CITY OF ENDERBY DRINKING WATER SYSTEM

ANNUAL REPORT 2025

April 22, 2026

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EXECUTIVE SUMMARY

The City of Enderby operates and maintains a community drinking water system in accordance with the Drinking Water Protection Act and the *Guidelines for Canadian Drinking Water Quality*.

In 2025, the total water distributed from the Water Treatment Plant was 528,482m^3. The maximum one-day demand was 2,692m^3 on August 11, 2025. By contrast, in 2024, the total water distributed from the Water Treatment Plant was 567,189 m^3 and the maximum one-day demand was on July 19 2024 at 3,074 m^3.

In 2025, the City of Enderby spent $3,671,321 to operate and maintain the community drinking water system. Of that value, capital investment represents 82% of the total expended by the City of Enderby in 2025. The capital expenditure was high due to the construction of a replacement reservoir on Francis Drive.

The City continues its water quality monitoring program. Nothing of concern was discovered in the drinking water system in 2025.

The City's Public Works staff is certified to meet the legislative requirements of operating the Water Treatment Plant and distribution system.

The City has completed its Source Protection Plan for both sources and has taken action to implement its short-term recommendations. The City also completed its annual update to its Drinking Water Emergency Response Plan.

INTRODUCTION

The City of Enderby operates and maintains a community drinking water system in accordance with the Drinking Water Protection Act and Regulations, as well as the *Guidelines for Canadian Drinking Water Quality*. Pursuant to Section 15(b) of the British Columbia Drinking Water Protection Act and Section 11 of the British Columbia Drinking Water Protection Regulation, the City of Enderby provides the following Annual Drinking Water Report for 2025.

The goal of the City of Enderby is to provide clean, safe, and reliable drinking water. This means that the drinking water quality meets the standards specified in the *Guidelines for Canadian Drinking Water Quality* and the operation of the drinking water system is consistent with the BC Drinking Water Protection Act and Drinking Water Protection Regulation.

High quality drinking water must meet requirements with respect to the following:

- Maximum acceptable concentrations of microbiological contaminants such as bacteria, protozoa, and viruses such as *Giardia*, *Cryptosporidium*, and *Escherichia coli*;
- Maximum acceptable levels of turbidity;
- Maximum acceptable chemical and physical parameters; and
- Aesthetic objectives related to taste, colour, and odour.

The City accomplishes these requirements through a multi-barrier approach to treatment. A multi-barrier approach is required as "the limitations or failure of one or more barriers may be compensated for by the effective operation of the remaining barriers. This compensation minimizes the likelihood of contaminants passing through the entire system and being present in sufficient amounts to cause illness to consumers."[1]

There are a variety of potential hazards to drinking water, most of which involve chemical and microbiological contaminants that may be introduced at the source or intake, during treatment, or during distribution. The City has implemented a water quality monitoring regime and uses multi-barrier treatment to manage the risks to public health. The City has a Drinking Water Emergency Response Plan and a Source Protection Plan for both of its sources.

WATER SYSTEM OVERVIEW

The Enderby water system consists of two sources:

1. Shuswap Well (ground water; suspected of being under the direct influence of surface water); and
2. Shuswap River (surface water).

[1] Federal-Provincial-Territorial Committee on Drinking Water and the CCME Water Quality Task Group, "From Source to Tap: Guidance on the Multi-Barrier Approach to Safe Drinking Water" (Ottawa, Ontario: 2004), 17.

The total amount of pipe in the distribution system is 30,962 meters. There are booster stations by the Bawtree Bridge, at the bottom of Gunter-Ellison Road, and between the upper and lower reservoirs on Francis Drive.

All water is chlorinated prior to distribution. The Shuswap River surface water is filtered through a two-stage rapid filtration system which reduces turbidity and minimizes the threat of giardia and cryptosporidium. The Shuswap Well is normally piped to the Water Treatment Plant clearwell, where it receives ultraviolet treatment in addition to the chlorination received on-site.

Under normal operation, water from the Shuswap River is filtered and chlorinated, then pumped from the clearwell through the UV disinfection system and into the distribution system to a water reservoir. Water from the Shuswap Well is chlorinated on-site and pumped to the clearwell, then through the UV disinfection system and to the reservoirs. Each system can be isolated and run to the reservoirs alone. There is a total of 2,838 m^3 of reservoir capacity.

It should be noted that, when the Shuswap Well is supplying water, a number of customers east of the Bawtree Bridge may receive water that is only disinfected with chlorine, meaning that it does not receive the two forms of treatment required for surface water (the Shuswap Well is suspected of being under the influence of surface water). However, when the supply of water is from the Water Treatment Plant, all customers receive fully treated water.

Under current operating parameters, the combined source capacity of the Shuswap River and the Shuswap Well is 4,753 m^3 per day. The maximum production capacity of the Water Treatment Plant is 3,150 m^3 per day under normal operating conditions at peak demand, although the rate of production is affected by source water turbidity, which increases backwashing frequency and reduces available production time. The ultimate planned source capacity, with expanded infrastructure, operational changes, and assuming the capability to run the Shuswap Well for twenty-four hours per day, is 6,135 m^3.

ANNUAL CONSUMPTION DATA

Note: the below figures only describe the Water Treatment Plant flow meter; this does not reflect the full quantity of water sent from the Shuswap Well, some of which is distributed to residents east of the Bawtree Bridge without being captured by the flow meter.

In 2025, the total water distributed from the Water Treatment Plant was 528,482m^3. The maximum one-day demand was 2,692m^3 on August 11, 2025. By contrast, in 2024, the total water distributed from the Water Treatment Plant was 567,189 m^3 and the maximum one-day demand was on July 19 2024 at 3,074 m^3.

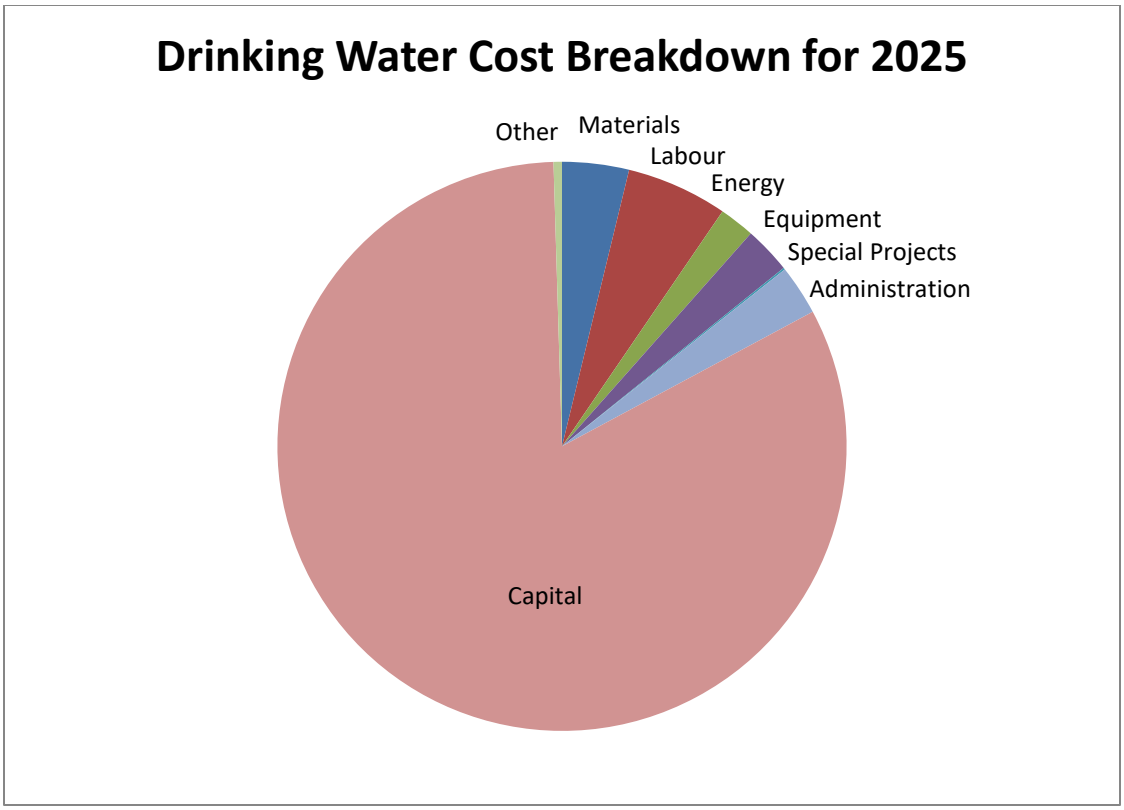
The following chart shows maximum and average daily demands from the Water Treatment Plant by month for 2024 and 2025.

Month	2025 Max. Daily Demand (m^3)	2025 Avg. Daily Demand (m^3)	2024 Max. Daily Demand (m^3)	2024 Avg. Daily Demand (m^3)
January	1327	1129	1658	1392
February	1396	1190	1929	1336
March	1437	1199	1525	1315
April	1284	1106	1807	1480
May	1611	1326	1963	1489
June	2291	1753	2244	1662
July	2251	1965	3074	2423
August	2279	1986	2874	2283
September	2309	1915	2411	1739
October	1762	1298	1650	1239
November	1274	1196	1419	1110
December	1297	1256	1347	1138

Year-to-year variations in demand tend to be influenced by the impact of weather upon consumption habits, particularly irrigation, while longer-range trends are influenced by population growth and demand management initiatives such as water rates and water conservation programs. For much of 2025, Stage 2 drinking water restrictions were in place to manage the availability of drinking water while the lower reservoir was under construction, which also contributed to the reduced demand.

DRINKING WATER COST BREAKDOWN

In 2025, the City of Enderby spent $3,671,321 to operate and maintain the community drinking water system. Of that value, capital investment represents 82% of the total. The capital expenditure was elevated due to the construction of a new reservoir on Francis Drive.



The following chart compares the dollar value associated with each expense category:

Category	2025 Value	2024 Value
Materials	139,248	167,441
Labour	211,054	200,016
Energy	73,711	68,210
Equipment	97,869	108,410
Special Projects	3,915	51,599
Interest	-	-
Administration	104,297	88,774
Capital	3,023,715	369,936
Other	17,513	17,158
Total	3,671,321	1,071,543

WATER SYSTEM ASSESSMENT AND INFRASTRUCTURE DEFICIT

The total replacement value for the water distribution system (such as pipes and pumps) is $111,733,692. As of December 31, 2025, the total depreciation is $23,089,293.

The total replacement value for the City of Enderby water treatment system (such as buildings, clarifier, chlorinators, and ultraviolet bank) is $9,286,363. As of December 31, 2025, the total depreciation is $5,110,018.

In 2025, $313,000 was contributed to the City of Enderby water reserve fund and $1,087,486 was withdrawn, for a balance at the end of the year of $76,684.

In order to address its infrastructure deficit, the City has committed to an incremental tax increase of 1% per year to the water utility. This amount is dedicated to asset management. The anticipated 2025 contribution to water reserves is $371,200.

COMPLETED AND FORTHCOMING MAJOR PROJECTS

There were a number of major water projects completed or forthcoming as of December 31, 2025:

- Planning for Water Treatment Plant expansion (completed; grant application submitted).
- Granville Avenue water main and service renewal (completed).
- Reservoir #1 replacement (in progress).
- King Avenue water main upsized renewal and service replacements (scheduled for 2026).
- Brickyard Road water main extension (scheduled for 2027).

MAJOR EVENTS

The seasonal freshet in the Shuswap River increased turbidity above 5 NTU between March 27 and April 15, 2025. During this event, the Water Treatment Plant was used as backup and the Shuswap Well was the primary source to supply water to consumers.

There were 3 water main breaks or major leaks to the distribution system during the year that required repair.

The Reservoir #1 bypass went into effect on March 3, 2025 and ran for the remainder of the year as the old reservoir was demolished and a replacement constructed in its place. This involved isolating Reservoir #1 and using Booster Station #2 in conjunction with a variable frequency drive on a distribution pump at the Water Treatment Plant to supply water directly to Reservoir #2, and then configure valve works in Booster Station #2 to reduce pressure in order to provide stored water to Pressure Zone 1. Early in the construction of the reservoir, there was a brief loss of water pressure in portions of the lower pressure zone due to misconfigured valve settings associated with reservoir replacement, which was promptly corrected.

WATER QUALITY MONITORING

Daily samples are collected at the Shuswap Well and River and tested for pH, temperature, and turbidity. Daily samples are also collected at the Water Treatment Plant and tested for pH, temperature, turbidity, and colour. The clearwell is tested on a daily basis for pH, temperature, turbidity, colour, and free and total chlorine.

Weekly system checks and distribution samples are tested for chlorine residuals to ensure a minimum of 0.20 mg/L of free chlorine is found throughout the distribution system. Chlorine residuals were above the minimum threshold for all sample locations and dates.

At least once per month, samples are collected at 10 monitoring stations within the distribution system for bacteriological testing. There were no positive coliform or E. Coli samples in 2025.

The filter backwash is sampled on a bi-monthly schedule for pH, conductivity, turbidity, total suspended solids, aluminum, and microbiology.

On a quarterly basis, trihalomethane (THM) samples are collected from the Brash PRV, Booster #1, and Valcairn stations. THMs are by-products caused by the chemical reaction between chlorine and organic matter naturally present in water. High levels of THMs can have adverse health effects and, as a result, the *Guidelines for Canadian Drinking Water Quality* set a maximum acceptable concentration of 0.1 mg/L. All THM tests from the above sample stations reported below the maximum acceptable concentration.

The Shuswap Well is tested monthly for nitrogen levels (including nitrates and nitrites) and microbiology. The Shuswap River is sampled monthly for microbiology. Both sources are sampled quarterly for total organic carbon.

The Shuswap River is sampled annually for comprehensive testing. The Shuswap Well is sampled every second year for comprehensive testing. The Shuswap River and Shuswap Well were tested in 2025.

The results are as follows.

Date	Parameter	Result (River)	Result (Well)
August 13, 2025	Chloride	0.45	1.35
August 13, 2025	Fluoride	<0.10	0.11
August 13, 2025	Nitrate (as N)	<0.010	0.239
August 13, 2025	Nitrite (as N)	<0.010	0.015
August 13, 2025	Sulfate	5.6	5.6
August 13, 2025	EPHw10-19	<250	<250
August 13, 2025	EPHw19-32	<250	<250
August 13, 2025	LEPHw	<250	<250
August 13, 2025	HEPHw	<250	<250
August 13, 2025	Langelier Index	-1.7	-1.8
August 13, 2025	Hardness, Total (as CaCO3)	44.8	50.7
August 13, 2025	Solids, Total Dissolved (calc)	50.2	61.2
August 13, 2025	Temperature, at pH	21.7	21.6
August 13, 2025	Colour, True	<5.0	<5.0
August 13, 2025	Alkalinity, Total (as CaCO3)	41.5	50.5
August 13, 2025	Alkalinity, Phenolphthalein (as CaCO3)	<1.0	<1.0
August 13, 2025	Alkalinity, Bicarbonate (as CaCO3)	41.5	50.5
August 13, 2025	Alkalinity, Carbonate (as CaCO3)	<1.0	<1.0
August 13, 2025	Alkalinity, Hydroxide (as CaCO3)	<1.0	<1.0
August 13, 2025	Cyanide, Total	<0.0020	<0.0020
August 13, 2025	Turbidity	0.54	0.15
August 13, 2025	pH	7.04	6.84
August 13, 2025	Conductivity (EC)	98.6	117

August 13, 2025	Coliforms, Total (Q-Tray)	1550	<1
August 13, 2025	E. coli (Q-Tray)	9	<1
August 13, 2025	Acenaphthene	<0.050	<0.050
August 13, 2025	Acenaphthylene	<0.200	<0.200
August 13, 2025	Acridine	<0.050	<0.050
August 13, 2025	Anthracene	<0.010	<0.010
August 13, 2025	Benz(a)anthracene	<0.010	<0.010
August 13, 2025	Benzo(a)pyrene	<0.010	<0.010
August 13, 2025	Benzo(b+j)fluoranthene	<0.050	<0.050
August 13, 2025	Benzo(g,h,i)perylene	<0.050	<0.050
August 13, 2025	Benzo(k)fluoranthene	<0.050	<0.050
August 13, 2025	2-Chloronaphthalene	<0.100	<0.100
August 13, 2025	Chrysene	<0.050	<0.050
August 13, 2025	Dibenz(a,h)anthracene	<0.010	<0.010
August 13, 2025	Fluoranthene	<0.030	<0.030
August 13, 2025	Fluorene	<0.050	<0.050
August 13, 2025	Indeno(1,2,3-cd)pyrene	<0.050	<0.050
August 13, 2025	1-Methylnaphthalene	<0.100	<0.100
August 13, 2025	2-Methylnaphthalene	<0.100	<0.100
August 13, 2025	Naphthalene	<0.200	<0.200
August 13, 2025	Phenanthrene	<0.100	<0.100
August 13, 2025	Pyrene	<0.020	<0.020
August 13, 2025	Quinoline	<0.050	<0.050
August 13, 2025	Aluminum, total	0.0425	0.0065
August 13, 2025	Antimony, total	<0.00020	<0.00020
August 13, 2025	Arsenic, total	<0.00050	<0.00050
August 13, 2025	Barium, total	0.0097	0.011
August 13, 2025	Boron, total	<0.0500	<0.0500
August 13, 2025	Cadmium, total	<0.000010	<0.000010
August 13, 2025	Calcium, total	15	16
August 13, 2025	Chromium, total	<0.00050	<0.00050
August 13, 2025	Cobalt, total	<0.00010	<0.00010
August 13, 2025	Copper, total	0.00163	0.00224
August 13, 2025	Iron, total	0.058	<0.010
August 13, 2025	Lead, total	0.00028	0.00083
August 13, 2025	Magnesium, total	1.76	2.58
August 13, 2025	Manganese, total	0.00388	<0.00020
August 13, 2025	Mercury, total	<0.000010	<0.000010
August 13, 2025	Molybdenum, total	0.00065	0.00129
August 13, 2025	Nickel, total	0.00057	0.00046
August 13, 2025	Potassium, total	0.83	1.05
August 13, 2025	Selenium, total	<0.00050	<0.00050
August 13, 2025	Sodium, total	1.21	2.59
August 13, 2025	Strontium, total	0.0696	0.0758
August 13, 2025	Uranium, total	0.00031	0.00021
August 13, 2025	Zinc, total	0.0066	0.0073

August 13, 2025	Benzene	<0.5	<0.5
August 13, 2025	Bromodichloromethane	<1.0	<1.0
August 13, 2025	Bromoform	<1.0	<1.0
August 13, 2025	Carbon tetrachloride	<0.5	<0.5
August 13, 2025	Chlorobenzene	<1.0	<1.0
August 13, 2025	Chloroethane	<2.0	<2.0
August 13, 2025	Chloroform	<1.0	<1.0
August 13, 2025	Dibromochloromethane	<1.0	<1.0
August 13, 2025	1,2-Dibromoethane	<0.3	<0.3
August 13, 2025	Dibromomethane	<1.0	<1.0
August 13, 2025	1,2-Dichlorobenzene	<0.5	<0.5
August 13, 2025	1,3-Dichlorobenzene	<1.0	<1.0
August 13, 2025	1,4-Dichlorobenzene	<1.0	<1.0
August 13, 2025	1,1-Dichloroethane	<1.0	<1.0
August 13, 2025	1,2-Dichloroethane	<1.0	<1.0
August 13, 2025	1,1-Dichloroethylene	<1.0	<1.0
August 13, 2025	cis-1,2-Dichloroethylene	<1.0	<1.0
August 13, 2025	trans-1,2-Dichloroethylene	<1.0	<1.0
August 13, 2025	Dichloromethane	<3.0	<3.0
August 13, 2025	1,2-Dichloropropane	<1.0	<1.0
August 13, 2025	1,3-Dichloropropene (cis + trans)	<1.0	<1.0
August 13, 2025	Ethylbenzene	<1.0	<1.0
August 13, 2025	Methyl tert-butyl ether	<1.0	<1.0
August 13, 2025	Styrene	<1.0	<1.0
August 13, 2025	1,1,2,2-Tetrachloroethane	<0.5	<0.5
August 13, 2025	Tetrachloroethylene	<1.0	<1.0
August 13, 2025	Toluene	<1.0	<1.0
August 13, 2025	1,1,1-Trichloroethane	<1.0	<1.0
August 13, 2025	1,1,2-Trichloroethane	<1.0	<1.0
August 13, 2025	Trichloroethylene	<1.0	<1.0
August 13, 2025	Trichlorofluoromethane	<1.0	<1.0
August 13, 2025	Vinyl chloride	<1.0	<1.0
August 13, 2025	Xylenes (total)	<2.0	<2.0

ENVIRONMENTAL OPERATORS CERTIFICATION

The *Drinking Water Protection Regulation* requires a Chief Operator certified by the Environmental Operators Certification Program at a level that matches the facility classification for Water Treatment and Water Distribution.

The Water Treatment Plant is a Class II facility. The Water Distribution system is a Class I facility.

During 2025, City of Enderby employed the following certified operators:

Name	Title	Water Treatment	Water Distribution
Damon Kipp	Systems Operator III	Level II	Level II
Ray Brown	Lead Hand II	Level I	Level II
Mervin Arvay	Utility II	-	Level III

WATER CONSERVATION PLAN

The City of Enderby's Water Conservation Plan identifies strategies to reduce water demand throughout the community. Reducing water demand helps to protect the watershed, mitigate requirements for infrastructure expansion, and reduce operating and maintenance costs.

As of December 31, 2025, the City of Enderby has achieved a number of strategies within its Water Conservation Plan, including:

1. Universal water metering;
2. Water Conservation and Drought Management framework; and
3. Education and compliance initiatives.

CROSS CONNECTION CONTROL PROGRAM

In 2003, Interior Health required all large water suppliers, including the City of Enderby, to implement a cross connection control program as a condition of operating permit. The purpose of the program is to protect public health by ensuring that drinking water is not contaminated due to a backflow incident.

The City adopted a Cross Connection Control Program in 2004 and began the program implementation with assessments of a number of commercial, industrial, institutional and agricultural customers in June, 2004. Under Enderby's program, owners were expected to implement the recommendations in a timely manner and were responsible for all costs associated with their backflow prevention systems.

For a number of reasons, including cost and internal capacity limitations, the Cross Connection Control Program has not been fully implemented but progress is being made on all public facilities, new buildings, and high-risk properties. The City of Enderby intends to increase compliance with its Cross Connection Control program in 2026 and will follow a risk-based approach.

SOURCE PROTECTION PLAN

In February 2017, the City completed its Source Protection Plan for both the surface water intake and the Shuswap Well. The Source Protection Plan characterized the sources, provided an inventory of potential contaminants and threats, characterized risks, and recommended various actions to mitigate risk. As a result of this plan, the City has completed analyses of both sources for herbicides, pesticides, and petroleum in order to characterize the source water better.

The City has also reached out to relevant third parties to inform them of the locations of the City's drinking water sources and request that they notify the City in the event of an accident, spill, fire, or

natural disaster. The City has also requested that the Regional District of North Okanagan refer development applications within the designated groundwater protection area.

EMERGENCY RESPONSE PLAN

The City of Enderby Drinking Water Emergency Response Plan was completed in 2013. The Emergency Response Plan includes provisions for public notification and response procedures for emergency situations, such as backflow incidents, broken water mains, chlorinator failure, source and/or reservoir contamination, and spills or vehicle accidents affecting the distribution system. It also provides an emergency contact directory.

The Emergency Response Plan was last updated on November 13, 2024. The 2025 update was deferred until 2026 and the completion of reservoir construction.