



TOWN OF MARION ANNUAL WATER QUALITY REPORT January 1, 2021 through December 31, 2021

We are pleased to present to you this year's Annual Water Quality Report. This report is designed to inform you about the quality water and services we deliver to you everyday. Our constant goal is to provide you with a safe and dependable supply of drinking water. We want you to understand the efforts we make to continually improve the water treatment process and protect our water resources. We are committed to ensuring the quality of your water. Regulations require all community public water systems to provide an annual water quality report to their customers by July 1st each year. If you have any questions or concerns regarding the information contained in this report, please contact the Marion Water Division office by phone at 508-748-3540 or e-mail mariondpw@marionma.gov. Please visit the town's website located at www.marionma.gov.

WATER SUPPLY AND TREATMENT

Marion uses groundwater exclusively as a source of water. The majority of Marion's water supply is located in the Town of Rochester, Massachusetts (Perry Hill Station, East & West Wells, Mary's Pond Station and Wolf Island Station). Only Main Water Station, our oldest well field, is located in Marion. The town's supply is composed of both gravel-packed wells and small-diameter tubular well fields.

Because Marion uses groundwater as its water supply source, minimal treatment or chemical addition is employed. In 1989, equipment was added to all water supply sources to add sodium silicate to sequester the high iron content from the Wolf Island Well. Potassium hydroxide was also added to raise the pH of the water from acidic to alkaline. When the New Bedford Road Wells were constructed, chemical addition capability was also added.

Marion is also capable of receiving water from the Mattapoissett River Valley Water District Public Water Supply, #417300. This is a 6-million gallon a day facility which receives water from the following eight groundwater wells in the Mattapoissett River Valley Aquifer: Mattapoissett's Stations #3, #4 and #5, Fairhaven's Tinkham Lane Well, Fairhaven's Wolf Island Wells #1, #2, and #3, and Marion's Wolf Island Well. This facility removes iron and manganese from the groundwater using ozonation followed by membrane ultrafiltration.

DISTRIBUTION SYSTEM

Construction of the water distribution system began in 1908 with the installation of water mains in the center of town. The original water system consisted of cast iron water mains, Main Water Station, and the Mill Street Standpipe. In 1939, the town stopped installing unlined cast iron and began using transite water pipe. Marion's water system consists of 5 wells and 2 well fields, 4 storage tanks, and approximately 75 miles of water main. The total storage volume available between the 4 storage tanks is approximately 2,775,000 gallons. Water main sizes in Marion range from 4" to 16" in diameter.

STORAGE FACILITIES

As mentioned above, four storage facilities are located in Marion with a total storage volume of approximately 2,775,000 gallons. Two of these facilities are steel standpipes, one is a prestressed concrete reservoir and the fourth is a composite elevated water storage tank. All of the storage facilities in Marion can produce a hydraulic grade line (HGL) of approximately 158 feet (United States Geological Survey - [USGS]). Current operation of the system dictates that the tanks are not filled past an elevation of 150 feet.

INTERCONNECTIONS AND BACK-UP SUPPLIES

The Town of Marion currently has two interconnections with the Town of Mattapoissett's water supply. These serve as emergency back-up supplies for both towns.

CUSTOMER VIEWS WELCOME

The purpose of this report is to provide you with useful information about your water. Your feedback is welcomed. Please contact us at 508-748-3540.

Share your views and opinions with the Board of Water Commissioners. They meet on the 1st and 3rd Tuesday of each month. For more information, please visit Marion's webpage at www.marionma.gov.

SUBSTANCES FOUND IN TAP WATER

The sources of drinking water (both tap 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 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 storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.

Pesticides and herbicides which may come from a variety of sources such as agriculture, urban storm water 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 storm water 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, 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.

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 about drinking water 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 at 1-800-426-4791.

SWAP

The Massachusetts Department of Environmental Protection (MA DEP) has completed a Source Water Assessment and Protection (SWAP) Program Report for the Town of Marion's public water system. The SWAP Program, established under the Federal Safe Drinking Water Act, requires every state to (1) inventory land uses within the recharge areas of all public water supply sources; (2) assess the susceptibility of drinking water sources to contamination from these land uses; and (3) publicize the results to provide support for improved protection.

The Marion Water System was assigned a susceptibility ranking of high based on MA DEP's assessment of potential pollution sources in our watershed. These threats include a variety of land uses, such as septic systems, transportation corridors (local roads and highways), and stormwater.

This SWAP report is available at the Marion Water Division office located at 50 Benson Brook Road and online at www.state.ma.us/dep/brp/dws.

WHAT IS A CROSS CONNECTION AND WHAT CAN I DO ABOUT IT?

A cross connection is a connection between a drinking water pipe and a polluted source. The pollution can come from your own home. For example, 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 at the same time you turn on the hose, the fertilizer may be back-siphoned into the drinking water pipes through the hose. This problem can be prevented by using an attachment on your hose called a backflow-prevention device.

The Marion Water Division recommends the installation of backflow prevention devices, such as low cost hose bib vacuum breakers, for all inside and outside hose connections. You can purchase these at a hardware store or plumbing supply store. This is a great way for you to help protect the water in your home as well as the Marion drinking water system. For additional information on cross connections and on the status of Marion's Cross Connection Program, please contact our office at (508) 748-3540.

All drinking water, including bottled water, may reasonably be expected to contain at least a small amount 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 at 1-800-426-4791.

WATER QUALITY REPORT – Detected Regulated Contaminants 2021

<i>Inorganic Compounds</i>						
Contaminant	Violation Y/N	Max Amount Detected	Range Detected	MCLG	MCL	Possible Sources of Contaminant
Nitrate	No	.99	0 - .99	10	10	Runoff from fertilizer use, leaching from septic tanks, sewage, erosion from natural deposits
Perchlorate	No	0.15	0 – .15	N/A	2	Rocket propellants, fireworks, munitions, flares, blasting agents

<i>Lead and Copper</i>						
Contaminant	Violation Y/N	90th Percentile	Action Level	# of Sites Sampled	# of Sites Above AL	Possible Sources of Contaminant
Copper (ppm)	No	0.38	1.3	20	0	Corrosion of household plumbing systems, erosion of natural deposits, leaching from wood preservatives
Lead (ppb)	No	.002	15	20	0	Corrosion of household plumbing systems, erosion of natural deposits

<i>Microbiological</i>						
Contaminant	MCL/TT	MCLG	Value	Date	Violation (Y/N)	Possible Sources of Contaminant
Total Coliform Bacteria	TT	0	Positive	06/08/21	Yes ¹	Naturally present in the environment. Also present in human and animal waste.
Total Coliform Bacteria	TT	0	Positive	07/20/21	Yes ²	Naturally present in the environment. Also present in human and animal waste.
Total Coliform Bacteria	TT	0	Positive	10/05/21	Yes ³	Naturally present in the environment. Also present in human and animal waste.
E. Coli	MCL	0	Positive	07/07/20	Yes ⁴	Human and animal fecal waste

¹The Town of Marion detected *total coliform* in the distribution system from routine samples collected on 6/8/2021. Repeat samples were taken on 6/10/2021, and all samples were clean except 1. On 6/15/2021 the Mill Street Tank was disinfected, and the area flushed, and the area of the Great Hill Tank was flushed. The Mill Street Tank was cleaned on 7/7/2021, the Benson Brook Tank was cleaned on 7/8/2021, and the Great Hill Tank was cleaned on 7/12/2021. More information about this situation is provided in the situation section below.

²The Town of Marion detected *total coliform* in the distribution system from routine samples collected on 7/20/2021. Repeat samples were taken on 7/22/2021, and all samples were clean. More information on this situation is provided in the situation section below.

³The Town of Marion detected *total coliform* in the distribution system from routine samples collected on 10/5/2021. More information about this situation is provided in the situation section below.

⁴The Town of Marion detected *E. coli* in the distribution system; the sample was collected in response to a TC+ routine sample collected on 10/5/21. More information about this situation is provided in the situation section below.

Situation Section

The Town of Marion experienced a total of three events, each of which occurred in the months of June, July, and October. The first event occurred in June, and Total Coliform was found to be present in 2 of the routine samples taken. The second event occurred in July, and Total Coliform was found to be present in 2 of the routine samples take.

The third event occurred in October, and Total Coliform was found to be present in 6 of the routine samples taken and E-coli were found in 4 of the routine samples taken. This event was caused by a compromised well, owned by Fairhaven, that tested positive for Total Coliform and E-coli pumping water into the MRV Water Treatment Plant. E-coli was detected in repeat samples taken on 10/7/21 and therefore triggered the MCL violation. In accordance with D.E.P. a Unilateral Administrative Order (Boil Order) was put in effect from 10/7/21 -10/19/21 at which time corrective actions were taken to mitigate the situation.

During the past year, [3] Level 2 assessments were required to be completed for our water system. [3] Level 2 assessment were completed. In addition, we were required to take [12] corrective actions and we completed [12] of these actions.

A Level 2 assessment is a very detailed study of the water system to identify potential problems and determine (if possible) why an E. coli MCL violation has occurred and/or why total coliform bacteria have been found in our water system on multiple occasions.

In addition, the Town of Fairhaven and Mattapoisett detected *Total Coliform* in their distribution systems on 9/14/2021. During this time, all samples for the Town of Marion were clean. Since the Town of Marion receives water from the MRV Water Treatment Plant, the Town of Marion issued a Tier 1 GWR Non-Boil Advisory within 24 hours of the TC+ samples, per MassDEP instruction.

Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, waterborne 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 or distribution. When this occurs, we are required to conduct assessment(s) to identify any problems that were found during these assessment

E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Human pathogens in these wastes can cause short term effects such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a greater health risk for infants, young children, the elderly, and people with severely compromised immune systems. We found E. coli bacteria, indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct assessments to identify problems and to correct any problems that were found during these assessments. We were required to complete a Level 2 assessment because we found E. coli in our water system. In addition, we were required to take [3] corrective actions and we completed [3] of these actions.

In the table on the previous page you will find many terms and abbreviations you might not be familiar with. To help you better understand these terms we've provided the following definitions:

Maximum Contaminant Level Goal (MCLG) - 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.

Maximum Contaminant Level (MCL) - 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.

Action Level (AL) - the concentration of a contaminant which, if exceeded, triggers a treatment or other requirement which a water system must follow.

ppm – parts per million

ppb – parts per billion

Important Information on Lead & Copper

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 Marion Water Division 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>.

LEAKS

The first step to creating a water-efficient home is to check for leaks. Leaks are wasteful and expensive. Every unused drop that trickles down the drain will show up on your water and sewer bill. If the wasted water is heated, your gas or electric bill will be higher also. The biggest source of leaks around the house is the toilet. Some studies indicate that as many as 20 percent of all household toilets leak. **The easiest way to test for a leaking toilet is to lift the lid off the toilet tank and put a few drops of food coloring into the tank. Wait a few minutes then look in the bowl. If any of the food coloring has made its way there, you have a leak.**

WATER CONSERVATION TIPS

- Fix all faucet, toilet, and showerhead leaks.
- Use the dishwasher and washing machine only with full loads.
- Don't run water continuously for vegetable and dish washing. Speed the cleaning of vegetables by using a vegetable brush. Spray water in short bursts. Faucet aerators cut consumption.
- Plan ahead to defrost foods overnight in the refrigerator. Don't use running water. Use the microwave or put wrapped food in a bowl of cold water.
- Don't let the water run while brushing your teeth or shaving.
- Take showers rather than baths; keep them short. Filling the bathtub uses about 50 gallons of water
- Don't use the toilet as a trash can. Every flush you eliminate can save between 2 and 7 gallons of water.
- Don't run the tap to get cold water; instead keep a bottle in the refrigerator.
- Install aerators on bathroom and kitchen faucets.
- Install low-flow toilets (1.6 gallons per flush) and low-flow showerheads.
- Insulate your water heater and pipes.

OUTDOOR WATERING TIPS

- Use a broom to clean driveways, walks, and patios.
- Use a sponge and a bucket of water to wash the car.
- Water the lawn in early morning or evening to avoid evaporation.
- Aerate regularly and use mulch to reduce evaporation.
- Plant native or drought-resistant grass and plants.
- Water trees slowly, deeply, infrequently to encourage deep rooting.
- Water only when it is needed. The easiest way to tell if grass needs water is to walk on it. If you leave a trail of footprints in the lawn, it is time to irrigate.
- Capture and reuse rainwater. Use rain barrels to capture rainwater from downspouts for use in your yard. A lid, mesh fabric, or several drops of baby oil on the surface will prevent mosquitoes from breeding.
- Keep your mower blades sharp to prevent tearing of grass and raise your lawn mower's blades to 2.5". Longer grass provides shade for the roots and help reduce water loss.
- Be aware of the various shade and moisture zones in your yard and plan your gardens and plantings accordingly.

Above excerpts from: A Consumer's Guide to Water Conservation by Mark Obmascik
Massachusetts Drought Management Task Force - *Tips for Saving Water* - Commonwealth of MA

Water restrictions will be in place from June 15 through September 15 each year until further notice. Phase 1 watering hours are from 6:00 AM to 8:00 AM and 6:00 PM to 8:00 PM on Mondays, Wednesdays, and Fridays for even-numbered addresses and on Tuesdays, Thursdays, and Saturdays for odd-numbered addresses. Residents may wash vehicles and water plants on Sundays by means of a hand-held hose between the hours of 6:00 AM and 12:00 noon. Any person violating this restriction shall be liable to the Town in the amount of \$50.00 for the first violation and \$100.00 for each subsequent violation. If you have any questions, please contact the Marion Water Division at 508-748-3540.