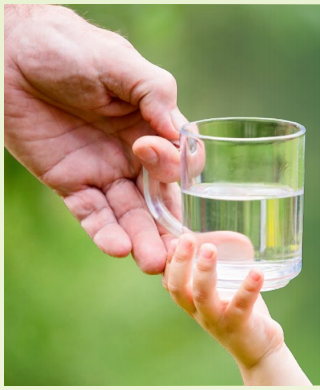
ANNUAL WATER QUALITY REPORT

Reporting Year 2022

Presented By

Bristol Water and Sewer Department

PWS ID#: 017011



Our Mission Continues

We are once again pleased to present our annual water quality report covering all testing performed between January 1 and December 31, 2022. Over the years, we have dedicated ourselves to producing drinking water that meets all state and federal standards. We continually strive to adopt new methods for delivering the best-quality drinking water to you. 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. Please remember that we are always available should you ever have any questions or concerns about your water.

Where Does My Water Come From?

The Bristol Water and Sewer Department has supplied the City of Bristol with high-quality drinking water since the early 1900s. The Bristol Water Department has accomplished this by making major investments in the supply, treatment, and distribution facilities needed to operate a sophisticated water system.

The Bristol watershed is comprised of six contributing reservoir areas. Water from reservoirs in the towns of Burlington, Harwinton, Plymouth, and Bristol is channeled through the Poland River to transmission mains and from there to a water treatment plant, where it is treated and sent into the distribution system and storage facilities. Along with the reservoir system, we have five gravel-packed wells, which provide water to the distribution system's low-service area, and an interconnection with the City of New Britain Water Department to supplement the Stevens Street area.

In 2020 the Bristol Water Department produced a total of 2.55 billion gallons of water, or approximately 5.62 million gallons per day. On June 25, 2020, the highest production day of the year, we produced 10,170,240 gallons of water.

Water Treatment Process

The treatment process consists of a series of steps. First, raw water is drawn from our reservoir and pumped into the water treatment plant, where it enters a large mixing chamber. Here, we add powdered activated carbon for taste and odor control. Also added is PCH-180, a type of liquid aluminum sulfate, which causes small particles to adhere to one another, forming floc. The water then goes through three flocculators, which slowly mix the water and bring all the suspended particles (floc) into the sedimentation tanks, where the floc slowly settles to the bottom and is removed as sludge. The water is then filtered through layers of a mixed-media filtering system. As smaller suspended particles are removed, turbidity disappears and clear water emerges. The water then goes into a clearwell, where chlorine, fluoride, caustic soda, and phosphate are added before it is sent to your home.

Important Health Information

Sources of lead in drinking water include corrosion of household plumbing systems and erosion of natural deposits. Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure.

Sources of copper in drinking water include corrosion of household plumbing systems, erosion of natural deposits, and leaching from wood preservatives. Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short amount of time could experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level over many years could suffer liver or kidney damage. People with Wilson's disease should consult their personal doctor.

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.

Community Participation

You are invited to attend our Water and Sewer Board meetings. We meet the third Tuesday of each month at 6:00 p.m. for the Sewer Commission and 6:15 p.m. for the Water Commission at the water treatment plant, 1080 Terryville Avenue, Bristol.

We are now on Facebook! By liking us on Facebook or signing up for email notifications at www.bristolwaterdept.org, you can get up-to-date information on hydrant flushing, water main breaks, special meetings, and more.

Questions?

For more information about this report, or for any questions relating to your drinking water, please call Superintendent Robert Longo at (860) 582-7431.

Water Conservation Tips

You can play a role in conserving water and save yourself money in the process by becoming conscious of the amount of water your household is using and looking for ways to use less whenever you can. It is not hard to conserve water. Here are a few tips:

- Automatic dishwashers use 15 gallons for every cycle, regardless of how many dishes are loaded. So get a run for your money and load it to capacity.
- Turn off the tap when brushing your teeth.
- Check every faucet in your home for leaks. Just a slow drip can waste 15 to 20 gallons a day. Fix it and you can save almost 6,000 gallons per year.
- Check your toilets for leaks by putting a few drops of food coloring in the tank. Watch for a few minutes to see if the color shows up in the bowl. It is not uncommon to lose up to 100 gallons a day from an invisible toilet leak. Fix it and you save more than 30,000 gallons a year.
- Use your water meter to detect hidden leaks. Simply turn off all taps and water-using appliances. Then check the meter after 15 minutes. If it moved, you have a leak.

> "Thousands have lived without love, not one without water."
>
> —W.H. Auden

Source Water Assessment

In 2003 a source water assessment was completed by the Department of Public Health, Drinking Water Division. The assessment found that the Bristol reservoir system has a rating of low and the well fields have a rating of high susceptibility to contamination. The updated assessment report can be found on the Department of Public Health website at https://www.dir.ct.gov/dph/Water/SWAP/Community/CT0170011.pdf.

Think before You Flush!

Flushing unused or expired medicines can be harmful to your drinking water. Properly disposing of unused or expired medication helps protect you and the environment. Keep medications out of our waterways by disposing responsibly. To find a convenient drop-off location near you, please visit https://bit.ly/3IeRyXy.

Substances That Could Be in Water

To ensure that tap water is safe to drink, the U.S. EPA prescribes regulations limiting the amount of certain contaminants in water provided by public water systems. U.S. Food and Drug Administration 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, in some cases radioactive material, and 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 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.

For more information about contaminants and potential health effects, call the U.S. EPA's Safe Drinking Water Hotline at (800) 426-4791.

Lead in Home Plumbing

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 and removing lead pipes, but we cannot control the variety of materials used in plumbing components in your home. You share the responsibility for protecting yourself and your family from the lead in your home plumbing. You can take responsibility by identifying and removing lead materials within your home plumbing and taking steps to reduce your family's risk. Before drinking tap water, flush your pipes for several minutes by running your tap, taking a shower, or doing laundry or a load of dishes. You can also use a filter certified by the American National Standards Institute to reduce lead in drinking water. Contact us if you are concerned about lead in your water and wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available at http://www.epa.gov/safewater/lead.

Additional Information

In 2007 I was appointed to the Bristol Water Department's Board of Commissioners, and in the years since I have been on the board, I have witnessed exponential growth in technological advances in the department under the leadership of Superintendent Robert Longo and all the department staff. I would like to share with you how the water industry is changing and its impact on you, the customer, through interviews I conducted with each of the Water Division's assistant superintendents.

Joseph Pagliaruli, Meter Division, has the primary responsibility of ensuring meters are accurate and replaced every 8 to 10 years. They are rebuilt and placed back into service, if possible. In addition, he is responsible for ensuring there is no pollution of our water supply due to cross-connections. This will be accomplished more efficiently by the SEDARU project, a program that will not only provide geographic information system mapping but also keep historical electronic records of all work performed in real time to increase efficiency and accuracy and eliminate paper waste.

Dan Bolduc, Water Supply and Treatment Division, is in charge of our treatment plant, three well fields, six reservoirs, and 5,000 acres of watershed. He is responsible for ensuring we are in compliance with all federal and state regulations by taking over 2,500 samples per year. A new supervisory control and data acquisition (SCADA) project will begin in 2023, and when completed, it will allow full control of every aspect of the water system remotely, ultimately resulting in more efficiency and increased cost savings.

Paul Keegan, Water Construction and Maintenance Division, monitors every repair or new installation in the water distribution system, including tank inspections, hydrant maintenance, water main installations, and Call Before You Dig (CBYD) mark-outs. Beneath every street is a network of water, sewer, gas, electric, and communications lines. It is important that CBYD be called four days before any dig. All CBYDs are sent to Paul's staff through SEDARU so paperwork is eliminated and coordination is more efficient. In the future customers can request notification online for their convenience.

Finally, I would like to acknowledge Dawn LaBella, office division manager, who has contributed so many ideas to educate, update, and make doing business with the Bristol Water and Sewer Department convenient, fast, and secure. Although Dawn has been with the department for less than two years, she has streamlined processes and created a new website where contractors can apply for permits and customers can schedule meter appointments at their convenience, reducing hundreds of calls to our office.

I've highlighted a few of the people who have helped us move forward into the twenty-first century, but this department has a staff like no other, willing to share a vision of making the department efficient, up to date, and fully trained to industry standards. At the Bristol Water and Sewer Department, all staff work as a team to ensure your drinking water is not only safe but of the highest quality. If you would like to learn more about where your water comes from and where it goes, please visit our website at www.bristolctwatersewer.gov, where you can watch a brief video highlighting our water from stream to stream!

Sincerely,

Elizabeth Phelan

Chair

What type of container is best for storing water?

Consumer Reports has consistently advised that glass or BPA-free plastics such as polyethylene are the safest choices. To be on the safe side, do not use any container with markings on the recycle symbol showing 7PC (that's code for BPA). You could also consider using stainless steel or aluminum with BPA-free liners.

How much emergency water should I keep?

Typically, one gallon per person per day is recommended. For a family of four, that would be 12 gallons for three days. Humans can survive without food for one month but can only survive one week without water.

How long can I store drinking water?

The disinfectant in drinking water will eventually dissipate, even in a closed container. If that container housed bacteria prior to filling up with the tap water, the bacteria may continue to grow once the disinfectant has dissipated. Some experts believe that water can be stored up to six months before needing to be replaced. Refrigeration will help slow the bacterial growth.

How long does it take a water supplier to produce one glass of treated drinking water?

It can take up to 45 minutes to produce a single glass of drinking water.

How many community water systems are there in the U.S.?

About 53,000 public water systems across the United States process 34 billion gallons of water per day for home and commercial use. Eighty-five percent of the population is served by these systems.

Which household activity wastes the most water?

Most people would say the majority of water use comes from showering or washing dishes; however, toilet flushing is by far the largest single use of water in a home (accounting for 40 percent of total water use). Toilets use about 4 to 6 gallons per flush, so consider an ultra-low-flow (ULF) toilet, which requires only 1.5 gallons.

Test Results

Our water is monitored for many different kinds of substances on a very 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 all our analytical results 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.

REGULATED SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Barium (ppm)	2022	2	2	0.10	0.02–0.26	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Chlorine (ppm)	2022	[4]	[4]	1.29	0.81–1.49	No	Water additive used to control microbes
Fluoride (ppm)	2022	4	4	0.80	0.55–0.87	No	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories
Haloacetic Acids [HAAs]–Stage 2 (ppb)	2022	60	NA	34	0.01–62.0	No	By-product of drinking water disinfection
Nitrate (ppm)	2022	10	10	1.73	0.10–1.73	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Total Organic Carbon (removal ratio)	2022	TT[1]	NA	1.40	1.02–1.77	No	Naturally present in the environment
TTHMs [total trihalomethanes]–Stage 2 (ppb)	2022	80[2]	NA	56	23–83	No	By-product of drinking water disinfection
Turbidity[3] (NTU)	2022	TT	NA	0.11	0.02–0.11	No	Soil runoff
Turbidity (lowest monthly percent of samples meeting limit)	2022	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)	RANGE LOW-HIGH	SITES ABOVE AL/TOTAL SITES	VIOLATION	TYPICAL SOURCE
Copper (ppm)	2020	1.3	1.3	0.27	NA	0/30	No	Corrosion of household plumbing systems; Erosion of natural deposits
Lead (ppb)	2020	15	0	8.9	NA	1/30	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
Chloride (ppm)	2022	250	NA	49.8	22.0–77.2	No	Runoff/leaching from natural deposits

[1] The value reported under Amount Detected for TOC is the lowest ratio of percentage of TOC actually removed to 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.

[2] Compliance is based on a quarterly average. Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous system and may have an increased risk of getting cancer.

[3] 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.

UNREGULATED SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AMOUNT DETECTED	RANGE LOW-HIGH	TYPICAL SOURCE
Bromochloroacetic Acid (ppb)	2020	0.3	ND–0.3	By-product of drinking water disinfection
Bromodichloroacetic Acid (ppb)	2020	3.5	ND–3.5	By-product of drinking water disinfection
Chlorodibromoacetic Acid (ppb)	2020	0.4	ND–0.4	By-product of drinking water disinfection
Dichloroacetic Acid (ppb)	2020	20.6	1.8–20.6	By-product of drinking water disinfection
HAA6Br (ppb)	2020	7.3	0.5–7.3	By-product of drinking water disinfection
HAA9 (ppb)	2020	55	4.9–55	By-product of drinking water disinfection
Manganese (ppm)	2020	0.078	0.002–0.078	Erosion of natural deposits
Monobromoacetic Acid (ppb)	2020	0.5	ND–0.5	By-product of drinking water disinfection
Monochloroacetic Acid (ppb)	2020	2.6	ND–2.6	By-product of drinking water disinfection
Sodium (ppm)	2022	34.6	16.0–57.2	NA

Source Water Protection

The Bristol Water and Sewer Department is always working to protect our water sources. Each year our Watershed Division inspects all septic systems in the vicinity of our reservoirs to ensure they are not failing, which could cause contamination to our water sources. The Bristol Water Department also constantly monitors the sanitary radius around all wells and works with land use officials to review any new construction in the source water areas, as required by the Aquifer Protection Act, to ensure that future contamination does not occur.

Definitions

90th %ile: The levels reported for lead and copper represent the 90th percentile of the total number of sites tested. The 90th percentile is equal to or greater than 90% of our lead and copper detections.

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

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.

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.