

REGIONAL DISTRICT OF NANAIMO

Water Service Area Annual Report 2020



San Pareil Water Service Area

June 2021

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Appendix A - Map of San Pareil Water Service Area

Appendix B - Water Quality Testing Results

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1. Introduction

The following annual report describes the San Pareil Water Service Area and summarizes the water quality and production data from 2020. This report also includes a summary of inquiries and complaints, completed and proposed maintenance activities, Operator Certification, the Emergency Response Plan, and the Cross Connection Control Program. This report is to be submitted to Island Health by the spring of 2021.

2. San Pareil Water System

The San Pareil Water Service Area was established in 1999 when the RDN acquired the existing Bubbling Springs Water Utility. This system is located to the northeast of the Englishman River Bridge on the east side of the City of Parksville. There are 289 water service connections in San Pareil. The water source for the San Pareil Water Service Area comes from a series of groundwater wells located in the well field on Plummer Road. The well water passes through an upgraded ultraviolet disinfection process, is chlorinated, and is then stored in two reservoirs. A back-up generator is present at the pumphouse, should it be required. A map of the San Pareil Water System is provided in Appendix A.

2.1 Groundwater Wells

Two groundwater production wells are present in the well field at 1090 Plummer Road, Parksville, B.C. Well #2 was closed in 2012. Well #3 is used as a monitoring well, but also serves as a backup well to Well #4.

Well / Name	Well Depth	Wellhead Protection	Treated/Untreated with Chlorine
#1	4.4 m	Yes	Treated
#2	5.5 m	Closed	Not in use
#3	7.0 m	Yes	Treated
#4	5.7 m	Yes	Treated

2.2 Reservoirs

Two concrete service reservoirs are present at 1090 Plummer Road, and have a capacity of 340 m³ (75,000 imperial gallons) each.

2.3 Distribution System

The water distribution system in San Pareil, as summarized in the table below, is comprised of 6.6 km of asbestos-concrete and PVC watermains. Twenty (20) fire hydrants are present in the service area.

Watermain Material	Length of mains in San Pareil Water Service Area	Prevalence in Water Service Area
AC: 150mm or smaller	3.4 km	52%
AC: 200mm or larger	n/a	n/a
PE: 50mm or smaller	0.7 km	10%
PVC: 150mm or smaller	0.2 km	2%
PVC: 200mm or larger	2.3 km	36%

Note: 'AC' is Asbestos-Concrete, 'PVC' is poly-vinylchloride (plastic), 'PE' is polyethylene

3. Water Sampling and Testing Program

Water sampling and testing is carried out weekly in the distribution system. Notably, the chlorine residual levels are tested weekly to ensure the absence of bacterial regrowth in the water mains. The following table includes a summary of all testing:

Timing	Location	Tests
Weekly	RDN (in-house) Laboratory	Total coliforms, E.Coli, Temp, pH, Conductivity, Chlorine residual, Salinity, Turbidity, TDS Iron and Manganese (Monthly)
Weekly	BC Centre for Disease Control	Total coliforms, E.Coli
Annual Source Water Testing (every Fall)	Bureau Veritas	Complete potability testing of raw well water, including T. Ammonia, UVT
Annual System Water Testing (every Spring)	Bureau Veritas	Complete potability testing of distribution system, including T. Ammonia

4. 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/san-pareil. 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. Water Quality Inquiries and Complaints

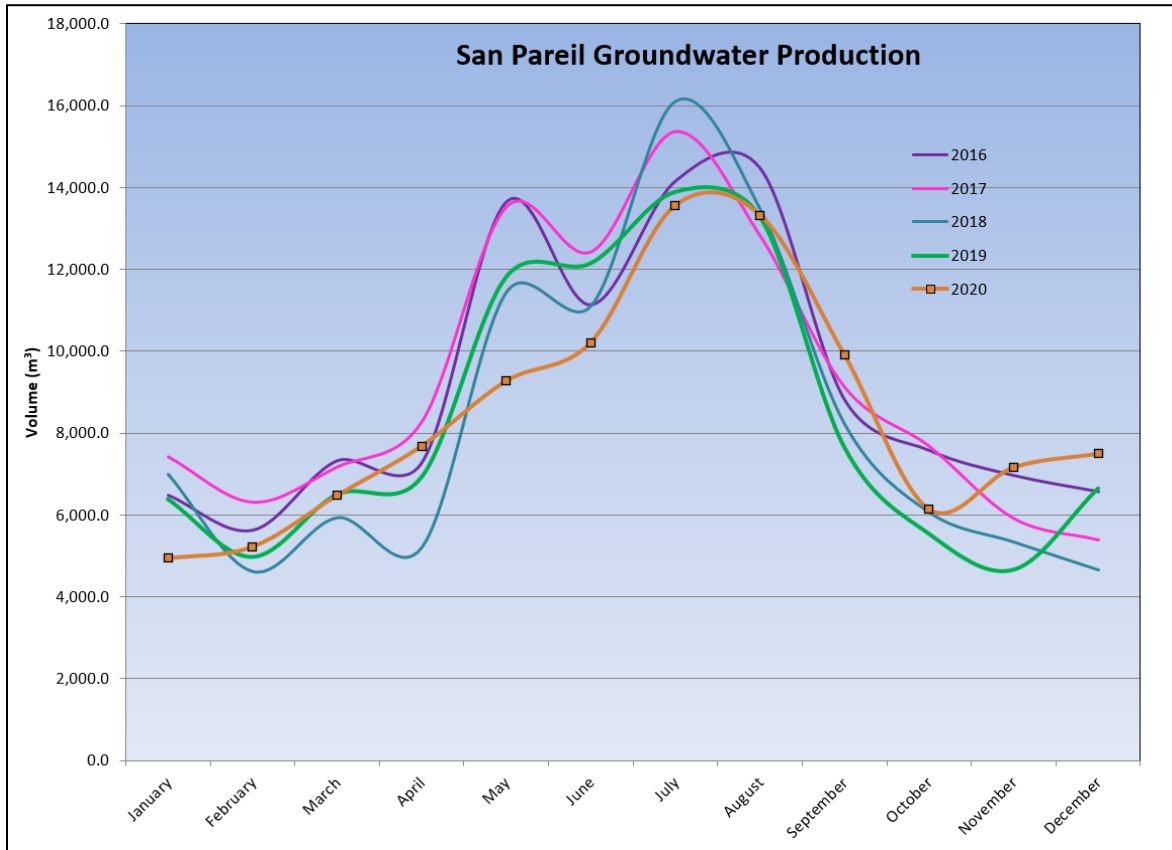
A few complaints were received from the San Pareil water service area in 2020 which were typically related to high water bills. Several refunds were subsequently issued under the RDN’s Leak Policy. A small group of property owners on Shorewood Drive inquired about joining the service area, and are currently considering extending the community watermain at their own expense (not the taxpayers’).

A summary of the water system incidents in 2020 is given in the table below.

Activity in 2020	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	None	None

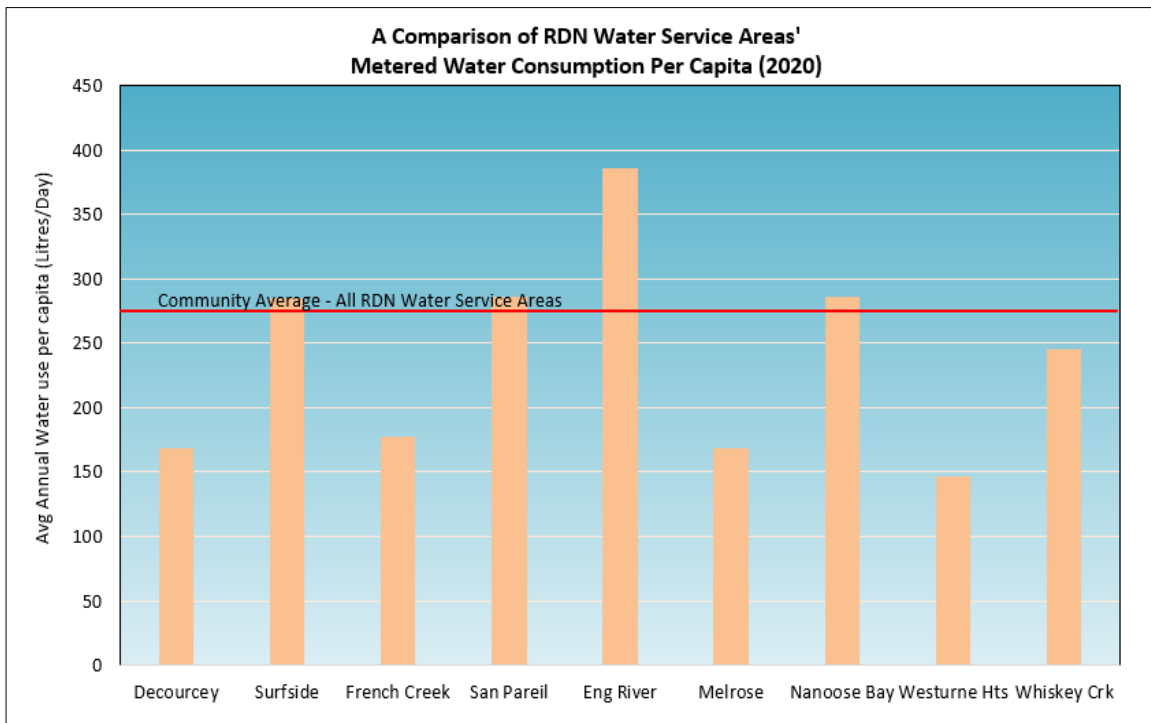
6. Groundwater Production and Consumption

The monthly groundwater production for San Pareil for the past 5 years is shown in the chart below. In 2020, groundwater production was below average overall in comparison to previous years.



Consumption

In the Fall/Winter of 2020, the average usage per home in San Pareil was 0.49 cubic metres per day (108 imperial gallons). In the summer, the average water usage was 1.08 cubic metres per day (237.6 imperial gallons). Based on these figures, the annual consumption per capita is estimated to be 286 L/day (based on 2.4 people/household). This consumption is **3% more** than all the other RDN water system averages of 278 L/day/capita in 2020 (see graph on next page).



7. Maintenance Program

A weekly pump station inspection is carried out to reduce or eliminate the risk of contamination and system failure, and to ensure the consistent application of chlorine for treatment purposes. Fire hydrants are serviced once per year (either 'A-level' or 'B-level' maintenance) in the spring. The reservoirs are cleaned every 2-3 years. Twenty-four hour on-call coverage is in place to respond to water system emergencies and alarms.

8. Operator Certification

The Regional District Water & Utility Services staff is 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 | ✓ Chlorine Handling | ✓ Confined Space Awareness |
| ✓ Water Distribution | ✓ WHMIS (Workplace Hazardous Material Information System) | ✓ Traffic Control |
| ✓ Wastewater Collection | ✓ TDG (Transportation of Dangerous Goods) | ✓ Fall Protection |
| ✓ Cross Connection Control | | ✓ First Aid |
| ✓ Asbestos Awareness | | ✓ Silica Awareness |

9. Water System Projects

9.1 2020 Completed Studies & Projects

- Completed Reservoir #1 repairs, and installed a new stainless steel ladder;
- Updated asset database with new assets;
- Calibrated and serviced all Hach spectrophotometer lab equipment;
- Completed a Water System Condition Assessment report and Capital Plan;
- Corresponded with residents regarding water conservation;
- Enforced outdoor sprinkling regulations;
- Completed irrigation checks for high-water users;
- Advised residents regarding water leak repairs;
- Completed the 2020-2030 Water Conservation Plan;
- Implemented a Water Systems SCADA Master Plan;
- Completed regular watermain flushing and hydrant maintenance;
- Maintained a high level of water quality; and
- Continued quality control through regular testing and monitoring of water system.

San Pareil
Well Site



9.2 2021 Proposed Projects & Upgrades

- Design the replacement of asbestos-concrete watermains;
- Continue watermain flushing program and hydrant maintenance;
- Continue implementing the Water Systems SCADA Master Plan;
- Implement the 2020-2030 DWWP Water Conservation Plan;
- Review well protection plans; and
- Continue to offer numerous water-saving incentives via rebates.

10. **Emergency Response Plan**

The Regional District Emergency Response Plan (ERP) 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 ERP was reviewed and updated in 2020, and copies are available on our website, at each RDN office, in each pumphouse, and in each Water Services vehicle. A copy of the ERP is also attached to this report in Appendix C.

11. **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).

12. **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.

13. Closing

An annual report for the year 2021 will be prepared and submitted to Island Health in the Spring of 2022. Annual reports are also available on our website at: www.rdn.bc.ca/san-pareil.



**San Pareil
Reservoir #2**

APPENDIX A

**MAP OF SAN PAREIL
WATER SERVICE AREA**

SAN PAREIL WATER SERVICE AREA



APPENDIX B

WATER QUALITY TESTING RESULTS

SAN PAREIL WATER SERVICE AREA



Facility Location:

Terrien Way

Facility Information: Facility Type: 15-300 connections DWC

Facility Sampling History:

<u>Location</u>	<u>Date</u>	<u>Total Coliform</u>	<u>E. Coli</u>
San Pareil Sample Port - 995 Sabine Rd	16-Dec-2020	LT1	LT1
San Pareil Sample Port - 793 San Malo Cres	16-Dec-2020	LT1	LT1
San Pareil Sample Port - 995 Sabine Rd	9-Dec-2020	REJCT DELAY3	REJCT DELAY3
962 Ballenas Rd , 1090 Plummer Way	2-Dec-2020	LT1	LT1
1090 Plummer Road	2-Dec-2020	LT1	LT1
962 Ballenas Rd , 1090 Plummer Way	25-Nov-2020	LT1	LT1
1090 Plummer Road	25-Nov-2020	LT1	LT1
San Pareil Sample Port - 995 Sabine Rd	18-Nov-2020	LT1	LT1
San Pareil Sample Port - 793 San Malo Cres	4-Nov-2020	LT1	LT1
1090 Plummer Road	28-Oct-2020	LT1	LT1
San Pareil Sample Port - 995 Sabine Rd	20-Oct-2020	LT1	LT1
962 Ballenas Rd , 1090 Plummer Way	14-Oct-2020	LT1	LT1
San Pareil Sample Port - 793 San Malo Cres	7-Oct-2020	LT1	LT1
1090 Plummer Road	30-Sep-2020	LT1	LT1
San Pareil Sample Port - 995 Sabine Rd	15-Sep-2020	LT1	LT1
Audit - 906 Ballenas San Pareil WS, 906 Ballenas	9-Sep-2020	LT1	LT1
San Pareil Sample Port - 793 San Malo Cres	2-Sep-2020	LT1	LT1
1090 Plummer Road	26-Aug-2020	LT1	LT1
San Pareil Sample Port - 995 Sabine Rd	18-Aug-2020	LT1	LT1
962 Ballenas Rd , 1090 Plummer Way	10-Aug-2020	LT1	LT1
San Pareil Sample Port - 793 San Malo Cres	5-Aug-2020	LT1	LT1
1090 Plummer Road	28-Jul-2020	LT1	LT1
San Pareil Sample Port - 995 Sabine Rd	22-Jul-2020	LT1	LT1
San Pareil Sample Port - 793 San Malo Cres	6-Jul-2020	LT1	LT1
1090 Plummer Road	24-Jun-2020	LT1	LT1
San Pareil Sample Port - 995 Sabine Rd	17-Jun-2020	LT1	LT1
962 Ballenas Rd , 1090 Plummer Way	10-Jun-2020	LT1	LT1
San Pareil Sample Port - 793 San Malo Cres	3-Jun-2020	LT1	LT1

<u>Location</u>	<u>Date</u>	<u>Total Coliform</u>	<u>E. Coli</u>
1090 Plummer Road	27-May-2020	LT1	LT1
San Pareil Sample Port - 995 Sabine Rd	19-May-2020	LT1	LT1
962 Ballenas Rd , 1090 Plummer Way	13-May-2020	LT1	LT1
San Pareil Sample Port - 793 San Malo Cres	6-May-2020	LT1	LT1
1090 Plummer Road	29-Apr-2020	LT1	LT1
San Pareil Sample Port - 995 Sabine Rd	22-Apr-2020	LT1	LT1
962 Ballenas Rd , 1090 Plummer Way	15-Apr-2020	LT1	LT1
San Pareil Sample Port - 793 San Malo Cres	8-Apr-2020	LT1	LT1
962 Ballenas Rd , 1090 Plummer Way	25-Mar-2020	LT1	LT1
San Pareil Sample Port - 995 Sabine Rd	18-Mar-2020	LT1	LT1
1090 Plummer Road	11-Mar-2020	LT1	LT1
San Pareil Sample Port - 793 San Malo Cres	4-Mar-2020	LT1	LT1
1090 Plummer Road	26-Feb-2020	LT1	LT1
San Pareil Sample Port - 995 Sabine Rd	19-Feb-2020	LT1	LT1
962 Ballenas Rd , 1090 Plummer Way	12-Feb-2020	LT1	LT1
San Pareil Sample Port - 793 San Malo Cres	5-Feb-2020	LT1	LT1
1090 Plummer Road	29-Jan-2020	LT1	LT1
San Pareil Sample Port - 995 Sabine Rd	21-Jan-2020	L1	L1
962 Ballenas Rd , 1090 Plummer Way	15-Jan-2020	L1	L1
San Pareil Sample Port - 793 San Malo Cres	8-Jan-2020	L1	L1

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
- REJECT DELAY3 means sample was in transit too long and was not tested



Regional District of Nanaimo - Water Services Department

San Pareil Water Analysis - 2020 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-Dec-20	962 Ballenas	0	0	0	0	10	6.69	0.54	36.4	0.03	72.9	Fe and Mn are no longer tested in-house. See Annual Tap Water Results at https://www.rdn.bc.ca/san-pareil	
2-Dec-20	1190 Plummer	0	0	0	0	10	6.72	0.53	34.2	0.03	72.7		
9-Dec-20	995 Sabine			0	0	9	6.80	0.24	36.8	0.04	78.2		
16-Dec-20	995 Sabine	0	0	0	0	9		0.70					
16-Dec-20	793 San Malo	0	0	0	0	9	6.90	0.77	37.4	0.04	77.9		
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)

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:

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

San Pareil Water Analysis - 2020 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)
4-Nov-20	793 San Malo	0	0	0	0	12	6.70	0.66	41.2	0.04	87.5	Fe and Mn are no longer tested in-house. See Annual Tap Water Results at https://www.rdn.bc.ca/san-pareil	
10-Nov-20	962 Ballenas			0	0	12	7.20	0.36	44.4	0.04	94.3		
18-Nov-20	995 Sabine	0	0	0	0	11	6.73	0.70	36.8	0.04	78.3		
25-Nov-20	1190 Plummer	0	0	0	0	11	6.61	0.66	36.1	0.04	76.8		
25-Nov-20	962 Ballenas	0	0	0	0	11	6.67	0.65	37.1	0.04	77.1		
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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		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-Oct-20	793 San Malo	0	0	0	0	16	6.73	0.73	46.5	0.05	99.0	Fe and Mn are no longer tested in-house. See Annual Tap Water Results at https://www.rdn.bc.ca/san-pareil	
14-Oct-20	962 Ballenas	0	0	0	0	15	6.89	0.27	51.3	0.05	108.5		
20-Oct-20	995 Sabine	0	0	0	0	14	6.90	0.81	56.7	0.05	110.9		
28-Oct-20	1190 Plummer	0	0	0	0	13	7.33	0.65	42.2	0.04	89.5		
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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Regional District of Nanaimo - Water Services Department

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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-Sep-20	793 San Malo	0	0	0	0	17	6.50	0.82	44.0	0.04	93.0	Fe and Mn are no longer tested in-house. See Annual Tap Water Results at https://www.rdn.bc.ca/san-pareil	
9-Sep-20	962 Ballenas	0	0	0	0	17	6.57	0.87	47.1	0.05	98.1		
14-Sep-20	995 Sabine	0	0	0	0	17	6.69	0.79	50.1	0.05	97.6		
23-Sep-20	995 Sabine			0	0	16	6.84	0.73	48.4	0.05	102.8		
30-Sep-20	1190 Plummer	0	0	0	0	16	6.78	0.84	48.3	0.05	102.1		
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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		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-Aug-20	793 San Malo	0	0	0	0	16	6.31	0.69	45.5	0.04	96.4	Fe and Mn are no longer tested in-house. See Annual Tap Water Results at https://www.rdn.bc.ca/san-pareil	
10-Aug-20	962 Ballenas	0	0	0	0	16	6.40	0.79	45.8	0.04	96.8		
18-Aug-20	995 Sabine	0	0	0	0	17	6.47	0.76	46.8	0.05	99.4		
26-Aug-20	1190 Plummer	0	0	0	0	15	6.55	0.89	44.8	0.04	95.0		
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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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)
8-Jul-20	793 San Malo	0	0	0	0	15	6.88	0.82	35.1	0.03	70.1	0.04	0.003
15-Jul-20	962 Ballenas	0	0	0	0	14	6.70	0.69	46.5	0.05	98.6		
22-Jul-20	995 Sabine	0	0	0	0	13	6.70	0.51	45.7	0.04	97.1		
29-Jul-20	1190 Plummer	0	0	0	0	14	6.68	0.77	46.6	0.05	98.9		
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 Manganese (2019) from: <https://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
I = Inorganic chemical parameter	Manganese (2019)	0.12	AO: <0.02	Dissolution of naturally-occurring minerals commonly found in soil and rock. Other sources include industrial discharge, mining activities and leaching from landfills.	Health Basis of MAC: Effects on neurological development and behaviour; deficits in memory, attention, and motor skills. Other: Formula-fed infants (where water containing manganese at levels above the MAC is used to prepare formula) may be especially at risk.	AO based on minimizing the occurrence of discoloured water, consumer complaints and staining of laundry.



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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)
3-Jun-20	793 San Malo	0	0	0	0	13	6.81	0.81	32.7	0.03	69.6	0.04	0.003
10-Jun-20	962 Ballenas	0	0	0	0	14	7.04	0.56	36.5	0.04	77.5		
17-Jun-20	995 Sabine	0	0	0	0	13	6.95	0.92	36.1	0.04	76.6		
24-Jun-20	1190 Plummer	0	0	0	0	14	6.88	0.80	37.7	0.04	79.3		
30-Jun-20	995 Sabine			0	0	14	6.99	0.81	39.0	0.04	82.8		
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)

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 Manganese (2019) from: <https://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
I = Inorganic chemical parameter	Manganese (2019)	0.12	AO: <0.02	Dissolution of naturally-occurring minerals commonly found in soil and rock. Other sources include industrial discharge, mining activities and leaching from landfills.	Health Basis of MAC: Effects on neurological development and behaviour; deficits in memory, attention, and motor skills. Other: Formula-fed infants (where water containing manganese at levels above the MAC is used to prepare formula) may be especially at risk.	AO based on minimizing the occurrence of discoloured water, consumer complaints and staining of laundry.



Regional District of Nanaimo - Water Services Department

San Pareil Water Analysis - 2020 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)
6-May-20	793 San Malo	0	0	0	0	10	6.91	0.61	30.4	0.03	64.8	0.04	0.004
13-May-20	962 Ballenas	0	0	0	0	11	6.92	0.80	29.6	0.03	62.9		
20-May-20	995 Sabine	0	0	0	0	12	6.93	0.75	30.6	0.03	65.2		
27-May-20	1190 Plummer	0	0	0	0	9	6.95	0.84	30.9	0.03	65.7		
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)

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Comments:

Notes below about Manganese (2019) from: <https://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
I = Inorganic chemical parameter	Manganese (2019)	0.12	AO: <0.02	Dissolution of naturally-occurring minerals commonly found in soil and rock. Other sources include industrial discharge, mining activities and leaching from landfills.	Health Basis of MAC: Effects on neurological development and behaviour; deficits in memory, attention, and motor skills. Other: Formula-fed infants (where water containing manganese at levels above the MAC is used to prepare formula) may be especially at risk.	AO based on minimizing the occurrence of discoloured water, consumer complaints and staining of laundry.



Regional District of Nanaimo - Water Services Department

San Pareil Water Analysis - 2020 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)
6-Apr-20	793 San Malo	0	0	0	0	9	7.06	0.65	35.5	0.03	71.1	0.03	0.015
15-Apr-20	962 Ballenas	0	0	0	0	9	7.06	0.67	35.1	0.03	74.6		
22-Apr-20	995 Sabine	0	0	0	0	10	7.01	0.72	31.4	0.03	66.7		
29-Apr-20	1190 Plummer	0	0	0	0	8	6.75	0.78	30.7	0.03	65.4		
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)

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Comments:

Notes below about Manganese (2019) from: <https://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
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Regional District of Nanaimo - Water Services Department

San Pareil Water Analysis - 2020 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)
4-Mar-20	793 San Malo	0	0	0	0	7	6.71	0.77	36.6	0.04	77.6	0.03	0.014
11-Mar-20	1190 Plummer	0	0	0	0	8	7.03	0.81	34.7	0.03	73.8		
18-Mar-20	995 Sabine	0	0	0	0	9	6.75	0.70	35.8	0.04	76.1		
25-Mar-20	962 Ballenas	0	0	0	0	7	6.82	0.47	38.6	0.04	81.9		
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)

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Comments:

Notes below about Manganese (2019) from: <https://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
I = Inorganic chemical parameter	Manganese (2019)	0.12	AO: <0.02	Dissolution of naturally-occurring minerals commonly found in soil and rock. Other sources include industrial discharge, mining activities and leaching from landfills.	Health Basis of MAC: Effects on neurological development and behaviour; deficits in memory, attention, and motor skills. Other: Formula-fed infants (where water containing manganese at levels above the MAC is used to prepare formula) may be especially at risk.	AO based on minimizing the occurrence of discoloured water, consumer complaints and staining of laundry.

Regional District of Nanaimo - Water Services Department

San Pareil Water Analysis - 2020 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-Feb-20	793 San Malo	0	0	0	0	7	6.74	0.54	36.2	0.04	77.0	0.06	0.037
12-Feb-20	962 Ballenas	0	0	0	0	7	6.65	0.86	39.7	0.04	84.2		
19-Feb-20	995 Sabine	0	0	0	0	8	6.47	0.83	40.4	0.04	85.8		
26-Feb-20	1190 Plummer	0	0	0	0	8	6.60	0.93	38.5	0.04	81.8		
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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Type	Parameter (published, reaffirmed)	MAC (mg/L)	Other value (mg/L)	Common sources of parameter in water	Health considerations	Comments
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Regional District of Nanaimo - Water Services Department

San Pareil Water Analysis - 2020 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)
8-Jan-20	793 San Malo	0	0	0	0	8	7.00	0.67	34.3	0.03	72.9	0.02	0.037
15-Jan-20	962 Ballenas	0	0	0	0	8	6.73	0.38	39.3	0.04	83.4		
22-Jan-20	995 Sabine	0	0	0	0	8	6.70	0.42	80.9	0.09	171.2		
29-Jan-20	1190 Plummer	0	0	0	0	8	6.70	0.69	34.8	0.03	74.0		
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)

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

Comments:

Notes below about Manganese (2019) from: <https://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
I= Inorganic chemical parameter	Manganese (2019)	0.12	AO: <0.02	Dissolution of naturally-occurring minerals commonly found in soil and rock. Other sources include industrial discharge, mining activities and leaching from landfills.	Health Basis of MAC: Effects on neurological development and behaviour; deficits in memory, attention, and motor skills. Other: Formula-fed infants (where water containing manganese at levels above the MAC is used to prepare formula) may be especially at risk.	AO based on minimizing the occurrence of discoloured water, consumer complaints and staining of laundry.

CDWG=Canadian Drinking Water Guidelines
OG= Operational Guidance Value

MAC=Maximum Acceptable Concentration
AO= Asthetic Objective

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	Units	CDWG		October 12 2016	September 20 2017	October 29 2018	October 3 2019	October 20 2020
Miscellaneous Inorganics								
Fluoride	mg/L	1.5	MAC	0.015	0.023	0.02	<0.05	<0.05
Alkalinity (total as CaCO)	mg/L			25.5	23.8	24.6	22	26
Anions								
Dissolved Sulphate	mg/L	500	AO	2	1.7	1.6	1.7	2.6
Dissolved Chloride	mg/L	250	AO	15	13	16	15	8.3
Nitrite	mg/L	1	MAC	<0.0050	<0.0050	<0.0050	<0.005	<0.005
Miscellaneous								
Apparent Colour	Colour Unit			<5.0	5	5	5	10
Nutrients								
Total Ammonia	mg/L			0.081	<0.020	<0.020	0.084	<0.015
Physical Properties								
Conductivity	µS/cm			102	91.4	106	100	80
pH	pH	7.0:10.5	OG	7.31	7.59	7.42	6.93	7.38
TDS	mg/L	500	AO	64	54	72	66	58
Turbidity	NTU			0.16	0.14	0.13	<0.10	<0.10
Microbiological Parameters								
E.coli	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0	0	0
Total Coliforms	MPN/100mL	<1	MAC	6.4	14	<1.0	4.2	0
Calculated Parameters								
Total Hardness (CaCO)	mg/L			32.2	29.9	35.1	30.8	26.2
Nitrate	mg/L	10	MAC	0.149	0.090	0.090	0.114	0.104
Elements								
Total Mercury	mg/L	0.001	MAC	<0.00001	<0.00001	<0.000002	<0.000002	<0.000019
Total Metals								
Total Aluminum	mg/L	0.1	OG	0.0058	0.008	0.008	0.0043	0.0084
Total Antimony	mg/L	0.006	MAC	<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
Total Barium	mg/L	1	MAC	0.0055	0.005	0.0052	0.005	0.004
Total Beryllium	mg/L			<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Total Bismuth	mg/L			<0.001	<0.001	<0.001	<0.001	<0.001
Total Boron	mg/L	5	MAC	<0.050	<0.050	<0.050	<0.05	<0.05
Total Cadmium	mg/L	0.005	MAC	<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
Total Cobalt	mg/L			<0.0005	<0.0002	<0.0002	<0.0002	<0.0002
Total Copper	mg/L	1	AO	0.00634	0.00185	0.0106	0.00065	0.00083
Total Iron	mg/L	0.3	AO	0.0065	0.0104	0.0289	0.0083	0.0148
Total Lead	mg/L	0.01	MAC	0.00092	0.00065	0.00129	<0.0002	<0.0002
Total Manganese	mg/L	0.02 0.12	AO MAC	<0.001	<0.001	0.0036	<0.001	0.0017
Total Molybdenum	mg/L			<0.001	<0.001	<0.001	<0.001	<0.001
Total Nickel	mg/L			<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
Total Silicon	mg/L			3.02	3.48	2.81	2.5	2.92
Total Silver	mg/L			<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Total Strontium	mg/L			0.0489	0.042	0.0476	0.0418	0.0345
Total Thallium	mg/L			<0.00005	<0.00001	<0.00001	<0.00001	<0.00001
Total Tin	mg/L			<0.005	<0.005	<0.005	<0.005	<0.005
Total Titanium	mg/L			<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
Total Vanadium	mg/L			<0.005	<0.005	<0.005	<0.005	<0.005
Total Zinc	mg/L	5	AO	<0.005	<0.005	0.0072	<0.005	<0.005
Total Zirconium	mg/L			<0.0005	<0.0001	<0.0001	<0.0001	<0.0001
Total Calcium	mg/L			10.4	9.75	11.5	10.1	8.44
Total Magnesium	mg/L			1.54	1.35	1.56	1.38	1.26
Total Potassium	mg/L			0.213	0.194	0.207	0.192	0.198
Total Sodium	mg/L	200	AO	5.82	4.64	4.99	5.1	4.55
Total Sulphur	mg/L			<3.0	<3.0	<3.0	<3	<3
UVT	%T/cm			97.0	>97.7	97.4	95.3	93.7

Notes below about Manganese (2019) from: <https://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
I = Inorganic chemical parameter	Manganese (2019)	0.12	AO: <0.02	Dissolution of naturally-occurring minerals commonly found in soil and rock. Other sources include industrial discharge, mining activities and leaching from landfills.	Health Basis of MAC: Effects on neurological development and behaviour; deficits in memory, attention, and motor skills. Other: Formula-fed infants (where water containing manganese at levels above the MAC is used to prepare formula) may be especially at risk.	AO based on minimizing the occurrence of discoloured water, consumer complaints and staining of laundry.

CDWG=Canadian Drinking Water Guidelines
OG= Operational Guidance Value

MAC=Maximum Acceptable Concentration
AO= Aesthetic Objective

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	Units	CDWG		October 12 2016	September 20 2017	October 29 2018	October 17 2019	October 20 2020
Miscellaneous Inorganics								
Fluoride	mg/L	1.5	MAC	0.015	0.026	0.021	<0.05	<0.05
Alkalinity (total as CaCO)	mg/L			22.1	24	22.4	21	26
Anions								
Dissolved Sulphate	mg/L	500	AO	1.8	1.7	1.4	1.5	2.3
Dissolved Chloride	mg/L	250	AO	16	12	14	14	7.8
Nitrite	mg/L	1	MAC	<0.0050	<0.0050	<0.0050	<0.005	<0.005
Miscellaneous								
Apparent Colour	Colour Unit			5	5	5	5	10
Nutrients								
Total Ammonia	mg/L			0.084	<0.020	<0.020	0.064	<0.015
Physical Properties								
Conductivity	µS/cm			100	91.3	96	96	77
pH	pH	7.0:10.5	OG	7.21	7.66	7.39	6.97	7.36
TDS	mg/L	500	AO	70	66	58	70	62
Turbidity	NTU			0.17	0.25	0.25	<0.1	<0.1
Microbiological Parameters								
E.coli	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0	0	0
Total Coliforms	MPN/100mL	<1	MAC	5.3	<1.0	<1.0	0	0
Calculated Parameters								
Total Hardness (CaCO)	mg/L			31.1	30.3	31.9	29	25.5
Nitrate	mg/L	10	MAC	0.229	0.111	0.113	0.135	0.1
Elements								
Total Mercury	mg/L	0.001	MAC	<0.00001	<0.00001	0.0000048	<0.000002	<0.0000019
Total Metals								
Total Aluminum	mg/L	0.1	OG	0.0069	0.0067	0.0083	0.0045	0.008
Total Antimony	mg/L	0.006	MAC	<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
Total Barium	mg/L	1	MAC	0.0034	0.0028	0.0032	0.0031	0.004
Total Beryllium	mg/L			<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Total Bismuth	mg/L			<0.001	<0.001	<0.001	<0.001	<0.001
Total Boron	mg/L	5	MAC	<0.050	<0.050	<0.050	<0.05	<0.05
Total Cadmium	mg/L	0.005	MAC	<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
Total Cobalt	mg/L			<0.0005	<0.0002	<0.0002	<0.0002	<0.0002
Total Copper	mg/L	1	AO	0.00623	0.00153	0.0103	0.00085	0.00078
Total Iron	mg/L	0.3	AO	0.0218	0.026	0.0206	0.0151	0.0101
Total Lead	mg/L	0.01	MAC	0.0007	0.00053	0.00071	<0.0002	<0.0002
Total Manganese	mg/L	0.02 0.12	AO MAC	0.0077	0.0092	0.0022	0.0024	0.0013
Total Molybdenum	mg/L			<0.001	<0.001	<0.001	<0.001	<0.001
Total Nickel	mg/L			<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
Total Silicon	mg/L			3.37	4.05	3.31	2.96	2.87
Total Silver	mg/L			<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Total Strontium	mg/L			0.047	0.0414	0.0436	0.0382	0.0346
Total Thallium	mg/L			<0.00005	<0.00001	<0.00001	<0.00001	<0.00001
Total Tin	mg/L			<0.005	<0.005	<0.005	<0.005	<0.005
Total Titanium	mg/L			<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
Total Vanadium	mg/L			<0.005	<0.005	<0.005	<0.005	<0.005
Total Zinc	mg/L	5	AO	<0.005	<0.005	0.0097	<0.005	<0.005
Total Zirconium	mg/L			<0.0005	<0.0001	<0.0001	<0.0001	<0.0001
Total Calcium	mg/L			9.83	9.73	10.5	9.37	8.24
Total Magnesium	mg/L			1.6	1.47	1.41	1.36	1.21
Total Potassium	mg/L			0.339	0.285	0.31	0.287	0.175
Total Sodium	mg/L	200	AO	5.54	4.7	4.55	4.91	4.55
Total Sulphur	mg/L			<3.0	<3.0	<3.0	<3.0	<3
UVT	%T/cm			97.2	97.5	97.4	95.1	93.4

Notes below about Manganese (2019) from: <https://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
I = Inorganic chemical parameter	Manganese (2019)	0.12	AO: <0.02	Dissolution of naturally-occurring minerals commonly found in soil and rock. Other sources include industrial discharge, mining activities and leaching from landfills.	Health Basis of MAC: Effects on neurological development and behaviour; deficits in memory, attention, and motor skills. Other: Formula-fed infants (where water containing manganese at levels above the MAC is used to prepare formula) may be especially at risk.	AO based on minimizing the occurrence of discoloured water, consumer complaints and staining of laundry.

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

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

	Units	CDWG		May 13 2014	May 19 2015	May 10 2016	May 10 2017	May 2 2018	May 23 2019	May 21 2020
Miscellaneous Inorganics										
Fluoride	mg/L	1.5	MAC	<0.05	0.022	0.021	0.027	0.023	<0.02	<0.05
Alkalinity (total as CaCO ₃)	mg/L			24	25.1	25.7	25.3	24.7	22.7	21
Anions										
Dissolved Sulphate	mg/L	500	AO	1.7	1.91	1.95	1.88	2.2	1.2	1.8
Dissolved Chloride	mg/L	250	AO	4.7	9	6	4.1	5	7.3	5.5
Nitrite	mg/L	1	MAC	<0.05	<0.0050	<0.0050	<0.0050	<0.0050		<0.005
Miscellaneous										
Apparent Colour	Colour Unit			<5	<5	5	10	5	5	5
Nutrients										
Total Ammonia	mg/L			<0.02	0.0071	0.014	0.2	<0.020	<0.015	<0.015
Physical Properties										
Conductivity	µS/cm			69	82.9	72.3	66.9	64	72.8	62
pH	pH	7.0:10.5	AO	6.7	7.41	7.26	7.43	7.25	7.31	6.92
TDS	mg/L	500	AO	54	50	58	26	52	42	36
Turbidity	NTU			<0.5	<0.10	<0.10	0.14	<0.10	<0.1	0.16
Microbiological Parameters										
E.coli	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0	<1.0	<1.0	0	0
Total Coliforms	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0	<1.0	<1.0	0	0
Calculated Parameters										
Total Hardness (CaCO ₃)	mg/L			22	29.7	23.6	22.6	20.6	21.2	19.9
Nitrate	mg/L	10	MAC	0.08	0.05	0.05	0.06	0.042		<0.02
Elements										
Total Mercury	mg/L	0.001	MAC	<0.00001	<0.00001	<0.00001	<0.00001	0.0000021	<0.000002	<0.0000019
Total Metals										
Total Aluminum	mg/L	0.1	OG	<0.025	0.008	0.0104	0.0138	0.0152	0.0094	0.0145
Total Antimony	mg/L	0.006	MAC	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Total Arsenic	mg/L	0.01	MAC	<0.00025	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Total Barium	mg/L	1	MAC	0.00293	0.0035	0.0031	0.0034	0.0027	0.0027	0.0024
Total Beryllium	mg/L			<0.00025	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Total Bismuth	mg/L			<0.0005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total Boron	mg/L	5	MAC	0.011	<0.05	<0.05	<0.050	<0.050	<0.05	<0.05
Total Cadmium	mg/L	0.005	MAC	<0.00005	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Total Chromium	mg/L	0.05	MAC	<0.0025	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total Cobalt	mg/L			<0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002
Total Copper	mg/L	1	AO	0.0073	0.0026	0.00332	0.00428	0.00516	0.0045	0.00454
Total Iron	mg/L	0.3	AO	0.021	0.016	0.0147	0.0185	0.0147	0.0117	0.0134
Total Lead	mg/L	0.01	MAC	0.0007	0.00183	0.00053	0.0006	0.00089	0.00115	0.00065
Total Manganese	mg/L	0.02 0.12	AO MAC	<0.0050	0.0052	0.0034	0.0016	<0.001	0.0014	<0.001
Total Molybdenum	mg/L			<0.00025	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total Nickel	mg/L			<0.0010	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total Selenium	mg/L	0.05	MAC	<0.0005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Total Silicon	mg/L			3.21	3.7	3.46	3.56	3.07	3.36	3.16
Total Silver	mg/L			<0.00025	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Total Strontium	mg/L			0.0292	0.0372	0.032	0.0304	0.0273	0.0316	0.0263
Total Thallium	mg/L			<0.00005	<0.00005	<0.00005	<0.00001	<0.00001	<0.00001	<0.00001
Total Tin	mg/L			<0.0005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Total Titanium	mg/L			<0.0025	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Total Uranium	mg/L	0.02	MAC	<0.00005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Total Vanadium	mg/L			<0.0005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Total Zinc	mg/L	5	AO	0.0161	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Total Zirconium	mg/L				<0.0005	<0.0005	<0.0001	<0.0001	<0.0001	<0.0001
Total Calcium	mg/L			7.19	9.87	7.6	7.38	6.55	6.84	6.43
Total Magnesium	mg/L			0.93	1.23	1.13	1.03	1.04	1	0.928
Total Potassium	mg/L			<0.5	0.212	0.197	0.194	0.189	0.184	0.181
Total Sodium	mg/L	200	AO	4.3	4.52	4.4	4.15	4.34	4.09	4.12
Total Sulphur	mg/L				<3.0	<3.0	<3.0	<3.0	<3	<3