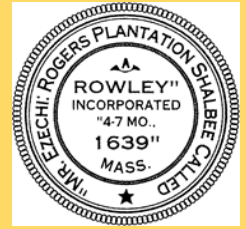


2017 Consumer Confidence Report
ROWLEY WATER DEPARTMENT
 Mass DEP PWSID # 3254000



PUBLIC WATER SYSTEM INFORMATION

Mission Statement: To provide adequate water quantity and quality at a reasonable cost that meets or exceeds state and federal drinking water standards, and to provide sufficient water for fire protection, maintain adequate pressures throughout the distribution system and administer first-rate customer service to the Town of Rowley.

To maintain and operate all aspects of the municipal water supply in an environmentally sound fashion, maintain regulatory compliance, adhere to established budgets and provide drinking water of the highest quality and optimum fire protection. To maximize system reliability, minimize losses, repair or improve system deficiencies and operate within an established budget. Maintain regulatory compliance and protect the residents from contamination or back siphon/backflow water quality issues.

Our goal is to ensure that we will have ample water supplies in the future that are contaminant free.

Major water issues are usually presented at regular bi-weekly Water Board Meetings. We encourage you to get involved.

Address:	401 Central Street PO Box 29 Rowley, MA 01969	Board of Water Commissioners:	Mark Emery Bernard Cullen John Manning
Phone:	(978) 948-2640	Water Superintendent:	Vacant
Website:	www.rowleywater.com	For billing or payment questions, or to schedule an appointment, please contact Customer Service by phone at (800) 553-5191, or by email at customer-service@pennichuck.com	
Hours:	7:00AM – 3:00PM Monday – Friday		

Flushing: The Water Department periodically flushes the fire hydrants throughout the town. The hydrant-flushing program is very important to the maintenance of the Town's water distribution system. During this process, it is not uncommon for a yellow, brown or reddish tint to appear in the water. Harmless mineral deposits settle in the water mains, and flushing the system stirs the deposits causing the discoloration. Flushing removes the sediments from the mains and also serves the following purposes:

- ❖ Improves water quality in the distribution system.
- ❖ Verifies the proper operation of fire hydrants and valves.
 - ❖ Helps find weaknesses in the water system.
- ❖ Checks for closed valves and weak flows in the water mains.
 - ❖ Verifies adequate fire flows for firefighting.







Leak Detection: Detecting and repairing leaks is one of the main components of water conservation. Leak detection has historically assumed that most, if not all leaks, rise to the surface and are visible. In fact, many leaks continue below the surface for long periods of time and remain undetected. With this leak detection program, the Rowley Water Department can search for and reduce previously undetected leaks. Water lost after treatment and pressurization, but before delivered for the intended use, is water, money and energy wasted. Accurate location and repair of leaking water pipes in a supply system greatly reduces these losses.

Once a leak is detected, the Water Department will take corrective action to minimize water losses in the water distribution system. The Water Department will try to maintain that unaccounted for water will not be more than 10 percent of the total water produced. The Water Department hired Water & Waste Pipe Testing, Inc to conduct a survey of 43 miles of water main. We found three leaks in 2017, and all three leaks were repaired. For more information on this report, please visit our website at www.rowleywater.com.

Leak Detection

Repairing a leak will pay for itself very quickly when you consider how much water can be lost through a pinhole leak over a period of a month. Unaccounted for water is a major source of lost revenue for most utilities. Higher electrical and chemical bills also result from pumping and treating lost water.

Water loss as a result of a leak 0.63 mm diameter (1/4") can mean a loss of 14,952 gallons a day. If undetected for a period of 34 days, over 1/2 million gallons are lost. Help the Water Department reduce operating expenses, and eliminate capital expenditures for expanding water supplies by stopping your losses. The following table shows leak sizes and their approximate loss in gallons/fee on a pressurized pipeline.

Pipe Leak Size	Gallons Lost	
	Per Day	Per Month
	360	11,160
	3,096	95,976
	8,424	261,144
	14,952	463,512

A water meter measures the amount of water entering your home. Most water meters are located in basements closest to the street. They can also be in a utility closet, mechanical room or outside in a pit. Rowley's water meters measure water use in gallons. Try reading your water meter throughout the week to determine how much water you use. Your water meter is equipped with a leak detection feature and can pick up water-using appliances and fixtures that have "silent" leaks. The top two culprits for leaks are toilets and irrigation systems. The American Water Works Association estimates that up to 25 percent of toilets in the U.S. leak.

YOUR DRINKING WATER SOURCE

Where does my drinking water come from? The drinking water for the Town of Rowley comes from three groundwater wells located on Town-owned parcels of land within the Parker River Basin.

How are these sources protected? Mass DEP has prepared a Source Water Assessment Program (SWAP) Report for the water supply sources serving the Town of Rowley. The SWAP Report assesses the susceptibility of public water supplies. A susceptibility rating of **high** was assigned to this system using the information collected during Mass DEP's assessment due to the absence of hydrological barriers that could prevent migration of contamination into the Town's groundwater supply.

The complete SWAP Report is available at <http://www.mass.gov/dep/water/drinking/swapreps.htm>. You can also visit our website www.rowleywater.com for more information on the SWAP Report.

Source Name	MassDEP Source ID	Source Type
Well #2	3254000-02G	Groundwater
Well #3	3254000-03G	Groundwater
Well #5	3254000-05G	Groundwater

Groundwater comes from rain and snowmelt percolating through the ground and flows through the spaces between soil particles and through fractures in rock. Groundwater is vulnerable to contamination from many types of land uses and activities, including road salt, septic systems and improper disposal of hazardous materials. If the groundwater becomes contaminated, it may be impossible to eliminate the contamination so the well can be used for drinking water.

With careful use, and by reducing sources of pollution, our groundwater will continue to be an important natural resource for years to come! To help protect water sources, residents should follow several important tips:

- ✓ If your house or business is served by a septic system, pump out the tank every two to three years. Do not use commercial septic tank cleaners or put hazardous materials down the sink, toilet or floor drain. These materials reduce the effectiveness of the system by killing necessary microorganisms and they can pass through the system and contaminate the groundwater.
- ✓ Avoid applying hazardous or toxic materials to lawns or other areas of your property.
- ✓ Never dispose of used motor oil or other hazardous materials on your property or in storm sewers.
- ✓ Practice good septic system maintenance.
- ✓ Limit pesticide and fertilizer use and dispose of hazardous household chemicals at hazardous material collection days.
- ✓ Support water supply protection initiatives at the next town meeting.

Is my water treated? Our water system makes every effort to provide you with good quality drinking water. Well #3 and Well #5 are treated and filtered through the treatment plant. We add sodium hypochlorite for disinfection to protect you against microbial contaminants, potassium permanganate for manganese removal, ortho-polyphosphate for sequestration of iron, and sodium hydroxide for pH adjustment and corrosion control. Well #2 is treated with sodium hypochlorite for disinfection to protect you against microbial contaminants, ortho-polyphosphate for sequestration of iron, and sodium hydroxide for pH adjustment and corrosion control.

All reservoirs and some ground water sources contain numerous microorganisms, some of which can cause people to become sick. To eliminate disease-carrying organisms, it is necessary to disinfect the water. Disinfection does not sterilize the water; it removes harmful organisms. Sterilization is too costly and kills all microorganisms, even though most are not harmful. The Rowley Water Department adds sodium hypochlorite as its primary disinfectant. Chlorine destroys organisms by penetrating cell walls and reacting with enzymes. When combined with filtration, disinfection with chlorine has been proven effective at ensuring that water is free of harmful organisms and safe to drink.

Many drinking water sources in New England are naturally corrosive (i.e., they have a pH of less than 7.0). So, the water they supply has a tendency to corrode and dissolve the metal piping it flows through. This not only damages pipes, but can also add harmful metals, such as lead and copper, to the water. For this reason it is beneficial to add chemicals that make the water neutral or slightly alkaline. This is done by adding any one, or a combination of several, approved chemicals. The Rowley Water Department adds sodium hydroxide to its water. This adjusts the water to a non-corrosive pH. Testing throughout the water system has shown that this treatment has been effective at reducing lead and copper concentrations.

All chemicals used for drinking water treatment are approved by one of the following organizations: National Sanitation Foundation (Now known as NSF International or UL, both accredited by the American National Standards Institute). Chemicals must also meet standards established by the American Water Works Association (AWWA).

Is my water tested? The water quality of our system is constantly monitored by the Rowley Water Department and the Massachusetts Department of Environmental Protection to determine the effectiveness of existing water treatment and to determine if any additional treatment is required. Last year we collected more than 200 samples to determine the presence of biological, organic and inorganic contaminants. 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** – include viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife.
- **Inorganic contaminants** – include 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 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** – include 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** – 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, the Massachusetts DEP and U.S. Environmental Protection Agency (EPA) 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 EPA's Safe Drinking Water Hotline at (800) 426-4791.

RESERVE AND CONSERVE FOR THE FUTURE BY REDUCING, REUSING AND RECYCLING

EDUCATIONAL INFORMATION

Water Conservation: Municipal water systems face many challenges such as: meeting seasonal water demands, finding new supply sources to keep pace with growth, resource protection, water conservation, environmental protection and the increasing stringent regulations for improved water quality. Our sustainability, as it relates to water, is dependent upon our ability to stay abreast of these changing conditions and implementation of future plans. Therefore, sound planning is crucial. Regardless of our future supply conditions, water conservation and prudent supply management will still be our number one priority to ensure the long-term availability of our water supplies. We are committed to conserving our water supplies and complying with Massachusetts state regulatory requirements governing the operation of water systems. A conscientious effort on everyone's part is necessary for these conservation measures to have a positive effect. Your efforts are most appreciated, as we must all work together to preserve this most valuable resource for generations to come. Household water conservation not only saves water, but it saves energy too; energy needed to heat water and to run appliances. Your water meter is equipped with a leak detector. If you see a dripping faucet, you have a leak somewhere. Check all faucets for leaks; even a slow drip can waste up to 20 gallons of water a day. Check for toilet leaks by putting a few drops of food coloring in the toilet's tank. An "invisible" leak in the toilet wastes up to 100 gallons in a day. Only run full loads through your washing machine and dishwasher.



Here are more water saving tips:

- When washing dishes by hand, don't let the water run while rinsing.
- Check your sprinkler system frequently and adjust sprinklers so only your lawn is watered and not the house, sidewalk, or street.
- Run your washing machine and dishwasher only when they are full. This could save you 1,000 gallons a month.
- Keep a pitcher of water in the refrigerator instead of running the tap for cold drinks, so that no water is wasted going down the drain.
- Minimize evaporation by watering during the early morning hours, when temperatures are cooler and winds are lighter.
- Use a layer of organic mulch around plants to reduce evaporation and save hundreds of gallons of water a year.
- Use a broom instead of a hose to clean your driveway or sidewalk and save 80 gallons of water every time.
- Only water your lawn when needed. A lawn only needs 1" of water each week.
- Install low-volume toilets.

Cross Connections: The purpose of this program is to:

- Protect the public potable water supply from the possibility of contamination or pollution by isolating such contaminants or pollutants that could backflow or back-siphon into the public water system.
- Promote the elimination or control of existing cross connections, actual or potential, between its customers in-plant potable water system, and non-potable systems.
- Provide for the maintenance of a continuing program of cross connection control which will effectively prevent the contamination or pollution of all potable water systems by cross connection.

For information regarding our program, please visit the Rowley Water Department webpage at www.rowleywater.com.

What you can do to help prevent a cross-connection: Without the proper protection, something as simple as a garden hose has the potential to contaminate or pollute the drinking water lines in your house. In fact, over half of the country's cross-connection incidents involve unprotected garden hoses. There are very simple steps that you, as a drinking water user, can take to prevent such hazards:

- Never submerge a hose in soapy water buckets, pet watering containers, pool, tubs, sinks, drains, or chemicals.
- Never attached a hose to a garden sprayer without the proper backflow preventer.
- Buy and install a hose bibb vacuum breaker on every threaded water fixture. The installation can be as easy as attaching a garden hose to a spigot. This inexpensive device is available at most hardware stores and home-improvement centers.
- Identify and be aware of potential cross-connections to your water line.
- Buy appliances and equipment with a backflow preventer.
- Buy and install backflow prevention devices or assemblies for all high and moderate hazard connections.

Any existing water customer who wishes to have the water meter removed and disconnect from Town water may do so. The resident needs to cut and cap the water service at their own expense. This must be witnessed by a representative of the water department. to avoid any cross connections in the public water supply.

If the customer wishes to keep the water meter and service, the customer shall be billed monthly service fee of \$30.00 per month. The water department reads these meters and has to maintain the service connection, respond to any leaks and incur the costs for billing even if the bill sent reads zero.

If at any time in the future the resident wishes to re-connect to the town water, that resident shall be subject to any fees associated with the re-connection. Customers need to contact Pennichuck at 1-800-553-5191 to schedule an appointment for discontinued water service.

- **Back-siphonage** is the reversal of normal flow in a system caused by negative pressure, vacuum or partial vacuum in the supply piping. This can be created when there is a stoppage of the water supply due to firefighting, main repairs or main breaks or leaks.
- **Back Pressure** is the backflow of normal flows in a system due to an increase in the downstream pressure above that of the supply pressure. Which is possible in installations such as heating systems, elevated tanks and pressure producing systems. Water tends to flow in the direction of least resistance.

Have you ever considered all of the places that you use water in your home? You may be surprised how many different ways that water can be used and possibly misused. Here are some things you can be aware of to protect the purity of water you drink, cook with or bath in.

✓ Irrigation

Sprinkler systems make watering your lawn and garden easier, however, if not properly installed and maintained, contaminants can enter your drinking water. Water that pools around the sprinkler heads may contain contamination from chemicals, fertilizer or animal waste. To help protect your water, install an Atmospheric Vacuum Breaker (AVB), Pressure Vacuum Breaker (PVB), or a Reduced Pressure Principal Assembly (RP). You should consult with a professional lawn irrigation contractor or a licensed plumber.

✓ Outside Faucets

The garden hose is the most common cross-connection in the home. It acts like an extension of the water line. The hose is attached to the outdoor faucet and the other end is connected to an aspirator that contains insecticides, fertilizer or other chemicals used with the aspirator. Another common cross-connection is to leave the other end of the hose submerged in a bucket of soapy water or just lay it down on the ground. You can also install a hose bib vacuum breaker, which will isolate the faucet and protect the water supply from contamination. Each spigot at your home should have a hose bib vacuum breaker installed. This is a simple, inexpensive device, which can be purchased at any plumbing or hardware store. Installation is as easy as attaching your garden hose to a spigot.

✓ Sinks, Tubs

Make sure all faucets and spray hoses are above the flood rim for your sinks in the bathroom and kitchen. Make sure when filling sinks and tubs an air gap is between the end of the faucet and the water line. Without an air gap the contents may be back-siphoned into the line during a loss of pressure. Be sure to return the kitchen sink sprayer to its resting place after use.

✓ Toilets

Toilets need water to flush the waste material to the sewer system. The water that flushes the toilet enters the tank at the bottom through a small hose. The float valve (or anti-siphon ballcock) inside the tank should be the correct type so that the contents of the tank do not get back into the drinking water in your home. Proper installation for the refill tube and float valve is above the water level in the tank.

✓ Boilers

Pressure may build up inside the boiler. The water pressure in the boiler may exceed the pressure of the water feeding the boiler. This could cause a back-pressure situation and push the water into the water supply. Installing a backflow preventer with an intermediate vent will protect against back-pressure and back-siphonage and can be used under continuous pressure.

✓ Washing machine

The washing machine has a built in air gap from the factory. However, you can install a single lever shutoff valve that shuts off both the hot and cold water to prevent flooding if one of the hoses breaks.

✓ Water heater

Thermal expansion occurs whenever water is heated. The backflow preventer stops the expanded water from returning to the water supply. Since the water cannot be compressed, the expanded water volume can cause a rapid increase in pressure in the piping and will often exceed the temperature setting and pressure relief valve. Installing an atmospheric vacuum breaker and a thermal expansion tank will help absorb the thermal expansion and maintain a balanced system pressure. Your system should be checked at least once every three years to ensure safe operation.

If you are the owner or manager of a property that is being used as a commercial, industrial, or institutional facility, you must have your property's plumbing system surveyed for cross connection. If your property has NOT been surveyed for cross-connection, contact **Water Safety Services, Inc. at 781-932-8787** to schedule a cross-connection survey.

The Massachusetts Drinking Water Regulations, 310 CMR 22.00, requires all public water systems to have an approved and fully implemented Cross-Connection Control Program (CCCP). The Rowley Water Department is working diligently to protect the public health of its drinking water customers from the hazards caused by unprotected cross-connections. We are doing this through the implementation of our cross-connection survey program, elimination or proper protection of all identified cross-connections, the registration of all cross-connections protected by reduced pressure backflow preventers (RPBPs) or double check valve assemblies (DCVAs), and the implementation of a testing program for all RPBPs and DCVAs.

This combined cooperative effort between the Town of Rowley and customers will help ensure your water supply is protected in the distribution system and ultimately in residential homes and businesses. Remember you should contact a licensed plumber for installation of the devices.

For more information on cross connection backflow prevention contact Water Safety Services, Inc. at 781-932-8787. You can also visit the following websites:

- ❖ <http://www.epa.gov/safewater/crossconnection.html>
- ❖ <http://www.awwa.org>
- ❖ <http://www.usc.edu/dept/fccchr/beta/foundation.html>
- ❖ <http://www.dep.us.gov>

Sensitive populations: Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons, such as persons with cancer or undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and some infants can be particularly at risk from infections. These people should seek advice about drinking water from their healthcare providers. EPA/Centers for Disease Control and Prevention (CDC) guidelines on lowering the risk of infection by cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline at (800) 426-4791.

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 Rowley Water Department 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 two 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>. **The 90th percentile for lead is 0.0 ppm. 90th percentile for copper is 0.5 ppm**

Contaminant	Date(s) Collected	Highest Result Detected	90 th Percentile	Action Level	Total Samples	Violation (Y/N)	Possible Source(s) of Contamination
Lead and Copper							
Lead (ppm)	8/8/2017	0.004	0.0	0.015	21	No	Corrosion of household plumbing systems; Erosion of natural deposits
Copper (ppm)	8/8/2017	0.5	0.19	1.3	21	No	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives

Lead poisoning is preventable.

If your home was built before 1988, it is more likely to have plumbing containing lead.

Manganese: is a naturally occurring mineral found in rocks, soil 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 EPA and Massachusetts DEP 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, Mass DEP'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 ug/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 ug/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 and Mass DEP Office of Research and Standards Guideline (ORSG) for Manganese. http://www.epa.gov/safewater/ccl/pdfs/reg_determine1/support_cc1_magnese_dwreport.pdf
<http://www.mass.gov/eea/agencies/massdep/water/drinking/manganese-in-drinking-water.html>

SODIUM: Sensitive individuals, such as those experiencing hypertension, kidney failure, or congestive heart failure, should be aware of the sodium levels where exposures are being carefully controlled. Rowley's water has an average of **73mg/l (last sampled 2015)** *I would consider changing this background color, it's hard to read the text.

UNREGULATED CONTAMINANTS are those for which there are no established drinking water standards. The purpose of unregulated contaminant monitoring is to assist regulatory agencies in determining their occurrence in drinking water and whether future regulation is warranted. The U.S. EPA has established a lifetime health advisory (HA) value of 300 ppb for manganese to protect against concerns of potential neurological effects, and a one-day and 10-day HA of 1000 ppb for acute exposure.

Hardness: Hardness in drinking water is defined as those minerals that dissolve in water having a positive electrical charge. The presence or absence of the hardness minerals in drinking water is not known to pose a health risk to users. Hardness is normally considered an aesthetic water quality factor. The presence of some dissolved mineral material in drinking water is typically what gives the water its characteristic and pleasant taste. The Town of Rowley has hardness of **100-140mg/l or 4.0 -5.0 grains per gallon**. For more information visit www.epa.gov

Hardness creates the following consumer problems:

- ✓ Produces soap scum most noticeable on tubs and showers.
- ✓ Produces white mineral deposits on dishes more noticeable on clear glassware.
- ✓ Reduces the efficiency of devices that heat water. As hardness deposits build in thickness, they act like insulation, reducing the efficiency of heat transfer.

Categorizing Hardness (mg/l)

Soft water	0-50
Moderately hard water	51-100
Hard water	101-150
Very hard water	151 and up



Pharmaceuticals and personal care products were first called "PPCPs" only a few years ago, but these bioactive chemicals (substances that have an effect on living tissue) have been around for decades. Their effect on the environment is now recognized as an important area of research. Some PPCPs are easily broken down and processed by the human body or degrade quickly in the environment, but others are not easily broken down and processed, so they enter septic systems and sewers. PPCPs dissolve easily and don't evaporate at normal temperatures or pressure, they make their way into the soil and into aquatic environments via sewage, treated sewage sludge (biosolids), and irrigation with reclaimed water. **DO NOT FLUSH DOWN SINK OR TOILET.** The best and most cost-effective way to ensure safe water at the tap is to keep our source waters clean. Never flush unused medications down the toilet or sink. For disposal of non-liquid medications, call your local pharmacy where you bought them. Sources of PPCP's are: Human activity, residues from pharmaceutical manufacturing, residues from hospitals, illicit drugs, and veterinary drug use, especially antibiotics and steroids. PPCP examples are: Prescription and over-the-counter drugs, veterinary drugs fragrances, cosmetics, sunscreen products, Diagnostic agents and nutraceuticals (e.g., vitamins).

Suggested water quality testing for private wells: If you have a private well, then water quality testing should be important to you and your family. Some contaminants in drinking water have been linked to cancer and toxicity, posing a risk to human health. Many contaminants often have no taste, odor, or color. Their presence can only be

determined by laboratory testing. Well water originates as rain and snow that then filters into the ground. As it soaks through the soil, the water can dissolve materials that are present on or in the ground, becoming contaminated. Some contaminants are naturally occurring in soil and rock. These include contaminants such as bacteria, radon, arsenic, uranium, and other minerals. Other contaminants find their way onto the land from human activities. Industrial and commercial activities, improper waste disposal, road salting and fuel spills can introduce hazardous substances to the ground. However, even typical residential activities, such as the use of fertilizers and pesticides, fueling of lawn equipment, and disposal of household chemicals, can contaminate the ground when done improperly. That is why taking measures to protect your well from contamination is so important. For more information visit www.epa.gov

Annual	Every 3 to 5 years
<p>*I'd consider changing this dark blue color, it's hard to read</p> <p>Arsenic Bacteria Sodium /Chloride Copper/copper Hardness Iron/Manganese Nitrate/Nitrite pH</p>	<p>Radon Uranium Gross Alpha Volatile organic compounds (VOCs)</p>

Radon: is a radioactive gas that you cannot see, taste, or smell. It is found throughout the United States. Radon can move up through the ground and into a home through cracks and holes in the foundation. Radon can build up to high levels in all types of homes. Radon can also get into indoor air when released from tap water from showering, washing dishes, and other household activities. Compared to radon entering the home through soil, radon entering the home through tap water will be (in most cases) a small source of radon in indoor air. Radon is a known human carcinogen. Breathing air containing radon can lead to lung cancer. Drinking water containing radon may also cause increased risk of stomach cancer. If you are concerned about radon in your home, test the air in your home. Testing is inexpensive and easy. Fix your home if the level of radon in your air is 4 picocuries of radon per liter of air (pCi/l) or higher. There are simple ways to fix a radon problem that aren't too costly. For additional information, call the Massachusetts DEP radon program or call EPA's Radon Hotline at 800.SOS.RADON.

Contaminants	Date	Average	Range Detected	Highest Result
Gross Alpha (pCi/L)	7/22/2014	0.35	0.33-0.82	0.82
Radium 226 (pCi/L)	7/22/2014	0.11	0.6-0.21	0.21
Radium 228 (pCi/L)	7/22/2014	0.51	0.04-1.13	1.13
Combined Radium pCi/L)	7/22/2014	0.68	0.17-1.2	1.20

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.)

2017 WATER QUALITY TEST RESULTS

The water quality information presented in the table(s) is from the most recent round of testing done in accordance with the regulations. All data shown was collected during the last calendar year unless otherwise noted in the table(s).

Abbreviations and 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.

Turbidity is a measure of the cloudiness of the water. We monitor it because it is a good indicator of the effectiveness of our filtration system.

Maximum Residual Disinfectant Level (MRDL) -- The highest level of a disinfectant (chlorine, chloramines and 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 and chlorine dioxide) below which there is no known or expected risk to health. MRDLG's do not reflect the benefits of the use of disinfectants to control microbial contaminants.

Treatment Technique (TT) – A required process intended to reduce the level of a contaminant in drinking water.

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

90th Percentile – Out of every 10 homes sampled, nine were at or below this level.

Variations and Exemptions – State or EPA permission not to meet an MCL or a treatment technique under certain conditions.

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.

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

ppm = parts per million, or milligrams per liter (mg/l) 6* is this 6 supposed to be here?

ppb = parts per billion, or micrograms per liter (ug/l)

ppt = parts per trillion, or nanograms per liter pCi/L = picocuries per liter (a measure of radioactivity)

NTU = Nephelometric Turbidity Units

ND = Not Detected

N/A = Not Applicable mrem/year = milliremms per year (a measure of radiation absorbed by the body).

Contaminant	Date(s) Collected	Highest Result Detected	Range Detected	MCL or MRDL	MCLG or MRDLG	Violation (Y/N)	Possible Source(s) of Contamination
Volatile Organic Compounds							
Tetrachloroethylene (PCE) ppb	4/6/17	0.94	0-0.94	5	0	NO	Discharge from factories and dry cleaners; residual of vinyl-lined water main. Some people who drink water containing tetrachloroethylene in excess of the MCL over many years could have problems with their liver, and may have an increased risk of getting cancer.

*I would consider making the text in the blue header a little bigger

Unregulated Contaminants							
Chloroform	1/4/17	19	0-19	---	---	NO	By-product of drinking water chlorination
Bromodichloromethane	1/4/17	13	0-13	---	---	NO	By-product of drinking water chlorination
Chlorodibromomethane	1/4/17	4.9	0-4.9	---	---	NO	By-product of drinking water chlorination

Contaminant	Date(s) Collected	Highest Result Detected	Range Detected	MCL or MRDL	MCLG or MRDLG	Violation (Y/N)	Possible Source(s) of Contamination
Inorganic Contaminants							
Perchlorate ppb	10/2/17	ND	ND	2	NA	NO	Rocket propellants, fireworks, munitions, flares, blasting agents. Perchlorate interferes with the normal function of the thyroid gland and thus has the potential to affect growth and development, causing brain damage and other adverse effects, particularly in fetuses and infants. Pregnant women, the fetus, infants, children up to the age of 12 and people with a hypothyroid condition are particularly susceptible to perchlorate toxicity.
Nitrate ppm	43/17	1.95	0.015-1.95	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.

Here are some useful tips on how you can help protect your drinking water supply...

- Use non-toxic and less-toxic alternatives to household chemicals such as cleaners, oil-based paints and insecticides.
- Take leftover household chemicals to your community's household hazardous waste collection day.
- Take care of your septic system.
- Keep records of septic system maintenance.
- Inspect your septic tank every year.
- Have your tank pumped out every two to three years.
- Avoid damage to your leach field.

Contaminant	Date(s) Collected	Highest Result Detected	Range Detected	MCL or MRDL	MCLG or MRDLG	Violation (Y/N)	Possible Source(s) of Contamination
Disinfectants and Disinfection By-Products							
Free Chlorine (ppm)	Weekly	0.80	0.40-0.80	4	4	NO	Water additive used to control microbes
Total Trihalomethane (TTHMs) (ppb)	8/7/17 11/6/17 11/13/17	130	0-130	80	-----	NO	Byproduct of drinking water chlorination. Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous systems, and may have an increased risk of getting cancer.
Total Haloacetic Acid (HAA5) (ppb)	8/7/17 11/6/17 11/13/17	66	0-66	60	-----	NO	Byproduct of drinking water disinfection

Due to an increase in Disinfection By-Products, the Massachusetts DEP required the Rowley Water Department to increase sampling for THMs, and HAA5s. The Rowley Water Department made changes to the treatment processes to safely reduce chlorine levels in the system. Compliance based on the Locational Running Annual Average (LRAA). Rowley Water remains in compliance with Massachusetts DEP regulations.

Contaminant	Date Collected	Average Detected	Result or Range Detected	SMCL	ORSG or Health Advisory	Violati on Y/N	Possible Sources
Secondary Contaminants							
Chloride (ppm)	9/11/17	88.1	86.5 - 93.8	250	---	NO	Runoff from road de-icing, use of inorganic fertilizers, landfill leachates, septic tank effluents, animal feeds, industrial effluents, irrigation drainage and seawater intrusion in coastal areas
Alkalinity (AS CaCO ₃)	9/11/17	62.5	60.4 - 63	---	---	NO	Buffering capacity of water
pH (units)	9/11/17	7.6	7.53 - 7.65	6.5-8.5	---	NO	-----
Total dissolved solids (TDS)	9/11/17	238	232 - 244	500	---	NO	Erosion of natural deposits. May produce hardness; deposits; colored water; staining; salty taste
Zinc (ppm)	9/11/17	0.0093	0.0 – 0.0163	5	---	NO	Erosion of natural deposits, leaching from plumbing materials. May produce a metallic taste.
Turbidity (NTU)	9/11/17	0.0	ND - 0.01	TT	TT	NO	Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses and parasites that can cause symptoms such as nausea, cramps, diarrhea and associated headaches.
Sulfate (ppm)	9/11/17	13.2	11.1 - 15.2	250	----	NO	Natural sources. May produce a salty taste
Calcium (ppm)	9/11/17	25.7	23.3 - 27.9	----	----	NO	-----
Magnesium (ppm)	9/11/17	5.5	4.88 - 5.8	----	----	NO	-----
Potassium (ppm)	9/11/17	2.65	2.29 - 2.85	----	----	NO	-----
Odor (TON)	9/11/17	1	1 - 2	3	----	NO	Erosion of natural deposits; leaching from wood preservatives
Iron (ppm)	9/11/17	ND	ND	0.3	----	NO	Naturally occurring, corrosion of cast iron pipes
Manganese (ppm)	9/11/17	0.003	0.0 - 0.004	0.05	0.3	NO	Erosion of natural deposits

	Highest # Positive in a month	Total # Positive	MCL	MCLG	Violation (Y/N)	Possible Source of Contamination
Total Coliform	1	1	1	0	N	Naturally present in the environment
Fecal Coliform or <i>E.coli</i>	0	0	*	0	N	Human and animal fecal waste

* Compliance with the Fecal Coliform/E.coli MCL is determined upon additional repeat testing.

In 2017 the Rowley Water Department sampled for Total Coliform 143 times. Out of 87 samples taken from the distribution system, one (1) sample tested positive for Total Coliform, and **NEGATIVE** for E.coli. As required by the Massachusetts DEP, repeat samples were tested in the area within 24 hours. All repeat samples came back negative for total coliform. Rowley Water remains in compliance with Massachusetts DEP regulations.