Annual Water Quality Report

CITY OF GOLDEN

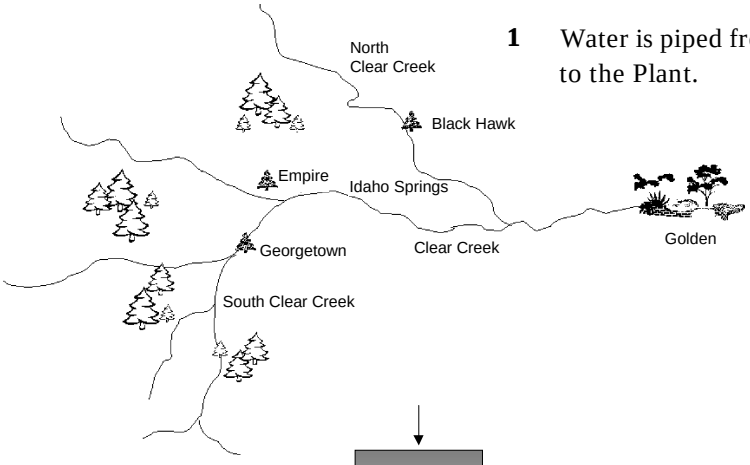
Do you have questions about your water quality?

The City of Golden is pleased to provide you with your 2nd Annual Water Quality Report. This report is a summary of the quality of water provided to you in 1999. If you have any questions about this report, please call the City of Golden Water Quality Lab at (303) 384-8181 or send an e-mail to vcoppage@ci.golden.co.us.

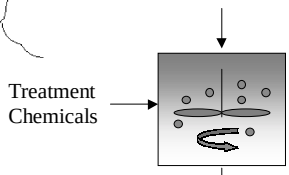
Trivia

Golden's 24 hour water usage has gone as high as 8.51 million gallons, enough to cover about 26 football fields one foot deep in water in just one 24 hour period.

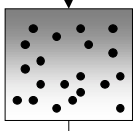
Peak consumption usually occurs in July. The highest daily usage in 1999 was 8.45 million gallons on 7/23/99. The water plant can produce and pump 13 millions gallons/day.



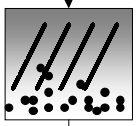
1 Water is piped from Clear Creek to the Plant.



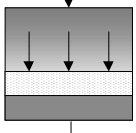
2 Chemicals are added to begin treatment.



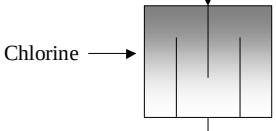
3 The treatment chemicals combine with sediment, metals and organic particles.



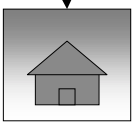
4 The larger particles are settled out.



5 Clarified water is filtered.



6 Chlorine is added for disinfection.



7 Treated water is sent to your home.

How Is Water From Clear Creek Treated and Supplied to My Tap?

Treatment of Clear Creek water begins with sedimentation, where particles and metals attach to each other (coagulation) and settle out (flocculation). Next the water is filtered, followed by disinfection as the final step. At this point it is dispersed as potable water for community use. (See the schematic on page 11). The treated water is pumped to two reservoirs and 8 tanks around town. From there it is gravity fed through underground distribution pipes to your home. The water treatment plant serves a population of 16,000 and can be readily equipped to provide water for 25,000 residents. The average winter output of water from the plant in 1999 was 2.6 million gallons per day (MGD). The average summer output in 1999 was 6.0 MGD due to irrigation usage.

Drinking Water

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, reservoirs, ponds, springs and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive materials, and can pick up substances resulting from the presence of animals or from human activity.

The plant is currently capable of a maximum output of 13 MGD which surpasses current peak demands by nearly 50%. All of Golden's Water Treatment Plant Operators are certified by the Colorado Department of Public Health and Environment. They cover the plant 24 hours a day, 7 days a week to provide high quality drinking water for Golden's residents. The City's State Certified Water Quality Lab also works to ensure safe drinking water by monitoring the quality of the Creek, the treated water leaving the plant and at various homes around town.

Fluoride

Fluorine is the 17th most abundant element on earth. It naturally occurs in the earth's crust as a fluoride compound in rocks and minerals. When ingested or applied topically during the years of tooth development, fluoride strengthens teeth and prevents tooth decay. The United States Public Health Service has determined the optimum concentration for fluoride in United States water to be in the range of 0.7 to 1.2 parts per million. Dissolved fluoride-containing minerals are measured year round in the water of Clear Creek. The level fluctuates seasonally, but is sufficient to meet the concentration suggested by USPHS. Because of this, the addition of fluoride to our drinking water by fluoridation at the plant is not necessary.

Many brands of bottled drinking water contain no fluoride. Read the label closely to determine which ones do and at what level. Since an increase in the consumption of bottled water, dentists have seen a marked increase in the number and occurrence of cavities in children. Keep this in mind if your children primarily drink bottled water. If this is your preference, you can supplement their fluoride exposure with mouth rinses, toothpaste etc. Ask your dentist for his or her suggestions.

Lead and Copper

People often ask if there is lead and copper in Golden's water, especially those in homes with older plumbing. The answer is no. In the most recent study, conducted in September of 1999, no lead or copper was detected. Historically, analysis of Golden's water has shown that no lead or copper concerns exist, in new homes or old. Because of this, the Colorado Department of Public Health and Environment requires the City only to do reduced lead-copper monitoring, only once every three years instead of annually. Metals are prevented from being leached into the drinking water from the pipes that carry it by a process called corrosion control. In Golden's water treatment process this is accomplished by keeping the pH of the water at the correct level and using sodium silicate to form a protective layer on the inside of the water distribution lines and your home's pipes.

Sodium Silicate

Sodium silicate is an inert substance that forms a protective layer on the inside of the water distribution lines and your home's pipes. This coating physically separates the water from the pipes. However, it can also coat copper/zinc filters and interfere with their effectiveness. Keep this in mind if you choose to purchase a water filter for your home or fifth wheel. This additive, as well as the lime used to adjust the pH, can sometimes be noticed as a whitish residue on faucets and hardware where water has evaporated. This is not harmful and can be easily removed.

Taste and odors

As the weather warms up and snowmelt begins, materials deposited on the forest floor throughout the fall and winter begin to be flushed into Clear Creek. This is referred to as "spring runoff". Much of the material washed into the creek is organic in nature, such as decaying leaves, pine needles and branches. Some consumers may notice seasonal taste and odor variations in the drinking water which are attributable to increased concentrations of these organic materials. They are not harmful, but can be unpleasant.

The water treatment plant staff is aware of the seasonal taste and odors encountered during spring or in times of low water levels in the creek. As a result, seasonal process changes are being investigated to try to remove more of the organic matter. One of the challenges is that the situation is short-lived, therefore testing can only be performed for a short period of time each year before the event ends. We anticipate identifying a good solution in the near future as a result of the ongoing master planning process in which the water treatment plant is involved. After all, drinking water must not only be safe, but should also be aesthetically pleasing for consumers.

What's in Your Water?

All drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminates. The presence of contaminates does not necessarily indicate that water poses a health risk.

More information about contaminates and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline (800) 426-4791.

Volunteer Activities

The Partnership for Safe Drinking Water is a volunteer program, originally established by the American Water Works Association and the Environmental Protection Agency. The Partnership provides guidance to perform self-evaluation of water treatment plants and establishes rigorous water treatment goals, above and beyond those required by current federal regulations. The City began this project in January 2000 and is expecting to complete the initial phases of the program within about one year's time.

In addition to the Partnership program, the City participates in two American Water Works Research Foundation projects. One focuses on computer control systems and the other focuses on innovative ways to measure pathogen removal. The plant staff is working with researchers to learn more about the latest technology to optimize effective water treatment.

MTBE (Methyl Tertiary Butyl Ether)

MTBE is a gasoline additive used to increase the level of oxygen in gasoline and ultimately to reduce the level of carbon monoxide emissions in urban areas. It has been detected in some ground water supplies and for this reason is under study to determine the extent of this contamination. The City of Golden agreed to participate in an AWWARF study that was designed to assess the detection, frequency and distribution of MTBE, other gasoline oxygenates and related organic compounds in ground & surface drinking water sources used by communities throughout the United States. Water collected from Golden's source water showed no MTBE was detected.

Update on Water Treatment Plant Investments for 1999

The City of Golden is committed to providing a reliable supply of aesthetically pleasing water that meets all the requirements determined by state and federal regulations. To this end, over $500,000 was invested in the water treatment process in 1999. The investments included: installation of a new raw water supply line; installation of 3 additional on-line process monitoring units; installation of computer control for all chemical feed systems; and numerous modifications to the plant's computer system. Nearly 1,200 signals are monitored every few seconds by the plant's computer system.

El informe contiene informacion importante sobre la calidad del agua en su comunidad. Por favor, traduzcalo o hablo con alguien que lo entienda bien.

So Now What Do You Think?

If we have left any questions unanswered, if you are interested in a tour of the water treatment plant and lab or have any comments for us, please call Golden's Water Quality Lab at (303) 384-8181. We are located at 1445 10th St., Golden, CO 80401. We can also be reached at www.ci.golden.co.us or vcoppage@ci.golden.co.us. The first 10 residential consumers who contact us with feedback on this report will qualify for $25 worth of water off their next water bill. So let us hear from you and water your lawn on us.

Detected Regulated Substances

	Parameter	Detected Level	Range	MCL	MCLG	Violation? Y/N	Potential Sources
Regulated at the Treatment Plant	Fluoride, ppm	0.8	0.27-0.80	4	4	n	Erosion of Natural Deposits
	Nitrate, ppm	0.66	n/a	10	10	n	Wildlife/Fertilizer Run-off
	Turbidity, NTU	2.03*	n/a	TT	none	n	Natural Run-off
	Beta emitters, pCi/L	1.6	n/a	50	0	n	Decay of Natural Deposits
	Radium, pCi/L	0.3	n/a	5	none	n	Decay of Natural Deposits
	Alpha emitters, pCi/L	2.9	n/a	15	0	n	Decay of Natural Deposits
	Antimony, ppb	0.24	n/a	6	6	n	Refinery discharge
Regulated in the Distribution System	Total Trihalomethanes, ppb	56.9	27 - 109	100	0	n	By-product of Chlorination

* Highest single measurement for 1999. Monthly averages must be less than 0.5 ntu 95% of the time. Golden's average in 1999 - 97.3%.

Detected Unregulated Substances

	Parameter	Average	Range	MCL	SMCL		Potential Sources
Monitored at the Treatment Plant	Sulfate, ppm	12.7	n/a	Not Regulated	250	n	Erosion of Natural Deposits
	Sodium, ppm	23	n/a	Not Regulated	None	n	Erosion of Natural Deposits
Monitored in the Distribution System	Total Haloacetic Acids, ppb**	26.2	n/a	60 proposed	None	n	By-product of chlorination

** tested as part of an EPA information collection rule.

Other Substances Detected - Unregulated but of Public Interest

Parameter	Average	Range	MCL	SMCL	Potential Sources
Manganese, ppm	0.041	<0.002-0.041	Not Regulated	0.05	Erosion of Natural Deposits

Definitions

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.

Maximum Contaminant Level (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.

Treatment Technique (TT): A required process intended to reduce the level of a contaminant in drinking water instead of a MCL.

ppm: part per million - corresponds to one inch in 16 miles

NTU: nephelometric turbidity unit, used to measure water clarity

ppb: part per billion - corresponds to 1 inch in 16,000 miles

pCi/L: picocuries per liter, used to measure radioactivity

Secondary Maximum Contaminant Level (SMCL): Non enforceable levels that primarily affect the aesthetic quality of drinking water.

n/a - not applicable

If You Have Special Health Concerns: Some people may be more vulnerable to contaminates in drinking water than the general population. Immune-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune systems disorders; as well as, elderly and infants can be particularly at risk from infections. In addition to their drinking water, these people should seek advice from their health care providers about food preparation, sanitation and handling of infants or pets.

EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbiological contaminates are available from the Safe Drinking Water Hotline toll free at (800) 426-4791 or on the Internet at www.epa.gov/ogwdw.