



WATER TREATMENT PLANT & DISTRIBUTION SYSTEM



2017 Annual Operations Performance Report

Facility Numbers 529 & 155

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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 2017, 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 one Level II operator.

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

OPERATIONAL HIGHLIGHTS

WATER TREATMENT PLANT

Throughout 2017, 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.

- There were no violations to permit in 2017
- Quarterly samples for THMs and HAAs all returned within acceptable limits
- All bacteriological testing came back within expected parameters
- Seasonal low river levels due to dry weather triggered a Stage 2 water use restriction as per Port Hardy Water Conservation Bylaw No. 06-2005
- 145 ML less water was treated in 2017 compared to 2016; a 10 year low due in large to water system repairs and compliance with the District's Water Conservation Bylaw
- Two extended power outages occurred in 2017 resulted in the use of the emergency diesel power generator. No issues with quality or quantity of water
- In February, all gear boxes on the flocculation tanks were rebuilt as part of the maintenance program
- In May, as part of our capital program a new 5-camera security camera system was installed and new SCADA computers were installed. Additionally, new LED lights were installed in the water treatment plant
- In July, a new treated water meter was installed as part of the capital project program. Addition work on the capital program included the installation of a streaming current meter to monitor chemical dosages and a fire suppression system for around the water treatment plant

WATER DISTRIBUTION SYSTEM

- Work has commenced on 3000 meters of new water distribution pipe and a new reservoir in the Fort Rupert area of Port Hardy. Reservoir #1 at the water treatment plant is also scheduled to be replaced
- 200 hydrants were serviced in 2017 and all district hydrants are now painted red
- Utility locating and marking was a priority in 2017 due to the fibre optic installation around Port Hardy. As a result many of our service cards and maps corrected or in many cases new cards were created. Any services that were found in need of repair were completed
- Commercial and meters were installed as part of property developments this year
- Work has commenced to make the meter reading program more efficient
- In April, a water main was excavated and repaired in front of the Pier Side Landing Hotel on Granville Street
- A leak at the McNeill PRV was discovered in April. Operators were able to install a repair clamp
- In June, a backup water pump and diesel generator arrived for the Kains Lake capital project. This system will be used to supply water to the water plant in the event of extreme low water levels or catastrophic failure of the dam
- In July, a water main broke on Byng Road resulting in the Storeys Beach area being without water for several hours
- In September, a main break was repaired in front of the Quarterdeck Pub on Hardy Bay Road
- In December, all operators received training in PRV station operation and maintenance as part of our staff training development

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 sanidumps and public gardens.

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.

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	27	24	27	25	27	26	26	27	25	27	26	26	313
Reservoir Water pH Daily Grab Sample or Continuous 6.5 - 8.5	31	28	31	30	31	30	26	31	30	31	30	31	360
Colour (Reservoir) AO: <= 15 TCU	27	24	27	25	27	26	26	27	25	27	26	26	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	46	42	42	41	48	46	46	46	41	46	41	41	526
Turbidity (Distribution) Grab Samples	46	42	42	41	48	46	47	46	41	46	41	41	527
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	12	12	12	12	12	17	12	12	12	12	12	149
Total Coliforms 11 per month Distribution, 1 Raw MAC: 0 CFU/100mL	12	12	12	12	12	12	17	12	12	12	12	12	149
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	1	2	1	2	3	5	4	4	2	4	4	1	33
Water Service Repairs	0	6	4	1	1	1	0	0	0	0	0	0	13
Water Service Locates	2	107	6	2	8	4	2	1	4	8	6	4	154
BC One Calls	14	23	5	2	7	12	9	5	7	2	11	11	108
PRV Inspections	0	0	0	1	1	0	0	0	0	0	0	0	2
ERP Exercises	0	0	0	0	0	0	0	0	0	0	0	0	0
Hydrant A - Services	0	0	0	2	0	0	0	0	0	0	0	0	2
Hydrant B - Services	0	0	0	42	65	53	12	0	28	0	0	0	200

RAW AND TREATED WATER PRODUCTION

	January	February	March	April	May	June	July	August	September	October	November	December	Total
Raw Water Pumped in ML	164	138	140	124	125	129	150	154	135	128	122	129	1635
Treated Water Production in ML	159	135	136	121	123	126	147	151	131	124	120	126	1597
Rainfall in mm	223	87.8	175.6	70.4	64.4	45.8	14.4	17.4	85.6	249.2	295.4	46.8	1361
Backwashes	43	34	38	34	38	36	35	46	38	36	38	33	449

CHEMICAL USAGE

	January	February	March	April	May	June	July	August	September	October	November	December	Total
ISOPAC 6 Coagulant in kg	3369	2455	3102	2984	3104	3165	2067	1932	3302	5058	3950	3137	37624
Soda Ash in kg	1226	1112	1385	1112	1521	1294	726	499	1249	1907	1566	1567	15165
Filter Aid (LT20) in kg	1.49	1.29	1.29	1.12	1.03	1.13	1.24	1.21	1.11	1.12	1.11	1.13	14.28
Salt for Chlorine Generator in kg	1226	1112	1112	817	1500	1800	1824	300	540	740	454	704	12129
Liquid Sodium Hypochlorite 12% in kg	20	0	10	0	0	0	0	0	0	0	0	0	30
Lime in kg	1937	1758	2002	1937	2383	1899	2108	1402	2016	2089	1830	1757	23117
Carbon Dioxide in kg	2851	2408	3002	2285	2562	2671	2805	2327	2479	3581	3853	4483	35308

FILTERED WATER QUALITY

Month	Filter 1		Filter 2		Filter 3		Filter 4	
	Avg	Max	Avg	Max	Avg	Max	Avg	Max
January	0.02	0.24	0.03	0.29	0.03	0.29	0.02	0.29
February	0.03	0.29	0.02	0.29	0.02	0.29	0.03	0.29
March	0.03	0.29	0.04	0.29	0.03	0.29	0.03	0.29
April	0.03	0.29	0.04	0.29	0.03	0.29	0.03	0.29
May	0.04	0.29	0.05	0.29	0.04	0.29	0.03	0.29
June	0.04	0.29	0.05	0.29	0.05	0.29	0.04	0.29
July	0.03	0.29	0.03	0.29	0.04	0.29	0.03	0.29
August	0.03	0.29	0.03	0.29	0.04	0.29	0.03	0.29
September	0.03	0.29	0.04	0.29	0.03	0.25	0.02	0.19
October	0.04	0.29	0.05	0.29	0.04	0.29	0.03	0.29
November	0.03	0.29	0.04	0.29	0.04	0.29	0.03	0.29
December	0.04	0.29	0.04	0.29	0.06	0.30	0.03	0.29
Average	0.03	0.29	0.04	0.29	0.04	0.29	0.03	0.28
Minimum	0.02	0.24	0.02	0.29	0.02	0.25	0.02	0.19
Maximum	0.04	0.29	0.05	0.29	0.06	0.30	0.04	0.29

RESERVOIR EFFLUENT

Month	Flow (m ³ /hour)		Free Chlorine (mg/L)		pH		Turbidity (NTU)	
	Avg	Max	Avg	Max	Avg	Max	Avg	Max
January	185	331	1.1	1.3	7.5	8.0	0.08	0.40
February	174	358	1.0	1.2	7.5	8.4	0.06	0.22
March	140	297	1.0	1.9	7.6	7.8	0.07	0.28
April	140	297	1.0	1.6	7.6	7.8	0.05	0.28
May	138	284	0.9	1.6	7.6	9.1	0.05	0.21
June	146	418	0.9	1.1	7.5	7.8	0.05	0.26
July	167	666	1.0	1.7	7.5	7.7	0.04	0.15
August	165	398	0.9	1.3	7.4	9.5	0.03	0.14
September	150	285	0.9	1.5	7.4	10.3	0.03	0.22
October	132	294	0.9	1.2	7.5	7.9	0.05	0.26
November	130	459	1.0	1.1	7.5	9.8	0.04	0.25
December	131	267	1.0	1.2	7.5	7.8	0.04	0.40
Avg	150	363	1.0	1.4	7.5	8.5	0.05	0.26
Min	130	267	0.9	1.1	7.4	7.7	0.03	0.14
Max	185	666	1.1	1.9	7.6	10.3	0.08	0.40

Note: Data from the above tables are accumulated from online instrumentation and SCADA trending. Maximum values can be influenced by cleaning, calibrating and flushing of online instrumentation which at that time does not reflect the actual quality of the water.

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	01-03-17	0.5	0.24	7.8										
	01-04-17	0.5	0.31	8.0										
	01-10-17	0.8	0.26	7.8										
	01-17-17	0.7	0.49	7.8										
	01-24-17	0.8	0.18	8.0										
01-31-17	0.7	0.19	8.0											
Peel Street Liftstation	01-03-17	0.9	0.23	7.5										
	01-10-17	0.8	0.24	7.5										
	01-17-17	0.9	0.39	7.4										
	01-24-17	0.8	0.21	7.4										
	01-31-17	0.9	0.23	7.6										
Airport Wastewater Treatment Plant	01-03-17	0.7	0.87	7.7										
	01-10-17	0.7	0.36	7.4										
	01-17-17	0.8	0.72	7.5										
	01-24-17	0.8	0.51	7.2										
	01-31-17	0.5	1.73	7.6										
Public Works Yard	01-03-17	0.6	0.18	7.5										
	01-10-17	1.0	0.22	7.7										
	01-17-17	1.0	0.23	7.4										
	01-24-17	0.7	0.16	7.9										
	01-31-17	1.0	0.24	7.6										
Eagleview School	01-03-17	0.2	0.61	7.9										
	01-10-17	0.2	0.49	8.4										
	01-17-17	0.5	1.44	7.5										
	01-24-17	0.6	0.20	8.1										
	01-31-17	0.5	0.23	7.9										
Bear Cove Reservoir	01-03-17	0.8	0.24	7.6										
	01-10-17	0.9	0.20	7.3										
	01-17-17	0.9	0.31	7.4										
	01-24-17	0.8	0.31	7.5										
	01-31-17	0.6	0.22	7.5										
Ferry Terminal	01-03-17	0.7	0.33	7.5										
	01-10-17	0.4	0.19	7.4										
	01-17-17	1.0	2.71	7.4										
	01-24-17	0.8	0.22	7.6										
	01-31-17	0.7	0.20	7.4										
Highway 19 PRV	01-03-17	1.0	0.16	7.5										
	01-10-17	1.0	0.20	7.6										
	01-17-17	1.0	0.16	7.4										
	01-24-17	0.8	0.23	7.4										
	01-31-17	1.0	0.39	7.5										
Average		0.7	0.42	7.6										
Minimum		0.2	0.16	7.2										
Maximum		1.0	2.71	8.4										
Chatham Avenue	02-07-17	0.8	0.24	7.9										
	02-14-17	0.7	0.44	7.9										
	02-21-17	0.8	0.17	8.1										
	02-28-17	0.7	0.31	8.0										
Peel Street Liftstation	02-07-17	0.8	0.18	7.6										
	02-14-17	0.7	0.20	7.9										
	02-21-17	0.8	0.50	7.6										
	02-28-17	0.9	0.31	7.6										
Airport Wastewater Treatment Plant	02-07-17	0.7	0.31	7.7										
	02-14-17	0.6	0.29	7.8										
	02-21-17	0.6	0.45	8.1										
	02-28-17	0.6	0.43	7.6										
Public Works Yard	02-07-17	0.8	0.32	7.7										
	02-14-17	0.6	0.21	7.9										
	02-21-17	0.9	0.16	7.7										
	02-28-17	0.9	0.17	7.7										
Eagleview School	02-07-17	0.5	0.33	7.9										
	02-14-17	0.5	0.30	8.2										
	02-21-17	0.5	0.42	8.0										
	02-28-17	0.5	0.23	7.9										
Bear Cove Reservoir	02-07-17	0.8	0.20	7.6										
	02-14-17	0.9	0.23	7.6										
	02-21-17	0.9	0.20	7.6										
	02-28-17	0.9	0.20	7.6										
Ferry Terminal	02-07-17	0.8	0.17	7.6										
	02-14-17	0.7	0.17	7.5										
	02-21-17	1.0	0.16	7.5										
	02-28-17	0.8	0.16	7.5										
Highway 19 PRV	02-07-17	0.9	0.24	7.7										
	02-14-17	0.9	0.42	7.8										
	02-21-17	0.9	0.26	7.6										
	02-28-17	0.9	0.20	7.7										
Average		0.8	0.27	7.7										
Minimum		0.5	0.16	7.5										
Maximum		1.0	0.50	8.2										
Chatham Avenue	03-07-17	0.7	0.33	7.8										
	03-14-17	0.8	0.28	7.9										
	03-21-17	0.9	0.22	7.9										
	03-28-17	0.8	0.25	7.7										
Peel Street Liftstation	03-07-17	0.9	0.32	7.6										
	03-14-17	1.0	0.26	7.7										
	03-21-17	0.9	0.20	7.7										
	03-28-17	0.9	0.18	7.5										
Airport Wastewater Treatment Plant	03-07-17	0.8	0.35	7.6										
	03-14-17	0.8	0.36	7.7										
	03-21-17	0.8	0.33	7.7										
	03-28-17	0.8	0.19	7.6										
Public Works Yard	03-07-17	1.0	0.38	8.4										
	03-14-17	1.0	0.27	7.8										
	03-21-17	0.9	0.19	8.0										
	03-28-17	0.9	0.22	7.5										
Eagleview School	03-07-17	0.6	0.27	8.0										
	03-14-17	0.6	0.32	8.0										
	03-21-17	0.6	0.31	8.3										
	03-28-17	0.5	0.27	8.0										
Bear Cove Reservoir	03-07-17	0.9	0.25	7.5										
	03-14-17	0.9	0.25	7.7										
	03-21-17	1.0	0.24	7.7										
	03-28-17	0.8	0.22	7.6										
Ferry Terminal	03-07-17	0.7	0.38	7.5										
	03-14-17	0.7	0.37	7.7										
	03-21-17	0.8	0.27	7.6										
	03-28-17	0.7	0.18	7.5										
Highway 19 PRV	03-07-17	1.0	0.19	7.7										
	03-14-17	1.1	0.23	7.7										
	03-21-17	1.0	0.23	7.8										
	03-28-17	0.9	0.24	7.5										
Average		0.8	0.27	7.7										
Minimum		0.5	0.18	7.5										
Maximum		1.1	0.38	8.4										
Peel Street Liftstation	04-04-17	0.5	0.19	8.4										
	04-18-17	0.7	0.19	7.7										
	04-25-17	0.6	0.22	7.6										
Airport Wastewater Treatment Plant	04-04-17	0.8	0.20	7.6										
	04-11-17	0.8	0.19	7.5										
	04-18-17	0.8	0.22	7.5										
	04-25-17	0.7	0.18	7.6										
Public Works Yard	04-04-17	0.5	0.18	8.3										
	04-11-17	0.5	0.22	7.8										
	04-18-17	0.8	0.24	7.6										
	04-25-17	0.3	0.23	8.8										
Eagleview School	04-04-17	0.4	0.31	7.9										
	04-11-17	0.4	0.40	7.6										
	04-18-17	0.3	0.28	8.2										
	04-25-17	0.4	0.41	7.9										
Bear Cove Reservoir	04-04-17	0.8	0.21	7.5										
	04-11-17	0.7	0.25	7.6										
	04-18-17	0.6	0.24	7.5										
	04-25-17	0.7	0.20	7.6										
Ferry Terminal	04-04-17	0.7	0.20	7.5										
	04-11-17	0.7	0.22	7.6										
	04-18-17	0.6	0.23	7.6										
	04-25-17	0.5	0.19	7.5										
Highway 19 PRV	04-04-17	0.8	0.20	7.5										
	04-11-17	0.9	0.19	7.6										
	04-18-17	0.7	0.29	7.5										
	04-25-17	0.8	0.20	7.6										
Average		0.6	0.2	7.7										
Minimum		0.3	0.2	7.5										
Maximum		0.9	0.4	8.8										
Peel Street Liftstation	05-09-17	0.6	0.18	7.8										
	05-16-17	0.6	0.22	7.6										
	05-23-17	0.6	0.19	8.0										
	05-30-17	0.5	0.18	7.8										
Airport Wastewater Treatment Plant	05-02-17	0.7	0.18	7.5										
	05-09-17	0.8	0.19	7.5										
	05-16-17	0.7	0.16	7.5										
	05-23-17	0.7	0.19	7.5										
	05-30-17	0.8	0.23	7.7										
Public Works Yard	05-02-17	0.5	0.27	7.6										
	05-09-17	0.5	0.27	7.6										
	05-16-17	0.3	0.21	7.5										
	05-23-17	0.6	0.21	7.7										
	05-30-17	0.4	0.30	7.7										
Eagleview School	05-02-17	0.6	0.22	9.1										
	05-09-17	0.4	0.21	8.9										
	05-16-17	0.7	0.27	8.7										
	05-23-17	0.8	0.24	7.6										
	05-30-17	0.7	0.19	8.7										
Bear Cove Reservoir	05-02-17	0.5	0.22	7.8										
	05-09-17	0.3	0.30	7.7										
	05-16-17	0.3	0.31	7.8										
	05-23-17	0.4	0.28	8.3										
	05-30-17	0.4	0.24	8.0										
Ferry Terminal	05-02-17	0.6	0.23	7.6										
	05-09-17	0.8	0.22	7.5										
	05-16-17	0.7	0.18	7.5										
	05-23-17	0.5	0.22	7.7										
	05-30-17	0.7	0.25	7.6										
Highway 19 PRV	05-02-17	0.5	0.20	7.6										
	05-09-17	0.4	0.20	7.5										
	05-16-17	0.4	0.19	7.5										
	05-23-17	0.4	0.21	7.5										
	05-30-17	0.5	0.18	7.6										
Average		0.6	0.22	7.8										
Minimum		0.3	0.16	7.5										
Maximum		0.8	0.31	9.1										
Peel Street Liftstation	06-13-17	0.5	0.23	7.8										
	06-20-17	0.4	0.20	7.7										
	06-27-17	0.6	0.27	7.7										
Airport Wastewater Treatment Plant	06-06-17	0.6	0.25	7.6										
	06-13-17	0.5	0.21	7.5										
	06-20-17	0.7	0.42	7.7										
	06-27-17	0.8	0.26	7.6										
Public Works Yard	06-06-17	0.5	0.24	7.6										
	06-13-17	0.5	0.20	7.5										
	06-20-17	0.7	0.19	7.7										
	06-27-17	0.5	0.22	7.6										
Eagleview School	06-06-17	0.8	0.23	7.8										
	06-13-17	0.4	0.20	8.0										
	06-20-17	0.4	0.30	7.8										
	06-27-17	0.4	0.34	7.9										
Bear Cove Reservoir	06-06-17	0.6	0.22	7.7										
	06-13-17	0.6	0.22	7.6										
	06-20-17	0.6	0.23	7.6										
	06-27-17	0.6	0.26	7.5										
Ferry Terminal	06-06-17	0.5	0.21	7.7										
	06-13-17	0.3	0.20	7.5										
	06-20-17	0.5	0.25	7.7										
	06-27-17	0.6	0.26	7.5										
Highway 19 PRV	06-06-17	0.7	0.22	7.7										
	06-13-17	0.8	0.21	7.5										
	06-20-17	0.7	0.22	7.6										
	06-27-17	0.8	0.20	7.5										
Average		0.6	0.24	7.7										
Minimum		0.2	0.19	7.5										
Maximum		0.8	0.42	8.1										

July				
Location	Date	Free Chlorine mg/L	Turbidity NTU	pH
Peel Street Liftstation	07-11-17	0.7	0.30	7.7
	07-18-17	0.7	0.25	7.7
	07-04-17	0.7	0.18	7.6
	07-11-17	0.8	0.43	7.6
	07-18-17	0.8	0.22	7.7
Airport Wastewater Treatment Plant	07-25-17	0.7	0.16	7.6
	07-04-17	0.6	0.41	7.8
	07-11-17	0.8	0.25	7.6
	07-18-17	0.6	0.27	7.6
Public Works Yard	07-25-17	0.5	0.19	7.7
	07-04-17	0.1	0.25	8.9
	07-11-17	0.1	0.15	8.3
	07-18-17	0.9	0.16	7.7
Eagleview School	07-25-17	0.5	0.12	8.1
	07-04-17	0.1	0.29	8.3
	07-11-17	0.7	0.51	7.7
	07-18-17	0.7	0.16	7.6
Bear Cove Reservoir	07-25-17	0.6	0.13	7.7
	07-04-17	0.5	0.19	7.7
	07-11-17	0.8	0.20	7.6
	07-18-17	0.7	0.06	7.6
Ferry Terminal	07-25-17	0.7	0.18	7.7
	07-04-17	0.4	0.19	7.7
	07-11-17	0.5	0.26	7.4
	07-18-17	0.6	0.15	7.6
Highway 19 PRV	07-25-17	0.7	0.14	7.6
	07-04-17	0.7	0.23	7.6
	07-11-17	1.0	0.18	7.5
	07-18-17	0.9	0.21	7.5
Average		0.6	0.2	7.7
Minimum		0.1	0.51	7.4
Maximum		1.0	0.51	8.9

August					
Location	Date	Free Chlorine mg/L	Turbidity NTU	pH	
Peel Street Liftstation	08-08-17	0.6	0.15	7.9	
	08-15-17	0.6	0.16	8.0	
	08-01-17	0.8	0.18	7.8	
	08-08-17	0.8	0.14	7.7	
	08-15-17	0.8	0.43	7.7	
	08-22-17	0.7	0.14	7.6	
	08-29-17	0.6	0.14	7.6	
	08-01-17	0.4	0.33	7.9	
	08-08-17	0.5	0.19	7.8	
	Airport Wastewater Treatment Plant	08-15-17	0.6	0.32	7.8
08-22-17		0.7	0.15	7.8	
08-29-17		0.4	0.21	7.7	
08-01-17		0.6	0.24	8.3	
08-08-17		0.2	0.21	8.2	
08-15-17		0.2	0.18	8.9	
08-22-17		0.3	0.19	8.9	
08-29-17		0.3	0.21	8.1	
08-01-17		0.8	0.43	7.9	
Public Works Yard		08-08-17	0.6	0.25	7.9
	08-15-17	0.5	0.21	8.0	
	08-22-17	0.5	0.21	7.9	
	08-29-17	0.4	0.24	7.9	
	08-01-17	0.7	0.23	7.7	
	08-08-17	0.7	0.26	7.8	
	08-15-17	0.6	0.36	7.7	
	08-22-17	0.6	0.31	7.7	
	08-29-17	0.6	0.17	7.6	
	Eagleview School	08-01-17	0.5	0.14	7.7
08-08-17		0.6	0.23	7.9	
08-15-17		0.7	0.17	7.8	
08-22-17		0.7	0.23	7.6	
08-29-17		0.5	0.13	7.6	
08-01-17		0.9	0.23	7.8	
08-08-17		0.9	0.25	7.7	
08-15-17		0.8	0.27	7.8	
08-22-17		0.7	0.15	7.7	
08-29-17		0.8	0.24	7.8	
Bear Cove Reservoir	Average		0.6	0.22	7.9
	Minimum		0.2	0.13	7.6
	Maximum		0.9	0.43	8.9

September				
Location	Date	Free Chlorine mg/L	Turbidity NTU	pH
Peel Street Liftstation	09-12-17	0.6	0.17	8.0
	09-19-17	0.3	0.21	7.7
	09-05-17	0.6	0.42	7.9
	09-12-17	0.4	0.13	7.5
	09-19-17	0.6	0.18	7.5
Airport Wastewater Treatment Plant	09-26-17	0.6	0.15	7.5
	09-05-17	0.4	0.19	7.9
	09-12-17	0.4	0.33	7.8
	09-19-17	0.3	0.20	7.5
	09-26-17	0.4	0.31	7.6
Public Works Yard	09-05-17	0.1	0.18	8.6
	09-12-17	0.3	0.32	8.6
	09-19-17	0.3	0.38	7.8
	09-26-17	0.3	0.16	8.0
	09-05-17	0.6	0.42	7.8
Eagleview School	09-12-17	0.6	0.16	7.7
	09-19-17	0.2	0.18	7.8
	09-26-17	0.2	0.21	7.9
	09-05-17	0.5	0.18	7.7
	09-12-17	0.5	0.24	7.7
Bear Cove Reservoir	09-19-17	0.4	0.19	7.5
	09-26-17	0.5	0.17	7.4
	09-05-17	0.5	0.17	7.7
	09-12-17	0.5	0.16	7.7
	09-19-17	0.2	0.21	7.6
Ferry Terminal	09-26-17	0.3	0.16	7.6
	09-05-17	0.8	0.11	7.6
	09-12-17	0.7	0.19	7.7
	09-19-17	0.7	0.15	7.5
	09-26-17	0.6	0.16	7.5
Average		0.4	0.23	7.8
Minimum		0.1	0.11	7.4
Maximum		0.8	0.76	8.6

October				
Location	Date	Free Chlorine mg/L	Turbidity NTU	pH
Chatham Avenue	10-03-17	0.4	0.15	7.7
	10-10-17	0.4	0.23	7.8
	10-17-17	0.4	0.16	7.8
	10-24-17	0.5	0.16	7.9
	10-31-17	0.4	0.28	7.9
Peel Street Liftstation	10-03-17	0.5	0.27	7.5
	10-10-17	0.7	0.16	7.7
	10-17-17	0.6	0.32	7.5
	10-24-17	0.7	0.18	7.6
	10-31-17	0.7	0.18	7.7
Airport Wastewater Treatment Plant	10-03-17	0.2	0.22	7.7
	10-10-17	0.4	0.16	7.5
	10-17-17	0.4	0.15	7.6
	10-24-17	0.5	0.17	7.7
	10-31-17	0.5	0.17	7.7
Public Works Yard	10-03-17	0.3	0.23	8.0
	10-10-17	0.2	0.16	7.7
	10-17-17	0.8	0.17	7.7
	10-24-17	0.7	0.18	7.8
	10-31-17	0.8	0.19	7.7
Eagleview School	10-03-17	0.2	0.21	7.9
	10-10-17	0.3	0.19	9.2
	10-17-17	0.2	0.17	7.8
	10-24-17	0.5	0.25	7.7
	10-31-17	0.2	0.28	8.1
Bear Cove Reservoir	10-03-17	0.5	0.19	7.6
	10-10-17	0.5	0.19	7.7
	10-17-17	0.6	0.20	7.6
	10-24-17	0.6	0.18	7.7
	10-31-17	0.5	0.22	7.7
Ferry Terminal	10-03-17	0.2	0.14	7.5
	10-10-17	0.4	0.17	7.4
	10-17-17	0.3	0.17	7.6
	10-24-17	0.4	0.15	7.7
	10-31-17	0.4	0.15	7.7
Highway 19 PRV	10-03-17	1.0	0.31	7.5
	10-10-17	0.7	0.17	7.6
	10-17-17	0.6	0.20	7.6
	10-24-17	0.5	0.17	7.7
	10-31-17	0.6	0.29	7.6
Average		0.5	0.14	7.7
Minimum		0.2	0.32	7.4
Maximum		0.8	0.32	9.2

November				
Location	Date	Free Chlorine mg/L	Turbidity NTU	pH
Chatham Avenue	11-07-17	0.7	0.19	7.7
	11-14-17	0.6	0.21	7.8
	11-21-17	0.6	0.15	7.8
	11-28-17	0.8	0.65	7.7
	11-07-17	0.8	0.16	7.4
Peel Street Liftstation	11-14-17	0.8	0.15	7.5
	11-21-17	0.8	0.15	7.5
	11-28-17	0.8	0.76	7.7
	11-07-17	0.6	0.22	7.6
	11-14-17	0.2	0.34	7.7
Airport Wastewater Treatment Plant	11-21-17	0.6	0.18	7.6
	11-28-17	0.7	0.18	7.6
	11-07-17	1.0	0.19	7.4
	11-14-17	0.5	0.26	8.3
	11-21-17	0.9	0.18	7.6
Public Works Yard	11-28-17	0.2	0.61	7.8
	11-07-17	0.3	0.20	8.0
	11-14-17	0.2	0.26	8.1
	11-21-17	0.3	0.27	7.6
	11-28-17	0.3	0.26	8.1
Eagleview School	11-07-17	0.7	0.27	7.5
	11-14-17	0.5	0.16	7.7
	11-21-17	0.6	0.25	7.6
	11-28-17	0.6	0.40	7.6
	11-07-17	0.4	0.22	7.6
Bear Cove Reservoir	11-14-17	0.6	0.29	7.6
	11-21-17	0.5	0.15	7.6
	11-28-17	0.5	0.18	7.6
	11-07-17	0.9	0.24	7.4
	11-14-17	0.9	0.24	7.5
Ferry Terminal	11-21-17	0.8	0.19	7.5
	11-28-17	0.8	0.21	7.7
	11-07-17	0.8	0.20	7.6
	11-14-17	0.6	0.16	7.6
	11-21-17	0.5	0.16	7.6
Highway 19 PRV	11-28-17	0.8	0.20	7.5
	11-07-17	0.8	0.20	7.5
	11-14-17	0.8	0.17	7.5
	11-21-17	1.0	0.13	7.4
	Average		0.6	0.26
Minimum		0.2	0.15	7.4
Maximum		1.0	0.76	8.3

December					
Location	Date	Free Chlorine mg/L	Turbidity NTU	pH	
Chatham Avenue	12-05-17	0.6	0.19	7.9	
	12-12-17	0.7	0.15	7.9	
	12-19-17	0.7	0.16	7.7	
	12-28-17	0.7	0.18	7.7	
	12-05-17	0.8	0.16	7.6	
Peel Street Liftstation	12-12-17	0.8	0.19	7.6	
	12-19-17	0.9	0.17	7.6	
	12-28-17	0.8	0.17	7.4	
	12-05-17	0.7	0.29	7.6	
	12-12-17	0.7	0.34	7.7	
Airport Wastewater Treatment Plant	12-19-17	0.7	0.25	7.6	
	12-28-17	0.8	0.18	7.5	
	12-05-17	0.7	0.21	7.7	
	12-12-17	0.9	0.19	7.6	
	12-19-17	1.0	0.17	7.7	
Public Works Yard	12-28-17	0.9	0.17	7.5	
	12-05-17	0.3	0.21	8.1	
	12-12-17	0.3	0.26	7.9	
	12-19-17	0.3	0.20	8.0	
	12-28-17	0.9	0.17	7.5	
Eagleview School	12-05-17	0.7	0.25	7.7	
	12-12-17	0.7	0.17	7.6	
	12-19-17	0.7	0.18	7.6	
	12-28-17	0.8	0.20	7.5	
	12-05-17	0.6	0.19	7.7	
Bear Cove Reservoir	12-12-17	0.6	0.16	7.6	
	12-19-17	0.5	0.16	7.6	
	12-28-17	0.8	0.20	7.5	
	12-05-17	0.8	0.20	7.6	
	12-12-17	0.8	0.17	7.6	
Ferry Terminal	12-19-17	0.9	0.25	7.6	
	12-28-17	1.0	0.13	7.4	
	12-05-17	0.7	0.25	7.6	
	12-12-17	0.8	0.20	7.7	
	12-19-17	0.8	0.20	7.5	
Highway 19 PRV	Average		0.7	0.20	7.7
	Minimum		0.3	0.15	7.4
	Maximum		1.0		

January

Sample Date	Sample Location	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Total Coliform CFU/100ml	E.Coli CFU/100ml
01-03-17	Hospital	0.7	0.18	7.6	L1	L1
01-10-17	Airport Washroom	0.9	0.29	7.6	L1	L1
01-03-17	Chatham Ave.	0.5	0.24	7.8	L1	L1
01-10-17	Bear Cove Reservoir	0.9	0.20	7.3		
01-17-17	Highway 19 PRV	1.0	0.16	7.4	L1	L1
01-03-17	Pioneer Inn	0.9	0.22	7.5	L1	L1
01-10-17	Public Works Yard	1.0	0.22	7.7	L1	L1
01-10-17	Glen Lyon Restaurant	0.9	0.13	7.5	L1	L1
01-03-17	Airport Inn	0.8	0.17	7.5	L1	L1
01-17-17	Peel St Liftstation	0.9	0.39	7.4	L1	L1
01-17-17	B.C. Ferry	1.0	2.71	7.4	L1	L1

Sample Date	Sample Location	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Total Coliform CFU/100ml	E.Coli CFU/100ml
01-17-17	Tsulate River (Untreated)		3.50	6.2		

March

Sample Date	Sample Location	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Total Coliform CFU/100ml	E.Coli CFU/100ml
03-14-17	Hospital	0.9	0.28	7.7	L1	L1
03-07-17	Airport Washroom	0.8	0.19	7.5	L1	L1
03-07-17	Chatham Ave.	0.7	0.33	7.8	L1	L1
03-14-17	Bear Cove Reservoir	0.9	0.25	7.7	L1	L1
03-07-17	Highway 19 PRV	1.0	0.19	7.7	L1	L1
03-14-17	Pioneer Inn	0.9	0.42	7.7	L1	L1
03-07-17	Public Works Yard	1.0	0.38	8.4	L1	L1
03-21-17	Glen Lyon Restaurant	0.8	0.21	7.7	L1	L1
03-14-17	Airport Inn	0.8	0.34	7.7	L1	L1
03-21-17	Peel St Liftstation	0.9	0.20	7.7	L1	L1
03-21-17	B.C. Ferry	0.8	0.27	7.6	L1	L1

Sample Date	Sample Location	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Total Coliform CFU/100ml	E.Coli CFU/100ml
03-21-17	Tsulate River (Untreated)		0.53	6.6		

May

Sample Date	Sample Location	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Total Coliform CFU/100ml	E.Coli CFU/100ml
05-09-17	Hospital	0.6	0.22	7.6	L1	L1
05-09-17	Airport Washroom	0.5	0.19	7.7	L1	L1
05-09-17	Chatham Ave.	0.6	0.18	7.8	L1	L1
05-02-17	Bear Cove Reservoir	0.6	0.23	7.6	L1	L1
05-02-17	Highway 19 PRV	0.7	0.30	7.5	L1	L1
05-16-17	Pioneer Inn	0.6	0.16	7.5	L1	L1
05-16-17	Public Works Yard	0.7	0.27	8.7	L1	L1
05-16-17	Glen Lyon Restaurant	0.6	0.19	7.5	L1	L1
05-16-17	Airport Inn	0.5	0.17	7.5	L1	L1
05-02-17	Peel St Liftstation	0.7	0.18	7.5	L1	L1
05-09-17	B.C. Ferry	0.4	0.20	7.5	L1	L1

Sample Date	Sample Location	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Total Coliform CFU/100ml	E.Coli CFU/100ml
05-02-17	Tsulate River (Untreated)		0.45	6.7		

February

Sample Date	Sample Location	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Total Coliform CFU/100ml	E.Coli CFU/100ml
02-07-17	Hospital	0.8	0.48	7.7	L1	L1
02-14-17	Airport Washroom	0.9	0.24	7.7	L1	L1
02-07-17	Chatham Ave.	0.8	0.24	7.9	L1	L1
02-14-17	Bear Cove Reservoir	0.9	0.23	7.6	L1	L1
02-21-17	Highway 19 PRV	0.9	0.26	7.6	L1	L1
02-07-17	Pioneer Inn	0.7	0.17	7.6	L1	L1
02-14-17	Public Works Yard	0.6	0.21	7.9	L1	L1
02-14-17	Glen Lyon Restaurant	1.0	0.23	7.9	L1	L1
02-14-17	Airport Inn	0.9	0.24	7.7	L1	L1
02-21-17	Peel St Liftstation	0.8	0.50	7.6	L1	L1
02-21-17	B.C. Ferry	1.0	0.16	7.5	L1	L1

Sample Date	Sample Location	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Total Coliform CFU/100ml	E.Coli CFU/100ml
02-21-17	Tsulate River (Untreated)		0.53	6.6		

April

Sample Date	Sample Location	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Total Coliform CFU/100ml	E.Coli CFU/100ml
04-11-17	Hospital	0.8	0.25	7.6	L1	L1
04-11-17	Airport Washroom	0.7	0.44	7.5	L1	L1
04-11-17	Chatham Ave.	0.5	0.19	8.4	L1	L1
04-11-17	Bear Cove Reservoir	0.7	0.25	7.6	L1	L1
04-04-17	Highway 19 PRV	0.8	0.20	7.5	L1	L1
04-18-17	Pioneer Inn	0.7	0.19	7.5	L1	L1
04-18-17	Public Works Yard	0.8	0.24	7.6	L1	L1
04-18-17	Glen Lyon Restaurant	0.8	0.20	7.5	L1	L1
04-04-17	Airport Inn	0.7	0.21	7.5	L1	L1
04-18-17	Peel St Liftstation	0.8	0.22	7.5	L1	L1
04-04-17	B.C. Ferry	0.7	0.20	7.5	L1	L1

Sample Date	Sample Location	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Total Coliform CFU/100ml	E.Coli CFU/100ml
04-04-17	Tsulate River (Untreated)		0.42	6.7		

June

Sample Date	Sample Location	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Total Coliform CFU/100ml	E.Coli CFU/100ml
06-06-17	Hospital	0.5	0.28	7.8	L1	L1
06-13-17	Airport Washroom	0.3	0.20	7.6	L1	L1
06-13-17	Chatham Ave.	0.5	0.23	7.8	L1	L1
06-06-17	Bear Cove Reservoir	0.6	0.22	7.7	L1	L1
06-20-17	Highway 19 PRV	0.7	0.22	7.6	L1	L1
06-20-17	Pioneer Inn	0.7	0.21	7.6	L1	L1
06-13-17	Public Works Yard	0.4	0.20	8.0	L1	L1
06-20-17	Glen Lyon Restaurant	0.7	0.18	7.7	L1	L1
06-06-17	Airport Inn	0.5	0.19	7.7	L1	L1
06-20-17	Peel St Liftstation	0.7	0.42	7.7	L1	L1
06-13-17	B.C. Ferry	0.3	0.20	7.5	L1	L1

Sample Date	Sample Location	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Total Coliform CFU/100ml	E.Coli CFU/100ml
06-06-17	Tsulate River (Untreated)		0.11	7.6		

July							August						
Sample Date	Sample Location	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Total Coliform CFU/100ml	<i>E.Coli</i> CFU/100ml	Sample Date	Sample Location	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Total Coliform CFU/100ml	<i>E.Coli</i> CFU/100ml
07-04-17	Hospital	0.5	0.21	7.7	L1	L1	08-01-17	Hospital	0.7	0.17	7.9	L1	L1
07-04-17	Airport Washroom	0.5	0.22	7.7	L1	L1	08-08-17	Airport Washroom	0.5	0.22	7.9	L1	L1
07-04-17	Chatham Ave.	0.7	0.21	7.7	L1	L1	08-01-17	Chatham Ave.	0.7	0.15	7.9	L1	L1
07-18-17	Bear Cove Reservoir	0.7	0.06	7.6	L1	L1	08-15-17	Bear Cove Reservoir	0.6	0.36	7.7	L1	L1
07-18-17	Highway 19 PRV	0.9	0.21	7.5	L1	L1	08-08-17	Highway 19 PRV	0.9	0.25	7.7	L1	L1
07-04-17	Pioneer Inn	0.7	0.25	7.6	L1	L1	08-01-17	Pioneer Inn	0.8	0.17	7.4	L1	L1
07-18-17	Public Works Yard	0.7	0.16	7.7	L1	L1	08-15-17	Public Works Yard	0.2	0.18	8.9	L1	L1
07-11-17	Glen Lyon Restaurant	0.7	0.15	7.6	L1	L1	08-08-17	Glen Lyon Restaurant	0.7	0.22	7.8	L1	L1
07-11-17	Airport Inn	0.6	0.35	7.6	L1	L1	08-01-17	Airport Inn	0.6	0.16	7.7	L1	L1
07-11-17	Peel St Liftstation	0.8	0.43	7.6	L1	L1	08-15-17	Peel St Liftstation	0.8	0.43	7.7	L1	L1
07-11-17	B.C. Ferry	0.5	0.26	7.4	L1	L1	08-08-17	B.C. Ferry	0.6	0.23	7.9	L1	L1
Sample Date	Sample Location	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Total Coliform CFU/100ml	<i>E.Coli</i> CFU/100ml	Sample Date	Sample Location	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Total Coliform CFU/100ml	<i>E.Coli</i> CFU/100ml
07-18-17	Tsulate River (Untreated)		0.21	7.2			08-15-17	Tsulate River (Untreated)		0.16	7.2		
September							October						
Sample Date	Sample Location	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Total Coliform CFU/100ml	<i>E.Coli</i> CFU/100ml	Sample Date	Sample Location	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Total Coliform CFU/100ml	<i>E.Coli</i> CFU/100ml
09-12-17	Hospital	0.3	0.22	7.8	L1	L1	10-03-17	Hospital	0.4	0.19	7.7	L1	L1
09-19-17	Airport Washroom	0.3	0.18	7.7	L1	L1	10-17-17	Airport Washroom	0.3	0.18	7.8	L1	L1
09-12-17	Chatham Ave.	0.6	0.17	8.0	L1	L1	10-03-17	Chatham Ave.	0.4	0.15	7.7	L1	L1
09-05-17	Bear Cove Reservoir	0.5	0.18	7.7	L1	L1	10-10-17	Bear Cove Reservoir	0.5	0.19	7.7	L1	L1
09-05-17	Highway 19 PRV	0.8	0.11	7.6	L1	L1	10-17-17	Highway 19 PRV	0.6	0.20	7.6	L1	L1
09-12-17	Pioneer Inn	0.5	0.19	7.5	L1	L1	10-10-17	Pioneer Inn	0.7	0.16	7.4	L1	L1
09-19-17	Public Works Yard	0.3	0.38	7.8	L1	L1	10-10-17	Public Works Yard	0.2	0.16	7.7	L1	L1
09-19-17	Glen Lyon Restaurant	0.4	0.16	7.5	L1	L1	10-17-17	Glen Lyon Restaurant	0.5	0.22	7.6	L1	L1
09-12-17	Airport Inn	0.3	0.19	7.7	L1	L1	10-03-17	Airport Inn	0.5	0.17	7.6	L1	L1
09-05-17	Peel St Liftstation	0.6	0.42	7.9	L1	L1	10-10-17	Peel St Liftstation	0.8	0.23	7.7	L1	L1
09-19-17	B.C. Ferry	0.2	0.21	7.6	L1	L1	10-17-17	B.C. Ferry	0.3	0.17	7.6	L1	L1
Sample Date	Sample Location	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Total Coliform CFU/100ml	<i>E.Coli</i> CFU/100ml	Sample Date	Sample Location	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Total Coliform CFU/100ml	<i>E.Coli</i> CFU/100ml
09-05-17	Tsulate River (Untreated)		0.50	7.1			10-10-17	Tsulate River (Untreated)		1.40	7.0		
November							December						
Sample Date	Sample Location	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Total Coliform CFU/100ml	<i>E.Coli</i> CFU/100ml	Sample Date	Sample Location	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Total Coliform CFU/100ml	<i>E.Coli</i> CFU/100ml
11-07-17	Hospital	0.6	0.46	7.6	L1	L1	12-05-17	Hospital	0.6	0.19	7.7	L1	L1
11-21-17	Airport Washroom	0.5	0.17	7.7	L1	L1	12-19-17	Airport Washroom	0.6	0.20	7.6	L1	L1
11-07-17	Chatham Ave.	0.7	0.19	7.7	L1	L1	12-05-17	Chatham Ave.	0.6	0.19	7.9	L1	L1
11-14-17	Bear Cove Reservoir	0.5	0.16	7.7	L1	L1	12-12-17	Bear Cove Reservoir	0.7	0.17	7.6	L1	L1
11-14-17	Highway 19 PRV	0.9	0.24	7.5	L1	L1	12-12-17	Highway 19 PRV	0.8	0.17	7.6	L1	L1
11-07-17	Pioneer Inn	0.9	0.16	7.4	L1	L1	12-05-17	Pioneer Inn	0.7	0.18	7.3	L1	L1
11-21-17	Public Works Yard	0.9	0.18	7.6	L1	L1	12-19-17	Public Works Yard	1.0	0.17	7.7	L1	L1
11-21-17	Glen Lyon Restaurant	0.7	0.16	7.6	L1	L1	12-19-17	Glen Lyon Restaurant	0.6	0.24	7.6	L1	L1
11-07-17	Airport Inn	0.7	0.21	7.5	L1	L1	12-05-17	Airport Inn	0.7	0.16	7.6	L1	L1
11-14-17	Peel St Liftstation	0.8	0.15	7.5	L1	L1	12-12-17	Peel St Liftstation	0.8	0.19	7.6	L1	L1
11-21-17	B.C. Ferry	0.5	0.15	7.6	L1	L1	12-19-17	B.C. Ferry	0.5	0.19	7.6	L1	L1
Sample Date	Sample Location	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Total Coliform CFU/100ml	<i>E.Coli</i> CFU/100ml	Sample Date	Sample Location	Free Chlorine (mg/L)	Turbidity (NTU)	pH	Total Coliform CFU/100ml	<i>E.Coli</i> CFU/100ml
11-14-17	Tsulate River (Untreated)		0.90	6.7			12-12-17	Tsulate River (Untreated)		0.88	6.7		

TRIHALOMETHANE AND HALOACETIC ACID QUARTERLY RESULTS

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Page 1 of 3



Analytical Report

Bill To: District of Port Hardy
Report To: District of Port Hardy
 Water & Wastewater Division
 8800 Park Drive
 Port Hardy, BC, Canada
 V0N 2P0
Attn: Joe Jewell
Sampled By: RF
Company: D.P.H

Project:
ID:
Name:
Location:
LSD:
P.O.:
Acct code:

Lot ID: 1179907
Control Number:
Date Received: Jan 5, 2017
Date Reported: Jan 13, 2017
Report Number: 2159912

Analyte	Matrix	Reference Number		Nominal Detection Limit
		1179907-1	1179907-2	
Sample Description		Reservoir / Treated Water / 2.9°C	Chatham / Treated Water / 2.9°C	
Units	Results	Results	Results	
Trihalomethanes Screen - Water				
Chloroform	mg/L	0.011	0.030	0.001
Bromodichloromethane	mg/L	<0.001	0.001	0.001
Dibromochloromethane	mg/L	<0.001	<0.001	0.001
Bromoform	mg/L	<0.001	<0.001	0.001
Total Trihalomethanes	mg/L	0.011	0.031	0.001
Trihalomethanes - Surrogate Recovery				
Dibromofluoromethane	EPA Surrogate %	93	91	86-118
Toluene-d8	EPA Surrogate %	99	99	85-115
Bromofluorobenzene	EPA Surrogate %	99	99	86-115
Haloacetic Acids - Water				
Monochloroacetic Acid	ug/L	<2.0	<2.0	2.0
Monobromoacetic Acid	ug/L	<2.0	<2.0	2.0
Dichloroacetic Acid	ug/L	7.0	12.6	2.0
Bromochloroacetic Acid	ug/L	<2.0	<2.0	2.0
Dibromoacetic Acid	ug/L	<2.0	<2.0	2.0
Trichloroacetic Acid	ug/L	8.9	16.8	2.0
Total Haloacetic Acids (HAA6)	ug/L	15.9	29.4	2.0

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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: C. Aensohke
 Company: D.P.H

Project:
 ID:
 Name:
 Location:
 LSD:
 P.O.:
 Acct code:

Lot ID: **1196162**
 Control Number: C0062348
 Date Received: Apr 12, 2017
 Date Reported: Apr 24, 2017
 Report Number: 2181670

Analyte	Units	Reference Number		Results	Nominal Detection Limit
		1196162-1	1196162-2		
		Sample Date	Sample Date		
		Sample Time	Sample Time		
		Sample Location			
Sample Description		Reservoir / Treated Water	Chatham / Treated Water		
Matrix		Water	Water		
Trihalomethanes Screen - Water					
Chloroform	mg/L	0.017	0.048		0.001
Bromodichloromethane	mg/L	<0.001	0.002		0.001
Dibromochloromethane	mg/L	<0.001	<0.001		0.001
Bromoform	mg/L	<0.001	<0.001		0.001
Total Trihalomethanes	mg/L	0.017	0.050		0.001
Trihalomethanes - Surrogate Recovery					
Dibromofluoromethane	EPA Surrogate %	94	110		86-118
Toluene-d8	EPA Surrogate %	88	89		85-115
Bromofluorobenzene	EPA Surrogate %	101	98		86-115
Haloacetic Acids - Water					
Monochloroacetic Acid	µg/L	<2.0	<2.0		2.0
Monobromoacetic Acid	µg/L	<2.0	<2.0		2.0
Dichloroacetic Acid	µg/L	9.1	16.0		2.0
Bromochloroacetic Acid	µg/L	<2.0	<2.0		2.0
Dibromoacetic Acid	µg/L	<2.0	<2.0		2.0
Trichloroacetic Acid	µg/L	10.1	17.3		2.0
Total Haloacetic Acids (HAA8)	µg/L	19.2	33.3		2.0

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Analytical Report

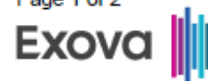
Bill To: District of Port Hardy Box 68 Port Hardy, BC, Canada V0N 2P0	Project ID: Project Name: Project Location: LSD: P.O.:	Lot ID: 1213309 Control Number: A216524 Date Received: Jul 7, 2017 Date Reported: Jul 17, 2017 Report Number: 2204865
Attn: Accounts Payable	Proj. Acct. code:	
Sampled By: Company:		

	Reference Number	1213309-1	1213309-2		
	Sample Date	Jul 06, 2017	Jul 06, 2017		
	Sample Time	NA	NA		
	Sample Location				
	Sample Description	Reservoir / 5.6 °C	Chatham Ave / 5.6 °C		
	Matrix	Water	Water		
Analyte	Units	Results	Results	Results	Nominal Detection Limit
Trihalomethanes Screen - Water					
Chloroform	mg/L	0.039	0.064		0.001
Bromodichloromethane	mg/L	0.001	0.002		0.001
Dibromochloromethane	mg/L	<0.001	<0.001		0.001
Bromoform	mg/L	<0.001	<0.001		0.001
Total Trihalomethanes	mg/L	0.040	0.066		0.001
Trihalomethanes - Surrogate Recovery					
Dibromofluoromethane	EPA Surrogate %	128	129		86-118
Toluene-d8	EPA Surrogate %	102	100		85-115
Bromofluorobenzene	EPA Surrogate %	104	107		86-115
Haloacetic Acids - Water					
Monochloroacetic Acid	µg/L	<2.0	<2.0		2.0
Monobromoacetic Acid	µg/L	<2.0	<2.0		2.0
Dichloroacetic Acid	µg/L	13.6	20.8		2.0
Bromochloroacetic Acid	µg/L	<2.0	<2.0		2.0
Dibromoacetic Acid	µg/L	<2.0	<2.0		2.0
Trichloroacetic Acid	µg/L	21.2	35.3		2.0
Total Haloacetic Acids (HAA6)	µg/L	34.8	56.1		2.0

Approved by: 
 Michael Yohemas, BSc
 Laboratory Operations Manager

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Analytical Report

Bill To: District of Port Hardy	Project ID:	Lot ID: 1230554
Box 08	Project Name:	Control Number:
Port Hardy, BC, Canada	Project Location:	Date Received: Oct 4, 2017
VON 2P0	LSD:	Date Reported: Oct 13, 2017
Attn: Accounts Payable	P.O.:	Report Number: 2227822
Sampled By: R. LeFort	Proj. Acct. code:	
Company: District of Port Hardy		

	Reference Number	1230554-1	1230554-2	
	Sample Date	Oct 03, 2017	Oct 03, 2017	
	Sample Time	09:15	11:00	
	Sample Location			
	Sample Description	DPH / Reservoir / 1.7°C	DPH / Chatham Ave. / 1.7°C	
	Matrix	Water	Water	
Analyte	Units	Results	Results	Nominal Detection Limit
Trihalomethanes Screen - Water				
Chloroform	mg/L	0.040	0.070	0.001
Bromodichloromethane	mg/L	0.002	0.003	0.001
Dibromochloromethane	mg/L	<0.001	<0.001	0.001
Bromoform	mg/L	<0.001	<0.001	0.001
Total Trihalomethanes	mg/L	0.042	0.073	0.001
Trihalomethanes - Surrogate Recovery				
Dibromofluoromethane	EPA Surrogate %	104	104	50-140
Toluene-d8	EPA Surrogate %	98	98	50-140
Bromofluorobenzene	EPA Surrogate %	100	102	50-140
Haloacetic Acids - Water				
Monochloroacetic Acid	µg/L	<2.0	<2.0	2.0
Monobromoacetic Acid	µg/L	<2.0	<2.0	2.0
Dichloroacetic Acid	µg/L	17.5	23.4	2.0
Bromochloroacetic Acid	µg/L	<2.0	<2.0	2.0
Dibromoacetic Acid	µg/L	<2.0	<2.0	2.0
Trichloroacetic Acid	µg/L	16.1	29.5	2.0
Total Haloacetic Acids (HAA6)	µg/L	33.6	52.9	2.0

Approved by: 
 Matthew Norman, BSc, PChem
 Operations Chemist

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ADDITIONAL SAMPLING RESULTS

Sampling Results after July 8th Byng Road Main Break

Location	Date	Total Coliform CFU/100 ml	E.Coli CFU/100 ml
5010 Dodd Place	July 10, 2017	L1	L1
Airport Wastewater Treatment Plant	July 10, 2017	L1	L1
Chatham Avenue	July 10, 2017	L1	L1
K&K Electric	July 10, 2017	L1	L1
Peel Street	July 10, 2017	L1	L1