

A close-up photograph of a clear glass pitcher pouring water into a glass. The water is captured in mid-pour, creating a dynamic, crystalline stream. The background is softly blurred, showing hints of other glassware and a warm, ambient light. The text is overlaid on the upper portion of the image.

# ANNUAL WATER QUALITY REPORT

REPORTING YEAR 2020

*Presented By*  
**Town of Middleborough  
Water Department**



## Quality First

Once again, we are pleased to present our annual water quality report covering all testing performed between January 1 and December 31, 2020. As in years past, we are committed to delivering the best-quality drinking water possible. To that end, we remain vigilant in meeting the challenges of new regulations, source water protection, water conservation, and community outreach and education while continuing to serve the needs of all our water users. Thank you for allowing us the opportunity to serve you and your family.

We encourage you to share your thoughts with us on the information contained in this report. After all, well-informed customers are our best allies.

## Source Water Assessment

A Source Water Assessment has been completed for the Middleborough Water Department. The assessment has identified various activities to be monitored to maintain water quality. The Town has received high susceptibility ratings for 8 of 11 wells and moderate for 3 of the remaining wells in town. These ratings are due to the absence of natural barriers to contamination in the aquifers that supply these wells, which make them vulnerable. The two new East Main Street Satellite Wells were installed after the SWAP Report was completed; their susceptibility is similar to the original East Main Street Wells (#1 and #2).

Copies of the assessment are available from the MassDEP site at <https://www.mass.gov/doc/southeast-region-source-water-assessment-protection-swap-program-reports/download> - use PWS 4182000 to locate Middleborough's SWAP report.

## Water Treatment Process

In order to meet State and Federal requirements for public drinking water, we treat our source water before supplying it to customers. All of the well supplies are treated for pH adjustment with potassium hydroxide, and sodium hypochlorite is added for disinfection purposes. Additionally, the East Grove Street Well is filtered through a slow sand filter and East Main Street #1, Satellite Wells #1A and #1B and #2 Well supplies are filtered through a biological filtration process for iron and manganese removal.

## Capital Improvement Program

Capital improvements to the water system include: 1) Construction of a new iron and manganese filtration plant at the East Main #1 and #2 Well supplies. (This new plant replaced the existing, aging treatment methods at these sites, and will ensure that Middleborough continues to be supplied with high-quality water into the future). 2) Construction of a new well supply and 3) Construction of a new elevated storage tank to replace the existing Fire Tower Elevated Tank. Construction of the treatment plant was completed in December of 2018. Construction of the new well supply pumping station and storage tank commenced in 2020. Construction of the water main to serve the new pumping station is on-going. Other water main replacement projects (Forest and Bishop Streets) were completed, and Myrtle Street will begin the construction process shortly.

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In December of 2020, the Middleborough Water Department received a Public Water System Award for outstanding performance and achievement in the medium and large Community Systems Category and another Public Water System Award for energy conservation in 2019 from MassDEP.  
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## Community Participation

The Middleborough Board of Selectmen oversee the operations of the Middleborough Water Department. During the months of September through May, the Middleborough Board of Selectmen meet weekly, Monday evenings at 7:00 p.m. Meetings are held twice a month during the months of June, July, and August. Meetings are held at the Town Hall in the Selectmen's Meeting Room. The public is encouraged to attend these open meetings. Meetings are also televised on the local public access station.

## Lead in Home Plumbing

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. We are responsible for providing high-quality drinking water, but we 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 at (800) 426-4791 or at [www.epa.gov/safewater/lead](http://www.epa.gov/safewater/lead).



## Additional Monitoring

The Middleborough Water Department has initiated sampling and will continue to sample in 2021 for Per- and Polyfluoroalkyl substances (PFOS/PFAS) in cooperation with the MassDEP monitoring program. Included in that monitoring were PFOS, PFOA, PFHxS, PFNA, PFHpA, and PFDA. The U.S. EPA has set a Health Advisory of 70 ppt for PFOS and PFOA, and MassDEP's Office of Research and Standards has set an ORSG of 20 ppt for such substances individually or as a group through October 1, 2020; the MassDEP has set a Massachusetts MCL of 20 ppt for the combined PFAS6 compounds for sampling after October 1, 2020.

## Substances That Could Be in Water

To ensure that tap water is safe to drink, the Massachusetts Department of Environmental Protection (MassDEP) and the U.S. Environmental Protection Agency (U.S. EPA) prescribe regulations limiting the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration (FDA) and Massachusetts Department of Public Health (DPH) regulations establish limits for contaminants in bottled water that must provide the same protection for public health. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of these contaminants does not necessarily indicate that the water poses a health risk.

The 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. Substances 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, or wildlife;

Inorganic Contaminants, such as salts and metals, which can be naturally occurring or may result from urban stormwater 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 stormwater runoff, and residential uses;

Organic Chemical Contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production and may also come from gas stations, urban stormwater runoff, and septic systems;

Radioactive Contaminants, which can be naturally occurring or may be the result of oil and gas production and mining activities.

More information about contaminants and potential health effects can be obtained by calling the U.S. EPA's Safe Drinking Water Hotline at (800) 426-4791.



## Where Does My Water Come From?

Town of Middleborough Water Department customers receive their water from 13 groundwater sources, which produced over 625 million gallons of water (or an average of 1.71 million gallons per day) in 2020. Maximum day pumpage was

2.64 million gallons. The East Grove Street, Rock #1 and #2, East Main Street #1, #1A, #1B and #2, Tispaquin #1 (off-line) and #2, Cross Street, Plympton Street, Miller Street, and Spruce Street wells are located within the Taunton River basin.

To learn more about our watershed on the Internet, go to the U.S. EPA's Surf Your Watershed at [www.epa.gov/surf](http://www.epa.gov/surf).

## Important Health Information

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons such as those with cancer undergoing chemotherapy, those who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants may be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. The U.S. EPA/CDC (Centers for Disease Control and Prevention) 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 (800) 426-4791 or <http://water.epa.gov/drink/hotline>.



**QUESTIONS?** For more information about this report, or for any questions relating to your drinking water, please call Michael Bumpus, Water Superintendent, at (508) 946-2482.

## Test Results

Our water is monitored for many different kinds of substances on a very strict sampling schedule. Also, the water we deliver must meet specific health standards. Here, we show only those substances that were detected in our water. (A complete list of all our analytical results is available upon request.) Remember that detecting a substance does not mean the water is unsafe to drink; our goal is to keep all detects below their respective maximum allowed levels.

The State recommends monitoring for certain substances less often than once per year because the concentrations of these substances do not change frequently. In these cases, the most recent sample data are included, along with the year in which the sample was taken.

### REGULATED SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Combined Radium (pCi/L)	2020	5	0	1.79	0.95–1.79	No	Erosion of natural deposits
Haloacetic Acids [HAAs] (ppb)	2020	60	NA	7.9	0–30.0	No	By-product of drinking water disinfection
Nitrate (ppm)	2020	10	10	1.41	0.77–2.19	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
PFAS6 (ppt)	2020	20	NA	16	ND–16	No	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
Perchlorate (ppb)	2020	2	NA	0.27	0.10–0.68	No	Inorganic chemicals used as oxidizers in solid propellants for rockets, missiles, fireworks, and explosives
TTHMs [Total Trihalomethanes] (ppb)	2020	80	NA	23.2	5.6–53.0	No	By-product of drinking water disinfection

### Tap water samples were collected for lead and copper analyses from sample sites throughout the community

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AL	MCLG	AMOUNT DETECTED (90TH %ILE)	SITES ABOVE AL/TOTAL SITES	VIOLATION	TYPICAL SOURCE
Copper (ppm)	2020	1.3	1.3	0.21	0/134	No	Corrosion of household plumbing systems; Erosion of natural deposits
Lead (ppb)	2020	15	0	2	1/134	No	Corrosion of household plumbing systems; Erosion of natural deposits

### SECONDARY SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	SMCL	MCLG	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Chloride (ppm)	2020	250	NA	94.3	24.2–220	No	Runoff/leaching from natural deposits
Iron (ppb)	2020	300	NA	113	60–310	No	Leaching from natural deposits; Industrial wastes
Manganese (ppb)	2020	50	NA	87	7–324	No	Leaching from natural deposits
pH (Units)	2020	6.5–8.5	NA	7.87	7.0–8.9	No	Naturally occurring

## Definitions

**90th %ile:** 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.

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

**MCL (Maximum Contaminant Level):** 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.

**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.

**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 risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

**NA:** Not applicable

**ND (Not detected):** Indicates that the substance was not found by laboratory analysis.

**pCi/L (picocuries per liter):** A measure of radioactivity.

**ppb (parts per billion):** One part substance per billion parts water (or micrograms per liter).

**ppm (parts per million):** One part substance per million parts water (or milligrams per liter).

**ppt (parts per trillion):** One part substance per trillion parts water (or nanograms per liter).

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

UNREGULATED SUBSTANCES <sup>1</sup>				
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
<b>Bromodichloromethane</b> (ppb)	2020	5.2	1.4–9.4	By-product of drinking water disinfection
<b>Bromoform</b> (ppb)	2020	0.6	ND–2.1	By-product of drinking water disinfection
<b>Chloroform</b> (ppb)	2020	15.5	0.8–43.9	By-product of drinking water disinfection
<b>Dibromochloromethane</b> (ppb)	2020	1.9	0.7–3.5	By-product of drinking water disinfection
<b>Sodium</b> (ppm)	2020	94.9	41.5–141	Naturally occurring substance in the environment

OTHER UNREGULATED SUBSTANCES <sup>1</sup>			
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH
<b>Bromochloroacetic Acid</b> (ppb)	2018	2.101	ND–3.850
<b>Bromodichloroacetic Acid</b> (ppb)	2018	1.398	ND–2.320
<b>Chlorodibromoacetic Acid</b> (ppb)	2018	0.903	0.359–1.160
<b>Dibromoacetic Acid</b> (ppb)	2019	0.75	ND–1.9
<b>Dichloroacetic Acid</b> (ppb)	2019	6.08	1.6–14.0
<b>Germanium</b> (ppb)	2018	0.015	ND–0.301
<b>Monochloroacetic Acid</b> (ppb)	2019	0.425	ND–2.4
<b>Trichloroacetic Acid</b> (ppb)	2019	8.325	1.0–22.8

<sup>1</sup>Unregulated contaminants are those for which the U.S. EPA has not established drinking water standards. The purpose of monitoring unregulated contaminants is to assist U.S. EPA in determining their occurrence in drinking water and whether future regulation is warranted.

UNREGULATED PFAS						
UNREGULATED CONTAMINANT (CASRN)	YEAR SAMPLED	DETECT RESULT OR RANGE	AVERAGE	ORSG	POSSIBLE SOURCES	HEALTH EFFECTS
<b>Perfluorobutanesulfonic Acid (PFBS)</b> (375-73-5)	2020	ND–2	0.2	†	-	-
<b>Perfluorohexanoic acid (PFHxA)</b> (307-24-4)	2020	ND–8	2.0	†	-	-
<b>N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)</b> (2991-50-6)	2020	3	2.8	†	-	-
<b>January through to October 1, 2020 detections of PFAS6 contaminants (before regulation was promulgated):</b>						
<b>perfluoroheptanoic acid (PFHpA)</b> (375-85-9)	2020	ND–5	1.4	20	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 firefighting foams.	Some people who drink water containing these PFAS in excess of the ORSG 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.
<b>perfluorohexane sulfonic acid (PFHxS)</b> (355-46-4)	2020	ND	ND			
<b>perfluorooctanoic acid (PFOA)</b> (335-67-1)	2020	ND–10	3.9			
<b>perfluorononanoic acid (PFNA)</b> (375-95-1)	2020	ND	ND			
<b>perfluorooctane sulfonic acid (PFOS)</b> (1763-23-1)	2020	ND–7	2.5			
<b>perfluorodecanoic acid (PFDA)</b> (335-76-2)	2020	ND	ND			

† There is no ORS Guideline for this compound

## 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 United States Environmental Protection Agency (EPA) and MassDEP have set an aesthetics-based Secondary Maximum Contaminant Level (SMCL) for manganese of 50 ug/L (microgram per liter), or 50 parts per billion. 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. See EPA Drinking Water Health Advisory for manganese at: [https://www.epa.gov/sites/production/files/2014-09/documents/support\\_cc1\\_magnese\\_dwreport\\_0.pdf](https://www.epa.gov/sites/production/files/2014-09/documents/support_cc1_magnese_dwreport_0.pdf) and MassDEP Office of Research and Standards (ORSG) for manganese <http://www.mass.gov/eea/agencies/massdep/water/drinking/lead-and-other-contaminants-in-drinking-water.html#11>.