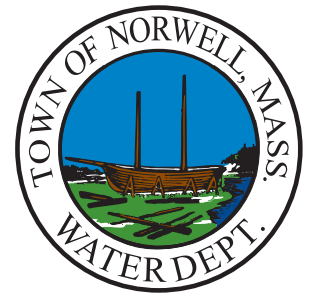




Norwell Water



2017

Drinking Water Quality Report

Consumer Confidence Report

Public Water Supply ID #4219000

Public Water System Information

The Norwell Water Department is pleased to present our 2017 Drinking Water Quality Report. As required by the Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (MassDEP), this annual report will detail where your water comes from, what it contains, and the risks our water testing and treatment techniques are designed to prevent. The Norwell Water Department is committed to providing you with the cleanest, safest, and most reliable water supply possible.

In 2017 we conducted more than 400 tests for over 100 drinking water contaminants. Seven regulated contaminants were detected in your drinking water in 2017, or during the most recent sampling period in the past five years. However, the levels of these regulated contaminants were well below EPA established maximum contaminant level (MCL) or action level (A.L.) and are listed in the Water Quality Testing table of this report.

Call us for more information about your water system. **Mr. John McInnis is the Water Superintendent and he can be reached at 781-659-8076.** Feel free to attend any of our regularly scheduled meetings. The Board of Water Commissioners and Superintendent meet on the first and third Thursday of each month at 4:30 pm in the Town Hall, Water Department Office, 345 Main Street.

Is my water treated?

The Norwell Water Department makes every effort to provide you with clean, safe drinking water. To improve the quality of the water we deliver to you, the following treatment practices are used:

- **The South Street Well Field** consists of Wells 1 and 6. This water is filtered at the South Street Treatment Plant to remove elevated

levels of iron, manganese and organic color. If not removed, these constituents would stain laundry and plumbing fixtures, cause discoloration of the water, and possibly cause the water to taste on unpleasant tastes and odors. Further treatment conducted at South Street includes the addition of chlorine as a disinfectant against microbial contaminants, and the addition of potassium hydroxide for pH adjustment. The groundwater in Norwell is naturally corrosive; untreated water tends to corrode and dissolve metal piping. This not only damages the internal plumbing of your home but can also add harmful metals such as lead and copper to your water. By adding potassium hydroxide, we can raise the treated water pH to a non-corrosive level.

- **The Grove Street Well Field** consists of Wells 2, 3, 5, and 10. Treatment at Grove Street consists of pH adjustment with potassium hydroxide and disinfection with sodium hypochlorite.
- **The Washington Street Well Field** consists of Wells 4, 7, and 8. Treatment at Washington Street consists of pH adjustment with potassium hydroxide and disinfection with sodium hypochlorite.
- **Well 9** is a low-yield source located off of Bowker Street. It is used infrequently due to its limited production capacity and elevated levels of iron. When used, water from this well is disinfected with sodium hypochlorite prior to entering the distribution system.

The water quality of our system is constantly monitored by the Water Department and MassDEP to determine the effectiveness of existing water treatment and to determine if any additional treatment is required.

Water System Improvements/Information

A record drought in the summer of 2016 prompted the Norwell Water Department to develop a four-tiered water restriction program in 2017. Tier one of this program is in effect year-round. Tier one limits the use of automated lawn irrigation systems and other unattended devices to two days per week, during certain hours of the day. Other tiers are more restrictive. The goal of the program is to maintain a sustainable groundwater withdrawal rate and provide clean, safe drinking water during periods of high demand. In the summer of 2017 tier one of this program was very effective in accomplishing that goal. For more information regarding the tiered water restriction program, visit us on the web at <https://www.townofnorwell.net/water-department>.

In 2017, the Norwell Water Department conducted a comprehensive inspection of our three water storage tanks. Based on the results of that inspection report, the Norwell Water Department will undertake a project this fall to renovate and repaint the tank located at Phillips Drive. Other remedial work will be conducted at the Paradise Drive and Judges Hill tanks within the scope of the project. Scheduled improvements for Well #2 are also under way; the well and pumping station will be completely renewed with a new well, submersible pumping unit, and a new structure at the site. These improvements will allow for recovery of lost pumping capacity by increasing well yield and will provide a new

Your Drinking Water Sources

Source Name	DEP Source ID Number	Source Type	Source Location
Well #1	4219001	Groundwater	South Street
Well #2	4219002	Groundwater	Grove Street
Well #3	4219003	Groundwater	Grove Street
Well #4 (replacement)	4219013	Groundwater	Washington Street
Well #5	4219005	Groundwater	Grove Street
Well #6 (replacement)	4219012	Groundwater	South Street
Well #7	4219008	Groundwater	Washington Street
Well #8	4219009	Groundwater	Washington Street
Well #9	42190010	Groundwater	Bowker Street
Well #10	42190011	Groundwater	Grove Street

Water Quality Testing Results

The following table lists all the drinking water contaminants detected during calendar year 2017 or during the most recent sampling period within the past five years. The state requires us to monitor for certain contaminants less than once per year because the concentrations of these contaminants are not expected to vary significantly from year to year. In addition to the normal water quality testing required by MassDEP, the Norwell Water Department along with many other surrounding communities were required to perform additional sampling in 2013 as part of the EPA's Unregulated Contaminant Monitoring Rule 3 (UCMR 3). The UCMR 3 benefits the environment and public health by providing the EPA with data on the occurrence of contaminants suspected to be in drinking water, in order to determine if the EPA needs to introduce new regulatory standards to improve drinking water quality. Any UCMR 3 detections are shown in the data tables of the report. Please feel free to contact us for more information on this program. The presence of these contaminants in the water does not necessarily indicate the water poses a health risk. Definitions of the terms and abbreviations used in the table below can be found in the Important Definitions section of this report.

Regulated Contaminants						
Contaminant (Units)	Year Sampled	MCL	MCLG	Highest Detected Level	Range (Low - High)	Typical Source
Nitrate (ppm)	2017	10	10	4.73	0.67 – 4.73	Runoff from fertilizer use, leaching from septic tanks, sewage, erosion of natural deposits
Total Coliform	2017	More than one positive per month	0	0	ND	Naturally present in the environment
Perchlorate (ppb)	2017	2.0	N/A	0.36	0.09 – 0.36	Rocket propellants, fireworks, munitions, flares, blasting agents
Radionuclides (pCi/L) (Gross Alpha Activity)	2012	15	0	1.90	0.81 – 1.90	Erosion of natural deposits
Disinfectants and Disinfectant By-Products						
Contaminant (Units)	Year Sampled	MRDL	MRDLG	Highest Detected Level	Range (Low - High)	Typical Source
Total Trihalomethanes—Stage 2 (ppb) ¹	2017	80	N/A	35.95 (Highest Annual Quarterly Average)	0.60 – 97.0	By-product of drinking water chlorination
Haloacetic Acids—Stage 2 (ppb) ¹	2017	60	N/A	20.78 (Highest Annual Quarterly Average)	0 – 35.8	By-product of drinking water chlorination
Free Chlorine (ppm) ¹	2017	4.0	4.0	0.25 (Quarterly Running Annual Avg.)	0.03 – 0.90	By-product of drinking water chlorination
Regulated at the Customer's Tap						
Contaminant (Units)	Year Sampled	Action Level	MCLG	90th Percentile Level	Homes Above Action Level	Typical Source
Lead (ppb) ²	2017	15	0	5	1	Corrosion of household plumbing systems
Copper (ppm) ²	2017	1.30	1.30	0.95	1	Corrosion of household plumbing systems
Unregulated Contaminants						
Contaminant (Units)	Year Sampled	ORSG	Average Detected Level	Range (Low - High)	Typical Source	
Sodium (ppm) ³	2016	20	68.1	28.4 – 103	Naturally present in the environment, roadway salt runoff	
Bromodichloromethane (ppb) ³	2017	—	9.10	4.20 – 18.5	By-product of drinking water chlorination	
Bromoform (ppb) ³	2017	—	0.47	0 – 1.40	By-product of drinking water chlorination	
Chlorodibromomethane (ppb) ³	2017	—	4.20	0.70 – 10.3	By-product of drinking water chlorination	
Chloroform (ppb) ³	2017	70	13.8	8.80 – 18.6	By-product of drinking water chlorination	
Secondary Contaminants						
Secondary Contaminant	Year Sampled	SMCL	Average Detected Level	Range (Low - High)	Typical Source	
Manganese (ppm)	2017	0.05	0.06	0 – 0.115	Erosion of natural deposits	

Notes:

1. Disinfectant and disinfectant byproduct compliance is based on a quarterly running average of all samples collected. The maximum quarterly average detected is reported, as well as the range of all samples collected during the year.
2. Tap water samples for lead and copper analysis were collected from 46 residences throughout the distribution system in August of 2017. Compliance is based on the 90th percentile sample results for lead and copper being equal to or less than their respective Action Level (A.L.).
3. Unregulated Contaminants are those for which the EPA has not established drinking water standards. The purpose of unregulated contaminant monitoring is to assist EPA in determining their occurrence in drinking water and whether future regulation is warranted.

Unregulated Contaminant Monitoring Rule 3

Contaminant	Year Sampled	Highest Detected Level	Range (Low - High)
1,4-dioxane (ppb) ²	2013	0.08	ND – 0.08
Vanadium (ppb) ²	2013	0.40	ND – 0.40
Strontium (ppb) ²	2013	130	83 – 130
Chromium Total (ppb) ²	2013	0.90	ND – 0.90
Chromium-6 (ppb) ²	2013	0.86	0.12 – 0.86
Chlorate (ppb) ²	2013	420	32 – 420

building which will serve the community for many years to come. Finally, the Norwell Water Department has plans underway to install a new 8" water main through King's Landing to provide municipal drinking water and fire protection services to King's Landing residents.

Our water system is routinely inspected by MassDEP. MassDEP inspects our system for its technical, financial, and managerial capacity to provide you with clean, safe drinking water. To ensure that the Norwell Water Department provides you with the highest quality water possible, your water system is operated by Massachusetts certified operators who oversee the routine operation of our treatment and distribution systems.

What Is a Cross Connection and What Can I Do About It?

A cross-connection is formed at any point where a drinking water line connects to equipment (boilers), systems containing chemicals (air conditioning systems, fire sprinkler systems, irrigation systems), or water sources of questionable quality. Cross-connection contamination can occur when the pressure in the equipment or system is greater than the pressure inside the drinking water line (backpressure). Contamination can also occur when the pressure in the drinking water line drops due to fairly routine occurrences (main breaks, heavy water demand), causing contaminants to be siphoned from the equipment and into the drinking water line (backsiphonage). Backflow prevention devices are installed where cross connections exist to protect the public water supply.

Outside water spigots and garden hoses tend to be the most common sources of cross-connection contamination at home. The garden hose creates a hazard when submerged in a swimming pool or when attached to a chemical sprayer for weed killing. Garden hoses that are left lying on the ground may be contaminated by fertilizers, cesspools, or garden chemicals. Improperly installed valves in your toilet could also be a source of cross-connection contamination. The Water Department recommends the installation of backflow prevention devices such as low cost hose bib vacuum breakers for all inside and outside hose connections. These can be readily purchased at a hardware or pumping supply store.

For additional information on cross connections and the status of Norwell's cross connection control program, please contact Mr. Scott O'Keefe at 781-659-4371. You can also call the Safe Drinking Water Hotline at 800-426-4791.

Sources Water Assessment and Protection (SWAP)

The Source Water Assessment and Protection (SWAP) program, established under the Federal Safe Drinking Water Act, requires the Norwell Water Department to inventory land uses within the recharge

areas of all public water supply sources, assess the susceptibility of drinking water sources to contamination from these land uses, and publicize the results to provide support for improved protection. The recharge areas for Norwell's wells consist primarily of forest and residential land use, with small areas of commercial and light industrial land uses. In addition, Norwell's wells are located in aquifers with high vulnerability to contamination due to the absence of hydrogeologic barriers that can prevent contaminant migration. As a result, Norwell's groundwater sources are considered highly susceptible (with the exception of Well #9, which is considered moderately susceptible) to contamination from a variety of sources such as petroleum products, industrial solvents, fertilizers, and microbial contaminants. Susceptibility is a measure of a water supply's potential to become contaminated due to land uses and activities within its recharge area and does not imply poor water quality.

The complete SWAP report is available at the Water Department Office and the Board of Health, both located on the lower level of the Town Hall. For more information, call Mr. John McInnis at 781-659-8076. In addition, the SWAP report is available on the MassDEP website at <http://mass.gov/eea/docs/dep/water/drinking/swap/sero/4219000.pdf>.

In the SWAP report, the MassDEP commended the Water Department for its work to date on promoting source protection. The Water Department will continue to protect your water sources by:

- Regularly inspecting land under the care and control of the Water Department.
- Acquiring additional lands for wellhead protection whenever possible.
- Working with other Town boards to review and provide recommendations on proposed development within water supply protection areas.

Residents and businesses can do their part in protecting Norwell's groundwater sources by:

- Practicing good septic system maintenance.
- Supporting water supply protection initiatives at the next Town Meeting.
- Taking hazardous chemicals to hazardous materials collection centers.
- Disposing of waste oil and hazardous materials properly; never in storm drains, septic systems, or on the ground.
- Applying pesticides and fertilizers minimally and properly.

Substances Found in Tap Water

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence

Important Definitions

- **Action Level (AL):** The concentration of a contaminant that, if exceeded, triggers treatment or other requirements, which a water system must follow.
- **Massachusetts DEP Office of Research and Standards Guidelines (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, with a margin of safety. If exceeded, it serves as an indicator of the potential need for further action or regulation.
- **Maximum Contaminant Level (MCL):** The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs (see below) 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 allowed in drinking water. There is convincing evidence that addition of a disinfectant (such as

chlorine, chloramines, or chlorine dioxide) is necessary for control of microbial contaminants.

- **Maximum Residual Disinfectant Level Goal (MRDLG):** The level of a drinking water disinfectant below which there is no known expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.
- **NA:** Not applicable.
- **ND:** None detected.
- **90th Percentile:** Out of every 10 homes sampled, 9 are at or below this level.
- **Parts per billion (ppb):** Parts per billion, or micrograms per liter ($\mu\text{g/L}$)
- **Parts per million (ppm):** Parts per million, or milligrams per liter (mg/L)
- **pCi/L:** Picocuries per liter (a measure of radioactivity)
- **Secondary Maximum Contaminant Level (SMCL):** Non-enforceable federal limits set for contaminants included in the Secondary Drinking Water Standards. The purpose of these limits is to assist public water systems in managing their drinking water for aesthetic considerations.

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 EPA's 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 Food and Drug Administration (FDA) and the Massachusetts Department of Public Health (DPH) regulations establish limits for contaminants in bottled water that must provide the same protection for public health.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised 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 from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are also available from the Safe Drinking Water Hotline (800-426-4791).

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 household plumbing. The Norwell 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 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>.

Sources of drinking water and drinking water 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 sources of water

- **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 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, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff, and septic systems.
- **Radioactive contaminants**, which can be naturally-occurring or be the result of oil and gas production and mining activities.

Water Conservation Tips

Water conservation begins with you. Here are suggestions that will help preserve your water supply and at the same time save you money on your water bill:

Indoor

- Run your washing machine and dishwasher only when they are full.
- Keep showers under 5 minutes.
- Fix leaking faucets, pipes, toilets, etc.
- Turn off the water while you shave and brush your teeth.
- Replace old dishwashers and clothes washers with energy efficient machines that use less water and electricity.

Outdoor

- Check your sprinkler system frequently and adjust sprinklers so only your lawn is watered and not the house, sidewalk, or street.
- Minimize evaporation by watering during the early morning hours, when temperatures are cooler and winds are lighter.
- Install a rain shut-off device on your automatic sprinklers to eliminate unnecessary watering.
- Plant during the spring or fall when watering requirements are lower.
- Use a layer of organic mulch around plants to reduce evaporation.
- Use a broom instead of a hose to clean your driveway or sidewalk.
- Adjust your lawn mower to a higher setting. Longer grass shades root systems and holds soil moisture better than a closely clipped lawn.

The Norwell Water Department is a participating member of the North and South River Watershed Association's "Greenscapes" program. Water conservation and landscaping advice can be found at their web site <http://www.greenscapes.org>.

The Internet has numerous other web sites offering water conservation tips. The EPA provides one such site that can be found at https://www3.epa.gov/region1/eco/drinkwater/water_conservation_residents.html.

Norwell Water Customer



Norwell Water Department
345 Main Street
Norwell, MA 02061
Phone 781-659-8076



BULK RATE
US POSTAGE
PAID
PERMIT NO. 5
NORWELL, MA