

Drinking Water Quality Report

2016

To our Customers,

When you flush your toilet, run a load of laundry, or brush your teeth, did you know that water is treated twice? Once before it reaches your tap, and again before it returns to the environment. While critical to protect the health of our customers and our Earth, this treatment uses resources and energy. Inside this year's report, we offer ideas how we can work together with you to become "Water Stewards" to protect our environment.

This report provides information on your drinking water supplied by the Cambridge Water Department, how it is treated, the quality of the water you receive and how Cambridge water meets and exceeds all state and federal drinking water standards. But it also contains key information on what impact you can make with water conservation, to minimize your impact on the environment and keep our reservoirs full.

I encourage you to contact the Water Department with questions, comments or suggestions about any aspect of the City of Cambridge's drinking water.

Sincerely,
Sam Corda
Managing Director, Cambridge Water Department
(617) 349-4770



City of Cambridge Water Department

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24-Hour Emergency Customer
Service: 617-349-4770



How Is Your Water Purified?

The source waters of the Cambridge reservoir system undergo extensive treatment at the Walter J. Sullivan Water Purification Facility at Fresh Pond Reservation before drinking water is delivered to your home or business. The water is treated to exceed all state and federal drinking water standards.

(1) Pretreatment: The first steps in the treatment process combine preoxidation with ozone, coagulation and dissolved air flotation (DAF) to remove manganese, natural color, sediment and particles, algae, protozoa, viruses and bacteria.

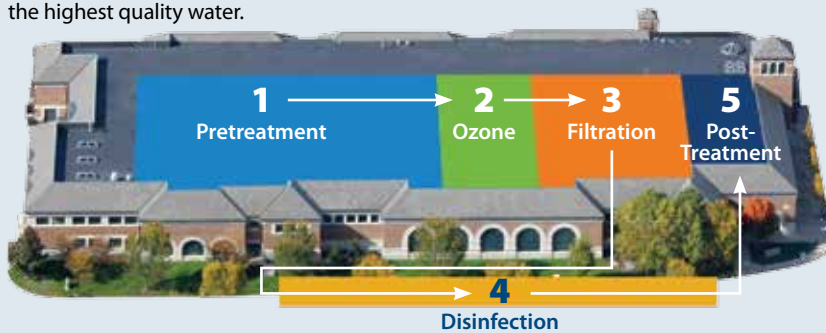
(2) Ozone: Fine bubbles of ozone are dissolved into the water to kill bacteria, viruses, and protozoa.

(3) Filtration: The water passes through granular activated carbon (GAC) to remove organic compounds. Filtration also acts as a “polishing step” to remove additional particles, color and protozoa.

(4) Disinfection: Chlorine is used to provide the second step of disinfection for redundancy in the overall process and monochloramine is added to maintain a disinfectant residual throughout the distribution system.

(5) Post Treatment: The pH of the water is adjusted for corrosion control and fluoride is added for dental health.

The Cambridge Water Department’s state-certified laboratory continuously monitors the effectiveness of the treatment process and makes adjustments to the treatment to ensure the highest quality water.



Come see it for yourself! Timothy MacDonald, Director of Water Operations, leads tours of the City’s beautiful treatment facility. Tours are scheduled for July 10, August 14, September 11, October 2, and November 13, and run from 6pm to 7:30pm.

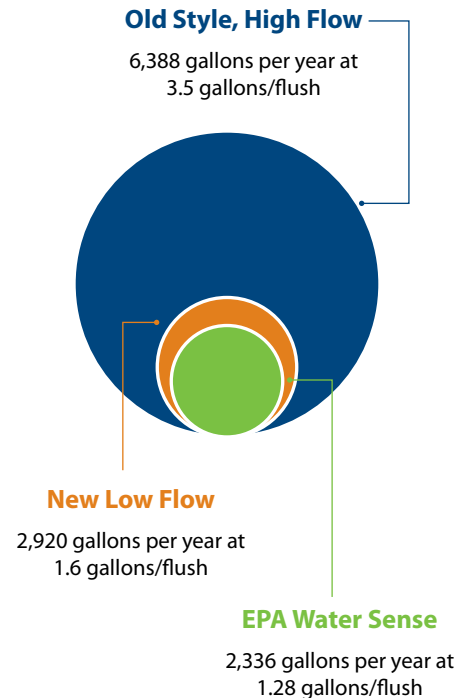
Did You Know?

- ◆ The Cambridge Reservoir system holds up to 8 months of water supply.
- ◆ We monitor our supplies very closely; when levels start to run low during a prolonged drought, we purchase a portion of our supply from the MWRA (at around twice the cost!).
- ◆ In 60 years, we have only purchased MWRA water due to a drought twice – in the mid-1960s and in 2016!



How Much of an Impact Can You Make?

The average person flushes the toilet five times a day. By replacing that vintage pink toilet in your bathroom with an EPA WaterSense toilet, you could reduce your water usage by over 4,000 gallons per year! To learn more about EPA WaterSense, go to www.epa.gov/watersense.



What Happens to My Water When it Goes Down the Drain?

- ◆ Water becomes wastewater when it leaves your house, and flows to the Massachusetts Water Resource Authority’s (MWRA’s) treatment facility at Deer Island.
- ◆ Any water that goes down the drain must be treated, which costs money and energy.
- ◆ The water you use is treated twice - once to make it drinkable, and then again before it is discharged back to the environment.
- ◆ The less water you use, the less treatment needs to occur, protecting our water supply and saving energy.
- ◆ Throughout this report we have highlighted easy ways you can conserve water.

Regulated Compounds							
Compound	Units	Highest Level Found	Range of Detections (low-high)	Highest Level Allowed (MCL or MRDL)	Ideal Goal (MCLG or MRDL)	Violation	How it gets in the water
Barium	ppb	52	52	2,000	2,000	NO	Erosion of natural deposits
Chlorine (as monochloramine)	ppm	2.3 ⁽¹⁾	1.5 - 3.0 ⁽²⁾	4	4	NO	Water disinfectant
Copper ⁽³⁾	ppb	41	2 - 49 (no homes exceeded the AL)	AL = 1,300	0	NO	Corrosion of household plumbing systems
Fluoride	ppm	0.84	0.56 - 0.84	4	4	NO	Added to water to promote strong teeth
Gross Alpha ⁽⁴⁾	pCi/L	1.2	no range, 1 sample required	15	0	NO	Erosion of natural deposits
Lead ⁽³⁾	ppb	5	ND - 9 (no homes exceeded the AL)	AL = 15	0	NO	Corrosion of household plumbing systems
Nitrate as Nitrogen	ppb	540	5-540	10,000	10,000	NO	Naturally present in the environment
Nitrite as Nitrogen	ppb	40	ND - 40	1,000	1,000	NO	Runoff from fertilizer use
Radium ⁽⁴⁾ (226 & 228 combined)	pCi/L	0.29	no range, 1 sample required	5	0	NO	Erosion of natural deposits
Total Coliform	%	0	0	5	0	NO	Naturally present in the environment
Total Haloacetic Acids	ppb	8.7 ⁽¹⁾	4.9 - 14 ⁽²⁾	60 ⁽⁶⁾	0	NO	Byproduct of water disinfection
Total Trihalomethanes ⁽⁵⁾	ppb	11.2 ⁽¹⁾	4.9 - 18.8 ⁽²⁾	80 ⁽⁶⁾	0	NO	Byproduct of water disinfection
Turbidity ⁽⁷⁾	NTU	0.16	0.05 - 0.16	TT = 0.3 NTU	N/A	NO	Suspended matter from soil runoff
Secondary Compounds							
Calcium	ppm	28	28	-	-	NO	Naturally occurring minerals
Chloride	ppm	200	200	250	-	NO	Erosion of natural mineral deposits
Magnesium	ppm	6	6	-	-	NO	Naturally occurring minerals
Manganese	ppb	2	2	50	-	NO	Naturally occurring minerals
Sodium	ppm	120	120	20 ⁽⁸⁾	N/A	NO	Road salt
Sulfate	ppm	32	32	250	-	NO	Erosion of natural mineral deposits
Total Dissolved Solids	ppm	370	370	500	-	NO	Naturally occurring minerals

Notes

- 1: Highest level detected is based on average of four quarterly samples.
- 2: Highest value in range is based on individual samples, rather than averages.
- 3: The Action Level (AL) and the highest level found are based on the 90th percentile of the samples. Most recent lead and copper results were obtained in 2014.
- 4: Most recent gross alpha and radium results were obtained in 2014.
- 5: No other volatile organic compounds (VOCs) were detected other than trihalomethanes.
- 6: Highest level allowed (MCL) for this substance is based on the average of four quarterly samples.
- 7: TT= Treatment Technique: Turbidity is a measure of treatment performance and is regulated as a treatment technique. 100% of samples met the TT requirement.
- 8: An 8 ounce glass of Cambridge water contains approximately 28 milligrams of sodium, well within the FDA's "very low sodium" category.

Terms & Abbreviations

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

MCL : Maximum Contaminant Level – 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.

MCLG : Maximum Contaminant Level Goal – 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.

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 risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

N/A: Not Available. An ideal goal has not been established by EPA or MassDEP for this compound.

ND: Not Detected

NTU: Nephelometric Turbidity Unit – A measure of the turbidity (or clarity) of water. We monitor it because it is a good indicator of the effectiveness of our filtration system.

pCi/L: Picocuries per liter. A measure of radiation.

ppb: Parts per Billion or micrograms per liter (ug/L)

ppm: Parts per Million or milligrams per liter (mg/L)

ppt: Parts per Trillion or nanograms per liter (ng/L)

TT: Treatment Technique – A required process intended to reduce the level of a contaminant in drinking water. Turbidity is a measure of treatment performance and is regulated as a treatment technique. 95% of our turbidity readings each month must be below 0.3 NTU.

90th Percentile: 9 out of every 10 homes were at or below this level.

Continuing Our Partnership with the MWRA

In 2016, Cambridge purchased water from the MWRA to complete some water system construction projects and supplement our supply during the drought. For more information on MWRA water use, please visit: <http://www.cambridgema.gov/Water/wateroperationsdivision/mwrawaterusage>

The MWRA (PWS# 6000000) supplies wholesale water to local water departments in 48 cities and towns in greater Boston and MetroWest, and three in Western Massachusetts. MWRA water comes from the Quabbin Reservoir, about 65 miles west of Boston, and the Wachusett Reservoir, about 35 miles west of Boston. For the full MWRA Water Quality Report that includes test results for 2016 and other important information about your tap water follow this link: <http://www.mwra.com/annual/waterreport/2016results/metro-all.pdf>

Become a Water Steward!

- ◆ Install the most efficient appliances possible, check out EPA WaterSense to learn more! www.epa.gov/watersense
- ◆ Always run a full load! Whether it be dishes or clothes, always make sure the machine is full before you press start to get the most out of every gallon of water.
- ◆ Turn the water off while you brush. Approximately 5 gallons goes down the drain, and if you brush twice a day, that adds up to over 3,600 gallons per year!
- ◆ Look into xeriscaping - replace some of your grass with plants and landscaping that require little to no water.

Important Information from EPA & MassDEP about Sources of Drinking Water and Drinking Water Contaminants

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 resulting from the presence of animals or from human activity.

Contaminants that may be present in source water include:

- Microbial contaminants, such as viruses and bacteria, may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- Inorganic contaminants, such as salts and metals, can be naturally-occurring or result from urban storm water runoff, industrial, or domestic wastewater discharges, oil and gas production, mining, and farming.
- Pesticides and herbicides may come from a variety of sources such as agriculture, urban storm water runoff, and residential uses.
- Organic chemical contaminants include synthetic and volatile organic chemicals that are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff, and septic systems.
- Radioactive contaminants can be naturally occurring or be the result of oil and gas production, and mining activities.

In order to ensure that tap water is safe to drink, MassDEP and US EPA prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. FDA and the Massachusetts Department of Public Health regulations establish limits for contaminants in bottled water that must provide the same protection for public health.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contamination. 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.

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 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 Safe Drinking Water Hotline: 800-426-4791.

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 Cambridge Water Department is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When 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 for free. 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 www.epa.gov/safewater/lead. Home Lead Testing Kits are available at 250 Fresh Pond Parkway for Cambridge residents.

Protect Your Drinking Water at Home!

A "cross connection" is a connection between a drinking water pipe and a polluted source. The pollution can come from your own home. For instance, you're going to spray fertilizer on your lawn. You hook up your hose to the sprayer that contains the fertilizer. If the water pressure drops (say, because of fire hydrant use in the City) when the hose is connected to the fertilizer, the fertilizer may be sucked back into the drinking water pipes through the hose. Over half of cross-connection incidents involve unprotected garden hoses.

Here are some simple steps that you can take to prevent cross-connection hazards:

- Never submerge a hose in soapy water buckets, pet watering containers, pools, tubs, sinks, drains, or chemicals.
- Install a hose bibb vacuum breaker on every threaded water fixture. This inexpensive device is available at most hardware stores and home-improvement centers, and the installation is as easy as attaching a garden hose to a spigot.
- Buy appliances and equipment that come with a built-in backflow preventer.

For additional information on cross connections and on the status of Cambridge's cross connection program, please contact John Blouin, Cross Connection Supervisor, at the Cambridge Water Department, 617-349-4025 or jblouin@cambridgema.gov



Where Does Your Water Come From?

Reservoirs

The Cambridge Water System extends across four towns and includes four bodies of water. The Hobbs Brook Upper Reservoir flows into the Hobbs Brook Lower Reservoir and connects with the Stony Brook Reservoir. The water then flows to the Fresh Pond Reservoir through an underground aqueduct. The Stony Brook Reservoir watershed extends from Weston north into the Town of Lincoln. The watershed for the Hobbs Brook Reservoirs includes areas of Waltham, Lexington and Lincoln. The watershed for the Fresh Pond Reservoir is completely within the City of Cambridge. Storm drainage modifications were implemented to divert street runoff away from Fresh Pond Reservoir. The contributing watershed area is the first step in a multi-barrier program to protect our drinking water. The combined capacity of the Hobbs Brook and Stony Brook reservoir system is 3.1 billion gallons; an additional 1.3 billion gallons of water is stored in Fresh Pond Reservoir. Our water supply is backed up by interconnections to the Massachusetts Water Resources Authority (MWRA) system. For a more detailed map of our water sources and their protection areas please visit cambridgema.gov/cwd

Watershed Protection

As part of our ongoing commitment to protecting the source water, we participated with the Massachusetts Department of Environmental Protection (MassDEP) in preparing a Source Water Assessment Program (SWAP) Report completed in 2003. The SWAP Report assesses the susceptibility of our public water supply and notes the key land use and protection issues, including: Zone A Land Uses, Residential Land Uses, Transportation

Corridors, Hazardous Material Storage and Use, and Presence of Oil or Hazardous Materials Contamination Sites. A copy of the Cambridge SWAP Report can be found on the MassDEP website at www.mass.gov/eea/docs/dep/water/drinking/swap/nero/3049000.pdf or at the Cambridge Water Department.

Because of the developed nature and types of land uses within the Cambridge watershed, our source waters are considered as having “high” susceptibility to contamination. Susceptibility is a measure of a water supply's *potential* to become contaminated due to land uses and activities within its recharge (watershed) area. If a source is susceptible to contamination, it does not necessarily mean the source has poor water quality. The Cambridge Water Department has taken the following actions to minimize contamination threats to our water supply:

- Work cooperatively with watershed towns on emergency response and storm water management
- Placed spill kits at strategic points within the watershed
- Actively monitor source water quality throughout the watersheds, using the data to target source protection
- Work cooperatively with businesses in the watersheds to encourage source protection
- Adopted the Fresh Pond Master Plan, which includes long-term protection measures for the Fresh Pond Reservation
- Dedicated staff resources to inspections, public education, and coordination of source protection efforts

In 2011, the Watershed Division of the Cambridge Water Department updated its comprehensive Source Water Protection Program. The major components of the program to ensure a continuous supply of high quality water include:

1. **Extensive monitoring** – sampling and analysis of water chemistry
2. **Hazardous materials emergency response planning** – to reduce the potential for contamination in the watershed
3. **Partnership development** – relationship-building with other parties in the watershed with common goals
4. **Proactive site review and monitoring** – to minimize potential impacts on the watershed from construction
5. **Stormwater management** – insuring that Best Management Practices are implemented
6. **Community outreach** – public relations and education

For questions about our source water and our protection efforts, please contact David Kaplan, Watershed Manager, at dkaplan@cambridgema.gov or 617-349-4799.

You Can Save Money!

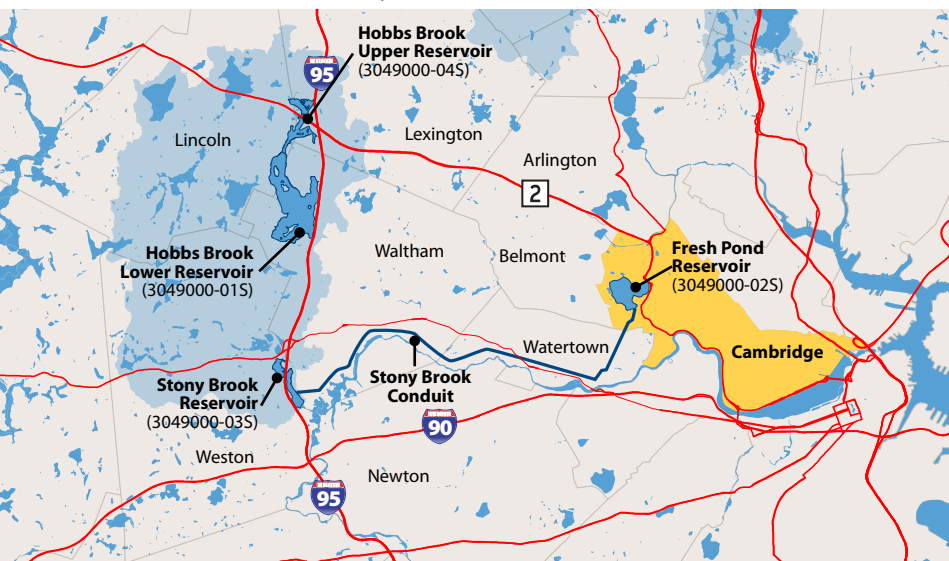
The Cambridge Water Department's “High-Read” notification program contacts property owners soon after we detect a situation of unusually high water usage. Speedy notification allows property owners to quickly repair any leaks and minimize charges to your Water and Sewer



Rooftop receiving unit for daily readings from customers' meters.

Bill. In 2016, we issued approximately 1,454 “High-Read” notifications to our customers. The Cambridge Water Department can also provide you with a Toilet Leak Detection Kit with instructions on how to perform a simple test that may save you money and save water.

We need property owners to update their contact information so the Water Department can notify you as soon as a “High-Read” is detected. Please call Brian McCoy at 617-349-4737 or email him at HighReads@cambridgema.gov with your name, account number, phone number, mailing address, and email address.





Cambridge Water Department
250 Fresh Pond Parkway
Cambridge, MA 02138

Presorted
Standard
US Postage
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ECRWSS



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 or on the web at cambridgema.gov/water

Can you guess where was this photo taken? Take our quiz!



- A. The Mojave Desert**
- B. Hobbs Brook Reservoir**
- C. Albuquerque, New Mexico**
- D. Lake Tahoe**

Go to www.cambridgema.gov/Water/administration/waterquiz to find out the answer and learn more about water conservation!

This report contains very important information about your drinking water. Please translate it, or speak with someone who understands it.

Este informe contiene información muy importante acerca de su agua potable. Pídale a alguien que traduzca esta información a usted o hablar con alguien que entiende esta información.

本报告含有关于您所在社区的水质的重要信息。请您找人翻译一下或请能看懂这份报告的朋友给您解释一下。

Ce rapport contient des renseignements très importants sur votre eau potable. Demander à quelqu'un pour traduire cette information à vous ou à parler avec quelqu'un qui comprend cette information.

