



Annual Water Quality Report

CITY OF GOLDEN



The City of Golden is pleased to provide you with your Annual Water Quality Report. This report is a summary of the quality of water provided to you in 2003. It contains important information about the water you drink, where it comes from and how it is treated. Informed Golden consumers are the best advocates for safe drinking water and we welcome your input. Call the Environmental Services Division at (303) 384-8181 or contact us on the web at www.cityofgolden.net.

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Este informe contiene información importante sobre su agua de beber. Si no lo puede leer, por favor busque la ayuda de alguien que lo puede traducir.

Guanella Reservoir Is Filling

Long range planning for Guanella Reservoir began in the 1970s to provide enough water to meet Golden's future needs. Construction was originally scheduled for completion in 2006. The 2002 drought, combined with certain court rulings, made the reservoir critical to Golden's water supply and prompted City Council to accelerate the construction schedule to completion in 2003.

The project was unique because Golden employed a process using the Construction Management/General Conditions contracting method. This "fast track" approach allowed work to begin quickly on basic construction plans. The process also included third party review by the State Engineer's office. Golden's project was the first to utilize this system of review.

This streamlined approach completed the reservoir ahead of schedule, and allowed the City to take advantage of the critical November to June filling season.



The City began storing groundwater in Guanella in December 2003. Direct diversions of water from the west fork of Clear Creek started on March 19th of this year. Guanella will provide 2000 acre feet of additional storage, a 300% increase in the amount of City water storage.

Limited snow pack conditions for this year have resulted in a poor water outlook for many water suppliers. With the completion of Guanella Reservoir, Golden's supply looks to be more than sufficient to meet community needs now and in the future.

We want our customers to be informed about Golden's water utility. For additional information, here is a list of drinking water related websites:

The City of Golden Environmental Services Division: www.cityofgolden.net

Source Water Protection Information: www.ourwater.org

Drinking water standards: www.epa.gov/safewater/mcl.html

Information on bottled water: www.epa.gov/safewater/faq/faq.html#bw

and on the FDA website www.fda.gov/bbs/topics/ANSWERS/ANS00692.html

The treatment plant and laboratory are located at 1445 10th Street. For a tour, please call (303) 384-8187.



Water Treatment Plant Update

Innovative pilot plant research continues through Golden's unique partnership established in 2001 with the Colorado School of Mines. Students and water treatment plant staff have constructed a model treatment system which allows staff to develop new treatment strategies on a small scale. By using the system, operators are able to accurately predict how a proposed change or modification will work before applying the changes full scale. In 2003, this strategy was used to investigate two types of water clarification treatments.

Because pilot type testing cannot fully reproduce full scale treatment, modifications are applied to only half of the plant process utilizing a "split train" system that is now in operation. When satisfactory results are achieved, the changes are gradually introduced to full treatment while maintaining water quality.

Continual upgrades to automated on-line monitoring systems help operators accurately monitor, record, and assess differences between the two treatment trains as well as the status of remote storage tanks and reservoirs. In 2003, money was budgeted for upgrades to system valving and control, improvements to existing security systems and water tank maintenance.

Golden's water treatment staff is committed to meeting the challenge of ever more complex water quality regulations, while providing residents with affordable and consistently high quality drinking water.

Golden continues its Partnership for Safe Water, established by the American Water Works Association and the Members are encouraged to pursue a higher professional standard in water treatment operations than required by State and Federal laws. More information is available at <http://www.awwa.org/Science/partnership>

Golden's drinking water source is exclusively Clear Creek and its tributaries. As it flows through the watershed, it may pick up substances from construction and highway maintenance, mining and remediation projects, land and rock slides, septic systems and pollutants transported by stormwater runoff. Contaminants that may be present in our raw water source include: bacteria and viruses, salts and metals, pesticides and herbicides from agricultural runoff, organics contaminants from petroleum spills and gas stations and radioactive contaminants that are naturally occurring or from mining activity.

In order to ensure that tap water is safe to drink, the EPA has set regulations that limit the amount of certain contaminants in water provided by public water systems.

Water in Clear Creek is Everyone's Responsibility

While it is commonly believed that factories and wastewater treatment plants are the largest contributors of water pollution, non-point source pollution (also referred to as stormwater runoff or urban runoff) is the main cause of water pollution nationwide. Runoff carries pollutants which include heavy metals, harmful nutrients, sediment, pesticides and household chemicals. All of these pollutants are transported in runoff to Clear Creek, without treatment.

It is more effective and economical to prevent contamination of a raw water supply than to clean up a polluted source. Every citizen can take steps to maintain and improve the quality of water in Clear Creek, Golden's drinking water source. Here's how:

1. Pick up after pets and throw waste in the trash.
2. Minimize or eliminate the use of lawn and garden chemicals.
3. Conserve water in the landscape - if water is running down the gutter, you're over watering.
4. Fix leaks from your car.
5. Wash your car at a commercial car wash instead of the driveway.
6. Take unused portions of household chemicals to the Rooney Road Recycling Center. Call (303) 316-6262 to schedule an appointment for drop-off or pick-up.
7. Volunteer to Adopt-a-Spot in Golden and help keep trails, gulches, and open space litter-free. Call (303) 384-8155 for more information and to sign-up.



What Causes Ice Cubes to Taste Bad?

“Why do my ice cubes taste bad?” Usually, it’s not the water. Since ice readily absorbs tastes and odors, here are some tips for fresher tasting ice cubes.

City of Golden employees sample water daily, weekly, monthly, and quarterly.

Sample locations are based on elevation zones and distance from the water treatment plant.

During sampling, water must run for a minimum of 3 minutes. This allows for collection of a representative sample of the water distribution system.

The City of Golden monitors for chlorine, metals, organics, inorganics, coliform bacteria, and protozoan parasites.

- Look in the ice bin. A very light coating of whitish residue or “permafrost” is an indication your cubes are “sublimating” or evaporating. This coating absorbs tastes and odors. Dump out those old ice cubes and make new ice!
- Periodically wash out the ice bin and wipe off the inside of the freezer and refrigerator. This keeps mold and mildew from growing and producing strong tastes and odors.
- Seal open bags and containers tightly. Odors from onions, garlic, sweet and hot peppers, and citrus fruits smell great as long as those odors aren’t absorbed by the ice.
- To keep your refrigerator smelling fresh, place *open* boxes of baking soda in the refrigerator and freezer. Replace boxes every couple of months.
- Lastly, if you have a filter on your ice-maker, it may need to be changed.



IS BOTTLED WATER BETTER?

The Environmental Protection Agency (EPA) sets standards for drinking water; however, bottled water is regulated by the Food and Drug Administration (FDA). Some bottled water receives extensive treatment prior to bottling, while others receive little or no treatment depending on the type and manufacturer.

Look at the labels on bottled water to understand what it contains. Some contain added sugar and/or vitamins. Also look for sodium or fluoride content. Fluoride is not contained in many types of bottled water. If you or your children drink only bottled water, ask your dentist for advice about fluoride. The City of Golden’s drinking water contains small amounts of naturally occurring fluoride.

HOW EPA PRIMARY AND SECONDARY STANDARDS KEEP DRINKING WATER SAFE

The EPA has established **Primary Drinking Water Standards** applicable to all community water systems throughout the U.S. Primary Standards set Maximum Contaminant Levels (MCLs) designed to protect consumers from certain contaminants that could pose a risk to human health. There are currently 90 listed Primary Standards.

Upgraded treatment processes at the plant have allowed Golden to consistently remain below the limits designed to protect your health. Substances that were detected through our monitoring program in 2003 are listed on the back page of this report. You can compare detected levels with the EPA standards or **MCLs**.

Secondary Drinking Water Standards address certain water quality contaminants that are not a risk to human health but are considered “nuisance” contaminants. There are currently 15 listed Secondary Maximum Contaminant Levels or **SMCLs**. High amounts of these contaminants in treated water supplies may cause corrosion or damage to water pipes. Some secondary contaminants can cause taste and odor problems as well as undesirable cosmetic effects such as tooth discoloration. Compliance with Secondary Standards is not mandatory. However, water treatment operators use the limits as guidelines in optimizing the treatment process. Some results for Secondary Standards detected in 2003 are listed under “Other Substances-Unregulated” on the back page of this report. You can compare detected levels with the recommended **SMCLs**.



The City monitors our drinking water for hundreds of parameters each year. This table lists all the substances found in Golden's drinking water during 2003. To better understand the terms and abbreviations in the table, we have provided a list of definitions.

If You Have Special Health Concerns:

Because not all contaminants can be completely eliminated, 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 water poses a health risk.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised individuals such as persons undergoing chemotherapy, persons who have undergone organ transplants, those with HIV/AIDS or other immune system disorders and some elderly and infants can be particularly at risk for infection. These people should seek advice about drinking water from their health care providers. For more information about contaminants and potential health effects, or to receive a copy of the EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbiological contaminants, contact the EPA Safe Drinking Water Hotline toll free at 1-800-426-4791.

Detected Regulated Substances

	Parameter	Detected Level	Range	MCL	MCLG	Sample Date	Violation? Y/N	Potential Sources
Regulated leaving the Treatment Plant	Fluoride, ppm	0.52	0.32 - 0.79	4	4	monthly	N	Erosion of Natural Deposits
	Nitrate, ppm	0.41	n/a	10	10	12-Mar-03	N	Fertilizer Run-off
	Turbidity, NTU	0.27*	see note**	TT	None	24-Jul-03	N	Natural Run-off
	Beta emitters, pCi/L	0.4	n/a	50	0	8-Jul-03	N	Decay of Natural Deposits
	Radium, pCi/L	0.1	n/a	5	None	8-Jul-03	N	Decay of Natural Deposits
	Barium, ppm	0.036	0.022 - 0.036	15	0	11-Mar-03	N	Decay of Natural Deposits
	Cadmium, ppb	0.4	n/a	5	5	11-Mar-03	N	Decay of Natural Deposits
	Total Organic Carbon, ppm	1.12	0.74 - 1.88	TT	None	monthly-RAA	N	Naturally Present in environment
Regulated in the Distribution System	Total Trihalomethanes, ppb	41.3	27.6 - 57.8	100	n/a	quarterly-RAA	N	By-product of Chlorination
	Total Haloacetic Acids, ppb	12.5	10.4 - 20.7	60	n/a	quarterly-RAA	N	By-product of Chlorination
	Chlorine, ppm	0.97	0.77 - 1.09	MRDL-4	MRDLG-4	quarterly-RAA	N	Drinking water disinfectant

* Highest single measurement for 2003. Monthly averages must be less than 0.5 NTU 95% of the time.

** 100% of all turbidity measurements were less than 0.5 ntu during 2003.

Turbidity is a measure of the cloudiness of water.

We monitor for turbidity because it is a good indicator of the effectiveness of our filtration system.

Detected Unregulated Substances

	Parameter	Average	Range	MCL	SMCL	Sample Date	Violation? Y/N	Potential Sources
Monitored leaving the Treatment Plant	Sodium, ppm	35	n/a	Not Regulated	None	11-Mar-03	N	Erosion of Natural Deposits
	Bromodichloromethane, ppb	6	n/a	Not Regulated	None	15-Jul-03	n/a	By-product of chlorination
	Chloroform, ppb	6	n/a	Not Regulated	None	15-Jul-03	n/a	By-product of chlorination
	Chlorodibromomethane, ppb	0.7	n/a	Not Regulated	None	15-Jul-03	n/a	By-product of chlorination

Other Substances Detected - Unregulated but of Public Interest

	Parameter	Average	Range	MCL	SMCL	Sample Date	Violation? Y/N	Potential Sources
Monitored in the Distribution System	Manganese, ppb	8	1.8 - 16	n/a	50	monthly	n/a	Erosion of Natural Deposits
	Iron, ppb	9	6 - 14.5	n/a	300	monthly	n/a	Erosion of Natural Deposits

Definitions

- **ppm:** parts per million - corresponds to one inch in 16 miles
- **ppb:** parts per billion - corresponds to 1 inch in 16,000 miles
- **NTU:** nephelometric turbidity unit, used to measure water clarity
- **pCi/L:** picocuries per liter, used to measure radioactivity
- **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.
- **Maximum Contaminant Level Goal (MCLG):** the level of contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.
- **Treatment Technique (TT):** a required process intended to reduce the level of contaminant in drinking water instead of a MCL.
- **Running Annual Average (RAA) -** annual average based on weekly or quarterly monitoring.
- **Maximum Residual Disinfectant Level (MRDL):** the highest level of a disinfectant allowed in drinking water.
- **Maximum Residual Disinfectant Level Goal (MRDLG):** the level of drinking water disinfectant below which there is no known health risk.
- **Secondary Maximum Contaminant Level (SMCL):** non-enforceable levels that primarily affect the aesthetic quality of drinking water.
- **n/a** - not applicable