



University of British Columbia

Drinking Water Quality Monitoring Report 2021

June 2022

Executive Summary

The University of British Columbia implemented a Drinking Water Quality Monitoring Program in 2002. This monitoring program was developed based on the standard program adopted by Metro Vancouver member municipalities, the Canadian Drinking Water Guidelines (CDWG), and input from the Vancouver Coastal Health Authority. With this approved monitoring program in place, UBC has collected and analyzed water quality data since 2002. This report outlines this program and its results for the year 2021.

The implementation of the Drinking Water Quality Monitoring program was a significant commitment made by UBC to monitor the delivery of safe and high - quality water. It generates valuable data for gaining understanding of UBC's water distribution system and for evaluating the historic performance of the system in a reliable and systematic way. Most importantly, it allows for potential health hazards to be identified and consumers' water concerns to be addressed.

The sampling analysis results have demonstrated a satisfactory performance of the UBC distribution system. There were no recorded instances of *E. coli* and three instances of total coliforms detected in 2021. UBC employs a multi-barrier approach to protect its water distribution system. Concerns regarding any indications of impairment to the system are addressed by an increased spot-flushing program.

All water quality complaints were responded to by either the Facility Managers or UBC Energy and Water Services (EWS) and were resolved satisfactorily. In all cases, issues were investigated and found to be internal to a building; the distribution system's quality was not a factor. A protocol for recording complaints is included in the UBC Emergency Response Plan – Water Utility.

UBC is committed to delivery of water of the highest quality, and will continue to make the necessary investment to ensure its continued success.

ACRONYMS

AO	Aesthetic Objective (characteristics such as taste, colour, appearance, temperature that are not health related)
BCDWPR	British Columbia Drinking Water Protection Regulation
CFU	Colony Forming Units
DBP	Disinfection By-product
<i>E. coli</i>	<i>Escherichia coli</i>
EPA	Environmental Protection Agency (USA)
ERP	Emergency Response Plan
CDWG	Canadian Drinking Water Guidelines
GVWD	Greater Vancouver Water District
HAA	Halo acetic Acid
HPC	Heterotrophic Plate Count
IMAC	Interim Maximum Acceptable Concentration
MAC	Maximum Acceptable Concentration
MCL	Maximum Contaminant Level
MDA	Minimum Detectable Activity
MDL	Method Detection Limit
MF	Membrane Filter
mg/L	Milligram per litre (0.001 g/L)
µg/L	Microgram per litre (0.000001 g/L)
mL	Milliliter
mJ/cm ²	Millijoule per centimeter squared
MPN	Most Probable Number
MV	Metro Vancouver
N/A	Not Available
NTU	Nephelometric Turbidity Unit
OG	Operational Guidance value
pH	Measure of acidity or basicity of water; pH 7 is neutral
Ppb	Parts per Billion (Equivalent of microgram per litre)
Ppm	Parts per Million (Equivalent of milligram per litre)
SCFP	Seymour-Capilano Filtration Plant
THAA ₅	Total Halo acetic ₅ Acids
THM	Trihalomethane
TOC	Total Organic Carbon
TTHM	Total Trihalomethane
UBC EWS	University of British Columbia Energy and Water Services
UDF	Unidirectional Flushing
UEL	University Endowment Lands
VCH	Vancouver Coastal Health
WHO	World Health Organization
WQMRP	Water Quality Monitoring and Reporting Plan

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1.0 Introduction

The purpose of this report is to provide a summary of the Drinking Water Quality Monitoring Program during 2021 for the UBC Energy & Water Services' water distribution system.

During 2021, the provision of drinking water was governed by the Drinking Water Protection Regulation (pursuant to the Drinking Water Protection Act). This regulation requires suppliers of drinking water in BC to:

- Develop a process to notify the Drinking Water Officer (DWO) of situations or conditions that render or could render the water unfit to drink;
- Implement a plan for collecting, shipping and analyzing water samples in compliance with the direction set by the DWO;
- Implement a plan for reporting monitoring results to the DWO and to water users including the preparation of an annual report;
- Implement an emergency response and contingency plan.

UBC EWS monitors the water quality in the UBC distribution system on a weekly basis in accordance with their Drinking Water Quality Monitoring Program. Appendix B includes a graphic summary of test results for 2021.

UBC EWS receives potable water from Metro Vancouver and is responsible for the transmission and distribution of this potable water to customers at UBC. EWS' jurisdictional limits of responsibility end at the meter at each service location. Water quality downstream of the meter is the responsibility of each customer.

This document includes a brief introduction to UBC's water distribution system and its drinking water monitoring and testing program. The remaining parts of this document summarize the results and analysis of water samples collected in 2021 and evaluates the distribution system's performance in delivering safe and quality drinking water.

2.0 Water Distribution System

UBC receives bulk treated water from Metro Vancouver's Water District (GVWD) through two supply points via the University Endowment Lands. Water is then supplied to UBC's customers through its distribution system. UBC has developed a comprehensive Operations and Maintenance (O&M) program for the water distribution system to ensure the highest quality water is delivered at sufficient quantity and pressure to its customers. The O&M program in 2021 included a water quality testing program and flushing of problem areas. Capital improvements including main replacement, as well as the installation of new mains, looping improvement and appurtenances in a number of areas also contribute to the highest water quality delivered to customers.

1. **UBC Source Water:** UBC's drinking water comes from three northern mountainous watersheds managed by Metro Vancouver. The watersheds are protected from urban development, closed to public access, and managed as assets of the highest importance to the region. The water in these watersheds originates from rainfall and snow melt and is collected in the three reservoirs: Capilano, Seymour and Coquitlam.

Metro Vancouver is responsible for all treatment of source water to meet Health Canada's Guidelines for Drinking Water Quality. Metro Vancouver also tests and analyses water in their transmission piping and reservoir network to ensure delivery of quality potable water to its member municipalities.

Water treatment by disinfection destroys disease-causing pathogenic organisms and secondary chlorine disinfection of water downstream helps to prevent bacterial regrowth in the distribution systems. UBC does not further treat the water.

UBC tests the source water from Metro Vancouver at the two Main supply locations entering UBC's distribution system: Station WQF7A-010 at Wesbrook Mall and University Blvd. and Station WQN9-013 at 16th Avenue and the UBC Border.

For more information see: <http://www.metrovancouver.org/services/water/quality-treatment-testing/treatment-facilities/Pages/default.aspx>.

See appendix D for summary tables of source water quality for Capilano, Seymour and Coquitlam reservoirs.

2. **Capital Improvements** to the system are made as areas are redeveloped or new development takes place, or as scheduled CI and AC main replacement/abandonment internal projects through EWS. Old water mains are replaced, enlarged and/or extended; dead-ends eliminated; and new hydrants, valves and services installed. The results of these improvements to the infrastructure are more efficient operations, less repairs and maintenance, better water quality, and increased firefighting supply.

- a) Infrastructure Renewal and Cast Iron/Asbestos Cement Water Main Abandonment Program – As part of Energy and Water Services' infrastructure renewal efforts, aging and vulnerable cast iron and asbestos cement piping have been targeted for replacement. Other possible improvements to the water network have been identified through computer modelling.
- b) Energy and Water Services has taken advantage of new development and redevelopment on campus to coordinate infrastructure replacement as areas are developed, therefore reducing restoration of landscape and roadwork costs. Some replacement costs are funded by the project itself, resulting in even greater savings.

Health Sciences Mall Watermain Replacement – Under SLP20052, we replaced 201m of 300mm CI watermain with a 300mm DI watermain.

Osoyoos Crescent & Public Safety Lane/Acadia Lane – Under SLP21001, we replaced 555m of 200mm CI watermain with 250mm DI watermain.

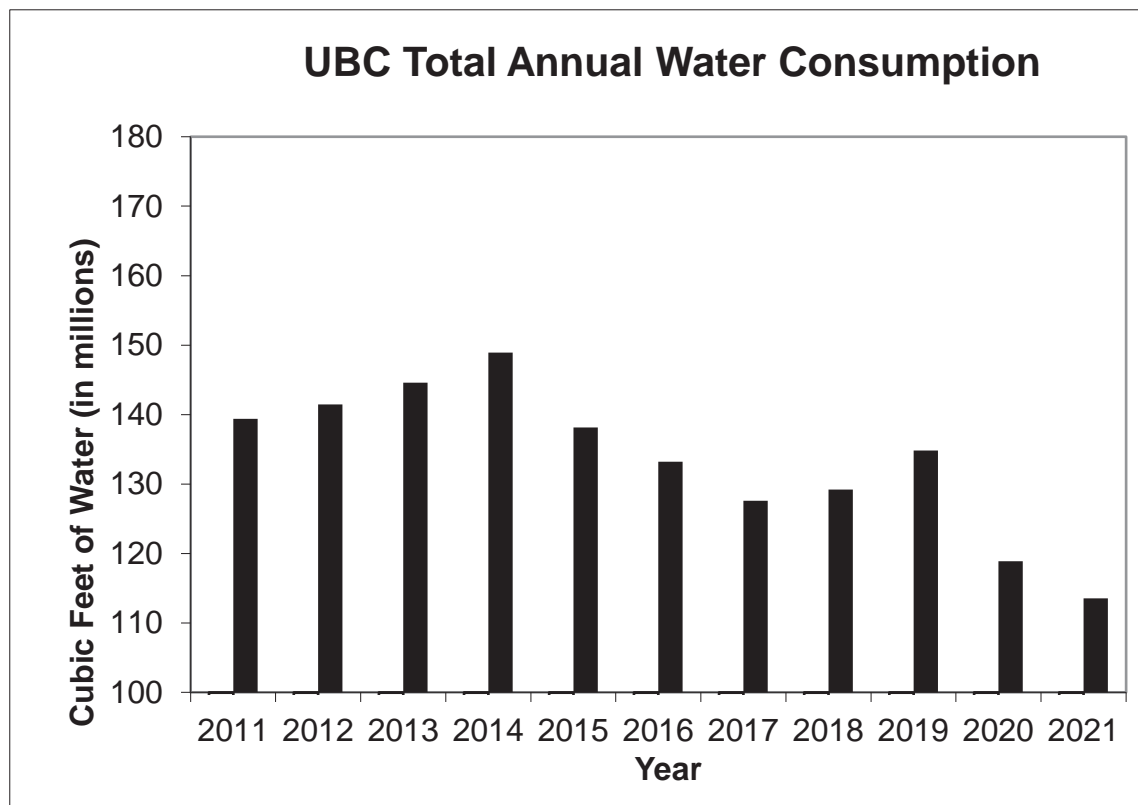
Pressure Reducing Valve (PRV) Stations 6 and 8 Replacement – Complete replacement of both PRV stations.

In addition to the replacement of water mains, dead ends are eliminated by looping; aging valves, hydrants and services are replaced. Ductile iron piping itself is resilient to earthquake loading and each joint is mechanically restrained. This improves the resiliency of UBC's water system should an earthquake occur. Additionally, the renewal of piping and appurtenances results in:

1. Improved water quality
2. Increased fire flows
3. Less water loss through leaking joints, hydrants, valves etc.
4. Lower future maintenance costs and emergency repairs.

3. UBC Total Annual Water Consumption

On the following chart is a summary of the water purchased by UBC for the last ten years. Water consumption is variable on a year-to-year basis, but it should be noted that the absence of students on the campus in 2021 dramatically reduced campus water demands.



4. UBC Emergency Response Plan – Water Utility (ERP-WU)

The UBC ERP-WU includes different possible emergency scenarios, protocols, procedures and staff responsibilities in emergencies. Minor revisions to the plan in 2021 included contact name updates. In addition to the scenarios, if an extraordinary turbidity event occurs, the Metro Vancouver and Municipal Response Procedure will be followed (see Appendix C of the ERP).

5. Cross Connection Control Program

During 2019, UBC's Cross Connection Control Program grew to over 1,500 devices. EWS also oversees the UBC Academic and Hospital Cross-Connection Control Programs. The program incorporates testing and annual certification of devices as well as site inspections. EWS also provides advice and oversight on new installations at existing, non-compliant facilities. Another full survey was planned for 2021 but due to COVID restrictions it was only partially completed. Since the program has significantly expanded over the last 10 years, EWS has scaled back to only requiring submission of test reports for primary devices. We continue to only keep records of secondary devices. During this transition to the online, third party managed system, we are providing the following table describing the program to date of printing.

Cross Connection Control Program Statistics

January 2020		May 2021	
Total BFPs tracked	1,542	Total BFPs tracked	1,551
Past due test reports	857	Past due test reports	259

3.0 Testing and Monitoring Program

Drinking water quality is a function of source water quality, water treatment, and water quality changes after treatment. As a result, monitoring of drinking water quality consists of three components: source water monitoring, monitoring after treatment, and monitoring in the distribution system. While Metro Vancouver's Water District carries out testing of water at the source and testing after treatment, UBC's Drinking Water Quality Monitoring Program focuses on monitoring the water quality within its own water distribution system.

The monitoring and testing program consists of routine monitoring, for obtaining an accurate overview of water quality within the distribution system, and non-routine monitoring, for handling complaint and emergency situations. Monitoring includes two components: collection of the samples and laboratory analysis of the samples.

3.1 Routine Monitoring

The collection of water samples was completed as part of an annual contract with CARO Environmental Services from sampling sites within UBC on a regular basis. These water samples were then forwarded to laboratories for analysis. The collection, transportation and analysis of samples were performed in accordance with the *Standard Methods for the Examination of Water and Wastewater 21st Edition*. All analyses were conducted by laboratories that are approved by the Canadian Association of Environmental Analytical Laboratories or an equivalent certification program for the other tests performed.

All testing parameters, except vinyl chloride, were analyzed by the laboratories of Metro Vancouver. Analysis of vinyl chloride, a volatile organic compound, was tested by the laboratory of CARO Analytical Services.

3.1.1 Sampling Parameters

The parameters that were analyzed are summarized in the following table:

Table 1. Sampling Parameters

	PARAMETERS
Microbiological	Total Coliforms, <i>E. coli</i> , Heterotrophic Plate Count (HPC)
Chemical and Physical	Turbidity, Temperature, Free Chlorine Residual, pH, Aluminium, Copper, Iron, Lead, Zinc, Haloacetic Acids (HAAs), Trihalomethanes (THMs), Vinyl Chloride Odour/Taste (complaint basis)
Radiological	None

Guidelines for chemical and physical parameters are:

1. (MAC) – Health based and listed as a maximum acceptable concentration.
2. (AO) – Based on aesthetic considerations and listed as an aesthetic objective; or
3. (OG) – Established based on operational considerations and listed as an operational guidance value.

The significance of the parameters of most relevance is briefly discussed below. Further details regarding the parameters listed in the above table can be found by accessing the supporting documents of the CDWG through the following web site, <https://www.canada.ca/en/health-canada/services/environmental-workplace-health/water-quality/drinking-water/canadian-drinking-water-guidelines.html>.

Total and E. coli Coliforms

One of the primary concerns in water quality is the growth of coliform bacteria. The presence of total coliforms indicates that treatment is inadequate or that the distribution system is experiencing regrowth of the bacteria in distribution system biofilms or intrusion of untreated water. Exceedances of the distribution system goal should be investigated. The presence of *E. coli* indicates a possibility of fecal contamination. *Escherichia coli* (*E. coli*) is used as an indicator of the microbiological safety of drinking water; if detected, enteric pathogens may also be present.

Heterotrophic Plate Counts

Heterotrophic Plate Counts (HPC) are used to estimate the general bacterial population. Historically the HPC test has been used to indicate when conditions in the distribution system are favourable for the growth of bacteria. It was felt that if the growth of heterotrophs is controlled, growth of coliforms should also be controlled. However, there is uncertainty as to the significance of the HPC test. The Canadian Drinking Water Quality Guidelines removed HPCs as an indicator of drinking water quality. Monitoring for HPCs has been maintained to assist in understanding changes in operational conditions to the system.

Unlike other indicators such as *Escherichia coli* or total coliforms, low concentrations of HPC organisms will still be present after drinking water treatment. In distribution systems, HPC provides some indication of stagnation, tuberculation, chlorine residual, and available nutrients for bacterial growth. High HPC measurements have not been found to correlate with illness incidence and no outbreaks have been directly linked to elevated concentrations of HPC flora in tap water; however, a sudden rise in HPC measurements collected from a site that has traditionally had low counts is an indicator that something has changed in the system and should be investigated. UBC uses the historical figure of 500 CFU/100mL as a baseline measurement that will trigger investigation into possible changes in the distribution system.

Free Chlorine Residual

Free chlorine residual provides a good indication of water quality within the distribution system. Low chlorine residual may indicate deteriorating water quality as a result of bacterial regrowth or stagnant water. Maintaining a free chlorine residual of at least 0.2mg/L in the distribution system has been observed to reduce the level of HPC.

Turbidity

Turbidity in water is caused by suspended matter, such as clay, silt, organic and inorganic matter. Controlling turbidity is important for both health and aesthetic reasons. Bacteria, viruses and protozoa can adhere to suspended particles in turbid water and thus be protected from disinfection. Also, excessive turbidity detracts from the appearance of treated water and has often been associated with unacceptable tastes and odours.

Disinfection Byproducts

Halo acetic acids (HAAs) and Trihalomethanes (THMs) are disinfection byproducts and are formed in drinking water when chlorine reacts with organic matter that is naturally present in raw water supplies. Research suggests that HAAs have an adverse impact on human health and may possibly be carcinogenic. The most common THM is chloroform. Chloroform is also classified as being possibly carcinogenic to humans. There is a tradeoff between reducing risk from disinfection byproducts and having enough chlorine to provide water safe from bacteria and parasites.

Copper

Copper is used extensively in plumbing for domestic water systems. Although copper is frequently found in surface water, distributed water contains considerably more copper than the original water supply because of the dissolution of copper from copper piping. Copper can stain laundry and plumbing fixtures and cause an undesirable bitter taste in water. Copper intake at extremely high doses can result in adverse health effects.

Iron

Iron is naturally present in food and drinking water. However, there is no evidence to indicate that concentrations of iron commonly found in food or water constitute any hazard to human health. Iron can stain laundry and plumbing fixtures and cause undesirable tastes in beverages.

The precipitation of excessive iron imparts an objectionable reddish-brown color to the water. Iron may also promote the growth of certain microorganisms, which can lead to the deposition of a slimy coat in piping.

Lead

Lead was used in drinking water plumbing and as solder in distribution systems. Older distribution systems may also be made from lead pipe. Lead is present in tap water as a result of dissolution from natural sources or from household plumbing systems. Lead is a cumulative general poison and has been classified as being potentially carcinogenic to humans. Fetuses, infants, young children and pregnant women are most susceptible to adverse health effects. In order to minimize exposure to lead introduced into drinking water from plumbing systems, it is recommended that only cold water be used, after an appropriate period of flushing to rid the system of standing water, for sampling, drinking, beverage preparation and cooking.

Vinyl Chloride

The presence of vinyl chloride in potable water is associated mainly with the use of polyvinyl chloride (PVC) water pipes manufactured with incompletely polymerized vinyl chloride monomer. Acute exposure or chronic inhalation exposure results in a variety of adverse effects in humans. Sufficient evidence has accumulated to implicate vinyl chloride as a human and animal carcinogen.

Zinc

Although zinc is present in surface waters at low concentrations, levels in tap water can be considerably higher due to the use of zinc in plumbing materials. Water containing zinc in excess concentrations has an undesirable astringent taste and may develop a greasy film upon boiling. Long-term ingestion of zinc in quantities considerably in excess of the daily requirement has not resulted in adverse effects.

pH

pH is controlled in water to minimize corrosion and incrustation. Corrosion may increase below 6.5 and incrustation and scaling may increase above pH 8.5. There is also a decrease in the efficiency of chlorine disinfection processes with increasing pH levels. In addition, through discussions with Metro Vancouver, it was noted that pH assists in the interpretation of sampling results for disinfection by-products, and thus should be sampled at the same time. Health Canada recently completed its review of the considerations associated with the pH of drinking water. Based on this review, the operational guideline for the pH of finished drinking water has been increased to an acceptable range of 7.0 to 10.5. On June 7, 2021 Metro Vancouver increased

Conductivity

There is no CDWG value for conductivity. Conductivity is related to ions capable of carrying an electrical current. It is an estimation of the total dissolved solids or salinity in water. Levels up to 800µS/cm are acceptable in drinking water. Rain water has a conductivity of between 10µS/cm and 20µS/cm while sea water has a conductivity of around 50,000µS/cm. UBC samples the conductivity in its distribution system to use as an indicator of possible changes in water quality.

The normal range of conductivity of source water from Metro Vancouver is from 20µS/cm to 50µS/cm. Any large deviations from this norm will trigger further investigation.

Temperature

An aesthetic objective of $\leq 15^{\circ}\text{C}$ has been established for the temperature of drinking water by the CDWG. Temperature does not bear a direct relationship to health, but at temperatures above 15°C , the growth of nuisance organisms in the distribution system becomes a problem and could lead to the development of unpleasant tastes and odours. However, rarely does the temperature of the UBC distribution water reach 18°C and only briefly during summer months.

3.1.2 Sampling Locations

Sampling locations are distributed in different areas within UBC so as to obtain an accurate overview of water quality of the distribution system. See Table 2 below. The 16 locations were strategically selected based on land use and system configuration. They include residential area supply, high-density residential area supply, institutional area supply, and water source supply. These locations are illustrated in Appendix A. In 2016, station WQF7A-010 was brought on line. This station enables UBC to monitor source water directly on the main 600mm suction line supplying water to the central campus area.

Table 2. Sampling Station Locations

Site	Location	Flow Category	Description
WQB7-001	Iona Drive at Theology Mall	Low	VST Residences
WQC3-002	NW Marine east of West Mall	Low	Supply to Residences
WQD2-003	Place Vanier west of Lower Mall	Low	Place Vanier Residences
WQH3A-004	Lower Mall south of Agronomy Rd.	Low	Totem Park Residences
WQH3B-005	Tap in Totem Park		Service Connection
WQL3-006	Stadium Rd. east of Main Mall	Medium	Thunderbird Stadium
WQJ5-007	Thunderbird Crescent	Low	Thunderbird Residences
WQG6-008	Health Sciences Mall	Medium	Hospital Supply
WQF7B-009	Wesbrook Mall south of Univ. Blvd.	Medium	Hospital Supply
WQF7A-010	Univ. Blvd. At Wesbrook Mall	Source	Main Pump Station Supply
WQJ10-011	Fairview Place west of Acadia Rd.	Medium	Acadia Residences and PVC in area
WQM8-012	Hampton Place	Low	Hampton Place Residences
WQN9-013	16 th Ave. at UBC border	Source	Low Pressure Feed
WQQ6-014	Animal Science	Low	Animal Science Area
WQQ7-015	Wesbrook Mall at BC Research	Medium	Supply to BC Research and Triumph
WQT7-016	Nurseries Road at Triumph	Dead End	Supply to Environment Services

3.1.3 Sampling Frequency

UBC, as a purveyor of drinking water to a maximum population of approximately 50,000-60,000, is required to test at least 40 samples per 30-day period as outlined in the *Drinking Water Protection Regulation*. In general, parameters that have greater effects on health were sampled and analyzed more often than those that only affect the aesthetic quality. The sampling frequency of different parameters from different sampling locations is summarized in Table 3. In 2016, sampling frequency was increased to 50 samples per 30-day period to compensate for the population increase, as UBC continues to grow.

Table 3. Sampling Frequency

Frequency:	WEEKLY	QUARTERLY	SEMI-ANNUALLY
Parameters:	Total coliforms <i>E. coli</i> HPCs Free chlorine residual Turbidity Temperature pH Conductivity	Halo acetic Acids Trihalomethanes	Copper Zinc Lead Iron Vinyl chloride
Site Category:	Various Campus Areas	Various Campus Areas	Tap in Building and Campus Areas

3.2 Non-routine Monitoring

CARO Environmental Services was on-call for monitoring water quality complaints and emergency situations. The UBC Emergency Response Plan – Water Utility includes a protocol for recording consumer complaints to ensure efficient response and follow-up. In any emergency situation, the procedures outlined in the UBC Emergency Response Plan are followed.

3.3 Water Quality Complaints

All water quality complaints referred to EWS are fully investigated and followed up. EWS did not receive any water quality complaints in 2021.

4.0 Sample Analysis Results

A total of 684 samples were taken from the water distribution system during 2021. Most samples did not exceed the limits set out in the BCDWPR or the CDWG. The sample analysis results are summarized in Table 4 below, and some of the parameters worth noting are discussed in this section. It should be noted that the limits contained within the CDWG are recommendations only and representative of best practices. These can become requirements if the Drinking Water Officer places a condition on the Operating Permit for UBC. At present there are no such conditions placed on UBC.

Table 4. Summary of Analysis Results *

Sample Station	Samples Taken	HPC CFU/ml			Free Chlorine Residual mg/L			Turbidity NTU			Positive Coliform Tests	Positive E. coli tests
		Low	Average	High	Low	Average	High	Low	Average	High		
WQB7-001 (UBC-001)	51	<2	8.7	62	0.3	0.5	0.7	0.1	0.3	3.3	None	None
WQC3-002 (UBC-002)	51	<2	19.8	74	0.3	0.5	0.7	0.1	0.2	1.0	1	None
WQD2-003 (UBC-003)	51	<2	15.1	150	0.3	0.5	0.7	0.1	0.2	1.2	None	None
WQH3A-004 (UBC-004)	53	<2	5.7	52	0.4	0.5	0.7	0.1	0.3	1.9	1	None
WQL3-006 (UBC-006)	25	<2	2.0	2	0.4	0.6	0.6	0.1	0.3	2.4	None	None
WQJ5-007 (UBC-007)	25	<2	2.0	2	0.4	0.5	0.7	0.1	0.2	0.7	None	None
WQG6-008 (UBC-008)	46	<2	23.2	150	0.3	0.5	0.7	0.1	0.3	3.1	None	None
WQF713-009 (UBC-009)	52	<2	10.5	78	0.3	0.5	0.7	0.1	0.2	1.5	1	None
WQF7A-010 (UBC-010)	51	<2	15.3	170	0.5	0.6	0.7	0.1	0.2	1.5	None	None
WQJ10-011 (UBC-011)	51	<2	12.8	56	0.4	0.5	0.6	0.1	0.2	0.7	None	None
WQM8-012 (UBC-012)	51	<2	8.9	52	0.4	0.5	0.7	0.1	0.2	1.8	None	None
WQN9-013 (UBC-013)	50	<2	3.6	12	0.1	0.5	0.7	0.1	0.2	0.5	None	None
WQQ6-014 (UBC-014)	50	<2	3.3	8	0.4	0.5	0.7	0.1	0.2	1.2	None	None
WQQ7-015 (UBC-015)	51	<2	5.2	28	0.4	0.5	0.6	0.1	0.2	0.7	None	None
WQT7-016 (UBC-016)	26	<2	5.0	12	0.3	0.5	0.6	0.1	0.2	0.5	None	None
UBC Average		<2	9.4	60.5	0.3	0.5	0.7	0.1	0.2	1.5		
UBC Total	684										3	0
Limits												
Standard												
CDWG	< 500			> 0.2			< 1					
BCDWPR										< 10		

**For reporting averages, test results below the detectable limit are given a value of 0.*

Coliform

The BCDWPR requires that (1) no sample should contain *Escherichia coli* (*E. coli*) and that (2) no sample should contain more than 10 total coliform per 100 millilitres and not more than 10% of samples from the distribution system in a given calendar month should show the presence of total coliform bacteria.

Of the 684 samples analyzed for microbiological criteria in 2021, no *E. coli* was detected. There were three recorded instances of positive total coliform during 2021. Although the presence of total coliforms (in the absence of *E. coli*) is of no immediate public health significance, total coliform detection above 10 per 100mg/l as regulated by the BCDWPR triggers an immediate investigation and corrective actions taken in order to maintain the overall bacteriological quality of the water.

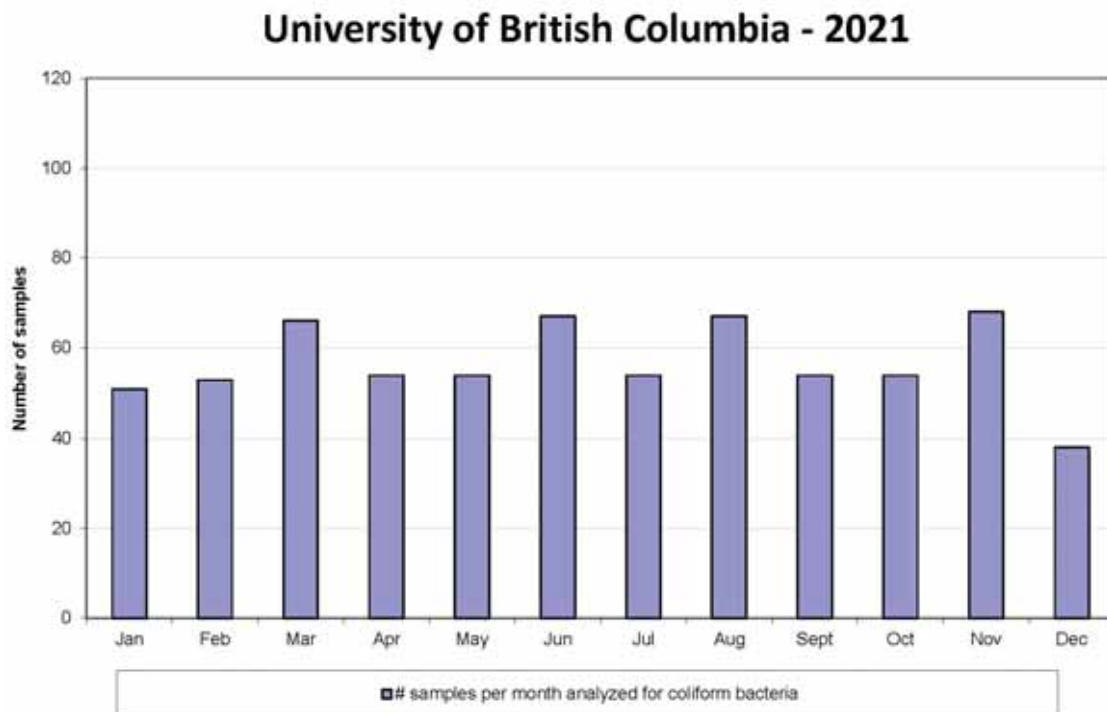
UBC uses a multi-barrier approach to maintaining good water quality using a number of indicators such as free chlorine, HPC, turbidity, pH, temperature and total coliforms. Abnormal changes to any of these parameters are considered as indication that something has changed in the distribution system and an investigation is conducted to determine the cause.

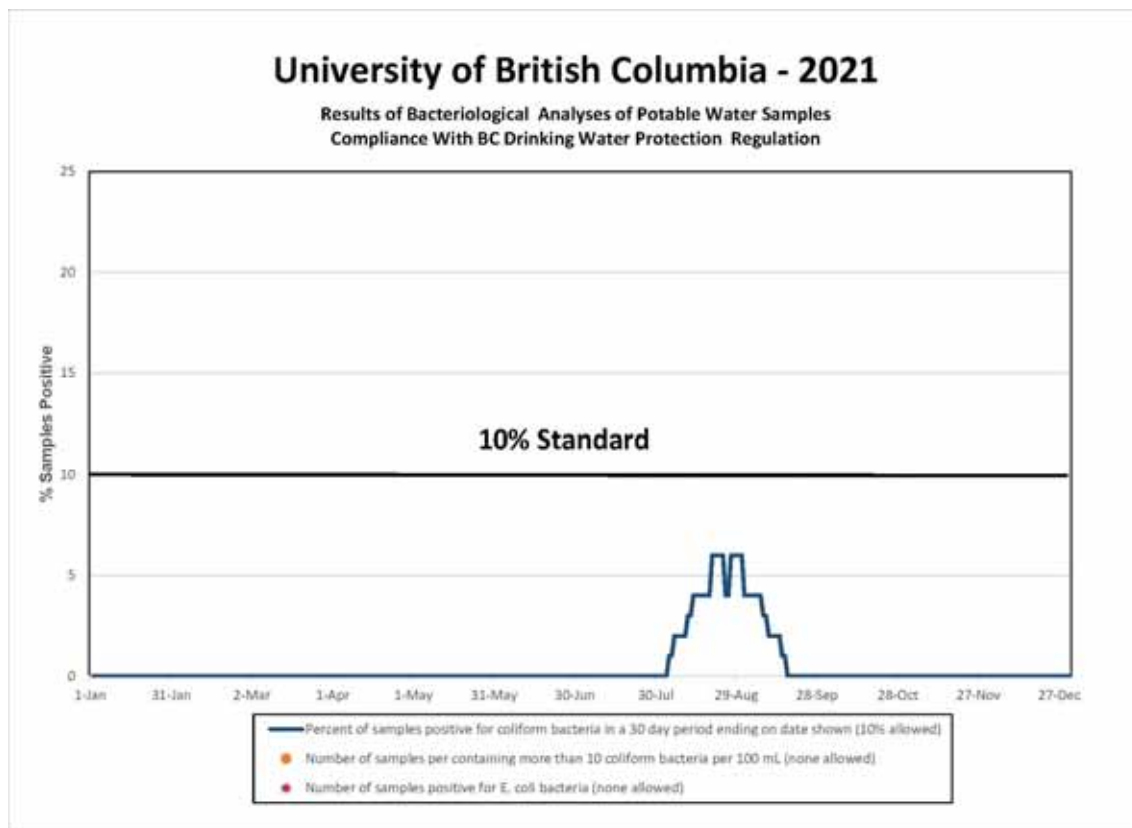
The presence of total coliform bacteria in water in the distribution system in isolated non-consecutive tests normally indicates bacterial re-growth in the system. Re-growth is a phenomenon seen in many water distribution systems even though there has been no loss of primary treatment or loss of system integrity, which might result in contamination. Total coliform bacteria are frequently detected in distribution water samples, particularly those samples with low free chlorine residuals. In Metro Vancouver and member water utilities, re-growth typically occurs when the water warms up in the late summer and early fall. During this period, it is critical to maintain adequate chlorine residual to as many areas as possible. As UBC has no re-chlorination stations, this is accomplished through spot flushing to draw in fresh water to sensitive areas identified by monitoring chlorine residuals.

The maintenance of chlorine residual is dependent on a number of factors:

- The amount of chlorine in the source water (from Metro Vancouver)
- The chlorine demand in the water
 - Amount of organics
 - Water temperature
- Residence time of the water in the distribution system.

See the following tables for results.



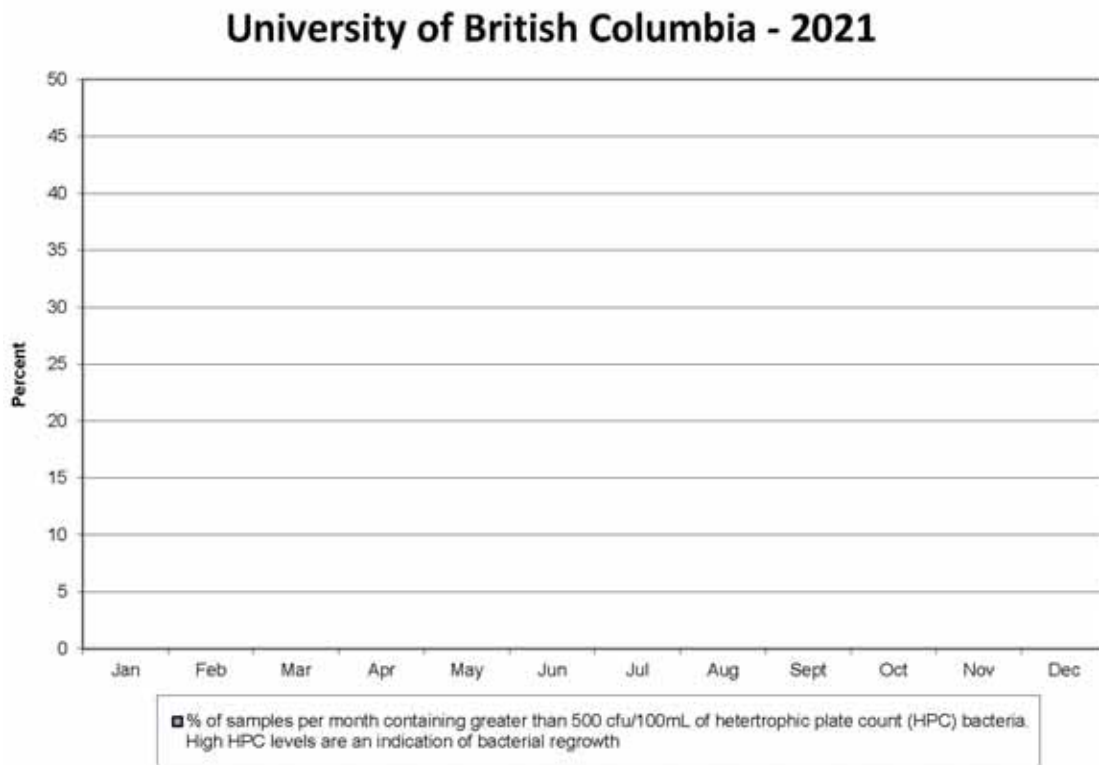


*Heterotrophic Plate Count, HPC **

Elevated levels of HPC's can be used as an indicator of possible changes in the conditions in a water distribution system. In 2021, there were no higher-than-normal HPC readings recorded.

HPC has been removed as an indicator of drinking water quality, by the CDWG, however, based on historical data, UBC has retained a figure of 500CFU/100ml as a baseline measurement in order to assess possible changes in the distribution system.

* see explanation for HPC (p. 6)



Turbidity

The CDWG guidelines recommend that water entering the distribution system have turbidity levels of 1.0 Nephelometric Turbidity Unit (NTU) or less. However, UBC's monitoring program tests only water within its distribution system. Although turbidity measurements cannot automatically be used to interpret the safety of water in the distribution system, a turbidity level below 1.0 NTU has been identified as one potential goal for utilities to use for routine monitoring and operations. Localized turbidity events can be caused by water main flushing or higher velocity draws from the distribution system as a result of construction, firefighting, water main breaks, etc. Turbidity levels above the target of 1.0 NTU were briefly observed on thirteen occasions (at 10 sampling stations); however these events showed no signs of bacteriological impairment and none were repeated at the next test. As a precaution, areas that had turbidity levels higher than 1.0 NTU were flushed.

Free Chlorine Residual

In 2021, the free chlorine residual levels tested in UBC's distribution system were within the recommended levels with the exception of one sampling station (WQN9-013 April 20 2021 showed 0.13 mg/L) which fell below the average free chlorine residual concentration target of 0.2mg/L.

As with HPC levels, low chlorine residual is a warning sign and not an indication of bacteriological impairment. Chlorine levels are regulated by Metro Vancouver, and at UBC's request, has increased chlorine levels to compensate for the longer transmission distance to the campus. The Seymour/Capilano Filtration Plant and continual

improvements to UBC's distribution system has greatly improved the residual chlorine in the system at UBC.

Disinfection By-products

The source water at WQN9-013 was tested four times for disinfection by-product concentration. See the table below for analysis results.

Sample	Date Sampled	THM (ppb)						HAA (ppb)						
		Bromodichloromethane	Bromoform	Chlorodibromomethane	Chloroform	Total Trihalomethanes	Total THM Quarterly Average (Guideline Limit 100 ppb)	Dibromoacetic Acid	Dichloroacetic Acid	Monobromoacetic Acid	Monochloroacetic Acid	Trichloroacetic Acid	Total Haloacetic Acid	Total HAA Quarterly Average (Guideline Limit 80 ppb)
UBC-013	23-Feb-21	<1	<1	<1	28	29	27	<0.5	13	<1	2	16	31	26
UBC-013	01-Jun-21	<1	<1	<1	20	22	26	<0.5	10	<1	<2	11	22	27
UBC-013	24-Aug-21	<1	<1	<1	23	25	26	<0.5	8	<1	<2	4	13	25
UBC-013	23-Nov-21	<1	<1	<1	31	31	27	<0.5	11	<1	<2	8	19	21

The annual average THM concentration of 27 ppb (0.02mg/L) is well below the CDWG recommended maximum of 100ppb (0.1mg/L). The Canadian guideline level for the Haloacetic group (HAA) is 80ppb (0.08mg/L). The average HAA concentration of 25 ppb is well below the recommended maximum and is measured at the source water from Metro Vancouver as it enters UBC's distribution system. Some studies have indicated that as water approaches the extremities of the distribution system, HAA levels decrease as residence times increase, especially during summer months as temperature levels rise.

Vinyl Chloride

Vinyl chloride concentration was tested twice during 2021. The tests were both below the detection limit of 1ppb, which is below the CDWG recommended 2ppb (0.002mg/L).

pH

The acceptable range for pH set out by CDWG is 7.0 - 10.5. In June 2021, Metro Vancouver changed their target pH from 7.7 to 8.4 to enhance corrosion control (with an average pH of 8.2 coming out of the Seymour Capilano Filtration Plant). Grab samples taken from source water stations WQN9-013, and WQF7A-010 tested for pH at 7.13 - 8.60 throughout 2021. Since pH is largely determined by source water characteristics, water entering from Metro Vancouver controls its magnitude.

Historically low pH problems at UBC have improved with the recently constructed Seymour Capilano Filtration Plant. The addition of Ash Soda at that plant maintains the average pH levels above 7.0.

Conductivity

There is no CDWG value for conductivity, however UBC samples conductivity to use as an indicator of possible changes in the distribution system. In 2021, the normal range of source water (20-50µS/cm) was maintained throughout the network.

Metals

Three sample locations were tested a total of six times for metals during 2021 (see table).

Sample Name	Date Sampled	Aluminum Total µg/L	Copper Total µg/L	Iron Total µg/L	Lead Total µg/L	Zinc Total µg/L
UBC-003	20-Apr-2021 11:50	30	1.9	32	<0.5	<3.0
UBC-003	9-Nov-2021 12:00	49	0.8	12	<0.5	<3.0
UBC-005	20-Apr-2021 10:55	32	7.1	14	<0.5	<3.0
UBC-005	9-Nov-2021 14:25	49	5.6	7	<0.5	<3.0
UBC-008	20-Apr-2021 14:55	69	24.1	86	<0.5	<3.0
UBC-008	9-Nov-2021 11:30	49	13.4	7	<0.5	4.3
CDWG Health Guidelines		N/A	≤2000	N/A	5	N/A
CDWG Aesthetic Objective		200	N/A	≤300	N/A	≤5000
CDWG Operational Guidance Values		N/A	N/A	N/A	N/A	N/A

All metal levels fall below the recommended guidelines outlined in the CDWG.

Temperature

The CDWG aesthetic objective of ≤15°C was exceeded at almost all testing stations including the supply points from Metro Vancouver in the summer of 2021. The highest recorded temperature was 18.5°C at one station. Temperature itself does not bear a direct relationship to health. All other parameters were normal.

5.0 Summary

The University of British Columbia implemented a Drinking Water Quality Monitoring Program in 2002. This monitoring program was developed based on the standard program adopted by Metro Vancouver member municipalities, the Guidelines for Canadian Drinking Water Quality (CDWG), and input from the Vancouver Coastal Health Authority. With this approved monitoring program in place, UBC has collected and analyzed water quality data since 2002.

The implementation of the Drinking Water Quality Monitoring program was a significant commitment made by UBC to deliver to consumers safe and good quality water. It generates valuable data for gaining understanding of UBC's water distribution system and for evaluating the past performance of the system in a reliable and systematic way. Most importantly, it allows for potential health hazards to be identified and consumers' water concerns to be addressed.

The sampling analysis results have demonstrated a satisfactory performance of the UBC distribution system. There were no recorded instances of E. coli and three instances of total coliforms detected in 2021.

With the launch of the Seymour/Capilano Filtration Plant and improvements to UBC's distribution system, there has been a marked reduction in low chlorine and low pH events in the last few years.

UBC is committed to delivery of water of the highest quality, and will continue to make the necessary investment to ensure its continued success.

References:

British Columbia Drinking Water Protection Regulation. Drinking Water Protection Act Reg. 200/2003, 2003.

Guidelines for Canadian Drinking Water Quality – Health Canada, Sixth Edition, 1996 with updated summary table, June 2019.

Water Quality Monitoring and Reporting Plan for the METRO VANCOUVER and Member Municipalities, Regional Engineers Advisory Committee (REAC), 2018.

Contact Information

For more information on the contents of this report please contact:

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Phone: 604 822 4179
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www.energy.ubc.ca

APPENDIX A

Water Sampling Sites Site Map



The University of
British Columbia
Energy & Water Services

LEGEND:

300mm Zone I High Pressure Zone

300mm Zone II Low Pressure Zone

--- Zone I - Alternate Pump Station Supply

--- Zone II - Main Pump Station Supply

(M) Meter Station

(P) Pressure Reducing Station

(V) Check Valve Station

(C) Valve Normally Closed

(B) Powerhouse Booster Pumps

(E) Emergency Water Supply Trailer

WQ06-014 Water Quality Monitoring Site

--- UBC Boundary

*All pipe sizes in millimeters (mm)

MAJOR WATER SYSTEM SCHEMATIC

Prepared By:

UBC
ENERGY & WATER
SERVICES

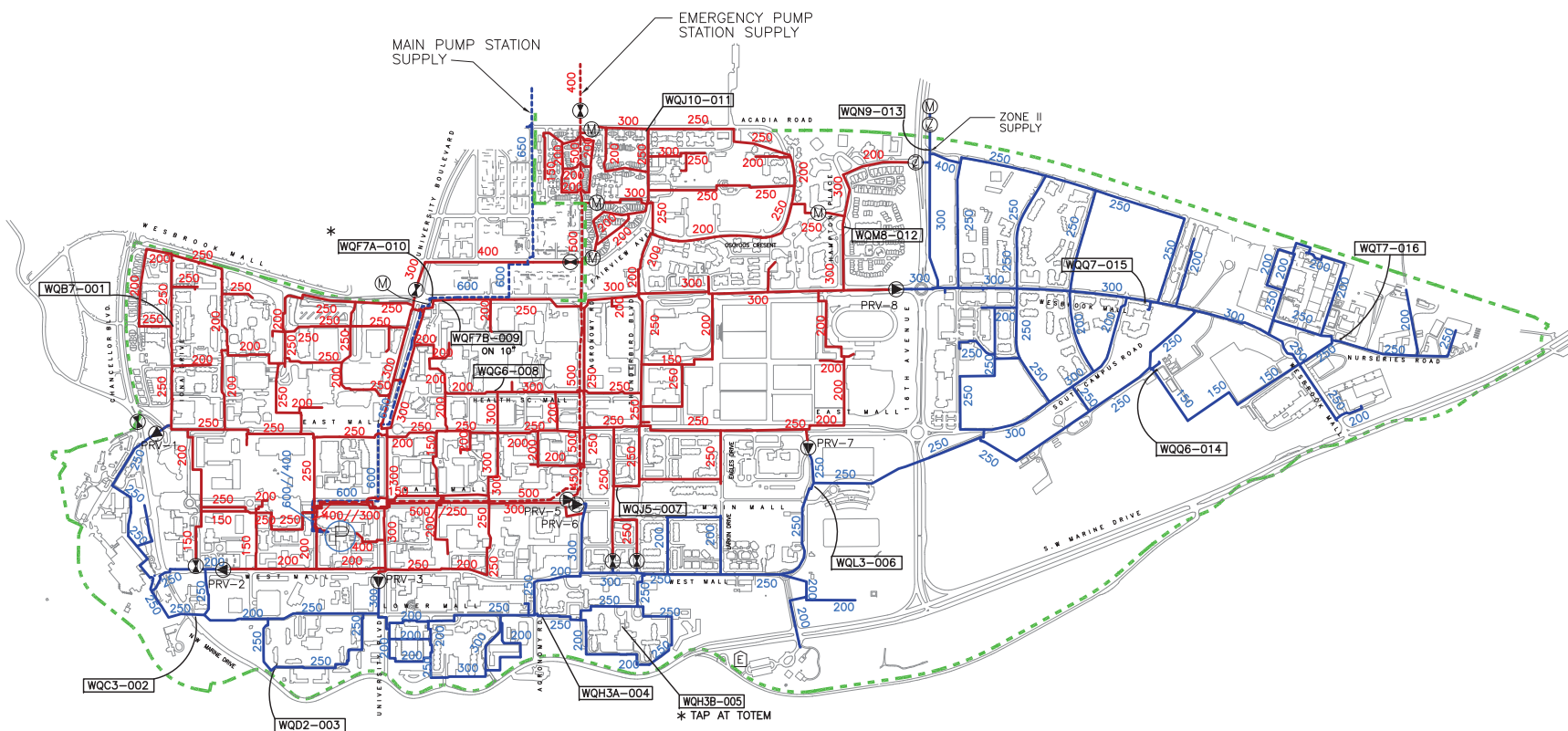
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Design: -

Scale: N.T.S

Date: March 16, 2020

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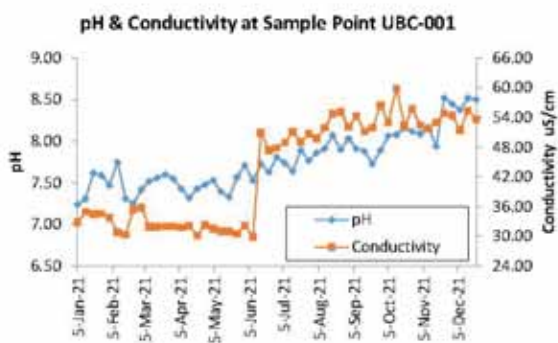
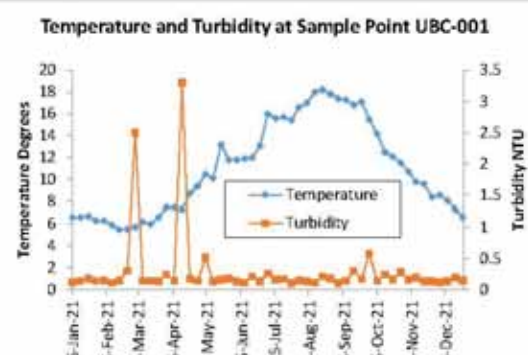
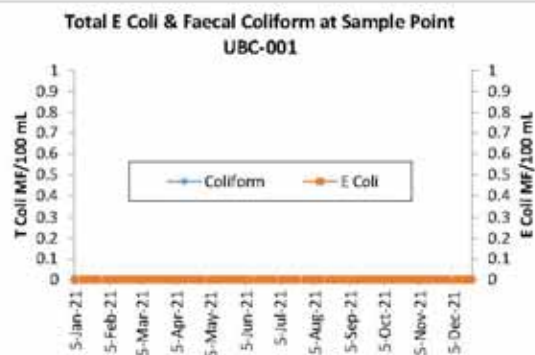
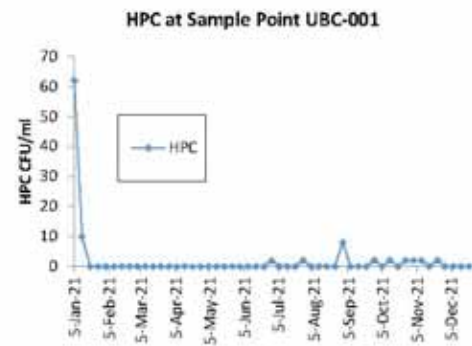
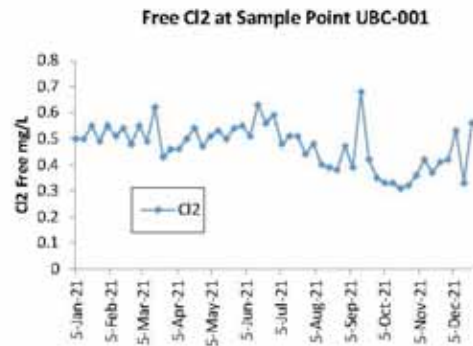
APPENDIX B

Sample Analysis Results

Sample Point WQB7-001 (UBC-001)

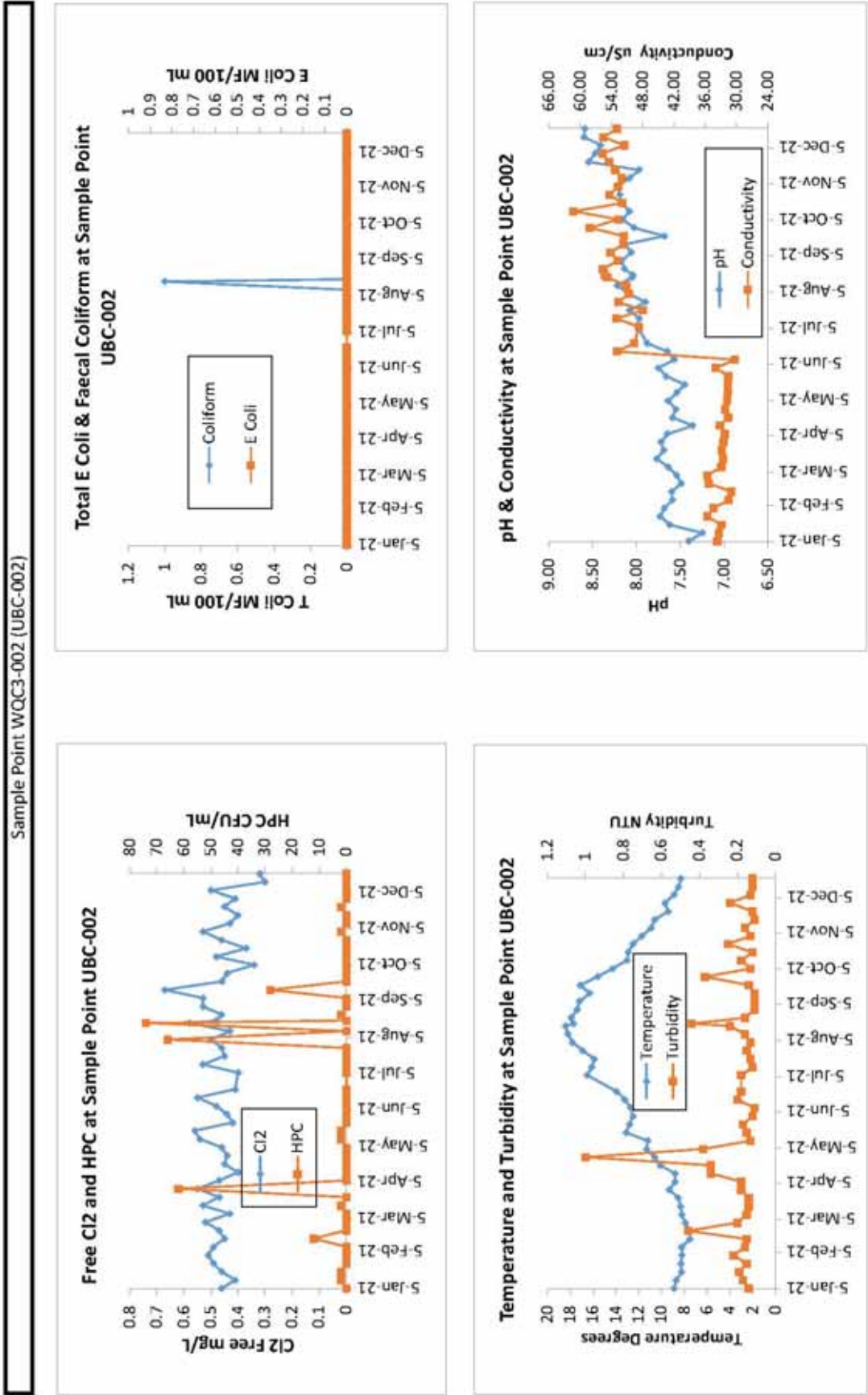
Sample name	Sampled date	Chlorine Free (mg/L)	Total Coliform (CFU/100mLs)	Ecoli (CFU/100mLs)	HPC (CFU/mL)	Temperature (°C)	Turbidity (NTU)	pH	Conductivity (uS cm)
UBC-001	5-Jan-21	0.5	<1	<1	62	6.6	0.12	7.24	32.82
UBC-001	12-Jan-21	0.5	<1	<1	10	6.6	0.14	7.31	34.91
UBC-001	19-Jan-21	0.55	<1	<1	<2	6.7	0.18	7.62	34.43
UBC-001	26-Jan-21	0.49	<1	<1	<2	6.3	0.14	7.59	34.61
UBC-001	2-Feb-21	0.55	<1	<1	<2	6.3	0.15	7.47	33.78
UBC-001	9-Feb-21	0.51	<1	<1	<2	5.9	0.11	7.75	30.81
UBC-001	16-Feb-21	0.54	<1	<1	<2	5.5	0.15	7.31	30.35
UBC-001	23-Feb-21	0.48	<1	<1	<2	5.5	0.3	7.25	35.37
UBC-001	2-Mar-21	0.55	<1	<1	<2	5.7	2.5	7.42	35.80
UBC-001	9-Mar-21	0.49	<1	<1	<2	6.2	0.14	7.52	31.94
UBC-001	16-Mar-21	0.62	<1	<1	<2	6	0.14	7.56	31.95
UBC-001	23-Mar-21	0.43	<1	<1	<2	6.6	0.13	7.60	31.99
UBC-001	30-Mar-21	0.46	<1	<1	<2	7.5	0.24	7.55	31.99
UBC-001	6-Apr-21	0.46	<1	<1	<2	7.5	0.14	7.43	31.77
UBC-001	13-Apr-21	0.5	<1	<1	<2	7.3	3.3	7.32	32.10
UBC-001	20-Apr-21	0.54	<1	<1	<2	8.7	0.18	7.43	30.20
UBC-001	27-Apr-21	0.47	<1	<1	<2	9.4	0.14	7.48	32.26
UBC-001	4-May-21	0.51	<1	<1	<2	10.5	0.51	7.53	31.51
UBC-001	11-May-21	0.53	<1	<1	<2	10.1	0.13	7.39	31.02
UBC-001	18-May-21	0.5	<1	<1	<2	13.2	0.16	7.33	31.01
UBC-001	25-May-21	0.54	<1	<1	<2	11.8	0.18	7.57	30.57
UBC-001	1-Jun-21	0.55	<1	<1	<2	11.8	0.13	7.71	32.16
UBC-001	8-Jun-21	0.51	<1	<1	<2	11.9	0.11	7.53	29.89
UBC-001	15-Jun-21	0.63	<1	<1	<2	12	0.21	7.73	50.92
UBC-001	22-Jun-21	0.56	<1	<1	<2	13.1	0.13	7.63	47.41
UBC-001	29-Jun-21	0.59	<1	<1	2	16	0.26	7.81	47.84
UBC-001	6-Jul-21	0.48	<1	<1	<2	15.6	0.16	7.74	48.98
UBC-001	13-Jul-21	0.51	<1	<1	<2	15.7	0.17	7.64	51.05
UBC-001	20-Jul-21	0.51	<1	<1	<2	15.4	0.1	7.89	49.03
UBC-001	27-Jul-21	0.44	<1	<1	2	16.6	0.15	7.77	50.67
UBC-001	3-Aug-21	0.48	<1	<1	<2	17	0.13	7.86	49.76
UBC-001	10-Aug-21	0.4	<1	<1	<2	18	0.11	7.91	51.90
UBC-001	17-Aug-21	0.39	<1	<1	<2	18.2	0.21	8.07	54.73
UBC-001	24-Aug-21	0.38	<1	<1	<2	17.8	0.18	7.90	55.15
UBC-001	31-Aug-21	0.47	<1	<1	8	17.4	0.1	8.03	52.12
UBC-001	7-Sep-21	0.39	<1	<1	<2	17.3	0.14	7.91	54.26
UBC-001	14-Sep-21	0.68	<1	<1	<2	16.8	0.3	7.88	51.13
UBC-001	21-Sep-21	0.42	<1	<1	<2	17.1	0.17	7.73	51.93
UBC-001	28-Sep-21	0.35	<1	<1	2	15.5	0.58	7.89	56.44
UBC-001	5-Oct-21	0.33	<1	<1	<2	14.2	0.14	8.06	53.06
UBC-001	12-Oct-21	0.33	<1	<1	2	12.5	0.24	8.08	59.86
UBC-001	19-Oct-21	0.31	<1	<1	<2	12.1	0.16	8.16	52.39
UBC-001	26-Oct-21	0.32	<1	<1	2	11.5	0.28	8.12	55.74
UBC-001	2-Nov-21	0.36	<1	<1	2	10.7	0.16	8.09	52.45
UBC-001	9-Nov-21	0.42	<1	<1	2	9.8	0.19	8.17	51.78
UBC-001	16-Nov-21	0.37	<1	<1	<2	9.6	0.13	7.94	53.05
UBC-001	23-Nov-21	0.41	<1	<1	2	8.4	0.13	8.52	54.91
UBC-001	30-Nov-21	0.42	<1	<1	<2	8.6	0.12	8.45	54.43
UBC-001	7-Dec-21	0.53	<1	<1	<2	8.1	0.13	8.38	51.48
UBC-001	14-Dec-21	0.33	<1	<1	<2	7.3	0.19	8.52	55.39
UBC-001	21-Dec-21	0.56	<1	<1	NA	6.6	0.15	8.5	53.70

Sample Point WQB7-001 (UBC-001)



Sample Point WQC3-002 (UBC-002)

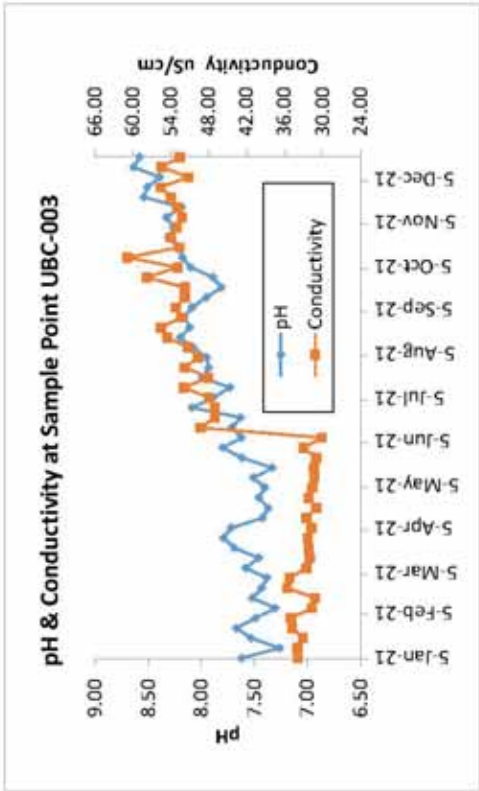
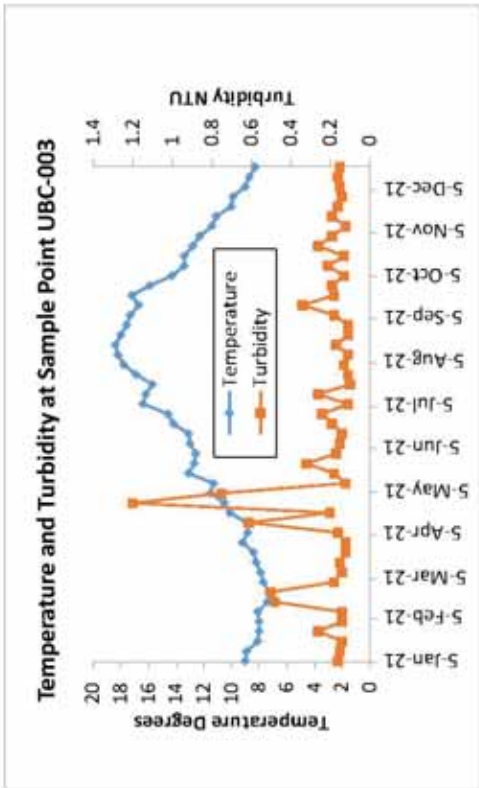
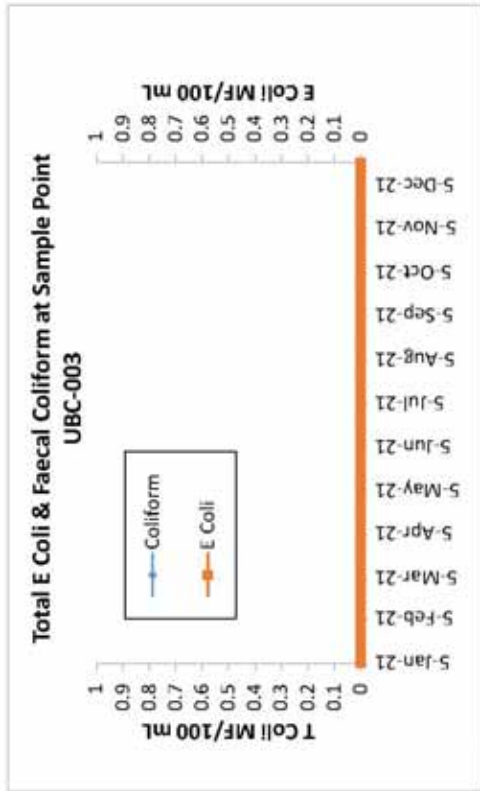
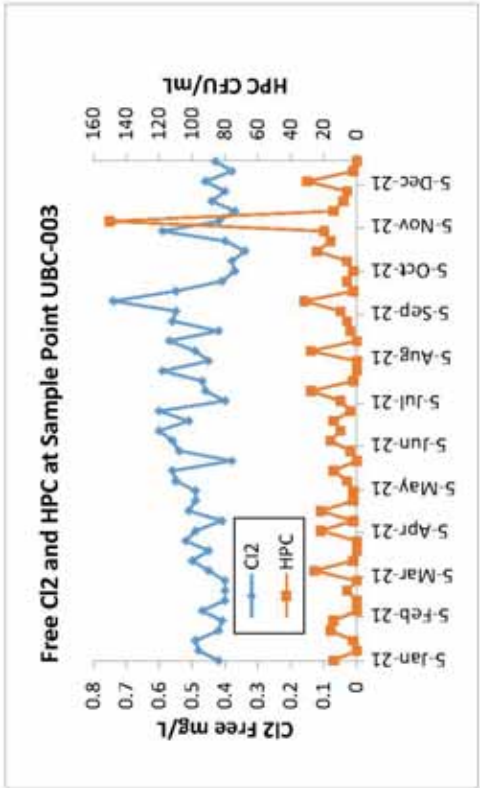
Sample name	Sampled date	Chlorine Free (mg/L)	Total Coliform (CFU/100mLs)	Ecoli (CFU/100mLs)	HPC (CFU/mL)	Temperature (°C)	Turbidity (NTU)	pH	Conductivity (uS cm)
UBC-002	5-Jan-21	0.46	<1	<1	<2	8.9	0.14	7.40	33.68
UBC-002	12-Jan-21	0.41	<1	<1	2	8.7	0.17	7.25	33.34
UBC-002	19-Jan-21	0.46	<1	<1	2	8.2	0.19	7.62	32.93
UBC-002	26-Jan-21	0.49	<1	<1	<2	8.3	0.15	7.73	35.60
UBC-002	2-Feb-21	0.51	<1	<1	<2	8.2	0.22	7.68	34.46
UBC-002	9-Feb-21	0.49	<1	<1	<2	8.2	0.16	7.59	31.54
UBC-002	16-Feb-21	0.45	<1	<1	12	7.5	0.15	7.60	30.98
UBC-002	23-Feb-21	0.47	<1	<1	<2	7.5	0.46	7.49	35.33
UBC-002	2-Mar-21	0.52	<1	<1	<2	7.9	0.2	7.54	35.58
UBC-002	9-Mar-21	0.43	<1	<1	<2	8.2	0.15	7.64	32.86
UBC-002	16-Mar-21	0.53	<1	<1	2	8.3	0.14	7.77	32.57
UBC-002	23-Mar-21	0.47	<1	<1	<2	8.5	0.14	7.69	32.81
UBC-002	30-Mar-21	0.55	<1	<1	62	9.3	0.18	7.72	32.52
UBC-002	6-Apr-21	0.47	<1	<1	<2	8.8	0.18	7.65	32.26
UBC-002	13-Apr-21	0.4	<1	<1	<2	8.8	0.34	7.36	33.17
UBC-002	20-Apr-21	0.45	<1	<1	<2	10.1	0.34	7.59	31.59
UBC-002	27-Apr-21	0.44	<1	<1	<2	10.6	1	7.55	32.14
UBC-002	4-May-21	0.46	<1	<1	<2	11.3	0.38	7.64	31.77
UBC-002	11-May-21	0.54	<1	<1	2	11.2	0.13	7.54	31.68
UBC-002	18-May-21	0.56	<1	<1	2	13.1	0.15	7.45	31.70
UBC-002	25-May-21	0.42	<1	<1	<2	12.8	0.17	7.66	31.61
UBC-002	1-Jun-21	0.44	<1	<1	<2	12.5	0.12	7.75	33.99
UBC-002	8-Jun-21	0.48	<1	<1	<2	12.7	0.11	7.57	30.31
UBC-002	15-Jun-21	0.55	<1	<1	<2	13.2	0.2	7.65	52.97
UBC-002	22-Jun-21	0.41	<1	<1	<2	13.9	0.18	7.88	49.63
UBC-002	6-Jul-21	0.4	<1	<1	<2	16.5	0.18	7.99	48.72
UBC-002	13-Jul-21	0.53	<1	<1	<2	16.1	0.12	7.97	53.11
UBC-002	20-Jul-21	0.45	<1	<1	<2	15.9	0.13	8.08	47.96
UBC-002	27-Jul-21	0.46	<1	<1	<2	16.9	0.15	7.9	52.68
UBC-002	3-Aug-21	0.5	<1	<1	66	17.8	0.13	8.09	50.62
UBC-002	10-Aug-21	0.43	<1	<1	<2	18.2	0.16	8.22	51.18
UBC-002	17-Aug-21	0.58	1	<1	74	18.4	0.24	8.05	54.86
UBC-002	19-Aug-21	0.48	<1	<1	<2	17.7	0.44	8.04	55.28
UBC-002	24-Aug-21	0.46	<1	<1	2	17.9	0.16	8.14	55.64
UBC-002	31-Aug-21	0.53	<1	<1	<2	17.4	0.11	8.17	52.76
UBC-002	7-Sep-21	0.53	<1	<1	<2	17.2	0.11	8.06	54.16
UBC-002	14-Sep-21	0.67	<1	<1	28	16.3	0.11	8.13	51.75
UBC-002	21-Sep-21	0.46	<1	<1	<2	17.1	0.14	7.68	51.68
UBC-002	28-Sep-21	0.44	<1	<1	<2	15.6	0.37	8.03	58.19
UBC-002	5-Oct-21	0.34	<1	<1	<2	14.3	0.13	8.16	52.67
UBC-002	12-Oct-21	0.48	<1	<1	<2	13	0.18	8.08	61.35
UBC-002	19-Oct-21	0.37	<1	<1	<2	12.9	0.12	8.18	51.87
UBC-002	26-Oct-21	0.46	<1	<1	<2	12.5	0.25	8.19	54.44
UBC-002	2-Nov-21	0.53	<1	<1	2	11.7	0.13	8.22	52.74
UBC-002	9-Nov-21	0.43	<1	<1	<2	10.9	0.16	8.08	52.01
UBC-002	16-Nov-21	0.4	<1	<1	<2	10.6	0.11	7.97	53.26
UBC-002	23-Nov-21	0.45	<1	<1	2	9.4	0.12	8.55	54.47
UBC-002	30-Nov-21	0.41	<1	<1	<2	9.7	0.24	8.47	55.75
UBC-002	7-Dec-21	0.5	<1	<1	<2	8.9	0.13	8.41	51.55
UBC-002	14-Dec-21	0.3	<1	<1	<2	8.5	0.12	8.60	55.53
UBC-002	21-Dec-21	0.32	<1	<1	NA	8.3	0.12	8.59	52.98



Sample Point WQD2-003 (UBC-003)

Sample name	Sampled date	Chlorine Free (mg/L)	Total Coliform (CFU/100mLs)	Ecoli (CFU/100mLs)	HPC (CFU/mL)	Temperature (°C)	Turbidity (NTU)	pH	Conductivity (uS cm)
UBC-003	5-Jan-21	0.42	<1	<1	14	9	0.16	7.62	33.87
UBC-003	12-Jan-21	0.48	<1	<1	<2	8.9	0.15	7.26	33.97
UBC-003	19-Jan-21	0.49	<1	<1	2	8.1	0.14	7.53	33.06
UBC-003	26-Jan-21	0.42	<1	<1	16	8	0.26	7.67	34.75
UBC-003	2-Feb-21	0.41	<1	<1	14	8	0.14	7.49	34.95
UBC-003	9-Feb-21	0.47	<1	<1	<2	8.1	0.14	7.30	31.65
UBC-003	16-Feb-21	0.4	<1	<1	<2	7.4	0.48	7.52	31.18
UBC-003	23-Feb-21	0.4	<1	<1	6	7.3	0.5	7.43	35.53
UBC-003	2-Mar-21	0.4	<1	<1	<2	7.7	0.18	7.38	35.23
UBC-003	9-Mar-21	0.45	<1	<1	26	7.9	0.14	7.58	32.47
UBC-003	16-Mar-21	0.5	<1	<1	2	8.2	0.15	7.46	32.00
UBC-003	23-Mar-21	0.45	<1	<1	<2	8.4	0.12	7.69	32.17
UBC-003	30-Mar-21	0.52	<1	<1	<2	9.2	0.12	7.79	32.33
UBC-003	6-Apr-21	0.49	<1	<1	22	8.8	0.16	7.72	31.75
UBC-003	13-Apr-21	0.41	<1	<1	2	8.9	0.61	7.42	32.55
UBC-003	20-Apr-21	0.51	<1	<1	22	10.1	0.2	7.37	30.97
UBC-003	27-Apr-21	0.49	<1	<1	2	10.5	1.2	7.46	32.18
UBC-003	4-May-21	0.49	<1	<1	2	11.5	0.75	7.40	31.58
UBC-003	11-May-21	0.55	<1	<1	6	11.3	0.12	7.51	31.27
UBC-003	18-May-21	0.56	<1	<1	14	13.1	0.18	7.33	31.34
UBC-003	25-May-21	0.38	<1	<1	<2	12.7	0.32	7.62	30.96
UBC-003	1-Jun-21	0.54	<1	<1	4	12.6	0.17	7.80	32.97
UBC-003	8-Jun-21	0.56	<1	<1	16	13	0.15	7.62	30.11
UBC-003	15-Jun-21	0.6	<1	<1	10	13.1	0.14	7.71	49.35
UBC-003	22-Jun-21	0.51	<1	<1	14	14.2	0.19	7.63	47.03
UBC-003	29-Jun-21	0.6	<1	<1	4	14.6	0.24	8.09	47.00
UBC-003	6-Jul-21	0.4	<1	<1	10	16.4	0.11	7.89	47.95
UBC-003	13-Jul-21	0.46	<1	<1	28	16.2	0.26	7.73	51.97
UBC-003	20-Jul-21	0.47	<1	<1	2	15.7	0.1	7.99	48.07
UBC-003	27-Jul-21	0.59	<1	<1	<2	16.9	0.11	7.93	51.78
UBC-003	3-Aug-21	0.45	<1	<1	<2	17.8	0.13	7.95	49.71
UBC-003	10-Aug-21	0.49	<1	<1	28	18.2	0.11	8.08	51.28
UBC-003	17-Aug-21	0.57	<1	<1	<2	18.4	0.17	8.20	54.62
UBC-003	24-Aug-21	0.42	<1	<1	4	18	0.11	8.11	55.57
UBC-003	31-Aug-21	0.56	<1	<1	6	17.6	0.11	8.16	52.31
UBC-003	7-Sep-21	0.55	<1	<1	10	17.3	0.18	8.09	53.26
UBC-003	14-Sep-21	0.74	<1	<1	32	16.7	0.34	7.95	51.80
UBC-003	21-Sep-21	0.55	<1	<1	2	17.2	0.18	7.81	51.81
UBC-003	28-Sep-21	0.41	<1	<1	6	15.9	0.19	7.89	57.89
UBC-003	5-Oct-21	0.37	<1	<1	2	14.3	0.13	8.10	52.92
UBC-003	12-Oct-21	0.38	<1	<1	6	13.4	0.21	8.18	60.91
UBC-003	19-Oct-21	0.34	<1	<1	24	13.4	0.13	8.22	52.62
UBC-003	26-Oct-21	0.4	<1	<1	16	12.8	0.26	8.31	53.98
UBC-003	2-Nov-21	0.59	<1	<1	20	12.3	0.19	8.26	52.99
UBC-003	9-Nov-21	0.42	<1	<1	150	11.4	0.12	8.33	52.20
UBC-003	16-Nov-21	0.37	<1	<1	14	11.1	0.19	8.19	52.97
UBC-003	23-Nov-21	0.44	<1	<1	8	10	0.16	8.54	54.01
UBC-003	30-Nov-21	0.4	<1	<1	6	9.9	0.14	8.51	55.62
UBC-003	7-Dec-21	0.46	<1	<1	30	9	0.15	8.39	51.24
UBC-003	14-Dec-21	0.38	<1	<1	2	8.7	0.16	8.64	55.50
UBC-003	21-Dec-21	0.43	<1	<1	NA	8.3	0.15	8.58	52.58

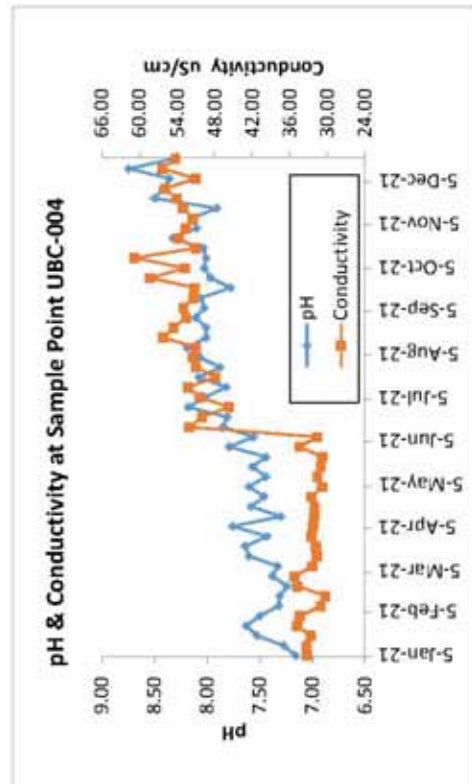
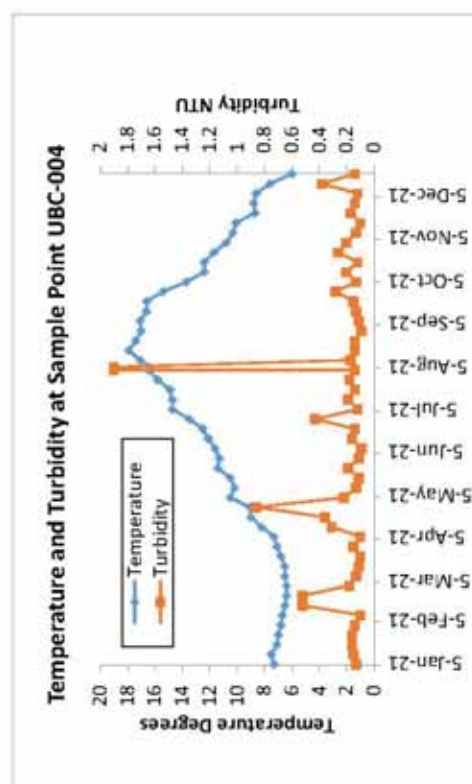
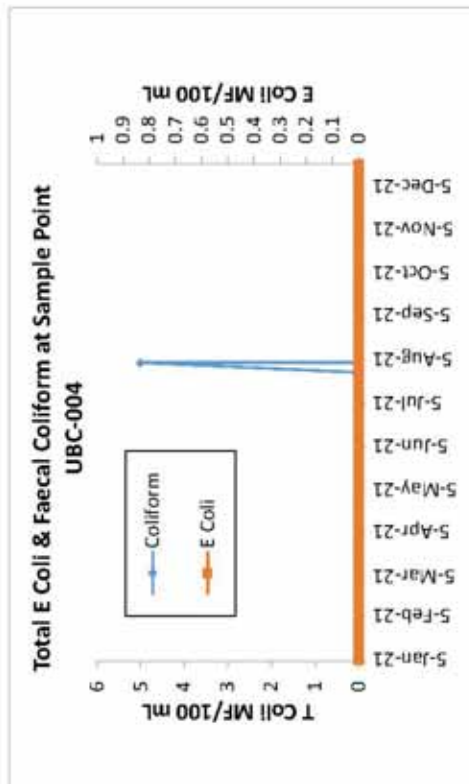
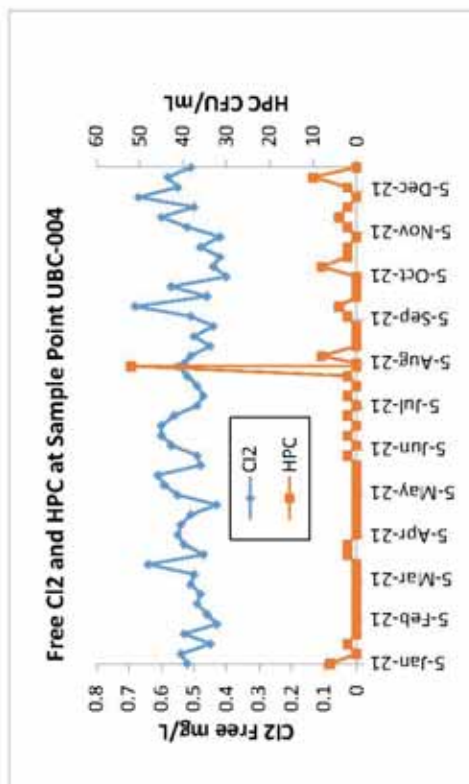
Sample Point WQD2-003 (UBC-003)



Sample Point WQH3A-004 (UBC-004)

Sample name	Sampled date	Chlorine Free (mg/L)	Total Coliform (CFU/100mLs)	Ecoli (CFU/100mLs)	HPC (CFU/mL)	Temperature (°C)	Turbidity (NTU)	pH	Conductivity (uS cm)
UBC-004	5-Jan-21	0.52	<1	<1	6	7.3	0.13	7.16	33.22
UBC-004	12-Jan-21	0.54	<1	<1	<2	7.5	0.15	7.27	33.28
UBC-004	19-Jan-21	0.45	<1	<1	2	7.1	0.16	7.53	32.68
UBC-004	26-Jan-21	0.53	<1	<1	<2	7	0.16	7.63	34.80
UBC-004	2-Feb-21	0.43	<1	<1	<2	6.8	0.14	7.50	34.34
UBC-004	9-Feb-21	0.46	<1	<1	<2	6.7	0.1	7.32	31.03
UBC-004	16-Feb-21	0.49	<1	<1	<2	6.5	0.52	7.31	30.31
UBC-004	23-Feb-21	0.48	<1	<1	<2	6.4	0.52	7.24	34.78
UBC-004	2-Mar-21	0.51	<1	<1	<2	6.4	0.18	7.38	35.20
UBC-004	9-Mar-21	0.5	<1	<1	<2	6.5	0.13	7.33	32.35
UBC-004	16-Mar-21	0.64	<1	<1	<2	6.5	0.11	7.60	31.67
UBC-004	23-Mar-21	0.47	<1	<1	2	6.8	0.1	7.64	31.82
UBC-004	30-Mar-21	0.53	<1	<1	2	7.1	0.15	7.43	32.52
UBC-004	6-Apr-21	0.55	<1	<1	<2	7.3	0.1	7.76	32.27
UBC-004	13-Apr-21	0.54	<1	<1	<2	8.2	0.31	7.30	32.11
UBC-004	20-Apr-21	0.51	<1	<1	<2	9	0.36	7.58	32.02
UBC-004	27-Apr-21	0.43	<1	<1	<2	9.1	0.86	7.46	32.45
UBC-004	4-May-21	0.55	<1	<1	<2	10.5	0.22	7.60	30.77
UBC-004	11-May-21	0.59	<1	<1	<2	10.2	0.13	7.44	31.54
UBC-004	18-May-21	0.61	<1	<1	<2	10.5	0.11	7.57	31.04
UBC-004	25-May-21	0.48	<1	<1	<2	11.4	0.19	7.44	30.82
UBC-004	1-Jun-21	0.49	<1	<1	2	11.3	0.11	7.79	34.44
UBC-004	8-Jun-21	0.57	<1	<1	<2	11.6	0.09	7.56	31.61
UBC-004	15-Jun-21	0.6	<1	<1	2	12.1	0.16	7.85	52.04
UBC-004	22-Jun-21	0.6	<1	<1	<2	12.5	0.14	7.81	50.01
UBC-004	29-Jun-21	0.56	<1	<1	2	13.5	0.43	8.18	45.72
UBC-004	6-Jul-21	0.49	<1	<1	<2	14.7	0.12	8.02	50.43
UBC-004	13-Jul-21	0.47	<1	<1	2	14.7	0.19	7.82	52.30
UBC-004	20-Jul-21	0.49	<1	<1	<2	14.9	0.14	8.08	47.87
UBC-004	27-Jul-21	0.52	<1	<1	2	15.8	0.18	7.88	50.96
UBC-004	3-Aug-21	0.55	5	<1	52	16.5	0.14	8.07	51.46
UBC-004	3-Aug-21	0.53	<1	<1	<2	16.3	1.9		
UBC-004	5-Aug-21	0.53	<1	<1	<2	16.3	1.9		
UBC-004	10-Aug-21	0.51	<1	<1	8	17.1	0.17	8.19	51.10
UBC-004	17-Aug-21	0.45	<1	<1	<2	17.9	0.14	8.01	56.25
UBC-004	24-Aug-21	0.5	<1	<1	<2	17.4	0.14	8.01	54.59
UBC-004	31-Aug-21	0.44	<1	<1	<2	17	0.09	8.11	52.56
UBC-004	7-Sep-21	0.51	<1	<1	2	17.1	0.11	8.03	52.96
UBC-004	14-Sep-21	0.68	<1	<1	4	16.6	0.13	8.06	51.34
UBC-004	21-Sep-21	0.46	<1	<1	<2	16.6	0.15	7.78	51.22
UBC-004	28-Sep-21	0.57	<1	<1	<2	15.4	0.28	7.97	58.29
UBC-004	5-Oct-21	0.4	<1	<1	<2	13.7	0.13	8.03	52.76
UBC-004	12-Oct-21	0.44	<1	<1	8	12.4	0.2	8.01	60.83
UBC-004	19-Oct-21	0.42	<1	<1	2	12.4	0.12	8.04	51.00
UBC-004	26-Oct-21	0.48	<1	<1	2	11.7	0.26	8.33	53.79
UBC-004	2-Nov-21	0.42	<1	<1	<2	10.8	0.2	8.10	52.61
UBC-004	9-Nov-21	0.52	<1	<1	2	10.3	0.13	8.15	51.48
UBC-004	16-Nov-21	0.6	<1	<1	4	10.1	0.1	7.91	53.10
UBC-004	23-Nov-21	0.5	<1	<1	2	8.7	0.17	8.50	54.06
UBC-004	30-Nov-21	0.67	<1	<1	<2	8.8	0.14	8.42	55.99
UBC-004	7-Dec-21	0.55	<1	<1	2	8.6	0.12	8.36	51.06
UBC-004	14-Dec-21	0.58	<1	<1	10	7.6	0.38	8.75	56.35
UBC-004	21-Dec-21	0.51	<1	<1	NA	6	0.14	8.31	54.28

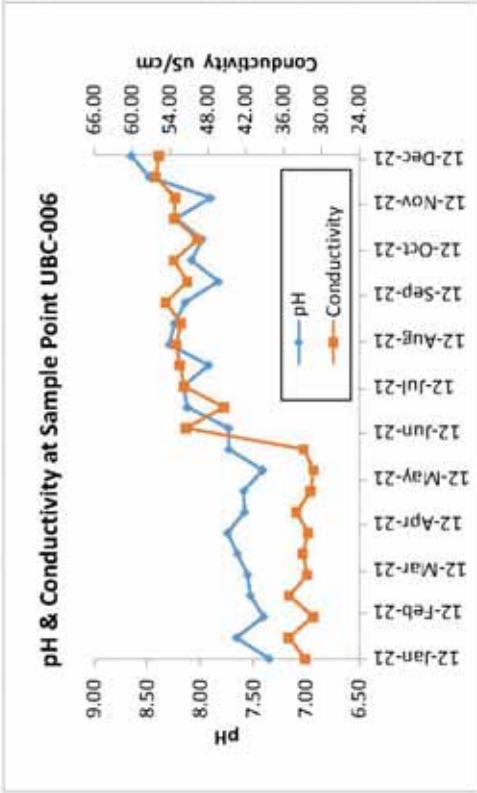
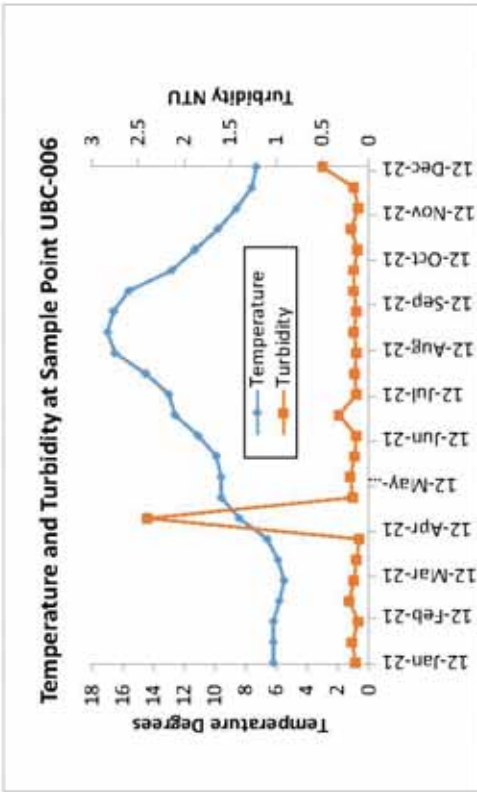
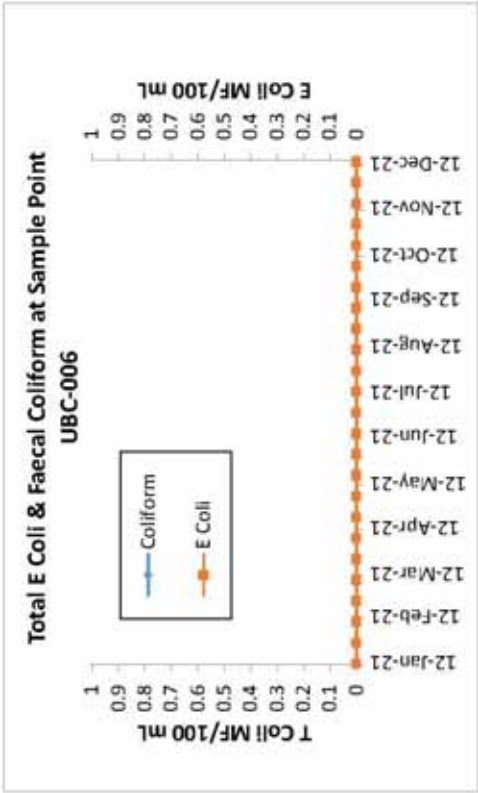
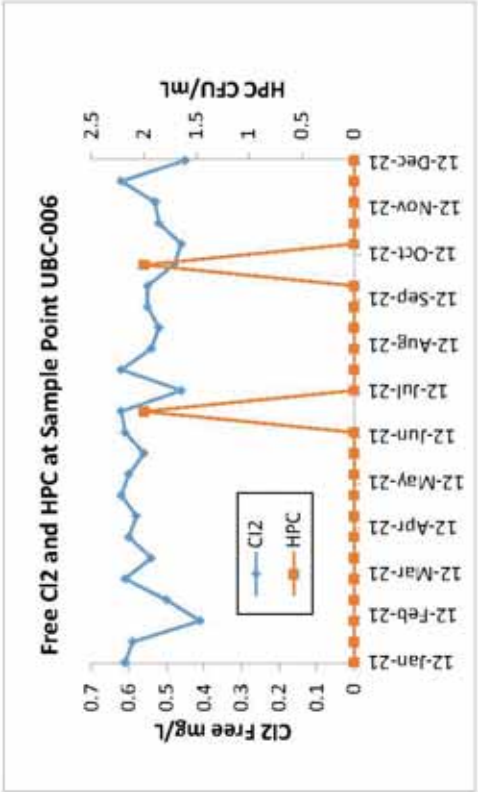
Sample Point WQH3A-004 (UBC-004)



Sample Point WQL3-006 (UBC-006)

Sample name	Sampled date	Chlorine Free (mg/L)	Total Coliform (CFU/100mLs)	Ecoli (CFU/100mLs)	HPC (CFU/mL)	Temperature (°C)	Turbidity (NTU)	pH	Conductivity (uS cm)
UBC-006	12-Jan-21	0.61	<1	<1	<2	6.2	0.14	7.35	32.58
UBC-006	26-Jan-21	0.59	<1	<1	<2	6.2	0.18	7.66	35.17
UBC-006	9-Feb-21	0.41	<1	<1	<2	6.2	0.11	7.40	31.30
UBC-006	23-Feb-21	0.5	<1	<1	<2	5.8	0.21	7.53	35.08
UBC-006	9-Mar-21	0.61	<1	<1	<2	5.5	0.16	7.55	32.24
UBC-006	23-Mar-21	0.54	<1	<1	<2	5.9	0.13	7.65	32.98
UBC-006	6-Apr-21	0.6	<1	<1	<2	6.6	0.1	7.74	32.11
UBC-006	20-Apr-21	0.58	<1	<1	<2	8.4	2.4	7.58	33.97
UBC-006	4-May-21	0.62	<1	<1	<2	9.6	0.17	7.59	31.72
UBC-006	18-May-21	0.6	<1	<1	<2	9.6	0.2	7.41	31.23
UBC-006	1-Jun-21	0.56	<1	<1	<2	9.9	0.15	7.73	32.80
UBC-006	15-Jun-21	0.61	<1	<1	<2	11.1	0.13	7.73	51.42
UBC-006	29-Jun-21	0.62	<1	<1	2	12.6	0.32	8.12	45.44
UBC-006	13-Jul-21	0.46	<1	<1	<2	13	0.13	8.16	51.73
UBC-006	27-Jul-21	0.62	<1	<1	<2	14.5	0.15	7.92	52.38
UBC-006	10-Aug-21	0.54	<1	<1	<2	16.5	0.13	8.29	53.01
UBC-006	24-Aug-21	0.52	<1	<1	<2	17	0.16	8.24	52.21
UBC-006	7-Sep-21	0.55	<1	<1	<2	16.6	0.13	8.14	54.63
UBC-006	21-Sep-21	0.55	<1	<1	<2	15.6	0.16	7.83	51.22
UBC-006	5-Oct-21	0.48	<1	<1	2	12.8	0.16	8.08	53.37
UBC-006	19-Oct-21	0.46	<1	<1	<2	11.3	0.12	7.98	49.56
UBC-006	2-Nov-21	0.52	<1	<1	<2	9.8	0.19	8.23	53.26
UBC-006	16-Nov-21	0.53	<1	<1	<2	8.6	0.11	7.90	53.17
UBC-006	30-Nov-21	0.62	<1	<1	<2	7.6	0.16	8.48	56.27
UBC-006	14-Dec-21	0.45	<1	<1	<2	7.3	0.5	8.65	55.68

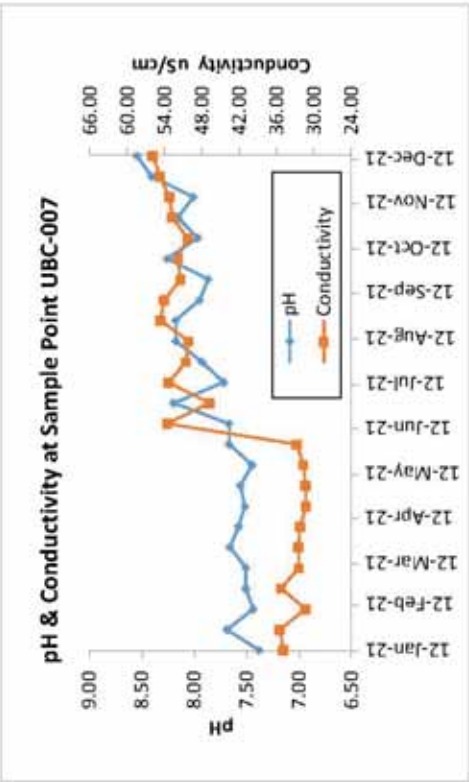
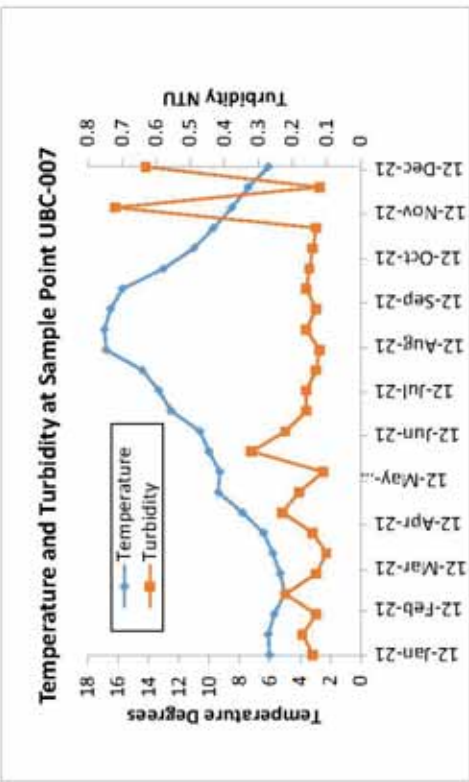
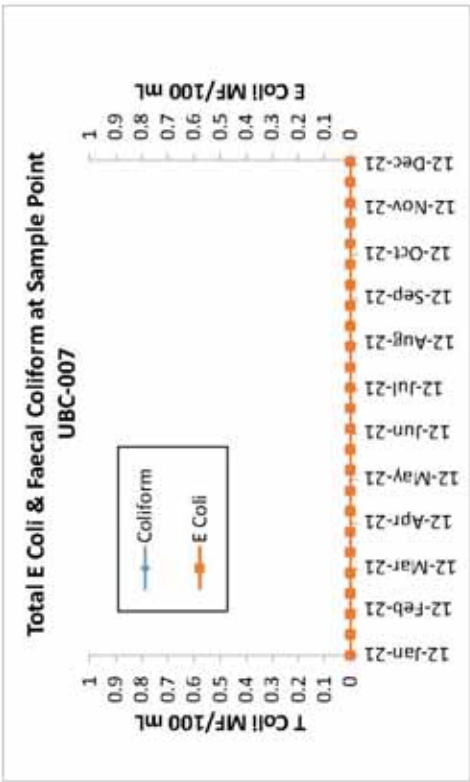
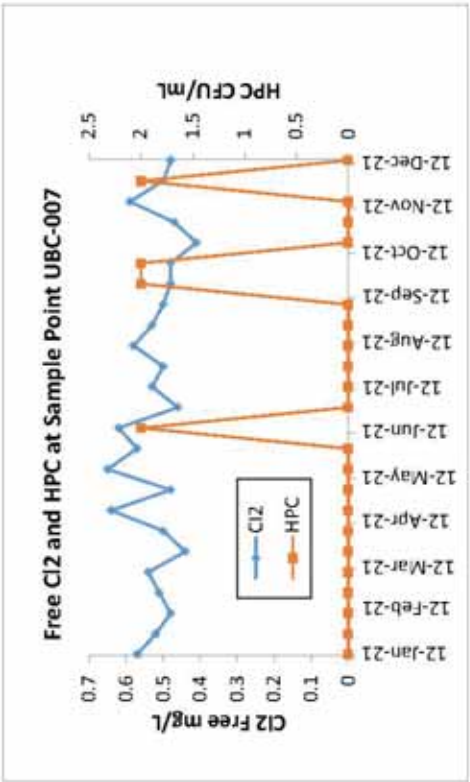
Sample Point WQL3-006 (UBC-006)



Sample Point WQJ5-007 (UBC-007)

Sample name	Sampled date	Chlorine Free (mg/L)	Total Coliform (CFU/100mLs)	Ecoli (CFU/100mLs)	HPC (CFU/mL)	Temperature (°C)	Turbidity (NTU)	pH	Conductivity (uS cm)
UBC-007	12-Jan-21	0.57	<1	<1	<2	6	0.14	7.38	34.93
UBC-007	26-Jan-21	0.52	<1	<1	<2	6.1	0.17	7.69	35.53
UBC-007	9-Feb-21	0.48	<1	<1	<2	5.7	0.13	7.44	31.34
UBC-007	23-Feb-21	0.51	<1	<1	<2	5	0.22	7.51	35.29
UBC-007	9-Mar-21	0.54	<1	<1	<2	5.3	0.13	7.51	32.45
UBC-007	23-Mar-21	0.44	<1	<1	<2	5.8	0.1	7.66	32.53
UBC-007	6-Apr-21	0.5	<1	<1	<2	6.4	0.14	7.58	32.22
UBC-007	20-Apr-21	0.64	<1	<1	<2	7.8	0.23	7.52	31.30
UBC-007	4-May-21	0.48	<1	<1	<2	9.4	0.18	7.56	31.34
UBC-007	18-May-21	0.65	<1	<1	<2	9.3	0.11	7.45	31.72
UBC-007	1-Jun-21	0.57	<1	<1	<2	10	0.32	7.67	32.78
UBC-007	15-Jun-21	0.62	<1	<1	2	10.6	0.22	7.67	53.59
UBC-007	29-Jun-21	0.46	<1	<1	<2	12.5	0.16	8.2	46.80
UBC-007	13-Jul-21	0.53	<1	<1	<2	13.3	0.16	7.72	53.32
UBC-007	27-Jul-21	0.5	<1	<1	<2	14.4	0.13	7.93	50.55
UBC-007	10-Aug-21	0.58	<1	<1	<2	16.8	0.12	8.18	50.16
UBC-007	24-Aug-21	0.53	<1	<1	<2	16.9	0.16	8.18	54.66
UBC-007	7-Sep-21	0.5	<1	<1	<2	16.5	0.13	7.95	54.02
UBC-007	21-Sep-21	0.48	<1	<1	2	15.7	0.16	7.87	51.41
UBC-007	5-Oct-21	0.48	<1	<1	2	13	0.15	8.26	51.88
UBC-007	19-Oct-21	0.41	<1	<1	<2	11	0.14	7.97	50.32
UBC-007	2-Nov-21	0.47	<1	<1	<2	9.7	0.13	8.16	52.75
UBC-007	16-Nov-21	0.59	<1	<1	<2	8.5	0.72	8.01	53.26
UBC-007	30-Nov-21	0.5	<1	<1	2	7.4	0.12	8.41	54.75
UBC-007	14-Dec-21	0.48	<1	<1	<2	6.1	0.63	8.55	55.90

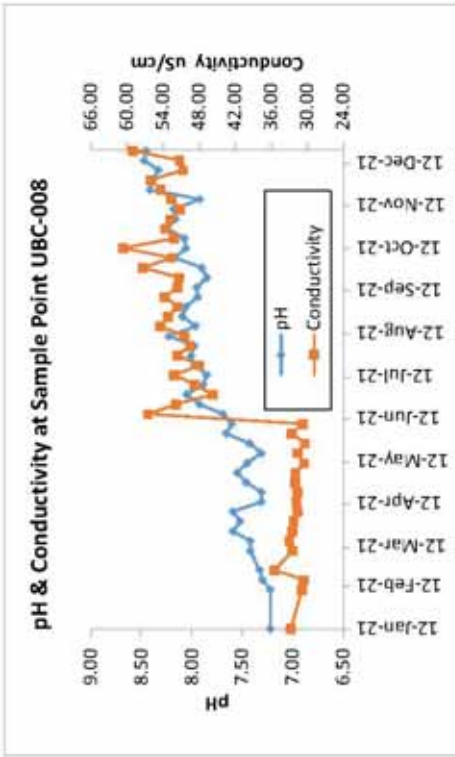
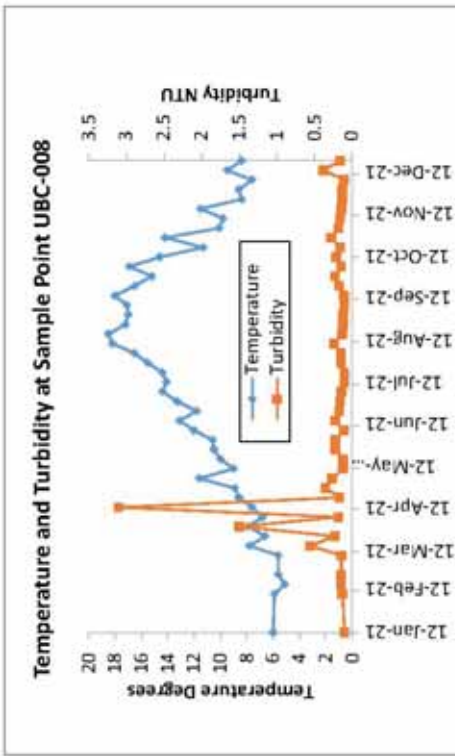
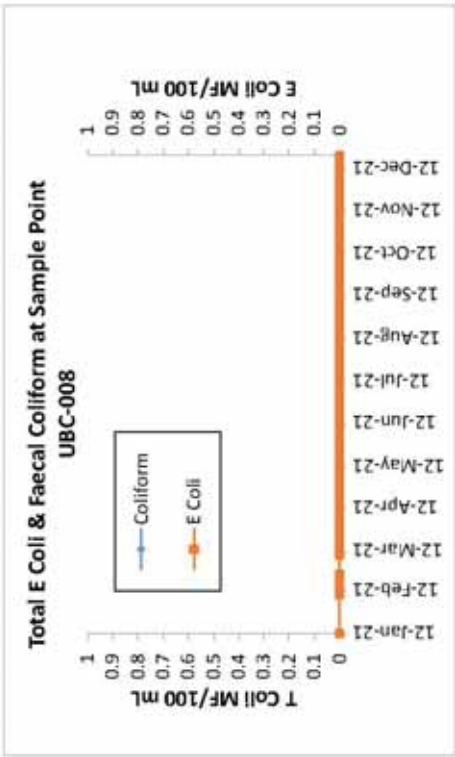
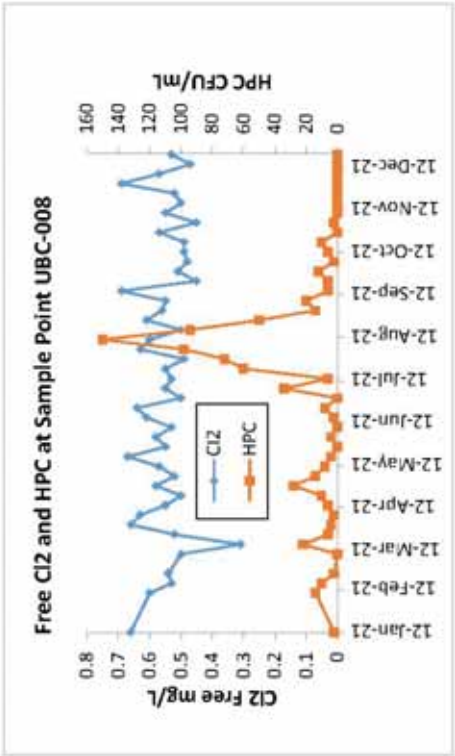
Sample Point WQJ5-007 (UBC-007)



Sample Point WQG6-008 (UBC-008)

Sample name	Sampled date	Chlorine Free (mg/L)	Total Coliform (CFU/100mLs)	Ecoli (CFU/100mLs)	HPC (CFU/mL)	Temperature (°C)	Turbidity (NTU)	pH	Conductivity (uS cm)
UBC-008	12-Jan-21	0.66	<1	<1	2	6	0.1	7.22	32.72
UBC-008	9-Feb-21	0.6	<1	<1	14	5.9	0.13	7.22	30.90
UBC-008	16-Feb-21	0.53	<1	<1	10	5.1	0.15	7.30	30.60
UBC-008	23-Feb-21	0.54	<1	<1	2	5.6	0.15	7.33	35.42
UBC-008	9-Mar-21	0.5	<1	<1	<2	5.6	0.14	7.42	32.44
UBC-008	16-Mar-21	0.31	<1	<1	22	7.8	0.56	7.42	32.91
UBC-008	23-Mar-21	0.52	<1	<1	6	6.6	0.23	7.59	32.47
UBC-008	30-Mar-21	0.66	<1	<1	4	7.9	1.5	7.52	32.23
UBC-008	6-Apr-21	0.63	<1	<1	2	6.8	0.18	7.59	31.60
UBC-008	13-Apr-21	0.55	<1	<1	6	7.6	3.1	7.31	31.76
UBC-008	20-Apr-21	0.5	<1	<1	10	8.6	0.17	7.31	31.55
UBC-008	27-Apr-21	0.58	<1	<1	28	8.9	0.35	7.46	32.00
UBC-008	4-May-21	0.52	<1	<1	14	11.6	0.27	7.55	31.95
UBC-008	11-May-21	0.57	<1	<1	8	9	0.12	7.45	30.54
UBC-008	18-May-21	0.67	<1	<1	4	10	0.12	7.31	31.54
UBC-008	25-May-21	0.55	<1	<1	<2	10.5	0.22	7.43	30.37
UBC-008	1-Jun-21	0.58	<1	<1	4	10.6	0.22	7.66	32.54
UBC-008	8-Jun-21	0.53	<1	<1	<2	12	0.11	7.60	30.70
UBC-008	15-Jun-21	0.61	<1	<1	2	13.1	0.22	7.69	56.49
UBC-008	22-Jun-21	0.64	<1	<1	8	11.8	0.17	7.92	51.84
UBC-008	29-Jun-21	0.5	<1	<1	<2	13.3	0.16	8.05	45.69
UBC-008	6-Jul-21	0.55	<1	<1	34	14.4	0.14	7.89	48.70
UBC-008	13-Jul-21	0.53	<1	<1	6	14.1	0.1	7.85	52.08
UBC-008	20-Jul-21	0.55	<1	<1	60	14.4	0.1	7.97	47.90
UBC-008	27-Jul-21	0.49	<1	<1	72	15.5	0.15	8.01	51.54
UBC-008	3-Aug-21	0.63	<1	<1	98	16.5	0.15	7.97	49.49
UBC-008	10-Aug-21	0.6	<1	<1	150	18.2	0.24	8.23	50.39
UBC-008	17-Aug-21	0.5	<1	<1	94	18.5	0.13	7.96	54.43
UBC-008	24-Aug-21	0.61	<1	<1	50	17.2	0.12	8.09	53.12
UBC-008	31-Aug-21	0.56	<1	<1	14	17	0.12	8.06	51.53
UBC-008	7-Sep-21	0.55	<1	<1	20	17.1	0.1	7.94	53.65
UBC-008	14-Sep-21	0.69	<1	<1	6	18	0.11	7.95	51.57
UBC-008	21-Sep-21	0.45	<1	<1	6	16.5	0.17	7.85	51.32
UBC-008	28-Sep-21	0.51	<1	<1	12	15.2	0.23	7.90	57.36
UBC-008	5-Oct-21	0.48	<1	<1	2	16.9	0.15	8.17	52.49
UBC-008	12-Oct-21	0.49	<1	<1	6	14.6	0.21	8.06	60.56
UBC-008	19-Oct-21	0.49	<1	<1	10	11.3	0.16	8.07	52.10
UBC-008	26-Oct-21	0.57	<1	<1	<2	14.2	0.28	8.24	53.60
UBC-008	2-Nov-21	0.45	<1	<1	2	10.1	0.18	8.16	52.78
UBC-008	9-Nov-21	0.55	<1	<1	<2	9.8	0.16	8.18	51.10
UBC-008	16-Nov-21	0.5	<1	<1	<2	11.5	0.14	7.92	52.58
UBC-008	23-Nov-21	0.52	<1	<1	<2	8.4	0.13	8.41	54.33
UBC-008	30-Nov-21	0.69	<1	<1	<2	8.6	0.13	8.39	56.02
UBC-008	7-Dec-21	0.57	<1	<1	<2	7.6	0.11	8.33	50.59
UBC-008	14-Dec-21	0.47	<1	<1	<2	9.5	0.38	8.47	51.24
UBC-008	21-Dec-21	0.53	<1	<1	NA	8.4	0.16	8.45	58.97

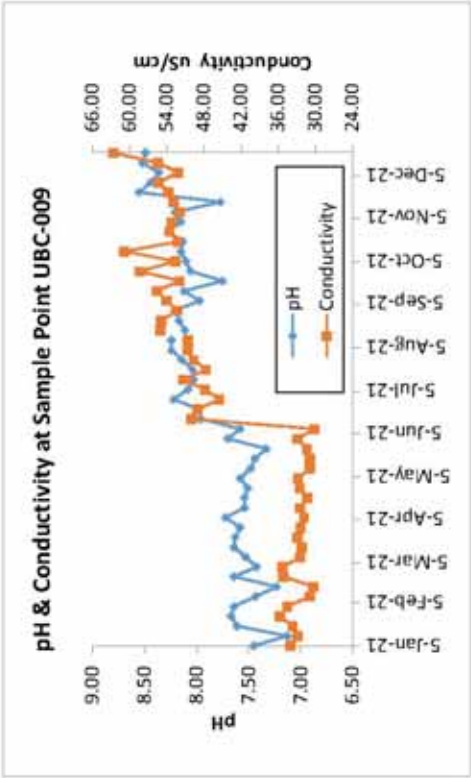
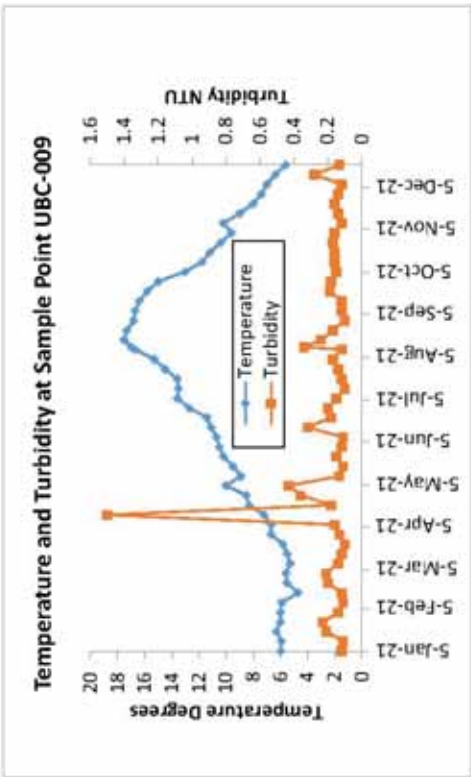
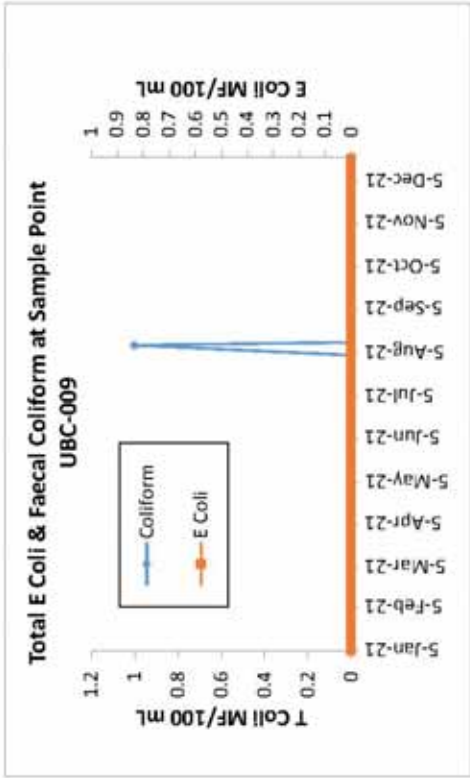
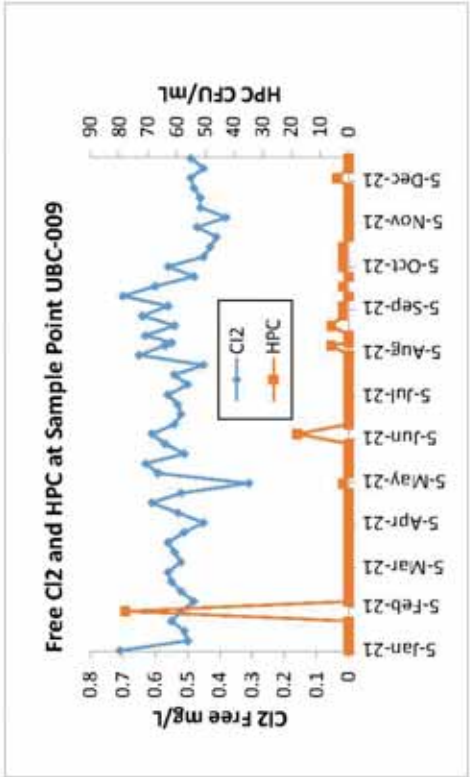
Sample Point WQGG-008 (UBC-008)



Sample Point WQF7B-009 (UBC-009)

Sample name	Sampled date	Chlorine Free (mg/L)	Total Coliform (CFU/100mLs)	Ecoli (CFU/100mLs)	HPC (CFU/mL)	Temperature (°C)	Turbidity (NTU)	pH	Conductivity (uS cm)
UBC-009	5-Jan-21	0.71	<1	<1	<2	6	0.12	7.45	33.99
UBC-009	12-Jan-21	0.5	<1	<1	<2	5.9	0.11	7.13	32.91
UBC-009	19-Jan-21	0.51	<1	<1	<2	6.3	0.21	7.61	33.68
UBC-009	26-Jan-21	0.55	<1	<1	<2	6	0.23	7.67	35.73
UBC-009	2-Feb-21	0.52	<1	<1	78	6	0.14	7.64	34.53
UBC-009	9-Feb-21	0.48	<1	<1	<2	5.9	0.11	7.43	30.89
UBC-009	16-Feb-21	0.52	<1	<1	<2	4.7	0.12	7.23	30.37
UBC-009	23-Feb-21	0.55	<1	<1	<2	5.5	0.2	7.64	35.14
UBC-009	2-Mar-21	0.56	<1	<1	<2	5.6	0.21	7.42	35.27
UBC-009	9-Mar-21	0.52	<1	<1	<2	5.3	0.14	7.53	32.46
UBC-009	16-Mar-21	0.54	<1	<1	<2	5.5	0.12	7.64	32.24
UBC-009	23-Mar-21	0.56	<1	<1	<2	5.8	0.1	7.63	32.94
UBC-009	30-Mar-21	0.51	<1	<1	<2	6.7	0.13	7.58	32.40
UBC-009	6-Apr-21	0.45	<1	<1	<2	6.7	0.16	7.72	31.81
UBC-009	13-Apr-21	0.53	<1	<1	<2	7.2	1.5	7.54	32.50
UBC-009	20-Apr-21	0.61	<1	<1	<2	8.3	0.18	7.54	31.32
UBC-009	27-Apr-21	0.52	<1	<1	<2	8.5	0.36	7.51	32.55
UBC-009	4-May-21	0.31	<1	<1	2	10	0.43	7.58	32.82
UBC-009	11-May-21	0.59	<1	<1	<2	8.9	0.13	7.48	30.89
UBC-009	18-May-21	0.63	<1	<1	<2	9.5	0.11	7.44	30.91
UBC-009	25-May-21	0.51	<1	<1	<2	10.2	0.15	7.33	31.39
UBC-009	1-Jun-21	0.57	<1	<1	<2	10.5	0.12	7.70	32.91
UBC-009	8-Jun-21	0.61	<1	<1	18	10.7	0.11	7.58	30.16
UBC-009	15-Jun-21	0.54	<1	<1	<2	11.1	0.32	7.96	49.99
UBC-009	22-Jun-21	0.52	<1	<1	<2	11.4	0.18	7.98	49.03
UBC-009	29-Jun-21	0.53	<1	<1	<2	12.7	0.2	8.22	45.54
UBC-009	6-Jul-21	0.56	<1	<1	<2	13.6	0.15	8.08	47.78
UBC-009	13-Jul-21	0.5	<1	<1	<2	13.5	0.1	8.03	51.39
UBC-009	20-Jul-21	0.54	<1	<1	<2	13.6	0.12	8.04	47.67
UBC-009	27-Jul-21	0.45	<1	<1	<2	14.5	0.14	8.14	49.7
UBC-009	3-Aug-21	0.65	<1	<1	<2	15.3	0.17	8.24	50.57
UBC-009	10-Aug-21	0.57	1	<1	6	16.7	0.12	8.24	50.55
UBC-009	12-Aug-21	0.55	<1	<1	<2	17	0.34		
UBC-009	17-Aug-21	0.63	<1	<1	<2	17.5	0.24	8.11	55.05
UBC-009	24-Aug-21	0.54	<1	<1	6	17.3	0.17	8.17	54.88
UBC-009	31-Aug-21	0.64	<1	<1	2	16.8	0.1	8.21	52.33
UBC-009	7-Sep-21	0.56	<1	<1	2	16.7	0.12	7.97	54.03
UBC-009	14-Sep-21	0.7	<1	<1	<2	16.4	0.12	8.12	55.55
UBC-009	21-Sep-21	0.6	<1	<1	2	15.8	0.19	7.75	51.95
UBC-009	28-Sep-21	0.48	<1	<1	<2	15	0.18	8.06	58.32
UBC-009	5-Oct-21	0.56	<1	<1	2	13	0.15	8.10	52.59
UBC-009	12-Oct-21	0.45	<1	<1	2	11.8	0.16	8.15	60.81
UBC-009	19-Oct-21	0.43	<1	<1	2	11.2	0.16	8.13	52.20
UBC-009	26-Oct-21	0.41	<1	<1	<2	10.4	0.17	8.27	53.50
UBC-009	2-Nov-21	0.47	<1	<1	<2	9.6	0.16	8.15	53.13
UBC-009	9-Nov-21	0.38	<1	<1	<2	10.2	0.12	8.21	51.79
UBC-009	16-Nov-21	0.46	<1	<1	<2	9	0.14	7.77	52.89
UBC-009	23-Nov-21	0.46	<1	<1	<2	8	0.16	8.55	53.72
UBC-009	30-Nov-21	0.48	<1	<1	<2	7.4	0.14	8.44	55.33
UBC-009	7-Dec-21	0.49	<1	<1	4	7	0.12	8.36	52.19
UBC-009	14-Dec-21	0.45	<1	<1	<2	6.4	0.28	8.52	55.41
UBC-009	21-Dec-21	0.49	<1	<1	NA	5.6	0.13	8.49	62.59

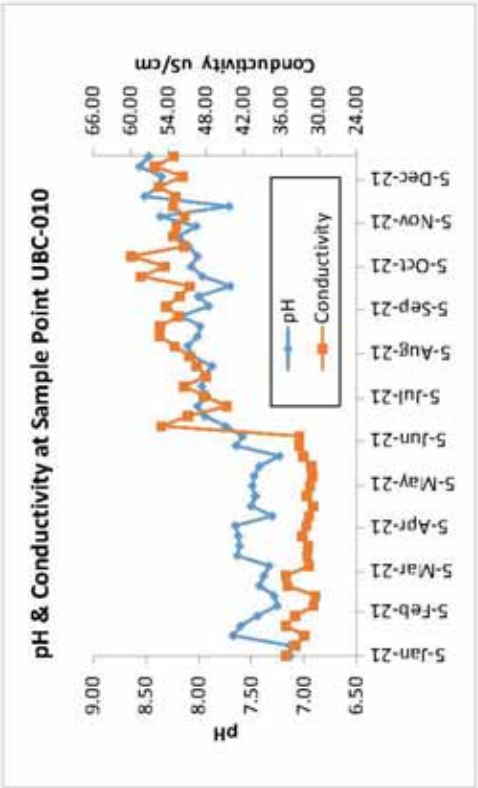
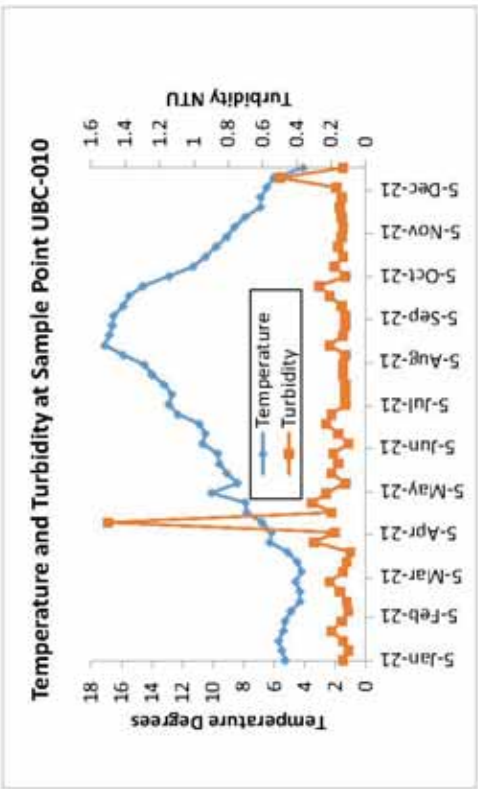
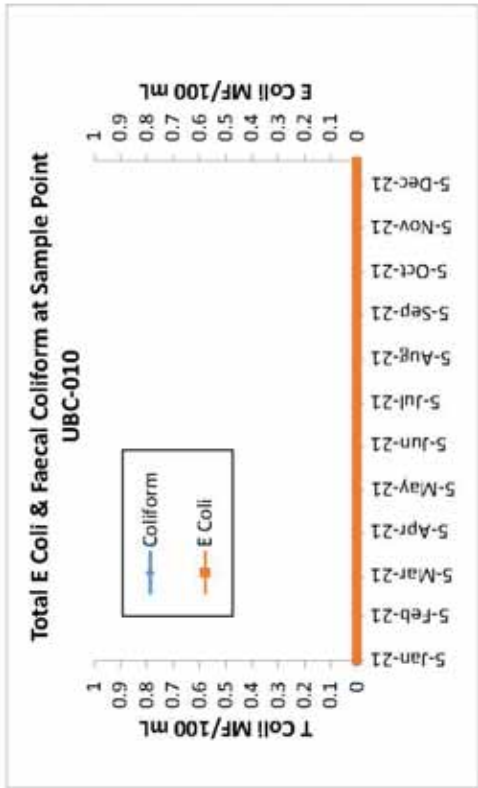
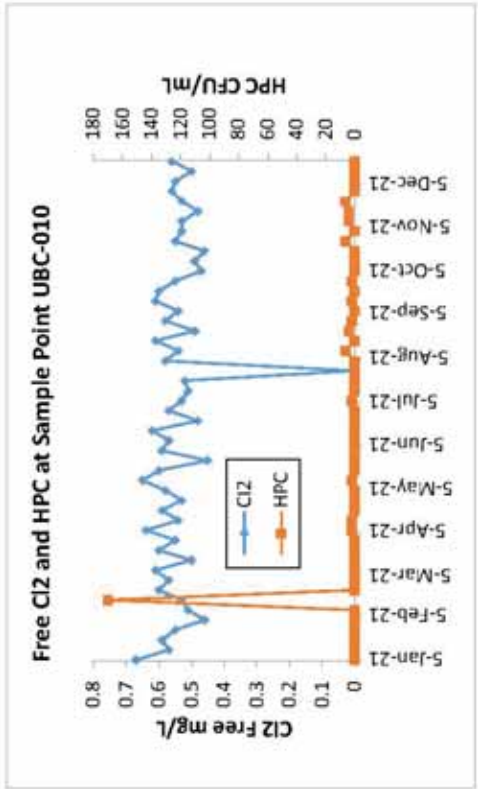
Sample Point WQF7B-009 (UBC-009)



Sample Point WQF7A-010 (UBC-010)

Sample name	Sampled date	Chlorine Free (mg/L)	Total Coliform (CFU/100mLs)	Ecoli (CFU/100mLs)	HPC (CFU/mL)	Temperature (°C)	Turbidity (NTU)	pH	Conductivity (uS cm)
UBC-010	5-Jan-21	0.67	<1	<1	<2	5.3	0.13	7.13	35.25
UBC-010	12-Jan-21	0.57	<1	<1	<2	5.5	0.1	7.13	33.78
UBC-010	19-Jan-21	0.59	<1	<1	<2	5.7	0.13	7.67	32.35
UBC-010	26-Jan-21	0.55	<1	<1	<2	5.4	0.2	7.60	35.25
UBC-010	2-Feb-21	0.46	<1	<1	<2	5.3	0.14	7.44	33.77
UBC-010	9-Feb-21	0.51	<1	<1	<2	4.9	0.1	7.25	30.87
UBC-010	16-Feb-21	0.53	<1	<1	170	4.3	0.11	7.28	30.57
UBC-010	23-Feb-21	0.6	<1	<1	<2	4.3	0.15	7.42	34.97
UBC-010	2-Mar-21	0.57	<1	<1	<2	4.6	0.21	7.38	35.24
UBC-010	9-Mar-21	0.61	<1	<1	<2	4.2	0.13	7.33	31.53
UBC-010	16-Mar-21	0.5	<1	<1	<2	4.5	0.11	7.63	31.85
UBC-010	23-Mar-21	0.6	<1	<1	<2	5.1	0.09	7.61	31.69
UBC-010	30-Mar-21	0.55	<1	<1	<2	6.3	0.3	7.62	32.59
UBC-010	6-Apr-21	0.64	<1	<1	2	6.2	0.18	7.65	31.98
UBC-010	13-Apr-21	0.54	<1	<1	2	6.8	1.5	7.30	31.54
UBC-010	20-Apr-21	0.59	<1	<1	<2	7.8	0.2	7.50	30.88
UBC-010	27-Apr-21	0.53	<1	<1	<2	7.9	0.31	7.46	31.94
UBC-010	4-May-21	0.58	<1	<1	<2	10.1	0.23	7.49	31.41
UBC-010	11-May-21	0.65	<1	<1	2	8.4	0.12	7.47	31.00
UBC-010	18-May-21	0.6	<1	<1	<2	9.1	0.2	7.42	31.20
UBC-010	25-May-21	0.45	<1	<1	<2	9.6	0.16	7.23	32.45
UBC-010	1-Jun-21	0.59	<1	<1	<2	9.7	0.19	7.64	33.14
UBC-010	8-Jun-21	0.57	<1	<1	<2	10.7	0.1	7.58	33.10
UBC-010	15-Jun-21	0.62	<1	<1	<2	10.5	0.16	7.74	55.08
UBC-010	22-Jun-21	0.48	<1	<1	<2	10.9	0.23	7.94	50.83
UBC-010	29-Jun-21	0.57	<1	<1	<2	12.3	0.2	8.01	44.67
UBC-010	6-Jul-21	0.53	<1	<1	2	12.9	0.12	7.92	48.31
UBC-010	13-Jul-21	0.51	<1	<1	<2	12.7	0.12	7.97	51.46
UBC-010	20-Jul-21	0.52	<1	<1	<2	13.2	0.12	7.95	47.95
UBC-010	27-Jul-21	<0.02	<1	<1	<2	14	0.13	7.87	49.44
UBC-010	3-Aug-21	0.58	<1	<1	<2	14.5	0.13	8.06	50.55
UBC-010	10-Aug-21	0.54	<1	<1	6	15.9	0.12	8.10	52.95
UBC-010	17-Aug-21	0.61	<1	<1	<2	17.1	0.21	8.01	55.36
UBC-010	24-Aug-21	0.49	<1	<1	4	16.8	0.13	7.98	55.33
UBC-010	31-Aug-21	0.58	<1	<1	2	16.6	0.12	8.17	52.35
UBC-010	7-Sep-21	0.54	<1	<1	<2	16.5	0.12	7.90	54.34
UBC-010	14-Sep-21	0.61	<1	<1	2	15.9	0.14	8.00	52.19
UBC-010	21-Sep-21	0.6	<1	<1	<2	15.5	0.21	7.70	50.54
UBC-010	28-Sep-21	0.55	<1	<1	2	14.6	0.27	7.96	58.33
UBC-010	5-Oct-21	0.47	<1	<1	<2	12.9	0.12	8.07	54.54
UBC-010	12-Oct-21	0.49	<1	<1	<2	11.3	0.18	8.01	59.89
UBC-010	19-Oct-21	0.46	<1	<1	<2	10.5	0.13	8.09	51.42
UBC-010	26-Oct-21	0.55	<1	<1	6	9.8	0.16	8.19	53.16
UBC-010	2-Nov-21	0.53	<1	<1	<2	9.1	0.14	8.02	52.67
UBC-010	9-Nov-21	0.53	<1	<1	4	8.6	0.13	8.36	51.33
UBC-010	16-Nov-21	0.48	<1	<1	4	7.9	0.14	7.71	53.26
UBC-010	23-Nov-21	0.53	<1	<1	6	6.9	0.15	8.51	52.85
UBC-010	30-Nov-21	0.56	<1	<1	<2	6.9	0.14	8.38	55.41
UBC-010	7-Dec-21	0.55	<1	<1	<2	6.5	0.17	8.35	51.70
UBC-010	14-Dec-21	0.5	<1	<1	<2	6	0.5	8.56	56.14
UBC-010	21-Dec-21	0.56	<1	<1	NA	4.1	0.13	8.47	53.09

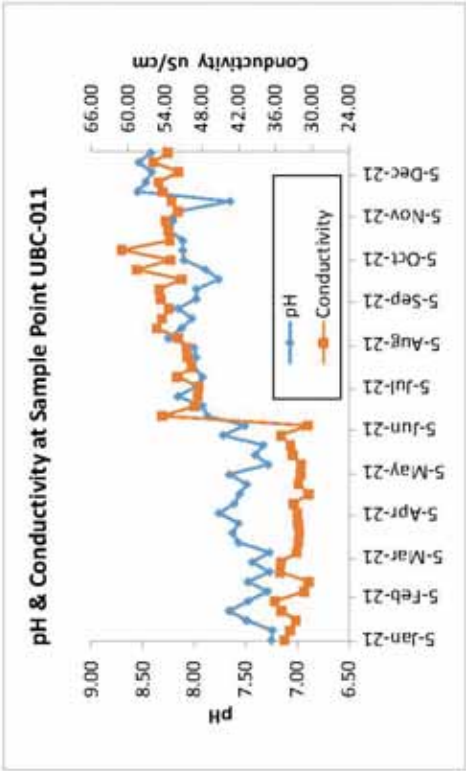
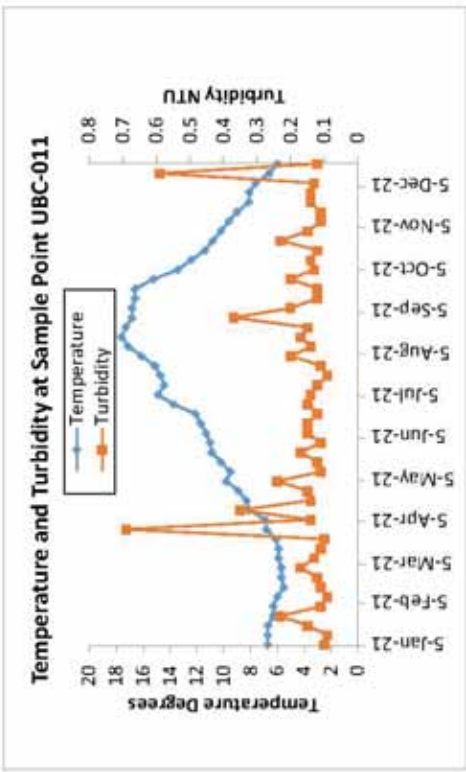
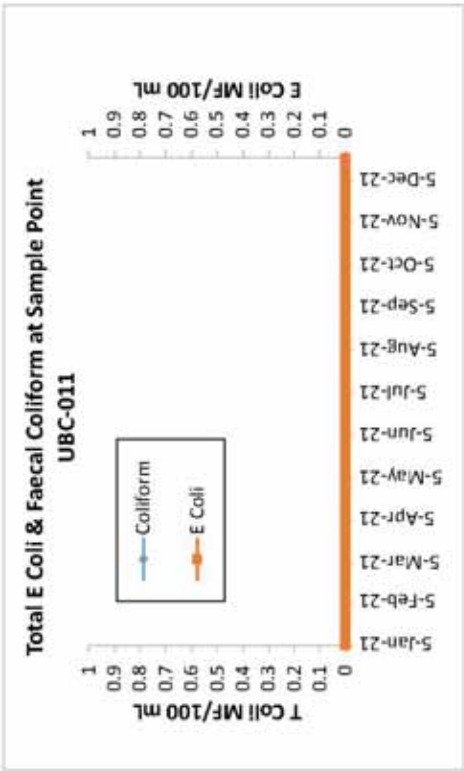
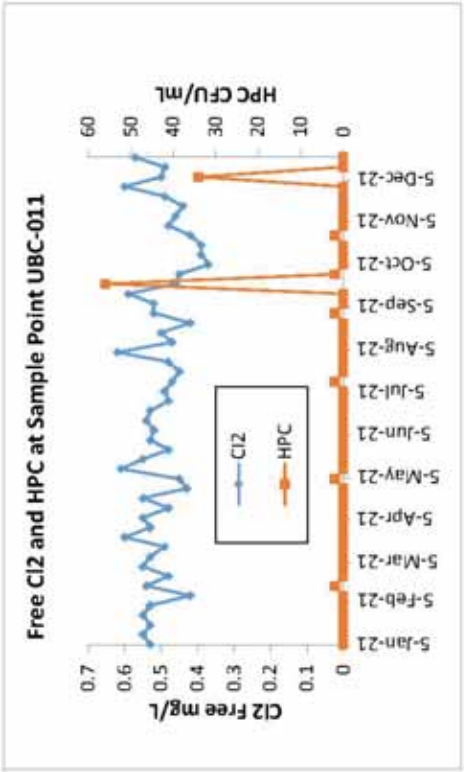
Sample Point WQF7A-010 (UBC-010)



Sample Point WQ10-011 (UBC-011)

Sample name	Sampled date	Chlorine Free (mg/L)	Total Coliform (CFU/100mLs)	Ecoli (CFU/100mLs)	HPC (CFU/mL)	Temperature (°C)	Turbidity (NTU)	pH	Conductivity (uS cm)
UBC-011	5-Jan-21	0.53	<1	<1	<2	6.7	0.1	7.25	34.49
UBC-011	12-Jan-21	0.55	<1	<1	<2	6.7	0.09	7.24	33.53
UBC-011	19-Jan-21	0.53	<1	<1	<2	6.7	0.15	7.49	32.65
UBC-011	26-Jan-21	0.55	<1	<1	<2	6.3	0.23	7.66	34.95
UBC-011	2-Feb-21	0.53	<1	<1	<2	6.3	0.11	7.48	36.02
UBC-011	9-Feb-21	0.42	<1	<1	<2	6	0.09	7.29	31.21
UBC-011	16-Feb-21	0.54	<1	<1	2	5.5	0.11	7.48	30.53
UBC-011	23-Feb-21	0.48	<1	<1	<2	5.7	0.12	7.27	35.22
UBC-011	2-Mar-21	0.55	<1	<1	<2	5.7	0.17	7.44	35.07
UBC-011	9-Mar-21	0.53	<1	<1	<2	5.9	0.13	7.27	32.46
UBC-011	16-Mar-21	0.49	<1	<1	<2	5.9	0.11	7.57	32.23
UBC-011	23-Mar-21	0.6	<1	<1	<2	6.1	0.1	7.63	32.04
UBC-011	30-Mar-21	0.53	<1	<1	<2	6.8	0.69	7.57	32.27
UBC-011	6-Apr-21	0.55	<1	<1	<2	6.9	0.14	7.76	32.35
UBC-011	13-Apr-21	0.48	<1	<1	<2	8.1	0.35	7.61	32.96
UBC-011	20-Apr-21	0.55	<1	<1	<2	8.3	0.14	7.56	30.58
UBC-011	27-Apr-21	0.43	<1	<1	<2	8.9	0.15	7.49	32.18
UBC-011	4-May-21	0.45	<1	<1	2	9.8	0.24	7.66	31.85
UBC-011	11-May-21	0.61	<1	<1	<2	9.5	0.11	7.28	31.78
UBC-011	18-May-21	0.55	<1	<1	<2	10.2	0.12	7.41	33.14
UBC-011	25-May-21	0.48	<1	<1	<2	10.9	0.17	7.33	33.49
UBC-011	1-Jun-21	0.53	<1	<1	<2	11	0.11	7.72	35.07
UBC-011	8-Jun-21	0.52	<1	<1	<2	11.3	0.15	7.51	30.71
UBC-011	15-Jun-21	0.54	<1	<1	<2	11.7	0.15	7.87	54.39
UBC-011	22-Jun-21	0.53	<1	<1	<2	12.1	0.12	7.92	49.10
UBC-011	29-Jun-21	0.48	<1	<1	<2	13.7	0.15	8.16	48.62
UBC-011	6-Jul-21	0.49	<1	<1	<2	14.9	0.14	7.98	48.50
UBC-011	13-Jul-21	0.47	<1	<1	2	14.4	0.12	7.92	51.96
UBC-011	20-Jul-21	0.45	<1	<1	<2	14.7	0.09	8.01	49.61
UBC-011	27-Jul-21	0.48	<1	<1	<2	15.1	0.11	7.98	50.28
UBC-011	3-Aug-21	0.62	<1	<1	<2	16.1	0.2	8.00	50.49
UBC-011	10-Aug-21	0.47	<1	<1	<2	17.1	0.14	8.25	51.86
UBC-011	17-Aug-21	0.5	<1	<1	<2	17.6	0.17	8.12	55.29
UBC-011	24-Aug-21	0.42	<1	<1	<2	17.3	0.15	8.02	54.44
UBC-011	31-Aug-21	0.52	<1	<1	2	16.8	0.37	8.16	53.28
UBC-011	7-Sep-21	0.52	<1	<1	<2	16.8	0.2	7.98	54.67
UBC-011	14-Sep-21	0.59	<1	<1	<2	16.6	0.12	7.98	54.90
UBC-011	21-Sep-21	0.46	<1	<1	56	16.6	0.12	7.76	51.27
UBC-011	28-Sep-21	0.45	<1	<1	2	15.2	0.2	7.89	58.58
UBC-011	5-Oct-21	0.37	<1	<1	<2	13.4	0.13	8.10	53.05
UBC-011	12-Oct-21	0.39	<1	<1	<2	12.4	0.14	8.11	60.98
UBC-011	19-Oct-21	0.39	<1	<1	<2	11.4	0.12	8.11	53.15
UBC-011	26-Oct-21	0.42	<1	<1	2	10.8	0.23	8.24	53.36
UBC-011	2-Nov-21	0.48	<1	<1	<2	10.2	0.15	8.21	53.86
UBC-011	9-Nov-21	0.46	<1	<1	<2	9.6	0.11	8.14	51.84
UBC-011	16-Nov-21	0.44	<1	<1	<2	9	0.11	7.65	52.86
UBC-011	23-Nov-21	0.49	<1	<1	<2	8.1	0.14	8.55	54.42
UBC-011	30-Nov-21	0.6	<1	<1	<2	8.1	0.14	8.47	55.02
UBC-011	7-Dec-21	0.5	<1	<1	34	7.6	0.13	8.41	51.71
UBC-011	14-Dec-21	0.49	<1	<1	<2	6.6	0.59	8.54	55.87
UBC-011	21-Dec-21	0.57	<1	<1	NA	6	0.12	8.42	53.51

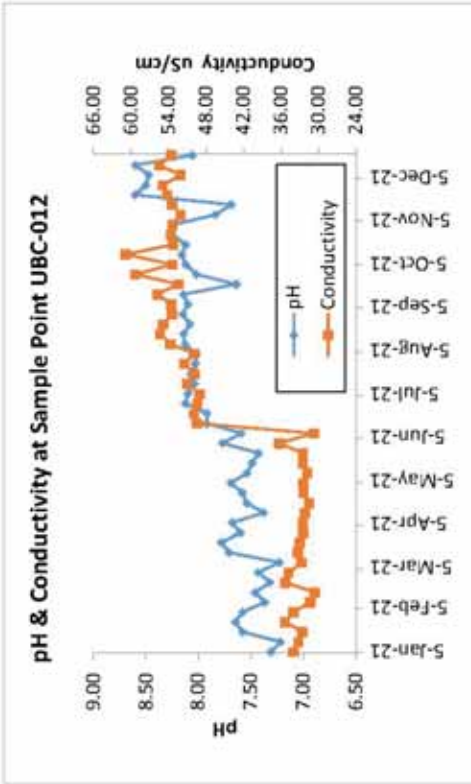
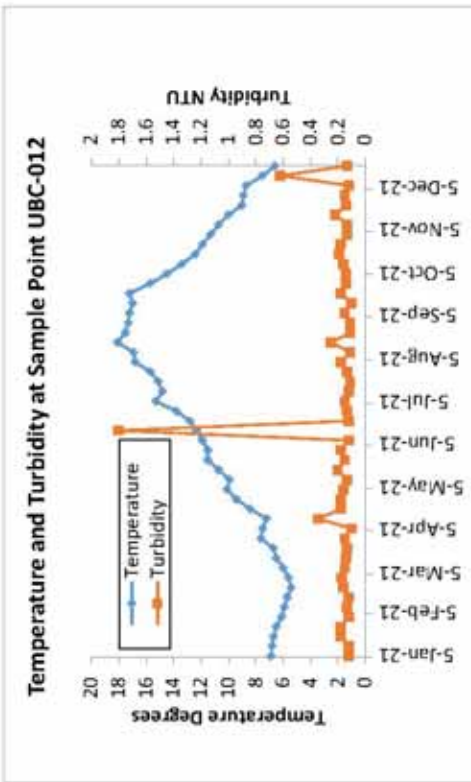
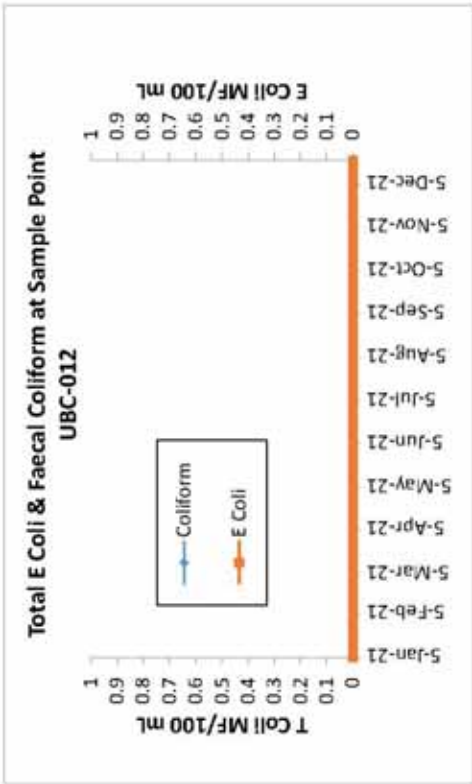
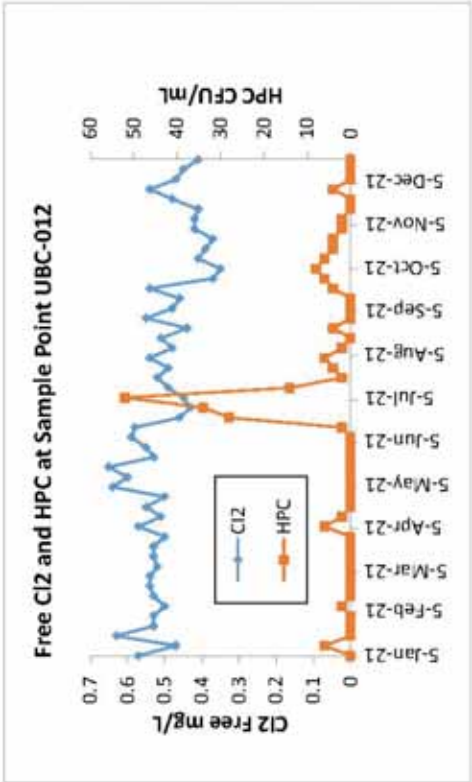
Sample Point WQJ10-011 (UBC-011)



Sample Point WQM8-012 (UBC-012)

Sample name	Sampled date	Chlorine Free (mg/L)	Total Coliform (CFU/100mLs)	Ecoli (CFU/100mLs)	HPC (CFU/mL)	Temperature (°C)	Turbidity (NTU)	pH	Conductivity (uS cm)
UBC-012	5-Jan-21	0.57	<1	<1	<2	6.9	0.12	7.31	34.00
UBC-012	12-Jan-21	0.47	<1	<1	6	6.8	0.12	7.22	33.22
UBC-012	19-Jan-21	0.63	<1	<1	<2	6.7	0.18	7.58	32.59
UBC-012	26-Jan-21	0.53	<1	<1	<2	6.5	0.18	7.65	35.31
UBC-012	2-Feb-21	0.53	<1	<1	<2	6.1	0.12	7.58	34.01
UBC-012	9-Feb-21	0.5	<1	<1	2	5.9	0.13	7.37	31.29
UBC-012	16-Feb-21	0.53	<1	<1	<2	5.7	0.12	7.46	30.61
UBC-012	23-Feb-21	0.54	<1	<1	<2	5.4	0.16	7.32	35.27
UBC-012	2-Mar-21	0.54	<1	<1	<2	5.6	0.17	7.43	34.78
UBC-012	9-Mar-21	0.52	<1	<1	<2	6	0.15	7.23	32.68
UBC-012	16-Mar-21	0.53	<1	<1	<2	6.5	0.14	7.71	33.30
UBC-012	23-Mar-21	0.53	<1	<1	<2	6.7	0.13	7.78	32.98
UBC-012	30-Mar-21	0.5	<1	<1	<2	7.6	0.15	7.60	32.38
UBC-012	6-Apr-21	0.57	<1	<1	6	7.5	0.1	7.68	32.48
UBC-012	13-Apr-21	0.51	<1	<1	2	7.2	0.34	7.38	32.14
UBC-012	20-Apr-21	0.55	<1	<1	<2	8.4	0.18	7.54	31.50
UBC-012	27-Apr-21	0.5	<1	<1	<2	9.4	0.18	7.58	32.36
UBC-012	4-May-21	0.64	<1	<1	<2	10.1	0.16	7.69	32.44
UBC-012	11-May-21	0.6	<1	<1	<2	9.9	0.13	7.54	31.76
UBC-012	18-May-21	0.65	<1	<1	<2	10.7	0.2	7.49	32.52
UBC-012	25-May-21	0.53	<1	<1	<2	11.5	0.15	7.43	32.46
UBC-012	1-Jun-21	0.55	<1	<1	<2	11.5	0.18	7.77	36.28
UBC-012	8-Jun-21	0.59	<1	<1	<2	11.9	0.12	7.59	30.73
UBC-012	15-Jun-21	0.58	<1	<1	2	12.3	1.8	7.92	49.39
UBC-012	22-Jun-21	0.46	<1	<1	28	12.8	0.12	7.92	49.91
UBC-012	29-Jun-21	0.43	<1	<1	34	13.8	0.13	8.12	49.32
UBC-012	6-Jul-21	0.45	<1	<1	52	15.3	0.15	8.10	48.99
UBC-012	13-Jul-21	0.49	<1	<1	14	14.8	0.12	8.04	51.02
UBC-012	20-Jul-21	0.52	<1	<1	2	15.1	0.11	8.07	49.86
UBC-012	27-Jul-21	0.49	<1	<1	4	15.7	0.13	8.03	51.49
UBC-012	3-Aug-21	0.54	<1	<1	6	16.8	0.18	8.02	49.80
UBC-012	10-Aug-21	0.48	<1	<1	2	16.9	0.11	8.13	53.70
UBC-012	17-Aug-21	0.51	<1	<1	<2	18.1	0.25	8.14	55.32
UBC-012	24-Aug-21	0.44	<1	<1	4	17.5	0.11	8.08	54.83
UBC-012	31-Aug-21	0.55	<1	<1	<2	17.3	0.11	8.15	53.43
UBC-012	7-Sep-21	0.48	<1	<1	<2	17.2	0.15	8.10	53.55
UBC-012	14-Sep-21	0.46	<1	<1	<2	17	0.1	8.14	55.77
UBC-012	21-Sep-21	0.54	<1	<1	4	17.2	0.18	7.64	52.41
UBC-012	28-Sep-21	0.37	<1	<1	6	15.7	0.14	8.02	59.30
UBC-012	5-Oct-21	0.35	<1	<1	8	14.5	0.14	8.12	53.32
UBC-012	12-Oct-21	0.41	<1	<1	6	13.4	0.16	8.16	60.78
UBC-012	19-Oct-21	0.39	<1	<1	4	12.4	0.19	8.12	53.26
UBC-012	26-Oct-21	0.37	<1	<1	4	11.9	0.18	8.25	53.61
UBC-012	2-Nov-21	0.42	<1	<1	2	11.3	0.13	8.24	53.30
UBC-012	9-Nov-21	0.42	<1	<1	2	10.7	0.13	7.84	52.06
UBC-012	16-Nov-21	0.41	<1	<1	<2	10	0.22	7.69	53.41
UBC-012	23-Nov-21	0.48	<1	<1	<2	9	0.14	8.60	54.22
UBC-012	30-Nov-21	0.54	<1	<1	4	8.9	0.15	8.50	54.87
UBC-012	7-Dec-21	0.47	<1	<1	<2	8.7	0.12	8.47	52.04
UBC-012	14-Dec-21	0.45	<1	<1	<2	7.5	0.62	8.60	55.48
UBC-012	21-Dec-21	0.41	<1	<1	NA	6.6	0.13	8.06	53.51

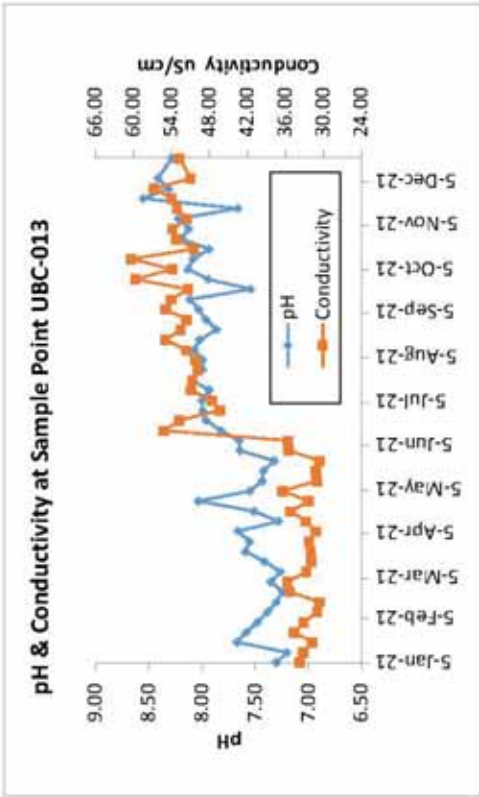
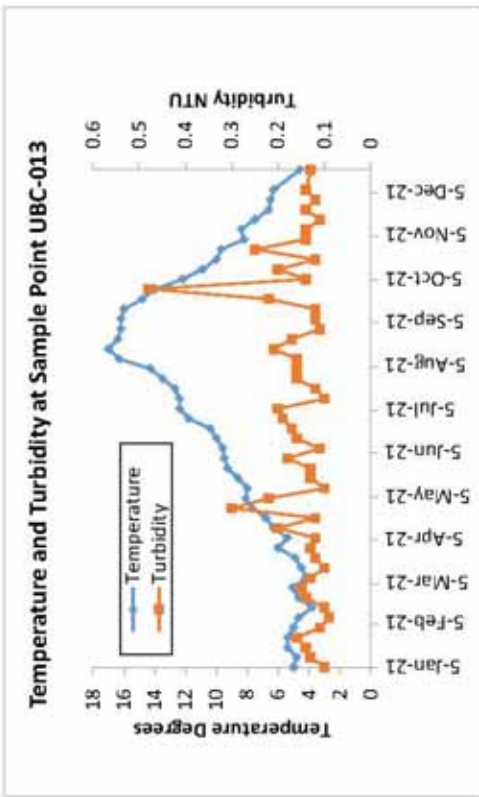
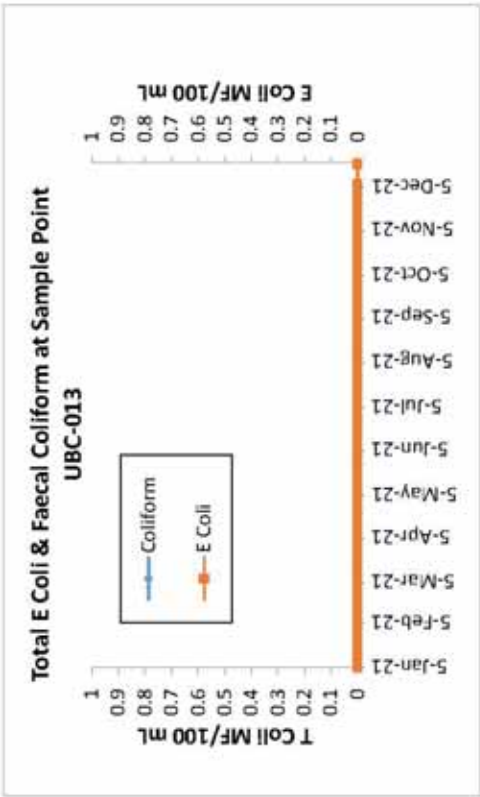
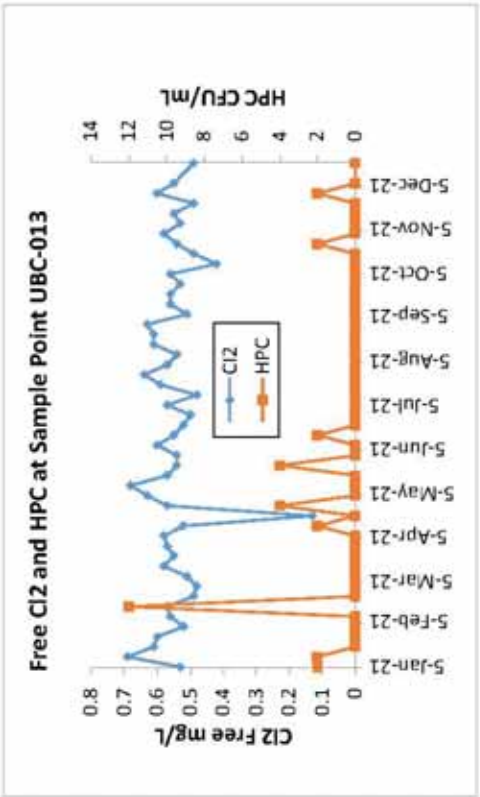
Sample Point WQM8-012 (UBC-012)



Sample Point WQN9-013 (UBC-013)

Sample name	Sampled date	Chlorine Free (mg/L)	Total Coliform (CFU/100mLs)	Ecoli (CFU/100mLs)	HPC (CFU/mL)	Temperature (°C)	Turbidity (NTU)	pH	Conductivity (uS cm)
UBC-013	5-Jan-21	0.53	<1	<1	2	5	0.1	7.30	33.76
UBC-013	12-Jan-21	0.69	<1	<1	2	4.8	0.13	7.20	33.16
UBC-013	19-Jan-21	0.61	<1	<1	<2	5.4	0.14	7.67	31.78
UBC-013	26-Jan-21	0.6	<1	<1	<2	5.4	0.16	7.58	34.57
UBC-013	2-Feb-21	0.52	<1	<1	<2	5	0.11	7.48	33.10
UBC-013	9-Feb-21	0.56	<1	<1	<2	4.7	0.09	7.38	30.97
UBC-013	16-Feb-21	0.57	<1	<1	12	3.8	0.1	7.30	30.64
UBC-013	23-Feb-21	0.49	<1	<1	<2	4.7	0.14	7.24	35.26
UBC-013	2-Mar-21	0.48	<1	<1	<2	5.1	0.15	7.35	35.68
UBC-013	9-Mar-21	0.51	<1	<1	<2	4.2	0.13	7.26	32.69
UBC-013	16-Mar-21	0.58	<1	<1	<2	4.5	0.1	7.41	31.89
UBC-013	23-Mar-21	0.55	<1	<1	<2	4.9	0.12	7.59	31.97
UBC-013	30-Mar-21	0.57	<1	<1	<2	6	0.13	7.55	32.27
UBC-013	6-Apr-21	0.58	<1	<1	<2	5.4	0.12	7.66	31.20
UBC-013	13-Apr-21	0.52	<1	<1	2	6.3	0.2	7.28	32.75
UBC-013	20-Apr-21	0.13	<1	<1	<2	6.8	0.12	7.51	35.15
UBC-013	27-Apr-21	0.57	<1	<1	4	7.7	0.3	8.03	32.34
UBC-013	4-May-21	0.63	<1	<1	<2	8.1	0.22	7.55	36.43
UBC-013	11-May-21	0.68	<1	<1	<2	8	0.1	7.43	31.03
UBC-013	18-May-21	0.57	<1	<1	<2	8.6	0.13	7.42	31.20
UBC-013	25-May-21	0.54	<1	<1	4	9.3	0.13	7.32	30.65
UBC-013	1-Jun-21	0.54	<1	<1	<2	9.5	0.18	7.64	35.44
UBC-013	8-Jun-21	0.6	<1	<1	<2	9.6	0.11	7.65	35.61
UBC-013	15-Jun-21	0.55	<1	<1	2	10	0.16	7.82	55.18
UBC-013	22-Jun-21	0.52	<1	<1	<2	10.4	0.17	7.96	52.71
UBC-013	29-Jun-21	0.5	<1	<1	<2	11.8	0.19	7.99	46.32
UBC-013	6-Jul-21	0.57	<1	<1	<2	12.4	0.2	8.00	47.61
UBC-013	13-Jul-21	0.48	<1	<1	<2	12.4	0.1	7.93	50.85
UBC-013	20-Jul-21	0.59	<1	<1	<2	12.7	0.12	8.09	50.67
UBC-013	27-Jul-21	0.64	<1	<1	<2	13.5	0.16	7.99	49.81
UBC-013	3-Aug-21	0.57	<1	<1	<2	14.3	0.16	7.99	50.15
UBC-013	10-Aug-21	0.54	<1	<1	<2	16.3	0.16	8.07	51.64
UBC-013	17-Aug-21	0.61	<1	<1	<2	17	0.21	8.02	54.93
UBC-013	24-Aug-21	0.61	<1	<1	<2	16.4	0.17	7.86	52.52
UBC-013	31-Aug-21	0.63	<1	<1	<2	16.2	0.11	7.96	51.54
UBC-013	7-Sep-21	0.51	<1	<1	<2	16.2	0.12	8.03	54.88
UBC-013	14-Sep-21	0.56	<1	<1	<2	16	0.12	8.11	54.03
UBC-013	21-Sep-21	0.56	<1	<1	<2	14.8	0.22	7.54	51.38
UBC-013	28-Sep-21	0.53	<1	<1	<2	14	0.48	7.94	59.65
UBC-013	5-Oct-21	0.56	<1	<1	<2	12.2	0.14	8.13	53.78
UBC-013	12-Oct-21	0.42	<1	<1	<2	10.9	0.2	8.08	60.32
UBC-013	19-Oct-21	0.49	<1	<1	<2	10	0.12	7.93	50.35
UBC-013	26-Oct-21	0.54	<1	<1	2	9.7	0.25	8.19	53.17
UBC-013	2-Nov-21	0.58	<1	<1	<2	8.2	0.14	8.12	53.79
UBC-013	9-Nov-21	0.53	<1	<1	<2	8.4	0.14	8.22	51.56
UBC-013	16-Nov-21	0.55	<1	<1	<2	7.5	0.11	7.66	53.10
UBC-013	23-Nov-21	0.49	<1	<1	<2	6.6	0.14	8.55	53.94
UBC-013	30-Nov-21	0.6	<1	<1	2	6.5	0.12	8.31	56.70
UBC-013	7-Dec-21	0.55	<1	<1	<2	6.3	0.14	8.41	50.95
UBC-013	21-Dec-21	0.49	<1	<1	NA	4.6	0.13	8.28	52.73

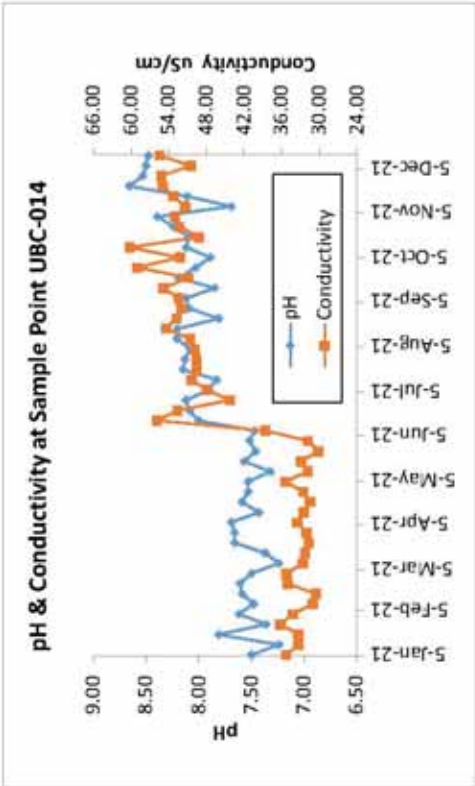
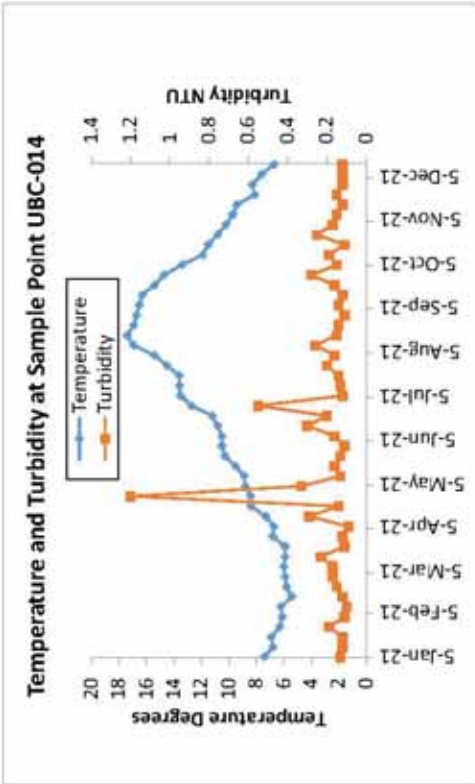
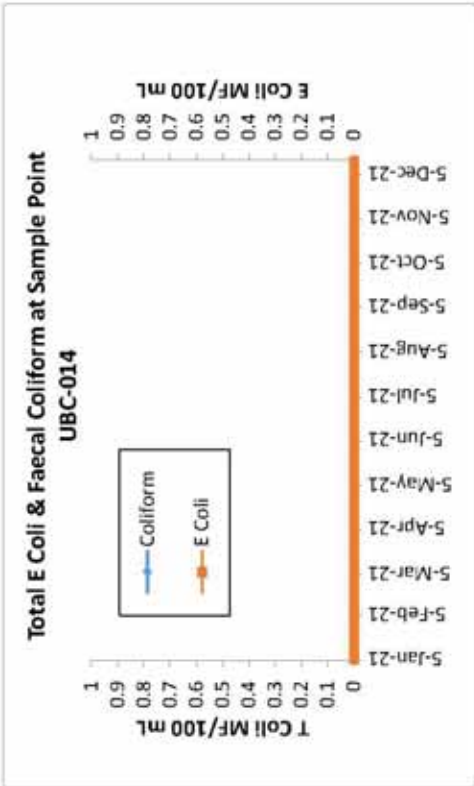
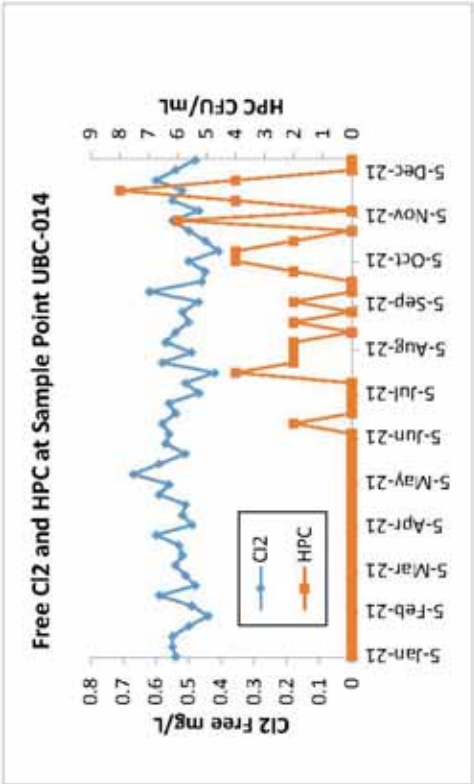
Sample Point WQN9-013 (UBC-013)



Sample Point WQQ 6-014 (UBC-014)

Sample name	Sampled date	Chlorine Free (mg/L)	Total Coliform (CFU/100mLs)	Ecoli (CFU/100mLs)	HPC (CFU/mL)	Temperature (°C)	Turbidity (NTU)	pH	Conductivity (uS cm)
UBC-014	5-Jan-21	0.54	<1	<1	<2	7.4	0.13	7.50	35.27
UBC-014	12-Jan-21	0.55	<1	<1	<2	6.8	0.12	7.24	33.28
UBC-014	19-Jan-21	0.55	<1	<1	<2	6.9	0.12	7.81	33.29
UBC-014	26-Jan-21	0.5	<1	<1	<2	6.3	0.19	7.36	36.21
UBC-014	2-Feb-21	0.44	<1	<1	<2	6.1	0.11	7.62	34.21
UBC-014	9-Feb-21	0.49	<1	<1	<2	6.2	0.1	7.48	31.01
UBC-014	16-Feb-21	0.59	<1	<1	<2	5.4	0.12	7.59	30.50
UBC-014	23-Feb-21	0.48	<1	<1	<2	5.8	0.15	7.61	35.08
UBC-014	2-Mar-21	0.51	<1	<1	<2	5.9	0.17	7.50	35.18
UBC-014	9-Mar-21	0.54	<1	<1	<2	6	0.17	7.24	32.58
UBC-014	16-Mar-21	0.52	<1	<1	<2	5.9	0.23	7.37	32.24
UBC-014	23-Mar-21	0.53	<1	<1	<2	5.9	0.11	7.66	31.69
UBC-014	30-Mar-21	0.6	<1	<1	<2	6.8	0.12	7.66	32.03
UBC-014	6-Apr-21	0.49	<1	<1	<2	6.7	0.09	7.69	33.45
UBC-014	13-Apr-21	0.52	<1	<1	<2	7.3	0.29	7.43	32.45
UBC-014	20-Apr-21	0.51	<1	<1	<2	8.4	0.14	7.59	31.44
UBC-014	27-Apr-21	0.59	<1	<1	<2	8.4	1.2	7.53	32.53
UBC-014	4-May-21	0.56	<1	<1	<2	8.8	0.33	7.53	35.39
UBC-014	11-May-21	0.67	<1	<1	<2	8.9	0.13	7.32	31.84
UBC-014	18-May-21	0.59	<1	<1	<2	9.5	0.16	7.57	32.89
UBC-014	25-May-21	0.51	<1	<1	<2	10.3	0.13	7.46	30.16
UBC-014	1-Jun-21	0.57	<1	<1	<2	10.5	0.11	7.52	31.79
UBC-014	8-Jun-21	0.56	<1	<1	<2	10.5	0.16	7.47	38.59
UBC-014	15-Jun-21	0.58	<1	<1	2	10.8	0.3	8.00	55.90
UBC-014	22-Jun-21	0.54	<1	<1	<2	11.2	0.2	8.09	52.56
UBC-014	29-Jun-21	0.56	<1	<1	<2	12.7	0.55	8.12	44.26
UBC-014	6-Jul-21	0.47	<1	<1	<2	13.5	0.12	7.91	47.98
UBC-014	13-Jul-21	0.51	<1	<1	<2	13.6	0.13	7.83	50.32
UBC-014	20-Jul-21	0.42	<1	<1	4	13.6	0.14	8.15	49.54
UBC-014	27-Jul-21	0.58	<1	<1	2	14.5	0.2	8.13	49.58
UBC-014	3-Aug-21	0.49	<1	<1	2	15.4	0.16	8.08	49.86
UBC-014	10-Aug-21	0.57	<1	<1	2	16.9	0.26	8.21	50.57
UBC-014	17-Aug-21	0.54	<1	<1	<2	17.4	0.15	8.20	54.40
UBC-014	24-Aug-21	0.5	<1	<1	2	16.9	0.14	7.81	52.72
UBC-014	31-Aug-21	0.52	<1	<1	<2	16.7	0.11	8.09	51.88
UBC-014	7-Sep-21	0.47	<1	<1	2	16.5	0.14	8.12	52.41
UBC-014	14-Sep-21	0.62	<1	<1	<2	16.3	0.12	7.85	54.81
UBC-014	21-Sep-21	0.46	<1	<1	<2	15.4	0.16	8.19	50.86
UBC-014	28-Sep-21	0.45	<1	<1	2	14.7	0.28	8.03	59.00
UBC-014	5-Oct-21	0.5	<1	<1	4	13.4	0.15	7.89	52.21
UBC-014	12-Oct-21	0.41	<1	<1	4	11.9	0.19	8.12	60.24
UBC-014	19-Oct-21	0.45	<1	<1	2	11.5	0.11	8.09	49.22
UBC-014	26-Oct-21	0.5	<1	<1	<2	10.8	0.25	8.24	52.27
UBC-014	2-Nov-21	0.55	<1	<1	6	10.2	0.17	8.39	52.97
UBC-014	9-Nov-21	0.47	<1	<1	<2	9.7	0.15	7.69	51.37
UBC-014	16-Nov-21	0.55	<1	<1	4	9.4	0.12	8.11	53.21
UBC-014	23-Nov-21	0.52	<1	<1	8	8.1	0.15	8.66	54.96
UBC-014	30-Nov-21	0.6	<1	<1	4	8.3	0.12	8.53	55.21
UBC-014	7-Dec-21	0.54	<1	<1	<2	7.6	0.12	8.50	50.44
UBC-014	14-Dec-21	0.48	<1	<1	<2	6.7	0.12	8.48	55.50

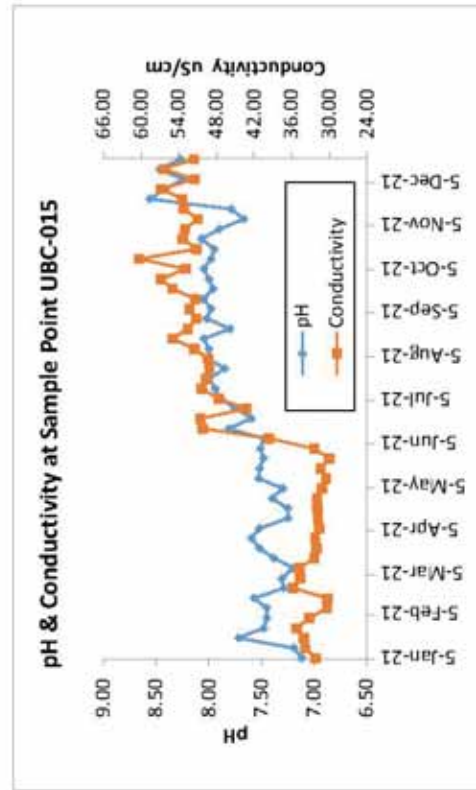
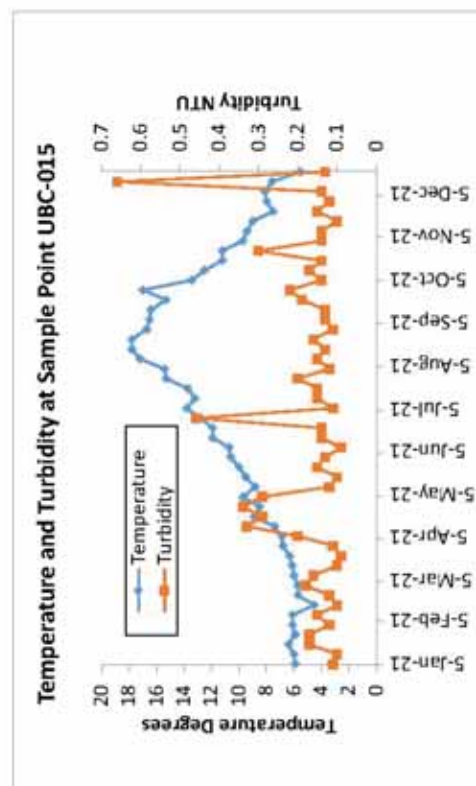
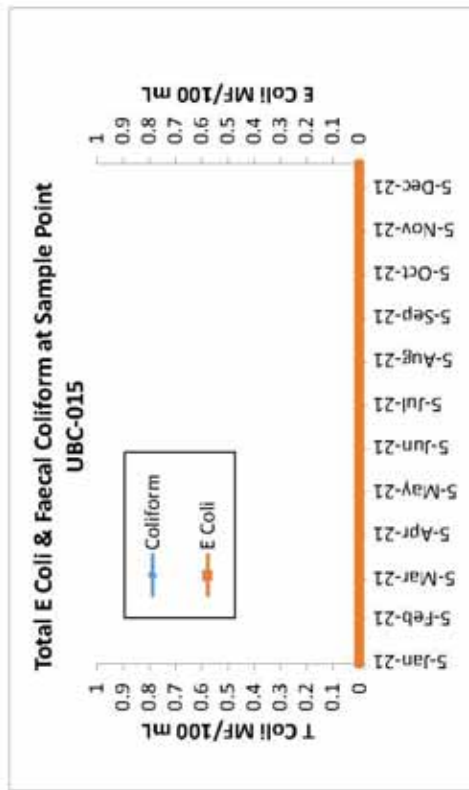
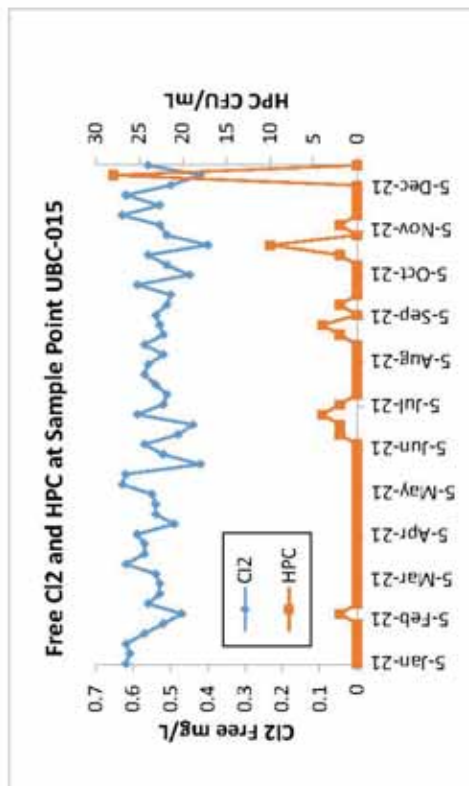
Sample Point WQQ 6-014 (UBC-014)



Sample Point WQQ7-015 (UBC-015)

Sample name	Sampled date	Chlorine Free (mg/L)	Total Coliform (CFU/100mLs)	Ecoli (CFU/100mLs)	HPC (CFU/mL)	Temperature (°C)	Turbidity (NTU)	pH	Conductivity (uS cm)
UBC-015	5-Jan-21	0.62	<1	<1	<2	5.9	0.11	7.12	32.18
UBC-015	12-Jan-21	0.61	<1	<1	<2	6	0.1	7.19	33.83
UBC-015	19-Jan-21	0.62	<1	<1	<2	6.4	0.17	7.72	34.06
UBC-015	26-Jan-21	0.57	<1	<1	<2	5.9	0.17	7.48	35.20
UBC-015	2-Feb-21	0.52	<1	<1	<2	6.1	0.12	7.45	33.21
UBC-015	9-Feb-21	0.47	<1	<1	2	6.1	0.15	7.45	30.38
UBC-015	16-Feb-21	0.56	<1	<1	<2	4.5	0.1	7.57	30.28
UBC-015	23-Feb-21	0.53	<1	<1	<2	5.7	0.12	7.29	35.80
UBC-015	2-Mar-21	0.53	<1	<1	<2	5.7	0.18	7.31	34.66
UBC-015	9-Mar-21	0.54	<1	<1	<2	6	0.16	7.20	34.76
UBC-015	16-Mar-21	0.62	<1	<1	<2	6.1	0.1	7.38	32.37
UBC-015	23-Mar-21	0.57	<1	<1	<2	6.3	0.09	7.52	32.05
UBC-015	30-Mar-21	0.57	<1	<1	<2	6.8	0.11	7.60	32.24
UBC-015	6-Apr-21	0.59	<1	<1	<2	6.9	0.2	7.52	31.60
UBC-015	13-Apr-21	0.49	<1	<1	<2	7.4	0.33	7.25	31.85
UBC-015	20-Apr-21	0.54	<1	<1	<2	8.9	0.29	7.25	31.91
UBC-015	27-Apr-21	0.54	<1	<1	<2	8.5	0.34	7.40	31.98
UBC-015	4-May-21	0.55	<1	<1	<2	9.7	0.29	7.30	31.13
UBC-015	11-May-21	0.63	<1	<1	<2	8.8	0.12	7.53	30.51
UBC-015	18-May-21	0.62	<1	<1	<2	9.5	0.1	7.52	31.36
UBC-015	25-May-21	0.42	<1	<1	<2	10	0.15	7.48	30.03
UBC-015	1-Jun-21	0.52	<1	<1	<2	10.6	0.13	7.51	32.39
UBC-015	8-Jun-21	0.57	<1	<1	<2	10.7	0.09	7.48	39.56
UBC-015	15-Jun-21	0.48	<1	<1	2	11.9	0.14	7.81	50.18
UBC-015	22-Jun-21	0.44	<1	<1	2	11.9	0.14	7.60	50.57
UBC-015	29-Jun-21	0.59	<1	<1	4	12.8	0.46	7.75	43.25
UBC-015	6-Jul-21	0.52	<1	<1	2	13.8	0.11	7.89	47.65
UBC-015	13-Jul-21	0.51	<1	<1	<2	13.2	0.15	7.94	50.35
UBC-015	20-Jul-21	0.54	<1	<1	<2	13.7	0.15	8.00	49.63
UBC-015	27-Jul-21	0.57	<1	<1	<2	15.3	0.2	7.85	49.09
UBC-015	3-Aug-21	0.56	<1	<1	<2	15.4	0.12	8.01	49.33
UBC-015	10-Aug-21	0.52	<1	<1	<2	17.2	0.15	8.00	51.52
UBC-015	17-Aug-21	0.57	<1	<1	<2	17.8	0.13	8.05	54.95
UBC-015	24-Aug-21	0.52	<1	<1	2	17.8	0.16	7.80	52.58
UBC-015	31-Aug-21	0.53	<1	<1	4	16.7	0.11	8.02	51.17
UBC-015	7-Sep-21	0.54	<1	<1	<2	16.5	0.13	7.98	52.32
UBC-015	14-Sep-21	0.51	<1	<1	2	16.4	0.13	8.05	51.34
UBC-015	21-Sep-21	0.5	<1	<1	<2	15.3	0.19	7.96	54.97
UBC-015	28-Sep-21	0.59	<1	<1	<2	17	0.22	8.00	56.82
UBC-015	5-Oct-21	0.45	<1	<1	<2	13.4	0.14	8.05	52.97
UBC-015	12-Oct-21	0.51	<1	<1	<2	12.5	0.17	7.98	60.33
UBC-015	19-Oct-21	0.56	<1	<1	2	11.2	0.14	7.95	51.19
UBC-015	26-Oct-21	0.4	<1	<1	10	11.2	0.3	8.07	53.34
UBC-015	2-Nov-21	0.51	<1	<1	<2	9.7	0.14	7.90	53.01
UBC-015	9-Nov-21	0.53	<1	<1	2	9.4	0.14	7.67	51.02
UBC-015	16-Nov-21	0.63	<1	<1	<2	9	0.1	7.79	53.22
UBC-015	23-Nov-21	0.53	<1	<1	<2	7.5	0.15	8.56	53.43
UBC-015	30-Nov-21	0.62	<1	<1	<2	8	0.12	8.41	56.82
UBC-015	7-Dec-21	0.5	<1	<1	<2	8.1	0.14	8.25	51.46
UBC-015	14-Dec-21	0.42	<1	<1	28	7.6	0.66	8.47	56.48
UBC-015	21-Dec-21	0.56	<1	<1	NA	5.5	0.13	8.27	51.60

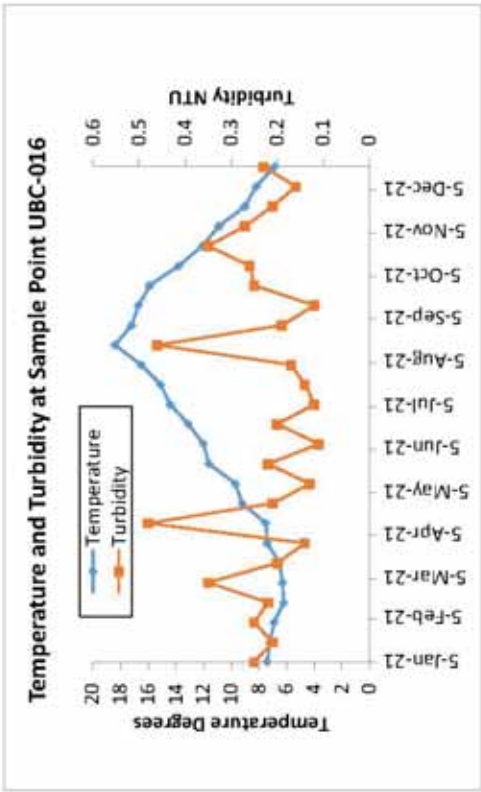
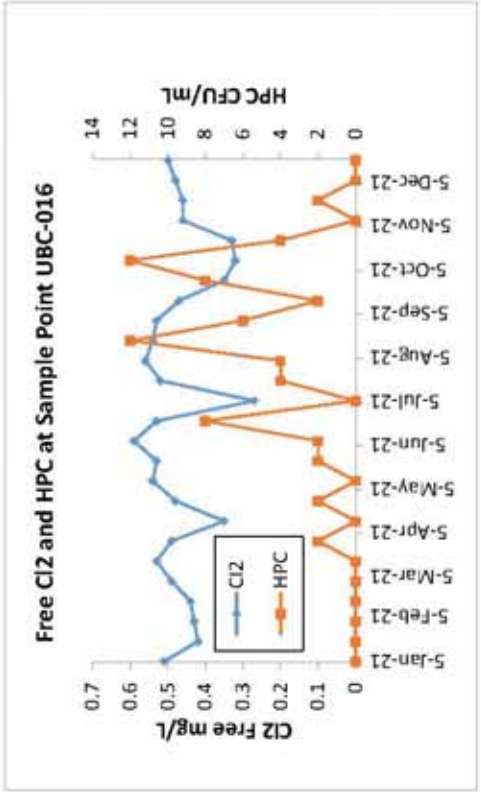
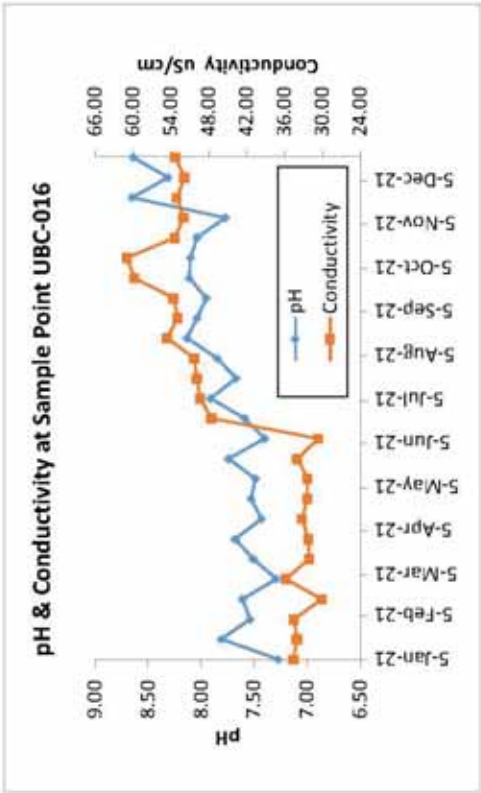
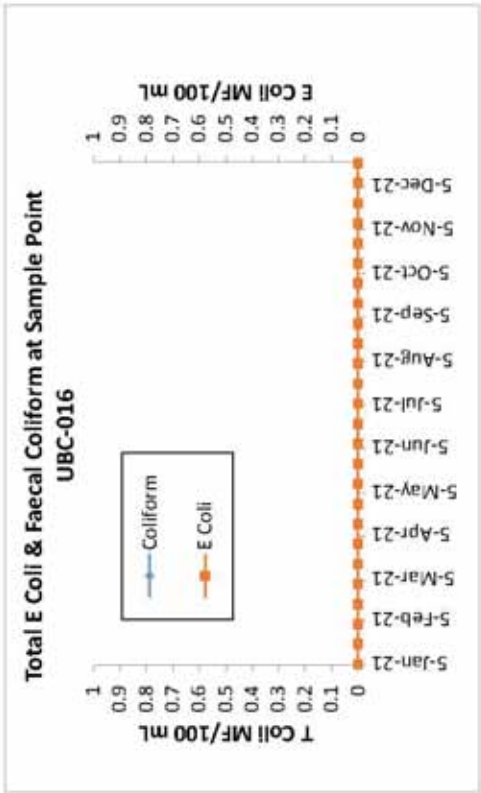
Sample Point WQQ7-015 (UBC-015)



Sample Point WQT7-016 (UBC-016)

Sample name	Sampled date	Chlorine Free (mg/L)	Total Coliform (CFU/100mLs)	Ecoli (CFU/100mLs)	HPC (CFU/mL)	Temperature (°C)	Turbidity (NTU)	pH	Conductivity (uS cm)
UBC-016	5-Jan-21	0.51	<1	<1	<2	7.4	0.25	7.27	34.59
UBC-016	19-Jan-21	0.42	<1	<1	<2	7.2	0.21	7.81	33.98
UBC-016	2-Feb-21	0.43	<1	<1	<2	6.9	0.25	7.54	34.49
UBC-016	16-Feb-21	0.44	<1	<1	<2	6.2	0.22	7.61	30.11
UBC-016	2-Mar-21	0.49	<1	<1	<2	6.3	0.35	7.29	35.76
UBC-016	16-Mar-21	0.53	<1	<1	<2	6.5	0.2	7.51	32.08
UBC-016	30-Mar-21	0.49	<1	<1	2	7.4	0.14	7.68	32.24
UBC-016	13-Apr-21	0.35	<1	<1	<2	7.5	0.48	7.43	33.21
UBC-016	27-Apr-21	0.48	<1	<1	2	9.2	0.21	7.53	32.38
UBC-016	11-May-21	0.54	<1	<1	<2	9.7	0.13	7.49	32.33
UBC-016	25-May-21	0.53	<1	<1	2	11.6	0.22	7.74	33.96
UBC-016	8-Jun-21	0.59	<1	<1	2	12	0.11	7.40	30.66
UBC-016	22-Jun-21	0.53	<1	<1	8	13.1	0.2	7.59	47.54
UBC-016	6-Jul-21	0.27	<1	<1	<2	14.4	0.12	7.91	49.34
UBC-016	20-Jul-21	0.52	<1	<1	4	15.1	0.14	7.67	49.87
UBC-016	3-Aug-21	0.56	<1	<1	4	16.5	0.17	7.85	50.26
UBC-016	17-Aug-21	0.54	<1	<1	12	18.4	0.46	8.13	54.59
UBC-016	31-Aug-21	0.53	<1	<1	6	17.2	0.19	8.04	52.88
UBC-016	14-Sep-21	0.47	<1	<1	2	16.7	0.12	7.95	53.56
UBC-016	28-Sep-21	0.35	<1	<1	8	15.9	0.25	8.11	59.75
UBC-016	12-Oct-21	0.32	<1	<1	12	13.8	0.26	8.10	60.93
UBC-016	26-Oct-21	0.33	<1	<1	4	12.1	0.35	8.04	53.32
UBC-016	9-Nov-21	0.46	<1	<1	<2	10.9	0.27	7.77	51.97
UBC-016	23-Nov-21	0.46	<1	<1	2	9	0.21	8.65	53.05
UBC-016	7-Dec-21	0.48	<1	<1	<2	8.2	0.16	8.31	51.79
UBC-016	21-Dec-21	0.5	<1	<1	NA	6.9	0.23	8.64	53.26

Sample Point WQT7-016 (UBC-016)

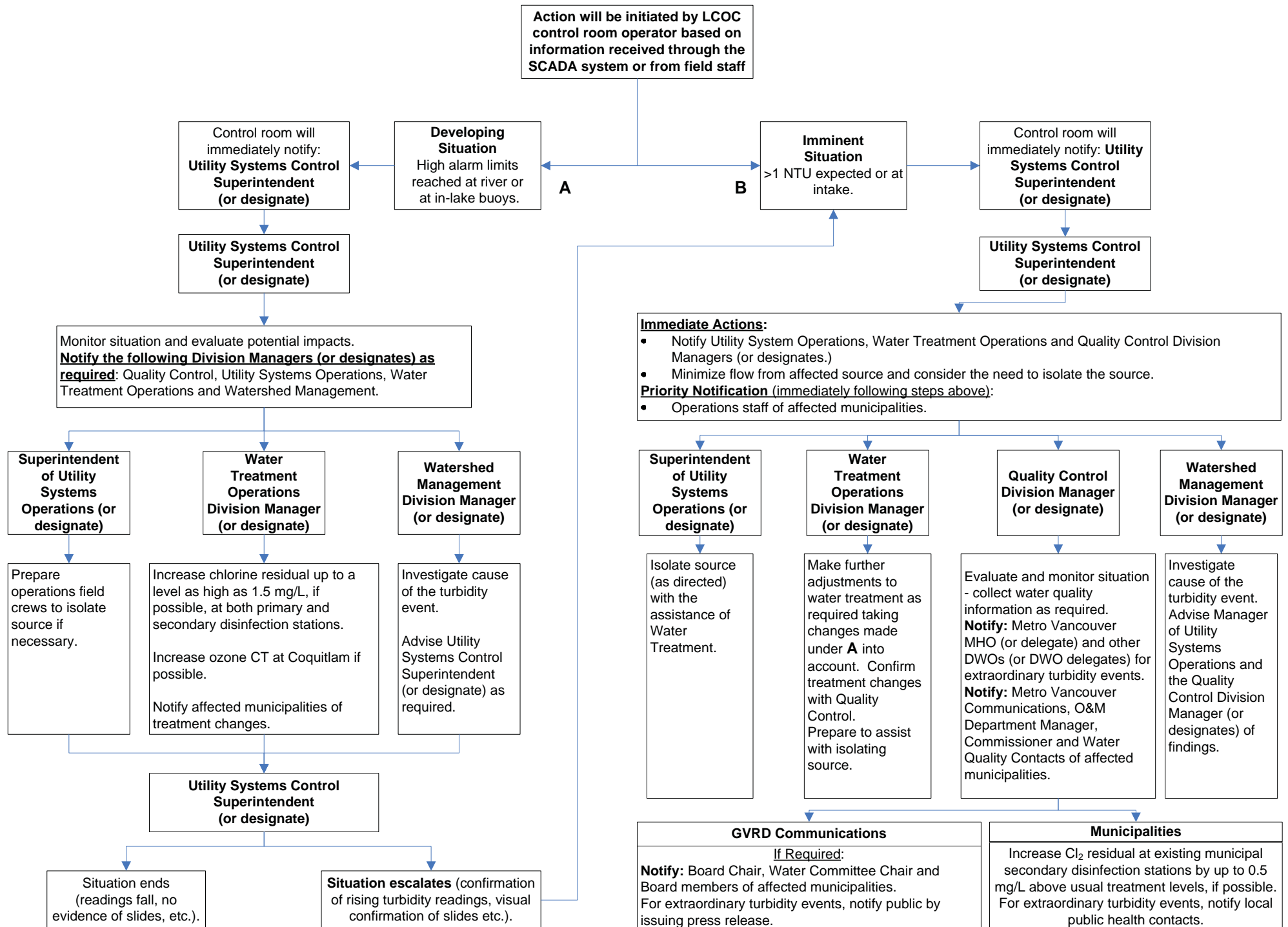


APPENDIX C

Metro Vancouver and Municipal Response Procedure


SOURCE WATER TURBIDITY EVENTS

Metro Vancouver and Municipal Response Procedures




APPENDIX D

Source Water Quality Summary Tables for Capilano, Seymour and Coquitlam Reservoirs

 metrovanancouver SERVICES AND SOLUTIONS FOR A LIVABLE REGION						
Physical and Chemical Analysis of Water Supply						
2021 – Capilano Water System						
Parameter	Untreated	Treated		Canadian Guideline		
	Average	Average	Range	Days Exceeded	Limit	Reason Established
Alkalinity as CaCO ₃ (mg/L)	2.8	16	9.0-25		none	
Aluminum Dissolved (µg/L)	76	34	19-63		none	
Aluminum Total (µg/L)	164	35	19-81		none	
Antimony Total (µg/L)	<0.5	<0.5	<0.5	0	6	Health
Arsenic Total (µg/L)	<0.5	<0.5	<0.5	0	10	Health
Barium Total (µg/L)	2.9	2.5	1.8-2.9	0	1000	Health
Boron Total (µg/L)	<10	<10	<10	0	5000	Health
Bromate (mg/L)	<0.01	<0.01	<0.01	0	0.1	Health
Bromide (mg/L)	<0.01	<0.01	<0.01		none	
Cadmium Total (µg/L)	<0.2	<0.2	<0.2	0	5	Health
Calcium Total (µg/L)	1140	6210	3980-9320		none	
Carbon Organic - Dissolved (mg/L)	1.8	0.7	0.5-1.0		none	
Carbon Organic - Total (mg/L)	1.8	0.7	0.5-1.0		none	
Chlorate (mg/L)	<0.01	0.03	0.02-0.04	0	1	Health
Chloride (mg/L)	<0.5	2.4	2.0-3.1	0	~250	Aesthetic
Chromium Total (µg/L)	<0.1	<0.05	<0.05	0	50	Health
Cobalt Total (µg/L)	<0.5	<0.5	<0.5		none	
Color - Apparent (ACU)	16	<2	<2-3		none	
Color - True (TCU)	11	<1	<1-2	0	~15	Aesthetic
Conductivity (µmhos/cm)	10	41	30-55		none	
Copper Total (µg/L)	2.1	<0.5	<0.5	0	~1000	Aesthetic
Cyanide Total (mg/L)	<0.02	<0.02	<0.02	0	0.2	Health
Fluoride (mg/L)	<0.05	<0.05	<0.05	0	1.5	Health
Hardness as CaCO ₃ (mg/L)	3.5	16.6	10.5-24.3		none	
Iron Dissolved (µg/L)	34	<5	<5-5		none	
Iron Total (µg/L)	121	<6	<5-13	0	~300	Aesthetic
Lead Total (µg/L)	<0.5	<0.5	<0.5	0	5	Health
Magnesium Total (µg/L)	166	185	147-241		none	
Manganese Dissolved (µg/L)	3.9	1.6	0.7-3.3		none	
Manganese Total (µg/L)	5.4	3.6	1.4-7.0	0	~50	Aesthetic
Mercury Total (µg/L)	<0.05	<0.05	<0.05	0	1	Health
Molybdenum Total (µg/L)	<0.5	<0.5	<0.5		none	
Nickel Total (µg/L)	<0.5	<0.5	<0.5		none	
Nitrogen - Ammonia as N (mg/L)	<0.02	<0.02	<0.02		none	
Nitrogen - Nitrate as N (mg/L)	0.07	0.66	0.04-0.10	0	45	Health
Nitrogen - Nitrite as N (mg/L)	<0.01	<0.01	<0.01	0	1	Health
pH (pH units)	6.5	7.7	7.4-8.2	0	7.0 to 10.5	Aesthetic
Phenol (mg/L)	<0.005	<0.005	<0.005		none	
Phosphorus Dissolved (µg/L)	<10	<10	<10		none	
Phosphorus Total (µg/L)	<10	<10	<10		none	
Potassium Total (µg/L)	150	150	124-169		none	
Residue Total (mg/L)	15	28	21-37		none	
Residue Total Dissolved (mg/L)	10	30	20-40	0	~500	Aesthetic
Residue Total Fixed (mg/L)	9	22	15-31		none	
Residue Total Volatile (mg/L)	6	6	4-9		none	
Selenium Total (µg/L)	<0.5	<0.5	<0.5	0	50	Health
Silica as SiO ₂ (mg/L)	3.2	3.2	2.3-3.8		none	
Silver Total (µg/L)	<0.5	<0.5	<0.5		none	
Sodium Total (µg/L)	564	1570	1420-1760	0	~200000	Aesthetic
Sulphate (mg/L)	<0.6	1.0	0.7-1.3	0	~500	Aesthetic
Turbidity (NTU)	1.7	0.13	0.06-0.24		none	
Turbidity IFE (NTU)	-	-	-	-	-	-
UV Absorbance 254 nm (Abs/cm)	0.073	0.011	0.007-0.017		none	
Zinc Total (µg/L)	<3	<3	<3	0	~5000	Aesthetic


These figures are averaged values from a number of laboratory analyses done throughout the year. Where the range is a single value no variation was measured for the samples analyzed. Average values containing one or more results below the detection limit are preceded with "<" symbol. Minimum range values than "<" denotes not detectable with the technique used for determination. Methods and terms are based on those of the most current on-line version of "Standard Methods for the Examination of Water and Waste Water". Untreated water is from the intake prior to the raw water tunnel, treated water is from a single site in the GIWD distribution system after the treated water tunnel and before the breakhead tank. Guidelines are taken from the most current Guidelines for Canadian Drinking Water Quality summary table updated in September 2020. Capilano Source was operational for 365 days in 2021.

¹Treated turbidity guideline and the number of exceedances applies to Individual Filter Effluent readings; measured in events and not days.

 metrovanancouver SERVICES AND SOLUTIONS FOR A LIVABLE REGION						
Physical and Chemical Analysis of Water Supply						
2021 – Seymour Water System						
Parameter	Untreated	Treated		Days Exceeded	Canadian Guideline	
	Average	Average	Range		Limit	Reason Established
Alkalinity as CaCO ₃ (mg/L)	3.3	16	8.3-24		none	
Aluminum Dissolved (µg/L)	69	34	19-63		none	
Aluminum Total (µg/L)	130	35	20-76		none	
Antimony Total (µg/L)	<0.5	<0.5	<0.5	0	6	Health
Arsenic Total (µg/L)	<0.5	<0.5	<0.5	0	10	Health
Barium Total (µg/L)	3.1	2.5	2.0-2.9	0	1000	Health
Boron Total (µg/L)	<10	<10	<10	0	5000	Health
Bromate (mg/L)	<0.01	<0.01	<0.01	0	0.1	Health
Bromide (mg/L)	<0.01	<0.01	<0.01		none	
Cadmium Total (µg/L)	<0.2	<0.2	<0.2	0	5	Health
Calcium Total (µg/L)	1550	6320	3980-9180		none	
Carbon Organic - Dissolved (mg/L)	1.6	0.7	0.5-1.0		none	
Carbon Organic - Total (mg/L)	1.7	0.7	0.5-1.0		none	
Chlorate (mg/L)	<0.01	0.03	0.02-0.04	0	1	Health
Chloride (mg/L)	<0.5	2.4	2.0-3.1	0	>250	Aesthetic
Chromium Total (µg/L)	<0.07	<0.05	<0.05	0	50	Health
Cobalt Total (µg/L)	<0.5	<0.5	<0.5		none	
Color - Apparent (ACU)	17	<2	<2.3		none	
Color - True (TCU)	11	<1	<1.1	0	<15	Aesthetic
Conductivity (µmhos/cm)	12	41	29-55		none	
Copper Total (µg/L)	29.4	<0.6	<0.5-1.1	0	>1000	Aesthetic
Cyanide Total (mg/L)	<0.02	<0.02	<0.02	0	0.2	Health
Fluoride (mg/L)	<0.05	<0.05	<0.05	0	1.5	Health
Hardness as CaCO ₃ (mg/L)	4.5	16.7	10.6-23.9		none	
Iron Dissolved (µg/L)	63	<6	<5-29		none	
Iron Total (µg/L)	162	<8	<5-29	0	>300	Aesthetic
Lead Total (µg/L)	<0.5	<0.5	<0.5	0	5	Health
Magnesium Total (µg/L)	154	186	148-238		none	
Manganese Dissolved (µg/L)	4.2	3.0	1.9-4.6		none	
Manganese Total (µg/L)	6.2	4.0	2.2-6.2	0	>50	Aesthetic
Mercury Total (µg/L)	<0.05	<0.05	<0.05	0	1	Health
Molybdenum Total (µg/L)	<0.5	<0.5	<0.5		none	
Nickel Total (µg/L)	<0.5	<0.5	<0.5		none	
Nitrogen - Ammonia as N (mg/L)	<0.02	<0.02	<0.02		none	
Nitrogen - Nitrate as N (mg/L)	0.06	0.06	0.03-0.10	0	45	Health
Nitrogen - Nitrite as N (mg/L)	<0.01	<0.01	<0.01	0	1	Health
pH (pH units)	6.5	7.7	7.3-8.1	0	7.0 to 10.5	Aesthetic
Phenol (mg/L)	<0.005	<0.005	<0.005		none	
Phosphorus Dissolved (µg/L)	<10	<10	<10		none	
Phosphorus Total (µg/L)	<10	<10	<10		none	
Potassium Total (µg/L)	150	142	123-169		none	
Residue Total (mg/L)	16	28	22-37		none	
Residue Total Dissolved (mg/L)	10	30	20-40	0	>500	Aesthetic
Residue Total Fixed (mg/L)	9	21	12-32		none	
Residue Total Volatile (mg/L)	7	7	5-11		none	
Selenium Total (µg/L)	<0.5	<0.5	<0.5	0	50	Health
Silica as SiO ₂ (mg/L)	3.1	3.1	2.3-3.8		none	
Silver Total (µg/L)	<0.5	<0.5	<0.5		none	
Sodium Total (µg/L)	534	1550	1400-1720	0	>200000	Aesthetic
Sulphate (mg/L)	1.1	1.0	0.7-1.3	0	>500	Aesthetic
Turbidity (NTU)	1.1	0.13	0.06-0.21		none	
Turbidity IFE (NTU)	-	-	-	-	-	-
UV Absorbance 254 nm (Abs/cm)	0.070	0.011	0.008-0.017		none	
Zinc Total (µg/L)	<4	<3	<3	0	>5000	Aesthetic

These figures are averaged values from a number of laboratory analyses done throughout the year. Where the range is a single value no variation was measured for the samples analyzed. Average values containing one or more results below the detection limit are preceded with "<" symbol. Minimum range values than "<" denotes not detectable with the technique used for determination. Methods and terms are based on those of the most current on-line version of "Standard Methods for the Examination of Water and Waste Water". Untreated water is from a sample site prior to coagulation, treated water is from a sample site downstream of the SCFP clearwell. Guidelines are taken from the most current Guidelines for Canadian Drinking Water Quality summary table updated in September 2020. Seymour Source was operational for 365 days in 2021.

¹Treated turbidity guideline and the number of exceedances applies to Individual Filter Effluent readings; measured in events and not days.

 metrovanancouver SERVICES AND SOLUTIONS FOR A LIVABLE REGION						
Physical and Chemical Analysis of Water Supply						
2021 – Coquitlam Water System						
Parameter	Untreated	Treated		Days Exceeded	Canadian Guideline	
	Average	Average	Range		Limit	Reason Established
Alkalinity as CaCO ₃ (mg/L)	1.9	16	7.1-23		none	
Aluminum Dissolved (µg/L)	68	70	61-85		none	
Aluminum Total (µg/L)	94	94	77-141		none	
Antimony Total (µg/L)	<0.5	<0.5	<0.5	0	6	Health
Arsenic Total (µg/L)	<0.5	<0.5	<0.5	0	10	Health
Barium Total (µg/L)	2.2	2.2	1.9-2.4	0	1000	Health
Boron Total (µg/L)	<10	<10	<10	0	5000	Health
Bromate (mg/L)	<0.01	<0.01	<0.01	0	0.1	Health
Bromide (mg/L)	<0.01	<0.01	<0.01		none	
Cadmium Total (µg/L)	<0.2	<0.2	<0.2	0	5	Health
Calcium Total (µg/L)	836	836	752-899		none	
Carbon Organic - Dissolved (mg/L)	1.6	1.5	1.2-2.0		none	
Carbon Organic - Total (mg/L)	1.7	1.5	1.2-2.0		none	
Chlorate (mg/L)	<0.01	0.06	0.03-0.10	0	1	Health
Chloride (mg/L)	<0.5	2.2	1.8-2.7	0	<250	Aesthetic
Chromium Total (µg/L)	<0.05	<0.05	<0.05-0.06	0	50	Health
Cobalt Total (µg/L)	<0.5	<0.5	<0.5		none	
Color - Apparent (ACU)	13	<2	<2-3		none	
Color - True (TCU)	9	<1	<1-1	0	<15	Aesthetic
Conductivity (µmhos/cm)	8	37	24-50		none	
Copper Total (µg/L)	4.7	<0.5	<0.5-0.6	0	<1000	Aesthetic
Cyanide Total (mg/L)	<0.02	<0.02	<0.02	0	0.2	Health
Fluoride (mg/L)	<0.05	<0.05	<0.05	0	1.5	Health
Hardness as CaCO ₃ (mg/L)	2.5	2.5	2.3-2.6		none	
Iron Dissolved (µg/L)	22	24	12-64		none	
Iron Total (µg/L)	57	58	31-150	0	<300	Aesthetic
Lead Total (µg/L)	<0.5	<0.5	<0.5	0	5	Health
Magnesium Total (µg/L)	97	98	86-110		none	
Manganese Dissolved (µg/L)	4.2	2.6	1.5-4.2		none	
Manganese Total (µg/L)	4.5	3.8	2.0-7.4	0	<50	Aesthetic
Mercury Total (µg/L)	<0.05	<0.05	<0.05	0	1	Health
Molybdenum Total (µg/L)	<0.5	<0.5	<0.5		none	
Nickel Total (µg/L)	<0.5	<0.5	<0.5		none	
Nitrogen - Ammonia as N (mg/L)	<0.02	<0.02	<0.02		none	
Nitrogen - Nitrate as N (mg/L)	0.07	0.08	0.04-0.10	0	45	Health
Nitrogen - Nitrite as N (mg/L)	<0.01	<0.01	<0.01	0	1	Health
pH (pH units)	6.3	7.9	7.1-8.7	0	7.0 to 10.5	Aesthetic
Phenol (mg/L)	<0.005	<0.005	<0.005		none	
Phosphorus Dissolved (µg/L)	<10	<10	<10		none	
Phosphorus Total (µg/L)	<10	<10	<10		none	
Potassium Total (µg/L)	108	109	106-112		none	
Residue Total (mg/L)	12	30	21-36		none	
Residue Total Dissolved (mg/L)	10	30	20-40	0	<500	Aesthetic
Residue Total Fixed (mg/L)	6	20	12-26		none	
Residue Total Volatile (mg/L)	6	10	7-13		none	
Selenium Total (µg/L)	<0.5	<0.5	<0.5	0	50	Health
Silica as SiO ₂ (mg/L)	2.5	2.5	2.2-2.8		none	
Silver Total (µg/L)	<0.5	<0.5	<0.5		none	
Sodium Total (µg/L)	462	8010	5110-10600	0	<200000	Aesthetic
Sulphate (mg/L)	<0.5	<0.6	<0.5-0.7	0	<500	Aesthetic
Turbidity (NTU)	0.50	0.43	0.18-1.9		none	
UV 254 - Apparent (Abs/cm)	0.071	0.023	0.015-0.060		none	
UV Absorbance 254 nm (Abs/cm)	0.065	0.019	0.013-0.022		none	
Zinc Total (µg/L)	<3	<3	<3	0	<5000	Aesthetic

These figures are averaged values from a number of laboratory analyses done throughout the year. Where the range is a single value no variation was measured for the samples analyzed. Average values containing one or more results below the detection limit are preceded with "<" symbol. Minimum range values than "<" denotes not detectable with the technique used for determination. Methods and terms are based on those of the most current on-line version of "Standard Methods for the Examination of Water and Waste Water". Untreated water is from the intake prior to treatment, treated water is from a single site in the G1WD distribution system downstream of CWTP. Guidelines are taken from the most current Guidelines for Canadian Drinking Water Quality summary table updated in September 2020. Recommended turbidity guidelines applies to finished treated water from an un-filtered source. Coquitlam source was operational for 365 days in 2021.