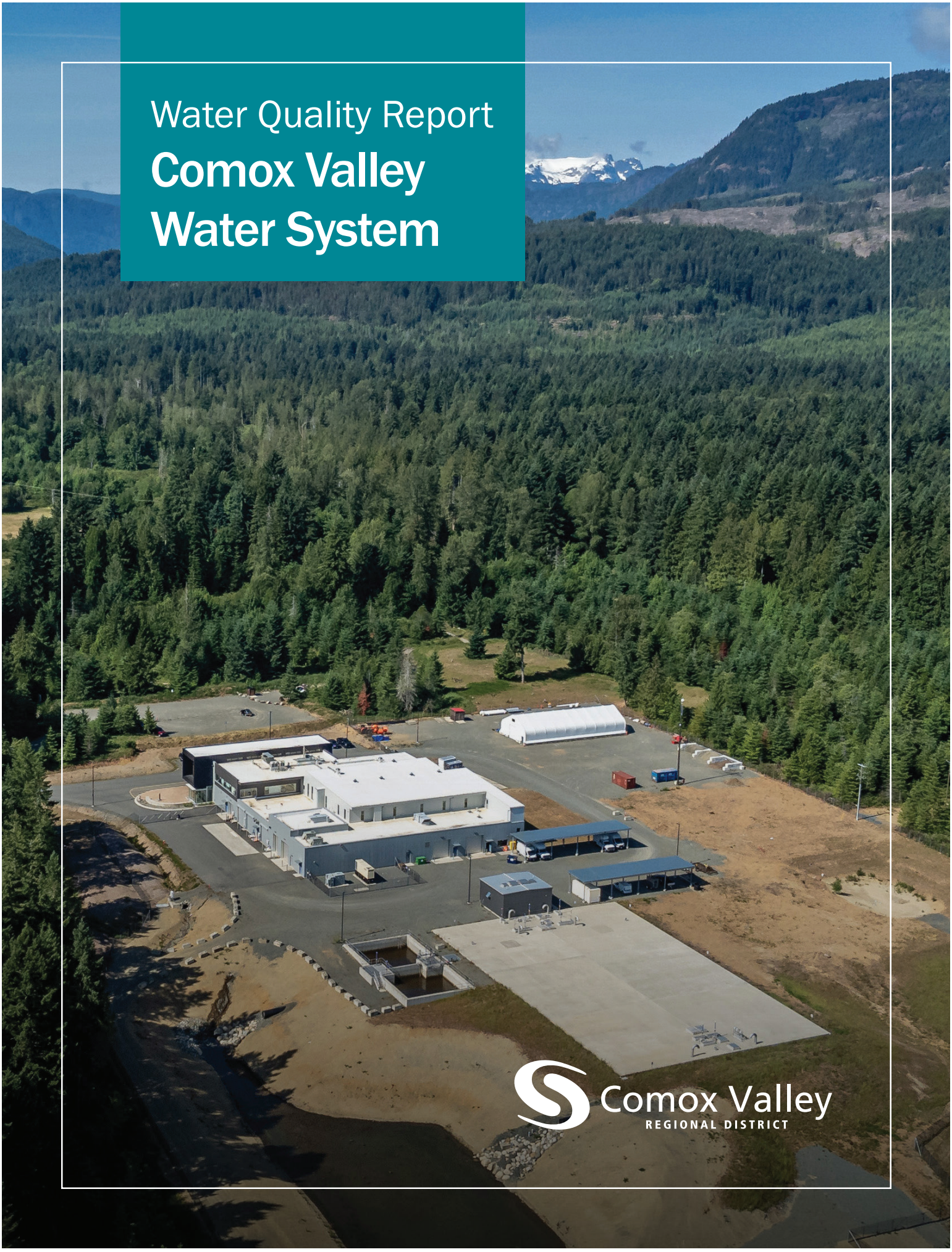
Water Quality Report

Comox Valley Water System



Comox Valley
REGIONAL DISTRICT

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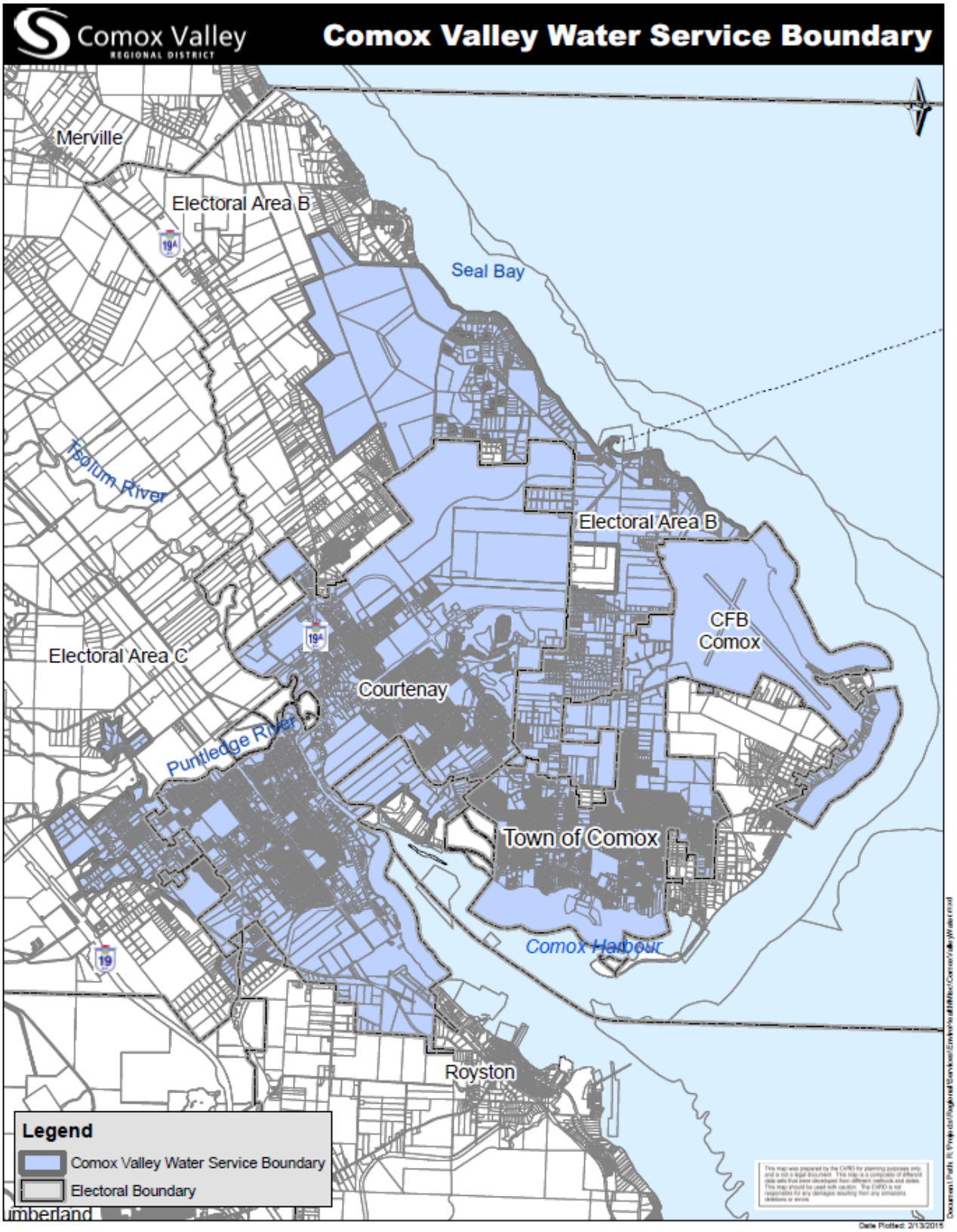
Map of Service Area



Introduction

The Comox Valley Regional District (CVRD) strives to provide high quality drinking water to the Comox Valley Water Service Area, through responsible operation, monitoring, and management of the water system. The CVRD is regulated by Island Health as part of the Ministry of Health for its activities as a potable water supplier. Under the *Drinking Water Protection Act* (DWP Act), the CVRD is required to report annually on the Comox Valley Water System (CVWS). This report covers the period from January 1 to December 31, 2022 and includes information on water quality, consumption, maintenance and capital projects.

The CVRD owns and operates the CVWS that provides domestic water to approximately 55,000 residents, including supplying bulk water to the Town of Comox, the City of Courtenay and to K'ómoks First Nations. The system also provides water and system maintenance to the Comox Valley Water Local Service Areas (CVLSA).

Figure No.1: West Courtenay Reservoir

The newly constructed Comox Valley Water Treatment Plant (CVWTP) was commissioned in October 2021 and is now responsible for treating all water that enters the CVWS. The transmission and distribution system utilize 33.6km of pipe, four pump stations (see Figure No.1) and six reservoirs with ability to store a combined volume of 31 million liters (ML).

Operations

Goals

To provide high quality drinking water to all customers through efficient and effective disinfection and distribution operations.

Water Quality Summary

Parameter[1]	2021	2022	Target
Source Water			
Chlorine Dosing Set Point (mg/L)	1.25*	1.5*	<2.0
Trihalomethanes (mg/L)	0.038	0.015	<0.1
Distribution System			
Chlorine Residual-Distribution System (mg/L)	0.88	0.77	>0.2
Total Coliforms (Positive Samples)	1	0	0
E.Coli (Positive Samples)	0	0	0
Canadian Drinking Water Quality Guidelines			
Source Water Turbidity (Average Nephelometric Turbidity Unit (NTU))	0.40	0.13	<1.0
Source Water Temperature (Celsius)	10.9	11.7	15.0
Source Water pH Levels	7.20	7.73	7.0-8.5

[1]More information for each parameter is available later on in the report.

The Ministry of Health regulates municipal drinking water quality through the DWP Act and the *Drinking Water Protection Regulation* (the Regulation). The DWP Act and Regulation are administered

by regional health authorities, and for the CVRD, the administering authority is Island Health. Both the DWP Act and Regulation set out certain requirements for drinking water operators and suppliers to ensure the provision of safe drinking water to their customers.

The CVRD manages the CVWS which includes supplying bulk water to the City of Courtenay, the Town of Comox and K'ómoks First Nations as well as providing and managing water for the Comox Valley WLSA. The CVRD takes weekly water quality samples at six reservoirs and within the distribution system, to ensure that water is meeting provincial objectives. Sampling for distribution by-products and water chemistry reports occurs quarterly. A summary of water quality and a description of sampling results can be found below.

Treatment

The CVWS utilizes surface water that is sourced from Comox Lake. All water supply systems using surface water are governed by Island Health and are required to adhere to provincial 4-3-2-1-0 surface water treatment objectives to ensure effective elimination of disease causing viruses, bacteria and parasites. The 4-3-2-1-0 objectives are as follows:

- 4-log (99.99 per cent) removal/inactivation of viruses;
- 3-log (99.9 per cent) removal/inactivation of Giardia cysts and Cryptosporidium oocysts;
- 2 treatment processes, usually filtration and disinfection;
- 1 NTU turbidity (maximum) in finished water;
- No detectable E.Coli, fecal coliforms and total coliforms in treated water.

Water from Comox Lake enters the new water treatment plant via a lake intake where it is pumped through 2.7km of water main to the CVWTP. The treatment plant utilizes direct filtration as the primary treatment technology. This process uses coagulant to create a 'floc' that is removed through the dual media filter beds. This removes suspended particles within the source water, ultimately eliminating boil water notices related to turbidity. The filtered water is then disinfected by ultra violet light (UV) and sodium hypochlorite before it enters a 10ML clear well. The finished water then travels approximately 5.3 kms through the treated water transmission main where it enters the water system at the master meter facility.

This work was initiated in 2015 with construction beginning in 2019 and was commissioned in October of 2021.

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Sodium hypochlorite is added to the finished water to establish a free chlorine residual which lasts throughout the distribution network to help prevent water from bacteriological regrowth. The CVRD strives to achieve a free chlorine residual of 0.3 to 0.5mg/L at the end of the system. In 2022 the average residual throughout the whole system was 0.77mg/L and at the end of the system the residual was 0.67mg/L meeting Island Health's minimum requirement of 0.2mg/L. Figure No.3 below shows the average free chlorine residual at each reservoir.

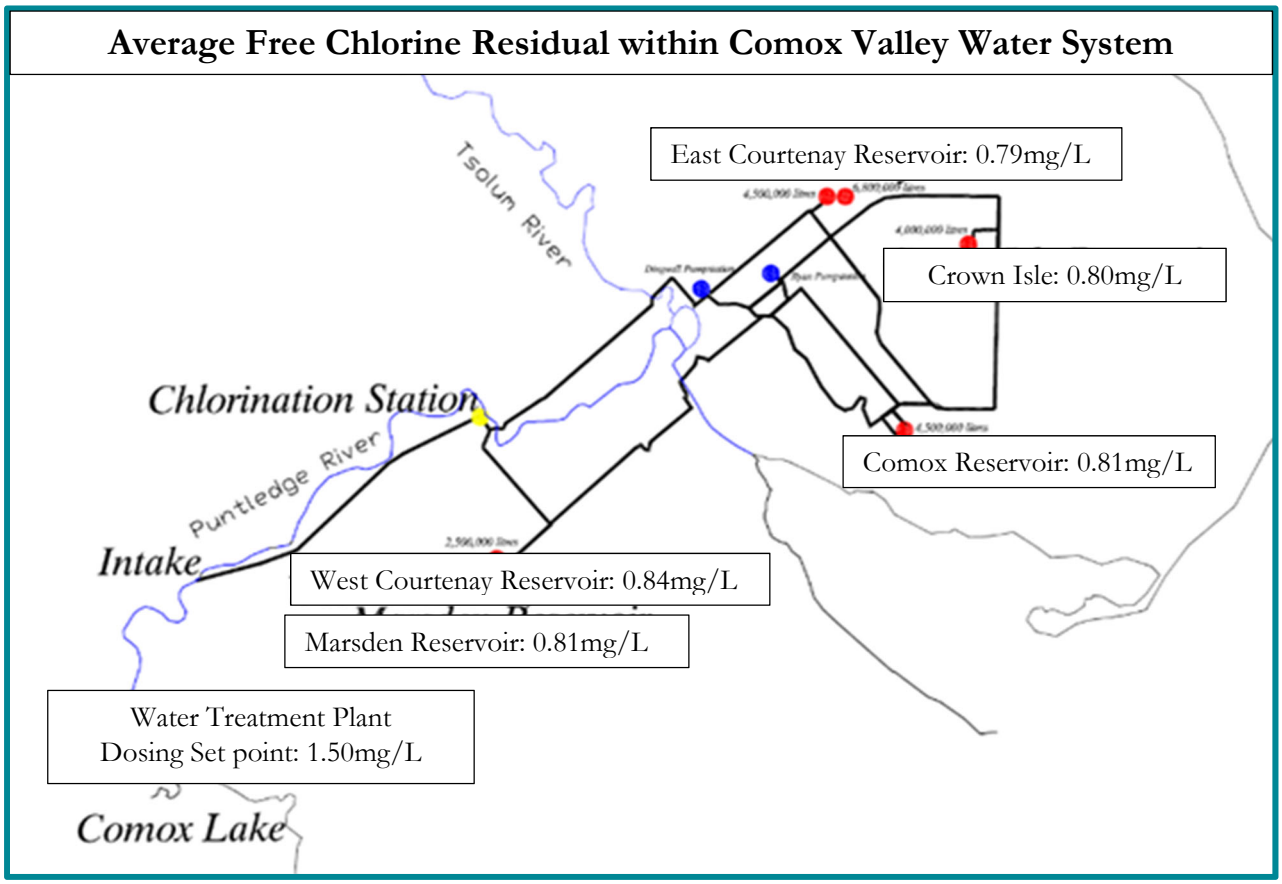


Figure No.3: Average Free Chlorine Residual within CVWS

The CVRD samples quarterly for disinfection by-products (DBP) within the distribution system. Trihalomethanes (THM's) are the organic compounds that form as a DBP from chlorination, the CVRD samples for THM's at the West Courtenay Reservoir. There are four types of DBP that contribute to total THM's. Chloroform is the most commonly regulated DBP and is formed when natural organic matter reacts with chlorine and/or bromine in disinfected water. The guidelines require that total THM's for drinking water must be less than 0.1mg/L. Table No.1 below shows the average total THM's from the quarterly samples. The same results year after year show a continuity in system operations.

Table No.1: Total THM Concentration at the West Courtenay Reservoir

Trihalomethanes	West Courtenay Reservoir
Chloroform	0.014
Bromodichloromethane	0.0013
Dibromochlromethane	<0.001
Bromoform	<0.001
Total Trihalomethanes (mg/L)	**0.015**

Bacteria

E.Coli and total coliform bacteria are microorganisms that if present in water samples indicate possible contamination with sewage or animal wastes. Chlorination helps to remove harmful pathogens within the water supply network. Table No.2 illustrates that the CVRD's water disinfection system met the bacteriological standards for potable water.

Table No.2: Bacteriological Standards and Sampling Results

Parameter	Standard	Result
E.Coli	No detectable E.Coli per 100mL	0 exceedances per 612 samples
Total Coliform Bacteria	At least 90 per cent of samples have no detectable total coliform bacteria per 100 ml and no sample has more than 10 total coliform bacteria per 100 ml	0 exceedances per 612 samples (100 per cent of samples have no detectable total coliform bacteria, no sample exceeded 0 total coliform bacteria per 100ml)

Canadian Drinking Water Guidelines

Health Canada develops the *Canadian Drinking Water Guidelines*. These are guidelines for limits on microbial, chemical, physical, radiological substances in drinking water. In the guidelines, health-based limits on a substance are assigned a maximum allowable concentration. The guidelines also assign aesthetic objectives to substances that do not cause risk to human health but influence consumer acceptance of the water based on factors such as taste, odour and colour. Table No.3 shows the Comox Reservoir concentration averages compared to guideline concentrations. Distribution water was sampled two times in 2022 from the Comox Reservoir location and the system was below all guideline concentrations.

More information on the parameters listed below, including common sources and health considerations, can be found on the Health Canada website.

Table No.3: Average of Chemical and Physical Parameters Compared to Guideline Concentrations

Parameter	Average Concentration (mg/L)	Guideline Concentrations (mg/L)
Aluminum	0.024	≤0.2*
Arsenic	0.0002	0.01
Barium	0.0011	1.0
Boron	<0.05	5.0
Chloride	1.9	≤250
Chromium	<0.001	0.05
Copper	0.0032	1
Fluoride	<0.050	1.5
Iron	<0.05	≤0.30
Lead	<0.0002	0.01
Manganese	0.0064	≤0.05
Nitrate (as N)	0.041	10
Nitrite (as N)	<0.005	1
Selenium	<0.0001	0.05
Sodium	1.70	≤200
Zinc	<0.005	≤5.0

*These are operational guidance values that only apply to drinking water treatment plants using aluminum-based coagulants.

Turbidity

The new water treatment plant has filtration as an additional barrier to meet provincial drinking water guidelines and eliminate turbidity related boil water notices completely. In 2022, turbidity entering the water system did not exceed 1 NTU and no boil water notices were issued. Figure No.4 shows turbid water entering Comox Lake. Figure No.5 shows the average source water turbidity entering the system at 0.42 NTU.

Figure No.4: Turbid Water from Beech Creek Entering Comox Lake

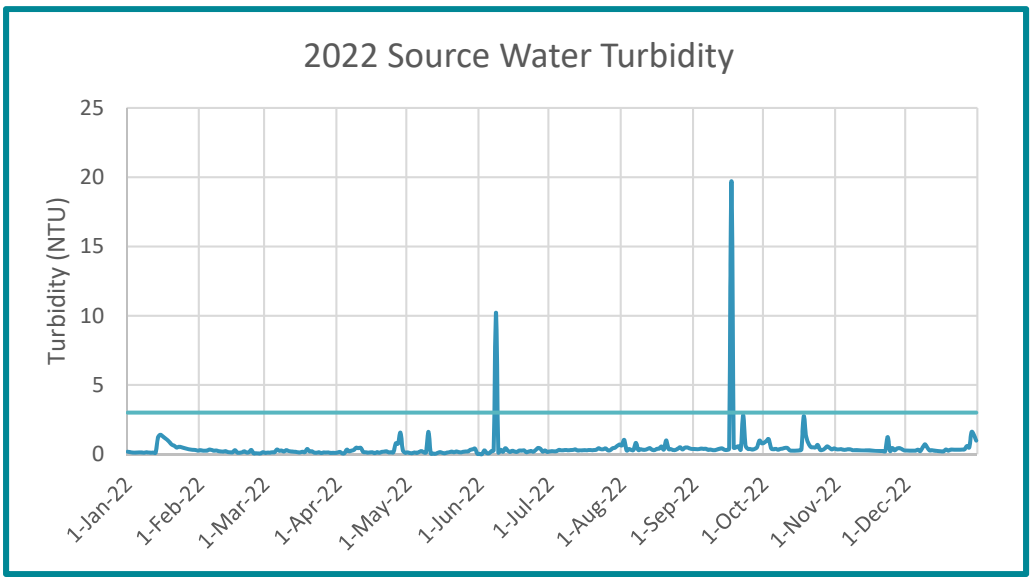


Figure No.5: Average Daily Source Water Turbidity

Temperature

Temperature is described as an aesthetic objective (a parameter that may impair the taste, smell or colour of water) and a physical characteristic of water. Gradual variations in water temperature occur throughout the seasons, however signifcant changes in water temperature can upset chlorination and chemical water treatment processess. The guidelines recommend the temperature to be less than 15 degrees celsius, the average source water temperature for the CVWS was 10.6 degrees celsius. Figure No.6 below shows the incoming source water daily temperautre from the BC Hydro penstock, it can be seen that the water temperature increases in the summer months and decreases in the winter months.

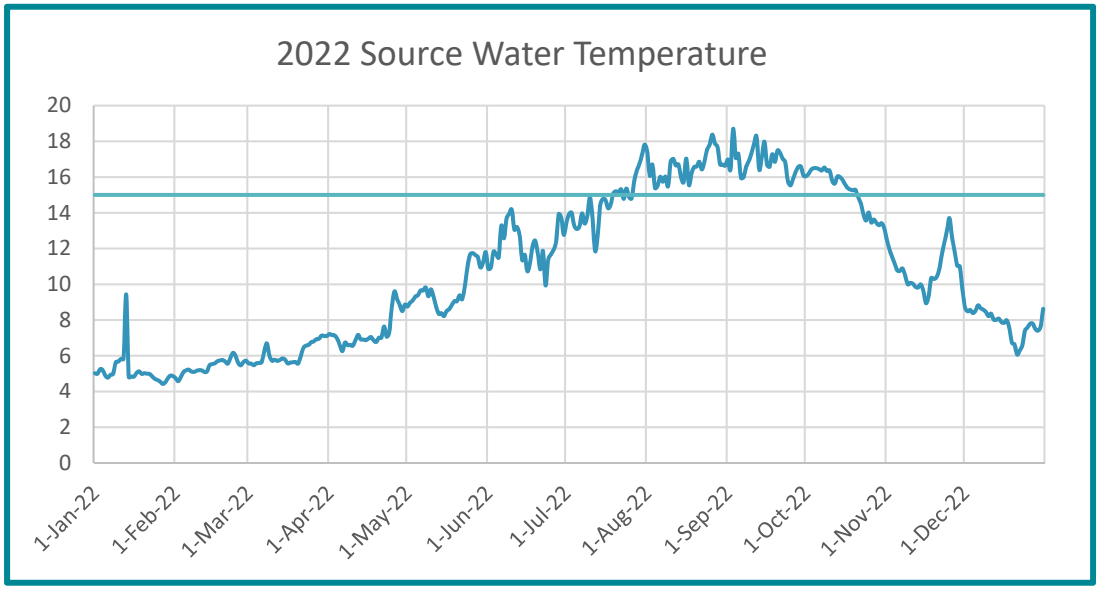


Figure No.6: Source Water Temperature

pH

The pH of water is a measure of acidity. pH has minimal impact for water consumers however it is very important for many operational water quality parameters. The *Canadian Drinking Water Guidelines* recommend the pH ranging between 7.0 to 10.5. pH varies greatly depending on the water source and in 2022 the average pH of the source water was 7.14. Figure No.7 below shows the pH of the incoming source water.

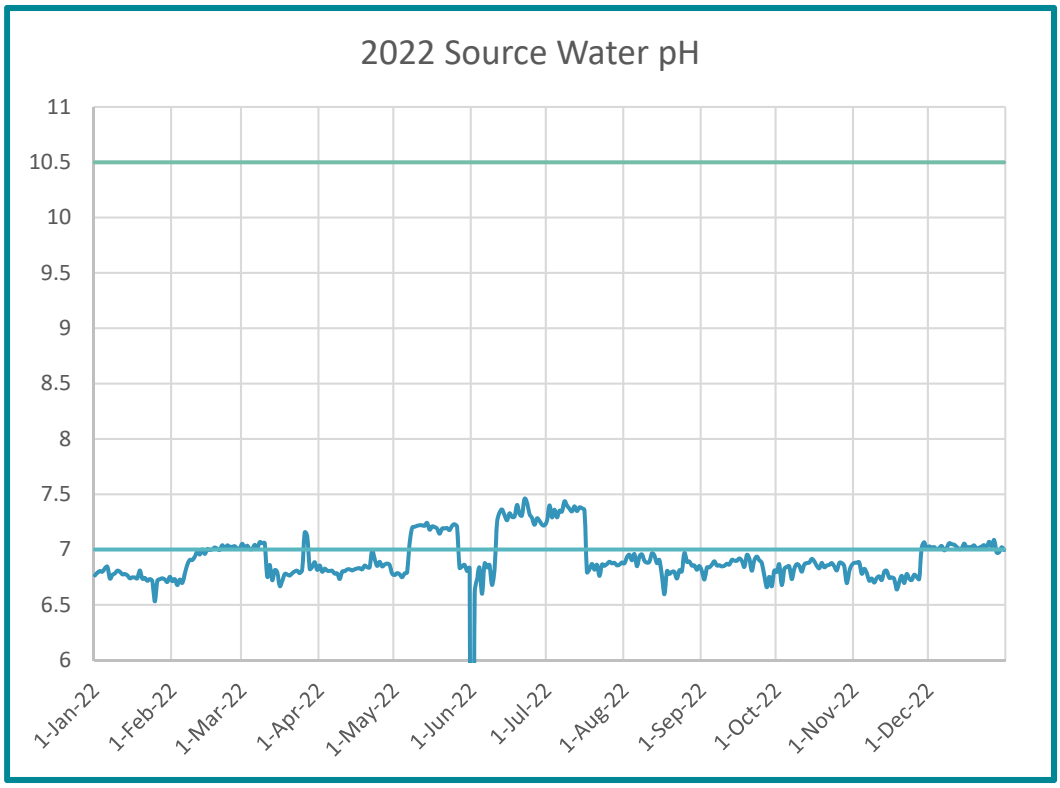


Figure No.7: Source Water pH

Water Quality Concerns

The CVRD continues to monitor water quality in the Comox Lake watershed through a series of programs.

Ensuring high-quality drinking water also requires preservation of water at its source. Continued implementation of the Watershed Protection Plan occurred in 2022. This included collaboration with the many stakeholders within the watershed, hydrodynamic modelling and continued water quality monitoring within the watershed. Turbidity and water quality is monitored at all major tributaries to the Comox Lake and all data is recorded within a watershed database to help inform and provide insight on water quality. Figure No.8 illustrates the size and extent of the Comox Lake watershed.

In 2022 the CVRD continued to partner with the Town of Comox, City of Courtenay, Village of Cumberland and K'ómoks First Nation on a multi-year initiative with the Municipal Natural Asset Initiative (MNAI). The goal of the project is to value natural assets in the watershed to better understand, measure and manage the drinking water services that are provided.

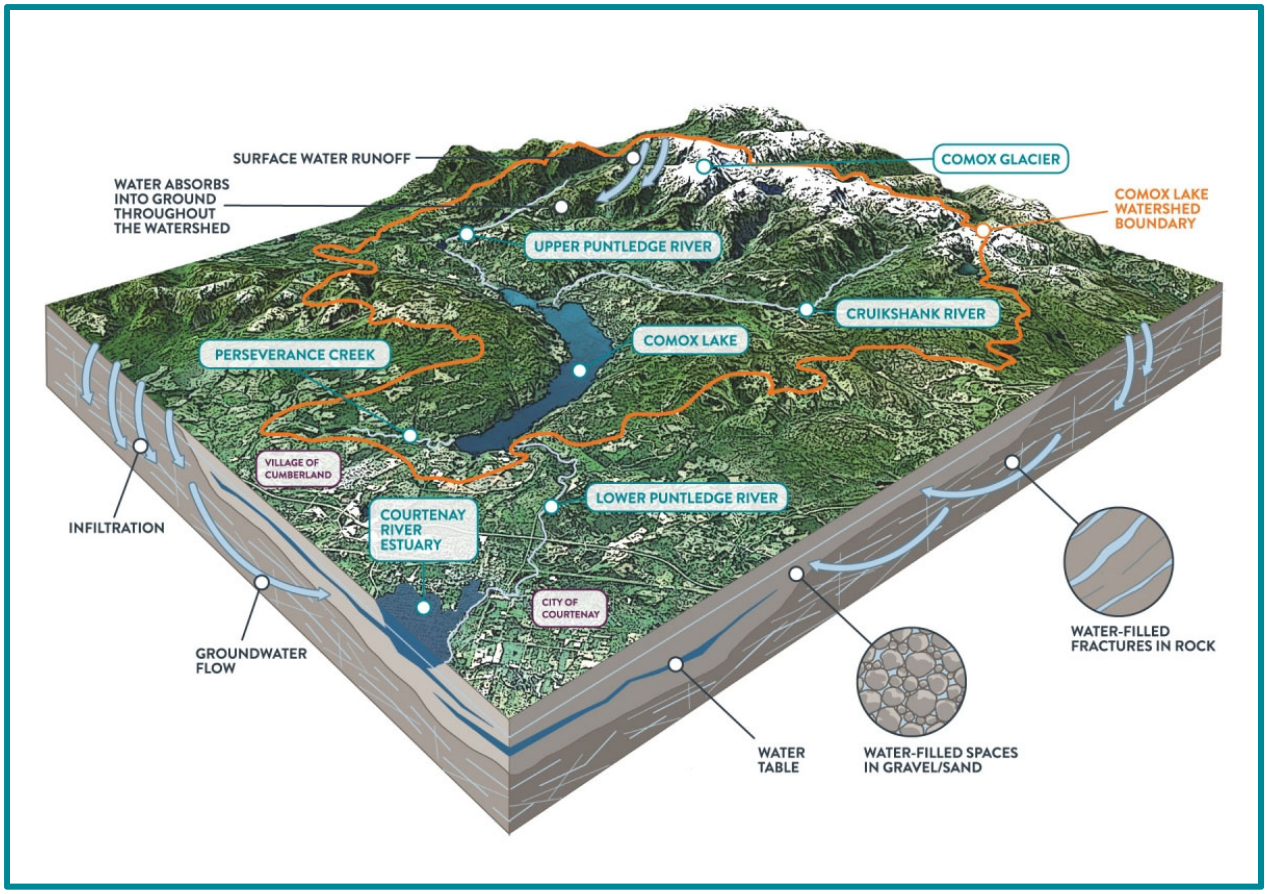


Figure No.8: Comox Lake Watershed

Planning

Goals

To ensure effective long-term planning and management programs are in place to meet the needs of all users groups while minimizing operation and infrastructure costs.

Consumption

The average daily water consumption for the system in 2022 was 25.3 ML/day.

To help reduce consumption the CVRD have rebate programs in place to encourage Comox Valley residents to be water efficient. Rebates in 2022 included smart control outdoor irrigation.

The CVRD closely monitors water demand and compliance to restrictions throughout the year and during summer months water demand increases approximately two fold from normal winter demand, as shown in Figure No.9 below.

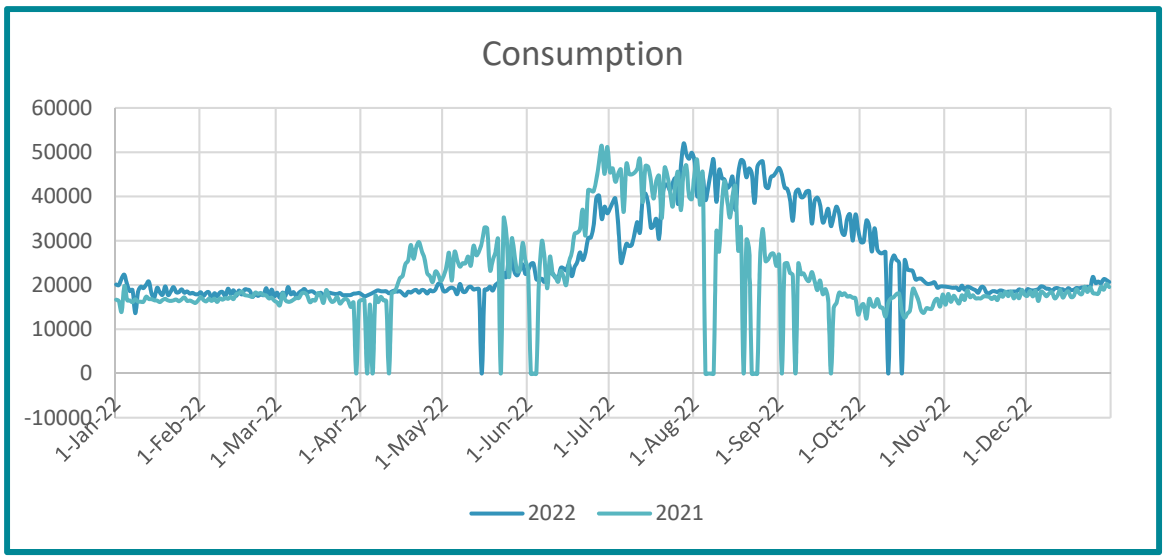


Figure No.9: CVWS Daily Consumption in 2021 and 2022

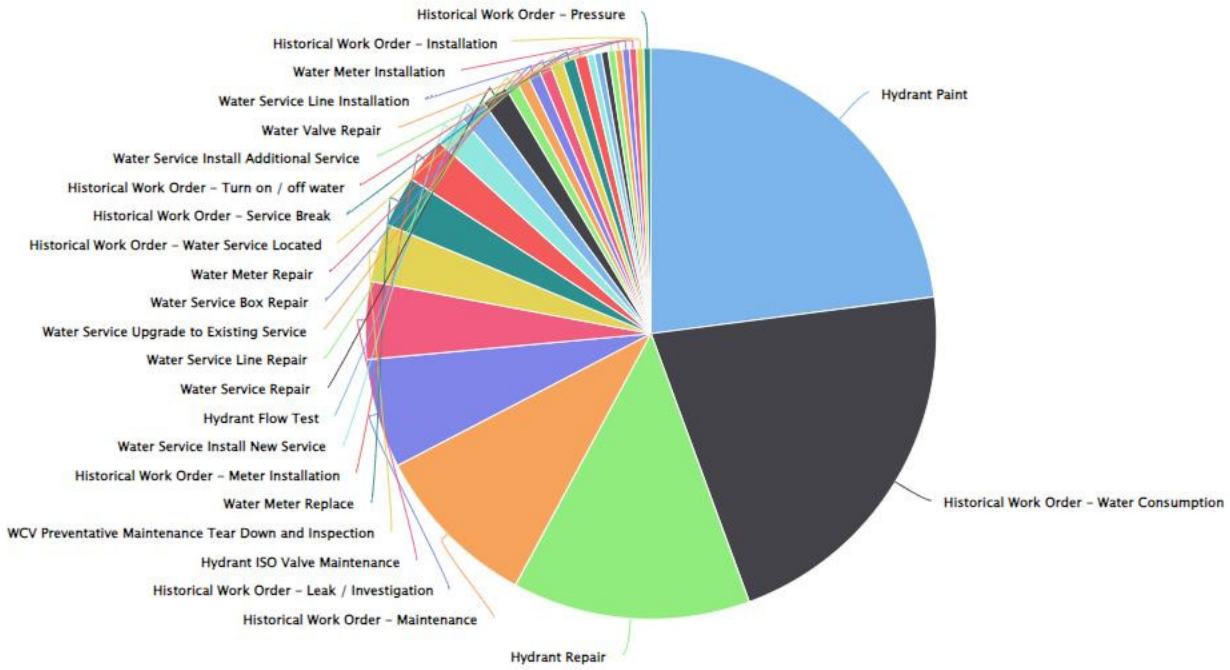
Water conservation is an increasingly important concept as our climate is changing and while it seems like we have an abundance of water available to us, our fresh water supply is a limited, precious resource in the summer. CVRD has a four-stage system in place for managing water consumption. Stage one is the least restrictive and comes into effect annually on May 1 unless noted otherwise. Stages two and three are increasingly more restrictive and are implemented as per the water use agreement with BC Hydro which is primarily based on the environmental flow needs in the Puntledge River. Stage 4 can be implemented in circumstances where it is essential to bring water consumption down to as low as possible to maintain critical flows to accommodate major repairs or extremely low river flows.

In 2022, the Maximum Day Demand (MDD) was 51.9 ML and occurred on July 28th. In comparison, the highest consumption day in 2021 was 51.3 ML and 44.0 ML in 2020. The increase in the MDD can be attributed to multiple factors, including population growth, weather and current watering restrictions.

Maintenance

The waterworks staff consists of eleven operators with varying ranges of certification. Each operator is registered with the Environmental Operator's Certification Program within BC and is required to remain in good standing by taking yearly continuing education courses.

The waterworks staff carries out preventive, corrective and emergency maintenance to all parts within the CVWS. This ensures continued operation and supply of safe, clean water to all users. The CVWTP, reservoirs and distribution system are regularly inspected and maintained. 274 work orders within the system were investigated by the CVRD's Waterworks Operations Staff. Operator's time is primarily dedicated to the operations and maintenance of transmission mains and the treatment system, however Figure No.10 shows the breakdowns of service requests by category



Financial

In response to the COVID-19 pandemic, bulk water rates for 2021 and 2022 were decreased to $0.80/m3 to assist the community during the COVID-19 recovery phase. Rates are slated to increase in 2023 to $0.96/m3.

With completion of the CVWTP in 2021, capital spending for the CVWS is significantly decreased. The primary drivers for capital spending in 2022 are the final scope additions at the CVWTP, seasonal inspection and repair of the Puntledge River crossing, and the water south extension project.

Implementation of the Watershed Protection Plan (WPP) allows for compliance with Island Health regulations, minimizes operations and maintenance costs of the CVWS, and ensures the ongoing safe reliable supply of drinking water for the community. In 2022, work completed under the WPP included continuing the Coal Beach property management planning process, updating the WPP risk assessment, expanding the water quality and environmental monitoring program and continued implementation of the education and outreach program.

2022 Accomplishments

- ✓ Completed first year of operating the CVWTP.
- ✓ Major repair on the hyprescon transmission watermain.
- ✓ Retro fitted two pumps at the Dingwall pump station into altitude valves.
- ✓ Completed pressure reducing valve safety upgrades.

2023 Objectives

- Continue to develop detailed operating / maintenance plans and procedures.
- Further progress on the South Water Extension Project.
- Safety/Security upgrades to Water Reservoir access.
- Next phase of the Fibre Optic Project.

DISTRIBUTION SYSTEM

	Chlorine Residual (mg/L)													Total Coliform															E.Coli													
Date	74 Salsbury	Arden Station	1750 Astra	2490 Waveland	4871 Greaves Crescent	3441 Cumberland	Comox Res.	Crown Isle Res.	E. Courtenay Reservoir	Marsden Res.	W.Courtenay Reservoir	2390 Rennison	2472 Gibson	74 Salsbury	Arden Station	1750 Astra	2490 Waveland	4871 Greaves Crescent	3441 Cumberland	Comox Res.	Crown Isle Res.	E. Courtenay Reservoir	Marsden Res.	W.Courtenay Reservoir	2390 Rennison	2472 Gibson	2701 Elmo	Raw Water Pump Station	Comox Lake RAW Water	74 Salsbury	Arden Stn	1750 Astra	2490 Waveland	4871 Greaves Crescent	3441 Cumberland	Comox Res.	Crown Isle Res.	E. Courtenay Reservoir	Marsden Res.	W.Courtenay Reservoir	2390 Rennison	2472 Gibson	2701 Elmo	Raw Water Pump Station	Comox Lake RAW Water
2022-01-04	0.80	0.84	0.78	0.74	0.82	0.78	0.82	0.80	0.76	0.84	0.87	0.68		< 1	< 1	< 1	< 1	< 1	< 1		< 1	< 1	< 1	< 1	< 1					< 1	< 1	< 1	< 1	< 1	< 1		< 1	< 1	< 1	< 1	< 1				
2022-01-05																												2	1															< 1	< 1
2022-01-06																				< 1																< 1								
2022-01-10	0.73	0.90	0.75	0.87	0.91	0.98	0.91	0.93	0.84	0.90	0.91		0.83	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1		< 1				< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1		< 1			
2022-01-17	0.79	0.81	0.72	0.77	0.81	0.81	0.80	0.75	0.76	0.82	0.93	0.74		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1			22	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1			< 1	< 1
2022-01-24	0.74	0.80	0.77	0.75	0.88	0.80	0.93	0.83	0.84	0.74	0.84	0.84		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1			< 1	3		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1		< 1	< 1			< 1	< 1	
2022-01-31	0.75	0.79	0.77	0.68	0.87	0.72	0.83	0.76	0.81	0.79	0.87	0.72		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1		< 1		3.1		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1		< 1			< 1	
2022-02-07		0.90	0.78	0.78	0.80	0.85			0.73	1.09	0.75	0.96		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1			3		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1				< 1	
2022-02-07											0.81																																		
2022-02-14	0.75	0.79	0.78	0.75	0.80	0.75	0.82	0.77	0.80	1.13	0.93	0.71		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1			< 1		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1				< 1	
2022-02-22	0.70	0.88	0.75	0.69	0.79	0.72	0.77	0.76	0.77	0.79	0.79	0.69		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1			6		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1				1	
2022-03-07														< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1			< 1		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1				< 1	
2022-03-14														< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1		< 1		2		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1		< 1			< 1	
2022-03-21														< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1			< 1		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1				< 1	
2022-03-28	0.94	0.94	0.78	1.12	0.89	0.97	0.93	0.89	0.89	0.90	0.86	0.59																																		
2022-04-02																		< 1																< 1										
2022-04-04	0.81	0.87	0.84	0.79	0.76	0.80	0.89	0.81	0.80	0.88	0.90	0.65		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1			2		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1				< 1	
2022-04-11	0.76	0.80	0.73	0.67	0.85	0.76	0.82	0.78	0.79	0.81	0.83		0.74	< 1	< 1	< 1	< 1		< 1	< 1	< 1	< 1	< 1	< 1		< 1				< 1	< 1		< 1		< 1	< 1	< 1	< 1	< 1		< 1				
2022-04-19														< 1		< 1			< 1	< 1		< 1	< 1	< 1	< 1			< 1		< 1		< 1			< 1	< 1		< 1	< 1	< 1	< 1		< 1			< 1	
2022-04-25	0.77	0.87	0.71	0.76	0.83	0.80	0.82	0.77	0.81	0.73	0.85	0.32		< 1	< 1	< 1		< 1	< 1	< 1	< 1	< 1	< 1	< 1			< 1			< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1			< 1		
2022-04-26							0.75														< 1															< 1								
2022-05-02	0.74	0.76	0.72	0.73	0.80	0.77	0.79	0.79	0.80	0.80	0.83	0.68		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1			4	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1			< 1	< 1	
2022-05-09	0.68	0.73	0.67	0.68	0.74	0.68	0.75	0.54	0.70	0.74	0.78		0.67	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1		< 1		< 1		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1		< 1			< 1	
2022-05-16	0.78	0.83	0.70	0.72	0.76	0.72	0.82	0.75	0.76	0.76	0.86	0.61		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1			170		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1				< 1	
2022-05-24	0.73	0.72	0.67	0.70	0.80	0.70	0.75	0.73	0.74	0.76	0.58	0.55		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1			< 1	2		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1			< 1		< 1	
2022-05-30	0.63	0.69	0.59	0.68	0.71	0.66	0.71	0.67	0.71	0.79	0.79	0.68		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1		< 1		4		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1			< 1		
2022-06-06	0.63	0.67	0.62	0.65	0.70	0.64	0.69	0.67	0.66	0.68	0.76	0.49		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1		< 1			2		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1		< 1				< 1	
2022-06-07							0.59													< 1															< 1								
2022-06-09																								< 1																< 1				
2022-06-13	0.76	0.82	0.66	0.78	0.86	0.76	0.83	0.75	0.81	0.82	0.88		0.85	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1		< 1		4		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1		< 1		< 1		1	
2022-06-20	0.72	0.73	0.63	0.67	0.80	0.68	0.77	0.75	0.75	0.72	0.59	0.58		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1			< 1		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1				< 1	
2022-06-27	0.74	0.74	0.70	0.74	0.76	0.74	0.80	0.75	0.77	0.76	0.77	0.58		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1			< 1	3		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1			< 1		< 1	
2022-07-04	0.72	0.74	0.67	0.70	0.75	0.70	0.77	0.73	0.77	0.74	0.84	0.65		< 1	< 1	< 1	< 1		< 1		< 1	< 1	< 1	< 1	< 1			2		< 1	< 1	< 1	< 1		< 1	< 1	< 1	< 1	< 1	< 1	< 1				< 1	
2022-07-11	0.73	0.78	0.73	0.76	0.81	0.77	0.86	0.76	0.80	0.78	0.82		0.79	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1		< 1		3		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1			< 1		< 1	
2022-07-18	0.79	0.83	0.77	0.81	0.87	0.81	0.86	0.80	0.85	0.83	0.91	0.68		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1			19		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1				< 1	
2022-07-25	0.83	0.85	0.79	0.85	0.87	0.83	0.91	0.92	0.89	0.96	1.04	0.70		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1			< 1	4		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1			< 1	1	
2022-08-02	0.87	0.92	0.73	0.81	0.92	0.90	0.81	0.82	0.89	0.85	0.89	0.80		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1			9		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1				< 1	
2022-08-07																< 1															< 1												
2022-08-08	0.75	0.79	0.70	0.80	0.77	0.73	0.77	0.76	0.79	0.81	0.82		0.78	< 1	< 1		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1		< 1		32		< 1	< 1		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1			< 1		
2022-08-15	0.70	0.75	0.70	0.76	0.76	0.71	0.29	0.75	0.78	0.75	0.75	0.73		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1			26		< 1	< 1	< 1	< 1	< 1	< 1		< 1	< 1	< 1	< 1	< 1				< 1	
2022-08-15							0.77																																				
2022-08-22	0.73	0.79	0.70	0.73	0.82	0.74	0.80	0.77	0.80	0.80	0.78	0.76																																
2022-08-25	0.76	0.79	0.72	0.79	0.78	0.77	0.81	0.77	0.79	0.78	0.78			< 1	< 1	< 1		< 1	< 1	< 1	< 1	< 1	< 1	< 1			< 1	9		< 1	< 1	< 1		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1		< 1	< 1		
2022-08-25				0.64																																							
2022-08-28																	< 1																	< 1										
2022-08-29	0.71	0.72	0.67	0.69	0.76	0.70	0.76	0.72	0.71	0.73	0.79			< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1		< 1		23		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1			< 1			
2022-08-29				0.72																																							
2022-09-06	0.67	0.71	0.68	0.74	0.76	0.66	0.74	0.72	0.77	0.70	0.75	0.64		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1			42		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1				< 1	
2022-09-12														< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1		35		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1			< 1	
2022-09-20	0.68	0.81	0.60	0.72	0.81	0.66	0.74	0.67	0.86	0.77	0.85	0.71		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1			56		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1				< 1	
2022-09-26	0.77	0.81	0.70	0.82	0.88	0.77	0.86	0.73	0.83	0.84	0.86	0.65		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1			< 1	37		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1			< 1		< 1	
2022-10-03														< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1			5		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1				< 1	
2022-10-11	0.71	0.75	0.66	0.64	0.78	0.72	0.78	0.67	0.77	0.77	0.79		0.73	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1		< 1		39		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1			< 1		1	
2022-10-17														< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1			40		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1				< 1	
2022-10-24	0.65	0.72	0.58	0.67	0.73	0.67	0.70	0.65	0.69	0.71	0.77	0.54		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1			39		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1				< 1	
2022-10-31	0.71	0.82	0.59	0.75	0.93	0.77	0.81	0.73	0.77	0.83	0.91	0.79			< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1		61			< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1			< 1	
2022-11-07	0.75	0.79	0.76	0.77	0.80	0.76	0.82	0.97	0.74	0.82	0.85	0.69		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1			39		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1				< 1	
2022-11-14	0.80	0.70	0.69	0.69	0.88	0.80	0.81	0.78	0.71	0.82	0.97		0.75	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1		< 1		24		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1			< 1		< 1	
2022-11-21	0.80	0.84	0.73	0.80	0.88	0.82	0.85	0.77	0.81	0.86	0.87	0.74		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1			31		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1				< 1	
2022-11-28	0.87	0.89	0.70	0.77	0.92	0.87	0.85	0.81	0.83	0.88	0.86	0.64		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1			< 1	4		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1			< 1		< 1	
2022-12-05	0.80	0.86	0.81	0.81	0.82	0.80	0.88	0.87	0.87	0.90	0.93	0.63		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1			4		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1				< 1	
2022-12-12	0.85	0.92	0.68	0.67	0.82	0.83	0.87	0.79	0.73	0.78	0.82		0.70	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1		< 1				< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1			< 1		
2022-12-19	0.79	0.82		0.78	0.83	0.83	0.82	0.81	0.87	0.83	0.84	0.75																																
2022-12-28	0.83	0.83	0.74	0.85	0.85	0.81	0.83	0.83	0.82	0.84	0.84	0.69		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1			< 1	31		< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1			< 1	< 1	< 1	
Count	**44**	**45**	**44**	**47**	**45**	**45**	**47**	**44**	**45**	**45**	**46**	**34**	**9**	**48**	**48**	**49**	**47**	**47**	**49**	**48**	**50**	**49**	**49**	**49**	**24**	**15**	**11**	**39**	**2**	**48**	**48**	**48**	**48**	**47**	**49**	**48**	**50**	**47**	**48**	**49**	**24**	**15**	**11**	**41**	**3**
Average	**0.76**	**0.80**	**0.71**	**0.75**	**0.82**	**0.77**	**0.79**	**0.77**	**0.79**	**0.81**	**0.83**	**0.67**	**0.76**	**< 1**	**< 1**	**< 1**	**< 1**	**< 1**	**< 1**	**< 1**	**< 1**	**< 1**	**< 1**	**< 1**	**< 1**	**< 1**	**< 1**	**21.69**	**< 1**	**< 1**	**< 1**	**< 1**	**< 1**	**< 1**	**< 1**	**< 1**	**< 1**	**< 1**	**< 1**	**< 1**	**< 1**	**< 1**	**< 1**	**< 1**	**< 1**