for water and wastewater treatment are met with green power including hydro-energy, wind turbines, and solar panels.

**WATER SYSTEM REDUNDANCY**

For several years now, MWRA has been focusing on ensuring redundancy for each water service area. That means providing a second means of getting water to an area if something happens to the primary pipeline – like a major water main break.

Much progress has been made and we now have full redundancy from the water treatment plant in Marlborough to the tunnels that carry water into the metropolitan area; however, there is no redundancy for those tunnels. MWRA plans to construct two new tunnels beginning in Weston – one to the north and one to the south – to address this issue. The actual construction would not begin for several years, but in the meantime, several smaller projects will be completed to strengthen this system until the new tunnels are completed.

New redundant pipelines are currently under construction in both the northern service area, through Reading, Stoneham

and Woburn, and the southern service area, through Boston and Dedham.

**ON-GOING 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 2016, \$17.3 million was loaned to communities for 18 projects including the replacement of over 17 miles of older, unlined pipes with new cement-lined ductile iron water pipes.



**ALWAYS**

use water wisely



We know that conservation works. Customers in the MWRA service have reduced their average daily demand from 340 million gallons per day in 1980 to about 210 million gallons today. It is important that these conservation efforts continue – especially during dry periods.

**Cut Out And Conserve** 

More tips are available at [MWRA.com](http://MWRA.com).

▷ Indoor Tips ◁



**Install** low-flow aerators on your faucets. You'll save 1 to 5 gallons per minute.



**Fix** that leaky toilet. You'll save 50 gallons a day or more.



**Replace** your washing machine with a high-efficiency model. You'll use 30 to 50% less water.



**Never** use your toilet as a waste-basket. You'll save 1 to 2 gallons per flush (and you'll save your pipes).

**Fix** that leaky faucet. Worn-out washers can waste hundreds of gallons per week.



▷ Outdoor Tips ◁

**Water** your lawn overnight or before 5 am. Mid-day watering will result in evaporation.



**Aerate** your soil in the spring and fall. This will aid water absorption and retention.

**One** inch of water a week is plenty. After heavy rains, you may not need to water for 10 to 14 days.



**Raise** the mower blade to 2 or 3 inches or more. Longer grass retains moisture and competes better against weeds.



**Use** mulch in your flower beds. Mulch will keep roots cool and moist and reduce weeds.



**With All The News** about lead in drinking water, you may have some concerns about the safety of your tap water. MWRA's water 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 the 15 ppb level.

**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.

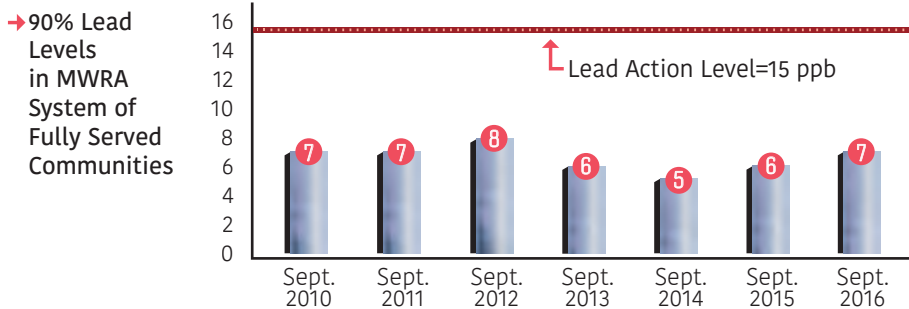
**MWRA MEETS LEAD STANDARD IN 2016**

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 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 21 sampling rounds over the past twelve years have been below the EPA standard. Results for the 463 samples taken in September 2016 are shown in the table. Nine out of ten houses were below 6.9 ppb, which is below the Action Level of 15 ppb. **Only two communities, Malden and Quincy, were above the Action Level for lead.** Your community letter on page 7 will provide you with local results and more information.

Sept. 2016 Lead & Copper Results	Range	90% Value	(Target) Action Level	(Ideal Goal) MCLG	#Home Above AL/ #Homes Tested
Lead (ppb)	0-70	6.9	15	0	10/463
Copper (ppm)	0-0.18	0.09	1.3	1.3	0/463

**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.



**IMPORTANT** information from EPA about lead



If present, elevated levels of lead can cause serious health problems, especially for unborn babies 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 water 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](http://www.epa.gov/safewater/lead).

**What Can I Do To Reduce Exposure To Lead 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.

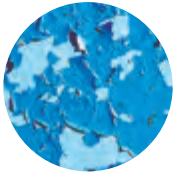
Check your plumbing fixtures to see if they are lead-free. Read the labels closely.

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 small children or pregnant women.

## “What do I do if I have a lead service line?”



### 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 (usually those built 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 at 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 leave some lead pipe behind - do not lower lead levels, and in many cases, can actually increase lead levels.

### MWRA PROGRAM TO REPLACE LEAD SERVICE LINES

To help communities in removing lead service lines, MWRA and its Advisory Board 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 can develop its own program, tailored to their local circumstances. Several communities have already moved forward with programs. To find out more, please read your community letter or contact your local water department.

### HOW DO I get my home's tap water tested for lead?



There is a list of labs and sampling instructions available on the lead testing page at [www.MWRA.com](http://www.MWRA.com) or you can call MWRA at 617-242-5323.

Also, some communities have testing available for residents. Please contact your local water department for more information.

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



← New copper service line



For more information on lead service lines go to [mwra.com](http://mwra.com).

## Lead Testing In Schools



Starting in 2016, MWRA in coordination with DEP, provided no-cost lab analysis and technical assistance for schools and day care centers across all of MWRA's water communities. Almost all

MWRA communities have already participated in the program, and sampling is still ongoing. Over 14,000 sample bottles from over 300 schools across 35 communities were received, and over 29,000 tests were completed. Most of the results are available on the DEP website – [www.mass.gov/dep](http://www.mass.gov/dep) (search for lead in schools). Some results also may be available through your local community website, DPW, or school department.





**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, please call your local water department or MWRA at 617-242-5323.

**TESTS IN COMMUNITY PIPES**

MWRA and local water 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. If total coliform is detected in more than 5% of samples in a month, the water system is required to investigate the possible source and fix any identified problems. 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 2016. If your community found any total coliform, it will be listed within the community letter on page 7.



**CONTAMINANTS IN BOTTLED WATER AND TAP WATER**

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 (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 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/2016.html](http://www.mwra.com/UCMR/2016.html).

**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 on cross connections, please call 617-242-5323 or visit [www.mwra.com/crosscon.html](http://www.mwra.com/crosscon.html).



**WATERSHED PROTECTION**

is an extra layer of protection while providing open space



All of the trees and protected land in the Quabbin, Wachusett and Ware River watersheds act as extra layers of protection from possible contamination. The protected land acts as a natural filter, and is one of the reasons MWRA water is often rated as some of the best in the country. Since 1985, almost \$150 million has been invested in land protection.

**AWARD WINNING**



In 2016, MWRA received the DEP Award for Outstanding Performance by a Public Water System.



**THE CITY OF MALDEN, MASSACHUSETTS**

**Malden Government Center  
17 Pleasant St.  
Malden, Massachusetts 02148**

- Department of Engineering -

Public Water Supply  
# 3165000

Dear Water Customer:

Your water and sewer systems are provided to you through a collaborative effort between the Massachusetts Water Resources Authority (MWRA) and the City of Malden. The City works closely with the MWRA on testing and monitoring these systems in order to assure that regulatory standards are met. The Malden water and sewer systems have been serving the community since the late 1800's. The City of Malden is continuously updating and maintaining its water distribution system.

Malden tests water samples each month for total coliform throughout the distribution system. The highest result for Malden was 2.6% in December. This was below the 5% standard.

A priority of the City is its lead reduction program. As required, the Malden Water Department works with the MWRA to test water for lead levels in fifteen homes twice a year. During the 2016 sampling period, Malden tested water at households that are likely to have lead components. The March 2016 result was 11 ppb (known as the "90th percentile level"), which is below the Action Level of 15 ppb. The September 2016 result showed the level at 30.9 ppb (parts per billion). The results of this water test indicate that Malden was above the Action Level. Malden has taken the following steps to address the potential of lead in drinking water: A program has been developed to provide public education on the effects of lead in the drinking water. This program has delivered information regarding the potential for elevated lead levels in drinking water and continues to be available through several media sources. The City has established a Lead Service Line Replacement program. This assures a long term commitment to replace at least 150 lead water services per year. Efforts are underway to create programs to assist with lead water service replacement on private property. The City in partnership with the Malden Redevelopment Authority (MRA) provides low-interest loans to help homeowners finance the replacement of the private portion of lead service lines. For more information, please call the MRA @ 781-397-1940.

The main water distribution systems of both Malden and the MWRA do not contain lead. However, some properties built prior to 1985 may have lead water services and other water-piping components which may contain lead. Studies have shown that infants and children who drink water with lead levels in excess of the Action Level could experience delays in their physical or mental development. Adults who drink this water over many years could develop kidney problems or high blood pressure. The City of Malden wants all of its water customers to have access to the information and programs available regarding lead in the drinking water. Please visit the City's website, [cityofmalden.org](http://cityofmalden.org) and the MWRA's website, [mwra.com](http://mwra.com) for up to date information. You can also contact the City of Malden by calling 781-397-7040 or emailing [leadinfo@cityofmalden.org](mailto:leadinfo@cityofmalden.org) for further information, or to schedule a free water test to identify lead levels in any house constructed prior to 1985 or for copies of free educational brochures about the hazards of lead.



# Water Conservation

## TIPS FOR SAVING INDOORS AND OUTSIDE YOUR HOME



### ← Watch your waste!

Wasting water can add up quickly. On average, each person in the MWRA region uses about 60 gallons of water each day. More efficient water use can reduce the impact on the water supply and your wallet. For ways to make your home and your habits more water efficient, contact the **MWRA at 617-242-SAVE** or visit [www.mwra.com](http://www.mwra.com) for tips on how to save water indoors and in your backyard.



### ← How to find and fix leaks

Dripping, trickling or leaking faucets, showerheads and toilets can waste up to several hundred gallons of water a week, depending on the size of the leaks. Worn-out washers are the main causes of leaks in faucets and showerheads. A new washer generally costs about 25 cents.



### ← Install a low-flow showerhead and faucet aerator

Some showerheads may still use 5 gallons per minute. A low-flow showerhead uses 2.5 gallons or less and can save you over 20 gallons per 10 minute shower. In one year, that's over 7,000 gallons. Faucets can use 2 to 7 gallons of water per minute – a low-flow aerator can reduce the flow by about 25%.

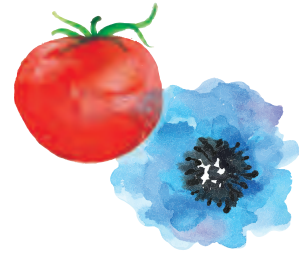


### ← A test for your home

That trickling sound you hear in the bathroom could be a leaky toilet, but sometimes toilets leak silently.

**TRY THIS:** Crush a dye tablet and carefully empty the contents into the center of the toilet tank and allow it to dissolve or use a few drops of food coloring. Wait about 10 minutes. Inspect the toilet bowl. If color appears, your flapper or flush valve may need to be replaced. Parts are inexpensive and fairly easy to replace. If no dye has appeared after 10 minutes, you probably don't have a leak.

### OUTDOOR WATER SAVING GROUND RULES



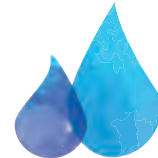
Apply mulch around plants to reduce evaporation, promote plant growth, and control weeds.

Water your lawn (and other landscaping) in early morning or evening to avoid evaporation.



Be sure sprinklers water only your lawn, not your pavement.

Use rain barrels connected to downspouts to save water to use outdoors.



Never use the hose to clean debris from your driveway or sidewalk. Use a broom.

### Promote Tap Water!

Let everyone you know that you are drinking some of the best water in the world! Put a sticker on your reusable water bottle and fill it with tap water. Contact the MWRA if you would like to receive a free sticker.

### For Further Information

For more water saving ideas, go to [www.mwra.com](http://www.mwra.com) or call 617-242-SAVE.

