



Water Quality

Treatment
Sampling
Monitoring

Department of Public Works
Helena Water Treatment Division



2009 Consumer Confidence Water Quality Report

The City of Helena Public Water System Identification, (PWSID) Number MT0000241 currently serves 8100 residential and 2152 commercial water accounts with a yearly average of 5.2 million gallons of water each day. Water is supplied to fire hydrants to ensure the safety of homes and businesses. Last year, the Water Treatment Division produced a total of 1.9 billion gallons of water with a maximum production of 12.7 million gallons on a single day. The City of Helena's Source Water Protection Plan for Public Water System can be viewed on the DEQ Web Site <http://nris.state.mt.us/wis/swap/SwapQuery.asp>

This year the City will complete the 1.5 million gallon clear well for disinfection and a new energy efficient High Zone Pumping Station at MRTP to improve reliability, maintain regulatory compliance, and meet future growth needs. The City's Utility Maintenance Division will replace sections of deteriorated water mains to improve system dependability, and reduce water loss due to leakage.

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 Facility 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.

Water Treatment – This process consists of a series of steps to refine the quality of the source or raw water. Chemicals are added to the raw water causing small particles to adhere to each other making them heavy enough to settle into a basin or collect on special media. The particles are then flushed to waste lagoons. Next the water is filtered through layers of fine anthracite coal filters and silicate sand removing suspended

particles. During filtration, turbidity is removed and clear water emerges. Prior to the water being sent to the distribution system, a small amount of chlorine is added to ensure the water remains free of any virus or bacteria. These treatment processes are manned and operated by a team of highly trained, state certified water treatment professionals, and assisted by computerized supervisor control and data acquisition systems. (SCADA)

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

Daily: Chlorine Residuals, Turbidity, pH, Temperature and Color (NTU)
Weekly: Bacteria (total coliform)
Quarterly: Trihalomethanes, Haloacetic Acids
Yearly: Inorganics, Volatile Organic Contaminants, Nitrates
3 years Lead & Copper
4 years Radioactivity

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 1-800-426-4791** or <http://www.epa.gov/safewater/lead>

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. 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 (1-800-SOS-RADON).

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).

Turbidity is a measure of the clarity of water. We monitor this 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 the most caustic is 14. Natural waters typically have a pH between 6.8 and 8.5. The pH in our system has a pH of 7.2 to 8.5

Hardness is a natural characteristic of water caused by dissolved calcium and magnesium. The Maximum Contaminant Level (MCL) is 300 mg/L.

Tenmile	24.67 mg/L	1.7 grains/gal
MRTP	135.71 mg/L	9.5 grains/gal
Eureka	232.00 mg/L	16.8 grains/gal

Listed below are the substances that **were detected** and analyzed by Energy Lab 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.

This table shows the results of our monitoring for the period of January 1 to December 31, 2008.

Tenmile Water Treatment Plant, MRTP, Hale/Eureka Water Sources

TEST RESULTS								
Contaminant	Violation Y/N	Sample Date	Highest Level Detected	Range Detected/ RAA	Unit Measure	MCLG	MCL	Likely Source of Contamination
Microbiological Contaminants								
1. Turbidity Tenmile MRTP	N N	May 28,08 Jun 06 08	0.35 0.28		NTU	NA	TT = <0.3 NTU 95% of the time TT = 1 NTU max	Soil run off.
2. Total Organic Carbon Tenmile MRTP	N N	Jun 08 Jun 08	7.3 3.9	.93-7.3 (RAA 3.54) 2.1-3.9 (RAA 3.1)	ppm	NA	TT	Naturally present in the environment.
3. Chlorine Residual Tenmile	N	May 08	2.0	0.2 - 2.0 (RAA 0.75)	ppm	MRDLG=4	MRDL=4	Water additive to control microbes.
Inorganic Contaminates								
4. Arsenic Tenmile MRTP Hale / Eureka	N N N	Jul 17, 08 Jul 17, 08 Jul 17, 08	1.0 2.0 2.0		ppb	NA	10	Erosion of natural deposits; runoff from orchards; runoff from glass and electronics production wastes
5. Copper 90 th percentile of 30 samples taken	N	Apr 21, 06	0.29		ppm	1.3	AL=1.3	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives.
6. Lead 90 th percentile of 30 samples taken	N	Apr 21, 06	4		ppb	0	AL= 15	Corrosion of household plumbing systems; erosion of natural deposits.
7. Nitrate + Nitrite as N Tenmile MRTP Hale / Eureka	N N N	Jul 17, 08 Jul 17, 08 May 16 08	ND ND 1.38		ppm	10	10	Runoff from fertilizer use; leaching from septic tanks, sewage;
8. Fluoride Tenmile MRTP Hale / Eureka	N N N	Jul 26, 07 Jul 26, 07 Jul 17, 08	0.20 0.8 0.30		ppm	4	4	erosion of natural deposits.
Volatile Organic Contaminants (voc's)								
9. Total Trihalomethanes Tenmile MRTP Hale/Eureka	N N N	May 08 Jun 08 Nov 08	84 100 5	48-84 (RAA 61) 36-100 (RAA 65) 4-7 (RAA 5)	ppb	NA	80.0 RAA	By-product of drinking water chlorination.
10. Total Haloacetic Acid Tenmile MRTP Hale/Eureka	N N N	Feb 08 Jun 08 Oct 08	50 40 1	31-50 (RAA 38) 29-40 (RAA 34) 0-1 (RAA 1)	ppb	NA	60.0 RAA	By-product of drinking water chlorination

***Abbreviated Definitions:**

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

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.

Some people may be more vulnerable to contaminants in drinking water than others. Immuno-compromised persons such as persons undergoing chemotherapy, persons who have

undergone organ transplants, people with HIV/AIDS or other immune system disorders, the elderly, and infants can be particularly at risk from 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

In September 2008, The Department of Environmental Quality issued a noncompliance for monitoring due to a sampling procedural error. On September 3rd, 2008 The City of Helena pulled a bacteriological sample and received a false positive. On average, the City collects 33 samples a month. In September we had over 50 samples

analyzed by 2 independent labs to verify that the City's water was indeed safe and not contaminated with bacteria. A Public notice was advertised as required by the regulatory agency.

If you have any questions about this report or concerning your water utility, please contact Donald Clark, Water/Wastewater Treatment Superintendent at 457-8556, or e-mail dclark@ci.helena.mt.us. To learn more about the City of Helena and the City's Water Utility, visit our web site at <http://www.ci.helena.mt.us/>.

Prepared March 30th
 Julie Muscutt, Certified Operator II
 Jason Fladland, Water Supervisor
 Reviewed and approved by
 Lynora Rogstad, Coordinator
 Don Clark, Water Superintendent