

Drinking Water Quality Report

2015

To our customers,

We are pleased to provide this report, covering information about the drinking water supplied by the Cambridge Water Department in 2015. The report provides details about where your water comes from, 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.

The Water Department understands that you may have concerns about lead in your drinking water. Cambridge treats the water to make it less corrosive, to protect against lead leaching from pipes and plumbing fixtures. The lead concentrations in our system have been well below the Environmental Protection Agency's action level. To learn more about lead in your drinking water, and the steps Cambridge Water Department takes to protect our customers, please visit www.cambridgema.gov/water.

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

How Do We Treat Your Water?

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.



Continuing Our Partnership with the MWRA

The Cambridge Water Department and the Massachusetts Water Resources Authority (MWRA) have collaborated since 2013 to accomplish projects important to both the City of Cambridge and the MWRA, through the supply of MWRA water to Cambridge. In 2015, the MWRA supplied a small volume of water to Cambridge, allowing the Water Department to conduct emergency response training and maximize summer energy management. Due to water main construction on Huron Avenue, this minor supplemental MWRA water use will continue until mid-summer 2016. 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. The reservoirs provide about 200 million gallons of high quality water to consumers each day. For the full MWRA Water Quality Report that includes test results for 2015 and other important information about your tap water follow this link: www.mwra.com/wqr/2015/metro.pdf

If you would like to learn more about MWRA activities and projects, or about MWRA meetings that are open to the public, please visit the website at www.mwra.com or call 617-242-5323.

Reducing Our Footprint

The Water Department has been moving forward with a number of projects at the Walter J. Sullivan Water Purification Facility to both improve energy efficiency and reduce energy demand. Many of these projects were recommended in our 2011 Energy Efficiency and Process Optimization Audit. In 2015, we reached important milestones on two projects – the rooftop solar photovoltaic system and the pumping system and valve improvements.

The rooftop solar photovoltaic (PV) system has a total of 561 high efficiency photovoltaic panels. Each panel has 72 cells and a maximum output of 305 Watts. There are 506 panels installed on the roof of the main building and 55 panels installed on the roof of the vehicle storage building. The total output of the system is 171.1 Kilowatts. Construction was completed at the end of 2015, and the system was energized on January 27, 2016. Check out real-time information on the energy produced by the PV system:

<http://www.solrenview.com/SolrenView/mainFr.php?siteld=3839>

Also in 2015, the design of valve and pumping system improvements at the Water Purification Facility was completed. The raw water pumping system accounts for nearly 20 percent of the total energy used at the



plant. The improvements are estimated to achieve \$115,000 per year in energy savings. The project will replace the raw water pumps and selected valves. By looking at the raw water system as a whole, and identifying these valves for replacement, an additional 46 percent in energy savings can be achieved in addition to just replacing the pumps.

The project is estimated at \$4.5 million and was bid in early 2016, and is anticipated to take 18 months to complete.

The Water Department was able to obtain \$200,000 in construction grants for both the solar array and pumping system improvements.

Regulated Compounds							
Compound	Units	Highest Level Found	Range of Detections (low-high)	Highest Level Allowed (MCL or MRDL)	Ideal Goal (MCLG or MRDLG)	Violation	How it gets in the water
Barium	ppb	48	48	2,000	2,000	NO	Erosion of natural deposits
Chlorine (as monochloramine)	ppm	2.4 ⁽¹⁾	1.3 - 2.9 ⁽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	1.2	0.63 - 1.2	4	4	NO	Added to water to promote strong teeth
Gross Alpha	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	769	218 - 769	10,000	10,000	NO	Naturally present in the environment
Nitrite as Nitrogen	ppb	83	ND - 83	1,000	1,000	NO	Runoff from fertilizer use
Radium (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	7.5 ⁽¹⁾	3.8 - 13 ⁽²⁾	60 ⁽⁵⁾	0	NO	Byproduct of water disinfection
Total Trihalomethanes ⁽⁴⁾	ppb	9.5 ⁽¹⁾	4.6 - 15.5 ⁽²⁾	80 ⁽⁵⁾	0	NO	Byproduct of water disinfection
Turbidity ⁽⁶⁾	NTU	0.13	0.03 - 0.13	TT = 0.3 NTU	N/A	NO	Suspended matter from soil runoff

Secondary Compounds

Aluminum	ppb	52	52	50	-	NO	Erosion of natural mineral deposits
Calcium	ppm	23	23	-	-	NO	Naturally occurring minerals
Chloride	ppm	180	180	250	-	NO	Erosion of natural mineral deposits
Magnesium	ppm	5	5	-	-	NO	Naturally occurring minerals
Manganese	ppb	27	27	50	-	NO	Naturally occurring minerals
Sodium	ppm	110	110	20 ⁽⁷⁾	N/A	NO	Road salt
Sulfate	ppm	29	29	250	-	NO	Erosion of natural mineral deposits
Total Dissolved Solids	ppm	400	400	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: No other volatile organic compounds (VOCs) were detected other than trihalomethanes.
- 5: Highest level allowed (MCL) for this substance is based on the average of four quarterly samples.
- 6: TT= Treatment Technique: Turbidity is a measure of treatment performance and is regulated as a treatment technique. 100% of samples met the TT requirement.
- 7: An 8 ounce glass of Cambridge water contains approximately 26 milligrams of sodium, well within the FDA's "very low sodium" category.

Unregulated Compounds

Compound	Units	Average Level Found	Range of Detections (low-high)	How it gets in the water
Chlorate	ppb	195	170 - 220	Byproduct of water disinfection
Chromium	ppt	213	ND - 230	Erosion of natural deposits
Hexavalent Chromium (Dissolved)	ppt	49	43 - 51	Results of industrial activities or from naturally occurring sources
Strontium	ppb	135	130 - 140	Occurs naturally in the environment in minerals

Unregulated contaminants are those that do not have a drinking water standard set by US Environmental Protection Agency. The purpose of monitoring for these contaminants is to help US EPA decide whether the contaminants should have a standard in the future.

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.

2015 Water Department Accomplishments

- Provided dozens of school programs, tours, and open houses, as well as presentations to colleges and universities and international visitors.
- Coordinated the 8th annual Fresh Pond Reservation Day.
- Provided real-time information to our customers, through increased usage of the Cambridge Water Department's website and social media via Facebook and Twitter.
- Completed installation and start-up of a rooftop solar photovoltaic system at the Water Purification Facility with 561 panels capable of producing up to 171.1 Kilowatts of electricity.
- Completed design of raw water pump and valve improvements at the Water Purification Facility. The project will improve the energy efficiency of the pumping system and save the Water Department an estimate \$115,000 a year in electricity costs.

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.

Cross Connection Information

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.

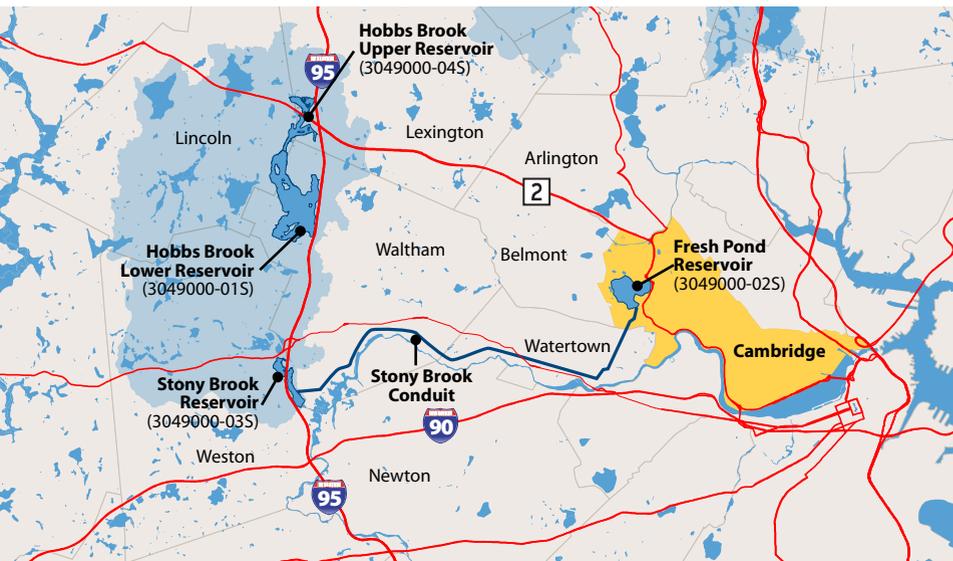
Let Our "High-Read" Notification Program Help You Find Leaks and Save Money

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 Bill. In 2015, we issued approximately 1,405 "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.



Rooftop receiving unit for daily readings from customers' meters.





Cambridge Water Department
250 Fresh Pond Parkway
Cambridge, MA 02138

Presorted
Standard
US Postage
Paid
Boston, MA
Permit No. 55356

ECRWSS

ECRWSS
Postal Customer
Cambridge, MA

Find us on
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Follow us:
twitter.com/CambWaterDept

or on the web at cambridgema.gov/water

Join Us for Fresh Pond Day Saturday, June 11!

Celebrate the land, water, wildlife and people that make the Fresh Pond Reservation in Cambridge a unique and vital place. Events for all ages from 11 am to 3 pm! Get your sun-boogie on: rain cancels. Visit our website for more information regarding Fresh Pond Day activities: cambridgema.gov/freshpondday



Want to learn more?

Walter J. Sullivan Water Purification Facility

Tour: Timothy MacDonald, Director of Water Operations, leads tours of the City's beautiful treatment facility. Tours are scheduled for May 16, June 13, July 11, August 15, September 12, October 17, and November 14. Find out how water that falls as rain in the suburbs 10 miles west of Cambridge is transported to Fresh Pond and then tested, treated and delivered to the City.

Wake up and Weed!

Join the Water Department's weed-warrior crew and help keep invasive plants at bay on Thursdays from 10 am-noon. Contact the Watershed Office by phone at 617-349-6489 or fpr@cambridgema.gov for more information.

For a full list of events, click on the calendar of events at cambridgema.gov/water

Become a Friend of Fresh Pond Reservation:
friendsoffreshpond.org

Get involved!

Volunteer at Fresh Pond Reservation:

Our volunteers play an instrumental role in the ecological stewardship of this beloved community open space. Citizens of all ages and experience levels have adopted habitats to care-take, maintained and improved trails, shared knowledge through educational programs, monitored flora and fauna, removed invasive plant species that choke native plant communities, and more! Contact the Watershed Office by phone at 617-349-6489 or email fpr@cambridgema.gov to learn more or sign up to receive monthly event updates and volunteer opportunities.

Join us for a Water Board Meeting:

Meetings are usually held on the 2nd Tuesday of the month, from 5-6:30 pm at the Walter J. Sullivan Water Purification Facility at 250 Fresh Pond Parkway. For more information about dates of upcoming meetings and to review minutes from previous meetings please visit the Water Department's website, cambridgema.gov/water

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.

