

2001 Annual Water Quality Report

The Helena Water Division provides more than 29,000 customers with a yearly average of 5.8 million gallons of water each day. Our water system supplies water directly to homes and businesses throughout Helena. It also delivers water to the city's fire hydrants, to ensure the safety of our residents. The water distribution system connects to 9,398 service taps. The total annual gallonage from all sources for 2000 is 2.112 BG* with a peak day of 12.3 MG*.

In 2000, the Helena Water Division once again met all state and federal standards for clean water. We are pleased to offer this report to the community detailing the workings of our division and the results of the testing.

Water System

To meet Helena's daily water needs, the Helena Water Division of the Department of Public Works operates two surface water treatment plants - the Missouri River Water Treatment Plant (MRTP) located at 2560 Canyon Ferry Road, whose source is the Missouri River east of Helena and the Tenmile Water Treatment Plant west of Helena at 1115 Rimini Road, whose source is the Tenmile Creek drainage west of Helena. The Tenmile Water Plant is in operation year round while the MRTP is used only during the summer months for peak demands. We obtain additional water from the Hale system, which consists of the Oro Fino well collector located southwest of Helena in the Oro Fino Gulch area and the Eureka well collector located at Cruse and Park Streets. The division's two treatment plants are maintained, evaluated, and upgraded to stay abreast of advancements in technology, health science and governmental regulations.

The Helena water distribution system consists of five finished water storage reservoirs (Malben, Winne, Hale, Upper Hale, and Woolston) and five pumping stations (Forrest Estates, Hale, Eureka, Dahlhausen, Reeder's Village) linked together with 185 miles of water transmission and distribution pipelines. The Chessman (530MG) and Scott (195MG) reservoirs in the Tenmile watershed also provide additional water for the Tenmile Water Plant during low flows. These reservoirs are filled with spring run off water.

Carollo Engineers of Boise, Idaho, completed a Water Master Plan Update for the City of Helena in April 1997. The Department of Public Works has copies of the Water Master Plan available for public review. Phase One of this update determined that the existing Missouri River Treatment Plant should be rehabilitated or replaced due to age of equipment, public health risks, and operational safety issues. Plant replacement or rehabilitation was recommended. Phase One improvements have begun by installation of a new clear well, high service pumping station and chlorine chemical storage at the MRTP. On the upper east side of Helena a new 4.0MG Nob Hill reservoir, new pumping station, and additional supply pipelines for the reservoir will begin shortly.

Water Plant Treatment - this process consists of a series of steps. First, we add an aluminum sulfate and cationic polymer to the influent water, causing small particles to

adhere to each other and making them heavy enough to settle into a basin from which sediment is removed. At the Tenmile Water Plant these particles are attached to small plastic media, which are flushed to waste lagoons. The water is then filtered through layers of fine coal and silicate sand filtering out suspended particles. A disinfectant (chlorine) is added after filtration to our clear well. During filtration, turbidity is removed and clear water emerges. Prior to the water being sent to town, chlorine is added again to ensure the water is free of any bacteria.

Sampling - this process is initiated by the highly trained staff at the water treatment plants. Sampling includes the following:

Daily	chlorine residuals, turbidity, pH, temperature, color
Weekly	bacteria (total coliform)
Quarterly	trihalomethanes
Yearly	inorganic, volatile organic contaminants, synthetic organic contaminants, nitrates, lead and copper (every 3 years), radioactivity (every 4 years)

Monitoring - the State Environmental Lab in the Cogswell Building in Helena and the MSE-HKM Lab in Butte are the heart of our quality assurance program. Their testing by certified chemists and technicians follows precise procedures established by the U.S. Environmental Protection Agency (EPA).

Listed below are the substances, which were detected and analyzed, by the State Environmental Lab and the MSE-HKM Lab for the Helena Water Division. The maximum contaminated levels (MCL) apply to the water within our distribution system after treatment, including groundwater sources. This table shows the results of our monitoring for the period of January 1 to December 31, 2000.

Source ledger;

M RTP - Missouri River Treatment Plant
 Ten Mile - Ten Mile Water Plant
 Hale/Eureka - Oro Fino Water Line, Eureka Well

TEST RESULTS								
Contaminant	Violation Y/N	Sample Date	Highest Level Detected	Range Detected	Unit Measurement	MCLG	MCL	Likely Source of Contamination
Microbiological Contaminants								
Turbidity								
Ten Mile	N	Jun. 11,00	0.47	100% of samples taken meet state requirements	NTU	NA	TT	Soil runoff
M RTP	N	Aug. 07, 00	0.27					

Inorganic Contaminants								
Antimony								
	N	Sep. 07, 95	1		PPM	6	6	Discharge from petroleum refineries; fire retardants; solder; electronics.
	N	Sep. 07, 95	1					
Arsenic								
	N	May 30, 00	4		PPM	NA	50	Erosion of natural deposits; runoff from orchards; runoff from glass and electronics production wastes.
Barium								
	N	May 30, 00	0.009		PPM	2	2	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
	N	Sep.07, 95	0.036					
Copper								
	N	Oct. 21, 98	0.31 90th percentile of samples taken	No samples exceeded the Action Level	PPM	1.3	AL=1.3	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservative
Fluoride								
	N	Sep. 07, 95	0.10		PPM	4	4	Erosion of natural

	N	Sep. 07, 95	0.73		PPM				deposits; discharge from fertilizer and aluminum factories
Lead									
	N	Oct. 21, 98	3 90th percentile of samples taken	No samples exceeded the Action Level.	Ppb	0	AL=15		Corrosion of household plumbing systems, erosion of natural deposits
Nitrate plus Nitrite as N									
	N	Jun. 29, 00	1.10		Ppb	10	10		
Volatile Organic Contaminants (VOC's)									
Total Trihalomethanes									
Ten Mile-Forrest Estates	N	Yearly average.	39.9	22-65	Ppb	0	100 Yearly Average		By-product of drinking water. Chlorination
Ten Mile-Civic Center	N	Yearly average.	50.4	34-72	Ppb	0			
MRTP-915 Saddle Dr.	N	Yearly average.	56.9	32-92	Ppb	0			
Hale/Eureka-May Butler	N	Yearly average.	7.3	6-9	ppb	0			

"Turbidity is a measure of the cloudiness of the water. We monitor it because it is a good indicator of the effectiveness of our filtration system." The specified limit for our treatment process is .5 NTU in the clearwell and our turbidity measurements were less than this amount 100% of the time.

As you can see by the table, our system had no violations. We're proud that your drinking water meets or exceeds all federal and state requirements. We have learned through our monitoring and testing that some contaminants have been detected. The EPA has determined that your water IS SAFE at these levels.

Some of our data in the table is more than one year old, since certain chemical contaminants are monitored less than once a year. Our sampling frequency complies with EPA and State drinking water regulations. We constantly monitor the water supply for various constituents. We have detected radon in our groundwater supply in three out of three sources tested. The radon detection ranged from a low of 320 pCi/L to a high of 1770

pCi/L. Radon is a radioactive gas that you can't see, taste, or smell. It normally is found underground and can move up through the ground and into a home through cracks and holes in the foundations. The EPA is proposing an MCL of 300 pCi/L in drinking water with an alternative MCL of 4000 pCi/L for those systems or states that implement a Multi-Media Mitigation Program, which is a public awareness program. There is no federal regulation for radon levels (MCL) in drinking water as of this printing. This drinking water is defined as groundwater or a blend of surface and groundwater. 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 call the EPA's Radon Hotline (1-800-SOS-RADON).

Additional testing of our drinking water was taken by the EPA on April 28, 2000. These samples were taken during a period of high turbidity commonly seen in the early spring. During this period velocities increase several fold resulting in scouring in the distribution system. "All samples taken" were within compliance of all EPA and state drinking water regulations.

- Abbreviated Definitions:

NA	Not Available
BG	Billion Gallons
MG	Million Gallons
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 of a single penny in \$10,000
ppb	Parts per billion. One part per billion corresponds to one minute in 2,000 years, or a single penny in \$10,000,000
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.
thm's	Trihalomethanes. Disinfectant-by-product of drinking water
AL	Action Level -the concentration of a contaminant which, if exceeded, trigger's treatment or other requirements which a water system must follow
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
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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 Environmental Protection Agency's Safe Drinking Water Hotline at 1-800-426-4791.

The MCL is set at some very stringent levels. To understand the possible health effects described for many regulated constituents, 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.

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. 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).