

# 2019 CONSUMER CONFIDENCE REPORT



## Water Quality

Treatment  
Sampling  
Monitoring

Department of Public Works  
Helena Water Treatment Division



# 2018 Annual Water Quality Data

The City of Helena's Public Water System (PWS) Identification Number MT0000241 currently serves 9920 residential and 1890 commercial water accounts. Last year, the Water Treatment Division produced a total of 1.938 billion gallons, (5.3 million gallons on average per day) with a maximum production of 15.2 million gallons on a single day. July was the month with the highest usage at 344.9 million gallons. Water is also supplied to fire hydrants that ensure the safety of homes and businesses. For more information on our PWS # MT0000241 go to the MT DEQ Web Site <http://deq.mt.gov/Water>. If you have any questions about this report, or concerns with your water utility, please contact Jamie Clark, Interim Water Production Superintendent at 457-8511, or e-mail [jclark@helenamt.gov](mailto:jclark@helenamt.gov). To learn more about your City of Helena water utility, visit us on the web at <http://www.helenamt.gov>.

**Water System** – To meet Helena's water needs, the City's Water Treatment Division operates two surface water treatment plants; the Missouri River Treatment Plant (MRTP) east of Helena and the Tenmile Water Treatment Plant (TMTP) west of Helena. Additional water is produced from the Eureka Well located at Cruise and Park Avenues. This pure groundwater source does not require further treatment but is disinfected using sodium hypochlorite.

**Water Treatment** – The City's treatment process consist of a series of steps to remove impurities and disinfect untreated or raw water. When the raw water is first delivered to the treatment plants, chemicals are added that cause small particles to combine and become heavy (flocculation). Next the impurities are allowed to settle in sedimentation basins at the MRTP or collect on special media in the contact absorption clarifiers (CACs) at the TMTP. Then, the water is filtered through sand and anthracite coal filters to remove remaining small particles. These filters are cleaned or "backwashed" with treated water to remove accumulated particles and sediment. The backwash water from the MRTP is used for managed irrigation and recycled back into the plant to be retreated. The process allows the MRTP to be a "zero discharge facility," not only saving permitting and operational costs, but also

conserving previously wasted water. At the end of the treatment process a small amount of sodium hypochlorite is added for disinfection before the water is delivered to the distribution system.

All of the collecting, treating, sampling and monitoring is performed by well trained, state certified water treatment professionals, and assisted by a SCADA (supervisor control and data acquisition) computer system that makes it possible to monitor the storage tanks and pump stations from the treatment plants.

In 2018, as in years past, your tap water met all EPA and State drinking water health standards. The City of Helena continually tests for water quality using independent laboratories and every effort is made to assure that the testing required by State and Federal Regulators are performed. We are proud to announce that our system has not exceeded any maximum contaminant level (MCL).

The TMTP was the sole source of water for the entire fall and winter months for the City of Helena. The new water distribution pipeline from TMTP was installed starting in October and is nearing completion. The TMTP will be shut down temporarily in the fall of 2019 to accommodate the new water pipeline tie in. Additional projects included replacing the SCADA system and Programmable Logic Controllers (PLCs) at MRTP along with necessary instrumentation and control upgrades to facilitate these replacements. The MRTP high zone pump station motors were also replaced due to an unfortunate accident during transport after maintenance. The high zone pumps were also rebuilt as part of periodic plant maintenance.

Upcoming projects include repairs to the Red Mountain Canal, upgrades to the Chessman Reservoir and water main replacements.

**Turbidity** is a measure of the clarity of water. We monitor turbidity as an indicator of the effectiveness of our filtration system.

**pH** is an expression of the basic or acidic condition of a liquid. The pH scale ranges from 0 to 14. Neutral being 7, the most acidic is 0 and the most caustic is 14. Natural waters typically have a pH between 6.8 and 8.5. The pH in our system ranges from 7.2 to 8.5.

## Hardness of Helena Water

Source Water	Detect Level	Grains/Gal
TMTP	24.67 mg/l	1.7
MRTP	135.71	9.5
EUREKA	232	16.8

**MCL for hardness is 300 mg/l**

**Sampling** – Regular sampling and testing is an important assurance of the quality of water. Sampling includes the following:

Daily	Chlorine residuals, turbidity, pH, temperature, and color, (NTU).
Weekly	Bacteria (total coliform).
Quarterly	Trihalomethanes, Haloacetic Acids.
Yearly	Inorganics, VOC's (volatile organic contaminants), SOC's (synthetic organic contaminants), and nitrates.
Every 3 years	Fluoride, Lead and Copper
Every 4 years	Radioactivity

**Monitoring** – Both, Energy Laboratories, Inc. & Alpine Analytical Inc. in Helena are at the heart of our quality assurance program. Their independent testing by certified chemists and technicians follows precise procedures established by the U.S. Environmental Protection Agency (EPA).

Listed below are the substances that **were detected** and analyzed by Energy Lab Inc. and Alpine Analytical Inc. for the Helena Water Treatment Division. The maximum contaminated levels (MCL) apply to the water within our distribution system, after treatment, including groundwater sources. The U.S. EPA and the State of Montana have established MCL's at levels that assure public health and safety with a very low risk of health impacts.

The table below shows our monitoring results for the period of January 1 to December 31, 2018.

## Tenmile Water Treatment Plant, Missouri River Treatment Plant (MRTP), Hale/Eureka Water Sources

<b>TEST RESULTS</b>								
Contaminant	Compliance Y/N	Sample Date	Highest Level Detected	Range Detected/ RAA	Unit Measure	MCLG	MCL	Likely Source of Contamination
<b>Contaminates</b>								
<b>1. Turbidity</b> Tenmile MRTP	Y Y	May, 2018 Aug., 2018	<b>0.22</b> <b>0.27</b>		NTU	NA	TT = <0.3 NTU 95% of the time TT = 1 NTU max	Soil run off.
<b>2. Total Organic Carbon</b> Tenmile Raw Water  MRTP Finished Water	Y  Y	May 29, 2018 July 18, 2018  Aug., 15, 2018	<b>4.6</b>  <b>3.0</b>	2.4-4.6 (RAA 3.6)  2.2 – 3.0 (RAA 2.47)	ppm	NA	TT	Naturally present in the environment.
<b>3. Chlorine Residual</b> Tenmile	Y	May 15, 2018	<b>1.79</b>	0.4 – 1.6 (RAA 0.99)	ppm	MRDL G=4	MRDL=4	Water additive to control microbes.
<b>Inorganic Contaminates (IOC's)</b>								
<b>4. Arsenic</b> Tenmile MRTP Hale / Eureka	Y Y Y	July 18, 18 July 18, 18 July 18, 18	<b>4</b> <b>7</b> <b>2</b>		ppb	NA	10	Erosion of natural deposits; runoff from orchards; runoff from glass and electronics production wastes
<b>5. Copper</b> 90 <sup>th</sup> percentile of 40 samples taken	Y	Aug/Sept 2018	<b>.702</b>		ppm	1.3	AL=1.3	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives.
<b>6. Lead</b> 90 <sup>th</sup> percentile of 40 samples taken	Y	Aug/Sept 2018	<b>.3</b>		ppb	0	AL= 15	Corrosion of household plumbing systems; erosion of natural deposits.
<b>7. Nitrate + Nitrite as N</b> Tenmile MRTP Hale / Eureka	Y Y Y	July 18, 18 July 18, 18 July 18, 18	<b>.03</b> <b>.19</b> <b>1.36</b>		ppm	10	10	Runoff from fertilizer use; leaching from septic tanks, sewage;
<b>8. Fluoride</b> Tenmile MRTP Hale / Eureka	Y Y Y	Aug 16, 17 Aug 16, 17 Aug 16, 17	<b>ND</b> <b>.8</b> <b>0.10</b>		ppm	4	4	Erosion of natural deposits.
<b>Volatile Organic Contaminants (VOC's)</b>								
<b>9. Total Trihalomethanes</b> DBP-1 DBP-2 DBP-3 DBP-4	Y Y Y Y	May, 18 May, 18 Aug., 18 May, 18	<b>69</b> <b>77</b> <b>93</b> <b>99</b>	34-62 (RAA 53) 41-77 (RAA 51) 37-93 (RAA 59) 41-99 (RAA 65)	ppb	NA	80.0 RAA	By-product of drinking water chlorination.
<b>10. Total Haloacetic Acid</b> DBP-1 DBP-2 DBP-3 DBP-4	Y Y Y Y	May, 18 May, 18 May, 18 May, 18	<b>78</b> <b>81</b> <b>71</b> <b>92</b>	24-78 (RAA 47) 26-81 (RAA 47) 27-71 (RAA 44) 20-92 (RAA 54)	ppb	NA	60.0 RAA	By-product of drinking water chlorination

**\*Abbreviated Definitions:**

<b>AL</b>	Action level. The concentration of a contaminant, which if exceeded, triggers treatment or other requirements.
<b>NA</b>	Not Available.
<b>ND</b>	No Detection.
<b>TT</b>	Treatment Technique. Required process intended to reduce the level of a contaminant in drinking water.
<b>ppm or mg/L</b>	Parts Per Million. One part per million corresponds to one minute in two years.
<b>ppb or ug/L</b>	Parts Per Billion. One part per billion corresponds to one minute in 2,000 years.
<b>NTU</b>	Nephelometric Turbidity Unit. A measure of the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.
<b>pCi/L</b>	Picocuries per liter--measure of radioactivity in water.
<b>MCL</b>	Maximum Contaminant Level. Highest allowable amount of a contaminant that is allowed in drinking water.
<b>MCLG</b>	Maximum Contaminant Level Goal. Level of a contaminant in drinking water below which no known or expected risk to health exists. MCLG's allow for a margin of safety
<b>MRDL</b>	Maximum Residual Disinfectant Level. The highest level of a disinfectant allowed in drinking water. There is convincing evidence that the addition of a disinfectant is necessary for control of microbial contaminants.
<b>MRDLG</b>	Maximum Residual Disinfectant Level Goal. The level of a drinking water disinfectant below which there is no known or expected risk to health.
<b>RAA</b>	Running Annual Average.

Radon is a naturally occurring radioactive gas in the earth's crust. It is soluble in water and is tasteless, colorless and odorless. Helena's surface and ground water sources detection ranged from 220 pCi/L to 1770 pCi/L when last tested in 2017. The U.S. EPA is proposing a MCL of 300 pCi/L in drinking water with an alternative MCL of 4000 pCi/L for systems that implement a Multi-Media Mitigation Program. There is no federal regulation for radon levels in drinking water as of this printing. Exposure to air transmitted radon over a long period of time may cause adverse health effects. For additional information call the state radon program at 444-5318, or EPA's Radon Hotline 800-SOS-RADON.

All sources of drinking water are subject to potential contamination by constituents that are naturally occurring or man made. Those constituents can be microbes, organic or inorganic chemicals, or radioactive materials. All 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 the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the U.S. EPA's **Safe Drinking Water Hotline at 1-800-426-4791**.

Some people may be more vulnerable to contaminants in drinking water than others. Persons with immunocompromised diseases such as HIV/AIDS or other immune system disorders, persons receiving chemotherapy, or who have had an organ transplant, the elderly and infants can be susceptible to infections. These people should seek advice about drinking water from their health care providers. The EPA and Centers for Disease Control guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbiological contaminants are available from the **Safe Drinking Water Hotline 1-800-426-4791**.

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 Helena is responsible for providing high quality drinking water, but can not 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 or <http://www.epa.gov/safewater/lead>

**Prepared May 2, 2019**

Jamie Clark, Interim Water Production Superintendent

Carrie Hahn, Water/Wastewater Treatment Administrative Coordinator

Ben Rigby, Water Production Supervisor

**Reviewed and approved by**  
Randall Camp, Public Works Director