



**District of Port Edward  
Water Quality Report  
Annual Report 2020**

## TABLE OF CONTENTS

1. INTRODUCTION
2. BACKGROUND
3. SYSTEM OVERVIEW
4. SYSTEM CLASSIFICATION
5. OPERATOR CERTIFICATION
6. WATER QUALITY
7. ANNUAL WATER CONSUMPTION
8. WATER PLANT PROJECTS



*Port Edward Water Treatment Plant with Utility Operator, Scott Duffus*

## **1. INTRODUCTION**

As required by the British Columbia Drinking Water Protection Act, the District of Port Edward provides an Annual Report by June 30. The information has been compiled to help you better understand your drinking water and how your municipal water system operates. This report outlines the water source, distribution, and testing methods as well as other information that may be of interest to the public.

## **2. BACKGROUND**

The District of Port Edward operates and maintains a public water distribution system, guided by the *Drinking Water Protection Act* and its underlying regulations as well as adherence to the *Guidelines for Canadian Drinking Water Quality*.

## **3. SYSTEM OVERVIEW**

The District of Port Edward has a population of approximately 500 with 245 water connections. Alwyn Lake is the source of the District of Port Edward's municipal water supply.

The Water Treatment Plant was built in 2004 along the bank of Wolf Creek to supply a population of up to 1000 with opportunity to expand affordably to supply up to 1500. The plant is primarily designed to remove colour and turbidity with a mixed media /Disolved Air Flotation (DAF) system with water supplied from Alwyn Lake under a water license of a maximum 31,000 m<sup>3</sup> per day.

The plant design flow rate is 10 liters per second per treatment train for a maximum treatment capacity of 20 liters per second.

Raw water is pumped from Wolf Creek into the treatment plant which is designed to operate at a constant flow, which is controlled by a modulating butterfly valve upstream of the treatment trains. There are two water treatment trains consisting of a flocculation tanks, DAF tanks, clarification unit with tube settlers and a mixed media filter of anthracite/sand/gravels.

A float piloted diaphragm valve controls the flow out of the filter to maintain a constant head over the media. The treated water from each train is combined prior to flowing through a single Ultraviolet (UV) disinfection unit. Following UV disinfection, the water flows into the clear well where 12% sodium hypochlorite is added. The sodium hypochlorite is injected and monitored in the clear well; control is provided by a chlorine residual analyzer. Finally, the treated water is fed into the Reservoir (capacity of 1.3 million liters) to allow contact time for disinfection (chlorination) and ensure an adequate supply during peak demand times such as cannery operations and fire fighting.



#### **4. SYSTEM CLASSIFICATION**

The District of Port Edward Water Treatment Facility is registered with the Environmental Operators Certification Program (EOCP) as a Level 3 plant with Registration No. 177.

#### **5. OPERATOR CERTIFICATION**

Currently the District has one Level 3 Water Treatment Operator, a Level 2 and a Level 1. Our plant is a Level 3. The District has also formed a mentorship relationship with the Village of Masset so that if we do not have a qualified operator on shift, we can have operational decisions for our plant overseen by a qualified operator at all times.

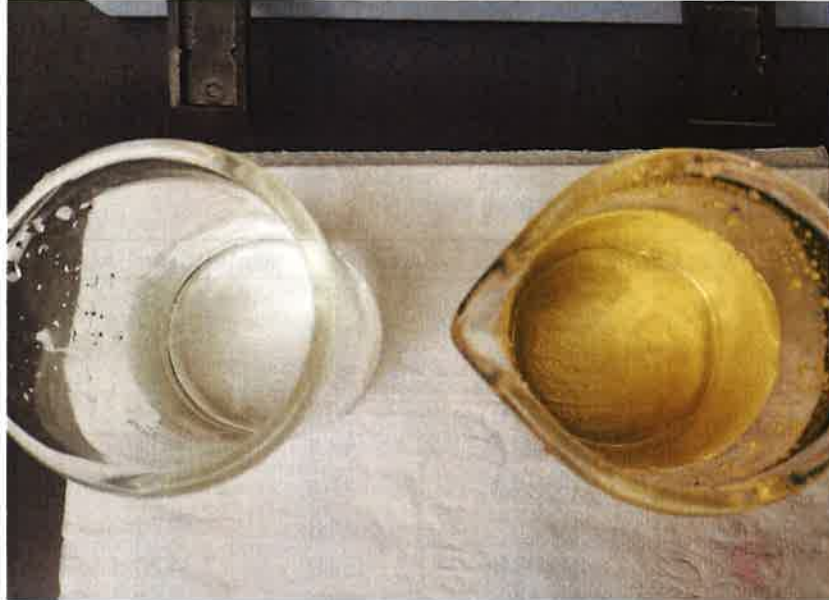
The District supports all public works staff to seek training and professional development opportunities for water treatment.

#### **6. WATER QUALITY**

The quality of drinking water is a function of the water source, water treatment, and changes made to the water quality after treatment. Monitoring consists of three main components: raw water monitoring, treated water monitoring and distribution system treated water monitoring.

Our water permit is with the Northern Health Authority and requires the following:

- A certified operator at Level III;
- 2 bacteriological samples per month;
- An annual full chemistry report or more frequent as requested by Environmental Health Officer.
- An up to date Emergency Response Plan (last updated 2011 and under update for 2020);
- Minimum chloring residual of .2ppm and daily monitoring, and
- Turbidity of maximum 1 NTU in accordance with Canadian Drinking Water Guidelines.



*Port Edward treated water on left and raw water from Wolf Creek on right.*

Water samples are collected by local company NORLABS and submitted every second week for bacteriological analysis. As required by our permit these reports are reviewed by our utility operators and submitted automatically by the lab to Northern Health. This is our main method of determining water quality. Northern Health tracks testing through their Public Health Protection database ([www.healthspace.ca/nha](http://www.healthspace.ca/nha))

Between January 1, 2020 and December 31, 2020, a total of 25 samples were collected by NORLABS and submitted to Northern health for analysis of Total Coliforms (TC) and E.Coli. No samples during that period contained TC or E.Coli. Over the course of 2020, the water system operators also collected samples daily to monitor water quality for coloration, chlorine levels, PH and temperature. This additional level of monitoring helps our operators to fine tune our water system and continue to provide the highest quality of drinking water possible.

As well as bacteriological testing, full chemistry analysis is required to be done annually and submitted by the lab to Northern Health – this was done in July, 2020 and is included as an appendix to this report for reference.

## 7. TREATED WATER CONSUMPTION

The District of Port Edward provides treated water to the townsite and raw water to Ridley Island for industrial use. The chart below outlines the amount of treated water provided to the community.

**Water Flows 2020**

	Flow in Cubic Meters	Average	Minimum	Maximum
January	10,817	353	232	752
February	11,097	367	240	721
March	10,817	350	236	431
April	11,020	356	284	687
May	10,622	343	308	403
June	11,938	398	333	500
July	19,252	618	371	842
August	16,076	519	420	715
September	12,295	410	347	507
October	11,521	372	324	461
November	10,291	343	320	380
December	8,691	281	241	457
<b>Yearly Total</b>	<b>144,437</b>			

## 8. 2020 WATER PLANT PROJECTS

In 2020, a major plant upgrade was completed of the Programmable Logic Controller (PLC), which automates many functions of the plant operations. This was a \$160,000 project that modernized our technology to ensure efficient plant operations well into the future. Our utility operators also replaced a significant amount of mechanical equipment which had aged out of service. It's been a busy year!

In 2020, staff updated our Water Treatment Plant Emergency Response Plan from the 2013 document so that our staff are well informed on necessary processes and procedures to handle any emergency situations. This document is shared with our local Environmental Health Officer to support interagency coordination as well.

**That concludes our 2020 Annual Water Report. If you have any questions please contact [info@portedward.ca](mailto:info@portedward.ca) and we will do our best to get back to you as soon as possible.**

District of Port Edward  
770 Pacific Avenue  
Port Edward, BC V0V 1G0  
sduffus@portedward.ca

**Work Order:** N20G148

**RECEIVED:** 23-Jul-2020

Project: Drinking Water  
Project Number: -  
Project Manager: Scott Duffus

**REPORTED:** 14-Aug-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



## ANALYTICAL REPORT

District of Port Edward - Drinking Water

Work Order: N20G148

LAB #	N20G148-01	N20G148-02	-	-
SAMPLED DATE	23-Jul-20	23-Jul-20	-	-
SAMPLED TIME	10:55	11:30	-	-
SAMPLE ID	WTP - Raw	Port Edward Public Works Sink (Treated)	-	-

	MRL Units	CDWG		
<b>General Parameters (Water)</b>				
pH	1.0 pH units	7.0-10.5	6.7	6.7
Alkalinity (total, as CaCO <sub>3</sub> )	1 mg/L	-	10	16
Conductivity	1.0 uS/cm	-	25.9	94.2
Colour	1 PtCo units	AO ≤ 15	107	4
Turbidity	0.05 NTU	MAC = 1	0.70	0.27
Solids, Total Dissolved / TDS	1.0 mg/L	AO ≤ 500	38	59
Carbon, Total Organic	0.50 mg/L	-	8.80	1.75
Ammonia (total as N)	0.03 mg/L	-	<0.03	<0.03
Nitrogen, Total Kjeldahl	0.050 mg/L	-	0.168	<0.050
<b>Calculated Parameters (Water)</b>				
Total Trihalomethanes	0.00400 mg/L	MAC = 0.1	<0.00400	0.0660
Nitrate (as N)	0.10 mg/L	MAC = 10	<0.10	<0.10
Nitrogen, organic	0.0500 mg/L	-	0.168	<0.0500
Hardness, Total (as CaCO <sub>3</sub> )	0.500 mg/L	-	10.9	10.1
<b>Anions (Water)</b>				
Chloride	1.0 mg/L	AO ≤ 250	2.0	22.2
Fluoride	0.05 mg/L	MAC = 1.5	<0.10	<0.10
Nitrite (as N)	0.01 mg/L	MAC = 1	<0.01	<0.01
Nitrate + Nitrite (as N)	0.10 mg/L	MAC = 10	<0.10	<0.10
Sulfate	1.0 mg/L	AO ≤ 500	1.1	<1.0
<b>Total Metals (Water)</b>				
Aluminum, total	0.0050 mg/L	OG < 0.1	0.237	0.319
Antimony, total	0.00020 mg/L	MAC = 0.006	<0.00020	<0.00020
Arsenic, total	0.00050 mg/L	MAC = 0.01	<0.00050	<0.00050
Barium, total	0.0050 mg/L	MAC = 1	0.0180	0.0184
Beryllium, total	0.00010 mg/L	-	<0.00010	<0.00010
Bismuth, total	0.00010 mg/L	-	<0.00010	<0.00010
Boron, total	0.0500 mg/L	MAC = 5	<0.0500	<0.0500
Cadmium, total	0.000010 mg/L	MAC = 0.005	0.000012	<0.000010
Calcium, total	0.20 mg/L	-	3.78	3.58



District of Port Edward - Drinking Water

Work Order: N20G148

LAB #	N20G148-01	N20G148-02	-	-
SAMPLED DATE	23-Jul-20	23-Jul-20	-	-
SAMPLED TIME	10:55	11:30	-	-
SAMPLE ID	WTP - Raw	Port Edward Public Works Sink (Treated)	-	-
MRL Units	CDWG			

**Total Metals (continued)**

Chromium, total	0.00050 mg/L	MAC = 0.05	<0.00050	<0.00050
Cobalt, total	0.00010 mg/L	-	<0.00010	<0.00010
Copper, total	0.00040 mg/L	AO = 1 MAC = 2	<b>0.00082</b>	<b>0.00949</b>
Iron, total	0.010 mg/L	AO <= 0.3	<b>0.359</b>	<b>0.026</b>
Lead, total	0.00020 mg/L	MAC = 0.005	<0.00020	<b>0.00080</b>
Lithium, total	0.00010 mg/L	-	<b>0.00019</b>	<b>0.00043</b>
Magnesium, total	0.010 mg/L	-	<b>0.361</b>	<b>0.276</b>
Manganese, total	0.00020 mg/L	AO <= 0.02 MAC = 0.12	<b>0.00901</b>	<b>0.00537</b>
Mercury, total	0.000010 mg/L	MAC = 0.001	<0.000010	<0.000010
Molybdenum, total	0.00010 mg/L	-	<0.00010	<0.00010
Nickel, total	0.00040 mg/L	-	<b>0.00058</b>	<b>0.00043</b>
Phosphorus, total	0.050 mg/L	-	<0.050	<0.050
Potassium, total	0.10 mg/L	-	<b>0.28</b>	<b>0.23</b>
Selenium, total	0.00050 mg/L	MAC = 0.05	<0.00050	<0.00050
Silicon, total	1.0 mg/L	-	<b>1.3</b>	<1.0
Silver, total	0.000050 mg/L	-	<0.000050	<0.000050
Sodium, total	0.10 mg/L	AO <= 200	<b>1.32</b>	<b>14.3</b>
Strontium, total	0.0010 mg/L	MAC = 7	<b>0.0092</b>	<b>0.0081</b>
Sulfur, total	3.0 mg/L	-	<3.0	<3.0
Tellurium, total	0.00050 mg/L	-	<0.00050	<0.00050
Thallium, total	0.000020 mg/L	-	<0.000020	<0.000020
Thorium, total	0.00010 mg/L	-	<0.00010	<0.00010
Tin, total	0.00020 mg/L	-	<0.00020	<0.00020
Titanium, total	0.0050 mg/L	-	<0.0050	<0.0050
Tungsten, total	0.0010 mg/L	-	<0.0010	<0.0010
Uranium, total	0.000020 mg/L	MAC = 0.02	<0.000020	<0.000020
Vanadium, total	0.0010 mg/L	-	<0.0010	<0.0010
Zinc, total	0.0040 mg/L	AO <= 5	<0.0040	<b>0.0097</b>
Zirconium, total	0.00010 mg/L	-	<0.00010	<b>0.0199</b>

**Haloacetic Acids (Water)**

District of Port Edward - Drinking Water

Work Order: N20G148

LAB #	N20G148-01	N20G148-02	-	-
SAMPLED DATE	23-Jul-20	23-Jul-20	-	-
SAMPLED TIME	10:55	11:30	-	-
SAMPLE ID	WTP - Raw	Port Edward Public Works Sink (Treated)	-	-

	MRL Units	CDWG		
--	-----------	------	--	--

**Haloacetic Acids (continued)**

Monochloroacetic Acid	0.0020 mg/L	-	<0.0020	<b>0.0026</b>
Monobromoacetic Acid	0.0020 mg/L	-	<0.0020	<0.0020
Dichloroacetic Acid	0.0020 mg/L	-	<0.0020	<b>0.0297</b>
Trichloroacetic Acid	0.0020 mg/L	-	<0.0020	<b>0.0383</b>
Dibromoacetic Acid	0.0020 mg/L	-	<0.0020	<0.0020
Total Haloacetic Acids (HAA5)	0.00200 mg/L	MAC = 0.08	<0.00200	<b>0.0706</b>
2-Bromopropionic Acid	70-130 [surr]	-	94%	86%

**Volatile Organic Compounds (VOC) (Water)**




Bromodichloromethane	0.0010 mg/L	-	<0.0010	<b>0.0018</b>
Bromoform	0.0010 mg/L	-	<0.0010	<0.0010
Chloroform	0.0010 mg/L	-	<0.0010	<b>0.0642</b>
Dibromochloromethane	0.0010 mg/L	-	<0.0010	<0.0010
Toluene-d8	70-130 [surr]	-	74%	75%
4-Bromofluorobenzene	70-130 [surr]	-	97%	96%

District of Port Edward - Drinking Water

Work Order: N20G148

---

### Glossary of Terms

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

---

### Standards / Guidelines Referenced

<b>CDWG</b>	Canadian Drinking Water Quality Guidelines (2019) <a href="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">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</a>
-------------	--

