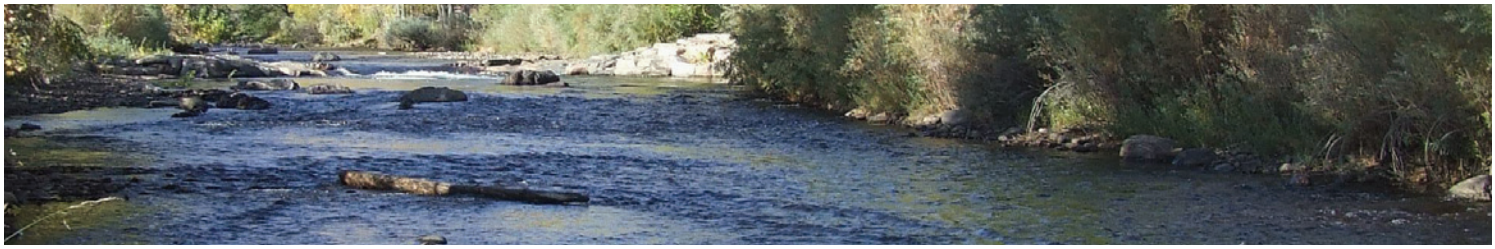
City of Golden

WATER

2022

Water Quality Report



The City of Golden is committed to providing its customers with safe and dependable drinking water. This is your annual summary of drinking water quality along with updated information about Golden's water treatment plant, water service lines, and Clear Creek – our raw water supply. We hope you will find this report useful and welcome any comments you may have. The Environmental Services Division can be reached at 303-384-8181 or to learn more, go to www.cityofgolden.net/DrinkingWater.

Clear Creek – Our Mountain Water Source

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. Golden's drinking water is predominately snowmelt from Clear Creek and its tributaries. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity. Contaminants that may be present in source water include:

- **Microbial contaminants:** viruses and bacteria that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- **Inorganic contaminants:** salts and metals, which can be naturally occurring or result from urban storm water runoff; industrial or domestic wastewater discharges; oil and gas production, mining, or farming.
- **Pesticides and herbicides:** may come from a variety of sources, such as agriculture, urban storm water runoff, and residential uses.
- **Radioactive contaminants:** can be naturally occurring or be the result of oil and gas production and mining activities.
- **Organic chemical contaminants:** including synthetic and volatile organic chemicals, which are byproducts of industrial processes and petroleum production, and also may come from gas stations, urban storm water runoff, and septic systems.

In order to ensure that tap water is safe to drink, the Colorado Department of Public Health and Environment (CDPHE) prescribes regulations limiting the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water that must provide the same protection for public health.

Drinking water sources are susceptible to contamination from a wide variety of natural and man-made origins. Potential contaminant sources for Golden include anything likely to manufacture, produce, use, store, dispose, or transport regulated and unregulated contaminants of concern. These sources are divided into discrete or dispersed sources.

Discrete contaminant sources generally include facility-related operations from which the potential release of contamination would be confined to a relatively small area.

Potential discrete contaminant sources in our source water area have been identified as:

- Environmental Protection Agency (EPA) Superfund sites
- EPA identified abandoned contaminated sites
- EPA identified hazardous waste generators
- EPA identified chemical inventory/storage sites
- Permitted wastewater discharge sites
- Aboveground, underground, and leaking storage tank sites

- Solid waste sites
- Existing/abandoned mine sites

Dispersed contaminant sources generally include broad-based land uses and miscellaneous sources from which the potential release of contamination would be spread widely over a relatively large area.

Potential dispersed contaminant sources in our source water area have been identified as:

- Commercial/industrial/transportation
- High and low intensity residential land use
- Urban recreational grasses or fallow
- Quarries/strip mines/gravel pits
- Row crops
- Pasture/hay
- Deciduous, evergreen, and mixed forests
- Septic systems
- Oil/gas wells
- Road miles

The CDPHE provided consumers with a Source Water Assessment Report that is specific to Golden's raw water supply. The report is not an indication of the current quality of our water source, but provides a screening level evaluation of potential impacts to Clear Creek and rates the possible susceptibility to those sources. Information from the report is available to Golden to develop and implement water management strategies in order to optimize treatment and protect the quality of our drinking water. The report is available online at http://wqcdcompliance.com/ccr or may be obtained by contacting the City of Golden Environmental Services Division at 303-384-8181.

Water Quality and Your Health

LEAD IN DRIKING WATER – WHAT YOU NEED TO KNOW

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. We are responsible for providing high quality drinking water and removing city owned lead pipes but cannot control the variety of materials used in the service line to your home or plumbing components in your home. You share the responsibility for protecting yourself and your family from the lead in your home plumbing. You can take responsibility by identifying and removing lead materials within your home plumbing and taking steps to reduce your family's risk. Before drinking tap water, flush your pipes for several minutes by running your tap, taking a shower, doing laundry or a load of dishes. You can also use a filter certified by an American National Standards Institute accredited certifier to reduce lead in drinking water. If you are concerned about lead in your water and wish to have your water tested, contact KERRY MAJOR at 303-384-8182. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available at www.epa.gov/safewater/lead.

If You Have Special Health Concerns:

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. Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised 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 of infections. 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 U.S. Environmental Protection Agency (EPA) and the U.S. Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and microbiological contaminants call the EPA Safe Drinking Water Hotline at (1-800-426-4791). More information about contaminants and potential health effects can also be obtained by visiting http://epa.gov/ground-water-and-drinking-water.

Lead Service Line Inventory Project

Golden is committed to providing safe drinking water to all our residents and we do this by consistently complying with all regulations of the US EPA Safe Drinking Water Act (SDWA). Recent revisions to the SDWA's Lead and Copper Rule require the City of Golden to create a mapped inventory of water service line materials throughout our public water system. For the City of Golden, historic city ordinances document the installation of lead service lines starting in 1879 and ending in 1937. The City prohibited lead service lines in 1937, so homes built after 1940 should not have lead service lines.

While the City has records of system-owned water infrastructure, there is little information available regarding customer-owned service lines. In the spring and summer of 2022, the City began the process of determining customer-owned service line materials by sending out a survey to residents with homes built before 1940 and gathering information on their service line material. The City will continue our inventory process this summer by conducting field investigations and water quality sampling. Creating a more complete lead service line inventory is the first step the City of Golden is taking to address lead service lines in our water system. Once the inventory is complete, City staff will use this information to create a plan of action and recommendations to take to City Council on what to do with the lead service lines in our service area.

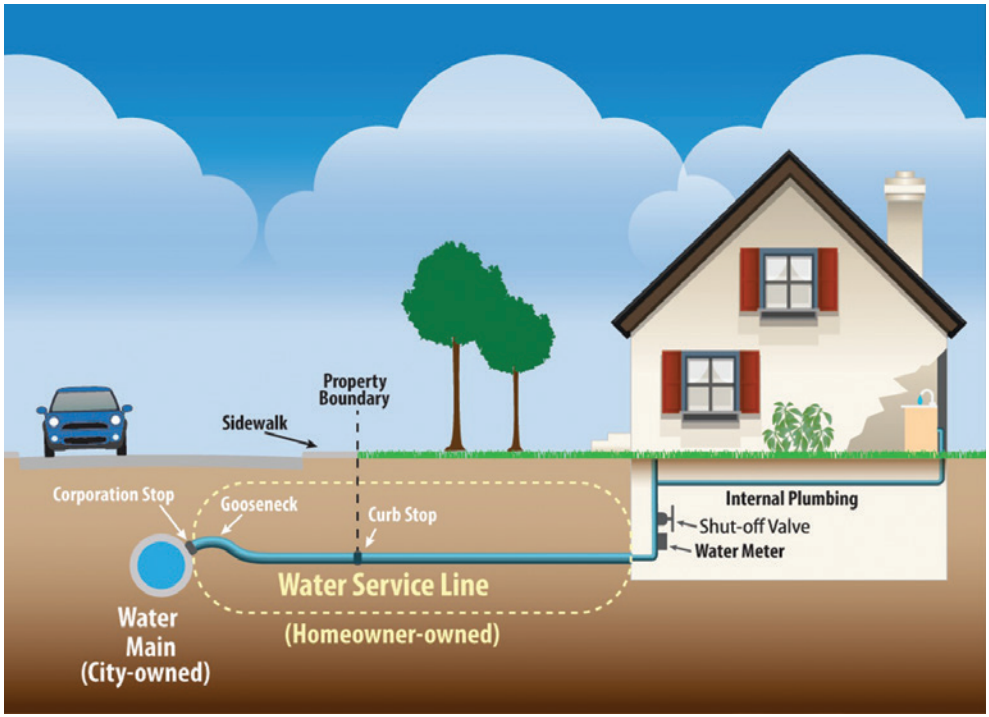


Figure 1: Depiction of where the municipally owned water main meets the private homeowner's service line before entering the home's water fixtures.

WHAT IS A "SERVICE LINE"?

Service lines are the pipes that branch off from the City's water mains and supply water into your home. (See Figure 1, above) The City of Golden owns and maintains the water mains but does not own the service lines. Your service line could be constructed from lead, copper, galvanized steel, or plastic depending what year the home was built. The maintenance and repair of the entire service line is the responsibility of the property owner.

For more information, visit www.guidinggolden.com/lead-service-line-inventory.

2022 Water Quality Monitoring Results

The following tables contain the results of all substances that are regulated by State and Federal law that were detected in Golden's water during the 2022 monitoring period. Most of the monitoring performed by Golden's Environmental Services lab results in non-detect levels allowing the City to perform reduced monitoring for substances that pose no risk to our system. Some of those results will show dates that may be more than a year old.

Detected Regulated Substances

Monitored leaving the Water Treatment Plant

For more information, call the Water Quality Lab at 303-384-8181.
Or contact Kerry Major at 303-384-8182.

Organic/Inorganic	Sample Date	Average	Range Found	MCL	MCLG	No Violations	Common Sources
Barium, ppm	Yearly	0.03	0.03 - 0.03	2	2		Natural erosion
Fluoride, ppm	Yearly	0.32	0.32 - 0.32	4	4		Natural erosion
Nitrate, ppm	Yearly	0.1	0.1 - 0.1	10	10		Fertilizer run-off
*Total Organic Carbon (TOC), ratio *(TOC, reported as a ratio, must remain above 1.0 for optimal water treatment.)*	Monthly	1.48	1.09 - 2.08	TT*	TT*		Naturally present in the environment

**TT - Treatment Technique: A required process intended to reduce the level of a contaminant in drinking water.*

Radionuclides	Sample Date	Average	Range Found	MCL	MCLG	No Violations	Common Sources
Combined Radium (226 & 228) pCi/L	2020	1.6	1.6 - 1.6	5	n/a		Erosion of natural deposits
Gross Alpha Particles pCi/L	2020	0.2	0.2 - 0.2	15	n/a		Erosion of natural deposits
Combined Uranium pCi/L	2020	<1.0	<1.0 - <1.0	20	n/a		Erosion of natural deposits

Summary of Turbidity Sampled at the Entry Point to the Distribution System					
Contaminant	**Sample Date**	**Level Found**	**TT Requirement**	**TT Violation**	**Typical Sources**
Turbidity *(Measure of the cloudiness of water. It is a good indicator of the effectiveness of our filtration system)*	November	Highest single measurement: 0.116 NTU	Maximum 1.0 NTU for any single measurement	No	Soil Runoff
Turbidity	December	Lowest monthly percentage of samples meeting TT requirement for our technology: 100%	In any month, at least 95% of samples must be less than 0.3 NTU	No	Soil Runoff

Monitored at consumer taps

Disinfection By-Products	Sample Date	Highest compliance value (LRAA)	Range of compliance values (LRAA)	Range of individual samples	Average of individual samples	MCL	MCLG	No Violations	Common Sources
Total Trihalomethanes, ppb	Quarterly	40.4	36.1 - 40.4	26.1 - 54	38.47	80	n/a		By-product of chlorination
Total Haloacetic Acids, ppb	Quarterly	10	9.12 - 10	4.3 - 13.5	9.71	60	n/a		By-product of chlorination

Running Annual Average for THM's must be less than 80 ppb. Running Annual Average for HAA's must be less than 60 ppb.

2022 Water Quality Monitoring Results

Disinfectants Sampled in the Distribution System

TT Requirement: At least 95% of samples per period (month or quarter) must be at least 0.2 ppm **OR**
If sample size is less than 40 no more than 1 sample is below 0.2 ppm. Sample size is 32.
Typical Sources: Water additive used to control microbes.

Disinfectant	Sample Date	Highest	Average	Range Found	MCL	MCLG	No Violations	Common Sources
Chlorine (free), ppm	Throughout the year	1.5	1.11	0.31 - 1.5	MRDL 4	MRDLG 4		Drinking water disinfectant

Lead and Copper	Sample Date	Concentration at 90th Percentile	Number of Exceedences at 90th Percentile	AL	No Violations	Common Sources
Lead, ppb	6/3/21 - 8/19/21	0	0	15		Corrosion of household plumbing
Copper, ppm	6/3/21 - 8/19/21	0.02	0	1.3		Corrosion of household plumbing

The City of Golden is currently required to monitor for lead and copper at consumer taps once every three years. 45 Golden households were sampled in 2021.

Other Monitoring Results and Secondary Contaminants**

Monitored leaving the Water Treatment Plant

**Secondary standards, or secondary maximum contaminant levels (SMCL), are non-enforceable guidelines for contaminants that may cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effects (such as taste, odor, or color) in drinking water.

Substance	Sample Date	Average	Range Found	MCL	SMCL	Common Sources
Alkalinity, ppm	Weekly	38.1	21 - 56	n/a	None	Erosion of natural deposits
Chloride, ppm	Quarterly	41.8	17.2 - 63.7	n/a	250 ppm	Erosion of natural deposits
Hardness, ppm	Weekly	114	42 - 168	n/a	None	Erosion of natural deposits
Iron, ppm	Quarterly	<0.01	<0.005 - <0.01	n/a	0.3 ppm	Erosion of natural deposits
Manganese, ppm	Quarterly	0.008	0.006 - 0.010	n/a	0.05 ppm	Treatment
pH, su	Weekly	8.6	7.6 - 9.1	n/a	6.5 - 8.5 su	Treatment
Potassium, ppm	Quarterly	2.8	1.6 - 3.6	n/a	None	Erosion of natural deposits
Sodium, ppm	Yearly	17.0	17.0 - 17.0	n/a	None	Erosion of natural deposits
Sulfate, ppm	Quarterly	86.5	38.3 - 112	n/a	250 ppm	Erosion of natural deposits
(TDS), ppm	Quarterly	263	140 - 347	n/a	500 ppm	Erosion and storm water runoff
Zinc, ppm	Quarterly	0.06	0.02 - 0.13	n/a	5 ppm	Erosion of natural deposits

If you have any questions, please contact the Water Treatment Plant at 303-384-8187 or online at **www.cityofgolden.net/WTP**.

Glossary of Terms and Definitions

- **Maximum Contaminant Level (MCL) –**
  The highest level of a contaminant allowed in drinking water.
- **Treatment Technique (TT) –**
  A required process intended to reduce the level of a contaminant in drinking water.
- **Health-Based –**
  A violation of either a MCL or TT.
- **Non Health-Based –**
  A violation that is NOT a MCL or TT.
- **Action Level (AL) –**
  The concentration of a contaminant which, if exceeded, triggers treatment and other regulatory requirements.
- **Maximum Residual Disinfectant Level (MRDL) –**
  The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
- **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 Residual Disinfectant Level Goal (MRDLG) –**
  The level of a drinking water disinfectant, below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.
- **Violation –**
  Failure to meet a Colorado Primary Drinking Water Regulation.
- **Formal Enforcement Action –**
  Escalated action taken by the State (due to the risk to public health, or number or severity of violations) to bring a non-compliant water system back into compliance.
- **Variance and Exemptions (V/E) –**
  Department permission not to meet a MCL or treatment technique under certain conditions.
- **Gross Alpha –**
  Gross Alpha particle activity compliance value. It includes radium-226, but excludes radon 222, and uranium.
- **Picocuries per liter (pCi/L) –**
  Measure of the radioactivity in water.
- **Nephelometric Turbidity Unit (NTU) –**
  Measure of the clarity or cloudiness of water. Turbidity in excess of 5 NTU is just noticeable to the typical person.
- **Compliance Value –**
  Single or calculated value used to determine if regulatory contaminant level (e.g. MCL) is met. Examples of calculated values are the 90th Percentile, Running Annual Average (RAA) and Locational Running Annual Average (LRAA).
- **Average (x-bar) –**
  Typical value.
- **Range (R) –**
  Lowest value to the highest value.
- **Sample Size (n) –**
  Number or count of values (i.e. number of water samples collected).
- **Parts per million = Milligrams per liter (ppm = mg/L) –**
  One part per million corresponds to one minute in two years or a single penny in $10,000.
- **Parts per billion = Micrograms per liter (ppb = ug/L) –**
  One part per billion corresponds to one minute in 2,000 years, or a single penny in $10,000,000.
- **Level 1 Assessment -**
  A study of the water system to identify potential problems and determine (if possible) why total coliform bacteria have been found in our water system.
- **Level 2 Assessment -**
  A very detailed study of the water system to identify potential problems and determine (if possible) why Ecoli MCL violation has occured and/or why total coliform bacteria have been found in our water system on multiple occasions.
- **Not Applicable (N/A) –**
  Does not apply or not available.

In order to ensure that tap water is safe to drink, the Colorado Department of Public Health and Environment (CDPHE) prescribes regulations that limit the amount of certain contaminants in the treated water provided by public water systems such as Golden's. The Food and Drug Administration (FDA) sets similar limits for contaminants in bottled water that must provide the same protection for consumers. However, the regulations and testing requirements are much less stringent than for tap water.

The City of Golden Water Treatment Plant Receives Award of Recognition for Twenty Years of Outstanding Performance

The Golden Water Treatment Plant (WTP) received the 20 Year Director Award from the Partnership for Safe Water, which is a voluntary self-assessment, peer review, and optimization program for water treatment plant and distribution system operation. The program was developed by the Environmental Protection Agency (EPA), American Water Works Association (AWWA), and other associated Partner organizations. More than 300 utility subscribers, collectively serving more than 100 million people, are committed to the Partnership's goals of providing safe, high-quality drinking water through achieving operational excellence in water treatment. Partnership members participate in a rigorous process, developed by water utility optimization experts, and are recognized for their commitment to delivering safe water to their communities.

Golden was presented this award for successfully maintaining the program's Director Award level of performance for a 20-year period. Golden originally earned the Director's Award by completing the self-assessment and peer review phase of the program, a phase which includes a comprehensive evaluation of treatment plant operations and performance, identification of performance limiting factors, and the development of action plans to achieve treatment optimization. The Golden WTP was one of a select group of utilities honored by the Partnership at the annual conference of the American Water Works Association, the largest and oldest worldwide organization dedicated to safe water. The staff at the City of Golden Water Treatment Plant continually strive to optimize operations and improve the quality of water being delivered to Golden citizens. Achievement of the 20-Year Directors Award demonstrates Golden's ongoing commitment to protecting public health. Moving forward, the staff at the Golden Water Treatment Plant will continue to strive for excellence and work towards receiving the Excellence in Water Treatment Award with the Partnership for Safe Water.

WTP Operations Staff: Brynn Goe (WTP Superintendent), Katie Summerfield, Tony Doukas (Lead Operator), Gordon Darnell, Brian Gier, Sal Ingenthrone (WTP Mechanic), and Mike Felipe. Not pictured Travis Olvey.

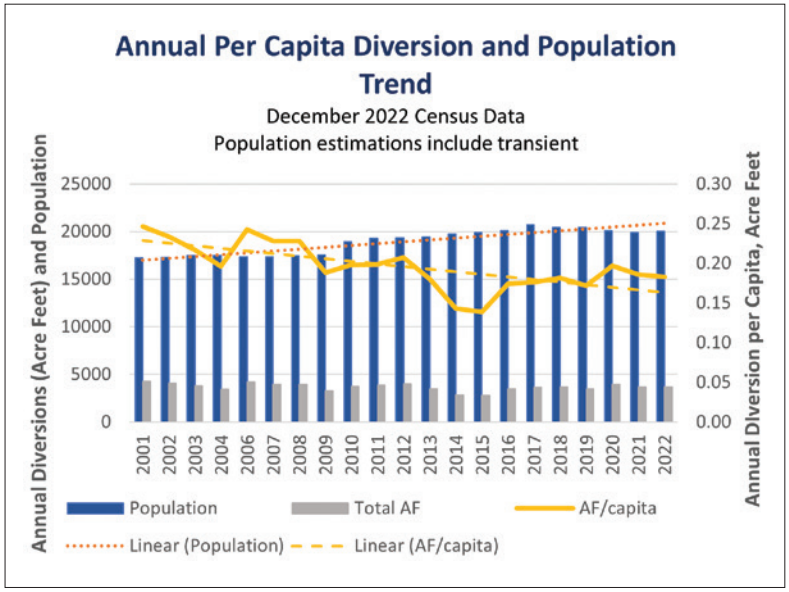
Tony Doukas (Lead Operator) receiving the 20 year Director Award at the Partnership Programs' Award Luncheon held during the AWWA ACE22 conference in San Antonio, TX.

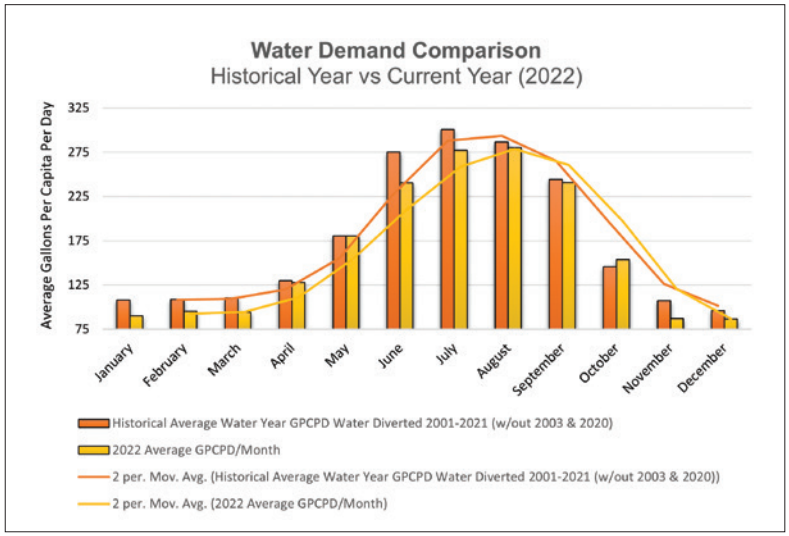
Water Demand and 2023 Water Supply Outlook

LOOKING BACK

The western US is now experiencing multi-year drought conditions that has created a collaborative effort for western states to all take part in reserving our water source. Golden diverts all of its water from one water source, so it is important that the community takes part of this effort. In 2019, Golden updated its Sustainability goals to reduce total per capita water use in Golden by at least 15% by 2030. Golden's overall water consumption has steadily decreased over the last 20 years even though our population has steadily increased.

The Water Demand Comparison Chart (right, below) provides the cities average monthly demand based on average gallons per capita per day. Overall, 2022 was collectively 6.4 % below the historical average gallons per capita per day. This may be due to a combination of weather patterns (historical demand includes drought years), as well more efficient indoor appliances and irrigation practices.





WATER SUPPLY OUTLOOK 2023

As it always has, Golden's water supply begins with snow in the high country. This year at the time of writing this article, the snowpack in Golden's watershed is about 106% of normal however that is subject to change at the winter wears on.

Golden's reservoirs are at 96% of capacity as of mid-March 2023 and could potentially be full in early June.

All in all, Golden's water supply looks very sustainable as long as we continue to use it wisely.

HOW CAN YOU SAVE WATER?

Do Not Waste and Be Wise with Clear Creek

This can be achieved by watering no more than three days per week (watering between 6 p.m. and 10 a.m.) and taking prompt action to fix your leaks.

Think your kids use too much water? They've got nothing on a leaky toilet. Even small toilet leaks can waste more than 100 gallons of water per day.

To check for leaks, add a few drops of food coloring to the toilet tank, wait 15 minutes, then check if the toilet bowl changes color.

If it does, you've got a leak.

For additional information please go to www.cityofgolden.net/live/sustainability-initiative/water-conservation.

Are You Polluting Golden's Creeks?

If you don't pick up after your pet, you are.

All untreated water poses potential health risks. In its natural state, Clear Creek contains pathogenic organisms from birds and mammals that live in and near the water. As Clear Creek flows through urbanized areas of the watershed, domestic animals become the primary source.

Dog waste can be a significant source of pathogens such as bacteria, viruses, and parasites, in addition to excess nutrients. It is estimated that the average size dog produces 3 billion fecal coliform bacteria – in each dog doo – along with Salmonella and Giardia. This is bad news for water quality.

When dog waste is not properly disposed, pathogenic organisms are washed into waterways with runoff from stormwater and landscape irrigation. This impacts recreational use, drinking water treatment and the overall health of our watershed.

While we can't control the contributions of wild animal populations, we can control the contribution from our own pets by picking up after them. The best way to improve water quality is to prevent contamination from occurring in the first place.

It's not just unsightly; it's unhealthy. Please pick up after your pet.

Even if your yard or the places where you regularly walk your dog seem far away from Clear Creek, they're not. Rain and snowmelt travel across yards and down streets, into drains and through pipes. Rain and snowmelt carry anything picked up along the way –eventually returning to Clear Creek, untreated. This includes bacteria, viruses, parasites, and excess nutrients from pet waste.

For more information, contact:

City of Golden
PUBLIC WORKS DEPARTMENT
ENVIRONMENTAL SERVICES DIVISION

1445 10TH ST. GOLDEN, CO 80401
303-384-8181
www.cityofgolden.net/DrinkingWater

The City of Golden is an active member of the Upper Clear Creek Watershed Association – a management agency dedicated to protecting the water quality in Clear Creek.

INFORMACIÓN IMPORTANTE ACERCA DE LA CALIDAD DEL AGUA

Para recibir la versión en español del Reporte de Calidad de Agua de 2022 de City of Golden, visite cityofgolden.net/media/CalidaddeAgua2021.pdf.

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