



2021

Water Quality Report

INFORME DE CALIDAD DE AGUA


 DENVER WATER



Photo credit: Denver Water.

WHAT IS THIS REPORT?

The Environmental Protection Agency requires public water suppliers that serve the same people year-round (community water systems) to provide consumer confidence reports to their customers. These reports are also known as annual water quality reports. This report summarizes information regarding water sources used, any detected contaminants, compliance and educational information.

Where does your water come from?



Denver's drinking water comes from rivers, lakes, streams, reservoirs and springs fed by high-quality mountain snow runoff. Denver Water's supply is 100% surface water that originates in sources throughout 3,100 square miles of watersheds on both sides of the Continental Divide.

Mountain water sources

Denver Water's water sources are the South Platte River and its tributaries, the streams that feed Dillon Reservoir and the creeks and canals above the Fraser River. Denver Water stores its water in five mountain reservoirs: Antero, Eleven Mile Canyon, Cheesman, Dillon and Gross. From these reservoirs, the water is then sent to the metro area through a complex system of streams, canals and pipes to be treated.



After treatment, drinking water is fed by both gravity and pumps to a system of underground, clean-water reservoirs before continuing to your home or business. More than 3,000 miles of pipe carry water to Denver Water customers.

Source water assessment

The Colorado Department of Public Health and Environment has completed a source water assessment of the potential for contaminants reaching any of Denver Water's three terminal



reservoirs at Strontia Springs, Marston and Ralston, the last stop for the water before it is treated. The potential sources of contamination that may exist are: EPA areas of concern; permitted wastewater discharge sites; above ground, underground and leaking storage tank sites; solid waste sites; existing or abandoned mine sites; other facilities; commercial, industrial and transportation activities; residential, urban recreational grasses; quarries, strip mines and gravel pits; agriculture; forests; septic systems; oil and gas wells and roads.

The Source Water Assessment Report provides a screening-level evaluation of potential contamination that could occur. It does not mean that the contamination has or will occur. We can use this information to evaluate the need

to improve our current water treatment capabilities and prepare for the future contamination threats. This can help us ensure that high-quality drinking water is delivered to your homes.

For general information or to obtain a copy of the report, please visit wqcdcompliance.com/ccr. The report is located under "Guidance: Source Water Assessment Reports." Search the table using 116001, Denver Water Board, or call Denver Water Customer Care at **303-893-2444**.

Información importante acerca de la calidad del agua

Para recibir la versión en español del Informe de Calidad de Agua de 2021 de Denver Water, llame a Servicio al cliente al **303-893-2444** o visite denverwater.org/CalidadDeAgua.





3,100

square miles of watersheds

5

mountain reservoirs

3,000

miles of pipe to carry water

DENVER WATER'S SYSTEM

Devoted to water quality

Denver Water proudly serves high-quality water to 1.5 million people in the city of Denver and many surrounding suburbs. Since 1918, we have expertly planned, developed and operated a complex system that provides clean, safe, great-tasting water. Denver Water is a public agency funded by water rates, new tap fees and the sale of hydropower, not taxes. We are Colorado's oldest and largest water utility — Denver Water has a total water service area of approximately 300 square miles.

Denver Water serves 25% of the state's population with less than 2% of all the water used in the state. The natural environment is our lifeline, and we help protect it by promoting wise water use. We take our water quality very seriously. Last year we collected more than 35,000 samples and conducted more than 70,000 tests to ensure our water is as clean and safe as possible. Denver Water vigilantly safeguards our mountain water supplies, and the water is carefully treated before it reaches your tap. This brochure provides data collected throughout 2020.

Reservoir	Capacity (acre-feet)	Percent of Total Capacity
Dillon	257,304	37.1
Eleven Mile Canyon	97,779	14.1
Williams Fork	96,822	14.0
Cheesman	79,064	11.4
Gross	41,811	6.0
Chatfield (Denver's portion)	27,076	4.0
Wolford Mountain (Denver's portion)	25,610	3.7
Antero	19,881	2.9
Marston	19,796	2.9
Ralston	10,776	1.5
Strontia Springs	7,863	1.1
Meadow Creek	5,370	0.8
Long Lakes	1,787	0.3
Platte Canyon	910	0.1
Soda Lakes	645	0.1
Total	692,846	100

SOURCES OF DRINKING WATER



Sources of drinking water include rivers, lakes, streams, ponds, reservoirs, 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 material. It can also pick up substances resulting from human activity and the presence of animals. Contaminants may include the following:

Microbial contaminants

Viruses, bacteria and other microbes 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 stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming.

Pesticides and herbicides

Chemical substances resulting from a variety of sources, such as agricultural and urban stormwater runoff, and residential uses.

Organic chemical contaminants

Substances including synthetic and volatile organic chemicals, which are byproducts of industrial processes and petroleum production, and also may come from gas stations, urban stormwater runoff and septic systems.

Radioactive contaminants

Substances that can be naturally occurring or be the result of oil and gas production, and mining activities.

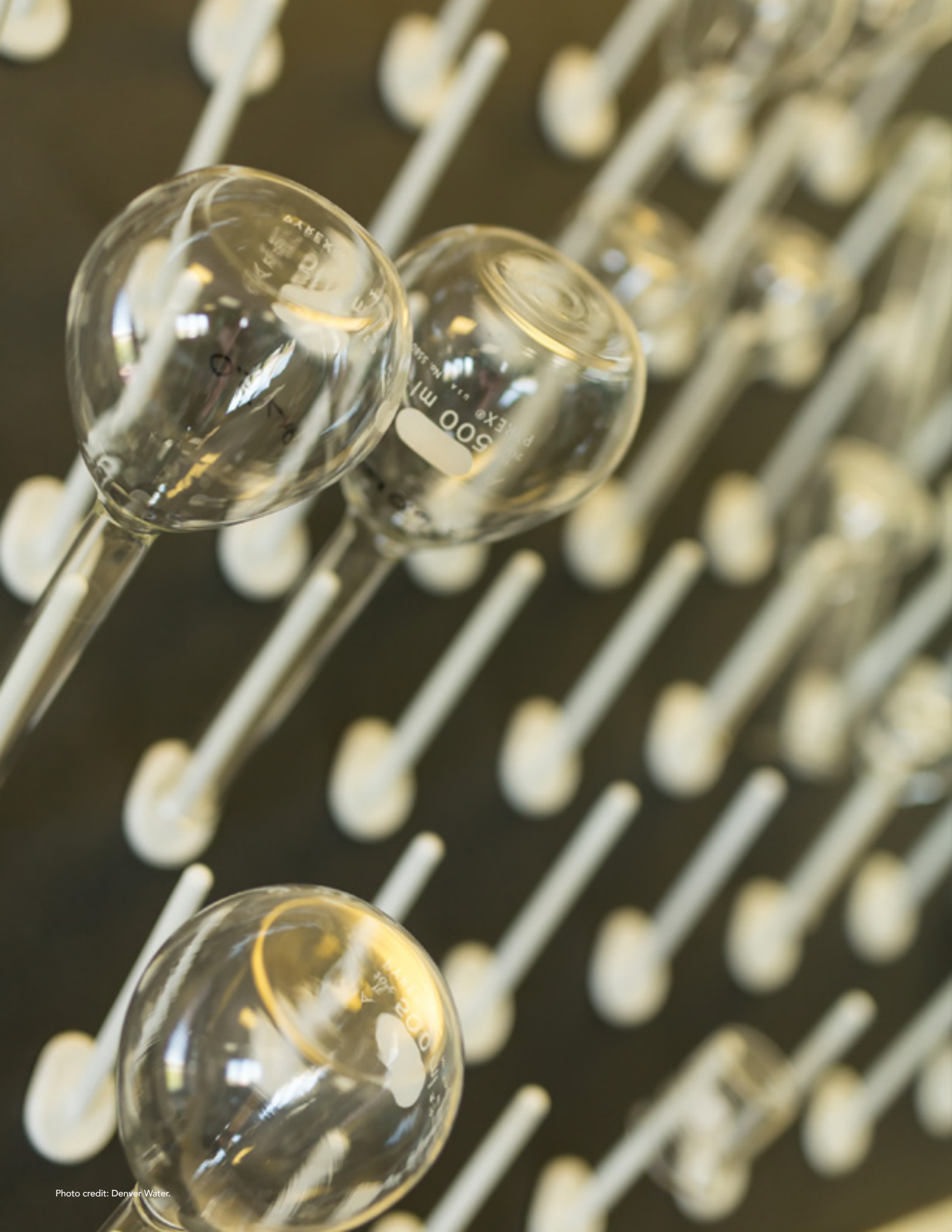




Photo credit: Denver Water.

WATER AT A GLANCE

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. In order to ensure that tap water is safe to drink, the Colorado Department of Public Health and Environment's regulations set limits on the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration sets limits for contaminants in bottled water to provide the same protection for public health.

More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline at [800-426-4791](tel:800-426-4791) or by visiting epa.gov/ground-water-and-drinking-water.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised people, such as people with cancer undergoing chemotherapy, people 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. Guidelines from the EPA and the Centers for Disease Control and Prevention on appropriate means to lessen the risk of infection by cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline, [800-426-4791](tel:800-426-4791).

Lead in drinking water

Denver Water is committed to delivering safe water to our customers. The water we provide to homes and businesses is lead-free, but lead can get into the water as it moves through customer-owned water service lines and household plumbing that contain lead.

Service lines bring water into a home or building from Denver Water's main delivery pipe in the street. In Denver Water's experience, homes built prior to 1951 are more likely to have lead service lines. Homes built before 1987 may have lead solder connecting copper pipes in their plumbing. Faucets and fixtures made before 2014 do not meet today's "lead-free" requirements.

Lead exposure can cause serious health problems, especially for pregnant women and young children.

To address this issue, Denver Water has launched the Lead Reduction Program,

which was approved in December 2019 by the Environmental Protection Agency and Colorado Department of Public Health and Environment.

The Lead Reduction Program has five main components:

- Increasing the pH level to reduce the risk of lead from getting into drinking water from lead service lines or household plumbing.
- Developing and maintaining a publicly accessible inventory of all customer-owned lead service lines in Denver Water's service area. This interactive map is available at denverwater.org/Lead.
- Replacing all lead service lines in our service area with copper lines at no direct charge to the customer. Beginning in 2020, it will take 15 years to replace all the lead service lines in our service area and work will continue through 2035.
- Providing a free water pitcher and filters that are certified to remove lead to all customers suspected of having a lead service line until their line is replaced, and for six months after.
- Ongoing communication, outreach and education.

HOW THE PROGRAM CAME TO BE

Since 1992, as part of the EPA's Lead and Copper Rule, Denver Water has monitored water quality in homes that have service lines or plumbing that contain lead.

Only once, in 2012, did test results from those homes indicate additional action was needed to protect public health, and Denver Water remains in compliance today. However, Denver Water is still required to implement the best method to reduce the risk of lead in tap water in homes with lead-containing plumbing or service lines.

Denver Water studied multiple treatment options from 2012 to 2017. Based on the results, the CDPHE in March 2018 required Denver Water to begin adding orthophosphate to the water it delivers in March 2020.

Although orthophosphate is effective



at reducing lead levels, adding phosphorous, a nutrient, into the wastewater and our streams and watersheds can, under the right conditions, set off a chain of problematic events, such as accelerating the growth of algae. With a desire to protect public health and regional water supplies, Denver Water conducted more research

and participated in a comprehensive stakeholder process that resulted in Denver Water requesting a variance from the EPA that met the Lead and Copper Rule's requirement that the proposed Lead Reduction Program Plan is "at least" as efficient at reducing lead levels as orthophosphate treatment.

That plan became the Lead Reduction Program, which is now underway. Learn more about this effort and the program at denverwater.org/Lead.

If you are concerned about lead, you can request to have your water tested. Information on lead in drinking water, testing and steps to minimize exposure is available from the Safe Drinking Water Hotline at **1-800-426-4791**, at epa.gov/safewater/lead and at denverwater.org/Lead.

HOW TO MINIMIZE YOUR EXPOSURE TO LEAD

If you have a water service line or interior plumbing that contain lead you can take the following actions to reduce your household's risk of exposure.

Flushing

If water has not been used in the property for a few hours, such as first thing in the morning or when coming home from work, then run cold water from the kitchen or any bathroom faucet for five minutes. You can also run the dishwasher, take a shower or do a load of laundry to help flush water in your home's internal plumbing before drinking, cooking or preparing infant formula.



Replace old fixtures

Replace faucets and indoor plumbing with "lead-free" components. Faucets and fixtures installed prior to 2014 do not meet today's requirements for "lead-free" fixtures.



Clean aerators

A faucet aerator is a small screen added to the end of a faucet to mix air with water to reduce the flow of water coming from the faucet. Remove and clean the aerators on your faucets, as they may have trapped particles from your old lead service line.



Maintain filters

Follow the manufacturer's maintenance schedule for the filtration system you have, including water pitchers, faucet-mounted filters, under-sink filter or refrigerator filters. The results of your water quality test may help to determine if you still wish to continue using a filter. Boiling the water does not remove lead.



You can find instructional videos on flushing and filter use at denverwater.org/Lead.

IS THERE A PRESENCE OF CRYPTOSPORIDIUM AND GIARDIA?

Denver Water has tested for cryptosporidium (crypto) and giardia in both raw and treated water since the 1980s. Since that time, Denver Water has never detected a viable indication of either in the drinking water.

Crypto and giardia are microscopic organisms that, when ingested, can cause diarrhea, cramps, fever and other gastro-intestinal symptoms. Crypto and giardia are usually spread through means other than drinking water.

While most people readily recover from the symptoms, crypto and giardia can cause more serious illness in people with compromised immune systems. The organisms are in many of Colorado's rivers and streams and are a result of animal wastes in the watershed. At the treatment plants, Denver Water removes crypto and giardia through effective filtration, and giardia is also killed by disinfection.

WATER QUALITY MONITORING VIOLATION

Findings from the Colorado Department of Public Health and Environment's 2019 Sanitary Survey resulted in notification to Denver Water on Sept. 19, 2019, of the violation of Regulation 11, specifically:

What happened?

Inspectors noted that Denver Water regularly conducts tank inspections and had some written standard operating procedures regarding its storage tank inspections. However, Denver Water's standard operating procedures were not comprehensive and complete to meet all the state's requirements for storage tank inspections and to allow Denver Water to successfully and consistently implement its storage tank inspection plan for all its storage tanks.

How did this impact water quality?

Denver Water monitors water quality throughout the Denver metro area 24/7/365, and our records, in accordance with drinking water standards, indicate

that water quality was not compromised as a result of this violation.

What is being done (corrective action)?

Your water is safe to drink, and water quality was never compromised. Denver Water updated its storage tank inspection plan in 2020 to reflect the recommendations made by the health department. The violation was resolved as of Dec. 30, 2020.

For more information, contact Denver Water Customer Care at **303-893-2444**. You can read more about our extensive treatment process at denverwater.org/TAP.

Please share this information with all other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools and businesses). You can do this by posting this notice in public places or by distributing copies by hand.

Technical Description of Violations F330 — Management:

Storage Tank Inspection Plan (T3): Supplier has not developed or maintained a finished water storage tank inspection plan. This is a violation of Regulation 11, Section 11.28(4)(a).

At the time of the sanitary survey, the department found that the supplier appears to regularly conduct tank inspections and has some written standard operating procedures (SOPs) regarding its storage tank inspections. However, the supplier's SOPs are not comprehensive and complete to meet all the required elements of the written plan for storage tank inspections as specified in Section 11.28(2) of Regulation 11 and to allow the supplier to successfully and consistently implement its storage tank inspection plan for all its storage tanks.

THE TREATMENT PROCESS

The treatment process consists of five steps:

1 COAGULATION/FLOCCULATION

Raw water is drawn into mixing basins at our treatment plants where we add alum and polymer. This process causes small particles to stick to one another, forming larger particles.

2 SEDIMENTATION

Over time, the now larger particles become heavy enough to settle to the bottom of a basin from which sediment is removed.

3 FILTRATION

The water is then filtered through layers of fine, granulated materials — either sand, or sand and coal, depending on the treatment plant. As smaller, suspended particles are removed, turbidity diminishes and clear water emerges.

4 DISINFECTION

As protection against any bacteria, viruses and other microbes that might remain, disinfectant is added before the water flows into underground reservoirs throughout the distribution system and into your home or business. Denver Water carefully monitors the amount of disinfectant added to maintain quality of the water at the farthest reaches of the system. Fluoride occurs naturally in our water but is also added to treated water, when needed, to achieve public health levels.

5 CORROSION CONTROL

pH is maintained by adding alkaline substances to reduce corrosion in the distribution system and the plumbing in your home or business.

REGULATED WATER CONTAMINANTS: WHAT IS IN THE WATER?

Data collected throughout 2020

Denver Water routinely monitors for contaminants in drinking water according to Federal and State laws. The following tables show all detections found in the period of January 1 through Dec. 31, 2020 unless otherwise noted. The State of Colorado requires Denver Water to monitor for certain contaminants less than once per year because the concentrations of these contaminants are not expected to vary significantly from year to year, or the system is not considered vulnerable to this type of contamination. Therefore, some of our data, though representative, may be more than one year old. Violations and Formal Enforcement Actions, if any, are reported in the previous section of this report.

Inorganic Contaminants Sampled at the Entry Point to the Distribution System									
Chemical Parameters	Year	Sampling Frequency	Average	Range	Unit of Measure	MCL	MCLG	MCL Violation	Typical Sources
Antimony	2020	Monthly	BRL	BRL	ppb	6	6	No	Discharge from petroleum refineries, fire retardants, ceramics, electronics, solder.
Arsenic	2020	Monthly	BRL	BRL	ppb	10	0	No	Erosion of natural deposits, runoff from orchards, runoff from glass and electronics, solder.
Barium	2020	Monthly	32.0	14.6-43.4	ppb	2000	2000	No	Erosion of natural deposits, discharge of drilling wastes.
Beryllium	2020	Monthly	BRL	BRL	ppb	4	4	No	Discharge from metal refineries and coal-burning factories; discharge from electrical, aerospace, and defense industries.
Cadmium	2020	Monthly	BRL	BRL	ppb	5	5	No	Corrosion of galvanized pipes, erosion of natural deposits, discharge from metal refineries, runoff from waste batteries and paints.
Chromium	2020	Monthly	0.41	BRL-2.1	ppb	100	100	No	Discharge from steel and pulp mills, erosion of natural deposits.
Copper	2020	Monthly	0.76	BRL-5.7	ppb	1300 (AL)	1300	No	Erosion of natural deposits.
Mercury	2020	Monthly	BRL	BRL	ppb	2	2	No	Erosion of natural deposits; discharge from refineries and factories; runoff from landfills and croplands.
Selenium	2020	Monthly	BRL	BRL	ppb	50	50	No	Discharge from petroleum and metal refineries; erosion of natural deposits; discharge from mines.
Thallium	2020	Monthly	BRL	BRL	ppb	2	0.5	No	Erosion of natural deposits; discharge from refineries and factories; runoff from landfills and croplands.
Uranium	2020	Monthly	BRL	BRL	ppb	30	0	No	Erosion of natural deposits, mine drainage.
Fluoride	2020	Monthly	0.58	0.31-0.7	ppm	4.0 (2.0 is SMCL)	4	No	Erosion of natural deposits, water additive that promotes strong teeth, discharge from fertilizer and aluminum factories.
Nitrate as N	2020	Monthly	0.02	BRL-0.16	ppm	10	10	No	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits.
Nitrite as N	2020	Monthly	BRL	BRL	ppm	1	1	No	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits.
Nickel	2020	Monthly	0.13	BRL-1.3	ppb	N/A	N/A	No	Discharge from metal alloy manufacturing, ceramics, batteries, electronics, and space applications.
2,4-D	2020	Annually (Foothills WTP)	BRL	BRL	ppb	70	70	No	Runoff from herbicide used on row crops.

TERMS, ABBREVIATIONS, AND SYMBOLS

Some of the terms, abbreviations and symbols contained in this report are unique to the water industry and might not be familiar to all customers. Terms used in the table are explained below.

Action Level

Concentration of a contaminant that if exceeded triggers treatment or other requirements that a water system must follow.

Average

Typical Value

Below Reporting Level (BRL)

Below the reportable level for an analysis or below the lowest reliable level that can be measured.

Compliance Value

Single or calculated value used to determine if a regulatory contaminant level is met. Examples of calculated values include average, 90th percentile, running annual average, location running annual average.

Contaminant

Potentially harmful physical, biological, chemical or radiological substance.

Maximum Contaminant Level (MCL)

Highest level of a contaminant allowed in drinking water. MCLs are set as close to the Maximum Contaminant Level Goal as feasible using the best available treatment technology.

Maximum Contaminant Level Goal (MCLG)

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 Disinfection Level (MRDL)

Highest level of a disinfectant allowed in drinking water. There is convincing evidence that the addition of disinfectant is necessary for control of microbial contaminants.

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.

Parts per billion (ppb)

Equivalent to micrograms per liter. One drop in one billion drops of water.

Parts per million (ppm)

Equivalent to milligrams per liter. One drop in one million drops of water.

Range (R)

Lowest value to the highest value.

Running Annual Average (RAA)

Average of the monitoring period average for a year.

Secondary Maximum Contaminant Level (SMCL)

Non-enforceable, recommended limits for substances that affect the taste, odor, color or other aesthetic qualities of drinking water rather than pose a health risk.

Treatment Technique

Required process intended to reduce the level of a contaminant in drinking water.

Turbidity

Measure of suspended material in water. In the water field, a turbidity measurement, expressed in the water field, a turbidity measurement, expressed in **Nephelometric Turbidity Units (NTU)**, is used to indicate clarity of water.

Variance and Exemptions

Department permission not to meet maximum contaminant level or treatment technique under certain conditions.

Violation

Failure to meet a Colorado Primary Drinking Water Regulation.

Secondary Contaminants Sampled at the Entry Point to the Distribution System*									
Chemical Parameters	Year	Sampling Frequency	Average	Range	Unit of Measure	MCL	MCLG	MCL Violation	Typical Sources
Aluminum	2020	Monthly	31.5	13.6-53.7	ppb	50-200 (SMCL)	N/A	No	Erosion of natural deposits, water treatment chemical.
Sodium	2020	Monthly	21.1	6.3-35.4	ppm	N/A	N/A	No	Naturally occurring

*Secondary standards 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.

Summary of Turbidity Sampled at the Entry Point to the Distribution System							
Chemical Parameters	Year	Sampling Frequency	Level Found	Unit of Measure	Treatment Technique Requirement	Treatment Technique Violation	Typical Sources
Turbidity	2020	Daily	Highest single measurement: 0.147 NTU (April, Foothills Treatment Plant)	NTU	Maximum 1 NTU for any one single measurement.	No	Soil runoff
Turbidity	2020	Daily	Lowest monthly percentage of samples meeting TT requirement for our technology: 100%	NTU	In any month, at least 95% of samples must be less than 0.3 NTU.	No	Soil runoff

Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.

Total Organic Carbon (Disinfection Byproducts Precursor) Removal Ratio of Raw and Finished Water*					
Chemical Parameters	Year	Frequency	Treatment Technique Requirement	Treatment Technique Violation	Typical Sources
Total organic carbon ratio	2020	Twice per month	**Denver Water uses enhanced treatment to remove the required amount of natural organic material and/or demonstrates compliance with alternative criteria.	No	Natural organic matter present in the environment.

**Total organic carbon (TOC) has no health effects. However, total organic carbon provides a medium for the formation of disinfection byproducts including trihalomethanes (THMs) and haloacetic acids (HAA5s). Drinking water containing these byproducts in excess of the MCL may lead to adverse health effects, liver or kidney problems, or nervous system effects, and may lead to an increased risk of getting cancer.

Disinfection Byproducts Sampled in the Distribution System										
Name	Year	Sampling Frequency	Highest Locational RAA	Range	Unit of Measure	MCL	MCLG	MCL Violation	Typical Sources	
Total Trihalomethanes (TTHM)	2020	Monthly	29.1	17-42.0	ppb	80	N/A	No	Byproduct of drinking water disinfection.	
Haloacetic Acids (HAA5s)	2020	Monthly	16.6	6.7-26.2	ppb	60	N/A	No	Byproduct of drinking water disinfection.	

Microbial Contaminants Regulated in the Distribution System										
Name	Year	Sampling Frequency	MCL	MCLG	Unit of Measure	Highest Monthly Percentage	Number of Positives	MCL Violation	Typical Sources	
Total Coliform (T. coli)	2020	Daily	No more than 5% positive per month	Zero	Present/Absent	0.5% (present T. coli), July 2020	3 out of 4,738 total samples (0.06%); 0 <i>E. coli</i> positive samples	No	Naturally present in the environment.	

Disinfectants Sampled in the Distribution System*							
Name	Year	Results	Number of Samples Below Level	Frequency	Treatment Technique Violation	MRDL	Typical Sources
Disinfectant as Total Cl ₂	2020	Lowest period percentage of samples above 0.2 ppm: 100%	0	Daily	No	4.0 ppm	Drinking water disinfectant used to control microbial growth

*Treatment technique requirement: at least 95% of samples per period (month or quarter) must be at least 0.2 ppm.


Lead and Copper Sampled in the Distribution System								
Contaminant Name	Period	90th Percentile	Sample Size	Unit of Measure	90th Percentile Action Level	Sample Sites Above Action Limit	90th Percentile AL Exceedance	Typical Sources
Copper	1-6/2020	0.14	1054	ppm	1.3	0	No	Corrosion of household plumbing; erosion of natural deposits.
Lead	1-6/2020	6.7	1054	ppb	15	27	No	Corrosion of household plumbing; erosion of natural deposits.
Copper	7-12/2020	0.06	936	ppm	1.3	0	No	Corrosion of household plumbing; erosion of natural deposits.
Lead	7-12/2020	4.1	1053	ppb	15	14	No	Corrosion of household plumbing; erosion of natural deposits.





D DENVER WATER


1600 W. 12th Ave., Denver, CO 80204-3412
303-893-2444


For more information on water quality,
including opportunities for public participation, visit denverwater.org.

 DenverWater

 YourDenverWater

 @DenverWater

 @Denver_Water

 TAP denverwater.org/TAP

Denver Water's Public Water System Identification: CO0116001