



2021 Drinking Water Quality Report

Yarmouth Water Department

99 Buck Island Road • West Yarmouth, MA 02673 • 508-771-7921
Massachusetts Public Water Supplier #4351000

This report is a snapshot of drinking water quality that we provided last year. Included are details about where your water comes from, what it contains, and how it compares to state and federal standards. This publication is mandated by the federal public right-to-know regulation requiring community water suppliers to provide specific treated water quality information annually to their customers. Our water system is routinely inspected by the Massachusetts Department of Environmental Protection (MassDEP). They inspect our system for its technical and managerial capacity to provide safe drinking water to you. Furthermore, your water system is operated by Massachusetts Certified Drinking Water Operators.

Yarmouth's Water Sources

The Town of Yarmouth operates 24 groundwater wells that draw water from two aquifers or lenses. The Sagamore Lens, which supplies most of the water for Yarmouth, and the Monomoy Lens. Your tap water may come from either of these sources depending upon where you live and the time of year. Emergency water supplies can be achieved through interconnections with the Dennis Water District and the Barnstable Fire District. No emergency water supplies were required in 2021. In addition to the 24 Well Pump Stations (PS) listed in the table to the right, the Town operates three water storage tanks, 2,115 hydrants, 282 miles of main and over 16,000 service connections.

The Yarmouth Water Department is currently able to utilize minimal treatment technologies due to the high quality of our source water. The Department owns and protects over 963 acres of land surrounding well fields and aquifer recharge areas to help ensure continued high quality water sources. We also inspect these areas regularly for any condition that could adversely affect the water quality. In addition, our staff, in conjunction with the Health Department, reviews and comments on local land development plans near our well fields that could impact water quality.

Is My Water Treated?

Potassium Hydroxide is added for adjusting the pH of your water. We do this to achieve a pH range of 6.8 to 7.5 in an effort to make your water pH neutral or less corrosive.

Name	Location	Source ID
PS 1 Main	Union Street	4351000-01G
PS 1	Higgins Crowell Road	4351000-02G
PS 2	Higgins Crowell Road	4351000-03G
PS 3	Higgins Crowell Road	4351000-04G
PS 4	Long Pond Drive	4351000-05G
PS 5	Long Pond Drive	4351000-06G
PS 6	North Main Street	4351000-07G
PS 7	North Main Street	4351000-08G
PS 8	North Main Street	4351000-09G
PS 9	North Main Street	4351000-10G
PS 10	Forest Road	4351000-11G
PS 11	Kristin Path	4351000-12G
PS 13	Chickadee Lane	4351000-13G
PS 14	Higgins Crowell Road	4351000-14G
PS 15	North Dennis Road	4351000-15G
PS 16	North Dennis Road	4351000-16G
PS 17	Horse Pond Road	4351000-17G
PS 18	Chickadee Lane	4351000-18G
PS 19	Chickadee Lane	4351000-19G
PS 20	Higgins Crowell Road	4351000-20G
PS 21	North Dennis Road	4351000-21G
PS 22	North Dennis Road	4351000-22G
PS 23	Mid-Tech Drive	4351000-23G
PS 24	Higgins Crowell Road	4351000-24G

Source Water Assessment Program (SWAP)

MassDEP has prepared a SWAP Report for the water supply sources serving our community. The SWAP Report assesses the susceptibility of public water supplies. There are a number of land uses and activities that are potential sources of contamination. The SWAP Report notes the following key issues for our sources; inappropriate activities in Zone 1's, residential land uses, hazardous materials, transportation corridors, oil or hazardous material contamination sites, and comprehensive wellhead protection planning. Yarmouth was assigned susceptibility ranking of high. This ranking does not imply that Yarmouth has poor water quality or will have poor water quality in the future. It only draws attention to various activities within the watershed that may be potential sources of contamination. The complete SWAP report is available at the Water Division, Board of Health, and online at www.mass.gov/service-details/the-source-water-assessment-protection-swap-program. For more information, contact Laurie Ruzala, Water & Wastewater Superintendent at 508-771-7921.

Information about PFAS6

PFAS6 includes perfluorooctanoic acid (PFOA), perfluorooctane sulfonic acid (PFOS), perfluorononanoic acid (PFNA), perfluorohexanesulfonic acid (PFHxS), perfluorodecanoic acid (PFDA) and perfluoroheptanoic acid (PFHpA). PFAS are man-made chemicals that have been used in the manufacturing of certain fire-fighting foams, moisture and stain resistant products, and other industrial processes. The Yarmouth Water Department sampled for PFAS6 as required by new regulations beginning in April 2021. The results at Wells No. 4 & 5 and Well No. 10 were above the MCL for PFAS6 in the third and fourth quarter of 2021, respectively. Wells No. 4, 5 and 10 have been taken out of service while we investigate treatment options. We will continue to monitor for PFAS6 at all of our sources and keep you informed of any important updates.

Landlords, please forward this important document to your tenants. Additional copies and more information can be found at www.yarmouth.ma.us/139/Water. If you have questions about this report or are interested in learning more about Yarmouth's water system, call Water & Wastewater Superintendent, Laurie Ruzala, at 508-771-7921. You may also attend the Board of Selectmen meetings. For more information about Board of Selectmen meetings, visit www.yarmouth.ma.us/65/Selectmen.

2021 Water Quality Testing Results

We test our water regularly through a certified laboratory. During 2021, we collected thousands of water samples in the system that were then tested for compliance with federal and state health standards both at the source and throughout the distribution system. State and federal regulators routinely monitor our compliance and testing protocols to assure that we deliver safe drinking water to our customers. The water quality information presented in the tables is from the most recent round of testing done in accordance with the regulations. All results are from samples collected during the last calendar year unless otherwise noted in the tables. Only the detected contaminants are shown.

Microbial Contaminants									
Fecal Indicator	Highest % Positive in a month	MCL	MCLG	Violation?	Possible source of contamination				
Total Coliform Bacteria	2.6	<5%	0	NO	Naturally present in the environment.				
Enterococci	1 positive sample	TT	NA	YES	Human and animal fecal waste.				
Lead and Copper									
Substance	Date Collected	90 th percentile	Action Level	MCLG	# of Sites Sampled	# of Sites above the AL	Possible source of contamination		
Copper (ppm) ¹	Sept, 2019	0.24	1.3	1.3	30	0	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives		
Lead (ppb) ¹	Sept, 2019	1.4	15	0	30	0	Corrosion of household plumbing systems; Erosion of natural deposits		
Inorganic Contaminants, SOC's, Nitrates, Nitrites, Radioactive Contaminants									
Substance	Date Collected	Highest Detect Level	Range Detected	Average Detected	MCL	MCLG	Violation ?	Possible source of contamination	Health Effects
Barium (ppm)	March 2021	0.29	0-0.29	0.05	2	2	NO	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits	Some people who drink water containing barium in excess of the MCL over many years could experience an increase in their blood pressure.
Chromium (ppb)	1 st Quarter 2021	2	ND-2	0.3	100	100	NO	Discharge from steel and pulp mills; Erosion of natural deposits	Some people who use water containing chromium well in excess of the MCL over many years could experience allergic dermatitis.
Di(2-Ethylhexyl) Phthalate (ppb)	November 2021	1.4	ND-1.4	0	6	0	NO	Discharge from rubber and chemical factories	Some people who drink water containing di (2-ethylhexyl) phthalate well in excess of the MCL over many years may have problems with their liver, or experience reproductive difficulties, and may have an increased risk of getting cancer.
Nitrate (ppm)	Quarterly	6.2	0.2-6.2	2.5	10	10	NO	Runoff from fertilizer use. Leaching from septic tanks, sewage; Erosion of natural deposits	Infants below the age of six months who drink water containing nitrate in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome.
Pentachloro-phenol	November 2021	0.05	ND-0.05	0	1	0	NO	Discharge from wood preserving factories	Some people who drink water containing pentachlorophenol in excess of the MCL over many years could experience problems with their liver or kidneys, and may have an increased risk of getting cancer.
Radium Combined (pCi/l)	September 2021	2.3	ND-2.3	0.19	5	0	NO	Erosion of natural deposits.	Some people who drink water containing radium 226 or 228 in excess of the MCL over many years may have an increased risk of getting cancer.
Secondary Contaminants									
Substance	Date Collected	Highest Detect Level	Range Detected	Average Detected	SMCL	OSRG or Health Advisory ²	Possible source of contamination		
Manganese ¹ (ppb)	2 nd quarter 2020	910 ³	0-910	140	50	300	Erosion of natural deposits.		

New Water Rates Beginning July 1, 2022

Please note that water rates will increase on July 1, 2022. New rates can be viewed by clicking on "Water Rates" on the Water Department website: <http://www.yarmouth.ma.us/139/Water>

Per- and Polyfluoroalkyl (PFAS) Substances							
Substance	Range Detected	Highest Quarterly Average	MCL	Violation ?	Possible source of contamination	Health Effects	
PFAS6 ⁴ (ppt)	ND-23	21 At Wells No. 4 & 5 23 At Well No. 10	20	YES	Discharges and emissions from industrial and manufacturing sources associated with the production or use of these PFAS, including production of moisture and oil resistant coatings on fabrics and other materials. Additional sources include the use and disposal of products containing these PFAS, such as fire-fighting foams.	Some people who drink water containing these PFAS in excess of the MCL may experience certain adverse effects. These could include effects on the liver, blood, immune system, thyroid, and fetal development. These PFAS may also elevate the risk of certain cancers.	
Unregulated Per- and Polyfluoroalkyl (PFAS) Substances							
Substance			Range Detected	Average	OSRG	Possible Sources	
Perfluorobutanesulfonic Acid (PFBS) (ppt)			ND-11	0.82	No OSRG Guideline for this compound	-	
Perfluorohexanoic acid (PFHxA) (ppt)			ND-35	0.72	No OSRG Guideline for this compound	-	
Perfluorotetradecanoic Acid (PFTA) (ppt)			ND-4.9	0.07	No OSRG Guideline for this compound	-	
Other Unregulated Contaminants							
Substance	Date Collected	Highest Detect Level	Range Detected	Average Detected	ORSG	Possible source of contamination	Health Effects
Chloroform (ppb)	Quarterly	5.9	0-5.9	2.1	70	Occurs naturally on Cape Cod. Future studies by MassDEP are planned to determine why.	Some people who drink water containing chloroform at high concentrations for many years could experience liver and kidney problems and may have an increased risk of cancer.
Nickel (ppb)	2 nd quarter 2021	2	ND-2	0.3	1000	Discharge from domestic wastewater, landfills, and mining and smelting operations	Some people who drink water containing nickel at high concentrations for many years could experience effects on the lung, stomach, blood, liver, kidneys, immune system, reproduction, and development.
Sodium (ppm)	2 nd quarter 2021	140	11-140	36	20	Discharge from the use and improper storage of sodium-containing de-icing compounds or in water-softening agents	Some people who drink water containing sodium at high concentrations for many years could experience an increase in blood pressure.

¹ Most of the data presented in this table is from testing done during the 2021 calendar year. We monitor for some contaminants less than once per year, because the concentrations for those contaminants are not expected to vary significantly from year to year. As a result, some of our data, though representative, is more than a year old. For those contaminants, the date of the last sample is shown in the table.

² EPA and MassDEP have established public health advisory levels for manganese to protect against concerns of potential neurological effects and a one-day and 10-day health advisory of 1000 ppb for acute exposure.

³ The pump station with the highest level detected was resampled for manganese one month later and the result was 37 ppb. The Department will continue to monitor manganese levels at this location.

⁴ PFAS6 was regulated on April 1, 2021. These results are from April 1 through December 31, 2021.

Information About Manganese

Manganese is a naturally occurring mineral found in rocks, soil, groundwater, and surface water. Manganese is necessary for proper nutrition and is part of a healthy diet, but can have undesirable effects on certain sensitive populations at elevated concentrations. The EPA and MassDEP have set an aesthetics-based Secondary Maximum Contaminant Level (SMCL) for manganese of 50 µg/L (microgram per liter), or 50 ppb. In addition, MassDEP's Office of Research and Standards (ORS) has set a drinking water guideline for manganese (ORSG), which closely follows the EPA public health advisory for manganese. Drinking water may naturally have manganese and, when concentrations are greater than 50 ppb, the water may be discolored and taste bad. Over a lifetime, the EPA recommends that people drink water with manganese levels less than 300 ppb and over the short term, EPA recommends that people limit their consumption of water with levels over 1000 ppb, primarily due to concerns about possible neurological effects. Children younger than one year old should not be given water with manganese concentrations over 300 ppb, nor should formula for infants be made with that water for more than a total of ten days throughout the year. The ORSG differs from the EPA's health advisory because it expands the age group to which a lower manganese concentration applies from children less than six months of age to children up to one year of age to address concerns about children's susceptibility to manganese toxicity.

Important Definitions

Maximum Contaminant Level or 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.

Maximum Contaminant Level Goal or 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.

Secondary Maximum Contaminant Level (SMCL): These standards are developed to protect aesthetic qualities of drinking water and are not health based.

Office of Research and Standards Guideline (ORSG): 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.

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

90th Percentile: Out of every 10 homes sampled, 9 were at or below this level. This number is compared to the action level to determine lead and copper compliance.

A Level 1 assessment is a study of the water system to identify potential problems and determine (if possible) why total coliform bacteria have been found in our water system.

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

TT: Treatment Technique

ppm: parts per million or milligrams per liter (mg/L)

ppb: parts per billion or micrograms per liter (µg/L)

Check out our Customer Portal!

Review past water usage trends, monitor current water use, set daily or billing cycle high usage alarms, or create vacation alarms in our Customer Portal! For more information please visit www.yarmouth.ma.us/1887/Customer-Portal.

Important Information About Drinking Water

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 the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the United States Environmental Protection Agency (EPA)'s Safe Drinking Water Hotline (800-426-4791).

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, in some cases, radioactive material, and can pick up substances resulting from the presences 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 storm water runoff, and residential uses.
- **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** can be naturally occurring or be the result of oil and gas production, and mining activities.

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/Center for Disease Control guidelines on appropriate means to lessen the risk of infection by cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

In order to ensure that tap water is safe to drink, the MassDEP and EPA prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. The US Food and Drug Administration and the MA Department of Public Health regulations establish limits for contaminants in bottled water that must provide the same protection for public health.

Information About Lead

If present, elevated level 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. Yarmouth Water 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 www.epa.gov/safewater/lead.

Bacteria

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.

Fecal indicators are microbes whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term health effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune system.

The Yarmouth Water Department had a bacteria related violation in April 2021. On April 5, 2021, we had a positive coliform sample in the distribution, which is not a violation. However, the positive coliform sample requires testing all sources for enterococci, a fecal indicator. We completed sampling as required on April 7, 2021, however, inadvertently tested the sources for E. coli (a different fecal indicator) instead of enterococci. This is considered a violation for failure to collect repeat samples. All samples were negative for coliform and E. coli.

In July, 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 assessments. During the past year, we were required to conduct one Level 1 assessment. The Level 1 Assessment was completed because we failed to collect the correct repeat samples on July 9, 2021. We did not become aware of the issue until later, and therefore, failed to notify MassDEP in a timely manner or complete the required Level 1 Assessment within the prescribed timeframe. As soon as we were aware of the issue, we completed the Level 1 Assessment. We were required to take four corrective actions and we completed all four of these actions to bring our system back into compliance. As part of the follow up sampling conducted on July 9, Well No. 8 tested positive for enterococci. The well was immediately taken offline while we conducted additional sampling at the well. Five consecutive samples taken on July 11 were negative for enterococci and the well was brought back online. Finally, on August 17, 2021, we failed to notify MassDEP of an E. coli positive sample on the same day it was reported to us by the laboratory. We did notify MassDEP the following morning and took all required repeat samples within the required time frame. All repeat samples were negative for E. coli.

We continue to monitor all sources for bacteria on a routine basis. It is important to note that we have instituted all new sampling procedures and protocols. Our staff has been trained and redundancy has been added to ensure future compliance with all sampling requirements.

Monitoring Violation

We are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not your drinking water meets health standards. During first quarter 2020, we did not complete all monitoring required for Nitrate and Nitrite, and therefore cannot be sure of the quality of your drinking water during that time. All missed samples were collected in the fourth quarter of 2021 and were found to be below the MCLs.