Consumer Confidence Report
The Quality of Your Drinking Water

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Bridgewater Water Treatment Plant: 6-Time Gold Medal Winner

For the sixth year in a row, Bridgewater has received the Virginia Department of Health's highest honor in water treatment. The lengthy title, "Virginia Department of Health's Office of Drinking Water Gold Treatment Award," is a reflection of the experience and dedication of our Plant Supervisor, Shane Pyles, and his staff of Wayne Roberts, Byron Slagell, Anna King, and Josh Kinkead.

In addition to the "Gold Medal," the Virginia Department of Health (VDH) noted that our staff had maintained optimal levels in some key components of finished water for ***twelve*** straight years. To maintain this level of consistency, our staff constantly monitor filters, chemical feeds, and back-washing efficiency in order to meet VDH standards. We are pleased that our Water Treatment Plant has been so honored and congratulate the plant staff on this accomplishment.

American Water Works Association Ranks Top Ten Challenges

Each year the American Water Works Association surveys water professionals to determine the biggest issues facing the water treatment industry. Most of those named make perfect sense, but a few come as a surprise. Here's the list with some editorial comments:

1. Infrastructure. No surprise here, this is a nationwide concern. Aging pipes, water treatment plants, wells, etc. are a problem throughout the industry. In Bridgewater, we are systematically replacing the oldest pipes in our system, but that's an expensive task. In the past year we've worked on lines on West Bank and Ashby Streets.
2. Lack of public appreciation for the value of water.
3. Funding for capital projects.
4. Water scarcity. This is not a problem for Bridgewater, but worldwide it probably ranks first.
5. Replacing a retiring workforce. Certified operators are difficult to find. We are fortunate to have four Class I operators and one Class II working for us, but finding their replacements in the years to come won't be easy.
6. Drought potential. Bridgewater has two sources. North River is surface water, while nearby a deep well provides an underground supply. This combination has proven dependable through the droughts experienced over the past few decades.
7. Cost recovery. Each year we adjust water rates by the Department of Labor's Cost of Living Adjustment. Other localities let costs exceed revenues, resulting in a financial challenge. We're able to pay our bills and keep the system maintained.
8. Customer relations. We certainly try to provide good service to our citizens. Comments and questions are always welcome and we do our best to give a prompt response.
9. Government regulations. Ever-changing regulations are always a concern. Fortunately, most drinking water regulations seem to have a common-sense reason behind them. As this report shows, Bridgewater is always in compliance with EPA regulations for contaminants.
10. Emergency planning and response. This became more of an issue after September 11. While no one can be fully prepared for all emergencies, we do have an emergency plan that addresses floods and other catastrophes. In times of emergencies, other governments jump in to help each other.

Newer issues like climate change and cybersecurity didn't make the list, but they still require our consideration. Please be assured that whatever issues come to the forefront, those responsible for providing safe drinking water to your tap will do their best to keep it flowing.

Quality of Your Drinking Water: Water Quality Test Results for 2016

Your drinking water is routinely monitored according to federal and state regulations for a variety of contaminants. The tables that follow show the results of our monitoring for the period of January 1 through December 31, 2016.

The results in most of these tables are from testing done in 2016. The state allows us to monitor for some contaminants less than once per year because the concentrations of these contaminants do not change frequently. As a result some of our data, though accurate, is more than one year old and only those contaminants that had some level of detection are listed. Many other contaminants have been analyzed but were not present or were below the detection limits of the lab equipment and therefore, not listed. Maximum Contaminant Levels (MCLs) are set by the U.S. Environmental Protection Agency (EPA). In developing the standards, the EPA assumes that the average adult drinks 2 liters of water each day throughout a 70 -year life span. The EPA generally sets MCLs at levels that will result in no adverse health effects for some contaminants or a one-in-ten-thousand to one-in-a-million chance of having the described health effect for other contaminants.

Lead and Copper (Most recent monitoring period)

Contaminant/Unit of Measurement	MCLG	MCL	Level Found/Range	Exceedance	Date of Sample (Next 7/2017)	Typical Source of Contamination
Copper ppm	1.3	AL = 1.3	0.032 (90th percentile) None of the 20 samples collected exceeded the AL.	No	July 2014	Corrosion of household plumbing; erosion of natural deposits; leaching from wood preservatives.
Lead ppb	0	AL = 15	2 (90th percentile) None of the 20 samples collected exceeded the AL.	No	July 2014	Corrosion of household plumbing systems; Erosion of natural deposits.

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 Town of Bridgewater 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 the 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 (1-800-426-4791) or at http://www.epa.gov/safewater/lead.*

Radiological Contaminants (Most recent monitoring period)

Contaminant/ Unit of Measurement	MCLG	MCL	Level Found/ Range	Violation	Date of Sample (Next 4/2020)	Typical Source of Contamination
Combined Radium - pCi/L	0	5	ND	No	April 2014	Erosion of natural deposits
Alpha emitters - pCi/L	0	15	0.12	No	April 2014	Erosion of natural deposits
Gross Beta - pCi/L	0	50	1.20	No	April 2014	Decay of natural & manmade deposits

Radiological Contaminants: *Certain minerals are radioactive and may emit various forms of radiation. They become a part of the water supply through erosion of the mineral deposits. Some people who drink water containing radiation in excess of the maximum contaminant limit may have an increased risk of getting cancer. Our water shows trace amounts of alpha and beta radiation. Please note that our readings are far less than the MCL.*

Inorganic Contaminants

Contaminant/Unit of Measurement	MCLG	MCL	Level Found/ Range	Violation	Date of Sample	Typical Source of Contamination
Fluoride ppm	4	4	Range: 0.57 to 0.85	No	Monthly 2016	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer & aluminium factories.
Barium ppm	2	2	0.0509	No	April 2016	Discharge of drilling waste; discharge from metal refineries; erosion of natural deposits.
Nitrate ppm	10	10	1.16	No	April 2016	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits.

Inorganic Contaminants: *The Department of Health tests for 15 different inorganic contaminants including arsenic, asbestos, mercury, & nitrate. Lead is also classified as "inorganic" but it is listed separately in this report since it is of particular concern for all water systems. We show small amounts of fluoride and nitrate in our test results. Fluoride is added at the water filtration plant as a preventative for tooth decay. Nitrates occur in our system and were a concern in the past. However, we now blend river & well water, greatly reducing our nitrate levels. In this report we show slightly more than one part per million, a small fraction of the MCL.*

Disinfection By-Products Precursors

Contaminant/ Unit of Measurement	MCLG	MCL	Level Found/ Range	Violation	Date of Sample	Typical Source of Contamination
(TOCs) Total Organic Carbon ppb	NA	TT	Range: ND to 0.93	No	Monthly 2016	Naturally present in the environment.

Disinfection By-Products Precursors: *A precursor is defined as a substance from which another substance is formed. In the case of Carbon, it can combine with Chlorine to form organic compounds. In greater concentrations, some of these are harmful to human health. Our level of Total Organic Carbon is quite low and poses no risk to health.*

Disinfection By-Products

Contaminant/ Unit of Measurement	MCLG	MCL	Level Found	Violation	Date of Sample	Typical Source of Contamination
TTHMs (Total Trihalomethanes) ppb	0	80	Average: 11 Range: 0.89 to 21.60	No	Yearly 2016	By-product of drinking water chlorination.
Haloacetic acids (HAAs) ppb	NA	60	Average: 9.1 Range: 6.50 to 11.70	No	Quarterly 2015	By-product of drinking water chlorination.

Disinfection By-Products: *Disinfection by-products are formed by the reaction of the disinfectant with natural organic matter in the water. Bridgewater samples are significantly lower than the maximum allowable limit in both TTHMs and HAAs.*

Microbiological Contaminants

Contaminant/Unit of Measurement	MCLG	MCL	Level Found/Range	Violation	Date of Sample	Typical Source of Contamination
Turbidity NTU	NA	TT=0.3 NTU (95% of monthly samples must be <0.3 NTU)	0.09 Max (Maximum & all monthly samples <0.3 NTUs 100% of the time)	No	Daily	Soil runoff

Turbidity: *All water contains a certain amount of suspended solids, some of which could be microbiological contaminants that can cause sickness if ingested. Drinking water turbidity is measured in nephelometric turbidity units (NTUs) and a reading of .3 or less is considered safe by the Health Department. For comparison, .5 NTU turbidity is barely noticeable to the naked eye. The Town's drinking water falls well below the standard for safe drinking water.*

Four Groups of Contaminants

1. Microbial Pathogens. Pathogens in drinking water are serious health risks. Pathogens are disease-producing micro-organisms, which include bacteria (such as *giardia lamblia*), viruses, and parasites. They get into drinking water when the water source is contaminated by sewage and animal waste, or when wells are improperly sealed and constructed. They can cause gastroenteritis, salmonella infection, dysentery, shigellosis, hepatitis, and giardiasis (a gastrointestinal infection causing diarrhea, abdominal cramps, and gas). The presence of coliform bacteria, which is generally a harmless bacteria, may indicate other contamination to the drinking water system.

2. Organics. Some chemical compounds are known as "organics." These contain carbon and are often found in nature. Most organic compounds would be considered harmless, but some are regulated, such as:

- Trihalomethanes (THMs), which are formed when chlorine in treated drinking water combines with naturally occurring organic matter;
- Pesticides, including herbicides, insecticides, amd fungicides; and
- Volatile organic chemicals (VOCs), which include solvents, degreasers, adhesives, gasoline additives, and fuel additives. Some of the common VOCs are benzene, trichloroethylene (TCE), styrene, toluene, and vinyl chloride. Possible chronic health effects include cancer, central nervous system disorders, liver and kidney damage, reproductive disorders, and birth defects.

3. Inorganics. These contaminants include toxic metals like arsenic, barium, chromium, lead, mercury, and silver. These metals can get into your drinking water from natural sources, industrial processes, and the materials used in your plumbing system. Toxic metals are regulated in public water supplies because they can cause acute poisoning, cancer, and other health effects.

Nitrate is another inorganic contaminant. The nitrates in mineral deposits, fertilizers, sewage, and animal wastes can contaminate water. Nitrate has been associated with "blue baby syndrome" in infants.

4. Radioactive Elements. Radon is a radioactive contaminant that results from the decay of uranium in soils & rocks. It is usually more of a health concern when it enters a home as a soil gas than when it occurs in water supplies. Radon in air is associated with lung cancer.

Definitions

Throughout this report there may be unfamiliar terms and abbreviations. The following definitions are provided to help you better understand these terms:

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

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.

Nephelometric Turbidity Unit (NTU): A measure of the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

Non-detects (ND): Lab analysis indicates that the contaminant is not present.

Parts per million (ppm) or milligrams per liter (mg/l): One part per million corresponds to one minute in 2 years, or a single penny in $10,000.

Parts per billion (ppb) or micrograms per liter: One part per billion corresponds to one minute in 2,000 years, or a single penny in $10,000,000.

Parts per trillion (ppt) or nanograms per liter (nanograms/l): One part per trillion corresponds to one minute in 2,000,000 years, or a single penny in $10,000,000,000.

Picocuries per liter (pCi/l): A measure of the radioactivity in water.

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

Variances and exemptions: State or EPA permission not to meet an MCL or a treatment technique under certain conditions.

Town of Bridgewater
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Local
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Annual Drinking Water Quality Report

Town of Bridgewater (PWSID No. 2165045)

Source Water Assessment

The Virginia Department of Health (VDH) completed a source water assessment on March 27, 2002. This assessment determined that our source may be susceptible to contamination because it is located in an area that promotes migration of contaminants from land use activities of concern. More specific information may be obtained by contacting **Bob Holton** at **(540) 908-4212.**

What does that mean? The language used to describe the "Source Water Assessment" was written by the Virginia Department of Health. What this really means is that North River runs through an agricultural area that is subject to contamination from fields. In addition, Pilgrim's Pride and a few small industries are upstream from our intake. This also poses a risk. However, it should be noted that no contamination of North River has occurred over the past fifteen years. In fact, the last contamination we can remember came from a farm upstream and happened over thirty years ago.

An Open Letter to the Citizens of Bridgewater:

Each year about this time you receive a report on the quality of your drinking water. While this is mandated by the Environmental Protection Agency and the Virginia Department of Health, we welcome the opportunity to explain our water treatment system to you and share the results of recent testing for contaminants.

First and foremost, please realize that your drinking water meets all state and federal requirements administered by the Office of Drinking Water for the Virginia Department of Health. We are committed to providing you with a safe and dependable supply both now and in the future.

I hope you enjoy reading this report and that it gives you a better understanding of the issues surrounding water and public health.

Sincerely,

A. Fontaine Canada

A. Fontaine Canada, Chairman
Public Works Committee

This "Quality of Your Drinking Water" Report was prepared by Town of Bridgewater staff. For information, please call (540) 908-4212.