District of Port Edward

Water Quality Report

Annual Report 2021

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1. INTRODUCTION

As required by the British Columbia Drinking Water Protection Act, the District of Port Edward provides an Annual Water Report. 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 m3 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

In 2021 the District had one Level 3 Water Treatment Operator, a Level 2, a Level 1 and two operators in training. Our plant is a Level 3. The District 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 so that we maintain compliance.

The District supports all public works staff to seek training and professional development opportunities for water treatment and we are re-vamping our job descriptions to ensure the required competencies for future recruitment efforts.

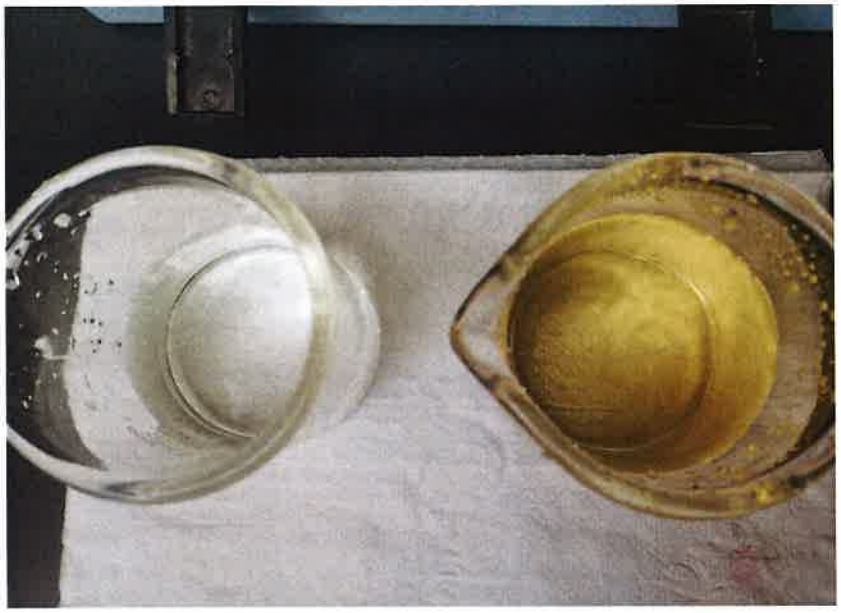
6. WATER QUALITY

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 .2ppp 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)

Between January 1, 2021 and December 31, 2021, a total of 22 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 2022, 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 April 2021 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 2021

	Flow in Cubic Meters	Average	Minimum	Maximum
January	9,490	296	229	489
February	10,814	373	277	520
March	9,626	310	114	379
April	12,375	396	311	736
May	12,826	415	369	517
June	11,443	381	338	418
July	13,131	422	311	542
August	12,241	396	323	487
September	10,662	355	315	408
October	13,615	437	326	663
November	12,189	406	345	574
December	14,261	458	361	766
Yearly Total	**142,673**			

8. 2021 WATER PLANT and DISTRIBUTION SYSTEM PROJECTS

That concludes our 2021 Annual Water Report. If you have any questions please contact info@portedward.ca and we will do our best to get back to you as soon as possible.

ANALYTICAL REPORT

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

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

Work Order: N21D171

RECEIVED: 30-Apr-2021

REPORTED: 16-Jun-2021

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

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ANALYTICAL REPORT

District of Port Edward - Drinking Water **Work Order:** N21D171

LAB #				**N21D171-01**	**N21D171-02**
SAMPLED DATE				**30-Apr-21**	**30-Apr-21**
SAMPLED TIME				**12:05**	**11:45**
SAMPLE ID				**WTP - Raw**	**Port Edward Public Works Sink (Treated)**
	MRL	***Units***	***CDWG***		
General Parameters (Water)					
pH	*1.0*	*pH units*	*7.0-10.5*	**6.6**	**6.8**
Alkalinity (total, as CaCO3)	*1*	*mg/L*	-	**4**	**25**
Conductivity	*1.0*	*uS/cm*	-	**13.7**	**148**
Colour	*1*	*PtCo units*	*AO <= 15*	**63**	**3**
Turbidity	*0.05*	*NTU*	*MAC = 1*	**1.27**	**0.14**
Solids, Total Dissolved / TDS	*1.0*	*mg/L*	*AO <= 500*	**41**	**100**
Carbon, Total Organic	*0.50*	*mg/L*	-	**5.20**	**1.04**
Ammonia (total as N)	*0.03*	*mg/L*	-	<0.03	<0.03
Nitrogen, Total Kjeldahl	*0.050*	*mg/L*	-	**0.107**	**0.092**
Calculated Parameters (Water)					
Total Trihalomethanes	*0.00400*	*mg/L*	*MAC = 0.1*	<0.00400	**0.0209**
Nitrate (as N)	*0.10*	*mg/L*	*MAC = 10*	<0.10	<0.10
Nitrogen, organic	*0.0500*	*mg/L*	-	**0.107**	**0.0920**
Hardness, Total (as CaCO3)	*0.500*	*mg/L*	-	**4.27**	**7.09**
Anions (Water)					
Chloride	*1.0*	*mg/L*	*AO <= 250*	**1.2**	**32.2**
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*	<1.0	<1.0
Total Metals (Water)					
Aluminum, total	*0.0050*	*mg/L*	*OG < 0.1*	**0.160**	**0.105**
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*	**0.0087**	**0.0092**
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*	<0.000010	<0.000010
Calcium, total	*0.20*	*mg/L*	-	**1.40**	**2.49**

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SAMPLED TIME				12:05	11:45
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*	**0.00055**	**0.00332**
Iron, total	*0.010*	*mg/L*	*AO <= 0.3*	**0.219**	**0.011**
Lead, total	*0.00020*	*mg/L*	*MAC = 0.005*	<0.00020	**0.00028**
Lithium, total	*0.00010*	*mg/L*	-	**0.00028**	**0.00017**
Magnesium, total	*0.010*	*mg/L*	-	**0.188**	**0.210**
Manganese, total	*0.00020*	*mg/L*	*AO <= 0.02* *MAC = 0.12*	**0.00685**	**0.00165**
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*	-	<0.00040	<0.00040
Phosphorus, total	*0.050*	*mg/L*	-	<0.050	<0.050
Potassium, total	*0.10*	*mg/L*	-	**0.13**	**0.19**
Selenium, total	*0.00050*	*mg/L*	*MAC = 0.05*	<0.00050	<0.00050
Silicon, total	*1.0*	*mg/L*	-	<1.0	<1.0
Silver, total	*0.000050*	*mg/L*	-	<0.000050	<0.000050
Sodium, total	*0.10*	*mg/L*	*AO <= 200*	**0.90**	**25.6**
Strontium, total	*0.0010*	*mg/L*	*MAC = 7*	**0.0034**	**0.0048**
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	**0.0066**
Zirconium, total	*0.00010*	*mg/L*	-	<0.00010	<0.00010
Haloacetic Acids (Water)					

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SAMPLED TIME				**12:05**	**11:45**
SAMPLE ID				**WTP - Raw**	**Port Edward Public Works Sink (Treated)**
	MRL	***Units***	***CDWG***		
Haloacetic Acids (continued)					
Monochloroacetic Acid	*0.0020*	*mg/L*	-	<0.0020	<0.0020
Monobromoacetic Acid	*0.0020*	*mg/L*	-	<0.0020	<0.0020
Dichloroacetic Acid	*0.0020*	*mg/L*	-	<0.0020	**0.0071**
Trichloroacetic Acid	*0.0020*	*mg/L*	-	<0.0020	**0.0055**
Dibromoacetic Acid	*0.0020*	*mg/L*	-	<0.0020	<0.0020
Total Haloacetic Acids (HAA5)	*0.00200*	*mg/L*	*MAC = 0.08*	<0.00200	**0.0126**
2-Bromopropionic Acid	*70-130*	*[surr]*	-	*103%*	*97%*
Volatile Organic Compounds (VOC) (Water)					
Bromodichloromethane	*0.0010*	*mg/L*	-	<0.0010	**0.0030**
Bromoform	*0.0010*	*mg/L*	-	<0.0010	<0.0010
Chloroform	*0.0010*	*mg/L*	-	<0.0010	**0.0179**
Dibromochloromethane	*0.0010*	*mg/L*	-	<0.0010	<0.0010
Toluene-d8	*70-130*	*[surr]*	-	*85%*	*76%*
4-Bromofluorobenzene	*70-130*	*[surr]*	-	*103%*	*102%*

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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
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