ANNUAL WATER QUALITY REPORT

Reporting Year 2018

Presented By
Suez

PWS ID#: 2103000

Our Mission Continues

We are pleased to present our annual water quality report covering all testing performed between January 1 and December 31, 2018. We have dedicated ourselves to producing drinking water that meets all state and federal standards. As new challenges to drinking water safety emerge, we remain vigilant in meeting the goals of source water protection, water conservation, and community education while continuing to serve the needs of all our water users.

Source Water Assessment

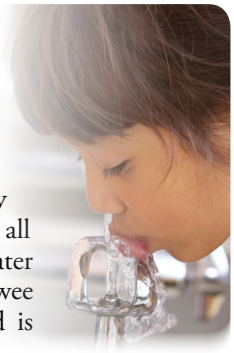
The Massachusetts Department of Environmental Protection (DEP) has prepared a Source Water Assessment Program (SWAP) report for the water supply sources serving this water system. The report assesses the susceptibility of each source of public water supplies. A susceptibility ranking of high was assigned to this system using information collected during the assessment by DEP. The plan is an assessment of the delineated area around our listed sources through which contaminants, if present, could migrate and reach our source water. It also includes an inventory of potential sources of contamination within the delineated area and a determination of the water supply's susceptibility to contamination by the identified potential sources.

You can view a copy of the SWAP report at www.mass.gov/eea/docs/dep/water/drinking/swap/cero/2103000.pdf.

Important Health Information

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 may be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. The U.S. EPA/CDC (Centers for Disease Control and Prevention) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline at (800) 426-4791 or http://water.epa.gov/drink/hotline.

Where Does My Water Come From?



Your drinking water comes from groundwater and surface water sources. The surface water supplies are Cowee Pond, Perley Brook Reservoir, and Crystal Lake, all of which are located in Gardner. Water naturally flows by gravity from Cowee Pond to Perley Brook Reservoir and is then pumped to Crystal Lake.

The Snake Pond Well Treatment facility is a groundwater source. It is used as a secondary source to help with seasonal water demand.

The Crystal Lake Water Treatment Facility, which was upgraded in 2007, continues to produce high-quality drinking water. The Crystal Lake Water Treatment Facility uses microfiltration membranes and has a total capacity of 4.5 million gallons per day. A total of 658 million gallons of raw water was pumped from Crystal Lake in 2018 and treated in order to produce 569 million gallons of finished water that was distributed to the City of Gardner.

The Snake Pond Well treatment facility was upgraded in 2006 and continues to produce high-quality drinking water. This facility was upgraded to treat manganese and iron in groundwater. At this time it is capable of treating high levels of these metals. This facility pumped 84 million gallons of raw water in order to produce 79 million gallons of finished water that was distributed to the City of Gardner. It has a capacity of 1.3 million gallons a day.

There are three drinking water storage tanks in the City of Gardner. They are above-ground storage tanks used to help ensure a safe, reliable supply of drinking water and provide fire protection. The combined capacity of these storage tanks is 4.75 million gallons.

Substances That Could Be in Water

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

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity. Substances that may be present in source water include: Microbial Contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, or wildlife; Inorganic Contaminants, such as salts and metals, which can be naturally occurring or may result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming; Pesticides and Herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses; Organic Chemical Contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and which may also come from gas stations, urban stormwater runoff, and septic systems; Radioactive Contaminants, which can be naturally occurring or may be the result of oil and gas production and mining activities.

> "We remain vigilant in delivering the best-quality drinking water"

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

Opportunities for Public Participation

You may attend the Public Service Committee meetings. They are held every month before the City Council meeting. Attending these meetings will allow you to discuss any agenda item and learn information about your water system.

What's a Cross-Connection?

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. 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.

Outside water taps and garden hoses tend to be the most common sources of cross-connection contamination. 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 contamination.

Community water supplies are continuously jeopardized by cross-connections unless appropriate backflow prevention devices are installed and maintained. We have surveyed industrial, commercial, and institutional facilities in the area to make sure that potential cross-connections are identified and eliminated or protected by a backflow preventer. We also inspect and test backflow preventers to make sure that they provide maximum protection.

For more information, call the Safe Drinking Water Hotline at (800) 426-4791.

Benefits of Fluoridation

Fluoride is a naturally occurring element in water supplies in trace amounts. In our system the fluoride level is adjusted to the optimal level of 0.7 part per million (ppm) to improve oral health in children. At this level it is safe, odorless, colorless, and tasteless. Our water system has been providing this treatment since 1987.

QUESTIONS?

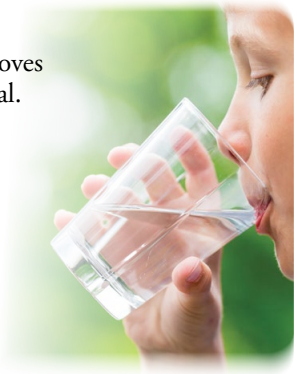
For more information, or for any questions relating to your drinking water, call Timothy Michaud, Chief Operator, at (978) 630-8791.

Lead in Home Plumbing

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. We are responsible for providing high-quality drinking water, but we cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline at (800) 426-4791 or at www.epa.gov/safewater/lead.

Cryptosporidium in Drinking Water

Cryptosporidium is a microbial parasite found in surface water. Although filtration removes Cryptosporidium, the most commonly used methods cannot guarantee 100-percent removal. Monitoring of source water and/or finished water indicates the presence of these organisms. Current test methods do not allow us to determine if the organisms are dead or if they are capable of causing disease. Symptoms of infection include nausea, diarrhea, and abdominal cramps. Most healthy individuals can overcome the disease within a few weeks. However, immunocompromised people are at greater risk of developing life-threatening illness. We encourage immunocompromised individuals to consult their doctor regarding precautions to take to avoid infection. Cryptosporidium must be ingested to cause disease, and it may be spread through means other than drinking water.



Treatment Train Description

Our water system makes every effort to provide safe and pure drinking water. To improve the quality of the water delivered to you, we treat it to remove several contaminants.

- We add sodium hypochlorite and ammonium sulfate to protect you against microbial contaminants.
- We add poly aluminum chloride to help coagulate the dirt particles within the untreated water to help the microfiltration process.
- We filter the water to remove small particles and organisms such as sediment, algae, and bacteria.
- We chemically treat the water to reduce lead and copper concentrations from leaching out of your household plumbing.
- We add sodium fluoride to the water to aid in dental health and hygiene.
- We add soda ash to adjust the pH of the water to assist in corrosion control of the distribution system.
- We chemically treat the water to reduce levels of iron and manganese.

SUEZ and DEP regularly monitor the quality of the water to determine the effectiveness of the treatment and if any additional treatment is required.

Test Results

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

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

We participated in the fourth stage of the U.S. EPA's Unregulated Contaminant Monitoring Rule (UCMR4) program by performing additional tests on our drinking water. UCMR4 sampling benefits the environment and public health by providing the U.S. EPA with data on the occurrence of contaminants suspected to be in drinking water, in order to determine if U.S. EPA needs to introduce new regulatory standards to improve drinking water quality. Unregulated contaminant monitoring data are available to the public, so please feel free to contact us if you are interested in obtaining that information. If you would like more information on the U.S. EPA's Unregulated Contaminants Monitoring Rule, please call the Safe Drinking Water Hotline at (800) 426-4791.

REGULATED SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Barium (ppm)	2018	2	2	0.03	0.008–0.03	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Chlorine[1] (ppm)	2018	[4]	[4]	1.642	0.06–2.91	No	Water additive used to control microbes
Combined Radium (pCi/L)	2015	5	0	0.26	ND–0.26	No	Erosion of natural deposits
Fluoride[1] (ppm)	2018	4	4	0.686	0.2–1.0	No	Water additive which promotes strong teeth
Haloacetic Acids [HAA] (ppb)	2018	60	NA	20	2.3–33	No	By-product of drinking water disinfection
Nitrate (ppm)	2018	10	10	0.105	0.05–0.16	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Perchlorate (ppb)	2018	2	NA	0.115	0.07–0.16	No	Inorganic chemicals used as oxidizers in solid propellants for rockets, missiles, fireworks, and explosives
TTHMs [Total Trihalomethanes] (ppb)	2018	80	NA	35	2.0–50.0	No	By-product of drinking water disinfection
Total Coliform Bacteria[2] (Positive samples)	2018	TT	NA	2	NA	No	Naturally present in the environment
Total Organic Carbon[3] (ppm)	2018	TT	NA	2.60	2.00–2.60	No	Naturally present in the environment
Turbidity[4] (NTU)	2018	TT	NA	0.20	0.01–0.20	No	Soil runoff
Turbidity (Lowest monthly percent of samples meeting limit)	2018	TT = 95% of samples meet the limit	NA	100	NA	No	Soil runoff

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

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AL	MCLG	AMOUNT DETECTED (90TH %ILE)	SITES ABOVE AL/TOTAL SITES	VIOLATION	TYPICAL SOURCE
Copper (ppm)	2018	1.3	1.3	0.1	0/30	No	Corrosion of household plumbing systems; Erosion of natural deposits
Lead (ppb)	2018	15	0	4	0/30	No	Corrosion of household plumbing systems; Erosion of natural deposits

SECONDARY SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	SMCL	MCLG	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Aluminum (ppb)	2016	200	NA	60	23–60	No	Erosion of natural deposits; Residual from some surface water treatment processes
Chloride (ppm)	2018	250	NA	115	26–115	No	Runoff/leaching from natural deposits
Manganese[5] (ppb)	2018	50	NA	120	ND–120	No	Leaching from natural deposits
pH (Units)	2018	6.5–8.5	NA	7.84	6.89–8.72	No	Naturally occurring
Total Dissolved Solids [TDS] (ppm)	2018	500	NA	144	84–204	No	Runoff/leaching from natural deposits
Zinc (ppm)	2016	5	NA	0.01	0.01–0.01	No	Runoff/leaching from natural deposits; Industrial wastes

UNREGULATED AND OTHER SUBSTANCES[6]

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
Bromodichloromethane (ppb)	2018	12	0.71–12	Disinfection by-product
Chlorodibromomethane (ppb)	2018	1.5	1.5–1.5	Disinfection by-product
Chloroform (ppm)	2018	35	0.68–35	Disinfection by-product
Magnesium (ppm)	2018	2.02	1.02–2.02	Leaching from natural deposits
Sodium[7] (ppm)	2018	69	28–69	Natural sources; Runoff from use as salt on roadways; By-product of treatment process
Sulfate (ppm)	2018	10.5	7–14	Naturally occuring

[1] Results are LRAA/RAA.

[2] Coliform bacteria are naturally present in the environment and are used as an indicator to detect other potentially harmful bacteria. All repeat testing results were negative, confirming no violation.

[3] The value reported under Amount Detected for TOC is the lowest ratio of the percentage of TOC actually removed to the percentage of TOC required to be removed. A value of greater than 1 indicates that the water system is in compliance with TOC removal requirements. A value of less than 1 indicates a violation of the TOC removal requirements.

[4] Turbidity is a measure of the cloudiness of the water. It is monitored because it is a good indicator of the effectiveness of the filtration system.

[5] 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. The U.S. EPA and Massachusetts DEP have established public health advisory levels to protect against concerns of potential neurological effects.

[6] Unregulated contaminants are those for which the U.S. EPA has not established drinking water standards. The purpose of unregulated contaminant monitoring is to assist U.S. EPA in determining their occurrence in drinking water and whether future regulation is warranted.

[7] The Massachusetts Department of Environmental Protection maintains a guideline level of 20 ppm for sodium.

Definitions

90th %ile: Out of every 10 homes sampled, 9 were at or below this level. This number is compared to the Action Level to determine lead and copper compliance.

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

LRAA (Locational Running Annual Average): The average of sample analytical results for samples taken at a particular monitoring location during the previous four calendar quarters. Amount Detected values for TTHMs and HAAs are reported as the highest LRAAs.

MCL (Maximum Contaminant Level): The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

MCLG (Maximum Contaminant Level Goal): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

MRDL (Maximum Residual Disinfectant Level): The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

MRDLG (Maximum Residual Disinfectant Level Goal): The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

NA: Not applicable.

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

NTU (Nephelometric Turbidity Units): Measurement of the clarity, or turbidity, of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

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

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

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

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

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