

Town of Weymouth
Department of Public Works
Mayor Robert L. Hedlund



Year 2017

Annual Water Quality Report

Please call the Water Department at **781-337-5100** with any questions, concerns, or problems regarding water meters, leaks, water main breaks, fire hydrants, billing, or water quality. Our staff of dedicated drinking water professionals is there to assist you:

Director of Public Works	Kenan Connell
Water & Sewer Superintendent	Kenneth C. Morse
Business Manager	David J. Tower
Treatment & Operations	Alan R. Cowing
Asst. Water Superintendent	Frank E. Sheppard
Facilities Manager	Mike Gervasi

In addition, public meetings may be held at the request of the Mayor or the Town Council. Town Council meets at the Town Hall (75 Middle Street) at 7:30 p.m., every other Monday. Supplemental information about drinking water quality and potential health effects can be obtained by calling the Environmental Protection Agency's **Safe Drinking Water Hotline: 1-800-426-4791**. Cross Connection and other useful information can also be found on DEP's website (<http://www.mass.gov/dep/>) and Town's website (<http://www.weymouth.ma.us/water-sewer/pages/water-system>).

The Weymouth Water Department is proud to provide you with the Year 2017 Annual Water Quality Report. Our objective is to help keep you informed of ongoing and upcoming water system projects; local, state and federal drinking water regulations; and Weymouth's annual water quality results. Our Mission Statement is: "To reliably and economically deliver the highest quality, safe drinking water, to all of our customers, emphasizing and practicing: source protection; state of the art water treatment; sound distribution management & maintenance; and water conservation". The Department of Public Works is committed to this mission statement 24 hours per day, 365 days a year.

Water System Information

The identification number for the Weymouth Public Water System is 4336000. The Water Division of the Weymouth Department of Public Works supplies drinking water to the Town of Weymouth from two water treatment facilities, the Great Pond Water Treatment Plant (GPWTP) and the Arthur J. Bilodeau Water Treatment Plant (AJBWTP). All chemicals used for treatment are approved by the National Sanitation Foundation and meet performance standards of the American Water Works Association. Customers are invited to contact the Water Department with specific questions.

The GPWTP was placed into service in 2010 and has the capacity to produce up to 8.0 million gallons per day (MGD). Treatment systems at the GPWTP include: raw water screening, pre-oxidation using potassium permanganate, rapid mixing, coagulation and flocculation using polyaluminum chloride, clarification using dissolved air flotation, intermediate ozonation for primary disinfection, biologically active carbon filtration, chlorination for secondary disinfection, sodium hydroxide for pH adjustment, hydrofluorosilicic acid for fluoridation (to prevent tooth decay), sodium bicarbonate for alkalinity adjustment, and phosphoric acid for corrosion control. The Great Pond water supply system consists of Great Pond (01S) and a pumping station to supplement the water in Great Pond during periods of low precipitation or drought from the South Cove of Whitman's Pond (02S) and Whitman's Pond proper (03S), in an emergency. The watershed of Great Pond is approximately 3.04 square miles and the total usable volume of water in Great Pond is approximately 1.1 billion gallons. South Cove and Whitman's Pond have a combined watershed of approximately 1.84 square miles and a usable volume of approximately 165 million gallons. The combined safe yield of the Town's surface water supply system is 3.63 MGD. The Town owns the majority of the watershed land around Great Pond and some of the land around Whitman's Pond. Zoning ordinances are in place to limit land uses within the watershed and protect the Town's most valuable natural resource.

The AJBWTP presently treats groundwater from five active wells in the Mill River Aquifer: the Circuit Avenue Well (01G), the Main Street Well (02G), the Libbey Park Well (03G), Winter Street Well #1 (04G), and Winter Street Well #2 (05G). Existing zoning ordinances for the Groundwater Protection District limit land uses within the groundwater recharge boundary. The AJBWTP was built in 1974 and can treat up to 4 million gallons of water a day (4 MGD). Treatment systems at the AJBWTP include: packed tower aeration; oxidation using potassium permanganate; coagulation and flocculation using polyaluminum chloride; sedimentation using tube settlers; filtration with granular activated carbon (GAC) media; fluoridation using sodium fluoride (to prevent tooth decay); pH adjustment using potassium hydroxide; chlorine for disinfection; and phosphoric acid for corrosion control. The AJBWTP currently supplies approximately eighteen percent of the Town's drinking water. The combined safe yield of the Town's groundwater supply system is 2.64 MGD.

Drinking water is distributed to Weymouth's 16,445 water system customers by means of more than 210 miles of pipe. In addition, four active water storage tanks (Park Avenue, Reed Avenue, Essex Street, and Great Hill) are utilized to store the Town's finished drinking water so that it is available for periods of high demand, such as fighting fires. In times of emergency, the Town's water system can be supplemented with water from the neighboring communities of Abington, Rockland, Braintree, Hingham, and Quincy.

The DEP has prepared a Source Water Assessment Program (SWAP) Report for Weymouth's water supply sources described above. The SWAP report indicated a moderate susceptibility to contamination for Great Pond because of current land uses which include residential fuel oil storage and landscaping practices and a high susceptibility for the groundwater sources and for the South Cove surface supply because land uses include many gas stations and industries. Residents can help protect sources by taking hazardous household chemicals to hazardous materials collection days, and by limiting the use of pesticides and fertilizer. The complete SWAP report is available for your review at the Water Department and the Board of Health. Alternately, it can be obtained online from Massachusetts DEP website: <http://mass.gov/eea/docs/dep/water/drinking/swap/sero/3336000.pdf>.

Water Demand & Statistics

In 2017, the total volume of water produced was 1,341,073,069 gallons from the Great Pond WTP and 189,470,071 gallons from the Arthur J. Bilodeau WTP. The maximum combined amount of water pumped in one day was 5,315,145 gallons on July 4, 2017. The annual average daily volume of water supplied from the Town's sources in 2017 was 4.51 MGD, well below the allowable Water Management Act withdrawal limit of 5.0 MGD and available safe yield of the Town's water supplies of 6.27 MGD. The total rainfall in 2017 was 51.30 inches. Effective management of the Town's water resources allowed the Town's water supplies to remain at safe levels. Lastly, due to the Town's water conservation programs, water resource management, and annual precipitation there were no water bans in 2017.

Water Quality Summary

The Weymouth Department of Public Works is committed to providing our customers with High Quality Drinking Water which meets or surpasses state and federal drinking water standards for quality and safety. Each year the Water Division conducts over 60,000 water quality tests, examining them for more than 125 potential drinking water contaminants. A summary of contaminants detected in 2017 is provided in the Tables below. All data shown was collected during the last calendar year unless otherwise noted in the tables. Not listed are contaminants that were tested for but not detected. As you were notified at the time we failed to complete a Level 1 Assessment for bacteria.

Contaminant	MCL/TT	MCLG	Value	Violation	Common and Likely Source(s) of Contaminant
Total Coliform Bacteria	TT	0	Positive	Y*	Naturally present in the environment.

*Weymouth's Water System triggered a Level 1 assessment on July 9, 2017, and failed to complete the required assessment on time. More information about this situation is provided in the Situation section below.

Situation Section

Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, water borne pathogens may be present or that a potential pathway exists through which contamination may enter the drinking water distribution system. We found coliforms indicating the need to look for potential problems in water treatment distribution. When this occurs, we are required to conduct an assessment to identify any problems that were found during these assessments.

On 7/5/2017, Weymouth collected 20 samples. We were notified by lab on 7/7/2017 that one sample was total coliform-positive (TC+). The sample was tested for e-coli and found to be negative on 7/8/2017. We collected repeat samples on July 10, 2017 from the distribution system and had them analyzed. All repeat samples were negative but the repeat samples were not done within 24 hours as required by the Revised Total Coliform Rule which is a violation along with not notifying the DEP. This triggered a Level 1 Assessment which was not reported to the DEP which in turn triggers a treatment technique violation which calls for public notification.

During the past year, we were required to conduct a Level 1 assessment. We completed the assessment on 8/21/2017. The assessment showed that we had low chlorine residuals at the ends of the system. We started chlorine booster pumps at Great Hill and Essex Street storage tanks on 7/13/2017 which solved the problem. In addition, we were required to notify the public by newspaper, notices in public areas, and by direct delivery in the water bills. The notice was placed in the paper on 8/26/2017, notices were posted in public places on 9/1/2017, and notices were inserted in the water bills from September 2017 – November 2017. Completing these actions returned our system to compliance.

Substance (Contaminant)	Range Detected	MCL	MCLG	Violation	Common and Likely Source(s) of Contaminant
Barium (ppm)	0.03	2	2	N	Discharge of drilling waste and metal refineries; erosion of natural deposits.
Chlorine (ppm)	0.01 – 1.62	4 MRDL	MRDLG	N	Water additive used to control microbes.
¹⁴ Chromium (ppb)	1.6	100	100	N	Discharge from steel and pulp mills; erosion of natural deposits.
Copper (ppm) (90 th %tile) 30 Sites, 1 round	0.011 – 0.149 (0.078) 0 > A.L.	A.L. = 90 th %tile of 1.3	1.3	N	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives.
Fluoride (ppm)	0.63 – 0.80	4	4	N	Fluoride occurs naturally in all water supplies in trace amounts. In many Massachusetts communities the fluoride level is adjusted to about one part per million (ppm or mg/l) so that it is optimal for better oral health. At this level, it is safe, odorless, colorless, and tasteless. In 1951, the first Massachusetts communities became fluoridated. There are now over 3.9 million people in 140 Massachusetts communities and 184 million people in the United States who receive the health and economic benefits of fluoridation.
Lead (ppm) (90 th %tile) 30 Sites, 1 round	ND – 0.018 (0.001) 1 > A.L.	A.L. = 90 th %tile of 0.015	0	N	Corrosion of household plumbing; erosion of natural deposits.
Nitrate (ppm)	0.11 – 0.71	10	10	N	Runoff from fertilizer; leaching from septic tanks; sewage; erosion of natural deposits.
Total HAA5s (ppb) (Haloacetic Acids)	RAA = 11.81 4.6 – 29.3	RAA <60	0	N	By-product of water chlorination.
Total THMs (ppb) (Trihalomethanes)	RAA= 38.04 7.6– 77.3	RAA < 80	0	N	By-product of water chlorination.
Total Organic Carbon	0.49 – 3.1	TT	NA	N	Naturally present in the environment.
Turbidity (NTU) (Nephelometric Turbidity Units)	Maximum 0.270	TT = 1 NTU	NA	N	Soil Runoff. Turbidity is a measure of the cloudiness in water. We monitor it because it is a good indicator of the effectiveness of our filtration system.
	100%	TT = >95% <0.3 NTU	NA	N	
Sodium (ppm)	50 - 219	ORSG = 20 Unregula ted	NA	N	The MA DEP has established a sodium guideline of 20 mg/L. Sodium is a naturally occurring common element found in soil and water. It is necessary for the normal functioning of human systems. The principal source of exposure to sodium is from the diet. Drinking water contributes only a small fraction (less than 10%) to the overall sodium intake. Individuals concerned about sodium levels should consult their physician.
Sulfate (ppm)	11.5	SMCL = 250 Unregula ted	NA	N	Naturally present in the environment.

Definitions:

14	A 2-digit number noted above the contaminant denotes the calendar year for the reported results (2014).
90th %tile	Out of every 10 homes, 9 were at or below this level.
A.L.	Action Level: The concentration of a contaminant that, if exceeded, triggers treatment or other requirements, which a water system must follow.
Level 1 Assessment:	A Level 1 Assessment is a study of the water system to identify potential problems and determine (if possible) why coliform bacteria have been found in our water system.
MCL	Maximum Contaminant Level: The highest level of a contaminant 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.
MFL	Million fibers per liter.
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 the control of microbiological contamination.
MRDLG	Maximum Residual Disinfectant Level Goal: The level of a drinking water disinfectant which there is no known or expected risk to health.
ND	Not detected. Refers to the detection limit of the chemical analysis instrument or procedure.
NR	Not regulated.
N/A	Not applicable.
ORSG	Office of Research and standards Guideline – State of Massachusetts
pCi/L	Picocuries per liter (a measure of radioactivity).
PPB	One part per billion.
PPM	One part per million.
RAA	Running annual average of quarterly sampling results.
SMCL	Secondary Maximum Contaminant Level: Non- enforceable guidelines based on aesthetics such as color and odor.
TT	Treatment Technique: A required process intended to reduce the level of a contaminant in drinking water.

POSTAL CUSTOMER



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Public Health and Drinking Water

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 (1-800-426-4791). 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 (1-800-426-4791).

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.

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. Weymouth 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 <http://www.epa.gov/safewater/lead>.

In order to ensure that tap water is safe to drink, DEP and 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.