

2009 Water Quality Report

What's on tap:

Meeting health-related guidelines, one drop at a time.
High quality water for high quality of life.
The people who make our water safe.
Do your part to protect our water.

MX 411686



Protecting what's precious.
Land. Air. Water.





Our glass is more than half full

Calgarians have a lot to celebrate. We're dynamic, we're progressive and we just happen to have one of the best water systems in the world. This Water Quality Report is an up-to-date look at where your water comes from, how it is treated and who's working behind the scenes to continually improve our system. And when you know more about our water, you too can play a role in protecting this precious resource.

Calgarians are fortunate enough to have access to a high quality source of drinking water that flows from the pristine Rocky Mountains. On average we treat 474 mega litres of water each day – enough water to fill the Pengrowth Saddledome nearly 1.5 times. And we've developed 14,526 kilometres of water, wastewater and storm pipe infrastructure in our city – enough to stretch to Antarctica.

The City of Calgary is dedicated to delivering safe, quality drinking water. How do we do this? We make sure our world-class water treatment standards consistently meet, even surpass all provincial and federal health-related guidelines. Our water is tested from the moment it comes from the river until it enters your home and eventually returns to the river.

And while plants, laboratories and pipes are key to a safe water supply, so are the people behind them. This report will introduce you to some members of the Water Services team. While these dedicated individuals ensure you're getting some of the best drinking water in the world, they're also ensuring we return high quality water to the river, for those living downstream from us. It's a labour of love for them, it's a labour of life for us.



The Elbow River

Where your water comes from

Calgary has two important sources of drinking water: The Elbow River, which is 120 kilometres long and passes through four sub-climates before it enters the Glenmore Reservoir, is the source for nearly half of the city's water supply. The Elbow Valley watershed covers an area of 1,210 km².

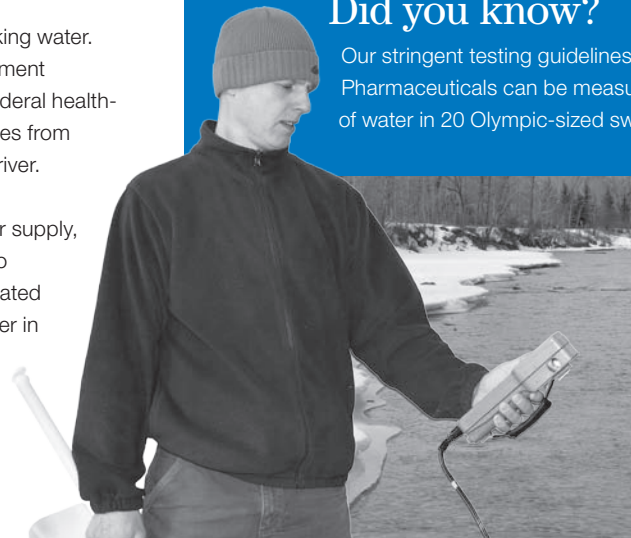
The Bow River originates on the Bow Glacier north of Lake Louise and is one the three main tributaries of the South Saskatchewan River. The Bow River watershed covers an area of 7,770 km².

Test, measure, analyze. Repeat.

We take water quality very seriously. That's why it is tested and retested every step of the way from the river and the treatment plant to your tap and back to the river again.

Did you know?

Our stringent testing guidelines allow us to find even the smallest contaminant. Pharmaceuticals can be measured in parts per trillion—that's equivalent to one drop of water in 20 Olympic-sized swimming pools. Nothing gets by us!



Aaron Javorsky

Water Quality Sampler

As a water sampler, Aaron Javorsky ensures our watersheds are well monitored and our water quality remains high. Aaron samples the Elbow and Bow Rivers as well as both reservoirs, then sends samples to labs to be tested. It's a job where no time (or water) is wasted.

What are we testing for?

We test for about 150 accredited parameters, from microbiological organisms and water hardness to lead and pesticides. The City employs a team of trained operators and laboratory technicians who ensure the system is working exactly the way it should – 24/7/365. They also collect and analyze water samples from various locations upstream in the watersheds and in the distribution system throughout Calgary. It's this diligent measuring, testing and analysis that allows us to meet and exceed the standards set for us. You and your family are in good hands.

Clean water, well into the future

We're committed to providing high quality drinking water well into the future. In fact, current upgrades to our water treatment plants will help meet Calgary's needs for the next 15 to 20 years.

Recently completed upgrades at the Bearspaw Water Treatment Plant allow us to clean our drinking water faster and more efficiently than ever, even during challenging water quality conditions. Bearspaw improved residuals treatment process is also ensuring zero discharge of process waste streams (chlorinated water and sedimentation) from entering the Bow River, better protecting our sensitive aquatic ecosystems.

Once upgrades are completed at the Glenmore Water Treatment Plant in 2011, process improvements at our two plants will reduce the amount of water withdrawn from the river system by 10 per cent.

This is just one example of how we're setting new and higher standards as an environmental steward. And just one reason why we're a leader in water management.

David Rehn

Laboratory Technician

Laboratory technicians like David Rehn ensure your drinking water is tested at various stages of production 365 days a year. From collecting samples, maintaining records and conducting water analysis, to creating reports and communicating with both stakeholders and the public, David is working towards quality water today and for future generations.



KEY DRINKING WATER PARAMETERS 2009

TREATED WATER AT PLANT

Water Quality Parameter	Units	Drinking Water	Limit ^a	Major Source
BASIC WATER CHEMISTRY		(< or ≤ means not detected)		
Colour	TCU ^b	<2 – 2.6	≤15 ^e	Erosion of natural deposits in watershed.
Hardness as CaCO ₃	mg/L	141 – 262	500 mg/L ^e	Erosion of natural deposits in watershed.
pH	pH	7.14 – 8.03	6.5-8.5 ^e	Influenced by the dissolved minerals in water and water treatment.
Temperature	°C	1.1 – 20.0	≤15°C ^e	Surface water temperature.
Total dissolved solids	mg/L	141 – 301	≤500 ^e	Erosion of natural deposits in watershed.
Turbidity	NTU ^c	<0.04 – 0.18	1.0 ^g	Suspended particles in solution.

INORGANIC SUBSTANCES

Aluminum	mg/L	0.015 - 0.206	0.1 ^f	Plant treatment.
Arsenic	mg/L	<0.0005	0.01	Erosion of natural deposits in watershed.
Barium	mg/L	0.0261 – 0.0756	1.0	Plant treatment.
Cadmium	mg/L	<0.0005	0.005	Erosion of natural deposits in watershed.
Calcium	mg/L	35 – 68	No limit	Erosion of natural deposits in watershed.
Free chlorine residual	mg/L	0.71 – 1.69	≥0.2	Plant treatment.
Chromium	mg/L	<0.0005 – 0.0019	0.05	Erosion of natural deposits in watershed.
Copper	mg/L	<0.0005 – 0.0032	≤1.0 ^e	Erosion of natural deposits in watershed.
Fluoride	mg/L	0.64 – 0.80	1.5	Naturally occurring and plant treatment.
Iron	mg/L	<0.03	≤0.3 ^e	Erosion of natural deposits in watershed.
Lead	mg/L	<0.0005	0.01	Erosion of natural deposits in watershed.
Magnesium	mg/L	11 – 19	No limit	Erosion of natural deposits in watershed.
Manganese	mg/L	<0.0005 – 0.0028	≤0.05	Erosion of natural deposits in watershed.
Mercury	mg/L	<0.000001 – 0.000003	0.001	Erosion of natural deposits in watershed.
Nickel	mg/L	<0.0005 – 0.0024	No limit	Erosion of natural deposits in watershed.
Nitrite + Nitrate as Nitrogen	mg/L	0.011 – 0.17	10	Erosion of natural deposits in watershed.
Potassium	mg/L	0.42 – 2.6	No limit	Erosion of natural deposits in watershed.
Sodium	mg/L	1.7 – 11.9	≤200 ^e	Erosion of natural deposits in watershed.
Sulfate	mg/L	38 - 77	≤500 ^e	Erosion of natural deposits in watershed.
Zinc	mg/L	<0.002	≤5.0 ^e	Erosion of natural deposits in watershed.

KEY DRINKING WATER PARAMETERS 2009

TREATED WATER AT PLANT

Water Quality Parameter	Units	Drinking Water	Limit ^a	Major Source
MICROBIOLOGICAL ORGANISMS				
<i>E. coli.</i>	MPN/100 mL ^d	<1	0	Domestic animals, wildlife and human waste.
Total Coliform	MPN/100 mL ^d	<1	0	Soil, domestic animals and wildlife.
<i>Giardia</i>	Cysts/100 L	<1	No limit	Domestic animals, wildlife and human waste.
<i>Cryptosporidium</i>	Oocysts/100 L	<1	No limit	Domestic animals, wildlife and human waste.

TREATED WATER IN DISTRIBUTION SYSTEM

Water Quality Parameter	Units	Drinking Water	Limit ^a	Major Source
VOLATILE ORGANIC SUBSTANCES				
Total trihalomethanes ^h	mg/L	0.0214	0.1	By-product of chlorination.

MICROBIOLOGICAL ORGANISMS

<i>E. coli.</i> ⁱ	MPN/100 mL ^d	<1	0	Domestic animals, wildlife and human waste.
Total coliform ⁱ	MPN/100 mL ^d	<1	0	Soil, domestic animals and wildlife.

a Limit stipulated by Guidelines for Canadian Drinking Water Quality or Alberta Government operating approval for aesthetic, health and operational reasons.

b TCU = True Colour Units.

c NTU = Nephelometric Turbidity Units, a measure of water clarity.

d MPN = Most-Probable Number.

e Aesthetic objective, which is not a health-related limit.

f Federal operational guidance value, which is not a health-related limit.

g Lower limits are stipulated for some operation conditions.

h Annual average values.

i Samples collected in conjunction with microbiological sampling as required in The City of Calgary's Approval to Operate.

NOTE: mg/L = milligrams per litre, or parts per million (ppm).



The Pine Creek Wastewater Treatment Plant processes 100 mega litres of wastewater per day

Take a peek at Pine Creek

Like the innovation demonstrated at our Water treatment plants, the Pine Creek Wastewater Treatment Plant will continue to build on our tradition of excellence in wastewater services.

Wastewater treatment plants play an important role in protecting our health and environment by treating the wastewater from our homes, businesses and industries. With independent organizations like the Sierra Legal Defense Fund referring to us as international leaders in wastewater management, The City is really turning heads with the capabilities of our newest plant – Pine Creek. Here are some more interesting facts about the project:

- Uses organisms to treat wastewater. Not chemicals. Bonnybrook and Fish Creek plants use the same technology.
- Currently provides wastewater services for more than 250,000 Calgarians, processing roughly 100 mega litres of wastewater a day. That's enough to fill the Calgary Tower four times.
- Has the ability to expand over the next 30 years to serve an estimated 1.5 million people. It's a development that will grow with us for many years to come.
- With the largest tertiary filtration system in all of Canada, it's capable of removing even more phosphorus and impurities before returning the treated wastewater to the Bow River.
- Ultraviolet light, the most sophisticated technology in the field, is used to disinfect treated wastewater that goes back into the Bow River to ensure it is clean and safe.

Bob Kotch

Chief Operator, Wastewater Treatment

Wastewater Treatment Chief Operator Bob Kotch understands responsibility. Each day, employees like Bob work tirelessly to ensure Calgary's wastewater is treated to meet and even surpass Alberta Environmental Standards. Employees like Bob are ensuring the integrity of our water resources for all Albertans.

Ashwani Attiri

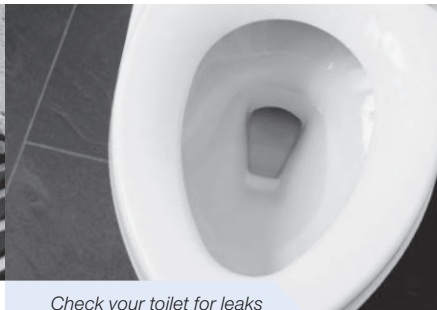
*Plant Operator,
Water Treatment*

As a plant operator, Ashwani is part of a team of water treatment employees diligently monitoring our water treatment process and equipment around the clock, 365 days a year. For our water treatment employees, nothing is more important than producing some of the world's highest quality drinking water for Calgarians each day.





Use a broom instead of a hose



Check your toilet for leaks



Be water-wise

When it comes to managing and protecting our water, it's important to get the whole community involved. Our goal is to keep the Bow River basin clean, and we're committed to helping you be a part of the process. There are simple things you can do to help protect the quality of our water. By incorporating just a few of these tips, you'll have good, world-class water on tap for many years to come.

Next stop – the river

The water that runs off your lawn and down the street into the storm drain heads straight to the river untreated. That can disrupt the sensitive natural habitats of the fish and wildlife. Instead of using a hose, clean your sidewalks and driveway with a broom and dustpan, then put the debris in the garbage instead of washing it down the drain. It's a simple change.

Grease and other bad stuff

When we pour chemicals or grease down the drains and toilets, our treatment plants have to work harder. Small amounts of grease should be put in containers, then in the garbage once they have cooled to a solid substance.

Hazardous products like motor oil, paint and antifreeze should be dropped off at designated fire stations and landfills. Call 3-1-1 for locations near you.

The scoop on pets

When it comes to doggies doing their business, it's important to pick up waste so it doesn't get washed down the drain and into our rivers.

Conserve water

A lot of things pose a threat to our precious water. Climate change, rapid population and urban growth are some of the big culprits. The City's water efficiency goal, known as 30-in-30, is designed to accommodate future population growth with the same amount of water Calgarians used in 2003. Here's how you can help:

- Check your toilets for leaks every six months. A small leak can waste up to 28 bathtubs full of water each month, which could cost you \$100 per year.
- Collect rain in a rain barrel so your lawn and garden get warmer, natural water. If you don't have a rain barrel, you can pick one up at the annual Green Calgary Rain Barrel Sale on May 1, 2010.

For more information on the rain barrel sale, community events and ways to protect and conserve water, please visit calgary.ca/waterservices or call 3-1-1.



Amy Ross

Water Educator

As a water educator, Amy Ross might be a familiar face for some. Through event appearances and workshops, Amy is often found in the community teaching residents how to conserve water and reduce their impacts on our rivers.