

# REGIONAL DISTRICT OF NANAIMO

## Water Service Area Annual Report 2022



## Whiskey Creek Water Service Area

June 2023



**REGIONAL DISTRICT OF NANAIMO**

*Water Services Department*

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## Table of Contents

1.	Introduction.....	2
2.	Whiskey Creek Water System .....	2
2.1	Source Water .....	2
2.2	Reservoirs.....	2
2.3	Distribution System.....	2
3.	Water Sampling and Testing Program.....	2
4.	Water Quality - Source Water and Distribution System .....	2
5.	Water Quality Inquiries and Complaints .....	2
6.	Water Consumption .....	3
7.	Maintenance Program.....	4
8.	Operator Certification .....	4
9.	Water Service Area Projects.....	5
9.1	2022 Completed Studies & Projects.....	5
9.2	2023 Proposed Projects & Upgrades.....	5
10.	Emergency Response & Contingency Plan .....	6
11.	Supply Security.....	6
12.	Cross Connection Control.....	6
13.	Cyber Security .....	7
14.	Closing .....	7

Appendix A - Map of Whiskey Creek Water Service Area

Appendix B - Water Quality Testing Results

Appendix C - Emergency Response & Contingency Plan

## 1.0 Introduction

The following annual report describes the Whiskey Creek Water Service Area and summarizes the water quality and production data from 2022. This report also includes a summary of inquiries and complaints, completed and proposed maintenance activities, Operator Certification, the Emergency Response & Contingency Plan, and the Cross Connection Control Program.

This report is to be submitted to Island Health by the spring of 2023.

## 2.0 Whiskey Creek Water System

The Whiskey Creek water system was constructed in the 1970s and was initially operated by the subdivision developer, Westerlea Estates Ltd. The water system is located eight kilometres southwest of Qualicum Beach on the south side of Highway 4. There are 130 residential lots connected to the water system. In January 2011, the ownership and operation of the Whiskey Creek Water District was transferred to the RDN. A map of the Whiskey Creek Water Service Area is provided in Appendix A for reference.

### 2.1 Source Water

Two water licenses allowed surface water to be extracted from nearby Crocker Creek for over 45 years. Water from Crocker Creek was temporarily stored in a raw water storage pond and wet well on Hebert Road. The water was dosed with a polymer, pumped through a pressure filter, chlorinated, and stored in a reservoir. Drinking water was then pumped into the water system via two booster pumps.

A permanent groundwater source has been found as a better quality and more reliable water supply for the service area. In 2020, two test wells were drilled near Carson Road and source approval was received from Island Health. By the fall of 2021, a temporary overland groundwater supply line was installed and the switch was made from surface to groundwater sourcing. The location and depth of the permanent well supply infrastructure to the water storage reservoir is being designed in 2022, and will be installed by 2023. A permanent emergency backup generator is available in the event of a power failure.

### 2.2 Reservoirs

One service reservoir (concrete) is present at 979 Poplar Way and has a capacity of 195 m<sup>3</sup> (43,000 imperial gallons).

### 2.3 Distribution System

The water distribution system in Whiskey Creek is summarized in the table below. There are 9 fire hydrants and 4 flush-outs in the system, though the hydrants will eventually be removed as fire protection is provided via tanker service for this area.

Watermain Material	Length of mains in Whiskey Creek Water Service Area	Prevalence in Water Service Area
<u>Asbestos-concrete:</u> 100mm or smaller	1,280 m	40%
150mm or larger	1,920 m	60%

### 3.0 Water Sampling and Testing Program

Water sampling and testing is carried out weekly in the distribution system. The following table includes a summary of all testing:

Timing	Location	Tests
Weekly	BC Centre for Disease Control	Total coliforms, E.Coli
Weekly	RDN (in-house) Laboratory	Total coliforms, E.Coli Temperature, pH, Conductivity, TDS, Chlorine residual, Salinity
Monthly	RDN (in-house) Laboratory	Raw water UVT, Bacteria (total-coliform and e.coli)
Quarterly	Bureau Veritas	Raw water PH sampling
Monthly	BC Centre for Disease Control	Raw water bacteria (total coliform and e.coli)
Annual Source Water Testing (every Fall)	Bureau Veritas	Complete potability testing of raw source water
Annual System Water Testing (every Spring)	Bureau Veritas	Complete potability testing of distribution system water

### 4.0 Water Quality - Source Water and Distribution System

Up-to-date water quality reports and lab data are posted monthly on the RDN website at [www.rdn.bc.ca/whiskey-creek](http://www.rdn.bc.ca/whiskey-creek). Tables of water quality testing results for both the source water and distribution system are provided at the end of this report under Appendix B.

### 5.0 Water Quality Inquiries and Complaints

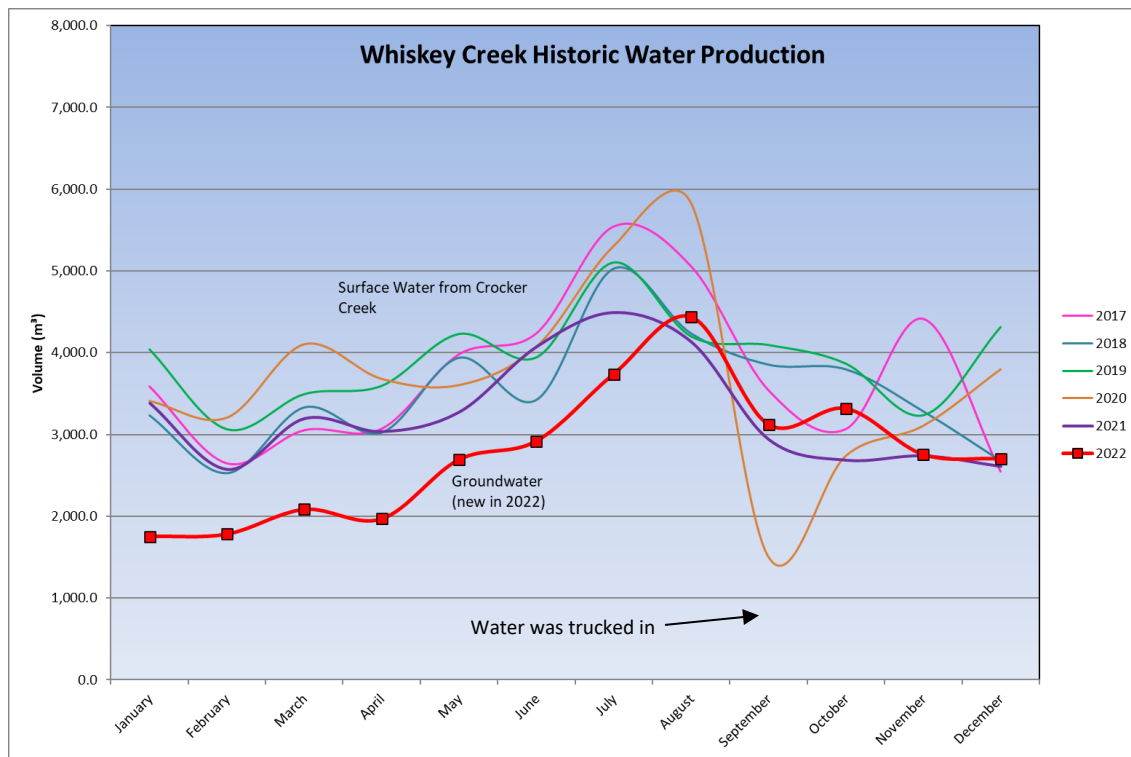
A few inquiries were received from the Whiskey Creek water service area in 2022 and were typically related to water billing and seasonal restrictions.

A summary of the water system incidents in 2022 is given in the table below.

Activity in 2022	Date(s)	History/Notes
Boil Water Advisories	None	None
High Turbidity Events	None	None
Equipment Malfunction	None	None
Water Main Breaks	None	None
Pump Failures	Monthly	Temp power outages

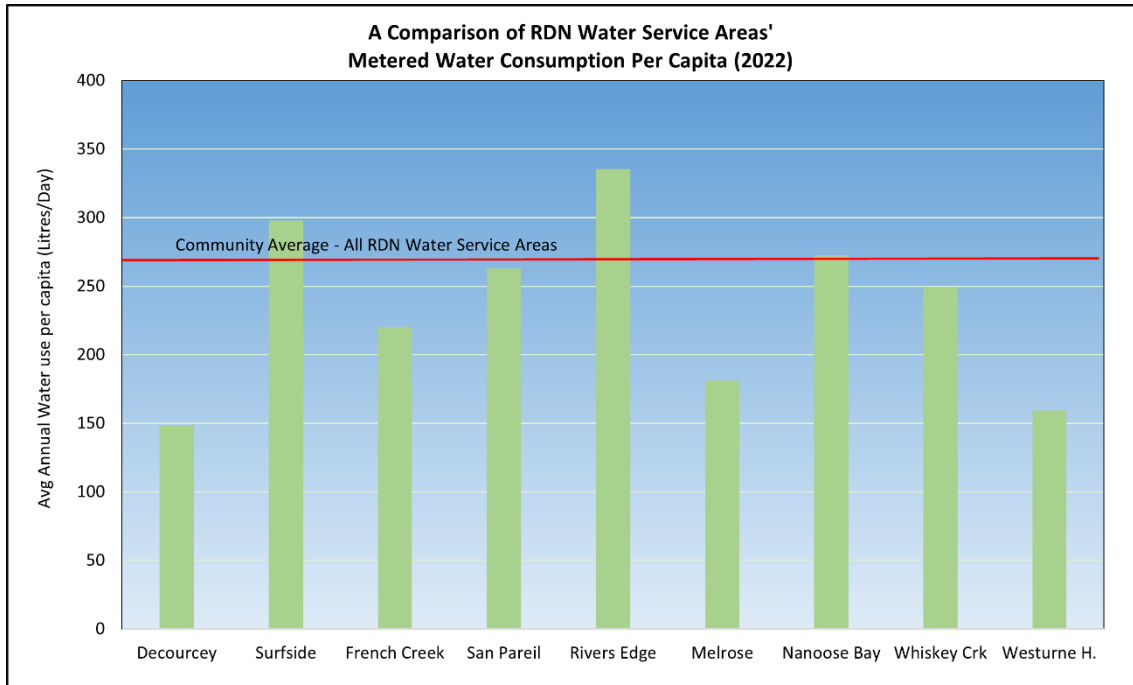
### 6.0 Water Production and Consumption

Monthly water production for the Whiskey Creek Water Service Area for the past 6 years is shown in the chart below, which captures the new groundwater sourcing for the service area. Water production in 2022 was below average in comparison to previous years.



#### Consumption

In the Fall/Winter of 2022, the average usage per home in Whiskey Creek was 0.52 cubic metres per day (114.4 imperial gallons). In the summer, the average water usage was 0.76 cubic metres per day (167.2 imperial gallons). Based on these figures, the annual consumption per capita is estimated to be 249 L/day (based on 2.4 people/household). This consumption is *7% less* than the RDN system average of 321 L/day/capita in 2022.



## 7.0 Maintenance Program

Daily pump station inspections are carried out to reduce or eliminate the risk of contamination and system failure, and to ensure the consistent application of chlorine for treatment purposes. Watermains are flushed once annually in the spring. Fire hydrants (9) are serviced once per year (either 'A-level' or 'B-level' maintenance) in the fall. Twenty-four hour on-call coverage is in place to respond to water system emergencies and alarms.

Fire hydrants in the Whiskey Creek water system cannot be relied on for fire insurance purposes due to insufficient supply and capacity for fire flows.

## 8.0 Operator Certification

The Regional District Water & Utility Services staff are comprised of one Manager, one Project Engineer, one Engineering Technologist, one Engineering Technician, one Chief Operator, and seven certified operators.

The operators receive ongoing training and certification in:

- ✓ Water Treatment
- ✓ Water Distribution
- ✓ Wastewater Collection
- ✓ Cross Connection Control
- ✓ Asbestos Awareness
- ✓ Chlorine Handling
- ✓ WHMIS (Workplace Hazardous Material Information System)
- ✓ TDG (Transportation of Dangerous Goods)
- ✓ Confined Space Awareness
- ✓ Fall Protection
- ✓ First Aid
- ✓ Silica Awareness

## 9.0 Water Service Area Projects

### 9.1 2022 Completed Studies & Projects

- Design and begin transmission main and pump station upgrades;
- Complete water reservoir structural assessment;
- Cleaned water storage reservoir;
- Corresponded with residents regarding water conservation;
- Utilized leak detection equipment and tracking;
- Set new water rates structure based on rewarding conservation;
- Followed Cross Connection Control program to reduce backflow prevention risks;
- Enforced outdoor sprinkling regulations;
- Advised residents regarding water leak repairs;
- Continued the 2021-2030 Water Conservation Plan;
- Completed regular watermain flushing and hydrant maintenance;
- Maintained a high level of water quality;
- Continued quality control through regular testing and monitoring of water system;
- Implement Phase 2 Water Systems SCADA Master Plan; and
- Continued valve maintenance program.

### 9.2 2023 Proposed Projects & Upgrades

- Complete transmission main and pump station upgrades;
- Complete irrigation checks for high-water users;
- Begin billing for metered consumption based on revised water rates;
- Continue watermain flushing program and hydrant maintenance;
- Continue leak detection equipment utilization program;
- Investigate new watermain flushing and metering procedures to promote conservation;
- Continue valve maintenance program;
- Continue the 2021-2030 DWWP Water Conservation Plan; and
- Continue to offer numerous water-saving incentives via rebates.



**Poplar Way in  
Whiskey Creek**

## 10.0 Emergency Response & Contingency Plan

The Regional District Emergency Response & Contingency Plan (ERCP) contains procedures and contact information to efficiently respond to water system emergencies such as contamination of water supply, loss of supply, pump failure, and drought management. The ERCP was reviewed and updated in 2022, and copies are available on our website, at each RDN office, in each pumphouse, and in each Water Services vehicle. A copy of the ERCP is also attached to this report in Appendix C.



Water Source Area Protection sign on Hebert Rd.

## 11.0 Supply Security

The RDN continues to effectively manage water supply in its service areas in response to ongoing demand and the effects of climate change. Most RDN water service areas are not expected to expand, so growth in demand is not expected. Initiatives that provide resiliency for the groundwater sources that serve residents remain a high priority. Reservoir capacity and redundancy are reviewed with regards to water storage during periods of drought, and water from backup sources is available to be delivered in the case of an emergency. Groundwater quality is regularly tested in all RDN water service areas. The aquifers within the regional district are monitored through the RDN's Drinking Water and Watershed Protection (DWWP) program. The most sustainable way to protect water supply is through demand management (conservation), which is promoted through outreach and stewardship initiatives provided by the RDN's Team WaterSmart, as well as the RDN Water Service Area's Water Conservation Plan 2020-2030. Rebates for well water testing, water smart landscaping, and rainwater harvesting further assist RDN residents to reduce water usage in high demand seasons. A new tiered system for water rates taking effect in 2023 will help promote conservation by rewarding low water users with reduced rates and encouraging high water users to seek ways to use less. Additional planning and preparation initiatives will be introduced in the future to support water supply security.

## 12.0 Cross Connection Control

The RDN's Cross Connection Control Program was put in place to protect the public health by reducing the risk of contaminants flowing back into the public water supply. The RDN Manager of Water Services is the designated Cross Connection Control Manager.

The RDN's Cross Connection Control Program addresses cross connection threats through operating policies and procedures, as well as assisting customers with backflow preventer selection, installation, testing, maintenance and reporting. The program receives its authority from *RDN Cross Connection Control Regulation Bylaw No. 1788*, and the *British Columbia Building Code, Part 7*, which requires that potable water be protected from contamination. Additionally,



a webpage has been established at <https://rdn.bc.ca/cross-connection-control-program> to educate RDN water service customers about cross connection hazards, and lists the relevant links to current standards and resources. Two of the RDN's water system operators received certification as backflow assembly testers through the British Columbia Water & Waste Association (BCWWA).

### 13.0 Cyber Security

The RDN uses a multi-level approach to cyber-security. Corporate network security is employed via a universal threat management gateway that implements various methods of data security, which includes daily definition updates to block known cyber threats. In addition, all RDN PC's are protected with anti-virus software. RDN water systems are connected to the corporate network via IP-Sec VPN's for remote management by information technology and equipment operators. Future infrastructure upgrades will see our water systems located on segregated networks to limit the vulnerability from cybersecurity threats.

### 14.0 Closing

An annual report for the year 2023 will be prepared and submitted to Island Health in the spring of 2024. Annual reports are also available on our website at: [www.rdn.bc.ca/whiskey-creek](http://www.rdn.bc.ca/whiskey-creek).



Land clearing and well site construction in Whiskey Creek

**APPENDIX A**

**MAP OF WHISKEY CREEK**

**WATER SERVICE AREA**

WHISKEY CREEK WATER SERVICE AREA



## **APPENDIX B**

### **WATER QUALITY TESTING RESULTS**

# WHISKEY CREEK WATER SERVICE AREA



## Facility Location:

979 Poplar Way, Qualicum Beach

**Facility Information:** Facility Type: 15-300 connections DWC

## Facility Sampling History:

<u>Date Collected</u>	<u>Total Coliform</u>	<u>Total E. Coli</u>	<u>Site Name</u>
01/18/2022	LT1	LT1	3533 Hebert Road
02/16/2022	LT1	LT1	3533 Hebert Road
03/16/2022	LT1	LT1	3533 Hebert Road
04/20/2022	LT1	LT1	3533 Hebert Road
05/16/2022	LT1	LT1	3533 Hebert Road
06/15/2022	LT1	LT1	3533 Hebert Road
07/19/2022	LT1	LT1	3533 Hebert Road
08/16/2022	LT1	LT1	3533 Hebert Road
09/21/2022	LT1	LT1	3533 Hebert Road
10/17/2022	LT1	LT1	3533 Hebert Road
11/14/2022	LT1	LT1	3533 Hebert Road
12/14/2022	LT1	LT1	3533 Hebert Road
01/05/2022	QRWRT	QRWRT	3537 Harris Crescent
01/18/2022	LT1	LT1	3537 Harris Crescent
02/02/2022	LT1	LT1	3537 Harris Crescent
03/02/2022	LT1	LT1	3537 Harris Crescent
04/05/2022	LT1	LT1	3537 Harris Crescent
05/04/2022	LT1	LT1	3537 Harris Crescent
06/20/2022	LT1	LT1	3537 Harris Crescent
07/06/2022	LT1	LT1	3537 Harris Crescent
08/02/2022	LT1	LT1	3537 Harris Crescent
09/07/2022	LT1	LT1	3537 Harris Crescent
10/05/2022	LT1	LT1	3537 Harris Crescent
11/02/2022	LT1	LT1	3537 Harris Crescent
12/05/2022	LT1	LT1	3537 Harris Crescent
01/25/2022	LT1	LT1	3564 Foxglove Road
02/23/2022	LT1	LT1	3564 Foxglove Road
03/23/2022	LT1	LT1	3564 Foxglove Road
04/25/2022	LT1	LT1	3564 Foxglove Road

05/25/2022	LT1	LT1	3564 Foxglove Road
06/08/2022	LT1	LT1	3564 Foxglove Road
07/26/2022	LT1	LT1	3564 Foxglove Road
08/24/2022	LT1	LT1	3564 Foxglove Road
09/27/2022	LT1	LT1	3564 Foxglove Road
10/26/2022	LT1	LT1	3564 Foxglove Road
11/21/2022	LT1	LT1	3564 Foxglove Road
02/08/2022	LT1	LT1	844 Carson Road
03/08/2022	LT1	LT1	844 Carson Road
04/13/2022	LT1	LT1	844 Carson Road
06/01/2022	LT1	LT1	844 Carson Road
07/13/2022	LT1	LT1	844 Carson Road
08/09/2022	LT1	LT1	844 Carson Road
09/14/2022	LT1	LT1	844 Carson Road
10/12/2022	LT1	LT1	844 Carson Road
11/07/2022	LT1	LT1	844 Carson Road
12/14/2022	LT1	LT1	844 Carson Road
01/18/2022	LT1	LT1	Temporary Overland Water Main
01/25/2022	LT1	LT1	Temporary Overland Water Main
02/02/2022	LT1	LT1	Temporary Overland Water Main
02/08/2022	LT1	LT1	Temporary Overland Water Main
02/16/2022	LT1	LT1	Temporary Overland Water Main
02/23/2022	LT1	LT1	Temporary Overland Water Main
03/02/2022	LT1	LT1	Temporary Overland Water Main
03/08/2022	LT1	LT1	Temporary Overland Water Main
03/16/2022	LT1	LT1	Temporary Overland Water Main
03/23/2022	LT1	LT1	Temporary Overland Water Main
03/29/2022	LT1	LT1	Temporary Overland Water Main
04/05/2022	LT1	LT1	Temporary Overland Water Main
04/13/2022	LT1	LT1	Temporary Overland Water Main
04/20/2022	LT1	LT1	Temporary Overland Water Main
04/25/2022	LT1	LT1	Temporary Overland Water Main
05/04/2022	LT1	LT1	Temporary Overland Water Main
05/10/2022	LT1	LT1	Temporary Overland Water Main
05/16/2022	LT1	LT1	Temporary Overland Water Main
06/01/2022	LT1	LT1	Temporary Overland Water Main
06/15/2022	LT1	LT1	Temporary Overland Water Main
07/06/2022	LT1	LT1	Temporary Overland Water Main
08/02/2022	LT1	LT1	Temporary Overland Water Main
09/07/2022	LT1	LT1	Temporary Overland Water Main

10/12/2022	LT1	LT1	Temporary Overland Water Main
11/02/2022	LT1	LT1	Temporary Overland Water Main
12/05/2022	LT1	LT1	Temporary Overland Water Main
03/16/2022	LT1	LT1	WHISKEY CREEK TREATED
03/23/2022	LT1	LT1	WHISKEY CREEK TREATED
04/25/2022	LT1	LT1	WHISKEY CREEK TREATED
01/18/2022	LT1	LT1	Whiskey Creek Well Tag No 42538
01/25/2022	LT1	LT1	Whiskey Creek Well Tag No 42538
02/02/2022	LT1	LT1	Whiskey Creek Well Tag No 42538
02/08/2022	LT1	LT1	Whiskey Creek Well Tag No 42538
02/16/2022	LT1	LT1	Whiskey Creek Well Tag No 42538
02/23/2022	LT1	LT1	Whiskey Creek Well Tag No 42538
03/02/2022	LT1	LT1	Whiskey Creek Well Tag No 42538
03/29/2022	LT1	LT1	Whiskey Creek Well Tag No 42538
04/05/2022	LT1	LT1	Whiskey Creek Well Tag No 42538
04/13/2022	LT1	LT1	Whiskey Creek Well Tag No 42538
04/20/2022	LT1	LT1	Whiskey Creek Well Tag No 42538
05/04/2022	LT1	LT1	Whiskey Creek Well Tag No 42538
05/10/2022	LT1	LT1	Whiskey Creek Well Tag No 42538
05/16/2022	LT1	LT1	Whiskey Creek Well Tag No 42538
05/25/2022	LT1	LT1	Whiskey Creek Well Tag No 42538
06/01/2022	LT1	LT1	Whiskey Creek Well Tag No 42538
06/08/2022	LT1	LT1	Whiskey Creek Well Tag No 42538
06/15/2022	LT1	LT1	Whiskey Creek Well Tag No 42538
06/20/2022	LT1	LT1	Whiskey Creek Well Tag No 42538
07/06/2022	LT1	LT1	Whiskey Creek Well Tag No 42538
08/02/2022	LT1	LT1	Whiskey Creek Well Tag No 42538
09/07/2022	LT1	LT1	Whiskey Creek Well Tag No 42538
10/12/2022	LT1	LT1	Whiskey Creek Well Tag No 42538
11/02/2022	LT1	LT1	Whiskey Creek Well Tag No 42538
12/21/2022	REJCT DELAY3	REJCT DELAY3	Whiskey Creek Well Tag No 42538

### Interpreting Sample Reports

In VIHA, the results of drinking water sampling are reported using the following coding system:

LT1 Less than 1 (no detectable bacteria) - Meaning: No bacteria present

L1 Less than 1 (no detectable bacteria) - Meaning: No bacteria present



# Regional District of Nanaimo - Water Services Department

## Whiskey Creek Water Analysis - 2022 Monthly Report

Date	Sample Location (Address)	BC Centre for Disease Control		RDN In-House Laboratory and Spectrophotometer									
		E. coli *	Total Coliform *	E.coli *	Total Coliform *	Temp. (°C)	pH	Free Chlorine Residual (mg/L)	Total Dissolved Solids (mg/L)	Salinity (%)	Conductivity (µS/cm)	Total Iron (mg/L)	Manganese (mg/L)
5-Dec-22	Temp watermain	0	0	0	0	4	n/a	0.75	n/a	n/a	n/a	Fe and Mn are no longer tested in-house. See Annual Tap Water Results at <a href="https://www.rdn.bc.ca/whiskey-creek">https://www.rdn.bc.ca/whiskey-creek</a>	
5-Dec-22	3537 Harris	0	0	0	0	8	7.20	0.69	36.1	0.04	70.9		
14-Dec-22	3533 Hebert	0	0	0	0	6	7.17	0.91	31.0	0.03	66.1		
14-Dec-22	Well Head			0	0								
14-Dec-22	Carson	0	0	0	0	7	7.18	0.63	32.9	0.04	67.4		
CDN Drinking Water Guidelines		<1	<1	<1	<1	n/a	7.0-10.5	n/a	500	n/a	n/a	0.3	0.02 AO 0.12 MAC

### Legend:

\* Coliforms are measured in colony forming units (CFU) per 100 millilitres of water (CFU/100mL)

Green font indicates a value flagged for operational consideration

Orange font indicates non-compliance with the Aesthetic Objective (AO) in the Canadian Drinking Water Guidelines (CDWG)

Red font indicates non-compliance with the Maximum Acceptable Concentration (MAC) in the CDWG

### Comments:

Notes below about pH (2015) from [https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/water-quality/guidelines-canadian-drinking-water-quality-summary-table.html#\\_ftn1](https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/water-quality/guidelines-canadian-drinking-water-quality-summary-table.html#_ftn1)

Type	Parameter (published, reaffirmed)	MAC (mg/L)	Other value (mg/L)	Common sources of parameter in water	Health considerations	Comments
Treatment-related	pH (2015)	None	7.0-10.5	Not applicable	Not applicable	The control of pH is important to maximize treatment effectiveness, control corrosion and reduce leaching from distribution system and plumbing components.





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		E. coli *	Total Coliform *	E.coli *	Total Coliform *	Temp. (°C)	pH	Free Chlorine Residual (mg/L)	Total Dissolved Solids (mg/L)	Salinity (%)	Conductivity (µS/cm)	Total Iron (mg/L)	Manganese (mg/L)
3-Nov-22	3535 Harris	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a	Fe and Mn are no longer tested in-house. See Annual Tap Water Results at <a href="https://www.rdn.bc.ca/whiskey-creek">https://www.rdn.bc.ca/whiskey-creek</a>	
3-Nov-22	Well Head	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a		
3-Nov-22	Temp Watermain	0	0	0	0	8	7.32	0.82	30.2	0.03	64.3		
7-Nov-22	844 Carson	0	0	0	0	11	7.15	0.65	37.4	0.04	79.4		
14-Nov-22	3533 Hebert	0	0	0	0	11	6.91	0.77	31.0	0.03	86.0		
22-Nov-22	3564 Foxglove	0	0	0	0	10	7.40	0.53	37.4	0.04	79.6		
CDN Drinking Water Guidelines		<1	<1	<1	<1	n/a	7.0-10.5	n/a	500	n/a	n/a	0.3	0.02 AO 0.12 MAC

### Legend:

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5-Oct-22	3535 Harris	0	0	0	0	15	7.09	0.79	35.6	0.03	75.9	Fe and Mn are no longer tested in-house. See Annual Tap Water Results at <a href="https://www.rdn.bc.ca/whiskey-creek">https://www.rdn.bc.ca/whiskey-creek</a>	
12-Oct-22	844 Carson	0	0	0	0	15	7.30	0.68	39.6	0.04	84.3		
12-Oct-22	Well Head	n/a	n/a	0	0	n/a	n/a	n/a	n/a	n/a	n/a		
12-Oct-22	Temp Watermain	0	0	0	0	n/a	n/a	0.84	n/a	n/a	n/a		
17-Oct-22	3533 Hebert	0	0	0	0	13	7.18	0.68	31.9	0.03	68.0		
26-Oct-22	3564 Foxglove	0	0	0	0	12	6.82	0.66	31.8	0.03	67.6		
CDN Drinking Water Guidelines		<1	<1	<1	<1	n/a	7.0-10.5	n/a	500	n/a	n/a	0.3	0.02 AO 0.12 MAC

**Legend:**

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## Whiskey Creek Water Analysis - 2022 Monthly Report

Date	Sample Location (Address)	BC Centre for Disease Control		RDN In-House Laboratory and Spectrophotometer									
		E. coli *	Total Coliform *	E.coli *	Total Coliform *	Temp. (°C)	pH	Free Chlorine Residual (mg/L)	Total Dissolved Solids (mg/L)	Salinity (%)	Conductivity (µS/cm)	Total Iron (mg/L)	Manganese (mg/L)
7-Sep-22	3537 Harris	0	0	0	0	16	6.92	0.78	36.5	0.04	77.6	Fe and Mn are no longer tested in-house. See Annual Tap Water Results at <a href="https://www.rdn.bc.ca/whiskey-creek">https://www.rdn.bc.ca/whiskey-creek</a>	
7-Sep-22	Well Head	n/a	n/a	0	0	n/a	n/a	n/a	n/a	n/a	n/a		
7-Sep-22	Temp watermain	0	0	0	0	12	n/a	0.75	n/a	n/a	n/a		
14-Sep-22	844 Carson	0	0	0	0	17	7.19	0.64	38.2	0.04	81.0		
21-Sep-22	3533 Hebert	0	0	0	0	16	7.70	0.86	31.3	0.03	66.3		
27-Sep-22	3564 Foxglove	0	0	0	0		7.07	0.71	36.8	0.04	78.0		
CDN Drinking Water Guidelines		<1	<1	<1	<1	n/a	7.0-10.5	n/a	500	n/a	n/a	0.3	0.02 AO 0.12 MAC

**Legend:**

\* Coliforms are measured in colony forming units (CFU) per 100 millilitres of water (CFU/100mL)

Green font indicates a value flagged for operational consideration

Orange font indicates non-compliance with the Aesthetic Objective (AO) in the Canadian Drinking Water Guidelines (CDWG)

Red font indicates non-compliance with the Maximum Acceptable Concentration (MAC) in the CDWG

**Comments:**

Notes below about pH (2015) from [https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/water-quality/guidelines-canadian-drinking-water-quality-summary-table.html#\\_ftn1](https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/water-quality/guidelines-canadian-drinking-water-quality-summary-table.html#_ftn1)

Type	Parameter (published, reaffirmed)	MAC (mg/L)	Other value (mg/L)	Common sources of parameter in water	Health considerations	Comments
Treatment-related	pH (2015)	None	7.0-10.5	Not applicable	Not applicable	The control of pH is important to maximize treatment effectiveness, control corrosion and reduce leaching from distribution system and plumbing components.



# Regional District of Nanaimo - Water Services Department

## Whiskey Creek Water Analysis - 2022 Monthly Report

Date	Sample Location (Address)	BC Centre for Disease Control		RDN In-House Laboratory and Spectrophotometer									
		E. coli *	Total Coliform *	E.coli *	Total Coliform *	Temp. (°C)	pH	Free Chlorine Residual (mg/L)	Total Dissolved Solids (mg/L)	Salinity (%)	Conductivity (µS/cm)	Total Iron (mg/L)	Manganese (mg/L)
2-Aug-22	3537 Harris	0	0	0	0	n/a	7.27	0.80	32.0	0.03	67.8	Fe and Mn are no longer tested in-house. See Annual Tap Water Results at <a href="https://www.rdn.bc.ca/whiskey-creek">https://www.rdn.bc.ca/whiskey-creek</a>	
2-Aug-22	Well Head			0	0	n/a	n/a	n/a	n/a	n/a	n/a		
2-Aug-22	Temp Watermain	0	0	0	0	n/a	n/a	0.53	n/a	n/a	n/a		
9-Aug-22	844 Carson	0	0	0	0	15	7	0.8	37.1	0.04	78.8		
16-Aug-22	3533 Hebert	0	0	0	0	17	7.19	0.74	32.2	0.03	68.5		
24-Aug-22	3564 Foxglove	0	0	0	0	17	7.55	0.83	35.3	0.03	75.2		
31-Aug-22	844 Carson			0	0	18	7.34	0.68	34.1	0.03	72.4		
CDN Drinking Water Guidelines		<1	<1	<1	<1	n/a	7.0-10.5	n/a	500	n/a	n/a	0.3	0.02 AO 0.12 MAC

**Legend:**

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Red font indicates non-compliance with the Maximum Acceptable Concentration (MAC) in the CDWG

**Comments:**

Iron and Manganese are no longer being tested in-house.

A full potability scan is completed once per year at an external lab that includes metals and minerals.



# Regional District of Nanaimo - Water Services Department

## Whiskey Creek Water Analysis - 2022 Monthly Report

Date	Sample Location (Address)	BC Centre for Disease Control		RDN In-House Laboratory and Spectrophotometer								Bureau Veritas Lab	
		E. coli *	Total Coliform *	E.coli *	Total Coliform *	Temp. (°C)	pH	Free Chlorine Residual (mg/L)	Total Dissolved Solids (mg/L)	Salinity (%)	Conductivity (µS/cm)	Total Iron (mg/L)	Manganese (mg/L)
6-Jul-22	844 Carson	0	0	0	0	n/a	n/a	0.64	n/a	n/a	n/a		
6-Jul-22	Well Head			0	0	10	7.41	n/a	29.1	0.03	61.9		
6-Jul-22	Temp Watermain	0	0	0	0	n/a	n/a	0.63	n/a	n/a	n/a		
13-Jul-22	844 Carson	0	0	0	0	15	7.44	0.78	35.1	0.03	74.6		
13-Jul-22	Well Head			0	0	n/a	n/a	n/a	n/a	n/a	n/a		
13-Jul-22	Temp Watermain			0	0	n/a	n/a	0.86	n/a	n/a	n/a		
19-Jul-22	3533 Hebert	0	0	0	0	15	7.05	0.80	36.2	0.04	77.0		
27-Jul-22	3564 Foxglove	0	0	0	0	18	7.41	0.59	37.2	0.04	79.0		
CDN Drinking Water Guidelines		<1	<1	<1	<1	n/a	7.0-10.5	n/a	500	n/a	n/a	0.3	0.02 AO 0.12 MAC

**Legend:**

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**Comments:**

## Whiskey Creek Water Analysis - 2022 Monthly Report

Date	Sample Location (Address)	BC Centre for Disease Control		RDN In-House Laboratory and Spectrophotometer								Bureau Veritas Lab	
		E. coli *	Total Coliform *	E.coli *	Total Coliform *	Temp. (°C)	pH	Free Chlorine Residual (mg/L)	Total Dissolved Solids (mg/L)	Salinity (%)	Conductivity (µS/cm)	Total Iron (mg/L)	Manganese (mg/L)
1-Jun-22	844 Carson	0	0	0	0	11	6.91	0.66	37.7	0.04	80.1		
1-Jun-22	Temp Watermain	0	0	0	0	n/a	n/a	0.58	n/a	n/a	n/a		
8-Jun-22	3564 Foxglove	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a		
8-Jun-22	Well Head			0	0	12	7.03	n/a	29.6	0.03	63.6		
8-Jun-22	Temp Watermain			0	0	n/a	n/a	n/a	n/a	n/a	n/a		
15-Jun-22	Temp Watermain	0	0	0	0	n/a	n/a	0.64	n/a	n/a	n/a		
15-Jun-22	3533 Hebert	0	0	0	0	10	7.03	0.76	31.7	0.03	67.4		
20-Jun-22	3537 Harris	0	0	0	0	n/a	n/a	0.80	n/a	n/a	n/a		
20-Jun-22	Well Head	0	0	0	0	9	7.53	0	28.7	0.03	61.5		
29-Jun-22	844 Carson			0	0	n/a	n/a	0.83	n/a	n/a	n/a		
29-Jun-22	Well Head			0	0	n/a	n/a	n/a	n/a	n/a	n/a		
29-Jun-22	Temp Watermain			0	0	12	7.47	0.89	31.3	0.03	66.3		
CDN Drinking Water Guidelines		<1	<1	<1	<1	n/a	7.0-10.5	n/a	500	n/a	n/a	0.3	0.02 AO 0.12 MAC

**Legend:**

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**Comments:**

Notes below about pH (2015) from [https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/water-quality/guidelines-canadian-drinking-water-quality-summary-table.html#\\_ftn1](https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/water-quality/guidelines-canadian-drinking-water-quality-summary-table.html#_ftn1)

Type	Parameter (published, reaffirmed)	MAC (mg/L)	Other value (mg/L)	Common sources of parameter in water	Health considerations	Comments
Treatment-related	pH (2015)	None	7.0-10.5	Not applicable	Not applicable	The control of pH is important to maximize treatment effectiveness, control corrosion and reduce leaching from distribution system and plumbing components.

## Whiskey Creek Water Analysis - 2022 Monthly Report

Date	Sample Location (Address)	BC Centre for Disease Control		RDN In-House Laboratory and Spectrophotometer								Bureau Veritas Lab	
		E. coli *	Total Coliform *	E.coli *	Total Coliform *	Temp. (°C)	pH	Free Chlorine Residual (mg/L)	Total Dissolved Solids (mg/L)	Salinity (%)	Conductivity (µS/cm)	Total Iron (mg/L)	Manganese (mg/L)
4-May-22	3537 Harris	0	0	0	0	9	7.30	0.77	33.4	0.03	70.9		
4-May-22	Well Head			0	0	9							
4-May-22	Temp Watermain	0	0	0	0	10		0.91					
10-May-22	844 Carson	0	0	0	0	9	6.96	0.76	37.2	0.04	791.0		
10-May-22	Well Head			0	0	9							
10-May-22	Temp Watermain	0	0	0	0	10		0.58					
16-May-22	3533 Hebert	0	0	0	0	10	7.03	0.76	31.7	0.03	67.4		
16-May-22	Well Head			0	0	9							
16-May-22	Temp Watermain	0	0	0	0	9		0.86					
25-May-22	3564 Foxglove	0	0	0	0	11	6.99	0.87	31.7	0.03	67.4		
25-May-22	Well Head			0	0	9							
25-May-22	Temp Watermain	0	0	0	0	10		0.94					
CDN Drinking Water Guidelines		<1	<1	<1	<1	n/a	7.0-10.5	n/a	500	n/a	n/a	0.3	0.02 AO 0.12 MAC

### Legend:

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### Comments:

Notes below about pH (2015) from [https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/water-quality/guidelines-canadian-drinking-water-quality-summary-table.html#\\_ftn1](https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/water-quality/guidelines-canadian-drinking-water-quality-summary-table.html#_ftn1)

Type	Parameter (published, reaffirmed)	MAC (mg/L)	Other value (mg/L)	Common sources of parameter in water	Health considerations	Comments
Treatment-related	pH (2015)	None	7.0-10.5	Not applicable	Not applicable	The control of pH is important to maximize treatment effectiveness, control corrosion and reduce leaching from distribution system and plumbing components.



# Regional District of Nanaimo - Water Services Department

## Whiskey Creek Water Analysis - 2022 Monthly Report

Date	Sample Location (Address)	BC Centre for Disease Control		RDN In-House Laboratory and Spectrophotometer								Bureau Veritas Lab	
		E. coli *	Total Coliform *	E.coli *	Total Coliform *	Temp. (°C)	pH	Free Chlorine Residual (mg/L)	Total Dissolved Solids (mg/L)	Salinity (%)	Conductivity (µS/cm)	Total Iron (mg/L)	Manganese (mg/L)
5-Apr-22	3537 Harris	0	0	0	0	9	7.09	0.75	33.2	0.03	70.6		
5-Apr-22	Well Head			0	0	8	n/a	n/a	n/a	n/a	n/a		
5-Apr-22	Temp Watermain	0	0	0	0	9	n/a	0.86	n/a	n/a	n/a		
13-Apr-22	844 Carson	0	0	0	0	8	7.29	0.81	36.20	0.04	76.90		
13-Apr-22	Well Head			0	0	8	n/a	n/a	n/a	n/a	n/a		
13-Apr-22	Temp Watermain	0	0	0	0	8	n/a	0.68	n/a	n/a	n/a		
20-Apr-22	3533 Hebert	0	0	0	0	8	7.11	0.72	31.00	0.03	65.90		
20-Apr-22	Well Head			0	0	n/a	n/a	n/a	n/a	n/a	n/a		
20-Apr-22	Temp Watermain	0	0	0	0	8	n/a	0.90	n/a	n/a	n/a		
25-Apr-22	3564 Foxglove	0	0	0	0	9	7.10	0.98	38.5	0.04	81.8		
25-Apr-22	Well Head			0	0	n/a	n/a	n/a	n/a	n/a	n/a		
25-Apr-22	Temp Watermain	0	0	0	0	n/a	n/a	0.79	n/a	n/a	n/a		
CDN Drinking Water Guidelines		<1	<1	<1	<1	n/a	7.0-10.5	n/a	500	n/a	n/a	0.3	0.02 AO 0.12 MAC

**Legend:**

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**Comments:**



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Date	Sample Location (Address)	BC Centre for Disease Control		RDN In-House Laboratory and Spectrophotometer								Bureau Veritas Lab	
		E. coli *	Total Coliform *	E.coli *	Total Coliform *	Temp. (°C)	pH	Free Chlorine Residual (mg/L)	Total Dissolved Solids (mg/L)	Salinity (%)	Conductivity (µS/cm)	Total Iron (mg/L)	Manganese (mg/L)
2-Mar-22	3537 Harris	0	0	0	0	7	7.29	0.77	31.7	0.03	67.4		
2-Mar-22	Well Head			0	0	n/a	n/a	n/a	n/a	n/a	n/a		
2-Mar-22	Temp Watermain	0	0	0	0	n/a	n/a	0.85	n/a	n/a	n/a		
8-Mar-22	844 Carson	0	0	0	0	8	7.45	0.73	35.2	0.03	74.8		
8-Mar-22	Well Head			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a		
8-Mar-22	Temp Watermain	0	0	0	0	n/a	n/a	1.91	n/a	n/a	n/a		
16-Mar-22	3533 Hebert	0	0	0	0	7	7.16	0.55	31	0.03	65.9		
16-Mar-22	Well Head			0	0	n/a	n/a	n/a	n/a	n/a	n/a		
16-Mar-22	Temp Watermain	0	0	0	0	n/a	n/a	0.70	n/a	n/a	n/a		
23-Mar-22	3564 Foxglove	0	0	0	0	9	7.56	0.56	37.9	0.04	80.5		
23-Mar-22	Well Head			0	0	9	n/a	n/a	n/a	n/a	n/a		
23-Mar-22	Temp Watermain	0	0	0	0	9	n/a	0.98	n/a	n/a	n/a		
29-Mar-22	3564 Foxglove			0	0	8	7.51	0.82	37.1	0.04	78.3		
29-Mar-22	Well Head			0	0	8	n/a	n/a	n/a	n/a	n/a		
29-Mar-22	Temp Watermain	0	0	0	0	7	n/a	1.00	n/a	n/a	n/a		
CDN Drinking Water Guidelines		<1	<1	<1	<1	n/a	7.0-10.5	n/a	500	n/a	n/a	0.3	0.02 AO 0.12 MAC

### Legend:

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### Comments:



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		E. coli *	Total Coliform *	E.coli *	Total Coliform *	Temp. (°C)	pH	Free Chlorine Residual (mg/L)	Total Dissolved Solids (mg/L)	Salinity (%)	Conductivity (µS/cm)	Total Iron (mg/L)	Manganese (mg/L)
2-Feb-22	3537 Harris	0	0	0	0	6	7.12	0.85	32.2	0.03	68.6		
2-Feb-22	Well Head			0	0	n/a	n/a	n/a	n/a	n/a	n/a		
2-Feb-22	Temp Watermain	0	0	0	0	n/a	n/a	0.92	n/a	n/a	n/a		
8-Dec-22	Temp Watermain	0	0	0	0	n/a	n/a	0.7	n/a	n/a	n/a		
8-Feb-22	844 Carson	0	0	0	0	8	7.57	0.72	36.2	0.04	76.8	0.22	
16-Feb-22	3533 Hebert	0	0	0	0	n/a	7.22	0.35	30.6	0.00	65.3	0.14	
16-Feb-22	Well Head			0	0	n/a	n/a	n/a	n/a	n/a	n/a		
16-Feb-22	Temp Watermain	0	0	0	0	n/a	n/a	n/a	n/a	n/a	n/a		
23-Feb-22	3564 Foxglove	0	0	0	0	7	7.37	0.70	35.7	0.03	75.8		
23-Feb-22	Well Head			0	0	n/a	n/a	n/a	n/a	n/a	n/a		
23-Feb-22	Temp Watermain	0	0	0	0	n/a	n/a	0.96	0.98	n/a	n/a		
CDN Drinking Water Guidelines		<1	<1	<1	<1	n/a	7.0-10.5	n/a	500	n/a	n/a	0.3	0.02 AO 0.12 MAC

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Date	Sample Location (Address)	BC Centre for Disease Control		RDN In-House Laboratory and Spectrophotometer								Bureau Veritas Lab	
		E. coli *	Total Coliform *	E.coli *	Total Coliform *	Temp. (°C)	pH	Free Chlorine Residual (mg/L)	Total Dissolved Solids (mg/L)	Salinity (%)	Conductivity (µS/cm)	Total Iron (mg/L)	Manganese (mg/L)
5-Jan-22	3537 Harris	0	0	0	0	7	6.98	0.73	32.9	0.03	70.1		
5-Jan-22	Well Head			0	0	4							
5-Jan-22	Temp Watermain			0	0	4	6.80	0.68	35.1	0.03	71.4		
12-Jan-22	844 Carson	0	0	0	0	6	7.33	0.67	37.5	0.04	79.1		
12-Jan-22	Well Head			0	0	4							
12-Jan-22	Temp Watermain			0	0	4							
18-Jan-22	3537 Harris	0	0	0	0	7	6.80	0.78	30.4	0.03	64.7		
18-Jan-22	Well Head			0	0	4							
18-Jan-22	Temp Watermain	0	0	0	0	4							
25-Jan-22	3564 Foxglove	0	0	0	0	8	7.20	0.80	37.1	0.04	77.7		
25-Jan-22	Well Head			0	0								
25-Jan-22	Temp Watermain	0	0	0	0								
CDN Drinking Water Guidelines		<1	<1	<1	<1	n/a	7.0-10.5	n/a	500	n/a	n/a	0.3	0.02 AO 0.12 MAC

### Legend:

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### Comments:

Notes below about pH (2015) from [https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/water-quality/guidelines-canadian-drinking-water-quality-summary-table.html#\\_ftn1](https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/water-quality/guidelines-canadian-drinking-water-quality-summary-table.html#_ftn1)

Type	Parameter (published, reaffirmed)	MAC (mg/L)	Other value (mg/L)	Common sources of parameter in water	Health considerations	Comments
Treatment-related	pH (2015)	None	7.0-10.5	Not applicable	Not applicable	The control of pH is important to maximize treatment effectiveness, control corrosion and reduce leaching from distribution system and plumbing components.

CDWG=Canadian Drinking Water Guidelines  
OG= Operational Guidance Value

MAC=Maximum Acceptable Concentration  
AO=Aesthetic Objective

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	Units	CDWG		November 24 2022		
<b>Miscellaneous Inorganics</b>						
Fluoride	mg/L	1.5	MAC	<0.05		
Alkalinity (total as CaCO <sub>3</sub> )	mg/L			32		
<b>Anions</b>						
Dissolved Sulphate	mg/L	500	AO	<1.0		
Dissolved Chloride	mg/L	250	AO	1.3		
Nitrite	mg/L	1	MAC	<0.005		
<b>Miscellaneous</b>						
Apparent Colour	Colour Unit			<5		
<b>Nutrients</b>						
Total Ammonia	mg/L			<0.015		
<b>Physical Properties</b>						
Conductivity	µS/cm			63		
pH	pH	7.0:10.5	OG	6.84		
TDS	mg/L	500	AO	52		
Turbidity	NTU			0.11		
<b>Microbiological Parameters</b>						
E.coli	MPN/100mL	<1	MAC	0		
Total Coliforms	MPN/100mL	<1	MAC	0		
<b>Calculated Parameters</b>						
Total Hardness (CaCO <sub>3</sub> )	mg/L			25.8		
Nitrate	mg/L	10	MAC	0.04		
<b>Elements</b>						
Total Mercury	mg/L	0.001	MAC	<0.000019		
<b>Total Metals</b>						
Total Aluminum	mg/L	0.1	OG	<0.003		
Total Antimony	mg/L	0.006	MAC	<0.0005		
Total Arsenic	mg/L	0.01	MAC	<0.0001		
Total Barium	mg/L	1	MAC	<0.001		
Total Beryllium	mg/L			<0.0001		
Total Bismuth	mg/L			<0.001		
Total Boron	mg/L	5	MAC	<0.05		
Total Cadmium	mg/L	0.005	MAC	<0.00001		
Total Chromium	mg/L	0.05	MAC	<0.001		
Total Cobalt	mg/L			<0.0002		
Total Copper	mg/L	1	AO	0.00186		
Total Iron	mg/L	0.3	AO	<0.005		
Total Lead	mg/L	0.01	MAC	<0.0002		
Total Manganese	mg/L	0.02 0.12	AO MAC	<0.001		
Total Molybdenum	mg/L			<0.001		
Total Nickel	mg/L			<0.001		
Total Selenium	mg/L	0.05	MAC	<0.0001		
Total Silicon	mg/L			8.97		
Total Silver	mg/L			<0.00002		
Total Strontium	mg/L			0.0156		
Total Thallium	mg/L			<0.00001		
Total Tin	mg/L			<0.005		
Total Titanium	mg/L			<0.005		
Total Uranium	mg/L	0.02	MAC	<0.0001		
Total Vanadium	mg/L			<0.005		
Total Zinc	mg/L	5	AO	<0.005		
Total Zirconium	mg/L			<0.0001		
Total Calcium	mg/L			7.1		
Total Magnesium	mg/L			1.97		
Total Potassium	mg/L			0.142		
Total Sodium	mg/L	200	AO	2		
Total Sulphur	mg/L			<3		

Notes below about pH (2015) from [https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/water-quality/guidelines-canadian-drinking-water-quality-summary-table.html#\\_ftn1](https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/water-quality/guidelines-canadian-drinking-water-quality-summary-table.html#_ftn1)

Type	Parameter (published, reaffirmed)	MAC (mg/L)	Other value (mg/L)	Common sources of parameter in water	Health considerations	Comments
Treatment-related	pH (2015)	None	7.0-10.5	Not applicable	Not applicable	The control of pH is important to maximize treatment effectiveness, control corrosion and reduce leaching from distribution system and plumbing components.

CDWG=Canadian Drinking Water Guidelines  
OG= Operational Guidance Value

MAC=Maximum Acceptable Concentration  
AO= Aesthetic Objective.

**Orange font indicates non-compliance with the Aesthetic Objective (AO) in the Canadian Drinking Water Guidelines (CDWG)**  
**Red font indicates non-compliance with the Maximum Acceptable Concentration (MAC) in the CDWG**  
**Green font indicates a value flagged for operational consideration in the CDWG**

	Units	CDWG		May 19 2015	May 10 2016	May 8 2017	May 7 2018	May 13 2019	May 21 2020	May 27 2021	May 19 2022
<b>Miscellaneous Inorganics</b>											
Fluoride	mg/L	1.5	MAC	0.034	0.026	0.026	0.025	0.022	<0.05	<0.05	<0.05
Alkalinity (total as CaCO )	mg/L			32	32.7	31.1	27.1	29.1	26	35	31
<b>Anions</b>											
Dissolved Sulphate	mg/L	500	AO	2.76	2.91	2.82	3.9	3	4.2	2.9	<1
Dissolved Chloride	mg/L	250	AO	12	12	12	12	21	23	16	2.3
Nitrite	mg/L	1	MAC	<0.0050	<0.0050	<0.0050	<0.0050	<0.005	<0.005	<0.005	<0.005
<b>Miscellaneous</b>											
Apparent Colour	Colour Unit			<5	10	10	10	<2	5	5	<5
<b>Nutrients</b>											
Total Ammonia	mg/L			0.0057	0.0096	0.12	<0.020	<0.015	0.041	<0.015	<0.015
<b>Physical Properties</b>											
Conductivity	µS/cm			111	105	105	103	136	140	120	64
pH	pH	7.0:10.5	AO	7.67	7.56	7.62	7.53	6.99	7.13	7.6	6.91
TDS	mg/L	500	AO	80	52	80	56	100	100	110	42
Turbidity	NTU			0.17	0.14	0.19	0.17	0.22	0.12	0.35	0.17
<b>Microbiological Parameters</b>											
E.coli	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0	<1.0	0	0	0	0
Total Coliforms	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0	<1.0	0	0	0	0
<b>Calculated Parameters</b>											
Total Hardness (CaCO )	mg/L			40.8	34.4	42.9	35.7	47.1	41	38.1	26.5
Nitrate	mg/L	10	MAC	0.066	0.072	0.071	0.067	0.056	0.07	0.063	0.05
<b>Elements</b>											
Total Mercury	mg/L	0.001	MAC	<0.00001	<0.00001	<0.00001	<0.000002	<0.000002	<0.0000019	<0.0000019	0.000002
<b>Total Metals</b>											
Total Aluminum	mg/L	0.1	OG	0.302	0.126	0.256	0.123	0.026	0.0865	0.235	0.0859
Total Antimony	mg/L	0.006	MAC	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Total Arsenic	mg/L	0.01	MAC	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Total Barium	mg/L	1	MAC	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total Beryllium	mg/L			<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Total Bismuth	mg/L			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total Boron	mg/L	5	MAC	<0.050	<0.050	<0.050	<0.050	<0.05	<0.05	<0.05	<0.05
Total Cadmium	mg/L	0.005	MAC	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Total Chromium	mg/L	0.05	MAC	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total Cobalt	mg/L			<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Total Copper	mg/L	1	AO	0.00983	0.0059	0.00521	0.00931	0.00493	0.00704	0.00886	0.0316
Total Iron	mg/L	0.3	AO	0.0245	<0.005	0.0114	0.0079	<0.005	0.0071	0.0081	0.00144
Total Lead	mg/L	0.01	MAC	0.00051	0.00021	0.00028	0.00095	0.00025	0.00044	0.00116	0.00144
Total Manganese	mg/L	0.02 0.12	AO MAC	0.0031	0.0023	0.0028	0.0024	0.0018	0.0038	0.0026	0.0136
Total Molybdenum	mg/L			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total Nickel	mg/L			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total Selenium	mg/L	0.05	MAC	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Total Silicon	mg/L			9.43	8.96	10.4	8.55	8.01	8.25	7.79	9.57
Total Silver	mg/L			<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Total Strontium	mg/L			0.0231	0.0215	0.0233	0.0229	0.0288	0.0272	0.0227	0.0172
Total Thallium	mg/L			<0.00005	<0.00005	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Total Tin	mg/L			<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Total Titanium	mg/L			<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Total Uranium	mg/L	0.02	MAC	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Total Vanadium	mg/L			<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Total Zinc	mg/L	5	AO	0.0084	<0.005	0.0062	0.0056	<0.005	<0.005	0.0066	0.013
Total Zirconium	mg/L			<0.0005	<0.0005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Total Calcium	mg/L			11.2	9.01	11.5	9.52	12.6	10.9	10.1	7.34
Total Magnesium	mg/L			3.13	2.88	3.42	2.9	3.81	3.36	3.13	1.98
Total Potassium	mg/L			0.137	0.134	0.233	0.173	0.216	0.413	0.29	0.147
Total Sodium	mg/L	200	AO	6.14	6.07	6.95	5.75	6.19	7.66	7.14	2.67
Total Sulphur	mg/L			<3.0	<3.0	<3.0	<3.0	<3	<3	<3	<3

Notes below about Aluminum and pH from: [www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/water-quality/guidelines-canadian-drinking-water-quality-summary-table.html](http://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/water-quality/guidelines-canadian-drinking-water-quality-summary-table.html)

Type	Parameter (published, reaffirmed)	MAC (mg/L)	Other value (mg/L)	Common sources of parameter in water	Health considerations	Comments
T- treatment related parameter	Aluminum (1998)	None	Operational Guideline (OG): < 0.1 (conventional treatment); or < 0.2 (other treatment types)	Aluminum salts used as coagulants in drinking water treatment; naturally occurring.	There is no consistent, convincing evidence that aluminum in drinking water causes adverse health effects in humans.	The operational guideline applies to treatment plants using aluminum-based coagulants; it does not apply to naturally occurring aluminum found in groundwater. For treatment plants using aluminum-based coagulants, monthly samples should be taken of the water leaving the plant; the OGs are based on a running annual average of monthly samples.
T- treatment related parameter	pH (2015)	None	7.0-10.5	Not applicable	Not applicable	The control of pH is important to maximize treatment effectiveness, control corrosion and reduce leaching from distribution system and plumbing components.