



DRINKING WATER SYSTEM ANNUAL REPORT

Reporting Period: January 1st to December 31st, 2022 (year)

Water System Village of Cumberland

Water System Owner Village of Cumberland

Primary Contact Name (Operator or Manager) Gavin Murgatroyd

Phone Number (Operator or Manager) 250-792-1593

E-mail (Operator or Manager) gmurgatroyd@cumberland.ca

DESCRIBE YOUR WATER SUPPLY SYSTEM

What is the Source(s) of Raw Water?

Deep Well Shallow Well Surface Water Other

If other, specify details:

Does the Drinking Water System have Primary Disinfection? Yes No

Chlorination Ultraviolet Light Ozone Other

If other, specify details:

Does the Drinking Water System have Secondary Disinfection? Yes No

Chlorination Other

If other, specify details:

Does the Drinking Water System have Filtration? Yes No

Check all boxes that apply

Cartridge Filter(s) Carbon Filter Sand Filtration Reverse Osmosis Other

If other, specify details:

PUBLIC REPORTING

Emergency Response & Contingency Plan (ERCP)

Is your ERCP up to Date? Yes No

How do you Inform the System Users of the ERCP?

Hand Delivered Bulletin Board Newspaper Utility Bill Insert Website

Other (specify details)

Drinking Water System Annual Report

How do you Inform the System Users of the Annual Report?

Hand Delivered Bulletin Board Newspaper Utility Bill Insert Website

Other (specify details)



COMPLIANCE WITH OPERATING PERMIT

List the conditions of your Operating Permit (Contact the DWO for a copy if needed):

See attached.

Are you in compliance with your Operating Permit? Yes No

BACTERIOLOGICAL TESTING AND DRINKING WATER PROTECTION REGULATION WATER QUALITY STANDARDS

How many bacteriological samples were collected during this reporting period? 173

What is the minimum required sampling frequency for this system? (#samples/month) 4/month

Additional sampling details:

Was the minimum required sampling frequency achieved? Yes No

Comments:

Bacteriological summary attached to this report? Yes No

If no, how do the users of the system view the results?

WATER QUALITY STANDARDS FOR POTABLE WATER

Parameter:	Standard:	Did this system meet standard?	
Escherichia coli (for all samples)	No detectable <i>Escherichia coli</i> per 100ml	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Total Coliform Bacteria (if only 1 sample collected in a 30 day period)	No detectable total coliform bacteria per 100ml	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Total Coliform Bacteria (if more than 1 sample collected in a 30 day period)	No more than 10% of samples contain total coliform bacteria, and No sample has more than 10 total coliform bacteria per 100ml	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No

If the system did not meet any of above Drinking Water Protection Regulation standards, record the results in the table below; attach additional sheets if necessary.

Date	TC/100ml	E.coli/100ml	Reason	Corrective Action



CHEMICAL SAMPLING COMPLETED DURING THIS REPORTING PERIOD

Was any chemical sampling conducted during reporting period? Yes No

If no, when were the last chemical samples conducted for this system? (date) Don't know

If yes, attach a list of the chemical results Attached.

If any water samples did not meet the Guidelines for Canadian Drinking Water Quality, record the results in the table below; attach additional sheets if necessary.

Next scheduled full chemical test (date) **2023**

Parameter	Result	Corrective Action / Treatment / Comments

ADDITIONAL TESTING

Does the system have analyzers for continuous monitoring? Yes No

If yes, check all boxes that apply:

Chlorine Turbidity Other (details) **→ pH AND TEMP.**

Are the results available on request?

If any additional testing or sampling was conducted, record results in the table below; attach additional sheets if necessary.

Additional Testing & Reason for Sampling	Corrective Action Taken

WATER QUALITY COMPLAINTS

Were there any water quality complaints in this reporting period? (e.g. taste, odour, colour etc.) Yes No

If yes, complete the table below; attach additional sheets if necessary.

Date	Water Quality Complaint	Corrective Action / Treatment
See attached	See attached	See attached



OPERATIONAL PROBLEMS

Were there any operational problems during this reporting period? (e.g. insufficient water supply, malfunction of disinfection equipment, line breaks, elevated turbidity etc.).

 Yes

 No

If yes, complete the table below; attach additional sheets if necessary. **See attached**

Incident Date	Type of Operational Problem	Corrective Action Taken
See attached	See attached	See attached

MAJOR UPGRADES/REPAIRS & EXPENSES

Were there any major upgrades/repairs or any major costs incurred during this reporting period?

 Yes

 No

If yes, complete the table below; attach additional sheets if necessary.

Major Upgrades/Expenses	Details
Improvements required by DWO	
Additions/changes to system	
Purchase or install new equipment	New turbidity meter for finished water installed at WTP
Equipment repair or replacement	
Annual maintenance of system	Watermain flushing program - completed Spring 2022
Specialist report	
Other	

FUTURE IMPROVEMENTS

Are there any plans for future improvements?

 Yes

 No

If yes, complete the table below; attach additional sheets if necessary.

Future Upgrades or Improvements	Estimated Date of Completion
Water main upgrades at Ambleside Ave. and Maryport Ave. (between Egremont and Silecroft)	2023
New water main at Union Road (from Cumberland Road to 3338 Union Road) creating looped main	2023

Click here to enter a date.

DATE COMPLETED:

COMPLETED BY:

Excellent health and care, for everyone,
everywhere, every time.



December 1, 2020

Village of Cumberland
2673 Dunsmuir Avenue
Cumberland, BC V0R 1S0

Dear Village of Cumberland:

Re: Notice of Proposed Changes to Terms and Conditions of Operating Permit No. 1414314 Village of Cumberland Water Supply

The Drinking Water Protection Act requires Drinking Water Officers (DWO) to exercise discretion in their oversight of drinking water systems. Specific requirements may be made of a water supplier to ensure that the system is operated in a manner that protects the health of water users. Permit Terms and Conditions can often help to clarify the expectations and responsibilities associated with being a water supplier.

Section 8(4) of the *Drinking Water Protection Act* (DWPA) states:

The drinking water officer or an issuing official may change the terms and conditions of an operating permit if the officer or issuing official considers this advisable, but must first consult with the water supplier respecting the proposed changes and must consider any comments of the water supplier in response.

As an issuing official, I propose to attach the following Terms and Conditions to your operating permit:

See Appendix A

Please respond in writing within **30 days** of receiving this notice if you wish to comment on the proposed changes to your permit. Your comments will be considered before a final decision is made.

Be advised that, short of judicial review, this is your only opportunity to influence the outcome of this process. Changes to the terms and conditions of an operating permit are not subject to reconsideration or review under Section 39.1 of the Drinking Water Protection Act.

Please contact the undersigned for further information.

Yours truly,

Ella Derby B.Sc, B.Tech, CPHI (C)
Environmental Health Officer
Island Health Authority
ella.derby@viha.ca

APPENDIX A

WATER SYSTEM OPERATING TERMS AND CONDITIONS FOR

VILLAGE OF CUMBERLAND WATER SUPPLY SYSTEM

2673 Dunsmuir Avenue

Cumberland, BC, V0R 1S0

The permit holder is advised of the following Terms and Conditions are in addition to other legislated responsibilities and obligations such as:

- The *Drinking Water Protection Act*, [SBC 2001] Chapter 9
- The *Drinking Water Protection Regulation* (B.C. Reg. 200/2003 O.C. 508/2003)

The specific terms and conditions of this operating permit are listed below:

Water Disinfection Facility (Henderson & Allen Lake)

The water supply system owner is authorized to operate the *disinfection facility* with a design flow rate of 112 L/s, and consisting of strainers, three Spektron 900e low pressure UV reactors (one dedicated reactor per source with a third reactor capable of treating either source to provide system redundancy), brine storage tank, an on-site sodium hypochlorite generator, liquid 0.8% sodium hypochlorite storage tanks, dosing pumps, injection ports, flow meters, pH, temperature and free chlorine analyzers, turbidity monitors, spill containment, hydrogen gas monitors and alarms, 2,500m³ steel bolted reservoir, back-up generator and other related appurtenances to serve existing and future development in the Village of Cumberland.

Water Supply Facility (Well #36245)

The water supply system owner is authorized to operate the *water supply facility* with a design flow rate of 15 L/s, and consisting of chlorine injection to provide secondary disinfection in the distribution system to serve existing and future development in the Village of Cumberland.

1. Performance Standards

The finished water leaving the water disinfection and supply facilities (surface water or well water) shall:

- Meet, or be lower than, the health related concentration limits for substances listed in the most recent version of the Health Canada's *Guidelines for Canadian Drinking Water Quality*;
- Contain no detectable *Escherichia coli* bacteria/100 mL; and

- Contain no detectible total coliform bacteria / 100 mL
- The maximum concentration of *free* chlorine leaving the facility shall not exceed 4.0 mg/L
- Comply with the maximum acceptable concentrations of disinfection by-products: Trihalomethanes (THMs) and Haloacetic acids (HAAs) are not to exceed .100 mg/l and 0.08 mg/l, respectively. This is based on a locational running annual average of a minimum of quarterly samples.

The performance standards for each specific source are as follows:

a) Henderson Lake and Allen Lake

The Water System Owner shall inspect the authorized waterworks regularly and maintain them in good working order to ensure the production and delivery of potable water.

The disinfection facility shall be operated in a manner to achieve the following:

- a minimum of 4-log reduction (99.99% inactivation) of viruses;
- a minimum of 3.0-log reduction (99.9% removal) in *Giardia Lamblia* cysts;
- a minimum of 3.0-log reduction (99.9 % removal) of *Cryptosporidium* oocysts
- a minimum of 2 forms of disinfection applied (UV and chlorination)
- a turbidity less than 1 NTU

b) Well #36245

The Water System Owner shall inspect the authorized waterworks regularly and maintain them in good working order to ensure the production and delivery of potable water.

The water supply facility shall be operated in a manner to achieve the following:

- a turbidity less than 1 NTU

2. **Water Quality Monitoring**

a. Henderson Lake and Allen Lake

i. Turbidity Monitoring

- The water supply system owner shall provide and maintain suitable sampling facilities and monitor the turbidity in both the raw water *sources* and finished treated water leaving the disinfection facility on a continuous basis.

ii. Contact Time

- The water supply system owner shall ensure the CT value is monitored on a daily basis where CT is the product of C and T, where C represents the *free* chlorine residual disinfectant concentration in mg/L and T represents the *contact time* in minutes.
- Once per day, at a maximum hourly flow, the water supply system owner shall monitor the temperature of the disinfected water, the residual disinfectant

concentration, C, and the pH at the sampling point. The sampling point should be located before the first customer. In addition, at the peak hourly flow, the water supply system owner shall determine the contact time, T, based on the time of travel that the water takes to reach the first customer within the pipelines and retention in the reservoir.

- Virus reduction will be based upon the CT tables listed in the document, "Guidelines for Canadian Drinking Water Quality; Guideline Technical Document – Enteric Viruses", Water, Air and Climate Change Bureau. Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario, (April 2019).

iii. UV Dose

- The water supply system owner shall determine the minimum dose for the ultraviolet disinfection units on a daily basis measured in mJ/cm².
- Protozoan reduction will be based upon the dose tables listed in the document "Guidelines for Canadian Drinking Water Quality; Guideline Technical Document – Enteric Protozoa: Giardia and Cryptosporidium", Water, Air and Climate Change Bureau. Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario, (Catalogue No H129-23/2013E-PDF), 2012

b. Well #36245

i. Turbidity monitoring

- The water supply system owner shall provide and maintain suitable sampling facilities and monitor the turbidity in the well water leaving the disinfection facility on a continuous basis.

3. Bacteriological and Chemical Monitoring

The water supply system owner shall adhere to a sampling and monitoring program for chemical, physical, protozoan and bacterial monitoring parameters, sampling frequencies and sampling locations for the water disinfection facilities as approved by the Drinking Water Officer. The water quality data shall be suitably tabulated and submitted to the Drinking Water Officer on a regular basis as specified by the Drinking Water Officer.

4. Filtration Exemption (Surface Water Sources)

The water supply system owner shall adhere to a sampling and monitoring program as a condition of the filtration exemption, as set out in the *Drinking Water Treatment Objectives for Surface Water in British Columbia (most recent version)*. The program may contain chemical, physical, protozoan and bacterial monitoring parameters at sampling frequencies and sampling locations, watershed surveillance, and a watershed protection plan as approved by the Drinking Water Officer. The operator must provide annual written updates to the Drinking Water Officer (DWO) that outlines on-going review and update of the watershed protection plan, and compliance with the filtration deferral criteria.

5. Distribution System Maintenance, Disinfection By-Product Monitoring and Residual Monitoring

The water supply system owner shall provide a minimum of 0.2 mg/L of residual disinfectant measured as *free* chlorine, for the water at all points within the distribution system. This may be higher or lower as approved by the Drinking Water Officer.

The maximum residual disinfectant concentration, measured as *free* chlorine shall not exceed 4.0 mg/L anywhere in the distribution system. This does not apply in situations where water mains or reservoirs, or other appurtenances are being super-chlorinated during their installation, repair, or routine maintenance.

If the minimum level of chlorine is not detected during routine residual analysis in the distribution system, the water supplier is to refer to the Emergency Response Plan (ERP) for direction.

Disinfection by-products, trihalomethanes (THM), and haloacetic acids (HAA), are to be measured on a quarterly basis at locations within the distribution system as approved by the local Drinking Water Officer. The measured average of these results must comply with the MAC as outlined in the Guidelines for Canadian Drinking Water Quality (GCDWQ). If a MAC is exceeded, a written plan to decrease the formation of the DBPs or decrease the presence of precursors in the source water must be submitted for review by the DWO within 30 days of the exceedance. Monitoring sites are to be as outlined in an approved Sampling Program and include sites within the distribution system where potential disinfection by-product formation is at its highest.

6. Reporting

Prepare a monthly report outlining facilities operations as set by the DWO. Submit the monthly report for the previous month by the 15th day of the following month to the DWO.

7. Operating Training

The water supply system shall be operated and maintained by or under the supervision of persons certified within and according to the classification (treatment and distribution) of the water system by the Environmental Operators Certification Program (EOCP).



Range Report 2022- Village Of Cumberland

Date Collected	Total Coliform	Total E. Coli	Site Name
01/18/2022	LT1	LT1	SITE 1 2040 DERWENT Monthly
02/01/2022	L1	L1	SITE 1 2040 DERWENT Monthly
02/09/2022	LT1	LT1	SITE 1 2040 DERWENT Monthly
03/08/2022	LT1	LT1	SITE 1 2040 DERWENT Monthly
03/21/2022	L1	L1	SITE 1 2040 DERWENT Monthly
04/06/2022	LT1	LT1	SITE 1 2040 DERWENT Monthly
05/03/2022	LT1	LT1	SITE 1 2040 DERWENT Monthly
05/09/2022	L1	L1	SITE 1 2040 DERWENT Monthly
06/08/2022	LT1	LT1	SITE 1 2040 DERWENT Monthly
06/28/2022	L1	L1	SITE 1 2040 DERWENT Monthly
07/13/2022	LT1	LT1	SITE 1 2040 DERWENT Monthly
08/09/2022	LT1	LT1	SITE 1 2040 DERWENT Monthly
08/16/2022	1.0	L1	SITE 1 2040 DERWENT Monthly
09/13/2022	LT1	LT1	SITE 1 2040 DERWENT Monthly
10/04/2022	L1	L1	SITE 1 2040 DERWENT Monthly
10/12/2022	LT1	LT1	SITE 1 2040 DERWENT Monthly
11/14/2022	LT1	LT1	SITE 1 2040 DERWENT Monthly
11/24/2022	L1	L1	SITE 1 2040 DERWENT Monthly
12/07/2022	LT1	LT1	SITE 1 2040 DERWENT Monthly
01/18/2022	13.5	LT1	Village of Cumberland, ALLEN LAKE RAW Monthly
02/09/2022	63.8	LT1	Village of Cumberland, ALLEN LAKE RAW Monthly
04/06/2022	35.4	LT1	Village of Cumberland, ALLEN LAKE RAW Monthly
05/03/2022	13.4	LT1	Village of Cumberland, ALLEN LAKE RAW Monthly
06/07/2022	REJCT DELAY3	REJCT DELAY3	Village of Cumberland, ALLEN LAKE RAW Monthly
07/13/2022	261.3	1.0	Village of Cumberland, ALLEN LAKE RAW Monthly
08/09/2022	37.5	LT1	Village of Cumberland, ALLEN LAKE RAW Monthly
09/13/2022	235.9	LT1	Village of Cumberland, ALLEN LAKE RAW Monthly
10/12/2022	275.5	LT1	Village of Cumberland, ALLEN LAKE RAW Monthly
11/14/2022	30.3	1.0	Village of Cumberland, ALLEN LAKE RAW Monthly
12/07/2022	15.5	LT1	Village of Cumberland, ALLEN LAKE RAW Monthly
07/18/2022	240	L1	Village of Cumberland, Allen Lake, Chemical Sampling Site, Raw
2022-08-03	19.9	LT1	Village of Cumberland, Private Lab Allen Lake Raw Source
01/18/2022	115.3	LT1	Village of Cumberland, HENDERSON LAKE RAW Monthly
02/09/2022	93.2	LT1	Village of Cumberland, HENDERSON LAKE RAW Monthly

03/08/2022	48.0	LT1	Village of Cumberland, HENDERSON LAKE RAW Monthly
04/06/2022	73.3	LT1	Village of Cumberland, HENDERSON LAKE RAW Monthly
05/03/2022	49.5	LT1	Village of Cumberland, HENDERSON LAKE RAW Monthly
06/07/2022	REJCT DELAY3	REJCT DELAY3	Village of Cumberland, HENDERSON LAKE RAW Monthly
07/13/2022	435.2	31.3	Village of Cumberland, HENDERSON LAKE RAW Monthly
07/18/2022	140	26	Village of Cumberland, HENDERSON LAKE RAW Monthly
08/09/2022	579.4	1.0	Village of Cumberland, HENDERSON LAKE RAW Monthly
09/13/2022	816.4	1.0	Village of Cumberland, HENDERSON LAKE RAW Monthly
10/12/2022	613.1	1.0	Village of Cumberland, HENDERSON LAKE RAW Monthly
11/14/2022	488.4	4.1	Village of Cumberland, HENDERSON LAKE RAW Monthly
12/07/2022	127.4	LT1	Village of Cumberland, HENDERSON LAKE RAW Monthly

01/18/2022	LT1	LT1	Village of Cumberland, SITE 2 3328 SECOND ST Monthly
02/07/2022	L1	L1	Village of Cumberland, SITE 2 3328 SECOND ST Monthly
02/09/2022	LT1	LT1	Village of Cumberland, SITE 2 3328 SECOND ST Monthly
03/08/2022	LT1	LT1	Village of Cumberland, SITE 2 3328 SECOND ST Monthly
03/31/2022	L1	L1	Village of Cumberland, SITE 2 3328 SECOND ST Monthly
04/06/2022	LT1	LT1	Village of Cumberland, SITE 2 3328 SECOND ST Monthly
05/03/2022	LT1	LT1	Village of Cumberland, SITE 2 3328 SECOND ST Monthly
05/16/2022	L1	L1	Village of Cumberland, SITE 2 3328 SECOND ST Monthly
06/08/2022	LT1	LT1	Village of Cumberland, SITE 2 3328 SECOND ST Monthly
07/07/2022	L1	L1	Village of Cumberland, SITE 2 3328 SECOND ST Monthly
07/13/2022	LT1	LT1	Village of Cumberland, SITE 2 3328 SECOND ST Monthly
08/09/2022	LT1	LT1	Village of Cumberland, SITE 2 3328 SECOND ST Monthly
08/24/2022	L1	L1	Village of Cumberland, SITE 2 3328 SECOND ST Monthly
09/13/2022	LT1	LT1	Village of Cumberland, SITE 2 3328 SECOND ST Monthly
10/11/2022	L1	L1	Village of Cumberland, SITE 2 3328 SECOND ST Monthly
10/18/2022	QRWRT	QRWRT	Village of Cumberland, SITE 2 3328 SECOND ST Monthly
11/14/2022	LT1	LT1	Village of Cumberland, SITE 2 3328 SECOND ST Monthly
12/01/2022	L1	L1	Village of Cumberland, SITE 2 3328 SECOND ST Monthly
12/13/2022	LT1	LT1	Village of Cumberland, SITE 2 3328 SECOND ST Monthly

01/18/2022	LT1	LT1	Village of Cumberland, SITE 3 4700 CUMBERLAND RD Monthly
01/25/2022	L1	L1	Village of Cumberland, SITE 3 4700 CUMBERLAND RD Monthly
02/09/2022	LT1	LT1	Village of Cumberland, SITE 3 4700 CUMBERLAND RD Monthly
02/15/2022	L1	L1	Village of Cumberland, SITE 3 4700 CUMBERLAND RD Monthly
03/08/2022	LT1	LT1	Village of Cumberland, SITE 3 4700 CUMBERLAND RD Monthly
04/04/2022	L1	L1	Village of Cumberland, SITE 3 4700 CUMBERLAND RD Monthly
04/06/2022	LT1	LT1	Village of Cumberland, SITE 3 4700 CUMBERLAND RD Monthly
05/03/2022	LT1	LT1	Village of Cumberland, SITE 3 4700 CUMBERLAND RD Monthly
05/24/2022	L1	L1	Village of Cumberland, SITE 3 4700 CUMBERLAND RD Monthly
06/08/2022	LT1	LT1	Village of Cumberland, SITE 3 4700 CUMBERLAND RD Monthly
07/12/2022	L1	L1	Village of Cumberland, SITE 3 4700 CUMBERLAND RD Monthly

07/13/2022	LT1	LT1	Village of Cumberland, SITE 3 4700 CUMBERLAND RD Monthly
08/08/2022	L1	L1	Village of Cumberland, SITE 3 4700 CUMBERLAND RD Monthly
08/09/2022	LT1	LT1	Village of Cumberland, SITE 3 4700 CUMBERLAND RD Monthly
08/29/2022	L1	L1	Village of Cumberland, SITE 3 4700 CUMBERLAND RD Monthly
09/14/2022	LT1	LT1	Village of Cumberland, SITE 3 4700 CUMBERLAND RD Monthly
10/17/2022	L1	L1	Village of Cumberland, SITE 3 4700 CUMBERLAND RD Monthly
10/18/2022	QRWRT	QRWRT	Village of Cumberland, SITE 3 4700 CUMBERLAND RD Monthly
11/21/2022	LT1	LT1	Village of Cumberland, SITE 3 4700 CUMBERLAND RD Monthly
12/06/2022	L1	L1	Village of Cumberland, SITE 3 4700 CUMBERLAND RD Monthly
12/13/2022	LT1	LT1	Village of Cumberland, SITE 3 4700 CUMBERLAND RD Monthly
01/05/2022	L1	L1	Village of Cumberland, SITE 4 3190 ROYSTON RD Monthly
01/18/2022	LT1	LT1	Village of Cumberland, SITE 4 3190 ROYSTON RD Monthly
02/09/2022	LT1	LT1	Village of Cumberland, SITE 4 3190 ROYSTON RD Monthly
03/08/2022	LT1	LT1	Village of Cumberland, SITE 4 3190 ROYSTON RD Monthly
04/06/2022	LT1	LT1	Village of Cumberland, SITE 4 3190 ROYSTON RD Monthly
04/12/2022	L1	L1	Village of Cumberland, SITE 4 3190 ROYSTON RD Monthly
05/03/2022	LT1	LT1	Village of Cumberland, SITE 4 3190 ROYSTON RD Monthly
05/31/2022	L1	L1	Village of Cumberland, SITE 4 3190 ROYSTON RD Monthly
06/07/2022	REJCT DELAY3	REJCT DELAY3	Village of Cumberland, SITE 4 3190 ROYSTON RD Monthly
07/13/2022	LT1	LT1	Village of Cumberland, SITE 4 3190 ROYSTON RD Monthly
07/19/2022	L1	L1	Village of Cumberland, SITE 4 3190 ROYSTON RD Monthly
08/09/2022	LT1	LT1	Village of Cumberland, SITE 4 3190 ROYSTON RD Monthly
09/07/2022	L1	L1	Village of Cumberland, SITE 4 3190 ROYSTON RD Monthly
09/13/2022	LT1	LT1	Village of Cumberland, SITE 4 3190 ROYSTON RD Monthly
10/18/2022	QRWRT	QRWRT	Village of Cumberland, SITE 4 3190 ROYSTON RD Monthly
10/24/2022	L1	L1	Village of Cumberland, SITE 4 3190 ROYSTON RD Monthly
11/21/2022	LT1	LT1	Village of Cumberland, SITE 4 3190 ROYSTON RD Monthly
12/13/2022	LT1	LT1	Village of Cumberland, SITE 4 3190 ROYSTON RD Monthly
12/15/2022	L1	L1	Village of Cumberland, SITE 4 3190 ROYSTON RD Monthly
01/11/2022	L1	L1	Village of Cumberland, SITE 5 3607 SMALL RD Monthly
01/18/2022	LT1	LT1	Village of Cumberland, SITE 5 3607 SMALL RD Monthly
02/09/2022	LT1	LT1	Village of Cumberland, SITE 5 3607 SMALL RD Monthly
03/01/2022	L1	L1	Village of Cumberland, SITE 5 3607 SMALL RD Monthly
03/08/2022	LT1	LT1	Village of Cumberland, SITE 5 3607 SMALL RD Monthly
04/06/2022	LT1	LT1	Village of Cumberland, SITE 5 3607 SMALL RD Monthly
04/20/2022	L1	L1	Village of Cumberland, SITE 5 3607 SMALL RD Monthly
05/03/2022	LT1	LT1	Village of Cumberland, SITE 5 3607 SMALL RD Monthly
06/06/2022	L1	L1	Village of Cumberland, SITE 5 3607 SMALL RD Monthly
06/08/2022	LT1	LT1	Village of Cumberland, SITE 5 3607 SMALL RD Monthly
07/13/2022	LT1	LT1	Village of Cumberland, SITE 5 3607 SMALL RD Monthly
07/26/2022	L1	L1	Village of Cumberland, SITE 5 3607 SMALL RD Monthly

08/09/2022	LT1	LT1	Village of Cumberland, SITE 5 3607 SMALL RD Monthly
09/14/2022	LT1	LT1	Village of Cumberland, SITE 5 3607 SMALL RD Monthly
09/14/2022	L1	L1	Village of Cumberland, SITE 5 3607 SMALL RD Monthly
10/18/2022	QRWRT	QRWRT	Village of Cumberland, SITE 5 3607 SMALL RD Monthly
11/03/2022	L1	L1	Village of Cumberland, SITE 5 3607 SMALL RD Monthly
11/21/2022	LT1	LT1	Village of Cumberland, SITE 5 3607 SMALL RD Monthly
12/13/2022	LT1	LT1	Village of Cumberland, SITE 5 3607 SMALL RD Monthly
01/17/2022	L1	L1	Village of Cumberland, SITE 6 2478 LINDALE RD Monthly
01/18/2022	LT1	LT1	Village of Cumberland, SITE 6 2478 LINDALE RD Monthly
02/09/2022	LT1	LT1	Village of Cumberland, SITE 6 2478 LINDALE RD Monthly
03/08/2022	LT1	LT1	Village of Cumberland, SITE 6 2478 LINDALE RD Monthly
03/10/2022	L1	L1	Village of Cumberland, SITE 6 2478 LINDALE RD Monthly
04/06/2022	LT1	LT1	Village of Cumberland, SITE 6 2478 LINDALE RD Monthly
04/25/2022	L1	L1	Village of Cumberland, SITE 6 2478 LINDALE RD Monthly
05/03/2022	LT1	LT1	Village of Cumberland, SITE 6 2478 LINDALE RD Monthly
06/07/2022	REJCT DELAY3	REJCT DELAY3	Village of Cumberland, SITE 6 2478 LINDALE RD Monthly
06/14/2022	L1	L1	Village of Cumberland, SITE 6 2478 LINDALE RD Monthly
07/13/2022	LT1	LT1	Village of Cumberland, SITE 6 2478 LINDALE RD Monthly
08/03/2022	L1	L1	Village of Cumberland, SITE 6 2478 LINDALE RD Monthly
08/09/2022	LT1	LT1	Village of Cumberland, SITE 6 2478 LINDALE RD Monthly
09/13/2022	LT1	LT1	Village of Cumberland, SITE 6 2478 LINDALE RD Monthly
09/20/2022	L1	L1	Village of Cumberland, SITE 6 2478 LINDALE RD Monthly
10/12/2022	LT1	LT1	Village of Cumberland, SITE 6 2478 LINDALE RD Monthly
11/07/2022	L1	L1	Village of Cumberland, SITE 6 2478 LINDALE RD Monthly
11/21/2022	LT1	LT1	Village of Cumberland, SITE 6 2478 LINDALE RD Monthly
12/07/2022	LT1	LT1	Village of Cumberland, SITE 6 2478 LINDALE RD Monthly
01/18/2022	LT1	LT1	Village of Cumberland, SITE 7 2476 DUNSMUIR AVE Monthly
02/09/2022	LT1	LT1	Village of Cumberland, SITE 7 2476 DUNSMUIR AVE Monthly
03/08/2022	LT1	LT1	Village of Cumberland, SITE 7 2476 DUNSMUIR AVE Monthly
03/16/2022	L1	L1	Village of Cumberland, SITE 7 2476 DUNSMUIR AVE Monthly
04/06/2022	LT1	LT1	Village of Cumberland, SITE 7 2476 DUNSMUIR AVE Monthly
05/02/2022	L1	L1	Village of Cumberland, SITE 7 2476 DUNSMUIR AVE Monthly
05/03/2022	LT1	LT1	Village of Cumberland, SITE 7 2476 DUNSMUIR AVE Monthly
06/08/2022	LT1	LT1	Village of Cumberland, SITE 7 2476 DUNSMUIR AVE Monthly
06/21/2022	L1	L1	Village of Cumberland, SITE 7 2476 DUNSMUIR AVE Monthly
07/13/2022	LT1	LT1	Village of Cumberland, SITE 7 2476 DUNSMUIR AVE Monthly
08/09/2022	LT1	LT1	Village of Cumberland, SITE 7 2476 DUNSMUIR AVE Monthly
08/11/2022	L1	L1	Village of Cumberland, SITE 7 2476 DUNSMUIR AVE Monthly
09/13/2022	LT1	LT1	Village of Cumberland, SITE 7 2476 DUNSMUIR AVE Monthly
09/27/2022	L1	L1	Village of Cumberland, SITE 7 2476 DUNSMUIR AVE Monthly
10/12/2022	LT1	LT1	Village of Cumberland, SITE 7 2476 DUNSMUIR AVE Monthly

11/14/2022	LT1	LT1	Village of Cumberland, SITE 7 2476 DUNSMUIR AVE Monthly
11/15/2022	L1	L1	Village of Cumberland, SITE 7 2476 DUNSMUIR AVE Monthly
12/07/2022	LT1	LT1	Village of Cumberland, SITE 7 2476 DUNSMUIR AVE Monthly
01/18/2022	LT1	LT1	Village of Cumberland, SITE 8 SOURCE WELL 36425 Monthly
02/09/2022	LT1	LT1	Village of Cumberland, SITE 8 SOURCE WELL 36425 Monthly
03/08/2022	LT1	LT1	Village of Cumberland, SITE 8 SOURCE WELL 36425 Monthly
04/06/2022	LT1	LT1	Village of Cumberland, SITE 8 SOURCE WELL 36425 Monthly
05/03/2022	LT1	LT1	Village of Cumberland, SITE 8 SOURCE WELL 36425 Monthly
06/08/2022	LT1	LT1	Village of Cumberland, SITE 8 SOURCE WELL 36425 Monthly
07/13/2022	LT1	LT1	Village of Cumberland, SITE 8 SOURCE WELL 36425 Monthly
07/18/2022	L1	L1	Village of Cumberland, SITE 8 SOURCE WELL 36425 Monthly
08/09/2022	LT1	LT1	Village of Cumberland, SITE 8 SOURCE WELL 36425 Monthly
09/13/2022	LT1	LT1	Village of Cumberland, SITE 8 SOURCE WELL 36425 Monthly
10/12/2022	LT1	LT1	Village of Cumberland, SITE 8 SOURCE WELL 36425 Monthly
11/14/2022	LT1	LT1	Village of Cumberland, SITE 8 SOURCE WELL 36425 Monthly
12/07/2022	LT1	LT1	Village of Cumberland, SITE 8 SOURCE WELL 36425 Monthly



Your P.O. #: 2019-15
 Your Project #: DRINKING WATER
 Site Location: HENDERSON-RAW
 Your C.O.C. #: WI031496

Attention: Public Works
 VILLAGE OF CUMBERLAND
 PO BOX 340
 CUMBERLAND, BC
 CANADA V0R 1S0

Report Date: 2022/07/22
 Report #: R3204055
 Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C251609

Received: 2022/07/18, 14:01

Sample Matrix: Drinking Water
 # Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity @25C (pp, total), CO ₃ ,HCO ₃ ,OH (1)	1	N/A	2022/07/20	BBY6SOP-00026	SM 23 2320 B m
Chloride/Sulphate by Auto Colourimetry (1)	1	N/A	2022/07/21	BBY6SOP-00011 / BBY6SOP-00017	SM23-4500-Cl/SO4-E m
Colour (True) by Kone Lab (1)	1	N/A	2022/07/19	BBY6SOP-00057	SM 23 2120 C m
Conductivity @25C (1)	1	N/A	2022/07/20	BBY6SOP-00026	SM 23 2510 B m
Fluoride (1)	1	N/A	2022/07/21	BBY6SOP-00048	SM 23 4500-F C m
Hardness Total (calculated as CaCO ₃) (1, 2)	1	N/A	2022/07/20	BBY WI-00033	Auto Calc
Mercury (Total) by CV (1)	1	2022/07/20	2022/07/20	AB SOP-00084	BCMOE BCLM Oct2013 m
Na, K, Ca, Mg, S by CRC ICPMS (total) (1)	1	N/A	2022/07/20	BBY WI-00033	Auto Calc
Elements by CRC ICPMS (total) (1)	1	N/A	2022/07/20	BBY7SOP-00003 / BBY7SOP-00002	EPA 6020b R2 m
Nitrate + Nitrite (N) (1)	1	N/A	2022/07/19	BBY6SOP-00010	SM 23 4500-NO3- I m
Nitrite (N) by CFA (1)	1	N/A	2022/07/19	BBY6SOP-00010	SM 23 4500-NO3- I m
Nitrogen - Nitrate (as N) (1)	1	N/A	2022/07/22	BBY WI-00033	Auto Calc
pH @25°C (1, 3)	1	N/A	2022/07/20	BBY6SOP-00026	SM 23 4500-H+ B m
Total Dissolved Solids (Filt. Residue) (1)	1	2022/07/20	2022/07/21	BBY6SOP-00033	SM 23 2540 C m
Tot Coliform/E.Coli by MF-Chromocult(PW) (1)	1	N/A	2022/07/19	BBY4SOP-00143	Merck KGaA Version 1
Turbidity (1)	1	N/A	2022/07/19	BBY6SOP-00027	SM 23 2130 B m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.



Your P.O. #: 2019-15
 Your Project #: DRINKING WATER
 Site Location: HENDERSON-RAW
 Your C.O.C. #: WI031496

Attention: Public Works
 VILLAGE OF CUMBERLAND
 PO BOX 340
 CUMBERLAND, BC
 CANADA V0R 1S0

Report Date: 2022/07/22
Report #: R3204055
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C251609

Received: 2022/07/18, 14:01

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

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Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Bureau Veritas Vancouver, 4606 Canada Way , Burnaby, BC, V5G 1K5

(2) "Total Hardness" was calculated from Total Ca and Mg concentrations and may be biased high (Hardness, or Dissolved Hardness, calculated from Dissolved Ca and Mg, should be used for compliance if available).

(3) The CCME method requires pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the CCME holding time. Bureau Veritas endeavours to analyze samples as soon as possible after receipt.

Encryption Key



**AUTHORIZED REPORT
 RAPPORT AUTORISÉ**

Bureau Veritas
 22 Jul 2022 15:36:11

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 Customer Solutions, Western Canada Customer Experience Team
 Email: customersolutionswest@bureauveritas.com
 Phone# (833) 282-5227

=====

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BUREAU
VERITAS

Bureau Veritas Job #: C251609
Report Date: 2022/07/22

VILLAGE OF CUMBERLAND
Client Project #: DRINKING WATER
Site Location: HENDERSON-RAW
Your P.O. #: 2019-15

DRINKING WATER PACKAGE (REGULATED)

Bureau Veritas ID					AXL423	
Sampling Date					2022/07/18 11:30	
COC Number					WI031496	
	UNITS	MAC	AO	OG	HENDERSON - RAW	RDL
ANIONS						
Nitrite (N)	mg/L	1	-	-	<0.0050	0.0050
Calculated Parameters						
Total Hardness (CaCO3)	mg/L	-	-	-	11.7	0.50
Nitrate (N)	mg/L	10	-	-	0.038	0.020
Misc. Inorganics						
Conductivity	uS/cm	-	-	-	28	2.0
pH	pH	-	-	7.0:10.5	7.16	N/A
Total Dissolved Solids	mg/L	-	500	-	26	10
Anions						
Alkalinity (PP as CaCO3)	mg/L	-	-	-	<1.0	1.0
Alkalinity (Total as CaCO3)	mg/L	-	-	-	12	1.0
Bicarbonate (HCO3)	mg/L	-	-	-	14	1.0
Carbonate (CO3)	mg/L	-	-	-	<1.0	1.0
Dissolved Fluoride (F)	mg/L	1.5	-	-	<0.050	0.050
Hydroxide (OH)	mg/L	-	-	-	<1.0	1.0
Chloride (Cl)	mg/L	-	250	-	<1.0	1.0
Sulphate (SO4)	mg/L	-	500	-	<1.0	1.0
MISCELLANEOUS						
True Colour	Col. Unit	-	15	-	5.7	5.0
Nutrients						
Nitrate plus Nitrite (N)	mg/L	-	-	-	0.038	0.020
Physical Properties						
Turbidity	NTU	see remark	see remark	see remark	0.25	0.10
Elements						
Total Mercury (Hg)	ug/L	1	-	-	<0.0019	0.0019
Total Metals by ICPMS						
Total Aluminum (Al)	ug/L	2900	-	100	12.2	3.0
Total Antimony (Sb)	ug/L	6	-	-	<0.50	0.50
Total Arsenic (As)	ug/L	10	-	-	<0.10	0.10
Total Barium (Ba)	ug/L	2000	-	-	<1.0	1.0
No Fill	No Exceedance					
Grey	Exceeds 1 criteria policy/level					
Black	Exceeds both criteria/levels					
RDL = Reportable Detection Limit						
N/A = Not Applicable						



BUREAU VERITAS

Bureau Veritas Job #: C251609
 Report Date: 2022/07/22

VILLAGE OF CUMBERLAND
 Client Project #: DRINKING WATER
 Site Location: HENDERSON-RAW
 Your P.O. #: 2019-15

DRINKING WATER PACKAGE (REGULATED)

Bureau Veritas ID					AXL423	
Sampling Date					2022/07/18 11:30	
COC Number					WI031496	
	UNITS	MAC	AO	OG	HENDERSON - RAW	RDL
Total Boron (B)	ug/L	5000	-	-	<50	50
Total Cadmium (Cd)	ug/L	7	-	-	<0.010	0.010
Total Chromium (Cr)	ug/L	50	-	-	<1.0	1.0
Total Cobalt (Co)	ug/L	-	-	-	<0.20	0.20
Total Copper (Cu)	ug/L	2000	1000	-	3.92	0.20
Total Iron (Fe)	ug/L	-	300	-	64.3	5.0
Total Lead (Pb)	ug/L	5	-	-	<0.20	0.20
Total Manganese (Mn)	ug/L	120	20	-	8.2	1.0
Total Molybdenum (Mo)	ug/L	-	-	-	<1.0	1.0
Total Nickel (Ni)	ug/L	-	-	-	<1.0	1.0
Total Selenium (Se)	ug/L	50	-	-	<0.10	0.10
Total Silicon (Si)	ug/L	-	-	-	2180	100
Total Silver (Ag)	ug/L	-	-	-	<0.020	0.020
Total Strontium (Sr)	ug/L	7000	-	-	7.2	1.0
Total Uranium (U)	ug/L	20	-	-	<0.10	0.10
Total Vanadium (V)	ug/L	-	-	-	<5.0	5.0
Total Zinc (Zn)	ug/L	-	5000	-	<5.0	5.0
Total Calcium (Ca)	mg/L	-	-	-	3.24	0.050
Total Magnesium (Mg)	mg/L	-	-	-	0.881	0.050
Total Potassium (K)	mg/L	-	-	-	<0.050	0.050
Total Sodium (Na)	mg/L	-	200	-	0.831	0.050
Total Sulphur (S)	mg/L	-	-	-	<3.0	3.0
Microbiological Param.						
Total Coliforms	CFU/100mL	0	-	-	140	N/A
E. coli	CFU/100mL	0	-	-	26	N/A
No Fill	No Exceedance					
Grey	Exceeds 1 criteria policy/level					
Black	Exceeds both criteria/levels					
RDL = Reportable Detection Limit						
N/A = Not Applicable						



BUREAU
VERITAS

Bureau Veritas Job #: C251609

Report Date: 2022/07/22

VILLAGE OF CUMBERLAND

Client Project #: DRINKING WATER

Site Location: HENDERSON-RAW

Your P.O. #: 2019-15

GENERAL COMMENTS

MAC,AO,OG: The guidelines that have been included in this report have been taken from the Canadian Drinking Water Quality Summary Table, September 2020.

Criteria A = Maximum Acceptable Concentration (MAC) / Criteria B = Aesthetic Objectives (AO) / Criteria C = Operational Guidance Values (OG)
It is recommended to consult these guidelines when interpreting your data since there are non-numerical guidelines that are not included on this report.

Turbidity Guidelines:

1. Chemically assisted filtration: less than or equal to 0.3 NTU in 95% of the measurements or 95% of the time each month. Shall not exceed 1.0 NTU at any time.
2. Slow sand / diatomaceous earth filtration: less than or equal to 1.0 NTU in 95% of the measurements or 95% of the time each month. Shall not exceed 3.0 NTU at any time.
3. Membrane filtration: less than or equal to 0.1 NTU in 99% of the measurements made or at least 99% of the time each calendar month. Shall not exceed 0.3 NTU at any time.
4. To ensure effectiveness of disinfection and for good operation of the distribution system, it is recommended that water entering the distribution system have turbidity levels of 1.0 NTU or less.

Measurement of Uncertainty has not been accounted for when stating conformity to the selected criteria, where applicable.

Results relate only to the items tested.



BUREAU
VERITAS

Bureau Veritas Job #: C251609
Report Date: 2022/07/22

VILLAGE OF CUMBERLAND
Client Project #: DRINKING WATER
Site Location: HENDERSON-RAW
Your P.O. #: 2019-15

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

David Huang, M.Sc., P.Chem., QP, Scientific Services Manager

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Your P.O. #: 2019-15
 Your Project #: DRINKING WATER
 Site Location: SITE #8 WELL
 Your C.O.C. #: WI031691

Attention: Public Works
 VILLAGE OF CUMBERLAND
 PO BOX 340
 CUMBERLAND, BC
 CANADA V0R 1S0

Report Date: 2022/07/22
 Report #: R3204248
 Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C251606

Received: 2022/07/18, 14:01

Sample Matrix: Drinking Water
 # Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity @25C (pp, total), CO ₃ ,HCO ₃ ,OH (1)	1	N/A	2022/07/20	BBY6SOP-00026	SM 23 2320 B m
Chloride/Sulphate by Auto Colourimetry (1)	1	N/A	2022/07/21	BBY6SOP-00011 / BBY6SOP-00017	SM23-4500-Cl/SO4-E m
Colour (True) by Kone Lab (1)	1	N/A	2022/07/19	BBY6SOP-00057	SM 23 2120 C m
Conductivity @25C (1)	1	N/A	2022/07/20	BBY6SOP-00026	SM 23 2510 B m
Fluoride (1)	1	N/A	2022/07/22	BBY6SOP-00048	SM 23 4500-F C m
Hardness Total (calculated as CaCO ₃) (1, 2)	1	N/A	2022/07/20	BBY WI-00033	Auto Calc
Mercury (Total) by CV (1)	1	2022/07/20	2022/07/20	AB SOP-00084	BCMOE BCLM Oct2013 m
Na, K, Ca, Mg, S by CRC ICPMS (total) (1)	1	N/A	2022/07/20	BBY WI-00033	Auto Calc
Elements by CRC ICPMS (total) (1)	1	N/A	2022/07/20	BBY7SOP-00003 / BBY7SOP-00002	EPA 6020b R2 m
Nitrate + Nitrite (N) (1)	1	N/A	2022/07/19	BBY6SOP-00010	SM 23 4500-NO3- I m
Nitrite (N) by CFA (1)	1	N/A	2022/07/19	BBY6SOP-00010	SM 23 4500-NO3- I m
Nitrogen - Nitrate (as N) (1)	1	N/A	2022/07/22	BBY WI-00033	Auto Calc
pH @25°C (1, 3)	1	N/A	2022/07/20	BBY6SOP-00026	SM 23 4500-H+ B m
Total Dissolved Solids (Filt. Residue) (1)	1	2022/07/20	2022/07/21	BBY6SOP-00033	SM 23 2540 C m
Tot Coliform/E.Coli by MF-Chromocult(PW) (1)	1	N/A	2022/07/19	BBY4SOP-00143	Merck KGaA Version 1
Turbidity (1)	1	N/A	2022/07/19	BBY6SOP-00027	SM 23 2130 B m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.



Your P.O. #: 2019-15
 Your Project #: DRINKING WATER
 Site Location: SITE #8 WELL
 Your C.O.C. #: WI031691

Attention: Public Works
 VILLAGE OF CUMBERLAND
 PO BOX 340
 CUMBERLAND, BC
 CANADA V0R 1S0

Report Date: 2022/07/22
Report #: R3204248
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C251606

Received: 2022/07/18, 14:01

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

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Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Bureau Veritas Vancouver, 4606 Canada Way, Burnaby, BC, V5G 1K5

(2) "Total Hardness" was calculated from Total Ca and Mg concentrations and may be biased high (Hardness, or Dissolved Hardness, calculated from Dissolved Ca and Mg, should be used for compliance if available).

(3) The CCME method requires pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the CCME holding time. Bureau Veritas endeavours to analyze samples as soon as possible after receipt.

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Bureau Veritas
 22 Jul 2022 18:48:40

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 Customer Solutions, Western Canada Customer Experience Team
 Email: customersolutionswest@bureauveritas.com
 Phone# (833) 282-5227

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BUREAU
VERITAS

Bureau Veritas Job #: C251606
Report Date: 2022/07/22

VILLAGE OF CUMBERLAND
Client Project #: DRINKING WATER
Site Location: SITE #8 WELL
Your P.O. #: 2019-15

DRINKING WATER PACKAGE (REGULATED)

Bureau Veritas ID					AXL420	
Sampling Date					2022/07/18 12:00	
COC Number					W1031691	
	UNITS	MAC	AO	OG	SITE #8 WELL	RDL
ANIONS						
Nitrite (N)	mg/L	1	-	-	<0.0050	0.0050
Calculated Parameters						
Total Hardness (CaCO3)	mg/L	-	-	-	32.0	0.50
Nitrate (N)	mg/L	10	-	-	0.041	0.020
Misc. Inorganics						
Conductivity	uS/cm	-	-	-	110	2.0
pH	pH	-	-	7.0:10.5	7.45	N/A
Total Dissolved Solids	mg/L	-	500	-	72	10
Anions						
Alkalinity (PP as CaCO3)	mg/L	-	-	-	<1.0	1.0
Alkalinity (Total as CaCO3)	mg/L	-	-	-	36	1.0
Bicarbonate (HCO3)	mg/L	-	-	-	44	1.0
Carbonate (CO3)	mg/L	-	-	-	<1.0	1.0
Dissolved Fluoride (F)	mg/L	1.5	-	-	<0.050	0.050
Hydroxide (OH)	mg/L	-	-	-	<1.0	1.0
Chloride (Cl)	mg/L	-	250	-	11	1.0
Sulphate (SO4)	mg/L	-	500	-	3.1	1.0
MISCELLANEOUS						
True Colour	Col. Unit	-	15	-	<5.0	5.0
Nutrients						
Nitrate plus Nitrite (N)	mg/L	-	-	-	0.041	0.020
Physical Properties						
Turbidity	NTU	see remark	see remark	see remark	<0.10	0.10
Elements						
Total Mercury (Hg)	ug/L	1	-	-	<0.0019	0.0019
Total Metals by ICPMS						
Total Aluminum (Al)	ug/L	2900	-	100	<3.0	3.0
Total Antimony (Sb)	ug/L	6	-	-	<0.50	0.50
Total Arsenic (As)	ug/L	10	-	-	<0.10	0.10
Total Barium (Ba)	ug/L	2000	-	-	1.4	1.0
No Fill	No Exceedance					
Grey	Exceeds 1 criteria policy/level					
Black	Exceeds both criteria/levels					
RDL = Reportable Detection Limit						
N/A = Not Applicable						



Bureau Veritas Job #: C251606
 Report Date: 2022/07/22

VILLAGE OF CUMBERLAND
 Client Project #: DRINKING WATER
 Site Location: SITE #8 WELL
 Your P.O. #: 2019-15

DRINKING WATER PACKAGE (REGULATED)

Bureau Veritas ID					AXL420	
Sampling Date					2022/07/18 12:00	
COC Number					WIC31691	
	UNITS	MAC	AO	OG	SITE #8 WELL	RDL
Total Boron (B)	ug/L	5000	-	-	200	50
Total Cadmium (Cd)	ug/L	7	-	-	<0.010	0.010
Total Chromium (Cr)	ug/L	50	-	-	<1.0	1.0
Total Cobalt (Co)	ug/L	-	-	-	<0.20	0.20
Total Copper (Cu)	ug/L	2000	1000	-	<0.20	0.20
Total Iron (Fe)	ug/L	-	300	-	<5.0	5.0
Total Lead (Pb)	ug/L	5	-	-	<0.20	0.20
Total Manganese (Mn)	ug/L	120	20	-	<1.0	1.0
Total Molybdenum (Mo)	ug/L	-	-	-	<1.0	1.0
Total Nickel (Ni)	ug/L	-	-	-	<1.0	1.0
Total Selenium (Se)	ug/L	50	-	-	<0.10	0.10
Total Silicon (Si)	ug/L	-	-	-	5520	100
Total Silver (Ag)	ug/L	-	-	-	<0.020	0.020
Total Strontium (Sr)	ug/L	7000	-	-	27.7	1.0
Total Uranium (U)	ug/L	20	-	-	<0.10	0.10
Total Vanadium (V)	ug/L	-	-	-	<5.0	5.0
Total Zinc (Zn)	ug/L	-	5000	-	<5.0	5.0
Total Calcium (Ca)	mg/L	-	-	-	8.93	0.050
Total Magnesium (Mg)	mg/L	-	-	-	2.36	0.050
Total Potassium (K)	mg/L	-	-	-	0.267	0.050
Total Sodium (Na)	mg/L	-	200	-	9.49	0.050
Total Sulphur (S)	mg/L	-	-	-	<3.0	3.0
Microbiological Param.						
Total Coliforms	CFU/100mL	0	-	-	0	N/A
E. coli	CFU/100mL	0	-	-	0	N/A
No Fill	No Exceedance					
Grey	Exceeds 1 criteria policy/level					
Black	Exceeds both criteria/levels					
RDL = Reportable Detection Limit						
N/A = Not Applicable						



BUREAU
VERITAS

Bureau Veritas Job #: C251606
Report Date: 2022/07/22

VILLAGE OF CUMBERLAND
Client Project #: DRINKING WATER
Site Location: SITE #8 WELL
Your P.O. #: 2019-15

GENERAL COMMENTS

MAC,AO,OG: The guidelines that have been included in this report have been taken from the Canadian Drinking Water Quality Summary Table, September 2020.

Criteria A = Maximum Acceptable Concentration (MAC) / Criteria B = Aesthetic Objectives (AO) / Criteria C = Operational Guidance Values (OG)
It is recommended to consult these guidelines when interpreting your data since there are non-numerical guidelines that are not included on this report.

Turbidity Guidelines:

1. Chemically assisted filtration: less than or equal to 0.3 NTU in 95% of the measurements or 95% of the time each month. Shall not exceed 1.0 NTU at any time.
2. Slow sand / diatomaceous earth filtration: less than or equal to 1.0 NTU in 95% of the measurements or 95% of the time each month. Shall not exceed 3.0 NTU at any time.
3. Membrane filtration: less than or equal to 0.1 NTU in 99% of the measurements made or at least 99% of the time each calendar month. Shall not exceed 0.3 NTU at any time.
4. To ensure effectiveness of disinfection and for good operation of the distribution system, it is recommended that water entering the distribution system have turbidity levels of 1.0 NTU or less.

Measurement of Uncertainty has not been accounted for when stating conformity to the selected criteria, where applicable.

Results relate only to the items tested.



BUREAU
VERITAS

Bureau Veritas Job #: C251606

Report Date: 2022/07/22

VILLAGE OF CUMBERLAND
Client Project #: DRINKING WATER
Site Location: SITE #8 WELL
Your P.O. #: 2019-15

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

David Huang, M.Sc., P.Chem., QP, Scientific Services Manager

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Your P.O. #: 2019-15
 Your Project #: DRINKING WATER
 Site Location: ALLEN LAKE
 Your C.O.C. #: W/031690

Attention: Public Works
 VILLAGE OF CUMBERLAND
 PO BOX 340
 CUMBERLAND, BC
 CANADA V0R 1S0

Report Date: 2022/07/22
 Report #: R3204250
 Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C251603

Received: 2022/07/18, 14:01

Sample Matrix: Drinking Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity @25C (pp, total), CO ₃ ,HCO ₃ ,OH (1)	1	N/A	2022/07/20	BBY6SOP-00026	SM 23 2320 B m
Chloride/Sulphate by Auto Colourimetry (1)	1	N/A	2022/07/21	BBY6SOP-00011 / BBY6SOP-00017	SM23-4500-Cl/SO4-E m
Colour (True) by Kone Lab (1)	1	N/A	2022/07/19	BBY6SOP-00057	SM 23 2120 C m
Conductivity @25C (1)	1	N/A	2022/07/20	BBY6SOP-00026	SM 23 2510 B m
Fluoride (1)	1	N/A	2022/07/22	BBY6SOP-00048	SM 23 4500-F C m
Hardness Total (calculated as CaCO ₃) (1, 2)	1	N/A	2022/07/20	BBY WI-00033	Auto Calc
Mercury (Total) by CV (1)	1	2022/07/20	2022/07/20	AB SOP-00084	BCMOE BCLM Oct2013 m
Na, K, Ca, Mg, S by CRC ICPMS (total) (1)	1	N/A	2022/07/20	BBY WI-00033	Auto Calc
Elements by CRC ICPMS (total) (1)	1	N/A	2022/07/20	BBY7SOP-00003 / BBY7SOP-00002	EPA 6020b R2 m
Nitrate + Nitrite (N) (1)	1	N/A	2022/07/19	BBY6SOP-00010	SM 23 4500-NO3- I m
Nitrite (N) by CFA (1)	1	N/A	2022/07/19	BBY6SOP-00010	SM 23 4500-NO3- I m
Nitrogen - Nitrate (as N) (1)	1	N/A	2022/07/22	BBY WI-00033	Auto Calc
pH @25°C (1, 3)	1	N/A	2022/07/20	BBY6SOP-00026	SM 23 4500-H+ B m
Total Dissolved Solids (Filt. Residue) (1)	1	2022/07/21	2022/07/22	BBY6SOP-00033	SM 23 2540 C m
Tot Coliform/E.Coli by MF-Chromocult(PW) (1)	1	N/A	2022/07/19	BBY4SOP-00143	Merck KGaA Version 1
Turbidity (1)	1	N/A	2022/07/19	BBY6SOP-00027	SM 23 2130 B m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.



Your P.O. #: 2019-15
Your Project #: DRINKING WATER
Site Location: ALLEN LAKE
Your C.O.C. #: WI031690

Attention: Public Works

VILLAGE OF CUMBERLAND
PO BOX 340
CUMBERLAND, BC
CANADA V0R 1S0

Report Date: 2022/07/22
Report #: R3204250
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C251603

Received: 2022/07/18, 14:01

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Bureau Veritas Vancouver, 4606 Canada Way, Burnaby, BC, V5G 1K5

(2) "Total Hardness" was calculated from Total Ca and Mg concentrations and may be biased high (Hardness, or Dissolved Hardness, calculated from Dissolved Ca and Mg, should be used for compliance if available).

(3) The CCME method requires pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the CCME holding time. Bureau Veritas endeavours to analyze samples as soon as possible after receipt.

Encryption Key



Bureau Veritas
22 Jul 2022 18:49:51

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Customer Solutions, Western Canada Customer Experience Team

Email: customersolutionswest@bureauveritas.com

Phone# (833) 282-5227

=====
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For Service Group specific validation please refer to the Validation Signature Page.



BUREAU VERITAS

Bureau Veritas Job #: C251603
 Report Date: 2022/07/22

VILLAGE OF CUMBERLAND
 Client Project #: DRINKING WATER
 Site Location: ALLEN LAKE
 Your P.O. #: 2019-15

DRINKING WATER PACKAGE (REGULATED)

Bureau Veritas ID					AXL408	
Sampling Date					2022/07/18 11:45	
COC Number					WI031690	
	UNITS	MAC	AO	OG	ALLEN LAKE	RDL
ANIONS						
Nitrite (N)	mg/L	1	-	-	<0.0050	0.0050
Calculated Parameters						
Total Hardness (CaCO3)	mg/L	-	-	-	12.2	0.50
Nitrate (N)	mg/L	10	-	-	<0.020	0.020
Misc. Inorganics						
Conductivity	uS/cm	-	-	-	29	2.0
pH	pH	-	-	7.0:10.5	7.10	N/A
Total Dissolved Solids	mg/L	-	500	-	22	10
Anions						
Alkalinity (PP as CaCO3)	mg/L	-	-	-	<1.0	1.0
Alkalinity (Total as CaCO3)	mg/L	-	-	-	12	1.0
Bicarbonate (HCO3)	mg/L	-	-	-	15	1.0
Carbonate (CO3)	mg/L	-	-	-	<1.0	1.0
Dissolved Fluoride (F)	mg/L	1.5	-	-	<0.050	0.050
Hydroxide (OH)	mg/L	-	-	-	<1.0	1.0
Chloride (Cl)	mg/L	-	250	-	1.1	1.0
Sulphate (SO4)	mg/L	-	500	-	<1.0	1.0
MISCELLANEOUS						
True Colour	Col. Unit	-	15	-	5.9	5.0
Nutrients						
Nitrate plus Nitrite (N)	mg/L	-	-	-	<0.020	0.020
Physical Properties						
Turbidity	NTU	see remark	see remark	see remark	0.64	0.10
Elements						
Total Mercury (Hg)	ug/L	1	-	-	<0.0019	0.0019
Total Metals by ICPMS						
Total Aluminum (Al)	ug/L	2900	-	100	5.2	3.0
Total Antimony (Sb)	ug/L	6	-	-	<0.50	0.50
Total Arsenic (As)	ug/L	10	-	-	<0.10	0.10
Total Barium (Ba)	ug/L	2000	-	-	<1.0	1.0
Total Boron (B)	ug/L	5000	-	-	<50	50
No Fill	No Exceedance					
Grey	Exceeds 1 criteria policy/level					
Black	Exceeds both criteria/levels					
RDL = Reportable Detection Limit						
N/A = Not Applicable						



VERITAS

Bureau Veritas Job #: C251603
 Report Date: 2022/07/22

VILLAGE OF CUMBERLAND
 Client Project #: DRINKING WATER
 Site Location: ALLEN LAKE
 Your P.O. #: 2019-15

DRINKING WATER PACKAGE (REGULATED)

Bureau Veritas ID					AXL408	
Sampling Date					2022/07/18 11:45	
COC Number					WI031690	
	UNITS	MAC	AO	OG	ALLEN LAKE	RDL
Total Cadmium (Cd)	ug/L	7	-	-	<0.010	0.010
Total Chromium (Cr)	ug/L	50	-	-	<1.0	1.0
Total Cobalt (Co)	ug/L	-	-	-	<0.20	0.20
Total Copper (Cu)	ug/L	2000	1000	-	10.0	0.20
Total Iron (Fe)	ug/L	-	300	-	149	5.0
Total Lead (Pb)	ug/L	5	-	-	<0.20	0.20
Total Manganese (Mn)	ug/L	120	20	-	43.7	1.0
Total Molybdenum (Mo)	ug/L	-	-	-	<1.0	1.0
Total Nickel (Ni)	ug/L	-	-	-	<1.0	1.0
Total Selenium (Se)	ug/L	50	-	-	<0.10	0.10
Total Silicon (Si)	ug/L	-	-	-	2650	100
Total Silver (Ag)	ug/L	-	-	-	<0.020	0.020
Total Strontium (Sr)	ug/L	7000	-	-	7.5	1.0
Total Uranium (U)	ug/L	20	-	-	<0.10	0.10
Total Vanadium (V)	ug/L	-	-	-	<5.0	5.0
Total Zinc (Zn)	ug/L	-	5000	-	7.4	5.0
Total Calcium (Ca)	mg/L	-	-	-	3.24	0.050
Total Magnesium (Mg)	mg/L	-	-	-	0.985	0.050
Total Potassium (K)	mg/L	-	-	-	0.061	0.050
Total Sodium (Na)	mg/L	-	200	-	1.11	0.050
Total Sulphur (S)	mg/L	-	-	-	<3.0	3.0
Microbiological Param.						
Total Coliforms	CFU/100mL	0	-	-	240	N/A
E. coli	CFU/100mL	0	-	-	0	N/A
No Fill	No Exceedance					
Grey	Exceeds 1 criteria policy/level					
Red	Exceeds both criteria/levels					
RDL = Reportable Detection Limit						
N/A = Not Applicable						



BUREAU
VERITAS

Bureau Veritas Job #: C251603

Report Date: 2022/07/22

VILLAGE OF CUMBERLAND

Client Project #: DRINKING WATER

Site Location: ALLEN LAKE

Your P.O. #: 2019-15

GENERAL COMMENTS

MAC,AO,OG: The guidelines that have been included in this report have been taken from the Canadian Drinking Water Quality Summary Table, September 2020.

Criteria A = Maximum Acceptable Concentration (MAC) / Criteria B = Aesthetic Objectives (AO) / Criteria C = Operational Guidance Values (OG)
It is recommended to consult these guidelines when interpreting your data since there are non-numerical guidelines that are not included on this report.

Turbidity Guidelines:

1. Chemically assisted filtration: less than or equal to 0.3 NTU in 95% of the measurements or 95% of the time each month. Shall not exceed 1.0 NTU at any time.
2. Slow sand / diatomaceous earth filtration: less than or equal to 1.0 NTU in 95% of the measurements or 95% of the time each month. Shall not exceed 3.0 NTU at any time.
3. Membrane filtration: less than or equal to 0.1 NTU in 99% of the measurements made or at least 99% of the time each calendar month. Shall not exceed 0.3 NTU at any time.
4. To ensure effectiveness of disinfection and for good operation of the distribution system, it is recommended that water entering the distribution system have turbidity levels of 1.0 NTU or less.

Measurement of Uncertainty has not been accounted for when stating conformity to the selected criteria, where applicable.

Results relate only to the items tested.



BUREAU VERITAS

Bureau Veritas Job #: C251603
Report Date: 2022/07/22

VILLAGE OF CUMBERLAND
Client Project #: DRINKING WATER
Site Location: ALLEN LAKE
Your P.O. #: 2019-15

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

A handwritten signature in black ink, appearing to read "D. Huang", written over a horizontal line.

David Huang, M.Sc., P.Chem., QP, Scientific Services Manager

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Your P.O. #: 2019-15
 Your Project #: DRINKING WATER
 Site Location: SITE# 3 (TREATED)
 Your C.O.C. #: WI031833

Attention: Public Works

VILLAGE OF CUMBERLAND
 PO BOX 340
 CUMBERLAND, BC
 CANADA V0R 1S0

Report Date: 2022/08/12
Report #: R3215373
 Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C258089

Received: 2022/08/08, 11:28

Sample Matrix: Drinking Water
 # Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity @25C (pp, total), CO ₃ ,HCO ₃ ,OH (1)	1	N/A	2022/08/09	BBY6SOP-00026	SM 23 2320 B m
Chloride/Sulphate by Auto Colourimetry (1)	1	N/A	2022/08/11	BBY6SOP-00011 / BBY6SOP-00017	SM23-4500-Cl/SO4-E m
Colour (True) by Kone Lab (1)	1	N/A	2022/08/10	BBY6SOP-00057	SM 23 2120 C m
Conductivity @25C (1)	1	N/A	2022/08/09	BBY6SOP-00026	SM 23 2510 B m
Fluoride (1)	1	N/A	2022/08/09	BBY6SOP-00048	SM 23 4500-F C m
Hardness Total (calculated as CaCO ₃) (1, 2)	1	N/A	2022/08/10	BBY WI-00033	Auto Calc
Mercury (Total) by CV (1)	1	2022/08/10	2022/08/10	AB SOP-00084	BCMOE BCLM Oct2013 m
Na, K, Ca, Mg, S by CRC ICPMS (total) (1)	1	N/A	2022/08/10	BBY WI-00033	Auto Calc
Elements by CRC ICPMS (total) (1)	1	N/A	2022/08/10	BBY7SOP-00003 / BBY7SOP-00002	EPA 6020b R2 m
Nitrate + Nitrite (N) (1)	1	N/A	2022/08/09	BBY6SOP-00010	SM 23 4500-NO3- I m
Nitrite (N) by CFA (1)	1	N/A	2022/08/09	BBY6SOP-00010	SM 23 4500-NO3- I m
Nitrogen - Nitrate (as N) (1)	1	N/A	2022/08/10	BBY WI-00033	Auto Calc
pH @25°C (1, 3)	1	N/A	2022/08/09	BBY6SOP-00026	SM 23 4500-H+ B m
Total Dissolved Solids (Filt. Residue) (1)	1	2022/08/11	2022/08/12	BBY6SOP-00033	SM 23 2540 C m
Tot Coliform/E.Coli by MF-Chromocult(PW) (1)	1	N/A	2022/08/09	BBY4SOP-00143	Merck KGaA Version 1
Turbidity (1)	1	N/A	2022/08/09	BBY6SOP-00027	SM 23 2130 B m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.



Your P.O. #: 2019-15
Your Project #: DRINKING WATER
Site Location: SITE# 3 (TREATED)
Your C.O.C. #: WI031833

Attention: Public Works
VILLAGE OF CUMBERLAND
PO BOX 340
CUMBERLAND, BC
CANADA V0R 1S0

Report Date: 2022/08/12
Report #: R3215373
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C258089
Received: 2022/08/08, 11:28

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested. This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

- (1) This test was performed by Bureau Veritas Vancouver, 4606 Canada Way , Burnaby, BC, V5G 1K5
- (2) "Total Hardness" was calculated from Total Ca and Mg concentrations and may be biased high (Hardness, or Dissolved Hardness, calculated from Dissolved Ca and Mg, should be used for compliance if available).
- (3) The CCME method requires pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the CCME holding time. Bureau Veritas endeavours to analyze samples as soon as possible after receipt.

Encryption Key



AUTHORIZED REPORT
RAPPORT AUTORISÉ

Bureau Veritas
12 Aug 2022 16:50:57

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Customer Solutions, Western Canada Customer Experience Team
Email: customersolutionswest@bureauveritas.com
Phone# (833) 282-5227

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For Service Group specific validation please refer to the Validation Signature Page.



BUREAU VERITAS

Bureau Veritas Job #: C258089
 Report Date: 2022/08/12

VILLAGE OF CUMBERLAND
 Client Project #: DRINKING WATER
 Site Location: SITE# 3 (TREATED)
 Your P.O. #: 2019-15

DRINKING WATER PACKAGE (REGULATED)

Bureau Veritas ID					AZA410	
Sampling Date					2022/08/08 11:15	
COC Number					WI031833	
	UNITS	MAC	AO	OG	SITE #3 (TREATED)	RDL
ANIONS						
Nitrite (N)	mg/L	1	-	-	<0.0050	0.0050
Calculated Parameters						
Total Hardness (CaCO3)	mg/L	-	-	-	19.9	0.50
Nitrate (N)	mg/L	10	-	-	0.029	0.020
Misc. Inorganics						
Conductivity	uS/cm	-	-	-	59	2.0
pH	pH	-	-	7.0:10.5	7.00	N/A
Total Dissolved Solids	mg/L	-	500	-	96	10
Anions						
Alkalinity (PP as CaCO3)	mg/L	-	-	-	<1.0	1.0
Alkalinity (Total as CaCO3)	mg/L	-	-	-	23	1.0
Bicarbonate (HCO3)	mg/L	-	-	-	28	1.0
Carbonate (CO3)	mg/L	-	-	-	<1.0	1.0
Dissolved Fluoride (F)	mg/L	1.5	-	-	<0.050	0.050
Hydroxide (OH)	mg/L	-	-	-	<1.0	1.0
Chloride (Cl)	mg/L	-	250	-	6.3	1.0
Sulphate (SO4)	mg/L	-	500	-	1.2	1.0
MISCELLANEOUS						
True Colour	Col. Unit	-	15	-	<5.0	5.0
Nutrients						
Nitrate plus Nitrite (N)	mg/L	-	-	-	0.029	0.020
Physical Properties						
Turbidity	NTU	see remark	see remark	see remark	0.39	0.10
Elements						
Total Mercury (Hg)	ug/L	1	-	-	<0.0019	0.0019
Total Metals by ICPMS						
Total Aluminum (Al)	ug/L	2900	-	100	3.9	3.0
Total Antimony (Sb)	ug/L	6	-	-	<0.50	0.50
Total Arsenic (As)	ug/L	10	-	-	<0.10	0.10
Total Barium (Ba)	ug/L	2000	-	-	1.0	1.0
No Fill	No Exceedance					
Grey	Exceeds 1 criteria policy/level					
Black	Exceeds both criteria/levels					
RDL = Reportable Detection Limit						
N/A = Not Applicable						



BUREAU VERITAS

Bureau Veritas Job #: C258089
 Report Date: 2022/08/12

VILLAGE OF CUMBERLAND
 Client Project #: DRINKING WATER
 Site Location: SITE# 3 (TREATED)
 Your P.O. #: 2019-15

DRINKING WATER PACKAGE (REGULATED)

Bureau Veritas ID					AZA410	
Sampling Date					2022/08/08 11:15	
COC Number					W1031833	
	UNITS	MAC	AO	OG	SITE #3 (TREATED)	RDL
Total Boron (B)	ug/L	5000	-	-	65	50
Total Cadmium (Cd)	ug/L	7	-	-	<0.010	0.010
Total Chromium (Cr)	ug/L	50	-	-	<1.0	1.0
Total Cobalt (Co)	ug/L	-	-	-	<0.20	0.20
Total Copper (Cu)	ug/L	2000	1000	-	31.0	0.20
Total Iron (Fe)	ug/L	-	300	-	135	5.0
Total Lead (Pb)	ug/L	5	-	-	0.70	0.20
Total Manganese (Mn)	ug/L	120	20	-	11.6	1.0
Total Molybdenum (Mo)	ug/L	-	-	-	<1.0	1.0
Total Nickel (Ni)	ug/L	-	-	-	<1.0	1.0
Total Selenium (Se)	ug/L	50	-	-	<0.10	0.10
Total Silicon (Si)	ug/L	-	-	-	3580	100
Total Silver (Ag)	ug/L	-	-	-	<0.020	0.020
Total Strontium (Sr)	ug/L	7000	-	-	15.2	1.0
Total Uranium (U)	ug/L	20	-	-	<0.10	0.10
Total Vanadium (V)	ug/L	-	-	-	<5.0	5.0
Total Zinc (Zn)	ug/L	-	5000	-	11.0	5.0
Total Calcium (Ca)	mg/L	-	-	-	5.59	0.050
Total Magnesium (Mg)	mg/L	-	-	-	1.44	0.050
Total Potassium (K)	mg/L	-	-	-	0.161	0.050
Total Sodium (Na)	mg/L	-	200	-	5.59	0.050
Total Sulphur (S)	mg/L	-	-	-	<3.0	3.0
Microbiological Param.						
Total Coliforms	CFU/100mL	0	-	-	0	N/A
E. coli	CFU/100mL	0	-	-	0	N/A
No Fill	No Exceedance					
Grey	Exceeds 1 criteria policy/level					
Black	Exceeds both criteria/levels					
RDL = Reportable Detection Limit						
N/A = Not Applicable						



BUREAU
VERITAS

Bureau Veritas Job #: C258089
Report Date: 2022/08/12

VILLAGE OF CUMBERLAND
Client Project #: DRINKING WATER
Site Location: SITE# 3 (TREATED)
Your P.O. #: 2019-15

GENERAL COMMENTS

MAC,AO,OG: The guidelines that have been included in this report have been taken from the Canadian Drinking Water Quality Summary Table, September 2020.

Criteria A = Maximum Acceptable Concentration (MAC) / Criteria B = Aesthetic Objectives (AO) / Criteria C = Operational Guidance Values (OG)
It is recommended to consult these guidelines when interpreting your data since there are non-numerical guidelines that are not included on this report.

Turbidity Guidelines:

1. Chemically assisted filtration: less than or equal to 0.3 NTU in 95% of the measurements or 95% of the time each month. Shall not exceed 1.0 NTU at any time.
2. Slow sand / diatomaceous earth filtration: less than or equal to 1.0 NTU in 95% of the measurements or 95% of the time each month. Shall not exceed 3.0 NTU at any time.
3. Membrane filtration: less than or equal to 0.1 NTU in 99% of the measurements made or at least 99% of the time each calendar month. Shall not exceed 0.3 NTU at any time.
4. To ensure effectiveness of disinfection and for good operation of the distribution system, it is recommended that water entering the distribution system have turbidity levels of 1.0 NTU or less.

Measurement of Uncertainty has not been accounted for when stating conformity to the selected criteria, where applicable.

Results relate only to the items tested.



BUREAU
VERITAS

Bureau Veritas Job #: C258089

Report Date: 2022/08/12

VILLAGE OF CUMBERLAND

Client Project #: DRINKING WATER

Site Location: SITE# 3 (TREATED)

Your P.O. #: 2019-15

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

David Huang, M.Sc., P.Chem., QP, Scientific Services Manager

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Your P.O. #: 2019-15
 Your Project #: DRINKING WATER
 Site Location: SITE# 3
 Your C.O.C. #: 08496944

Attention: Public Works
 VILLAGE OF CUMBERLAND
 PO BOX 340
 CUMBERLAND, BC
 CANADA V0R 1S0

Report Date: 2022/01/26
Report #: R3126610
 Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C203191

Received: 2022/01/19, 11:07

Sample Matrix: Drinking Water
 # Samples Received: 1

Analyses	Date		Laboratory Method	Analytical Method
	Quantity Extracted	Date Analyzed		
Total Trihalomethanes Calculation (1)	1	N/A	2022/01/26 BBY WI-00033	Auto Calc
Carbon (Total Organic) (2, 3)	1	N/A	2022/01/24 AB SOP-00087	MMCW 119 1996 m
VOCs, VH, F1, LH in Water by HS GC/MS (1)	1	N/A	2022/01/25 BBY8SOP-00009 / BBY8SOP-00011 / BBY8SOP-00012	BCMOE BCLM Jul2017 m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

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Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Bureau Veritas Vancouver, 4606 Canada Way, Burnaby, BC, V5G 1K5

(2) This test was performed by Bureau Veritas Calgary, 4000 - 19 St., Calgary, AB, T2E 6P8

(3) TOC present in the sample should be considered as non-purgeable TOC.



Your P.O. #: 2019-15
Your Project #: DRINKING WATER
Site Location: SITE# 3
Your C.O.C. #: 08496944

Attention: Public Works
VILLAGE OF CUMBERLAND
PO BOX 340
CUMBERLAND, BC
CANADA V0R 1S0

Report Date: 2022/01/26
Report #: R3126610
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C203191
Received: 2022/01/19, 11:07

Encryption Key



Bureau Veritas
26 Jan 2022 14:24:30

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Customer Solutions, Western Canada Customer Experience Team
Email: customersolutionswest@bureauveritas.com
Phone# (833) 282-5227

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BUREAU
VERITAS

Bureau Veritas Job #: C203191
Report Date: 2022/01/26

VILLAGE OF CUMBERLAND
Client Project #: DRINKING WATER
Site Location: SITE# 3
Your P.O. #: 2019-15
Sampler Initials: SP

RESULTS OF CHEMICAL ANALYSES OF DRINKING WATER

Bureau Veritas ID		ANF727	
Sampling Date		2022/01/19 10:30	
COC Number		08496944	
	UNITS	SITE 3	RDL
Misc. Inorganics			
Total Organic Carbon (C)	mg/L	1.0	0.50
RDL = Reportable Detection Limit			



BUREAU
VERITAS

Bureau Veritas Job #: C203191
Report Date: 2022/01/26

VILLAGE OF CUMBERLAND
Client Project #: DRINKING WATER
Site Location: SITE# 3
Your P.O. #: 2019-15
Sampler Initials: SP

TRIHALOMETHANES (THM) IN WATER

Bureau Veritas ID			ANF727	
Sampling Date			2022/01/19 10:30	
COC Number			08496944	
	UNITS	MAC	SITE 3	RDL
Volatiles				
Total Trihalomethanes	ug/L	100	27	1.0
Bromodichloromethane	ug/L	-	1.1	1.0
Bromoform	ug/L	-	<1.0	1.0
Dibromochloromethane	ug/L	-	<1.0	1.0
Chloroform	ug/L	-	26	1.0
Surrogate Recovery (%)				
1,4-Difluorobenzene (sur.)	%	-	105	
4-Bromofluorobenzene (sur.)	%	-	89	
D4-1,2-Dichloroethane (sur.)	%	-	99	
No Fill	No Exceedance			
Grey	Exceeds 1 criteria policy/level			
Black	Exceeds both criteria/levels			
RDL = Reportable Detection Limit				



GENERAL COMMENTS

MAC: The guidelines that have been included in this report have been taken from the Canadian Drinking Water Quality Summary Table, September 2020.

Criteria A = Maximum Acceptable Concentration (MAC) / Criteria B = Aesthetic Objectives (AO) / Criteria C = Operational Guidance Values (OG)
It is recommended to consult these guidelines when interpreting your data since there are non-numerical guidelines that are not included on this report.

Turbidity Guidelines:

1. Chemically assisted filtration: less than or equal to 0.3 NTU in 95% of the measurements or 95% of the time each month. Shall not exceed 1.0 NTU at any time.
2. Slow sand / diatomaceous earth filtration: less than or equal to 1.0 NTU in 95% of the measurements or 95% of the time each month. Shall not exceed 3.0 NTU at any time.
3. Membrane filtration: less than or equal to 0.1 NTU in 99% of the measurements made or at least 99% of the time each calendar month. Shall not exceed 0.3 NTU at any time.
4. To ensure effectiveness of disinfection and for good operation of the distribution system, it is recommended that water entering the distribution system have turbidity levels of 1.0 NTU or less.

Measurement of Uncertainty has not been accounted for when stating conformity to the selected criteria, where applicable.

Results relate only to the items tested.



BUREAU
VERITAS

Bureau Veritas Job #: C203191
Report Date: 2022/01/26

VILLAGE OF CUMBERLAND
Client Project #: DRINKING WATER
Site Location: SITE# 3
Your P.O. #: 2019-15
Sampler Initials: SP

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

David Huang, M.Sc., P.Chem., QP, Scientific Services Manager

Sze Yeung Fock, B.Sc., Scientific Specialist

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Your P.O. #: 2019-15
 Your Project #: DRINKING WATER
 Site Location: SITE #3
 Your C.O.C. #: 08504751

Attention: Public Works
 VILLAGE OF CUMBERLAND
 PO BOX 340
 CUMBERLAND, BC
 CANADA V0R 1S0

Report Date: 2022/04/07
Report #: R3157943
 Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C221691
Received: 2022/04/04, 13:35

Sample Matrix: Drinking Water
 # Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Total Coliform & E.Coli by MF-Chromocult (1)	1	N/A	2022/04/05	BBY4SOP-00143	Merck KGaA Version 1
Total Trihalomethanes Calculation (1)	1	N/A	2022/04/07	BBY WI-00033	Auto Calc
Carbon (Total Organic) (2, 3)	1	N/A	2022/04/07	AB SOP-00087	MMCW 119 1996 m
VOCs, VH, F1, LH in Water by HS GC/MS (1)	1	N/A	2022/04/07	BBY8SOP-00009 / BBY8SOP-00011 / BBY8SOP-00012	BCMOE BCLM Jul2017 m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

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Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Bureau Veritas Vancouver, 4606 Canada Way, Burnaby, BC, V5G 1K5

(2) This test was performed by Bureau Veritas Calgary, 4000 - 19 St., Calgary, AB, T2E 6P8

(3) TOC present in the sample should be considered as non-purgeable TOC.



Your P.O. #: 2019-15
Your Project #: DRINKING WATER
Site Location: SITE #3
Your C.O.C. #: 08504751

Attention: Public Works
VILLAGE OF CUMBERLAND
PO BOX 340
CUMBERLAND, BC
CANADA V0R 1S0

Report Date: 2022/04/07
Report #: R3157943
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C221691

Received: 2022/04/04, 13:35

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Bureau Veritas
07 Apr 2022 18:52:41

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Customer Solutions, Western Canada Customer Experience Team
Email: customersolutionswest@bureauveritas.com
Phone# (833) 282-5227

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BUREAU
VERITAS

Bureau Veritas Job #: C221691
Report Date: 2022/04/07

VILLAGE OF CUMBERLAND
Client Project #: DRINKING WATER
Site Location: SITE #3
Your P.O. #: 2019-15

RESULTS OF CHEMICAL ANALYSES OF DRINKING WATER

Bureau Veritas ID		ARA011	
Sampling Date		2022/04/04 13:00	
COC Number		08504751	
	UNITS	SITE #3	RDL
Misc. Inorganics			
Total Organic Carbon (C)	mg/L	1.5	0.50
RDL = Reportable Detection Limit			



Bureau Veritas Job #: C221691
 Report Date: 2022/04/07

VILLAGE OF CUMBERLAND
 Client Project #: DRINKING WATER
 Site Location: SITE #3
 Your P.O. #: 2019-15

MICROBIOLOGY (DRINKING WATER)

Bureau Veritas ID			ARA011
Sampling Date			2022/04/04 13:00
COC Number			08504751
	UNITS	MAC	SITE #3
Microbiological Param.			
Total Coliforms	CFU/100mL	0	0
E. coli	CFU/100mL	0	0
No Fill	No Exceedance		
Grey	Exceeds 1 criteria policy/level		
Black	Exceeds both criteria/levels		



BUREAU
VERITAS

Bureau Veritas Job #: C221691
Report Date: 2022/04/07

VILLAGE OF CUMBERLAND
Client Project #: DRINKING WATER
Site Location: SITE #3
Your P.O. #: 2019-15

TRIHALOMETHANES (THM) IN WATER

Bureau Veritas ID			ARA011	
Sampling Date			2022/04/04 13:00	
COC Number			08504751	
	UNITS	MAC	SITE #3	RDL
Volatiles				
Total Trihalomethanes	ug/L	100	36	1.0
Bromodichloromethane	ug/L	-	<1.0	1.0
Bromoform	ug/L	-	<1.0	1.0
Dibromochloromethane	ug/L	-	<1.0	1.0
Chloroform	ug/L	-	36	1.0
Surrogate Recovery (%)				
1,4-Difluorobenzene (sur.)	%	-	95	
4-Bromofluorobenzene (sur.)	%	-	77	
D4-1,2-Dichloroethane (sur.)	%	-	86	
No Fill	No Exceedance			
Grey	Exceeds 1 criteria policy/level			
Black	Exceeds both criteria/levels			
RDL = Reportable Detection Limit				



BUREAU VERITAS
VERITAS

Bureau Veritas Job #: C221691
Report Date: 2022/04/07

VILLAGE OF CUMBERLAND
Client Project #: DRINKING WATER
Site Location: SITE #3
Your P.O. #: 2019-15

GENERAL COMMENTS

MAC: The guidelines that have been included in this report have been taken from the Canadian Drinking Water Quality Summary Table, September 2020.

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Turbidity Guidelines:

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2. Slow sand / diatomaceous earth filtration: less than or equal to 1.0 NTU in 95% of the measurements or 95% of the time each month. Shall not exceed 3.0 NTU at any time.
3. Membrane filtration: less than or equal to 0.1 NTU in 99% of the measurements made or at least 99% of the time each calendar month. Shall not exceed 0.3 NTU at any time.
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BUREAU
VERITAS

Bureau Veritas Job #: C221691

Report Date: 2022/04/07

VILLAGE OF CUMBERLAND

Client Project #: DRINKING WATER

Site Location: SITE #3

Your P.O. #: 2019-15

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

David Huang, M.Sc., P.Chem., QP, Scientific Services Manager



100% Accuracy Guaranteed
100% Client Satisfaction Guaranteed
100% Compliance to the Bureau Veritas

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Your P.O. #: 2019-15
 Your Project #: DRINKING WATER
 Site Location: SITE #3
 Your C.O.C. #: 08505165

Attention: Public Works
 VILLAGE OF CUMBERLAND
 PO BOX 340
 CUMBERLAND, BC
 CANADA V0R 1S0

Report Date: 2022/07/18
Report #: R3201222
 Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C249820

Received: 2022/07/12, 13:35

Sample Matrix: Drinking Water
 # Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Total Trihalomethanes Calculation (1)	1	N/A	2022/07/15	BBY WI-00033	Auto Calc
Carbon (Total Organic) (2, 3)	1	N/A	2022/07/17	AB SOP-00087	MMCW 119 1996 m
VOCs, VH, F1, LH in Water by HS GC/MS (1)	1	N/A	2022/07/15	BBY8SOP-00009 / BBY8SOP-00011 / BBY8SOP-00012	BCMOE BCLM Jul2017 m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

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Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Bureau Veritas Vancouver, 4606 Canada Way , Burnaby, BC, V5G 1K5

(2) This test was performed by Bureau Veritas Calgary, 4000 - 19 St. , Calgary, AB, T2E 6P8

(3) TOC present in the sample should be considered as non-purgeable TOC.



Your P.O. #: 2019-15
Your Project #: DRINKING WATER
Site Location: SITE #3
Your C.O.C. #: 08505165

Attention: Public Works
VILLAGE OF CUMBERLAND
PO BOX 340
CUMBERLAND, BC
CANADA V0R 1S0

Report Date: 2022/07/18
Report #: R3201222
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C249820

Received: 2022/07/12, 13:35

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Bureau Veritas

18 Jul 2022 10:33:36

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Customer Solutions, Western Canada Customer Experience Team
Email: customersolutionswest@bureauveritas.com
Phone# (833) 282-5227

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BUREAU VERITAS

Bureau Veritas Job #: C249820

Report Date: 2022/07/18

VILLAGE OF CUMBERLAND

Client Project #: DRINKING WATER

Site Location: SITE #3

Your P.O. #: 2019-15

RESULTS OF CHEMICAL ANALYSES OF DRINKING WATER

Bureau Veritas ID		AXA510	
Sampling Date		2022/07/12 11:30	
COC Number		08505165	
	UNITS	SITE #3	RDL
Misc. Inorganics			
Total Organic Carbon (C)	mg/L	1.0	0.50
RDL = Reportable Detection Limit			



BUREAU VERITAS

Bureau Veritas Job #: C249820
Report Date: 2022/07/18

VILLAGE OF CUMBERLAND
Client Project #: DRINKING WATER
Site Location: SITE #3
Your P.O. #: 2019-15

TRIHALOMETHANES (THM) IN WATER

Bureau Veritas ID			AXA510	
Sampling Date			2022/07/12 11:30	
COC Number			08505165	
	UNITS	MAC	SITE #3	RDL
Volatiles				
Total Trihalomethanes	ug/L	100	29	1.0
Bromodichloromethane	ug/L	-	1.2	1.0
Bromoform	ug/L	-	<1.0	1.0
Dibromochloromethane	ug/L	-	<1.0	1.0
Chloroform	ug/L	-	28	1.0
Surrogate Recovery (%)				
1,4-Difluorobenzene (sur.)	%	-	105	
4-Bromofluorobenzene (sur.)	%	-	71	
D4-1,2-Dichloroethane (sur.)	%	-	87	
No Fill	No Exceedance			
Grey	Exceeds 1 criteria policy/level			
Black	Exceeds both criteria/levels			
RDL = Reportable Detection Limit				



VERITAS

Bureau Veritas Job #: C249820
Report Date: 2022/07/18

VILLAGE OF CUMBERLAND
Client Project #: DRINKING WATER
Site Location: SITE #3
Your P.O. #: 2019-15

GENERAL COMMENTS

MAC: The guidelines that have been included in this report have been taken from the Canadian Drinking Water Quality Summary Table, September 2020.

Criteria A = Maximum Acceptable Concentration (MAC) / Criteria B = Aesthetic Objectives (AO) / Criteria C = Operational Guidance Values (OG)
It is recommended to consult these guidelines when interpreting your data since there are non-numerical guidelines that are not included on this report.

Turbidity Guidelines:

1. Chemically assisted filtration: less than or equal to 0.3 NTU in 95% of the measurements or 95% of the time each month. Shall not exceed 1.0 NTU at any time.
2. Slow sand / diatomaceous earth filtration: less than or equal to 1.0 NTU in 95% of the measurements or 95% of the time each month. Shall not exceed 3.0 NTU at any time.
3. Membrane filtration: less than or equal to 0.1 NTU in 99% of the measurements made or at least 99% of the time each calendar month. Shall not exceed 0.3 NTU at any time.
4. To ensure effectiveness of disinfection and for good operation of the distribution system, it is recommended that water entering the distribution system have turbidity levels of 1.0 NTU or less.

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Results relate only to the items tested.



Bureau Veritas Job #: C249820
Report Date: 2022/07/18

VILLAGE OF CUMBERLAND
Client Project #: DRINKING WATER
Site Location: SITE #3
Your P.O. #: 2019-15

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

David Huang, M.Sc., P.Chem., QP, Scientific Services Manager

Sze Yeung Fock, B.Sc., Scientific Specialist

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Your P.O. #: 2019-15
 Your Project #: DRINKING WATER
 Site Location: SITE #3
 Your C.O.C. #: 08514108

Attention: Public Works
 VILLAGE OF CUMBERLAND
 PO BOX 340
 CUMBERLAND, BC
 CANADA V0R 1S0

Report Date: 2022/10/12
Report #: R3246429
 Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C277035

Received: 2022/10/04, 11:25

Sample Matrix: Drinking Water
 # Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Total Trihalomethanes Calculation (1)	1	N/A	2022/10/11	BBY WI-00033	Auto Calc
Carbon (Total Organic) (2, 3)	1	N/A	2022/10/08	AB SOP-00087	MMCW 119 1996 m
VOCs, VH, F1, LH in Water by HS GC/MS (1)	1	N/A	2022/10/09	BBY8SOP-00009 / BBY8SOP-00011 / BBY8SOP-00012	BCMOE BCLM Jul2017 m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Bureau Veritas Vancouver, 4606 Canada Way , Burnaby, BC, V5G 1K5

(2) This test was performed by Bureau Veritas Calgary, 4000 - 19 St. , Calgary, AB, T2E 6P8

(3) TOC present in the sample should be considered as non-purgeable TOC.



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Encryption Key



AUTHORIZED REPORT
RAPPORT AUTORISÉ

Bureau Veritas
12 Oct 2022 09:22:29

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Customer Solutions, Western Canada Customer Experience Team
Email: customersolutionswest@bureauveritas.com
Phone# (833) 282-5227

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BUREAU VERITAS

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RESULTS OF CHEMICAL ANALYSES OF DRINKING WATER

Bureau Veritas ID		BDM465	
Sampling Date		2022/10/04 11:00	
COC Number		08514108	
	UNITS	SITE 3	RDL
Misc. Inorganics			
Total Organic Carbon (C)	mg/L	0.84	0.50
RDL = Reportable Detection Limit			




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TRIHALOMETHANES (THM) IN WATER

Bureau Veritas ID			BDM465	
Sampling Date			2022/10/04 11:00	
COC Number			08514108	
	UNITS	MAC	SITE 3	RDL
Volatiles				
Total Trihalomethanes	ug/L	100	40	1.0
Bromodichloromethane	ug/L	-	2.4	1.0
Bromoform	ug/L	-	1.0	1.0
Dibromochloromethane	ug/L	-	1.1	1.0
Chloroform	ug/L	-	35	1.0
Surrogate Recovery (%)				
1,4-Difluorobenzene (sur.)	%	-	103	
4-Bromofluorobenzene (sur.)	%	-	89	
D4-1,2-Dichloroethane (sur.)	%	-	102	
No Fill	No Exceedance			
Grey	Exceeds 1 criteria policy/level			
	Exceeds both criteria/levels			
RDL = Reportable Detection Limit				



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GENERAL COMMENTS

MAC: The guidelines that have been included in this report have been taken from the Canadian Drinking Water Quality Summary Table, September 2020.

Criteria A = Maximum Acceptable Concentration (MAC) / Criteria B = Aesthetic Objectives (AO) / Criteria C = Operational Guidance Values (OG)
It is recommended to consult these guidelines when interpreting your data since there are non-numerical guidelines that are not included on this report.

Turbidity Guidelines:

1. Chemically assisted filtration: less than or equal to 0.3 NTU in 95% of the measurements or 95% of the time each month. Shall not exceed 1.0 NTU at any time.
 2. Slow sand / diatomaceous earth filtration: less than or equal to 1.0 NTU in 95% of the measurements or 95% of the time each month. Shall not exceed 3.0 NTU at any time.
 3. Membrane filtration: less than or equal to 0.1 NTU in 99% of the measurements made or at least 99% of the time each calendar month. Shall not exceed 0.3 NTU at any time.
 4. To ensure effectiveness of disinfection and for good operation of the distribution system, it is recommended that water entering the distribution system have turbidity levels of 1.0 NTU or less.
- Measurement of Uncertainty has not been accounted for when stating conformity to the selected criteria, where applicable.

Results relate only to the items tested.



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2022 Water Quality Concerns | Village of Cumberland

Date	Location	Concern	Cause	Actions/Recommendations
8-Jul-22	2502 Lindale	Water filter requires more frequent changing (less than 1 month) than Fanny Bay	New to town so didn't understand our water system. Simon explained how it all works.	Simon spoke with resident and explained our water system.
21-Sep-22	Union Road	Dirty water	Major water main tie-in and reconfig for new development at 3025 Cumberland Road	Flushed water mains after tie in completed on the 21st. Had to continue flushing on the 22nd.
13-Oct-22	3353 Westwood	Metallic taste last two days	Cumberland Creek Res low. Switch over to Allen Lake	Explained Allen Lake switch to resident. Safe to drink.
13-Oct-22	3302 Seventh Street	Dark brown water, made her vomit	Cumberland Creek Res low. Switch over to Allen Lake. No fire practice. Possible unauthorized use of hydrant by contractor?	Explained possible reasons. Safe to drink. Call back if happens again.
2-Nov-22	2591 Derwent Ave	Discoloured water, even after running a bathtub full.	Unexplained draw on the water system that eventually ceased.	Run until clear. Large draw on system stopped.
10-Nov-22	2596 Derwent Ave	Discoloured water, has been running for 10 minutes	Watermain repair near 2591 Derwent Ave.	Main flushed for 20 minutes
15-Nov-22	Windermere Ave	Discoloured water	Hydrant maintenance	Ran tap, now clear

Watermain/Service Leak Report | 2022 | Village of Cumberland

Date	Street	Address	Pipe Size	Pipe Type	Leak Type	Probable Cause	Repair Details
27-Jan-22	Penrith	2706	100	Steel	Hole in pipe	Age	SS Repair clamp
18-Feb-22	Penrith	2639	19	Plastic	Hole in pipe	Uncertain	SS Repair clamp
13-Apr-22	Maryport	Between 2nd and 3rd	100	Steel	Holes in pipe	Age	SS Repair clamp
19-Apr-22	Maryport	Between 2nd and 3rd	100	Steel	Holes in pipe	Age	Cut out section installed new plastic piece
28-Jun-22	Cumberland Rd	4712	12.7	Copper	Hole in pipe	Poor bedding	Brass coupling
05-Nov-22	Penrith	2699	100	Steel	Holes in pipe	Age	SS Repair clamp
08-Nov-22	Derwent	2591	50	Steel	Holes in pipe to blow off	Poor quality parts/install	Remove and replace with new fittings
22-Nov-22	Windermere	2747	100	Steel	Holes in pipe	Age	SS Repair clamp
12-Dec-22	Dunsmuir	2621	19	Copper	Blown gasket in comp fitting	Bad install?	Cut out section installed new plastic piece
16-Dec-22	Penrith	2687	100	Steel	Hole in pipe and lead joint	Age	Cut out section installed new plastic piece
22-Dec-22	Penrith	2750	12.7	Copper	Hole in flare fitting	Age	Cut out section installed new plastic piece