

# **University of British Columbia**

Drinking Water Quality Monitoring Report 2022

November 2023

# **Executive Summary**

The University of British Columbia (UBC) 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 2022.

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 one instance of total coliforms detected in 2022. 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 including characteristics such as taste, colour,
BCDWPR	British Columbia Drinking Water Protection Regulation
CELL	Colony Forming Units
CDWG	Canadian Drinking Water Guidelines
E coli	Escherichia coli
	Environmental Protection Agency (LISA)
	Emorganey Posponso Plan
	LIBC Energy and Water Services
	Greater Vancouver Water District
	Halo acotic Acid
	Hatoratraphia Plata Count
	Interim Maximum Accontable Concentration
	Maximum Acceptable Concentration
MOL	Maximum Acceptable Concentration
	Minimum Detectable Activity
	Method Detectable Activity
	Membrana Filter
	Milligrom per litre (0.001 g/l.)
mg/L	Miningram per litre (0.001 g/L)
μg/L	Microgram per nue (0.000001 g/L)
mL	Milliliter
mJ/cm <sup>2</sup>	Millijoule per centimeter squared
MPN	Most Probable Number
MV	Metro Vancouver
N/A	Not Available
NIU	Nephelometric Turbidity Unit
OG	Operational Guidance value
рН	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
THAA₅	Total Halo acetic₅ 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 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 understanding 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 purpose of this annual report is to provide a summary of the Drinking Water Quality Monitoring Program during 2022 for the UBC Energy & Water Services (EWS) water distribution system.

During 2022, 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 2022.

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 down stream 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 2022 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 2022 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: <u>https://metrovancouver.org/services/water/water-quality-treatment-testing</u>.

See appendix D for summary tables of source water quality for Capilano, Seymour and Coquitlam reservoirs as provided by Metro Vancouver.

2. **Capital Improvements:** Improvements to the system are made as areas are redeveloped or new development takes place, or as scheduled for cast iron (CI) and asbestos cement (AC) main replacements. Identified old water mains are replaced, upsized 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 CI/AC 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 analysis and modelling.
- b) Energy and Water Services has taken advantage of new development and redevelopment on campus to coordinate infrastructure replacement, therefore reducing surface restoration and roadwork costs. Some replacement costs are funded by the project itself, resulting in even greater savings.

Below is a list of network improvements completed in 2022:

- <u>Brock Commons Residences Phase 2:</u> Replaced 30 m of 150 mm diameter CI watermain with 200 mm diameter ductile iron (DI) watermain.
- <u>Triumf IAMI:</u> Replaced 78 m of 200 mm diameter CI watermain with 200 mm diameter DI watermain.
- <u>Gateway:</u> Replaced 60 m of 300 mm diameter watermain (DI to DI) to address utility conflicts.
- <u>School of Biomedical Engineering (SBME)</u>: Replaced 117 m of 200 mm diameter watermain (DI to DI) for new building extension.
- <u>Water Quality Sampling Stations:</u> Two stations were replaced: Station WQD2-003 and station WQL3-006 identified in the Sampling Sites Map in Appendix A.

In addition to the replacement of water mains, dead ends are eliminated by looping while aging valves, hydrants and services are replaced. Ductile iron (DI) piping itself is resilient to earthquake loading and each joint is mechanically restrained. This improves the seismic resilience of UBC's water system. 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

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. In 2022 demand returned to a more typical amount.



# 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 2022 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

UBC EWS oversees the UBC Cross Connection Control Program which grew to over 1,500 devices in 2019. 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 through UBC Campus & Community Planning's building officials. EWS also provides advice and oversight on new installations at existing, non-compliant facilities. EWS has almost completed the transition to the online third-party managed system (F.A.S.T, through MTS Inc.), with only a few "service contract" facilities and the hospital still reporting separately. As of July 1, 2023, EWS was tracking 1,649 devices of which 774 are primary protection. With 110 primary devices past due, the resulting compliance rate is 86%. Staff continuously follow up on overdue testing and non-compliance.

#### 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 21<sup>st</sup> 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 laboratories operated by 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:

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

#### Table 1. Sampling Parameters

Guidelines for chemical and physical parameters are:

- 1. Maximum Acceptable Concentration (MAC) Health based
- 2. Aesthetic Objective (AO) Based on aesthetic considerations; or
- 3. Operations Guidance (OG) Established based on operational considerations.

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, <u>https://www.canada.ca/en/health-canada/services/environmental-workplace-health/water-quality/drinking-water/canadian-drinking-water-guidelines.html</u>.

#### 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 Escherichia coli (*E. coli*) indicates a possibility of fecal contamination. *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 E. 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 may be a concern. UBC uses the historical figure of 500 CFU/100mL as a baseline HPC measurement that will trigger early 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, slit, 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 persistent after 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 which is also classified as possibly carcinogenic to humans. There is a tradeoff between reducing risks from disinfection byproducts and using 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. 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 a visible 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 from plumbing systems, it is recommended that only cold water be used following an appropriate period of flushing to rid the system of standing water for water quality 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 health effects.

#### рΗ

pH is controlled in water to minimize corrosion and incrustation. Corrosion may increase below pH 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. 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 pH 7.0 to 10.5.

# 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  $800\mu$ S/cm are acceptable in drinking water. Rain water has a conductivity of between  $10\mu$ S/cm and  $20\mu$ S/cm while sea water has a conductivity of around  $50,000\mu$ S/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 for source water from Metro Vancouver is 20µS/cm to 50µS/cm. Any large deviations beyond this range will trigger further investigation.

#### Temperature

An aesthetic objective of  $\leq 15^{\circ}$ 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. The temperature of UBC distribution water rarely reaches up to 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. A station of note is Station WQF7A-010 which monitors source water directly on the main 600mm suction line supplying water to the central campus area.

Site	Location	Flow	Description
		Category	
WQB7-001	Iona Drive at Theology Mall	Low	VST Residences
WQC3-002	NW Marine Dr 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	University 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	West 16 <sup>th</sup> 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 Triumf	Dead End	Supply to Environment Services

# Table 2. Sampling Station Locations

# 3.1.3 Sampling Frequency

UBC, as a purveyor of drinking water to a maximum population of approximately 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, UBC increased our sampling frequency to 50 samples per 30-day period to account for an increasing population as UBC continues to grow. To achieve this sampling frequency, each station is sampled on a weekly basis.

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

	~	~		-	
lable	3.	Sam	pling	Freq	luency

# 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 2022 related to the distribution system.

# 4.0 Sampling Analysis Results

A total of 695 samples were taken from the water distribution system during 2022. 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.

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)	52	<2	4.1	12	0.4	0.5	0.6	0.1	0.2	1.2	None	None
WQC3-002 (UBC-002)	52	<2	29.2	200	0.4	0.5	0.6	0.1	0.2	1.6	None	None
WQD2-003 (UBC-003)	47	<2	12.8	120	0.4	0.5	0.6	0.1	0.2	1.5	None	None
WQH3A-004 (UBC-004)	52	<2	4.8	22	0.3	0.5	0.7	0.1	0.3	3.5	None	None
WQL3-006 (UBC-006)	27	<2	27.9	220	0.4	0.5	0.6	0.1	0.2	1.0	None	None
WQJ5-007 (UBC-007)	27	<2	17.5	120	0.5	0.5	0.6	0.1	0.2	1.3	None	None
WQG6-008 (UBC-008)	52	<2	10.4	90	0.4	0.6	0.8	0.1	0.3	4.8	None	None
WQF713-009 (UBC-009)	51	<2	14.7	44	0.4	0.5	0.6	0.1	0.2	1.0	None	None
WQF7A-010 (UBC-010)	52	<2	7.2	24	0.4	0.6	0.7	0.1	0.2	0.8	None	None
WQJ10-011 (UBC-011)	52	<2	10.8	94	0.4	0.5	0.6	0.1	0.2	0.9	None	None
WQM8-012 (UBC-012)	52	<2	6.0	30	0.4	0.5	0.6	0.1	0.4	10.0	1	None
WQN9-013 (UBC-013)	52	<2	17.2	140	0.4	0.6	0.7	0.1	0.2	0.4	None	None
WQQ6-014 (UBC-014)	50	<2	7.4	72	0.4	0.5	0.7	0.1	0.1	0.5	None	None
WQQ7-015 (UBC-015)	51	<2	12.5	58	0.3	0.6	0.7	0.1	0.2	2.2	None	None
WQT7-016 (UBC-016)	26	<2	10.4	34	0.4	0.5	0.7	0.1	0.2	1.0	None	None
UBC Average		<2	12.9	85.3	0.4	0.5	0.7	0.1	0.2	2.1		
UBC Total	695										1	0
Standard							Limits	ts				
GCDWQ			< 500		> 0.2			< 1				
BCDWPR											< 10	< 1

# Table 4. Summary of Analysis Results \*

\*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 695 samples analyzed for microbiological criteria in 2022, no E. coli was detected in any of the samples. There was one recorded sample of positive total coliform during 2022. 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. This individual sample event was not replicated in subsequent samples and falls well below the 10% threshold.

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 an 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 nonconsecutive 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:

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

See the following graphs for results.



#### Number of Samples per Month Analyzed for Coliform Bacteria



# 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.

HPC has been removed as an indicator of drinking water quality, by the CDWG, however, based on historical data, UBC has used 500CFU/100ml as a baseline threshold measurement in order to indicate possible changes in the distribution system. In 2022, there were no samples with HPC readings above the baseline threshold.

#### 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 1.0 NTU were observed in 13 samples at 10 different 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 2022, the free chlorine residual levels tested in UBC's distribution system were within the recommended levels for all samples.

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 have greatly improved the residual chlorine in the system at UBC.

# Disinfection By-products

The source water sampling location at West 16<sup>th</sup> Avenue (WQN9-013) was tested four times throughout 2022 for disinfection by-product concentration. See the table below for analysis results.

		THM (ppb)					НАА (ррb)							
Sample	Date Sampled	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	16-Feb-22	<1	<1	<1	19	20	25	<0.5	8.1	<5.0	<5.0	6.8	15	17
UBC-013	10-May-22	<1	<1	<1	27	28	26	<0.5	9.8	<0.5	0.7	6.2	17	16
UBC-013	23-Aug-22	<1	<1	<1	20	20	25	<0.5	7.7	<0.5	<5.0	4.3	13	16
UBC-013	15-Nov-22	<1	<1	<1	23	24	23	<0.5	9.6	<0.5	0.8	6.4	17	16

The annual average THM concentration of 24.8 ppb (0.02mg/L) is well below the CDWG recommended maximum of 100ppb (0.1mg/L). The Canadian guideline level for the Halo acetic group (HAA) is 80ppb (0.08mg/L). The average HAA concentration of 16.3 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 2022. The tests were both below the detection limit of 1ppb, which is below the CDWG recommended 2ppb (0.002mg/L).

# рΗ

The acceptable range for pH set out by CDWG is 7.0 - 10.5. In June 2021, Metro Vancouver raised their target pH to 8.4 to enhance corrosion control (with an average pH of 8.2 coming out of the Seymour Capilano Filtration Plant). Since pH is largely determined by source water characteristics, Metro Vancouver controls the value to a target range.

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 2022, UBC maintained a range of  $45-60\mu$ S/cm throughout the network.

#### Metals

Three sample locations were tested a total of six times for metals during 2022 (see table).

Sample Name	Date Sampled	Aluminum Total μg/L	Copper Total µg/L	lron Total μg/L	Lead Total µg/L	Zinc Total μg/L
UBC-003	03-May-2022	27	0.9	23	<0.5	<3.0
UBC-003	09-Nov-2022	29	2.3	9	<0.5	<3.0
UBC-005	03-May-2022	28	3.3	15	<0.5	<3.0
UBC-005	09-Nov-2022	28	6.6	6	<0.5	<3.0
UBC-008	03-May-2022	25	6.9	11	<0.5	<3.0
UBC-008	09-Nov-2022	30	5.9	6	<0.5	<3.0
CDWG	Health Guidelines	N/A	≤2000	N/A	5	N/A
CDWG A	esthetic Objective	200	N/A	≤300	N/A	≤5000
CDWG O	perational 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  $\leq 15^{\circ}$ C was exceeded at almost all testing stations including the supply points from Metro Vancouver in the summer of 2022. The highest recorded temperature was 18.3°C at one station. Temperature itself does not bear a direct relationship to health. All other parameters were normal.

# 5.0 Summary

The 2022 Drinking Water Quality Monitoring Program found the UBC water distribution system to be operating satisfactorily based on our extensive sampling analysis. There were no persistent issues or concerns identified through the recorded sampling results. From 695 samples throughout the year, a single sample had a reading for Total Coliforms. This was an anomalous sample as it was not replicated in any subsequent samples.

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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# **APPENDIX A**

Water Sampling Sites Site Map

# **APPENDIX B**

# Sample Analysis Results

Comula	Commind	Chloring	Total Californ	Facili		Tomporatura	Turkiditur		Conductivity
Sample	Sampled	Eroo (mg/L)		ECOII (CELL/100mLc)		remperature (°C)		лЦ	
	d lan 22		(CF0/100IIILS)	(CFO/100IIILS)		( C)	0.19	<u>рп</u> 0 лс	
UBC-001	4-Jd11-22	0.58	<1	<1	2	5	0.18	0.45	50.40
UBC-001	11-Jan-22	0.47	<1	<1	2	5	0.13	8.59	52.81
UBC-001	18-Jan-22	0.5	<1	<1	<2	5.3	0.19	8.51	53.14
UBC-001	25-Jan-22	0.52	<1	<1	<2	5.4	0.13	8.02	54.35
UBC-001	1-Feb-22	0.42	<1	<1	4	5.4	0.12	8.54	55.41
UBC-001	8-Feb-22	0.48	<1	<1	<2	5.5	0.15	8.49	57.90
UBC-001	15-Feb-22	0.5	<1	<1	10	5.7	0.19	8.43	55.17
UBC-001	22-Feb-22	0.51	<1	<1	<2	5.9	0.16	8.52	55.94
UBC-001	1-Mar-22	0.52	<1	<1	2	6.6	0.14	8.54	56.34
UBC-001	8-Mar-22	0.5	<1	<1	<2	6	0.19	8.39	55.37
UBC-001	15-Mar-22	0.52	<1	<1	<2	7	0.13	8.28	48.17
UBC-001	22-Mar-22	0.49	<1	<1	<2	7.3	0.15	8.24	46.43
UBC-001	29-Mar-22	0.48	<1	<1	<2	7.1	0.14	8.46	52.88
UBC-001	5-Apr-22	0.53	<1	<1	2	7.6	0.13	8.27	50.68
UBC-001	12-Apr-22	0.49	<1	<1	<2	8.2	0.1	8.55	47.00
UBC-001	19-Apr-22	0.53	<1	<1	<2	9	0.1	8.50	54.13
UBC-001	26-Apr-22	0.53	<1	<1	<2	8.2	0.12	7.75	53.57
UBC-001	3-May-22	0.5	<1	<1	<2	9.5	0.12	8.69	54.01
UBC-001	10-May-22	0.53	<1	<1	<2	9.9	0.12	8.08	55.37
UBC-001	17-May-22	0.52	<1	<1	<2	10	0.09	8.36	55.16
UBC-001	24-May-22	0.47	<1	<1	<2	10.7	0.13	7.93	50.80
UBC-001	, 31-Mav-22	0.45	<1	<1	<2	11.4	0.12	8.35	51.93
UBC-001	, 7-Jun-22	0.45	<1	<1	4	11.6	0.09	8.45	53.72
UBC-001	14-Jun-22	0.49	<1	<1	<2	11.6	0.1	8.05	52.10
UBC-001	21-Jun-22	0.5	<1	<1	<2	12	0.15	8.43	49.30
UBC-001	28-lun-22	0.57	<1	<1	4	12.6	0.16	7.60	59.30
UBC-001	5-Jul-22	0.48	<1	<1	<2	13.7	0.12	7.76	55.30
UBC-001	12-Jul-22	0.47	<1	<1	2	14.4	0.11	7.79	54.90
UBC-001	19-Jul-22	0.45	<1	<1	4	15.4	0.13	7.82	56.60
UBC-001	26-Jul-22	0.13	<1	<1	2	15.1	0.1	7.52	52.00
UBC-001	2-Aug-22	0.54	<1	<1	<2	15.9	0.15	8 10	54.90
UBC-001	9-Aug-22	0.54	<1	<1	<2	16.5	0.15	7 70	54.20
UBC-001	16-Aug-22	0.30	<1	<1	1 1	16.3	0.05	7.70	54.70
	22_Aug_22	0.44	<1	<1	-7	10.5	0.1	9.1 <i>/</i>	51.00
	20-Aug-22	0.38	<1	<1	6	17.2	0.15	0.14	55.00
UBC-001	50-Aug-22	0.43	<1	<1	-2	17.2	0.11	0.32	53.00
	12 Son 22	0.42	<1	<1	<2	17.5	0.12	0.20	54.50
UBC-001	13-Sep-22	0.56	<1	<1	<2	16.9	0.13	8.01	50.30
UBC-001	20-Sep-22	0.49	<1	<1	<2	16.7	0.1	0.43	53.70
UBC-001	27-Sep-22	0.53	<1	<1	~2	16.2	0.16	8.13	53.10
UBC-001	4-0ct-22	0.44	<1	<1	2	16.3	0.13	8.30	55.90
UBC-001	11-Oct-22	0.47	<1	<1	12	15.9	0.11	8.11	54.30
0BC-001	18-Oct-22	0.43	<1	<1	6	15.3	0.14	NA	NA
UBC-001	25-Oct-22	0.51	<1	<1	6	14.1	0.15	8.54	49.80
0BC-001	1-Nov-22	0.46	<1	<1	4	12.4	0.23	8.45	48.70
UBC-001	8-Nov-22	0.47	<1	<1	<2	10.4	0.14	8.42	52.00
UBC-001	15-Nov-22	0.46	<1	<1	4	9.6	0.12	8.45	57.40
UBC-001	22-Nov-22	0.48	<1	<1	2	8.8	0.14	8.46	55.40
UBC-001	29-Nov-22	0.41	<1	<1	2	7.7	0.12	8.33	57.30
UBC-001	6-Dec-22	0.47	<1	<1	<2	6.9	0.14	8.20	56.70
UBC-001	13-Dec-22	0.54	<1	<1	<2	6.7	0.18	8.17	56.9
UBC-001	22-Dec-22	0.64	<1	<1	NA	5.7	1.2	7.29	53.14
UBC-001	28-Dec-22	0.48	<1	<1	NA	6.10	0.15	8.36	58.30

Sample Point WQB7-001 (UBC-001)













<b>C</b>	Consultant.	Ch La share	Tablesi	5	002 (000		<b>T</b>		
Sample	Sampled		I otal Coliform	ECOII	HPC (CELL(mL)	Temperature	I urbidity		Conductivity
name	date	Free (mg/L)	(CFU/100mLS)	(CFU/100mLs)	(CFU/ML)	()	(NIU)	рн	(US CM)
0BC-002	4-Jan-22	0.47	<1	<1	<2	6.8	0.14	8.45	56.69
UBC-002	11-Jan-22	0.48	<1	<1	36	6.6	0.14	8.67	53.42
UBC-002	18-Jan-22	0.47	<1	<1	<2	6.9	0.13	8.48	53.13
0BC-002	25-Jan-22	0.55	<1	<1	<2	6.4	0.13	8.57	54.42
UBC-002	1-Feb-22	0.43	<1	<1	<2	6.8	0.14	8.56	55.55
UBC-002	8-Feb-22	0.51	<1	<1	<2	6.5	0.14	8.49	58.19
UBC-002	15-Feb-22	0.58	<1	<1	<2	6.6	1.6	8.52	54.45
UBC-002	22-Feb-22	0.49	<1	<1	<2	7.5	0.1	8.44	55.63
UBC-002	1-Mar-22	0.54	<1	<1	8	7.3	0.14	8.45	56.29
UBC-002	8-Mar-22	0.52	<1	<1	<2	6.8	0.17	8.42	55.32
UBC-002	15-Mar-22	0.51	<1	<1	2	7.8	0.12	8.45	49.54
UBC-002	22-Mar-22	0.58	<1	<1	200	6.5	0.13	8.23	45.42
UBC-002	29-Mar-22	0.5	<1	<1	<2	6.1	0.22	8.26	52.99
UBC-002	5-Apr-22	0.58	<1	<1	<2	6.6	0.12	7.88	49.86
UBC-002	12-Apr-22	0.54	<1	<1	4	6.4	0.12	8.20	46.43
UBC-002	19-Apr-22	0.52	<1	<1	<2	6.8	0.21	8.32	52.90
UBC-002	26-Apr-22	0.57	<1	<1	<2	7.3	0.13	7.65	53.87
UBC-002	3-May-22	0.58	<1	<1	<2	7.8	0.26	8.60	55.19
UBC-002	10-May-22	0.58	<1	<1	2	8.3	0.12	8.27	58.78
UBC-002	17-May-22	0.56	<1	<1	2	8.7	0.1	8.38	53.11
UBC-002	24-May-22	0.54	<1	<1	IA	9.1	0.14	7.80	48.78
UBC-002	31-May-22	0.51	<1	<1	34	95	0.12	8 29	52.62
UBC-002	7-lun-22	0.52	<1	<1	51 52	9.8	0.12	8 37	52.02
UBC-002	1/1-lun-22	0.56	<1	<1	<2	9.0	0.13	8.03	50.95
	21_lup_22	0.50	<1	<1	<2	10.2	0.14	0.05	51.60
	21-Jun-22	0.55	<1	<1	<2	11.1	0.16	7.69	50.20
UBC-002	5-Jul-22	0.50	<1	<1	<2	11.1	0.10	7.00	57.30
	12 101 22	0.50	<1	<1	<2	11.5	0.13	7.83	57.20
UBC-002	12-Jul-22	0.55	<1	<1	<2	11.9	0.14	0.04	55.10
UBC-002	19-Jul-22	0.51	<1	<1	<2	12.8	0.11	7.70	55.10
UBC-002	26-JUI-22	0.58	<1	<1	<2	13.3	0.14	7.71	51.40
UBC-002	2-Aug-22	0.57	<1	<1	<2	14.1	0.13	7.77	54.30
UBC-002	9-Aug-22	0.54	<1	<1	<2	14.4	0.12	7.62	53.50
UBC-002	16-Aug-22	0.47	<1	<1	<2	14.7	0.1	8.06	54.40
UBC-002	23-Aug-22	0.46	<1	<1	<2	15.1	0.21	7.67	51.80
UBC-002	30-Aug-22	0.5	<1	<1	<2	15.7	0.13	8.10	54.50
UBC-002	6-Sep-22	0.51	<1	<1	<2	16	0.11	8.27	56.20
UBC-002	13-Sep-22	0.55	<1	<1	<2	16.2	0.11	8.19	53.60
UBC-002	20-Sep-22	0.5	<1	<1	<2	16.2	0.09	8.42	53.40
UBC-002	27-Sep-22	0.61	<1	<1	<2	15.5	0.17	8.13	53.30
UBC-002	4-Oct-22	0.45	<1	<1	<2	15.9	0.13	8.30	55.70
UBC-002	11-Oct-22	0.55	<1	<1	<2	18.3	0.16	8.07	54.30
UBC-002	18-Oct-22	0.41	<1	<1	<2	15.2	0.12	NA	NA
UBC-002	25-Oct-22	0.56	<1	<1	2	13.9	0.14	8.52	49.50
UBC-002	1-Nov-22	0.49	<1	<1	<2	12.3	0.12	8.56	48.70
UBC-002	8-Nov-22	0.42	<1	<1	<2	10.2	0.14	8.42	51.70
UBC-002	15-Nov-22	0.44	<1	<1	<2	9.2	0.15	8.19	56.80
UBC-002	22-Nov-22	0.5	<1	<1	2	8.6	0.13	8.35	55.90
UBC-002	29-Nov-22	0.39	<1	<1	<2	7.6	0.21	8.20	56.70
UBC-002	6-Dec-22	0.58	<1	<1	<2	7.1	0.16	8.14	56.90
UBC-002	13-Dec-22	0.48	<1	<1	<2	6.3	0.16	8.13	57.0
UBC-002	22-Dec-22	0.57	<1	<1	NA	5.7	0.51	7.69	51.28
UBC-002	28-Dec-22	0.47	<1	<1	NA	5.90	0.16	8.32	58.00

#### Sample Point WQC3-002 (UBC-002)



Sample	Sampled	Chlorine	Total Coliform	Ecoli	HPC	Temperature	Turbidity		Conductivity
name	date	Free (mg/L)	(CFU/100mLs)	(CFU/100mLs)	(CFU/mL)	(°C)	(NTU)	рН	(uS cm)
UBC-003	4-Jan-22	0.53	<1	<1	8	6.8	0.16	8.48	56.78
UBC-003	11-Jan-22	0.49	<1	<1	<2	6.6	0.14	8.64	53.55
UBC-003	18-Jan-22	0.52	<1	<1	2	7	0.14	8.54	52.89
UBC-003	25-Jan-22	0.52	<1	<1	<2	6.7	0.12	8.50	54.47
UBC-003	1-Feb-22	0.43	<1	<1	6	7.1	0.33	8.54	56.14
UBC-003	8-Feb-22	0.53	<1	<1	<2	6.7	0.13	8.40	58.09
UBC-003	15-Feb-22	0.53	<1	<1	<2	7	0.12	8.51	54.20
UBC-003	22-Feb-22	0.52	<1	<1	<2	6.9	0.14	8.52	55.38
UBC-003	1-Mar-22	0.51	<1	<1	<2	7.2	0.15	8.75	56.31
UBC-003	8-Mar-22	0.52	<1	<1	<2	7	0.12	8.54	56.36
UBC-003	15-Mar-22	0.51	<1	<1	<2	8.1	0.14	8.43	48.73
UBC-003	22-Mar-22	0.57	<1	<1	8	6.5	0.13	8.31	45.86
UBC-003	29-Mar-22	0.55	<1	<1	<2	6	0.23	8.43	53.36
UBC-003	5-Apr-22	0.52	<1	<1	6	6.6	0.14	7.62	50.70
UBC-003	12-Apr-22	0.51	<1	<1	6	6.6	0.15	8.50	46.06
UBC-003	19-Apr-22	0.51	<1	<1	4	7	0.14	8.63	52.65
UBC-003	26-Apr-22	0.61	<1	<1	6	7.7	0.13	7.69	53.77
UBC-003	3-May-22	0.58	<1	<1	<2	7.8	0.24	8.47	54.81
UBC-003	10-May-22	0.59	<1	<1	<2	8.4	0.14	8.11	55.65
UBC-003	17-May-22	0.58	<1	<1	2	8.8	0.09	8.48	53.64
UBC-003	24-May-22	0.52	<1	<1	<2	9.5	0.15	8.12	48.37
UBC-003	31-May-22	0.53	<1	<1	<2	9.7	0.14	8.31	52.32
UBC-003	7-Jun-22	0.54	<1	<1	<2	9.8	0.11	8.45	52.71
UBC-003	14-Jun-22	0.55	<1	<1	<2	9.9	0.12	8.28	51.37
UBC-003	21-Jun-22	0.57	<1	<1	<2	10.4	0.21	8.45	51.30
UBC-003	28-Jun-22	0.55	<1	<1	4	11.2	0.16	8.08	50.00
UBC-003	5-Jul-22	0.54	<1	<1	4	12.2	0.12	8.28	56.80
UBC-003	12-Jul-22	0.53	<1	<1	120	12.1	0.15	8.12	55.00
UBC-003	19-Jul-22	0.48	<1	<1	2	12.7	0.21	7.88	55.10
UBC-003	26-Jul-22	0.53	<1	<1	<2	13	0.12	7.55	51.40
UBC-003	2-Aug-22	0.58	<1	<1	<2	14.2	0.13	7.65	54.30
UBC-003	9-Aug-22	0.64	<1	<1	2	14.4	1.5	7.78	54.50
UBC-003	16-Aug-22	0.5	<1	<1	<2	14.8	0.11	7.87	54.60
UBC-003	23-Aug-22	0.46	<1	<1	<2	15.2	0.23	7.51	51.20
UBC-003	30-Aug-22	0.48	<1	<1	<2	16	0.1	8.26	55.30
UBC-003	6-Sep-22	0.49	<1	<1	<2	16.1	0.13	8.30	54.70
UBC-003	13-Sep-22	0.55	<1	<1	4	16.3	0.13	8.32	54.90
UBC-003	18-Oct-22	0.52	<1	<1	26	15.5	0.12	NA	NA
UBC-003	25-Oct-22	0.4	<1	<1	14	14	0.18	8.53	49.70
UBC-003	1-Nov-22	0.46	<1	<1	6	12.9	0.11	8.53	48.70
UBC-003	8-Nov-22	0.46	<1	<1	10	10.6	0.14	8.39	51.80
UBC-003	15-Nov-22	0.5	<1	<1	4	9.1	0.13	8.34	55.40
UBC-003	22-Nov-22	0.52	<1	<1	24	8.7	0.11	8.46	55.70
UBC-003	29-Nov-22	0.42	<1	<1	4	7.7	0.13	8.30	56.70
UBC-003	6-Dec-22	0.59	<1	<1	26	6.7	0.11	8.23	56.90
UBC-003	13-Dec-22	0.53	<1	<1	8	6.3	0.19	8.33	56.8
UBC-003	28-Dec-22	0.47	<1	<1	NA	6.5	0.16	8.39	58.40

# Sample Point WQD2-003 (UBC-003)



Sample	Sampled	Chloring	Total Caliform	Ecoli		Tomporatura	Turbidity		Conductivity
sample	data	Eroo (mg/L)	(CEU/100mLs)	(CEU/100mLc)		(°C)		24	
	4_lan_22	0.50	<1	<1	(0,0,1112)	5 A	0.15	9 / /	56 54
UBC 004	4-Jail-22	0.55	<1	<1	10	5.4	0.13	0.44	50.54 E2.91
UBC-004	11-Jan-22	0.01	<1	<1	-10	5.0	0.14	0.J4 Q 5/I	52.01
UBC-004	25-Jan-22	0.57	<1	<1	<2	5.4	0.13	0.J4 0.50	54.40
UBC 004	25-Jaii-22	0.34	<1	<1	~2	5.8	0.14	0.55	54.40
UBC-004	1-FED-22	0.46	<1	<1	°	5.7	0.17	0.50	50.64
	0-FED-22	0.51	<1	<1	<2	5.7	0.18	0.00	56.25
	13-Feb-22	0.5	<1	<1	<2	5.5	0.71	0.40	54.20
UBC-004	22-FED-22	0.55	<1	<1	<2	6.1	0.11	0.50	50.07
UBC-004	1-IVIar-22	0.57	<1	<1	<2	6.4	0.24	8.07	50.27
UBC-004	0-IVIdI-ZZ	0.54	<1	<1	<2	6.2	0.23	8.30	35.37
UBC-004	15-IVId1-22	0.58	<1	<1	<2	0.8	0.3	8.30	49.41
UBC-004	22-IVId1-22	0.54	<1	<1	~2	7.5	0.14	8.41	40.30
UBC-004	29-Iviar-22	0.51	<1	<1	2	7.6	2.3	8.43	53.05
UBC-004	5-Apr-22	0.46	<1	<1	<2	7.8	0.11	8.28	46.16
UBC-004	12-Apr-22	0.44	<1	<1	<2	7.6	0.11	8.29	46.10
UBC-004	19-Apr-22	0.5	<1	<1	<2	8.6	0.1	8.51	53.13
UBC-004	26-Apr-22	0.53	<1	<1	<2	8.5	0.13	7.63	53.70
UBC-004	3-1VIAy-22	0.45	<1	<1	2	8.8	0.13	8.59	54.46
UBC-004	10-IVIay-22	0.51	<1	<1	2	9.2	0.14	8.38	56.05
UBC-004	17-IVIay-22	0.48	<1	<1	2	10	0.08	8.45	53.48
UBC-004	24-May-22	0.5	<1	<1	2	10.7	0.13	7.88	50.63
UBC-004	31-May-22	0.5	<1	<1	22	10.7	0.12	8.49	52.23
UBC-004	7-Jun-22	0.49	<1	<1	<2	11	0.11	8.30	53.18
UBC-004	14-Jun-22	0.49	<1	<1	2	11.6	0.12	8.05	51.82
UBC-004	21-Jun-22	0.52	<1	<1	<2	11.9	0.14	8.26	49.70
UBC-004	28-Jun-22	0.59	<1	<1	<2	12.1	0.24	7.88	48.80
UBC-004	5-Jul-22	0.51	<1	<1	2	12.4	0.12	7.80	56.70
UBC-004	12-Jul-22	0.47	<1	<1	4	13.1	0.22	7.75	54.70
UBC-004	19-Jul-22	0.52	<1	<1	4	13.5	0.22	7.80	55.60
UBC-004	26-Jul-22	0.5	<1	<1	<2	13.8	0.15	7.57	51.60
UBC-004	2-Aug-22	0.58	<1	<1	6	15	0.19	7.82	54.30
UBC-004	9-Aug-22	0.52	<1	<1	2	15.4	0.12	7.76	54.00
UBC-004	16-Aug-22	0.49	<1	<1	2	15.5	0.11	7.89	54.30
UBC-004	23-Aug-22	0.45	<1	<1	4	16	0.16	7.60	52.00
UBC-004	30-Aug-22	0.37	<1	<1	2	16.4	0.16	8.04	55.20
UBC-004	6-Sep-22	0.48	<1	<1	<2	15.8	0.11	8.06	56.70
UBC-004	13-Sep-22	0.48	<1	<1	4	17.7	0.13	8.20	54.40
UBC-004	20-Sep-22	0.48	<1	<1	14	17.2	0.14	8.51	53.30
UBC-004	27-Sep-22	0.48	<1	<1	<2	16.4	0.14	8.03	52.70
UBC-004	4-Oct-22	0.41	<1	<1	<2	16.3	0.15	8.18	55.00
UBC-004	11-Oct-22	0.4	<1	<1	2	16.7	0.12	8.17	54.30
UBC-004	18-Oct-22	0.54	<1	<1	<2	15.6	0.11	NA	NA
UBC-004	25-Oct-22	0.65	<1	<1	4	14.1	0.37	8.58	49.70
UBC-004	1-Nov-22	0.51	<1	<1	<2	13.1	0.11	8.54	48.80
UBC-004	8-Nov-22	0.48	<1	<1	6	11.5	0.14	8.40	52.40
UBC-004	15-Nov-22	0.39	<1	<1	2	11.2	0.18	8.39	55.90
UBC-004	22-Nov-22	0.57	<1	<1	<2	10.4	0.14	8.42	56.40
UBC-004	29-Nov-22	0.31	<1	<1	<2	9	0.12	8.36	56.20
UBC-004	6-Dec-22	0.48	<1	<1	<2	8	0.15	8.35	56.60
UBC-004	13-Dec-22	0.61	<1	<1	<2	7.9	0.16	8.42	56.3
UBC-004	22-Dec-22	0.66	<1	<1	NA	6.1	3.5	8.1	51.41
UBC-004	28-Dec-22	0.45	<1	<1	NA	6.8	0.13	8.29	58.00

Sample Point WQH3A-004 (UBC-004)



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Sample	Sampled	Chlorine	Total Coliform	Ecoli	HPC	Temperature	Turbidity		Conductivity
name	date	Free (mg/L)	(CFU/100mLs)	(CFU/100mLs)	(CFU/mL)	(°C)	(NTU)	рН	(uS cm)
UBC-006	4-Jan-22	0.6	<1	<1	<2	4.3	0.19	8.55	53.79
UBC-006	11-Jan-22	0.52	<1	<1	72	4.5	0.16	8.63	53.70
UBC-006	25-Jan-22	0.56	<1	<1	<2	4.4	0.13	8.61	54.66
UBC-006	8-Feb-22	0.54	<1	<1	<2	4.9	0.17	8.57	58.51
UBC-006	22-Feb-22	0.52	<1	<1	<2	5.4	0.12	8.59	56.03
UBC-006	8-Mar-22	0.54	<1	<1	12	5.8	0.2	8.35	55.49
UBC-006	22-Mar-22	0.58	<1	<1	220	6.5	0.25	8.32	47.22
UBC-006	5-Apr-22	0.48	<1	<1	4	7	0.13	7.81	46.23
UBC-006	19-Apr-22	0.51	<1	<1	6	7.5	0.1	8.45	52.84
UBC-006	3-May-22	0.49	<1	<1	10	9.2	0.15	8.50	53.91
UBC-006	17-May-22	0.59	<1	<1	2	9.6	0.1	8.52	53.72
UBC-006	31-May-22	0.54	<1	<1	20	10.6	0.23	8.32	52.06
UBC-006	14-Jun-22	0.55	<1	<1	<2	11	0.11	8.59	52.22
UBC-006	28-Jun-22	0.49	<1	<1	6	13.3	0.12	7.82	53.80
UBC-006	12-Jul-22	0.44	<1	<1	2	13	0.13	7.73	55.10
UBC-006	26-Jul-22	0.43	<1	<1	18	15.2	0.13	7.98	52.80
UBC-006	9-Aug-22	0.57	<1	<1	36	14.5	0.11	7.58	54.00
UBC-006	23-Aug-22	0.57	<1	<1	<2	15.4	1	7.45	51.20
UBC-006	6-Sep-22	0.54	<1	<1	<2	16.5	0.17	8.39	54.50
UBC-006	20-Sep-22	0.5	<1	<1	<2	16.3	0.11	8.25	53.50
UBC-006	4-Oct-22	0.55	<1	<1	2	15.9	0.16	8.45	53.30
UBC-006	18-Oct-22	0.58	<1	<1	<2	15.2	0.11	NA	NA
UBC-006	1-Nov-22	0.53	<1	<1	6	12	0.12	8.44	48.40
UBC-006	15-Nov-22	0.53	<1	<1	<2	9	0.13	8.35	56.70
UBC-006	29-Nov-22	0.49	<1	<1	<2	7.2	0.13	8.42	56.30
UBC-006	13-Dec-22	0.52	<1	<1	2	6.10	0.13	8.44	56.50
UBC-006	28-Dec-22	0.59	<1	<1	NA	5.6	0.18	8.35	59.00

#### Sample Point WQL3-006 (UBC-006)



Sample	Sampled	Chlorine	Total Coliform	Ecoli	HPC	Temperature	Turbidity		Conductivity
name	date	Free (mg/L)	(CFU/100mLs)	(CFU/100mLs)	(CFU/mL)	(°C)	(NTU)	рН	(uS cm)
UBC-007	4-Jan-22	0.6	<1	<1	<2	3.8	0.2	8.50	56.76
UBC-007	11-Jan-22	0.58	<1	<1	<2	4	0.13	8.64	52.57
UBC-007	25-Jan-22	0.58	<1	<1	<2	4.3	0.13	8.54	54.39
UBC-007	8-Feb-22	0.55	<1	<1	<2	4.3	1.3	8.54	59.22
UBC-007	22-Feb-22	0.52	<1	<1	<2	4.5	0.1	8.53	55.80
UBC-007	8-Mar-22	0.56	<1	<1	2	5.2	0.51	8.37	55.20
UBC-007	22-Mar-22	0.53	<1	<1	2	6.4	0.17	8.29	45.58
UBC-007	5-Apr-22	0.58	<1	<1	2	6.6	0.17	7.88	47.99
UBC-007	19-Apr-22	0.5	<1	<1	<2	6.8	0.13	8.43	53.61
UBC-007	3-May-22	0.55	<1	<1	<2	7.9	0.15	8.64	55.11
UBC-007	17-May-22	0.62	<1	<1	<2	8.5	0.09	8.31	53.12
UBC-007	31-May-22	0.55	<1	<1	<2	9.1	0.15	8.30	52.70
UBC-007	14-Jun-22	0.52	<1	<1	<2	9.5	0.18	7.93	51.67
UBC-007	28-Jun-22	0.58	<1	<1	<2	10.9	0.19	8.04	49.40
UBC-007	12-Jul-22	0.56	<1	<1	2	11.9	0.18	7.84	55.50
UBC-007	26-Jul-22	0.53	<1	<1	120	13.1	0.13	7.57	51.40
UBC-007	9-Aug-22	0.57	<1	<1	4	14.1	0.26	7.75	53.60
UBC-007	23-Aug-22	0.48	<1	<1	<2	15	0.22	7.64	51.40
UBC-007	6-Sep-22	0.49	<1	<1	<2	15.7	0.15	8.49	55.00
UBC-007	20-Sep-22	0.51	<1	<1	2	15.9	0.1	8.09	53.10
UBC-007	4-Oct-22	0.58	<1	<1	6	15.8	0.1	8.33	54.10
UBC-007	18-Oct-22	0.57	<1	<1	<2	15.2	0.11	NA	NA
UBC-007	1-Nov-22	0.54	<1	<1	<2	12.1	0.12	8.55	48.80
UBC-007	15-Nov-22	0.48	<1	<1	<2	8.9	0.14	8.38	57.50
UBC-007	29-Nov-22	0.56	<1	<1	<2	7.1	0.13	8.35	56.80
UBC-007	13-Dec-22	0.62	<1	<1	<2	5.80	0.12	8.35	57.20
UBC-007	28-Dec-22	0.5	<1	<1	NA	5.1	0.15	8.34	58.40

# Sample Point WQJ5-007 (UBC-007)



name         odate         Free (mg/1)         (EPU/JOM-1)         (EPU/J	Sample	Sampled	Chlorine	Total Coliform	Ecoli	НРС	Temperature	Turbidity		Conductivity
UBC-008         1-1m-22         0.5         -1         -1         -2         6         0.18         8.51         55.70           UBC-008         11-1m-22         0.61         -1         -1         -2         4.3         0.15         8.57         53.22           UBC-008         15-1m-22         0.58         -1         -1         -2         5.4         0.17         8.45         55.11           UBC-008         15-Feb-22         0.56         -1         -1         -2         5.2         0.17         8.45         55.43           UBC-008         15-Feb-22         0.56         -1         -1         -2         5.8         0.24         8.57         55.66           UBC-008         8-Mar-22         0.51         -1         -1         -2         5.4         0.5         8.53         55.79           UBC-008         8-Mar-22         0.51         -1         -1         -2         6.6         0.16         8.41         48.2           UBC-008         8-Mar-22         0.53         -1         -1         -2         7.2         0.14         8.53         55.79           UBC-008         8-Mar-22         0.53         -1         -1	name	date	Free (mg/L)	(CFU/100mLs)	(CFU/100mLs)	(CFU/mL)	(°C)	(NTU)	рH	(uS cm)
UBC-008         11-Jan-22         0.58         <1	UBC-008	4-Jan-22	0.6	<1	<1	<2	6	0.18	8.51	56.70
UBC-008         15.3m-22         0.61         <1         <2         5.4         0.17         8.87         53.81           UBC-008         1-feb-22         0.46         <1	UBC-008	11-Jan-22	0.58	<1	<1	<2	4.3	0.15	8.56	53.22
UBC:008         25:Jan-22         0.58         <1         <1         <22         4.4         0.17         8.45         55:43           UBC:008         8:Feb-22         0.55         <1	UBC-008	18-Jan-22	0.61	<1	<1	<2	5.4	0.15	8.57	53.81
UBC-008         1-Feb-22         0.46         <1         <1         <2         5.2         0.17         8.46         55.43           UBC-008         15-Feb-22         0.55         <1	UBC-008	25-Jan-22	0.58	<1	<1	<2	4.4	0.17	8.45	54.11
UBC-008         8-Feb-22         0.55         <1         <1         20         5.3         0.24         8.52         5.839           UBC-008         15-Feb-22         0.56         <1	UBC-008	1-Feb-22	0.46	<1	<1	<2	5.2	0.17	8.46	55.43
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	UBC-008	8-Feb-22	0.55	<1	<1	20	5.3	0.24	8.52	58.39
UBC.008         22.Feb.22         0.51         <1         <1         <2         4.9         0.12         8.57         55.66           UBC.008         1.Mar-22         0.58         <1	UBC-008	15-Feb-22	0.56	<1	<1	<2	5.8	0.92	8.49	53.46
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	UBC-008	22-Feb-22	0.51	<1	<1	<2	4.9	0.12	8.57	55.66
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	UBC-008	1-Mar-22	0.58	<1	<1	<2	6	0.21	8.72	56.67
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	UBC-008	8-Mar-22	0.57	<1	<1	<2	5.4	0.5	8 53	55.79
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	UBC-008	15-Mar-22	0.52	<1	<1	<2	6.6	0.16	8.41	48.82
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	UBC-008	22-Mar-22	0.51	<1	<1	<2	7	0.14	8.45	45.09
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	UBC-008	29-Mar-22	0.51	<1	<1	<2	63	0.26	8.78	53.96
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	UBC-008	5-Anr-22	0.53	<1	<1	2	7.2	0.14	7.63	45.66
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	UBC-008	12-Δnr-22	0.53	<1	<1	<2	67	0.13	8 38	46.05
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	UBC-008	19-Apr-22	0.50	<1	<1	2	7.2	0.13	8 57	52.83
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	UBC-008	26-Apr-22	0.55	<1	<1	<2	8.8	0.15	7.68	54 51
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	UBC-008	3-May-22	0.52	<1	<1	<2	9.0	0.13	8.53	54.33
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	UBC-008	10_May-22	0.54	<1	<1	<2	9.4	0.13	8.04	56 51
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	UBC-008	17-May-22	0.05	<1	<1	14	9.3	0.1	8.25	53 73
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	UBC-008	2/-May-22	0.0	<1	<1	14	9.5 11.6	0.1	7 75	19.40
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		24-1vidy-22	0.57	<1	<1	4	10.1	0.23	8.20	52.84
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		7-lun-22	0.55	<1	<1	0	10.1	0.12	0.20	52.60
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $		14_lup_22	0.53	<1	<1	4	9.9 12.1	0.14	8.33	50.76
UBC-008       21-jun-22       0.54       <1		14-Juli-22	0.57	<1	<1	- 14	10.6	0.28	0.47 0.00	50.70
UBC-006       28-5101-22       0.54       <1		21-Juli-22	0.54	<1	<1	<2	10.0	0.10	0.09	40.00
UBC-008         12-Jul-22         0.56         <1         <1         90         11.3         0.14         8.35         37.10           UBC-008         12-Jul-22         0.61         <1		28-Juli-22	0.56	<1	<1	<2	11.5	0.2	7.05	49.90
OBC-006         12-10-22         0.50         C4         C4         90         14.3         0.19         7.83         53.20           UBC-008         19-Jul-22         0.51         <1		12_lul_22	0.54	<1	<1	90	14.2	0.14	7.92	55.20
UBC-003         15         16         16         18         15         15         16         18         15         15         16         16         16         17         16         16         16         17         16         17         16         17         16         17         16         17         16         17         16         17         16         17         16         17         16         17         16         17         16         16         17         16         16         17         16         16         16         16 <t< td=""><td></td><td>12-Jul-22</td><td>0.50</td><td>&lt;1</td><td>&lt;1</td><td>-2</td><td>14.5</td><td>0.13</td><td>7.03</td><td>53.20</td></t<>		12-Jul-22	0.50	<1	<1	-2	14.5	0.13	7.03	53.20
UBC-008         2-Aug-22         0.5         <1         <1         2         13.6         0.16         7.38         51.30           UBC-008         2-Aug-22         0.59         <1		19-Jul-22	0.01	<1	<1	2	12.6	0.87	7.00	54.70
UBC-008         2-Aug-22         0.59         C1         C1         C1         C2         14.8         0.13         7.72         34.40           UBC-008         9-Aug-22         0.77         <1		20-Jul-22	0.5	<1	<1	- 2	14.9	0.10	7.50	51.50
UBC-008         16Aug-22         0.77         K1         K1         Z         14.6         4.8         7.77         33.80           UBC-008         16Aug-22         0.48         <1		2-Aug-22	0.39	<1	<1	2	14.0	0.15	7.72	54.40
Obcode         Diskug22         D.44         C1         C2         D15         D11         B.05         D5.00           UBC-008         30-Aug-22         0.51         <1		9-Aug-22	0.77	<1	<1	-2	14.0	4.0	7.77 9.15	53.00
UBC-008         23-A0g-22         0.54         C1         C1         C2         1.3.4         0.3.         7.01         51.60           UBC-008         30-Aug-22         0.55         <1		22 Aug 22	0.48	<1	<1	<2	15 /	0.1	7.61	54.50
UBC-008       6-Sep-22       0.53       <1		23-Aug-22	0.54	<1	<1	<2	15.4	0.5	7.01 8.05	55.00
UBC-008         13-Sep-22         0.51         C1         C1         C2         13.4         0.18         8.13         54.30           UBC-008         13-Sep-22         0.6         <1		50-Aug-22	0.55	<1	<1	<2	15.9	0.11	0.00	53.00
UBC-008         19-58p-22         0.0         <1         <1         <2         11.5         0.21         8.03         55.10           UBC-008         20-Sep-22         0.56         <1		12-Sop-22	0.51	<1	<1	<2	16.5	0.10	8.13	55 10
OBC-006         20-56p-22         0.30         <1         <1         2         10.1         0.13         3.13         33.10           UBC-008         27-Sep-22         0.6         <1		20-Sop-22	0.0	<1	<1	2	16.1	0.21	0.03 0.12	55.10
OBC-008         2/7-Sep-22         0.0         <1         <1         <2         15.0         0.14         8.20         53.30           UBC-008         4-Oct-22         0.5         <1		20-Sep-22	0.50	<1	<1	-2	15.6	0.13	8 20	52.50
UBC-008       4-0Ct22       0.5       <1		27-3ep-22	0.0	<1	<1	<2	15.0	0.14	8.20	53.50
UBC-008         11-0CC+22         0.53         <1         <1         <2         15.7         0.15         0.14         35.40           UBC-008         18-OCt-22         0.56         <1		4-001-22	0.5	<1	<1	<2	10.1	0.10	0.24 0.1/	55.00
UBC-008       13-00-0122       0.30       <1       <1       4       13-3       0.17       NA       NA         UBC-008       25-Oct-22       0.61       <1		11-Oct-22	0.55	<1	<1	< <u>2</u>	15.7	0.15	0.14 NA	55.40 NA
UBC-008       25-0Ct-22       0.01       <1		25-Oct-22	0.50	<1	<1	4	12.9	0.17	NA 8.56	10.40
UBC-008         I-NOV-22         0.46         <1         <1         2         12         0.16         8.31         49.90           UBC-008         8-Nov-22         0.53         <1		1 Nov 22	0.01	<1	<1	2	13.4	0.15	0.50	49.40
UBC-008         D-100-22         0.33         N         N         N         4         5.5         0.1         8.32         51.70           UBC-008         15-Nov-22         0.56         <1		8-Nov-22	0.40	<1	<1	Δ	90	0.10	0.JI 8 27	49.90 51 70
UBC-008         15-10V-22         0.50         <1         <1         2         5         0.17         8.54         55.90           UBC-008         22-Nov-22         0.55         <1		15-Nov-22	0.55	<1	<1	+ 2	9.9	0.1	0.52 Q 51	55.00
UBC-006         22-100-22         0.53         C1         C1         C2         7.30         0.10         8.26         55.40           UBC-008         29-Nov-22         0.54         <1		13-NOV-22	0.50	~1	<1	2 2	<i>3</i> 7 00	0.17	0.34	55.30
UBC-008         6-Dec-22         0.54         <1         <1         <2         7.5         0.15         8.38         57.60           UBC-008         6-Dec-22         0.52         <1		22-NOV-22	0.55	<1	<1	<2	7.90	0.10	0.20 g 20	57.40
UBC-008         13-Dec-22         0.42         <1         <1         2         0.2         0.13         8.32         57.00           UBC-008         13-Dec-22         0.42         <1		6-Dec-22	0.54	~1	<1	2	7.5 6.7	0.13	0.30	57.00
UBC-008         22-Dec-22         0.42         <1         <1         <2         0         0.10         8.4         30.70           UBC-008         22-Dec-22         0.68         <1		13_Doc_22	0.52	<1	<1	2 2	6	0.13	Q /	56.70
UBC-008         28-Dec-22         0.00         <1         <1         NA         5.7         0.12         9.21         50.40		13-Det-22	0.42	<1	<1	NA	19	0.10	0.4 g ว⊑	50.70
		22-Dec-22	0.00	<1	<pre>&lt;1 </pre>	NA NA	- <del>1</del> .0 5.7	0.78	8 21	58 50

# Sample Point WQG6-008 (UBC-008)



Sample	Sampled	Chlorine	Total Coliform	Ecoli	HPC	Temperature	Turbidity		Conductivity
name	date	Free (mg/L)	(CFU/100mLs)	(CFU/100mLs)	(CFU/mL)	(°C)	(NTU)	рН	(uS cm)
UBC-009	4-Jan-22	0.54	<1	<1	<2	3.7	0.14	8.46	54.68
UBC-009	11-Jan-22	0.59	<1	<1	16	3.9	0.12	8.61	53.53
UBC-009	18-Jan-22	0.53	<1	<1	<2	4.6	0.15	8.58	53.81
UBC-009	25-Jan-22	0.55	<1	<1	<2	4.2	0.13	8.55	54.53
UBC-009	1-Feb-22	0.47	<1	<1	<2	4.4	0.14	8.53	56.14
UBC-009	8-Feb-22	0.57	<1	<1	<2	4.4	1	8.55	58.03
UBC-009	15-Feb-22	0.51	<1	<1	40	4.7	0.11	8.43	54.56
UBC-009	22-Feb-22	0.53	<1	<1	<2	5.5	0.14	8.53	56.28
UBC-009	1-Mar-22	0.51	<1	<1	2	5.7	0.15	8.67	56.61
UBC-009	8-Mar-22	0.55	<1	<1	<2	5.2	0.49	8.45	55.74
UBC-009	15-Mar-22	0.55	<1	<1	<2	5.9	0.16	8.32	48.51
UBC-009	22-Mar-22	0.52	<1	<1	<2	6.2	0.13	8.11	46.62
UBC-009	29-Mar-22	0.55	<1	<1	<2	5.8	0.48	8.35	54.23
UBC-009	5-Apr-22	0.51	<1	<1	<2	6.7	0.11	8.09	52.71
UBC-009	12-Apr-22	0.45	<1	<1	<2	6.5	0.1	7.82	46.20
UBC-009	19-Apr-22	0.52	<1	<1	<2	6.8	0.11	8.49	52.70
UBC-009	26-Apr-22	0.54	<1	<1	<2	8.1	0.13	7.73	53.63
UBC-009	3-May-22	0.51	<1	<1	<2	7.8	0.16	8.40	54.76
UBC-009	10-May-22	0.48	<1	<1	2	8.2	0.13	8.08	56.58
UBC-009	17-May-22	0.58	<1	<1	8	8.6	0.1	8.23	53.83
UBC-009	24-May-22	0.56	<1	<1	<2	9.2	0.15	7.84	50.05
UBC-009	31-May-22	0.56	<1	<1	<2	10.7	0.13	8.31	53.43
UBC-009	, 7-Jun-22	0.42	<1	<1	<2	10.2	0.12	8.51	54.99
UBC-009	14-Jun-22	0.58	<1	<1	<2	10.1	0.14	8.67	51.95
UBC-009	21-Jun-22	0.48	<1	<1	<2	10	0.18	8.36	51.30
UBC-009	28-Jun-22	0.64	<1	<1	<2	10.9	0.19	8.03	47.50
UBC-009	5-Jul-22	0.58	<1	<1	2	11.3	0.13	7.87	57.80
UBC-009	12-Jul-22	0.53	<1	<1	<2	12	0.17	7.82	55.10
UBC-009	19-Jul-22	0.58	<1	<1	2	13.2	0.13	7.81	55.40
UBC-009	26-Jul-22	0.6	<1	<1	42	13.1	0.14	7.76	51.50
UBC-009	2-Aug-22	0.56	<1	<1	<2	14.2	0.18	7.97	54.30
UBC-009	9-Aug-22	0.64	<1	<1	44	14.4	0.7	7.79	53.60
UBC-009	16-Aug-22	0.51	<1	<1	<2	14.8	0.11	7.97	54.40
UBC-009	23-Aug-22	0.55	<1	<1	<2	15.2	0.25	7.66	51.60
UBC-009	30-Aug-22	0.49	<1	<1	<2	16	0.13	7.90	53.50
UBC-009	6-Sep-22	0.5	<1	<1	<2	16.2	0.12	8.22	54.80
UBC-009	13-Sep-22	0.59	<1	<1	<2	16.3	0.17	7.96	54.80
UBC-009	20-Sep-22	0.57	<1	<1	2	15.9	0.11	7.98	54.00
UBC-009	27-Sep-22	0.62	<1	<1	<2	15.8	0.16	8.31	52.80
UBC-009	4-Oct-22	0.56	<1	<1	2	16	0.12	8.32	54.60
UBC-009	11-Oct-22	0.58	<1	<1	<2	15.4	0.13	8.02	54.60
UBC-009	18-Oct-22	0.54	<1	<1	<2	15.9	0.11	NA	NA
UBC-009	25-Oct-22	0.52	<1	<1	<2	13.1	0.13	8.30	49.00
UBC-009	1-Nov-22	0.44	<1	<1	<2	12	0.13	8.43	48.70
UBC-009	8-Nov-22	0.56	<1	<1	<2	9,9	0.3	8.26	52.00
UBC-009	15-Nov-22	0.48	<1	<1	<2	6.4	0.12	8.59	57,10
UBC-009	22-Nov-22	0.51	<1	<1	<2	7,8	0.13	8.35	55,70
UBC-009	29-Nov-22	0.62	<1	<1	<2	6,9	0.13	8.42	57,30
UBC-009	6-Dec-22	0.52	<1	<1	<2	5.7	0.12	8.28	56.40
UBC-009	13-Dec-22	0.52	<1	<1	<2	5.7	0.17	8.39	57.1
UBC-009	28-Dec-22	0.52	<1	<1	NA	4.9	0.13	8.40	58.80

Sample Point WQF7B-009 (	(UBC-009)
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Sample	Sampled	Chlorine	Total Coliform	Ecoli	HPC	Temperature	Turbidity		Conductivity
name	date	Free (mg/L)	(CFU/100mLs)	(CFU/100mLs)	(CFU/mL)	(°C)	(NTU)	рН	(uS cm)
UBC-010	4-Jan-22	0.58	<1	<1	<2	3.3	0.23	8.53	56.75
UBC-010	11-Jan-22	0.58	<1	<1	4	3.1	0.22	8.56	54.13
UBC-010	18-Jan-22	0.58	<1	<1	<2	3.7	0.18	8.52	52.87
UBC-010	25-Jan-22	0.55	<1	<1	2	3.9	0.15	8.49	54.73
UBC-010	1-Feb-22	0.51	<1	<1	<2	3.9	0.23	8.52	55.32
UBC-010	8-Feb-22	0.53	<1	<1	<2	4.2	0.26	8.50	57.91
UBC-010	15-Feb-22	0.56	<1	<1	<2	4.1	0.17	8.37	54.92
UBC-010	22-Feb-22	0.55	<1	<1	<2	4.5	0.11	8.54	56.64
UBC-010	1-Mar-22	0.54	<1	<1	<2	5.6	0.29	8.69	56.37
UBC-010	8-Mar-22	0.58	<1	<1	<2	4.7	0.34	8.46	56.03
UBC-010	15-Mar-22	0.61	<1	<1	2	5.6	0.22	8.48	50.04
UBC-010	22-Mar-22	0.52	<1	<1	24	5.7	0.16	8.33	46.59
UBC-010	29-Mar-22	0.57	<1	<1	<2	5.4	0.27	8.33	53.39
UBC-010	5-Apr-22	0.52	<1	<1	<2	6.1	0.15	8.01	52.34
UBC-010	12-Apr-22	0.45	<1	<1	<2	6	0.14	7.76	46.61
UBC-010	19-Apr-22	0.56	<1	<1	<2	6.5	0.12	8.54	54.00
UBC-010	26-Apr-22	0.58	<1	<1	<2	7.5	0.13	7.58	53.50
UBC-010	3-May-22	0.58	<1	<1	<2	7.4	0.14	8.27	56.00
UBC-010	10-Mav-22	0.59	<1	<1	18	8.6	0.16	8.08	57.97
UBC-010	17-May-22	0.56	<1	<1	14	8.7	0.12	8.12	53.26
UBC-010	24-May-22	0.5	<1	<1	<2	8.8	0.16	8.25	50.14
UBC-010	31-May-22	0.53	<1	<1	14	9.6	0.12	8.26	51.77
UBC-010	7-lun-22	0.5	<1	<1	4	9	0.13	8.41	53.45
UBC-010	14-lun-22	0.5	<1	<1	<2	94	0.16	8.45	52.04
UBC-010	21-lun-22	0.54	<1	<1	<2	10.1	0.21	8 15	52.01
UBC-010	28-lun-22	0.59	<1	<1	<2	10.5	0.16	7 72	51.20
UBC-010	5-Jul-22	0.55	<1	<1	<2	10.9	0.15	7.97	56 30
UBC-010	12-101-22	0.54	<1	<1	4	11.6	0.13	7.87	55.10
UBC-010	19-Jul-22	0.54	<1	<1	<2	12.3	0.13	7.32	55.20
LIBC-010	26-Jul-22	0.54	<1	<1	<2	12.5	0.13	7.73	51.50
LIBC-010	20-Jui-22	0.5	<1	<1	6	13.7	0.14	8.06	54.00
UBC-010	2-Aug-22 Ω-Διισ-22	0.05	<1	<1	0	13.0	0.12	7 59	54.00
UBC-010	16_Aug-22	0.37	<1	<1	4	14.6	0.73	8.08	54.00
UBC 010	22 Aug 22	0.40	<1	<1	~2	14.0	0.11	7.40	54.30
UBC-010	20-Aug-22	0.58	<1	<1	4	15	0.22	7.49 8.02	52.00
UBC-010	50-Aug-22	0.54	<1	<1	6	15 5	0.13	0.02 9.5 <i>1</i>	54.20
UBC 010	12 Son 22	0.51	<1	<1	-2	15.5	0.14	0.04	54.20
UBC-010	15-3ep-22	0.6	<1	<1	10	16.9	0.2	0.00	54.00
UBC-010	20-3ep-22	0.55	<1	<1	10	15 6	0.11	0.12	53.60
UBC-010	27-3ep-22	0.0	<1	<1	~2	15.0	0.13	0.14	52.70
UBC-010	4-001-22	0.51	<1	<1	0	10.2	0.13	0.27	53.20
UBC-010	11-0ct-22	0.54	<1	<1	<2	15.5	0.13	0.30	55.00
UBC-010	18-UCC-22	0.64	<1	<1	4	12.4	0.17		INA 40.00
UBC-010	25-0ct-22	0.56	<1	<1	<2	13.4	0.13	8.55	49.60
UBC-010	1-NOV-22	0.44	<1	<1	2	11.3	0.12	8.33	48.50
UBC-010	8-NOV-22	0.52	<1	<1	<2	9.1	0.13	8.29	51.50
0BC-010	15-NOV-22	0.53	<1	<1	4	8.2	0.18	8.52	55.20
0BC-010	22-INOV-22	0.55	<1	<1	<2	/.4	0.11	8.20	56.60
UBC-010	29-Nov-22	0.53	<1	<1	2	6.6	0.18	8.31	56.50
UBC-010	6-Dec-22	0.66	<1	<1	<2	5.6	0.15	8.41	56.80
UBC-010	13-Dec-22	0.62	<1	<1	<2	5.2	0.13	8.36	56.50
UBC-010	22-Dec-22	0.7	<1	<1	NA	4.8	0.16	7.46	50.69
UBC-010	28-Dec-22	0.58	<1	<1	NA	3.9	0.13	8.39	58.30

# Sample Point WQF7A-010 (UBC-010)



Comula	Commission	Chlavina	Tatal Californi				Tanda i dita a		
Sample	Sampled		I otal Coliform	ECOII	HPC	remperature	I urbidity		Conductivity
name	date	Free (mg/L)	(CFU/100mLS)	(CFU/100mLs)		(0)	(NTU)	рн	(US CM)
0BC-011	4-Jan-22	0.54	<1	<1	2	3.6	0.14	8.53	57.85
UBC-011	11-Jan-22	0.57	<1	<1	2	4.5	0.16	8.62	54.82
UBC-011	18-Jan-22	0.56	<1	<1	<2	4.8	0.35	8.51	53.01
UBC-011	25-Jan-22	0.53	<1	<1	4	5	0.14	8.58	54.66
UBC-011	1-Feb-22	0.48	<1	<1	<2	4.8	0.26	8.51	57.92
UBC-011	8-Feb-22	0.54	<1	<1	2	5.1	0.16	8.17	58.31
UBC-011	15-Feb-22	0.54	<1	<1	<2	5.1	0.31	8.49	54.24
UBC-011	22-Feb-22	0.51	<1	<1	<2	5.8	0.11	8.33	56.10
UBC-011	1-Mar-22	0.6	<1	<1	<2	6.5	0.15	8.43	56.66
UBC-011	8-Mar-22	0.52	<1	<1	<2	5.6	0.17	8.47	56.30
UBC-011	15-Mar-22	0.56	<1	<1	<2	6.5	0.14	8.44	48.61
UBC-011	22-Mar-22	0.5	<1	<1	<2	6.6	0.15	8.19	46.67
UBC-011	29-Mar-22	0.52	<1	<1	<2	6.5	0.15	8.49	54.81
UBC-011	5-Apr-22	0.47	<1	<1	<2	6.9	0.11	8.25	54.56
UBC-011	12-Apr-22	0.54	<1	<1	2	6.2	0.1	7.72	46.80
UBC-011	19-Apr-22	0.53	<1	<1	<2	7.9	0.09	8.39	53.19
UBC-011	26-Apr-22	0.53	<1	<1	10	7.5	0.12	7.63	54.09
UBC-011	3-May-22	0.51	<1	<1	<2	8.2	0.12	8.44	53.66
UBC-011	10-May-22	0.56	<1	<1	<2	8.8	0.13	8.04	58.24
UBC-011	17-May-22	0.51	<1	<1	<2	9.2	0.09	8.07	54.51
UBC-011	24-May-22	0.48	<1	<1	<2	9.9	0.12	7.93	54.22
UBC-011	31-May-22	0.56	<1	<1	94	10	0.13	8.60	53.92
UBC-011	7-Jun-22	0.52	<1	<1	<2	10.3	0.11	8.41	53.94
UBC-011	14-Jun-22	0.47	<1	<1	<2	10.6	0.69	8.60	52.23
UBC-011	21-Jun-22	0.49	<1	<1	<2	11.3	0.13	8.00	50.60
UBC-011	28-Jun-22	0.57	<1	<1	<2	11.6	0.15	7.73	53.50
UBC-011	5-Jul-22	0.51	<1	<1	<2	13.3	0.1	8.37	55.40
UBC-011	12-Jul-22	0.45	<1	<1	2	12.8	0.11	7.85	54.60
UBC-011	19-Jul-22	0.5	<1	<1	6	13.5	0.16	7.72	57.00
UBC-011	26-Jul-22	0.45	<1	<1	8	13.8	0.13	7.70	51.80
UBC-011	2-Aug-22	0.6	<1	<1	<2	15.1	0.13	7.95	55.70
UBC-011	9-Aug-22	0.51	<1	<1	<2	14.7	0.12	7.63	54 40
UBC-011	16-Aug-22	0.46	<1	<1	<2	15.1	0.12	8.01	55.90
UBC-011	23-Aug-22	0.49	<1	<1	<2	15.1	0.2	7.62	52.30
UBC-011	30-Aug-22	0.45	<1	<1	2	16.1	0.15	7.02	55 50
UBC-011	6-Sen-22	0.40	<1	<1	<2	16.1	0.13	8 34	56.30
UBC-011	13-Sen-22	0.55	<1	<1	<2	16.5	0.12	8 00	54.30
UBC-011	20-Sep-22	0.55	<1	<1	< <u>2</u>	16.5	0.14	8.05	54.30
UBC-011	20-Sep-22	0.5	<1	<1	-7	15.0	0.24	8 10	53.40
	4-Oct-22	0.31	<1	<1	<2	15.5	0.15	8.10 9.40	52.20
	4-001-22	0.43	<1	<1	<2	15.6	0.13	0.40	53.20
	11-0ct-22	0.46	<1	<1	<2	15.0	0.13	0.10	54.00
	16-001-22	0.5	<1	<1	10	14.2	0.14	NA 0.57	10.10
UBC-011	25-001-22	0.58	<1	<1	18	14.5	0.14	0.37	49.10
		0.51	<1	<1	<2	10 5	0.12	0.33	49.00
UBC-011	8-INOV-22	0.46	<1	<1	<2	10.5	0.15	8.24 8.22	52.30
UBC-011	15-NOV-22	0.49	<1	<1	4	9.3	0.13	8.33	57.70
0BC-011	22-NOV-22	0.47	<1	<1	2	8.4	0.13	8.42	56.50
UBC-011	29-Nov-22	0.45	<1	<1	<2	7.2	0.1	8.19	56.80
UBC-011	6-Dec-22	0.47	<1	<1	<2	6.8	0.11	8.30	56.90
UBC-011	13-Dec-22	0.52	<1	<1	<2	6.3	0.13	8.28	56.70
UBC-011	22-Dec-22	0.64	<1	<1	NA	4.9	0.94	7.65	52.00
UBC-011	28-Dec-22	0.47	<1	<1	NA	5.8	0.13	8.37	58.40

Sample Point WQJ10-011 (UBC-011)



Comunita	Compled	Chloring	Tatal Californi			. 012)	Teachidite		
Sample	Sampled			ECOII	HPC	remperature	Turbidity		Conductivity
name	date	Free (mg/L)	(CFU/100mLS)	(CFU/100mLS)	(CFU/mL)	()	(NTU)	рн	(US CM)
UBC-012	4-Jan-22	0.51	<1	<1	<2	5.3	0.15	8.55	56.56
UBC-012	11-Jan-22	0.5	<1	<1	2	5.2	0.12	8.69	55.61
UBC-012	18-Jan-22	0.54	<1	<1	<2	5.5	0.18	8.60	53.43
UBC-012	25-Jan-22	0.54	<1	<1	<2	5.6	0.14	8.62	54.95
UBC-012	1-Feb-22	0.47	<1	<1	<2	5.5	0.13	8.52	57.83
UBC-012	8-Feb-22	0.51	<1	<1	<2	5.7	0.22	8.15	58.14
UBC-012	15-Feb-22	0.51	<1	<1	30	5.7	0.27	8.51	54.52
UBC-012	22-Feb-22	0.51	<1	<1	<2	5.9	0.11	8.52	56.11
UBC-012	1-Mar-22	0.53	<1	<1	12	6.5	0.45	8.54	56.10
UBC-012	8-Mar-22	0.54	<1	<1	<2	5.8	0.21	8.56	55.97
UBC-012	15-Mar-22	0.55	<1	<1	<2	6.8	0.15	8.43	48.64
UBC-012	22-Mar-22	0.47	<1	<1	<2	7	0.15	8.44	46.46
UBC-012	29-Mar-22	0.5	<1	<1	<2	6.8	0.13	8.42	55.55
UBC-012	5-Apr-22	0.49	<1	<1	<2	7.4	0.11	8.19	53.82
UBC-012	12-Apr-22	0.43	<1	<1	<2	7.6	0.09	7.78	46.26
UBC-012	19-Apr-22	0.51	<1	<1	4	7.8	0.1	8.54	53.61
UBC-012	26-Apr-22	0.44	<1	<1	<2	8	0.14	7.74	53.93
UBC-012	3-May-22	0.49	<1	<1	<2	8.8	0.11	8.38	53.88
UBC-012	10-May-22	0.52	<1	<1	4	9.1	0.13	8.36	55.92
UBC-012	17-May-22	0.54	<1	<1	4	9.5	0.09	8.03	54.20
UBC-012	, 24-May-22	0.51	<1	<1	2	9	1.2	8.17	52.64
UBC-012	31-May-22	0.5	<1	<1	<2	10.3	0.11	8.13	54.52
UBC-012	7-Jun-22	0.46	<1	<1	<2	11	0.1	8.47	54.32
UBC-012	14-lun-22	0.47	<1	<1	4	11	0.15	8.59	52.40
UBC-012	21-lun-22	0.46	<1	<1	<2	11.5	0.13	8.14	49.60
UBC-012	28-lun-22	0.55	<1	<1	6	11.6	0.15	7.81	55.10
UBC-012	5-Jul-22	0.33	<1	<1	<2	12.7	0.14	8 29	55.10
UBC-012	12-Jul-22	0.46	<1	<1	2	12.9	0.12	7.85	54.20
UBC-012	19-Jul-22	0.5	<1	<1	<2	13.6	0.1	7.05	56.90
UBC-012	26-Jul-22	0.5	101	0	>11000	14.2	0.16	7.60	51.70
UBC-012	20 Jul 22	0.59	<u> </u>	<1	<2	14.2	0.10	7.00	54.90
UBC-012	9-Aug-22	0.55	<1	<1	1	15.1	0.13	7.54	54.80
UBC-012	16-Aug-22	0.31	<1	<1	-7	15.1	0.11	8.08	54.80
	22_Aug-22	0.44	<1	<1	<2	15.5	0.11	7 5 9	51.60
UBC-012	20-Aug-22	0.49	<1	<1	6	15.8	0.13	7.56	55.40
UBC-012	50-Aug-22	0.53	<1	<1	-2	16.5	0.12	7.80	56.50
UBC 012	12 Son 22	0.43	<1	<1	~2	16.7	0.09	7.30 0.00	50.50
UBC-012	15-3ep-22	0.55	<1	<1	4	16.7	0.14	0.02 7.09	55.00
	20-3ep-22	0.47	~1	1	2 2	10.5	0.09	7.30 Q 10	52 10
	4 Oct 22	0.55	~1	~1	~2	16.4	0.12	0.15	53.10
UBC-012	4-001-22	0.42	<1	<1	<2	10.4	0.13	0.30	54.20
UBC-012	11-0ct-22	0.57	<1	<1	<2	15.8	0.4	8.02	54.20
UBC-012	18-0ct-22	0.51	<1	<1	<2	15.6	0.12	8.04	52.70
UBC-012	25-0ct-22	0.49	<1	<1	4	14.6	0.16	8.59	50.00
UBC-012	1-NOV-22	0.49	<1	<1	<2	13.1	0.11	8.43	49.10
UBC-012	8-Nov-22	0.44	<1	<1	<2	11.4	0.13	8.17	52.40
UBC-012	15-Nov-22	0.43	<1	<1	<2	10.5	0.12	8.12	56.70
UBC-012	22-Nov-22	0.47	1	<1	<2	9.2	0.12	8.36	57.40
UBC-012	29-Nov-22	0.39	<1	<1	<2	8.1	0.15	8.31	56.70
UBC-012	6-Dec-22	0.45	<1	<1	<2	7.4	0.13	8.31	56.60
UBC-012	13-Dec-22	0.51	<1	<1	<2	7	0.13	8.40	56.80
UBC-012	22-Dec-22	0.64			NA	5.8	10	7.80	52.16
UBC-012	28-Dec-22	0.47	<1	<1	NA	6.1	0.21	8.38	58.10

Sample Point WQM8-012 (UBC-012)

CGC: confluent growth with coliform



					010/010				
Sample	Sampled	Chlorine	Total Coliform	Ecoli	HPC	Temperature	Turbidity		Conductivity
name	date	Free (mg/L)	(CFU/100mLs)	(CFU/100mLs)	(CFU/mL)	(°C)	(NTU)	рН	(uS cm)
UBC-013	4-Jan-22	0.54	<1	<1	<2	3.2	0.25	8.55	56.96
UBC-013	11-Jan-22	0.58	<1	<1	<2	3.3	0.13	8.55	54.47
UBC-013	18-Jan-22	0.6	<1	<1	<2	3.6	0.15	8.56	53.84
UBC-013	25-Jan-22	0.57	<1	<1	<2	3.7	0.15	8.51	55.20
UBC-013	1-Feb-22	0.5	<1	<1	<2	3.8	0.14	8.51	55.90
UBC-013	8-Feb-22	0.56	<1	<1	<2	3.8	0.18	8.04	59.72
UBC-013	15-Feb-22	0.6	<1	<1	<2	4.1	0.23	8.36	53.89
UBC-013	22-Feb-22	0.57	<1	<1	<2	4.2	0.12	8.34	56.71
UBC-013	1-Mar-22	0.57	<1	<1	<2	4.7	0.17	8.49	57.42
UBC-013	8-Mar-22	0.55	<1	<1	<2	4.3	0.21	8.43	56.74
UBC-013	15-Mar-22	0.6	<1	<1	<2	5.4	0.15	8.40	49.97
UBC-013	22-Mar-22	0.52	<1	<1	2	5.9	0.26	8.17	45.90
UBC-013	29-Mar-22	0.56	<1	<1	<2	5.3	0.31	8.24	56.49
UBC-013	5-Apr-22	0.54	<1	<1	2	5.9	0.11	8.22	50.73
UBC-013	12-Apr-22	0.52	<1	<1	<2	5.9	0.12	8.04	46.82
UBC-013	19-Apr-22	0.58	<1	<1	4	6.2	0.1	8.27	53.86
UBC-013	26-Apr-22	0.49	<1	<1	<2	6.6	0.11	7.64	55.18
UBC-013	3-May-22	0.53	<1	<1	2	7.4	0.12	8.37	54.44
UBC-013	10-May-22	0.53	<1	<1	4	7.6	0.15	8.04	56.66
UBC-013	17-May-22	0.61	<1	<1	2	9.3	0.11	8.07	52.79
UBC-013	24-May-22	0.55	<1	<1	<2	8.4	0.13	8.11	53.69
UBC-013	31-May-22	0.55	<1	<1	<2	8.4	0.22	8.09	53.97
UBC-013	7-lun-22	0.51	<1	<1	<2	9.2	0.11	8.44	53.46
UBC-013	14-lun-22	0.57	<1	<1	<2	8.8	0.13	8 58	51.01
UBC-013	21-lun-22	0.53	<1	<1	<2	83	0.13	8.12	55.00
UBC-013	28-lun-22	0.4	<1	<1	<2	10.8	0.22	7 76	52.30
UBC-013	5-Jul-22	0.1	<1	<1	<2	10.6	0.13	8 30	56.90
UBC-013	12-Jul-22	0.56	<1	<1	2	11.2	0.13	7 77	56.70
UBC-013	12 Jul 22	0.50	<1	<1	2	11.2	0.14	7.86	55.00
UBC-013	26-Jul-22	0.57	<1	<1	<2	12.0	0.15	7.65	51.00
UBC-013	20-301-22	0.52	<1	<1	<2	13.4	0.10	7.05	54.20
UBC-013	0-Aug-22	0.01	<1	<1	140	12.7	0.12	7.70	54.20
UBC-013	16-Aug-22	0.0	<1	<1	-140	14.1	0.11	7.00	55.00
UBC 013	22 Aug 22	0.52	<1	<1	<2	14.1	0.12	7.55	55.00
UBC-013	20-Aug-22	0.58	<1	<1	< <u>2</u>	14.3	0.17	8.06	54.90
UBC-013	50-Aug-22	0.50	<1	<1	6	15.1	0.13	8.00 9.01	56.20
UBC-013	12 Son 22	0.5	<1	<1	<2	15.1	0.1	0.01	50.50
UBC-013	15-Sep-22	0.05	<1	<1	<2	13.7	0.12	0.24	55.70
UBC-013	20-3ep-22	0.56	<1	<1	<2	14.5	0.11	0.04 7 Q1	57 20
	27-3ep-22	0.04	~1	~1	~2	10.1	0.2	7.01	52.50
UBC-013	4-UCT-22	0.54	<1	<1	<2	15.0	0.11	0.58	53.20
UBC-013	11-0ct-22	0.54	<1	<1	<2	15.1	0.17	8.10	57.30
UBC-013	18-0ct-22	0.59	<1	<1	<2	14.2	0.13	7.94	52.40
UBC-013	25-0ct-22	0.64	<1	<1	6	13.6	0.13	8.57	49.50
UBC-013	1-NOV-22	0.54	<1	<1	<2	11.3	0.13	8.33	48.10
UBC-013	8-NOV-22	0.55	<1	<1	<2	9.4	0.13	8.1/	51.90
UBC-013	15-NOV-22	0.51	<1	<1	<2	8.1	0.12	8.24	57.20
0BC-013	22-INOV-22	0.51	<1	<1	<2	1.1	0.12	8.56	57.10
UBC-013	29-Nov-22	0.52	<1	<1	<2	6.3	0.15	8.34	56.90
UBC-013	6-Dec-22	0.59	<1	<1	<2	5.6	0.13	8.24	57.60
UBC-013	13-Dec-22	0.53	<1	<1	<2	5.2	0.13	8.32	56.70
UBC-013	22-Dec-22	0.7	<1	<1	NA	4.4	0.42	7.29	51.07
UBC-013	28-Dec-22	0.52	<1	<1	NA	4.3	0.13	8.24	57.70

# Sample Point WQN9-013 (UBC-013)



Sampe         Sampe         Construction         Construction         Construction         Part of the part of the construction         Part of the construction           UBC-04         4-Jan-22         0.53         -1         -1         2         4.4         0.18         8.65         57.35           UBC-044         1-Jan-22         0.6         -1         -1         -2         4.4         0.18         8.65         53.76           UBC-014         1-Jan-22         0.61         -1         -1         -2         4.4         8.0         16         8.66         54.79           UBC-014         1-Feb-22         0.61         -1         -1         -2         5.1         0.13         8.52         55.67           UBC-014         1-Feb-22         0.63         -1         -1         -2         5.1         0.1         8.64         52.85           UBC-014         1-Mar-22         0.54         -1         -1         -2         6.3         0.17         8.33         8.48         55.67           UBC-014         2-Mar-22         0.55         -1         -1         -2         6.2         0.29         8.52         55.67           UBC-014         1-Mar-22         0.55	Comple	Commined	Chloring	Total Caliform	د د د مرمز د د <u>-</u>		Tommoroturo	Turkiditur		Conductivity
met         met <th>sample</th> <th>data</th> <th>Eroo (mg/L)</th> <th>(CEU/100mLs)</th> <th>(CELL/100mLc)</th> <th></th> <th>(°C)</th> <th></th> <th><b>n</b>LI</th> <th></th>	sample	data	Eroo (mg/L)	(CEU/100mLs)	(CELL/100mLc)		(°C)		<b>n</b> LI	
Dec ord         Hillin 22         0.6         cl         cl<         cl         cl<         cl< <th< td=""><td></td><td>/_lan_22</td><td>0.53</td><td>&lt;1</td><td>&lt;1</td><td>2</td><td></td><td>0.18</td><td>8 65</td><td>57 35</td></th<>		/_lan_22	0.53	<1	<1	2		0.18	8 65	57 35
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		4-Jail-22	0.55	<1	<1	-2	4.4	0.18	0.05	57.35
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	UBC-014	11-Jan 22	0.6	<1	<1	<2	4.0	0.12	0.57	55.70
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	UBC-014	10-Jall-22	0.61	<1	<1	~2	4.7	0.12	0.59	55.57
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	UBC-014	25-Jali-22	0.50	<1	<1	4	4.0	0.10	0.00	54.79
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	UBC-014	1-Feb-22	0.46	<1	<1	<2	4.9	0.13	0.52	55.07
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	UBC-014	8-FED-22	0.5	<1	<1	~2	5.2	0.12	8.35	58.00
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	UBC-014	15-Feb-22	0.63	<1	<1	2	5.1	0.51	8.40	52.80
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	UBC-014	22-Feb-22	0.54	<1	<1	<2	5.1	0.1	8.64	56.25
UBC-014         8-Mar-22         0.54         <1         <1         <2         5.5         0.17         8.49         56.79           UBC-014         12-Mar-22         0.55         <1	UBC-014	1-IVIar-22	0.61	<1	<1	<2	0	0.38	8.41	56.46
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	UBC-014	8-IVIar-22	0.54	<1	<1	<2	5.5	0.17	8.45	56.79
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	UBC-014	15-Mar-22	0.56	<1	<1	<2	6.3	0.17	8.53	48.67
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	UBC-014	22-Iviar-22	0.5	<1	<1	2	6.6	0.12	8.23	46.58
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	UBC-014	29-Mar-22	0.55	<1	<1	2	6.2	0.29	8.56	56.64
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	UBC-014	5-Apr-22	0.48	<1	<1	<2	7.2	0.15	8.30	51.00
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	UBC-014	12-Apr-22	0.5	<1	<1	<2	7.3	0.11	8.17	46.79
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	UBC-014	19-Apr-22	0.54	<1	<1	4	7.4	0.22	8.57	53.67
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	UBC-014	26-Apr-22	0.51	<1	<1	2	8.1	0.12	7.62	55.47
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	UBC-014	3-May-22	0.49	<1	<1	2	8.3	0.11	8.30	55.24
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	UBC-014	10-May-22	0.53	<1	<1	<2	9.1	0.13	8.40	55.21
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	UBC-014	17-May-22	0.44	<1	<1	6	9.3	0.1	8.14	53.76
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	UBC-014	24-May-22	0.45	<1	<1	<2	9.8	0.16	8.21	52.94
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	UBC-014	31-May-22	0.46	<1	<1	14	10.6	0.13	8.40	52.05
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	UBC-014	7-Jun-22	0.43	<1	<1	2	10.8	0.1	8.55	54.10
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	UBC-014	14-Jun-22	0.46	<1	<1	4	11.3	0.09	8.65	51.95
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	UBC-014	21-Jun-22	0.47	<1	<1	<2	11.7	0.18	8.14	55.40
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	UBC-014	28-Jun-22	0.52	<1	<1	4	12	0.12	7.78	53.60
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	UBC-014	5-Jul-22	0.58	<1	<1	<2	11.9	0.14	8.44	56.30
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	UBC-014	12-Jul-22	0.52	<1	<1	<2	12.7	0.16	7.85	55.00
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	UBC-014	19-Jul-22	0.46	<1	<1	<2	13.9	0.11	7.96	57.40
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	UBC-014	26-Jul-22	0.58	<1	<1	4	14	0.15	7.72	51.60
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	UBC-014	2-Aug-22	0.48	<1	<1	2	15.5	0.13	7.68	57.70
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	UBC-014	9-Aug-22	0.49	<1	<1	<2	15.2	0.09	7.58	55.00
UBC-01423-Aug-220.44<1<1<215.90.167.5952.80UBC-01430-Aug-220.55<1	UBC-014	16-Aug-22	0.42	<1	<1	2	15.3	0.14	8.03	56.20
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	UBC-014	23-Aug-22	0.44	<1	<1	<2	15.9	0.16	7.59	52.80
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	UBC-014	30-Aug-22	0.55	<1	<1	<2	15.8	0.12	7.49	55.40
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	UBC-014	6-Sep-22	0.42	<1	<1	10	16.1	0.12	8.17	56.10
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	UBC-014	13-Sep-22	0.58	<1	<1	10	16.2	0.11	7.96	55.80
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	UBC-014	20-Sep-22	0.53	<1	<1	4	15.9	0.09	8.22	54.60
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	UBC-014	27-Sep-22	0.65	<1	<1	<2	15.5	0.13	8.19	52.90
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	UBC-014	4-Oct-22	0.38	<1	<1	2	16	0.12	8.46	54.90
UBC-01418-Oct-220.56<1<1<2150.128.0652.00UBC-01425-Oct-220.61<1	UBC-014	11-Oct-22	0.5	<1	<1	10	15.5	0.17	8.06	54.30
UBC-01425-Oct-220.61<1<1413.80.128.2052.00UBC-0141-Nov-220.51<1	UBC-014	18-Oct-22	0.56	<1	<1	<2	15	0.12	8.06	52.00
UBC-014         1-Nov-22         0.51         <1         <1         72         12.7         0.11         8.11         48.80           UBC-014         8-Nov-22         0.5         <1	UBC-014	25-Oct-22	0.61	<1	<1	4	13.8	0.12	8.20	52.00
UBC-014     8-Nov-22     0.5     <1     <1     <2     10.9     0.11     8.26     51.90       UBC-014     15-Nov-22     0.5     <1	UBC-014	1-Nov-22	0.51	<1	<1	72	12.7	0.11	8.11	48,80
UBC-014     15-Nov-22     0.44     <1     <1     <2     9.8     0.12     8.29     57.60       UBC-014     22-Nov-22     0.52     <1	UBC-014	8-Nov-22	0.5	<1	<1	<2	10.9	0.11	8.26	51,90
UBC-014     22-Nov-22     0.52     <1     <1     <1     <1     <1     <1     <1     <1.5     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12     <1.12	UBC-014	15-Nov-22	0.44	<1	<1	<2	9.8	0.12	8.29	57.60
UBC-014         29-Nov-22         0.52         <1         <1         <2         8         0.17         8.46         57.10           UBC-014         6-Dec-22         0.55         <1	UBC-014	22-Nov-22	0.52	<1	<1	<2	8.9	0.12	8.58	56.20
UBC-014         6-Dec-22         0.55         <1         <1         <2         7.1         0.12         8.43         56.80           UBC-014         13-Dec-22         0.55         <1	UBC-014	29-Nov-22	0.52	<1	<1	<7	8	0.17	8.46	57 10
UBC-014 13-Der-22 0.52 c1 c1 c2 6.6 0.12 0.25 56.00	UBC-014	6-Dec-22	0.55	<1	<1	<2	7 1	0.12	8.43	56.80
	UBC-014	13-Dec-22	0.52	<1	<1	<2	6.6	0.12	8.35	56.80

Sample Point WQQ 6-014 (UBC-014)



Comple	Commind	Chlorino	Total Caliform	Feeli		Tommoroturo	Turkiditur		Conductivity
sample	data	Eroo (mg/L)	(CEU/100mLs)	(CEU/100mLs)		(°C)		<b>n</b> Ll	
	4 Jan 22					2.0		7.05	(us cill)
	4-Jd11-22	0.62	<1	<1	<2	5.9	0.22	7.95	50.99
UBC-015	11-Jdfi-22	0.69	<1	<1	<2	4	0.12	8.60	55.37
UBC-015	16-Jdll-22	0.62	<1	<1	~2	4.5	0.14	8.0Z	53.00
UBC-015	25-Jd11-22	0.57	<1	<1	2	4.7	0.14	0.77	55.57
UBC-015	1-Feb-22	0.56	<1	<1	4	4.4	0.13	8.51	56.01
UBC-015	8-Feb-22	0.3	<1	<1	<2	4.6	0.22	8.38	58.37
UBC-015	15-Feb-22	0.58	<1	<1	<2	4.8	0.16	8.37	54.50
UBC-015	22-Feb-22	0.58	<1	<1	<2	4.7	0.11	8.48	56.96
UBC-015	1-Mar-22	0.56	<1	<1	<2	6.4	0.27	8.64	56.16
UBC-015	8-Mar-22	0.51	<1	<1	<2	5.7	0.17	8.38	55.51
UBC-015	15-Mar-22	0.64	<1	<1	<2	5.9	0.17	8.49	59.10
UBC-015	22-Mar-22	0.54	<1	<1	<2	6.7	0.13	8.33	48.15
UBC-015	29-Mar-22	0.7	<1	<1	<2	6.1	2.2	8.56	59.04
UBC-015	5-Apr-22	0.54	<1	<1	<2	6.6	0.14	8.29	49.55
UBC-015	12-Apr-22	0.57	<1	<1	<2	6.7	0.1	8.00	46.87
UBC-015	19-Apr-22	0.55	<1	<1	<2	7.3	0.1	8.10	55.05
UBC-015	26-Apr-22	0.52	<1	<1	<2	7.9	0.12	8.07	53.81
UBC-015	3-May-22	0.45	<1	<1	<2	8.7	0.11	8.39	54.68
UBC-015	10-May-22	0.58	<1	<1	<2	9	0.71	8.35	56.10
UBC-015	17-May-22	0.58	<1	<1	<2	9.4	0.1	8.48	54.67
UBC-015	24-May-22	0.48	<1	<1	<2	9.6	0.13	8.16	49.62
UBC-015	31-May-22	0.54	<1	<1	<2	10.5	0.12	8.09	53.50
UBC-015	7-Jun-22	0.5	<1	<1	<2	11.7	0.08	8.42	52.51
UBC-015	14-Jun-22	0.52	<1	<1	<2	10.7	0.11	8.54	51.33
UBC-015	21-Jun-22	0.41	<1	<1	<2	10.7	0.18	7.90	56.60
UBC-015	28-Jun-22	0.61	<1	<1	<2	11.3	0.17	7.66	48.40
UBC-015	5-Jul-22	0.56	<1	<1	<2	12.6	0.11	8.20	52.80
UBC-015	12-Jul-22	0.56	<1	<1	2	12.3	0.16	7.74	55.80
UBC-015	19-Jul-22	0.56	<1	<1	<2	12.7	0.3	7.98	54.90
UBC-015	26-Jul-22	0.6	<1	<1	2	13.7	0.13	7.58	51.30
UBC-015	2-Aug-22	0.6	<1	<1	<2	15.1	0.13	7.73	54.10
UBC-015	9-Aug-22	0.59	<1	<1	<2	14.5	0.13	7.59	53.40
UBC-015	16-Aug-22	0.46	<1	<1	<2	16.1	0.12	7.93	54.40
UBC-015	23-Aug-22	0.58	<1	<1	58	15.2	0.15	7.52	50.90
UBC-015	30-Aug-22	0.55	<1	<1	<2	15.8	0.22	7.61	53.50
UBC-015	6-Sep-22	0.54	<1	<1	<2	15.9	0.24	8.38	56.30
UBC-015	13-Sep-22	0.65	<1	<1	<2	16.2	0.16	7.85	55.00
UBC-015	20-Sep-22	0.52	<1	<1	<2	15.9	0.11	8.39	56.10
UBC-015	27-Sep-22	0.61	<1	<1	<2	15.8	0.17	8.16	52.60
UBC-015	4-Oct-22	0.55	<1	<1	6	17.1	0.18	8 14	54.20
UBC-015	11-0ct-22	0.33	<1	<1	<2	17.1	0.10	7.86	54.90
UBC-015	11 Oct 22	0.51	<1	<1	<2	15.0	0.15	7.86	52.00
UBC-015	25-Oct-22	0.51	<1	<1	2	14.3	0.15	8 50	J2.00
LIBC-015	1-Nov-22	0.54	<1	<1	2 27	12 /	0.13	8.06	49.10
	8-Nov-22	0.50	<1	<1	~2	10.2	0.14	8 02	51 50
	15-Nov-22	0.51	<1	<1	~2	10.5	0.14	0.02	55.30
	13-NOV-22	0.52	<1	<1	~2	9./ 0.2	0.21	0.00	55.50
	22-INUV-22	0.50	~1	~1	<u>24</u>	0.2	0.12	0.10	
	29-100V-22	0.55	<1	<1	<2	1.1	0.13	0.05 0.50	55.50
		0.58	<1	<1	<2	0.0	0.19	0.55	57.30
UBC-015	13-Dec-22	0.59	<1	<1	<2	0./	0.15	8.31	50.90
ORC-012	28-Dec-22	0.57	<1	<1	NA	5.1	0.13	8.44	59.90

Sample Point WQQ7-015 (UBC-015)



Sample	Sampled	Chlorine	Total Coliform	Ecoli	HPC	Temperature	Turbidity		Conductivity
name	date	Free (mg/L)	(CFU/100mLs)	(CFU/100mLs)	(CFU/mL)	(°C)	(NTU)	рН	(uS cm)
UBC-016	4-Jan-22	0.47	<1	<1	2	5.1	0.22	8.66	56.87
UBC-016	18-Jan-22	0.57	<1	<1	<2	5.8	0.13	8.59	54.01
UBC-016	1-Feb-22	0.45	<1	<1	6	5.8	0.18	8.62	55.20
UBC-016	15-Feb-22	0.5	<1	<1	20	6.1	0.15	8.57	53.82
UBC-016	1-Mar-22	0.57	<1	<1	14	6.3	0.2	8.72	56.42
UBC-016	15-Mar-22	0.56	<1	<1	2	7	0.32	8.38	49.97
UBC-016	29-Mar-22	0.5	<1	<1	<2	7.2	0.31	8.38	57.00
UBC-016	12-Apr-22	0.48	<1	<1	10	7.3	0.15	7.90	46.88
UBC-016	26-Apr-22	0.5	<1	<1	<2	8.8	0.12	8.14	54.05
UBC-016	10-May-22	0.58	<1	<1	4	9.8	0.17	8.12	58.53
UBC-016	24-May-22	0.57	<1	<1	<2	11	0.13	8.27	53.48
UBC-016	7-Jun-22	0.5	<1	<1	2	12.3	0.22	8.54	53.98
UBC-016	21-Jun-22	0.48	<1	<1	6	12.9	0.24	8.23	52.70
UBC-016	5-Jul-22	0.42	<1	<1	6	14.8	0.15	8.37	55.90
UBC-016	19-Jul-22	0.46	<1	<1	2	15	0.11	8.14	57.10
UBC-016	2-Aug-22	0.48	<1	<1	34	16.4	0.17	8.14	57.20
UBC-016	16-Aug-22	0.41	<1	<1	6	16.4	0.12	8.07	55.40
UBC-016	30-Aug-22	0.43	<1	<1	34	17.1	0.1	7.76	54.30
UBC-016	13-Sep-22	0.49	<1	<1	4	17.3	0.14	7.90	54.50
UBC-016	27-Sep-22	0.48	<1	<1	<2	16.2	0.12	8.18	52.50
UBC-016	11-Oct-22	0.38	<1	<1	4	15.9	0.13	8.43	54.40
UBC-016	25-Oct-22	0.54	<1	<1	30	14.8	0.25	8.35	49.60
UBC-016	8-Nov-22	0.49	<1	<1	2	11.7	0.15	8.21	52.20
UBC-016	22-Nov-22	0.5	<1	<1	<2	9.2	0.18	8.09	55.90
UBC-016	6-Dec-22	0.43	<1	<1	<2	7.4	0.19	8.23	56.80
UBC-016	22-Dec-22	0.67	<1	<1	NA	5.8	1	7.92	51.86

Sample Point WQT7-016 (UBC-016)



# **APPENDIX C**

Metro Vancouver and Municipal Response Procedure

# **APPENDIX D**

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

Physical and Chemical Analysis of Water Supply 2022 – Capilano Water System										
Parameter	Average	Average	Range	Days Exceeded	Limit <sup>2</sup>	Reason Established				
lkalinity as CaCO3 (mg/L)	3.0	22	18-25	N/A	None	N/A				
luminum Dissolved (µg/L)	59	26	20-35	N/A	None	N/A				
luminum Total (µg/L)	126	29	18-51	0	2,900	Health				
ntimony Total (µg/L)	<0.5	<0.5	<0.5	0	6 10 (ALADA)	Health				
arium Total (1971.)	2.4	2.8	2.5-3.5	0	2 000	Health				
coron Total (µg/L)	<10	<10	<10	0	5,000	Health				
romate (µg/L)	<10	<10	<10	0	10	Health				
romide (µg/L)	<10	<10	<10	N/A	None	N/A				
admium Total (µg/L)	<0.2	<0.2	<0.2	0	7	Health				
alcium Total (μg/L)	1,200	8,430	7,560-9,280	N/A	None	N/A				
arbon Organic - Dissolved (mg/L)	1.5	0.6	0.4-0.9	N/A N/A	None	N/A N/A				
horate (ug/L)	<10	25	16-41	0	1000	Health				
hloride (mg/L)	<0.5	2.3	2.1-2.9	0	< 250	Aesthetic				
hromium Total (μg/L)	<0.08	< 0.05	<0.05	0	50	Health				
cobalt Total (µg/L)	<0.5	<0.5	<0.5	N/A	None	N/A				
olour - Apparent (ACU)	15	3	<2-14	N/A	None	N/A				
olour - True (TCU)	10	<1	<1-1	0	≤ 15	Aesthetic				
onductivity (µmhos/cm)	10	49	43-54	N/A	None	N/A				
Copper Total (µg/L)	1.4	<0.5	<0.5	0/0	2,000/1,000	Health/Aesthe				
yanide 10tal (mgL)	<0.02	<0.02 N/A	<0.02 N/A	0	0.2	Health				
Junide (mg/L)	<0.20	<0.05	N/A <0.05	0	1.5	Health				
[aloacetic Acids Total (ug/L)	<1.1	10.4	9.5-12	0	80 (ALARA)	Health				
Lardness as CaCO <sub>3</sub> (mg/L)	3.7	22.0	20.3-24.0	N/A	None	N/A				
ron Dissolved (µg/L)	51	<5	<5-9	N/A	None	N/A				
ron Total (µg/L)	154	<9	<5-64	0	$\leq 300$	Aesthetic				
ead Total (µg/L)	<0.5	<0.5	<0.5	0	5 (ALARA)	Health				
fagnesium Total (µg/L)	176	208	181-256	N/A	None	N/A				
fanganese Dissolved (µg/L)	7.4	2.8	0.9-5.0	N/A	None	N/A				
Tanganese Total (Jig/L)	8.9	0.0	2.4-10.0	0/0	120/20	Health/Aestne				
folybdenum Total (ug/L)	<0.03	<0.05	<0.03	N/A	None	N/A				
lickel Total (ug/L)	<0.5	<0.5	<0.5	N/A	None	N/A				
litrogen - Ammonia as N (mg/L)	< 0.02	< 0.02	<0.02	N/A	None	N/A				
litrogen - Nitrate as N (mg/L)	0.08	0.07	0.02-0.17	0	10	Health				
litrogen - Nitrite as N (mg/L)	< 0.01	<0.01	<0.01	0	1	Health				
H (pH units)	6.5	8.0	7.8-8.4	0	7.0-10.5	None				
Thenol (mg/L)	<0.005	< 0.005	<0.005	N/A	None	N/A				
orassium 1 otal (µg/L) esidue Total (µg/L)	148	172	31.26	N/A N/A	None	N/A N/A				
Residue Total Dissolved (TDS) (mo/L)	10	30	30-40	0	< 500	Aesthetic				
Residue Total Fixed (mg/L)	9	27	25-30	N/A	None	N/A				
Residue Total Volatile (mg/L)	6	7	5-9	N/A	None	N/A				
elenium Total (µg/L)	<0.5	<0.5	<0.5	0	50	Health				
ilica as SiO <sub>2</sub> (mg/L)	3.2	3.3	2.8-3.6	N/A	None	N/A				
ilver Total (µg/L)	<0.5	<0.5	<0.5	N/A	None	N/A				
odium Total (µg/L)	591	1,570	1,380-1,820	0	≤ 200,000	Aesthetic				
rihalomethanes Total (µg/L)	<4	18	16-20	0 NI/4	100 Nons <sup>3</sup>	Health				
urbiany (NTU) Ironium Total (116/L)	1.5	0.15 N/A	0.0/-1.2 N/A	N/A 0	N OILE-	N/A Usalth				
IV Absorbance 254 nm (Abs/cm)	0.0502	0.010	0.008-0.013	N/A	None	N/A				
Vinc Total (ug/L)	<3	0.010	0.000 0.015	0	< 5 000	Acathetic				

<sup>2</sup>Limits are taken from the Guidelines for Canadian Drinking Water Quality summary table (September 2022).

<sup>3</sup>GCDWQ recommends that water entering the distribution system have turbidity levels of 1.0 NTU or less.

2022 – Seymour Water System										
Parameter	Average	Average	Range	Days Exceeded	Limit <sup>2</sup>	Reason Established				
Alkalinity as CaCO <sub>3</sub> (mg/L)	3.6	22	18-24	N/A	None	N/A				
Aluminum Dissolved (µg/L)	48	25	19-34	N/A	None	N/A				
Aluminum Total (µg/L)	87	30	18-55	0	2,900	Health				
Antimony Total (µg/L)	<0.5	<0.5	<0.5	0	6	Health				
Arsenic Lotal (µg/L) Barium Total (µg/L)	<0.5	<0.5	<0.5	0	10 (ALARA)	Health				
Boron Total (ug/L)	<10	<10	<10	0	5.000	Health				
Bromate (µg/L)	<10	<10	<10	0	10	Health				
Bromide (µg/L)	<10	<10	<10	N/A	None	N/A				
Cadmium Total (µg/L)	<0.2	<0.2	<0.2	0	5	Health				
Calcium Total (µg/L)	1,620	8,450	7,520-9,240	N/A	None	N/A				
Carbon Organic - Dissolved (mg/L)	1.3	0.6	0.5-1.0	N/A	None	N/A				
Carbon Organic - Total (mg/L)	1.4	0.6	0.4-1.0	N/A	None	N/A				
Thorate (µg/L)	<10	23	2.1-2.0	0	1000	Aesthetic				
Thromium Total (119/L)	<0.06	<0.06	<0.05-0.07	0	50	Health				
Cobalt Total (ug/L)	<0.5	<0.5	<0.5	N/A	None	N/A				
Colour - Apparent (ACU)	14	<2	<2-6	N/A	None	N/A				
Colour - True (TCU)	9	<1	<1-1	0	≤15	Aesthetic				
Conductivity (µmhos/cm)	12	49	43-53	N/A	None	N/A				
Copper Total (µg/L)	22.3	<2	<0.5-5.5	0/0	2,000/1,000	Health/Aestheti				
Cyanide Total (mg/L)	<0.02	<0.02	<0.02	0	0.2	Health				
Cyanobacterial Toxins - Microcystin - LR (µg/L)	<0.20	N/A	N/A	0	1.5	Health				
Horace (mg/L)	<0.05	~0.05	7.8-10	0	1.5 80 (ALADA)	Health				
Hardness as CaCO <sub>2</sub> (mg/L)	4 7	21.9	19 5-23 9	N/A	None	N/A				
ron Dissolved (ug/L)	74	<5	<5-7	N/A	None	N/A				
ron Total (µg/L)	168	<9	<5-22	0	≤300	Aesthetic				
ead Total (µg/L)	<0.5	<0.5	<0.5	0	5 (ALARA)	Health				
Aagnesium Total (µg/L)	153	210	180-266	N/A	None	N/A				
/Ianganese Dissolved (µg/L)	5.6	3.5	1.1-6.1	N/A	None	N/A				
Aanganese Total (μg/L)	8.8	6.5	2.7-12.8	0	≤50	Aesthetic				
Aercury Total (µg/L) Ashih denym Total (µg/L)	<0.05	<0.05	<0.05	0	1 None	Health				
Jickel Total (µg/L)	<0.5	<0.5	<0.5	N/A N/A	None	N/A N/A				
Nitrogen - Ammonia as N (mg/L)	<0.02	<0.02	<0.02	N/A N/A	None	N/A				
Nitrogen - Nitrate as N (mg/L)	0.06	0.07	0.02-0.17	0	45	Health				
Nitrogen - Nitrite as N (mg/L)	<0.01	< 0.01	< 0.01	0	1	Health				
H (pH units)	6.5	8.0	7.7-8.3	0	7.0-10.5	None				
Phenol (mg/L)	< 0.005	< 0.005	<0.005	N/A	None	N/A				
Potassium Total (µg/L)	156	170	137-226	N/A	None	N/A				
Residue Total (mg/L)	16	34	31-36	N/A	None	N/A				
cestone Total Dissolved (TDS) (mg/L)	10	30	30-40	0	<u>&lt;</u> 300	Aestnetic				
esidue Total Volatile (mg/L)	9	2/	5-8	N/A N/A	None	N/A N/A				
elenium Total (ug/L)	<0.5	<0.5	<0.5	0	50	Health				
ilica as SiO <sub>2</sub> (mg/L)	3.2	3.3	2.8-3.6	N/A	None	N/A				
ilver Total (µg/L)	<0.5	<0.5	<0.5	N/A	None	N/A				
odium Total (µg/L)	558	1,550	1,390-1,810	0	≤200,000	Aesthetic				
rihalomethanes Total (µg/L)	<4	16	16-17	0	100	Health				
urbidity (NTU)	0.58	0.15	0.07-0.28	N/A	None <sup>3</sup>	N/A				
Jranium Total (µg/L)	0.0198	N/A	N/A	0	50	Health				
JV Absorbance 254 nm (Abs/cm)	0.058	0.010	0.008-0.015	N/A	None	N/A				
Zinc Total (µg/L)	<5	<3	<3-3	0	≤5,000	Aesthetic				

<sup>2</sup>Limits are taken from the Guidelines for Canadian Drinking Water Quality summary table (September 2022).

<sup>3</sup>GCDWQ recommends that water entering the distribution system have turbidity levels of 1.0 NTU or less.

Physical and Chemical Analysis of Water Supply										
2022 – Coquitlam Water System										
	Untreated <sup>1</sup> Treated <sup>1</sup>			Canadian Guideline						
Parameter	Average	Average	Range	Days Exceeded	Limit <sup>2</sup>	Reason Established				
Alkalinity as CaCO3 (mg/L)	1.9	21	20-26	N/A	None	N/A				
Aluminum Dissolved (µg/L)	59	68	51-85	N/A	None	N/A				
Aluminum Total (µg/L)	81	83	61-106	0	2,900	Health				
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)	2.6	2.4	1./-3.0	0	1,000	Health				
Son on Total (hg/L)	<10	<10	<10	0	10	Health				
Bromide (µg/L)	<10	<10	<10	5	None	N/A				
Cadmium Total (µg/L)	<0.2	<0.2	<0.2	0	5	Health				
Calcium Total (µg/L)	807	911	706-2,300	N/A	None	N/A				
Carbon Organic - Dissolved (mg/L)	1.5	1.4	1.1-2.0	N/A	None	N/A				
Carbon Organic - Total (mg/L)	1.6	1.4	1.2-2.1	N/A	None	N/A				
Chlorate (µg/L)	<10	52	32-85	0	1,000	Health				
Chloride (mg/L)	<0.5	2.1	1.9-2.3	0	≤250	Aesthetic				
Chromium Total (µg/L)	<0.06	< 0.05	<0.05-0.05	0	50	Health				
Cobalt Total (µg/L)	<0.5	<0.5	<0.5	N/A	None	N/A				
Colour - Apparent (ACU)	12	<3	<2-8	N/A	None	N/A				
Colour - True (TCU)	9	<1	<1-6	0	≤15	Aesthetic				
Conductivity (µmnos/cm)	8	45	40-53	N/A	None	N/A Health/Aesthe				
Copper Total (µg/L)	4.4	<0.02	<0.02	0/0	2,000/1,000	Health				
Cyanobacterial Toxins - Microcystin - LR (ug/L)	<0.02	×0.02 N/A	~0.02 N/A	0	1.5	Health				
Fluoride (mg/L)	<0.05	<0.05	<0.05	0	1.5	Health				
Haloacetic Acids Total (ug/L)	<1.1	7.4	4.2-12	0	801	Health				
Hardness as CaCO <sub>3</sub> (mg/L)	2.4	2.7	2.1-6.2	N/A	None	N/A				
ron Dissolved (µg/L)	18	19	12-35	N/A	None	N/A				
fron Total (µg/L)	48	49	25-76	0	≤300	Aesthetic				
Lead Total (µg/L)	<0.5	<0.5	<0.5	0	51	Health				
Magnesium Total (µg/L)	93	94	77-110	N/A	None	N/A				
Manganese Dissolved (µg/L)	3.9	2.7	1.6-3.7	N/A	None	N/A				
Manganese Total (µg/L)	4.4	3.6	2.0-4.8	0	≤50	Aesthetic				
Mercury Total (µg/L)	<0.05	<0.05	<0.05	U NT/A	l None	Health				
Niekel Tetel (ug/L)	<0.5	<0.5	<0.5	N/A N/A	None	IN/A N/A				
Nicker Fotar (hg/L)	<0.02	<0.02	<0.02	N/A N/A	None	N/A N/A				
Nitrogen - Nitrate as N (mg/L)	0.07	0.08	0.04-0.11	0	45	Health				
Nitrogen - Nitrite as N (mg/L)	< 0.01	< 0.01	< 0.01	0	1	Health				
oH (pH units)	6.3	8.2	7.6-8.9	0		None				
Phenol (mg/L)	<0.005	< 0.005	<0.005	N/A	None	N/A				
Potassium Total (μg/L)	147	144	102-234	N/A	None	N/A				
Residue Total (mg/L)	12	35	33-37	N/A	None	N/A				
Residue Total Dissolved (TDS) (mg/L)	9	30	30	0	≤500	Aesthetic				
Residue Total Fixed (mg/L)	6	23	20-24	N/A	None	N/A				
kesiaue Total Volatile (mg/L)	0	12	9-14	N/A	None	N/A				
Selemum 1 otal (µg/L)	~0.5	~0.5	~0.5	U N/A	30 None	Health N/A				
Silver Total (119/L)	<0.5	2.4 <0.5	<0.5	N/A N/A	None	N/A N/A				
Sodium Total (1971.)	-0.5	10 300	9.000-11.100	0	<200.000	Aesthetic				
Trihalomethanes Total (ug/L)	<4	8	6-12	0	100	Health				
Furbidity (NTU)	<0.4	0.36	0.13-4.5	N/A	None <sup>3</sup>	N/A				
Uranium Total (µg/L)	0.0491	N/A	N/A	0	50	Health				
UV 254 - Apparent (Abs/cm)	0.065	0.023	0.016-0.057	N/A	None	N/A				
UV Absorbance 254 nm (Abs/cm)	0.059	0.020	0.013-0.050	N/A	None	N/A				
Zinc Total (µg/L)	<3	<3	<3-5	0	<5.000	Aesthetic				

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