Town of Smithers

2020 Annual Water Public Report

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2020 APPENDICES

Water Distribution System History

Since 1992, water purveyors in B.C. have been required to possess an Operating Permit issued by their Regional Health Authority, which includes following the *Guidelines for Canadian Drinking Water Quality*), and the *British Columbia Drinking Water Protection Act* and *Drinking Water Protection Regulation*

Water Distribution System Description

The Town of Smithers water system currently draws water from three wells. Well #1 (19th Avenue) is located about 30 feet away from the original well and is connected to the same pumphouse. It is 268 feet deep and in a sand and gravel aquifer with a 12-inch telescoping screen between 234 and 265 feet. This pumphouse is used for annual chlorine application for Spring Water Main Flushing.

Well #2 (Victoria Street well) is 244 feet deep, in the same aquifer, well confined from potential contamination from an old landfill site, and with a similar screen from 193 to 235 feet. Its capacity is unknown, but lower than Well #1.

Well #3 (Riverside Park) is located adjacent to the Bulkley River, is 92 feet deep gravel aquifer with a similar screen from 64 to 85 feet.

The Town reported that the Well #1 (19th Avenue) currently produces about 70 L/s (1,100 USGPM), the Well #2 (Victoria Street) produces about 17 L/s (270 USGPM) and the Well #3 (Riverside Park) produces about 60 L/s (950 USGPM). The system serves approximately 5,400 people.

Standards

The Town of Smithers has a Northern Health Authority permit to operate a drinking water system with 301 -10000 connections (copy of permit attached – Appendix "A"). The Emergency Response Plan is reviewed and updated annually or as required.

Three samples are collected weekly and tested for Bacteria. This schedule was setup with the Environmental Health Officer in 2018 to accommodate the limited days that is available to send out the samples weekly. Overall, the Town of Smithers tests at least 8 different locations each month. These samples are taken to the local Northern Health Authority Office and sent to an accredited lab for testing and analyzed for presence of Total Coliform and *E. coli*.

In 2020, there were a total of 123 samples collected, and of the samples collected 3 were positive for Total Coliforms and 18 tested positive background growth, which could be attributed to many things including handling and testing practices. Each of these sites were carefully re-sampled and came back negative of any background growth or total Coliforms.

Please note that when background growth counts are **greater than 200**, a follow-up investigation by Northern Health and sampling would be initiated as a high count like that could indicate that the water system may be under potability stress. A complete breakdown of Total Coliforms and E. coli results can be found in Appendix "B" for 2020.

Chemical testing is done annually from each source, or at the request of the Environmental Health Officer, and are sent to an accredited lab from Northern Health Authority for testing and are analyzed for chemical and physical parameters including potability, metals and mercury. A history of results can be found in Appendix C.

The results can also be found at Healthspace.ca/nha - Smithers Community Water Systems - Samples

Health Canada has established a new **Health-Based Guideline** in 2019 for manganese with a **M**aximum **A**cceptable **C**oncentration (**MAC**) of 0.12 mg/L and an **A**esthetic **O**bjective (**AO**) of 0.02 mg/L. Lab analysis indicated that the water was slightly soft with relatively low mineral content. It met objectives except that the manganese level in two of the wells were 0.148 mg/L and 0.174 mg/L, both of which are slightly above the Maximum acceptable concentration level of 0.12 mg/L.

Manganese (Mn)

Manganese is an essential element for humans and occurs naturally in the environment and is widely distributed in air, water, and soil. The main problem with manganese in drinking water has to do with undesirable taste and discoloration (black) of the water. Aesthetic Quality Guidelines address parameters, which may affect consumer acceptance of drinking water, such as taste, odour, and color. Operational guidelines are set for parameters that may affect processes at a treatment plant of in the drinking water distribution system. The Maximum Acceptable Concentration (MAC) for manganese in drinking water is 0.12 mg/L. As with iron, the presence of manganese in water may lead to the accumulation of microbial growths in the distribution system. Even at concentrations below 0.12 mg/L, manganese may form coatings on water distribution pipes that may slough off as black precipitates. We are actively looking for grant money to upgrade our system and treatment plant.

Manganese levels for Well # 1 (19th Avenue) 0.148 mg/L, Well #3 (Riverside) 0.174 mg/L, Smithers Fire Department 0.112 mg/L, Works & Operations Department 0.185 mg/L, and the Smithers Town Office 0.0910 mg/L.

For more information regarding drinking water, please refer to Health Canada and the Canadian Drinking Water Guidelines (CDWG) Canadian Drinking Water Guidelines - Manganese.

Water Storage Facilities

The distribution system includes two reservoirs, both of which float on the system. The Float on the System is a method of operating a water storage facility. Daily flow into the facility is approximately equal to the average daily demand for water. When consumer demands for water are low, the storage facility will be filling. During periods of high demand, the facility will be emptying. The reservoir levels are lowered and raised significantly each day. One reservoir is 265,000 gallons and is approximately 10 feet deep. The other is 1,000,000 gallons and 25 feet deep. Both have a single inlet/outlet, and the distribution system is flushed annually.

The main Moncton Road reservoir was built in 1975. The reservoir has been tested and the Condition Survey is on file in the Chief Operator's Office as well as in the Engineering Department at the Town Office. This reservoir was cleaned in 2005 and is scheduled for cleaning in 2020.

The small reservoir on Zobnick Road was built in 1950; it contains two compartments and is underground. Access is by manhole. The Zobnick reservoir was cleaned in September 2015.

Well Maintenance

Well maintenance is a critical component of our water infrastructure maintenance program. As the water from the three wells is introduced into our distribution grid untreated, we conduct maintenance and monitoring. The water levels are measured and recorded to ensure the aquifer is not over utilized and the system is checked for malfunctions. The system is flushed regularly and all activities around the wells are closely monitored and regulated. The Environmental Operators Certification Program of British Columbia certifies the employees who maintain this facility. Smithers has a Class 1 system, and the Town has three employees who are all level 2 certified that maintain the facilities.

Valves

The Town of Smithers has 871 flow control valves (including the airport) attached to the underground network. The valves are primarily used to control the direction of water flow and to isolate areas of the network for inspection or repair. The expected service life of a flow control valve is 40 to 50 years without cathodic protection and 100 years with cathodic protection. Cathodic Protection (CP) is a technique used to control the corrosion of metal surface by making it the cathode of an electrochemical cell.

Water Main Flushing

The Town of Smithers initiated a water main flushing program in 1978. In 2002, the Town of Smithers replaced the old chlorine gas system with a new hypochlorite (liquid chlorine) system. Each main is flushed annually in the month of May during daytime hours and flushes its 49.2 km of water mains. Chlorine is added the week before and during flushing.

The Town of Smithers follows the Guidelines for Canadian Drinking Water Quality (GCDWQ) protocols regarding the levels of Chlorine that is used. More information regarding Chlorine can be found at Guidelines for Canadian Drinking Water Quality: Guideline Technical Document – Chlorine.

In addition to accumulated debris, some areas of the water system are susceptible to water stagnation, where water usage is low, or water mains terminate at a cul-de-sac or dead-end water main. Accumulated debris and stagnant water inhibit flow through mains, cause dirty water and create a favourable environment for bacteria growth. In response to these concerns, chlorine is added during flushing to offset any bacteria that might be disturbed during the flushing program.

The Town of Smithers takes the responsibility of a water supplier very seriously and takes pride in the fact that we maintain a system that provides the Town of Smithers with the highest quality of potable water.

SUMMARY

In summary, the Town of Smithers undertook the following in the year 2020:

- Flushed every water main
- Maintained 3 pump stations
- Repaired 3 water main valves
- Repaired 10 water serviced boxes
- Repaired 1 fire hydrants
- Turned on/off 12 water services
- Conducted 123 microbiological tests and continued a dedicated water sampling and testing program
- Detected no fecal coliform in any test
- Installed 3 new water meters with R-900i meters
- Total water pumped in 2020 = 882,830 cubic meters
- Maintained emergency generator by running it once a month for an hour

FUTURE PLANS

In 2021 the Town of Smithers plans to undertake flow testing on all sections of the water distribution lines. This will provide information on system pressures and flow rates, assess conditions and operability, water quality characteristics. It will also provide important information for firefighting and is an opportunity for customer interaction.

Respectfully submitted,

Darren Fuerst
Utilities Supervisor

DF/jb

Town of Smithers

2020 Annual Water Public Report

APPENDIX "A"

2020 Ministry of Health Permit

northern health

PERMIT

TO OPERATE

A Drinking Water System with 301-10000 Connections

System Name:	**Smithers Community Water System**
Physical Location:	**Smithers Community Water System**
	1027 Aldous Street
	Smithers BC
Owner Name:	**Town of Smithers**

Conditions of Permit

a) Bacteriological sampling required minimum 6 samples monthly, from locations that are representative of the distribution system, as approved by the Environmental Health Officer.

b) Turbidity shall be maintained at a maximum level of 1 NTU in accordance with the Guidelines for Canadian Drinking Water Quality.

c) Chemical sampling is required yearly or at the request of the Environmental Health Officer.

d) An up-to-date Emergency Response plan shall be maintained.

1-Jul-1992
Effective Permit Date

Environmental Health Officer

21-Feb-2011
Permit Revised Date

This permit must be displayed in a conspicuous place and is non-transferable

Town of Smithers

2020 Annual Water Public Report

APPENDIX "B"

2020 Bacteriological Test Results

Sample Range Report

Northern Health - Northwest Health Service Delivery Area

Facility Name: Smithers Community Water System
Facility Type: WS1A
Date Range: Jan 1 2020 to Dec 31 2020
Date Created: Apr 13 2021

Operator Rob Blackburn
Box 879
Smithers, BC V0J 2N0

Sampling Site	Date Collected	Total Coliform	E. Coli	Fecal Coliform
Municipal Office, 1027 Aldous Street				
	1-20-2020	L1	L1	
	2-10-2020	L1	L1	
	3-2-2020	L1	L1	
	4-27-2020	L1	L1	
	5-4-2020	L1	L1	
	5-25-2020	L1	L1	
	6-15-2020	L1	L1	
	7-6-2020	L1	L1	
	7-13-2020	L1	L1	
	7-27-2020	L1	L1	
	8-17-2020	L1 B9	L1	
	9-8-2020	L1 B2	L1	
	9-28-2020	L1	L1	
	10-20-2020	L1	L1	
	11-17-2020	L1	L1	
	12-8-2020	L1	L1	
	12-29-2020	L1	L1	
	Total Positive :	0	0	0
Smithers Fire Department - Training Room, 1445 Main Street				
	1-6-2020	L1	L1	
	2-3-2020	L1	L1	
	3-16-2020	L1	L1	
	4-6-2020	L1	L1	
	4-14-2020	L1	L1	
	5-19-2020	L1	L1	
	5-25-2020	L1 B2	L1	
	6-8-2020	L1	L1	
	8-10-2020	L1	L1	
	8-31-2020	L1	L1	
	9-29-2020	L1	L1	
	10-13-2020	L1	L1	
	11-2-2020	L1	L1	

	11-30-2020	L1	L1	
	12-21-2020	L1	L1	
	Total Positive :	**0**	**0**	**0**
Bulkley Valley District Hospital, 3950 8th Avenue				
	1-13-2020	L1	L1	
	1-27-2020	L1	L1	
	2-18-2020	L1	L1	
	3-9-2020	L1	L1	
	3-30-2020	L1	L1	
	4-20-2020	L1	L1	
	5-11-2020	L1	L1	
	6-22-2020	L1	L1	
	7-13-2020	L1	L1	
	8-4-2020	L1	L1	
	9-15-2020	L1	L1	
	9-29-2020	L1	L1	
	10-27-2020	L1	L1	
	11-24-2020	L1	L1	
	12-14-2020	L1	L1	
	Total Positive :	**0**	**0**	**0**
New Arena Lunch Room, 4204 Third Avenue				
	1-13-2020	L1	L1	
	1-27-2020	L1	L1	
	2-18-2020	L1	L1	
	3-9-2020	L1	L1	
	3-30-2020	L1	L1	
	4-20-2020	L1	L1	
	5-11-2020	L1	L1	
	6-1-2020	L1	L1	
	6-22-2020	L1	L1	
	7-21-2020	L1	L1	
	8-4-2020	L1 B2	L1	
	8-24-2020	L1 B4	L1	
	9-15-2020	2	L1	
	9-29-2020	L1	L1	
	10-27-2020	L1	L1	
	11-24-2020	L1	L1	
	12-14-2020	L1	L1	
	Total Positive :	**1**	**0**	**0**
Sunny Point Drive, 1390 Sunny Point Drive				
	1-20-2020	L1	L1	
	2-10-2020	L1	L1	
	3-2-2020	L1	L1	

	4-27-2020	L1	L1	
	5-4-2020	L1	L1	
	5-25-2020	L1	L1	
	6-15-2020	L1 B15	L1	
	7-6-2020	L1 B1	L1	
	7-27-2020	L1	L1	
	8-17-2020	L1	L1	
	9-8-2020	L1	L1	
	9-28-2020	L1	L1	
	10-20-2020	L1	L1	
	11-17-2020	L1	L1	
	12-8-2020	L1	L1	
	12-29-2020	L1 B2	L1	
	Total Positive :	**0**	**0**	**0**
PIR Mill, 2375 Tatlow Road				
	1-6-2020	L1 B1	L1	
	2-3-2020	L1	L1	
	3-16-2020	L1	L1	
	5-19-2020	L1	L1	
	6-8-2020	L1	L1	
	7-21-2020	L1	L1	
	8-10-2020	L1	L1	
	8-31-2020	2 B14	L1	
	9-8-2020	L1 B2	L1	
	9-21-2020	6 B2	L1	
	9-29-2020	L1 B2	L1	
	10-13-2020	L1	L1	
	11-2-2020	L1 B5	L1	
	11-30-2020	L1	L1	
	12-21-2020	L1 B1	L1	
	Total Positive :	**2**	**0**	**0**
Works Yard, 2888 19th Avenue				
	1-6-2020	L1	L1	
	2-3-2020	L1	L1	
	3-16-2020	L1	L1	
	4-6-2020	L1	L1	
	4-14-2020	L1	L1	
	5-19-2020	L1	L1	
	6-8-2020	L1	L1	
	7-21-2020	L1 B1	L1	
	8-10-2020	L1	L1	
	8-31-2020	L1	L1	
	9-29-2020	L1	L1	
	10-13-2020	L1	L1	
	11-2-2020	L1	L1	
	11-30-2020	L1	L1	
	12-21-2020	L1	L1	
	Total Positive :	**0**	**0**	**0**

Hudson Bay Lodge,
3251 Highway 16

1-20-2020	L1	L1	
2-10-2020	L1	L1	
3-2-2020	L1	L1	
6-15-2020	L1	L1	
7-6-2020	L1	L1	
7-27-2020	L1	L1	
8-17-2020	L1 B2	L1	
9-8-2020	L1	L1	
9-21-2020	L1 B1	L1	
10-20-2020	L1	L1	
11-17-2020	L1	L1	
12-8-2020	L1	L1	
12-29-2020	L1	L1	
Total Positive :	**0**	**0**	**0**

Result Values: **E - estimated** **L - less than** **G - greater than**

Samples that contain total coliform:	3	2.44% of total
Samples that contain e. coli:	0	0.00% of total
Samples that contain fecal coliform:	0	0.00% of total
Number of consecutive samples that contain total coliform:	0	
Number of samples that contain total coliform in last 30 days:	0/0	
Total number of samples:	123	

Comments:

Environmental Health Officer
Apr 13 2021

FOR FURTHER INFORMATION PLEASE CALL: Allison Crowe

Definitions:

- Total Coliforms: total coliforms are organisms that are found all around us in the environment (ie on plants, animals and humans). They may or may not be harmful. Northern Health uses these organisms as indicator organisms. If total coliforms are found in the water, that indicates to the Environmental Health Officer (EHO) that other organisms may also be present.
- Fecal Coliforms: bacterial contamination from human or animal waste (feces).
- Escherichia coli: bacterial contamination from human or animal waste (feces).

Codes:

- A: means not tested; likely sample is too long in transit to the lab.
- B# (number) or BG: means the number of non-coliform background bacteria colonies. High numbers (>200) may indicate deteriorating water quality
- CFU: colony forming units
- E. Coli: means Escherichia coli.
- EST: means estimated count.
- L1: means less than 1 (<1) – essentially 0. Satisfactory.
- OG: means overgrowth of bacterial colonies; not possible to count coliform bacteria – unsatisfactory.
- R: means not tested; resample is likely required
- T: means not tested; likely sample is too long in transit to the lab.

Town of Smithers

2020 Annual Water Public Report

APPENDIX "C"

2020 Analytical Report

norlabs
Northern Laboratories (2010) Ltd.

ANALYTICAL REPORT

Town of Smithers
PO Box 879
Smithers, BC V0J 2N0
utilities@smithers.ca

Work Order: N20E160
RECEIVED: 29-May-2020

Project: Drinking water
Project Number: -
Project Manager: Dale Chartrand

REPORTED: 26-Jun-2020

All analyses were performed in accordance with standard procedures published by BC MoE, Health Canada, Environment Canada, the American Public Health Association, or the US EPA.

Northern Laboratories (2010) Ltd.

Jesse Newton
Laboratory Manager

norlabs
Northern Laboratories (2010) Ltd.

ANALYTICAL REPORT

Town of Smithers - Drinking water **Work Order:** N20E160

LAB #				N20E160-01	N20E160-02	N20E160-03	N20E160-04
SAMPLED DATE				28-May-20	28-May-20	28-May-20	28-May-20
SAMPLED TIME				13:00	13:20	13:35	13:50
SAMPLE ID				19th Ave Well	Riverside Well	Fire Hall	Town Office
	MRL	Units	CDWG				
Bacteriological Parameters (Water)							
Total Coliforms	1	MPN/100 mL	MAC = None Detected (<1)	<1	<1	<1	<1
E. coli	1	MPN/100 mL	MAC = None Detected (<1)	<1	<1	<1	<1
General Parameters (Water)							
pH	1.0	pH units	7.0-10.5	**8.2**	**8.2**	**8.2**	**8.2**
Alkalinity (total, as CaCO3)	1	mg/L	-	**210**	**120**	**120**	**120**
Conductivity	1.0	uS/cm	-	**429**	**265**	**263**	**269**
Colour	1	PtCo units	AO <= 15	**1**	**1**	**2**	**2**
Turbidity	0.05	NTU	MAC = 1	**1.10**	**0.50**	**0.35**	**0.42**
Solids, Total Dissolved / TDS	1.0	mg/L	AO <= 500	**240**	**140**	**150**	**150**
Calculated Parameters (Water)							
Nitrate (as N)	0.10	mg/L	MAC = 10	<0.10	<0.10	<0.10	<0.10
Hardness, Total (as CaCO3)	0.500	mg/L	-	**91.2**	**104**	**104**	**104**
Anions (Water)							
Chloride	1.0	mg/L	AO <= 250	**15.3**	**6.2**	**6.3**	**6.7**
Fluoride	0.05	mg/L	MAC = 1.5	**0.14**	<0.10	<0.10	<0.10
Nitrite (as N)	0.01	mg/L	MAC = 1	<0.01	<0.01	<0.01	<0.01
Nitrate + Nitrite (as N)	0.10	mg/L	MAC = 10	<0.10	<0.10	<0.10	<0.10
Sulfate	1.0	mg/L	AO <= 500	**2.1**	**9.9**	**9.7**	**9.4**
Total Metals (Water)							
Aluminum, total	0.0050	mg/L	OG < 0.1	<0.0050	<0.0050	<0.0050	<0.0050
Antimony, total	0.00020	mg/L	MAC = 0.006	<0.00020	<0.00020	<0.00020	<0.00020
Arsenic, total	0.00050	mg/L	MAC = 0.01	**0.00148**	**0.00330**	**0.00310**	**0.00281**
Barium, total	0.0050	mg/L	MAC = 1	**0.0893**	**0.0613**	**0.0609**	**0.0693**
Beryllium, total	0.00010	mg/L	-	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth, total	0.00010	mg/L	-	<0.00010	<0.00010	<0.00010	<0.00010
Boron, total	0.0050	mg/L	MAC = 5	**0.0628**	**0.0260**	**0.0236**	**0.0225**
Cadmium, total	0.000010	mg/L	MAC = 0.005	<0.000010	<0.000010	<0.000010	<0.000010
Calcium, total	0.20	mg/L	-	**23.7**	**26.8**	**26.7**	**26.8**
Chromium, total	0.00050	mg/L	MAC = 0.05	<0.00050	<0.00050	<0.00050	<0.00050

norlabs
Northern Laboratories (2010) Ltd.

ANALYTICAL REPORT

Town of Smithers - Drinking water

Work Order: N20E160

LAB #				N20E160-01	N20E160-02	N20E160-03	N20E160-04
SAMPLED DATE				28-May-20	28-May-20	28-May-20	28-May-20
SAMPLED TIME				13:00	13:20	13:35	13:50
SAMPLE ID				19th Ave Well	Riverside Well	Fire Hall	Town Office
	MRL	Units	CDWG				
Total Metals (continued)							
Cobalt, total	0.00010	mg/L	-	<0.00010	<0.00010	<0.00010	<0.00010
Copper, total	0.00040	mg/L	AO = 1 MAC = 2	**0.00714**	**0.00739**	**0.0346**	**0.0844**
Iron, total	0.010	mg/L	AO <= 0.3	**0.013**	**0.024**	**0.025**	**0.022**
Lead, total	0.00020	mg/L	MAC = 0.005	**0.00034**	**0.00047**	<0.00020	**0.00029**
Lithium, total	0.00010	mg/L	-	**0.00322**	**0.00066**	**0.00064**	**0.00080**
Magnesium, total	0.010	mg/L	-	**7.78**	**9.00**	**9.18**	**9.04**
Manganese, total	0.00020	mg/L	AO <= 0.02 MAC = 0.12	**0.148**	**0.174**	**0.112**	**0.0910**
Mercury, total	0.000010	mg/L	MAC = 0.001	<0.000010	<0.000010	<0.000010	<0.000010
Molybdenum, total	0.00010	mg/L	-	**0.00377**	**0.00116**	**0.00103**	**0.00101**
Nickel, total	0.00040	mg/L	-	<0.00040	<0.00040	<0.00040	<0.00040
Phosphorus, total	0.050	mg/L	-	<0.050	<0.050	<0.050	<0.050
Potassium, total	0.10	mg/L	-	**1.51**	**0.63**	**0.64**	**0.69**
Selenium, total	0.00050	mg/L	MAC = 0.05	<0.00050	<0.00050	<0.00050	<0.00050
Silicon, total	1.0	mg/L	-	**7.0**	**5.5**	**5.7**	**5.7**
Silver, total	0.000050	mg/L	-	<0.000050	<0.000050	<0.000050	<0.000050
Sodium, total	0.10	mg/L	AO <= 200	**60.7**	**14.6**	**15.1**	**16.8**
Strontium, total	0.0010	mg/L	MAC = 7	**0.298**	**0.278**	**0.274**	**0.282**
Sulfur, total	3.0	mg/L	-	<3.0	<3.0	**3.4**	<3.0
Tellurium, total	0.00050	mg/L	-	<0.00050	<0.00050	<0.00050	<0.00050
Thallium, total	0.000020	mg/L	-	<0.000020	<0.000020	<0.000020	<0.000020
Thorium, total	0.00010	mg/L	-	<0.00010	<0.00010	<0.00010	<0.00010
Tin, total	0.00020	mg/L	-	<0.00020	<0.00020	<0.00020	<0.00020
Titanium, total	0.0050	mg/L	-	<0.0050	<0.0050	<0.0050	<0.0050
Tungsten, total	0.0010	mg/L	-	<0.0010	<0.0010	<0.0010	<0.0010
Uranium, total	0.000020	mg/L	MAC = 0.02	**0.000643**	**0.000084**	**0.000087**	**0.000129**
Vanadium, total	0.0010	mg/L	-	<0.0010	<0.0010	<0.0010	<0.0010
Zinc, total	0.0040	mg/L	AO <= 5	<0.0040	<0.0040	<0.0040	<0.0040
Zirconium, total	0.00010	mg/L	-	<0.00010	<0.00010	<0.00010	<0.00010

norlabs
Northern Laboratories (2010) Ltd.

ANALYTICAL REPORT

Town of Smithers - Drinking water **Work Order:** N20E160

LAB #				**N20E160-05**
SAMPLED DATE				**28-May-20**
SAMPLED TIME				**14:10**
SAMPLE ID				**Works Yard**
	MRL	***Units***	***CDWG***	
Bacteriological Parameters (Water)				
Total Coliforms	1	MPN/100 mL	MAC = None Detected (<1)	<1
E. coli	1	MPN/100 mL	MAC = None Detected (<1)	<1
General Parameters (Water)				
pH	1.0	pH units	7.0-10.5	**8.2**
Alkalinity (total, as CaCO3)	1	mg/L	-	**140**
Conductivity	1.0	uS/cm	-	**305**
Colour	1	PtCo units	AO <= 15	**2**
Turbidity	0.05	NTU	MAC = 1	**1.68**
Solids, Total Dissolved / TDS	1.0	mg/L	AO <= 500	**170**
Calculated Parameters (Water)				
Nitrate (as N)	0.10	mg/L	MAC = 10	<0.10
Hardness, Total (as CaCO3)	0.500	mg/L	-	**98.2**
Anions (Water)				
Chloride	1.0	mg/L	AO <= 250	**8.5**
Fluoride	0.05	mg/L	MAC = 1.5	<0.10
Nitrite (as N)	0.01	mg/L	MAC = 1	<0.01
Nitrate + Nitrite (as N)	0.10	mg/L	MAC = 10	<0.10
Sulfate	1.0	mg/L	AO <= 500	**6.7**
Total Metals (Water)				
Aluminum, total	0.0050	mg/L	OG < 0.1	<0.0050
Antimony, total	0.00020	mg/L	MAC = 0.006	<0.00020
Arsenic, total	0.00050	mg/L	MAC = 0.01	**0.00234**
Barium, total	0.0050	mg/L	MAC = 1	**0.0766**
Beryllium, total	0.00010	mg/L	-	<0.00010
Bismuth, total	0.00010	mg/L	-	<0.00010
Boron, total	0.0050	mg/L	MAC = 5	**0.0315**
Cadmium, total	0.000010	mg/L	MAC = 0.005	<0.000010
Calcium, total	0.20	mg/L	-	**25.1**
Chromium, total	0.00050	mg/L	MAC = 0.05	<0.00050
Cobalt, total	0.00010	mg/L	-	<0.00010

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Northern Laboratories (2010) Ltd.

ANALYTICAL REPORT

Town of Smithers - Drinking water

Work Order: N20E160

LAB #				**N20E160-05**
SAMPLED DATE				**28-May-20**
SAMPLED TIME				**14:10**
SAMPLE ID				**Works Yard**
	MRL	**Units**	**CDWG**	
Total Metals (continued)				
Copper, total	0.00040	mg/L	AO = 1 MAC = 2	**0.0471**
Iron, total	0.010	mg/L	AO <= 0.3	**0.021**
Lead, total	0.00020	mg/L	MAC = 0.005	<0.00020
Lithium, total	0.00010	mg/L	-	**0.00164**
Magnesium, total	0.010	mg/L	-	**8.59**
Manganese, total	0.00020	mg/L	AO <= 0.02 MAC = 0.12	**0.185**
Mercury, total	0.000010	mg/L	MAC = 0.001	<0.000010
Molybdenum, total	0.00010	mg/L	-	**0.00105**
Nickel, total	0.00040	mg/L	-	<0.00040
Phosphorus, total	0.050	mg/L	-	<0.050
Potassium, total	0.10	mg/L	-	**0.95**
Selenium, total	0.00050	mg/L	MAC = 0.05	<0.00050
Silicon, total	1.0	mg/L	-	**6.0**
Silver, total	0.000050	mg/L	-	<0.000050
Sodium, total	0.10	mg/L	AO <= 200	**31.4**
Strontium, total	0.0010	mg/L	MAC = 7	**0.280**
Sulfur, total	3.0	mg/L	-	<3.0
Tellurium, total	0.00050	mg/L	-	<0.00050
Thallium, total	0.000020	mg/L	-	<0.000020
Thorium, total	0.00010	mg/L	-	<0.00010
Tin, total	0.00020	mg/L	-	<0.00020
Titanium, total	0.0050	mg/L	-	<0.0050
Tungsten, total	0.0010	mg/L	-	<0.0010
Uranium, total	0.000020	mg/L	MAC = 0.02	**0.000305**
Vanadium, total	0.0010	mg/L	-	<0.0010
Zinc, total	0.0040	mg/L	AO <= 5	**0.0094**
Zirconium, total	0.00010	mg/L	-	<0.00010

Town of Smithers - Drinking water **Work Order:** N20E160

Glossary of Terms

MRL	Method Reporting Limit
<	Less than the reported detection limit (RDL)
mg/L	Milligrams per Litre
MPN/100 mL	Most Probable Number per 100 mL
NTU	Nephelometric Turbidity Units
pH units	pH units
PtCo units	Platinum Colbalt colour units
uS/cm	Micro Siemens per centimeter
MAC	Maximum Acceptable Concentration. Values above MAC are formatted with **red** text and solid outline.
AO	Aesthetic Objective (not health related). Values above AO are formatted with a dashed outline.
OG	Operational guideline (for treated water)

Standards / Guidelines Referenced

CDWG	Canadian Drinking Water Quality Guidelines (2019) https://www.canada.ca/content/dam/hc-sc/migration/hc-sc/ewh-semt/alt_formats/pdf/pubs/water-eau/sum_guide-res_recom/sum_guide-res_recom-eng.pdf