

2019 Water Quality Report of the Belfast Water District

INTRODUCTION

This year marks the Belfast Water District's centennial year 1919-2019. This is the twenty-second annual water quality report of the Belfast Water District serving Belfast. This annual report is intended to provide you with important information about your drinking water. We know that you count on us for a safe and reliable supply of water every day, and our dedication to providing the highest quality of service to you at a great value. You may be interested to know that at the minimum rate, you pay less than one cent per gallon of water. Delivered to your home, you get 2 gallons of water for 1.5 cents, ten gallons for 7.5 cents and 100 gallons for 75 cents. You may be interested to know that this water supply has been tested for hardness 68 mg/l = 3.97 grains per gallon which is considered 'moderately' hard.

THE CONTENTS OF THIS REPORT

The Safe Drinking Water Act mandates the State of Maine, along with the Environmental Protection Agency (EPA), to establish and enforce minimum drinking water standards. These standards set limits on certain biological, radioactive, organic and inorganic substances sometimes found in drinking water. The limits set on these standards are known as MCLs, Maximum Contaminant Levels. Two types of standards have been established. Primary Standards set achievable levels of drinking water quality to protect your health. Secondary Standards provide guidelines regarding the taste, odor, color, and other aesthetic aspects of your drinking water which do not present a health risk. Listed in this report are the results of the System's regular testing which provides the test results for both Primary Standards and Secondary Standards.

The 2019 testing results indicate *Belfast Water District's system* meets all state and federal requirements. **No violations occurred in 2019.** Water is tested for the contaminants listed on the table. The data presented in this report are from the most recent testing done in accordance with the regulations as set forth by the Safe Drinking Water Act.

WATER QUALITY

We ensure that your water is safe through regular monitoring and testing of water quality. Maine State Health and Environmental Testing Laboratory and Maine Water Testing Laboratory conduct these tests, State certified testing laboratories. This report shows a comprehensive summary of the laboratory test results for the constituents we regularly monitor in your water supply. Responsibility for maintaining water quality resides with our staff of certified water treatment plant operators, licensed by the State of Maine Department of Human Services.

HEALTH INFORMATION

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. Contaminants that may be present in source water include Microbial, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife. Inorganic, such as salts and metals, which can be naturally occurring or 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, including synthetic and volatile organic chemicals which are by-products of industrial processes and petroleum production and can also come from gas stations, urban runoff, and septic systems. Radioactive, which can be naturally-occurring or be the result of oil and gas production and mining activities. However, 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 (1-800-426-4791) or at the following link: <https://www.epa.gov/ccr/forms/contact-us-about-consumer-confidence-reports>. MCL's (maximum contaminant levels) are set at very stringent levels. To understand the possible health effects described for many regulated constituents, a person would have to drink 2 liters (or about 2 quarts) of water every day at the MCL level for a lifetime to have a one in ten thousand chance of having the described health effect.

LEAD AND COPPER

The Federal Lead and Copper Rule mandate household testing for Lead and Copper. According to the rule, 90% of the samples from homes must have Lead levels less than 15 ppb and Copper levels less than 1.3 ppm. 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 Belfast Water District 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 are available from the Safe Drinking Water Hotline 1-800-426-4791 or at the following link: <http://www.epa.gov/safewater/lead>.

RADON

The highest Radon levels for our system were 969 pCi/L, taken in June 2005. Radon is found in the soil and bedrock formations and is a water-soluble, gaseous by-product of Uranium. Most Radon is released to the air, moments after turning on the tap. Only about 1-2 percent of Radon in the air comes from drinking water. The U.S. EPA is considering setting lower standards for Radon in drinking water. The State of Maine adopted a Maximum Exposure Guideline (MEG) for Radon in drinking water at 4,000 pCi/L, effective 1/1/07. If Radon exceeds the MEG in water, treatment is recommended. The U.S. EPA is proposing setting federal standards for Radon in public drinking water. It is also advisable to test indoor air for Radon. Breathing Radon released to air from tap water increases the risk of lung cancer over the course of your lifetime. If you seek more information about Radon, please

For more information, please visit us on the web at www.belfastwater.org OR at our office located at 285 Northport Avenue, Belfast, Maine

contact this office or the State Drinking Water Program and request a Radon 'Fact Sheet'.

TESTING WAIVER GRANTED

In 2017, our system was granted a 'Synthetic Organics Waiver'. This is a three-year exemption from the monitoring/ reporting requirements for the following industrial chemical(s): TOXAPHENE/CHLORDANE/PCB, HERBICIDES, SEMIVOLATILE ORGANICS. This waiver is granted due to the absence of these potential sources of contamination within a half-mile radius of the water source(s).

WATER SUPPLY/SOURCE INFORMATION

The Belfast Water District uses groundwater as its water source. There are two gravel packed wells located in the Goose River Aquifer in Swanville and Belfast. These wells have been in production since the 1950s and provide a reliable source of supply. The wells are protected by the Aquifer/Watershed Overlay District Ordinance adopted by the City of Belfast in 1990.

WATER TREATMENT AND ASSESSMENT

To ensure the quality of your water, three treatment techniques are used by this water utility. They include Sodium Hydroxide for Corrosion control, Fluoride for the reduction of tooth decay, and Sodium Hypochlorite for disinfection.

Sodium Hydroxide, for the control of Lead and Copper. Maintaining the proper pH with the addition of sodium hydroxide, 25% solution in the water protects our distribution system and your home's plumbing system from the effects of lead and copper. The Federal EPA Standard for Lead is 15 ppb or less, and Copper is 1.3 ppm or less. This treatment has been so effective that our annual monitoring program for lead and copper levels has been reduced to once every three years under EPA guidelines. Belfast Water's last tests were done in August 2017 when 20 sites were tested in the distribution system, and the results were: Lead – 3.58 ppb, and Copper – 0.163 ppm. (0 sites failed out of the 20 tested) Our next testing will be in the summer of 2020.

Sodium Fluoride, Fluoridation was authorized by referendum ballot on March 14, 1960, by the citizens of Belfast for the reduction of tooth decay. The Belfast Water District adds Sodium Fluoride to the water at the EPA recommended rate of 0.70mg/l.

Sodium Hypochlorite is added to ensure adequate disinfection of the water has occurred before delivery to you. Belfast Water has a disinfection level between 0.20mg/l and 0.40mg/l in the entire system per EPA guideline. Monthly bacteria samples are taken at six sites in the water system, and test results are reported to the Maine Drinking Water Program. Of the 72 samples taken in 2019, 0 failed.

MONITORING AND TESTING

Belfast Water District has four Maine State licensed operators that monitor and test your water. The treatment levels are contentiously monitored by analyzers at both wells, and all information is recorded by SCADA. The operators are immediately notified by the SCADA of any variances, and they immediately respond to correct them. These operators also perform backup tests of the water on a daily and weekly basis.

SOURCE WATER ASSESSMENT AND PROTECTION

The sources of drinking water include rivers, lakes, ponds, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and radioactive material and can pick up substances resulting from human or animal activity. The Maine Drinking Water Program (DWP) has evaluated all public water supplies as part of the Source Water Assessment Program (SWAP). The assessments included geology, hydrology, land uses, water testing information, and the extent of our land ownership or protection by local ordinance to see how likely our drinking water source is to being contaminated by human activities in the future. Our wells are rated as a moderate risk because they are gravel packed wells installed in a surficial aquifer. The current land use around our wells results in low risk for bacteria and nitrates, and a low to moderate risk for long-term, chronic contaminants. Both wells are isolated from most sources of potential contamination. Our extensive property ownership and wellhead protection program, including a local ordinance, indicate a low future risk for bacterial contamination and low to moderate risk for chronic contaminants. These are important features in providing long-term protection. We will continue to work with the City to maintain and support these programs. Assessment results are available at town offices and public water systems. For more information, contact the DWP at 287-2070.

WATER SYSTEM DATA

Your water supply and distribution system include over 39 miles of water mains. The system has 2,044 services serving 5,110 customers in 2019 and provides fire protection service through 251 hydrants. In the last twelve months, we have produced and delivered over 197,529,800 gallons of water. That's an average of 541,178 gallons each day. The system also maintains 3,050,000 gallons of water in our four storage tanks which allows us to meet peak system demand periods and maintain an adequate supply during fire-fighting activities.

OTHER IMPORTANT INFORMATION

This report is only a summary of our activities during the past year. If you have any questions about your water quality, the information contained in this report or your water service in general, please call us **at our office (207) 338-1200, Monday thru Friday between 7:00 AM and 3:30 PM, or contact us by e-mail at info@belfastwater.org, or fax (207) 338-0444.** Board of Trustees meetings are held monthly and open to the public. Meetings are posted on our website at: <http://www.belfastwater.org/meetingdate.htm>

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Thank you for allowing us to continue to provide you with clean, quality water this year!

Primary Drinking Water Standards

Primary Drinking Water Standards

PARAMETER	RESULTS	RANGE LOW-HIGH	MCL	MCLG	TYPICAL SOURCE	PARAMETER	Test Date	RESULTS	RANGE LOW-HIGH	MCL	MCLG	TYPICAL SOURCE
Clarity						Organic Chemicals (continued)						
Turbidity (NTU) (12) (TT)	<0.6	0.05-0.10	5.0	5.0	Soil runoff	Tetrachloroethylene (TCE) (ppb)	4/8/2014	NOT DETECTED		5	0	
Microbiological						Toluene (ppm)	3/27/2017	NOT DETECTED		1	1	
Total Coliform Bacteria (18)(cfu) (<72 samples)	0 Positive	0 (72 tests)	1 pos/mo or 5%	0 pos	Naturally present in the environment	Toxaphene (ppb)	4/8/2014	NOT DETECTED		3	0	
Organic Chemicals						Trichlorobenzene (1,2,4-) (ppb)	3/27/2017	NOT DETECTED		70	70	
2,4-D (ppb)	NOT DETECTED		70	70		Trichloroethane (1,1,1-) (TCA) (ppb)	3/27/2017	NOT DETECTED		200	200	
Adipate (diethylhexyl) (ppb)	NOT DETECTED		400	400		Trichloroethane (1,1,2-) (ppb)	3/27/2017	NOT DETECTED		5	3	
Alachlor (ppb)	NOT DETECTED		2	0		Trichloroethylene (TCE) (ppb)	4/8/2014	NOT DETECTED		5	0	
Aldicarb (ppb)	NOT DETECTED		3	1		Vinyl Chloride (ppb)	3/27/2017	NOT DETECTED		2	0	
Aldicarb Sulfone (ppb)	NOT DETECTED		3	1		Xylenes (ppm)	3/27/2017	NOT DETECTED		10	10	
Aldicarb Sulfoxide (ppb)	NOT DETECTED		3	1		Inorganic Chemicals						
Atrazine (ppb)	NOT DETECTED		3	3		Antimony, TOTAL (ppb)	3/27/2017	0.51		6	6	Discharge from petroleum refineries, fire retardants, ceramics, electronics, and solder.
Benzene (ppb)	NOT DETECTED		5	0		Arsenic (15) (ppb)	3/27/2017	NOT DETECTED		10	0	Erosion of natural deposits.
Benzo (a) Pyrene (2) (ppt)	NOT DETECTED		200	0		Asbestos (1) (MFL)	11/12/2013	NOT DETECTED		7	7	
Carbofuran (ppb)	NOT DETECTED		40	40		Barium (ppm)	3/27/2017	0.0054		2	2	Discharge of drilling wastes and from metal refineries. Erosion of natural deposits.
Carbon Tetrachloride (ppb)	NOT DETECTED		5	0		Beryllium (ppb)	3/27/2017	NOT DETECTED		4	4	
Chlordane (ppb)	NOT DETECTED		2	0		Cadmium (ppb)	3/27/2017	NOT DETECTED		5	5	
Chlorobenzene (ppb)	NOT DETECTED		100	100		Chromium (Total) (ppb)	3/27/2017	1.2		100	100	Discharge from steel and pulp mills. Erosion of natural deposits.
Dalapon (ppb)	NOT DETECTED		200	200		Copper (7) (ppm) 0 sites failed out of 20 sampled	8/25/2017	0.163		AL = 1.3	1.3	Corrosion of household plumbing systems.
Di (2-ethylhexyl) adipate (ppb)	NOT DETECTED		400	0		Cyanide(ppb)	7/11/2017	NOT DETECTED		200	200	
						Fluoride (6) (ppm)	12/18/19	0.76	0.50 – 1.2	4	4	Erosion of natural deposits. Water additive which promotes strong teeth. Discharge from fertilizer and aluminum factories.
						Lead (7) (ppb) 0 sites failed out of 20 sampled	8/25/2017	3.58		AL = 15	0	Corrosion of household plumbing systems.
Di (2-ethylhexyl) phthalate (PAE) (ppb)	NOT DETECTED		6	0		Mercury (ppb)	3/27/2017	NOT DETECTED		2	2	
Dibromochloropropane (DBCP) (2) (ppt)	NOT DETECTED		200	0		Nitrate (17) (ppm)	4/18/2019	0.54		10	10	Runoff from fertilizer use. Leaching from septic tanks, sewage. Erosion of natural deposits.
Dichlorobenzene (p-) (ppb)	NOT DETECTED		75	75								
						Nitrite (ppm)	3/27/2017	NOT DETECTED		1	1	
Dichlorobenzene o- (Ortho-) (ppb)	NOT DETECTED		600	600		Selenium (ppb)	3/27/2017	NOT DETECTED		0.05	0.05	
Dichloroethane (1,2-) (ppb)	NOT DETECTED		5	0		Thallium (ppb)	3/27/2017	NOT DETECTED		0.002	0.002	
Dichloroethylene (1,1-) (ppb)	NOT DETECTED		7	7		Disinfection By-Products						
Dichloroethylene (Trans-1,2-) (ppb)	NOT DETECTED		100	100		Total Trihalomethanes (TTHM) (8) (ppb)	LRAA 2019	7	7 - 7	80	0	By-product of drinking water chlorination.
Dichloromethane	NOT DETECTED		5	0		Total Haloacetic Acids (HAA5) (8) (ppb)	LRAA 2019	1	1.2 - 1.2	60	0	By-product of drinking water chlorination.
Dichloropropane (1,2-) (ppb)	NOT DETECTED		5	0		Radionuclides						
Dinoseb (ppb)	NOT DETECTED		7	7		Radon Screen (10) (pCi/L)	6/17/2005	969		4,000	N/A	Erosion of natural deposits.
Dioxin (3) (ppg)	STATE WIDE WAIVER		30	0		Gross Alpha Screen (9) (pCi/l)	3/7/2012	NOT DETECTED		15	0	Erosion of natural deposits.
Diquat (4) (ppb)	STATE WIDE WAIVER		20	20		Radium 226/228 (Combined) (pCi/L)	5/2/2011	0.818		5	0	Erosion of natural deposits.
Endothal (4) (ppb)	NOT DETECTED		100	100		Uranium-238 (16) (ppb)	4/8/2014	1.4		30	0	Erosion of natural deposits.
Endrin (ppb)	NOT DETECTED		2	2		Combined Uranium (ppb)	3/27/2017	0.91		30	0	Erosion of natural deposits.
Ethylbenzene (ppb)	NOT DETECTED		700	700		Other						
Ethylene Dibromide (EDB) (5) (ppt)	NOT DETECTED		50	0		Cryptosporidium/Giardia (11)				0	0	
						Calcium (mg/l)	3/27/2017	21				
						Chlorine Residual (ppm)	2019	0.35	0.20 – 0.40	MRDL= 4	MRDLG= 4	By-product of drinking water chlorination.
Glyphosate (3) (ppb)	STATE WIDE WAIVER		700	700		Secondary Drinking Water Standards						
Heptachlor (ppt)	NOT DETECTED		400	0		Chloride	3/27/2017	14	8-12	250	250	
Heptachlor Epoxide (ppt)	NOT DETECTED		200	0		Magnesium	3/27/2017	3.7				
Heptachlor/Heptachlor Epoxide (ppt)	NOT DETECTED		200	0		Foaming Agents (MBAS)		N/A		0.5	0.5	
Hexachlorobenzene (ppb)	NOT DETECTED		1	0		Iron	3/27/2017	0.059				
Hexachlorocyclopentadiene (ppb)	NOT DETECTED		50	50		Manganese	3/27/2017	0.0007		0.3	0.3	
Lindane (ppt)	NOT DETECTED		200	200		Silver	3/27/2017	NOT DETECTED		0.10	0.10	
Methoxychlor (ppb)	NOT DETECTED		40	40		Sulfate	3/27/2017	8		250	250	
Methyl-Tertiary-Butyl-Ether (MTBE) (13) (ppb)	NOT DETECTED		35	35		Total Dissolved Solids		N/A		500	500	
Oxamyl (Vydate) (ppb)	NOT DETECTED		200	200		Zinc	3/27/2017	0.0011	<0.002-.0028	2	2	
Pentachlorophenol (ppb)	NOT DETECTED		1	0		Sodium	3/27/2017	16				
Picloram (ppb)	NOT DETECTED		500	500		Nickel	4/8/2014	0.00071				
Polychlorinated Biphenyls (PCBs) (ppt)	NOT DETECTED		500	0		Physical Parameters						
Silvex (2,4,5-TP) (ppb)	NOT DETECTED		50	50		Color (units)	3/27/2017	less 5.0		50.0	50.0	
Simazine (ppb)	NOT DETECTED		4	4		pH	3/27/2017	7.5	8.5	6.5-8.5	6.5-8.5	
Styrene (ppb)	NOT DETECTED		100	100		Footnotes:						
Definitions:						(1) Asbestos - State wide waiver to testing in Maine. Only those systems with asbestos pipe need test.						
Running Annual Average (RAA): A 12 month rolling average of all monthly or quarterly samples at all locations. Calculation of the RAA may contain data from the previous year.						(2) Dibromochloropropane - State wide waiver granted to Maine						
Maximum Contaminant Level Goal (MCLG) established by EPA: The level of a contaminant in drinking water below which there is no known or expected risk to health.						(3) Dioxin/Glyphosate - State wide waiver granted to Maine						
Maximum Contaminant Level Goal (MCLG) established by EPA: The level of a contaminant in drinking water below which there is no known or expected risk to health.						(4) Diquat/Endothal - Testing only required if potato growing occurs in watershed.						
Maximum Contaminant Level (MCL): The highest level of a contaminant that is allowed in the drinking water. This is used to determine compliance.						(5) Ethylene Dibromide - Testing only required for ground water systems. State wide waiver for surface water systems in Maine.						
Variance of Waiver: State or U.S. EPA permission not to meet MCL or treatment technique under certain conditions (e.g. waiver to filtration).						(6) Fluoride - Levels must be maintained between 0.5 to 1.2 ppm. The optimum level is 0.7 ppm 2019 Monthly Average- 69 ppm						
Treatment Technique (TT): A required process intended to reduce the level of a contaminant in drinking water (e.g. turbidity).						(7) Lead/Copper: Action Levels (AL) are measured at consumer's tap. 90% of tests in water system must be equal to or below action level						
Action Level (AL): The concentration of a contaminant that, if exceeded, triggers treatment or other requirements that a water system must follow (e.g. lead, copper).						(8) TTHM & HAA5: Total Trihalomethanes and Haloacetic Acids (TTHM and HAA5) are formed as a by-product of drinking water chlorination. This chemical reaction occurs when chlorine combines with naturally occurring organic matter in water. Compliance is based on running annual average.						
Maximum Residual Disinfectant Level (MRDL): 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.						(9) Gross Alpha - Action level over 5 pCi/L requires testing for Radium 226/228. Action level over 15 pCi/L requires testing for Uranium. Compliance is based on Gross Alpha results minus Uranium results=Net Gross Alpha						
Maximum Residual Disinfection Level Goal (MRDLG): 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.						(10) Radon - The State of Maine adopted a Maximum Exposure Guideline (MEG) for Radon in drinking water at 4,000 pCi/L, effective 1/1/07.						
Concentrations: In this report, most of the quantities are expressed as ppm, ppd, ppt and pCi/L. These are a measure of organics, inorganics or radiation activity per a fixed amount of water.						If Radon exceeds the MEG in water, treatment is recommended. It is also advisable to test indoor air for Radon.						
Million Fibers Per Liter: (MFL)						(11) Cryptosporidium, Giardia, Legionella - Surface Waters Only, Ground waters not required to test or exempt before 1999.						
Locational Running Annual Average (LRAA): A 12 month rolling average of all monthly or quarterly samples at specific sampling locations. Calculation of the RAA may contain data from the previous year.						(12) Turbidity - Surface waters only: 1.49 NTU for Slow Sand or AFT Turbidity (continued) 0.549 NTU for Conventional or Direct Filtration; 5.0 ntu for unfiltered surface water systems.						
Parts per Million (ppm) or milligrams per liter (mg/L): the equivalent of one drop of chemical per every 10 gallons.						(13) MTBE - State of Maine MCL standard, adopted in February 1998						
Parts per Billion (ppb) or micrograms per liter (ug/L): Is the equivalent of one drop of chemical per every 10,000 gallons.						(14) E. Coli: E. Coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Human pathogens in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a greater health risk for infants, young children, the elderly, and people with severely-compromised immune systems.						
Parts per Trillion (ppt): Is the equivalent of one drop of chemical per every 10,000,000 gallons.						(15) Arsenic - While your drinking water may meet EPA's standard for Arsenic, if it contains between 5 to 10 ppb you should know that the standard balances the current understanding of arsenic's possible health effects against the costs of removing it from drinking water. EPA continues to research the health effects of low levels of arsenic, which is a mineral known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damage and circulatory problems. Quarterly compliance is based on running annual average.						
Parts per quadrillion (ppq): Is equivalent of one drop of chemical per every 10,000,000,000 gallons.						(16) Uranium - The U.S. EPA adopted the new MCL standard of 30 ppb, in December 2000. Water systems must meet this new standard by December 2003.						
Picocuries per Liter (pCi/L): Is a measure of the amount of naturally occurring radiation per liter of water.						(17) Nitrate: Nitrate in drinking water at levels above 10 ppm is a health risk for infants of less than six months of age. High nitrate levels in drinking water can cause blue baby syndrome. Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity. If you are caring for an infant you should ask advice from your health provider.						
Nephelometric Turbidity Units (NTU): Turbidity Units are the measurement of cloudiness in the water.						(18) Total Coliform Bacteria: Reported as the highest monthly number of positive samples, for water systems that take less than 40 samples per month.						
Colony forming units: (cfu)												
Positive Samples (pos)												