Town of Wellesley
Department of Public Works

Drinking Water Consumer Awareness Report for the Year 2010

Public Water Supplier DEP ID#3317000

The Wellesley Department of Public Works (DPW) is pleased to provide this consumer awareness report on the quality of your drinking water. It contains important information on chemicals measured in your drinking water. This report is a requirement of the Federal Safe Drinking Water Act (SDWA). The SDWA requires that all community water utilities provide to their customers an annual report on water quality and tap water related issues. This report covers the calendar year 2010, but also includes relevant data from other years. The analytical results provided in this report are conducted by independent certified laboratories. This annual report will enable the Wellesley DPW to inform consumers about the sources and quality of their drinking water, and about the decision-making process, which affects their drinking water.

WELLESLEY'S WATER SOURCES

In the year 2010 sixty-two percent (62%) of our water came from our local well supplies and thirty-eight percent (38%) came from the Massachusetts Water Resources Authority (MWRA). A very small portion, less than half a percent, of our total water use is received from Natick to supply the area on the western shore of Morses Pond. The availability of both local and regional water supply sources provides both diversity and reliability.

Wellesley's local water supplies consist of nine wells located within the Town. Three wells tap into the Waban Brook alluvial aquifer and six wells tap into the Rosemary Brook alluvial aquifer. The water pumped from the nine wells is treated at our three corrosion control and iron/manganese removal facilities.

The MWRA is a regional utility that uses surface water supplies in central Massachusetts at the Quabbin and Wachusett Reservoirs and the Ware River. **The MWRA water quality report is inserted within this report**. The year 2010 results of all detected contaminants in MWRA water are included in this insert. It is important when reviewing the water quality data that a blending of the MWRA and our local waters will cause the differences in the two waters to moderate.

The diversity of our water supply sources provides for flexibility so that a reliable supply of water can be depended upon to serve your needs.

In addition to these active supply sources, the Wellesley water distribution system is also interconnected with four other public water suppliers for mutual emergency preparedness. These four other water suppliers are Natick, Needham, Weston, and Wellesley College.

WATER SOURCE ISSUES

The Massachusetts Department of Environmental Protection completed its Source Water Assessment Program (SWAP) Report for all of Wellesley's local water supply sources. Copies of this report are now available upon request to the Wellesley Water Division (see ADDITIONAL INFORMATION). The purpose of the report is to be used as a planning tool to support local and state efforts to improve water supply protection. As for most suburban locations, the susceptibility of Wellesley's groundwater capture zones (i.e. Zone II's) is high. The assessment helps focus protection efforts on appropriate best management practices and drinking water source protection measures.

WHAT YOU CAN DO TO PROTECT AND CONSERVE WATER

We share the concern of many health and environmental officials that excessive lawn irrigation can deplete wetland environments and increase the potential of drawing contaminants to drinking water wells. You can help by conserving water. Lawn watering less frequently and near dawn will contribute to both conservation and to a healthier lawn by encouraging deeper root growth and reducing fungal damage. A general rule of thumb is that a mature lawn needs less than one-inch of water per week, including rain. When constructing a new lawn please consider the following:

- **Provide 12 inches, or more, of organic soil to encourage deep rooting.**
- **Choose drought tolerant grass (high percentage of fine fescues) and plantings.**
- **Position the sprinkler heads to perform the most efficient watering.**
- **Consider drip irrigation where appropriate.**
- **Consider installation of a rain or soil moisture shut-off device that will automatically reduce unnecessary lawn watering.**
- **Be sure that your sprinkler system is equipped with the appropriate backflow prevention device. A pressure vacuum breaker is generally sufficient; however it must be located at least one foot above the highest sprinkler head.**
- **Be sure that the sprinkler system is designed for winterization without compressed air blowback into the house plumbing. (Many systems require an air compressor to dewater the system. A water shutoff valve should be located between the house plumbing and the backflow prevention device and an air-venting valve should be located strategically beyond the backflow prevention device.)**

WATER DISTRIBUTION SYSTEM

There are about 140 miles of street mains that distribute our water throughout the town. This distribution system also includes two large storage facilities that have a capacity of nearly six million gallons. Due to the configuration of the distribution mains and the storage facilities, water from any given supply source has the capability of reaching any point within the town.

WATER TREATMENT SYSTEM

Wellesley operates three water treatment facilities. The primary purpose of these facilities is to provide the regulatory approved treatment technique (TT) for corrosion control under the Safe Drinking Water Act's Lead and Copper Rule. These facilities provide the same treatment processes to all of our wells. Figure #1 illustrates the treatment processes at these facilities. The well water is oxidized and its pH is adjusted prior to filtration. The filter process removes the naturally occurring iron and manganese minerals in the raw water. The filtration units consist of anthracite, green sand and garnet sand. After filtration the water cascades through a tray aerator, which removes naturally occurring carbon dioxide from the water. This aeration process removes the acidity from the water. The water is fluoridated and finally the water is disinfected with hypochlorite and detained in large holding tanks prior to being pumped into the distribution system.

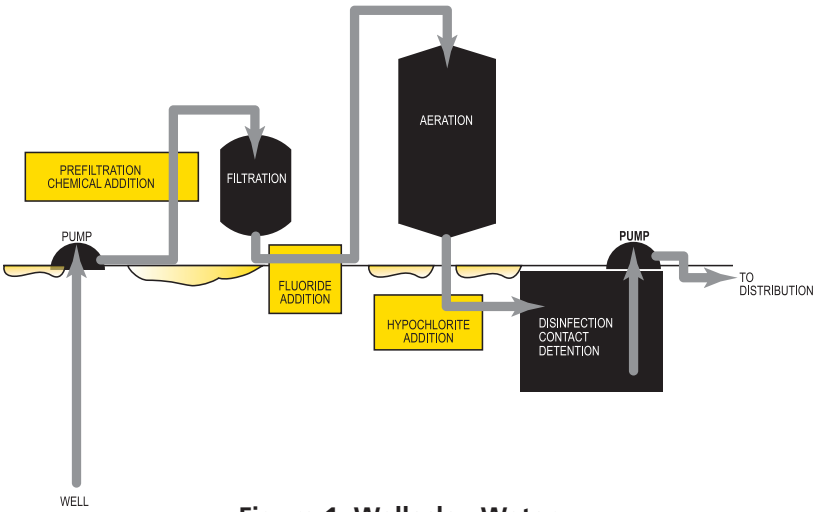

Figure 1: Wellesley Water Treatment Processes

SYSTEM IMPROVEMENTS

In 2010 the Wellesley DPW perform the following system improvements:

- **Replaced the filtration media within the five filtration vessels at its Wellesley Avenue Water treatment plant;**
- **Began operation of two new wells at the Coughlin Wellfield;**
- **Cleaned and Lined 2,500 feet of water main of Seaver Street;**
- **Completed a distribution loop with construction of 220 feet of 6-main on Park Avenue; and**
- **Added dual pumping, variable frequency drives (for energy efficiency), emergency power generation, and SCADA control of pumping at the Hegarty Pump Station, which boosts MWRA water to our system pressure.**

ABBREVIATIONS & DEFINITIONS

The following abbreviations may be useful in reading this report:

ppm	=	parts per million
ppb	=	parts per billion (A ppm is 1000 ppb.)
pCi/L	=	picoCuries per Liter (A pCi/L is a measure of radioactivity.)
NRS	=	No Regulatory Standard
ND	=	Not Detected

In reading this report, it is important to distinguish between ppm and ppb. Due to the characteristics of the various chemicals, their concentrations have been reported in the more appropriate unit of measure.

The following definitions may be useful in understanding the data presented in this report:

Safe Drinking Water Act (SDWA)
The Federal Law that governs the regulation of public water suppliers and ensures that tap water meets public health standards.

Maximum Contaminant Level Goal (MCLG)
The level, or concentration, of a contaminant in drinking water below which there is no known, or expected, risk to health.

Maximum Contaminant Level (MCL)
The highest allowable level, or concentration, of a contaminant in drinking water. MCL's are set as close to the MCLG's as feasible using the best available treatment technology.

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

Treatment Technique (TT)
A required treatment process intended to reduce the level of a contaminant in drinking water.

Maximum Residual Disinfection Level (MRDL)
The highest level of disinfectant (Chlorine, Chloramine, Chlorine Dioxide) allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Maximum Residual Disinfection Level Goal (MRDLG)
The level of a drinking water disinfectant (Chlorine, Chloramine, Chlorine Dioxide) below which there is no expected risk to health. MRDLG's do not reflect the benefits of the use of disinfectants to control microbial contaminants.

Department of Environmental Protection (DEP)
The Massachusetts State regulatory agency responsible for the implementation of the SDWA.

Environmental Protection Agency (EPA)
The Federal agency responsible for the development of SDWA regulations.

WELLESLEY WATER QUALITY

There were over 1,600 chemical analyses performed by independent laboratories on our water during the year 2010. In addition, our own staff performed more than 6,000 chemical analyses to insure the proper operation of our treatment facilities. The categories of contaminants analyzed are: Microbiological, Lead and Copper, Other Inorganics, Volatile Organics, Disinfection By-Products, Radionuclides, and Synthetic Organics. The following is a listing of all the water quality parameters that were detected in our water supplies for the year 2010.

SAFE DRINKING WATER ACT MONITORING DETECTIONS

Disinfectant Residuals Monitoring:

It is important to maintain a disinfection residual content throughout the distribution system. Wellesley uses hypochlorite (chlorine) as its disinfectant. The MWRA uses chloramine as its disinfectant. We monitor for the disinfectants as Total Chlorine at the same sampling points as our bacteriological monitoring. Total Chlorine is a measure of both free chlorine and combined chlorine and thereby is a measure of both chlorination and chloramination.

The monitoring results for the year 2010 are as follows:

Disinfectant	Highest Level Detected	Range of Results	Highest Level Allowed (MRDL)	Ideal Goal (MRDLG)
Total Chlorine (ppm)	2.60	0.02-to-2.6	4.0	4.0

The results of this monitoring were in compliance with regulations as the Maximum Residual Disinfectant Level was not exceeded throughout the year. Also, the US EPA has a guideline to achieve a minimum total chlorine residual of 0.20 ppm throughout the distribution system. During the year we were not always able to achieve this guidance minimum. Our average annual total chlorine residual was 0.63 ppm; and the guideline minimum was achieved on more than 91 % of the monitored samples (i.e., 394 of 431).

Total Coliform Bacteria Monitoring:

Total Coliform Bacteria are groupings of various bacteria that serve as a monitoring indicator of a potential health concern of microbial contamination. The MCL for Total Coliform is based on more than 5% positive sample measurements in the distribution system for any given month. The monitoring results for 2010 on our designated sampling points within the distribution system were as follows:

# of Samples Analyzed in 2010	=	431
# of Positive Samples in 2010	=	0
Highest # of Positives per Month	=	0
Highest Monthly % Positives in 2010	=	0.0%

Coliform are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful bacteria may be present. There were no

measurements of coliform bacteria in our designated distribution system sampling points (i.e., 9 locations widely distributed throughout the Town that are monitored approximately four times per month).

Lead and Copper Monitoring: No Violations

The purpose of our corrosion control treatment facilities is to remove acidity from our water and thereby reduce its corrosiveness. The TT used in our water treatment facilities primarily includes the aeration of water to release the naturally derived carbonic acid in the well water. Lead and copper can become present in your drinking water when the water corrodes those elements from the household plumbing. The measurement of lead and copper in the daily "first draw" of tap water from selected households is used to monitor the effectiveness of our corrosion control treatment. Due to Wellesley's long term compliance with the Safe Drinking Water Act's lead and copper requirements we were not required to monitor in the year 2010. Wellesley's 2009 monitoring program included thirty approved households selected by an EPA protocol. A monitoring round was conducted in June, July and August of 2009. The Action Level designated by the EPA is based on the 90th percentile measurement of each sample round. Therefore the regulatory statistic for each sample round is lead and copper content in the 90th percentile sample. The results of our 2009 corrosion control monitoring round were as follows:

Corrosion Parameters	Year 2009
90% for Lead (AL=15ppb)	5 ppb
90% for Copper (AL=1.3ppm)	0.29 ppm
# of samples above the Lead AL	0
# of samples above the Copper AL	0

The results of this monitoring were in compliance with the regulations.

In the year 2010 Wellesley did conduct lead and copper monitoring in two schools, with first draw samples at a bubbler and a sink in each school. No results exceeded the AL for either lead or copper.

School Lead & Copper Monitoring in 2010

Contaminants (units)	Highest Concentration, ppm	Range of Detection, ppm	Action Level, ppm
Total Lead	0.008	ND - 0.008	0.015
Total Copper	0.29	0.17 - 0.29	1.3

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 Wellesley DPW is responsible for providing high quality 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 http:/ www.epa.gov/safewater/lead.

Additional information is available from the Safe Drinking Water Hotline (1-800-426-4791) or at the Wellesley DPW (781-235-7600x3350).

Volatile Organic Monitoring: No Violations

Volatile Organic Compounds (VOC's) are hydrocarbons. Many of them are used as solvents (e.g., Trichloroethylene) and/or fuel additives (e.g., Benzene, toluene and MtBE). A total of fifty-six (56) volatile organic compounds are monitored quarterly as water is pumped from each of the three treatment facilities.

Our quarterly monitoring at each of our three water treatment facilities during 2010 measured no volatile organic compounds, except for trihalomethanes, that are discussed in the next section of this report.

Disinfection By-Product Monitoring: No Violations

Total Trihalomethanes (TTHM's) and Total Haloacetic Acids (THAA's) are disinfection by-products that are formed by the chlorination of drinking water. The regulation of TTHM's and THAA's is based on the average concentration of four consecutive quarterly samples at eight DEP designated sampling points within the distribution system. The chemical compounds that make up TTHM's are chloroform, bromoform, dichlorobromomethane, and dibromochloromethane. The chemical compounds that make up THAA's are monochloroacetic acid, dichloroacetic acid, trichloroacetic acid, monobromoacetic acid, and dibromoacetic acid. The results of our quarterly monitoring of these disinfection by-products during 2010 were as follows:

Contaminants (units)	Running Annual Average	Range of Measurement	Highest Level Allowed (MCL)	Ideal Goal (MCLG)
TTHM's (ppb)	21.0	5.0-to-45.0	80	0
THAA's (ppb)	7.7	ND-to-19.1	60	0

The above listings for TTHM's and THAA's follow the regulatory format, namely, the MCL applies to the highest running average of four consecutive quarters for the combination of all sample points. The Range of Measurement represents the lowest and highest individual measurements during the year 2010. The Highest Level Allowed is regulated based on the Running Annual Average. The lowest THAA refers to ND (Not Detected), which means there was no measurement of any of the five haloacetic acids to individual detection limits of 1.0 ppb.

Inorganic Monitoring: No Violations

The inorganic contaminants monitored in drinking water are the cations and anions of minerals, which are dissolved in the water. Many of the inorganic chemicals are metals and cyanide, which we are not required to monitor for each year. The following chemicals were last monitored in the year 2008, as part of the SDWA Inorganic Chemical Monitoring Program, and not detected: Arsenic, Barium, Cadmium, Chromium, Mercury, Selenium, Antimony, Beryllium, Nickel, Thallium, and Cyanide.

The detected inorganic chemicals were monitored in the year 2010 and their measurements were as follows:

Contaminants (units)	Highest Level Detected	Range of Detection	Highest Level Allowed (MCL)	Ideal Goal (MCLG)
Fluoride (ppm)	1.35	0.9-to-1.35	4.0	4.0
Sodium (ppm)	100	50-to-100	NRS	NRS

Fluoride is added to our water supply for the purpose of preventing tooth decay.

Sodium is a leachate of road deicing salts, water treatment chemicals, and natural deposits. No regulatory standard (NRS) has been established for sodium. **A guideline for people with hypertension is to avoid consuming water with levels above 20 ppm. Therefore it should be noted that our water is in excess of this guideline.**

Radionuclide Monitoring: No Violations

Radionuclides are radioactive particles present in the water supply at the points of entry into the distribution system from our three water treatment facilities. In the year 2003 we monitored for gross alpha emitters, radium 226 and 228, radon, and uranium. The positive measurements were as follows:

Contaminants (units)	Highest Level Detected	Range of Detection	Highest Level Allowed (MCL)*	Ideal Goal (MCLG)
Radium 226, (pCi/L)	0.4	ND-to-0.4	5.0	0.0
Radium 228, (pCi/L)	0.2	ND-to-0.2	5.0	0.0
Radon, (pCi/L)	270	90-to-270	NRS	NRS

* The MCL for Radium is 5 pCi/L for the combination of Radium 226 and 228.

Radium 226 & 228 are naturally occurring radioactive minerals.

Radon is a radioactive gas that occurs naturally in some ground waters. It poses a lung cancer risk when elevated levels of radon gas are released from water into the air (as occurs during showering, bathing, or washing dishes and clothes) and a stomach cancer risk when you drink water containing elevated levels of radon. Radon gas released from drinking water is a relatively small part of the total radon in air.

Other sources of radon gas are from soils at the foundation of homes, and radon inhaled directly while smoking cigarettes. There is presently no regulatory standard (NRS) for radon in drinking water. A proposed MCL for radon in drinking water of 300 pCi/L is under consideration by the EPA. For more information on radon you may call the EPA's SDWA Hotline at 1-800-426-4791.

Synthetic Organic Chemical: No Violations

Synthetic Organic Chemicals (SOC's) generally represent pesticides, herbicides and polychlorinated biphenols (PCB's). There are a total of twenty-five (25) chemicals included in the monitoring of Synthetic Organic Chemicals. In the year 2009 Wellesley monitored for SOC's in the first and third annual quarters. None of the SOC's were detected during these two monitoring rounds.

Nitrate / Sulfate SDWA Monitoring: No Violations

The nitrogen-series compounds of nitrate and nitrite monitored in 2010 under the SDWA and detected were as follows:

Contaminants (units)	Highest Level Detected	Range of Detection	Highest Level Allowed (MCL)	Ideal Goal (MCLG)
Nitrate (ppm)	1.3	0.58-to-1.3	10.0	10.0
Sulfate (ppm)	13	10-to-13	NRS	NRS

Nitrate is formed from the breakdown of fertilizers, septic tank leachate, and natural decomposition.

Sulfate is a product of natural decomposition. No regulatory standard (NRS) has been established for sulfate. A proposed MCL for sulfate of 500 ppm is currently under consideration by the EPA.

MONITORING OUTSIDE OF SAFE DRINKING WATER ACT

GENERAL WATER CHARACTERISTICS

The following characteristics describe Wellesley's local water supplies. They are not considered to have health impacts, but rather describe characteristics of the water, which may impact water-use appliances and soap lathering capabilities. It is important to note that the MWRA's water supplies are significantly softer than Wellesley's water and therefore have different characteristics.

Characteristic	Concentration Range (units)
pH	7.0 –to- 7.6
Total Dissolved Solids	360 –to- 460 (ppm)
Alkalinity	68 –to- 94 (ppm)
Calcium	28-to-36 (ppm)
Chloride	130-to-160 (ppm)
Hardness	100 –to- 130 (ppm)
Hardness	6 –to- 8 grains per gallon
Iron	ND-to-0.2 (ppm)
Magnesium	7.5-to-8.6 (ppm)
Manganese	ND-to-0.28 (ppm)
Potassium	26-to-31 (ppm)

The above characteristics are for Wellesley's supplies only. For comparison purposes the pH of MWRA water is typically above 8 units; the MWRA's total dissolved solids are about a third of Wellesley's; its alkalinity is about half of Wellesley's; and its hardness is about a quarter of Wellesley's.

REGULATORY STATEMENTS

In order to ensure that tap water is safe to drink, the DEP and EPA prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration (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.

Safe Drinking Water Act (SDWA) regulations are important to maintain tap water quality, because as water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals, 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, that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife. **Pesticides and Herbicides**, that may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses. **Inorganic Contaminants**, such as salts and metals, that can be naturally-occurring or result from urban stormwater runoff, industrial, or domestic wastewater discharges, oil and gas production, mining or farming. **Organic Chemical Contaminants**, including synthetic and volatile organic chemicals, that are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems. **Radioactive Contaminants**, that can be naturally-occurring or can be the result of oil and gas production and mining activities.

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.

Some people may be more vulnerable to contamination 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 (1-800-426-4791).

ADDITIONAL INFORMATION

The Water Commission for the Town of Wellesley is the Board of Public Works, which is a three-member board elected by the voters of the Town. The Board meets at regularly scheduled and publicly posted meetings throughout the year. The public is welcome at these meetings.

For more information on your Wellesley tap water, its sources of supply, the DEP Source Water Assessment Plan (SWAP), and the water treatment and distribution systems call the Water Superintendent, Joseph Duggan, at (781) 235-7600 x 3350.

Massachusetts Water Resources Authority

(617) 242 – 5323
www.mwra.com
PWS ID# 6000000

100 First Avenue
Boston, MA 02129

INFORMATION ABOUT MWRA WATER

In cooperation with the Wellesley Water Department, the Massachusetts Water Resources Authority is pleased to send you this annual update on your drinking water quality. This report includes test results for 2010 and other important information about your tap water. The Massachusetts Water Resources Authority (MWRA) supplies wholesale water to local water departments in 48 cities and towns of greater Boston and MetroWest, and three in Western Massachusetts. MWRA supplies some water to Wellesley, but most of your water comes from local supplies described elsewhere in this report. MWRA water comes from Quabbin Reservoir, about 65 miles west of Boston, and Wachusett Reservoir, about 35 miles west of Boston. Water from the Ware River, located between these two reservoirs, can also add to the supply at times. The reservoirs provide about 200 million gallons of high quality water to consumers each day.

Water Test Results

What does this table tell me? What is the bottom line?

EPA requires that we test for over 120 contaminants. MWRA found only those listed here. All of these levels were below EPA's Maximum Contaminant Levels (MCL).

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	0.009	0.009 - 0.01	2	No	Common mineral in nature
mono-Chloramine	ppm	4 - MRDL	1.8	0.0 - 3.6	4-MRDLG	No	Water disinfectant
Fluoride	ppm	4	1.05	0.75 - 1.15	4	No	Additive for dental health
Nitrate^	ppm	10	0.14	0.03 - 0.14	10	No	Atmospheric deposition
Nitrite^	ppm	1	0.01	0.01	1	No	Byproducts of water disinfection
Perchlorate	ppb	2	0.06	0.05 – 0.07	ns	No	Byproducts of water disinfection
Total Trihalomethanes	ppb	80	14	1.9 – 20.4	ns	No	Byproducts of water disinfection
Haloacetic Acids - 5	ppb	60	12.4	0 - 18	ns	No	Byproducts of water disinfection

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. **ppb** = parts per billion **ppm** = parts per million **nd** = no detect **ns** = no standard

^ Averages are not used for Nitrate and Nitrite.

Tap Water – The Green Choice! As water travels eastward to your faucet, clean hydro-energy is produced. MWRA also has wind turbines at our Deer Island Plant and solar panels at our Carroll Treatment Plant. Tap water is delivered straight to your home without trucking of plastic waste. Drink tap water and be green!

If you would like to learn more about the water that MWRA supplies, about other MWRA activities and projects, or about MWRA meetings that are open to the public, please visit our web-site at www.mwra.com. If you have any questions, please call 617-242-5323. Thanks for reading.