

# Groton Water Department

# Annual Water Quality Report

Annual Report—

April 2019

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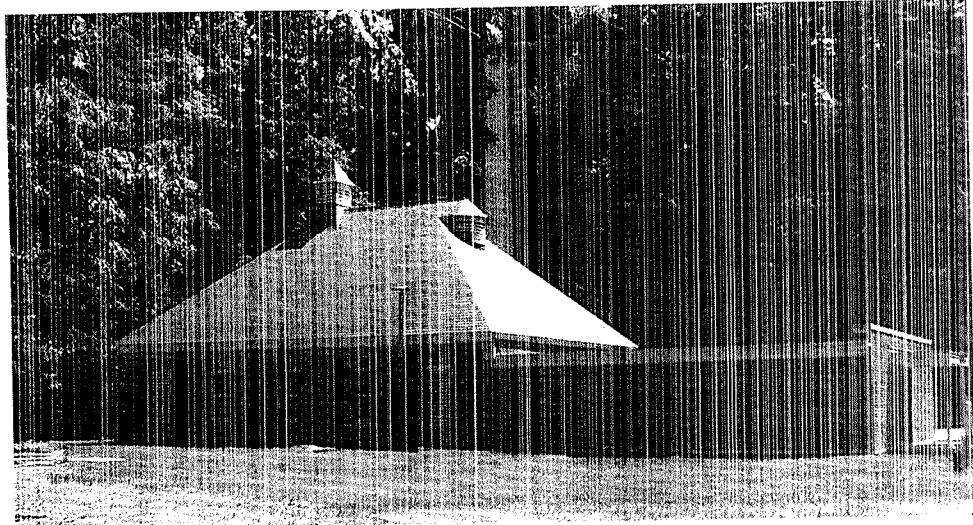
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## Superintendent's Message

*As your Superintendent of the Groton Water Department (GWD), I am very pleased to provide you, our valued customer, with the status of the quality of the drinking water delivered to your household in the calendar year 2018. Our very dedicated staff and elected officials continue to work tirelessly to provide you with the safest and most reliable source of potable drinking water possible. Your Annual Water Quality Report contains information on the sources of your drinking water and how it compares to state (MassDEP) and federal (USEPA) drinking water standards. The GWD continues to meet all of these regulatory requirements. I encourage you to take a few moments to read the report and become familiar with your drinking water quality. Additional information and data can be found on our web site at [www.grotonwater.org](http://www.grotonwater.org) or you may call our offices at 1-978-448-1122, Monday thru Friday.*

*Respectfully submitted,*

*Thomas D. Orcutt*



**Baddacook Pond Treatment Facility**

**Conservation** - Recently, the Groton Water Department was successful in making significant upgrades to the Whitney Pond Well Sites by replacing the old pumps and motors with more modern energy efficient variable speed pumps and motors. We replaced the Motor Control Panels that have been in place for over 30 years. We were also very fortunate to receive a \$83,000.00 grant towards these improvements. This grant covered nearly 25% of the entire project costs. Working closely with the Electric Light Department Board and General Manager, we were able to receive revised electrical rates if we participated in their Demand Management Program. This program requires us to turn our pumps off when energy consumption is at its highest demand each month in Groton. Demand Management is a "win / win" situation for both town departments. These savings help us control our operating expenses and help define our water rates. The Board of Water Commissioners meet regularly to discuss the financial operations to be sure we properly forecast future savings for the larger capital projects we are anticipating in the next two or three years.

## Manganese

The Water Department is looking at treatment options for the Whitney Pond Wells. This will be an expensive capital investment for the Water Department. The treatment will consist of manganese removal at both Whitney Pond Wells. Heavy summer pumping periods demands over a thirty year period, has led to an increase in the manganese coming out of the wells at these two sources. Manganese is not a health hazard, but is considered a "secondary" contaminant (see page 4 and page 6 for additional information and health advisories). The Board of Water Commissioners, with the assistance of our consulting engineers and the MassDEP, will be looking at treatment options to remove and/or reduce the levels of Manganese entering the system at this source. This may include treatment methods that will be costly, however, the money will be well spent in improving the overall water quality to all of our customers. Planning for future improvements to the water pumping station will require careful planning and design steps for the Board of Water Commissioners to consider. Funding a large capital project, such as a water filtration plant, will be a priority for the Board over the next six to twelve months. The Board will have open public meetings on the matter and/or you can find additional information on our web-site at [grotonwater.org](http://grotonwater.org) or you can call the office during normal business hours at 1-978-448-1122.

## Where Does My Drinking Water Come From?

Source Name	Source Type	Location of Source
Baddacook Well	Groundwater	On the south shore of Baddacook Pond
Whitney Well #1	Groundwater	On the east shore of Whitney Pond
Whitney Well #2	Groundwater	On the east shore of Whitney Pond

Presently, the water system has over 52.3 miles of water mains, 1,892 water accounts, 390 fire hydrants and three water supply wells: Baddacook Pond Well, Whitney Pond Well #1, and Whitney Pond Well #2. The Whitney Pond Well #2 is considered a redundant back-up well for the main Whitney Pond Well #1. The system's original well at Baddacook Pond (constructed in 1897), still remains in active service today. Water is pumped from our sources to the Chestnut Hill Water Storage tank. This 1.0 million gallon storage tank, constructed in 2005, is at an elevation of 516 feet above mean sea level and is the highest point in Groton.

## Protecting Our Water Resources

MassDEP has prepared a Source Water Assessment and Protection (SWAP) Report for the water supply sources serving this water system. The SWAP Report assesses the susceptibility of public water supplies to contamination due to land uses and activities in our well recharge areas.

### What Is My System's Ranking?

A susceptibility ranking of **moderate** was assigned to our water supply system using the information collected during the assessment by the MassDEP. In the report, MassDEP recommends:

*That we constantly monitor and remove all non water-system related activities immediately around our wells; that we maintain a 400-foot radial buffer area around the wells (Zone I) free from pesticide/herbicide use or storage, road salt, or fertilizers.*

*That we educate residents on ways they can help protect drinking water sources.*

*That we work with emergency response teams to ensure that they are aware of the storm water drainage in our well recharge area (Zone II) and that they cooperate when responding to spills or accidents.*

### Where Can I See The SWAP Report?

The complete SWAP Report is available at the Water Department Office and online at [www.grotonwater.org](http://www.grotonwater.org), under the "Helpful Contacts" section or @ <http://www.mass.gov/eea/docs/dep/water/drinking/swap/cero/2115000.pdf>. For more information or assistance, please call us at 1-978-448-1122.

## Substances Found In Drinking Water

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, which may come from sewerage treatment plants, septic systems, agricultural livestock operations, and wildlife.

**Inorganic contaminants** - such as salts and metals, which can be naturally-occurring or result from 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 can also come from gas stations, urban stormwater runoff, and septic systems.

**Radioactive contaminants** - which can be naturally occurring or be the result of oil and gas production and mining activities.

To ensure that tap water is safe to drink, the MassDEP and U.S. Environmental Protection Agency (USEPA) prescribe regulations that limit 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. All 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 water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the USEPA's Safe Drinking Water Hotline (800-426-4791).

## Is My Water Treated?

Our water system makes every effort to provide you with safe and pure drinking water. To improve the quality of the water delivered to you, it is treated with a low dosage of sodium hypochlorite (chlorine) as a preventative disinfectant to guard against microbial contaminants that might enter the distribution system through breaks or leaks. We also treat the water with low levels of potassium hydroxide. Potassium hydroxide raises the pH of the water to a level that is not corrosive to copper pipes or lead solder joints in household plumbing, thus reducing lead and copper concentrations in your home drinking water (see page 6 for copper and lead information).

The quality of water in our system is constantly monitored by the GWD staff and by MassDEP to determine the effectiveness of existing water treatment and to determine if any additional treatment is required. In 2018, over 1,000 water samples were collected and analyzed at various points in our water supply system by our staff and by a Massachusetts Certified Laboratory.

Water pumped from the Baddacook Pond Well has naturally occurring minerals (iron and manganese) removed through a greensand filtration process. Water pumped from the Whitney Pond Wells #1 and #2 are not filtered through this process, because of their lower concentrations of these minerals.

**Fluoride is not added to your drinking water.**

## Important Definitions

**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.

**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 Residual Disinfectant Level (MRDL)** - The highest level of a disinfectant (chlorine, chloramines, chlorine dioxide) allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

**Maximum Residual Disinfectant Level Goal (MRDLG)** - The level of a drinking water disinfectant (chlorine, chloramines, chlorine dioxide) 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.

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

**90<sup>th</sup> Percentile** - Out of every 10 homes sampled, 9 were at or below this level.

**ppm** = parts per million, or milligrams per liter (mg/l)      **pCi/l** = picocuries per liter (a measure of radioactivity)  
**ppb** = parts per billion, or micrograms per liter (ug/l)      **ND** = not detected

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

**Massachusetts 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.

## Water Quality Testing Results

### Does My Drinking Water Meet Current Health Standards?

We are pleased to report that in 2018, your drinking water met all applicable health standards regulated by the MassDEP and the USEPA. We did have two of our water samples test higher than DEP'S guidelines for Manganese (a secondary contaminant). MassDEP and USEPA have established public health advisory levels for manganese to protect against concerns of potential neurological effects. Manganese is a naturally occurring mineral found in rocks, soils and 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 GWD is working closely with its engineering consultant and MassDEP to find a cost effective solution to reduce the manganese.

The water quality information presented in the tables is from the most recent round of testing done in accordance with the regulations. All results shown are from the samples collected during the last calendar year unless otherwise noted in the tables. MassDEP has reduced the monitoring requirements for synthetic organic contaminants, inorganic contaminants and perchlorate at the Whitney Pond Wells and at the Baddacook Pond Well perchlorate received reduced monitoring. Reduced monitoring by MassDEP indicates that these sources are not at risk of contamination. The last samples were collected for these contaminants were in 2018 and were found to meet all applicable US EPA and MassDEP standards.

### Special Health Information

Some people may be particularly vulnerable to impurities in drinking water. 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 and some elderly people and infants can be particularly at risk for infections. These people should seek advice about drinking water from their health care providers. EPA/Centers for Disease Control (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).

## Bacteria Sampling Results

Routine monthly sampling conducted at nine different sampling locations in the water distribution system during 2018 have **not** detected the presence of coliform bacteria in any of the test results.

*The water quality information presented in the following tables is from the most recent round of testing completed in accordance with MassDEP and US EPA regulations.*

## Regulated Contaminants Detected

Regulated Contaminant	Date(s) Collected	Highest Detect	Range Detected	MCL	MCLG	Violation (Y/N)	Possible Source(s) of Contamination
<b>Inorganic Contaminants</b>							
Arsenic (ppm)	4/11/18	0.01	0.01	10	-	N	Erosion of natural deposits
Barium (ppm)	4/11/18	0.005	0 - 0.005	2	2	N	Erosion of natural deposits
Nitrate (ppm)	4/11/18	0.61	0.32 - 0.79	10	10	N	Runoff from fertilizer use; Leaching from septic tanks; Sewage; Erosion of natural deposits
Perchlorate (ppb)	8/15/17	0.23	0.08 - 0.23	2	-	N	Rocket propellants, munitions
<b>Radioactive Contaminants</b>							
Radionuclide (pCi/l)(plus uranium)	4/24/18	3.2	3.2	15	0	N	Erosion of Natural Deposits

Disinfection Byproducts and Chlorine	Highest Running Annual Average	Range Detected	MCL Or MRDL	MRDL Or MFDLG	Violation (Y/N)	Possible Source(s) of Contamination
Total Trihalomethanes (TTHMs) (ppb) (8/15/18)	14.2	14.2	80	--	N	Byproduct of drinking water chlorination
Total Haloacetic Acids (HAA5) (ppb) (8/15/18)	0.0	0.0	60	--	N	Byproduct of drinking water disinfection
Chlorine (ppm) (monthly)	0.09	0.03 - 0.11	4	4	N	Water additive used to control microbes

## Unregulated and Secondary Contaminants Detected

Unregulated contaminants are those for which there are no established drinking water standards. Monitoring of unregulated contaminants assists regulatory agencies in determining the occurrence of the contaminants in drinking water and helps to determine the need for future regulation.

Unregulated and Secondary Contaminants	Date(s) Collected	Range Detected	Average Detected	SMCL	ORSG	Possible Source(s)
Nickel (ppb)	4/30/18	0	0	--	100	Discharge from domestic wastewater, landfills, and mining and smelting operations
Manganese* (ppb)	Quarterly 2018	0 - 446	235	50	300	Erosion of natural deposits
Chloroform (ppb)	5/15/18	0.0 - 7.9	7.9	No MCL	No MCLG	Byproduct of drinking water disinfection
Bromodichloromethane (ppb)	5/15/18	0.0 - 2.1	2.1	No MCL	No MCLG	Byproduct of drinking water disinfection
Sodium (ppm)	4/11/18	10.8-23.6	17.7	--	20	Natural sources; Runoff from use of salt on roadways
Iron (ppb)	Quarterly 2018	0 - 96	63	300	--	Natural and industrial sources aging infrastructure

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 (micrograms 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 µg/L, the water may be discolored and taste bad. Over a lifetime, the EPA recommends that people drink water with manganese levels less than 300 µg/L and over the short term, EPA recommends that people limit their consumption of water with levels over 1000 ug/L, primarily due to concerns about possible neurological effects. Children up to 1 year of age should not be given water with manganese concentrations over 300 ug/L, nor should formula for infants be made with that water for longer than 10 days.*

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 6 months of age to children up to 1 year of age to address concerns about children's susceptibility to manganese toxicity. See: EPA Drinking Water Health Advisory for Manganese

[https://www.epa.gov/sites/production/files/2014-09/documents/support\\_c11\\_magnese\\_dwreport\\_0.pdf](https://www.epa.gov/sites/production/files/2014-09/documents/support_c11_magnese_dwreport_0.pdf)

And MassDEP Office of Research and Standards Guideline (ORSG) for Manganese - <https://www.mass.gov/lists/contaminants#11>

## Lead and Copper Sampling Results

The purpose of lead and copper sampling is to protect public health by minimizing lead and copper in your drinking water. Lead and copper are primarily introduced to drinking water through the corrosion of plumbing materials that contain lead and copper. By closely monitoring the pH of the drinking water we deliver to your home, we minimize this corrosion, thus lowering these levels. The staff of the Water Department monitors the pH continuously through our SCADA system and adjusts the pH levels accordingly.

The GWD has demonstrated optimal corrosion control in its drinking water system in the past and remains on a three year Compliance Schedule with the Department of Environmental Protection.

The table below summarizes results from the comprehensive 2017 lead and copper sampling round.

	Date Collected	90 <sup>th</sup> Percentile	Action Level	MCLG	# of Sites Sampled	# of Sites Above Action Level	Possible Source(s) of Contamination
Lead (ppb)	6/14/17	5	15	0	25	1	Corrosion of household plumbing systems; Erosion of natural deposits
Copper (ppm)	6/14/17	0.45	1.3	1.3	25	0	Corrosion of household plumbing systems; Erosion of natural deposits

## Do I Need To Be Concerned About These Contaminants Detected In My Water?

**Lead:** 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 GWD is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure. **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 (800-426-4791) or at <http://www.epa.gov/safewater/lead>.

**Copper:** Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short amount of time could experience gastrointestinal distress. People with Wilson's Disease should consult their personal doctor. **Flush your tap for 30 seconds to 2 minutes before using tap water.** Additional information is available from the Safe Drinking Water Hotline at 800-426-4791.