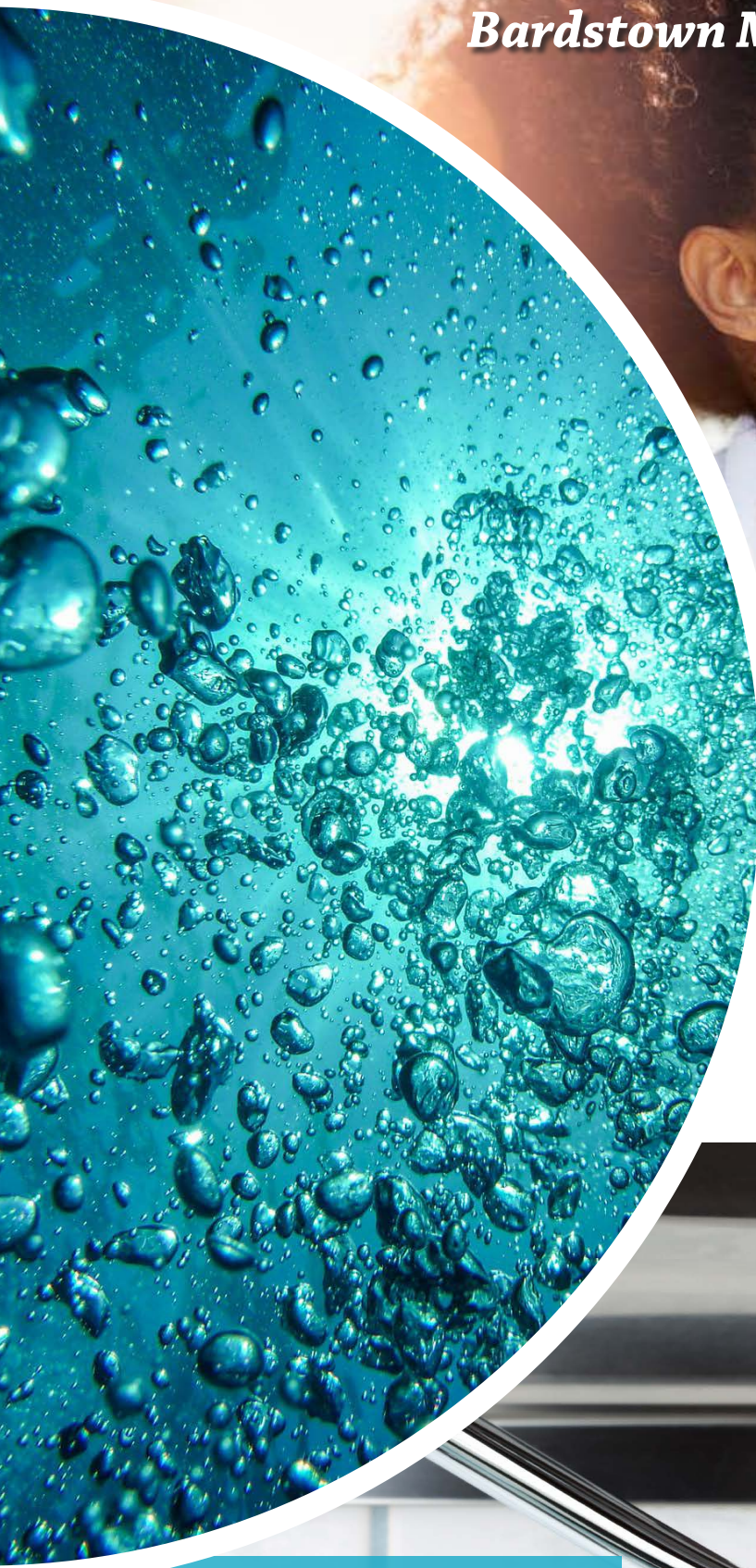


2017 Water Quality Report

Bardstown Municipal Water Department
PWSID#KY0900017



Bardstown Municipal Water Department
220 N 5th St
Bardstown, KY 40004
(502) 348-5947



MEETING THE CHALLENGE

The Bardstown Municipal Water Department is pleased to present this annual water quality report. This report is designed to inform you about the quality of water and services we deliver to you every day. We strive to provide our customers with a safe and dependable supply of drinking water. We want you to be aware of the continual efforts made to improve our water system and to protect our water resources. Thank you for your support.

SOME WAYS WE IMPROVED OUR SERVICES IN 2017:

- Completed upsizing of backwash supply line at Water Treatment Plant
- Added chlorine disinfection to top of filters at Water Treatment Plant
- Inspected and cleaned the Hurstland Water Tank
- Participated in workshops with the Kentucky Division of Water
- Repair work of the underdrain and painting of Filter Unit #2 at the Water Treatment Plant began with work wrapping up in the Spring of 2018
- Replaced aging water lines on Flaget St., N. Fourth St., Sylvan Dr., and Hurstland Dr.
- Completed design plans for Water Treatment Plant conversion from chlorine to chloramine disinfection; Construction Bid went out in December. Project awarded to Judy Construction with work beginning in Spring of 2018. Construction expected to be completed in Fall 2018



PROTECTING OUR WATER

We know that water is the most indispensable product in every home. We ask everyone to be conservative and help us protect our water source and water system. Please report any suspicious activity that you may see around water storage tanks, fire hydrants, pump stations, or Sympson Lake to law enforcement agencies or City Hall employees. Informed consumers are our best allies in maintaining safe drinking water. We encourage public interest and participation in our community's decisions affecting drinking water. Regular City Council meetings occur on the second and fourth Tuesdays, at the City Annex Building, 116 North Fifth Street at 7:00 P.M.

The staff at the Bardstown Water Treatment Plant work around the clock to provide top-quality water to every tap. If you want further information or want to discuss matters included in this report, please contact Jessica Filiatreau at (502) 348-5947 or Don Wilson at (502) 348-3064.

PROTECTION OF DRINKING WATER IS EVERYONE'S RESPONSIBILITY

You can help protect your water supply by:

- **Eliminating** excess use of lawn and garden fertilizers and pesticides
- **Picking up** after your pets
- **Disposing** of chemicals and used motor oil properly (AutoZone™ and Oil Express™ in Bardstown both accept small amounts of motor oil.)
- **Disposing** of used medicine properly
- **Volunteering** in watershed groups in our area
- **Remembering** that storm drains dump directly into local creeks and rivers
- **Keeping** livestock out of streams and creeks



LEAD SAFETY

Good News: Lead levels in Bardstown's water system have been so consistently below action levels that the DOW placed Bardstown on reduced monitoring in previous years. Due to the discontinuing of phosphate feed and the conversion from chlorine to chloramine disinfection, we will be returning to standard testing frequency in 2018.

The sampling is required as standard procedure for the Division of Water. Levels are expected to stay well below the action level, as Bardstown is fortunate to not have lead pipes in its public distribution system.

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children.

Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline (800) 426-4791 or at <http://www.epa.gov/safewater/>

Water Treatment Operators Krista Brady and Geronimo Afile take a sample for testing

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 care provider.

Barium

Some people who drink water containing barium in excess of the Maximum Contaminant Level (MCL) over many years could experience an increase in their blood pressure.

ADDITIONAL HEALTH INFORMATION

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised people, such as people with cancer who are undergoing chemotherapy, people 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.**

A YEAR AT A GLANCE

JESSICA FILITREAU, CITY CIVIL ENGINEER



Jessica Filiatreau
City Civil Engineer

“ Construction was the theme for the Bardstown Water Department in 2017. The Division of Water (DOW) Stage 2 Disinfection By-products (DBPs) compliance regulations are driving many of our water improvement projects both at the water treatment plant and our distribution system. Segments of aging water pipes were replaced downtown to improve water quality and flow to customers.

TSI Construction installed a new 24" diameter backwash pipeline from the 1-million gallon clearwell to Filter #3 and #4 at the water plant. This larger line allows for the units to be adequately cleaned, thus reducing DBP formation at the plant. A chlorine disinfection line was installed in the filter units as well, just over the top of the media, in order to optimize treatment and further reduce DBP formation. The \$1.2 million dollar project was completed in October of 2017.

We continued our trial study of granular activated carbon (GAC) as the primary media in one of the four filter units. When the GAC filter was in service, we saw improvement in water quality. During 2017, construction activities interfered with our ability to have the GAC filter unit consistently in service. Therefore, the Division of Water has granted us additional time to complete the study.

We're happy to say in 2017, we met all DOW regulatory requirements including those for DBPs. However, we've determined the most cost effective way to improve and sustain water quality is converting to chloramines. This is most critical for those customers at the farthest reaches of our service area, as well as our wholesale customers in Bloomfield, New Haven, North Nelson County, Hardin County, Larue County and Washington County. Kenvirons, a Kentucky-based engineering firm, designed the \$1,129,000 chloramine conversion project that bid January 16, 2018. Judy Construction is performing the work that kicked off in April. Monitoring equipment is being placed throughout the distribution system to ensure any that all regulatory requirements are being met and to make treatment adjustments as needed. The switch to chloramine will occur in the fall of 2018.

”

Cody Clark and Justin Miles install new water line on N. 4th and Flaget



CHLORAMINE QUICK FACTS

- Meets stringent water quality standards set by the EPA
- Cost effective compared to other options
- Reduces levels of potentially harmful by-products
- Produces a longer-lasting disinfectant
- Improves the taste and smell of water

MAKING THE SWITCH

MONOCHLORAMINE WILL SOON BECOME OUR FINAL DISINFECTION PROCESS

Scientific research and regulatory changes are leading Bardstown Municipal Water Department to change its water treatment process, ensuring the water we deliver to your tap is of the highest quality. Towards the end of 2018, we will begin using monochloramine as a final step in our disinfection process. With this change, our customers will receive drinking water that surpasses stringent standards set by the EPA and may improve taste and odor.

Monochloramine has been successfully used by water utilities for over 90 years. Cities within Kentucky that are using monochloramine to treat drinking water include Louisville, Elizabethtown, Radcliff, and Versailles. The larger cities of Dallas, San Francisco, Miami, Denver, Philadelphia, and many others have also made this switch. Bardstown currently uses free chlorine as its primary disinfectant. Although chlorine is the most powerful disinfectant available, it is also the most reactive, causing its residual to dissipate as water moves through the distribution system. The addition of ammonia to our post disinfection process will create monochloramine, which is more stable, providing more consistent water quality for all customers near and far.

PRECAUTIONS FOR SOME CUSTOMERS

Monochloramine is safe and beneficial at levels typically used to treat drinking water. However, **there are two special circumstances where monochloramine must be removed:** water used for kidney dialysis, and water used when keeping aquatic pets like fish and some amphibians.

MONOCHLORAMINE AND DIALYSIS

Monochloramine is harmful when it directly enters the bloodstream. It must be removed from water before using it for kidney dialysis.

If you are a dialysis patient or have questions, call your physician or the dialysis center nearest you.

FRESH AND SALTWATER PETS

Monochloramine is harmful to fish, amphibians and other aquatic life. To protect Koi fish, lobster, shrimp, frogs, turtles, snails, clams and live coral and other aquatic pets, use a treatment product that removes monochloramine. These products are readily available at most pet supply stores and aquarium dealers. Dogs, cats, birds and other animals can safely drink water treated with monochloramine. **Leaving water to sit for several days is not an effective method for removing monochloramine.** Monochloramine is longer lasting than chlorine and will not easily dissipate from water.

DEFINITIONS AND ABBREVIATIONS

Maximum Contaminant Level Goal (MCLG)

The level of a contaminant in the drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

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 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.

Maximum Residual Disinfectant Level Goal or (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.

Action Level (AL)

The concentration of a contaminant, which, if exceeded, triggers the treatment or other requirements, which a water system must follow.

Treatment Technique (TT)

A required process intended to reduce the level of a contaminant in drinking water.

Nephelometric Turbidity Units (NTU)

A measure of the cloudiness of water. Low turbidity is an indicator of the effectiveness of the filtration process.

BDL

Below detection level

ppm

Parts per million, or milligrams per liter (mg/l)

ppb

Parts per billion, or micrograms per liter (ug/l)

pCi/L

Picocuries per liter (a measure of radioactivity)

µg/L

Micrograms per liter

(common herbicide used before and after planting to control broadleaf & greasy weeds) was detected in our source water, though well below the MCL. Bardstown will continue to monitor and sample for four consecutive quarters with results being less than their MCL. Some people who drink water containing Atrazine well in excess of the MCL over many years could experience problems with their cardiovascular system or have reproductive difficulties.

THE WATER QUALITY DATA TABLE

The Bardstown Municipal Water Department

routinely monitors for constituents in your drinking water according to federal and state laws. The table on the facing page shows the results of our required monitoring for the period of January 1st to December 31st, 2017. It is important to remember that the presence of these constituents does not necessarily pose a health risk.

Every regulated contaminant that we detected in the water, even in the minutest traces, is listed here. The table contains the name of each substance, the highest level allowed by regulation (MCL), the ideal goals for public health, the amount detected, the usual sources of such contamination, and footnotes at the bottom of this page explaining our findings.

This table is part of the completed Source Water Assessment Plan (SWAP) which is available for inspection at the Lincoln Trail Area Development District, 613 College St. Rd., Elizabethtown, KY 40601, or by telephone at (270) 769-2393.

DETECTED CONTAMINANTS

^a **Radioactive Contaminants** – The data presented in this report are from the most recent testing done in accordance with the administrative regulations in 401 KAR Chapter 8:550 Section 1. Our next Radionuclide compliance monitoring will be collected during the 2019 calendar year.

^b **Lead and Copper** – Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. Bardstown Municipal Water Dept. 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 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.

^c **Atrazine** – In two quarters of 2017 Atrazine

WATER QUALITY DATA 2017

	Allowable Levels	Highest Single Measurement	Lowest Monthly %	Compliance Achieved	Likely Source
Turbidity (NTU) TT	No more than 1 NTU Less than 0.3 NTU in 95% of monthly samples	0.51	99.63	Yes	Soil runoff

Regulated Contaminant Test Results

Contaminant [code] (units)	MCL	MCLG	Level Found	Range of Detection	Date of Sample	Compliance Achieved Yes/No	Likely Source of Contamination
Radioactive Contaminants							
^a Alpha emitters [4000] (pCi/L)	15	0	0.02	0.02 - 0.02	2/14/10	Yes	Erosion of natural deposits
^a Uranium (µg/L)	30	0	0.09	0.09 - 0.09	2/14/10	Yes	Erosion of natural deposits
^a Beta/photon emitter (pCi/L)	50	0	4	4 - 4	2/14/10	Yes	Decay of natural and man made deposits
Inorganic Contaminants							
Barium [1010] ppm	2	2	0.02	0.020 - 0.020	2/1/17	Yes	Drilling wastes; metal refineries; erosion of natural deposits
^b Copper [1022] (ppm) (# Sites exceeded the AL)	AL=1.3	1.3	0.03 (90th percentile)	0 - 0.23 0 sites exceed AL	8/10/17	Yes	Corrosion of household plumbing systems, erosion of natural deposits; leaching from wood preservatives
Fluoride [1025] (ppm)	4	4	0.72	0.70 - 0.70	April 2017	Yes	Water additive which promotes strong teeth
^b Lead [1030] (ppb) (# sites exceeded the AL)	AL= 15	0	0 (90th percentile)	0 - 43 1 site(s) exceed AL	8/10/17	Yes	Corrosion of household plumbing systems, erosion of natural deposits
Nitrate [1040] (ppm)	10	10	1.6	1.60 - 1.60	2/1/17	Yes	Runoff from fertilizer use; leaching from septic tanks, sewage, erosion of natural deposits.
Synthetic Organic Contaminants including Pesticides and Herbicides							
^c Atrazine [2050] (ppb)	3	3	0.39	0 - 1.1	April 2017	Yes	Runoff from herbicide used on row crops
Disinfectants/Disinfection Byproducts and Precursors							
Total Organic Carbon (ppm) (measured as ppm, but reported as a ratio)	TT*	N/A	2.49 (lowest average)	1.63 - 3.09 (monthly ratios)	Jan - Dec 2017	Yes	Naturally present in the environment
* Monthly ratio is the % TOC removal achieved to % TOC removal required. Annual average of the monthly ratio must be 1.00 or greater for compliance							
Chlorine (ppm)	MRDL 4	MRDLG 4	0.97 (highest average)	0.21 - 1.97	Jan. 1 st - Dec. 31 st 2017	Yes	Water additive used to control microbes.
Haloacetic acids or HAA (ppb) Stage2	60	N/A	51 (highest individual LRAA)	18 - 88	1 st - 4 th QTR 2017	Yes	By-product of drinking water chlorination
TTHM Stage 2 [total trihalomethanes] Stage2 (ppb)	80	N/A	49 (highest individual LRAA)	20 - 72	1 st - 4 th QTR 2017	Yes	By-product of drinking water chlorination

PUBLIC NOTICE

The Bardstown Municipal Water Department did not receive any Notice of Violations for the year 2017.

All regulatory requirements for drinking water quality were met or exceeded. We started monitoring/sampling Cryptosporidium, E. Coli and Turbidity testing on April 2016 till March 2018 in accordance with 401 KAR 8:150 LONG TERM 2 ENHANCED SURFACE WATER TREATMENT (LT2ESWTR) Rule.

This table is part of the completed Source Water Assessment Plan (SWAP) which is available for inspection at the Lincoln Trail Area Development District, 613 College St. Rd., Elizabethtown, KY 40601, or by telephone at (270) 769-2393. The data presented in the report is from the most recent testing done in accordance with administrative regulations in 401 KAR Chapter 8. As authorized and approved by EPA, the State has reduced monitoring requirements for certain contaminants to less often than once per year because the concentrations of these contaminants are not expected to vary significantly from year to year. Some of the data in this table, though representative, may be more than one year old. Unless otherwise noted, the report level is the highest level detected.

WHERE DOES MY WATER COME FROM?

Our water comes entirely from surface water sources – Sympson Lake and the Beech Fork River. An 8.8-square-mile area of the Buffalo Creek watershed feeds Sympson Lake. The Beech Fork River Pumping Station is fed by a 669-square-mile area extending upstream from Bardstown, toward Chaplin, Springfield and Lebanon. 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 and through the ground, it dissolves naturally-occurring minerals, and can pick up substances resulting from the presence of animals or from human activity.

The Bardstown Municipal Water Department withdraws just under four million gallons per day of raw water from Sympson Lake. Areas of high concern at the intake consist of row crops, bridges and culverts, and urban and recreational grasses. These areas of high concern do not represent a danger to the environment. It is the potential for chemical spills, leaks, or hazardous material accidentally spilling into the water source that gives these sites the susceptibility ranking of *high*. However, when all aspects of the source assessment are analyzed, the overall ranking for Bardstown's water source is *moderate*.

For approximately half the year, water is withdrawn from the Beechfork River and pumped into Sympson Lake as a supplemental supply. Excessive algae is the number one issue with our source water that causes nuisance taste and odor issues. Left uncontrolled, it can kill fish by blocking out sunlight and deplete oxygen levels.



A MESSAGE FROM THE E.P.A

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 Environmental Protection Agency's Safe Drinking Water Hotline: (800) 426-4791.

Contaminants that may be present in our source water include:

1. Microbial contaminants, such as viruses and bacteria that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
2. Inorganic contaminants, such as salts and metals, that can be naturally-occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
3. Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.
4. Organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.
5. Radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production and mining activities.

To ensure that tap water is safe to drink, the U.S. EPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. FDA regulations establish limits for contaminants in bottled water that provide the same protection for public health.