

Town of Weymouth
Department of Public Works
Mayor Susan M. Kay



Year 2011

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	Jeffrey J. Bina, P.E.
Water & Sewer Superintendent	Kenneth C. Morse
Business Manager	David J. Tower
Treatment & Operations	Alan R. Cowing
Asst. Water Superintendent	Frank E. Sheppard

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**. Useful information can also be found on DEP's website (<http://www.mass.gov/dep/>) or the Town's website (<http://www.weymouth.ma.us.>).

The Weymouth Water Department is proud to provide you with the Year 2011 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 Weymouth Department of Public Works Water Department supplies the Town of Weymouth with drinking water 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 for more specific information regarding the physical and chemical treatment processes employed at the Town's two water treatment facilities.

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; flocculation; sedimentation; 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 seventeen 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 15,997 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://www.mass.gov/dep/water/drinking/swapreps.htm>.

Water Demand & Statistics

In 2011, the total volume of water produced was 1,209,707,229 gallons from the Great Pond WTP and 258,660,713 gallons from the Arthur J. Bilodeau WTP. The maximum combined amount of water pumped in one day was 5,913,000 gallons (July 22, 2011). The annual average daily volume of water supplied from the Town's sources in 2011 was 4.02 MGD, well below the allowable Water Management Act withdrawal of 5.0 MGD and available safe yield of the Town's water supplies of 6.27 MGD. The total rainfall in 2011 was 56.83 inches. Effective management of the Town's water resources allowed the Town's water supplies to remain at safe levels. Lastly, due to the success of the Town's water conservation programs, water resource management, and annual precipitation, for the 12th consecutive year, there were no water bans.

Common Sense Conservation Tips

1. Fix leaky faucets and plumbing joints. **Saves 20 gallons per day for every leak stopped.**
2. Don't run the hose while washing your car. Use a bucket of water and a quick hose rinse at the end. **Saves 150 gallons** each time.
3. Install water-saving shower heads or flow restrictors. **Saves 500 to 800 gallons** per month.
4. Run only full loads in the washing machine and dishwasher. **Saves 300 to 800 gallons** per month.
5. Shorten your showers. Even a one or two minute reduction can **save up to 700 gallons** per month.
6. Use a broom instead of a hose to clean driveways and sidewalks. **Saves 150 gallons** or more each time.
7. Don't use your toilet as an ashtray or wastebasket. **Saves 400 to 600 gallons** per month.
8. Turn off the water while brushing your teeth. **Saves three gallons** each day.
9. Turn off the water while shaving. Fill the bottom of the sink with a few inches of water to rinse your razor. **Saves three gallons** each day.
10. Keep a bottle of drinking water in the refrigerator. This beats the wasteful habit of running tap water to cool it for drinking. **Saves 200 to 300 gallons** a month.
11. Don't defrost frozen foods with running water. Either plan ahead by placing frozen items in the refrigerator overnight or defrost them in the microwave. **Saves 50 to 150 gallons** a month.
12. Don't let the faucet run while you clean vegetables. Rinse them in a filled sink or pan. **Saves 150 to 250 gallons** a month.
13. Use the garbage disposal less and the garbage more (even better--compost!). **Saves 50 to 150 gallons** a month.
14. Put a layer of mulch around trees and plants. Chunks of bark, peat moss or gravel slows down evaporation. **Saves 750 to 1,500 gallons** a month.
15. Set lawn mower blades one notch higher. Longer grass means less evaporation. **Saves 500 to 1,500 gallons** each month.

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 2010 is provided in the Table below. The most recent results from the last seven years are given for contaminants that are not required to be sampled annually. All contaminants detected were below allowed levels. Not listed are contaminants that were tested for but not detected.

The Surface Water Treatment Rule, 310 CMR 22.20D(4)(a)2 states, “Each supplier of water must maintain a turbidity level of representative samples of a system’s filtered water that at no time exceed 1 NTU.” On July 6, 2011, the combined filter effluent turbidity levels at the GPWTP exceeded 1 NTU. This was caused by elevated levels of manganese in the raw water which is not harmful in itself; however, it can interfere with disinfection and provide a medium for bacterial growth. None of our water quality tests indicated any contamination or disease causing organisms in the water. The Weymouth Water Department notified MassDEP of this event on July 7, 2011. The Town was instructed by the DEP to publish a public notification in the newspaper within 14 days which it did on July 20, 2011.

Substance (Contaminant)	Range Detected	MCL	MCLG	Violation	Common and Likely Source(s) of Contaminant
Barium (ppm)	0.11 - 0.0091	2	2	N	Discharge of drilling waste and metal refineries; erosion of natural deposits.
Chlorine (ppm)	0.01 – 1.32	4 MRDL	MRDLG	N	Water additive used to control microbes.
Copper (ppm) (90 th %tile) * 30 Sites, 1 round	0.001 – 0.17 (0.058)* 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)	0.67 – 1.17	4	4	N	Fluoride is added to the water to promote strong teeth; erosion of natural deposits.
Gross Alpha Particles (pCi/L)	2.05	15	0	N	Certain minerals are radioactive and may emit a form of radiation known as alpha radiation. Some people who drink water containing alpha emitters in excess of the MCL over many years may have an increased risk of getting cancer.
Lead (ppm) (90 th %tile)* 30 Sites, 1 round	ND – 0.006 (0.002)* 0 > A.L.	A.L. = 90 th %tile of 0.015	0	N	Corrosion of household plumbing; erosion of natural deposits.
Nitrate (ppm)	ND – 0.30	10	10	N	Runoff from fertilizer; leaching from septic tanks; sewage; erosion of natural deposits.
Radium 226 + 228 Combined (pCi/L)	0.98	5	0	N	Erosion of natural deposits.
Total HAA5s (ppb) (Haloacetic Acids)	RAA = 8.3 2.4 – 20.0	RAA <60	0	N	By-product of water chlorination.
Total THMs (ppb) (Trihalomethanes)	RAA= 44.3 10 – 96	RAA < 80	0	N	By-product of water chlorination.
Total Organic Carbon	1.5 – 4.5	TT	NA	N	Naturally present in the environment.
Turbidity (NTU) (Nephelometric Turbidity Units)	Maximum 1.51	TT = 1 NTU	NA	Y	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.
	99% - 100%	TT = >95% <0.3 NTU	NA	N	
Sodium (ppm)	37 - 170	ORSG = 20 Unregulated	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)	9.3 - 18	SMCL = 250 Unregulated	NA	N	Naturally present in the environment.

Definitions

05	A 2-digit number noted above the contaminant denotes the calendar year for the reported results.
* 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.
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 Contaminate 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.

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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, EPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. FDA regulations establish limits for contaminants in bottled water that must provide the same protection for public health.