# BARDSTOWN

**Municipal Water Department PWSID# KY0900017 Water Quality Report for Year 2018**

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.

**2018 Water Quality Improvements**

We want you to be aware of the continual efforts made to improve our water system and to protect our water resources. The mission of Bardstown's maintenance program is to improve water quality and increase the longevity of the water system. Bardstown utilizes automated flushing hydrants and in-line chlorine analyzers at critical locations in the distribution system to monitor and maintain disinfection levels. These monitoring methods allow Bardstown to flush and optimize tank levels to ensure fresh water to our customers. Treatment is also being optimized with a pilot project using a Granulated Activated Carbon (GAC) media on one of four filters to help reduce Disinfection Byproduct precursors. Construction continued in 2018 that allowed Bardstown to switch to chloramine in December as its post disinfectant to reduce said DBP formation even more. Bardstown continues routine maintenance with system flushing, tank inspection, and system optimization practices. We continue to implement our water line replacement program to help combat aging infrastructure. All of these efforts allowed Bardstown to maintain DBP compliance in 2018. Thank you for your continued support.

We know that water is the most indispensable product in every home and we ask everyone to be conservative and help us in our efforts to protect the water source and the 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 Tim Sneed at 502- 348-3064.

**Water Source**

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. A 669 square mile area extending upstream from Bardstown toward Chaplin, Springfield and Lebanon feeds the Beech Fork River Pumping Station. 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.

Contaminants that may be present in our source water include:

A. Microbial contaminants, such as viruses and bacteria that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
B. Inorganic contaminants, such as salts and metals, that can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
C. Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.
D. 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.
E. 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 shall provide the same protection for public health.

---

**Source Water Assessment**

*A source water assessment* of the system's susceptibility to potential sources of contamination has been completed. Following is a summary of the system's susceptibility to contamination, which is a part of the completed Source Water Assessment Plan (SWAP). The completed plan 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 Bardstown Municipal Water Department withdraws approximately four and a half (4 ½) million gallons per day of raw water from Sympson Lake. Areas of high concern at the intake consist of row crops, bridges and culverts, urban and recreational grasses. These high areas of 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.*

## Water-Quality Data Tables

The Bardstown Municipal Water Department routinely monitors for constituents in your drinking water according to Federal and State laws. This table shows the results of our required monitoring for the period of January 1st to December 31st, 2018. It is important to remember that the presence of these constituents does not necessarily pose a health risk. The table shows the results of our water-quality analysis. 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, footnotes explaining our findings, and a key to units of measurement.

The data presented in this 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.

| | 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 | 0.3 | 100% | Yes | Soil runoff |

**Regulated Contaminant Test Results**

| Contaminant [code] (units) | MCL | MCLG | Level Found | Range of Detection | Date of Sample | Compliance Achieved | Likely Source of Contamination |
|---|---|---|---|---|---|---|---|
| **Microbiological Contaminants** | | | | | | | |
| [1] Total Coliform Bacteria # or % positive samples | 1+ sample | 0 | 2+ samples | NA | October 2018 | No | Naturally present in the environment |
| **Radioactive Contaminants** | | | | | | | |
| [2] Alpha emitters [4000] (pCi/L) | 15 | 0 | 0.02 | 0.02 to 0.02 | 2/14/2010 | Yes | Erosion of natural deposits |
| [2] Uranium (µg/L) | 30 | 0 | 0.09 | 0.09 to 0.09 | 2/14/2010 | Yes | Erosion of natural deposits |
| [2] Beta/photon emitter (pCi/L) | 50 | 0 | 4 | 4 to 4 | 2/14/2010 | Yes | Decay of natural and man made deposits |
| **Inorganic Contaminants** | | | | | | | |
| Barium [1010] ppm | 2 | 2 | 0.02 | 0.020 to 0.020 | March 2018 | Yes | Drilling wastes; metal refineries; erosion of natural deposits |
| [3] Copper [1022] (ppm) (# Sites exceeded the AL) | AL=1.3 | 1.3 | 0.110 (90th percentile) | 0 to 0.62 0 sites exceed AL | 10/25/2018 | Yes | Corrosion of household plumbing systems, erosion of natural deposits; leaching from wood preservatives |
| Fluoride [1025] (ppm) | 4 | 4 | 0.73 | 0.60 to 0.80 | Feb 2018 | Yes | Water additive which promotes strong teeth |
| [3] Lead [1030] (ppb) (# sites exceeded the AL) | AL= 15 | 0 | 5 (90th percentile) | 0 to 50 1 site exceeds AL | 10/25/2018 | Yes | Corrosion of household plumbing systems, erosion of natural deposits |
| Nitrate (ppm) | 10 | 10 | 1.1 | 1.1 to 1.1 | April 2018 | Yes | Runoff from fertilizer use; leaching from septic tanks, sewage, erosion of natural deposits. |
| **Disinfectants/Disinfection Byproducts and Precursors** | | | | | | | |
| Total Organic Carbon (ppm) (measured as ppm, but reported as a ratio) | TT* | N/A | 2.41 (lowest average) | 2.02 to 3.23 (monthly ratios) | Jan – Dec 2018 | 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 | 1.02 (highest average) | 0.20 – 1.98 | Jan. 1st – Dec.31st 2018 | Yes | Water additive used to control microbes. |
| Haloacetic acids or HAA (ppb) Stage2 | 60 | N/A | 41 (highest individual LRAA) | 17 to 51 | 1st – 4th QTR 2018 | Yes | By-product of drinking water chlorination |
| TTHM Stage 2 [total trihalomethanes] Stage2 (ppb) | 80 | N/A | 47 (highest individual LRAA) | 26 to 67 | 1st – 4th QTR 2018 | Yes | By-product of drinking water chlorination |

| Contaminant [code] (units) | MCL | MCLG | Postive Number of Samples | Total Samples | Date of Sample | Compliance Achieved | Likely Source of Contamination |
|---|---|---|---|---|---|---|---|
| Cryptosporidium [oocycsts/L] | 0 | TT(90% Removal) | 5 | 24 | Mar 16 - Apr 18 | Yes (see note below) | Human and animal fecal waste |

**Regulated Contaminant Information**

***[1]Total coliform bacteria.***

Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, waterborne pathogens may be present or that a potential pathway exists through which contamination may enter the drinking water distribution system. We found coliforms indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct assessment(s) to identify problems and to correct any problems that were found during these assessments.

During the past year we were required to conduct one (1) Level 1 assessment. One (1) Level 1 assessment was completed. In addition, we were required to take one (1) corrective action and we completed these actions.

Bardstown routinely monitors for the presence of drinking water contaminants. Drinking water standards require that no more than one (1) sample per month may show the presence of coliform bacteria. During October we took 30 samples for Coliform bacteria. Two (2) of our samples showed the presence of coliform bacteria exceeding the required standard.

When we detect coliform bacteria in any sample, we do follow-up testing to see if other bacteria of greater concern, such as fecal coliform or *E. coli*, are present. Upon receiving the positive test results, Bardstown took additional follow-up/repeat samples in that area as part of a Level 1 assessment. **The subsequent water samples did not show bacteria present and all further testing has been free of total coliform bacteria. There was no E.coli found.**

As corrective action we reviewed sampling techniques and we believe that this was caused by human error during the handling of sample bottles. We reviewed our Standard Operating Procedures to reduce the chances of contaminating samples in the future. We disposed the suspected sample bottles and replaced them with new ones completing the corrective actions.

[2]***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.

[3] ***Lead and Copper*** - Bardstown Municipal Water Department returned to initial monitoring for lead/copper due to a treatment change that affects the corrosivity of our system. This means we needed to take 60 samples for the compliance period of January – June 2018 and another 60 samples for the July – December 2018 monitoring period. With the post disinfectant change in December of 2018, Bardstown will continue the same sampling schedule in 2019 even though all samples in 2018 were below action levels. If those samples stay below the action levels, we will be placed on reduced annual monitoring of 30 samples.

*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. 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. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at* ***http://www.epa.gov/safewater/lead****.*

**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 MCL over many years could experience an increase in their blood pressure.

**Cryptosporidium** is a microbial pathogen found in surface water. Crypto was detected in 5 of the 24 samples collected from the raw water source for our water system. It was not detected in the finished water. Current test methods do not enable us to determine if the organism are dead or if they are capable of causing disease. Symptoms of infection include nausea, diarrhea, and abdominal cramps. Cryptosporidium must be ingested to cause disease and it may be spread through means other than drinking water.

We are required to monitor the source of your drinking water for cryptosporidium in order to determine whether treatment at the water treatment plant is sufficient to adequately remove cryptosporidium from your drinking water. We constantly monitor the water supply for various contaminants. We have detected cryptosporidium in some of the samples tested. We believe it is important for you to know that cryptosporidium may cause serious illness in 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. These people should seek advice from their health care providers.

**Unregulated Contaminants Monitoring Rule 4 (UCMR4)** Bardstown Municipal Water Department tested for UCMR4. Monitoring is still in progress, however, all test for cyanotoxins (AM3) yielded Below Detection Levels (BDL). For more information please visit https://www.epa.gov/dwucmr/fourth-unregulated-contaminant-monitoring-rule.

**Disinfectants/Disinfection Byproducts and Precursors.** Disinfection By-products (DBPs) compliance regulation monitors Total Haloacetic Acids (HAA5s) and Total Trihalomethanes (TTHMs) at designated locations in the water distribution system. These TTHMs and HAA5s are by-products of the chlorine disinfection process. The regulatory annual quarterly average for HAA5 is 0.06 ppm (parts per million) and 0.08 ppm for TTHMs. We have remained in compliance with the regulation but want to further improve water quality for our Bardstown water customers and our wholesale water districts' customers.

**Definitions and Abbreviations**

***Maximum Contaminant Level or 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 or 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 Residual Disinfectant Level or 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 or AL*** – the concentration of a contaminant, which, if exceeded, triggers the treatment or other requirements, which a water system must follow.
***Treatment Technique or TT*** – A required process intended to reduce the level of a contaminant in drinking water.
***RTCR Level 1 Assessment*** **-** A Level 1 assessment is a study of the water system to identify potential problems and determine (if possible) why total coliform bacteria have been found in our water system.
***RTCR Level 2 Assessment*** **-** A Level 2 assessment is a very detailed study of the water system to identify potential problems and determine (if possible) why an *E. coli* MCL violation has occurred and/or why total coliform bacteria have been found in our water system on multiple occasions.
***NTU*** – Nephelometric Turbidity Units. NTU is 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 (*u*g/l)
***pCi/L***– picocuries per liter (a measure of radioactivity)
***µg/L***- micrograms per liter
***LRAA*** – locational running annual average
***RTCR*** – Revised Total Coliform Rule
***N/A*** – not applicable

---

**A Message from the EPA**

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 (1-800-426-4791).

***Maximum Contaminant Level (MCL's) are set at very stringent levels. To understand the possible health effects described for many regulated contaminants, a person would have to drink 2 liters of water every day at the MCL level for a lifetime to have a one-in-a-million chance of having the described health effect.***

**Additional Health Information**

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).

**Notice of Violations List for 2018**

Bardstown Municipal Water Department received two (2) Notices of Violations for the year 2018.

Violation Number – 2018-9950644 for failure to submit the calendar year 2016's CCR Certification Package to the Primacy agency by the Annual deadline of July 1st. It was submitted on a later date. The CCR was distributed to all customers by the appropriate timelines but the certification paperwork to the Division of Water was submitted two weeks past the deadline.

Violation Number – 2018-9950645 for failure to complete and/or submit a public notice for violation 2016-9950643 (Failure to have monitoring plan LT2). Bardstown provided a public notice of this violation in its 2017 CCR report, however, the wording did not meet all of the required public notice requirements. Upon receipt of the Notice of Violation a full Public Notice was mailed out to all customers and certification of PN of the violation was done in accordance with 401 KAR 8:075

For Additional Information Please Contact

THE CITY OF
BARDSTOWN
WATER DEPARTMENT

220 N. 5th St. Bardstown, KY 40004 (502) 348 5947
www.cityofbardstown.org