



CITY OF BILLINGS

2019 WATER QUALITY REPORT



IN THIS ISSUE

What is this Report? Special Population Advisory.

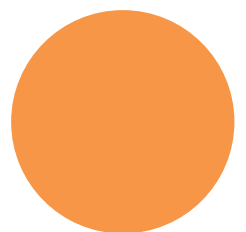
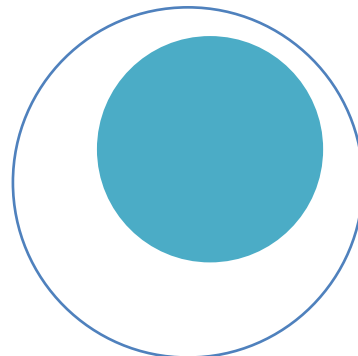
Where Can I Get More Information

EPA Regulations

Data Table Definitions

Water Quality Data Table

Secondary Contaminants & No Violations





WHAT IS THIS REPORT?

The City of Billings Water Quality Division is pleased to provide you with our 2019 Annual Drinking Water Quality Report. We want to keep you informed about the excellent water and service we have delivered to you over the past year. Our goal is and always has been, to provide to you a superior and dependable supply of drinking water. We continually monitor our finished (tap) water to ensure it has no regulated contaminant at a level considered to be a health issue by either the EPA or the Montana Department of Environmental Quality. Your water meets or exceeds the requirements of the Federal Safe Drinking Water Act.

All of the water we provide to you comes from the Yellowstone River. A study of the susceptibility of the Yellowstone River to contamination has been conducted. The analysis showed that our water's susceptibility to contamination is low. This plan is available through the **Billings Public Works, Environmental Affairs Division -406-247-8517**

SPECIAL POPULATION ADVISORY

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as people 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 microbiological contaminants are available from the **Safe Drinking Water Hotline (800-426-4791)**.

EPA Safe Drinking Water Information:

<https://www.epa.gov/ground-water-and-drinking-water/safe-drinking-water-hotline>

EPA National Drinking Water Regulations Table:

http://epa.gov/sites/production/files/2016-06/documents/npwdr_complete_table.pdf

Items of Interest

Cryptosporidium

Microscopic organism that, if ingested, can cause fever and gastrointestinal symptoms. *Cryptosporidium* is removed from water through a successful treatment combination of sedimentation and filtration.

Asbestos

On June 2, 2011, the Montana Department of Environmental Quality issued an asbestos monitoring waiver to the City of Billings through the year of 2019. The City of Billings distribution system contains no asbestos cement pipe.

Arsenic

While your drinking water meets the EPA's standard for arsenic, it does contain low levels of arsenic. EPA's standard balances the current understanding of arsenic's possible health effects against the costs of removing arsenic 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

MORE INFORMATION

The City of Billings Water Quality Laboratory
(406) 657-8346, website at:

<https://www.billingsmtpublicworks.gov/211/Stormwater-Wastewater-Water-Systems>

Montana Dept. of Environmental Quality
(MDEQ) (406) 444-4400

WANT TO LEARN MORE? Group tours of the water treatment plant are available. To schedule your tour, please call the Water Treatment Plant at (406) 247-8683.

SPECIAL NOTE TO OWNERS/MANAGERS OF ASSOCIATIONS AND/OR INCOME

PROPERTIES: To ensure the City of Billings 2019 Annual Drinking Water Quality Report reaches ALL consumers, please post for residents.

Big Ditch unloader structure into the City's Stormwater system in Nina Clair Road



Keep Ditches and Drains Debris Free

As the spring season approaches and outdoor yard work commences, the City of Billings and private ditch companies want to send a friendly reminder to not throw yard waste into ditches and drains. Your cooperation is needed to reduce negative impacts on Yellowstone River water quality and reduce flooding.

Ditches and drains either discharge directly into the Yellowstone River or into the City's stormwater system before discharging to the river. Unlike the sanitary sewer system, pollutants are NOT removed in stormwater discharges. Any dumping of yard wastes, chemicals, pet waste, trash or even loose dirt either on the ditch bank or within the ditch, can potentially cause water quality issues and blockages in the City's stormwater system, which can increase flooding and ditch bank overflows.

Because of this interconnection between the ditches and the City's stormwater system, dumping of debris violates Section 28 of the City Code and State Law 75-5-605 - Prohibitive Activity. Ditches and drains provide valuable benefits such as agricultural irrigation, residential/commercial/public outdoor watering, groundwater recharge and stormwater runoff collection.

Control and maintenance of the majority of the ditches and drains are by private ditch companies through ditch easements or prescriptive rights. Typically, the City's responsibility and ownership is limited to street culvert crossings. Please contact the ditch companies to get permission to divert or alter the course of a ditch, construct ditch crossings (i.e. fences and bridges), discharge stormwater or use ditch water for irrigation.

Below is a link to a map listing the ditches and drains crisscrossing the metropolitan area:

<https://www.billingsmtpublicworks.gov/DocumentCenter/View/215/Ditch-and-Drain-Map>

Below is a link to a ditch contact list:

<https://www.billingsmtpublicworks.gov/DocumentCenter/View/210/Ditch-Contacts-July19>

You can also contact Boris Krizek, Environmental Engineer at 247-8517 if you have questions or concerns.



FOG is an acronym for Fats, Oils, and Grease generated from food service establishments and to a lesser extent private residences. When FOG is disposed of in a drain, it can cool and solidify, building up in sewer laterals and main pipelines. The buildup of FOG can capture food particles and other debris, eventually obstructing wastewater flow and causing a backup. These backups are called Sanitary Sewer Overflows (SSOs) when raw sewage backs up into a basement or onto the surface of a street or yard. SSOs are a risk to human and environmental health and can be costly to the homeowner, business, and municipality. When a sewer backup is reported, a City crew jets the sewer main to ensure the blockage is not in the main. The homeowner/business is contacted by the crew, if the backup has cleared. If the blockage is not cleared, the blockage is in the lateral and therefore the owner's responsibility.

Good kitchen practices reduce the risk of blockages for both residences and food service businesses.

For the Homeowner:

- First, please be aware it is the homeowner's financial responsibility to clear a blockage in a lateral between the house and the sewer main in the street.
- Scrape food waste into a trash can rather than using a garbage disposal.
- Pour cooking grease and oil into a tin can with a lid for later disposal in the trash.
- Periodically fill up a kitchen or bathroom sink with warm water then unplug the drain to help clear the pipes of built-up debris.

For Food Service Establishments (FSE) or other businesses:

- First, please be aware it is the business owner's financial responsibility to clear a blockage in a lateral between the business and the sewer main.
- Scrape food waste into a trash can rather than using a food grinder.
- Pour cooking grease into covered containers for recycling or disposal.
- Scrape/dry-wipe excess food, solidified grease from cookware and dispose in the trash.
- Soak up spills with absorbent material and dispose of them properly.
- Keep written records of cleaning, inspection, and service of grease traps and interceptors.
- Train staff on Best Management Practices to keep FOG out of sewer pipes.
- Prevent any wash water from entering the storm drain system.
- Don't wash kitchen equipment, such as vent hoods, outdoors.

On all backups, the City Public Works Department provides a claim process form letter to all impacted parties. Executed claim forms are mailed to the City's Risk & Safety Officer for claim determination through the Montana Municipal Interlocal Authority (MMIA). For safety and health reasons, please have the impacted area professionally cleaned as soon as possible and retain all receipts for possible reimbursement.

The more you know:

The US Environmental Protection Agency estimates there are between 23,000 and 75,000 SSOs per year in the U.S.A., not including backups in buildings. SSOs can subject municipalities with permit violations and fines.

The City averages about 20 to 25 SSOs per year. The low numbers attributed to the Public Works maintenance and replacement program of the sewer collection system.

When FOG is properly disposed at the City's Water Reclamation Facility (WRF) by permitted grease haulers can be a source of energy. Directing collected FOG to the WRF's primary digester converts fatty acids into methane gas. The gas can be used to generate electricity, provide heating for plant processes, heat buildings, and produce biofuels.

For more information on the City's FOG program, please contact the Public Works Environmental Affairs Division at 406-247-8663.



"Your Water, Our Responsibility"



Our Mission is to be a trusted steward of the community, environmental, and financial resources we manage by providing efficient and reliable water and wastewater utility services.

ENVIRONMENTAL PROTECTION AGENCY (EPA) REGULATIONS

The City of Billings Water Quality Division routinely monitors for contaminants in your drinking water according to Federal and State regulations. The following tables show the results of our monitoring for the period of January 1st to December 31st, 2019. (Some of our data may be more than one year old because the state allows us to monitor for some contaminants less often than once per year.)

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity. The presence of contaminants does not necessarily indicate that water poses a health risk.

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

LONG TERM 2 – LONG TERM 2 ENHANCED SURFACE WATER TREATMENT RULE (LT2ESWTR)

The City of Billings has completed the second round of monthly monitoring for Cryptosporidium in the Yellowstone River in accordance with the EPA Long Term 2 Surface Water Treatment Rule (LT2).

The results from this second round of sampling were favorable and the City is not required to add additional treatment processes to meet the requirements of the rule.



David Mumford
Public Works Director



Jennifer Duray
Deputy Public Works Director



Louis Engels
Utility Systems Engineer

WATER QUALITY DATA TABLE DEFINITIONS

The tables on the next two pages list all of the drinking water contaminants detected for the calendar year of this report. The presence of contaminants in the water does not necessarily indicate that the water poses a health risk. Unless otherwise noted, the data presented in these tables is from testing done in the calendar year of the report. In the following section you will find many terms and abbreviations you might not be familiar with. To help you better understand these terms we've provided the following definitions:

ppm or mg/l – Parts per million or Milligrams per liter – or one ounce in 7,812 gallons of water.

ppb or µg/l – Parts per billion or Micrograms per liter – or one ounce in 7,812,000 gallons of water.

ND – Not Detected

NTU – Nephelometric turbidity unit is a measure of the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

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

TT – Treatment Technique – A treatment technique is a required process intended to reduce the level of a contaminant in drinking water.

Maximum Contaminant Level (MCL) – The MCL is 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.

Secondary Maximum Contaminant Level (SMCL) – The SMCL represents reasonable goals for drinking water quality and provides a guideline for public water suppliers. Secondary contaminants affect mainly the aesthetic qualities such as undesirable taste or odors.

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 contamination.

Maximum Residual Disinfectant 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 contamination.

Item of Interest

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 City of Billings Water Quality Facility 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 is available from the Safe Drinking Water Hotline (800-426-4791) or at <http://www.epa.gov/safewater/lead>

Water Quality Data						
Contaminant	Violation Yes/No	Highest Level Detected	Range Detected	MCL	MCLG	Likely Source of Contamination
Microbiological Contaminants						
Total Coliform Bacteria	No	0%		5% positive	0	Naturally present in the environment
Turbidity (NTU)	No	0.089	0.021 - 0.089	TT=95% of samples <0.3	N/A	Soil runoff. Turbidity is a measure of the cloudiness of the water. This is monitored because it is a good indicator of water quality.
Inorganic Contaminants						
Arsenic (ppb)	No	8	2.0 – 8.0	10	0	Erosion of natural deposits; runoff from orchards; runoff from glass and electronics production wastes
Distribution System Free Chlorine (ppm)	No	1.78	0.14 - 1.78	MRDL=4	MRDLG=4	Water additive used to control microbes
Fluoride (ppm)	No	0.44	0.16 – 0.44	4	4	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
Nitrate - NO ₃ (ppm)	No	0.56	0.04 - 0.56	10	10	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Barium (ppm)	No	0.06	ND - 0.06	2	2	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Copper (ppm)	No	0.255 = 90th percentile No sites above AL (2017 sampling data)		AL=1.3 Action Level—90% of samples must be below this level.	1.3	Corrosion of household plumbing systems, erosion of natural deposits; leaching from wood preservatives
Lead (ppb)	No	5 = 90th percentile 2 sites above AL (2017 sampling data)		AL=15 Action Level—90% of samples must be below this level.	0	Corrosion of household plumbing systems, erosion of natural deposits
Volatile Organic Contaminants						
Haloacetic Acids (HAA5)(ppb)	No	44	33 - 44	60	N/A	By-product of drinking water chlorination
Total trihalomethanes (TTHM)(ppb)	No	53	34 – 53	80	N/A	By-product of drinking water chlorination
Total Organic Carbon (TOC)	No	The percentage of (TOC) removal was measured each month and all removal requirements were met.		TT	N/A	Naturally present in the environment and has no health effects.

SECONDARY CONTAMINANTS			
Contaminant	Range Detected*	SMCL	Noticeable Effects at Elevated Levels
Aluminum (ppb)	ND – 56.8	50 - 200	Colored Water
Chloride (ppm)	4.8 – 15.5	250	Salty Taste
Sulfate (ppm)	10.7 – 83.1	250	Salty Taste
Total Dissolved Solids (ppm)	74 - 286	500	Hardness; deposits; colored water; staining; salty taste
pH (s.u.)	7.51 – 7.90	6.5 - 8.5	Low pH: bitter metallic taste; corrosion High pH: slippery feel; soda taste; deposits
Other Parameters			
Total Hardness (ppm)	52 - 233	None	Spots; Deposits
Alkalinity (ppm)	44 - 170	None	None
Potassium (ppm)	1.4 – 6.0	None	None
Sodium (ppm)	5.9 – 35.5	None	None
Magnesium (ppm)	3.4 – 19.8	None	None

**The concentration of these contaminants varies seasonally with the highest values in the winter and the lowest values during spring run-off. As you can see by the table, our system has had no violations. We take pride in providing you with drinking water that meets all Federal and State requirements.*

UNREGULATED CONTAMINANT MONITORING RULE 4 (UCMR4)

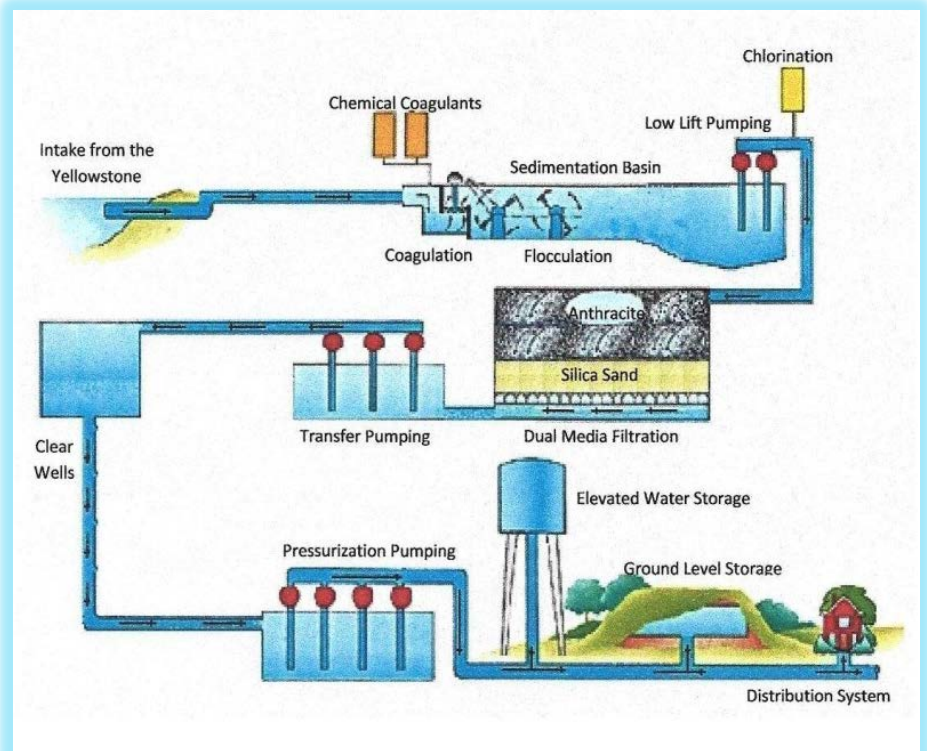
The City of Billings has completed the required monitoring for the EPA Unregulated Contaminant Monitoring Rule 4 (UCMR4). The EPA uses the Unregulated Contaminant Monitoring Rule (UCMR) to collect data for contaminants that are suspected to be present in drinking water and do not have health-based standards set under the Safe Drinking Water Act (SDWA).

Contaminant	Highest Level Detected	Range Detected	Likely Source of Contamination
Haloacetic Acids (HAA5) (ppb)	49	32 - 49	By-product of drinking water chlorination
Haloacetic Acids (HAA6BR) (ppb)	8.5	7.0 – 8.5	
Haloacetic Acids (HAA9) (ppb)	57	39 - 57	

A Simplified Water Treatment Process

The City of Billings Water Treatment Plant takes water from the Yellowstone River and removes unwanted physical, chemical, and biological contaminants. The end result is a safe and appealing drinking water. This process has been refined over the years to make it modern and efficient.

Two **intake** structures draw water from the river. One of them is placed near the center of the river where the water is deeper. This allows for the WTP to access enough volume for the City's needs during low water years.



Any large objects, such as driftwood, are prevented from entering the plant through physical barriers. The river water is then mixed with small amounts of Polyaluminum hydroxychloride (PACl) to begin the **coagulation/flocculation process**. PACl helps bind particles together which causes them to become heavy and fall to the bottom. The water slowly moves along a sedimentation basin where the freshly formed particles remain at the bottom.

The clearer water leaving the basins is pumped to the filters. **Chlorine** is added to disinfect the water as it travels to the **filters**. The filters have two layers of media, **anthracite** and **silica sand**. The filters trap fine particles from the water as it travels down through them by gravity.

After the water passes through the filters it is pumped into large **clear wells** (tanks) that provide time for the disinfectant (chlorine) to work before being sent out for consumption. Finally, the water is pumped through a system of pipes to water **storage tanks** throughout the city. Strategically placed pumping stations and water storage tanks help meet water supply demands and maintain adequate pressure at the faucet for the consumer regardless of their location.

Each step in the process of producing clean and appealing drinking water is monitored 365 days a year, 24 hours a day. In the event of an electrical outage the water plant and pumping stations have generators that activate, making it possible to continue to deliver enough drinking water to meet basic public health requirements. The staff of the Water Treatment Division is dedicated to providing a consistent supply of superior quality drinking water to the City of Billings.

Power Washing

Have you ever wondered where the runoff water from power washing equipment or your own driveway ends up? It all enters the storm drain system eventually discharging into the Yellowstone River.

Unlike the sanitary sewer system, pollutants are NOT removed from the runoff water before it's discharged into ditches, drains and the Yellowstone River. Cleaning activities like power washing can easily contribute to water pollution if the runoff is not managed properly.

Although convenient for cleaning surfaces and equipment, power washing runoff can release contaminants into the storm system. Grease from food dumpster areas, sediment from driveways and walkways, auto fluids from parking lots and drive-throughs mix with water and are carried to storm drains discharging to the Yellowstone River. Pollutants such as hot water, soaps, and chemicals can be very harmful to aquatic life and ecosystems, creating cloudy, low-oxygen, and sometimes deadly habitats for fish and other wildlife. Even biodegradable or "nontoxic" cleaners can pose a threat to rivers, especially when they mix with oils, greases, metals, and auto fluids.



For the Homeowner:

- Sweep and collect leaves and grass clippings from sidewalks and driveways.
- Don't hose off debris into the gutter and street.
- Minimize use of biodegradable soaps and direct power wash water to grassy areas as much as possible.
- Minimize water usage by using high pressure, low volume nozzles.

For Commercial Operations:

- Consider dry cleaning methods, such as sweeping to collect and properly dispose of loose material and debris before power washing.
- Minimize the use of soaps and detergents use biodegradable products, or better yet just use water.
- If wash water does discharge into the gutter, place a filter fabric over the stormwater drain inlet to capture any debris.
- If a leaf blower is used, please pick up and properly dispose of debris. Material blown into the street can potentially clog a stormwater inlet and reach the Yellowstone River.
- Use mops, brooms, rags or wire brushes to clean pavement, building and equipment as much as possible.
- Use vacuums or other machines to remove and collect loose debris before applying water.
- Minimize water usage by using high pressure, low volume nozzles.

For more information on proper power washing methods, please contact the Public Works Environmental Affairs Division at 406-247-8663.

THE LAKE IS COMING!

The City of Billings Public Works Department has begun design of a new west end water storage lake and water treatment plant. The additional treatment plant and lake fulfill a critical redundancy need. More exciting is the dual-use that the lake will have as a recreation area for Billings. There will be two lakes that will be approximately 160 acres combined that will add 3020 acre-feet of storage capacity for recreation and a redundant water supply. The current project will include approximately 4.7 miles of paved trails with additional soft trails and board walks. The lake will be located between 48th St. West and Shiloh Road southwest of Shiloh Crossing (old Knife River gravel pits). The current plan is to have the lake and treatment plant online in the next 3-4 years. Below is an architect's rendering of the new lake.

You can see a video about the lake and new water treatment plant by searching "Billings Lakes" on YouTube or typing <https://youtu.be/Hml9xoYU34c> into your web browser.



Common Water Quality Concerns



These small black particles tend to be rubbery or oily. This release of particles is caused by an old disintegrating faucet washer or gasket or from the inside of a flexible rubber hose.

Black particles in water



White or milky looking water is caused by tiny air or gas bubbles in the water. You should be able to see the bubbles float to the surface and disappear within a few minutes.

Water clears up from bottom to top.

This is a problem that people with water softeners installed in their home or people with older plumbing at their house, may encounter. If the particles are small, all about the same size, and look like fish eggs, the cause is usually a broken water softener. These particles are the resin in a water softener and get into your water lines when the water softener breaks. Call your service agent to have the water softener repaired.

If the orange or brown particles are irregular in shape and size and very hard, these tend to be from rusted steel water pipes within the house. They are not a health hazard, but do tend to clog screens in washing machines, or the aerators on faucets, or even shower heads. Unfortunately, this fix involves updating your plumbing.



Water Softener Resin



Iron Rust