



# Norfolk DPW - Water Division

## 2017

PWS ID: #2208000

# REPORT ON WATER QUALITY

The Norfolk Department of Public Works (DPW) is pleased to provide you with this 2017 Report on Water Quality. The Norfolk DPW continuously strives to produce the highest quality water possible to meet or surpass everyday water quality standards. We are committed to supplying our customers with a safe and adequate water supply at reasonable cost. This report includes information from 2017 and other years.

### Maintaining Water Quality

In order to ensure that tap water is safe to drink, the Department of Environmental Protection (DEP) and the Environmental Protection Agency (EPA) prescribe regulations that limit the amount of certain contaminants in water provided by Public Water Systems (PWS). The standards we operate under were enacted by the U.S. Congress as the Safe Drinking Water Act (SDWA) of 1974, and were amended in 1986 and 1996. The Food and Drug Administration (FDA) and the Massachusetts Department of Public Health (MDPH) regulations establish limits for contaminants in bottled water that must provide the same protection for public health.

### Opportunities to Participate

The Norfolk DPW is located at 33 Medway Branch, off of Boardman Street. We encourage public interest and participation in our community's decisions affecting drinking water. Meeting dates for the Board of Selectmen are posted at the Town Hall and published on the town's website, [www.virtualnorfolk.org](http://www.virtualnorfolk.org). If you would like to know more about the Norfolk water supply, or if you are interested in participating in the decision making process, please contact us at (508) 528-4990 with questions, comments or concerns.



It's Their Legacy

### Water Source & Treatment

Norfolk's water is supplied from four gravel-packed wells that draw from the Charles River Watershed. Gold Street Wells, 2208000-01G and 2208000-03G, which are located near the intersection of Medway Street and Myrtle Street; and the Spruce Road Wells, 2208000-02G and 2208000-04G, located at the intersection of Mirror Lake Avenue and Spruce Road.

Your water is delivered to your home through 57 miles of water main and stored in two 1.0 million gallon storage tanks. The Pondville Tank is located off Sharon Avenue, and the Weeber Tank is located off Meetinghouse Road behind Town Hall.

In addition, the town of Norfolk maintains permanent interconnections with the town of Wrentham, the town of Franklin, and the town of Walpole. Additional emergency hydrant-to-hydrant interconnection can be made with the town of Medfield.

In order to meet state and federal requirements for public drinking water, our source water receives treatment before it is supplied to our customers. The pH of the water at both well locations is increased by using sodium hydroxide to reduce its corrosiveness in household plumbing and orthophosphosphate is added to sequester iron and manganese, as well as to coat the water mains to assist with corrosion control. At Spruce Road, aeration removes dissolved CO<sub>2</sub>, thus raising pH and reducing radon, and is disinfected with a state-of-the-art UV (ultraviolet) light system. Testing throughout the water system has shown that this treatment has been effective at reducing lead and copper concentrations. Chlorination systems are also used at both pump station locations. All chemicals are approved for water treatment by one or more of the following organizations: National Sanitation Foundation International (NSF), or UL, both accredited by the American National Standards Institute (ANSI). Chemicals also have to meet performance standards established by the American Water Works Association.

### Improvements to Our Water System

During the past year the town has remained committed to the development of a new well site off Holbrook Street. Our consultants installed several test wells, pump tested the locations, and submitted new source approval applications to MassDEP. This site has been approved by MassDEP and will bring both stability and most importantly redundancy to our water system. The town has approved the design of the wellfield, associated treatment building, and the installation of water mains to supply the system and will have preliminary design and specifications for this site by mid-2018.

The town has continued to closely monitor unaccounted-for-water (UAW) and was at 52% in 2009, but is down to 10.5% in 2017. Although slightly elevated this year, the UAW continues to be a focus of the division. As a result of this improvement the total water pumped has dropped from 257.3 million gallons in 2009 to 159.1 million gallons in 2017. Less pumping results in operational cost savings in maintenance, electricity, and chemicals. The goal is to minimize leaks and maximize metering accuracy and is an on-going objective and goal of the Water Division. To this end, we work closely with our consultants to perform town-wide leak detection of all 71 miles of distribution system piping twice per year. Once identified, the Water Division diligently manages the repairs. The number of leaks detected and repaired has dropped overall from 127 in 2009 to 3 in 2017. Daily monitoring of residential and commercial meters is performed to maintain accuracy in water consumption.

We continue to conduct town-wide hydraulic system flushing twice per year to ensure that the water mains are clean, maintain outstanding water quality and maximize flows and velocities for fire protection. Isolated dirty water complaints are also handled on a case-by-case basis and usually the result of iron and/or manganese build-up. The flushing program is designed to minimize these occurrences. In the course of the flushing work, hydrant and gate valve maintenance items are identified and scheduled. We also continue to maintain and upgrade the pump station operations including well pumps, chemical feed pumps, water quality monitoring devices, and water system (SCADA) controls.

Please keep in mind that during the long, hot summer months, all residents should do their best to conserve water. Per the town's Water Management Act Permit (#9P-2-20-208.01) and town by-law, water use restrictions are in place due to water supply issues and permit restrictions. Non-essential outdoor water uses that are subject to mandatory restrictions include:

- Irrigation of lawns via sprinklers or automatic irrigation systems, and the filling of swimming pools

## DISTRIBUTION SYSTEM WATER QUALITY

Although we ran hundreds of tests, we only list the substances that were at or above minimum detection limits.  
Unless otherwise noted, sample dates are for the year 2017 or within 5 years.

| Microbial Results            | Highest # Positive in a Month | MCL | MCLG | Violation | Possible Source of Contamination     |
|------------------------------|-------------------------------|-----|------|-----------|--------------------------------------|
| Total Coliform Bacteria 2017 | 0                             | 1   | 0    | No        | Naturally present in the environment |

Coliform are bacteria that are naturally present in the environment and are used to indicate that other, potentially harmful bacteria may be present. Your water source is tested monthly and has been found to be free of these contaminants.

| Lead & Copper | Date(s) Collected | 90 <sup>th</sup> Percentile of Sample | Action Level | MCLG | # of Sites sampled | # of Sites Above Action Level | Exceeds Action Level? | Possible Source of Contamination        |
|---------------|-------------------|---------------------------------------|--------------|------|--------------------|-------------------------------|-----------------------|---|
| Lead (ppb)    | 9/27/16-9/30/16   | 0                                     | 15           | 0    | 20                 | 0                             | No                    | Corrosion of household plumbing systems |
| Copper (ppm)  | 9/27/16-9/30/16   | 0.11                                  | 1.3          | 1.3  | 20                 | 0                             | No                    | Corrosion of household plumbing systems |

Lead and copper compliance is based on the 90<sup>th</sup> percentile value, which is the highest level found in 9 out of every 10 homes sampled. This number is compared to the action level for each contaminant.

### TESTING FOR 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. **Norfolk DPW** is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at <http://www.epa.gov/safewater/lead>.

| Key to Tables   | SOME TERMS DEFINED   |
|---|--|
| <ul style="list-style-type: none"> <li>• ppm – Parts per million, corresponds to one penny in \$10,000</li> <li>• ppb – Parts per billion, corresponds to one penny in \$10,000,000</li> <li>• pCi/L – Picocuries per liter (a measure of radioactivity)</li> <li>• ND – Not detected</li> <li>• n/a - not applicable</li> <li>• RAA –Running annual average</li> <li>• TT—Treatment technique</li> </ul> | <p><b>Action Level (AL):</b> <i>The concentration of a contaminant which, if exceeded, triggers a treatment or other requirement which a water system must follow.</i></p> <p><b>Maximum Contaminant Level Goal (MCLG):</b> <i>The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLG's allow for a margin of safety</i></p> <p><b>Maximum Contaminant Level (MCL):</b> <i>The highest level of a contaminant that is allowed in drinking water. MCL's are set as close to the MCLG's as feasible using the best available treatment technology.</i></p> <p><b>Secondary Maximum Contaminant Level (SMCL):</b> <i>These standards are developed to protect the aesthetic qualities of drinking water and are not health based.</i></p> <p><b>Massachusetts Office of Research and Standards Guideline (ORSG):</b> <i>This is the concentration of a chemical in drinking water, at or below which, adverse, non-cancer health effects are likely to occur after chronic (lifetime) exposure. If exceeded, it serves as an indicator of the potential need for further action.</i></p> <p><b>Total Coliform:</b> <i>A bacteria that indicates other potentially harmful bacteria may be present.</i></p> <p><b>Unregulated Contaminants:</b> <i>Unregulated contaminants are those for which 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.</i></p> <p><b>90<sup>th</sup> Percentile:</b> <i>Out of every 10 homes, 9 were at or below this level.</i></p> |

# SUMMARY OF FINISHED WATER CHARACTERISTICS

| <b>Regulated Contaminants</b> | <b>Date(s) Collected</b> | <b>Highest Detect Value</b> | <b>Range Detected</b> | <b>MCL</b> | <b>MCLG</b> | <b>Violation</b> | <b>Possible Source of Contamination</b>   |
|-------------------------------|--------------------------|-----------------------------|-----------------------|------------|-------------|------------------|---|
| <b>Inorganic Contaminants</b> |                          |                             |                       |            |             |                  |   |
| Barium (ppm)                  | 5/21/14                  | 0.038                       | n/a                   | 2          | 2           | No               | Erosion of natural deposits   |
| Nitrate (ppm)                 | 4/18/17                  | 2.69                        | 1.89-2.69             | 10         | 10          | No               | Runoff from fertilizer use; leaching from septic tanks; sewage; erosion of natural deposits |
| Perchlorate (ppb)             | 7/27/17                  | 0.329                       | 0.240-0.329           | 2          | N/A         | No               | Rocket propellants, fireworks, munitions, flares, blasting agents.                          |

| <b>Disinfection By-Products</b>              |              |       |           |    |   |    |   |
|--|--------------|-------|-----------|----|---|----|---|
| Total Trihalomethanes * (TTHMs) (ppb)        | 2017         | 51.3* | 25.5-51.3 | 80 | - | No | By-product of drinking water disinfection |
| Haloacetic Acids * (HAA5) (ppb)              | 2017         | 5.3*  | 3.0-5.3   | 60 | - | No | By-product of drinking water disinfection |
| Free Chlorine (ppm) - Running Annual Average | Monthly 2017 | 0.25  | 0.14-0.37 | 4  | 4 | No | Water additive used to control microbes   |

\*We are not required to test monthly for TTHMs and HAA5, so the results are for one quarter. The results for chlorine are a running annual average.

| <b>Radioactive Contaminants</b>            |         |      |     |    |   |    |  |
|--|---------|------|-----|----|---|----|--|
| Gross Alpha Emitters (pCi/L)               | 4/20/15 | 0.18 | n/a | 15 | 0 | No | Erosion of natural deposits            |
| Radium 226 & 228 (pCi/L) (combined values) | 4/20/15 | 0.52 | n/a | 5  | 0 | No | Decay of natural and man-made deposits |

| <b>Unregulated &amp; Secondary Contaminants</b> | <b>Date(s) Collected</b> | <b>Result or Range</b> | <b>Average</b> | <b>SMCL</b> | <b>ORSG or Health Advisory</b> | <b>Possible Source of Contamination</b>           |
|---|--------------------------|------------------------|----------------|-------------|--------------------------------|---|
| <b>Inorganic Contaminants</b>                   |                          |                        |                |             |                                |   |
| Iron (ppb)                                      | 2016                     | ND-250                 | 52.9           | 300         | -                              | Naturally occurring; corrosion of cast iron pipes |
| Manganese (ppb)                                 | 2017                     | ND-89.1                | 66.2           | 50          | 300                            | Erosion of natural deposits                       |
| Sodium (ppm)                                    | 4/18/17                  | 34.5-73.4              | 53.95          | -           | 20                             | Natural sources; runoff from road salt            |
| Sulfate (ppm)                                   | 3/3/15, 9/15/15          | 19-20                  | 19.5           | 250         | -                              | Natural sources                                   |

**Sodium** is a naturally-occurring common element found in soil and water. It is necessary for the normal functioning of regulating fluids in human systems. Some people, however, have difficulty regulating fluid volume as a result of several diseases, including congestive heart failure and hypertension. The guideline of 20 mg/L for sodium represents a level in water that physicians and sodium sensitive individuals should be aware of in cases where sodium exposures are being carefully controlled. For additional information, contact your health care provider, your local board of health or the Massachusetts Department of Public Health, Bureau of Environmental Health Assessment at 617-624-5757.

**\*\*Manganese:** EPA has established a lifetime health advisory (HA) of 300 ppb for manganese to protect against concerns of potential neurological effects. 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 it can have undesirable effects on certain sensitive populations at elevated concentrations. US EPA and MassDEP have set an aesthetics-based secondary maximum contaminant level (SMCL) for manganese of 0.05 mg/L (50 ug/L or 50 ppb). In addition, MassDEP's Office of Research and Standards (ORS) has set a drinking water guideline (ORSG) of 0.3 mg/L (300 ug/L or 300 ppb) that closely follow EPA's public health advisory for manganese.

Drinking water may naturally have manganese and when concentrations are greater than 50 ug/L (50 ppb) the water may be discolored and taste bad. Over a lifetime, EPA recommends that people drink water with manganese levels less than 300 ug/L (300 ppb) and over the short term, EPA recommends that people limit their consumption of water with levels over 1000 ug/L (1000 ppb) 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 (300 ppb), nor should formula for infants be made with that water for longer than 10 days. The ORSG differs from EPA's health advisory because it expands the age group to which a lower 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.

### Contamination from Cross Connection

Cross-connections that could contaminate drinking water distribution lines are a major concern. A cross-connection is 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 sucked out from the equipment and into the drinking water line (backsiphonage).

Outside water taps 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 lay on the ground may be contaminated by fertilizers, cesspools or garden chemicals. We recommend the installation of hose bibb type vacuum breakers on all outside spigots. This will protect you, the homeowner, against the potential cross connection contamination of your outside garden hose.

Community water supplies are continually jeopardized by cross-connection unless appropriate valves, know as backflow prevention devices, are installed and maintained. The Town of Norfolk has an active cross connection control program. We survey all industrial, commercial and institutional facilities in the service area to insure that all potential cross-connections are identified, eliminated or protected by a backflow preventer. We currently test approximately 54 backflow devices as required by Mass DEP and the Cross Connection Control Section (310 CMR 22.22) of the Commonwealth of Massachusetts Drinking Water Regulations that they are providing maximum protection. The tests are performed once or twice per year, depending on the level of threat. In the event that a test fails, it is promptly repaired or replaced and retested.

## Source Water Protection

The MassDEP has prepared a Source Water Assessment Program (SWAP) Report for the water supply source serving the Norfolk DPW. The report assesses the susceptibility of public water supplies to contamination and makes recommendations.

This report is available from the MassDEP website: <http://www.mass.gov/eea/docs/dep/water/drinking/swap/cero/3208000.pdf>. If you have any questions, please contact WhiteWater, Inc., at 1-888 377-7678.

A susceptibility ranking of **high** was assigned to both wells in our system by the DEP due to the absence of hydro-geologic barriers (i.e. clay). Both Spruce Road and Gold Street wells are gravel-packed and presently meet all US Environmental Protection Agency (EPA) and MA DEP drinking water quality standards.

A well's water supply protection area is the land around the well where protection activities should be focused. Each well has a Zone I protective radius (400 ft) and a Zone II protection area. Zone I is owned and controlled by the Norfolk DPW and limited to only water supply activities. Zone II is defined as the primary recharge area for each well. To ensure wellhead protection, all construction plans in Norfolk are reviewed by the DPW with emphasis given to those in close proximity to Zone II.

In concert with its certified operator, WhiteWater, Inc., the Norfolk DPW is addressing the concerns as stated in the SWAP Report and welcomes your input to our planning. If you have any questions please contact Robert J. McGhee, Director of Public Works, at (508) 528-4990.

## FOR YOUR INFORMATION

In order to ensure that tap water is safe to drink, the Department of Environmental Protection (MassDEP) and U.S. Environmental Protection Agency (EPA) prescribe regulations that limit the amount of certain contaminants in water provided to 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 (800-426-4791).

Where to go for more information ....

Massachusetts Department of Environmental Protection (MassDEP)  
<http://www.mass.gov/eea/agencies/massdep/water/drinking/>



## SHOULD SOME PEOPLE TAKE SPECIAL PRECAUTIONS?

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons, such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/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 (800)426-4791.

## SOURCE WATER CHARACTERISTICS

The sources of drinking water in the United States (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 sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- Inorganic contaminants, such as salts and metals, which can be naturally occurring or result from

urban storm water 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 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. These contaminants can also come from gasoline storage, 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.

## Department of Public Works Contact Information

The Norfolk water system is operated and maintained by the Department of Public Works, Water Division. If you have any questions about this report, please contact: Robert J. McGhee, Director of Public Works at 508-528-4990.

Department of Public Works, 33 Medway Branch Road, Norfolk, MA 02056; office hours are Monday through Friday, 8:00 am to 3:30 pm; 508-528-4990. For water problems outside of normal hours, please contact the Norfolk Police Department at 508-528-3206 and one of our representatives will contact you immediately.

