



WATER TREATMENT PLANT & DISTRIBUTION SYSTEM



Operations Performance Annual Report 2021

Facility Numbers 529 & 155

OVERVIEW

Port Hardy, with a population of 4,132 residents and over 5,000 connected to the infrastructure is located at the northern end of Vancouver Island. In May 2000 the water treatment plant was commissioned and established Port Hardy's reputation for having some of British Columbia's best water quality.

Port Hardy's source water is the Tsulquate River. The water from this river is tinted brown from tannins and other leachates. Port Hardy's Water Treatment Plant uses a Dissolved Air Flotation (DAF) system which is very effective in treating highly colored water. Treatment is achieved using ISOPAC 6 and Soda Ash to remove the color, particles, sediment and organics that are present. A filter aid, Hydrofloc 400 is added in trace amounts after the DAF treatment and prior to the filters to improve coagulation of fine particles. Filtration is done through a mixed media consisting silica sand and anthracite. Lime slurry, carbon dioxide and sodium hypochlorite are injected post filtration for alkalinity, pH adjustment and disinfection.

In 2020, the plant continued to produce a very high level of treatment providing excellent water quality to the District of Port Hardy.

PERMIT TO OPERATE

The Port Hardy water treatment plant is a Level III facility as deemed by the Environmental Operators Certification Program (EOCP), certification number 529. The distribution system is a Level III system with a certification number of 155.

CERTIFIED OPERATORS

The Operational Permit from Vancouver Island Health Authority Operational requires that a certified operator is employed to match the Water Treatment Plant Certification, a level III plant. The District currently employs a Level IV operator and two, Level III operators. The District also employs two Level III Water Distribution Operator.

Operator	Title	Certification
Joe Jewell	Utilities Supervisor	WT IV, WD III, WWT II, WWC II
Justin Reusch	Chief Operator	WT III, WD III, WWT II, WWC I
Roland LeFort	Operator	WWT III, WT III, WWC I
Cory Henschke	Operator	WWT I, WD II
Robert Cousins	Operator	WT I, WWT II, Cross Connection

WATER TREATMENT PLANT

Throughout 2020, there were times where due to heavy rains and high river colour events, that the water treatment process was upset. In these events, the plant is taken offline and no water is pumped to the reservoir. Water is only pumped to the reservoirs once the treatment plant's process quality is restored. This will result in lower than desired reservoir levels but quality will not be compromised.

CAPITAL PROJECTS

Most capital projects in 2021 were postponed due to the coronavirus pandemic. However, utilities staff was able to complete the installation of replacement air compressor pumps and motor. These units replace the original equipment installed in 2000 and are much more efficient. Treated Water Pump #1 was sent out for a rebuild in 2021. It was determined that the cost to rebuild the pump was higher than the price of a new pump. A new pump was ordered in August 2020 and is yet to arrive due to global supply chain delays.

HIGHLIGHTS:

- No violations to permit in 2021
- 1473 ML of water were produced in 2021
- Quarterly samples for THMs and HAAs all returned within acceptable limits
- All bacteriological testing came back within expected parameters
- A Stage 1 water use restriction as per Port Hardy Water Conservation Bylaw No. 06-2005
- Several power outages occurred in 2021
- All flocculation and DAF tanks were taken offline for maintenance in January. Bearings were replaced and headers cleaned
- A second backwash sump pump was installed and a new discharge header was built
- The flowmeter in Reservoir #2 failed. A replacement was purchased
- A power rectifier on the raw water pump was found to be faulty at the water plant causing the pump to fault. The unit was bypassed until it could be replaced
- A new Variable Frequency Drive (VFD) was purchased for the raw water pump
- Fallers were hired to further trim trees around the private power line that feeds the water treatment plant. Electricians were able to perform the annual air switch disconnect at this time
- A electrical connection servicing a heater was found to be arcing at the water plant. The entire electrical panel will need to be replaced. For now, the heater is out of service
- Community members have opted to run their taps to avoid pipes from freezing during the cold weather in December causing increased demand for water and puts the community at risk if there was to be a fire or a malfunction at the water plant or in the distribution system. Water demand was almost double the daily average (4.4 ML/d vs 7.5 ML/d). December was our highest water production month of 2021
- A electrical connection servicing a heater was found to be arcing at the water plant and was replaced
- A smell of burnt wires was found in the clearwell building of the water plant. Electricians were called and loose wires were found on the contractor for the one of the clearwell pumps. All the electrical lugs were tightened and the issue appears to be resolved. The pump contactor is over 40 years old and has signs of arcing. It will need to be replaced

WATER DISTRIBUTION SYSTEM

In 2020, the District of Port Hardy commenced on a major upgrade to the water distribution system in the Storey's Beach area. A new 2000 cubic meter (m³) reservoir was constructed on Fort Rupert Road and 3000 meters of distribution pipe was replaced. The replacement distribution pipe was also increased in size from 150mm and 250mm to 300mm and 350mm. Additional hydrants were also installed ensuring a fire flow of 150 Litres/second where required. The Fort Rupert Reservoir site is equipped with backup power generation and chlorine disinfection booster pumps. The reservoir level is controlled by an altitude control valve which keeps the tank at a predetermined level within 1.5 meters. A rolling diaphragm pressure reducing valve is also installed on site to regulate the pressure in the event the reservoir is offline. The entire site can be monitored remotely from the water treatment.

CAPITAL PROJECTS

In 2021, the majority of capital projects were postponed due to the Coronavirus pandemic. Some of the completed projects included:

- New water meter reading hardware was purchased in 2021
- Revisions to the mapping continued. The new maps purchased in 2019 will now be edited in the field instead of using an offsite engineering service
- A new mainline valve was installed on Byng Road. A Traffic Control Plan was required for this work

ADDITIONAL HIGHLIGHTS:

- All fire hydrants were "B" Serviced this year. Hydrants were also stripped and repainted
- Water main clearing continued to keep our infrastructure accessible
- Backflow preventors were all tested and serviced
- A large water leak was repaired on an apartment building on Highland Drive. The leak was estimated to be 140 m³/day
- Several commercial meters that had failed were replaced. A new plan to replace the touch read for radio read meters has started. This initiative should reduce the time required to read meters for billing
- A new altitude control valve was installed at the Fort Rupert Reservoir. This smaller valve will replace the original that is too large for the application and caused issues within the distribution system
- A new waterline across the Hardy Bay estuary was installed with the new walking bridge. Bacteriological samples were returned within acceptable limits
- Hemlock trees were planted around Fort Rupert Reservoir
- A cluster of mainline isolation valves was found damaged on Bear Cove Highway. Repair work was completed the next day
- Leak detection equipment was deployed in the Lower Carnarvon area to locate a broken service line
- The emergency automatic transfer switch at Bear Cove Reservoir was found to not operable on the 25th. The switch is obsolete but parts were found and the switch was repaired
- Emergency power generators were serviced and load bank tested in October

CROSS CONNECTION CONTROL

A formal Cross Connection Control program created by Maintenance Tracking Systems Inc (MTS) was presented to the District of Port Hardy in late 2010. Currently, backflow preventers are installed in all high risk areas of the treatment plants, liftstations with a washdown hose, public sani dumps and public gardens. In August, all District Backflow assemblies were tested and recertified.

WATER WISE PROGRAM CONTINUATION

A total of 178 meters are being read including commercial users and multi-family dwellings. All new homes and constructions will have meter setters installed as part of this program. Continuing public education around proposed metering/rate changes and general information on water wise initiatives was conducted and will be ongoing until all users are metered. In 2016, new watering restrictions as per Port Hardy Water Conservation Bylaw No. 06-2005 were adopted. As part of the water system upgrade in 2018, water meter setters were installed on all single-family dwellings on Beaver Harbour Road as new service lines were run to the property line.

In 2020, new meters were installed on commercial properties on Granville Street and Jensen Cove Road. Other meters that failed to read remotely were replaced after attempts to repair them failed.

WATERSHED PROTECTION PLAN

The District of Port Hardy has taken steps to implement a watershed protection plan. The purpose of this is to create a plan that guides users in the best management and preservation of the Tsulquate River and Kains Lake watershed as a drinking water source for the District of Port Hardy. The plan will develop a public awareness, identify stakeholders, increase knowledge and public awareness of the watershed and develop procedures for an emergency response.

Water Treatment Plant / Distribution Testing													
	January	February	March	April	May	June	July	August	September	October	November	December	Total
Raw Water pH	26	24	27	26	26	26	26	27	26	26	26	27	313
Reservoir Water pH Daily Grab Sample or Continuous 6.5 - 8.5	31	28	31	30	31	30	31	31	30	31	30	31	365
Colour (Reservoir) AO: <= 15 TCU	26	24	27	26	26	26	26	27	26	26	26	27	313
Free Chlorine Residual (Reservoir) Daily Grab Sample or Continuous	31	28	31	30	31	30	31	31	30	31	30	31	365
Free Chlorine Residual Distribution Grab Sample	42	44	44	48	44	46	46	44	45	46	44	45	538
Turbidity (Distribution) Grab Samples	42	44	44	48	44	46	46	44	45	46	44	45	538
Turbidity (Filter) Grab Sample or Continuous <= 0.3 NTU in at least 95%; never > 1.0 NTU	31	28	31	30	31	30	31	31	30	31	30	31	365
Turbidity (Reservoir) Daily Grab Sample or Continuous 1 NTU Maximum in finished water	31	28	31	30	31	30	31	31	30	31	30	31	365
Escherichia Coli (<i>E.coli</i>) 11 per month Distribution, 1 Raw MAC: 0 CFU/100mL	12	14	14	12	12	12	12	12	12	12	12	12	148
Total Coliforms 11 per month Distribution, 1 Raw MAC: 0 CFU/100mL	12	14	14	12	12	12	12	12	12	12	12	12	148
Chemical and Physical Parameter Tests Once every 5 years													0
Trihalomethanes & Haloacetic Acids (THMs & HAAs) Quarterly <0.100 mg/L annual average	1			1			1			1			4
Monthly Report 15 th of the following month	1	1	1	1	1	1	1	1	1	1	1	1	12
Annual Report Before January 31 st	1												1
Permit Violations	0	0	0	0	0	0	0	0	0	0	0	0	0

Workplace Metrics													
	January	February	March	April	May	June	July	August	September	October	November	December	Total
Safety Meetings	1	1	1	1	1	1	1	1	1	1	1	1	12
Worksite Inspections	1	1	1	1	1	1	1	1	1	1	1	1	12
Kain's Lake Dam Inspections	2	1	1	2	1	2	2	3	3	3	3	1	24
Water Service Locates	3	4	4	4	4	2	4	10	4	3	6	1	49
Water Service Repairs	2	2	2	0	0	0	2	5	0	2	1	0	16
Water Main Repairs	0	0	0	0	0	0	0	0	0	0	0	0	0
BC One Calls	9	6	22	14	17	19	24	12	15	28	14	10	190
PRV Inspections	11	11	11	11	0	0	11	0	0	0	0	11	66
ERP Exercises	0	0	0	0	0	0	0	0	0	0	0	0	0
Air Valve Inspections	0	0	0	1	0	0	0	0	1	0	0	1	3
Mainline Valve Locates/Inspections	6	34	24	2	0	0	4	6	8	2	2	2	90
Hydrant A - Services	0	0	6	0	0	0	0	0	0	0	0	0	6
Hydrant B - Services	0	0	8	23	31	42	50	31	0	0	0	0	185

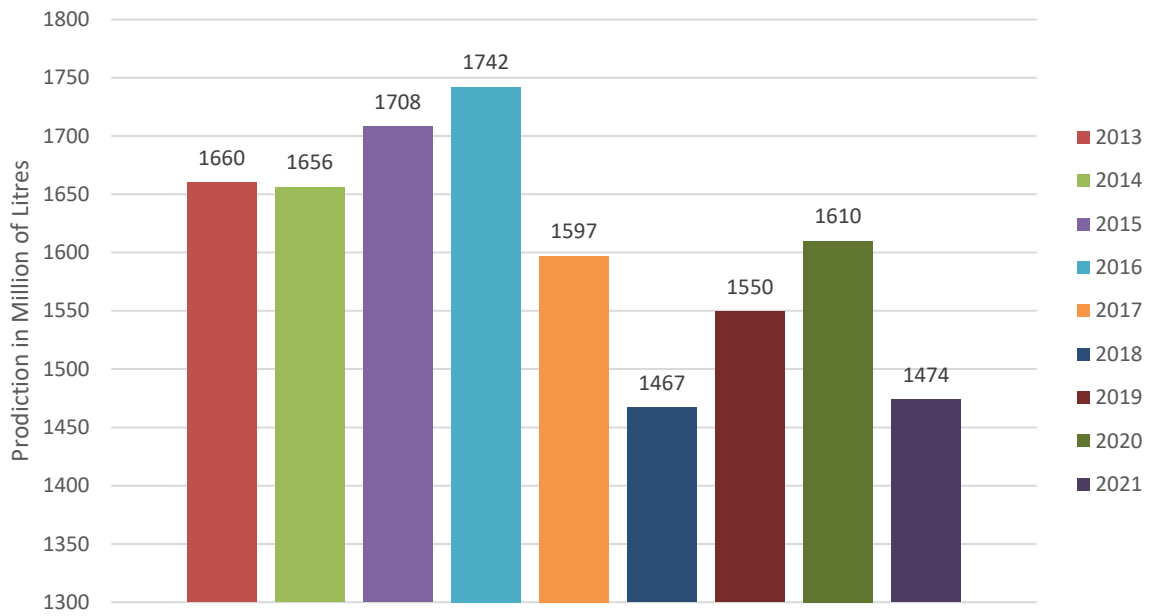
RAW AND TREATED WATER PRODUCTION

	January	February	March	April	May	June	July	August	September	October	November	December	Total
Raw Water Pumped in ML	133	119	123	115	121	126	141	136	127	128	123	141	1532
Treated Water Production in ML	129	115	117	111	117	120	138	132	119	121	119	136	1473
Rainfall in mm	232	182	160	63	70.4	84.6	20	24.4	252.2	196.4	397.4	179.8	1862
Backwashes	36	33	38	32	36	33	34	36	36	34	36	36	420

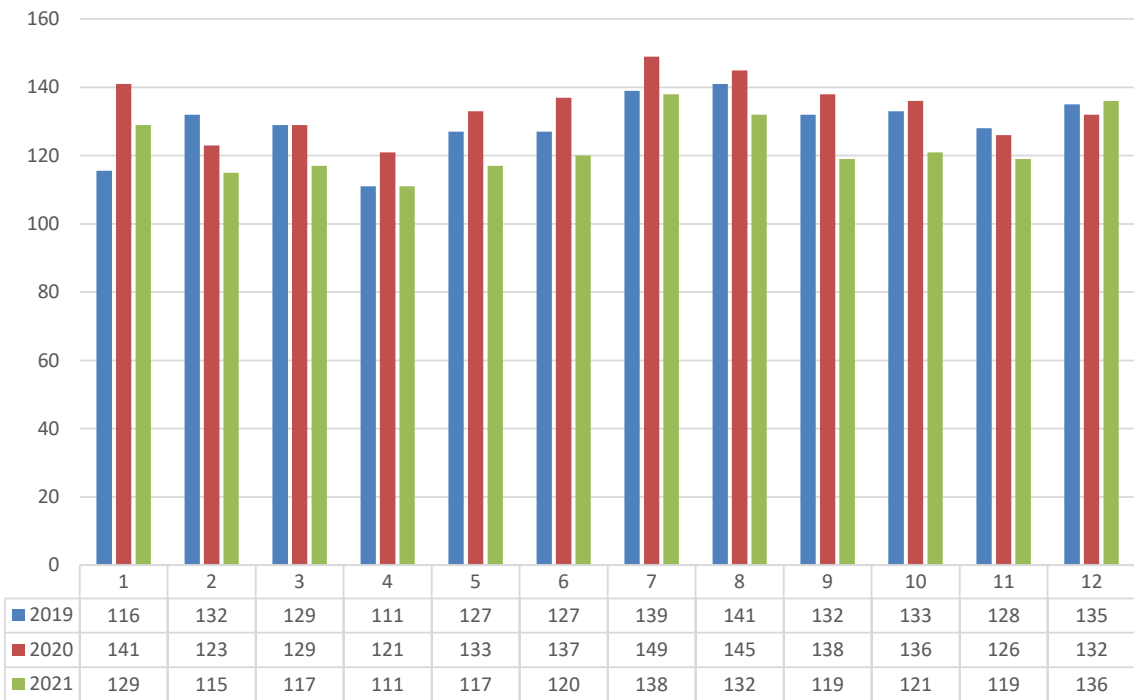
CHEMICAL USAGE

	January	February	March	April	May	June	July	August	September	October	November	December	Total
ISOPAC 6 Coagulant in kg	4216	3699	3914	3246	4711	4931	2982	2495	5509	6187	5004	5431	52324
Soda Ash in kg	1249	1317	1453	885	1226	1362	272	204	1680	1771	1407	1907	14732
Filter Aid (LT20) in kg	0.88	0.81	0.66	0.71	0.77	0.79	0.88	0.81	0.78	0.78	0.80	0.96	9.64
Salt for Chlorine Generator in kg	520	560	700	700	720	800	920	760	720	720	780	480	8380
Liquid Sodium Hypochlorite 12% in kg	0	0	0	0	0	0	0	0	0	0	0	0	0
Lime in kg	2518	2567	2887	2712	2932	2773	2928	3013	3051	2871	2492	2490	33234
Carbon Dioxide in kg	3090	2946	3291	3230	2276	4028	3230	3524	3001	3145	2327	2857	36945

Annual Water Production 2013 to 2021



Water Production 2019 to 2021 in ML



DISTRIBUTION WATER QUALITY AND BACTERIOLOGICAL RESULTS

January					February					March				
Location	Date	Free Chlorine mg/L	Turbidity NTU	pH	Location	Date	Free Chlorine mg/L	Turbidity NTU	pH	Location	Date	Free Chlorine mg/L	Turbidity NTU	pH
Chatham Avenue	01/04/21	0.5	0.18	8.0	Chatham Avenue	02/01/21	0.5	0.19	8.0	Chatham Avenue	03/01/21	0.6	0.19	8.1
	01/11/21	0.5	0.15	7.9		02/08/21	0.4	0.14	8.0		03/08/21	0.6	0.22	8.0
	01/18/21	0.4	0.19	7.9		02/16/21	0.6	0.14	7.9		03/15/21	0.4	0.24	7.9
	01/25/21	0.5	0.13	8.0		02/22/21	0.4	0.18	8.0		03/22/21	0.5	0.26	7.9
Peel Street Liftstation	01/04/21	0.8	0.20	7.7	Peel Street Liftstation	02/01/21	0.7	0.15	7.6	Peel Street Liftstation	03/01/21	0.7	0.23	7.8
	01/11/21	0.7	0.21	7.6		02/08/21	0.7	0.18	7.8		03/08/21	0.7	0.25	7.7
	01/18/21	0.6	0.13	7.6		02/16/21	0.6	0.19	7.8		03/15/21	0.6	0.21	7.5
Airport Wastewater Treatment Plant	01/25/21	0.6	0.20	7.7	Airport Wastewater Treatment Plant	02/22/21	0.7	0.14	7.7	Airport Wastewater Treatment Plant	03/22/21	0.6	0.14	7.8
	01/04/21	0.7	0.20	7.7		02/01/21	0.6	0.16	7.7		03/01/21	0.7	0.25	7.8
	01/11/21	0.6	0.24	7.4		02/08/21	0.5	0.17	7.8		03/08/21	0.7	0.26	7.8
Public Works Yard	01/18/21	0.5	0.15	7.6	Public Works Yard	02/16/21	0.6	0.18	7.7	Public Works Yard	03/15/21	0.6	0.18	7.7
	01/25/21	0.6	0.16	7.9		02/22/21	0.4	0.21	7.7		03/22/21	0.5	0.18	7.7
	01/04/21	0.8	0.14	7.8		02/01/21	0.8	0.19	7.7		03/01/21	0.8	0.27	7.7
Eagleview School	01/11/21	0.7	0.16	7.6	Eagleview School	02/08/21	0.7	0.17	7.7	Eagleview School	03/08/21	0.7	0.16	7.7
	01/18/21	0.8	0.16	7.7		02/16/21	0.9	0.23	7.6		03/15/21	0.6	0.27	7.6
	01/25/21	0.9	0.18	7.8		02/22/21	0.7	0.18	7.8		03/22/21	0.7	0.15	7.9
Bear Cove Reservoir	01/04/21	0.8	0.15	7.8	Bear Cove Reservoir	02/01/21	0.4	0.24	8.0	Bear Cove Reservoir	03/01/21	0.7	0.18	7.9
	01/11/21	0.8	0.18	7.8		02/08/21	0.3	0.21	8.1		03/08/21	0.5	0.16	8.1
	01/18/21	0.4	0.16	7.7		02/16/21	0.5	0.18	7.9		03/15/21	0.8	0.19	7.4
Ferry Terminal	01/25/21	0.3	0.21	7.9	Ferry Terminal	02/22/21	0.4	0.20	8.1	Ferry Terminal	03/22/21	0.8	0.20	7.6
	01/04/21	0.7	0.20	7.7		02/01/21	0.7	0.23	7.7		03/01/21	0.7	0.19	7.8
	01/11/21	0.7	0.15	7.6		02/08/21	0.7	0.18	7.8		03/08/21	0.8	0.16	7.7
Highway 19 PRV	01/18/21	0.6	0.24	7.6	Highway 19 PRV	02/16/21	0.7	0.22	7.8	Highway 19 PRV	03/15/21	0.7	0.17	7.7
	01/25/21	0.7	0.14	7.8		02/22/21	0.7	0.17	7.8		03/22/21	0.6	0.15	7.8
	01/04/21	0.6	0.23	7.7		02/01/21	0.7	0.22	7.7		03/01/21	0.7	0.16	7.8
Average	01/11/21	0.6	0.20	7.6	Average	02/08/21	0.8	0.17	7.8	Average	03/08/21	0.8	0.17	7.7
	01/18/21	0.6	0.31	7.7		02/16/21	0.7	0.19	7.7		03/15/21	0.6	0.15	7.7
	01/25/21	0.8	0.16	7.8		02/22/21	0.7	0.18	7.7		03/22/21	0.6	0.19	7.8
Minimum	0.3	0.13	7.4	Minimum	0.3	0.14	7.6	Minimum	0.4	0.14	7.4			
Maximum	0.9	0.31	8.0	Maximum	0.9	0.24	8.1	Maximum	0.9	0.27	8.1			

April					May					June				
Location	Date	Free Chlorine mg/L	Turbidity (NTU)	pH	Location	Date	Free Chlorine mg/L	Turbidity NTU	pH	Location	Date	Free Chlorine mg/L	Turbidity NTU	pH
Chatham Avenue	04/06/21	0.5	0.17	7.9	Chatham Avenue	05/03/21	0.4	0.18	7.7	Chatham Avenue	06/07/21	0.7	0.16	7.9
	04/12/21	0.6	0.17	8.0		05/10/21	0.4	0.20	7.9		06/14/21	0.4	0.55	7.9
	04/19/21	0.6	0.24	7.8		05/17/21	0.4	0.17	7.8		06/21/21	0.6	0.25	7.9
	04/26/21	0.3	0.52	8.0		05/25/21	0.7	0.18	7.9		06/28/21	0.6	0.26	7.8
Peel Street Liftstation	04/06/21	0.6	0.15	7.6	Peel Street Liftstation	05/03/21	0.6	0.14	7.5	Peel Street Liftstation	06/07/21	0.7	0.15	7.8
	04/12/21	0.7	0.15	7.8		05/10/21	0.6	0.28	7.7		06/14/21	0.6	0.60	7.8
	04/19/21	0.6	0.20	7.7		05/17/21	0.4	0.25	7.7		06/21/21	0.6	0.20	7.8
Airport Wastewater Treatment Plant	04/26/21	0.5	0.31	7.7	Airport Wastewater Treatment Plant	05/25/21	0.4	0.20	7.7	Airport Wastewater Treatment Plant	06/28/21	0.5	0.28	7.7
	04/06/21	0.5	0.15	7.8		05/03/21	0.6	0.16	7.7		06/07/21	0.8	0.15	7.9
	04/12/21	0.7	0.14	7.8		05/10/21	0.5	0.25	7.7		06/14/21	0.5	0.56	7.8
Public Works Yard	04/19/21	0.6	0.17	7.7	Public Works Yard	05/17/21	0.5	0.22	7.7	Public Works Yard	06/21/21	0.7	0.20	7.7
	04/26/21	0.6	0.15	7.8		05/25/21	0.8	0.17	7.8		06/28/21	0.5	0.38	7.7
	04/06/21	8.0	0.14	7.9		05/03/21	0.8	0.19	7.8		06/07/21	0.6	0.16	8.0
Eagleview School	04/12/21	0.8	0.16	7.8	Eagleview School	05/10/21	0.7	0.19	7.8	Eagleview School	06/14/21	0.7	0.23	7.7
	04/19/21	0.6	0.16	7.8		05/17/21	0.5	0.15	7.8		06/21/21	0.5	0.15	7.8
	04/26/21	0.5	0.28	7.8		05/25/21	0.6	0.15	7.9		06/28/21	0.5	0.26	8.2
Bear Cove Reservoir	04/06/21	0.4	0.21	8.1	Bear Cove Reservoir	05/03/21	0.4	0.19	7.7	Bear Cove Reservoir	06/07/21	0.5	0.17	8.0
	04/12/21	0.4	0.17	7.9		05/10/21	0.3	0.18	7.4		06/14/21	0.5	0.21	8.0
	04/19/21	0.4	0.15	7.9		05/17/21	0.3	0.18	8.0		06/21/21	0.4	0.27	7.8
Ferry Terminal	04/26/21	0.4	0.15	8.0	Ferry Terminal	05/31/21	0.3	0.19	7.8	Ferry Terminal	06/28/21	0.3	0.28	8.0
	04/06/21	0.8	0.18	7.9		05/03/21	0.6	0.17	7.7		06/07/21	0.5	0.18	7.8
	04/12/21	0.7	0.19	7.8		05/10/21	0.6	0.31	7.7		06/14/21	0.5	0.25	7.8
Highway 19 PRV	04/19/21	0.7	0.18	7.7	Highway 19 PRV	05/17/21	0.6	0.18	7.6	Highway 19 PRV	06/21/21	0.5	0.16	7.7
	04/26/21	0.5	0.22	7.8		05/25/21	0.6	0.18	7.7		06/28/21	0.4	0.52	7.7
	04/06/21	0.6	0.18	7.8		05/03/21	0.5	0.16	7.8		06/07/21	0.4	0.29	7.7
Average	04/12/21	0.7	0.13	7.8	Average	05/10/21	0.6	0.25	7.6	Average	06/14/21	0.3	0.21	7.8
	04/19/21	0.6	0.18	7.7		05/17/21	0.5	0.19	7.6		06/21/21	0.5	0.16	7.6
	04/26/21	0.5	0.16	7.7		05/25/21	0.6	0.22	7.7		06/28/21	0.4	0.22	7.7
Minimum	0.3	0.13	7.6	Minimum	0.3	0.14	7.4	Minimum	0.3	0.15	7.6			
Maximum	8.0	0.52	8.1	Maximum	0.9	0.31	8.0	Maximum	0.9	0.60	8.2			

July				
Location	Date	Free Chlorine mg/L	Turbidity NTU	pH
Chatham Avenue	07/05/21	0.7	0.36	7.9
	07/12/21	1.0	0.16	8.0
	07/19/21	0.5	0.16	7.8
Peel Street Liftstation	07/26/19	0.3	0.14	7.9
	07/05/21	0.9	0.21	7.8
	07/12/21	0.9	0.22	7.8
Airport Wastewater Treatment Plant	07/19/21	0.9	0.15	7.7
	07/26/21	0.5	0.13	7.7
	07/05/21	0.7	0.51	7.7
Public Works Yard	07/12/21	0.9	0.31	7.8
	07/19/21	0.7	0.19	7.7
	07/26/21	0.4	0.13	7.8
Eagleview School	07/05/21	0.7	0.26	7.8
	07/12/21	0.8	0.23	8.1
	07/19/21	0.8	0.21	7.9
Bear Cove Reservoir	07/26/21	0.7	0.14	7.7
	07/05/21	0.6	0.26	8.1
	07/12/21	0.5	0.17	7.9
Ferry Terminal	07/20/21	0.5	0.21	7.9
	07/26/21	0.4	0.19	8.0
	07/05/21	0.6	0.31	7.8
Highway 19 PRV	07/12/21	0.4	0.17	7.8
	07/19/21	0.5	0.17	7.7
	07/26/21	0.5	0.14	7.7
Average		0.6	0.21	7.8
Minimum		0.3	0.51	7.7
Maximum		1.0	0.51	8.1

August				
Location	Date	Free Chlorine mg/L	Turbidity NTU	pH
Chatham Avenue	08/03/21	0.3	0.14	7.8
	08/09/21	0.3	0.13	7.6
	08/16/21	0.6	0.14	7.8
Peel Street Liftstation	08/24/21	0.3	0.15	7.8
	08/30/21	0.3	0.14	7.9
	08/03/21	0.4	0.14	7.6
Airport Wastewater Treatment Plant	08/09/21	0.5	0.15	7.6
	08/16/21	0.8	0.16	7.7
	08/24/21	0.6	0.17	7.7
Public Works Yard	08/30/21	0.6	0.13	7.4
	08/03/21	0.4	0.13	7.6
	08/09/21	0.3	0.15	7.6
Eagleview School	08/16/21	0.5	0.15	7.7
	08/24/21	0.4	0.17	7.7
	08/30/21	0.3	0.13	7.7
Bear Cove Reservoir	08/03/21	0.7	0.15	7.5
	08/09/21	0.8	0.14	7.6
	08/16/21	0.8	0.15	7.8
Ferry Terminal	08/25/21	0.9	0.20	7.7
	08/30/21	0.4	0.14	7.7
	08/03/21	0.5	0.18	7.8
Highway 19 PRV	08/09/21	0.4	0.19	7.9
	08/16/21	0.3	0.25	7.9
	08/25/21	0.4	0.17	7.9
Average		0.5	0.16	7.7
Minimum		0.3	0.12	7.4
Maximum		0.9	0.25	7.9

September				
Location	Date	Free Chlorine mg/L	Turbidity NTU	pH
Chatham Avenue	09/07/21	0.3	0.15	7.6
	09/13/21	0.4	0.15	7.3
	09/20/21	0.3	0.16	7.7
Peel Street Liftstation	09/27/21	0.3	0.18	7.9
	09/07/21	0.8	0.13	7.6
	09/13/21	0.4	0.24	7.6
Airport Wastewater Treatment Plant	09/21/21	0.4	0.16	7.6
	09/27/21	0.4	0.16	7.6
	09/07/21	0.3	0.12	7.5
Public Works Yard	09/13/21	0.7	0.14	7.5
	09/20/21	0.2	0.17	7.5
	09/27/21	0.3	0.66	7.7
Eagleview School	09/07/21	0.4	0.12	7.7
	09/13/21	0.5	0.14	7.8
	09/21/21	0.5	0.21	7.8
Bear Cove Reservoir	09/27/21	0.5	0.19	7.8
	09/07/21	0.3	0.25	7.9
	09/13/21	0.3	0.21	7.8
Ferry Terminal	09/21/21	0.5	0.19	7.8
	09/27/21	0.5	0.19	7.8
	09/07/21	0.8	0.13	7.7
Highway 19 PRV	09/13/21	0.9	0.13	7.6
	09/22/21	0.9	0.15	7.6
	09/27/21	0.8	0.19	7.6
Average		0.5	0.19	7.6
Minimum		0.2	0.12	7.3
Maximum		0.9	0.66	7.9

October				
Location	Date	Free Chlorine mg/L	Turbidity NTU	pH
Chatham Avenue	10/04/21	0.2	0.19	7.9
	10/12/21	0.2	0.16	7.9
	10/18/21	0.2	0.15	7.7
Peel Street Liftstation	10/25/21	0.2	0.16	7.8
	10/04/21	0.6	0.19	7.7
	10/12/21	0.8	0.16	7.7
Airport Wastewater Treatment Plant	10/18/21	0.6	0.19	7.7
	10/25/21	0.6	0.20	7.6
	10/04/21	0.3	0.16	7.6
Public Works Yard	10/12/21	0.2	0.14	7.8
	10/18/21	0.3	0.20	7.6
	10/25/21	0.7	0.20	7.7
Eagleview School	10/04/21	0.5	0.20	7.8
	10/12/21	0.9	0.16	7.8
	10/18/21	0.9	0.25	7.8
Bear Cove Reservoir	10/25/21	0.9	0.27	7.8
	10/04/21	0.2	0.34	7.9
	10/12/21	0.3	0.25	8.0
Ferry Terminal	10/18/21	0.2	0.17	7.8
	10/25/21	0.2	0.24	7.8
	10/04/21	0.5	0.18	7.6
Highway 19 PRV	10/12/21	0.5	0.14	7.5
	10/18/21	0.5	0.15	7.6
	10/25/21	0.5	0.27	7.6
Average		0.5	0.14	7.7
Minimum		0.2	0.34	7.4
Maximum		0.9	0.34	8.0

November				
Location	Date	Free Chlorine mg/L	Turbidity NTU	pH
Chatham Avenue	11/01/21	0.3	0.20	7.9
	11/08/21	0.7	0.31	7.8
	11/15/21	0.7	0.33	8.1
Peel Street Liftstation	11/22/21	0.4	0.15	8.1
	11/01/21	0.2	0.23	7.6
	11/08/21	1.2	0.37	7.7
Airport Wastewater Treatment Plant	11/15/21	1.0	0.41	7.7
	11/22/21	0.6	0.14	7.6
	11/01/21	0.4	0.16	7.7
Public Works Yard	11/08/21	0.8	0.47	7.7
	11/15/21	0.4	0.39	7.8
	11/22/21	0.4	0.23	7.8
Eagleview School	11/01/21	0.6	0.17	7.8
	11/08/21	0.8	0.23	7.9
	11/15/21	1.0	0.24	7.9
Bear Cove Reservoir	11/22/21	0.7	0.27	7.7
	11/01/21	0.2	0.29	7.7
	11/08/21	0.6	0.24	7.8
Ferry Terminal	11/15/21	0.7	0.17	7.8
	11/22/21	0.7	0.27	7.7
	11/01/21	0.6	0.29	7.7
Highway 19 PRV	11/08/21	0.6	0.24	7.8
	11/15/21	0.7	0.33	7.8
	11/22/21	0.6	0.19	7.6
Average		0.6	0.25	7.8
Minimum		0.2	0.14	7.6
Maximum		1.2	0.47	8.1

December				
Location	Date	Free Chlorine mg/L	Turbidity NTU	pH
Chatham Avenue	12/06/21	0.4	0.21	7.6
	12/13/21	0.5	0.23	7.9
	12/20/21	0.5	0.35	7.9
Peel Street Liftstation	12/27/21	0.5	0.20	7.6
	12/06/21	0.7	0.21	7.6
	12/13/21	0.7	0.14	7.6
Airport Wastewater Treatment Plant	12/20/21	0.7	0.15	7.7
	12/27/21	0.5	0.20	7.5
	12/06/21	0.6	0.37	7.6
Public Works Yard	12/13/21	0.5	0.28	7.9
	12/20/21	0.5	0.28	7.8
	12/27/21	0.5	0.17	7.6
Eagleview School	12/06/21	0.8	0.17	7.8
	12/13/21	0.9	0.44	7.6
	12/20/21	0.8	0.32	7.8
Bear Cove Reservoir	12/27/21	0.6	0.32	7.8
	12/06/21	0.4	0.23	7.9
	12/13/21	0.5	0.36	7.9
Ferry Terminal	12/20/21	0.5	0.21	7.8
	12/27/21	0.5	0.28	7.7
	12/06/21	0.6	0.19	7.6
Highway 19 PRV	12/13/21	0.9	0.46	7.6
	12/20/21	0.7	0.26	7.7
	12/27/21	0.5	0.21	7.7
Average		0.7	0.21	7.6
Minimum		0.4	0.14	7.5
Maximum		0.9	0.48	7.9

January						
Sample Date	Sample Location	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Total Coliform CFU/100ml	E.Coli CFU/100ml
01/04/21	Hospital	0.7	0.13	7.7	<1	<1
01/04/21	Airport Washroom	0.7	0.21	7.7	<1	<1
01/18/21	Chatham Ave.	0.4	0.19	7.9	<1	<1
01/11/21	Bear Cove Reservoir	0.7	0.15	7.6	<1	<1
01/11/21	Highway 19 PRV	0.8	0.18	7.5	<1	<1
01/04/21	Pioneer Inn	0.9	0.16	7.7	<1	<1
01/11/21	Public Works Yard	0.7	0.16	7.6	<1	<1
01/18/21	Glen Lyon Restaurant	0.7	0.34	7.6	<1	<1
01/18/21	Airport Inn	0.5	0.17	7.6	<1	<1
01/11/21	Peel St Liftstation	0.7	0.21	7.6	<1	<1
01/04/21	B.C. Ferry	0.6	0.23	7.7	<1	<1

February						
Sample Date	Sample Location	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Total Coliform CFU/100ml	E.Coli CFU/100ml
02/01/21	Hospital	0.5	0.31	7.8	<1	<1
02/01/21	Airport Washroom	0.5	0.18	7.7	<1	<1
02/16/21	Chatham Ave.	0.6	0.14	7.9	<1	<1
02/08/21	Bear Cove Reservoir	0.7	0.18	7.8	<1	<1
02/08/21	Highway 19 PRV	0.7	0.16	7.7	<1	<1
02/01/21	Pioneer Inn	0.4	0.19	7.7	<1	<1
02/08/21	Public Works Yard	0.7	0.17	7.7	<1	<1
02/16/21	Glen Lyon Restaurant	0.9	0.14	7.8	<1	<1
02/16/21	Airport Inn	0.7	0.14	7.8	<1	<1
02/08/21	Peel St Liftstation	0.7	0.18	7.8	<1	<1
02/01/21	B.C. Ferry	0.7	0.22	7.7	<1	<1

Sample Date	Sample Location	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Total Coliform CFU/100ml	E.Coli CFU/100ml
01/18/21	Tsquake River (Untreated)	0	0.69	6.6		

Sample Date	Sample Location	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Total Coliform CFU/100ml	E.Coli CFU/100ml
02/16/21	Tsquake River (Untreated)		0.54	7.0		

March						
Sample Date	Sample Location	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Total Coliform CFU/100ml	E.Coli CFU/100ml
03/01/21	Hospital	0.7	0.44	7.8	<1	<1
03/01/21	Airport Washroom	0.7	0.26	7.9	<1	<1
03/15/21	Chatham Ave.	0.4	0.24	7.9	<1	<1
03/08/21	Bear Cove Reservoir	0.8	0.16	7.7	<1	<1
03/08/21	Highway 19 PRV	0.9	0.20	7.5	<1	<1
03/01/21	Pioneer Inn	1.0	0.18	7.7	<1	<1
03/08/21	Public Works Yard	0.7	0.16	7.7	<1	<1
03/15/21	Glen Lyon Restaurant	0.7	0.20	7.6	<1	<1
03/15/21	Airport Inn	0.6	0.18	7.6	<1	<1
03/08/21	Peel St Liftstation	0.7	0.25	7.7	<1	<1
03/01/21	B.C. Ferry	0.7	0.16	7.8	<1	<1

April						
Sample Date	Sample Location	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Total Coliform CFU/100ml	E.Coli CFU/100ml
04/12/21	Hospital	0.7	0.23	7.8	<1	<1
04/12/21	Airport Washroom	0.5	0.14	7.6	<1	<1
04/26/21	Chatham Ave.	0.3	0.52	8.0	<1	<1
04/19/21	Bear Cove Reservoir	0.7	0.18	7.7	<1	<1
04/19/21	Highway 19 PRV	0.9	0.19	7.7	<1	<1
04/12/21	Pioneer Inn	0.8	0.16	7.9	<1	<1
04/19/21	Public Works Yard	0.6	0.16	7.8	<1	<1
04/26/21	Glen Lyon Restaurant	0.6	0.15	7.7	<1	<1
04/26/21	Airport Inn	0.5	0.17	7.6	<1	<1
04/19/21	Peel St Liftstation	0.6	0.20	7.7	<1	<1
04/12/21	B.C. Ferry	0.7	0.13	7.8	<1	<1

Sample Date	Sample Location	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Total Coliform CFU/100ml	E.Coli CFU/100ml
03/15/21	Tsquake River (Untreated)		0.66	6.8		

Sample Date	Sample Location	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Total Coliform CFU/100ml	E.Coli CFU/100ml
04/26/21	Tsquake River (Untreated)		0.54	7.1		

May						
Sample Date	Sample Location	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Total Coliform CFU/100ml	E.Coli CFU/100ml
05/03/21	Hospital	0.7	0.14	7.7	<1	<1
05/03/21	Airport Washroom	0.4	0.19	7.7	<1	<1
05/17/21	Chatham Ave.	0.4	0.17	7.8	<1	<1
05/10/21	Bear Cove Reservoir	0.6	0.31	7.7	<1	<1
05/10/21	Highway 19 PRV	0.8	0.24	7.6	<1	<1
05/03/21	Pioneer Inn	0.7	0.20	7.7	<1	<1
05/10/21	Public Works Yard	0.7	0.19	7.8	<1	<1
05/17/21	Glen Lyon Restaurant	0.6	0.21	7.6	<1	<1
05/17/21	Airport Inn	0.5	0.15	7.6	<1	<1
05/10/21	Peel St Liftstation	0.6	0.28	7.7	<1	<1
05/03/21	B.C. Ferry	0.5	0.16	7.8	<1	<1

June						
Sample Date	Sample Location	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Total Coliform CFU/100ml	E.Coli CFU/100ml
06/07/21	Hospital	0.6	0.24	7.9	<1	<1
06/07/21	Airport Washroom	0.4	0.28	7.8	<1	<1
06/21/21	Chatham Ave.	0.6	0.28	7.9	<1	<1
06/14/21	Bear Cove	0.5	0.25	7.8	<1	<1
06/14/21	Highway 19 PRV	0.9	0.23	7.8	<1	<1
06/07/21	Pioneer Inn	0.9	0.28	7.6	<1	<1
06/14/21	Public Works Yard	0.7	0.23	7.7	<1	<1
06/14/28	Glen Lyon Restaurant	0.5	0.23	7.6	<1	<1
06/21/21	Airport Inn	0.8	0.19	7.7	<1	<1
06/14/21	Peel St Liftstation	0.6	0.60	7.8	<1	<1
06/07/21	B.C. Ferry	0.4	0.29	7.7	<1	<1

Sample Date	Sample Location	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Total Coliform CFU/100ml	E.Coli CFU/100ml
05/17/21	Tsquake River (Untreated)		0.72	7.0		

Sample Date	Sample Location	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Total Coliform CFU/100ml	E.Coli CFU/100ml
06/21/21	Tsquake River (Untreated)		0.55	6.9		

July						
Sample Date	Sample Location	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Total Coliform CFU/100ml	E.Coli CFU/100ml
07/05/21	Hospital	0.7	0.18	7.9	<1	<1
07/05/21	Airport Washroom	0.5	0.21	7.7	<1	<1
07/12/21	Chatham Ave.	1.0	0.16	8.0	<1	<1
07/12/21	Bear Cove Reservoir	0.4	0.17	7.8	<1	<1
07/12/21	Highway 19 PRV	0.9	0.22	8.0	<1	<1
07/05/21	Pioneer Inn	0.9	0.30	7.6	<1	<1
07/19/21	Public Works Yard	0.8	0.21	7.9	<1	<1
07/19/21	Glen Lyon Restaurant	0.4	0.15	7.6	<1	<1
07/19/21	Airport Inn	0.8	0.15	7.7	<1	<1
07/19/21	Peel St Liftstation	0.9	0.15	7.7	<1	<1
07/05/21	B.C. Ferry	0.5	0.17	7.8	<1	<1

Sample Date	Sample Location	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Total Coliform CFU/100ml	E.Coli CFU/100ml
07/12/21	Tsulquate River (Untreated)		0.23	7.0		

September						
Sample Date	Sample Location	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Total Coliform CFU/100ml	E.Coli CFU/100ml
09/27/21	Hospital	0.7	0.19	7.6	<1	<1
09/27/21	Airport Washroom	0.4	0.17	7.7	<1	<1
09/20/21	Chatham Ave.	0.3	0.16	7.7	<1	<1
09/20/21	Bear Cove Reservoir	0.3	0.16	7.6	<1	<1
09/27/21	Highway 19 PRV	0.8	0.19	7.6	<1	<1
09/07/21	Pioneer Inn	0.7	0.24	7.6	<1	<1
09/07/21	Public Works Yard	0.4	0.12	7.7	<1	<1
09/20/21	Glen Lyon Restaurant	0.6	0.17	7.5	<1	<1
09/20/21	Airport Inn	0.4	0.18	7.6	<1	<1
09/27/21	Peel St Liftstation	0.4	0.16	7.6	<1	<1
09/07/21	B.C. Ferry	0.6	0.12	7.5	<1	<1

Sample Date	Sample Location	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Total Coliform CFU/100ml	E.Coli CFU/100ml
09/07/21	Tsulquate River (Untreated)		0.39	7.1		

November						
Sample Date	Sample Location	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Total Coliform CFU/100ml	E.Coli CFU/100ml
11/08/21	Hospital	0.7	0.28	7.8	<1	<1
11/15/21	Airport Washroom	0.4	0.56	7.8	<1	<1
11/01/21	Chatham Ave.	0.3	0.20	7.9	<1	<1
11/01/21	Bear Cove Reservoir	0.5	0.19	7.6	<1	<1
11/01/21	Highway 19 PRV	0.7	0.17	7.6	<1	<1
11/08/21	Pioneer Inn	0.7	0.23	7.7	<1	<1
11/01/21	Public Works Yard	0.6	0.17	7.8	<1	<1
11/08/21	Glen Lyon Restaurant	0.7	0.23	7.8	<1	<1
11/08/21	Airport Inn	0.7	0.23	7.7	<1	<1
11/15/21	Peel St Liftstation	1.0	0.39	7.7	<1	<1
11/15/21	B.C. Ferry	0.7	0.33	7.8	<1	<1

Sample Date	Sample Location	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Total Coliform CFU/100ml	E.Coli CFU/100ml
11/15/21	Tsulquate River (Untreated)		0.67	6.7		

August						
Sample Date	Sample Location	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Total Coliform CFU/100ml	E.Coli CFU/100ml
08/16/21	Hospital	0.8	0.20	7.6	<1	<1
08/16/21	Airport Washroom	0.6	0.14	7.8	<1	<1
08/09/21	Chatham Ave.	0.3	0.13	7.6	<1	<1
08/03/21	Bear Cove Reservoir	0.4	0.14	7.7	<1	<1
08/03/21	Highway 19 PRV	0.7	0.14	7.7	<1	<1
08/03/21	Pioneer Inn	0.7	0.14	7.5	<1	<1
08/09/21	Public Works Yard	0.8	0.14	7.6	<1	<1
08/16/21	Glen Lyon Restaurant	0.5	0.19	7.8	<1	<1
08/09/21	Airport Inn	0.4	0.18	7.7	<1	<1
08/03/21	Peel St Liftstation	0.4	0.14	7.6	<1	<1
08/16/21	B.C. Ferry	0.4	0.22	7.6	<1	<1

Sample Date	Sample Location	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Total Coliform CFU/100ml	E.Coli CFU/100ml
08/09/21	Tsulquate River (Untreated)		0.29	7.2		

October						
Sample Date	Sample Location	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Total Coliform CFU/100ml	E.Coli CFU/100ml
10/18/21	Hospital	0.7	0.19	7.7	<1	<1
10/18/21	Airport Washroom	0.3	0.24	7.7	<1	<1
10/12/21	Chatham Ave.	0.2	0.16	7.9	<1	<1
10/04/21	Bear Cove Reservoir	0.5	0.18	7.6	<1	<1
10/04/21	Highway 19 PRV	0.8	0.18	7.5	<1	<1
10/18/21	Pioneer Inn	0.5	0.26	7.7	<1	<1
10/12/21	Public Works Yard	0.9	0.16	7.8	<1	<1
10/18/21	Glen Lyon Restaurant	0.6	0.14	7.6	<1	<1
10/12/21	Airport Inn	0.4	0.25	7.5	<1	<1
10/04/21	Peel St Liftstation	0.6	0.19	7.7	<1	<1
10/12/21	B.C. Ferry	0.4	0.14	7.6	<1	<1

Sample Date	Sample Location	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Total Coliform CFU/100ml	E.Coli CFU/100ml
10/04/21	Tsulquate River (Untreated)		0.80	6.8		

December						
Sample Date	Sample Location	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Total Coliform CFU/100ml	E.Coli CFU/100ml
12/13/21	Hospital	0.5	0.24	7.6	<1	<1
12/13/21	Airport Washroom	0.4	0.15	7.9	<1	<1
12/13/21	Chatham Ave.	0.5	0.23	7.9	<1	<1
12/06/21	Bear Cove Reservoir	0.6	0.19	7.6	<1	<1
12/06/21	Highway 19 PRV	0.9	0.28	7.7	<1	<1
12/06/21	Pioneer Inn	0.8	0.14	7.7	<1	<1
12/06/21	Public Works Yard	0.8	0.17	7.8	<1	<1
12/13/21	Glen Lyon Restaurant	0.7	0.16	7.6	<1	<1
12/13/21	Airport Inn	0.6	0.19	7.7	<1	<1
12/13/21	Peel St Liftstation	0.7	0.14	7.6	<1	<1
12/06/21	B.C. Ferry	0.7	0.21	7.6	<1	<1

Sample Date	Sample Location	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Total Coliform CFU/100ml	E.Coli CFU/100ml
12/06/21	Tsulquate River (Untreated)		0.71	6.8		

Analytical Report

Bill To: District of Port Hardy Box 68 Port Hardy, BC, Canada V0N 2P0	Project ID: Project Name: Project Location: Port Hardy LSD: P.O.: 5189 Proj. Acct. code:	Lot ID: 1469788 Control Number: Date Received: Jan 20, 2021 Date Reported: Jan 28, 2021 Report Number: 2588593
Attn: Accounts Payable		
Sampled By:		
Company: District of Port Hardy		

Reference Number	1469788-1
Sample Date	January 19, 2021
Sample Time	09:30
Sample Location	
Sample Description	WTP Reservoir / 7.2 °C
Sample Matrix	Water

Analyte	Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Trihalomethanes Screen - Water					
Chloroform	mg/L	0.019	0.001		
Bromodichloromethane	mg/L	0.001	0.001		
Dibromochloromethane	mg/L	<0.001	0.001		
Bromoform	mg/L	<0.001	0.001		
Total Trihalomethanes	mg/L	0.020	0.001	0.1	Below MAC
Trihalomethanes - Surrogate Recovery					
Dibromofluoromethane	EPA Surrogate %	103	50-140		
Toluene-d8	EPA Surrogate %	97	50-140		
Bromofluorobenzene	EPA Surrogate %	92	50-140		
Haloacetic Acids - Water					
Monochloroacetic Acid	µg/L	<2.0	2.0		
Monobromoacetic Acid	µg/L	<2.0	2.0		
Dichloroacetic Acid	µg/L	7.1	2.0		
Trichloroacetic Acid	µg/L	7.9	2.0		
Bromochloroacetic Acid	µg/L	<2.0	2.0		
Dibromoacetic Acid	µg/L	<2.0	2.0		
Total Haloacetic Acids (HAA6)	µg/L	15.0	12.0	80	Below MAC
2,3-Dibromopropionic acid	%	100	50-150		

Analytical Report

Bill To: District of Port Hardy Box 68 Port Hardy, BC, Canada V0N 2P0	Project ID: Project Name: Project Location: Port Hardy LSD: P.O.: 5169 Proj. Acct. code:	Lot ID: 1469788 Control Number: Date Received: Jan 20, 2021 Date Reported: Jan 28, 2021 Report Number: 2588503
Attn: Accounts Payable Sampled By: Company: District of Port Hardy		

Reference Number	1469788-2
Sample Date	January 19, 2021
Sample Time	10:15
Sample Location	
Sample Description	Chatham Ave. / 7.2 °C
Sample Matrix	Water

Analyte	Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Trihalomethanes Screen - Water					
Chloroform	mg/L	0.048	0.001		
Bromodichloromethane	mg/L	0.003	0.001		
Dibromochloromethane	mg/L	<0.001	0.001		
Bromoform	mg/L	<0.001	0.001		
Total Trihalomethanes	mg/L	0.051	0.001	0.1	Below MAC
Trihalomethanes - Surrogate Recovery					
Dibromofluoromethane	EPA Surrogate %	107	50-140		
Toluene-d8	EPA Surrogate %	96	50-140		
Bromofluorobenzene	EPA Surrogate %	87	50-140		
Haloacetic Acids - Water					
Monochloroacetic Acid	µg/L	<2.0	2.0		
Monobromoacetic Acid	µg/L	<2.0	2.0		
Dichloroacetic Acid	µg/L	16.0	2.0		
Trichloroacetic Acid	µg/L	22.5	2.0		
Bromochloroacetic Acid	µg/L	<2.0	2.0		
Dibromoacetic Acid	µg/L	<2.0	2.0		
Total Haloacetic Acids (HAA6)	µg/L	38.5	12.0	80	Below MAC
2,3-Dibromopropionic acid	%	110	50-150		

Approved by:



Carol Nam, Dipl. T.
Quality Officer

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Analytical Report

Bill To: District of Port Hardy Box 88 Port Hardy, BC, Canada V0N 2P0	Project ID: Resample Project Name: THM/HAA Sampling for Quarter #3 2021	Lot ID: 1507993
Attn: Accounts Payable	Project Location: LSD: P.O.: 5692	Control Number: Date Received: Jul 23, 2021 Date Reported: Jul 31, 2021 Report Number: 2644412
Sampled By: Company: District of Port Hardy	Proj. Acct. code:	

Analyte	Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Reference Number 1507993-1					
Sample Date					
Sample Time					
Sample Location					
Sample Description WTP Reservoir / 6.6 °C					
Sample Matrix Water					
Trihalomethanes Screen - Water					
Chloroform	mg/L	0.034	0.001		
Bromodichloromethane	mg/L	0.003	0.001		
Dibromochloromethane	mg/L	<0.001	0.001		
Bromoform	mg/L	<0.001	0.001		
Total Trihalomethanes	mg/L	0.037	0.001	0.1	Below MAC
Trihalomethanes - Surrogate Recovery					
Dibromofluoromethane	EPA Surrogate %	140	50-140		
Toluene-d8	EPA Surrogate %	103	50-140		
Bromofluorobenzene	EPA Surrogate %	120	50-140		
Haloacetic Acids - Water					
Monochloroacetic Acid	µg/L	<2.0	2.0		
Monobromoacetic Acid	µg/L	<2.0	2.0		
Dichloroacetic Acid	µg/L	10.4	2.0		
Trichloroacetic Acid	µg/L	11.5	2.0		
Bromochloroacetic Acid	µg/L	<2.0	2.0		
Dibromoacetic Acid	µg/L	<2.0	2.0		
Total Haloacetic Acids (HAA8)	µg/L	21.9	12.0	80	Below MAC
2,3-Dibromopropionic acid	%	100	50-150		

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Analytical Report

Bill To: District of Port Hardy Box 68 Port Hardy, BC, Canada V0N 2P0	Project ID: Resample Project Name: THM/HAA Sampling for Quarter #3 2021	Lot ID: 1507993
Attn: Accounts Payable	Project Location: LSD:	Control Number: Date Received: Jul 23, 2021
Sampled By:	P.O.: 5602	Date Reported: Jul 31, 2021
Company: District of Port Hardy	Proj. Acct. code:	Report Number: 2644412

Analyte	Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Trihalomethanes Screen - Water					
Chloroform	mg/L	0.075	0.001		
Bromodichloromethane	mg/L	0.006	0.001		
Dibromochloromethane	mg/L	<0.001	0.001		
Bromoform	mg/L	<0.001	0.001		
Total Trihalomethanes	mg/L	0.081	0.001	0.1	Below MAC
Trihalomethanes - Surrogate Recovery					
Dibromofluoromethane	EPA Surrogate %	135	50-140		
Toluene-d8	EPA Surrogate %	102	50-140		
Bromofluorobenzene	EPA Surrogate %	109	50-140		
Haloacetic Acids - Water					
Monochloroacetic Acid	µg/L	<2.0	2.0		
Monobromoacetic Acid	µg/L	<2.0	2.0		
Dichloroacetic Acid	µg/L	20.8	2.0		
Trichloroacetic Acid	µg/L	24.3	2.0		
Bromochloroacetic Acid	µg/L	<2.0	2.0		
Dibromoacetic Acid	µg/L	<2.0	2.0		
Total Haloacetic Acids (HAA6)	µg/L	45.1	12.0	80	Below MAC
2,3-Dibromopropionic acid	%	91	50-150		

Approved by:



Max Hewitt
 Operations Manager

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THM/HAA RESULTS – QUARTER 4



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Analytical Report

Bill To: District of Port Hardy Water & Wastewater Division 8900 Park Drive Port Hardy, BC, Canada V0N 2P0	Project ID: Project Name: THM/HAA Sampling for Quarter #4 2021 Project Location: LSD: P.O.: 5823 Proj. Acct. code:	Lot ID: 1531269 Control Number: Date Received: Oct 27, 2021 Date Reported: Nov 2, 2021 Report Number: 2682637
Attn: Joe Jewell		
Sampled By:		
Company: District of Port Hardy		

Analyte	Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Trihalomethanes Screen - Water					
Chloroform	mg/L	0.027	0.001		
Bromodichloromethane	mg/L	0.002	0.001		
Dibromochloromethane	mg/L	<0.001	0.001		
Bromoform	mg/L	<0.001	0.001		
Total Trihalomethanes	mg/L	0.029	0.001	0.1	Below MAC
Trihalomethanes - Surrogate Recovery					
Dibromofluoromethane	EPA Surrogate %	99	50-140		
Toluene-d8	EPA Surrogate %	99	50-140		
Bromofluorobenzene	EPA Surrogate %	102	50-140		
Haloacetic Acids - Water					
Monochloroacetic Acid	µg/L	<2.0	2.0		
Monobromoacetic Acid	µg/L	<2.0	2.0		
Dichloroacetic Acid	µg/L	9.6	2.0		
Trichloroacetic Acid	µg/L	13.1	2.0		
Bromochloroacetic Acid	µg/L	<2.0	2.0		
Dibromoacetic Acid	µg/L	<2.0	2.0		
Total Haloacetic Acids (HAA5)	µg/L	22.6	12.0	80	Below MAC
2,3-Dibromopropionic acid	%	100	50-150		

Analytical Report

Bill To: District of Port Hardy Water & Wastewater Division 8900 Park Drive Port Hardy, BC, Canada V0N 2P0 Attn: Joe Jewell Sampled By: Company: District of Port Hardy	Project ID: Project Name: THM/HAA Sampling for Quarter #4 2021 Project Location: LSD: P.O.: 5823 Proj. Acct. code:	Lot ID: 1531269 Control Number: Date Received: Oct 27, 2021 Date Reported: Nov 2, 2021 Report Number: 2682637
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Reference Number	1531269-2
Sample Date	October 26, 2021
Sample Time	NA
Sample Location	
Sample Description	Chatham Ave.
Sample Matrix	Water

Analyte	Units	Result	Nominal Detection Limit	Guideline Limit	Guideline Comments
Trihalomethanes Screen - Water					
Chloroform	mg/L	0.067	0.001		
Bromodichloromethane	mg/L	0.004	0.001		
Dibromochloromethane	mg/L	<0.001	0.001		
Bromoform	mg/L	<0.001	0.001		
Total Trihalomethanes	mg/L	0.071	0.001	0.1	Below MAC
Trihalomethanes - Surrogate Recovery					
Dibromofluoromethane	EPA Surrogate %	102	50-140		
Toluene-d8	EPA Surrogate %	98	50-140		
Bromofluorobenzene	EPA Surrogate %	105	50-140		
Haloacetic Acids - Water					
Monochloroacetic Acid	µg/L	<2.0	2.0		
Monobromoacetic Acid	µg/L	<2.0	2.0		
Dichloroacetic Acid	µg/L	15.1	2.0		
Trichloroacetic Acid	µg/L	33.6	2.0		
Bromochloroacetic Acid	µg/L	<2.0	2.0		
Dibromoacetic Acid	µg/L	<2.0	2.0		
Total Haloacetic Acids (HAA8)	µg/L	48.7	12.0	80	Below MAC
2,3-Dibromopropionic acid	%	66	50-150		

Approved by: 
 Max Hewitt
 Operations Manager

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