2014 Annual Drinking Water Quality Report

For

Boylston Water District

Boylston, Massachusetts
DEP PWSID # 2039000

Section 1 - Introduction

This report is provided annually by the Boylston Water District as required by the Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (DEP) to provide information to consumers regarding the quality of water distributed by the Water District. The purpose of this report is to summarize the results of water quality analyses conducted on samples collected from the water system between January 1, 2014 and December 31, 2014. The EPA and DEP require reporting of all detected contaminants to consumers, even in the event that the contaminants are below maximum contaminant levels (MCLs) established by EPA. The Boylston Water District has collected water samples and submitted the samples to a State Certified Laboratory for analysis, as required by EPA and DEP, to ensure that you have the best and safest drinking water that we can possibly supply. In addition to water quality testing, the District has identified the aquifers that supply water to the District's' wells, and the Town has adopted an Aquifer and Watershed Protection District to protect these areas through land use restrictions. The Boylston Water District continues to request the assistance of the residents of Boylston in protecting this essential natural resource for future generations.

Section 2 - Water System Information

Information concerning water quality or source water protection can be obtained by contacting Mr. Scott McCubrey of the Boylston Water District at 508-869–2212 or our website at www.boylstonwaterdistrict.org. Meetings of the Boylston Water District Board of Commissioners are held the first Monday of every month at Boylston Municipal Light Department. Meeting times are posted in the Library and Town Office Building, and meetings are open to the public. For general information on water quality call the EPA Safe Drinking Water Hotline at 800-462-4791 or visit online at: water.epa.gov/drink.

Water Sources

Sources of water for the Boylston Water District include a total of five (5) gravel packed wells. These include: Boylston wells No. 1 (PWS ID# 2039000-01G) and No. 2 (PWS ID# 2039000-02G) located off Route 70 northwest of the intersection of Routes 70 and 140, No. 3 (PWS ID# 2039000-03G) located adjacent to the Wachusett Reservoir near Scar Hill Road and Kendall Place, and No. 4 (PWS ID# 2039000-04G) and No.5 (PWS ID# 2039000-05G) located off Route 70 southeast of the intersection of Routes 70 and 140. All five wells are less than 90-feet deep, and draw water from sand and gravel deposits.

Water Treatment

Water from all five wells is treated at the source for corrosion control. This process involves the addition of Sodium Hydroxide which adjusts the pH and alkalinity of the water. Controlling the pH and alkalinity of the source water minimizes the corrosion of plumbing fixtures in the distribution system which can result in increased lead and copper concentrations in the water system.

Section 3 - Substances Found in Drinking Water

The following section contains language required by EPA for all public water systems, and is not specific to the Boylston Water District:

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, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.

Inorganic contaminants: such as salts and metals, which can be naturally-occurring or result from urban stormwater runoff, industrial, or domestic wastewater discharges, oil and gas production, mining, and farming.

Pesticides and herbicides: which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.

Organic chemical contaminants: including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.

Radioactive contaminants: which 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, the Department of Environmental Protection (DEP) and U.S. Environmental Protection Agency (EPA) prescribe regulations that 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 (DPH) regulations establish limits for contaminants in bottled water that must provide the same protection for public health. All drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water

poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline 800-426-4791 or visiting the EPA's Ground Water and Drinking Water webpage at water.epa.gov/drink.

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, persons with HIV/AIDS or other immune system disorders, some elderly, and some infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/Centers for Disease Control and Prevention (CDC) guidelines on lowering the risk of infection by cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline 800-426-4791 or the EPA webpage at water.epa.gov/drink.

SECTION 4 - DEFINITIONS

The following are definitions of terms and abbreviations that may be used throughout this report and on the Water Quality Data Table contained in section 6:

MCL - **Maximum Contaminant Level.** The highest concentration of a contaminant allowed in drinking water. MCLs are set as close to MCLGs as feasible using the best available treatment technologies.

SMCL - **Secondary Maximum Contaminant Level.** These standards are developed to protect the aesthetic qualities of drinking water and are not health based.

MCLG - **Maximum Contaminant Level Goal.** The concentration of a contaminant in drinking water below which there is no known or expected health risk.

Regulated Contaminant. Contaminants with established MCLs

Unregulated Contaminants. Unregulated contaminants presented in these tables are those for which EPA has not established drinking water standards. The purpose of unregulated contaminant monitoring is to assist EPA in determining their occurrence in drinking water and whether future regulation is warranted.

ORSG - **Massachusetts Office of Research and Standards Guideline** – This is the concentration of a chemical in drinking water, at or below which, adverse health effects are unlikely to occur after chronic (lifetime) exposure. If exceeded, it serves as an indicator of the potential need for further action.

ug/L - **micrograms per liter.** Number of micrograms of a substance dissolved in one (1) liter of water (parts per billion).

mg/L - **milligrams per liter.** Number of milligrams of a substance dissolved in one (1) liter of water (parts per million).

pCi/L - **Pico curries per liter.** A measure of the radioactivity of water expressed as a rate in disintegrations per second.

ND - **Not Detected.**

90th Percentile - DEP defines the 90th Percentile (310 CMR 22.06B(1)(c)3) as the concentration which is greater than concentrations in 90% of the samples taken.

ORSG - **Massachusetts Office of Research and Standards Guideline** – This is the concentration of a chemical in drinking water, at or below which, adverse health effects are unlikely to occur after chronic (lifetime) exposure. If exceeded, it serves as an indicator of the potential need for further action.

Zone I - The area closest to a well; a 100 to 400 foot radius proportional to the well's pumping rate. This area should be owned or controlled by the water supplier and limited to water supply activities.

Zone II- The primary recharge area for the aquifer. This area is defined by hydrogeologic studies that must be approved by DEP.

SECTION 5 – SWAP REPORT

The DEP has prepared two Source Water Assessment Program (SWAP) Reports for the water supply sources serving the Boylston Water District. SWAP reports have been prepared for the Boylston and the Morningdale Water Districts. These two districts merged in 2002 to become one district known as the Boylston Water District. The SWAP Reports assess the susceptibility of the public water supplies that serve the Boylston Water District. The SWAP reports are available at the Boylston Water District office and online at http://www.mass.gov/eea/docs/dep/water/drinking/swap/cero/2039000.pdf and the Morningdale Water District SWAP is found online at http://www.mass.gov/eea/docs/dep/water/drinking/swap/cero/2039001.pdf. For more information, call (508) 869-2212.

KEY FINDINGS

The SWAP Reports note key issues such as: transportation corridors, hazardous material storage, and residential land uses in the water supply protection area for Boylston Water District wells No. 1, 2, 3, 4 and 5. The report commends our water system on our groundwater monitoring plan, the regular inspection of all Zone I areas and our use of a well head protection plan.

SYSTEM RANKING

A susceptibility ranking of moderate was given to well No. 1, 2, 4 and 5, a susceptibility ranking of low was given to Well No.3. The information collected during the assessment by the DEP revealed only low and moderate land use within the Zone II's of each water source.

RECOMMENDATIONS

Zone I regularly, and when feasible, remove any non-water supply activities; 2) Educate residents on ways they can help protect drinking

water sources; 3) Work with emergency response teams to ensure that they are aware of the stormwater drainage in the Boylston Water District's Zone II; 4) Cooperate with emergency teams in response to spills or accidents within the Water District; 5) Partner with local businesses to ensure the proper storage, handling, and disposal of hazardous materials.

In order to address these protection recommendations the Boylston Water District plans to work with residents, local government officials and local businesses to further educate customers on the importance of protecting our drinking water sources. Residents can help protect our drinking water by practicing good septic system maintenance and limiting the use of pesticides and fertilizers.

SECTION 6 - WATER QUALITY RESULTS

The water quality information presented in the tables below is from the most recent round of testing done in accordance with the regulations. All data shown was collected during the last calendar year unless otherwise noted in the tables. All samples for synthetic organic contaminants and inorganic contaminants taken during the 2010 monitoring period were below applicable EPA and DEP standards. The Massachusetts Department of Environmental Protection has reduced the monitoring requirements of radioactive contaminants because the source is not at risk of contamination. The last sample collected for radioactive contaminates was taken during the 2009 monitoring period and was found to meet all applicable EPA and DEP standards.

LEAD AND COPPER RESULTS

Substance	Date(s) Collected	90TH percentile	Action Level	MCLG	# of sites sampled	# of sites above Action Level	Possible Source of Contamination
Lead (ug/L)	9/3/14-9/5/14	0.003	15	0	14	0	Corrosion of household plumbing systems; Erosion of natural deposits
Copper (mg/L)	9/3/14-9/5/14	0.16	1.3	1.3	14	0	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives

BACTERIA RESULTS

Substance	Highest Number of Positives Collected in a Month	MCL	MCLG	Violation (Yes/No)	Possible Source of Contamination
Total Coliform	3	1	0	Yes*	Naturally present in the environment
Fecal Coliform or E.coli	Absent	--	0	No	Human and animal fecal waste

***A description of this and other water quality violations is included in Section 7 of this report.**

REGULATED CONTAMINANT RESULTS

Substance	Highest Level Allowed (MCL)	Ideal Level (MCLG)	Concentration Range Detected	Maximum Concentration Detected	Average Detected	Sampling Date	Violation (Yes/No)	Typical Source
INORGANIC CONTAMINANTS								
Nitrate (mg/L)	**10**	0	0.22 to 3.2	1.50	1.884	5/9/14	No	Runoff from fertilizer use, leaching from septic tanks, sewage, and erosion of natural deposits
Arsenic (mg/L)	**0.010**	0	<0.0041 to 0.0042	0.0048	0.00146	5/9/14	No	Erosion of natural deposits; runoff from orchards; runoff from glass and electronicsproduction wastes
Barium (mg/L)	**2**	0	<0.0051 to 0.010	0.0094	0.00596	5/9/14	No	Rocket propellants, fireworks, munitions, flares, blasting agents
Chromium (mg/L)	**0.1**	0	<0.0010	0.0031	0.00062	5/9/14	No	Discharge from pulp mills; erosion of natural deposits
Mercury (mg/L)	**0.002**	0	<0.00020	0.00051	0.000102	5/9/14	No	Erosion of natural deposits; discharge from refineries and factories; runoff from landfills; runoff from cropland
Percholrate	**2.0**	<0.050	<0.050	<0.050	<0.050	9/9/14	No	Rocket propellants, fireworks, munitions, flares, blasting agents
RADIONUCLIDES (Next required sampling scheduled for 2015)								
Gross Alpha (pCi/L)	**15**	0	0.7 +/- 0.7 to 2.6 +/- 1.2	2.6	1.44	6/22/09	No	Erosion of natural deposits
Radium-226+228 (pCi/L)	**5**	0	0.55 to 3.53	3.53	1.59	6/22/09*	No	Erosion of natural deposits
SYNTHETIC ORGANIC COMPOUNDS (SOC's)								
Simazine (ug/L)	**2**	0	<0.15	<0.15	<0.15	2/11/14	No	Pre-emergence broad-leaved herbicide

*** A Radium 226+228 sample was collected from Well #2 on 5/14/2012 as required. The result was 0.85 pCi/L.**

UNREGULATED CONTAMINANT RESULTS:

Unregulated contaminants are those for which EPA has not established drinking water standards. The purpose of unregulated contaminant monitoring is to assist EPA in determining their occurrence in drinking water and whether future regulation is warranted.

Substance	Date(s) Collected	Result or Range Detected	Average Detected	SMCL	ORSG	Possible Source
INORGANIC CONTAMINANTS						
Nickel (mg/L)	5/9/14	<0.0010 to 0.0015	0.00118	---	0.1	Discharge from industrial processes
Sodium* (mg/L)	5/9/14	3.6 to 75	51.32	---	20	Natural sources; runoff from use as salt on roadways; by-product of treatment process
Sulfate (mg/L)	5/9/14	NS	---	250	---	Natural sources
SECONDARY CONTAMINANTS						
Iron (mg/L)	5/9/14	<0.051	<0.051	0.3	---	Erosion of natural deposits
Manganese (mg/L)	5/9/14	<0.0020 to 0.099	0.0218	0.05**	---	Erosion of natural deposits

***Sodium sensitive individuals, such as those experiencing hypertension, kidney failure, or congestive heart failure, should be aware of the levels of sodium in their drinking water where exposures are being carefully controlled.**

****The EPA has established a lifetime health advisory (HA) value of 300 ppb for manganese to protect against concerns of potential neurological effects, and a one-day and 10-day HA of 1000 ppb for acute exposure.**

SECTION 7 – HEALTH EFFECTS

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 Boylston Water District 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. 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 water.epa.gov/drink.

On May 30, 2014 we were notified that one water sample collected showed the presence of coliform bacteria. This exceeds acceptable standards. Notices of these events were published in local newspapers and on our website. The sample that tested positive was collected from the Stiles Road Water Storage Tank. These coliform bacteria detections were not emergencies and the presence of coliform bacteria is generally not harmful. Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other potentially harmful bacteria may be present such as E. coli or fecal coliform bacteria. None of these harmful bacteria were detected in the samples collected. Corrective actions taken in response to this event included chlorination of the Stiles Road Water Storage Tank and follow up bacteria testing of the water. Follow up bacteria testing of the water showed the issue was resolved.

On June 26, 2014 we were notified that one water sample collected showed the presence of coliform bacteria. As noted above, this exceeds acceptable standards. Notices of these events were published in local newspapers and on our website. The sample that tested positive was collected from the Cutler Road Water Storage Tank. These coliform bacteria detections were not emergencies and the presence of coliform bacteria is generally not harmful. Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other potentially harmful bacteria may be present such as E. coli or fecal coliform bacteria. None of these harmful bacteria were detected in the samples collected. Corrective actions taken in response to this event included chlorination of the Cutler Road Water Storage Tank, activation of the emergency chlorine disinfection system at Well No. 5 and follow up bacteria testing of the water. Follow up bacteria testing of the water showed the issue was resolved.

SECTION 8 - WHAT'S NEW

The Boylston Water District remains committed to providing you with the best water quality available and we are always making improvements to our systems and operations. In 2014 the Boylston Water District completed a number of activities including the replacing of portions of water mains in problem areas including along Scar Hill Road and the development of electronic maps of the water system to help with tracking changes and improvements to the system. In addition, a small crack in the roof of the Stiles Road Water Storage Tank was repaired along with the installation of a new roof hatch. An emergency chlorine disinfection system was installed at Well No.1 and a tank mixing system was installed in the Cutler Road Water Storage Tank.

SECTION 9 - ANNUAL WATER SYSTEM CROSS-CONNECTION EDUCATIONAL STATEMENT

The Boylston Water District maintains a Cross Connection Control Program to protect our customers, and we publish this statement annually to educate our customers about the program. A cross-connection is any actual or potential connection between the drinking water lines and potential sources of pollution or contamination, such as a piping arrangement or equipment that allows the drinking water to come in contact with non-potable liquids, solids or gases hazardous to humans in the event of a backflow event. Backflow is the undesired reverse of the water flow in the drinking water distribution lines. This backward flow of the water can occur when the pressure

created by equipment, such as a boiler or air-conditioning system, is higher that the water pressure inside the water distribution line (back pressure). It can also occur when the pressure in the distribution line drops due to routine occurrences such as water main breaks or heavy water demand, causing the water to flow backward inside the water distribution system (back-siphonage).

Backflow is a problem that many water consumers are unaware of. It's a problem that each and every water customer has a responsibility to help prevent. Please visit the Boylston Water District office or visit our website at www.boylstonwaterdistrict.org to learn more about cross connections. To learn about other responsibilities of your water system visit the MassDEP website at http://www.mass.gov/eea/docs/dep/water/ccdefreg.pdf or call the Boylston Water District at (508) 869-3400.

What can I do to help prevent a cross-connection? Without the proper protection something as simple as a garden hose has the potential to contaminate or pollute the drinking water lines in your house. In fact over half of the country's cross-connection incidents involve unprotected garden hoses. There are very simple steps that you as a drinking water user can take to prevent such hazards, they are:

- Never submerge a hose in soapy water buckets, pet watering containers, pool, tubs, sinks, drains or chemicals.
- Never attached a hose to a garden sprayer without the proper backflow preventer.
- Buy and install a hose bib vacuum breaker on any threaded water fixture. Installation of a hose bib vacuum breaker is as easy as attaching a garden hose to a spigot. These devices cost approximately $6.00 and are available at most hardware stores and home-improvement centers.
- Buy appliances and equipment with a backflow preventer.
- Buy and install backflow prevention devices or assemblies for all high and moderate hazard connections such as connections to fire protection systems, boilers or process water lines.

If you are the owner or manager of a property that is being used as a commercial, industrial or institutional facility you must have your property's plumbing system surveyed for cross-connection by your water purveyor. If your property has not been surveyed for cross-connections, contact the water district to schedule a survey. The Massachusetts Drinking Water Regulations, 310 CMR 22.00 requires all public water systems to have an approved and fully implemented Cross-connection Control Program (CCCP). The Boylston Water District is working diligently to protect the public health of its drinking water customers from the hazards caused by unprotected cross-connections through the implementation of its cross-connection survey program, elimination or proper protection of identified cross-connections, the registration of all cross-connections protected by reduced pressure backflow preventers (RPBPs) or double check valve assemblies (DCVAs), and the implementation of a testing program for all RPBPs and DCVAs.